

USDA, FOREST SERVICE
 COLUMBIA RIVER GORGE NATIONAL SCENIC AREA
 902 WASCO AVENUE, SUITE 200
 HOOD RIVER, OR 97031

Telephone: 541-308-1700
Fax: 541-386-1916

FOREST PRACTICE REVIEW APPLICATION

DATE OF APPLICATION: 03/13/2007—FILE NO: CD-06-14-S

APPLICANT(S)	PROPERTY OWNERS
USDA, FOREST SERVICE	USA
CRGNSA	
MAILING ADDRESS	MAILING ADDRESS
902 Wasco Avenue Suite 200	
Hood River, Oregon 97031	
APPLICANT'S SIGNATURE AND DATE	PROPERTY OWNER'S SIGNATURE AND DATE
	N/A
FS CONTACT: Diana L. Ross	
PHONE: 541.308.1716	PHONE:
E-MAIL: dlross@fs.fed.us	E-MAIL:
LOCATION OF PROPERTY	PROPERTY ADDRESS (IF APPLICABLE)
Township 4 North, Range 12 East Sections 30, 31 Township 3 North, Range 12 East Section 30 Township 3 North, Range 11 East Sections 2, 3, 13, 14, 15, 23, 24, 25, 26, 27, 28, 34, 35, 36	
PLANNING AREA SIZE (ACRES): 4,100	COUNTY: KLINKITAT
EXISTING LAND USE: USDA, FOREST SERVICE Multiple Use <u>Open Space SMA Policy 1</u> Open Space shall be designated to provide special protection for sensitive scenic, cultural, recreational, and natural resources, and for sensitive and/or representative ecosystems. <u>Forest/Agriculture SMA Policy 17</u> Forest management of National Forest System lands shall be for the purpose of ecosystem management and forest health.	STATE: WASHINGTON

PROJECT DESCRIPTION: Describe your proposed forest practice including:

SEE ATTACHED

KEY VIEWING AREAS:

- | | |
|---|--|
| <input checked="" type="checkbox"/> Historic Columbia River Highway | <input checked="" type="checkbox"/> Washington State Route 14 |
| <input type="checkbox"/> Sandy River | <input type="checkbox"/> Washington State Route 142 |
| <input type="checkbox"/> Portland Women's Forum State Park | <input type="checkbox"/> Washington State Route 141 |
| <input type="checkbox"/> Crown Point | <input type="checkbox"/> Cook-Underwood Road |
| <input type="checkbox"/> Rooster Rock State Park | <input type="checkbox"/> Dog Mountain Trail |
| <input type="checkbox"/> Multnomah Falls | <input type="checkbox"/> Beacon Rock |
| <input type="checkbox"/> Larch Mountain | <input type="checkbox"/> Cape Horn |
| <input checked="" type="checkbox"/> Highway I-84, including rest stops | <input checked="" type="checkbox"/> Columbia River |
| <input type="checkbox"/> Bonneville Dam Visitor Centers | <input type="checkbox"/> Pacific Crest Trail Oregon Highway 35 |
| <input type="checkbox"/> Sherrard Point on Larch Mountain | |
| <input checked="" type="checkbox"/> Rowena Plateau/Nature Conservancy Viewpoint | |
| <input type="checkbox"/> Larch Mountain Road | |
| <input type="checkbox"/> Wyeth Bench Road | |
| <input checked="" type="checkbox"/> County Road 1230 (Old WA St. Route 14) | |

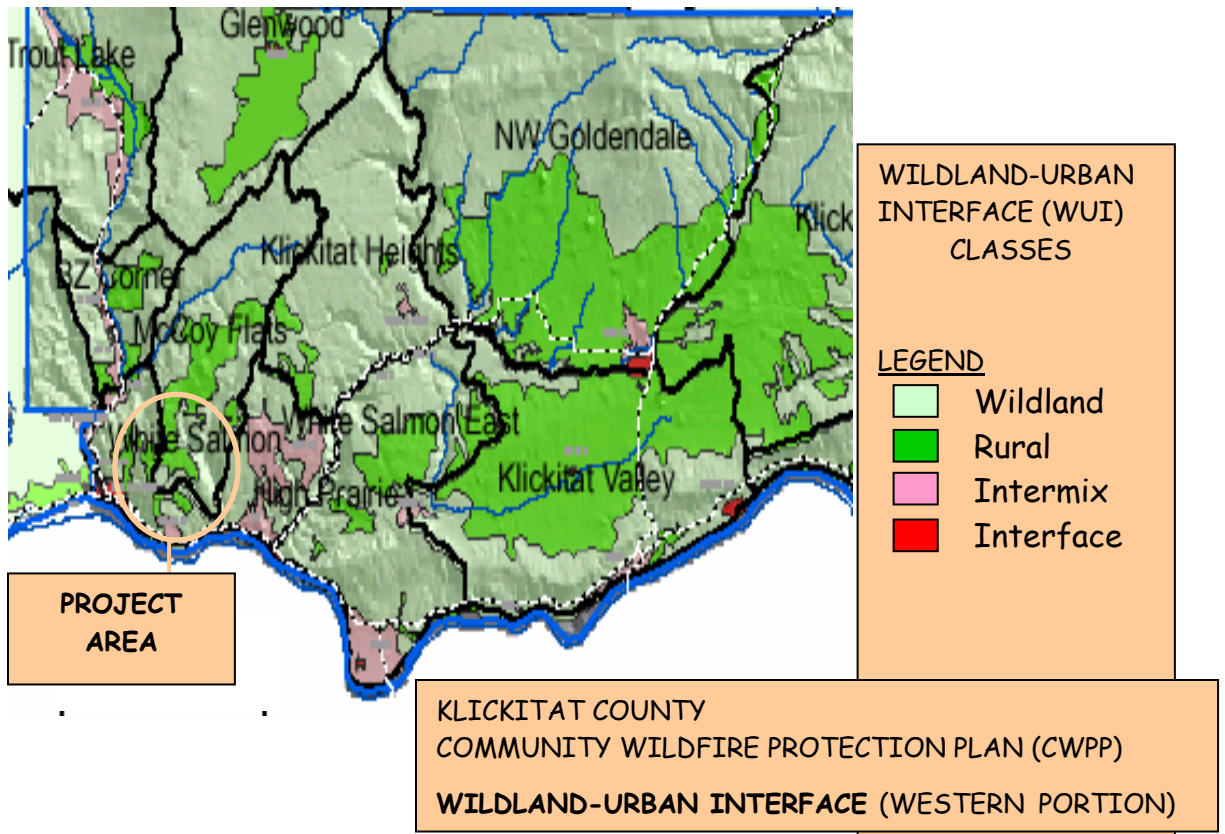
This project is designed to meet scenic resources from Key Viewing Areas and will meet the scenic standards because:

Almost all of the project activities are in the middleground or background distance zone from the above KVAs. No foreground KVAs are affected by thinning activities. A temporary road re alignment and a small area of the Burdoin and Catherine prescribed fire areas will be visible from SR-14 in the foreground. The project activities meet the requirement that management activities appear natural because the change in canopy closure will appear natural from the middle ground distance zone, fire is a natural disturbance, and the temporary road changes will not be visible within the required time frame to meet scenic standards (they will be removed).

The project will also exceed scenic requirement due to the following mitigations at non-KVA viewpoints:

- No permanent leave tree marking shall be used except the marking of boundary trees near the base of each tree.
- Stumps >10” dbh shall be flush cut in the immediate foreground (within 50 ft.) of Snowden Road.
- The landing at Snowden Road shall retain screening from existing trees as seen from Snowden Road wherever safety concerns permit.





**ADJACENT PROPERTY OWNERS AND EXISTING LAND USE
ON ADJACENT PARCELS WITHIN 200 FEET OF PROJECT PROPERTY:**

Parcel	Name	Address		City	State	Zip
West Fork Major Creek						
04113555000400	CLARK COLLEGE FOUNDATION TRUSTEE	1800 E MCLOUGHLIN BLVD		VANCOUVER	Washington	98663
04113555000300	HENDRY, JOHN	PO BOX 961		BINGEN	Washington	98605
04113500002100	SDS COMPANY LLC	PO BOX 266		BINGEN	Washington	98605
03110200000300	SDS COMPANY LLC	PO BOX 266		BINGEN	Washington	98605
03110200000400	STATE FORESTRY	PO BOX 47014		OLYMPIA	Washington	98504-7014
03110300000100	STATE FORESTRY	PO BOX 47014		OLYMPIA	Washington	98504-7014
03110300001800	STATE FORESTRY	PO BOX 47014		OLYMPIA	Washington	98504-7014
03111000000100	DEPT OF NATURAL RESOURCES	PRODUCT SALES & LEASING	PO BOX 47014	OLYMPIA	Washington	98504-7014
03111100000200	DEPT OF NATURAL RESOURCES	PRODUCT SALES & LEASING	PO BOX 47014	OLYMPIA	Washington	98504-7014
03111000001400	HOUSE,ARTHUR	319 BATES RD		WHITE SALMON	Washington	98672
03110300001200	DUGGER,STEPHEN	PO BOX 258		HUSUM	Washington	98623
03110300002500	GOHL, LAVERNE	725 SNOWDEN RD		WHITE SALMON	Washington	98672
03110300001300	SKAKEL,NANCY	687 SNOWDEN RD		WHITE SALMON	Washington	98672
03111100000400	NICOLAI, TOM, 320 BATES LLC	900 SW FIFTH AVE STE 2600		PORTLAND	Oregon	97204
03111100000500	BLILIE,JAMES	5997 TURTLE CREEK RD		SHOREVIEW	Minnesota	55126
03110351000100	BERNHARDT, MICHELLE	PO BOX 781		ENUMCLAW	Washington	98022
03110300001100	SDS COMPANY LLC	PO BOX 266		BINGEN	Washington	98605

East Fork Major Creek						
04113600000200	DEPT OF NATURAL RESOURCES	PRODUCT SALES & LEASING	PO BOX 47014	OLYMPIA	Washington	98504-7014
04113600000300	EATON, MARTY	242 ACME ROAD		WHITE SALMON	Washington	98672
04113600001000	EHRHART, EDWARD	EHRHART TRUST	63 MCC ARTHY RD	WHITE SALMON	Washington	98672
04112500001400	ALBRIGHT, GLORIA	4058 F CIRCLE		WASHOUGAL	Washington	98671
04112500001500	BROUGHTON LUMBER CO	92 Office Rd		UNDERWOOD	Washington	98651
04123000000600	BROUGHTON LUMBER CO	92 Office Rd		UNDERWOOD	Washington	98651
04123000000400	SDS COMPANY LLC	PO BOX 266		BINGEN	Washington	98605
04123000000200	SDS COMPANY LLC	PO BOX 266		BINGEN	Washington	98605
04123000000100	BROUGHTON LUMBER CO	92 Office Rd		UNDERWOOD	Washington	98651
04122900000200	BROUGHTON LUMBER CO	92 Office Rd		UNDERWOOD	Washington	98651
04122900000400	SDS COMPANY LLC	PO BOX 266		BINGEN	Washington	98605
04123200000300	GRAVES LIVING TRUST	40 STEVE GRAVES RD		LYLE	Washington	98635
04123100000100	GRAVES LIVING TRUST	40 STEVE GRAVES RD		LYLE	Washington	98635
04123100000300	DEPT OF NATURAL RESOURCES	PRODUCT SALES & LEASING	PO BOX 47014	OLYMPIA	Washington	98504-7014
Confluence Major Creek						
03111100000100	BOLES, BRUCE	1404 NW OVERTON		PORTLAND	Oregon	97209
03111200000300	BOLES, ENID	1404 NW OVERTON		PORTLAND	Oregon	97209
03111200000200	COCHENOUR, DANIEL	315 MCGOWEN RD		LYLE	Washington	98635
03111200000800	DEPT OF NATURAL RESOURCES	PRODUCT SALES & LEASING	PO BOX 47014	OLYMPIA	Washington	98504-7014
03111200000500	DEPT OF NATURAL RESOURCES	PRODUCT SALES & LEASING	PO BOX 47014	OLYMPIA	Washington	98504-7014
03111100000200	DEPT OF NATURAL RESOURCES	PRODUCT SALES & LEASING	PO BOX 47014	OLYMPIA	Washington	98504-7014
East Side of Area Along Major Creek						
03111300000100	TUTHILL RANCH INC	100 TUTHILL RD		LYLE	Washington	98635
03121800000000	TUTHILL RANCH INC	100 TUTHILL RD		LYLE	Washington	98635
03121900000100	TUTHILL RANCH INC	100 TUTHILL RD		LYLE	Washington	98635
03121900000200	MILES, LARRY AND MODINE	160 MAJOR CREEK RD		LYLE	Washington	98635
03121900000500	TRIBAL LANDS				No State	
03123000000100	TRIBAL LANDS				No State	
03123000000400	SAUTER, JOHN	381 OLD HWY		LYLE	Washington	98635
03123000001100	SAUTER, DAVID	PO BOX 42		LYLE	Washington	98635-9310
03122900001800	SAUTER, DAVID	PO BOX 42		LYLE	Washington	98635-9310
03122900000600	KROESKOP, CAROL	323 OLD HWY		LYLE	Washington	98635
03122900000800	BURRIS, NEVA	115 BALCH RD		LYLE	Washington	
03122900001100	BOEN, STEPHANIE	31 SAUTER RD		LYLE	Washington	98635
03122900001600	SAUTER, THEODORE	33 SAUTER RD		LYLE	Washington	98635
03123200000300	SAUTER, THEODORE	33 SAUTER RD		LYLE	Washington	98635
South of Area near SR14 to Locke Lake						
03123200000600	DEPT OF TRANSPORTATION	PO BOX 1709		VANCOUVER	Washington	98668
03123100000200	DEPT OF TRANSPORTATION	PO BOX 1709		VANCOUVER	Washington	98668
03123100000300	DEPT OF TRANSPORTATION	PO BOX 1709		VANCOUVER	Washington	98668
03123000000500	DEPT OF TRANSPORTATION	PO BOX 1709		VANCOUVER	Washington	98668
03123000000800	DEPT OF TRANSPORTATION	PO BOX 1709		VANCOUVER	Washington	98668
03123100000600	DEPT OF TRANSPORTATION	PO BOX 1709		VANCOUVER	Washington	98668
03113600000600	DEPT OF TRANSPORTATION	PO BOX 1709		VANCOUVER	Washington	98668
03113600000100	JOHNSTON, HOWARD & JEANETTE	486 OLD HWY		LYLE	Washington	98635-9311
03113600000300	STINGL, DANIEL	7171 HWY 14		LYLE	Washington	98635

	STINGL,DANIEL	PO BOX 2741		BONITA SPRINGS	Florida	34133
0311360000400	DEPARTMENT OF WILDLIFE	600 N CAPITOL WAY		OLYMPIA	Washington	98501-1091
0311350000100	DEPARTMENT OF WILDLIFE	600 N CAPITOL WAY		OLYMPIA	Washington	98501-1091
0311350000800	DEPT OF TRANSPORTATION	PO BOX 1709		VANCOUVER	Washington	98668
0311350000700	BURLINGTON NORTHERN, INC	PO BOX 961089		FORT WORTH	Texas	76161-0089
0311350000900	BURLINGTON NORTHERN, INC	PO BOX 961089		FORT WORTH	Texas	76161-0089
03113400001600	DEPT OF TRANSPORTATION	PO BOX 1709		VANCOUVER	Washington	98668
0311250000200	DEPARTMENT OF WILDLIFE	600 N CAPITOL WAY		OLYMPIA	Washington	98501-1091
North of Allen Oaks - outside NSA						
03111100001500	ALLEN,RODERICK	PO BOX 514		WHITE SALMON	Washington	98672
03111400000100	VANMETER,WILLIAM	15643 VAIL RD SE		YELM	Washington	98597-9563
03111400000200	JENNY,RICHARD	9304 NE 249TH ST		BATTLE GROUND	Washington	98604-9512
03111400000300	VANLEUVEN,SUSAN	9304 NE 249TH ST		BATTLEGROUND	Washington	98604-9512
03111400000600	BINKLY,JERRY	9804 NE 4TH CIRCLE		VANCOUVER	Washington	98664
03111400000700	REBELLO,JOHN	10916 NE 119TH ST		VANCOUVER	Washington	98662
03111400000800	BINKLY,JERRY	9804 NE 4TH CIRCLE		VANCOUVER	Washington	98664
03111400000500	FREE,BRUCE	12770 SE WINSTON RD		BORING	Oregon	97009
03111400001300	FORTANEL,EDUARDO	PO BOX 784		WHITE SALMON	Washington	98672
03111400001400	MOREAU,JACQUELINE	21 CATHERINE CREEK RD		WHITE SALMON	Washington	98672
03111400001600	PAINTER,TROY TRUSTEE	26 N MAJOR CREEK RD		WHITE SALMON	Washington	98672
03111500000501	SDS COMPANY LLC	PO BOX 266		BINGEN	Washington	98605
03111500001000	CROSMAN,CHARLES	PO BOX 1216		WHITE SALMON	Washington	98672
03111500001001	CROSMAN,CHARLES	PO BOX 1216		WHITE SALMON	Washington	98672
03111500001200	LOEB,DOUG	20 W GARFIELD ST		SEATTLE	Washington	98119
03111500000500	SDS COMPANY LLC	PO BOX 266		BINGEN	Washington	98605
Top of Coyote Wall						
03111400001700	SDS COMPANY LLC	PO BOX 266		BINGEN	Washington	98605
03112300000200	SDS COMPANY LLC	PO BOX 266		BINGEN	Washington	98605
03112300000500	THESENGA,BRUCE	144 STAR RIDGE RD		BOZEMAN	Montana	59715
03112300000600	GAUL,WILLARD	7301 SW 26TH AVE		PORTLAND	Oregon	97219
3112350000100	GAUL,TERESA	7301 SW 26TH AVE		PORTLAND	Oregon	97219
3112350000200	GAUL,WILLARD	7301 SW 26TH AVE		PORTLAND	Oregon	97219
3112350000300	GAUL,TERESA	7301 SW 26TH AVE		PORTLAND	Oregon	97219
3112350000400	GAUL,WILLARD	7301 SW 26TH AVE		PORTLAND	Oregon	97219
03112600000400	ALLEN FAMILY RLT	40475 SE HWY 26		SANDY	Oregon	97055

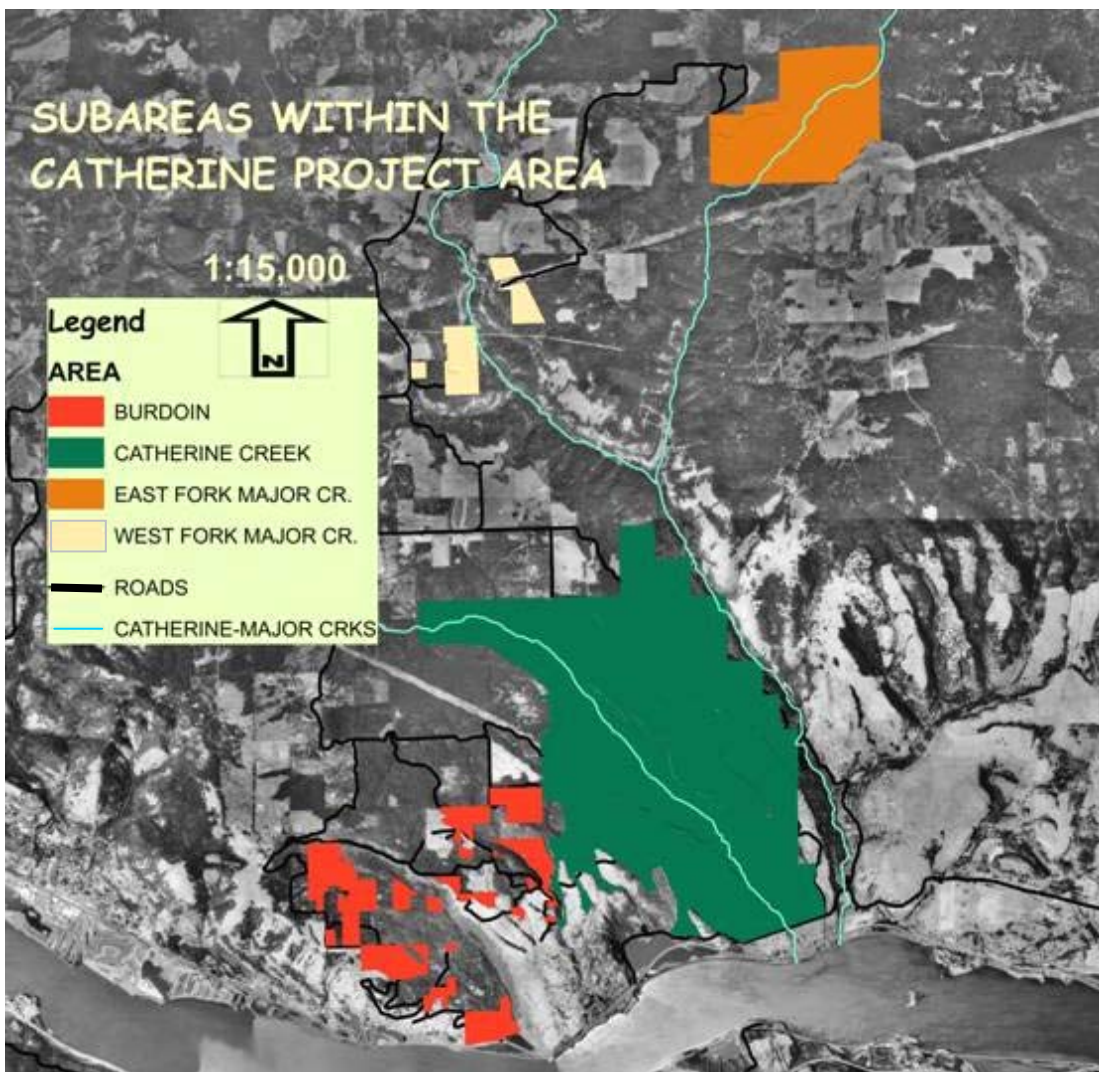
INTRODUCTION

The Catherine Forest Restoration is designed to increase fire resilience and to restore fire-dependent habitats by reducing the unsustainable in-growth of small trees or the encroachment of Douglas-fir caused by decades of fire exclusion. The project is planned in a portion of the Klickitat County Wildland Urban Interface designated by the Klickitat and Skamania County, Washington Community Wildfire Protection Plan.

This project was made possible by an on-going public and collaborative effort that resulted in a proposed action involving a combination of tree thinning and/or prescribed underburning, implementation requirements for affected resources, and requirements for monitoring.

The Catherine Planning Area encompasses approximately 4,100 acres of acquired National Forest Systems lands within the following:

- Township 4 North, Range 12 East Sections 30, 31
- Township 3 North, Range 12 East Section 30
- Township 3 North, Range 11 East Sections 2, 3, 13, 14, 15, 23, 24, 25, 26, 27, 28, 34, 35, 36



The 4,100-acre planning area is generally bounded on the south by SR-14, on the north by the boundary of the Columbia River Gorge National Scenic Area (NSA), on the east and west by National Forest System land ownership within the Catherine-Major watersheds and Burdoin Mt. The primary travel routes are SR-14, Courtney Road, Snowden Road, Upper and Lower Major Creek Road, Bates Road, and Acme Road.

The landscape ranges in elevation from 80 to 2,500 feet above sea level. The average slope is 20-30% and ranges from 0-10% to over 60%. Vegetative cover consists of grasslands, Oregon white oak woodlands with scattered ponderosa pine at the lower elevations and mixed conifer with scattered oak and pine at higher elevations. The vegetation composition transitions gradually or suddenly depending on the variables of elevation, slope, aspect, or soil conditions and their combined effect on moisture retention. Precipitation arrives principally from November to March, with amounts ranging from 28 to 32 inches annually. Summers are hot and dry, with limited surface water available. Several small unnamed ephemeral channels and two intermittent fish-bearing streams, Major and Catherine creeks, lie within the planning area. During summer, Major Creek contains surface water upstream from approximately river mile 0.5, while all other channels, including Catherine creek and the mouth of Major Creek, become dry. As expected, fish use in these intermittent channels is seasonal in nature.

EXISTING CONDITION AND THE NEED FOR ACTION

Fire Resilience

Surface Fuels-Surface fuels are defined as any materials lying on or immediately above the ground including needles or leaves, duff, grass, small dead wood, downed logs, stumps, large limbs, low brush, and reproduction. Generally speaking, surface fuels within the project area cover just about the full spectrum of fuels typically associated with Pacific Northwest forest types. On one end of this spectrum these fuels are categorized as being “light” or “flashy” and are comprised of a grass understory with some needle cast, leaf litter, and twigs. Fires tend to spread rapidly through these fuels especially when pushed by the west winds so characteristic of the gorge. The other end of the spectrum finds much “heavier” or larger diameter fuels comprised of a dead-down component in greater quantities of 3-inch or larger limb-wood. Due to the higher intensity generated by these heavier fuels, fires burning here tend to torch, spot, and crown and have a high resistance to control.

Ladder Fuels -Ladder fuels are defined as fuels that provide vertical continuity between the surface fuels and crown fuels in a forest stand, thus contributing to the ease of torching and crowning. The majority of the project area is dominated by timber stands that are tiered with ladder fuels. Such fuels pose a significant threat to both fire fighter and public safety in that they can generate extreme fire behavior and promote rapid rates of spread and lead to crown fires.

Crown Fuels-Canopy bulk density, canopy base height and canopy continuity are the key characteristics of crown fuels. Where bulk density, base height, and continuity align the threat of a crown fire exists. Crown fires are generally considered the primary threat to life, property, ecological and human values. They typically move faster than surface fires, are more difficult to suppress and pose the greatest threat to fire fighter and public safety. This threat comes from increased fire line intensity and long range spotting. Such hazards often mandate an indirect suppression strategy, which increases the acres burned as well as the fire severity over the landscape. This results in higher tree mortality and smoke production. Some 42% of the project area is typed as containing heavy crown loading, 37% is moderate, and the remaining 21% is light.

Fire behavior within the project area is anticipated to be consistent with the existing fuel characteristics described above. Fires burning in light fuels pushed by typical gorge winds will spread rapidly. Recent examples of this include both of the Major Creek Fires (the first in July, 1999; the second in August, 1999) which burned through a portion of the project area and consumed one residence and some 600 acres. The challenge for fire fighters in light fuels is not the fire's resistance to control--but the rate at which the fire spreads.

Under high fire danger conditions, fires burning in heavier fuels can be anticipated to exhibit extreme fire behavior with torching, spotting, and crowning as the expected norm. On July 23, 2002, a lightning strike ignited a fire on Sheldon Ridge—eight miles south of the project area across the Columbia River in Oregon. The typical gorge winds and heavy fuels prompted extreme fire behavior including torching, spotting, and crowning. By July 25 the Sheldon Ridge fire had consumed some 15,000 acres. The fuels, elevation and topography are nearly identical to those found in the project area.

Klickitat County Community Wildfire Protection Plan (CWPP)

The Klickitat County CWPP identifies the need to decrease the risk of catastrophic fire in the Wildland-Urban Interface (WUI) by treating vegetation to reduce fuel loading and fuel ladders as its third objective. The CWPP further states that county emergency management shall support such treatments on public lands administered by the; USDA Forest Service and Washington Department of Natural Resources and private lands as well to “create conditions that would decrease the hazard of large wildfires.”

Ecosystem Components

The present distribution of Oregon white oak extends from the Willamette Valley north to Puget Sound along the western side of the Cascade Range with a projection through the Gorge. Pine-oak forests fan out along the eastern flanks of the Cascades. The acreage of oak woodlands and the diversity of oak species both increase towards southern Oregon and California. The center of oak diversity is thought to be in Central America. Oaks were likely more widely distributed in Oregon and Washington during inter-glacial periods when climates were more moderate. Many species, such as the California mountain kingsnake, have followed the changing oak woodland distribution.

The key factors defining this area as wildlife habitat are the historically open forests or woodlands with large pines and oaks producing mast crops of acorns and pine nuts that are important to many wildlife species. Pine-oak and oak woodlands provide habitat for over approximately 200 species of terrestrial wildlife, including species that are on the Washington state endangered, threatened and sensitive list (Larsen and Morgan, 1998).

These large pines and oaks have disappeared over time for many reasons. Large pines were cut down for wood to build home and the large oaks for fire wood. Local knowledge indicates that oak was a prime wood for the steam boats that ran up the Columbia during the late 1800s consuming 1 cord per hour. The advent of active fire suppression programs near the turn of the century has allowed for uncontrolled Douglas-fir and grand fir seedling establishment to encroach on the once inhospitable fire-prone communities. Thickets of young trees have established that are now competing with the older (legacy) trees for moisture, nutrients and sunlight. Over the last 80 years many of the pine-oak forests have succumbed to the expanding firs. As the firs slowly encroach further into the oak-pine woodlands, more of these communities begin to decline. This decline directly impacts habitats and food availability for locally-adapted wildlife species.

Encroachment by Douglas-fir has been most notable at higher elevation or on east slopes where the soil moisture is more conducive for their growth. Close inspection of the current conditions indicate that there are scattered old, large oaks and pines dying or dead throughout areas where Douglas-fir have now become the dominant species. In other areas one can find the remnant stumps of large pines. Thickets of young oaks, pines, and firs have grown without fire to provide thinning. They have grown spindly with little mast production. In other areas, where intense fires are believed to have burned in the late 1800s or early 1900s without subsequent fires, the trees have grown back into thickets of even-aged, non-mast-producing woodlands. All these stand types provide habitat for wildlife, but none provide the habitats that existed when local species evolved.

Douglas-fir was the naturally dominant species in stands in the most northern areas of the East Fork of Major Creek and at the highest elevations throughout the project area (referred to as Northern East Conifer by the collaborative group). As fire becomes less frequent and moisture increases, the conditions favoring pine-oak habitat decrease in favor of Douglas-fir habitat. Historically, trees (as evidenced by stumps noted by the working group) grew extremely large and appeared to be spaced at distances from 40-50 feet apart. This spacing was encouraged by the still relatively frequent fire disturbance that regularly removed seedlings and allowed the existing trees the moisture, light and space to grow very large.

At the lowest elevations and along the natural edges of the forested communities, the open savannah oak is to a degree still present. This community intermixes with the open grasslands that were dominant at the lowest elevations where all top soil was washed away during the Bretz floods 10,000 years ago. Although the large pines have largely been cut down, the savannah oaks are today some of the largest and most productive oaks, providing a unique habitat for many edge dependent species. This community is pressured by some fir encroachment and the continued in-growth of younger oaks. This transition zone is an ecosystem that has been heavily impacted, declining in quality and quantity, due to human activities such as agriculture, land and housing development, fire suppression, and forest harvest practices (Partners-In-Flight, 2001). Human activities and development continue to fragment and alter natural processes. The pine-oak forests are recognized as a priority habitat because their distribution is limited and their diversity is very unique. The state of Washington has identified them as priority habitats (Larsen and Morgan, 1998). Many listed and important game species are dependent on these habitats.

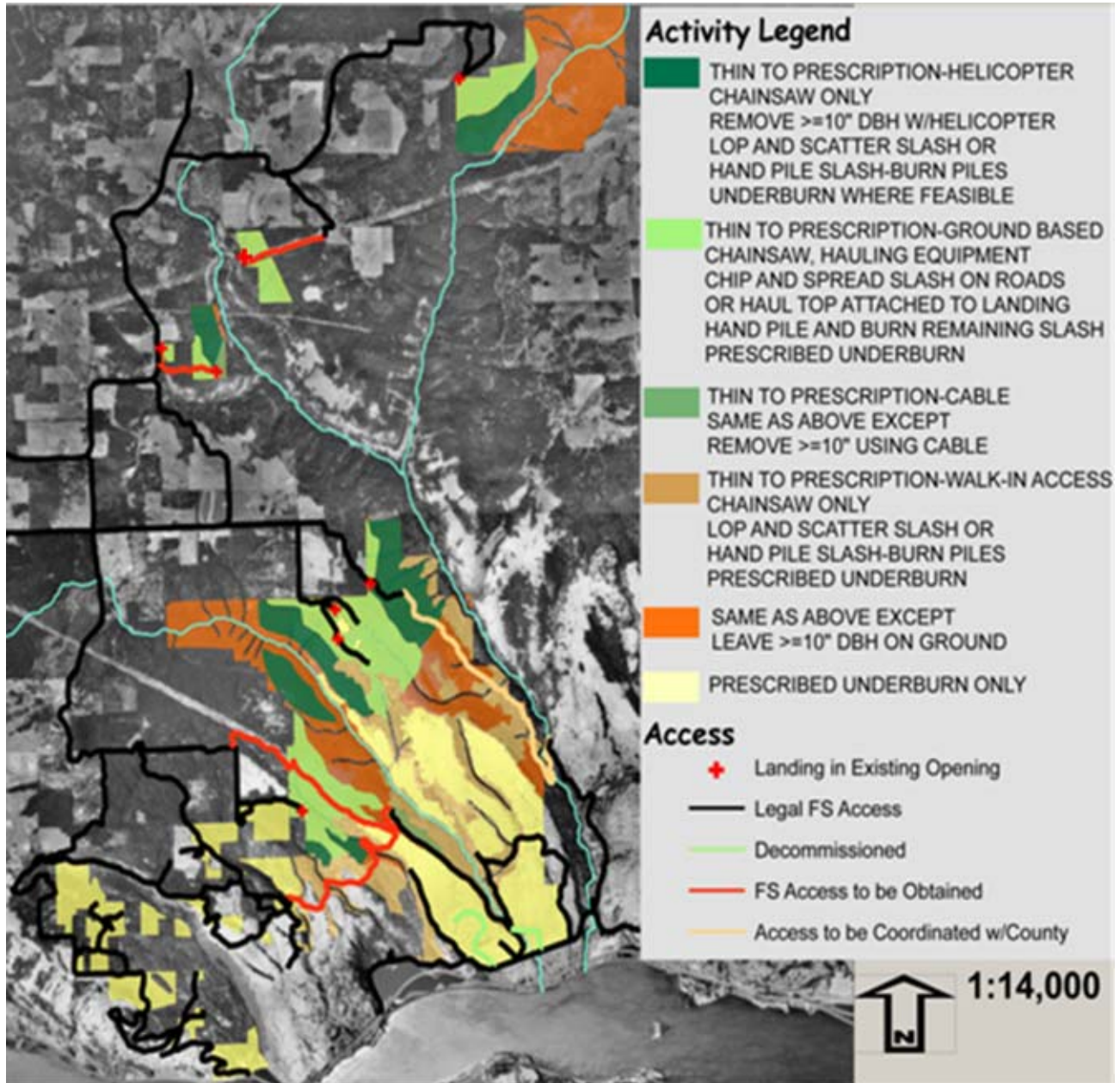
The information summarized above shows that it is critical and timely to take action to move the pine-oak and east conifer communities towards their historic conditions in order to maintain, protect, and enhance those species that depend on them. This condition will be the most likely to meet fire resiliency as well as continue to protect and provide the habitat components to sustain locally adapted species.

PROJECT DESCRIPTION

This alternative proposes to thin and underburn approximately 2510 acres of Fire Regime I, condition class 2 and 3 tree stands in the Wildland-Urban Interface in the Catherine Creek area, to underburn approximately 1300 acres and retain 290 acres in untreated buffers:

- The proposed action calls for thinning approximately 1,111 acres in the Catherine Creek planning area followed by underburning. Thinning will mostly include trees <21" DBH (diameter at breast height) and will require some road maintenance and landing creation, mechanical tree yarding, piling of slash, and pile burning.
- The proposed action calls for no mechanical thinning on steep slopes and in the oak-pine woodlands (which do not require it). Therefore, approximately 1,399 acres will be thinned using chain saws only followed by hand-piling of slash and pile burning.
- Thinning will be "from below" meaning that the smallest--mostly understory trees in the stands will be removed first to achieve the prescribed canopy closure, species preference and size classes after treatment. Large legacy trees will remain. Lower branches on conifers >20" DBH will be pruned up to 6 ft. to reduce ladder fuels.
- The proposal includes the release of overtopped oak and of large, legacy ponderosa pine trees by removing trees around them on approximately 500 acres in the Catherine Creek planning area.
- The proposal would create a prescribed underburning schedule for thinned tree stands and areas where fire can be reintroduced without thinning in the planning area. Approximately 1300 acres are proposed for underburning only. Other aspects of the proposal are:
 - Slash in excess of what can be left on the ground will be chipped and spread on existing roads, grapple or hand piled and burned. Stands may require a 2.5-3ft. fire-line dug before burning where no other fuel break exists. See preliminary burn plan on page 25.
 - Creation of snags where they are below requirements of the CRGNSA Management Plan.
 - All stands will be monitored post-activity for invasive plants.
 - Haul routes are planned to be on existing roads or tracks except for a small temporary entry to a landing off Snowden Road. See section on roads starting on page 21.
 - All decommissioned temporary access and other disturbed areas such as fire-line will be seeded with native grasses and wildflowers.
 - The implementation window for project activities within ¼ mile of a bald eagle nest is August 16 - December 31, within 400 ft. of a western gray squirrel nest (or 650 ft. from a goshawk nest) is September 1 - February 28.
 - The implementation window for pile burning and prescribed underburning will be set according to weather conditions, air quality requirements, and natural resource conditions specific to the exact location and season. The general season outside of bald eagle nest buffers is July 1-March 15 when moisture and weather conditions are favorable.
 - The implementation window for thinning w/o hauling on native surface roads or using ground-based machine operation is July 1-February 28 unless winter range is needed for deer and elk.
 - The implementation window for hauling and ground-based machine operation is July 1-October 15. This window may be extended up to February 28 in the event of a prolonged dry period as determined by the contract administrator in consultation with CRGNSA resource specialists.

The table and map on the next page graphically depict the activities described above for this alternative.



PROJECT ACTIVITY IMPLEMENTATION WINDOWS (LIGHT GRAY SHADING)												
ACTIVITY	JUL	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
THINNING & HAULING	DRY MILD WINTER								NOT ALLOWED			
HAULING IN	WET WINTER			NOT ALLOWED								
THINNING & HAULING IN	WINTER RANGE					NOT ALLOWED IN SEVERE WINTER						
PRESCRIBED	FIRE									NOT ALLOWED		
THINNING OR	FIRE	WITHIN $\frac{1}{4}$ MI. BALD EAGLE NEST				NOT ALLOWED						
THINNING OR	FIRE		WITHIN 400' WG SQUIRREL NEST Or 650' GOSHAWK NEST						NOT ALLOWED			

TREATMENT IN WATER RESOURCE BUFFERS & NWFP RIPARIAN RESERVES

Introduction

Treatments within portions of buffers are necessary in order to increase fire resilience and encourage the development of large trees for improved ecological function. The CRGNSA Management Plan requires that a practicable alternative test be applied when buffers are entered by project activities.

Practicable Alternative Test

The CRGNSA Management Plan states that “A practicable alternative (for entering a water resources buffer) does not exist if a project applicant satisfactorily demonstrates all of the following:

- The basic purpose of the use cannot be reasonably accomplished using one or more other sites in the vicinity that would avoid or result in less adverse effects on wetlands.
- The basic purpose of the use cannot be reasonably accomplished by reducing its proposed size, scope, configuration, or density, or by changing the design of the use in a way that would avoid or result in less adverse effects on wetlands.
- Reasonable attempts were made to remove or accommodate constraints that caused a project applicant to reject alternatives to the proposed use. Such constraints include inadequate infrastructure, parcel size, and land use designations.”

The Natural Resource Mitigation Plan that is required by the Management Plan when buffers are entered starts on page 19. It is not possible to restore the stands within the buffers without entering them. The following restrictions designed into the project by the collaborative group and the Forest Service reduced the proposed scope of the treatments within the water resource buffers. A reasonable balance was struck between reducing or removing adverse effects while providing the benefits of the restoration to the water resource buffers:

Treatment restrictions for intermittent and ephemeral non-fish bearing streams

Management Plan buffer width: 50 ft.--Northwest Forest Plan (intermittent only): 200 ft.

- Intermittent-No thinning or mechanical entry for 15 feet on either side of stream.
- Intermittent and Ephemeral- Ground based yarding, slash piling, or fire-line creation equipment will not be allowed to operate within 20’ of channels except to cross them at designated crossings.
- No mechanical constructed fire-line will be allowed within Riparian Reserves

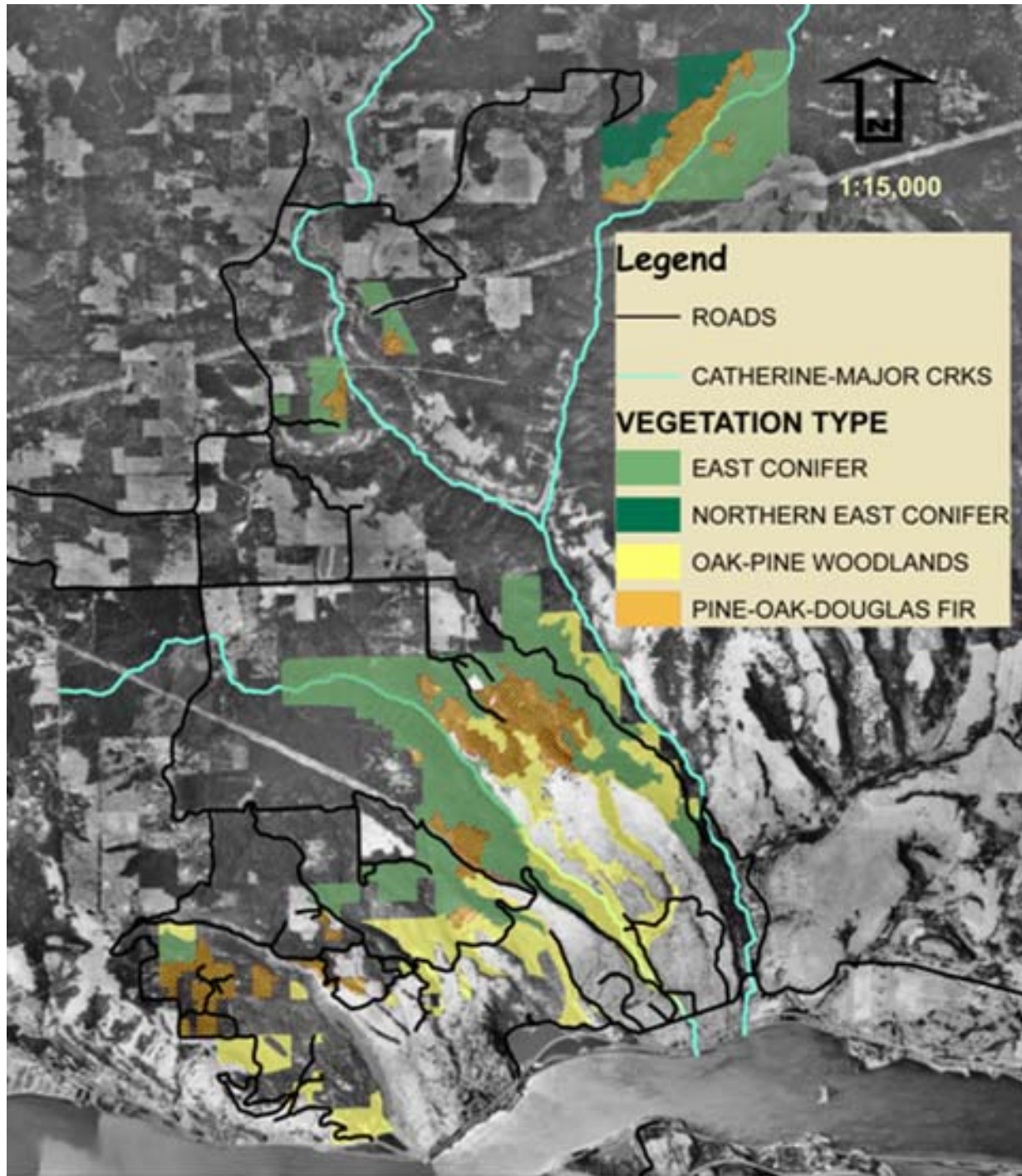
Treatment restrictions for Catherine Cr, Major Creek, and wetland buffers

Management Plan buffer width: 200 ft.

Northwest Forest Plan buffer width Major Cr: 400 ft.—Catherine Cr: 200 ft.

- 50 feet-No thinning or prescribed fire for 50 feet on either side of stream.
- 100 feet-No mechanical tree removal (i.e. cut using chainsaw only to the prescription for the stand type leaving larger wood on the ground, hand piling slash and schedule underburning if feasible--use sequential entries if necessary). Canopy closure reduction is 50% or less from existing conditions.
- Beyond 100’ but within the buffer, use mechanical means to achieve the prescriptions per stand type such as helicopter or cable yarding if necessary and feasible. No mechanical constructed fire-line will be allowed within Riparian Reserves. Where the use of mechanical methods is not indicated, (such as in oak-pine woodlands), use non-mechanical methods. Where mechanical methods are indicated but not feasible, use the method described in the above bullet for no mechanical tree removal.





PRESCRIPTIONS BY VEGETATION TYPE

Northern East Conifer East Fork Major Creek

PRESCRIPTION:

Total canopy closure overrides all other prescription elements.

Thin stands to the DFC average canopy closure of 45%. If large ($\geq 20''$ DBH) pines are found, preserve by removing all trees within a 30'-40' radius of the center of ponderosa pine $\geq 20''$ DBH. Preserve legacy largest diameter trees ($>20''$ DBH).

Remove grand fir $< 20''$, create snags $> 20''$ DBH.

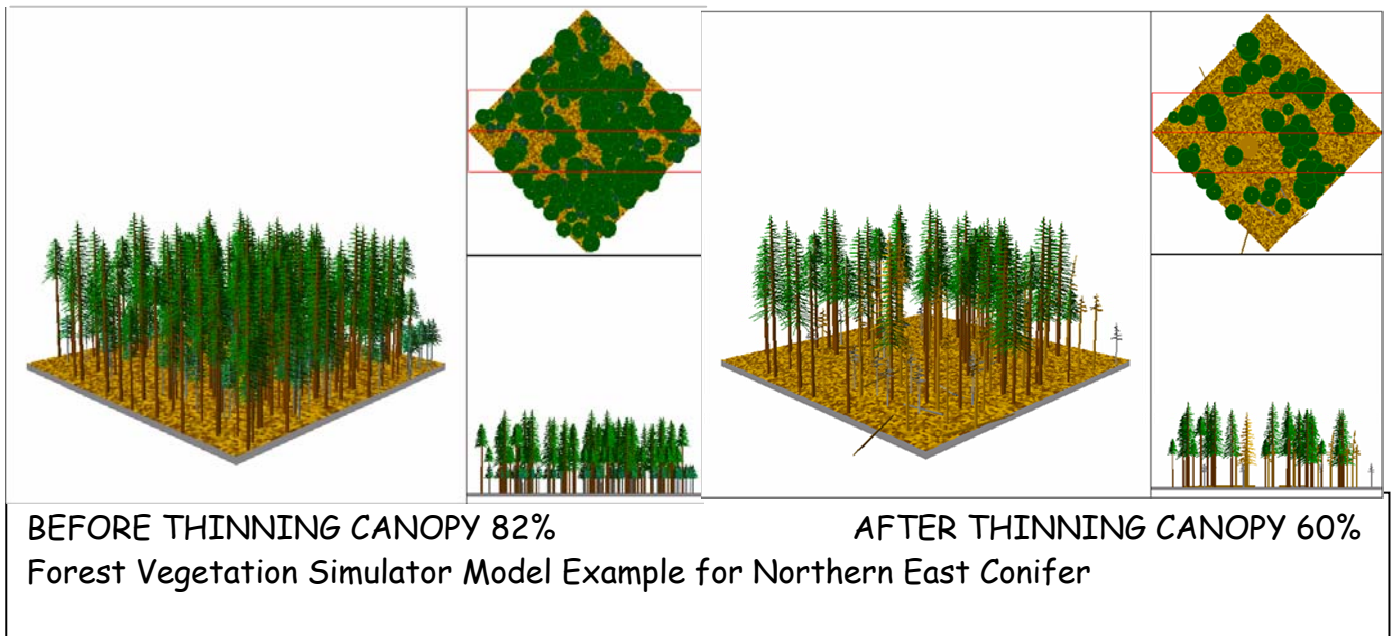
Thin all species from below. Thin to a total canopy no more than 20-30% less than existing canopy while maintaining an average of 45% within the DFC range of 35-65%. Exception is allowed to meet DFC canopy maximum of 65%. Emphasize future diameter growth in the spacing.

Release live oak trees $\geq 10''$ DBH where found by removing all trees within a 25' radius except leave 1-2 of the largest ($>20''$) conifer trees on the north side if present. Prefer pine.

Set underburning schedule (every 5-10 years) -- conditions will be monitored starting after thinning implementation and slash treatments are complete.

Openings: Created by underburning.

Snags, Downed Wood, Shrub and Herbaceous Layer: Mitigate the effect of thinning and underburning with reference to invasive plants. Snag creation as per Management Plan.



East Conifer

PRESCRIPTION:

Total canopy closure overrides all other prescription elements.

Overstory: Emphasize protection of large legacy pines. Remove all trees within a 30'-40' radius of the center of ponderosa pine $\geq 20"$ DBH, preferring the largest pine at a rate no more than 3-4 per acre. Leave oak trees $\geq 12"$ DBH within radius if present.

No thinning of overstory pine. Remove accumulated duff around legacy pines where a distinct mound has formed. Leave largest diameter fir.

Understory: Thin all species from below. Prefer pine to fir.

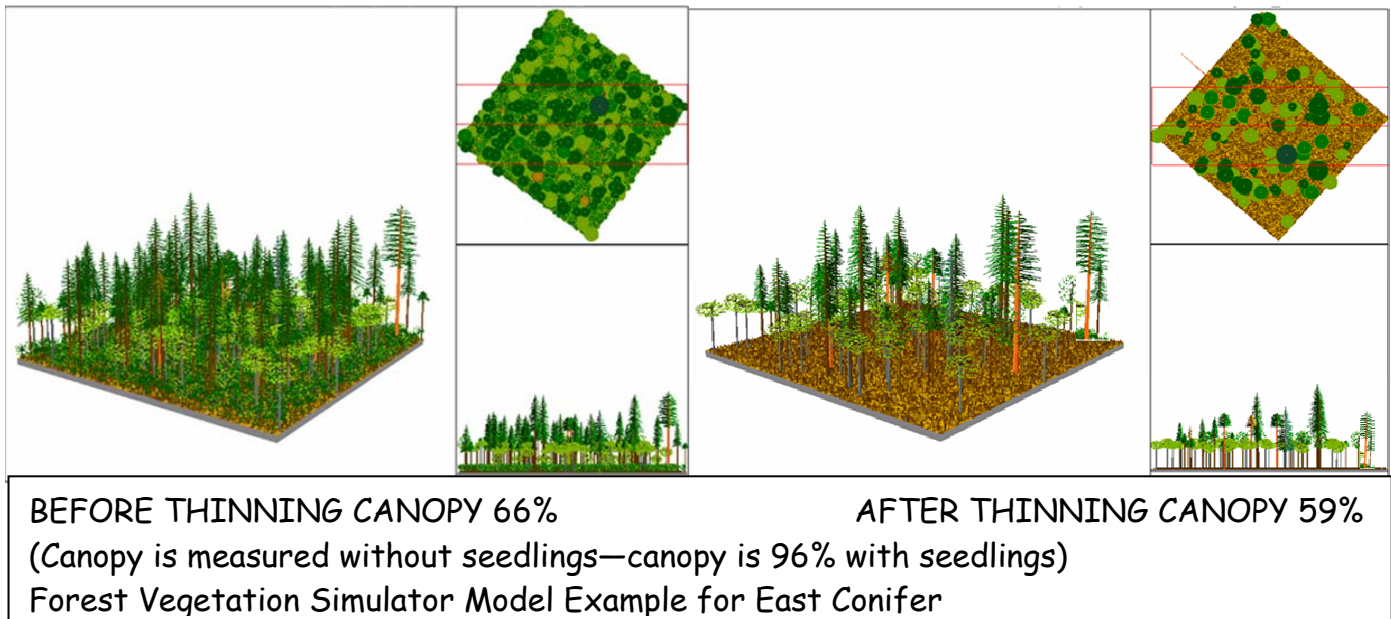
Thin to a total canopy no more than 20-30% less than existing canopy while maintaining an average of 60% within the DFC range of 50-70%.

Release live oak trees within a 20' radius but leave 1-2 of the largest ($>20"$) conifer trees on the north side. Prefer pine.

Set underburning schedule (every 5-10 years) -- conditions will be monitored starting in 5 years from thinning implementation.

Openings: Created by underburning.

Snags, Downed Wood, Shrub and Herbaceous Layer: Mitigate the effect of thinning and underburning with reference to invasive plants. Snag creation as per Management Plan.



Pine-Oak-Douglas Fir

PRESCRIPTION:

Total canopy closure overrides all other prescription elements.

Overstory: Step 1: Emphasize protection of large pines. Remove all trees within a 30'-40' radius of the center of Ponderosa pine $\geq 20''$ DBH, preferring the largest pine at a rate no more than 3-4 per acre while leaving 1-2 oak trees $\geq 12''$ DBH if present within radius. No thinning of overstory pine.

Release DF-overtopped live oak trees $\geq 10''$ DBH within a 20' radius but leave 1-2 of the largest ($>20''$) conifer trees on the north side. Prefer pine.

Step 1: Not prescribed for areas within 350 feet of western gray squirrel nest.

Step 2: Check residual canopy from Step 1, if desired total canopy allows, thin Douglas-fir to 10% canopy while maintaining total canopy as per "understory" below. Leave largest diameter fir ($>20''$ DBH) unless interferes with getting the desired canopy %.

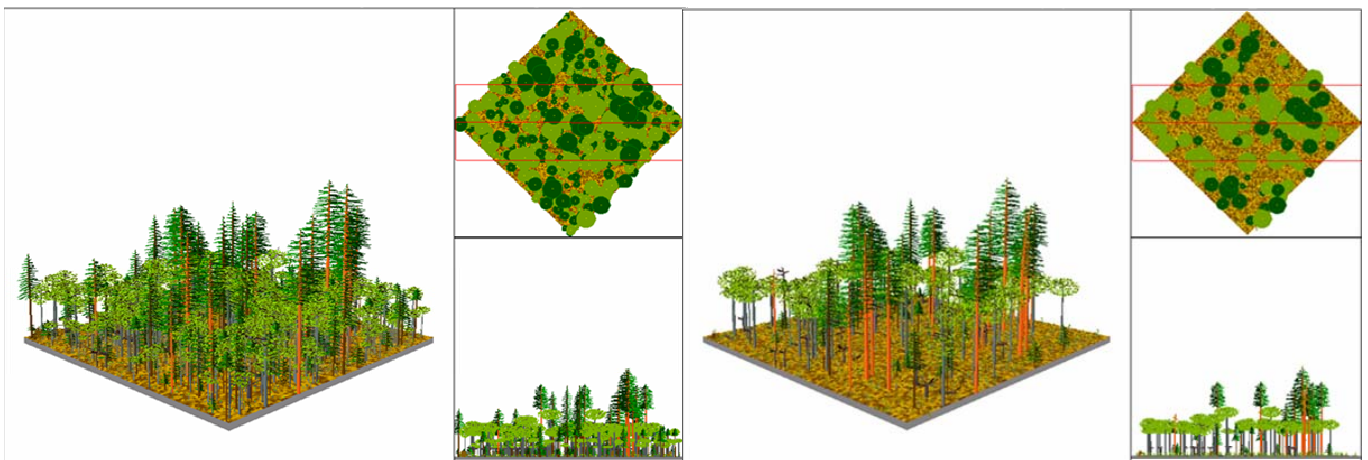
Understory: Thin all species from below. Prefer pine to fir.

Thin to a total canopy (including overstory) of no more than 20-30% less than existing canopy while maintaining an average of 50% within the DFC range of 30-70%. No thinning of oak $>10''$ DBH. Step 2 not allowed within 50 feet of western gray squirrel nest unless canopy not affected.

Set underburning schedule (every 5-10 years) -- conditions will be monitored starting after thinning implementation and slash treatments are complete.

Openings: Created by underburning.

Snags, Downed Wood, Shrub and Herbaceous Layer: Mitigate the effect of thinning and underburning with reference to invasive plants. Snag creation as per Management Plan.



BEFORE THINNING CANOPY 84%

AFTER THINNING CANOPY 59%

Forest Vegetation Simulator Model Example for Pine-Oak-Douglas Fir

Oak-Pine Woodlands

PRESCRIPTION:

Total canopy closure overrides all other prescription elements.

Overstory: Emphasize protection of all large trees. Especially pine >20", oak >10" DBH.

Understory: Thin Oregon oak from below. Thin to a total canopy no more than 30% less than existing canopy while maintaining an average of 50% within the DFC range of 25-60%. Thin areas above 60%. Can thin areas with 25-60% canopy from below if the residual canopy remains at existing per cent.

If existing, remove all Douglas-fir seedlings and saplings either by underburning or mechanical means.

Preserve clumps 100' feet away from the base of cliffs with the following:

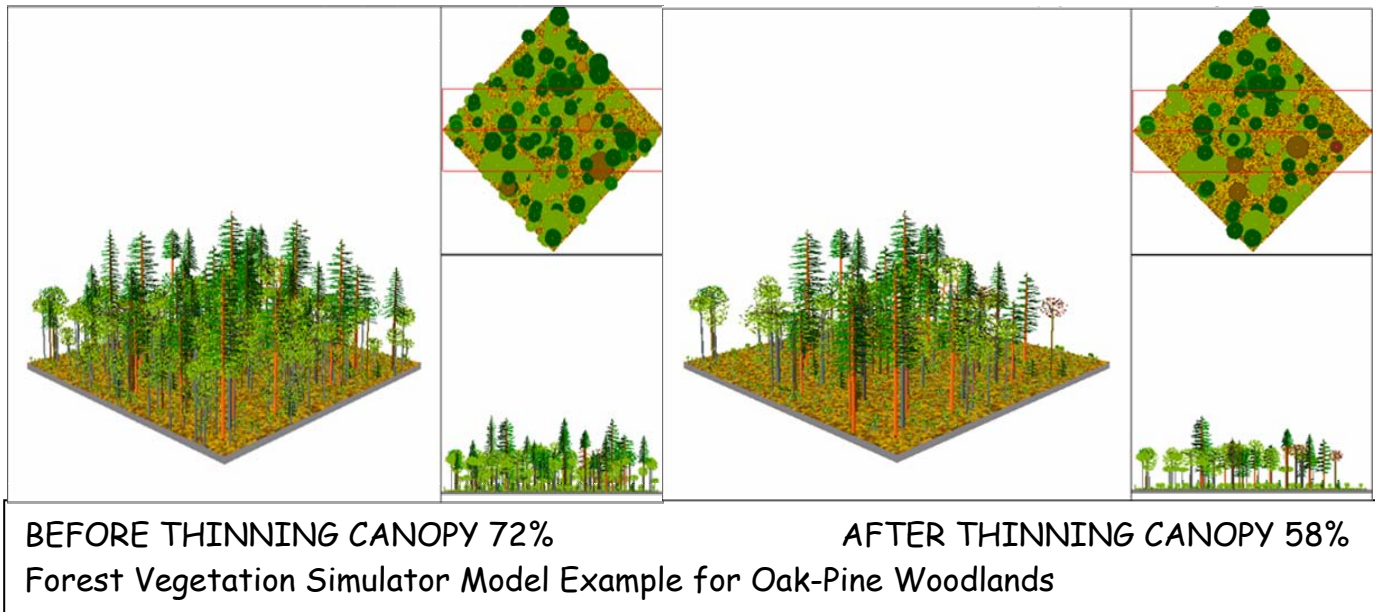
Leave untreated clumps of 6-10 oaks spaced 50-150 feet apart (vary).

Treated areas within the 100' buffer are thinned from below in a manner that maintains the existing canopy cover.

Set underburning schedule (every 5-10 years) – Begin underburns in areas not requiring thinning. Monitor conditions in areas requiring thinning after implementation of both thinning and slash treatments.

Openings: Created by underburning.

Snags, Downed Wood, Shrub and Herbacious Layer: Mitigate the effect of thinning and underburning with reference to invasive plants. Snag creation as per Management Plan.



IMPLEMENTATION REQUIREMENTS

Air Quality

1. Minimize the amount of material burned by making it available for other uses such as firewood and habitat restoration projects as a first priority.
2. When necessary, excess material shall be burned only when weather conditions minimize impacts from smoke. These include: burning on cloudy days when residual smoke cannot be seen; burn during low visitor time periods; and burning during periods of atmospheric instability for better smoke dispersal. Generally these conditions exist or a window can be found in all seasons. It is the most difficult from December to March when inversions are common.

Natural Resources Mitigation Plan

(Serves as Natural Resource Mitigation Plan as required by CRGNSA Management Plan)

Helpful definitions:

- **Haul Routes**-Existing roads chosen to accommodate vehicles up to the size of a log truck.
 - **Temporary Road**-A short, (<.5 mile) new natural surface road to a landing built to a standard that will allow both temporary (1-2 years) use by vehicles the size of a log truck and effective decommissioning and restoration.
 - **Skid road**-Provides temporary (1 year) access to landings for skidders, tractors, etc. No log truck access and little to no blading is used to create them. Tree removal is usually not necessary. They are usually designated on existing roads or tracks.
 - **Skid trail**-Provides very short term access (1 to 3 passes) for skidders, tractors, etc. No log truck access, no blading and no tree removal (other than as per prescription) is used to create them.
 - **Landing**-An existing or newly cleared area (up to 150 x 200 ft.) for the temporary storage of logs and slash that may need some minimal blading or grading to create. Usually located in existing disturbed areas such as roads, turnouts, quarries, previous created openings, etc. but may require additional tree removal.
3. This project was designed to use existing roads. New temporary roads shall be considered only if the protection of resources requires it and shall be very short (<.15 mile). Any temporary road shall be pre-designated and agreed to by the CRGNSA hydrologist, engineer and archeologist prior to tree removal activities.
 4. Track-mounted piling equipment or other low-impact equipment shall operate on top of slash to minimize soil disturbance where possible.
 5. Ground based yarding, slash piling, or fire-line creation equipment will not be allowed on slopes steeper than 30%. These steeper areas will be hand piled if fuel reduction is necessary.
 6. No mechanically constructed fire-line shall be allowed within Riparian Reserves.
 7. Skid roads determined by the Forest Service to have detrimental soil compaction will be ripped to a depth of 18", water-barred, sown with native grass seed, and mulched with fine slash.
 8. Any new temporary roads and all landings not part of an existing road shall be decommissioned and restored as per #6 above after contract completion.
 9. Scenic Area Management Plan standards for soil productivity will be met in the project area. These state that not more than 15% of an activity area will be detrimentally disturbed. This includes compaction, displacement, puddling and removal of organic layers exposing mineral soil.

10. Ground based yarding, slash piling, or fire-line creation equipment in ground-based treatment areas will not be allowed to operate within 20' of intermittent or ephemeral channels except to cross them at designated crossings.
11. Trees will be directionally felled away from streams and wetlands.
12. All wetland-dependent vegetation shall be left undisturbed.
13. Invasive plant infestations will be located during project layout and avoided to forestall potential spread until eradicated.
14. Clean equipment before entering National Forest System lands and before moving to each treatment area in a manner that will ensure that it is not contributing to the spread of invasive plants.
15. Snags and large woody debris shall be provided or preserved as per the CRGNSA Management Plan.
16. Treatment areas shall be reviewed for snag creation needs as part of this project.
17. Snags and down wood shall not be taken for firewood. Firewood permits and signs at cutting areas shall state this prohibition and encourage compliance.
18. Any snags cut for worker safety shall remain on the ground.
19. Project activities except prescribed fire will occur outside of the growing season of plants and the general nesting/rearing season for birds, gray squirrel and other wildlife species (March 1 through June 30). Prescribed fire shall occur outside of March 15-June 30.
20. No project activities are allowed within ¼ mile of a bald eagle nest from January 1 through August 15.
21. No project activities are allowed within 650 ft. of a bald eagle nest from March 1 through August 31.
22. All active western gray squirrel (WGS) nest sites shall have a 50 ft. no-thinning buffer around the nest tree. The trees within the buffer will be limbed to a 10' height to reduce crown fire risk, as needed. As nests are located, the most current WDFW management recommendations will be consulted; currently the 2006 Draft Washington State Recovery Plan for the WGS. Deviations from the Management Recommendations may be prescribed to fit local site characteristics, as collaborated with WDFW during preparations for implementation.
23. No loud (thinning activities including chainsaws) activity will occur within 400 ft. of active WGS nest trees from March 1 through August 31.
24. If the scenic area or state wildlife biologist determines that the area is needed as winter range (such as due to harsh winter weather), no mechanized equipment (including chainsaws) will be used between December 15-March 1 to reduce cumulative disturbance to deer/elk on their designated winter range.
25. If any sensitive wildlife or flora is located during the project, the Scenic Area wildlife biologist or ecologist shall be notified and appropriate measures taken to ensure protection.
26. Areas where post treatment field surveys indicate that a majority of the vegetation was removed and slow vegetation recovery is expected will be seeded with a native seed mixture to reduce the chance of surface erosion.
27. Opportunities exist to enhance habitat for native wildlife species after treatment by re-vegetating all disturbed areas with desired native bunch grass, forb and shrub species. Appropriate forage species include bluebunch wheatgrass (*Agropyron spicatum*), Idaho fescue (*Festuca idahoensis*), Serviceberry (*Amelanchier alnifolia*), arrowleaf balsamroot (*Balsamorhiza sagittata*), deerbrush (*Ceanothus integerrimus*), and others .
28. Known sites of sensitive plant species shall be protected by a buffer (200 ft) around each site within which no pile burning or mechanized equipment (except chain saws) shall be allowed. Any newly found sites will be given similar protection.

Scenic Resources

29. No permanent leave tree marking shall be used except the marking of boundary trees near the base of each tree.
30. Stumps >10" dbh shall be flush cut in the immediate foreground (within 50 ft) of Snowden Road.
31. The landing at Snowden Road shall retain screening from existing trees as seen from Snowden Road wherever safety concerns permit.

Recreation and Recreational Facilities and Access

32. Trail users, residents and the general public will be notified of thinning and underburning activities by posting warning signs at key trail intersections. Develop and distribute press release/key messages to local press and web site.
33. Before project commences, pursue necessary agreements with landowners for access.
34. Firewood will be made available to the public only on roads where public access is allowed rather than on roads owned by others where the Forest Service is allowed access for administrative purposes only.
35. The implementation window for hauling and ground-based machine operation is July 1-October 15. This window may be extended to February 28 in the event of a prolonged dry period as determined by the contract administrator in consultation with CRGNSA resource specialists.

Cultural Resources

36. Archeological sites shall be identified in the field and taken out of the treatment boundaries, including the appropriate buffers.
37. Should any historic or prehistoric cultural resources be uncovered during project activities, the Forest Service, or their agents, shall cease work and immediately notify the CRGNSA office and the Washington State Historic Preservation Office (Department of Archaeology and Historic Preservation). If the cultural resources are prehistoric or otherwise associated with Indian people, the Forest Service shall also notify the Indian tribal governments within 24-hours.

Vegetation Management

38. Prescriptions shall ensure tree spacing variability for aerial-pathways and interlocking canopies.
39. All prescriptions and marking guides shall include canopy closure as a control on the extent of tree removal.
40. De-commissioned landings shall be considered as areas suitable for planting ponderosa pine and/or Oregon oak seedlings.

ACCESS AND LANDS INFORMATION

The project area is comprised of land acquired from private parties, with the exception of two 40-acre parcels transferred from Bureau of Land Management jurisdiction to Forest Service jurisdiction. Each acquisition file was examined to determine access status and third party rights. Access to the Burdoin sub-area was established during development of the 2002 Burdoin Mt. EA.

The map on page 11 indicates which roads require the Forest Service to obtain permanent easement rights where there is existing physical access but no legal access rights, particularly where the physical access is over Bonneville Power Administration (BPA) managed land or easements.

ROAD MAINTENANCE AND LANDINGS

Some of the local roads accessing the project area will need minor reconstruction work to accommodate log haul. All of the local roads used for log haul will require some level of maintenance between the landings and the public road system. Haul routes will be on existing roads or tracks. The hauling window is July 1 – October 15 because most of the local roads providing access are native surfaced and will not support extended season haul without additional cost for reconstruction. This window may be extended up to February 28 in the event of a prolonged dry period as determined by the contract administrator in consultation with CRGNSA resource specialists.

Cost data for minor local road reconstruction and for local road maintenance are from the Gifford Pinchot National Forest publication “Cost Estimation Guide for Road Maintenance”, last updated in June, 2006.

Haul Routes

The table below indicates preliminary log haul routes. The routes on National Forest System lands and within the treatment areas will not change, but the actual routes on public roads may change according to the needs of the contractor.

Common point is the intersection of SR 14 with Oak Street in Bingen, Washington. Note that the Forest Service does not currently have access rights on all of the local access roads. Refer elsewhere to the section “Access and Lands Information” for further discussion.

Courtney Road is not included in the log haul routes proposed. The section between the end of the existing pavement and a point approximately two miles northerly consists of one narrow lane with few turnouts and tight curves. Reconstruction of this two mile section would be required to accommodate log haul from both operational and safety standpoints.

Preliminary Haul Routes to Bingen, Washington

Access Road	Forest Service Access Rights	Haul Route (public roads unless otherwise noted)
3119267	Yes	Acme Road – Snowden Road
BPA-3119097	No	Dorsey Road – Acme Road – Snowden Road
Landing, Sec. 3 (1)	Yes	Snowden Road
Upper Major Creek (2)	Yes	Bates Road – Snowden Road
3110320	Yes	Upper Major Creek Road – Bates Road – Snowden Road
BPA-3112300	No	Atwood Road – FS 1230020 – Old Hwy. No. 8 – SR 14
1230020	Yes	Old Hwy. No. 8 – SR 14
3112304	Yes	Bristol Road – Bates Road – Snowden Road

(1) T. 3 N., R. 11 E., NW1/4 SW1/4 SE1/4 Sec. 3, adjacent to Snowden Road.

(2) County road; Forest Service maps a.k.a. 3110000.

Proposed Road Work

CONSTRUCTION AND RECONSTRUCTION

Chapter 4 of Forest Service Handbook 7709.56, “Road Preconstruction Handbook”, was used to determine log truck and lowboy minimum lane widths for the type of local access roads to be used for tree removal and forms the basis for determining reconstruction or construction work required. For any given central angle and radius of curvature, the lowboy will require a greater minimum lane width than a

log truck. Traffic Service Level D roads typically accommodate log trucks, but not lowboys as vehicles such as yarders and log loaders “may have to be off loaded and walked in”. Because of physical constraints, insufficient right-of-way or easement width, and environmental concerns, only one of the local access roads included in this proposal will be designed to accommodate lowboys.

The following table provides a description of the construction or reconstruction work needed to utilize some of the local roads for log haul. A permit from Klickitat County is required where noted.

Roads with Construction or Reconstruction Work to Allow Log Truck Access (1)

Access Road	Description of Work (all dimensions and quantities are approximate <i>post haul restoration work included where it is proposed</i>)
BPA-3119097	Temporary improvement at the junction with Dorsey Road to provide log truck turning radius. A road approach permit from Klickitat County is required. Anticipated work includes 50 feet of fence removal; clearing 0.02 acre of brush; and grading for a length of 60 feet (by 16 feet wide). Grading involves minimal excavation or fill. <i>Post haul, reset fence and re-contour graded area.</i>
Landing, Sec. 3	Temporary road approach to Snowden Road at milepost 7.3 to provide lowboy as well as log truck access. A road approach permit from Klickitat County is required. Anticipated work: relocation of road warning sign; 45 feet of fence removal; clearing by removing four fir trees of 12 inch dbh or less; installing 70 feet of 12 inch culvert pipe in the existing ditch line; grading for a length of 150 feet (average width 20 feet), including 50 cubic yards of excavation and 20 cubic yards of fill; and placing 60 cubic yards of pit run rock surfacing over the first 60 feet of road length. Work adjacent to the County road will require temporary traffic control. <i>Post haul, remove rock, re-contour graded area, remove culvert pipe, restore road shoulder and ditch line, and reset fence. Work adjacent to the County road will require temporary traffic control.</i>
3110320	(a) Widen the road on its approach to North Major Creek Road to provide log truck turning radius. A road approach permit from Klickitat County is required. Anticipated work includes clearing 0.01 acre of brush; and grading for a length of 60 feet (by 17 feet wide), with 10 cubic yards of excavation. Work adjacent to the County road will require temporary traffic control. (b) Construct 100 feet of road (by 18 feet wide) at milepost 0.5 to provide log truck turning radius. Work includes resetting a power pole guy line and anchor (by the P.U.D.); 30 feet of fence removal; clearing by removing five fir trees of 4 inch to 24 inch dbh; and grading to level the existing ground surface with minimal excavation or fill. <i>Post haul, re-contour graded area and reset fence.</i>
BPA-3112300	Construct 170 feet of road on its approach to the Atwood Road to provide log truck turning radius. Work includes grading (average width 20 feet), with 150 cubic yards of excavation. The constructed road will replace 120 feet of existing road. Place the excavated material from the constructed road into the template of the existing road to be abandoned, contour and seed to native grass.
Atwood Road	Widen the road on the inside of a curve ¼ mile northerly of the junction with Road BPA-3112300 for log truck turning radius. Includes clearing 0.01 acre of brush and small firs; and grading by completing 10 cubic yards of excavation.

1230020	<p>(a) Temporary road approach to Old Hwy. No. 8 at milepost 1.5 to provide log truck access. A road approach permit from Klickitat County is required. Anticipated work: 20 feet of fence removal; installation of a temporary gate to control public access during haul; grading for a length of 60 feet (by 16 feet wide) to level the ground surface with minimal excavation or fill; and placing 40 cubic yards of pit run rock surfacing over the first 60 feet of road length. Work adjacent to the County road will require temporary traffic control. <i>Post haul, remove rock, re-contour graded area and reset fence. Work adjacent to the County road will require temporary traffic control.</i></p> <p>(b) Mitigate severe “bumps” between milepost 0.05 and 0.15 by removing the tops of existing exposed rock masses, or by ramping on either side of the “bumps” with placement of a total of 50 cubic yards of pit run rock. (c) At milepost 0.2, 150 feet, provide a reverse curve “swing out” to provide log truck access. Remove 20 cubic yards of rock slope to increase road width by 5 feet at the existing angle point in the road (transition to existing road width 60 feet northerly); and place 10 cubic yards of open graded rock in the flat area south and east of the existing angle point in the road to form the “swing out” area.</p>
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(1) Lowboy access provided where noted.

ROAD MAINTENANCE

All of the local access roads used for log haul will require some level of maintenance work. The type of maintenance work to be completed is described by category as follows:

- *Pre-haul* – minor log out, spot brush/limb up, fill waterbars, remove ruts, remove minor slough or slide material.
- *During haul* – blade once, remove minor slough or slide material.
- *Post haul* – reestablish waterbars and other drainage, shape the roadway.

The heaviest *pre-haul* maintenance work is described as follows:

- BPA-3119097-remove deep ruts.
- North Major Creek Road-remove moderate to deep ruts and complete moderate to heavy brush out, milepost 0.9 to milepost 1.4. A permit from Klickitat County to perform work within County road right-of-way is required.
- BPA-3112300-remove moderate depth ruts.
- 3112306-heavy brush out.

ACTIVITY CREATED FUELS TREATMENT

There are several methods proposed to treated the wood residue from the thinning prescription implementation:

- Hand Pile-approximately 1,464 acres
- Grapple Pile-approximately and/or yard tops attached, chip at landing (spread chips on road)—approximately 619 acres.

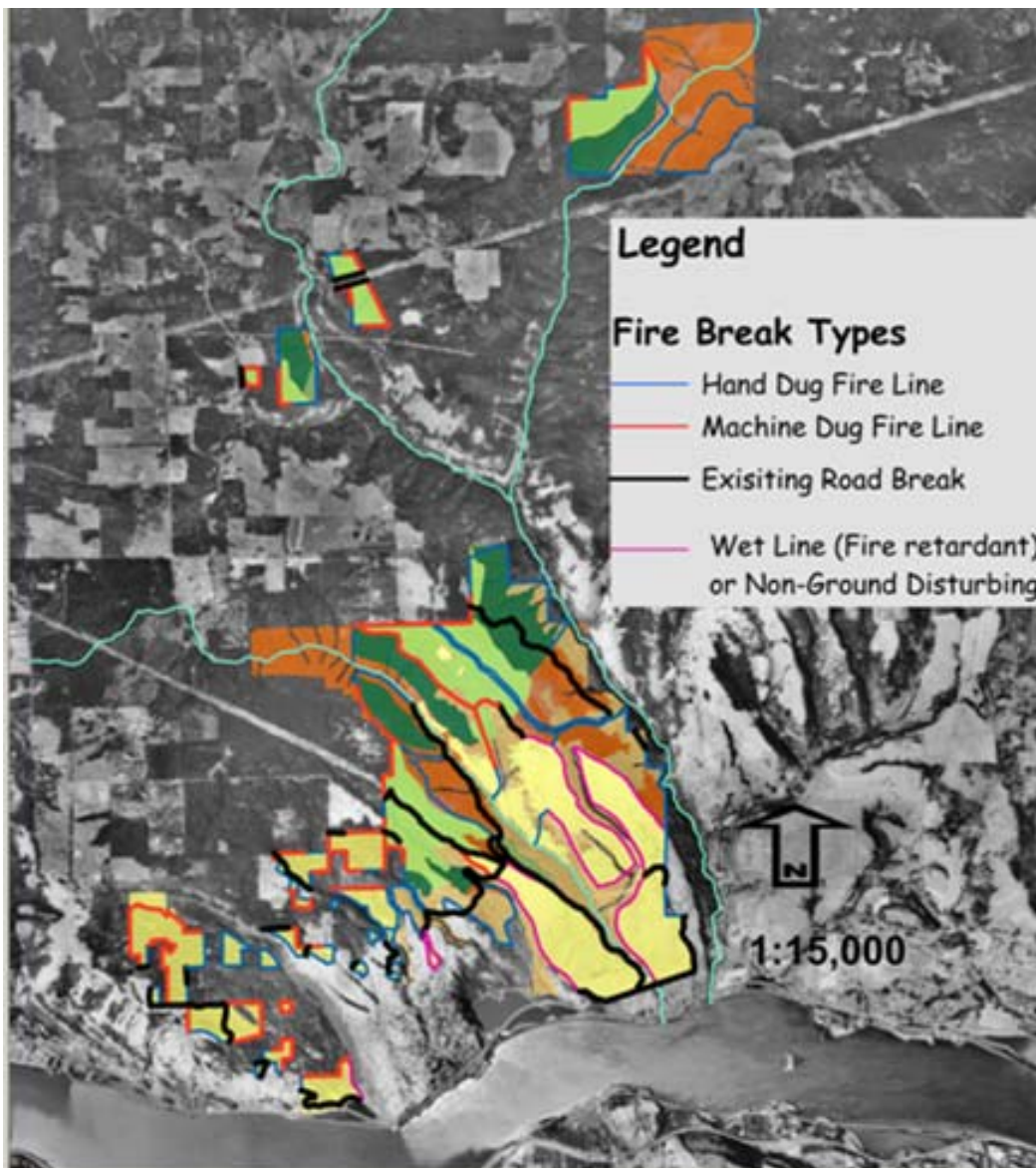
PRESCRIBED FIRE IMPLEMENTATION

The purpose of prescribed burning is to reduce the survival of encroaching Douglas-fir seedlings and the number of new oak and pine tree seedlings, reduce surface fuels, reduce litter and duff depth, increase canopy base height, and provide other benefits that are known to occur when fire-adapted landscapes are brought closer to being within the range of natural variability.

Prescribed burning is best used in areas with lighter fuel loads. It is estimated that 1,300 acres are currently available for treatment without pre-thinning. Approximately 2,510 acres will require thinning and slash pile burning before prescribed fire can be applied. Future maintenance burning will be needed to limit regeneration and maintain low levels of surface fuels. The CRGNSA fire specialists will evaluate areas for prescribed fire as funding becomes available. Prescribed fire implementation plans will be prepared before treatment. Existing fire breaks and new fire-line will be required to ensure control. Fire-line will be constructed as needed and will be sown with native grasses following use. The following priorities will be used for fire breaks based on safety and feasibility:

1. Existing roads and other existing breaks.
2. Wet-line (fire retardant) or non-ground disturbing hand-dug fire-line.
3. Hand-dug fire-line.
4. Fire-line dug using small (trail-sized) equipment.
5. Machine dug fire-line using larger equipment.

The map below indicates a preliminary plan for how these priorities apply:



APPENDIX A: SITE PLANS FOR ROAD RECONSTRUCTION, CONSTRUCTION

CATHERINE FOREST RESTORATION
COLUMBIA RIVER GORGE NATIONAL SCENIC AREA
Proposed Road Work Sketch

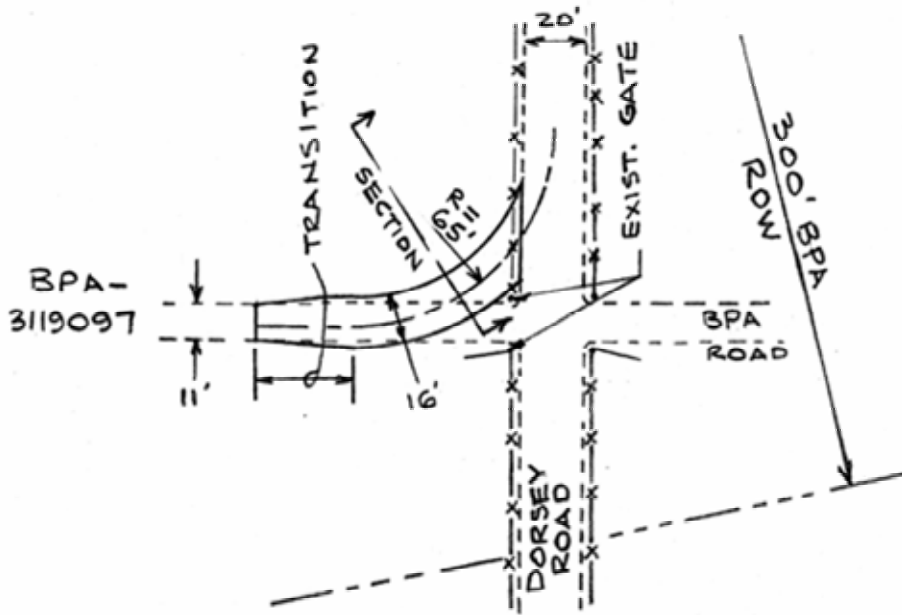
Road BPA-3119097 at the junction with Dorsey Road
Sec. 2, T.3N., R.11E., Dorsey Road Milepost 0.7

Legend:
R = Radius
ROW = Right of Way

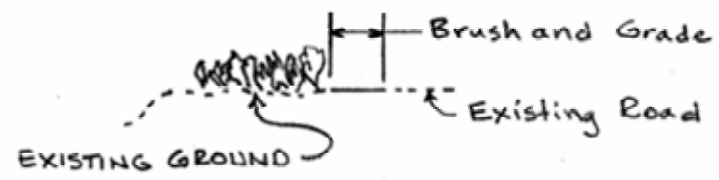
Symbols:
- - - - - x - - - - - x - - - - - = Existing Fence Line
- - - - - = Edge of Existing Road, gravel or native surface
- - - - - = Centerline of Proposed Road Work
- - - - - = Edge of Proposed Road Work



Scale: 1"=50'



PLAN



SECTION
(NO SCALE)

CATHERINE FOREST RESTORATION
 COLUMBIA RIVER GORGE NATIONAL SCENIC AREA
Proposed Road Work Sketch

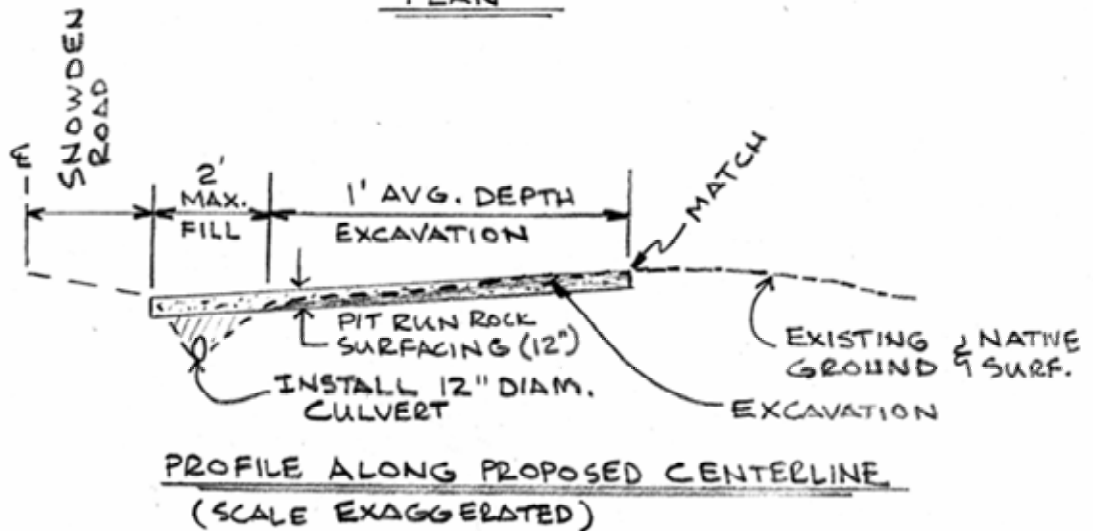
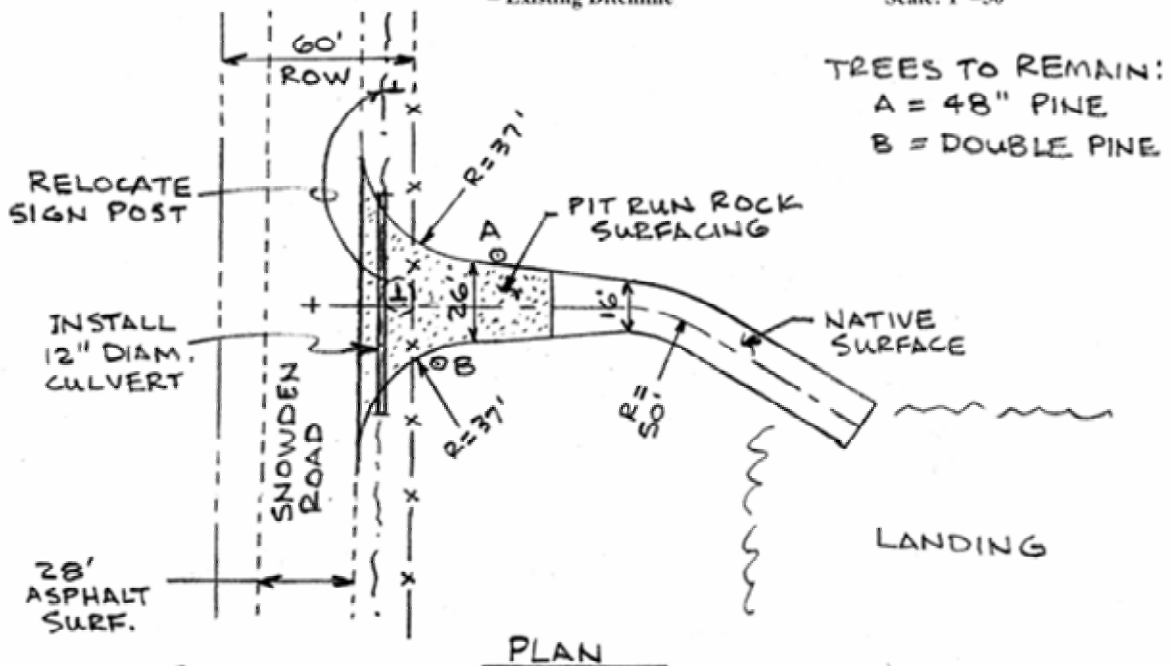
Landing, Sec. 3 at the junction with Snowden Road
 Sec. 3, T.3N., R.11E., Snowden Road Milepost 7.3

Legend:
 R = Radius
 ROW = Right of Way

Symbols:
 - - - - - x - - - - - x - - - - - = Existing Fence Line
 - - - - - = Edge of Existing Road
 - - - - - = Centerline of Proposed Road Work
 - - - - - = Edge of Proposed Road Work
 - - - - - = Existing Ditchline



Scale: 1"=50'



CATHERINE FOREST RESTORATION
COLUMBIA RIVER GORGE NATIONAL SCENIC AREA
Proposed Road Work Sketch

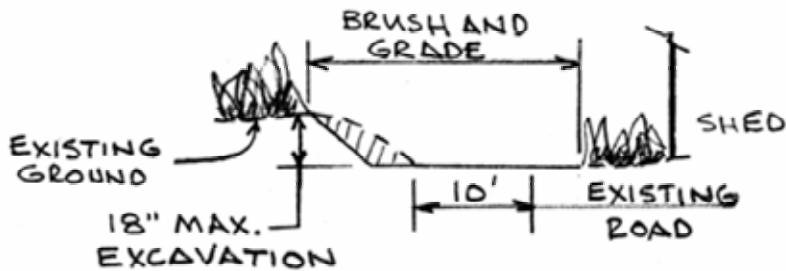
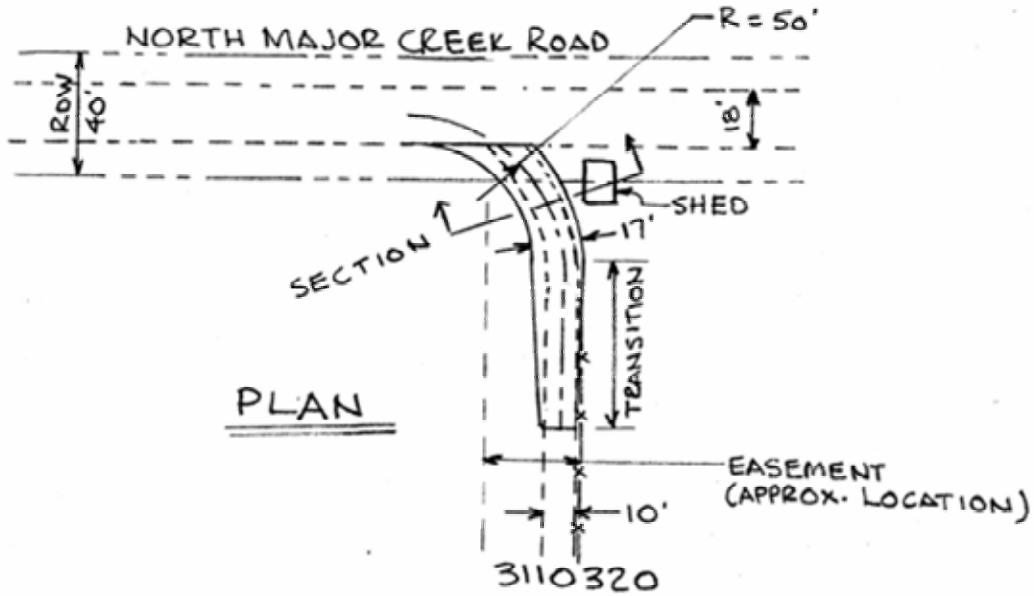
Road 3110320 at the junction with North Major Creek Road
Sec. 14, T.3N., R.11E., North Major Creek Road Milepost 0.6

Legend:
R = Radius
ROW = Right of Way

Symbols:
- - - x - - - x - - - x - - - = Existing Fence Line
- - - - - = Edge of Existing Road, gravel or native surface
- - - - - = Centerline of Proposed Road Work
- - - - - = Edge of Proposed Road Work



Scale: 1"=50'



SECTION
(NO SCALE)

CATHERINE FOREST RESTORATION
 COLUMBIA RIVER GORGE NATIONAL SCENIC AREA
Proposed Road Work Sketch

Road 3110320, Milepost 0.5
 Sec. 14, T.3N., R.11E.

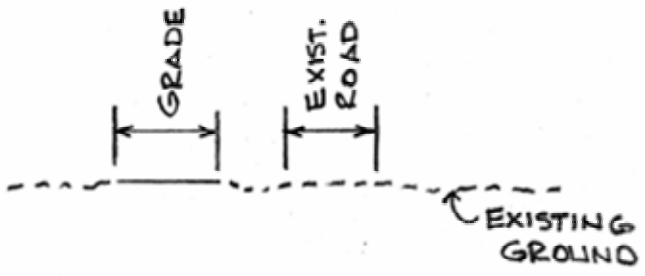
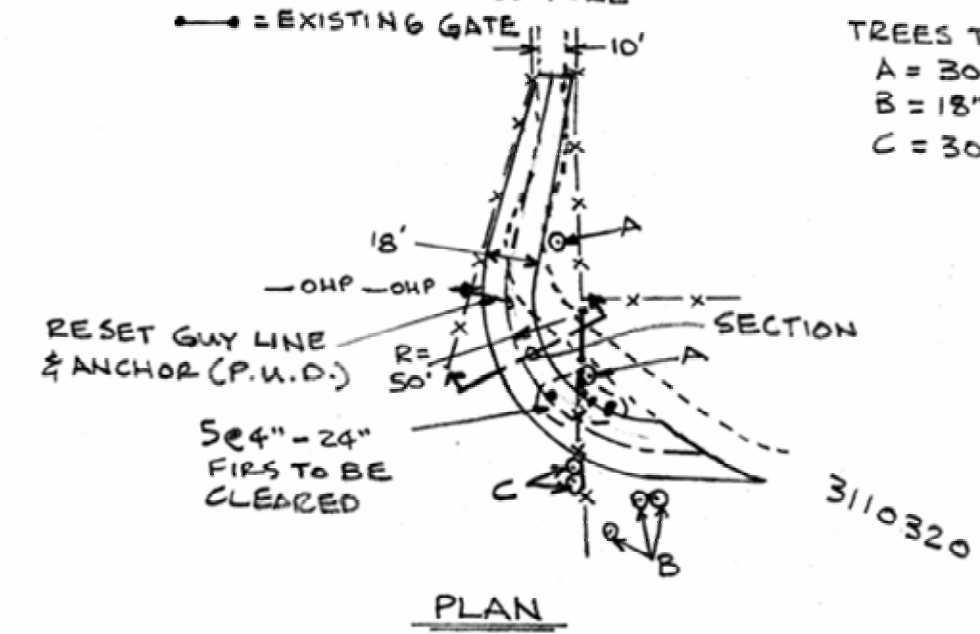
Legend:
 R = Radius
 ROW = Right of Way
 OHP = OVERHEAD
 POWER LINE

Symbols:
 - - - - x - - - - x - - - - = Existing Fence Line
 - - - - - = Edge of Existing Road, native surface
 - - - - - = Centerline of Proposed Road Work
 - - - - - = Edge of Proposed Road Work
 + = POWER POLE
 —●— = EXISTING GATE



Scale: 1"=50'

TREES TO REMAIN:
 A = 30" FIR
 B = 18"-20" FIR
 C = 30"-36" FIR

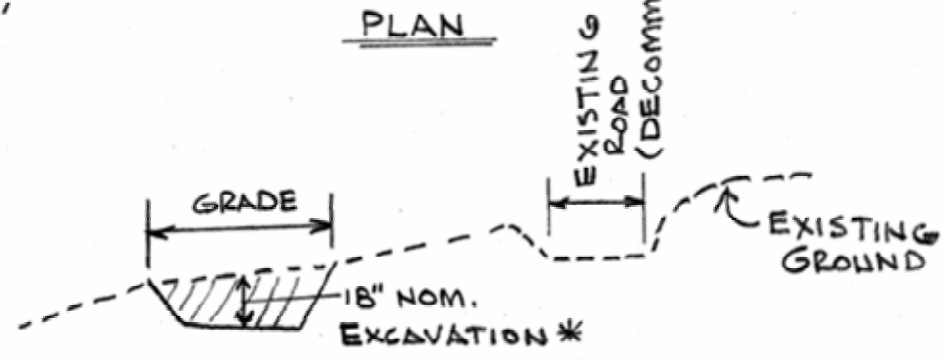
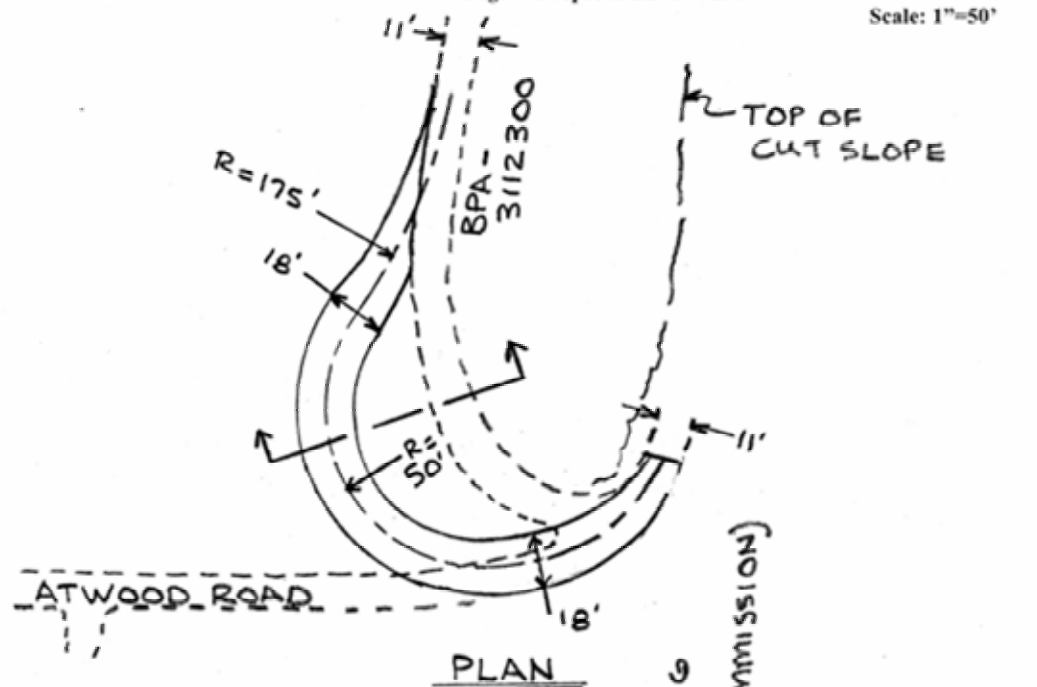
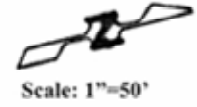


CATHERINE FOREST RESTORATION
 COLUMBIA RIVER GORGE NATIONAL SCENIC AREA
Proposed Road Work Sketch

Road BPA-3112300 at the junction with Atwood Road
 Sec. 25, T.3N., R.11E., 1.9 miles from Old Hwy. No. 8

Legend:
 R = Radius
 ROW = Right of Way

Symbols:
 - - - - - X - - - - - X - - - - - = Existing Fence Line
 - - - - - = Edge of Existing Road, native surface
 - - - - - = Centerline of Proposed Road Work
 - - - - - = Edge of Proposed Road Work



* DEPTH OF EXCAVATION VARIES FROM 3' - 0'
 WITH AN AVERAGE DEPTH OF 18" AT THIS SECTION.

SECTION
 (NO SCALE)

CATHERINE FOREST RESTORATION
 COLUMBIA RIVER GORGE NATIONAL SCENIC AREA
Proposed Road Work Sketch

Atwood Road

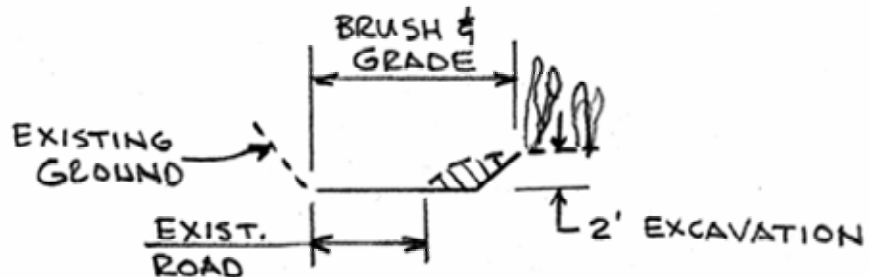
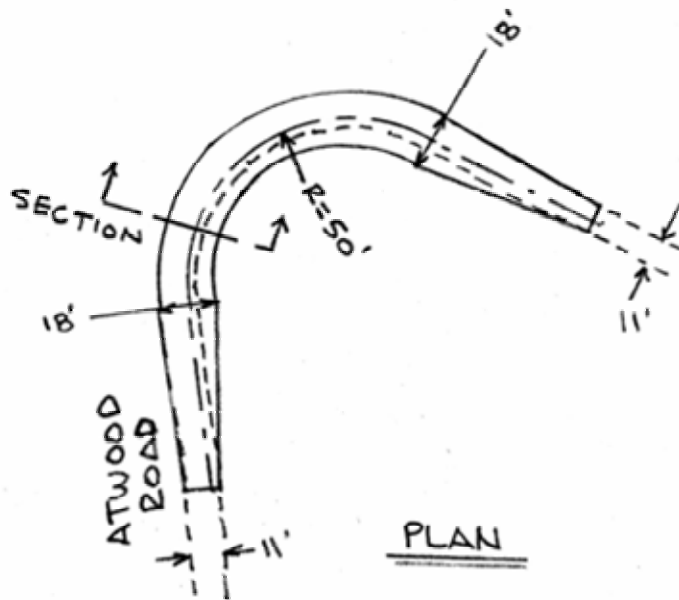
Sec. 25, T.3N., R.11E., 1.65 miles from Old Hwy. No. 8

Legend:
 R = Radius
 ROW = Right of Way

Symbols:
 -x-x-x-x-x- = Existing Fence Line
 - - - - - = Edge of Existing Road, native surface
 - - - - - = Centerline of Proposed Road Work
 _____ = Edge of Proposed Road Work



Scale: 1"=50'



SECTION
(NO SCALE)

CATHERINE FOREST RESTORATION
 COLUMBIA RIVER GORGE NATIONAL SCENIC AREA
Proposed Road Work Sketch

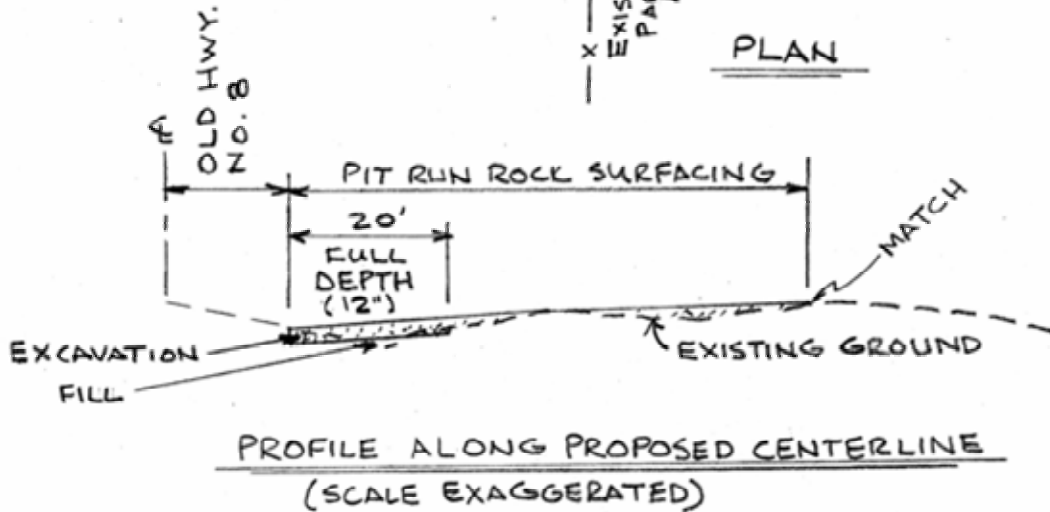
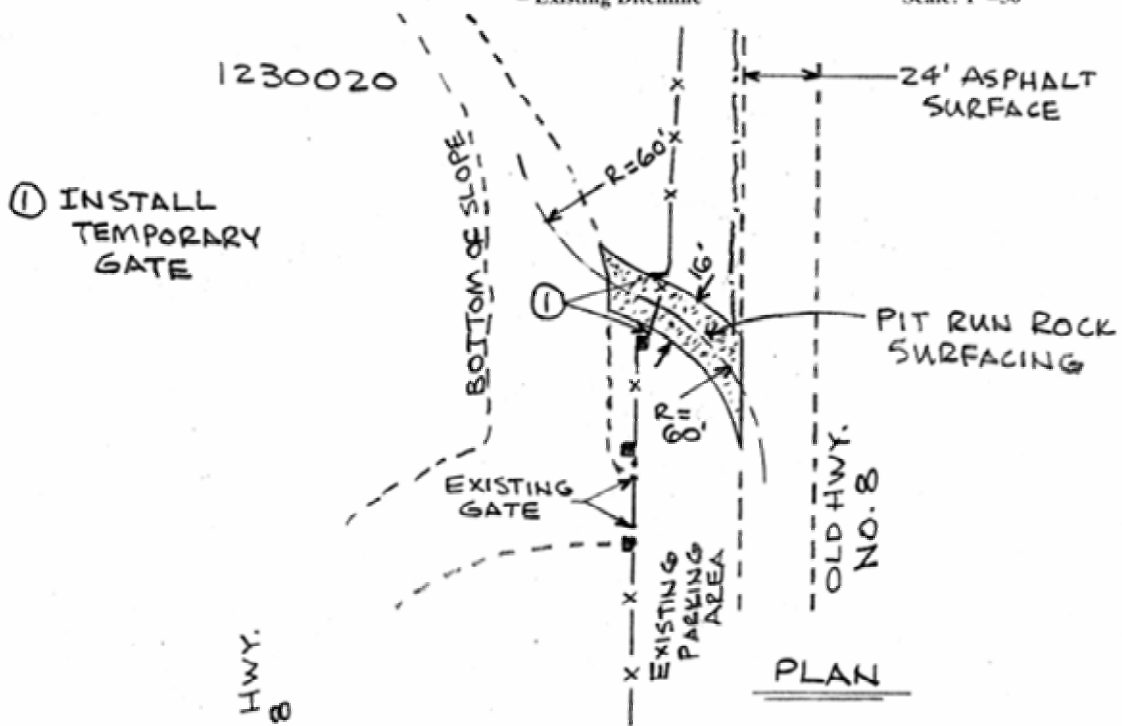
Road 1230020 at the junction with Old Hwy. No. 8
 Sec. 25, T.3N., R.11E., Old Hwy. No. 8 Milepost 1.5

Legend:
 R = Radius
 ROW = Right of Way

Symbols:
 - - - - - x - - - - - x - - - - - = Existing Fence Line
 - - - - - = Edge of Existing Road
 - - - - - = Centerline of Proposed Road Work
 - - - - - = Edge of Proposed Road Work
 - - - - - = Existing Ditchline

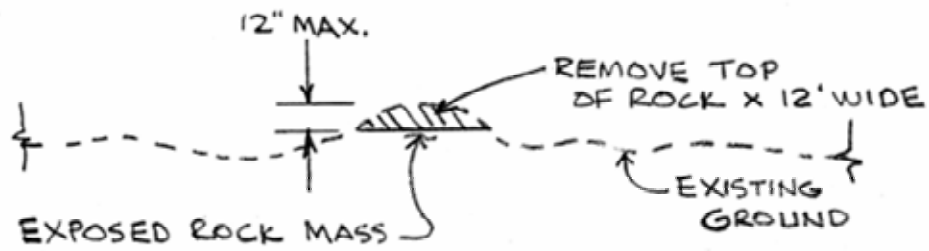


Scale: 1"=50'



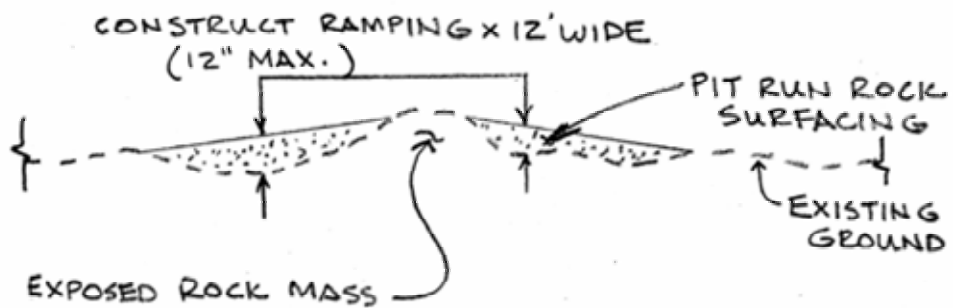
CATHERINE FOREST RESTORATION
COLUMBIA RIVER GORGE NATIONAL SCENIC AREA
Proposed Road Work Sketch

Road 1230020 "Bumps" Milepost 0.05 to Milepost 0.15
Sec. 30, T.3N., R.12E.



TYPICAL PROFILE, TOP OF ROCK REMOVAL
(NO SCALE)

OR



TYPICAL PROFILE, RAMPING
(NO SCALE)

CATHERINE FOREST RESTORATION
 COLUMBIA RIVER GORGE NATIONAL SCENIC AREA
Proposed Road Work Sketch

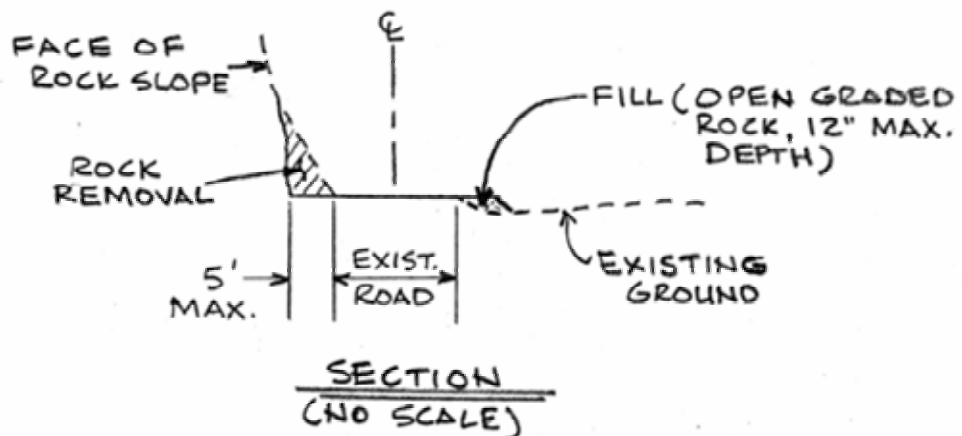
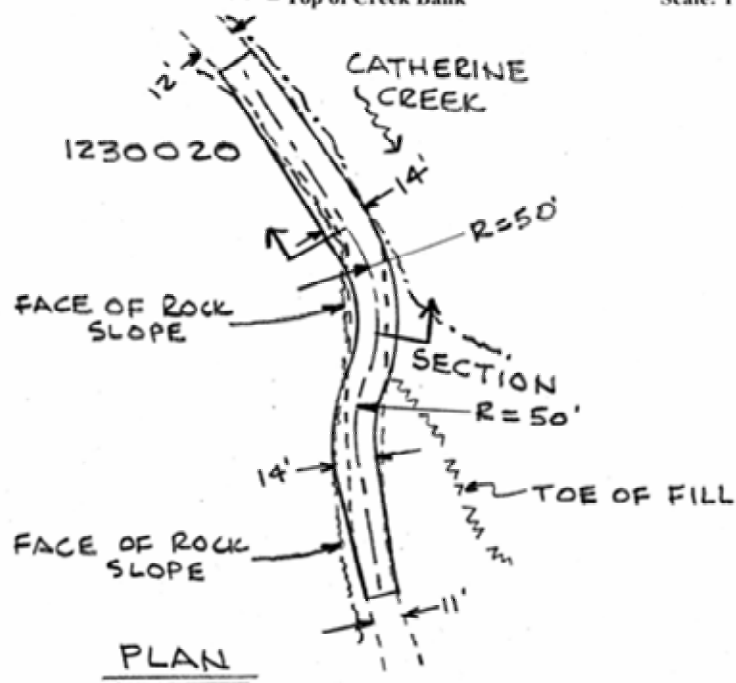
Road 1230020 Milepost 0.2
 Sec. 30, T.3N., R.12E.

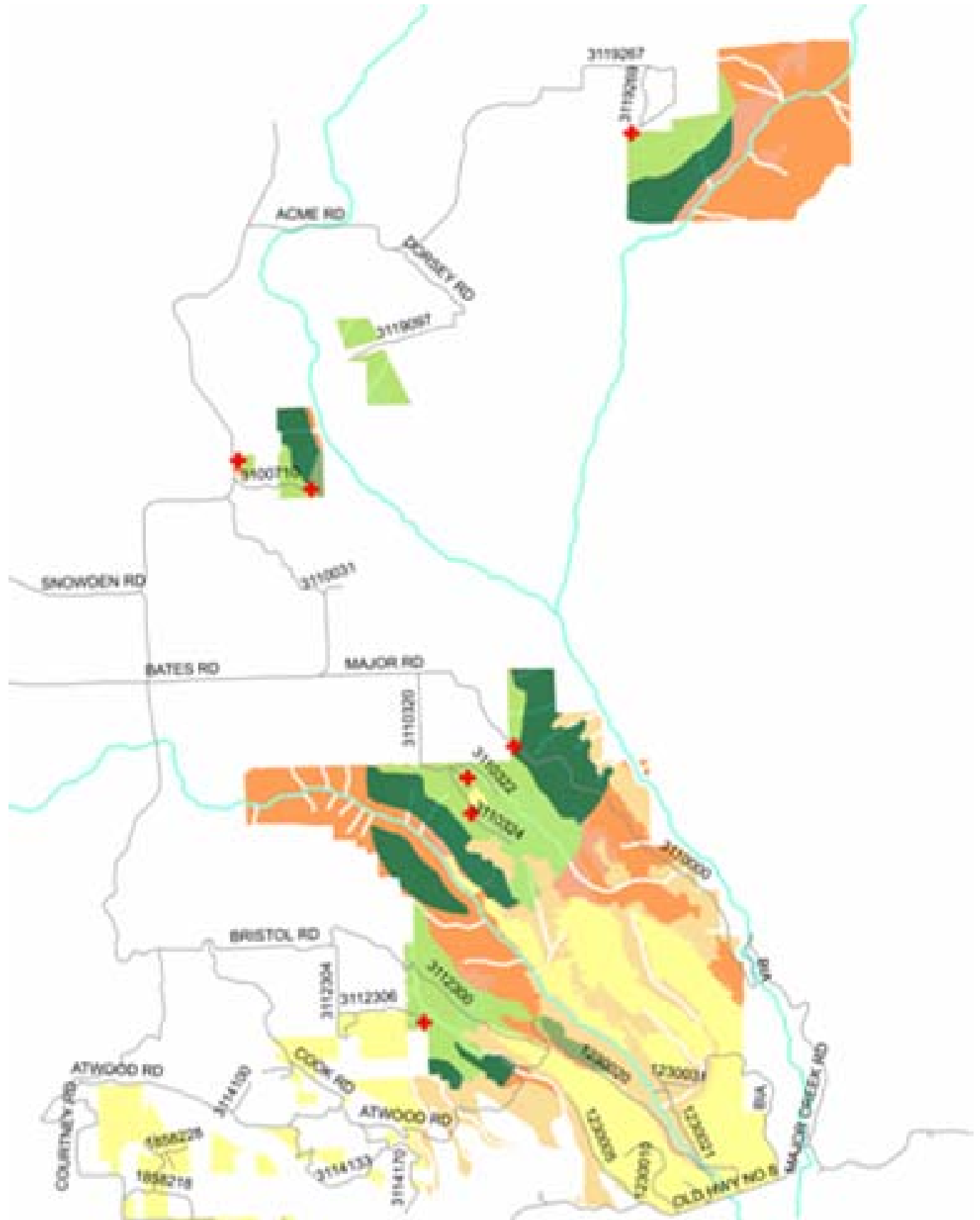
Legend:
 R = Radius
 ROW = Right of Way

Symbols:
 - - - - x - - - - x - - - - = Existing Fence Line
 - - - - - = Edge of Existing Road
 - - - - - = Centerline of Proposed Road Work
 - - - - - = Edge of Proposed Road Work
 - - - - - = Top of Creek Bank



Scale: 1"=50'





APPENDIX B: DEFINITION OF VEGETATION MANAGEMENT TERMS

Canopy closure: The percentage of forest cover formed by the branches and foliage of tree crowns. Looking up, the canopy closure percent is judged by the amount of sky visible as opposed to the amount of sky covered by trees. Looking down, it's the percent of ground shaded by tree crowns directly overhead.

Crown: The portion of a tree composed of branches and stem above the lowest live limb.

Diameter at Breast Height (DBH): The diameter of a tree stem measured 4.5 feet from the ground.

Forest stand structure: The number, types and spacing of tree species, tree sizes, and canopy layers contained in a stand of trees.

Openings: Spaces in the forest where trees are not growing. These may be permanent due to soil and moisture conditions, or they may be temporary—often caused by disturbances such as fire, a wind storm, harvest, or landslide.

Overstory: The highest vertical stratum of individual plants within a community. In a forest or woodland, the overstory is composed of dominant and co-dominant trees. These are the tall or mature trees that rise above the shorter or immature understory trees.

Remnant overstory or legacy trees: The oldest and largest trees in the overstory, usually the left over “remnants” of a previous stand that was almost completely removed by fire, harvest, or other disturbance. The size differences between these trees and the overstory co-dominants are usually marked. For example, legacy tree diameter at breast height (DBH) may be 50 inches, while the rest of the stand may contain trees from 10-30 inches DBH.

Savanna: A plant community or vegetation type dominated by grasses with scattered, drought-resistant trees.

Shrub and Herbaceous Layer: The layer of vegetation near or on the ground that is typically composed of grass, shrubs, flowers, tree seedlings, and saplings.

Size Composition: The mix of the different sizes of trees in the forest.

Species Composition: The mix of different types of trees and other vegetation in the forest.

Total canopy closure: The percentage measuring the degree to which all layers of the tree canopy combine together to block sunlight or obscure the sky as measured from below.

Understory: The layer of vegetation between the overstory canopy and the shrub and herbaceous layer. These are the shorter or immature trees that are below the tall or mature overstory trees.