

Camas Blooms Thinning Decision Document
Camas Valley 2011 Harvest Plan Environmental Assessment
DOI-BLM-OR-R050-2011-0005-EA

Bureau of Land Management
South River Field Office, Roseburg District

Background

The Camas Valley 2011 Harvest Plan Environmental Assessment (EA) describes and analyzes a no action alternative and two sub-alternatives of the proposed action. Under Alternative Two, Sub-alternative A commercial and variable density thinning (1,775 acres) would be utilized whereas Alternative Two Sub-Alternative B utilizes commercial and variable density thinning (1,575 acres) and variable retention harvest (240 acres). The selected alternative is Alternative Two Sub-Alternative B.

The analysis was conducted and the project designed to conform to management direction from the 1995 Roseburg District *Record of Decision and Resource Management Plan* (ROD/RMP) as amended prior to December 30, 2008.

Public Involvement & Response to Comment

Analysis for the Camas Valley 2011 Harvest Plan EA began in June of 2011. Informal scoping comments were received from two organizations in May and June of 2011. These comments were considered and addressed in the EA (pp. 5-13).

The EA was released for a 30-day public review and comment period beginning on June 18, 2013, and running through July 17, 2013. Comments were received from four organizations. Responses to relevant comments not already addressed in the EA are included in this document as Appendix A.

Decision

It is my decision to authorize the Camas Blooms Thinning project, which completes implementation of Alternative Two, Sub-Alternative B described in the Camas Valley 2011 Harvest Plan EA (pp. 28-30). Thirteen units will be treated in Sections 29 and 31, T. 28 S. R 8 W.; Sections 27 and 31, T. 29 S., R 8 W.; Sections 13 and 23 T. 29 S. R 9 W.; and Sections 9 and 17, T. 30 S. R 8 W., Willamette Meridian (see attached maps). The harvest activity areas total approximately 269 acres in the following land use allocations: General Forest Management Area (GFMA, 84 acres), Connectivity/Diversity Block (37 acres), Riparian Reserves (27 acres), and Late-Successional Reserves (121 acres). Commercial thinning with generally uniform spacing will be applied to upland portions of units in the GFMA. Variable density thinning will be applied in all harvest units located in the Riparian Reserves, Connectivity/Diversity Blocks, and Late-Successional Reserves. Each unit will be harvested with a combination of ground-based and cable yarding methods. In addition to thinning, the following activities will occur (see Table 1, Table 2, and the attached maps):

Road Construction (up to 0.75 miles): About 74 percent (0.57 miles) of the constructed road will be located within unit boundaries. All road construction and decommissioning will occur during the dry season (described below). Two road segments (0.07 mile) will be constructed and used for harvest operations, then decommissioned in the same respective operating season. Four road segments (0.17 miles) will be constructed and surfaced with rock, then decommissioned upon completion of harvest operations. One road segment (0.43 miles) will be constructed, surfaced with rock, and retained for future use. Three optional spur roads (approximately 0.08 miles) are

authorized in Units 8 and 10 to be constructed and decommissioned in the same respective operating season at the Purchaser’s expense. Table 2 displays the road treatment and length of each road segment, and the attached maps show the location of each road segment.

At a minimum, road decommissioning will consist of removing temporary drainage structures, constructing water bars, seeding and mulching disturbed areas, and blocking roads to vehicular use (EA, p. 26). If it is not possible to accomplish decommissioning at the end of an operating season, the purchaser shall be responsible for winterizing temporary roads by water-barring, obstructing motorized access, and mulching. Road construction and decommissioning will follow the northern spotted owl and marbled murrelet operating restrictions where applicable (see below).

- **Road Renovation (0.94 miles):** Three road segments (0.94 miles; see Table 2 and the attached maps) will be renovated during the dry season (described below), then decommissioned in the same respective operating season. Renovation actions are those needed to restore the road to original design specifications and may include blading, brushing, removing obstructions or trees within the right-of-way, reshaping drainage dips and the road bed, replacing and/or installing cross drains and live water culverts when needed, and spot aggregate placement where needed. Decommissioning will be as described previously. Northern spotted owl and marbled murrelet operating restrictions will apply where applicable (see below).
- **Road Right-of-Way Clearing:** Approximately 2 acres in forests less than 80 years old
- **Subsoiling:** Approximately 3.5 miles (5.0 acres) of skid trails, equipment areas and landings will be subsoiled. Subsoiling will treat compacted soils to a minimum of 18 inches in depth, or to the top of gravelly-cobbly soil layers if these layers are shallower than 18 inches.
- **Post-Harvest Fuels Treatment:** Fuel accumulations along roads and landings will be piled and burned as described in the EA (p. 27).

Total harvest volume is estimated at 3,823 thousand board feet. Approximately 1,741 thousand board feet derived from thinning in 121 acres in the General Forest Management Area and Connectivity/Diversity Block land use allocations is chargeable to the Roseburg District annual allowable sale quantity. The remaining 2,082 thousand board feet is derived from variable density thinning in 148 acres of Riparian Reserves and Late-Successional Reserves and is not chargeable to the annual allowable sale quantity. Timber sale unit numbers and corresponding EA unit designations are displayed in Table 1.

Table 1: Camas Blooms Unit Description

Sale Unit	EA Unit Designation	Age	Harvest Acres	Harvest Prescription	Land Use Allocation
1	29-8-27D	42	18 6	VDT VDT	Connectivity/Diversity Block Riparian Reserves
2	29-8-31B	74	19 4	VDT VDT	Connectivity/Diversity Block Riparian Reserve
3	30-8-9B	38	12	VDT	Late-Successional Reserves
4	30-8-9D	37	12	VDT	Late-Successional Reserves
5 & 6	30-8-17A	39	9/23	VDT	Late-Successional Reserves
7	30-8-17B	40	22	VDT	Late-Successional Reserves
8	30-8-17C	35	26	VDT	Late-Successional Reserves
9	28-8-31A	66	2	CT	General Forest Management Area
10	28-8-31D	60	6 6	CT VDT	General Forest Management Area Riparian Reserve
11	28-8-29A	40	30 8	CT VDT	General Forest Management Area Riparian Reserve
12	29-9-23B	44	17	VDT	Late-Successional Reserves
13	29-9-13B	50	46 3	CT VDT	General Forest Management Area Riparian Reserves

Applicable project design features described in the EA (pp. 19-30) will be incorporated into timber sale contract stipulations.

Prior to move-in, all equipment used in logging and road construction, excluding log trucks and crew transport, will be steam-cleaned or pressure washed to remove soil and materials that may be contaminated with weed seed or root fragments (EA, p. 27). Any equipment removed from the contract area during the life of the contract must be re-cleaned before being returned to the contract area.

Conventional ground-based yarding equipment will operate on designated skid trails, using pre-existing trails to the greatest extent practicable. Ground-based operations will be limited to the dry season, typically May 15 through October 15, but may be shortened or extended, dependent on weather conditions, when soils are at their driest and least susceptible to compaction. Operations are generally restricted to slopes of 35 percent or less, but may be authorized on steeper inclinations and pitches between gentler benches where appropriate (EA, p. 29).

Conventional ground-based harvest systems, excluding feller bunchers, are acceptable for the ground-based harvest areas. Some areas in the harvest units are subject to compaction because they contain soils with high clay content, low levels of rock or are located in areas with high soil moisture. Field review¹ shows past feller buncher operations on these soil types have yielded unacceptable levels of soil compaction.

For cable yarding, a skyline system capable of maintaining a minimum of one-end log suspension will be used. It shall be equipped with a mechanical slack pulling carriage having a minimum of 75 feet of lateral yarding capability (EA, p. 24). The system shall also have the capability to yard in multi-span configuration.

With the exception of the clearing of road rights-of-way, no timber falling, bucking or yarding shall be conducted in the thinning units during the bark-slip period from April 15 to July 15 of each calendar year, both days inclusive. This restriction may be waived or modified depending upon seasonal variations, logging systems, and operator skill.

Access will be primarily provided by existing roads, supplemented by the construction of up to ten road segments, described on page 1. Table 2 and the attached maps display details of necessary road treatments.

Table 2: Camas Blooms Thinning Road Construction, Renovation and Decommissioning

Road Number	Road Treatment	Length (miles)	Unit Number
Spur 1	Road Renovation, Decommission	0.47	2
Spur 2	Road Renovation, Decommission	0.07	5
Spur 3	Road Construction, Surface with Rock, Decommission	0.05	7
Spur 4	Road Construction, Surface with Rock, Decommission	0.03	8
Spur 5	Road Construction, Surface with Rock, Decommission	0.06	8
Spur 6	Road Construction, Surface with Rock, Decommission	0.03	10
Spur 7	Road Construction, Decommission	0.05	12
Spur 8	Road Construction, Decommission	0.02	9
29-9-23.1	Road Renovation, Decommission	0.40	12
29-9-23.8	Road Construction, Surface with Rock, Retain	0.43	13
Optional Spur 8-1	Road Construction, Decommission	0.03	8
Optional Spur 8-2	Road Construction, Decommission	0.02	8
Optional Spur 10-1	Road Construction, Decommission	0.03	10

¹ USDI BLM 2013. Sir Galahad Commercial Thinning and Density Management Soil Impacts Field Review. Roseburg District, Roseburg, Oregon.

Rationale for the Decision

Alternative Two, Sub-Alternative B will meet the objectives of providing sustainable timber production; reducing stand densities to promote tree survival and growth; enhancing species and structural diversity in Riparian Reserves to attain Aquatic Restoration Strategy objectives; and creating and maintaining late-successional forest conditions consistent with the Late-Successional Reserve Assessment (EA, pp. 2-3, 43, 46, 50, 51-54). Alternative One will not accomplish these objectives (EA, pp. 40-42).

Wildlife

Consultation with the U.S. Fish and Wildlife Service (Service) has been completed (TAILS #: 01EOFW00-2013-F-0200; dated September 30, 2013) and the project complies with the Endangered Species Act.

Northern Spotted Owl

No effect to northern spotted owls (*Strix occidentalis* var. *caurina*) from noise disruption or disturbance is expected (EA, pp. 26 and 75). Any operations with the potential for disruption of nesting northern spotted owls will be subject to seasonal restrictions. Operations within applicable disruption threshold distances of known northern spotted owl sites or unsurveyed suitable habitat will be prohibited from March 1 to July 15, both dates inclusive (EA, p. 26). If surveys indicate northern spotted owls are not present, the restriction may be lifted.

Spot check surveys concurrent with harvest operations and associated road construction and/or renovation are necessary for Units 1, 2, 4, 5/6, 7, 8 and 10. Spot checks prior to operations are required in Unit 2 and Spur 1. If northern spotted owls are detected in the spot check areas, all ongoing operations that have a likelihood of direct harm to a northern spotted owl and/or creating above-ambient noise shall be postponed (USFWS 2012, p. 20)² and any operations with the potential to disrupt nesting northern spotted owls will be subject to seasonal restrictions.

The Camas Blooms Thinning project includes application of thinning in approximately 49 acres of dispersal habitat outside of the core area but within the home range of one known occupied northern spotted owl site (0540B). Modified dispersal habitat will continue to function as dispersal habitat (EA, p. 75) because at least 50 percent canopy cover will be maintained (EA, pp. 21 and 22). Thinning will also occur in capable habitat within two known occupied northern spotted owl home ranges (1807O, 2047B). Thinning will modify approximately 12 acres of capable habitat in the core areas of site 1807O, and approximately 32 acres of capable habitat outside of core areas but within the home ranges of sites 1807O and 2047B. The environmental effects of project implementation on northern spotted owls are described in the Camas Valley 2011 Harvest Plan EA (pp.74-77, 82-83).

Northern spotted owls are expected to continue to use thinned areas after operations are complete because post-treatment canopy cover will remain above 40 percent and the quadratic mean diameter of trees in the stands will exceed 11 inches, figures widely used as thresholds for dispersal function (EA, p. 21-22, 75). It is acknowledged, however, that northern spotted owls will likely utilize the thinned stands less than unthinned stands until canopy closure returns to pre-thinning levels in 10 to 20 years (EA, p. 75).

² USFWS. 2012. Protocol for surveying proposed management activities that may impact northern spotted owls. February 2, 2011 revised January 9, 2012. Pp. 42.

In the Biological Opinion referenced above, the Service found that the Roseburg District proposed actions, of which Camas Blooms Thinning project is a component will not jeopardize the continued existence of the northern spotted owl and will not adversely modify northern spotted owl critical habitat (p. 1). Unit 2 is within the 2012 designated northern spotted owl critical habitat (EA, p. 59 and Appendix C). The project is likely to adversely affect site 0540B because thinning will modify dispersal habitat in the core area which is below the suitable habitat viability threshold (EA, p. 57 and USDI-FWS 2013, p. 149). Harvest within capable habitat in the home ranges of sites 1807O and 2047B will have no effect (USDI-FWS 2013, p. 149).

Marbled Murrelet

As described in the EA (p. 78), there will be no effect to the marbled murrelet (*Brachyramphus marmoratus*) from disturbance. The Camas Blooms Thinning project will treat unsuitable habitat in all units except Unit 2 which is suitable nesting habitat (EA, p. 77) where existing platform trees will be retained. Thinning will accelerate development of additional suitable nesting habitat (EA, p. 77).

No harvest units are located within occupied stands or unsurveyed suitable marbled murrelet habitat (USDI-FWS 2013, p. 118). Suitable habitat in Unit 2 is unoccupied by marbled murrelets based on two years of protocol surveys.

Harvest operations on Units 1, 3, 10 and 13, and construction/decommissioning of Spur 6 will have seasonal operating restrictions from April 1 through August 5, both dates inclusive, followed by daily operating restrictions from August 6 through September 5, both dates inclusive, because they are within a marbled murrelet restriction corridor and within 100 yards of suitable habitat. Six units (Units 4, 5/6, 7, 8 and 12) and associated roads will have daily operating restrictions from April 1 through August 5, both dates inclusive, because they are located in Marbled Murrelet Management Zone 2 (EA, Appendix C Map 2) and they are within 100 yards of unsurveyed suitable habitat. Units 2, 9, and 11, Spur Road 1 and Spur Road 8 will have no operating restrictions because they are not suitable habitat and are not within 100 yards of suitable habitat, or two years of surveys indicate they are unoccupied by marbled murrelets. Unit 12 is the only unit located in 2011 marbled murrelet critical habitat (EA, Appendix C Table C-4 and Map 2). The effects of thinning Unit 12 on the marbled murrelet will be as described in the EA (pp. 78 and 84).

In the Biological Opinion referenced above, the Service found that the Roseburg District proposed actions, of which Camas Blooms Thinning project is a component, will not jeopardize the continued existence of the marbled murrelet and will not adversely modify marbled murrelet critical habitat (pp. 1 and 118). The Service does not anticipate the incidental take of any murrelets due to the activities addressed in the Biological Opinion (USDI-FWS 2013, p. 121).

Pacific Fisher

The U.S. Fish and Wildlife Service proposed to list the Pacific fisher as a threatened species on October 7, 2014 (50 CFR 17; 79 FR 60419). The project is in the Coastal Oregon sub-region where fisher is likely extirpated (USFWS 2014, p. 47)³; 20 miles north of the known occupied range of the fisher in Northern California/Southern Oregon; and over 50 miles northwest of the Southern Oregon Cascades reintroduction population⁴. The area is not likely to be currently occupied by fishers (EA, Table C-1) and there is no, or only a low potential, for adverse effects to the species or its habitat so further analysis will not be completed.

³ USDI-USFWS. 2014. Draft species report: fisher (*Pekania pennant*), west coast population. January 13, 2014. Pg. 47.

⁴ USDI-FWS. 2014. Endangered and threatened wildlife and plants; threatened species status for west coast distinct population segment of fisher. Federal Register Vol. 79, No. 194. Pp. 60419-60443.

Botany Special Status Species

The project is within the range of Kincaid's lupine (*Lupinus sulphureus* ssp. *kincaidii*), a Federally-threatened herbaceous perennial plant. There will be no direct effect to Kincaid's lupine, as no populations have been identified in any of the units comprising this project (EA, p. 33, EA Appendix D)

There will be no effects on the Federally-Endangered rough popcorn flower (*Plagiobothrys hirtus*). The project is not within in the geographic range of the species and habitat provided by vernal wet meadows is not present (EA, Appendix D).

No Bureau Sensitive plant species were located during surveys in the Camas Blooms units; therefore no effect to Bureau Sensitive species is anticipated (EA, p. 33, EA Appendix D).

Aquatic Habitat, Fish, and Essential Fish Habitat

Oregon Coast coho salmon (*Oncorhynchus kisutch*), a federally threatened species, is present in the Olalla Creek-Lookingglass Creek and Middle Fork Coquille River 10th Field Watersheds, which include stream segments designated as critical habitat for the Oregon Coast coho salmon, and Essential Fish Habitat for both the Oregon Coast coho salmon and Oregon Coast Chinook salmon (*O. tshawytscha*).

Camas Blooms Thinning Unit 1 (23 acres) is within the Olalla Creek- Lookingglass Creek 10th-field watershed and the remaining units (248 acres) are within the Middle Fork Coquille River 10th Field Watershed. In the Olalla Creek-Lookingglass Creek watershed, Oregon Coast coho salmon are present over seven miles downstream of Unit 1. In the Middle Fork Coquille River, upstream migration by Oregon Coast coho salmon is blocked by Bradford Falls, near the mouth of Bear Creek (EA, p. 88), over five stream miles downstream from the nearest Camas Blooms Thinning unit (Unit 2) and haul route crossing. No direct effects from harvest activities are expected to Oregon Coast coho salmon, critical habitat for the species, or Essential Fish Habitat (EA, pp. 96-99, 102, 103). Riparian Reserves have been established on all streams located within or adjacent to the units. "No treatment" areas adjacent to the stream channels will filter sediment and provide effective shade (EA, p. 95) for maintenance of water temperatures (60 feet on fish bearing and perennial streams; 35 feet on intermittent streams).

Potential effects on aquatic systems come primarily from road related activities, which can contribute sediment to streams that can affect substrate for spawning (EA, p. 96). All road construction and renovation is seasonally restricted to the dry season. Absent seasonal precipitation, which could mobilize sediments, road construction and renovation will not contribute sediment to streams that could affect spawning substrates (EA, p. 96). Dry-season hauling will neither generate nor deliver sediment to live stream channels (EA, p. 97). Application of project design features and Best Management Practices (EA, pp. 28-31, 97, 101) will effectively eliminate delivery of road derived sediment to live stream channels (EA, p. 98). Some incidental sediment may enter streams, however, resulting in elevated levels of turbidity, but not at levels that exceed typical background levels during winter high flows (EA, p. 101).

Gravel-surfaced haul routes could contribute small amounts of fine sediment to stream channels at stream crossings at a time of year that sediment is being transported downstream by high winter flows (EA, p. 97). Under such circumstances small amounts of sediment could become entrained in substrates in fish-bearing reaches, reducing spawning habitat quality (EA, p. 97). Implementing project design features will reduce the potential for these effects (EA, p. 97). Active haul during the wet season will be suspended during or prior to forecasts of substantial rain or if the haul route becomes adversely impacted (EA, p. 97). Where haul routes are paved, there is no mechanism for sediment to be generated or carried to adjacent stream channels (EA, p. 97).

Water Quality and Quantity

Riparian Reserves have been established on all streams located within or adjacent to the harvest units, and “no treatment” areas have been established adjacent to the stream channels that will filter sediment and provide effective shade for maintenance of water temperatures (EA, pp. 20, 95, 99, 100, Appendix E).

As discussed in the EA (p. 102), openings in a forest canopy that are greater than two tree heights across can affect precipitation, snow melt and peak flows. Variable density thinning will maintain an average canopy cover of at least 50 percent (EA, p. 21 and 22). Variable density thinning in Riparian Reserves will create gaps or openings less than two tree heights which will have little effect on forest hydrology (EA, p. 102). Consequently, the Camas Blooms Thinning project does not present a risk to peak flow enhancement.

As discussed in the EA (p. 92), the average road density, an index of the relative amount of road in the analysis area, is 5.65 miles per square mile. Based on rights-of-way widths, assumed to be 40-feet on average, roads cover approximately 3,616 acres and represent 4.28 percent of the analysis area (EA, p. 92). Increases in peak flow can be found when the roads and other impermeable areas occupy more than 12 percent of a catchment scale watershed (Harr *et al.* 1975) (EA, p. 92). Road decommissioning will reduce road density, which will remain well below the 12 percent threshold for risk of peak flow enhancement identified by Harr *et al.* (1975) (EA, p. 104).

Aquatic Conservation Strategy

Riparian Reserves were established consistent with the 1995 ROD/RMP specification that Riparian Reserve widths will be equal to the height of two site potential trees on each side of fish-bearing streams and one site-potential tree on each side of perennial or intermittent non-fish bearing streams, wetlands greater than an acre, and constructed ponds and reservoirs (EA, Appendix E). The site-potential tree heights for the Middle Fork Coquille River and Olalla Creek-Lookingglass Creek watersheds are 180 feet and 160 feet, respectively (EA, Appendix E). Table 1 shows 27 acres (Units 1, 2, 10, 11 and 13) of variable density thinning will be conducted in Riparian Reserves in the Camas Blooms Thinning project. A principal objective for these treatments is to accelerate the development of late-seral characteristics (EA, p. 50).

Key Watersheds were established “as refugia...for maintaining and recovering habitat for at-risk stocks of anadromous salmonids and resident fish species (ROD/RMP, p. 20).” The watersheds in which the Camas Blooms Thinning project is located are not designated as a Tier 1 or Tier 2 Key Watershed (ROD/RMP, p. 20).

In developing the Camas Blooms Thinning project, the Upper Middle Fork Coquille Watershed Analysis (USDI BLM 1999⁵) and Olalla Creek-Lookingglass Watershed Analysis (USDI BLM 1998⁶) were used to evaluate existing conditions (EA, p. 1), establish desired future conditions, and assist in the formulation of appropriate alternatives (EA, p. 35, 54 and Appendix E).

One of the primary purposes of this project is to accelerate tree growth in Riparian Reserves and speed attainment of late-seral stand conditions with high vegetative diversity and complexity (EA, p. 4 and Appendix E). Variable density thinning is considered to be a watershed restoration project and is therefore consistent with the Watershed Restoration component of the Aquatic Conservation Strategy (EA, Appendix E).

⁵ USDI BLM. 1999. Upper Middle Fork Coquille Watershed Analysis. Roseburg, OR.

⁶ USDI BLM. 1998. Olalla Creek-Lookingglass Creek Watershed Analysis. Roseburg, OR.

Cultural/Historical Resources

The Camas Blooms Thinning project was surveyed for cultural resources, and one historic cabin scatter (35DO1246) was located. The site was determined "Not Eligible" for listing on the National Register of Historic Places. Consequently, the project will have "No Effect" on significant cultural resources. The results of the surveys are documented in CRS# SR1207 and SR1210. The BLM has completed its National Historic Preservation Act Section 106 responsibilities under the 2012 National Programmatic Agreement and the 1998 Oregon Protocol (EA, p. 31 and 32). In compliance with the Act, ground-disturbing activities will be halted if cultural resources are discovered until an Archaeologist can properly evaluate and document the resources.

Noxious Weeds

As discussed in the EA (p. 34), in the absence of this project, weed control measures will still be undertaken. These actions include inventory of infestations, assessment of risk for spread, and application of control measures in areas where other management actions are proposed or planned (EA, p. 34). Control measures may include mowing, hand-pulling, and limited use of approved herbicides (EA, p. 34).

As previously described in this document, equipment washing is required to minimize the risk of introducing soil from outside the project area that may be contaminated with noxious weed seed or other propagative materials. Any new infestations would be treated and periodically monitored to determine further treatment needs. Given that regular weed treatments would continue, there would be no perceptible difference between alternatives in the risk of weed establishment and spread (EA, p. 34).

Survey and Manage

In ruling on Conservation Northwest et al. v. Mark E. Rey et al. on December 12, 2009, Judge Coughenour in the U.S. District Court for Western Washington set aside the 2007 Record of Decision eliminating the Survey and Manage mitigation measures, but deferred issuing a remedy until further proceedings. Judge Coughenour did not issue a remedy or injunction at that time.

The plaintiffs and Federal Agencies entered into settlement negotiations in April 2010, and the Court filed approval of the resulting Settlement Agreement on July 6, 2011. The Defendant-Intervener subsequently appealed the 2011 Settlement Agreement. On April 25, 2013, the Ninth Circuit Court of Appeals invalidated the 2011 Survey and Manage Settlement Agreement and remanded the case back to the District Court. On February 18, 2014, the District Court vacated the 2007 RODs which returned the BLM to the status quo in existence prior to the 2007 RODs, which includes the use of the Pechman exemptions.

The Pechman Order dated October 11, 2006 directs: "Defendants shall not authorize, allow, or permit to continue any logging or other ground-disturbing activities on projects to which the 2004 ROD applied unless such activities are in compliance with the 2001 ROD (as the 2001 ROD was amended or modified as of March 21, 2004), except that this order will not apply to:

- a. Thinning projects in stands younger than 80 years old;
- b. Replacing culverts on roads that are in use and part of the road system, and removing culverts if the road is temporary or to be decommissioned;
- c. Riparian and stream improvement projects where the riparian work is riparian planting, obtaining material for placing in-stream, and road or trail decommissioning; and where the stream improvement work is the placement of large wood, channel and floodplain reconstruction, or removal of channel diversions; and

- d. The portions of project involving hazardous fuel treatments where prescribed fire is applied. Any portion of a hazardous fuel treatment project involving commercial logging will remain subject to the survey and management requirements except for thinning of stands younger than 80 years old under subparagraph (a) of this paragraph.”

Thinning in the Camas Blooms project will be applied to forest stands that are 35 to 74 years old (EA, p. 37 and 38). All new road construction, whether located within or outside of unit boundaries, is sited in stands less than 80 years old. Consequently, this project complies with Pechman exemption “a.”

Carbon Release and Sequestration

In May of 2011, a study on the effects of thinning and biomass utilization on carbon release and storage was published by Oregon State University⁷. The conclusions of the Camas Valley 2011 Harvest Plan EA, with respect to the effects of thinning on carbon storage, were reviewed against findings of the study. Among the study findings were:

- Forest carbon pools always immediately decreased as a result of thinning, with reductions increasing as a function of heavier thinning.
- After thinning, carbon pools remain lower throughout a 50-year period.
- Carbon pool estimates for thinned stands remained lower even after accounting for carbon transferred to wood products.

The findings of the Camas Valley 2011 Harvest Plan EA with respect to thinning are consistent with published findings (Clark et al. 2011⁷) that carbon pools immediately decline following thinning, and remain lower 50 years after thinning (EA, p. 117). This conclusion applies to thinning units in the Camas Blooms Thinning project.

The EA (Appendix F p. 3) also notes that Smith et al. (2006)⁸ calculated that 13.5 percent of gross saw log carbon and 14.8 percent of gross pulpwood carbon will be immediately released into the atmosphere at harvest. This is consistent with the finding that not all carbon from harvested timber is transferred into wood and paper products.

Monitoring

Monitoring of the effects of the Camas Blooms Thinning project will be done in accordance with provisions contained in the 1995 ROD/RMP, Appendix I (p. 84-86, 190-191, 193-199, and 201), focusing on the effects of thinning on: Riparian Reserves, Matrix, Air Quality, Water and Soils, Wildlife Habitat, Fish Habitat, Special Status Species Habitat, and Cultural Resources.

⁷ Clark, J., J. Sessions, O. Krankina, T. Maness. 2011. Impacts of Thinning on Carbon Stores in the PNW: A Plot Level Analysis. College of Forestry, Oregon State University. Corvallis, OR.

⁸ Smith, J.E., L.S. Heath, K.E. Skog, and R.A. Birdsey. 2006. Methods for calculating forest ecosystem and harvested carbon with standard estimates for forest types of the United States. Gen. Tech. Rep. NE-343. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northeastern Research Station. 216 p

Protest Procedures

The decision described in this document is a forest management decision and is subject to protest by the public. In accordance with Forest Management Regulations at 43 CFR Subpart 5003 Administrative Remedies, protests of this decision may be filed with the authorized officer, Steven Lydick within 15 days of the publication of the notice of decision/timber sale advertisement on December 30, 2014, in *The News-Review*, Roseburg, Oregon.

43 CFR § 5003.3 subsection (b) states: "Protests shall be filed with the authorized officer and shall contain a written statement of reasons for protesting the decision." This precludes the acceptance of electronic mail (email) or facsimile (fax) protests. Only written and signed hard copies of protests that are delivered to the Roseburg District Office will be accepted. The protest must clearly and concisely state which portion or element of the decision is being protested and the reasons why the decision is believed to be in error.

43 CFR § 5003.3 subsection (c) states: "Protests received more than 15 days after the publication of the notice of decision or the notice of sale are not timely filed and shall not be considered." Upon timely filing of a protest, the authorized officer shall reconsider the project decision to be implemented in light of the statement of reasons for the protest and other pertinent information available.

The authorized officer shall, at the conclusion of the review, serve the protest decision in writing to the party or parties. Upon denial of protest, the authorized officer may proceed with the implementation of the decision as permitted by regulations at 43 CFR § 5003.3 subsection (f).

If no protest is received by close of business January 14, 2015 (4:30 P.M., Pacific time zone), this decision will become final. If a timely protest is received, the project decision will be reconsidered in light of the statement of reasons for the protest and other pertinent information available, and the South River Field Office will issue a protest decision.



Steven Lydick
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(541) 464-3211

11/20/14

Date

Appendix A
Response to Comments on
Camas Valley 2011 Harvest Plan Environmental Assessment
Relevant to the Camas Blooms Thinning Project

A 30-day period for public review was provided with release of the EA on April 3, 2012. Comments were received from four organizations. Comments specific to this timber sale are noted in italics and addressed below.

The BLM should eliminate any proposed thinning in spotted owl nest patches.

Camas Blooms Thinning units do not enter the nest patch of any occupied northern spotted owl sites. Camas Blooms Thinning Unit 10 is located in the nest patch of northern spotted owl site 0540A which has no nesting history since the site was established in 1992.

This project fails to comply with the 2011 recovery plan, which requires protection of existing owl sites. BLM should prioritize vegetation management to enhance, not degrade habitat.

The recovery plan is an advisory document and does not represent a BLM statutory or regulatory requirement. Nonetheless, the EA (p. 3) clearly explains that treatments in Late-Successional Reserves (LSR) are intended to protect and enhance late-successional and old-growth forest. Variable density thinning in LSR and Riparian Reserves will be beneficial to the creation of late-successional forest conditions.

Modified dispersal habitat will continue to function as dispersal habitat (EA, p. 75) because at least 50 percent canopy cover will be maintained. Variable density thinning treatments will accelerate development of nesting habitat and create gaps large enough to allow growth of grass, forbs, shrubs, and hardwoods that will support prey populations (EA, p. 74 and 77). The environmental effects of project implementation on northern spotted owls are described in the Camas Valley 2011 Harvest Plan EA (pp.74-77, 82-83).

The EA (p. 83) states, “The project and its effects would be consistent with recommendations of the 2011 Northern Spotted Owl Recovery Plan because it would implement disturbance-based management within the range of the northern spotted owl with the goal of maintaining or restoring forest ecosystem structure, composition, and processes so they are sustainable under current and future climate conditions (USDI-FWS 2011, p. III-13).”

The Biological Opinion (USFWS 2013, Tails # 01E0FW00-2013-F-0200, p. 1) found the proposed action will not jeopardize the continued existence of the northern spotted owl and will not adversely modify critical habitat for the northern spotted owl. As indicated on page 119 of the Biological Opinion, there is no incidental take of known northern spotted owls anticipated in association with Camas Blooms Thinning project.

Improving an LSR [Late-Successional Reserves] for spotted owls that are already successfully using the area, and who will be harmed by the thinning, does not make sense. Temporarily harming them could be irreversible.

Northern spotted owl sites 0540B, 1807O and 2047B are known to have recent occupancy (EA, p. 58 Table 3-10). The Camas Blooms Thinning project will not change the habitat viability status of the affected sites because no suitable habitat will be removed or modified.

The Camas Blooms Thinning project includes application of thinning in approximately 49 acres of dispersal habitat outside of the core area but within the home range of one known occupied northern spotted owl site (0540B). Modified dispersal habitat will continue to function as dispersal habitat (EA, p. 75) because at least 50 percent canopy cover will be maintained (EA, pp. 21 and 22). Thinning will also occur in capable habitat within two known occupied northern spotted owl home ranges (1807O, 2047B). Thinning will modify approximately 12 acres of capable habitat in the core areas of site 1807O, and approximately 32 acres of capable habitat outside of core areas but within the home ranges of sites 1807O and 2047B. In the long-term, treatments will accelerate development of nesting habitat and create gaps large enough to allow growth of grass, forbs, shrubs, and hardwoods that will support prey populations (EA, p. 74 and 77).

Northern spotted owls are expected to continue to use thinned areas after operations are complete because post-treatment canopy cover will remain above 40 percent and the quadratic mean diameter of trees in the stands will exceed 11 inches, figures widely used as thresholds for dispersal function (EA, p. 21-22, 75). It is acknowledged, however, that northern spotted owls will likely utilize the thinned stands less than unthinned stands until canopy closure returns to pre-thinning levels in a projected 10 to 20 years (EA, p. 75).

Thinning would help develop more nesting, roosting and foraging habitat (NRF) in these deficient home ranges (EA, pp. 74, 75) whereas NRF conditions would not develop as quickly under the No Action Alternative. Figures 3-5 through 3-14 of the EA (pp. 44-49) show anticipated habitat conditions in stands where thinning is applied. Contrasting thinned stand conditions with untreated stand conditions, as depicted in Figures 3-1 through 3-4 (EA, pp. 39, 41 and 42), one can see the benefits of thinning. Most notably, variable density thinning would promote tree regeneration, shrub growth and development of multistoried stands; allow regeneration of conifers and hardwood species; allow growth of larger trees with full crowns and large limbs; aid in differentiation of tree sizes and crown characteristics associated with mature and late-successional forest; and generate larger snags and larger down wood (EA, pp. 46, 47 and 49). As discussed above, the U.S. Fish and Wildlife Service indicates that no incidental taking of known northern spotted owls is anticipated.

The EA failed [sic] disclose not only where owl activity centers are, but also the actual foraging locations.

The known northern spotted owl sites relative to the harvest units are listed in Appendix C, Table C-3 of the EA. Habitat conditions of those sites are summarized in Table 3-9 of the EA (p. 57) and occupancy of the northern spotted owl sites is summarized in Table 3-10 of the EA (p. 58). A map of northern spotted owl activity centers is in the project record and available for review. Foraging occurs in NRF and dispersal habitats. It would be impractical to identify actual foraging locations given the large size of home ranges, and because the presence of prey at a given site and time would be impossible to predict given the various species of prey, the mobility of prey, and changes in prey distribution given seasonal availability of cover and forage.

The BLM failed to consider which new roads could be eliminated by doing a non-commercial treatment instead of putting logs on a log truck, especially in the riparian or late successional reserves.

Road construction is a cost that must be borne by any given timber sale, and a longer term cost to the BLM for maintenance. Consequently, the BLM does not seek to build any more than the absolute minimum of roads necessary for environmentally responsible timber harvest and forest management. As described on page 1 of the EA, some stands were eliminated as candidates for thinning because they lacked suitable access and did not have sufficient volume to off-set road construction costs. Doing non-commercial treatments does not meet the purpose and need of the proposal (EA, p. 2-4).

Even so-called temporary roads are damaging. For instance, right-of-ways will cut down trees not included in the EA's described prescriptions, and could cut down some of the largest trees in a unit.

Again, for reasons previously described and given that road construction diminishes the forest land base, roads are only constructed where necessary to provide necessary access for forest management actions. Roads are located in areas that are stable, where the environmental consequences are minimized, and where the construction and long-term maintenance costs are minimized. Roads are not located with an objective of removal of the largest trees in a stand. As noted in the description of the alternatives (p. 19), stand exam data reported the presence of older remnant trees, primarily Douglas-fir, in some of the proposed units, at densities of generally less than one per acre. These trees are not the focus of thinning and would be retained to the greatest degree practicable with cutting limited to clearing road rights-of-way and landings, and providing for operational safety.

The EA (p. 92) states the assumption that the clearing limits of road rights-of-way average 40 feet, so the Camas Blooms Thinning project will clear up to 10 segments (approximately 2 acres) for road rights-of-way, including three optional spur roads. The silvicultural prescription for roads is not described because it is obviously a clearing prescription.

Camas Blooms Thinning will require approximately 0.75 miles of road construction. All but about 0.18 miles of road construction is within harvest units. All of the road construction in the Camas Blooms Thinning project is in stands less than 80 years old.

The EA failed to document under the no-action alternative which of the riparian reserves would attain desired vegetation characteristics on their own or with just a non-commercial treatment.

There is no need to disprove the negative. As described on page 1 the EA, units were dropped from consideration where stand development is on the desired trajectory for the given land use allocation and would not benefit from treatment. The same holds true for portions of units, which would include Riparian Reserves, not carried forward for treatment.

Removing as many trees as the BLM is removing is also not needed to attain ACS objectives, leaving as few as 60 trees per acre in the reserves. Leaving more green trees would allow more snags in the future.

Table 3-6 (EA, p. 50) indicates Riparian Reserve reference Unit 29-8-9A would have 80 trees per acre (TPA) post treatment, 75 TPA 20 years later, and 69 TPA after 50 years. This gradual reduction in the number of trees over time is a consequence of mortality suppression caused by inter-tree competition, not the silvicultural prescription.

Snag habitat was addressed throughout the EA (pp. 3, 4, 19, 21, 22, 28, 29, 46, 49, 69, 70, 72, 73, 76, 79, 84, 85, 104, 115, 116, and Appendix E). Appendix E describes consistency of the proposed action with objectives of the Aquatic Conservation Strategy which does not establish any numerical objectives or absolutes for snag density within Riparian Reserves. All trees in the "no treatment" area within Riparian Reserves will continue to be available for future snag development.

Sub-Alternative B will release 87 tonnes more carbon into the atmosphere than doing nothing. It will also release more tonnes of carbon than sub-alternative A, but we don't know how much more, because sub-alternative A was not included in Table 3-16. For sub-alternative B, with a large regeneration harvest, the carbon emitted will be reabsorbed within 12 years, also a suspect calculation with fuzzy, non peer-reviewed documentation.

There is nothing in the EA that describes the release of 87 tonnes of carbon under Alternative Two, Sub-Alternative B compared to no action. The EA (p. 117) clearly states that thinning under Sub-Alternative A would result in the direct release of between 5,325 and 7,100 tonnes of carbon, on the order of three to four tonnes per acre. Under Sub-Alternative B, thinning of 1,575 acres would result in direct release of between 5,037 and 6,453 tonnes (EA, p. 118), a figure still approximating three to four tonnes per acre. When the 52 tonnes per acre of carbon directly released by the variable retention harvest are added to this, direct carbon release under Sub-Alternative B is 55 to 56 tonnes per acre.

The methodology used in the carbon calculations for the Camas Valley 2011 Harvest Plan EA is the same that has been used by the BLM for the past four or five years. The assumptions and analytical methodology are all documented in Appendix F of the EA.

The EA failed to consider that the BLM manages an especially valuable carbon resource. Because private forestlands cannot be forced to help protect the earth's climate, public forests in the coast range are even more important for sequestering carbon.

The EA did not fail to consider the value of forests in carbon sequestration. As noted in the EA (p. 116), land use, land use change and forestry nationally resulted in a net sequestration of 940 million tonnes of CO₂ in 2008 (EPA, 2010; Table 2-3). Forest management in the U.S., alone, resulted in net CO₂ sequestration of 792 million tonnes (EPA, 2010; Table 2-9), an offset of approximately 11 percent of total U.S. CO₂ emissions. The BLM is not mandated by law or through management direction from the RMP to manage these forested lands for carbon sequestration.

Northwest Forest Plan standards for dead wood are based on an outdated "potential population" methodology which greatly underestimates the amount of snags and down logs needed to meet the needs of a variety of species associated with dead wood. The agencies should follow NEPA procedures to amend their management plans, consider alternatives, and adopt new standards that assure objectives are met over time and across the landscape.

The Northwest Forest Plan and the BLM RMPs tied to it did not establish standards for dead wood relative to "potential populations." The Roseburg RMP (p. 64) specified that, when conducting regeneration harvest, snags would be reserved in numbers, determined in the PRMP/EIS to be 1.2 per acre, sufficient to provide for 40 percent of optimal cavity nester populations.

This project is not regeneration harvest, so the standards incorrectly described in the comment are not applicable to the project at hand. Objectives for coarse wood and snags in Late-Successional Reserves were established in Late-Successional Reserve Assessments and are discussed in the EA (p. 22). The EA further describes how the BLM anticipates meeting these objectives.

With respect to amendments to the Resource Management Plans for Western Oregon, the effort is currently underway and will consider the most recent science regarding the appropriate distribution of snags and down wood for proper ecological functions.

When conducting commercial thinning projects take the opportunity to implement other critical aspects of watershed restoration especially pre-commercial thinning, restoring fish passage, reducing the impacts of the road system, and treating invasive weeds.

This would require augmentation of funds which is not permissible. The Roseburg District addresses other management programs such as pre-commercial thinning, fish passage restoration, and invasive weed treatments in separate environmental analyses available at <http://www.blm.gov/or/districts/roseburg/plans/index.php>.

Use projects as an opportunity to learn by conducting monitoring and research on the effects of thinning.

Monitoring will be conducted in accordance with provisions contained in the ROD/RMP, Appendix I (pp. 84-86, 190-199). Monitoring efforts will focus on consideration of the following resources; Riparian Reserves, Late-Successional Reserves, Matrix, Air Quality, Water and Soils, Wildlife Habitat, Fish Habitat, and Special Status Species Habitat (EA, p. 120). Conducting research is beyond the scope of this analysis.

Consider the effects of thinning on adjacent mature & old-growth habitat which may provide habitat for spotted owls, marbled murrelets, and other species.

The effects of thinning on habitat for species associated with mature and older forests were analyzed in the EA (pp. 74-86). The EA (p. 20) also considered effects on adjacent stands, where such potential effects were noted to exist, and proposed to apply a feathered thinning treatment in these areas of adjacency.

Focus on treating the youngest stands that are most "plastic" and amenable to restoration.

The pool of candidate harvest stands that would be most amenable and responsive to thinning treatments was established and refined based on stand age, stand development, site conditions, and logistical considerations (EA p. 1). The need for treatment was discussed on pages 3 and 4 of the EA. Camas Blooms Thinning treats stands that are between 35 and 74 years of age.

Generally retain all the largest trees, then "thin from below." Some of the smaller trees in all age-size classes should be represented in untreated "skips" embedded within the stand.

This is exactly what the BLM has proposed to do. The marking prescriptions are described in Chapter Two of the EA (pp. 19-23, 28-29), consisting of thinning from below in the suppressed and intermediate canopy classes. Harvest in all land use allocations would retain larger and older remnant trees (EA, p. 19) and to the greatest degree practicable would reserve the co-dominant and dominant trees within stands, as constrained by specific density and spacing objectives (EA, p. 20). Harvest in Riparian Reserves, Connectivity/Diversity Blocks and Late-Successional Reserves include "skips" and "gaps" (EA p. 12, 21 and 22).

Retain and protect under-represented conifer and non-conifer trees. Protect shrubs as much as possible, especially deciduous and tall shrubs, and those that produce berries and mast.

Harvest in all land use allocations would retain where available western hemlock, western redcedar, Port-Orford-cedar, and incense cedar (EA, p. 11, 20). Hardwood trees would be retained (EA, pp. 21, 22, and 28). It would be impossible to protect deciduous shrubs while at the same time conducting thinning. As described in the EA (p. 37), ground cover and understory vegetation, which would include deciduous shrubs, is patchy and sparse as a consequence of the closed canopy conditions. Thinning will promote conditions that are favorable to the establishment and maintenance of the understory.

Strive for a variable density outcome. Ideally variability should be implemented at numerous scales.

This is exactly what the BLM has proposed. Prescriptions for variable density treatments, including gaps and skips are described in the EA (pp. 19-22). The Camas Blooms Thinning project includes a variable density thinning harvest prescription in C/D Blocks, LSR and RR. Increased structural heterogeneity and introduction of fine scale variation into treated stands would be achieved by varying the spacing of reserve trees and creating gaps and skips (EA, p. 21).

Retain abundant snags and coarse wood both distributed and in clumps. Retain wildlife trees such as hollows, forked tops, broken tops, leaning trees, etc.

Again, the BLM proposal is consistent with this suggested approach. Snags would be retained where operationally feasible and safe. Retention of snags and coarse wood are discussed in the EA (pp. 3, 4, 8, 19, 21, 22, 28, 29). Selection of trees for retention in Riparian Reserves and Late-Successional Reserves would include trees displaying defects and physical characteristics that may provide wildlife habitat (EA, p. 22).

Green tree retention, including generous unthinned “skips” where density dependent mortality will play out, is necessary. Thin heavy enough to stimulate development of understory vegetation, but don’t thin too heavy.

The implementation of untreated skips is described in the EA (pp. 12, 21 and 22). Processes of natural mortality will continue to play out in these skips. The marking prescriptions are in Chapter 2 of the EA (pp. 19-23). Relative density of retained trees would range from 25 to 30 in treated Riparian Reserves and Connectivity Diversity Blocks (EA p. 21); 35 to 40 in GFMA (EA, p. 21); and 25 or more in Late-Successional Reserves (EA, p. 22). Over 50 percent green tree canopy cover would be retained in thinned units (EA, pp. 21, 22).

If using whole tree yarding or yarding with tops attached to control fuels, the agency should top a portion of the trees and leave the greens in the forest in order to retain structure and nutrients on site.

As a rule, whole-tree yarding is seldom used. Where it is used as a means to reduce activity fuels levels in units it would be counter-productive to top the trees before yarding as these are the fuels that we seek to reduce. All the same, many branches will break off and remain on-site when trees are felled and yarded. There were no issues or concerns associated with soil nutrients that were identified by the soil scientist in connection with limited whole tree yarding.

Avoid impacts to raptor nests and enhance habitat for diverse prey species. Train marking crews and cutting crews to look up and avoid cutting trees with nests of any sort and trees with defects.

Any trees containing raptor nests would be protected (RMP, p. 39). Gaps and skips would be established based on habitat features such as hardwood trees, snags, large down wood, and trees possessing uncommon or unique structural characteristics (EA, p. 22). Retained trees will include trees displaying defects and physical characteristics that may provide wildlife habitat (EA, p. 22).

Take proactive steps to avoid the spread of weeds.

As described in the EA (p. 34), actions taken to contain, control and eradicate existing infestations are implemented under the *Roseburg District Integrated Weed Control Plan* (USDI/ BLM 1995b). These actions include inventory of infestations, assessment of risk for spread, and application of control measures in areas where other management actions are proposed or planned. Control measures may include release mowing, hand-pulling, and limited use of approved herbicides.

BLM herbicide application treats individual plants. Application methods are limited to truck-mounted sprayers, backpack and hand sprayers, and wick wipers. Time and location of application is also restricted based upon forecast weather conditions, proximity to live water and riparian areas, and proximity to residences or other places of human occupation.

As further described (EA, p. 27) preventative measures would be implemented that focus on minimizing the risk of introducing new weed infestations or spreading existing ones, and would include:

- Steam cleaning or pressure washing equipment used in logging and road construction to remove soil and materials that could transport weed seed or root fragments.
- Scheduling work in uninfested areas prior to work in infested areas.
- Seeding and mulching disturbed areas with native grass seed; or revegetating with native plant species where natural regeneration is unlikely to prevent weed establishment.

Buffer streams from the effects of heavy equipment and loss of bank trees and trees that shade streams.

Riparian Reserves and riparian management areas would be one site-potential tree height (EA, p. 20). “No-treatment” areas would be established within Riparian Reserves and riparian management areas based upon the nature of individual streams (EA, p. 20). The marking prescription in Riparian Reserves includes retention of snags and large down wood including all decay class 3, 4, and 5 large woody debris (EA, p. 21). Relative density of green trees would range from 25 to 30 and average minimum canopy cover would be 50 percent in the treated portion of Riparian Reserves (EA, p. 21).



Camas Blooms Units and Roads

R09W

Sheet 1 of 8

R08W

T28S

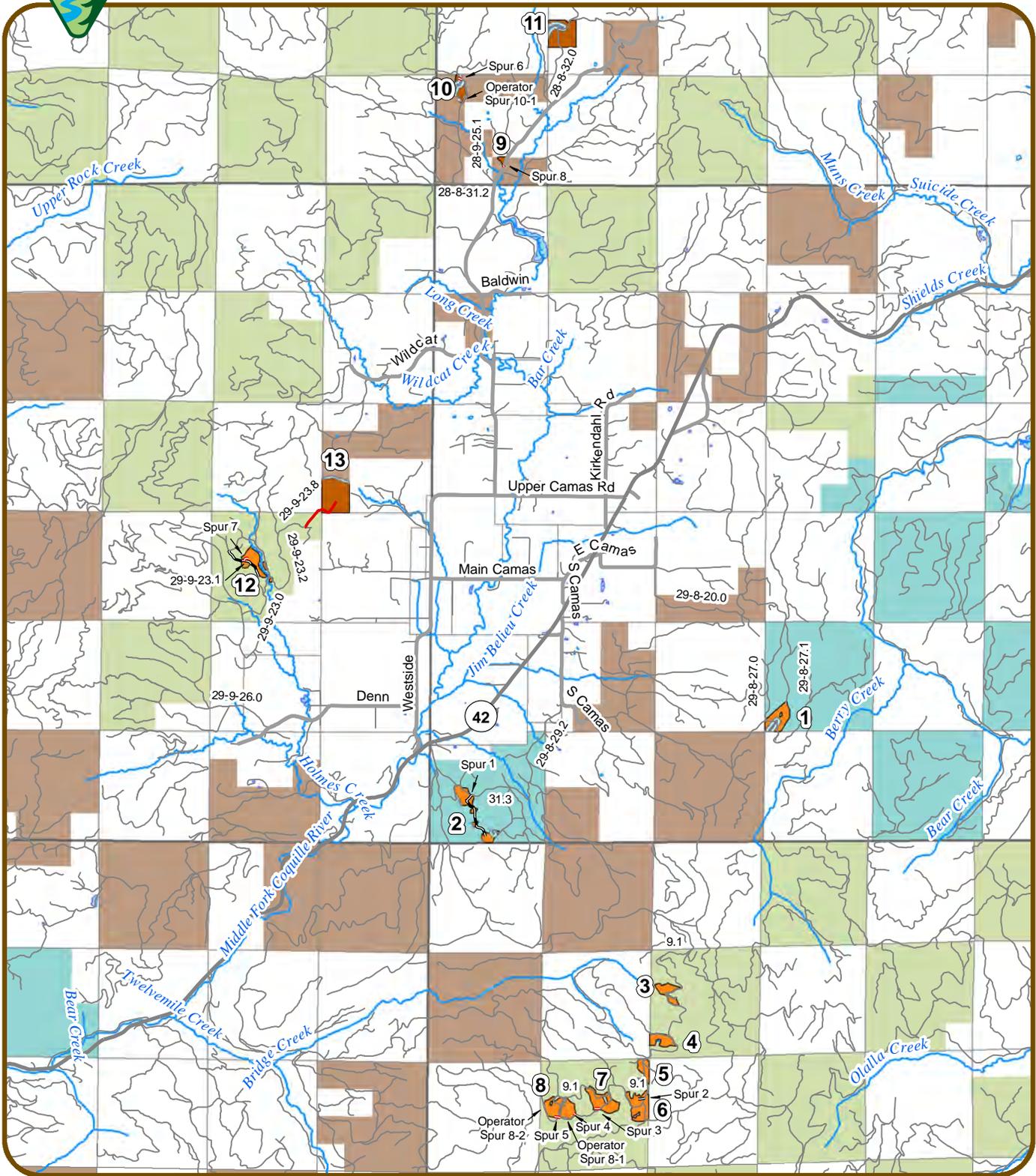
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Legend

R09W

R08W

- Road to Construct/Decommission
- Road to Construct/Maintain
- State Highway
- County Roads
- Road to Improve/Decommission
- Optional Spur/Decommission
- Existing Road
- Major Stream
- No Harvest Stream Buffer
- Riparian Reserve Treatment Area
- Wet Area
- Uniform Commercial Thinning
- Variable Density Thinning
- Connectivity
- General Forest Management Area
- Late Successional Reserve



Date: 11/17/2014



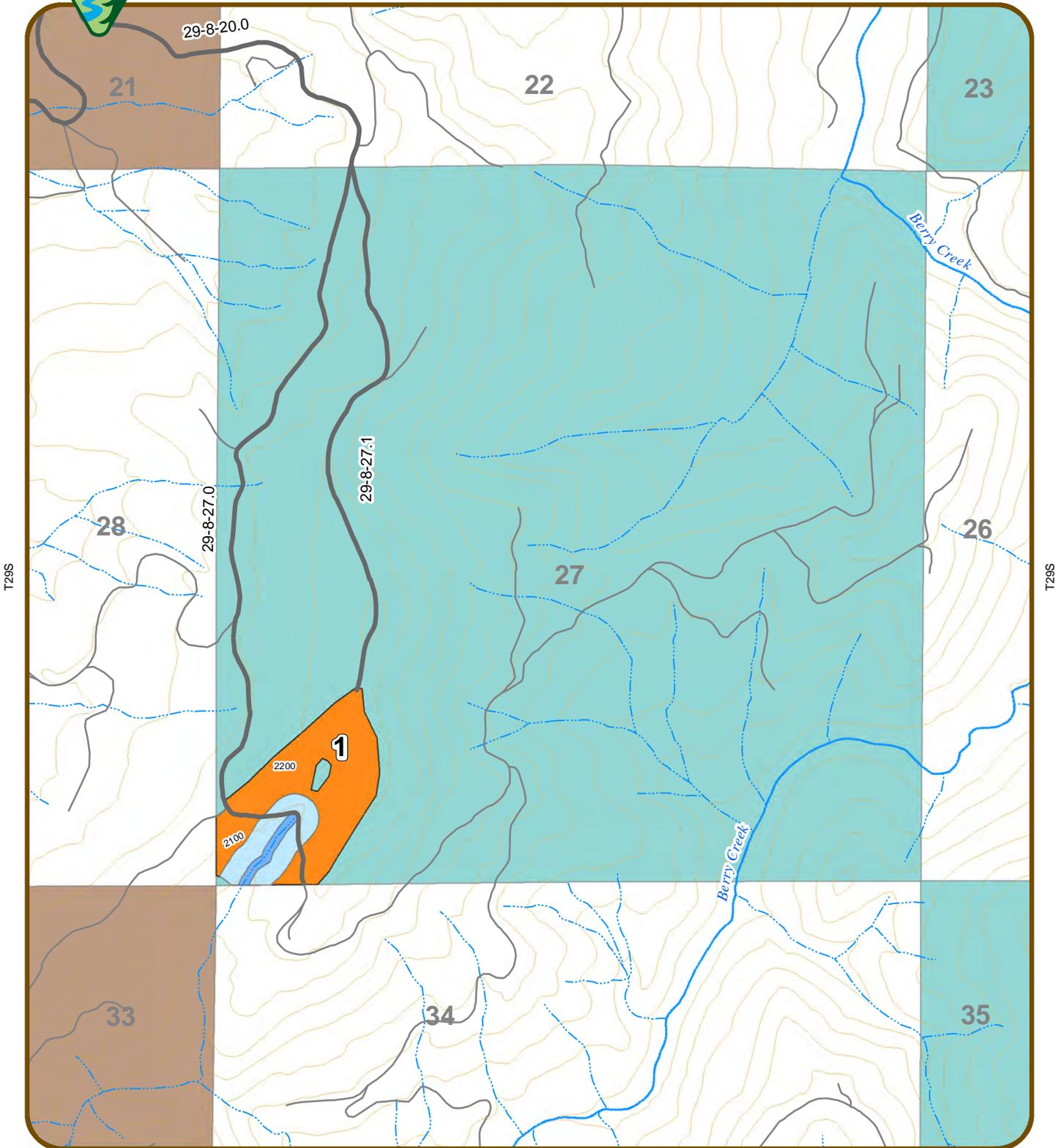
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Camas Blooms Units and Roads

R08W

Sheet 2 of 8



Legend

- Haul Route
- Existing Road
- Streams
- Major Stream
- No Harvest Stream Buffer
- Riparian Reserve Treatment Area
- Variable Density Thinning
- Connectivity
- General Forest Management Area



Date: 11/17/2014

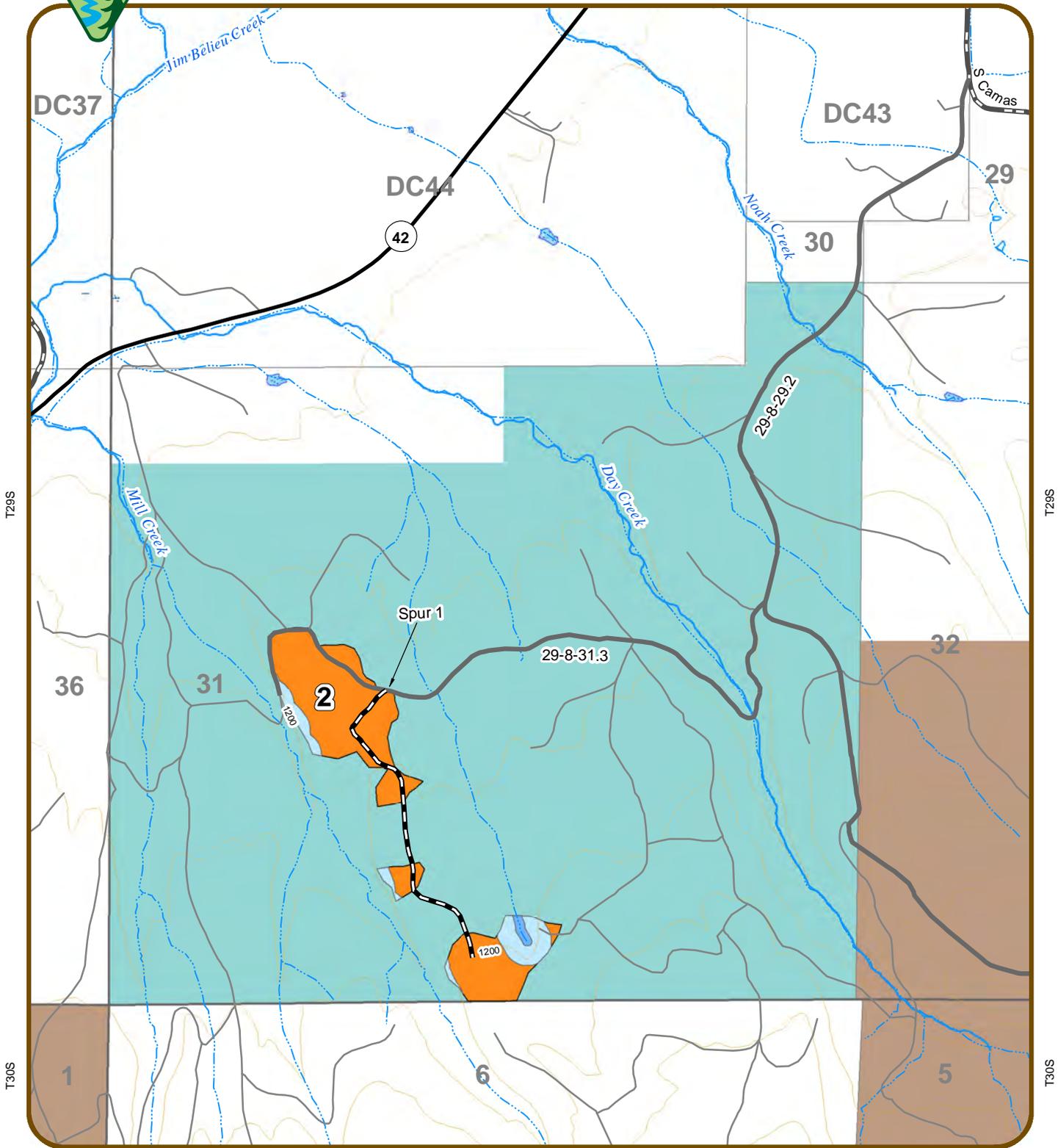


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Camas Blooms Units and Roads

R08W Sheet 3 of 8



Legend

- State Highway
- County Roads
- Road to Improve/Decommission
- Haul Route
- Existing Road
- Streams
- Major Stream
- 100' Contours
- No Harvest Stream Buffer
- Riparian Reserve Treatment Area
- Variable Density Thinning
- Connectivity
- General Forest Management Area



Date: 11/17/2014



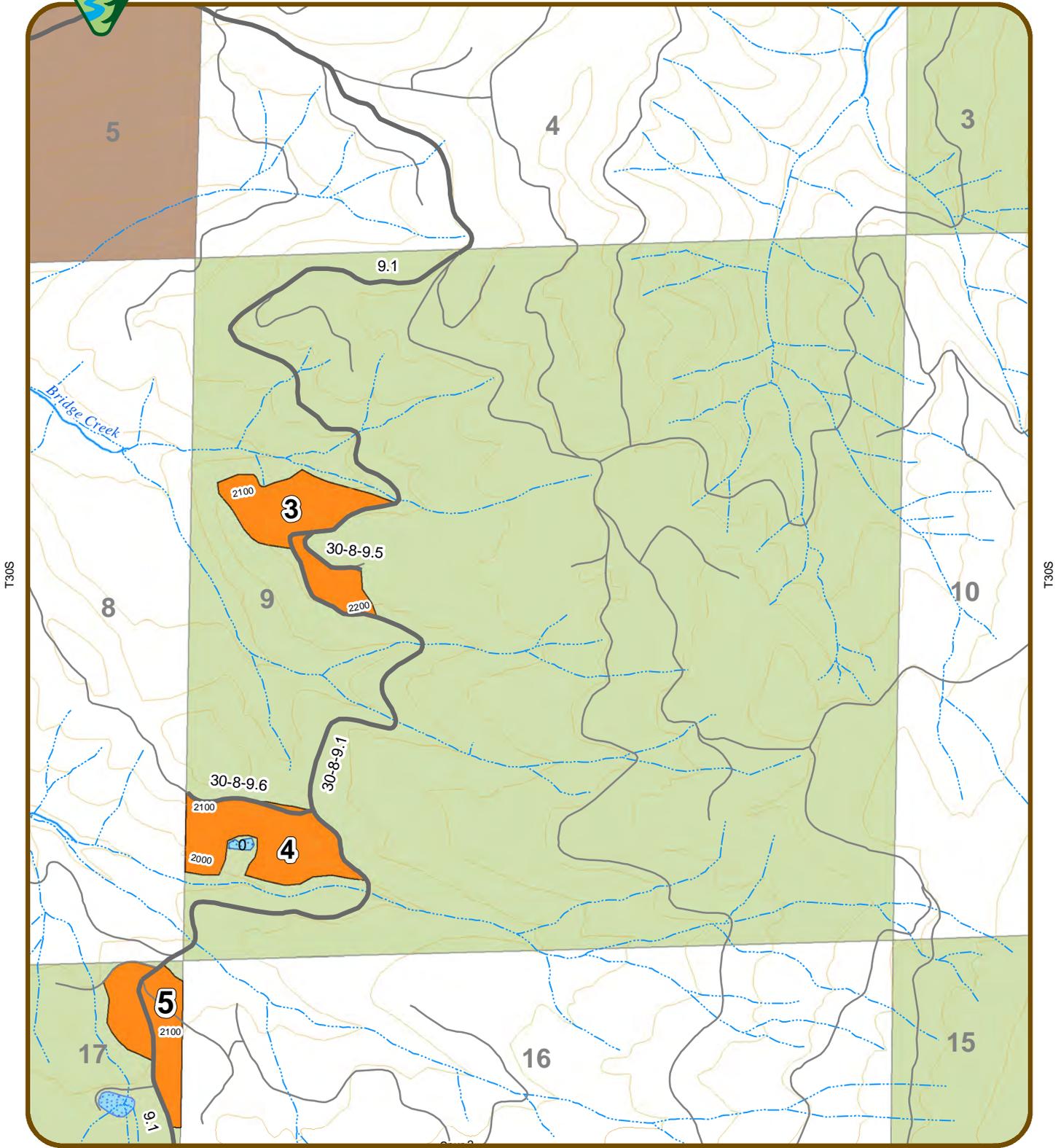
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Camas Blooms Units and Roads

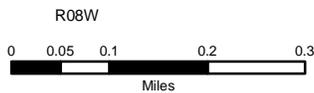
R08W

Sheet 4 of 8



Legend

- Haul Route
- Existing Road
- Streams
- Major Stream
- Wet Area
- Variable Density Thinning
- General Forest Management Area
- Late Successional Reserve



Date: 11/17/2014



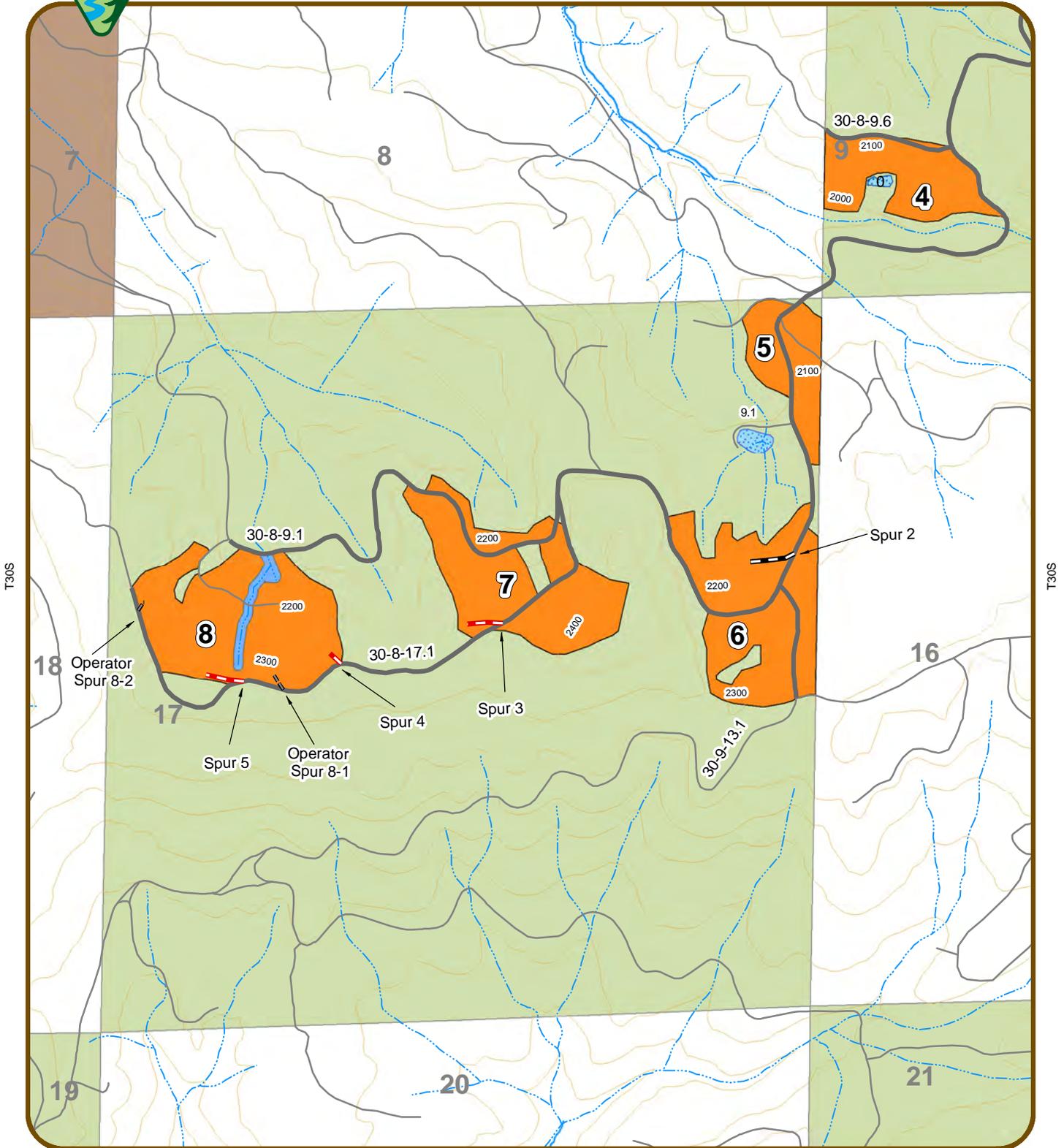
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Camas Blooms Units and Roads

R08W

Sheet 5 of 8



Legend

- Road to Construct/Decommission
- Road to Improve/Decommission
- Optional Operator Spur
- Haul Route
- Existing Road
- Streams
- Major Stream
- No Harvest Stream Buffer
- Wet Area
- Variable Density Thinning
- General Forest Management Area
- Late Successional Reserve

R08W



Date: 11/17/2014

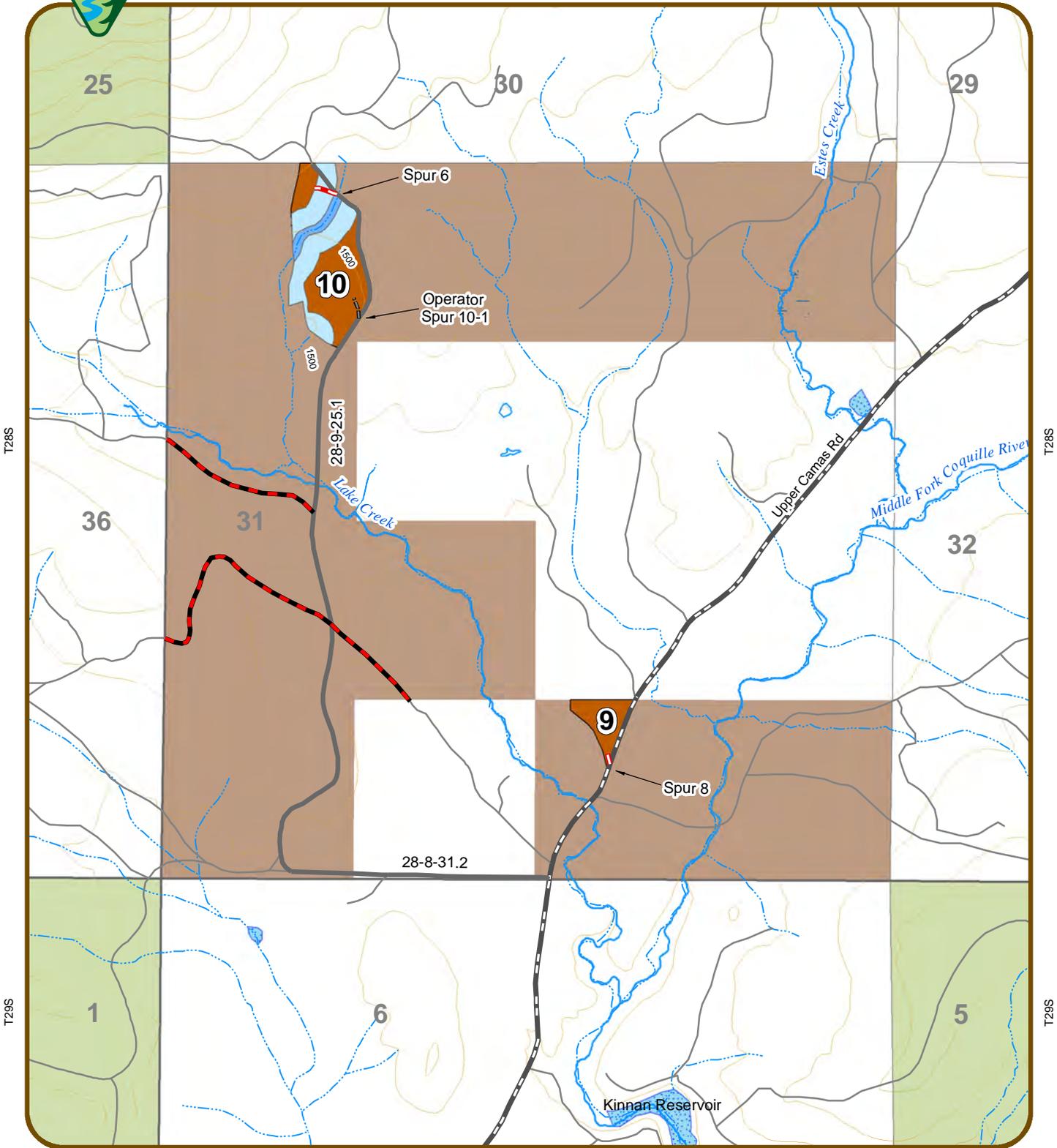


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Camas Blooms Units and Roads

R08W Sheet 6 of 8



Legend

- Road to Construct/Decommission
- County Roads
- Closed Road-Do Not Use
- Optional Operator Spur
- Haul Route
- Existing Road
- Streams
- Major Stream
- No Harvest Stream Buffer
- Riparian Reserve Treatment Area
- Uniform Commercial Thinning
- Variable Density Thinning
- General Forest Management Area
- Late Successional Reserve



Date: 11/17/2014



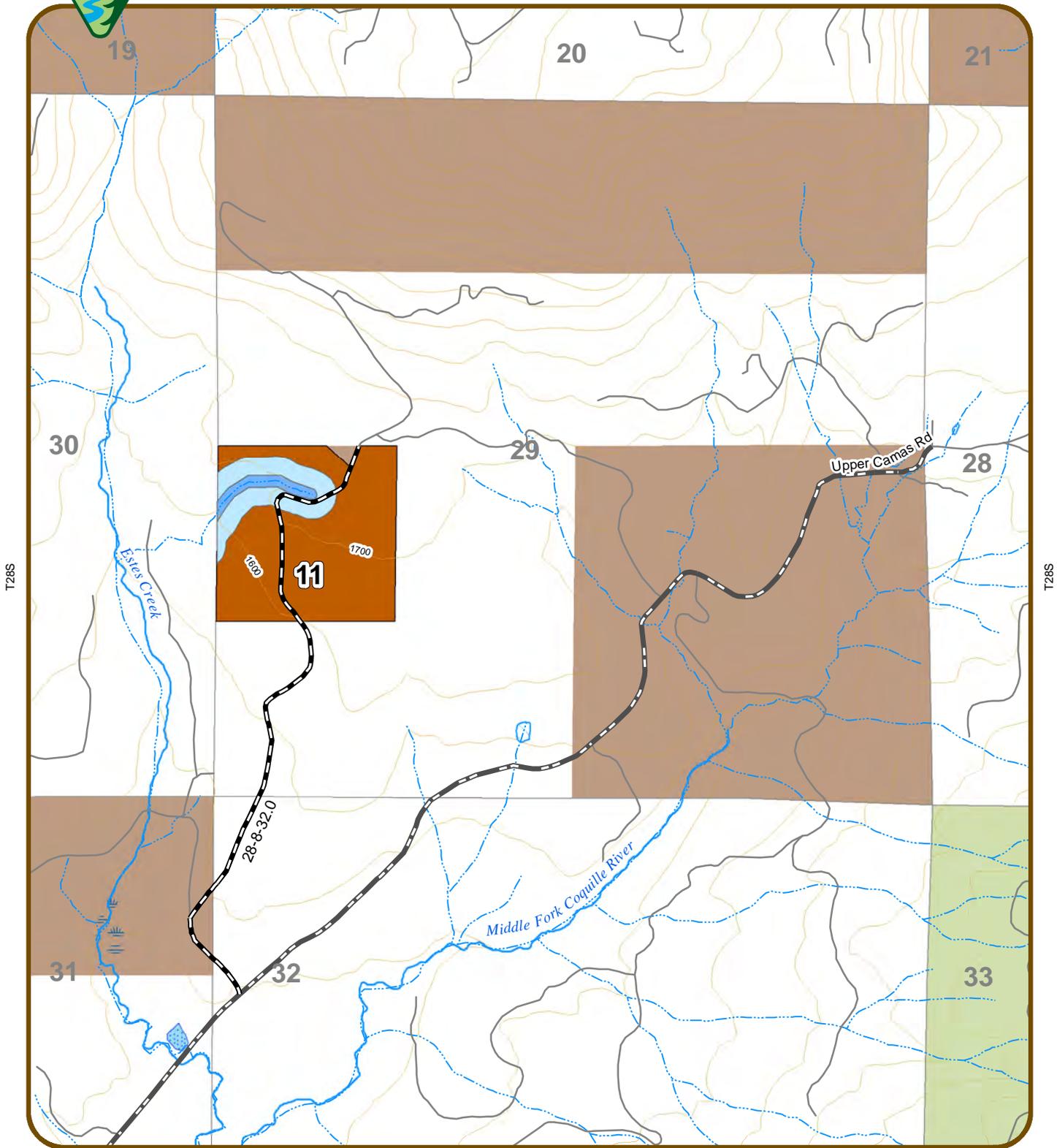
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Camas Blooms Units and Roads

R08W

Sheet 7 of 8



Legend

- Road to Improve/Decommission
- County Roads
- Existing Road
- Streams
- Major Stream
- No Harvest Stream Buffer
- Riparian Reserve Treatment Area
- Uniform Commercial Thinning
- Variable Density Thinning
- General Forest Management Area
- Late Successional Reserve

R08W



Date: 11/17/2014



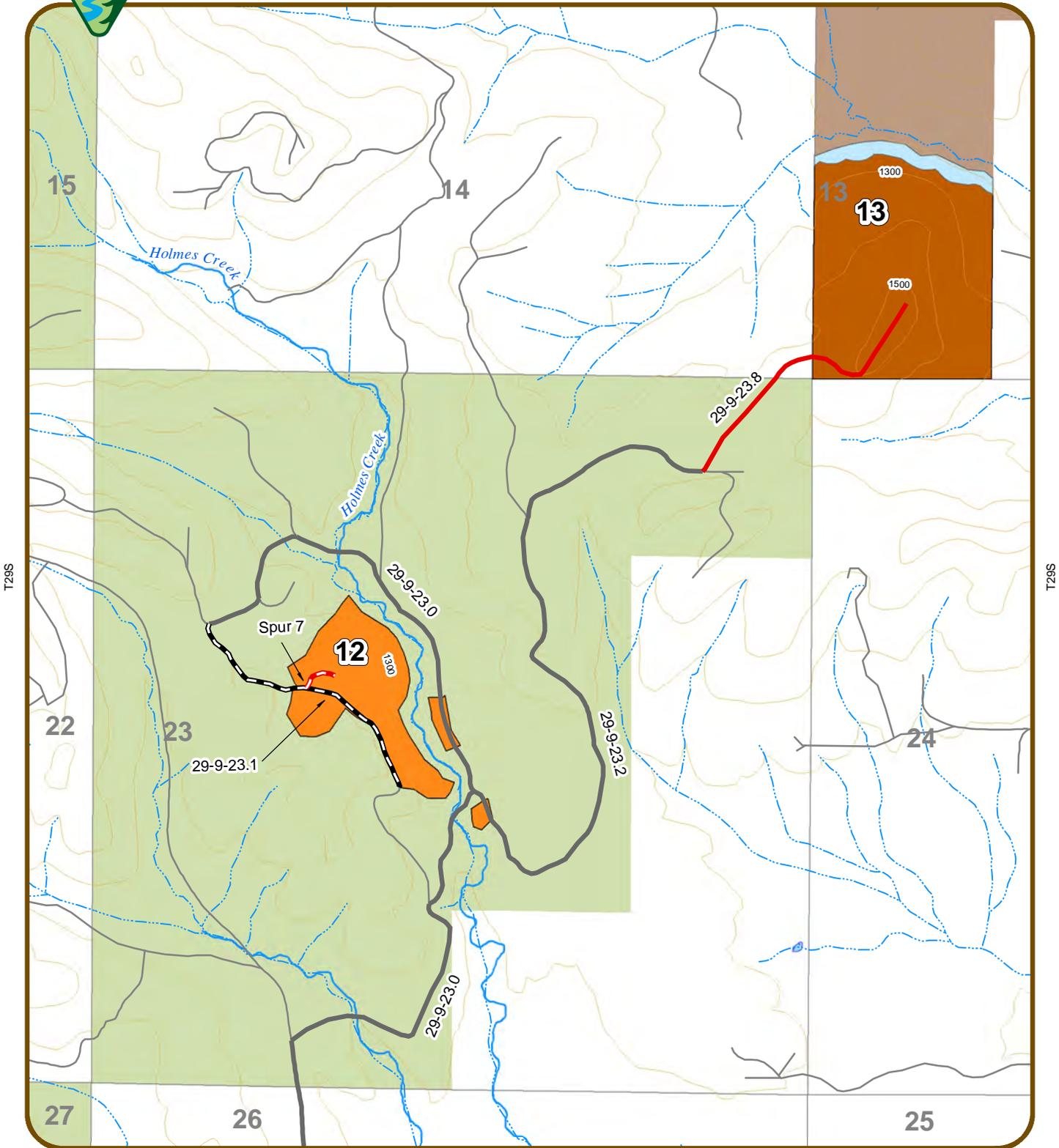
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Camas Blooms Units and Roads

R09W

Sheet 8 of 8



Legend

- Road to Construct/Decommission
- Road to Construct/Maintain
- Road to Improve/Decommission
- Haul Route
- Existing Road
- Streams
- Major Stream
- Riparian Reserve Treatment Area
- Uniform Commercial Thinning
- Variable Density Thinning
- General Forest Management Area
- Late Successional Reserve

R09W



Date: 11/17/2014

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