Upper Snake Sagebrush Steppe Restoration Project

Background

The Upper Snake Sagebrush Steppe Restoration Project is located in southeastern Idaho within the Upper Snake River Plain. The 70,320 acre project area is comprised entirely of Bureau of Land Management (BLM)-administered public lands, with treatment areas residing within Bingham, Bonneville, Butte, Clark, Jefferson and Power Counties (Map 1). The project area is located in whole or in part within Township 1 N., Range 31 & 32 E., Township 2 N., Range 27 & 36 E., Township 3 N., Range 27 E., Township 4 N., Range 34 & 35 E., Township 5 N., Range 34 & 35 E., Township 7 N., Range 35 E., Township 8 N., Range 35 & 36 E., Township 9 N., Range 34 & 35 E, Township 1 S., Range 32 E., Township 2 S., Range 31 & 32 E., Township 3 S., Range 31 & 32 E., and Township 4 S., Range 29 E. The topography of the project area consists of gently rolling lava plains with associated basalt bluffs and outcroppings. Elevations range from 4,500 feet on the southern end of the project area to over 5,800 feet above sea level on the northern end. The annual precipitation in the individual treatment areas ranges between 8-12 inches, while temperatures range between 92ºF for a high and -1ºF for a low. The project area consists of 11 disconnected treatment units that vary in size from 180 to 25,440 acres.

The BLM-administered public lands within the Sagebrush Restoration project area were historically a mosaic of shrub and herbaceous dominated vegetation. The historical native vegetation was comprised of a sagebrush-dominated plant community; inter-mountain basins big sagebrush steppe. Sites historically consisted of perennial grasses and forbs (>25% cover) with Wyoming big sagebrush (*Artemisia tridentata wyomingensis*) and basin big sagebrush (*Artemesia tridentata tridentata*) dominating or codominating the shrub layer. Historically, shrub layers were open to moderately dense with a cover ranging between 10-40%. The disturbance regime for this vegetation community mainly focused around fire, however, drought, climate shifts and insects and disease outbreaks did play a lesser role and depending upon the severity could have led to the replacement of the stand. Fires within the sagebrush steppe mainly consisted of stand-replacement fires with an estimated fire return interval (FRI) of between 35–100+ years.

Fire records dating back to the early 1940's, show that wildfire activity within those BLM lands that make up the various treatment units has been irregular, with some areas experiencing excessive fire and others too little. More recently (within the last 20 yrs), 20 wildfires have consumed a total of 60,506 acres or 86% of the native vegetation within the 11 treatment areas. These fires removed a majority of the mid to late seral sagebrush steppe vegetation that once dominated the sites. As a result, much of the area that was once categorized as Key Greater sage-grouse habitat has now been downgraded to Restoration I (R1) perennial grasslands and even in some cases Restoration II (R2) annual grasslands. In many of the areas that previously burned Emergency Stabilization and Rehabilitation (ESR) treatments were implemented, with varying degrees of success, to aid in the post-fire recovery of the site. To date approximately

55,835 acres or 79% of the treatment areas have been reseeded via the ESR program. Additionally, several of the treatment areas were treated via range improvement projects that focused on improving degraded range condition and fuels reduction projects that focused on improved the ecological condition of the sites by reseeding native vegetation and reducing annual grasses. Approximately 17,090 acres or 24% of the treatment areas have been seeded with either native or non-native grasses through these two treatment programs.

Wildfire, within its historic range of variability, is a natural process and is required for nutrient cycling and maintenance of a healthy ecosystem. However, due to alterations to the historic FRI it has become one of the principle disturbances altering landscape characteristics in the Upper Snake River Plain sagebrush steppe. Historically, fires within the Wyoming and basin big sagebrush vegetation types of the Snake River Plain occurred at a mean FRI of 75-94 years with an average patch size of approximately 250 acres. Alterations to the historic fire ecology of the area due to the introduction of non-native invasive species, such as cheatgrass, have resulted in larger fires occurring at shorter return intervals. When the interval becomes too short, native shrub and perennial bunchgrasses cannot recover and energy reserves become depleted resulting in an area dominated by invasive annual grasses. Conversely, when intervals become too long, native shrubs become overly dense and decadent and reduce the health and productivity of the native herbaceous understory. Vegetation management can counter these effects by implementing restoration and rehabilitation treatments in areas that have been experiencing disturbances outside the vegetation's natural range of historic variability.

A Fire Regime Condition Class (FRCC) assessment for the existing vegetation and disturbance regimes within the project area was calculated to be an FRCC II (See FRCC Methodology and Analysis). Landscapes classified as an FRCC II are defined as having moderately altered fire regimes and are moderately at risk of losing key ecosystem components. Additionally, fire frequencies may have departed by one or more return intervals (either increased or decreased), resulting in moderate changes in fire and vegetation attributes. If left unchecked, this continued modification of the fire and vegetation attributes as a result of the unyielding propagation of cheatgrass threatens to further reduce the quality and quantity of the existing Greater sage-grouse (*Centrocercus urophasianus*) and other sagebrush obligate species habitat. Greater sage-grouse are now listed as a candidate species by the US Fish and Wildlife Service (FWS) whereby the FWS have determined that listing is warranted but has been precluded. Fire and invasion by exotic annual grasses are widespread causes for habitat loss, particularly in the western part of the sage-grouse range (Miller et al. 2011). These two significant threats to Greater sage-grouse and their habitat warrant treatments to maintain or improve the habitat throughout the species range. Treatments, such as the chemical control of annual grasses, seeding of native/non-native grasses and the planting of sagebrush seedlings can reduce competition, increase nutrient availability and increase native vegetation. The final outcome is a sagebrush steppe containing multiple successional stages of more diverse vegetative communities.

Utilizing both quantitative and qualitative monitoring conducted over the last ten years by the USFO the proposed treatment units were developed as they were identified as areas substantially lacking herbaceous and/or shrub composition and cover relative to ecological site potential, and may be experiencing some degree of cheatgrass invasion. Vegetative cover within the individual treatment units is variable with native herbaceous (grasses and forbs) cover ranging between 7-23 percent, sagebrush cover between 0-17 percent, and other shrub cover (e.g. green rabbitbrush - Chrysothamnus viscidiflorus) between 2-20 percent. While a majority of the treatment units did display some degree of annual grass (cheatgrass) cover between 0-14 percent, only a few of the units possessed monitoring data pertaining to cheatgrass density. Within those units, cheatgrass densities ranged between 2 and 204 stems/ft² (65,340 – 8,890,596 stems/ac). Tables 1 and 2 summarize the monitoring data in relation to percent vegetative cover and cheatgrass density per acre within the project area.

Table 1: Vegetative Cover within the Sagebrush Steppe Treatment Units.

Treatment Unit	Perennial Grass Cover (%)	Annual Grass Cover (%)	Annual Forb Cover (%)	Perennial Forb Cover (%)	Sagebrush Cover (%)	Other Shrub Cover (%)
Camas Butte	21	5	5	0	1	19
Deadman Native	12	0	2	4	0	16
Forage Reserve	28	0	14	0	2	6
Hells Half Acre	8.8	13.7	3.3	8.7	14.6	2.0
Jefferson	7.3	0.3	2.2	0.2	0.6	3.5
Mesa	22.5	7.8	0	1	1.7	2
Stage Road	6	7	6.3	1.5	0	3
Table Butte	21	5	5	0	1	19
Table Legs Butte	19	2	0	4	17	15
Twin Buttes	9	0	0	1	0	20
West Cedar Butte	22.5	7.8	0	1	1.7	2

Table 2: Cheatgrass Density within the Sagebrush Steppe Treatment Units.

Treatment Unit	Cheatgrass (stems per foot²)	Cheatgrass (stems per acre)
Hells Half Acre	204.1	8,890,596
Jefferson	1.5	65,340
Stage Road	61	2,657,160

Proposal

Alternative A: The Proposed Action

Under the Proposed Action, 11 treatment areas totaling 70,320 acres would be treated with the intent of increasing sagebrush densities, improving native understory vegetation and reducing cheatgrass. Within the treatment footprint, 53,220 acres would be seeded via drilling or aerial application with native herbaceous (grasses and forbs) vegetation and 25,440 acres would be chemically treated to reduce cheatgrass dominance. Additionally, selected areas within each of the treatment units would be strategically hand planted with sagebrush seedlings using augers to promote the repopulating of the site by sagebrush (Map 2). These methods would include:

Sagebrush Hand Planting

Sagebrush seedlings would be planted at an approximate density of 100 seedlings per acre with a minimum spacing of 10 feet. Some soil disturbance would occur as a result of the planting process. The disturbance would vary in size depending on the type of seedling being planted, (e.g., bare root or containerized). Generally, three inch diameter earth augers would be used to establish holes for seedlings. If enough soil cannot be obtained to properly plant the seedling, an auxiliary hole would be drilled within the vicinity. Hoedads or planting bars may also be used in place of earth augers if site conditions are not favorable. Additionally, the use of 4-wheel drive and all-terrain vehicles may be needed to facilitate the transport of materials and equipment to the planting sites.

Areas susceptible to livestock grazing impacts or ground disturbance from unauthorized OHV use may be temporarily fenced to reduce impacts on seedlings following treatment. Temporary fence construction would consist of two or three strand electric wire with reflective markers placed on the top wire to reduce collision potential of avian species. Additionally, the use of protective Tubex shields could be used around individual plants in areas where wildlife herbivory is identified as a potential threat to the success of the treatment.

Native Herbaceous Seeding

The native seeding would involve seeding degraded areas with native grasses and forbs. These seedings are needed to restore native plant diversity and structure to the area. Whether this

treatment is implemented via drilling or aerial application followed by harrowing, it is likely to result in some degree of surface disturbance. The implementation of this treatment may follow the chemical treatment(s) of cheatgrass (see *Chemical Cheatgrass Reduction*) that are needed to reduce the annual grass density and competition. Both seeding methods would be implemented during the early fall at a rate and mixture of native vegetation that would result the highest likelihood of success (Table 3).

Treated areas would be closed to livestock grazing for a minimum of three growing seasons. A six mile temporary electric fence would be constructed within the Stage Road treatment area to protect the seeding while in the Jefferson seeding area sheep operators would be instructed to keep herds out of the closure (Map 3). Temporary fence construction would consist of two or three strand electric wire with reflective markers placed on the top wire to reduce collision potential of avian species. Livestock grazing could be resumed following an evaluation by an interdisciplinary team. Grazing at pre-treatment authorization levels would resume within the treated portions of the allotments once vegetation monitoring shows that perennial herbaceous cover is at least 70% of what is found in the adjacent untreated areas, and 50% of the herbaceous perennial plants are producing seed. Additionally, the team would consider plant vigor, stability of the treatment area, and overall seeding success.

Table 3: Seeded Species and Rates of Application.

Species		Common Name	Drill Seeding (lb/ac) (1) (2)	Aerial Seeding (lb/ac) (1) (3)	Comments
Grasses	*Pseudoroegneria spicata*	"Anatone" Bluebunch Wheatgrass	3	6	Long-lived, perennial bunchgrass with good palatability for wildlife. Best adapted to 10-20 inch precipitation zones. Drought resistant, aids in soil stabilization and is an important component of sage-grouse habitat.
	Elymus wawawaiensis	"Secar" Snake River Wheatgrass	3	6	Long-lived, perennial bunchgrass. Best adapted to 10-20 inch precipitation zones. Very drought tolerant bunchgrass that is desirable for erosion control. Highly palatable and has a high protein content.
	Agropyron fragile	*"Stabilizer"* Siberian Wheatgrass	1	2	Long-lived, perennial bunchgrass with good palatability for wildlife. Resists cheatgrass competition better than most natives, due to earlier germination at colder temperatures. Best adapted to 8-16 inch precipitation zones. Drought resistant, establishes quickly and aids in soil stabilization.
	Achnatherum hymenoides	"Nezpar" Indian Ricegrass	1	2	Drought tolerant bunchgrass that is desirable for erosion control. Best adapted to 8-14 inch precipitation zones. Important component of sage-grouse habitat, is highly palatable and has a very high protein and fat content
	Elymus elymoides	"Fish Creek" Bottlebrush Squirreltail	1	2	Drought tolerant short-lived bunchgrass that is an important component of sage-grouse habitat. Best adapted to 5-10 inch precipitation zones. An early seral species that outcompetes annual weedy species.
	Poa ampla	'Sherman' Big Bluegrass	1	2	Long-lived, perennial bunchgrass with good palatability for wildlife and competes well with winter annual weeds. Best adapted to 10-24 inch precipitation zones.
Forbs	*Linum lewisii*	Lewis Flax	0.5	1	Provides some forage value and good erosion control. Best adapted to 10-18 inch precipitation zones.
	Penstemon palmeri	Palmer's Penstemon	0.5	1	Used for restoration and wildlife enhancement plantings. Selectively used as forage by small birds, big game and livestock. Best adapted to10-16 inch precipitation zones.
	Astragalus filipes	Basalt Milvetch	0.5	1	A component of sage-grouse habitat. Best adapted to8-30 inch precipitation zones.
	Sphaeralcea coccinea	Scarlet Globemallow	0.5	1	Long-lived forb that is used for restoration and provides excellent forage for big game. Best adapted to 6-10 inch precipitation zones.
Total lb/ac.			**12**	**24**	

Notes

(1) Application rates are derived from BLM and NRCS Plant Guides for the purpose of mixed species establishment. Actual application rates will vary depending upon seed availability and funding.

(2) Based on a drill-seeding rate of 12 lb. pure live seeds/acre. Rate should be doubled for broadcast or hydro-seeding.

(3) Based on a broadcast or hydro-seeding rate of 24 lb. pure live seeds/acre. Rate should be halved for drill-seeding.

Chemical Cheatgrass Reduction (Specific to the Stage Road Treatment Area)

Chemical treatments would involve the application of herbicides at certain plant growth stages that would result in the demise of the plant. Chemical application(s) are required to reduce or eliminate the anticipated growth and competition of cheatgrass prior to fall plantings and seedings. The area would be sprayed with a single or combination of herbicides (Table 4). Two or more treatments may be necessary due to the large amount of cheatgrass seed within the seed bank. Subsequent applications are dependent on the environmental conditions occurring during the late spring/early summer. As a result, the timing of the chemical treatments would need to be flexible in order to maximize the effectiveness of the treatment. It is anticipated that at least two chemical treatments would be needed in the spring. The herbicide(s) would be applied according to the application rate identified on the chemicals label. To reduce the potential for drift and offsite application, the site would be sprayed within four hours of sunrise when wind velocities are less than five miles per hour (5 MPH). The desired post-treatment density of the cheatgrass would be approximately five plants per square foot.

Table 4. Herbicides Proposed for Use under the Action Alternatives.

Herbicide	Herbicide Characteristics
2,4-D	Selective; foliar absorbed; post-emergent; annual/perennial broadleaf weeds.
Chlorsulfuron	Selective; inhibits enzyme activity, broadleaf weeds and grasses.
Clopyralid	Selective, mimics plant hormones; annual and perennial broadleaf weeds.
Dicamba	Growth regulator; annual and perennial broadleaf weeds and grasses.
Glyphosate	Non-selective, annual and perennial grasses and broadleaf weeds, sedges, shrubs, and trees.
Metsulfuron methyl	Selective; post-emergent; inhibits cell division in roots and shoots; annual and perennial broadleaf weeds, brush, and trees.
Picloram	Selective; foliar and root absorption; mimics plant hormones; certain annual and perennial broadleaf weeds, vines, and shrubs.
Tebuthiuron	Relatively non-selective soil activated herbicide; pre and post-emergent control of annual and perennial grasses, broadleaf weeds and shrubs.
Triclopyr	Growth regulator; broadleaf weeds and woody plants.
Imazapic	Selective post-emergent herbicide; inhibits broadleaf weeds and some grasses.
Pseudomonas fluorescens strain D7 bacterium*	Selectively inhibits cheatgrass by colonizing the roots and producing root-suppressive compounds that decrease seedling vigor, the number of tillers and seeds produced.

*The application of D7 would be limited to no more than 50 acres for the purpose of conducting field tests on the viability and effectiveness of the chemical. Should this biological control agent become approved for public land application this document would allow for the large scale application of this product on those lands identified within this environmental assessment.

Details of the various actions to be implemented under the Proposed Action are summarized in Table 5 by treatment unit.

Table 5: Summary of Treatment Objectives, Methods and Acres by Treatment Unit(s).

Treatment Unit(s)	Acres	Treatment Method	Treatment Objectives
Twin Buttes Forage Reserve Deadman Native Table Legs Butte Table Butte	22,850	• Hand Plant Sagebrush Seedlings	• Establish seed sources that can further aid in the reestablishment of the sites. • Transition the vegetation structure and composition towards FRCC 1. • Improve wildlife habitat by enhancing native species diversity and increasing sagebrush densities.
Jefferson Fire West Cedar Butte Camas Butte Mesa Hells Half Acre Stage Road	47,470	• Hand Plant Sagebrush Seedlings • Native Grass & Forb Drill Seeding • Chemically Reduce/Remove Cheatgrass	• Reduce the threat of uncharacteristic wildland. • Transition the fire regime and vegetation structure and composition towards FRCC 1. • Establish seed sources that can further aid in the reestablishment of the sites. • Improve wildlife habitat by increasing native herbaceous and shrub species diversity. • Chemically treat non-native annual grasses to reduce competition to native vegetation.

Alternative B: Non-native Seeding Alternative

Under Alternative B, a single treatment area totaling 25,440 acres would be treated with the intent of improving the overall ecological condition of the site by increasing the herbaceous and woody vegetation that is degraded due to repeated wildfires. All 25,440 acres would be treated through a combination of sagebrush seedling plantings, non-native grass seedings and chemical cheatgrass reduction treatments (Map 3). These methods would include:

Sagebrush Hand Planting

Sagebrush seedlings would be planted at an approximate density of 100 seedlings per acre with a minimum spacing of 10 feet. Some soil disturbance would occur as a result of the planting process. The disturbance would vary in size depending on the type of seedling being planted, (e.g., bare root or containerized). Generally, three inch diameter earth augers would be used to establish holes for seedlings. If enough soil cannot be obtained to properly plant the seedling, an auxiliary hole would be drilled within the vicinity. Hoedads or planting bars may also be used in place of earth augers if site conditions are not favorable. Additionally, the use of 4-wheel drive and all-terrain vehicles may be needed to facilitate the transport of materials and equipment to the planting sites.

Areas susceptible to livestock grazing impacts or ground disturbance from unauthorized OHV use may be temporarily fenced to reduce impacts on seedlings following treatment. Temporary fence construction would consist of two or three strand electric wire with reflective markers placed on the top wire to reduce collision potential of avian species. Additionally, the use of protective Tubex shields could be used around individual plants in areas where wildlife herbivory is identified as a potential threat to the success of the treatment.

Nartive/Non-native Herbaceous Seeding

The native/non-native seeding would involve the seeding of degraded areas with a mix of naitve and non-native grasses. This seeding is needed to provide a source of perennial grasses and that would eventually out-compete cheatgrass, stabilize the soil and increase plant diversity and structure to the area. Whether this treatment is implemented via drilling or aerial application followed by harrowing, it is likely to result in some degree of surface disturbance. The implementation of this treatment would follow the chemical treatment(s) of cheatgrass (see *Chemical Cheatgrass Reduction*) that are needed to reduce the annual grass density and competition. Both seeding methods would be implemented during the early fall at a rate and mixture of seeds that would result the highest likelihood of success (Table 6).

Treated areas would be closed to livestock grazing for a minimum of three growing seasons. A six mile temporary electric fence would be constructed within the Stage Road treatment area to protect the seeding from livestock use (Map 3). Temporary fence construction would consist of two or three strand electric wire with reflective markers placed on the top wire to reduce collision potential of avian species. Livestock grazing would continue following an evaluation by an interdisciplinary team. Grazing at pre-treatment authorization levels would resume within the treated portions of the allotments once vegetation monitoring shows that perennial herbaceous cover is at least 70% of what is found in the adjacent untreated areas, and 50% of the herbaceous perennial plants are producing seed. Additionally, the team would consider plant vigor, stability of the treatment area, and overall seeding success.

Table 6: Seeded Species and Rates of Application.

Species		Common Name	Drill Seeding (lb/ac) (1) (2)	Aerial Seeding (lb/ac) (1) (3)	Comments
Grasses	*Elymus wawawaiensis*	"Secar" Snake River Wheatgrass	5	10	Long-lived, perennial bunchgrass. Best adapted to 10-20 inch precipitation zones. Very drought tolerant bunchgrass that is desirable for erosion control. Highly palatable and has a high protein content.
	Siberian Wheatgrass	*"Vavilov II" Agroypron fragile*	5	10	Long-lived, perennial bunchgrass with good palatability for wildlife. Resists cheatgrass competition better than most natives, due to earlier germination at colder temperatures. Best adapted to 8-16 inch precipitation zones. Drought resistant, establishes quickly and aids in soil stabilization.
	Western Wheatgrass	*"Recovery" Pascopyrum smithii*	1	2	Long-lived and spreads via rhizomes. It is well adapted to a variety of soils and works best as part of a seed mix. Best adapted to 12-20 inch precipitation zones.
	Streambank Wheatgrass	*"Bannock" Elymus lanceolatus spp. lanceolatus*	1	2	Long-lived, perennial bunchgrass with good palatability for wildlife and livestock. Best adapted to 8-20 inch precipitation zones. Drought resistant, establishes quickly and aids in soil stabilization.
Total lb/ac.			**12**	**24**	

Notes
(1) Application rates are derived from BLM and NRCS Plant Guides for the purpose of mixed species establishment. Actual application rates will vary depending upon seed availability and funding.
(2) Based on a drill-seeding rate of 12 lb. pure live seeds/acre. Rate should be doubled for broadcast or hydro-seeding.
(3) Based on a broadcast or hydro-seeding rate of 24 lb. pure live seeds/acre. Rate should be halved for drill-seeding.

Chemical Cheatgrass Reduction (Specific to the Stage Road Treatment Area)

Chemical treatments would involve the application of herbicides at certain plant growth stages that would result in the demise of the plant. Chemical application(s) are required to reduce or eliminate the anticipated growth and competition of cheatgrass prior to fall plantings and seedings. The area would be sprayed with a single or combination of herbicides (Table 4). Two or more treatments may be necessary due to the large amount of cheatgrass seed within the seed bank. Subsequent applications are dependent on the environmental conditions occurring during the late spring/early summer. As a result, the timing of the chemical treatments would need to be flexible in order to maximize the effectiveness of the treatment. It is anticipated that at least two chemical treatments would be needed in the spring. The herbicide(s) would be applied according to the application rate identified on the chemicals label. To reduce the potential for drift and offsite application the site would be sprayed within four hours of sunrise when wind velocities are less than five mile per hour (5 MPH). The desired post-treatment density of the cheatgrass would be approximately five plants per square foot.

Details of the actions to be implemented under Alternative B are summarized in Table 7 by treatment unit.

Table 7: Summary of Treatment Objectives, Methods and Acres by Treatment Unit(s).

Treatment Unit(s)	Acres	Treatment Method	Treatment Objectives
Stage Road	25,440	• Hand Plant Sagebrush Seedlings • Native/Non-native Grass & Forb Drill Seeding • Chemically Reduce/Remove Cheatgrass	• Reduce the threat of uncharacteristic wildland. • Transition the fire regime and vegetation structure and composition towards FRCC 1. • Establish seed sources that can further aid in the reestablishment of the sites. • Improve wildlife habitat by increasing herbaceous and shrub species diversity. • Chemically treat non-native annual grasses to reduce competition to native vegetation.

Design Features Covering All Action Alternatives

- To avoid the spread of noxious weeds, no cross country vehicular travel would occur through areas with known noxious weed infestations. Additionally, prior to ground-disturbing activities, all mechanical equipment and vehicles would be cleaned of all vegetation (stems, leaves, seeds, and all other vegetative parts) in order to minimize the transport and spread of invasive plants seeds.

- The use of certified weed-free seed mixes would be required to prevent the introduction of invasive plants.

- As funding allows, the treatment areas would be monitored for the presence of noxious weed species prior to and following implementation. Any weeds that are identified would be treated in accordance with the *Upper Snake-Pocatello Integrated Weeds Control Programmatic Environmental Assessment* (DOI-BLM 2009).

- Ground-disturbing treatments would only occur between July 1 and December 31 so as to minimize impacts to sage-grouse, migratory birds and other wildlife species unless previously cleared by a wildlife biologist.

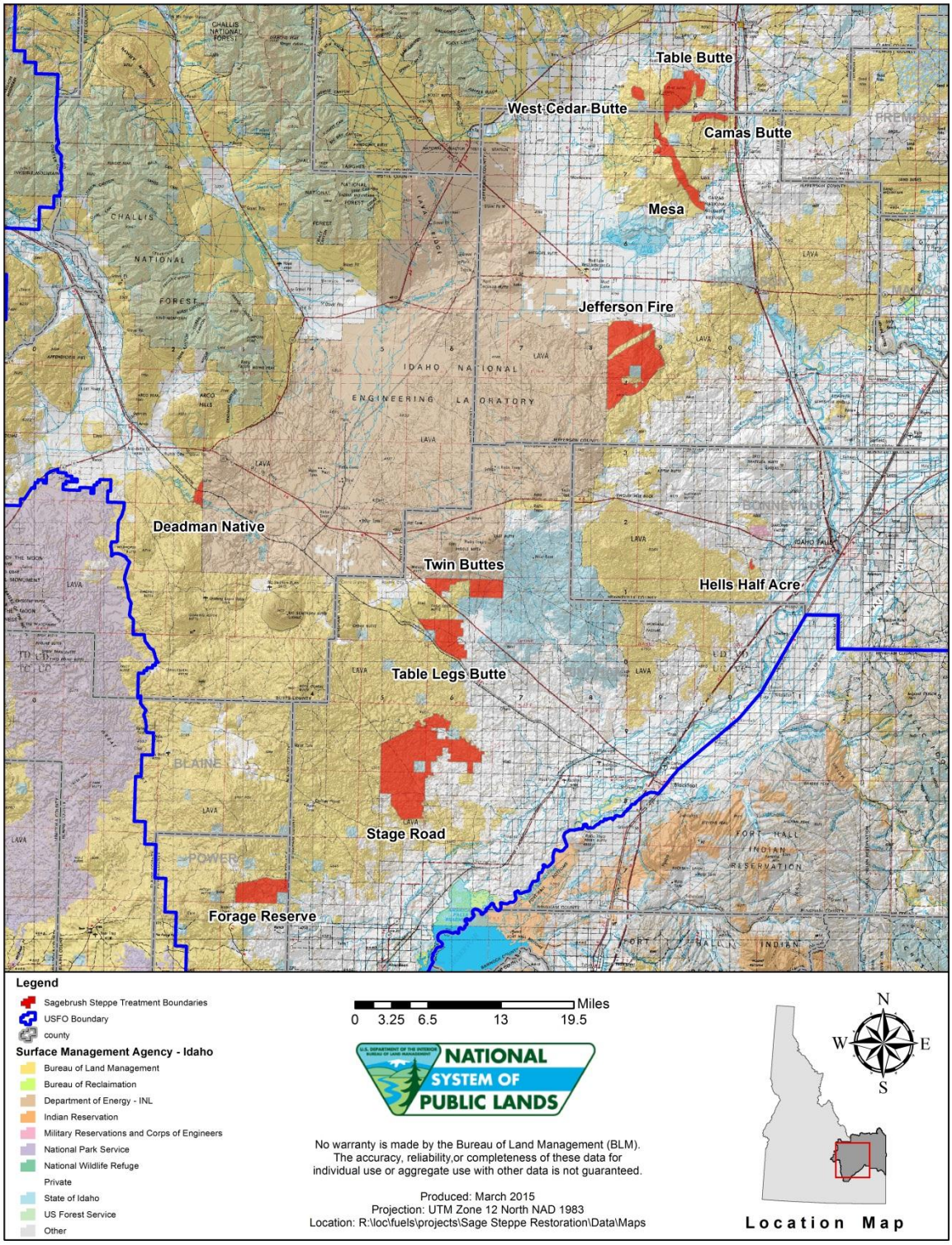
- A Class III inventory would be completed prior to the implementation of activities that may have an effect on cultural resources. All eligible or potentially eligible archaeological sites would be flagged prior to any ground-disturbing activities to avoid adverse effects. Sites that are located in areas proposed for treatment would be avoided.

- Should any sensitive plants be identified within the project area, sites would be flagged prior to any ground-disturbing activities to avoid adverse effects. Sites that are located in areas proposed for treatment would be avoided.

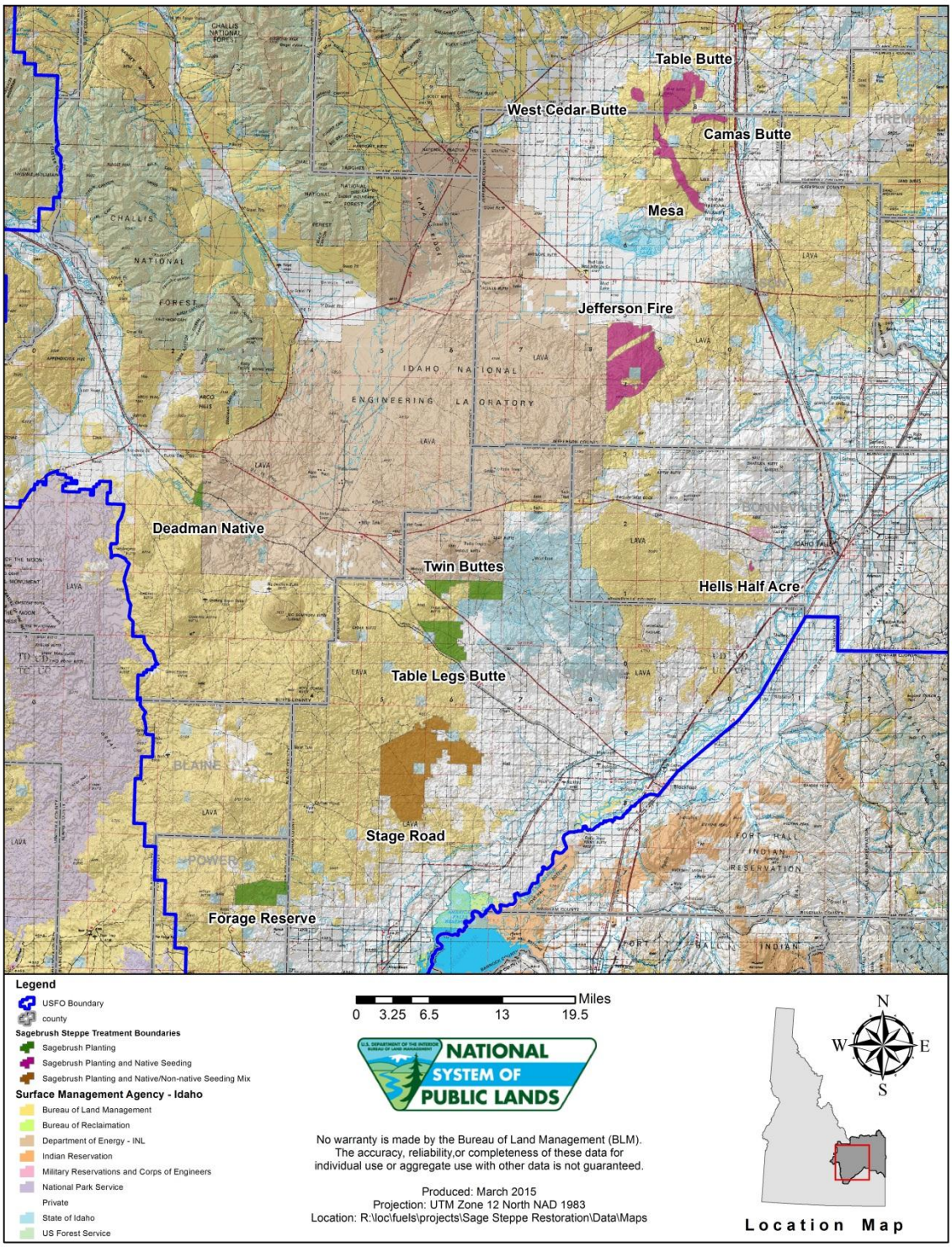
- Fence Construction
    - Fence projects would be accessed using existing roads and trails.
    - Cross-country travel would be restricted to the actual fence route.

- Only rubber-tired vehicles would be used during fence construction, alteration, or maintenance.
- Wildlife Timing Stipulations - Construction timing restrictions would be established by the Authorized Officer to reduce impacts to wildlife species during critical breeding, nesting, or wintering periods, unless previously cleared by a wildlife biologist, and would meet site-specific needs of affected wildlife species. Wildlife timing stipulations would include:
    - Construction activities would not occur within crucial wildlife winter ranges between the dates of November 15 and April 30.
    - Spring construction activities (March 1 to May 15) would be limited to between the hours of 9:00 am and 6:00 pm to avoid disturbing lekking sage-grouse.
    - Construction activities potentially disruptive to nesting greater sage/sharp-tailed grouse are prohibited during the period of May 1 to June 30 for the protection of strutting and nesting areas.
- Fence modification would be postponed if soils become saturated or ruts are produced by vehicles.
- All existing legal public vehicular and walk-in access areas would be maintained regardless of type of fence constructed.
- Fences constructed along the Stage Road (Goodale's Cutoff) would be offset 150 feet from the road to protect cultural resources.

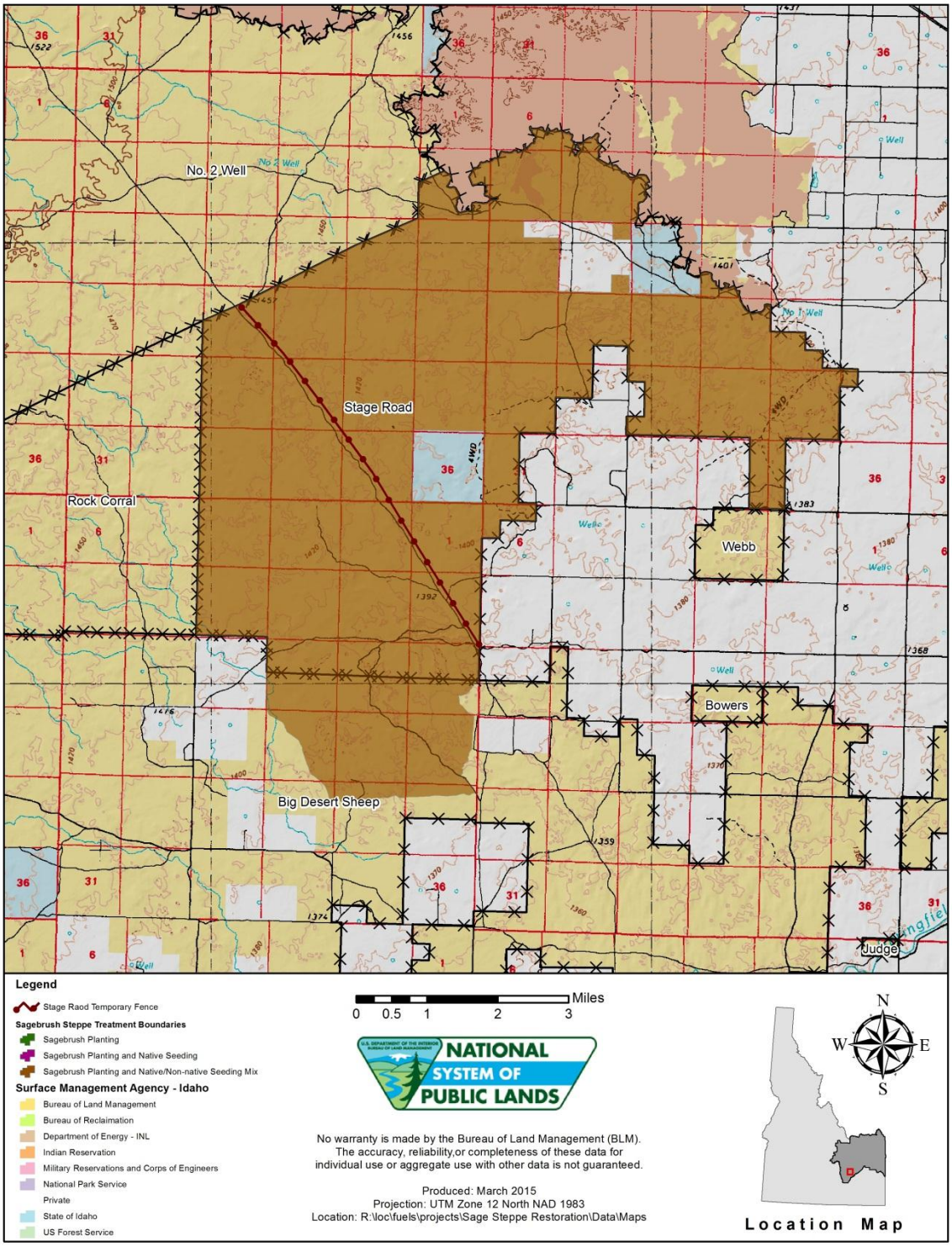
Map 1: Upper Snake Sagebrush Steppe Restoration Project Area.



Map 2: Upper Snake Sagebrush Steppe Restoration Project treatment units Alternative A (Proposed Action).

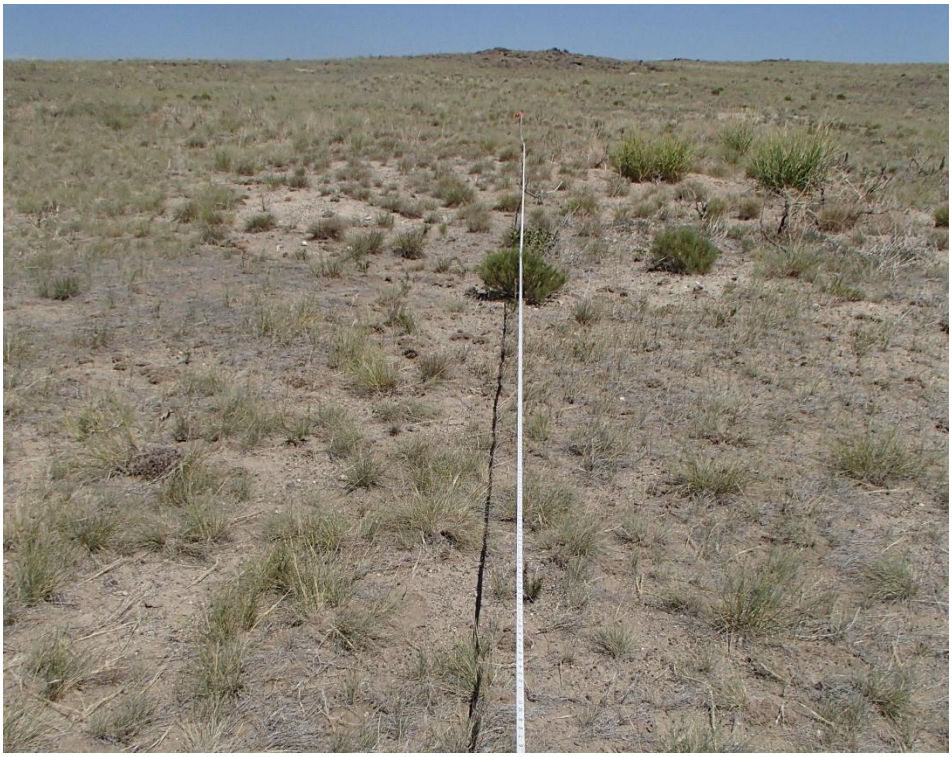


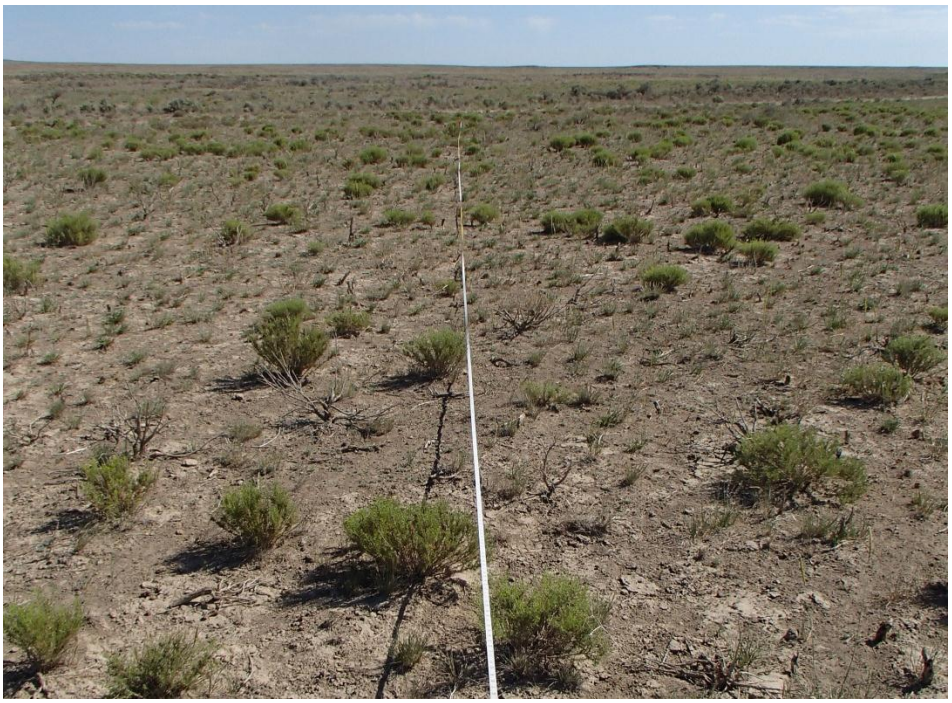
Map 3: Stage Road treatment unit and proposed temporary fence location.



Visual overview of the existing conditions of the various treatment units that makeup the Sagebrush Steppe Restoration project area.

Photos 1-2: Southern portion of the Stage Road treatment unit.



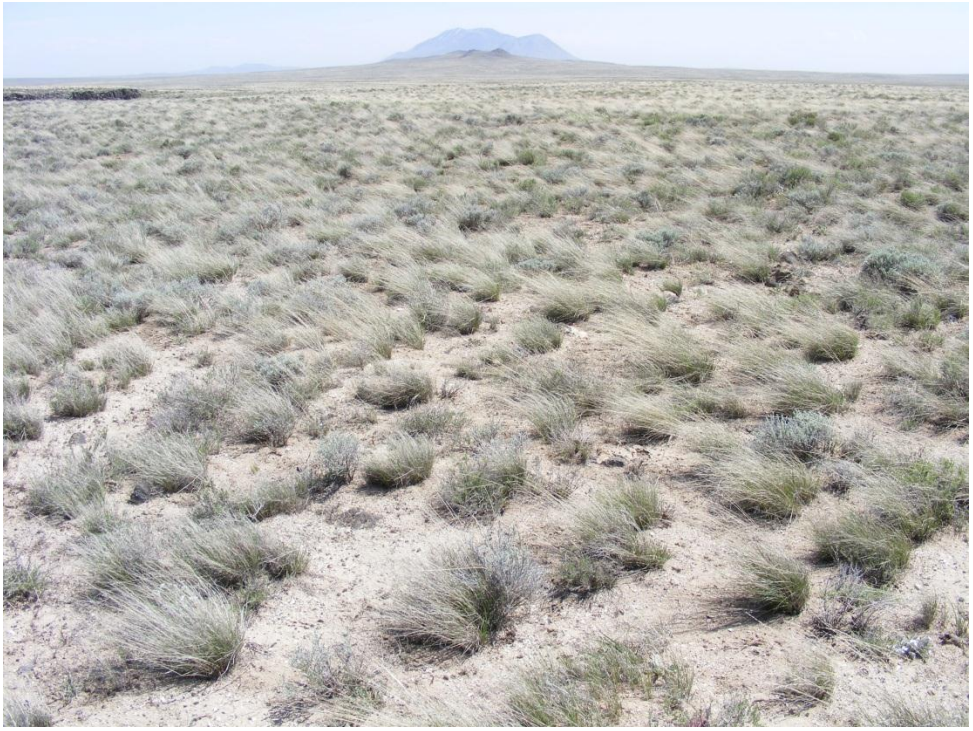


Photos 3-4: Jefferson fire treatment unit.

Photo 5: Forage Reserve treatment unit.

Photos 6-7: Mesa treatment unit.

Photo 8: Camas Butte treatment unit.



Photos 9: Deadman Native treatment unit.

Photo 10: Twin Buttes treatment unit.

FRCC METHODOLOGY and ANALYSIS

Fire Regime Condition Class (FRCC) is the classification of a project area (a landscape) into three categories based on the amount of departure from 1) the natural fire regime (historic wildland fire frequency, severity), and 2) the natural vegetation composition, structure, and pattern resulting from a natural fire regime (Hann and Bunnell 2001). The three fire regime condition classes are based on no or low (FRCC 1), moderate (FRCC 2), and high (FRCC 3) departure from the central tendency of the reference conditions (Hann and Bunnell 2001; Hardy et al. 2001; Schmidt et al. 2002). Departure in the natural fire regime can result in changes to one (or more) of the following ecological components and processes such as vegetation characteristics (species composition, structural stage, stand age, canopy closure, and mosaic pattern); fuel composition; fire frequency, severity, and pattern; and other associated disturbances, such as insect and disease mortality, grazing, and drought. Possible causes of this departure include (but are not limited to) fire suppression, timber harvesting, livestock grazing, introduction and establishment of exotic plant species, and introduced insects and disease (Schmidt et al. 2002). Both the departure from a natural fire regime and the resulting departure from the natural vegetation composition, structure, and pattern can be graphed (regime on the x-axis, vegetation on the y-axis), and an overall FRCC rating for each biophysical setting (BpS) within a landscape assigned.

General descriptions of each FRCC rating are as follows:

- FRCC I (0-33% departure) describes an area that is within the historical range of variability of vegetation characteristics; fuel composition; fire frequency, severity and pattern; and other associated disturbances. Fire behavior, effects, and other associated disturbances are similar to those that occurred prior to fire exclusion (suppression) and other types of management that do not mimic the natural fire regime and associated vegetation and fuel characteristics. Composition and structure of vegetation and fuels are similar to the natural (historical) regime.
- An FRCC II (34-66% departure) represents a moderate departure from the natural (historical) regime of vegetation characteristics; fuel composition; fire frequency, severity and pattern; and other associated disturbances. Fire behavior, effects, and other associated disturbances are moderately departed (more or less severe). Composition and structure of vegetation and fuel are moderately altered. Uncharacteristic conditions range from low to moderate.
- An FRCC III (67-100% departure) is defined as having high departure from the natural/historical fire regime – vegetation composition, structure, and fuels have high departure from the historical regime and predispose the system to high risk of loss of key ecosystem components. Wildland fires are highly uncharacteristic compared to the historical fire regime behaviors, severity, and patterns.

Disturbance agents, native species habitats, and hydrologic functions are substantially outside the historical range of variability.

In order to determine departure and assign FRCC, reference condition characteristics are needed so that a comparison with current conditions can occur. As part of the national-scale LANDFIRE project (see http://www.landfire.gov) reference condition characteristics have been identified and descriptions developed for the western U.S., eastern U.S., and Alaska concerning vegetation-fuel class composition, fire frequency, and fire severity for BpS. Biophysical settings are the primary environmental settings used in determining a landscape's natural fire regime(s) and FRCC. These settings incorporate both classification (taxonomic) and map unit concepts. Ecosystems can be classified based on a single attribute—vegetation, soils, or geomorphology, for example—or they can be classified based on integrated attributes, such as ecological types (Winthers and others 2004), ecological sites (USDA-NRCS 2003), or ecological systems (Comer and others 2003). The taxonomic units of these classifications can be considered biophysical classes. When these classes are mapped in organized, repeating map units, they become biophysical units. These units are land delineations based on the geographic area, physical setting, and vegetation community that can occupy the setting. Physical characteristics include climate, geology, geomorphology, and soils. Vegetation includes the area's native species and associated successional stages—determined according to our best understanding of the historical or natural range of variation, including disturbances. In addition to these attributes, each biophysical setting also features characteristic ecological processes of fire frequency and severity and therefore provides a cogent, robust foundation for determining fire regime and fire regime condition class.

The FRCC analysis completed used the procedures described in the National Interagency Fire Regime Condition Class Guidebook, Version 1.3.0 (http://www.frcc.gov June, 2008). For the purposes of this analysis the Sagebrush Steppe Restoration project area landscape used a single biophysical setting (LANDFIRE, 2007); 1) **Inter-Mountain Basins Big Sagebrush Steppe** (BpS #1811250).

The "current" vegetation composition, structure, and pattern was determined using one meter spatial resolution 2013 aerial photography, fuels inventory and monitoring data collected during the summer of 2014, GIS, and additional field work to categorize the landscape into the specified BpS and then further into associated successional classes. Fuels monitoring and inventory data can be found at the BLM USFO. The acreage of each BpS class was calculated from monitoring data collected over the last ten years and fire history records and the percentages were compared to the reference percentages identified for that BpS. Differences between current and reference was calculated and an FRCC rating was assigned.

Big Sagebrush Steppe (BpS 1811250)

Successional Stage	Reference%	Current%
Class A- Early Development 1	20	83
Class B- Mid Development 1 Open	50	9
Class C- Late Development 1 Closed	30	5
Class D	0	0
Class E	0	0
Uncharacteristic Vegetation	0	3