United States Department of Agriculture

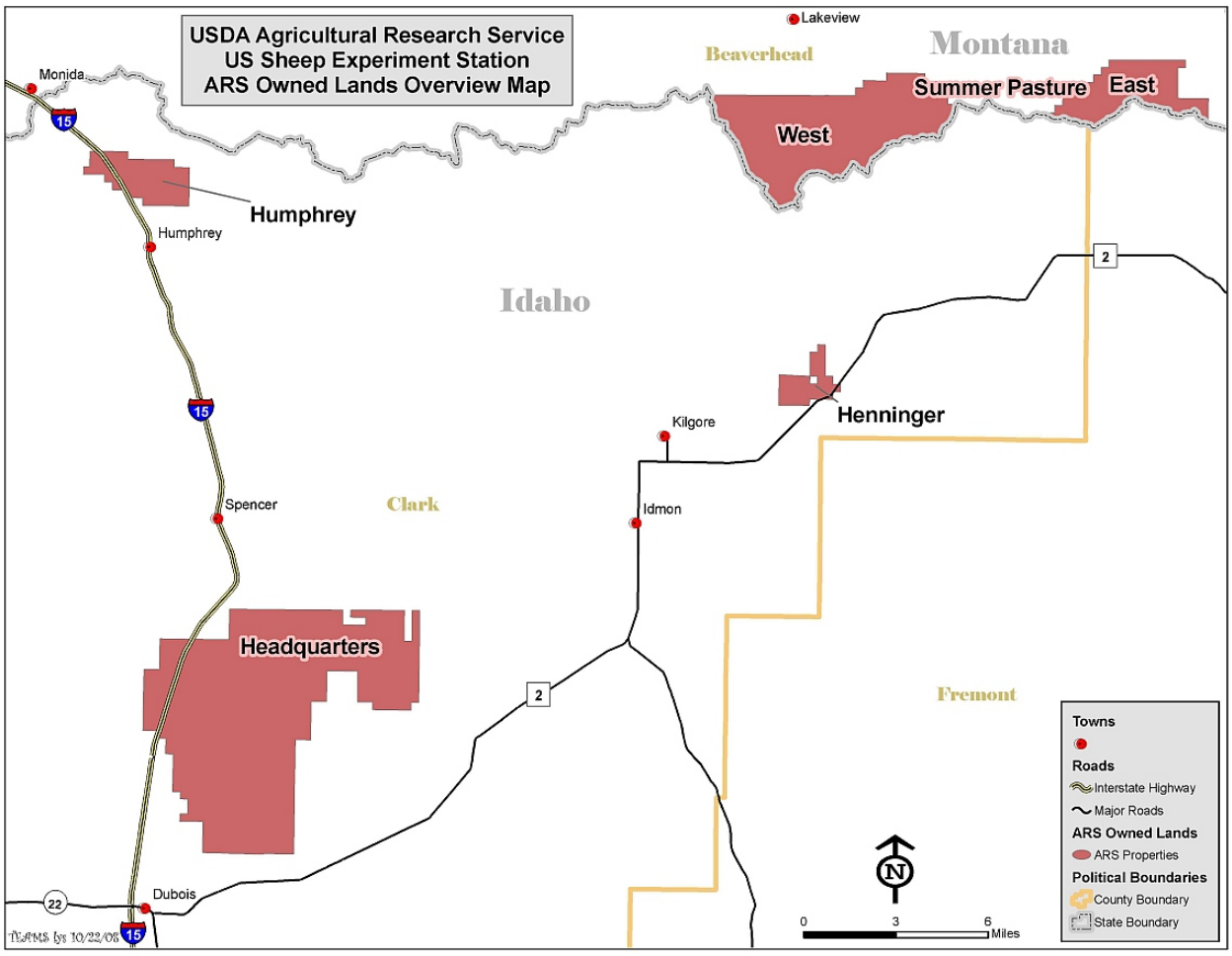
Agricultural Research Service

Pacific West Area

March 2009

U.S. Sheep Experiment Station Grazing and Associated Activities Project 2009

Scoping Information



Where is this project in the NEPA process?

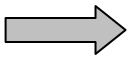
NEPA is a decision-making process. An acronym for the National Environmental Policy Act of 1969, NEPA provides opportunities for interested parties to give their ideas and opinions about federal actions. The following explains the steps of the NEPA process, and where the attached proposal is in that process.

____ Step One - Need for a Project

The Agricultural Research Service or some other entity may identify the need for a project.

____ Step Two - Develop Project Proposal

The Agricultural Research Service or a project proponent develops a detailed, site-specific proposal.



Step Three - Scoping (Public Input)

The Agricultural Research Service solicits public input on the site-specific proposal to define the scope of environmental analysis and range of alternatives to be considered.

____ Step Four - Develop Reasonable Range of Alternatives

If a proposal fits categorical exclusion: Agricultural Research Service makes and documents decision. If scoping determines need for EA or EIS: Agricultural Research Service develops alternatives.

____ Step Five – Information for Formal Public Comment Period

Agricultural Research Service performs analysis of environmental effects, identifies preferred alternative, and *may* solicit formal public comment.

____ Step Six – Environmental Analysis & Decision

Agricultural Research Service finalizes the environmental analysis and makes decision to implement one of the alternatives.

____ Step Eight - Implementation

Agricultural Research Service implements the project.

____ Step Nine - Monitor and Evaluate

Agricultural Research Service monitors and evaluates project results.

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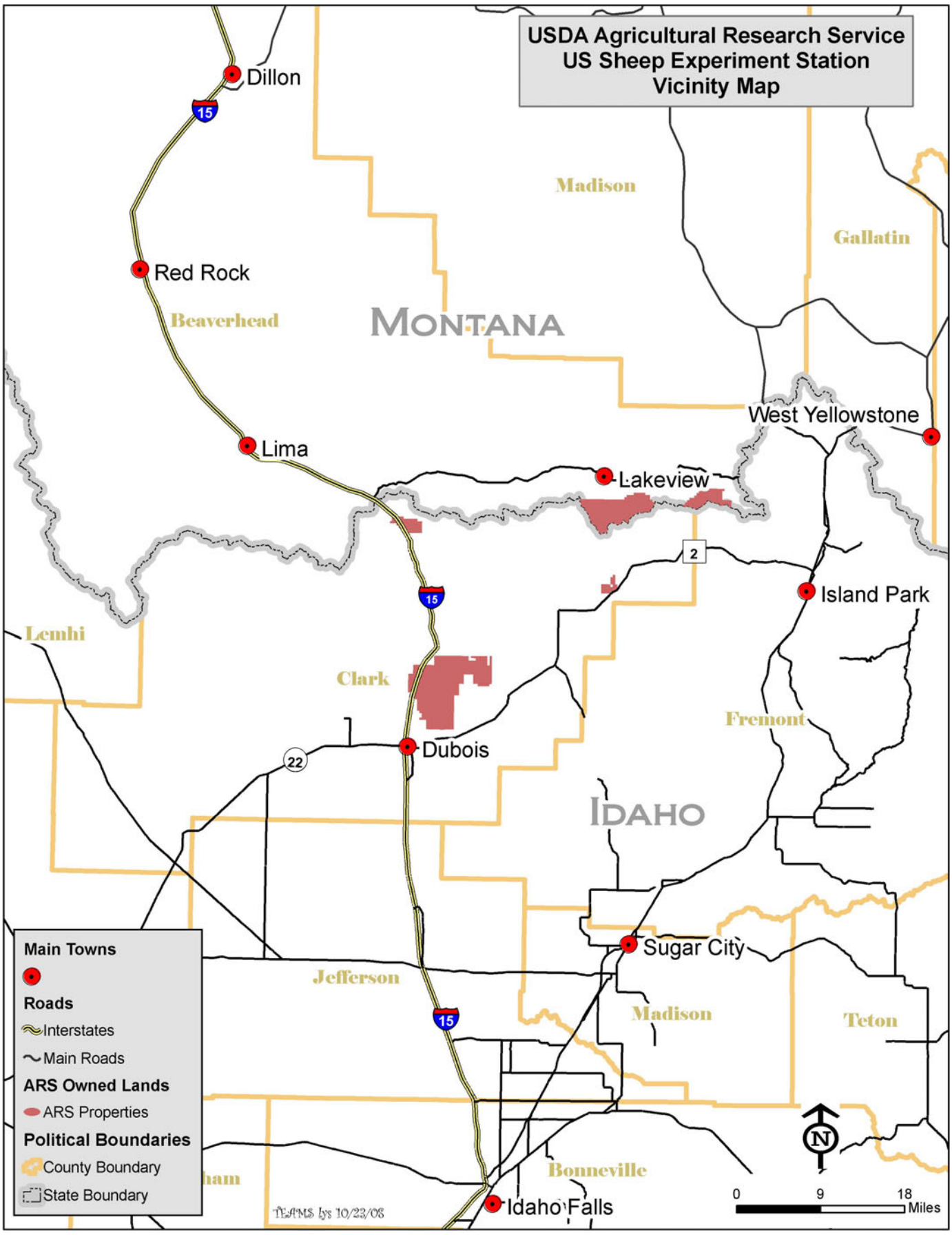


Figure 1. Vicinity Map

Proposal Summary

It is proposed that the Agricultural Research Service (ARS) continue ongoing sheep grazing and associated activities that have been historically occurring (approximately 90 years) in conjunction with ARS, United States Sheep Experiment Station (USSES) research to develop integrated methods for increasing production efficiency of sheep and to simultaneously improve the sustainability of rangeland ecosystems. For detailed descriptions of the individual activities, see Proposed Action, beginning on page 13.

Purpose and Need

The purpose and need for this project is to provide for the continuation of historic and ongoing grazing and associated activities at the USSES in support of the mission of the ARS, USSES in Dubois, Idaho.

Agricultural Research Service

The Agricultural Research Service is the U.S. Department of Agriculture's chief scientific research agency. Their job is finding solutions to agricultural problems that affect Americans every day, from field to table. ARS conducts research to develop and transfer solutions to agricultural problems of high national priority and provide information access and dissemination to: ensure high quality, safe food and other agricultural products. Unlike the (USDA) Forest Service or (USDI) Bureau of Land Management, ARS is not a land management agency, and is not subject to the Federal Land Management Policy Act or the Forest Service Organic Act. ARS is solely a research agency. As a research agency, ARS (in this instance, the USSES) is not required to, and does not manage its lands for public multiple use.

Mission Statement, USSES, Dubois, Idaho

The mission of the USSES, Dubois, Idaho is to develop integrated methods for increasing production efficiency of sheep and to simultaneously improve the sustainability of rangeland ecosystems.

To contribute to USDA, ARS national programs, and to accomplish the ARS mission at the USSES, ARS scientists address problems defined in components of the:

- **NP 101 Action Plan:** Understanding, Improving, and Effectively Using Animal Genetic and Genomic Resources; Preserve and Curate Livestock and Poultry Genetic Resources; Develop and Implement Genome-Enabled Genetic Improvement Programs; Enhancing Animal Adaptation, Well-Being and Efficiency in Diverse Production Systems; Reducing Reproductive Losses; Improving Efficiency of Nutrient Utilization and Conversion to Animal Products; and
- **NP 215 Action Plan:** Ecosystems and Their Sustainable Management; Rangeland Management Systems to Enhance the Environment and Economic Viability; Grazing Management; Livestock Production and the Environment; and Integrated Management of Weeds and Other Pests.

Because of the connectivity among the national programs and their components, a single experiment at the USSES may contribute to multiple components of NP 101 and NP 215. This feature of the national programs and USSES programs will lead to an understanding of the interactions between sheep and the environments in which they are produced that can be used to improve sheep production systems and ensure the sustainability of grazing land ecosystems.

Background

This is the second phase of a two-phase NEPA compliance plan for the grazing and associated activities at USSES. The first phase culminated in the issuance of an interim EA in November of 2008. This second phase will culminate in the issuance of a NEPA document that considers the long-term effects of the proposed action.

Phase 1 (Interim USSES Grazing and Associated Activities Project)

The first phase included an environmental assessment (Interim USSES Grazing and Associated Activities Project (http://www.ars.usda.gov/SP2UserFiles/Place/53640000/20081126-ARS-USSES-EA.pdf)) and was limited to:

- The sheep grazing and associated activities on the USSES lands that have historically occurred and are ongoing in support of research projects currently being conducted.
- The time necessary (through March 2010) to complete an environmental analysis (Phase 2) to consider the long-term effects of sheep grazing and associated activities needed to facilitate research at the USSES.

On August 12, 2008, a scoping package explaining the purpose and need for action, as well as the location and types of proposed activities, was mailed to approximately 100 interested parties. These included individuals and organizations who expressed interest in the project, adjacent landowners, public legislators (federal, state), township supervisors, and plaintiffs in *Center for Biological Diversity, and Western Watersheds Project v. U.S. Sheep Experiment Station; U.S. Department of Agriculture; Agricultural Research Service; and U.S. Forest Service*. Nineteen (19) responses to scoping were received. Comments received during the public scoping period were used to develop issues. Of the issues identified during scoping, none were unresolved. Therefore, no additional alternatives to the proposed action were analyzed in detail. Four additional alternatives were considered for that project but were eliminated from detailed analysis.

The Decision Notice and Finding of No Significant Impact for the Interim U.S. Sheep Experiment Station Grazing and Associated Activities Project Environmental Assessment were signed on November 28, 2008.

Phase 2

Phase 2 will be an environmental analysis that looks at the long-term effects of sheep grazing and associated activities on the USSES lands that have historically occurred and are ongoing in support of the USSES research projects in Dubois, Idaho.

Historical Background, USSES, Dubois, Idaho

Establishment of the Station at Dubois

In the fall of 1915, the Bureau of Animal Industry secured authorization to search for a tract of land in the west that could be used as a range for a western sheep breeding experiment station. Two exacting conditions governed the selection of the site:

1. The area must be unappropriated public domain land and not intermingled with homesteads or other property.

2. The location must be accessible by railroad.

The location at Dubois, an area of approximately 28,000 acres, was decided upon, because it was the only location found containing a solid block of public domain land of sufficient acreage and adjacent to a railroad (McWhorter, V. The Pacific Wool Grower, Vol. 4. Nos. 10 & 11, 1952).

The U.S. Sheep Experiment Station was established as a sheep-breeding and rangeland-grazing research facility. To provide the natural resource base for sheep and grazing research, lands were withdrawn from the public domain in 1915, 1916, 1919, and 1922. Presidents Woodrow Wilson and Warren G. Harding withdrew the lands with Executive Orders 2268, 2491, 3141, 3165, and 3767. Public Law 97-98-Dec. 22, 1981, clarified administrative jurisdiction of USSES lands (which rests solely with the Secretary of Agriculture), and the purpose of USSES lands, which are designated for "agricultural experiment purposes." There are no detailed records of land use prior to the USSES establishment. Livestock grazing research under the ARS ownership, which dates from circa 1918, predates the county. High elevation summer ranges were probably used for sheep grazing since that was a common practice at that time (possibly cattle, but more likely sheep).

Addition of Summer Range

Between 1940 and 1942, the USSES purchased the Humphrey and Henninger Ranches from the private sector. Prior to purchase, the Humphrey and Henninger Ranches were used for farming, some cropland, hay, and mainly livestock production. Before transfer to the ARS, Henninger was grazed at much heavier rates than currently used by the USSES.

Research at the USSES, Dubois, Idaho

Since its research began, circa 1918, the USSES is credited with developing three breeds of sheep (i.e., Columbia, Targhee, and Polypay) and has been making germplasm (i.e., breeding stock) available to sheep breeders in North America since the 1920s. Based on numbers of registrations, all three of these breeds (Columbia, Targhee, Polypay) are among the 10 most popular breeds of sheep in the United States. Grazing and rangeland research at the USSES has been ongoing since the 1930s, and the research has produced unmatched information on managing grazing on sagebrush steppe to preserve native ecosystems.

Current USSES research is aimed at developing new or improving existing genetic lines of sheep that specialize in paternal and maternal traits that enhance lamb production (i.e., number of lambs born and weaned per ewe), lamb growth, lamb carcass merit, and yield of marketable product; improving nutrient management throughout the sheep production cycle; developing monitoring technologies for landscape-scale assessment of plant communities and for determining the effects of rangeland management activities, including grazing and fire on vegetation, ground cover, and herbivore selectivity; and developing science-based grazing and prescribed burn management strategies and decision support systems that can be used to guide managers to maintain or improve the ecological function of western rangelands.

USSES research involves at least 34 scientists at 9 ARS locations in 7 states and 10 universities in 7 states, in addition to the scientists at the USSES. Most of the research spans multiple years, and some of the long-term sheep genetics and rangeland research spans more than seven decades. In many cases, the USSES has been the only location in North America with the land and animal resources to conduct the research, and the only location in North America able to establish direct linkages between new research

and research conducted during the last 90 years to provide a clear understanding of the long-term consequences of various management strategies. USSES research is published in peer-reviewed scientific journals, which are becoming more readily available to the public as publishing companies develop open-access electronic archives, and is often rewritten for various trade magazines.

USSES research has been used to:

- train new scientists;
- write textbooks to educate university students in animal and rangeland sciences;
- develop outreach programs that benefit farmers, ranchers, small business owners, agribusiness corporations, and land managers;
- develop or improve sheep breeds that increase the efficiency of food and fiber production;
- preserve or improve rangeland ecosystems; and
- preserve or improve wildlife habitat.

The USSES is known worldwide for its research and sheep breeds. Scientists, sheep producers, students, and industry personnel from throughout the United States and other countries visit, and many more contact the U.S. Sheep Experiment Station each year to learn more about the research or ask for comments on various issues associated with sheep production and rangeland management.

J.R. Simplot Mine History

On February 1, 1955, J.R. Simplot Company entered a lease agreement with the United States of America, Secretary of Interior to lease phosphate lands, under the Act of February 25, 1920 as amended. This lease agreement with Simplot was for the Bureau of Land Management to administer mine operations on ARS lands; ARS was included and was active in managing the mine lease.

During the years from 1956 through 1958, J.R. Simplot, an Idaho-based mining company, conducted surface mining operations for phosphate in the upper reaches of Spring Creek along the Montana-Idaho border. On the Montana side, their surface mining activities were in sections 1 through 5, 9 and 10, T.15 S., R. 1 W. Simplot constructed their main haul road down Spring Creek and Odell Creek to the town of Monida, Montana. Ore was then shipped to Ramsey, Montana for beneficiation. Since 1958, the haul road has not been maintained, has naturally revegetated. Currently the haul road is used only for foot or horse travel.

In the summer of 1995 and 1996, field reviews were conducted under the direction of Mr. John McKay (Bureau of Land Management) to determine reclamation activities needed to restore haul roads (remove culverts, correct erosion, etc.) and to reclaim the mine site. A plan was devised, an environmental assessment was developed by the Bureau of Land Management, and work was completed during the summer of 1997. Periodic evaluations by the Bureau of Land Management and ARS and Simplot personnel have occurred. Additional hand work was completed during the summer of 2007.

An ATV was used to haul supplies for mine rehabilitation work at the old mine in 2007. Mine rehabilitation included:

- lowering overflow channel on the catchment pond to confine runoff flow to the existing channel
- placing sandbags to shore up the pond wall and confine sediment

- placing rocks and woody debris in the overflow channel to dissipate energy and slow flow to arrest down cutting

Cooperating Agencies

Range Use on other Federal Lands

In addition to its own properties, the USSES has agreements in place to graze sheep on National Forest lands in the Caribou-Targhee National Forest and on Bureau of Land Management lands, in addition to the USSES lands. Both the Forest Service and the Bureau of Land Management have completed appropriate NEPA documentation for the grazing they authorized through these agreements. Accordingly, this NEPA analysis will focus on grazing that occurs on ARS lands at the USSES.

The USSES has agreements with the following federal agencies. To see the full text of these documents, please refer to the project file.

United States Department of Agriculture Forest Service, Caribou-Targhee National Forest

Forest Service Agreement 07-IA-11041561-025: This agreement documents the coordination and authorization of the use of National Forest Service land administered by the Caribou-Targhee National Forest by the USSES for research purposes. The intention is that "the research and investigation work shall be for the benefit of the entire sheep and range industry in Idaho and adjacent states, and for the general benefit of the People of the United States.[1]" This document authorizes the USSES to graze sheep at no cost on National Forest land administered by the Dubois and Island Park Ranger Districts as follows (Table 1; Map 1):

Table 1. Sheep grazing authorized on National Forest System lands

Number	Class	Period	Allotment
933	Ewe/Lamb	07/03 – 09/06	Meyer's Creek (Island Park Ranger District)
1,210	Dry	06/16 – 09/15	East Beaver Creek (Dubois Ranger District)
1,200		11/06 – 01/02	Snakey Canyon (Dubois Ranger District)
1,000		11/20 - 0103	Kelly Canyon (Dubois Ranger District)

Forest Service Agreement 58-5364—6-142N: A portion of the Continental Divide National Scenic Trail (hereafter referred to as the "Continental Divide Trail") crosses USSES lands that adjoin National Forest lands in the Centennial Mountains. The objectives of this cooperative project are to 1) determine the effects of the Continental Divide Trail on ecosystem processes on USDA, ARS, USSES lands in the Centennial Mountains of Montana and Idaho and 2) to create a mechanism for completing the construction and accomplishing the maintenance of the trail through the Centennial Mountains.[2] The agreement coordinates trail condition and maintenance activities by the Forest Service on the portion of the trail on USSES lands (see Map 7 and Map 8). USSES cannot use appropriated monies to construct or maintain any portion of the Continental Divide Trail. This cooperative agreement established a mechanism for constructing and maintaining the portion of the Continental Divide Trail that crosses USSES lands and for determining the effects of the trail on ecosystem processes in the vicinity of the

[1] USDA, Forest Service/Agricultural Research Service, USSES. July 2007. Forest Service Agreement 07-IA-11041561-025

[2] USDA, Forest Service/Agricultural Research Service. January 2006. Forest Service Agreement 58-5364-6-142N.

trail. The Continental Divide Trail is located on USDA, ARS USSES lands in the Centennial Mountains; however, the Forest Service manages and maintains the trail over all USDA lands.

United States Department of the Interior, Bureau of Land Management - 2007

Memorandum of Understanding between USDI Bureau of Land Management, Upper Snake Field Office and the USDA Agricultural Research Service, U.S. Sheep Experiment Station: The purpose of this Memorandum of Understanding is to document, coordinate, and authorize the use of public lands known as the Berenice Allotment, administered by the Bureau of Land Management, upper Snake Field Office for research purposes. Approximately 1,050 sheep are grazed on the Berenice Allotment between November 23 and February 5. Research is allowed for the mutually desired purpose of managing the Berenice Allotment for scientific research while maintaining or improving the ecological condition of the native vegetative communities within the allotment. Research shall be conducted by the USSES for the benefit of the entire sheep and range industry in Idaho and adjacent states, and for the general benefit of the people of the United States.[3] The Memorandum authorizes the USSES to graze sheep at no cost on public lands within the Berenice Allotment, managed by the Upper Snake Field Office under the terms and conditions previously analyzed in Environmental Assessment #ID -70-00-010 (see Map 1).

United States Department of Energy Nuclear Regulatory Commission - 1963 (Previously the Atomic Energy Commission)

Atomic Energy Commission Contract No. AT(10-1)-1154: This contract is defined by a Memorandum of Understanding that allows the U.S. Atomic Energy Commission (represented by its Idaho Operations Office) to grant a license to the USDA, ARS to allow the ARS to occupy, use and maintain a winter feeding area for experimental sheep on its premises called the "Range" within the Commission's National Reactor Testing Station (see Map 1).[4]

Project Location

The project area consists of the ARS, USSES lands as described below (see enclosed maps).

- Headquarters Property (Map 3): T. 11 N., R. 36 E., Sections: 1, 11, 12, 13, 14, 16, 22, 23, 24, 25, 26, 27, 34, 35, 36; Part of: 2, 9, 10, 15, 17, 20, 21, 28, 33. T. 11 N., R. 37 E., Sections: 5, 6, 7, 8, 9, 10, 15, 16, 17, 18, 19; Part of: 2, 3, 4, 11, 14, 20, 22, 23, 29, 30, 31. T. 10 N., R. 36 E., Sections: 1, 2, 11, 12. T. 10 N., R. 37 E., Sections: Part of: 6, 7.
- Henninger Ranch (Map 4): T. 13 N., R. 39 E., Sections: 25; Part of: 24, 36. T. 13 N., R. 40 E., Sections: 19, 30.
- Humphrey Ranch (Map 5): T. 14 N., R. 36 E., part of sections 19, 20, 21, 22, 27, 28, 29
- Summer Range (Map 6 and Map 7)
    - West Summer Range: T. 15 S., R. 2 W., sections: 1, 2, 3, 4; part of: 5, 9, 10, 11, 12, 13, 14, 15, 16, 22, 23; T. 15 S., R. 1 W., sections: 4, 5, 6, 7; part of 8, 9, 10, 18, 19; T. 14 S., R. 1 W., part of sections 31, 32, 33, 34.

[3] USDI, BLM/USDA, ARS, USSES. December 2007. Memorandum of Understanding Between USDI Bureau of Land Management, Upper Snake Field Office and the USDA Agricultural Research Service, U.S. Sheep Experiment Station.

[4] DOE, AEC/USDA, ARS. February 1963. Memorandum of Understanding between the United States Atomic Energy Commission and the United States Department of Agriculture, Agricultural research Service, Animal Husbandry Research Division.

- East Summer Range: T. 14 S., R. 1 E., section 34; part of 25, 26, 27, 28, 32, 33, 35; T. 15 S., R. 1 E., part of sections 1, 2, 3, 4, 5, 6.

Throughout the year, sheep utilize Bureau of Land Management, Forest Service, and Department of Energy lands (Map 1; also see Cooperating Agencies, pp. 5-6). These lands will be included in this analysis as appropriate. However, grazing use of these lands is covered under separate agreements with those agencies and will not be part of this decision.

Current Status

The U.S. Department of Agriculture (USDA), Agricultural Research Service, (ARS) U.S. Sheep Experiment Station (USSES) Headquarters Property is located in the upper Snake River plain at the foothills of the Centennial Mountains, approximately six miles north of Dubois, Idaho, which is the Clark County seat. Clark County contains 1,765 square miles of land and has a population of approximately 980 persons, approximately 500 of whom live in Dubois. The USSES is the second largest employer in Clark County.

Headquarters for the USSES is located within a two-hour drive of Grand Teton and Yellowstone National Parks. The Continental Divide National Scenic Trail crosses USSES land in the Centennial Mountains of Montana.

The USSES, Dubois, Idaho, has research land in two states (See maps beginning on page 27):

- 27,930 acres of ARS land at Headquarters Property, which has office, laboratory, animal, equipment, and residential buildings, dry-lot facilities for research throughout the year, lambing facilities, and lands used for spring and autumn grazing and rangeland research;
- approximately 16,600 acres of [unsurveyed] ARS land in the Centennial Mountains of Montana is used for summer grazing and rangeland research;
- 2,600 acres of ARS land at the Humphrey Ranch in Idaho, south of Monida, Montana, has animal facilities and equipment buildings, and is used for spring, summer, and autumn grazing and rangeland research; and
- 1,200 acres of ARS land at the Henninger Ranch near Kilgore, Idaho, has animal facilities, and is used for summer grazing and rangeland research.

ARS lands range in elevation from approximately 4,800 feet to nearly 10,000 feet, with average annual precipitation that ranges from approximately 10 inches in the Snake River plain to greater than 21 inches in the Centennial Mountains. Precipitation in the Centennial Mountains varies from 20 inches average in the valley to more than 50 inches at higher elevations. Average annual precipitation at Lakeview, MT from 1959 to 1994 was 21 inches with a high of 36 inches in 1980 and a low of 17 inches in 1978.

The Lakeview Ridge SNOTEL site[5] at 7,400 feet, averaged 31 inches (1971-2000) and the White Elephant SNOTEL site at 7,710 feet elevation, averaged 48 inches during the same period. USSES summer range is mostly higher than either of these sites. PRISM model precipitation extrapolation data

[5] Operated by the USDA, Natural Resource Conservation Service, National Weather and Climate Center, http://www.wcc.nrcs.usda.gov/snow/

are not measured values; the extrapolated data for West Summer Range is 39 inches and is 45 inches for the East Summer Range.

Because of its diverse geography, USSES lands contain subalpine meadow, foothill, sagebrush steppe, and desert shrubland ecosystems. This diversity provides unparalleled research opportunities within ARS.[6]

Existing Conditions

USSES Headquarters, Humphrey, and Henninger Properties are located in the Idaho Upper Snake River sagebrush steppe region. East and West Summer Ranges are located on the Montana side of the Continental Divide in the Centennial Mountains, in the upper Red Rocks River drainage. Sheep are grazed on ARS Properties and on U.S. Forest Service and Bureau of Land Management allotments at various times during the year. Table 7 displays the annual grazing schedule. Sheep are transported to the Department of Energy feed lots at Mud Lake for shearing and breeding.

Vegetation Community Types

The USSES land's diverse geography contains mixed conifer and aspen forests, subalpine meadows, foothills sagebrush steppe, and desert shrubland vegetation community types.

General vegetation cover types for ARS rangelands, with associated acres, are from GIS data. Historical hard copy vegetation data from the Dubois Headquarters office will be converted into digital format for Phase 2 analysis. Existing vegetative cover type data, used for Phase 1 analysis, was acquired through two different sources. Headquarters, Humphrey, and Henninger cover types are from Idaho GAP data (idveg)[7]. Idveg is GIS land cover data created from the second generation Idaho Gap Analysis Project. This broad coverage cover type data, from aerial interpretation, may not reflect site-specific species types on ARS lands. Summer Range vegetation cover types are from SILC3 image interpretation in GIS. SILC3 data was acquired from the Beaverhead-Deerlodge National Forest (USFS). Due to the remoteness of the area along the Continental Divide, combined with the area location along state and land ownership boundaries, there are gaps in available GIS vegetation data. Neither idveg nor SILC3 GIS vegetation data cover this border area. Areas without vegetation data are shown as blank areas in GIS, maps, and data tables. Sixty-six acres on the East Summer Range and 133 acres on the West Summer Range do not have a vegetation type assigned to them from idveg or SILC3. Field verification and conversion of hard copy data to digital will correct these gaps before Phase 2 analysis.

Forest vegetation cover types on Henninger and Summer Range Properties are not included as acres available for sheep grazing. Bark beetle activity is prevalent in the conifer timber stands in Odell Creek. There are extensive areas of Engelmann spruce, lodgepole pine, and whitebark pine mortality. Some Engelmann spruce stands in Spring Creek are 70 percent dead. There are extensive areas of whitebark pine, on Baldy Mt., that have up to 80 percent dead with a high percent of recent, red needle kill (C. Smith, personal communication). Lodgepole pine, mountain pine beetle, mortality is common throughout the timbered areas. Mortality is also common in large-diameter overstory Douglas-fir on southern aspects in lower Spring Creek. Patches of recent and older dead alpine fir occur on the northern aspect in lower Spring Creek.

[6] http://www.ars.usda.gov/Main/site_main.htm?modecode=53-64-00-00 (01/05/08)
[7] http://www.wildlife.uidaho.edu/idgap/index.htm

Tree mortality will continue, and will add standing and down fuels to timbered areas. Lodgepole pine and Engelmann spruce generally fall to the forest floor three to ten years after they are killed, creating a high risk of uncharacteristic wildfire. USDA Forest Service provides fire suppression and fire management on ARS Summer Range lands under an interagency agreement.

Total acres of each range area and percent vegetation cover type groups are shown in Table 2.

Table 2. Total acres and percent cover types

Property	Acres	Shrub/Grass [a, b]	Grass/Other [c, d]	Forb	Aspen	Conifer
Headquarters	27,930	95	5			
Humphrey Ranch	2,593	73	27			
Henninger Ranch	1,233	77	14		4	5
East Summer Range	3,976			27	8	65
West Summer Range	11,874			35	3	62

a Sagebrush is the dominant cover in the shrub/grass vegetation type.
b East and West Summer Range shrub/grass contain a high percent of forbs (Klement 1997)
c Humphrey Ranch and Henninger Ranch cover type grass/other includes irrigated grazing areas.
d Headquarters grass/other type includes the sheep station operations developed area.

Wildlife

Wildlife resources cover a complex array of habitats, property ownership, and federal and state regulations. A more detailed evaluation of wildlife resources can be found in the Biological Assessment and Wildlife Report (11/19/2008) prepared for Interim U. S. Sheep Experiment Station Grazing and Associated Activities Environmental Assessment (project file).

Wildlife habitats on USSES properties can be adequately described moving from lower elevation sagebrush-steppe habitats on the Headquarters Property (near Dubois, Idaho), and Humphrey Ranch proceeding toward the foothills of the Idaho portion of the Centennial Mountain Range, which includes aspen/lodgepole pine/sagebrush mix at Henninger Ranch, and finally to high elevation alpine forests and meadows on the Summer Range portion of the Centennial Mountains, which includes the Tom's Creek Grazing Area, Odell Creek Grazing Area, and the Big Mountain Grazing Area.

The USSES is a research facility and not a land management agency. However, the USSES lands include a variety of wildlife habitats occurring in Idaho and Montana, and it is important to recognize wildlife management strategies for the Idaho Department of Fish and Game and the Montana Fish, Wildlife, and Parks Department. The USSES lands, adjacent to public lands and wildlife habitat managed by the Forest Service and the Bureau of Land Management, contain suitable habitats for federally listed Canada lynx and gray wolf.

Table 3 provides a brief description of prominent wildlife resources and topics pertinent to activities on USSES lands.

Table 3. Prominent wildlife resources and topics pertinent to activities on USSES lands

Species	Federal Status	Present on USSES Lands	Activities that could affect the species
Canada Lynx	Threatened	Potential habitat in Odell, Big Mountain, and Tom's Creek Grazing Areas of the Summer Range. Lands are outside of Lynx Analysis Units and unlikely to support a resident population of lynx.	Disturbances are unlikely, and limited to lynx avoidance of guard dogs and sheep herding activities during the summer. The Biological Assessment and Wildlife Report found that sheep station grazing and associated activities are not likely to adversely affect Canada lynx. On December 9, 2008, the USFWS provided concurrence with that determination.
Gray Wolf	Nonessential experimental population. On January 14, 2009, USFWS announced that portions of the gray wolf population (including those in the project area) will be removed from Endangered Species list after publication in the Federal Register.	Known occurrences on properties in the Centennial Mountains.	Disturbances are most likely control actions related to depredation of sheep. Investigations and control actions are performed by APHIS Wildlife Services. Oversight authorized by US Fish and Wildlife Service and delegated to state wildlife agencies.
Grizzly Bear	The Yellowstone Distinct Population Segment of grizzly bears was delisted in 2007.	Grizzly bears most likely to occur in the Odell, Big Mountain, and Tom's Creek Grazing Areas of Summer Range, but may move through Henninger Ranch and Humphrey Ranch. All USSES lands are outside of the Primary Conservation Area.	Food storage (as an attractant), and control actions related to depredation of sheep. Investigations and control actions are performed by APHIS Wildlife Services with authorization from Montana Fish, Wildlife and Parks or Idaho Fish and Game.

Table 3. Prominent wildlife resources and topics pertinent to activities on USSES lands

Species	Federal Status	Present on USSES Lands	Activities that could affect the species
Greater Sage-grouse	Petitioned for listing, under review by USFWS.	Present in lower elevation lands, primarily the Headquarters Property. Part of the Upper Snake Sage-grouse Planning Area.	Prescribed fire research has had positive effects on breeding habitat and early brood rearing habitat. Sheep watering and camp tending sites have had positive effects on keeping active leks open from shrub encroachment.
North American Wolverine	None	Occurs in Centennial Mountains at a scale larger than USSES lands.	No effects expected, however Centennial mountains are likely an important habitat with minimal roads and provide for connectivity between the Yellowstone ecosystem and central Idaho.
American Black Bear	None. Legally hunted in both Idaho and Montana.	Common. May occur on all USSES properties.	Control actions related to depredations on sheep.
Rocky Mountain Bighorn Sheep	None. Trophy species hunted in Idaho. Nearest hunting in Idaho occurs in two areas: 1 North of Arco, ID approximately 35 miles southwest of Headquarters Property 2. East of Leadore, ID, approximately 30 miles west of Humphrey Ranch. In Montana, the nearest hunting occurs in one area that is near Lima, MT approximately 15 miles from Humphrey Ranch and approximately 30 miles west of Odell Creek.	Does not occur on USSES lands, but does occur on BLM and USFS lands.	Interactions between domestic sheep and bighorn sheep have been associated with the transmission of bacteria that can cause pneumonia and associated herd mortality. Geographic and temporal separation, combined with full time sheepherders and guard dogs are expected to minimize the chances of contact.
Aquatic species ▪ Arctic Grayling ▪ Yellowstone Cutthroat Trout ▪ Spotted Frog	None	Grayling occur in the streams below Odell and Tom's creek Grazing Areas on Summer Range in Centennial Mountains. Spotted frogs were identified in lakes and boggy areas within Tom's Creek and Odell Grazing Areas. Yellowstone cutthroat trout occur in tributaries to Beaver Creek upstream of the Headquarters Property.	Effects could occur from stream and riparian disturbance associated with livestock crossings, trailing, or concentrated grazing. Field reviews in 2008 indicated USSES activities are maintaining good stream and riparian conditions and not negatively affecting fisheries or amphibian habitats.

Geology and Hydrology

The Humphrey Ranch is mapped within Quaternary fluveolian deposits of the Snake River Group, which are comprised of Pliocene and Pleistocene lake and stream gravel deposits. This area is also characterized by shallow slip faults, generating slumps in the area. Slumps appear to be associated with seasonally moist ground or seeps. The Henninger and Headquarters Properties are located within Pleistocene flood basalts. This terrain is characterized by low-lying, broad ridges, which are formed either to overlapping basalt flows or by pressure ridges. Summer Range Grazing Areas: Odell Creek, Big Mountain, and Tom's Creek, are located in the Centennial Mountains of Montana. The Centennials are characterized by folding and faulting of marine sediments with subsequent volcanic intrusions. Portions of these areas are also characterized by low angle rotational slip faults in Cretaceous age rocks that have resulted in slumping, similar to that found in the Humphrey Ranch portion of ARS administered lands. As with the Humphrey slumps, these areas are associated with seasonally moist or wet areas.

Stream gauging stations from the U.S Geological Survey (USGS) were used to characterize stream flow within the project area. Beaver Creek, located proximally to the Henninger and Humphrey Ranches is an intermittent stream, and is illustrative of runoff hydrology for lower elevation areas associated with basalts. Average daily flow was determined to be 25.6 cubic feet per second (cfs) with a peak flow of 858 cfs. Odell and Tom's Creeks have partial flow records. Odell Creek, which is perennial, had an average daily flow of 46.5 cfs with a peak flow of 506 cfs. Tom's Creek is intermittent in flow and had a larger period where flow was not recorded. Average daily flow was 2.8 cfs with a peak flow of 12 cfs.

Channel conditions within the project area are generally good to excellent. This means that bank stability, fine sediment, apparent water clarity, and channel pattern are within expected and acceptable limits for the channels' flow regime, and topographic setting. Localized areas of channel degradation were noted in association with the old phosphate mine road adjacent to Spring Creek in the Big Mountain Grazing Area and are associated with Beaver Creek in the Humphrey Ranch, where stream diversion and rerouting has occurred.

Moisture-loving type vegetation, such as willow, was noted in association with perennial stream flow. Floodplain development was noted to be limited to due to lower stream order. Incipient floodplain development, where it occurred was generally functioning properly, except where the old phosphate road impinges on Spring Creek and on Beaver Creek, where there has been stream diversion activities.

Social and Economics

The economic analysis area for this environmental assessment consists solely of Clark County, Idaho. Housing, commuting, and socioeconomic patterns of the USSES employees, as well as the fact that the majority of research activities occur at the station, suggest that the primary economic area of concern is Clark County. The USSES is located in a dominantly rural part of Idaho. While the State has experienced population growth at more than double the rate of the United States, Clark County's population decreased 11.4 percent between the years 2000 and 2007. In recent years, technological advances and complicated markets have forced an out migration of farmers and ranchers in some rural parts of the country. In some cases, residents of rural areas have moved to more urban centers in search of employment opportunities. This may account for some of Clark County's population decline between 2000 and 2007. Negative population growth in rural counties may have adverse affects on the economic health of sectors other than agriculture. As residents leave the area, they take their income with them and reduce the total income in the region. This results in a decreased demand for household goods and services, and may affect the viability of local firms and business.

According to the 2006 IMPLAN data[8], total employment in Clark County is 935 jobs. Currently the USSES is the second largest employer in Clark County, supporting 23 full-time ARS employees and 2 University of Idaho employees.

The Government sector is the largest labor income, followed by the Manufacturing sector. Even though Government accounts for fewer than 17 percent of total jobs, it accounts for nearly 30 percent of total income. Thus, government jobs are high paying relative to other employment opportunities in the study area. The Natural Resources sector includes wood products and processing, grazing; mining; and agriculture, forestry, fishing, and hunting. These industries account for 0 percent, 7.33 percent, 3.59 percent, and 9.7 percent of total labor income, respectively. Grazing and mining only make up a very small percentage of employment in the county, but they support a much higher percentage of total income. Grazing and mining in Clark County are assumed to be lucrative employment opportunities relative to jobs in some of the other sectors. Jobs in the Agriculture, Forestry, Fishing, and Hunting sector account for the largest proportion of employment (24.62 percent), but jobs in this sector only support 9.7 percent of total income. Thus, the traditional agriculture employment opportunities in the local area are relatively low paying. This may have contributed to the negative population growth experienced in recent years as individuals previously employed in the agriculture sector migrate out of Clark County in search of higher paying jobs.

Proposed Action

The USSES is proposing to continue ongoing sheep grazing and associated activities that have been historically occurring in conjunction with ARS USSES research to develop integrated methods for increasing production efficiency of sheep and to simultaneously improve the sustainability of rangeland ecosystems.

Operations

Operations include traditional and ongoing activities associated with sheep research grazing. In addition to ARS lands, National Forest allotments (Snakey – Kelly, East Beaver, and Meyers Creek), Bureau of Land Management Berenice Allotment, and Department of Energy, Mud Lake Feedlot are also used for sheep research and grazing operations. Mud Lake Feedlot facilities are used when sheep are not on grazing lands. Mud Lake facilities includes sheep pens, water stations, feed storage facilities, feed mixing and delivery equipment, tractors to power feed mixing and delivery equipment, and pen cleaning equipment (Moffet, personal communication). Harvested feeds (e.g., alfalfa hay, barley straw, small grains, corn, and various byproducts) are used to formulate balanced diets to feed the sheep when they are at Mud Lake feedlot.

[8] IMPLAN – IMPLAN® is an input-output model describing commodity flows from producers to intermediate and final consumers. The total industry purchases are equal to the value of the commodities produced. Industries producing goods and services for final demand purchase goods and services from other producers. These other producers, in turn, purchase goods and services. This buying of goods and services continues until leakages from the region stop the cycle. The resulting sets of multipliers describe the change of output for regional industries caused by a change in final demand in an industry. The IMPLAN database describes the economy in 509 sectors. IMPLAN® is used to create complete, extremely detailed Social Accounting Matrices and Multiplier Models of local economies. MIG, Inc. provides software tools, region-specific data (see Products), and outstanding technical support to enable users to make in-depth examinations of state, multi-county, county or sub-county, and metropolitan regional economies. http://www.implan.com/

Sheep Grazing

USSES currently has approximately 3,000 mature sheep, plus attendant young sheep. Including mature ewes and lambs, lambing rates are approximately 170 percent, and weaning rates are approximately 145 percent. The total number of sheep soon after the end of the lambing period is approximately 6,500. The numbers of mature and young sheep retained vary according to research needs. Sheep in excess of those needed for hypothesis-driven research are not retained. USSES sheep harvest most of their feed through grazing. Sheep numbers are kept below range carrying capacity to maintain favorable range conditions. Table 4 displays stocking rates for Summer Grazing Areas from a *Summary of 25 Years of Grazing Summer Range, 1963 to 1988* (Jacobson, 2008).

Table 4. Summer Range and Meyer's Creek Allotment stocking summary from 1963 to 1988

	East Summer Range	West Summer Range	
	Meyer's/Tom's Creek[a]	Big Mountain	Odell Creek
Total grazing[b] acres available	5,538 acres	3,687 acres	2,534 acres
Average AUMs [c] used annually	348 AUMs	305 AUMs	235 AUMs
Average sheep days/acre	9.5 SD/acre	12.5 SD/acre	13.9 SD/acre
% use[d]	3.8	4.9	5.5
Average number ewes grazed annually	933 ewes	864 ewes	679 ewes
Average number days grazed annually	56 days	53 days	52 days
AUMs/acre used	0.06 AUMs/acre	0.08 AUMs/acre	0.09 AUMs/acre

a Meyer's Creek = 3,305 acres Tom's Creek = 2,233 acres

b Grazing acres available and data is from ARS 2008, A Summary of 25 Years of Grazing Summer Range, 1963 to 1988. These are available grazing acres only, not the total East and West Summer Range Acres.

c AUM as expressed above is 5 lactating ewes with lamb(s) under 6 months of age at side for 30 days

d Assuming average forage production is 1,338 lb/ac (1,500 kg/hectare) (Klements 1997)

Stocking rates were reduced after 1988, Table 5 displays stocking rates and percent of available AUMs used from 1989 to 2007 (Moffett 2008).

Table 5. Summer Range and Meyer's Creek Allotment stocking summary 1989 to 2007

	East Summer Range	West Summer Range	
	Meyer's/Tom's Creek[a]	Big Mountain	Odell Creek
Total grazing acres available	5,538 acres	3,687 acres	2,534 acres
Average AUMs used annually [b]	222 AUMs	194 AUMs	174 AUMs
Average number sheep days/acre[c]	6.0 SD/acre	7.9 SD/acre	10.3 SD/acre
% use[d]	2.4	3.1	4.1

a Meyer's Creek = 3,305 acres Tom's Creek = 2,233 acres

b A sheep day is one adult or one ewe with less than a six-month-old lamb at side.

c Data is from Quinn Jacobson's grazing records from 1989 to 2007.

d Assuming average forage production is 1,338 lb/acre (1,500 kg/hectare) (Klements 1997)

Grazing acres available vary between Tables 5, 6, and 7 due to vegetation type map boundaries used for data collection and how the grazing areas are combined in the range area groups for spring, fall, summer and winter grazing.

Table 6 (Proposed Action) shows current available forage, average forage amount used, and percent of available forage used for spring-fall, summer, and winter ranges under current actions.

Forage used for sheep grazing is well below total available forage. The highest use, on the winter range, is 36.4 percent, with less than 10 percent of available forage used on spring, fall, and summer grazed areas. Annual field surveys indicate Summer Range forage use is very low, 6.4 percent (Jacobson 2008[9]). A high percent of residual vegetation cover is retained to maintain plant species diversity, water quality, soil productivity, forage plant vigor, livestock diet quality, and wildlife habitat (Moffet 2008[10]). Holchek (1989[11]) indicates that up to 40 percent use of forage available will maintain quality forage production on semiarid ranges.

Sagebrush vegetation types on Headquarters, Humphrey, and Henninger Properties are grazed at 10 to 12 sheep days/acre (SD/acre) in late June and early July with similar grazing rates in fall. Rate variation occurs periodically to provide for research needs. Sheep graze across the landscape on a seasonal basis. Henninger Ranch is usually grazed in early summer and early fall each year. Irrigated pastures are grazed at 25 to 35 SD/acre. Table 7 displays the expected sheep grazing activity schedule for the 2008 through 2009 season, with dates and grazing areas used. The exact dates may vary each year, depending on weather conditions; however, they are usually within one or two weeks of the dates for the previous year.

Table 6. Forage available and amount used on spring, fall, summer, and winter ranges

Range	Grazing Acres Available	Forage pounds/acre	Total Tons Available Forage	Days Grazed	Tons Forage Used	Percent of Available Forage Used
Spring and Fall[a]	28,860	850	11,785	102	874	7.4
Summer[b]	15,058	1,338	10,074	75	643	6.4
Winter[c]	28,506	65 to 263 (100 average)	1,412	60	514	36.4
Total	**72,424**		**23,270**	**237**	**2,032**	**8.7**

a Spring and Fall Range; Headquarters, Henninger, Humphrey

b Summer Range: West and East Summer Ranges and USFS Meyers Creek Allotment

c Winter range; BLM Berenice Allotment, and USFS Snakey-Kelly and USFS East Beaver Allotments

[9] Jacobson, Quinn. 2008. UI Manager Sheep Operations/Range Resources, University of Idaho, Dubois, Idaho, October - November 2008

[10] Moffet, Corey. 2008. Rangeland Scientist, ARS, USSES Dubois, Idaho, October - November 2008

[11] Holechek, J. L., Pieper, R. D., Herbel, C. H., 1989, Range Management Principles and Practices, 173-203

Table 7. Anticipated USSES grazing schedule for 2008 and 2009

Dates	Activity	ARS Lands
Early July 2008 - Labor Day 2008	One group of sheep herded across the Forest Service Meyers Creek Allotment to summer grazing on Tom's Creek Grazing Area, USSES lands in Montana. Another group of sheep is herded from the Henninger Ranch to summer grazing in the ODell Creek and Big Mountain Grazing Areas of USSES lands in Montana.	Yes/ No
September 2008 - Early November 2008	Sheep return to USSES Headquarters Property in Idaho	Yes
Mid-October 2008 - Early December 2008	No grazing occurs, the sheep are maintained at the Mud Lake feedlot facility leased from Dept. of Energy (this is when the ewes are mated)	No
Early December 2008 - Mid-Late January 2009	Sheep graze on BLM and FS allotments	No
Mid-Late January 2009 - Late April to Early May 2009	No grazing occurs; the sheep are maintained at the Mud Lake feedlot facility leased from Dept. of Energy and in the feedlot facilities at USSES Headquarters Property (this is where the lambs are born during this period of the year)	Yes/ No
Late April to Early May 2009	Sheep are turned out onto USSES Headquarters Property in Idaho	Yes
Late April to Early May 2009 - Late June 2009	Grazing on USSES Headquarters Property in Idaho	Yes
Late June 2009 - Early July 2009	The sheep are moved from USSES Headquarters Property in Idaho to USSES lands at the Henninger Ranch property in Idaho (this move is a transition between the spring and summer feeding grounds)	Yes
Early June to late September 2009	Rams and some other small groups of sheep are grazed at the USSES Humphrey Ranch in Idaho	Yes
Early November 2009 - Early December 2009	No grazing occurs, the sheep are maintained at the Mud Lake feedlot facility leased from Dept. of Energy (this is when the ewes are mated)	No
Early December 2009 - Mid-Late January 2010	Sheep graze on BLM and FS allotments	No
Mid-Late January 2010 - Late April to Early May 2010	No grazing occurs; the sheep are maintained at the Mud Lake feedlot facility leased from Dept. of Energy and in the feedlot facilities at USSES Headquarters Property (this is where the lambs are born during this period of the year)	Yes/ No

Sheep Transportation by Truck

The sheep are trucked between grazing locations that are not contiguous or are not within trailing distance. Sheep are trucked from the Headquarters Property to the Mud Lake Feedlot, Humphrey Ranch, and to Forest Service and BLM allotments.

There are permanent corrals and loading chutes at Headquarters, Mud Lake, Humphrey, and Henninger. At the Snakey-Kelly Forest Service allotment, sheep are unloaded on Forest Service Road 202. On the Berenice BLM Allotment, sheep are unloaded on the allotment road at the grazing site. Suitable roads and semi-truck and trailer access are available at the loading sites. Trucking occurs on State Highways, County Roads, and National Forest system roads.

Headquarters and Mud Lake loading sites are similar in size and ground cover condition. Headquarters and Mud Lake truck loading sites have permanent corrals with bare soil similar to sheep pens. The Headquarters loading pen is 0.6 acre. The Mud Lake loading pen is 0.4 acre. Humphrey and Henninger sites are similar. The loading corral at Humphrey is 0.4 acre and Henninger loading corral is 0.8 acre. The Humphrey and Henninger loading sites have low grass and forb ground cover.

The number of sheep trucked in and out each year for each range area or allotment:

- Humphrey Ranch – 300 ewes
- Winter range – 850 ewes +/- 100 depending on year (FS and BLM allotments)
- Humphrey Ranch – 200 rams
- Mud Lake Feedlot – 3,000 animals +/- at shearing and breeding time

Sheep Trail and Driveway Use and Maintenance

Trails and driveways are used to move sheep between grazing areas.

Trails

Sheep are trailed along existing roads to move sheep from Headquarters Property and Henninger Ranch to other grazing areas. Sheep are trucked to an unloading site on National Forest Road 202 and trailed along the roads to the Snakey-Kelly Allotment (Map 2).

Trails used annually include the following:

- Headquarters Property to Henninger Ranch: Trailing from Headquarters to Henninger follows a private unnamed two-track road part way with 90 percent of trailing on county roads (Spencer-Idmon and County Road A2).
- From Henninger Ranch to Meyers Creek Forest Service Allotment: Sheep are trailed on County Road A2, sheep are moved or trailed while grazing through, Meyers Creek Allotment to the East Summer Range.
- From Henninger Ranch to West Summer Range: Sheep are trailed on County road A2, and National Forest East Dry Road 327.
- When returning from East Summer Range to Henninger Ranch: Sheep are trailed on Keg Springs National Forest Road 042 and County Road A2.
- Sheep trailed from West Summer Range follow National Forest Road 327 and County Road A2.
- When returning from Henninger Ranch to Headquarters Property: Sheep are trailed on County Road A2, Spencer-Idmon Road, and the unnamed two-track road on private land.
- Sheep are trucked to Humphrey Ranch and East Beaver Forest Service Allotment. At Humphrey, sheep are trailed through a gate to the adjacent National Forest East Beaver Allotment.
- Sheep are trucked and unloaded on National Forest Road 202. Depending on snow depth, sheep are trailed along National Forest Roads 184, 279 and 202 to Snakey-Kelly Forest Service Allotment. A

temporary corral and mobile loading chute are set up on Road 202 for loading when sheep are moved off the Snakey-Kelly Allotment.

Driveways

Sheep are moved along driveways through timbered areas on East and West Summer Ranges. Herders on horseback use working dogs to herd sheep from one grazing location to another. There are about four miles of maintained sheep driveways through timbered areas on the West and East Summer Ranges. Sheep driveway locations are shown on Map 9 and Map 10.

There are no sheep driveways on low-elevation grazing units; the only maintained driveways are through timbered areas in West Summer Range (Odell/Big Mountain) and East Summer Range (Tom's Creek). Annual driveway maintenance is done through the timbered areas. Small-diameter down wood across driveways is retained on site; some limbing may be done on retained down trees. New or recently fallen trees (greater than 10 or 12 inches in diameter) are cut out and removed (pulled back into adjacent timber stands) from the driveways each year. Occasionally sheep driveway trails are rerouted, closed, and rehabilitated. Driveways may be rerouted when a better route is located or an alternate route is needed for research. Only one reroute has been done in the past few years. Driveways through timber patches and across meadows are short, generally less than one-half mile long. If adverse effects to soil or water occur, mitigation measures (cross drains with woody debris to divert overland flow away from the trail) are implemented or a driveway segment maybe rerouted to avoid sensitive areas. Old driveways, no longer needed or used, and corral sites not needed are closed and rehabilitated; seeded with native species, brush or woody debris if available returned to the site, and animals are kept off to restore the area.

At three to four week intervals, sheep are moved from grazing areas to staging areas for data collection. On these drives, sheep are spread out over larger areas in open terrain and moved slowly while grazing to reduce adverse effects on the travel routes.

Driveways are used only on years the grazing units in the area are grazed, two out of three years. Each grazing unit is rested one year in three. Sheep numbers trailed on grazing units are average of last five years.

- Skyline Unit: Approximately one mile in length and used twice a year. Required time is about 2 hours. Two horses usually used. Ewes = 785 head. Lambs= 1,165 head.
- Odell Unit 6: About one-eighth mile in length and used once a year. Requires about 1 hour. Usually two horses. Ewes = 785 head. Lambs = 1,165 head.
- Odell Unit 4: Approximately one-eighth mile in length and used twice a year. Required time is about ½ hour. Usually only 1 horse used. Ewes = 785 head. Lambs = 1,165 head.
- Little Odell: Approximately one-quarter mile in length and used once a year. Required time is about 1 hour. Usually use one horse. Ewes = 785 head. Lambs = 1,165 head.
- Big Odell: Approximately one-quarter mile in length and usually use one horse. Required time is about 1 hour. Used only once a year. Ewes = 785 head. Lambs = 1,165 head.
- Big Mountain: Approximately one-half mile in length and usually use two horses. Generally used only once a year and requires about 1½ hours. Ewes = 782 head. Lambs = 1,157 head.
- Corrals to Top: Approximately one-half mile in length and usually use 2 horses. Usually used four times a year and requires about 1½ hours. Ewes = 782 head. Lambs = 1,157 head.

- Canyon Unit: Approximately one-quarter miles in length and takes about 45 minutes. Two horses usually used and occurs once or twice a year. Ewes = 782 head. Lambs = 1,157 head.
- Tom's Units 5 & 6: Approximately one-half mile in length and used once or twice a year. Use time about 1½ hours; one horse. Ewes = 838 head. Lambs = 1,273 head.
- Tom's Units 6 & 7: Approximately one-half mile in length and requires one horse and about 2 hours. Used once or less a year. Ewes = 838 head. Lambs = 1,273 head.

The sheep driveway crossing on Odell Creek in section 11, T. 15 S., R. 2 W. has bare soil, 10 feet wide for about 150 feet, on the south side of the crossing on 15 to 20 percent slope. The narrow trail to the west of the crossing is developing into a trench from overland water runoff. Proposed mitigation to this crossing site is described in the mitigation section. The sheep driveway crossing on the south fork of Odell Creek near the south line, section 14, T. 15 S., R. 2 W., is low impact, with well-established grass and forb cover.

Stock Water Operations

In areas where water is not readily accessible at the USSES Headquarters Property, water is trucked to the sheep and unloaded into water troughs 12 feet long, 12 inches high, and 12 inches wide. Troughs are moved as grazing progresses across the grazing units. The number of troughs used at each grazing area depends on the number of sheep to water; up to 25 troughs may be used for large groups, two troughs are adequate where small numbers of sheep are grazed. There are 70 grazing units at low elevation where water is trucked; approximately 120 to 125 watering sites are used annually (Jacobson, personal communication). Each group has one watering site. Fifteen to sixteen groups graze at the same time so that up to fifteen to sixteen sites could be used at any given time. Watering sites are used for three to seven days and then moved. Areas, up to one-quarter acre, are disturbed by sheep use at watering sites where there is a high percent of crested wheatgrass cover. Fall water sites, provide sage grouse lek habitat. Henninger and Humphrey Ranches have surface water available for watering sheep. Summer Ranges have surface water available for sheep and horses with developed sites on Big Mountain Grazing Area described below.

Water Developments

Humphrey and Henninger

Humphrey and Henninger Ranches have developed ditches to divert water onto grazing units while sheep are grazing the unit. Flood irrigation water is used to water sheep. Irrigation ditch locations and flood-irrigated areas are located on Henninger and Humphrey Grazing Units (Map 4 and Map 5). Humphrey and Henninger Ranches were working ranches, purchased from the private sector in the 1940s. Irrigation practices were ongoing before ARS purchased the properties. Water is diverted, from Modoc Creek at Humphrey Ranch and from West Dry Creek at Henninger Ranch, with canvas dams, into diversion ditches to flood grazing units at the time sheep graze in the area. Diverted irrigation water may be used annually, acres watered for each ranch varies, depending on stream flow at time of use. In dry years, very little water is used. Diverted water is used for watering sheep and irrigation provides more green forage longer during the dry season. Number of days water is applied varies from one year to next depending on needs and water availability. When sheep are moved out of the grazing unit water diversion canvas dams are removed, diversion is shut off. There are about two miles of irrigation ditch at each ranch. Humphrey Ranch irrigation has water use rights for 4,000 cubic feet per second (cfs) from May 1 to October 15 (Jacobson 2008). The Humphrey Ranch grazing units are grazed from May to October. Henninger Ranch has water use rights from May 1 to October 31; spring water use is not allowed until the water flow in

Dry Creek no longer reaches Spring Creek in mid to late June. Average past 10-year use is 675 cfs with a high of 1,125 cfs in 1999 and a low of 474 cfs in 2000. Diversion ditches are inspected and maintained annually.

West Summer Range

Water developments are located on the West Summer Range (Map 7). There are five water developments in the West Summer Range in Montana on the Big Mountain Grazing Area. Springs are developed with permanent troughs to collect water in low-flow areas needed to water 350 to 900 ewes and 1,250 to 1,400 lambs at one time. Water developments are also used by wildlife.

The five water development sites on the West Summer Range include four metal and one rubber trough. Four of the developments are flume type with metal troughs and metal (3) or wood (1) support structures. Flumes are 80 to 90 feet in length, approximately 20 to 24 inches in width, and 14 to 16 inches deep. The fifth development is a series of round rubber troughs, with about 10 gallons capacity each, installed at springs.

Developed water site locations shown on the Map 7 include:

- Short Canyon = SENE 1/4 Section 6, T15S, T1W (Round rubber troughs)
- Lower Unit 3 = SENE Section 5, T15S, R1W (Flume trough)
- Unit 2 = SWNWNW Section 5, T15S, R1W (Flume trough)
- Upper Unit 3 = SESW Section 33, T14S, R1W (Flume trough)
- Unit 4 = NENESE Section 4, T15S, R1W (Flume trough)

Camp Tending

Sheep Herding Camps

Headquarters, Humphrey and Henninger Camps

Low elevation grazing units are administered from existing roads. Herder camps on low elevation spring, fall and winter grazing units are equipped with a 12-foot-long by 7-foot-wide, four-wheel living quarters trailer and a tow-behind camp commissary to transport dog food, oats, saddles, and other gear. These camps are located near existing roads and are moved with pickups as sheep graze through the grazing units. Camp activities affect one-quarter acre or less at each site. Campsite equipment and activities include a horse trough, a horse picketed on a 20 to 30 foot chain, and dog feeding area. Camps at low elevation grazing units are visited by a camp tender at two-day intervals. Crested wheatgrass provides the primary ground cover at the one-quarter acre or less campsites where camp activities remove or trample sagebrush and other vegetation. Total area affected by campsites is a very low or is a negligible percent of the total grazing unit. Crested wheatgrass was planted on the Headquarters Property south grazing unit in 1941 (Jacobson, personal communication, February 2009). Crested wheatgrass planting, on Dubois ARS lands, is noted in a January 1947 National Wool Grower article. Crested wheatgrass seed was probably transported to disturbed camp and watering sites by animals and equipment.

Summer Range Camps

Summer camp activities have less effect on campsites than winter camps. Summer camps include a seven-foot-by-seven-foot teepee tent, no trough, horses are watered at natural water sites, one horse is picketed,

and one horse is loose. Camp areas affect about a 50-foot radius, less than one-quarter acre. Camps are moved every three to four days to progress with sheep grazing. Camps follow the sheep closely and with frequent moves have little effect on vegetation at the sites. Trash from herders' camps is transported back to USSES Headquarters for proper disposal in a dumpster that is emptied at a Clark and Jefferson County landfill. Table 8 shows the number of camps in each Summer Grazing Area and season used.

Table 8. Camps per grazing area and season used

Range	Grazing Area	Camps per Grazing Area	Season Used
West Summer Range	Odell	9	July 10 – August 29
	Big Mountain	7	July 10 – August 29
East Summer Range	Tom's Creek	6	July 10 – August 28

Maintenance and Repair of Existing Permanent Fence

Fences

There are about 180 miles of permanent sheep fence on Headquarters, Humphrey, and Henninger Properties. All fences are inspected and repaired annually. Fence locations, including exclosures, are shown on Map 3, Map 4 and Map 5, in the Maps section. Fence types are shown and described in the map legend.

Pasture Fences

Sheep-proof fences at Headquarters, Humphrey, and Henninger are maintained to confine sheep. An 8-foot-high coyote-proof fence was constructed from 1976 to 1977 (Jacobson, personal communication). The coyote-proof fence is maintained at Headquarters Property around, and subdividing, section 2, T. 10 N., R. 36 E., for coyote-sheep interaction research.

Horse Corral

The horse corral fence on West Summer Range, Odell Grazing Area, was constructed and is maintained to confine horses used for sheep trailing, camp tending and other sheep grazing management and research activities (see Map 8). The northern and western part of the horse corral is sheep proof net-wire with two strands of barbed wire above the net-wire. The southern and eastern portion of the corral is two-strand barbed wire. All of the corral fencing on Odell Grazing Area is let-down type. The drop fence is let down each year after grazing operations are completed.

Exclosures

Exclosures at Headquarters Property are sheep proof, maintained to exclude sheep from grazing excluded areas. The West Summer Range exclosures are drop fences, put up to exclude sheep when grazing units in the exclosure areas are grazed. These drop fences are let down after sheep are removed from the grazing unit.

An 8-foot-high wildlife exclosure fence in section 7, T. 15 N., R. 15 S., Odell Grazing Area, is maintained to exclude wild ungulates and sheep. An adjacent 4-foot-high sheep proof exclosure is maintained to compare grazing effects. This wildlife and sheep exclosure includes a riparian area. These exclosures are

located and designed to compare and evaluate domestic and wild ungulate grazing effects on willow and other riparian vegetation. The entire fenced area is less than one-half acre.

Maintenance and Repair of Existing Roads and Firebreaks

Roads

Road locations are shown on each map in the Maps section. There are 25 miles of existing system roads on the Headquarters Property (Map 11). No new roads have been developed in at least 15 years. Annual road maintenance is done on main roads as needed. Road segments with ruts or other maintenance needs are bladed or improved for efficient motorized travel. Each year approximately 20 miles of road need maintenance improvements. Road maintenance is contained within the road right-of-way.

An existing road through section 18 that ends at the horse corrals near the southwestern corner of section 7, T15S, R1W in the West Summer Range provides motorized access. Motorized travel is limited to the existing road for camp tending and other management activities with some off-road travel exceptions.

Recent off-road motorized use on the West Summer Range include pickup travel in 2006 and 2007 for research at bed grounds in section 13, T. 15 S., R. 2 W. and in section 8, T. 15 S., R. 1 W.; four-wheeled drive tractor use for bridge reconstruction on the Odell Creek crossing near the north line section 23, T. 15 S., R. 2 W. in 2007; and a pickup and trailer were used to haul supplies to rebuild the Location 23 exclosure in 2008, one trip to haul supplies in and haul old materials out. All-terrain vehicles were used in 2007 to haul supplies for mine reclamation work on Big Mountain Grazing Area. Camp tending and other management activities are done with horses. Occasional off road pickups, all-terrain vehicles, or tractors are used for maintenance or research on off road sites.

Firebreaks

After a wildfire in 2000, a two-mile-long firebreak was constructed to protect USSES Headquarters buildings and research plots on the Headquarters Property (Map 11). The firebreak around the Headquarters area is maintained annually with a motor grader to provide a mineral soil break about 20 feet wide. Chemicals may be used to control noxious weeds on the Headquarters firebreak. Weed management is described in the pest control section below. Firebreaks 15 to 20 feet wide down to mineral soil are constructed around prescribed burn areas including blackline burn control areas.

Prescribed burn firebreaks are constructed with a dozer and motor grader. Unit firebreak lines and blackline firebreaks are generally within 50 to 200 feet of each other. Cleared firebreaks around burn units are also used for vehicle and equipment access during burn operations and for research during and after the areas are burned. Shrub and grass debris removed from fuelbreaks is pulled back and spread over the cleared area on firebreaks not needed for research access after the burn, generally within the same season.

Firebreaks around prescribed burn areas are not maintained. They are not planted and revegetated with native species. Firebreaks not needed for motorized access for research are rehabilitated. Windrowed shrubs, grass, litter, and top soil are pulled back and spread over the firebreak with a motor grader. Invasive, noxious weeds have not been a problem on the cleared firebreaks. *Bromus tectorum L.* (cheatgrass), present since 1930s, inhabits some cleared areas, but is not persistent at this elevation or environment. A study of cheatgrass encroachment is continuing on the 2005 Hitching-Post Burn at Headquarters Property in parts of sections 5, 6, 7, and 8 T. 11 N., R. 37 E. (Taylor 2008).

Prescribed Fire

Range Improvement, Prescribed Burning

Prescribed burning, to improve rangeland, has been conducted on ARS land since 1936. Burning is conducted on units that are about 200 acres average size, primarily in spring and fall. Approximately 670 acres are burned each year. Burn records show the following acres burned:

- Past 30 years (1978 to 2007) - 5,400 acres prescribed burn and 13,867 acres wildfire
- Past 10 years (1998 to 2007) - 2,672 acres prescribed burn and 1,208 acres wildfire

In the past 30 years, burns have been done primarily in fall, with minor amounts of spring and late summer burning. Wildfire burn areas are evaluated and included when planning prescribed burns. The Headquarters Prescribed Burn Map 13 displays prescribed burn areas and years burned. The Headquarters Wildfire History Map 12 displays wildfires and year burned.

Research has been the main objective of prescribed burns after 1990. Prior to 1990 burning was done to increase forage production and improve range conditions. Burn research, to determine species composition, range health, and productivity, dates back to 1936. Research with statistically valid replicated plots of unburned areas, within the larger fire area, is done to simulate wildfire frequency and approximate natural fire cycles with a burned-unburned mosaic. Prescribe burn research includes effects on vegetation recovery with sheep grazing before and after the burn on rangeland ecosystems.

Since 2000, the primary objective of ARS prescribed burns on the sagebrush steppe areas is for research Earlier prescribed burn objectives were to improve forage production while providing for research projects. Current prescribed burns are designed to remove 95 percent of existing vegetation with fire. Prescribed burns are evaluated for fire intensity using remote sensing and other monitoring techniques. The main adverse burn effect is temporary loss of vegetation and litter ground cover for soil protection. Within two years after burning, forb and grass cover returns to replace pre-burn shrubs. Shrubs begin to reestablish on the sites within 10 years. Current burn effects monitoring is in progress to determine wind-caused soil transport on burn areas (Moffet 2008).

ARS plans to burn Headquarters Grazing Units at approximately 30-year intervals. This would average approximately 900 acres of burning each year. Burn records indicate average acres burned are less than the planned acres for a 30-year return interval. Burning for research to improve forage production also provides secondary benefits for wildlife habitat and other resources. Burning scheduled for fall 2008 and spring 2009, is located on areas that have been previously prescribed burned. The 2008/2009 burn plan is found in Appendix 3 of the Interim USSES Grazing and Associated Activities Project. Burn unit locations are shown on the ARS-Headquarters Prescribed Fire History Map 13. Unit 6, 74 acres, was burned 10-08-08. Weather conditions failed for the planned 10-09-08 burn on Unit 1 (86 acres) and Unit 3 (88 acres). These two fall burn units were burned 10-18-08. Unit 2 (78 acres), Unit 4 (74 acres), and Unit 5 (74 acres) are scheduled for a spring 2009 burn. Total burn acres, fall 2008 were 248 acres, spring 2009, 226 acres with 29 acres included in blackline burn areas.

Range Improvement, Seeding

Occasional reseeding has been done on Humphrey Ranch. Eleven acres were reseeded in 2005, and 20 acres were seeded in 1982. On Headquarters Property, 48 acres of the 2000 wildfire burn area were seeded in spring 2001. A native seed mix, an introduced mix, and a mix with natives and introduced species were applied to test results of seeding.

Cattle and Horse Grazing

Cattle and horse grazing with cooperative research was started in 1997 and is periodically used to improve sheep range conditions. Headquarters, Humphrey, and Henninger Properties are grazed from approximately November 1 to January 1. Cattle and horses consume vegetation that sheep typically do not harvest, creating more uniform pastures for grazing research, reducing residual on-site forage for other rangeland research, and reducing fuel loads and fire risk. Cattle and horse grazing is used mainly on Headquarters Property and Humphrey Ranch with occasional cattle grazing on Henninger Ranch. The number of animals used varies from year to year depending on research needs and vegetation conditions. Cattle or horse numbers used are based on the area and amount of vegetation needed to be removed. No cattle were grazed in 2006 due to drought conditions. Cattle and horse grazing AUMs are displayed in Table 9. Grazing units are evaluated for forage removal needs and mapped to determine livestock stocking. Grazing bids are solicited and awarded to private livestock owners.

Table 9. Cattle and horse grazing

Year	Humphrey	Henninger	HQ
1997	1269.1	0	3093.8
1998	1333.5	0	1766.7
1999	1697.7	30.1	1185.9
2000	1164.6	0	4560.9
2001	1063.6	0	-
2002	0	48.5	-
2003	1080.7	0	2454.7
2004	999	0	3238.5
2005	727.7	0	1567.4
2006	0	0	0
2007	0	0	1086.1
Total	9335.9	78.6	18954

Note: A dash (-) indicates no record of grazing for the designated year.

Predator Avoidance and Abatement

Records indicate few large carnivore encounters in the past. To avoid conflict, sheep are moved when large carnivores enter the current grazing area. USDA, Animal and Plant Health Inspection Service is contacted and used to manage wolf and grizzly bear encounters. USSES or Animal and Plant Health Inspection Service staffs remove problem coyotes. To date, there have been no lethal control actions on USSES lands for wolf or grizzly bear. Fewer than ten black bears and one mountain lion have been lethally controlled in the past decade. No incidents with Canada lynx or wolverine are known or expected to have occurred. Most encounters with large carnivores end without lethal control actions.

Integrated Pest Management

Noxious Weeds

There are few weed problems on ARS Properties. The minimal weed infestations that are present are located in sheep pens and along roads where there is no grazing. Some weed species are present on adjacent lands where cattle graze, and over time, adjacent weeds invade ARS lands. Invasive plant species infestations, on ARS lands, are GPS (Global Positioning System) mapped. Area or patch infestations are

mapped as polygon weed sites and included in the USSES records. Roadside noxious weed locations are identified on hard copy maps and recorded for treatment as they are found.

Precautions are taken by ARS to minimize weed spread from sheep. To accomplish this, weed areas are grazed in spring when there is little or no risk of spreading weed seeds. ARS also quarantines animals for six days before moving sheep from weed-infested areas or from feed with potential weed seeds to other grazing units. ARS does not graze areas when weed seeds are developed and there is risk of spreading seeds to another area.

ARS uses an integrated pest management approach for control and eradication of exotic, invasive weeds. This integrated approach is coupled with research on ecosystem functions and native plant communities and with research on weed seed production and spread with sheep grazing. As primary weed control, this integrated approach includes the use of strategic sheep grazing as a biocontrol method to reduce the production of weed seed and the spread of weeds. Other biocontrol methods, such as specific species of beetles, alone or in combination with other biocontrol methods, are also used.

Herbicide application is used minimally on invasive weed species that are not consumed by sheep. Herbicides are not used on the rangelands. Herbicides are sprayed annually along some roads and sheep pens with invasive weeds.

Invasive weeds may establish anywhere, at any given time. Many newly established patches would be controlled using appropriate sheep grazing techniques. Other weed areas may be managed with herbicides, where spraying is more effective. In general, existing and potential problem areas have been identified. They are located mainly along other land ownership borders with ARS lands. Herbicides use is more effective in these weed invasion areas than sheep grazing.

Vegetation monitoring is conducted before and after grazing, which includes annual measurements of invasive weeds, native plant density, occurrence frequency, along with collecting annual or biannual aerial (100 to 200 meters above ground level) and on-the-ground (1 to 2 meters) digital imagery of grazed and non-grazed areas. Post-treatment monitoring is conducted with site visits at 5-year intervals. A description, target species and example of USSES noxious weed strategy is included in Appendix 2 of the Interim U.S. Sheep Experiment Station Grazing and Associated Activities Project Environmental Assessment.

Mitigation Measures

Grizzly Bear

- Store all livestock feed, human food, and dog food in bear proof storage containers to prevent bears becoming habituated to these food sources.
- Render sheep carcasses in close proximity to the Continental Divide Trail and other trails on USSES lands unavailable to bears.
- Notify the Caribou-Targhee National Forest when conflicts, including trapping efforts, occur so that users of the Caribou-Targhee National Forest can be notified if necessary.

Sheep Driveway

At the sheep driveway crossing on Odell Creek in section 11, T. 15 S., R. 2 W. there is bare soil, 10 feet wide for about 150 feet on the south side of the crossing, on 15 to 20 percent slope. To divert overland flow and prevent soil transport into Odell Creek, cross drains could be constructed on the driveway trail.

Three 10- to 12-inch-diameter logs (available in the adjacent timber stand) could be angle imbedded three inches deep across the trail to divert runoff into undisturbed areas with existing vegetation ground cover and down woody debris. The three cross drains should be constructed 40 to 50 feet apart, at sites where the trail grade is less than 10 percent, for efficient cross-drain function and to minimize maintenance needs. Cross drains should also be constructed on the narrow trail further to the west. This trail segment is turning into a trench, cross drains would divert water off trail and eliminate further down cutting. Cross drains should be monitored annually and maintained after heavy use. The sheep driveway crossing on the south fork of Odell Creek near the south line, section 14, T15S, R2W, is low impact, with grass and forb cover and little adverse effect.

Cultural

To ensure protection for cultural resources:

- Review proposed undertakings with the State Historic Preservation Officers prior to implementation.
- If unanticipated discoveries are found during project activities, cease all operations in the vicinity of the discovery until assessed by a professional archaeologist or historian.
- Develop a survey strategy and facilities management plan and schedule during the second stage of the NEPA analysis. A facilities management plan would entail, at a minimum, a scaled and labeled "map" of the buildings used by the Research center; basic outside dimensions of each building 45 years of age and older; photographs of the same; basic building material descriptors (framing, outside facing material, colors, roofing, etc.).

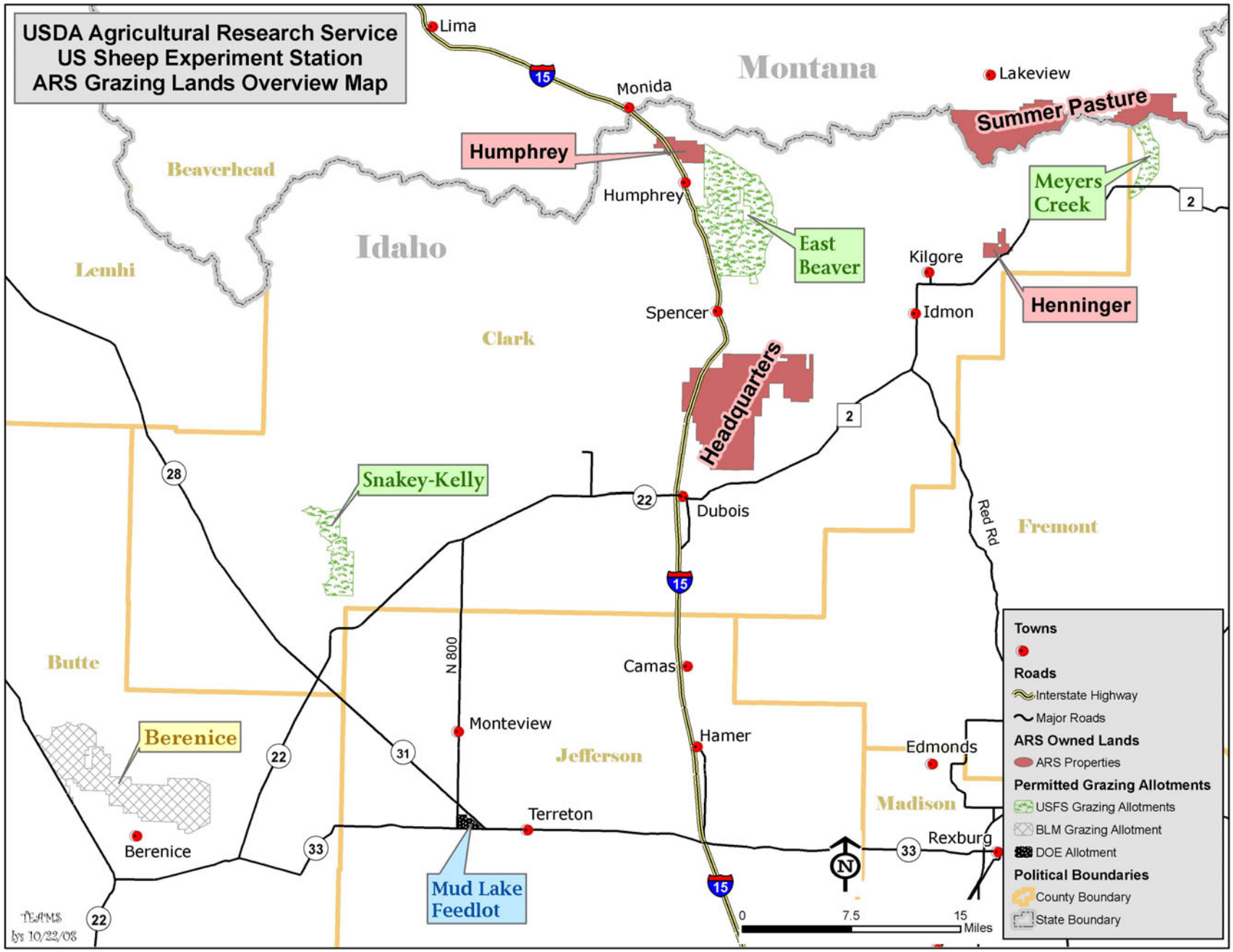
Decisions to Be Made

An environmental analysis will evaluate the site-specific issues the public has with the proposed action, consider alternatives to the proposed action, and analyze effects of the proposed action and alternatives on the environment. Based on the *purpose and need* identified for the USSES Grazing and Associated Activities Project, the scope of the project is limited to decisions concerning activities within the USSES Grazing and Associated Activities Project Area. The environmental analysis will provide the deciding official with the information to make the following decisions with regard to the Interim USSES Grazing and Associated Activities Project:

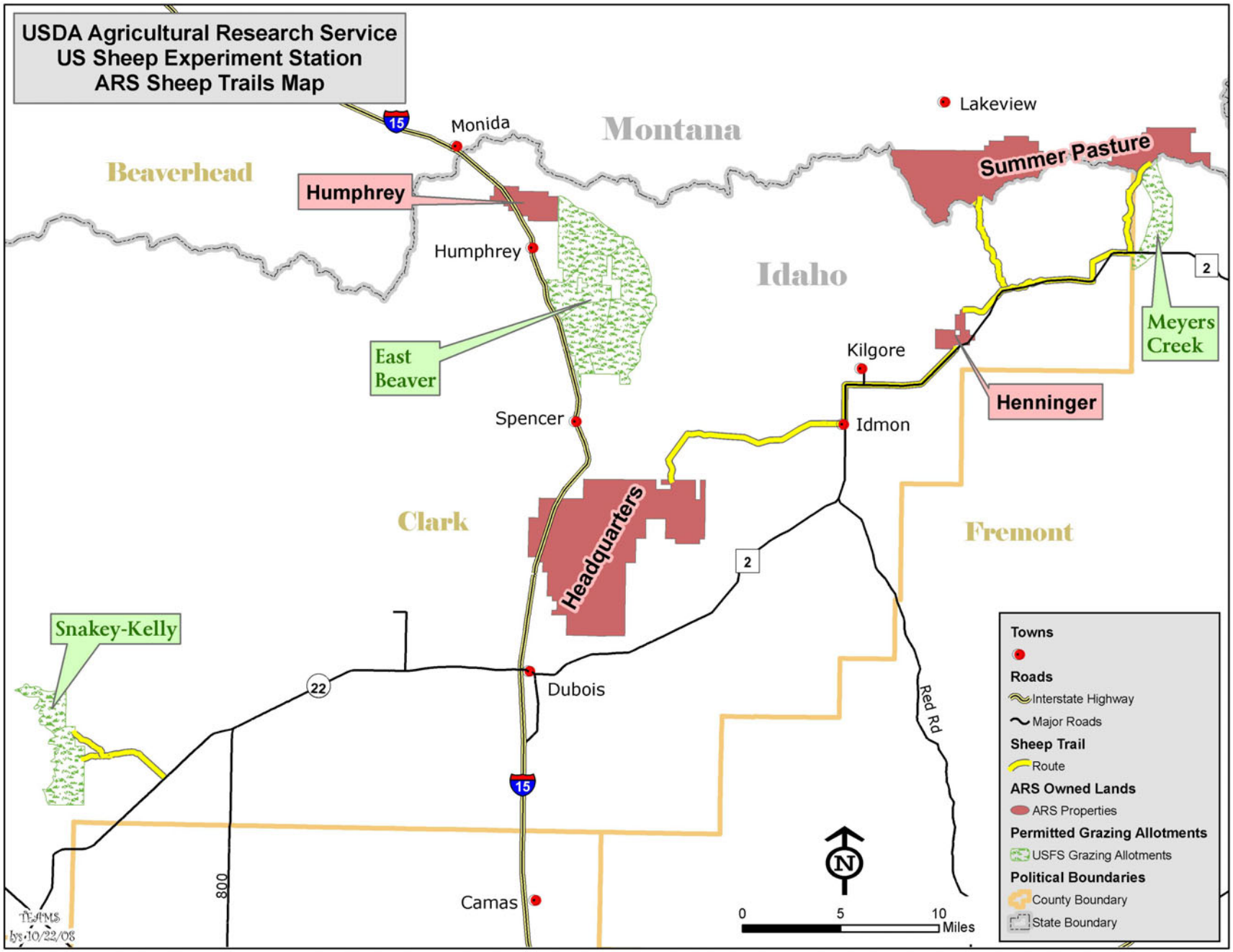
- Which actions, if any, will be approved, and
- What additional mitigation measures and monitoring requirements may be needed to protect resources?

The deciding official is Andrew C. Hammond, Agricultural Research Service Pacific West Area Director.

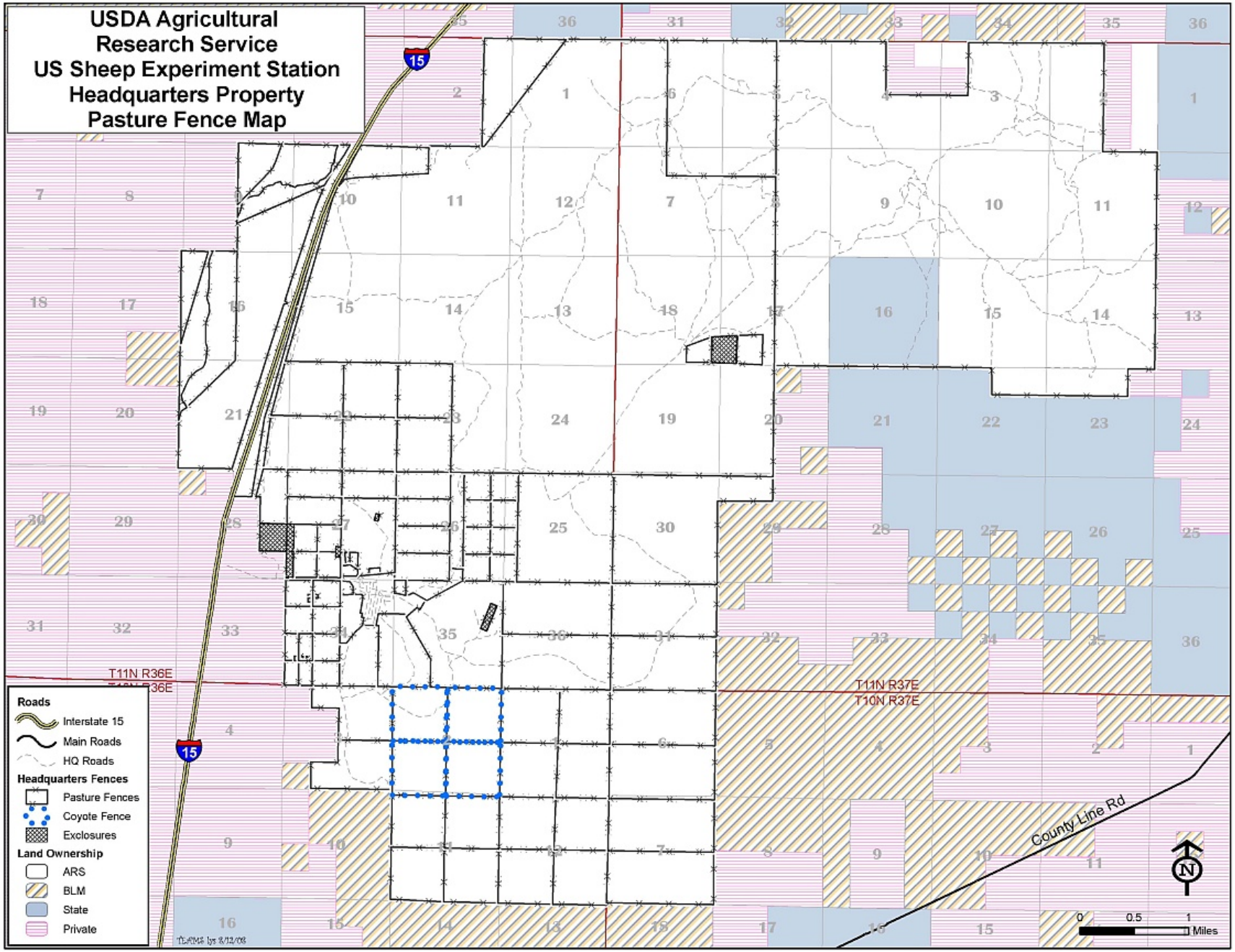
Maps



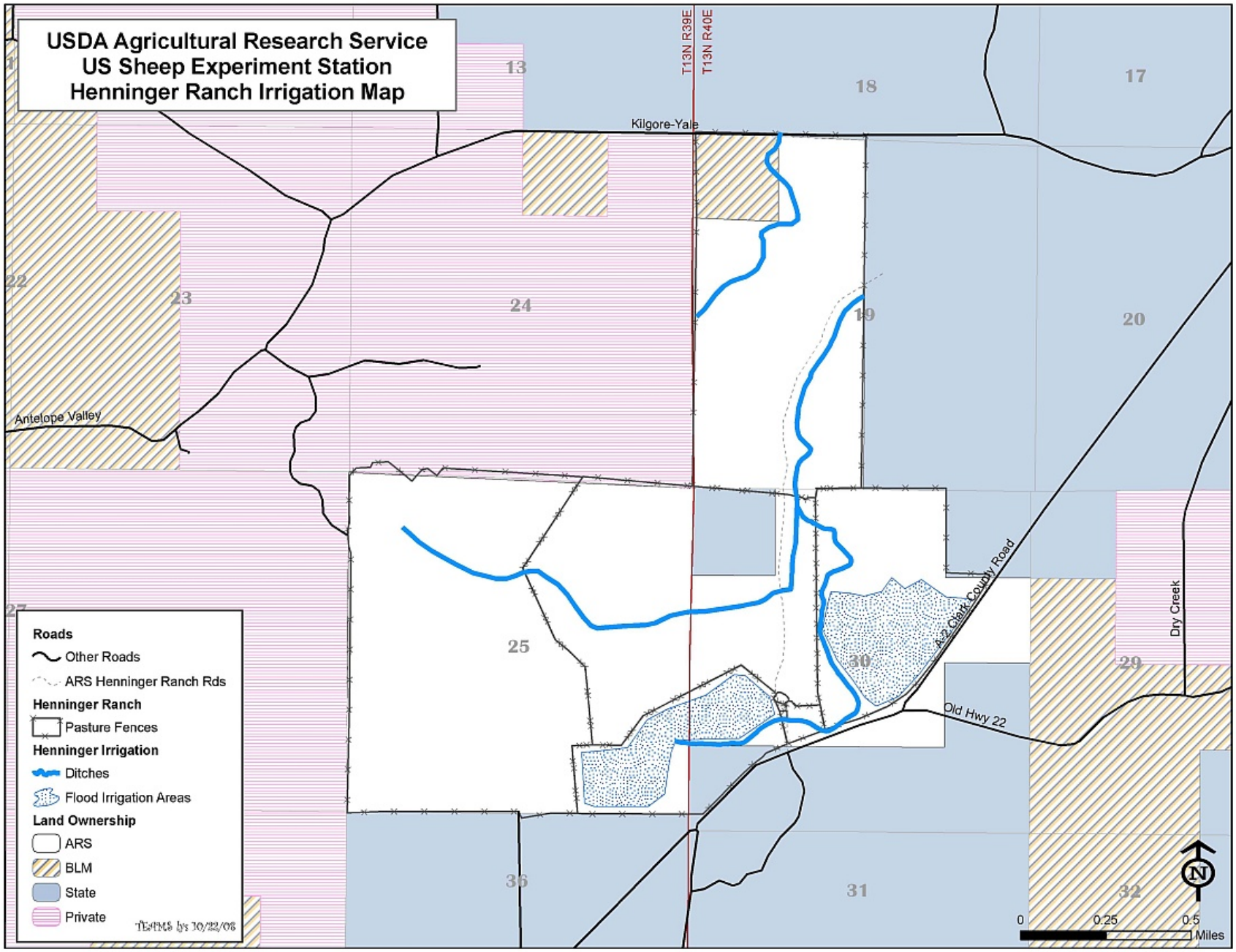
Map 1. Overview of ARS Properties with allotments



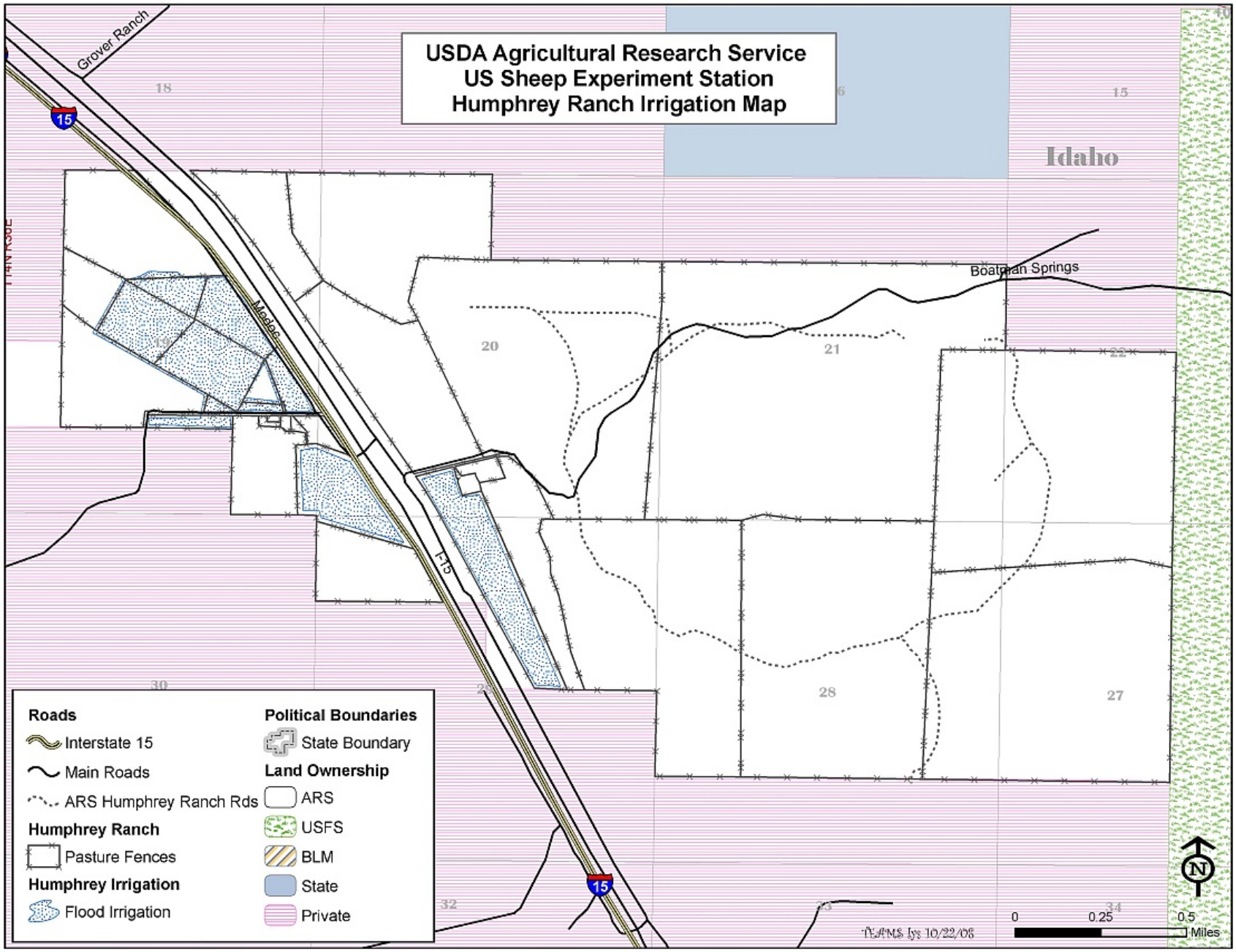
Map 2. Overview of ARS Properties with allotments and sheep trails



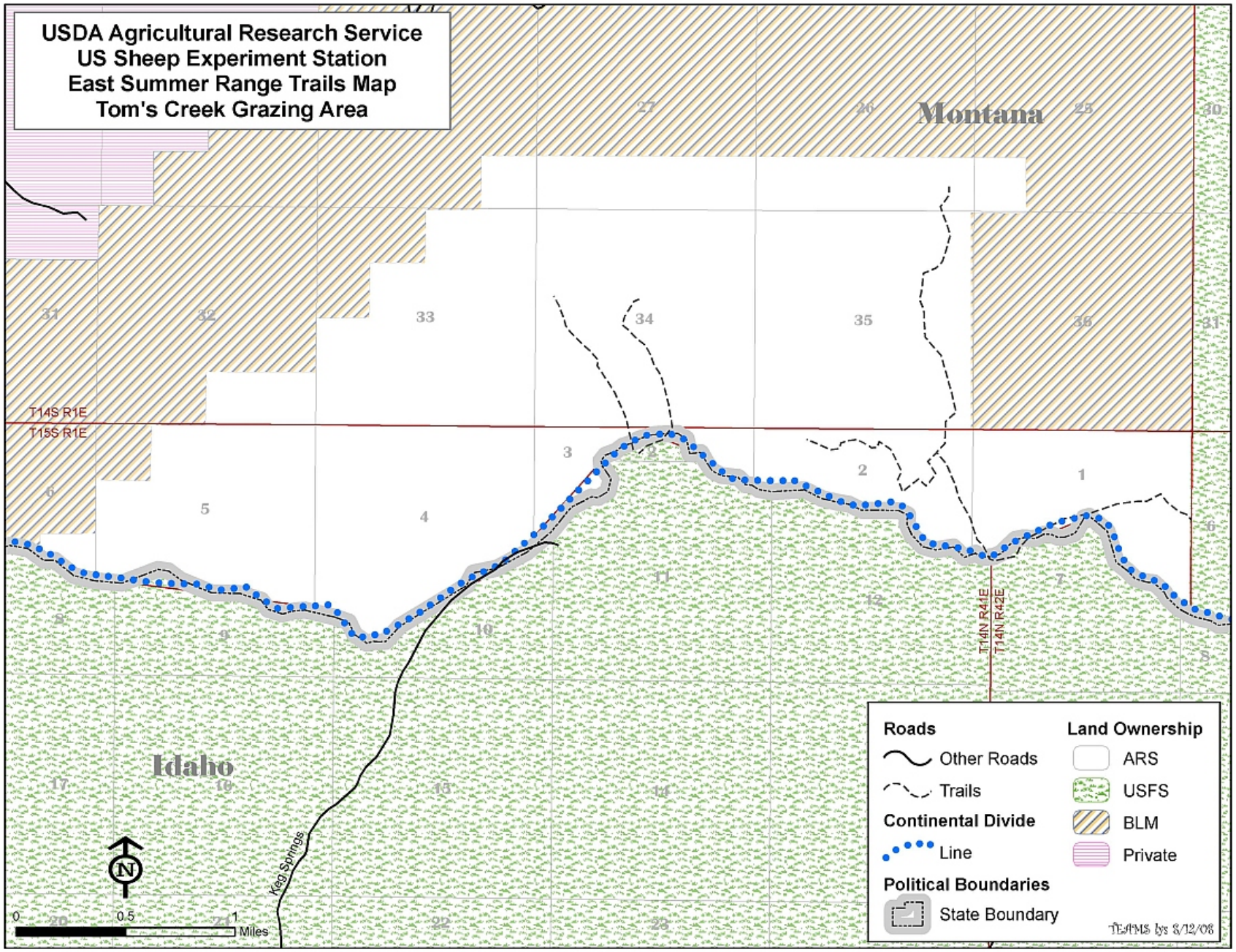
Map 3. Headquarters Property pasture fencing



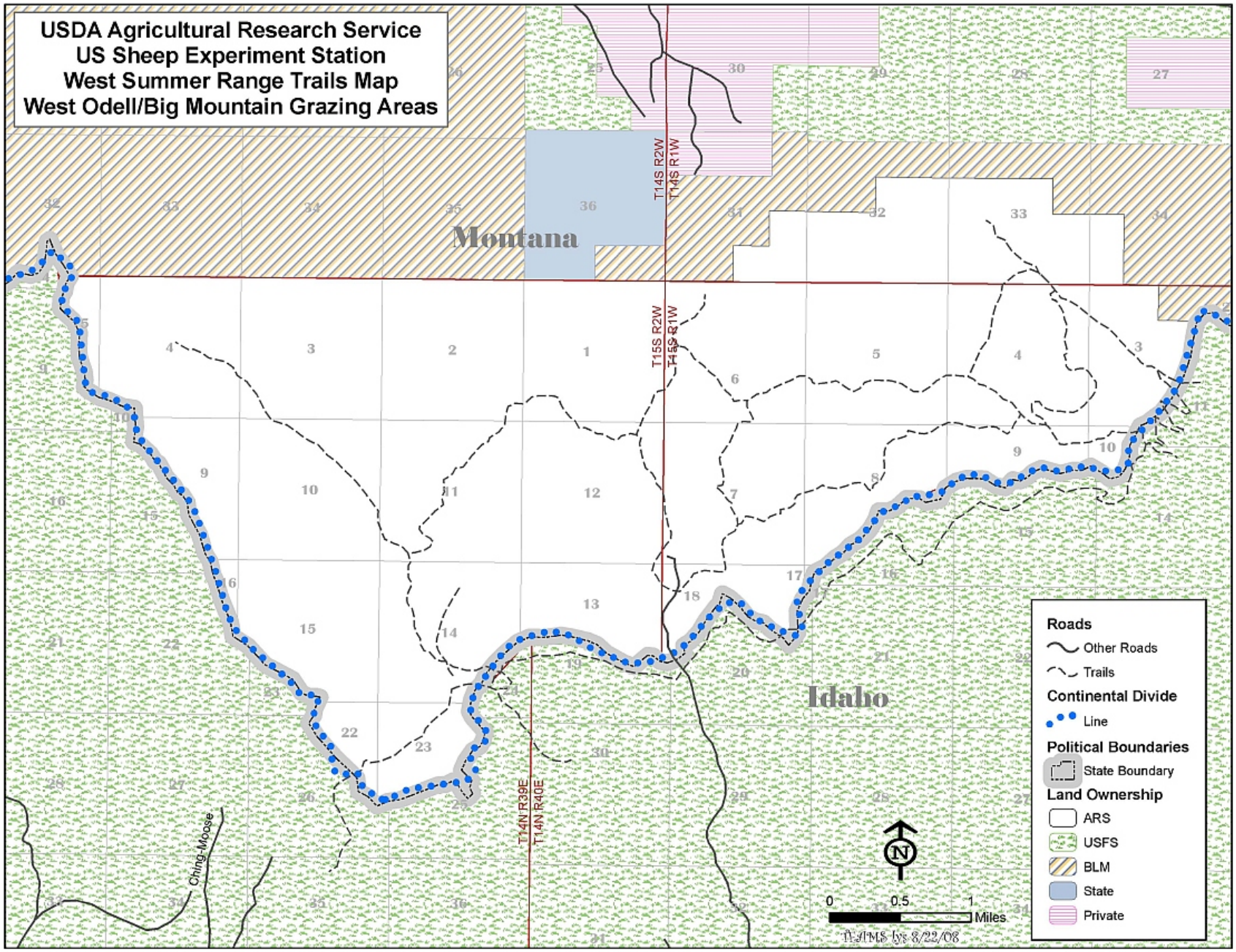
Map 4. Henninger Ranch irrigation and fencing



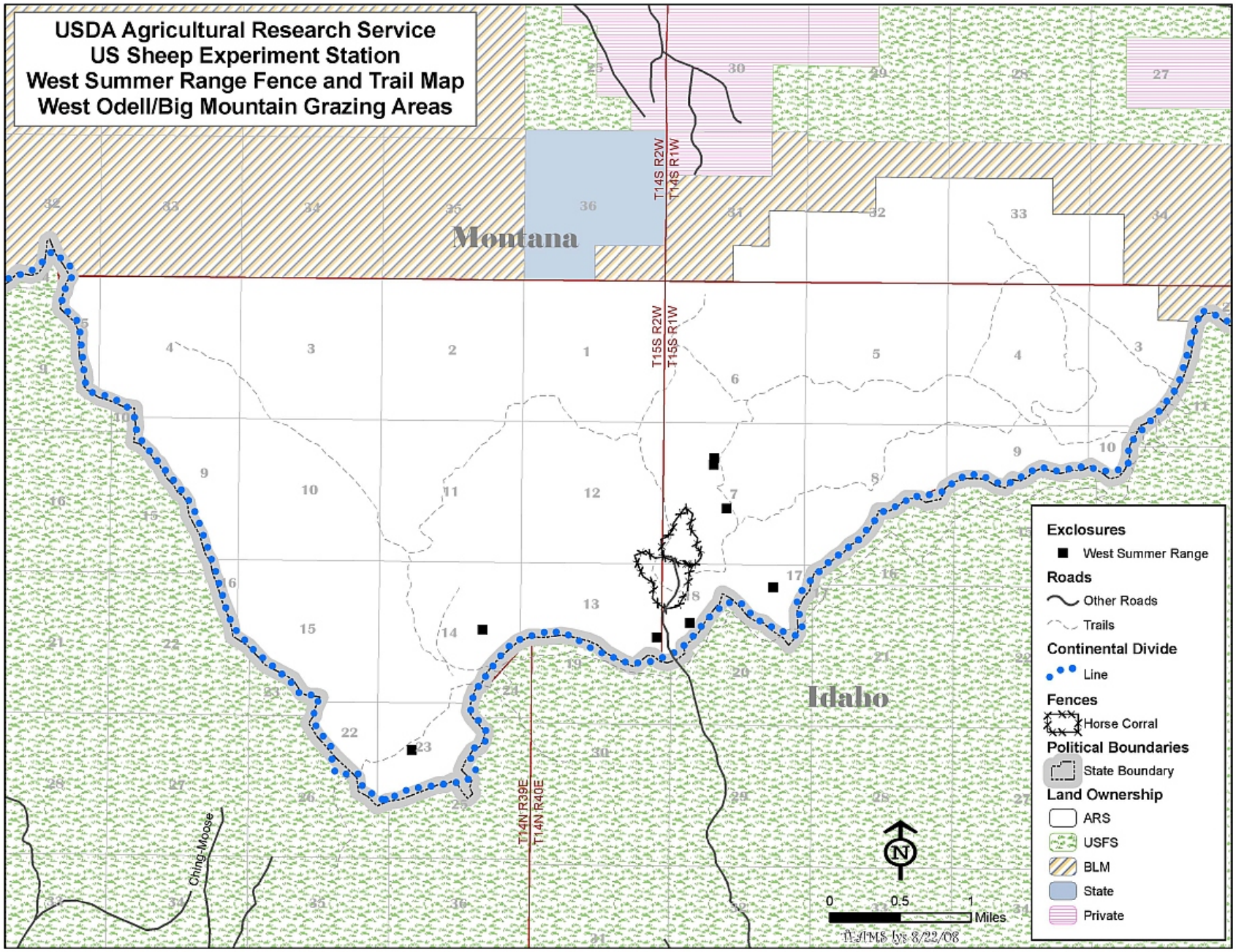
Map 5. Humphrey Ranch irrigation and fencing



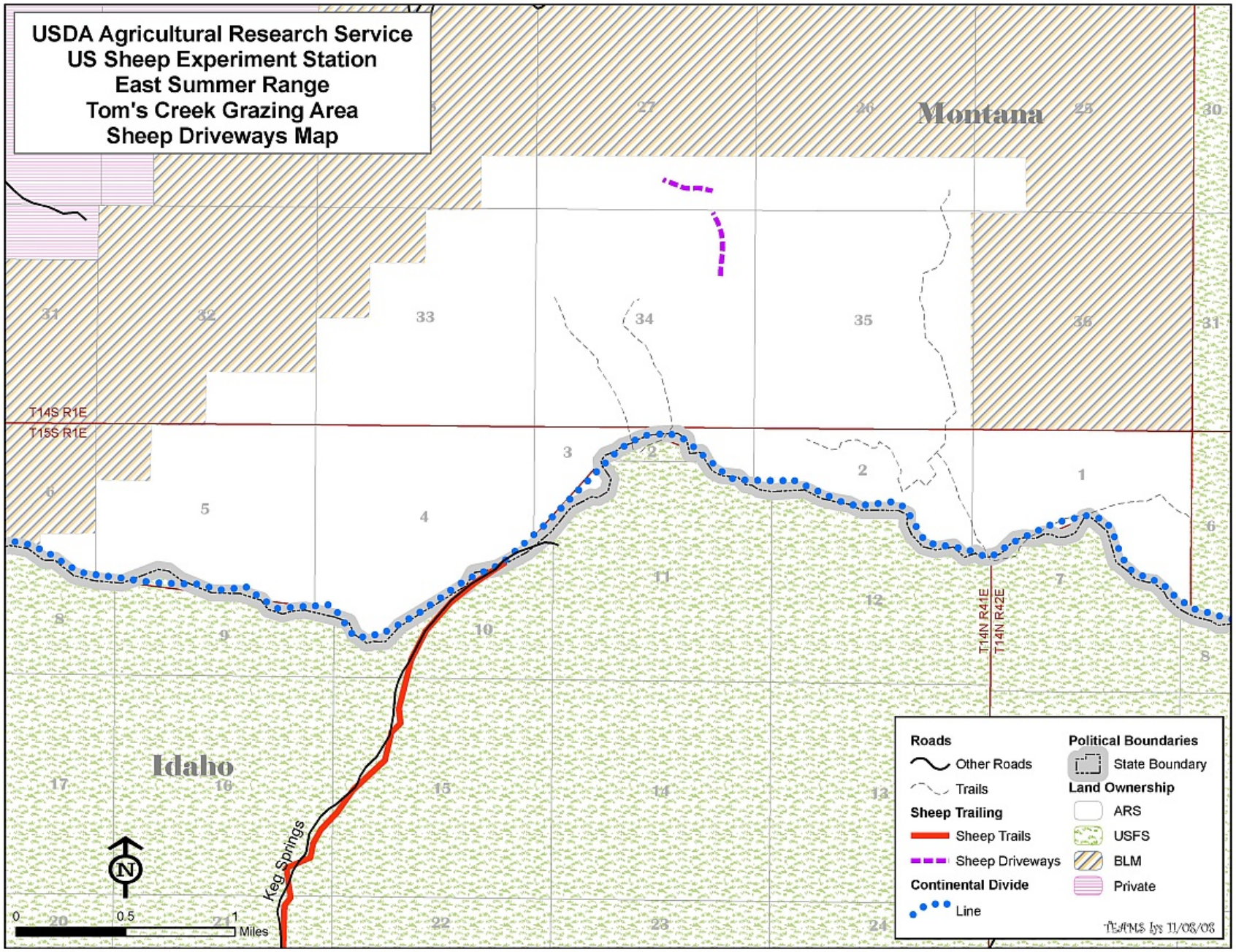
Map 6. East Summer Range



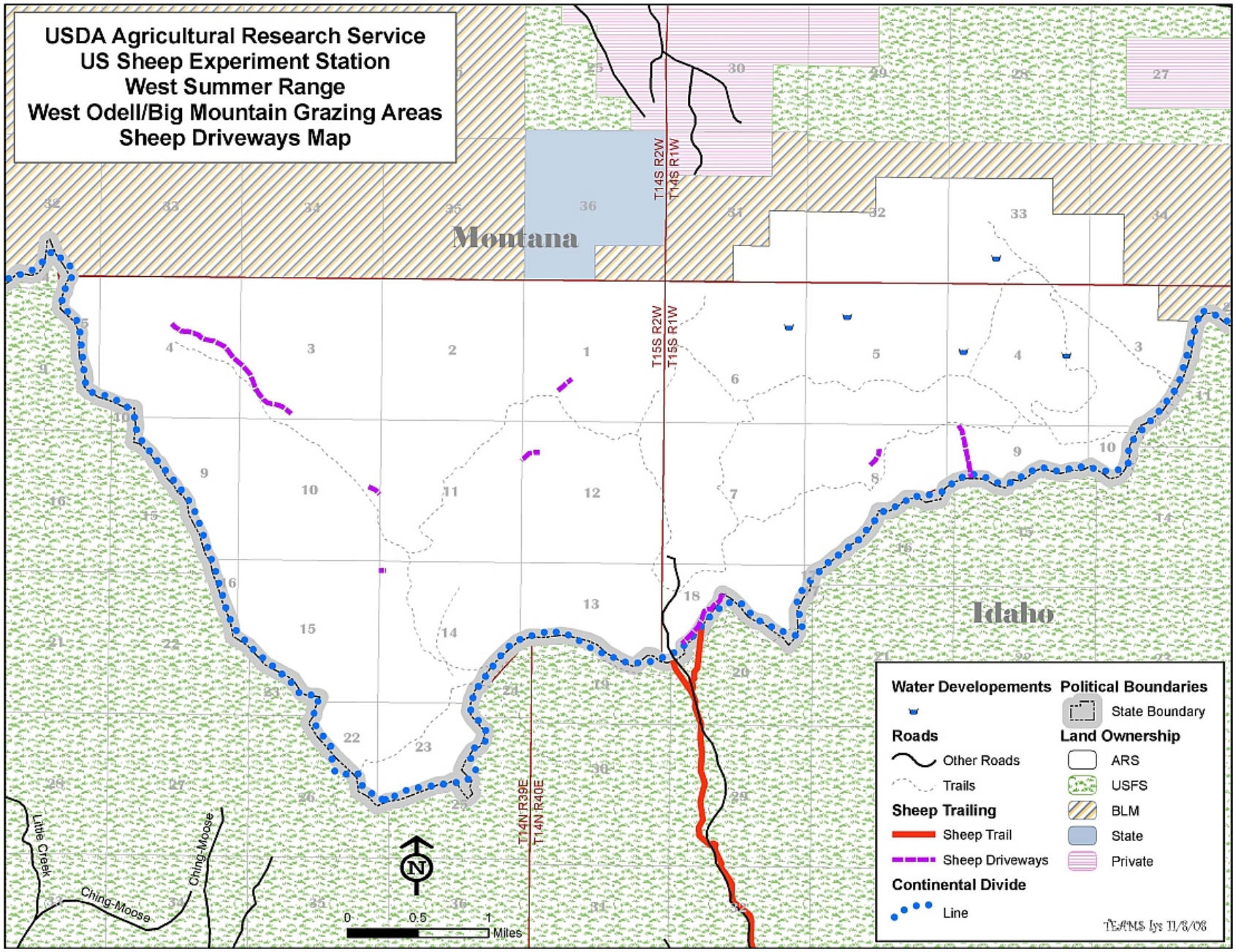
Map 7. West Summer Range



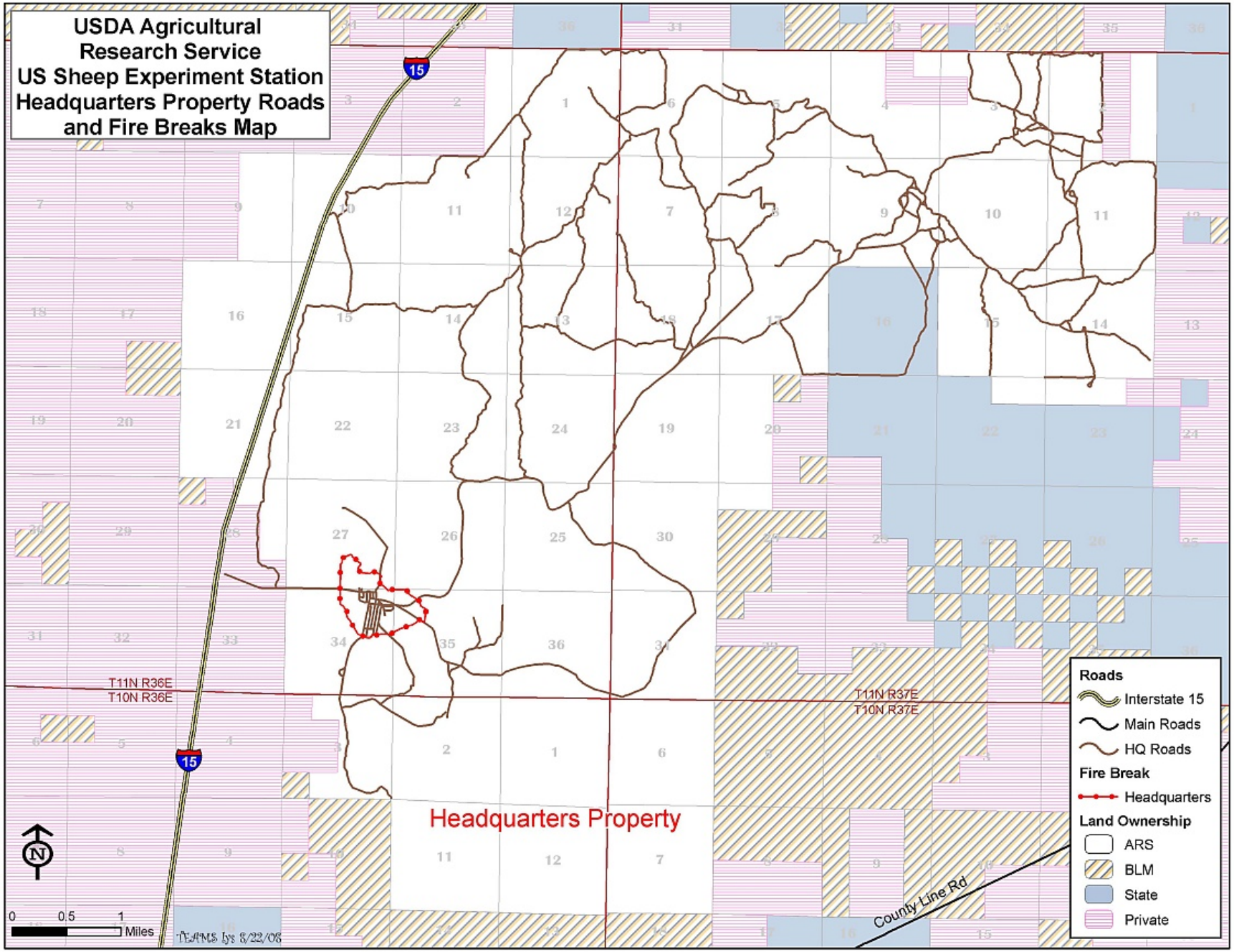
Map 8. West Summer Range fencing



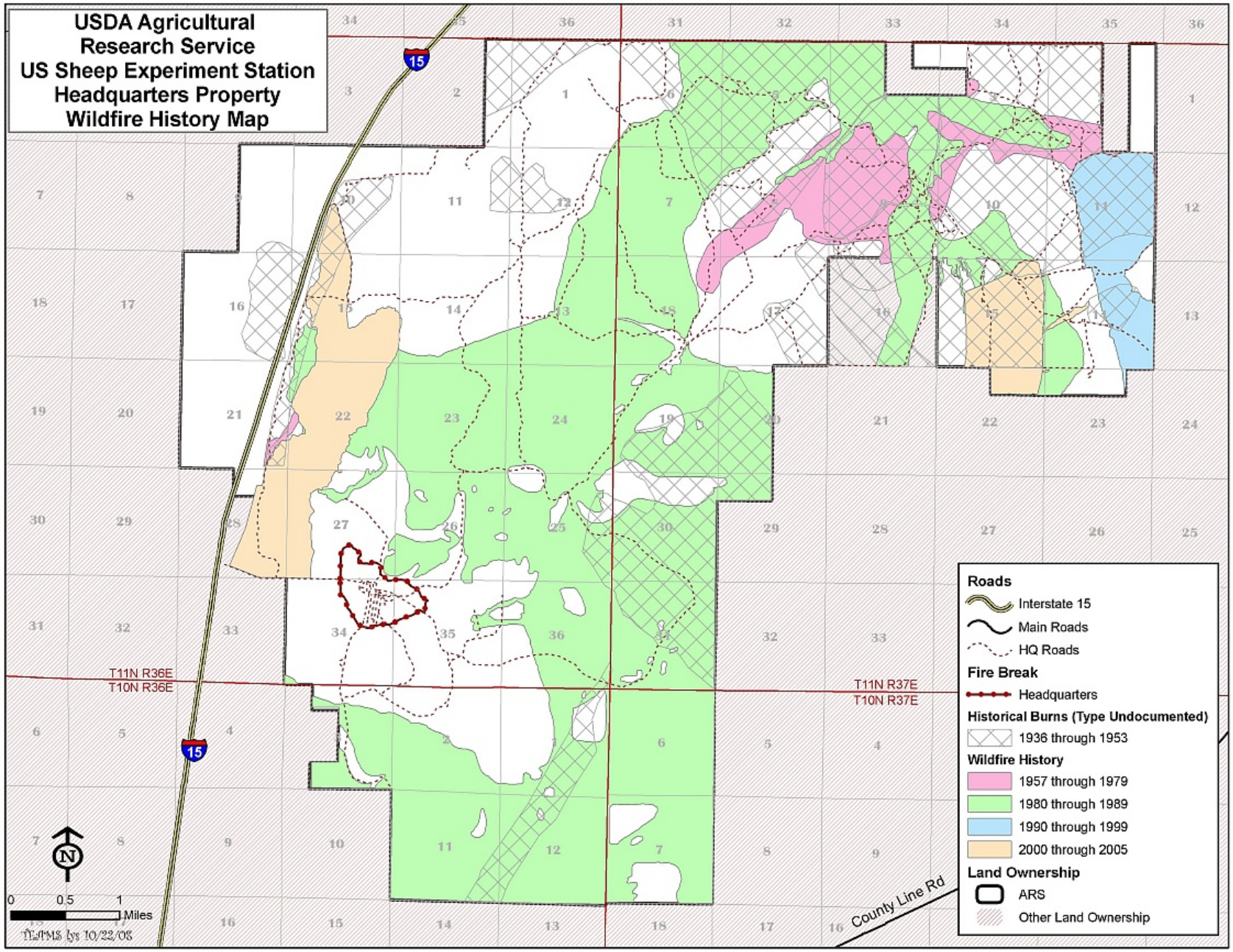
Map 9. East Summer Range sheep driveways



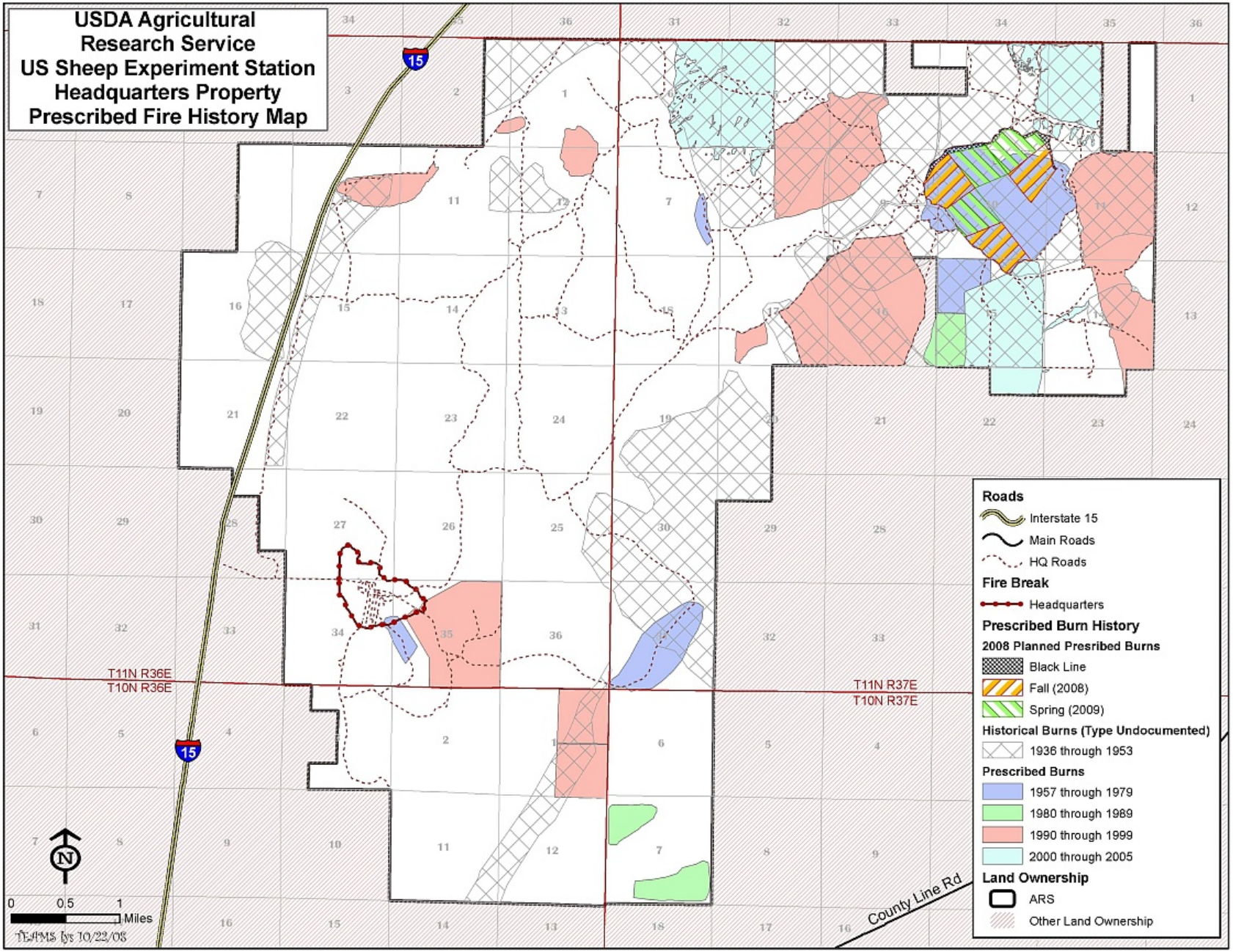
Map 10. West Summer Range sheep driveways



Map 11. Headquarters Property roads and firebreaks



Map 12. Headquarters Property wildfire history



Map 13. Headquarters Property prescribed fire history