Implementation Description

2019 Blue Mountain Ranger District Range Fence Project

Table 1. Project information

Category 9: Livestock fencing, stream crossings, and off-channel livestock watering facilities	Lead Preparer: Nick Stiner
Applicant: Blue Mountain Range	NEPA Reference: DN For Aquatic Restoration EA website*
Location: T9S, 32E, sec. 34; T9S, R33E, sec. 19, 20, 29, and 30; T10S, R32E, sec. 2, 3, and 11; T11S, R34E, sec. 11 and 12; T15S, R28E, sec. 20; and T15S, R29E, sec. 19 and 20 USGS Quad: Aldrich Mountain South, Bates, Big Weasel Springs, Sharp Ridge, Susanville	Lease/ /Case File/ Serial #: N/A (Reference #): N/A
Begin Date: 2/20/19	Due Date: 3/15/19

*Please see http://www.fs.usda.gov/detailfull/malheur/landmanagement/?cid=STELPRD3817723&width=full

Purpose and Need

The purpose and need for this project is to decrease the likelihood of retarding the recovery of Middle Columbia River steelhead critical habitat in the Bird, Tailings, and Unit C pastures of the North Middle Fork Allotment, Pizer pasture of the Lower Middle Fork Allotment, and Dans Creek and Blue Ridge pastures of the Murderers Creek Allotment.

Bear Creek, Big Creek, Caribou Creek, Dans Creek, Deadwood Creek, Middle Fork John Day River, Orange Creek, and South Fork Murderers Creek are all within category 1 riparian habitat conservation areas (fish-bearing streams) as designated by PACFISH/INFISH and are listed as designated critical habitat for Middle Columbia River steelhead by the National Marine Fisheries Service. Big Creek and Deadwood Creek are also listed as designated critical habitat for threatened Columbia River bull trout, with the Middle Fork John Day River designated as a migration corridor containing overwintering habitat. Juvenile chinook also rear in Big Creek during the low flow summer months. Big Creek, Dans Creek, Deadwood Creek, Middle Fork John Day River, and South Fork Murderers Creek contain sections of most sensitive riparian area (MSRA). In particular, Deadwood Creek and Big Creek have had aquatic restoration completed on them within the proposed fence area in 2016 and 2018. The section of the Middle Fork John Day River within the North Middle Fork Allotment Tailings pasture is reclaimed dredge mine tailings which were flattened. The tributary Caribou Creek contains Middle Columbia River steelhead and also enters the Middle Fork John Day River in this pasture. This area is proposed for aquatic restoration within the next 5 years as Caribou Creek currently goes subsurface within the flattened tailings with the exception of spring run off. Historical use of these riparian areas has caused them to be in a degraded state that is more susceptible to the impacts from livestock. There is a need to place additional emphasis on these areas to help ensure their quick recovery back to a healthy system.

The desired condition is to minimize the potential for adverse impacts from livestock to these sections of stream. By constructing fence enclosures around some sections of most sensitive riparian area and/or critical habitat, we will more effectively be able to decrease the likelihood of retarding the recovery of Middle Columbia River steelhead and Columbia River bull trout critical habitat and facilitate the recovery

of those areas which have had aquatic restoration completed on them. These fences will ensure willow communities will achieve stream shading goals and maintain cool water temperatures.

Land Use Plan Conformance

The project falls under Management Area 3B "Anadromous Riparian Areas" of the Malheur National Forest Land and Resource Management Plan (Malheur Forest Plan). The goal of Management Area 3B is to "Manage riparian areas to protect and enhance their value for wildlife, anadromous fish habitat and water quality… Design and conduct management in all riparian areas to maintain or improve water quality and beneficial uses" (USDA Forest Service 1990). This project is consistent with the Malheur Forest Plan forest-wide standard 88: "Design and implement structural and nonstructural range improvements to maintain productivity and range condition in addition to benefiting both wildlife and livestock. Locate range structural and nonstructural improvements to encourage livestock movement away from riparian areas" (USDA Forest Service 1990, page IV-34).

Project areas on Bear Creek, Big Creek, Caribou Creek, Dans Creek, Deadwood Creek, Middle Fork John Day River, Orange Creek, and South Fork Murderers Creek are within category 1 riparian habitat conservation areas (fish-bearing stream) as designated by PACFISH/INFISH, and contain designated critical habitat for Middle Columbia River steelhead and Columbia River bull trout. The project is consistent with standard GM-1 by modifying accessibility of riparian areas to livestock in areas that are likely to adversely affect listed anadromous fish.

Proposed Action and Implementation Plan

The Bird, Tailings, and Unit C pastures in the North Middle Fork Allotment and Pizer pasture in the Lower Middle Fork Allotment are located in the northeast corner of the Blue Mountain Ranger District. The Dans Creek and Blue Ridge pastures in the Murderers Creek Allotment are located in the southwest corner of the Blue Mountain Ranger District. Project activities are located in the Big Creek-Middle Fork John Day River (HUC 1707020303), Camp Creek-Middle Fork John Day River (HUC 1707020302), and Murderers Creek (HUC 1707020103) watersheds.

Fence design and construction will follow the Montana fence specifications from "A Landowner's Guide to Wildlife Friendly Fences." Second Edition. Private Land Technical Assistance Program, Montana Fish, Wildlife & Parks. Fence placement will be sited on the ground outside of the channel migration zone.

Table 2. Fence construction details by range allotment and pasture

Allotment	Pasture	Stream	NEPA name	Miles (approx)	Notes	Wildife Design Specs
North Middle Fork	Bird	Bear Creek	Bear1	0.8	This fence would be a barb wire fence and tie into existing fence lines along the Middle Fork John Day River and on the adjacent side of Bear Creek. Water gaps would be created.	Fence will be constructed on middle of old roadbed per discussion with range (nick). Construction on edge of road will be avoided when location will cause slope effect to fence height. Wildlife friendly wire spacing will be used on all sections of newly constructed fence. Water gap would be constructed on north side of river and allow for passage according to Nick's description. A site visit by wildlife, range and hydro or fish is necessary before construction to identify site specific modifications.

Allotment	Pasture	Stream	NEPA name	Miles (approx)	Notes	Wildife Design Specs
North Middle Fork	Tailings	Middle Fork John Day River	NMF1	0.4	This fence would be a barb wire fence and would tie into the existing adjacent enclosure on the Confederated Tribes of the Warm Springs Reservation of Oregon lands and would exclude the Middle Fork John Day River from grazing in this pasture.	No permanent fence recommended. If fence is constructed wildlife friendly specifications will be used. Lay-down fence design is proposed for SE section. Recommend modifying existing fence opposite proposed lay-down section to all for through passage of wildlife. A site visit by wildlife, range and hydro or fish is necessary before construction to identify site specific modifications.
North Middle Fork	Unit C	Middle Fork John Day River	NMF3 and NMF4	1.3	Two segments of barb wire fence that would exclude livestock from the Middle Fork John Day River and from the aquatic restoration activities that occurred beginning in 2009.	Lay-down fence sections proposed in at least three areas of newly proposed fence. Lay-down fence would help with wildlife passage when livestock are not present and during high water based on proposed locations. Wildlife friendly wire spacing will be used on all sections of newly constructed fence. A site visit by wildlife, range and hydro or fish is necessary before construction to identify site specific modifications.
Lower Middle Fork	Pizer	Deadwood Creek	LMF1	2.0	Incorporate water gaps. Do not include dispersed campsites in enclosures. Protect aquatic restoration work on Deadwood Creek. Use lodgepole from meadow restoration to construct buck and pole fence in open areas around dispersed campgrounds (where feasible). Use barb wire fence in other sections.	Gates will be installed at several locations along fence (per discussion with range (Nick)). Lay-down fence will be constructed on opposite side of exclosure from gates. Gates will be open when cattle are not present to allow for wildlife passage. Barbwire and buck and pole fence will be constructed using wildlife friendly specifications; max top pole height of 42”. Drop down poles are recommend in areas where wildlife use is observed and/or while cows are not present. A site visit by wildlife, range and hydro or fish is necessary before construction to identify site specific modifications.
Lower Middle Fork	Pizer	Big and Deadwood Creeks	LMF2	1.3	Incorporate water gaps. Do not include dispersed campsites in enclosures. Protect aquatic restoration work on Deadwood Creek. Use	Lay-down fence recommended at minimum of every .25 miles. Sections of lay-down will be constructed on opposite side of exclosure from one another or opposite gates. Gates will be secured open by permittee when cattle are not present to allow for wildlife passage. Barbwire and

Allotment	Pasture	Stream	NEPA name	Miles (approx)	Notes	Wildife Design Specs
					lodgepole from meadow restoration to construct buck and pole fence along National Forest System Road 20900000 and near dispersed campsites (where feasible). Use barb wire fence in other sections.	buck and pole fence will be constructed using wildlife friendly specifications; max top pole height of 42". Drop down poles are recommend in areas where wildlife use is observed and/or while cows are not present. A site visit by wildlife, range and hydro or fish is necessary before construction to identify site specific modifications.
Murderers Creek	Dans Creek	Orange Creek	Murderers1	1.1	This fence would be a barb wire fence and would include a water gap.	Wildlife friendly wire spacing will be used on all sections of newly constructed fence. A site visit by wildlife, range and hydro or fish is necessary before construction to identify site specific modifications.
Murderers Creek	Dans Creek	Dans Creek	Murderers2	1.5	Incorporate water gaps. Include aspen and meadows in enclosures.	Wildlife friendly wire spacing will be used on all sections of newly constructed fence. Water gap will be installed in middle portion of exclosure (per discussion with range (Nick)). Additional passage modifications beyond proposed water gap may be recommended. Wildlife and range site visit necessary before construction to identify site specific modifications.
Murderers Creek	Blue Ridge	South Fork Murderers Creek	Murderers3	0.7	This fence would be a barb wire fence and would include a water gap between this enclosure and the South Fork Murderers Creek Gather Pasture.	Wildlife friendly wire spacing will be used on all sections of newly constructed fence. Wildlife and range site visit necessary before construction to identify site specific modifications.

Project-Specific Project Design Criteria

The following project-specific project design criteria apply to this proposal:

- Make site visits to areas not yet surveyed for sensitive plants in early spring.
- Invasive plants that are in the "control" category according to our final ROD 2015 occur near proposed fence lines. Follow project design criteria to prevent spread of these species.
- Avoid enclosing dispersed campsites where feasible.
- Ensure proposed fencing does not block or restrict access to any authorized special use improvements, including access to overhead utility adjacent to Bird and Unit C proposals.
- Ensure National Forest Boundary Line Policy is reviewed prior to project implementation and adjacent landowners are adequately notified. Two private points of diversion (water right certificates

#8518 and #31048) are located within or adjacent to Bird and one point of diversion (water right certificate #81551) is located within or adjacent to Unit C.

- Four mining claims will be impacted by this project. Claimants should be contacted prior to implementation via written correspondence. Copies of these letters must be added to the mining files for each claimant.
- Fences are often used to protect critical fish habitat from impacts caused by livestock. Those miles of fence protecting critical fish habitats can also create hazards and barriers for wildlife, from big game to birds. By tailoring fence design and placement, injuries to wildlife and damage to fence can be reduced. Fencing should allow relatively easy passage for animals to jump over or crawl under and be highly visible for both ungulates and birds. The following field tested design recommendation have been shown to control livestock in most situations and allow for easier wildlife passage. These design modifications shall be used for barb wire fence construction to reduce wildlife injuries and decrease damage to fences:
    - Prior to fence construction, range, wildlife, and aquatics will conduct a field visit to identify the most appropriate location and passage modification to allow for wildlife passage. Wildlife-friendly wire spacing, materials, and other specifications shall be planned for and implemented regardless of the implementation mechanism.
        - The top wire or rail should be no more than 40 inches above the ground and absolutely no more than 42 inches. This should include adjustments for slope. (Figure 3)
        - There should be a minimum of 12 inches between the top two wires. (Figure 4)
        - There should be at least 18 inches between the bottom wire or rail and the ground. (Figure 4)
        - Smooth wire (double twisted) or rail should be used for the top and smooth wire should be used for the bottom. When the top wire is barbed, the second wire from the top should be constructed with smooth wire.
        - If stays are necessary, wooden, stiff plastic, or composite stays will be used. No metal stays or other material that can easily bend and cause three-dimensional hazards shall be used.
        - T-posts should be placed at 16.5 foot intervals.
        - When possible, reduce the number of wires to three. No more than 4 wires shall be used without consulting the district wildlife biologist.
        - Remove old fences that are in disrepair and those that are no longer in use or functioning. Bale and carry away wire and dispose of or recycle it properly.
        - Wildlife-friendly spacing specifications will be maintained during maintenance over the life of the fence. (Figure 5)
    - The following additional passage modification shall be used around riparian habitats, water holes, stream corridors, and other high quality habitats:
        - Install gates, drop downs and/or drop down rails, adjustable wire fence, lay-down fence, elk jumps or other passages modifications preferably where wildlife concentrate and cross (i.e. trails, known migration routes, etc.). Passage modifications will be placed a minimum of every 0.25 miles.

        - When adjustable wire fence or lay-down fence is used to create wildlife passage, sections will be a minimum of 33 feet in length.
    - If an exclosure is less than 0.25 miles, one or more passage modifications will be used to allow wildlife passage in and out of the exclosure. Passages shall be placed directly opposite one another on each side of the exclosure.
    - Jumps, drop downs, or other modifications should not be placed under trees or brush that would make the modification impassable by big game or antelope.
    - PVC pipe modification on top and/or bottom wire for big game and pronghorn passage should also be considered.
    - Modifications to increase visibility (i.e. high-vis/white ploy-coated wire, markers, etc.) should be considered in these important habitats for birds and other wildlife species.
    - When possible, fence should be constructed entirely of smooth wire around riparian habitats and stream corridors.
    - Fence placement will be sited on the ground outside the channel migration zone.
- The following passage modification shall be used around areas where wildlife are known to move or migrate, and along swales, gullies, and ridges:
    - Install gates, drop downs and/or drop down rails, adjustable wire fence, or other passage modifications preferably where wildlife concentrate and cross (i.e. trails, migration routes etc.).
    - If areas of wildlife use are not obvious or known, crossing will be placed at a minimum every 0.25 miles. If fence is less than 0.25 miles in length per side, one or more passage modifications will be used to allow wildlife passage in and out of the exclosure.
    - Lay-down fence should be considered and let down when the pasture is not in use by cattle. (Figure 1)
- The following passage modifications shall be used to adjust for slopes or along ditches or road edges that increase fence height above 42 inches for more than 0.25 consecutive miles:
    - On steep slopes, the top wire height should be adjusted to account for slope. (Figure 3)
    - Install jumps, drop downs, or other passage modifications a minimum of every 0.25 miles, preferably where wildlife concentrate and cross.
    - Where possible, lay-down fence or adjustable wire fence design should be considered on terrain with steep slopes over longer distances. This will allow for easy passage for wildlife during migration periods when livestock are not present.
        - Adjustable wire design: drop the top wire to the level of the second wire, either in sections or along an entire run of fence, to allow wildlife to jump over easily. Raise the lowest wire in the same way to allow wildlife to crawl under. (Figure 2)

- Fence will be let-down, adjusted, and gates secured open by the permittee as part of their permit conditions when livestock are not present and fences will be put up and gates closed each year before livestock are turned out.
- Flag newly constructed fence in known wildlife migration corridors immediately after construction to protect the fence until wildlife and livestock become accustomed to the new barrier.
- All modifications shall have a GPS point taken which will be shared with wildlife following construction for effectiveness monitoring.
- If construction will occur through a Forest Service contract or agreement with a partner, a district wildlife biologist shall review the final contract specifications prior to solicitation of the bid.
- Fence will be constructed of high quality materials to reduce sagging and broken wires that create hazards for wildlife and livestock and to reduce time and costs associated with maintenance. The following fence materials are recommended:
    - Wire
        - Will be new
        - Will consist of two twisted strands of 12.5-gauge steel wire with Class 3 galvanizing and minimum tensile strength of 170,000 PSI.
    - Fasteners
        - Staples should be nine gauge or heavier galvanized or stainless steel, with a minimum length of one inch for close-grained hardwoods.
        - Staples shall be driven diagonally to the wood's grain at a slight downward angle, (or upward if the tension is upward) to avoid splitting the post and loosening the staples.
        - Space should be left between the inside crown of the staple and the post to permit free movement of high tensile barbed wire.
        - Barbed staples shall be used for wooden posts. (Figure 6)
        - Manufacturer's clips or 14-gauge Class 3 galvanized fasteners should be used. (Figure 7)
    - Steel Posts
        - Steel line posts shall have the standard "T" section, with nominal dimensions of 1 3/8 inches by 1 3/8 inches by 1/8 inch with an anchor plate.
        - The posts shall be rolled from high carbon steel, weigh at least 1.33 pounds per foot of length and shall be hot-dip galvanized (best), enameled and baked, or painted with a weather resistant paint for steel.
        - Posts should be studded to aid in wire attachment.

Figures

Passage Modifications

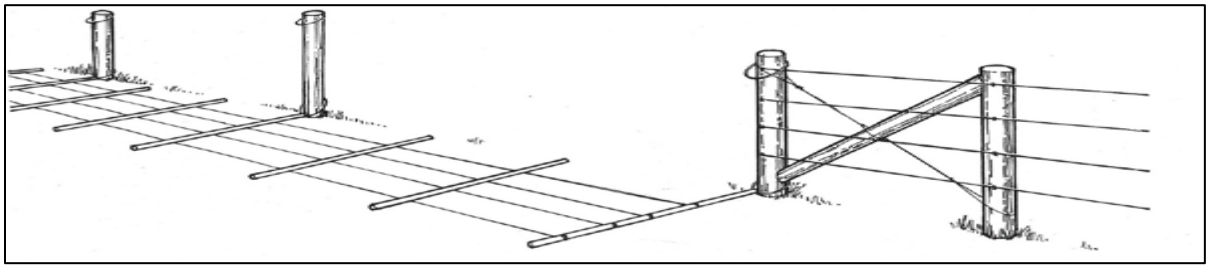

Figure 1. Lay-Down modification allowing passage for wildlife where and when livestock are not present (Hanophy 2009).

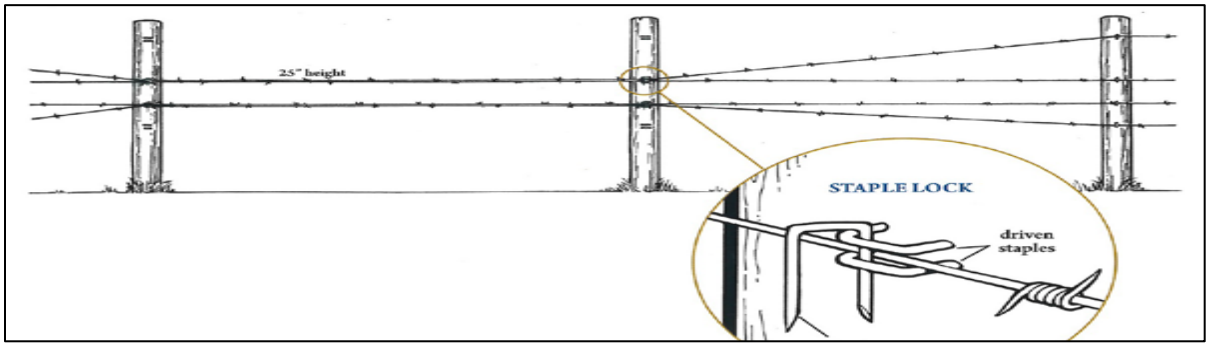

Figure 2. Adjustable fence to allow for wildlife passage around high quality habitats, on steep slopes, swales, gullies, ridges and/or when livestock are not present (Hanophy 2009).

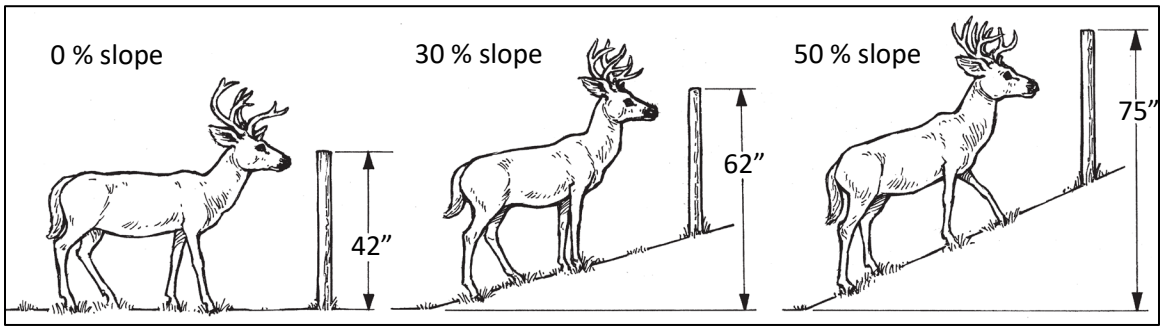

Figure 3. Influence of slope on fence height (Hanophy 2009).

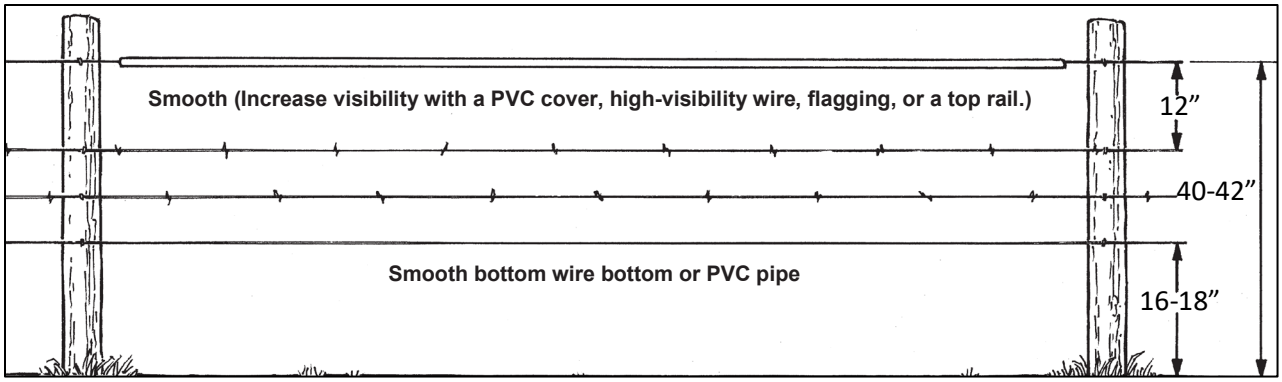

Figure 4. Wire fence with wildlife friendly fencing specifications (flat ground) (Hanophy 2009).

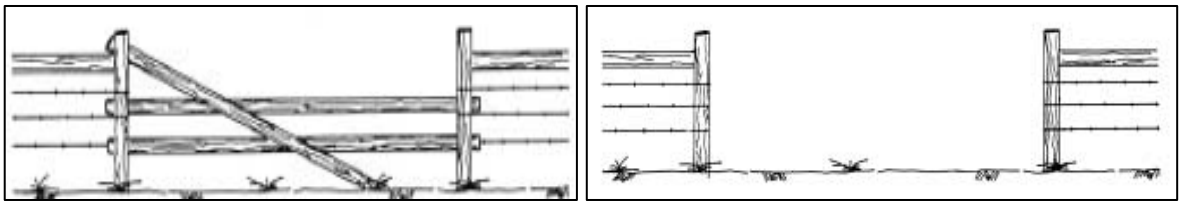

Figure 5. Wildlife jump or gates made of corral poles stacked parallel to the ground. Vertical poles should not be less than 12 feet apart. One or more poles can be removed to allow for easy passage (Hanophy 2009).

Fastening Mechanisms for Adjustable Wire Fence

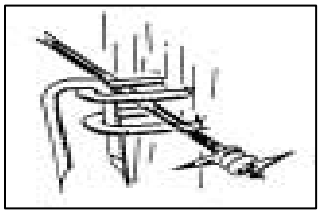

Figure 6. Staple lock. Simple and effective on wood posts. Holds wire tight if standard fence staples are used.

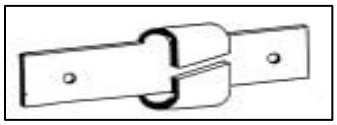

Figure 7. Metal Clip. Excellent on either wood or steel posts. Easy to install, no maintenance and allows fastest wire adjustment. Existing fences easy to modify with this clip. Variations of clip available for both adjustable and/or lay-down fence modifications.

Maps

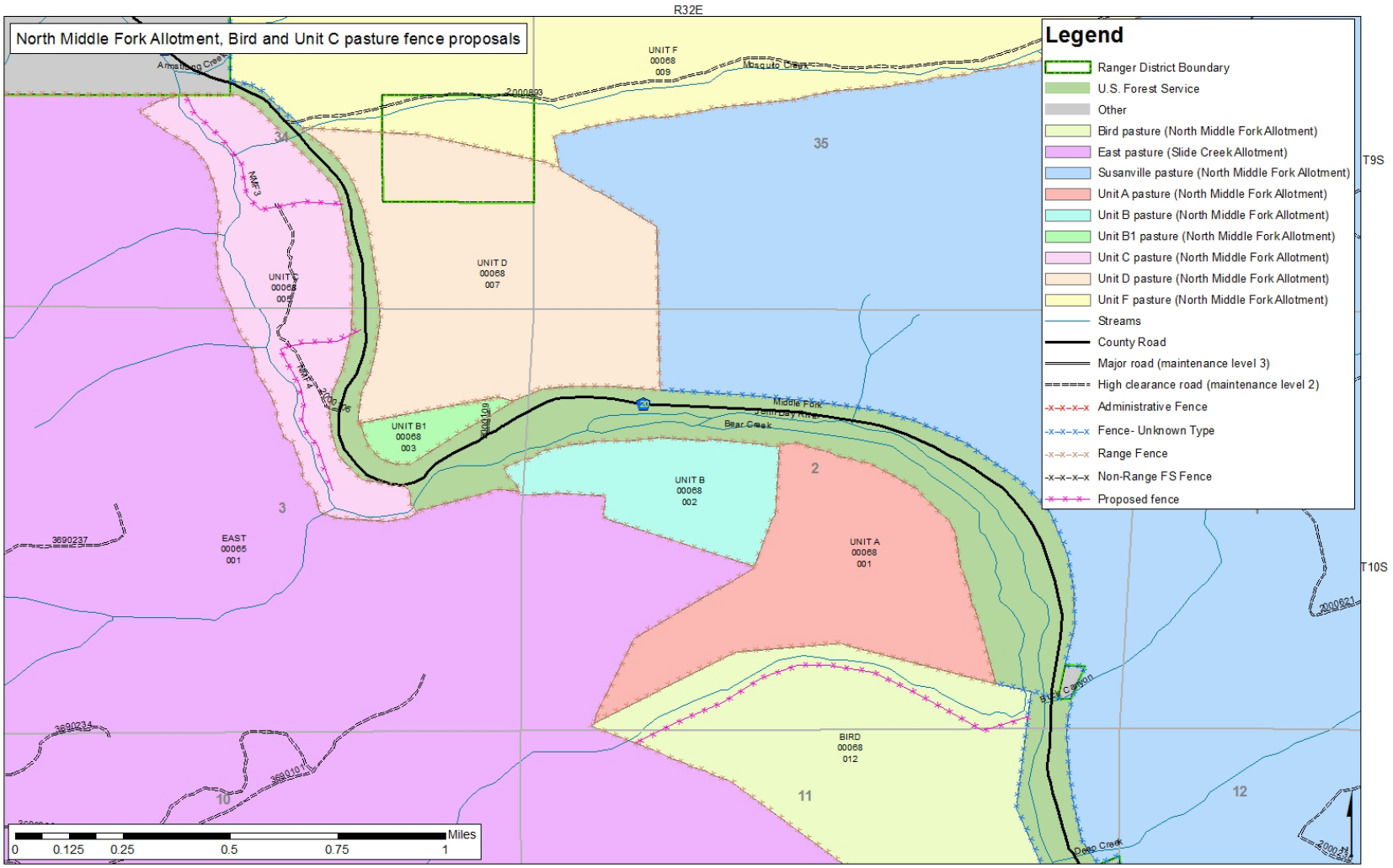

Figure 8. Map shows the North Middle Fork Allotment Bird pasture fence proposal (Bear1) and Unit C pasture fence proposals (NMF3 and NMF4). Bear1 bounds Bear Creek's south side through Bird, from east to west. NMF4 starts on the west side of 20, ~0.2 miles north of 2000106, goes west until the Middle Fork John Day River, then turns south following the river ~0.3 miles. NMF3 starts on the west side of 20, ~0.3 miles north of NMF4, goes west until the Middle Fork John Day River, then turns north following the river until the forest boundary.

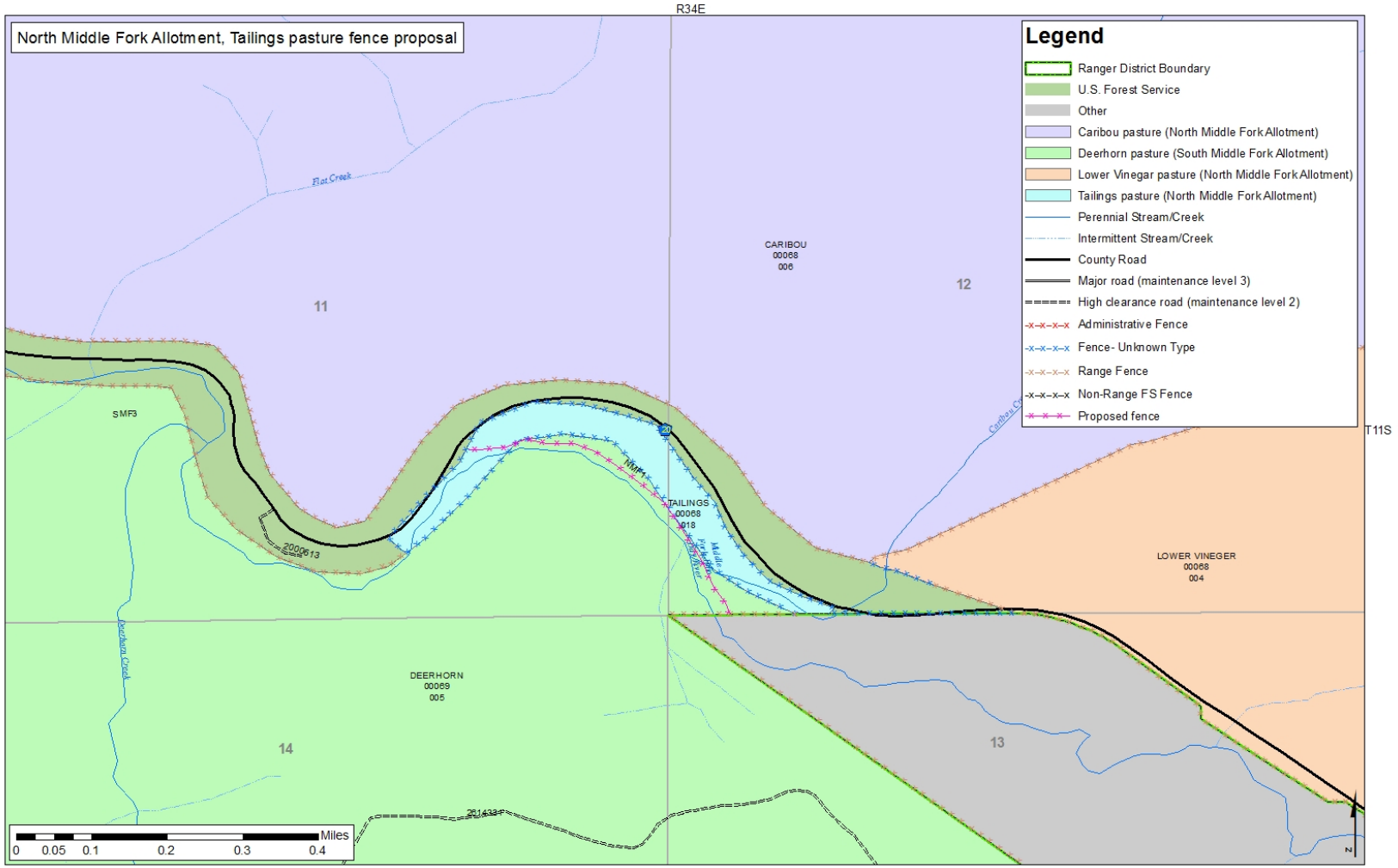

Figure 9. Map showing the location of the North Middle Fork Allotment Tailings pasture fence proposal (NMF1). Fence starts at the western border fence of Tailings pasture, just north of the Middle Fork of the John Day River. The proposed fence follows the northern side of the river through the pasture's southern border fence, continuing south until it meets the forest boundary.

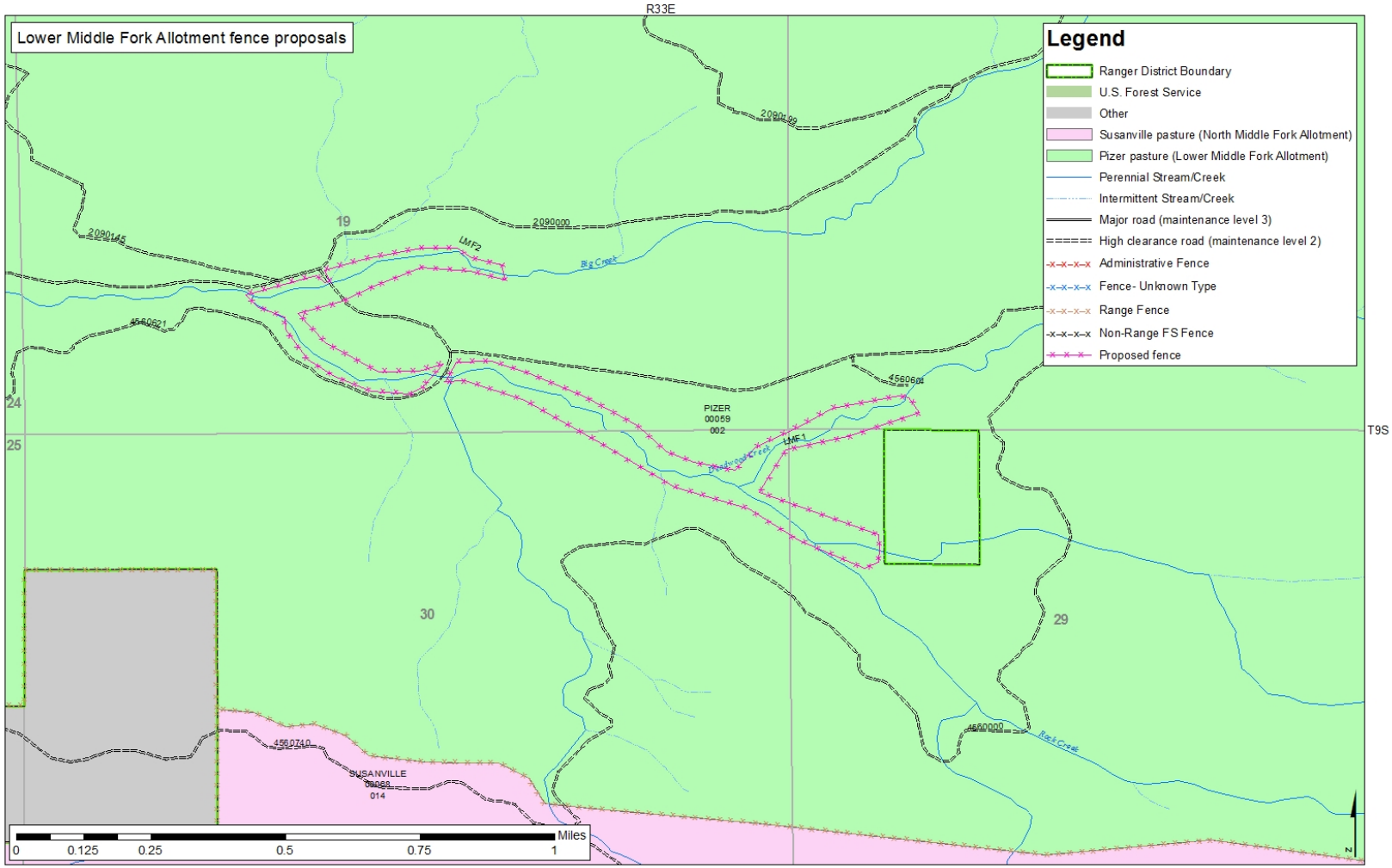

Figure 10. Map showing the location of the Lower Middle Fork Allotment fence proposals (LMF1 and LMF2). LMF1 starts just east of the intersection of the 4560000 and 4560621 roads. Fence borders Deadwood Creek past its confluence with Swamp Gulch, where it continues to follow Deadwood north and Swamp Gulch south for another ~0.25 miles in either direction. LMF2 surrounds the confluence of Big Creek and Deadwood Creek, then borders Big Creek north for ~0.25 miles after crossing the 4560000 road and Deadwood Creek south until just before the 4560621 road.

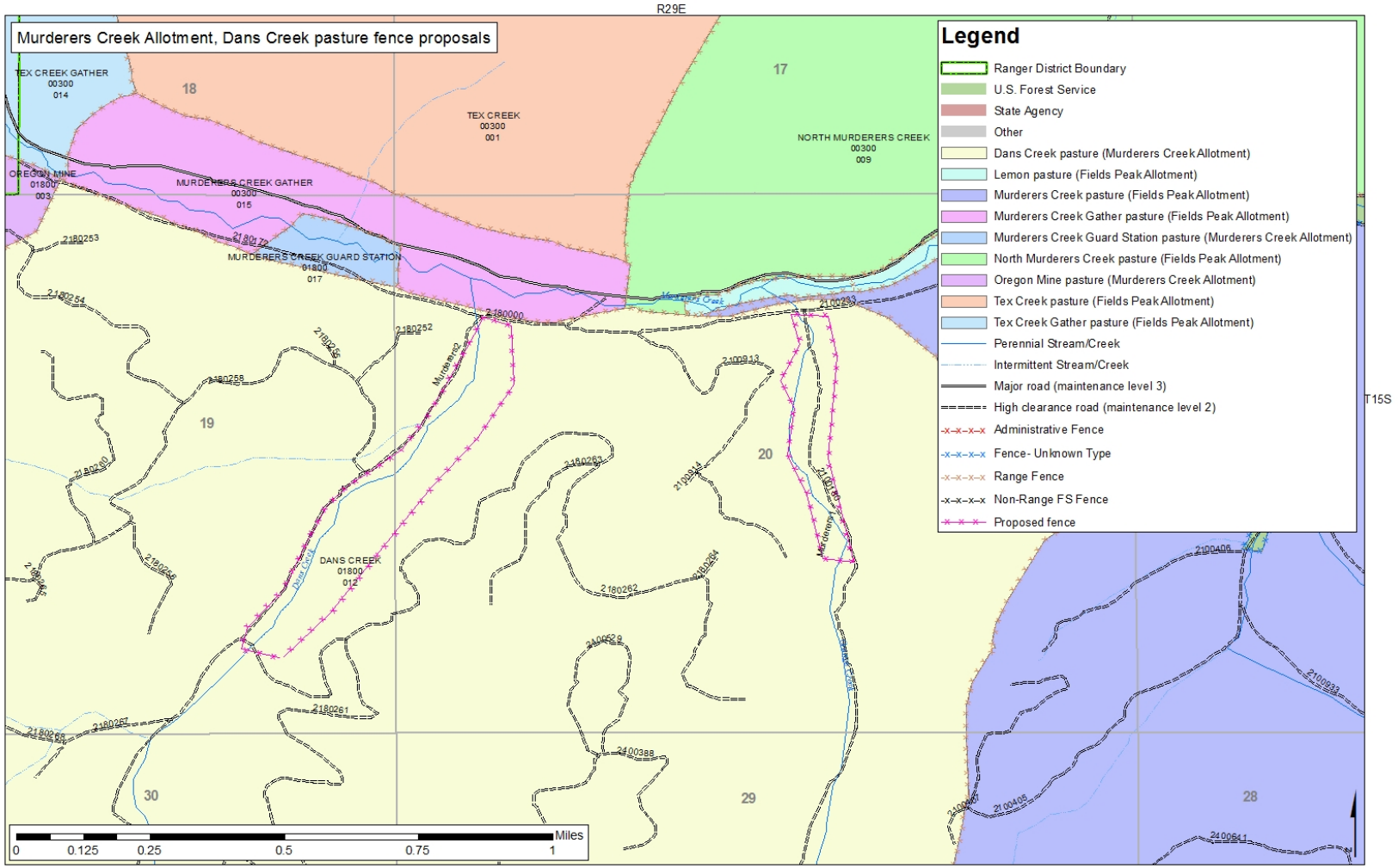

Figure 11. Map showing the location of the Murderers Creek Allotment Dans Creek pasture fence proposals (Murderers1 and Murderers2). Murderers 1 borders Orange Creek from the intersection of 2100233 with 2100180 and following Orange Creek for ~0.5 mile south. Murderers 2 surrounds the portion of Dans Creek between the intersections of 2180000 and 2180172 to the north and 2180172 and 2180262 to the south.

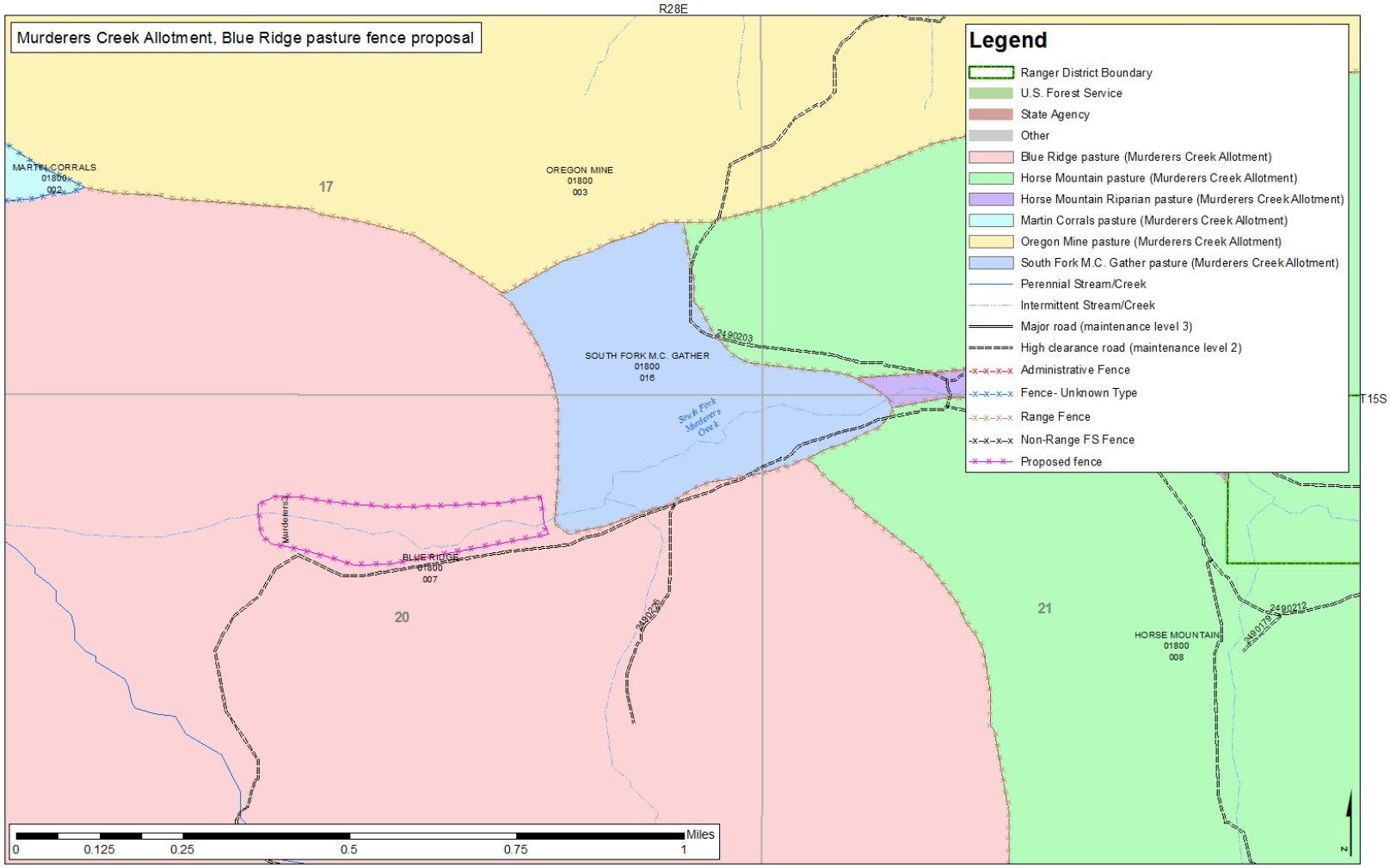

Figure 12. Map showing the location of the Murderers Creek Allotment Blue Ridge pasture fence proposal (Murderers3). The fence surrounds a portion of South Fork Murderers Creek from close to the South Fork gather pasture on its eastern border extending west along the 2490000 road until the road turns south (~0.3 miles).

References

Hanophy, W. 2009. Fencing with Wildlife in Mind. Colorado Division of Wildlife, Denver, CO.

Appendix to the Aquatic Restoration EA

Implementation Description

Project Title: 2019 Blue Mountain Ranger District Range Fence Project

Project Number: 01052019

Category: Category 9: Livestock fencing, stream crossings, and off-channel livestock watering facilities

The following information will guide actions for this project that is taking place within the bounds of the Decision Notice for the 2014 Malheur National Forest Aquatic Restoration Environmental Analysis to maintain that all conservation measures, guidelines, and project design criteria are met under this guiding document.

Much of the information below is reproduced from the Decision Notice for Aquatic Restoration Project Appendix A (pages 7 through 44), and may cite project design criteria (PDC) numbers, literature, or other documents not referenced further in this proposal document. Please refer to the Decision Notice for more information.

Program Administration

1. Integration of project design criteria and conservation measures and terms and conditions into project design and contract language
    a. This document is to outline the conservation measures and PDCs that will be used during project implementation to remain compliant with the aquatic restoration biological assessment as well as ARBO II.
2. Project notification: The following information will be provided to the National Marine Fisheries Service (NMFS) Level 1 aquatics members 30 days prior to implementation as a Project Notification Form 7.
    a. Action identifier – 01052019
    b. Project name – 2019 Blue Mountain Ranger District Range Fence Project
    c. Location –

Table 3. Project location information

Project location	Bear1	NMF1	NMF3 NMF4	LMF1	LMF2	Murderers1	Murderers2	Murderers3
Stream name	Bear Creek	Caribou Creek and Middle Fork John Day River	Middle Fork John Day River	Deadwood Creek	Big and Deadwood Creeks	Orange Creek	Dans Creek	South Fork Murderers Creek
6th field HUC	John Day	John Day	John Day	John Day	John Day	John Day	John Day	John Day
Latitude (decimal degrees)	44.723	44.623	44.737	44.763	44.767	44.255	44.255	44.259
Longitude (decimal degrees)	-118.829	-118.574	-118.847	-118.781	-118.789	-119.263	-119.274	-119.382

d. Agency contact – Nick Stiner, nstiner@fs.fed.us
e. Timing – May 2019 until project completion.
f. Activity category –
Category 9: Livestock fencing, stream crossings, and off-channel livestock watering
g. Project description – Project description is available in the Proposed Action and Implementation Plan section above.
h. Species affected –
    i. Listed species: Middle Columbia River steelhead (Bear1, NMF1, NMF3, NMF4, LMF1, LMF2, Murderers1, Murderers2, and Murderers3), Columbia River bull trout (NMF1, NMF3, NMF4, LMF1, and LMF2)
    ii. Critical Habitat: Middle Columbia River steelhead (Bear1, NMF1, NMF3, NMF4, LMF1, LMF2, Murderers1, Murderers2, and Murderers3), Columbia River bull trout (NMF1, NMF3, NMF4, LMF1, and LMF2)
    iii. MIS Species: steelhead (Bear1, NMF1, NMF3, NMF4, LMF1, LMF2, Murderers1, Murderers2, and Murderers3), bull trout (NMF1, NMF3, NMF4, LMF1, and LMF2), and redband trout (Bear1, NMF1, NMF3, NMF4, LMF1, LMF2, Murderers1, Murderers2, and Murderers3)
i. Date of submittal – To be completed in Spring of 2019, at least 30 day prior to implementation.
j. Site assessments – Assessment for contaminants is not required at these locations.
k. Review – NMFS fish passage review and Restoration Review Team review are not required.
l. Verification – _____
m. SOD project notification – _____

3. Minor Variance: No variances are proposed for this project.
4. NMFS Fish Passage Review and Approval: This work does not require review by the NFMS level 1 team member.
5. Restoration Review Team: This work does not require review by the restoration review team.
6. Project Completion Report: To be completed after implementation
7. Annual Program Report: This project will be completed within 1-2 years, completion and annual reporting will occur in the winter of FY20 of FY21 before February 15th.

General Aquatic Conservation Measures

8. **Technical skill and planning requirements:**
    a. An appropriately qualified fisheries biologist or hydrologist will be involved in the design of this project.
    b. The scope of this project is limited in both space and context. Field evaluations and site-specific surveys will require little work. Appropriate time will be allotted for these actions, prior to implementation. Planning and design will involve appropriate expertise.
    c. The assigned fisheries biologist or hydrologist will make sure that any applicable conservation measures and project design criteria are met through the contracting process.
9. **Climate change:** due to the small scale of this work, future climate changes impacts will not have dramatic effects on this work
10. **In-water work period:** In-stream activities will occur between July 15th and August 15th.
11. **Fish passage:** Not applicable.
12. **Site assessment for contaminants:** In developed or previously developed sites, such as areas with past dredge mines, or sites with known or suspected contamination, a site assessment for contaminants will be conducted on projects that involve excavation of greater than 20 cubic yards of material. The action agencies will complete a site assessment to identify the type, quantity, and

extent of any potential contamination. The level of detail and resources committed to such an assessment will be commensurate with the level and type of past or current development at the site. The assessment may include the following:

a. Review of readily available records, such as former site use, building plans, records of any prior contamination events.
b. Site visit to observe the areas used for various industrial processes and the condition of the property.
c. Interviews with knowledgeable people, such as site owners, operators, occupants, neighbors, local government officials, etc.
d. Report that includes an assessment of the likelihood that contaminants are present at site.

13. **Pollution and erosion control measures:** Implement the following pollution and erosion control measures:
    a. **Project contact:** Identify a project contact (name, phone number, an address) that will be responsible for implementing pollution and erosion control measures.
    b. List and describe any hazardous material that would be used at the project site, including procedures for inventory, storage, handling, and monitoring; notification procedures; specific clean-up and disposal instructions for different products available on the site; proposed methods for disposal of spilled material; and employee training for spill containment.
    c. Temporarily store any waste liquids generated at the staging areas under cover on an impervious surface, such as tarpaulins, until such time they can be properly transported to and treated at an approved facility for treatment of hazardous materials.
    d. Procedures based on best management practices to confine, remove, and dispose of construction waste, including every type of debris, discharge water, concrete, cement, grout, washout facility, welding slag, petroleum product, or other hazardous materials generated, used, or stored on-site.
    e. Procedures to contain and control a spill of any hazardous material generated, used or stored on-site, including notification of proper authorities. Ensure that materials for emergency erosion and hazardous materials control are onsite (for example, silt fence, straw bales, oil-absorbing floating boom whenever surface water is present).
    f. Best management practices to confine vegetation and soil disturbance to the minimum area, and minimum length of time, as necessary to complete the action, and otherwise prevent or minimize erosion associated with the action area.
    g. No uncured concrete or form materials will be allowed to enter the active stream channel.
    h. Steps to cease work under high flows, except for efforts to avoid or minimize resource damage.

14. **Site preparation:**
    a. **Flagging sensitive areas:** Prior to construction, clearly mark critical riparian vegetation areas, wetlands, and other sensitive sites to minimize ground disturbance.
    b. **Staging area:** Establish staging areas for storage of vehicles, equipment, and fuels to minimize erosion into or contamination of streams and floodplains.
        i. No topographical restrictions: Place staging area 150 feet or more from any natural water body or wetland in areas where topography does not restrict such a distance.
        ii. Topographical restrictions: Place staging area away from any natural water body or wetland to the greatest extent possible in areas with high topographical restriction, such as constricted valley types.
    c. **Temporary erosion controls:** Place sediment barriers prior to construction around sites where significant levels of erosion may enter the stream directly or through road ditches. Temporary erosion controls will be in place before any significant alteration of the action

site and will be removed once the site has been stabilized following construction activities.

d. **Stockpile materials:** Minimize clearing and grubbing activities when preparing staging, project, or stockpile areas. Any large wood, topsoil, and native channel material displaced by construction will be stockpiled for use during site restoration. Materials used for implementation of aquatic restoration categories (for example, large wood, boulders, and fencing material) may be staged within the 100-year floodplain.

e. **Hazard trees:** Where appropriate, include hazard tree removal (amount and type) in project design. Fell hazard trees when they pose a safety risk. If possible, fell hazard trees within riparian areas towards a stream. Keep felled trees on site when needed to meet coarse large wood objectives.

15. **Heavy equipment use:**

a. **Choice of equipment:** Heavy equipment will be commensurate with the project and operated in a manner that minimizes adverse effects to the environment (for example, minimally-sized, low pressure tires, minimal hard turn paths for tracked vehicles, or temporary mats or plates within wet areas or sensitive soils).

b. Fueling and cleaning and inspection for petroleum products and invasive weeds:

i. All equipment used for instream work will be cleaned for petroleum accumulations, dirt, plant material (to prevent the spread of noxious weeds), and leaks repaired prior to entering the project area. Such equipment includes large machinery, stationary power equipment (for example, generators and canes), and gas-powered equipment with tanks larger than 5 gallons.

ii. Store and fuel equipment in staging areas after daily use.

iii. Inspect daily for fluid leaks before leaving the vehicle staging area for operation.

iv. Thoroughly clean equipment before operation below ordinary high water or within 50 feet of any natural water body or areas that drain directly to streams or wetlands and as often as necessary during operation to remain grease free.

c. **Temporary access roads:** Existing roadways will be used whenever possible. Minimize the number of temporary access roads and travel paths to lessen soil disturbance and compaction and impacts to vegetation. Temporary access roads will not be built on slopes where grade, soil, or other features suggest a likelihood of excessive erosion or failure. When necessary, temporary access roads will be obliterated or revegetated. Temporary roads in wet or flooded areas will be restored by the end of the applicable in-water work period. Construction of new permanent roads is not permitted.

d. **Stream crossings:** Minimize number and length of stream crossings. Such crossings will be at right angles and avoid potential spawning areas to the greatest extent possible. Stream crossings shall not increase the risk of channel re-routing at low and high water conditions. After project completion, temporary stream crossings will be abandoned and the stream channel and banks restored.

e. **Work from top of bank:** To the extent feasible, heavy equipment will work from the top of the bank, unless work instream would result in less damage to the aquatic ecosystem.

f. **Timely completion:** Minimize time in which heavy equipment is in stream channels, riparian areas, and wetlands. Complete earthwork (including drilling, excavation, dredging, filling and compacting) as quickly as possible. During excavation, stockpile native streambed materials above the bankfull elevation, where it cannot reenter the stream, for later use.

16. **Site Restoration:**

a. **Initiate rehabilitation:** Upon project completion, rehabilitate all disturbed areas in a manner that results in similar or better than pre-work conditions through removal of

project related waste, spreading of stockpiled materials (soil, large wood, trees, etc.) seeding, or planting with local native seed mixes or plants.

b. **Short-term stabilization:** Measures may include the use of non-native sterile seed mix (when native seeds are not available), weed-free certified straw, jute matting, and other similar techniques. Short-term stabilization measures will be maintained until permanent erosion control measures are effective. Stabilization measures will be instigated within three days of construction completion.

c. **Revegetation:** Replant each area requiring revegetation prior to or at the beginning of the first growing season following construction. Achieve reestablishment of vegetation in disturbed areas to at least 70 percent of pre-project levels within three years. Use an appropriate mix of species that will achieve establishment and erosion control objectives, preferably forb, grass, shrub, or tree species native to the project area or region and appropriate to the site. Barriers will be installed as necessary to prevent access to revegetated sites by livestock or unauthorized persons.

d. **Planting manuals:** All riparian plantings shall follow Forest Service direction described in the Regional letter to Units, Use of Native and Nonnative Plants on National Forests and Grasslands May 2006 (Final Draft), and/or Bureau of Land Management (BLM) Instruction Memorandum No. OR-2001-014, Policy on the Use of Native Species Plant Material.

e. **Decompact soils:** Decompact soil by scarifying the soil surface of roads and paths, stream crossings, staging, and stockpile areas so that seeds and plantings can root.

17. **Monitoring:** Monitoring will be conducted by action agency staff, as appropriate for that project, during and after a project to track effects and compliance with this opinion.

a. Implementation:

i. Visually monitor during project implementation to ensure effects are not greater (amount, extent) than anticipated and to contact Level 1 representatives if problems arise.

ii. Fix any problems that arise during project implementation.

iii. Regular biologist/hydrologist coordination if biologist/hydrologist is not always on site to ensure contractor is following all stipulations.

b. **401 Certification**: To minimize short-term degradation to water quality during project implementation, follow current 401 Certification provisions of the Federal Clean Water Act for maintenance or water quality standards described by the following: Oregon Department of Environmental Quality (Oregon BLM, Forest Service, and BIA); Washington Department of Ecology (Washington BLM); and the Memorandum of Understanding between the Washington Department of Fish and Wildlife (WDFW) and Forest Service regarding Hydraulic Projects Conducted by Forest Service, Pacific Northwest Region (WDFW and USDA-Forest Service 2012); California, Idaho, or Nevada 401 Certification protocols (BLM and Forest Service).

c. **Post project:** A post-project review shall be conducted after winter and spring high flows.

i. For each project, conduct a walk through/visual observation to determine if there are post-project affects that were not considered during consultation. For fish passage and revegetation projects, monitor in the following manner:

ii. Fish Passage Projects: Note any problems with channel scour or bedload deposition, substrate, discontinuous flow, vegetation establishment, or invasive plant infestation.

iii. Revegetation: For all plant treatment projects, including site restoration, monitor for and remove invasive plants until native plants become established.

iv. In cases where remedial action is required, such actions are permitted without additional consultation if they use relevant PDC and aquatic conservation measures and the effects of the action categories are not exceeded.

18. **Work Area Isolation, Surface Water Withdrawals, and Fish Capture and Release**: Isolate the construction area and remove fish from a project site for projects that include concentrated and major excavation at a single location within the stream channel. This condition will typically apply to the following aquatic restoration categories: Fish Passage Restoration; Dam, Tidegate, and Legacy Structure Removal; and Channel Reconstruction/Relocation.

    a. **Isolate capture area:** Install block nets at up and downstream locations outside of the construction zone to exclude fish from entering the project area. Leave nets secured to the stream channel bed and banks until construction activities within the stream channel are complete. If block nets or traps remain in place more than one day, monitor the nets or traps at least on a daily basis to ensure they are secured to the banks and free of organic accumulation and to minimize fish predation in the trap.
    b. **Capture and release:** Fish trapped within the isolated work area will be captured and released as prudent to minimize the risk of injury, then released at a safe release site, preferably upstream of the isolated reach in a pool or other area that provides cover and flow refuge. Collect fish in the best manner to minimize potential stranding and stress by seine or dip nets as the area is slowly dewatered, baited minnow traps placed overnight, or electrofishing (if other options are ineffective). Fish must be handled with extreme care and kept in water the maximum extent possible during transfer procedures. A healthy environment for the stressed fish shall be provided—large buckets (five-gallon minimum to prevent overcrowding) and minimal handling of fish. Place large fish in buckets separate from smaller prey-sized fish. Monitor water temperature in buckets and well-being of captured fish. If buckets are not being immediately transported, use aerators to maintain water quality. As rapidly as possible, but after fish have recovered, release fish. In cases where the stream is intermittent upstream, release fish in downstream areas and away from the influence of the construction. Capture and release will be supervised by a fishery biologist experienced with work area isolation and safe handling of all fish.
    c. **Electrofishing:** Use electrofishing only where other means of fish capture may not be feasible or effective. If electrofishing will be used to capture fish for salvage, NMFS's electrofishing guidelines will be followed (NMFS 2000).
        i. Reasonable effort should be made to avoid handling fish in warm water temperatures, such as conducting fish evacuation first thing in the morning, when the water temperature would likely be coolest. No electrofishing should occur when water temperatures are above 18 ºC or are expected to rise above this temperature prior to concluding the fish capture.
        ii. If fish are observed spawning during the in-water work period, electrofishing shall not be conducted in the vicinity of spawning fish or active redds.
        iii. Only direct current (DC) or pulsed direct current shall be used.
        iv. Conductivity less than 100, use voltage ranges from 900 to 1100. Conductivity from 100 to 300, use voltage ranges from 500 to 800. Conductivity greater than 300, use voltage to 400.
        v. Begin electrofishing with minimum pulse width and recommended voltage and then gradually increase to the point where fish are immobilized and captured. Turn off current once fish are immobilized.
        vi. Do not allow fish to come into contact with anode. Do not electrofish an area for an extended period of time. Remove fish immediately from water and handle as described above (PDC 20b). Dark bands on the fish indicate injury, suggesting a reduction in voltage and pulse width and longer recovery time.

vii. If mortality is occurring during salvage, immediately discontinue salvage operations (unless this would result in additional fish mortality), reevaluate the current procedures, and adjust or postpone procedures to reduce mortality.

d. **Dewater construction site:** When dewatering is necessary to protect species or critical habitat, divert flow around the construction site with a coffer dam (built with non-erosive materials), taking care to not dewater downstream channels during dewatering. Pass flow and fish downstream with a by-pass culvert or a water-proof lined diversion ditch. Diversion sandbags can be filled with material mined from the floodplain as long as such material is replaced at end of project. Small amounts of instream material can be moved to help seal and secure diversion structures. If Endangered Species Act (ESA) listed-fish may be present and pumps are required to dewater, the intake must have a fish screen(s) and be operated in accordance with NMFS fish screen criteria described below (in part e.iv) of this section. Dissipate flow energy at the bypass outflow to prevent damage to riparian vegetation or stream channel. If diversion allows for downstream fish passage, place diversion outlet in a location to promote safe reentry of fish into the stream channel, preferably into pool habitat with cover. Pump seepage water from the de-watered work area to a temporary storage and treatment site or into upland areas and allow water to filter through vegetation prior to reentering the stream channel.

e. Surface water withdrawals:

i. Surface water may be diverted to meet construction needs, but only if developed sources are unavailable or inadequate. Where ESA-listed fish may be present, diversions may not exceed 10 percent of the available flow and fish screen(s) will be installed, operated, and maintained according to NMFS's fish screen criteria (NMFS 2011e).

ii. For the dewatering of a work site to remove or install culverts, bridge abutments etc., if ESA-listed fish may be present, a fish screen that meets criteria specified by NMFS (2011e) must be used on the intake to avoid juvenile fish entrainment. If ESA-listed salmon, steelhead, eulachon, or green sturgeon may be present, the action agencies will ensure that the fish screen design is reviewed and approved by NMFS for consistency with NMFS (2011e) criteria if the diversion (gravity or pump) is at a rate greater than 3 cubic feet per second (cfs). NMFS approved fish screens have the following specifications: (1) An automated cleaning device with a minimum effective surface area of 2.5 square feet per cfs, and a nominal maximum approach velocity of 0.4 feet per second (fps), or no automated cleaning device, a minimum effective surface area of 1 square foot per cfs, and a nominal maximum approach rate of 0.2 fps; and (2) a round or square screen mesh that is no larger than 2.38 mm (0.094 inches) in the narrow dimension, or any other shape that is no larger than 1.75 mm (0.069 inches) in the narrow dimension.

f. **Stream re-watering:** Upon project completion, slowly re-water the construction site to prevent loss of surface water downstream as the construction site streambed absorbs water and to prevent a sudden release of suspended sediment. Monitor downstream during re-watering to prevent stranding of aquatic organisms below the construction site.

Applicable Project Design Criteria

Project Design Criteria for Aquatic Restoration Activity Categories

9. Livestock Fencing, Stream Crossings and Off-Channel Livestock Watering Facilities

Livestock fencing, stream crossings and off-channel livestock watering facilities projects will be implemented by constructing fences to exclude riparian grazing, providing controlled access for

walkways that livestock use to transit across streams and through riparian areas, and reducing livestock use in riparian areas and stream channels by providing upslope water facilities. Such projects promote a balanced approach to livestock use in riparian areas, reducing livestock impacts to riparian soils and vegetation, streambanks, channel substrates, and water quality. Equipment such as excavators, bulldozers, dump trucks, front-end loaders, and similar equipment may be used to implement projects.

a. **Livestock fencing:**

i. Fence placement must allow for lateral movement of a stream and to allow establishment of riparian plant species. To the extent possible, fences will be placed outside the channel migration zone.

ii. Minimize vegetation removal, especially potential large wood recruitment sources, when constructing fence lines.

iii. Where appropriate, construct fences at water gaps in a manner that allows passage of large wood and other debris.

b. **Livestock stream crossings:**

i. The number of crossings will be minimized.

ii. Locate crossings or water gaps where streambanks are naturally low. Livestock crossings or water gaps must not be located in areas where compaction or other damage can occur to sensitive soils and vegetation (for example, wetlands) due to congregating livestock.

iii. To the extent possible, crossings will not be placed in areas where ESA-listed species spawn or are suspected of spawning (for example, pool tailouts where spawning may occur), or within 300 feet upstream of such areas.

iv. Existing access roads and stream crossings will be used whenever possible, unless new construction would result in less habitat disturbance and the old trail or crossing is retired.

v. Access roads or trails will be provided with a vegetative buffer that is adequate to avoid or minimize runoff of sediment and other pollutants to surface waters.

vi. Essential crossings will be designed and constructed or improved to handle reasonably foreseeable flood risks, including associated bedload and debris, and to prevent the diversion of streamflow out of the channel and down the trail if the crossing fails.

vii. If necessary, the streambank and approach lanes can be stabilized with native vegetation or angular rock to reduce chronic sedimentation. The stream crossing or water gap should be armored with sufficient-sized rock (for example, cobble-size rock) and use angular rock if natural substrate is not of adequate size.

viii. Livestock crossings will not create barriers to the passage of adult and juvenile fish. Whenever a culvert or bridge—including bridges constructed from flatbed railroad cars, boxcars, or truck flatbeds—is used to create the crossing, the structure width will tier to project design criteria listed for Stream Simulation Culvert and Bridge Projects under Fish Passage Restoration (PDC 21).

ix. Stream crossings and water gaps will be designed and constructed to a width of 10 to 15 feet in the upstream-downstream direction to minimize the time livestock will spend in the crossing or riparian area.

x. When using pressure-treated lumber for fence posts, complete all cutting or drilling offsite (to the extent possible) so that treated wood chips and debris do not enter water or flood-prone areas.

xi. Riparian fencing is not to be used to create livestock handling facilities or riparian pastures.

c. **Off-channel livestock watering facilities:**

i. The development of a spring is not allowed if the spring is occupied by ESA-listed species.

ii. Water withdrawals must not dewater habitats or cause low stream flow conditions that could affect ESA-listed fish. Withdrawals may not exceed 10 percent of the available flow.

iii. Troughs or tanks fed from a stream or river must have an existing valid water right. Surface water intakes must be screened to meet the most recent version of NMFS fish screen criteria (NMFS 2011e)(NMFS 2011e)(NMFS 2011e)(NMFS 2011e)(NMFS 2011e)(NMFS 2011e)(NMFS 2011e), be self-cleaning, or regularly maintained by removing debris buildup. A responsible party will be designated to conduct regular inspection and as-needed maintenance to ensure pumps and screens are properly functioning.
iv. Place troughs far enough from a stream or surround with a protective surface to prevent mud and sediment delivery to the stream. Avoid steep slopes and areas where compaction or damage could occur to sensitive soils, slopes, or vegetation due to congregating livestock.
v. Ensure that each livestock water development has a float valve or similar device, a return flow system, a fenced overflow area, or similar means to minimize water withdrawal and potential runoff and erosion.
vi. Minimize removal of vegetation around springs, wet areas.
vii. When necessary, construct a fence around the spring development to prevent livestock damage.

Project Design Criteria by Resource

Fisheries and Hydrology

Fisheries and hydrology resources will follow all mitigation measures and project design criteria for aquatic restoration activities as shown in the 'Aquatic Restoration Project Categories, Program Administration, General Aquatic Conservation Measures, and Project Design Criteria for Aquatic Restoration Activity Categories on the Malheur National Forest.'

Additional Aquatic project design criteria were developed for the following elements: tree tipping and felling, juniper treatments, tree hauling, and prescribed burning.

General For Inside Riparian Habitat Conservation Areas

All snags will be maintained within the RHCA unless deemed a hazard to the restoration activity.

Tree Tipping and Tree Felling for Large Wood Projects

Source trees being extracted (either by tipping or felling) as part of this project for instream restoration will not be harvested from within the primary shade zone.

Table 4. Primary shade zone width slope distance (feet), based on adjacent hillslope (percent)

Hillslope less than 30 percent	Hillslope 30 to 60 percent	Hillslope greater than 30 percent
50 feet	55 feet	60 feet

The Temperature Implementation Strategies allow the distances in the above table to be less (but not less than 25 feet.) if any of the following conditions applies:

- The trees are located on a south facing slope (175 to 185 degree azimuth) and therefore do not provide stream shade;
- An appropriate level of analysis is completed and documented, such as shade modeling, using site-specific characteristics to determine the primary shade tree width; and/or
- Field monitoring or measurements are completed to determine the width where optimum angular canopy density (65 percent or greater) is achieved (see TMDL Implementation Strategies).
- If trees are being felled for safety reasons they can be felled towards the stream.

- Source trees should come from but are not limited to: over or fully stocked upland and riparian stands, hazard trees, trees generated from administrative sites (maintenance, expansion, or new construction), and hardwood restoration.

There is no DBH (diameter at breast height) restriction for large wood, but consider the following before removing and placing trees:

Diameter:

- The key to establishing a logjam is utilizing larger diameter wood that resists decay. These pieces of wood are often called "key pieces," and serve as the anchors for the logjam structure. Wood can improve fish habitat only if the wood is large enough to stay, influence flow patterns, and sediment sorting. Larger diameter wood retains its size longer as abrasion and decay occurs over the years. Larger diameter wood is more effective in creating pools and complex channels that improve fish populations. The minimum diameter required for a key piece of wood depends on the bankfull width of the stream is found in the following table:

Table 5. Bankfull widths and minimum diameter of logs to be considered key pieces

Bankfull width* (in feet)	Minimum diameter* (inches)
0 to 10	10
10 to 20	16
20 to 30	18
Over 30	22

*This table was taken from '1995 A Guide to Placement of Large Wood in Streams.

Length:

- The length of the wood is also important to stability. To be considered a key piece a log with a rootwad still attached should be at least 1 1/2 times (1.5 times) the bankfull or a log without a rootwad should be twice (2 times) the length of the stream's bankfull width. As the best fish habitat is formed around jams composed of three to seven logs, at least two key pieces should be used at each structure.
- Mimic natural accumulations of large woody debris based on stream type, valley setting, and community type and ensure future large woody debris recruitment
- Tailholds as part of tree tipping operations are permitted across perennial, intermittent and ephemeral streams, but the use of protective straps will be required to prevent tree damage.

Juniper Treatments

The majority of the juniper treatment areas would be within the riparian habitat conservation areas and adjoining uplands. For each area evaluated for juniper treatments, interdisciplinary teams would discuss the following questions in order to identify the attributes of an area and select the appropriate treatments:

- What kind of site (potential natural vegetation, soils)?
- Successional state of site?
- Components that need to be restored?
- How units may fit into the overall landscape mosaic?
- Long-term goals and objectives?

Utilize the "Western Juniper Field Guide: Asking the Right Questions to Select the Appropriate Management Actions (Bates et al. 2007, Circular 1321) (see http://pubs.usgs.gov/circ/l 32 l/pdf/circ l 321.pdf).

Tree and Boulder Hauling

- Apply mitigation and best management practices for dust abatement (water, lignosulfonate, calcium, and magnesium chlorides) dry conditions, and erosion control as directed by physical scientist or road engineer (see road maintenance project design criteria #6 for application).
    - Haul on gravel and native-surface roads will be limited to dry conditions.

Haul Restrictions to Prevent Fine Sediment Delivery to Streams

- Haul or maintenance is permitted on roads under the following conditions:
    - During haul, weather conditions are monitored daily for the chance of precipitation by the hydrologist or fish biologist.
    - No rutting of the road surface is occurring, indicating the subsurface is wet.
    - Frozen ground conditions.
    - Haul will cease at any time when the travelway of the road is wet and turbid water or fines are observed moving off the road surface to ditchlines that deliver to stream channels regardless of time of year.

Roads Exempt from Haul Restrictions Include (Due to No Mechanism for Sediment Delivery):

- Paved roads
- Surfaced Ridge top roads
- Surfaced outsloped roads with no ditch or stream crossings

Prescribed Burning and Related Activities

- Mechanical piling and burning of large piles will be restricted to existing roads and landings.
- Include all relevant PDC in silviculture prescriptions and burn plan objectives for all fuel treatment activities within RHCAs.
- Use all available fuel treatments and preparation activities as necessary (for example, multiple entries, slash pull-back, modified ignition methods, locations, timing, and sequence, thinning of small green trees, pruning of green trees and snags, prescribed fire, fire suppression, jack pot burning, etc.) to achieve the specific PDC. Suppression should be used only as a last resort to achieve other PDC.

For Perennial and Fish-Bearing Stream Channels:

- Avoid removing trees along stream banks (for example, don’t cause bank instability or increase erosion).
- Within primary shade zone retain 100 percent of the overstory canopy closure with the exception of hardwood treatment.
- For intermittent. non-fish-bearing stream channels:
    - Within 50 feet of the stream channel backing fire is preferred.
- For the maintenance and use of water sources and draft sites:
    - Minimize disturbance of existing riparian vegetation to the greatest extent practical; in particular, maintain shade, bank stability, and large woody material recruitment potential.
    - Use sediment control measures such as straw bales, filter cloth, or sediment fences when conditions warrant.
    - Maximize maintenance activities during late summer and early fall to best avoid wet conditions.
    - Do not pump from streams that do not have continuous surface flow. When pumping water in all situations from streams, ensure that at least one-half of the original streamflow remains below the pump site.

- ♦ Refuel power equipment, or use absorbent pads for immobile equipment, and prepare concrete at least 150 feet (or as far as possible from the water body where local site conditions do not allow a 150 foot setback) from water bodies to prevent direct delivery of contaminants into associated water bodies.
- ♦ Fisheries, hydrology or other qualified personnel must work with engineering/fire personnel to review proposed activities to minimize potential effects to fish, stream channel conditions, and water quality.
- ♦ Use and develop off-channel ponds outside of stream channels were feasible and appropriate. Work with fire folks to prioritize and decommission unnecessary in-stream drafting sites.
- ♦ Water withdrawal equipment must have a fish screen installed, operated and maintained in accordance to NOAA Fisheries guidelines.

Wildlife

Threatened, Endangered or Sensitive Species

- If wolves become established (denning) while project implementation is occurring, measures will be taken to avoid activity in that vicinity
- If any evidence of wolverines is discovered during project implementation, measures will be taken to provide protection. If a den is found we would protect it from human disturbance.

Raptors

- No activities will occur within currently known goshawk or other raptor nest stands. To conserve nesting habitat and to minimize disturbance to nesting individuals, restrictions would be executed according to the requirements of the species involved.
- With all newly discovered raptor nests, a buffer zone would be established by the wildlife biologist to restrict activities near the nest area during occupancy.
- Where possible, retain trees with inactive nests that may be important to secondary nesters (for example, great gray owl).
- Any snags in riparian areas or uplands will be protected from disturbance, removal, or use in stream restoration activities unless deemed a safety hazard at a specific work site.

Big Game

- Within big game winter range a wildlife biologist will be consulted between December 1 and April 1 to determine if activities should be restricted for big game needs.

Botany

Note: Pre-implementation planning project design criteria are identified.

Rare and Sensitive Plants and Habitats

- ***Pre-Implementation:*** Proposed restoration projects shall be completely surveyed early in the implementation planning process by a qualified botanist or rare plant technician, to identify and assess any sensitive or rare plant populations or habitats.
- ***Pre-Implementation:*** Proposed restoration projects shall develop restoration plans for degraded sensitive species habitats and/or mitigation plans in areas where sensitive plant populations are documented. This shall be accomplished by a journey-level Forest Service botanist in collaboration with the interdisciplinary team and other stakeholders.

- Heavy equipment, vehicle operation, road construction, staging areas, stockpile areas, piling of slash, fence construction, recreation sites, prescribed fires, fire lines, and other operational activities shall not be allowed in any documented sensitive plant sites unless it is for the demonstrated benefit or protection of the site. All sensitive plant populations should be buffered 100 feet. from all operational activities where topography does not restrict such a distance. Sensitive plant sites and associated buffers shall be identified as areas to protect.

Sensitive and Unique Habitats

- The integrity of unique habitats shall be maintained. Unique habitats [may] include meadows, rimrock, talus slopes, cliffs, animal dens, wallows, bogs [fens], seeps and springs. This shall be accomplished by incorporating cover buffers approximately 100 feet in width.
- Heavy equipment, vehicle operation, road construction, staging areas, stockpile areas, piling of slash, fence construction, recreation sites, prescribed fires, fire lines, and other operational activities shall not occur within, or at the interface of lithosols (scablands).
- Cutting of old-growth juniper shall be prohibited. Old-growth characteristics include: sparse limbs, dead limbed or spiked-tops, deeply furrowed and fibrous bark, branches covered with bright-green arboreal lichens, noticeable decay of cambium layer at base of tree, and limited terminal leader growth in upper branches.

Groundwater-Dependent Ecosystems

- The integrity of groundwater-dependent ecosystems shall be maintained. Spring developments shall not dewater groundwater-dependent ecosystems. Spring developments shall not be allowed if the spring is occupied by rare or sensitive plant species, or in peatlands, fens, or where histic soils are present. These sites should be buffered 100 feet from all operational activities where topography does not restrict such a distance, and be identified as areas to protect.
- Heavy equipment, vehicle operation, road construction, staging areas, stockpile areas, piling of slash, fence construction, fire lines, and other operational activities shall not be allowed in springs, seeps, or any other groundwater dependent ecosystem, unless it is for the benefit or protection of the groundwater dependent ecosystems or development of the spring.
- Spring developments should not disturb the spring orifice (point where water emerges). Spring head boxes should be placed in a location that will cause the least amount of disturbance to the soils and vegetation of the groundwater dependent ecosystems. Preferable locations for spring head boxes should be in an established channel downstream from the orifice or a location where flowing water becomes subsurface.
- When necessary, construct fenced exclosures around spring developments to prevent damage from wild ungulates and livestock.
- Spring developments shall have a return flow system to minimize the diversion of surface and subsurface water from the catchment area. Consider using a float valve or similar device to reduce the amount of water withdrawn from the groundwater dependent ecosystems.
- When developing springs, place troughs far enough away from groundwater-dependent ecosystems, wetlands, and other sensitive or unique habitats to prevent erosion, compaction, or degradation to sensitive soils and vegetation due to livestock congregation.

Invasive Plant Species

- ***Pre-Implementation:*** Proposed restoration projects shall be surveyed for invasive plants early in the implementation planning process by a qualified invasive plant specialist /technician, to identify and assess any undocumented invasive plant infestation.

- ***Pre-Implementation**:* For project areas that overlap or are adjacent to invasive plant infestations, assure that there is sufficient time prior to develop a long-term site strategy for control, eradication, and revegetation of the site. This shall be accomplished by a qualified invasive plant specialist in collaboration with the interdisciplinary team and other stakeholders.
- All activities shall be conducted in a manner as to minimize or prevent the potential spread or establishment of invasive species.
- Actions conducted on National Forest System Lands that will operate outside the limits of the road prism, require the cleaning of all heavy equipment (bulldozers, skidders, graders, backhoes, dump trucks, etc.) prior to entering the Malheur National Forest. Cleaning will be inspected and approved by the forest officer in charge of administering the project.
- Assure that all materials are weed-free. Use weed-free straw and mulch for all projects conducted or authorized by the Forest Service on National Forest System Lands. If State certified straw or mulch is not available, individual national forests should require sources certified to be weed-free using the North American Weed Free Forage Program standards or a similar certification process.
- Inspect active gravel, fill, sand stockpiles, quarry sites, and borrow material for invasive plants before use and transport. Treat or require treatment of infested sources before any use of pit material. Use only gravel, fill, sand, or rock that are judged to be weed free by District or Forest weed specialists.
- Prohibit heavy equipment operation, vehicle travel, staging areas, fire-control lines, and any other operational activities in invasive plant infestations, unless the activities are for the express purpose of eradicating the infestation or INV1 and INV2 have been completed.
- Conduct post-implementation monitoring for invasive plants. Continue monitoring, treating, and removing invasive plants until all infestations are eradicated and native plant species are well established.

Native Plant Materials and Revegetation

- ***Pre-Implementation**:* Where the need for native plant materials is anticipated, assure that there is sufficient time for the plant materials specialist to develop a native plant materials plan and/or prescription prior to implementation of planned revegetation, rehabilitation, and restoration projects. This may include allowing for enough time to harvest and store hardwood cuttings, produce suitable quantities of native seed, and/or grow-out container stock.
- Locally adapted, genetically appropriate native plant materials are the first choice for use in revegetation, restoration, and rehabilitation, where timely natural regeneration of the native plant community is not likely to occur. Use a diverse assemblage of species that have the potential to naturally occur in the project area. Acquire native seed or plant sources as close to the watershed as possible. Examples of areas that may need treatment include: habitat restoration efforts, log decks, staging areas, landing zones, temporary roads, slash piles, culvert replacements, severely burned areas, skid trails, decommissioned roads, invasive species treatments, and other disturbances.
- Non-native, non-invasive plant species may be used in the following situations: (1) when needed in emergency conditions to protect basic resource values (for example, soil stability, water quality, and to help prevent the establishment of invasive species), (2) as an interim, non-persistent measure designed to aid in the re-establishment of native plants, (3) if native plant materials are not available or not economically feasible, and (4) in permanently altered plant communities.
- Under no circumstances shall non-native invasive plant species or noxious weeds be used for revegetation.
- Development, review, and/or approval of revegetation, rehabilitation, and restoration prescriptions, including species selection, genetic heritage, growth stage, seed mixes, sowing guidelines, and any needed site preparation, shall be accomplished by a plant materials specialist who is knowledgeable and trained or certified in the plant community type where the revegetation will occur.

- Concentrate plantings above the bank-full elevation. Sedge and rush mats should be placed and sized to prevent their movement during high flow events.
- Newly planted or seeded areas should be protected from animals and activities that may prevent, retard, or slow the establishment and recovery of native vegetation. Site-specific measures may include building fences, piling slash, jackstrawing, closing areas to vehicles, and/or temporarily changing grazing regimes until the desired condition is sufficiently achieved.

Soils

- For projects involving heavy machinery off roads, the project proponents shall inspect the site for existing impacts to the soil. If existing impacts appear to be heavy on the Malheur National Forest or moderate on the Ochoco National Forest, they shall contact a soil scientist, who shall determine what site specific project design criteria are necessary to meet Forest Plan and Forest Service Manual standards and guidelines. (If a soil scientist is not available, a silviculturist or hydrologist can do the work.) If standards and guidelines cannot be met, heavy machinery shall not be used.
- Erosion would be minimized by following General Aquatic Conservation Measures (see section, above) and by implementing the appropriate project design criteria based on the type of activity (see Appendix A).
- Erosion from heavy machinery use would be minimized; by minimizing compaction and puddling, rutting would be minimized.
- For Livestock Stream Crossings and Off-Channel Watering Facilities, out-of-channel erosion would be minimized.
- For Road Erosion Control, erosion would be minimized.
- For Juniper Removal, erosion would be minimized. It is possible that juniper removal would increase ground cover within a few years, and thereby reduce erosion.
- Prescribed fire (including for disposal of slash after juniper removal) can involve only low- and moderate-severity fire, and erosion from fire lines would be minimized, so erosion from prescribed fire would not be significant.

Fire and Fuels

- Mechanical tools may be necessary to prepare fire control lines for these burns, but would be limited, and typically no heavy equipment would be used. Prescribed burns or wildfires could temporarily affect air quality.
- The project design criteria for both Juniper Removal and Riparian Vegetation Treatment (controlled burning) would be followed. National, state, and local policies regarding prescribed fire implementation will be met.
- Activities that are expected to create smoke emissions would follow the State of Oregon Smoke Management Plan. Prior to burning, approval will be obtained from the Oregon Department of Forestry, who determines compliance with the Clean Air Act. State smoke forecasts, which predict wind direction and smoke mixing height, will be obtained prior to all burning to ensure smoke intrusions will not occur in the local smoke sensitive receptor areas.
- Burning will follow the guidance provided by the Oregon Smoke Management Plan (Directive 1-4-1-601, Operational Guidance for the Oregon Smoke Management Program), which is an agreement between federal land management agencies in northeast Oregon and Oregon Department of Forestry limiting smoke emission amounts. Oregon Department of Forestry monitors activity, and if a limit is reached it will shut down prescribed fire activity.

Heritage Resources

- Compliance with section 106 of the National Historic Preservation Act for activities authorized under this analysis will be completed and concurred with by the Oregon State Historic Preservation Office before any ground disturbing action takes place. For each potential activity the district or zone archaeologist will determine which of the criteria in the 2004 Programmatic Agreement with the Oregon State Historic Preservation Office best fit the particular project. This will vary somewhat project to project based on the scale of the particular activity, the location on the landscape, and the nature of associated cultural resources, if any.
- The district or zone archaeologist will document their findings on a programmatic agreement form with a project description, rationale and location map which will be attached to the Forest Service Heritage Event database. The forest archaeologist will review and sign off on the programmatic review form if concurred with. For appendices A, B and C projects as defined in the 2004 Programmatic Agreement, the Forest will retain the documentation and provide the Oregon State Historic Preservation Office with the annual summary of projects as described in the Preservation Act.
- For full inventories the district or zone archaeologist will complete an inventory report meeting current Oregon State Historic Preservation Office (SHPO) standards which will be reviewed by the forest archaeologist. The forest archaeologist will forward the completed inventory report to the Oregon State Historic Preservation Office for review and concurrence signature or further discussion as appropriate.
- Consultation with Native American tribes is conducted under the terms of the Memorandums of Understanding the Forest has with each individual tribe. The Forest regularly consults with the Burns Paiute Tribe, the Confederated Tribes of the Umatilla Indian Reservation and the Confederated Tribes of Warm Springs Reservation.
- For work requiring a full inventory under the terms of the 2004 Programmatic Agreement any identified cultural resources sites will generally be avoided. For cases where site avoidance is impractical mitigation procedures will be developed in consultation with the Oregon SHPO before project work begins.
- If any previously unidentified cultural resources are located during project implementation, ground disturbing work will be halted until the resources are evaluated by the district or zone archaeologist. If the cultural resources are determined to be potentially eligible for listing on the National Register of Historic Places work will either be permanently halted or a mitigation plan will be developed in consultation with the Oregon SHPO before work continues.

Recreation

- Motorized aquatic restoration methods would not be used within wilderness, wild portions of wild and scenic rivers, and inventoried roadless areas.
- Mechanized aquatic restoration methods would not be used within wilderness or wild portions of wild and scenic rivers.

Grazing

General

- Range and fire specialists and permittees would coordinate activities including scheduling of burning activities in grazing units.
- Utilize the Forest Post-Fire Interim Grazing Guidelines to aid in determining when to resume grazing activities.

- Whenever possible, units to be rested would be burned in the spring of the year to be rested or in the fall prior to the rest year.
- If a rest period is required following a burn the permittee has the option to exclude cattle grazing from those portions of a pasture that were burned through the use of fencing and could continue to graze the unburned areas of a unit.

Protection of Government and Permittee Investments

- All existing structural range improvements (fences, gates, spring developments, etc.) and permanent ecological plots would be contractually protected.
- Maintain structural integrity of range improvements.
- If structural improvements are damaged during project operations they would be repaired to Forest Service standards prior to livestock scheduled use by the party responsible for causing the damage. Repairs would be required of the purchaser if damage were done during thinning or fuel treatment contractors or by force account where appropriate.
- Three or more splices to a single wire within a distance of 20 feet will be replaced with a single splice.
- Fence right-of-ways (6 feet either side of fence), trails, other developments and access to them would be cleared of slash produced by project activities.

Aspen Restoration

- New aspen exclosure fences would have gates installed in proper locations to allow for removal of stray livestock. Aspen fences would be maintained each year and repaired whenever necessary. Plans for aspen exclosures will define when restoration of the protected stand has been achieved and who has responsibility for maintenance of the structure. When fences are no longer needed, aspen fences should be removed.
- Alternate livestock water sources to those being used in aspen stands would be developed off-site before fencing aspen or re-evaluate fencing of the aspen site. Coordinate with range specialist and permittee.

Notification

- During the planning stage of each individual project all potentially impacted grazing permittees will have notice of action and opportunity to provide input that may lessen impacts to their livestock operation well in advance of implementation.
- Prior to implementation all potentially impacted grazing permittees will be given notice of dates when work will start.

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