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AUG 2 7 2012

Memorandum

To: Field Office Manager, Jarbidge Field Office, Bureau of Land Management, Twin Falls, Idaho

From: State Supervisor, Idaho Fish and Wildlife Office, U.S. Fish and Wildlife Service, Boise, Idaho

Subject: Kinyon Road Fire Fuel Break—Elmore and Owyhee Counties, Idaho—Conference Opinion
In Reply Refer to: 01EIFW00-2012-F-0406 Internal Use: CONS-100b

On August 8, 2012, the United States District Court for the District of Idaho ordered that the final rule listing *Lepidium papilliferum* (slickspot peppergrass) as a threatened species under the Endangered Species Act of 1973, as amended (Act), be vacated and remanded for further consideration consistent with the court's decision. At this time, we are still awaiting legal advice on the interpretation of this decision. Until we receive further legal guidance, we are considering slickspot peppergrass to be a proposed species under the Act. During this interim period, it is our understanding that BLM is choosing to Conference for LEPA under section 7 to ensure conservation of the species and adherence to the LEPA Conservation Agreement between our agencies. We will coordinate with you further when we receive additional legal guidance.

In a letter dated August 3, 2012, and received by the Service on August 6, the Bureau requested formal consultation on the determination under section 7 of the Act that the proposed project is likely to adversely affect slickspot peppergrass. As this Biological Opinion was in the final stages of completion when the court ruled and due to the time sensitivity of the project, this document has not been retitled. Although the enclosed document is entitled the U.S. Fish and Wildlife Service (Service) Biological Opinion for the Bureau of Land Management (Bureau), this Opinion will serve as our Conference Opinion (Opinion) given the species current status and BLM's need to proceed with this project. This Opinion evaluates the effects on species proposed under the Act for the proposed Kinyon Road Fire Fuel Break project in Elmore and Owyhee Counties, Idaho. The enclosed Opinion is based primarily on our review of the proposed action, as described in your August 2012 Biological Assessment (Assessment), and the anticipated effects of the action, and was prepared in accordance with section 7 of the Act. Our Opinion concludes that the proposed project will not jeopardize the survival and recovery of slickspot peppergrass. A complete record of this conference is on file at this office.

Establishment of successful fuel breaks could provide opportunities for future vegetation restoration in the vicinity of the Project, and may help reduce the number and extent of fires in this fire-prone area. To date, the Service is not aware of any long-term data regarding the suppression effectiveness of fuel breaks in sagebrush steppe habitats or data that compares and contrasts the effectiveness of different types of fuel break strategies. Consideration of such

information is vital for appropriately analyzing the use of this fire management tool across large portions of the Snake River Plain. It would be beneficial if this information is collected and shared.

As discussed in our scoping letter for the proposed Jarbidge Wildfire Fuel Breaks Project (14420-2011-CPA-0099), we continue to have concerns regarding the use of forage kochia within habitats that may support slickspot peppergrass. However, we view this proposed Project as an opportunity to monitor forage kochia fuel break effectiveness as well as to document the rate and distance of spread of forage kochia within an area that has relatively low risks of significant impacts to slickspot peppergrass and its habitat. We continue to encourage use of the best available information to address short- and long-term needs associated with managing fire on the landscape while conserving native habitats and species, including slickspot peppergrass. Data regarding the effectiveness of the proposed forage kochia fuel breaks compared to other plant materials in altering fire behavior and increasing the effectiveness of fire suppression activities will be useful in making future fire management decisions within southern Idaho.

The Bureau may ask the Service to confirm the conclusion of this Conference Opinion should slickspot peppergrass become listed under the Act prior to completion of this project. This request must be in writing. If the Service reviews the proposed action and finds that there have been no significant changes in the project that could warrant a reanalysis of effects, the Service may confirm the Conference Opinion as our Biological Opinion, and no further section 7 consultation will be necessary.

Thank you for your continued interest in the conservation of threatened and endangered species. Please contact Barbara Chaney at (208) 378-5259 if you have questions concerning this Opinion.

Attachment

cc: Bureau, Twin Falls (Forster, Stewart, Hilty)
Bureau, ISO, Boise (Rosentreter, Hoefer)

BIOLOGICAL OPINION
FOR THE
Kinyon Road Fire Fuel Breaks Project
01EIFW00-F-2012-0406

August 2012

U.S. FISH AND WILDLIFE SERVICE
IDAHO FISH AND WILDLIFE OFFICE
BOISE, IDAHO

Supervisor Russell R. Holden for Brian T. Kelly

AUG 27 2012

Date _____

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Note to Reader

The reader should mentally substitute slickspot peppergrass as currently proposed for listing as Endangered everywhere the document identifies the species as listed.

On August 8, 2012, the United States District Court for the District of Idaho ordered that the final rule listing *Lepidium papilliferum* (slickspot peppergrass) as a threatened species under the Endangered Species Act of 1973, as amended (Act), be vacated and remanded for further consideration consistent with the court's decision. At this time, we are still awaiting legal advice on the interpretation of this decision. Until we receive that guidance, we are considering slickspot peppergrass to be a species proposed for listing under the Act; therefore, this document should be considered as a conference opinion. As this biological opinion was in the final stages of completion when this decision was issued and to expedite the completion of this time-sensitive consultation, this document has not been updated to reflect the change in the status of the species under the Act due to the recent court ruling. The action agency is proposing on-the-ground work for this field season which will not proceed without completed consultation. The effects and jeopardy analyses within the original document will not change despite the change in status of the species under the Act.

1. BACKGROUND

1.1 Introduction

The U.S. Fish and Wildlife Service (Service) has prepared this Biological Opinion (Opinion) of the effects of the proposed Kinyon Road Fire Fuel Breaks project (Project) on *Lepidium papilliferum* (slickspot peppergrass). In a letter dated August 3, 2012, and received on August 6, the Bureau of Land Management (Bureau) requested formal consultation with the Service under section 7 of the Endangered Species Act (Act) of 1973, as amended, for its proposal to authorize the action. The Bureau determined that the proposed action is likely to adversely affect slickspot peppergrass. As described in this Opinion, and based on the Biological Assessment (USBLM 2012, entire) developed by the Bureau and other information, the Service has concluded that the action, as proposed, is not likely to jeopardize the continued existence of slickspot peppergrass.

1.2 Consultation History

The Service previously provided a letter of concurrence to the Bureau addressing the effects of normal fire emergency stabilization and rehabilitation (ESR) actions, including the placement of fuel breaks, on slickspot peppergrass (USFWS 2006a, entire). The Bureau's 2006 Biological Assessment Addendum for ESR activities stated that "Any treatment within areas containing slickspot habitat that may likely adversely affect LEPA, including ... the use of potentially invasive nonnative species such as intermediate wheatgrass or forage kochia in seed mixes within the known range of LEPA would require additional site-specific section 7 conference." This Opinion addresses additional site-specific section 7 consultation needed for this Project as described in the Bureau's 2006 biological assessment.

Consultation history for the action is as follows:

September 13, 2006	The Service completed informal conference for the Boise District and the Jarbidge Field Office of the Twin Falls District on the effects of normal fire ESR plan activities on slickspot peppergrass (2006-IC-0975).
November 30, 2009	The Service completed formal consultation for the Jarbidge Resource Management Plan (RMP), the Kuna Management Framework Plan (MFP), the Cascade RMP, and the Snake River Birds of Prey National Conservation Area RMP on the effects of land use plan programs on slickspot peppergrass (14420-2010-F-0019).
December 7, 2009	The Service's decision to list slickspot peppergrass as threatened became effective.
December 14, 2009	The Service confirmed the informal conference on the effects of normal fire ESR plan activities on slickspot peppergrass as a letter of concurrence (14420-2010-TA-0103).

July 31, 2012	As requested, the Service provided the Bureau with an evaluation of the Post-Fire Emergency Stabilization and Burned Area Recovery Plan for the Kinyon Road Fire in the Jarbidge Field Office area in relation to its consistency with the 2006 ESR informal consultation. The Service recommended that additional site-specific section 7 consultation should be conducted on the effects of the proposed Kinyon Road Fire forage kochia fuel break treatment on slickspot peppergrass and its habitat.
August 2, 2012	The Service reviewed the draft Biological Assessment on the Project, and provided comments to the Bureau.
August 3, 2012	The Service received a request from the Bureau for formal consultation and the Bureau's Biological Assessment regarding the effects the proposed Project on slickspot peppergrass.
August 7, 2012	The Service provided the Bureau with the draft Opinion for review and comment.
August 8, 2012	The United States District Court for the District of Idaho ordered that the final rule listing slickspot peppergrass as a threatened species under the Act be vacated and remanded for further consideration consistent with the court's decision.
August 8, 2012	The Bureau provided the Service with Bureau comments on the draft Opinion, which were incorporated into the final Opinion, as appropriate

2. BIOLOGICAL OPINION

2.1 Description of the Proposed Action

This section describes the proposed Federal action, including any measures that may avoid, minimize, or mitigate adverse effects to listed species or critical habitat, and the extent of the geographic area affected by the action (i.e., the action area). The term "action" is defined in the implementing regulations for section 7 as "all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies in the United States or upon the high seas." The term "action area" is defined in the regulations as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action."

2.1.1 Action Area

The Project is located east of the Saylor Creek Air Force Range in Owyhee and Elmore Counties, Idaho. The project area includes the southwest portion of the Bureau's Saylor Creek Wild Horse Herd Management Area (HMA). The 3,311 acre Project area contains 3,252 acres of Bureau-administered lands and 59 acres of State land. About 2,646 acres (80 percent) of the Project's 3,311 acre total area is classified as potential habitat for slickspot peppergrass. No known occupied habitat or proposed critical habitat for the species occurs within the action area.

The Project is located within the area burned by the Kinyon Road Fire. The July 2012 Kinyon Road Fire burned 210,874 acres, including 172,335 acres of Federal lands administered by the Bureau; 8,771 acres of State land; 3,977 acres of private land; and 25,791 acres of land managed by the U.S. Department of Defense in the Saylor Creek Air Force Range (AFR). This lightening-ignited fire started on July 7, 2012, in the central portion of the Jarbidge Field Office area. The fire burned quickly north, then west and was contained on July 12, 2012. The fire spanned the Jarbidge Field Office, burning from the eastern boundary along Salmon Falls Creek to the western boundary along the Bruneau River canyon (Figure 1).

2.1.2 Proposed Action

The Bureau will establish about 45 miles of 600-foot wide fuel breaks (3,311 acres) on Federal lands administered by the Bureau and the State of Idaho (State) in four segments (Figure 2 and Table 1). The intent of the proposed fuel breaks is to enhance fire suppression abilities, provide for fire fighter and public safety, and reduce fire spread by breaking up fine fuel continuity. This could also reduce fire spread to areas of the field office supporting high quality potential habitat for slickspot peppergrass, as well as occupied and proposed critical habitat.

Map 1. Kinyon Road Fire (G1CH) and Land Status

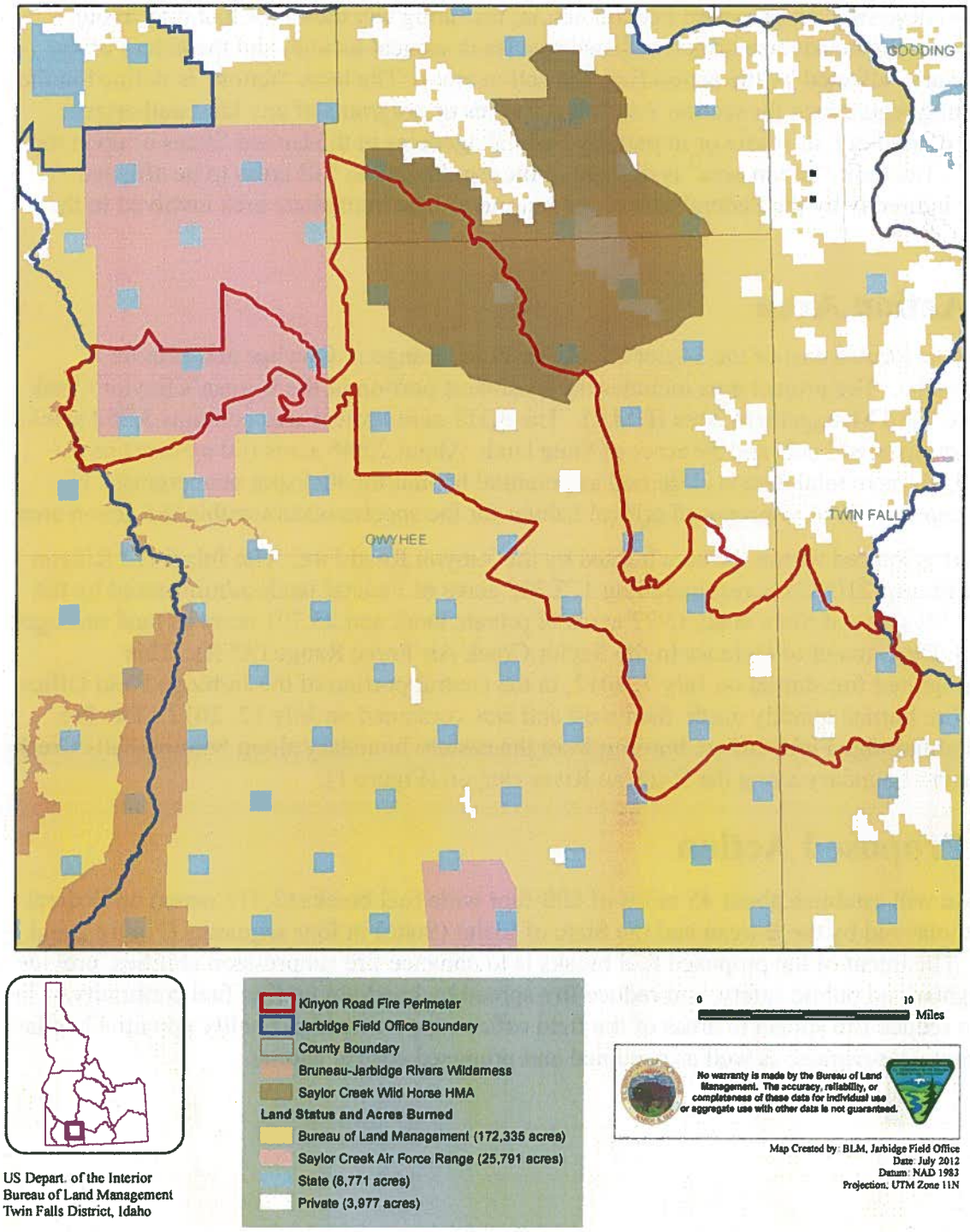

Figure 1. Kinyon Road Fire and Land Status

Map 2. Kinyon Road Fire (G1CH) Proposed Fuel Breaks and Slickspot Peppergrass Potential To Occur

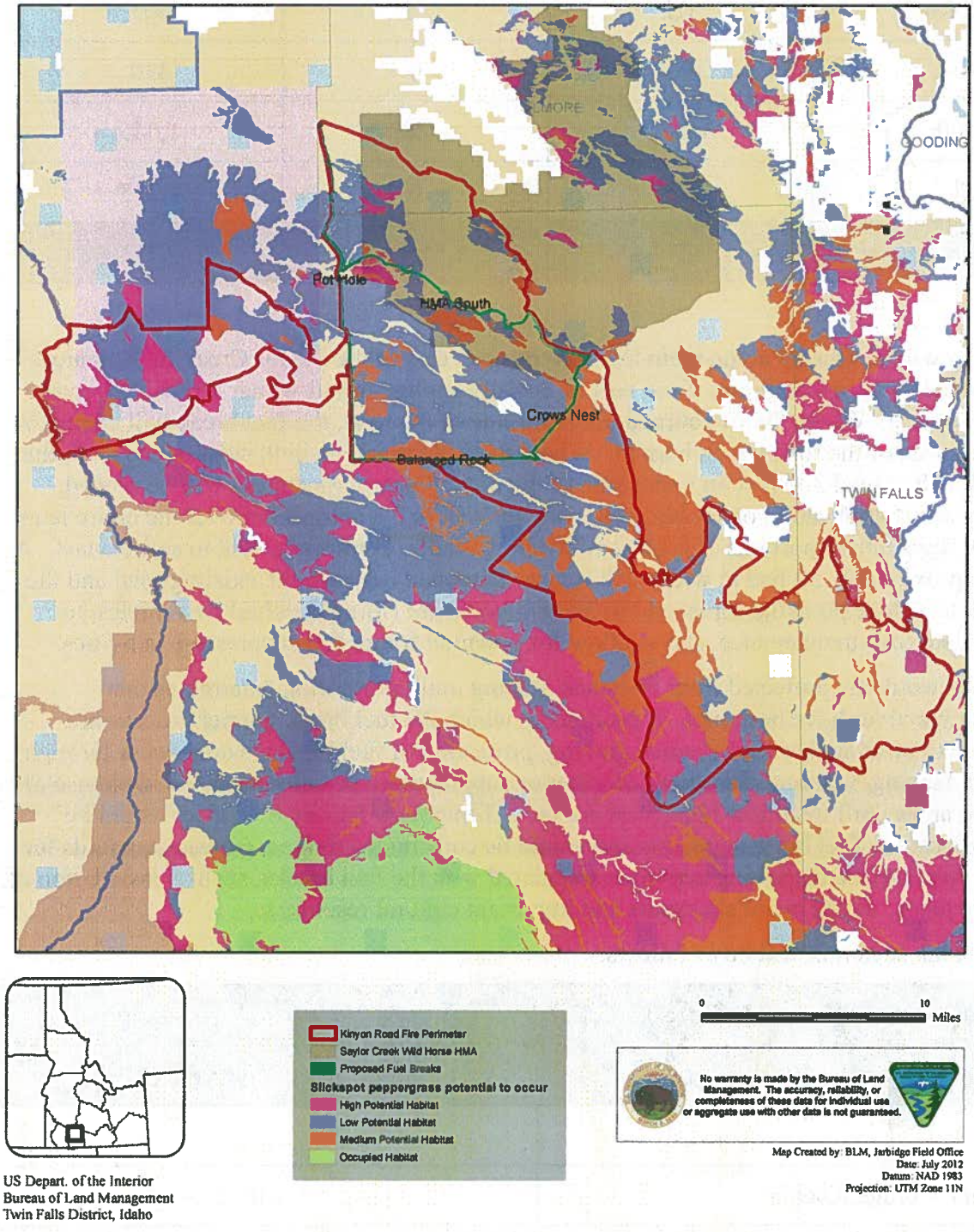

Figure 2. Kinyon Road Fire Fuel Break Project and Slickspot Peppergrass Potential to Occur.

Table 1. Kinyon Road Fire proposed fuel breaks segments.

Segment	Bureau Acres	State Acres	Total Acres
Balanced Rock	572	31	603
Crows Nest	430	0	430
HMA South	1,017	28	1,045
Pot Hole	1,233	0	1,233
Total Acres	3,252	59	3,311

Fuel breaks will be created along main travel routes just east of the Saylor Creek AFR in areas burned by the Kinyon Road Fire. Seed will be aerially applied in fall/winter 2012/2013, over snow, if possible. Where the fire burned only one side of the road, the fuel break will extend 600 feet on that side of the road which burned. Where the fire burned on both sides of the road, the fuel break will extend 300 feet on either side of the road. Only burned areas will be seeded. Following aerial application of kochia seed, a tractor will pull a cultipacker over the entire length fuel break segments or portions of segments, where possible, to improve seed to soil contact. A strip of approximately 50 feet in width will remain untreated between the existing road and the fuel break to reduce potential for spread of *Kochia prostrata* (forage kochia) by vehicles, to accommodate road maintenance, and to allow for potential future fire suppression activities.

Fuel breaks would be protected from livestock grazing until monitoring determines that treatment objectives have been met. If pastures in which the fuel break segments occur are determined to be available for livestock grazing, protection of fuel breaks would occur through temporary fencing, herding, placement of water or supplements, or other means to avoid use of the seeded areas until treatment objectives are met. Temporary fences, if needed, would be erected adjacent to fuel break segments and would be constructed to meet Bureau standards for wildlife. Any surface disturbing activities associated with the fuel breaks, such as installation of temporary fence, would avoid slickspots and important cultural resources.

The fuel break seed mix will be as follows:

Table 2. Kinyon Road Fire Fuel Breaks Aerial Seed Mix (3,311 acres)	
Species and Variety	**Seed Rate in Lbs/Acre (PLS)**
Grasses	
'Immigrant' Forage Kochia	4.00
'Ladak' Alfalfa	2.00
'Appar' Blue Flax	0.50

Fuel breaks implemented under the 2010 Long Butte ESR plan utilized a mix of native and nonnative herbaceous plants. Bureau observations indicate that establishment of the Long Butte fuel breaks was spotty, and portions of the Long Butte fuel breaks reburned in the Kinyon Road Fire.

Fuel breaks comprised of a forage kochia seed mix are proposed to address the issue of large, repeated fires that have affected multiple resources, including the Saylor Creek Wild Horse HMA. The proposed Kinyon Road Fire forage kochia fuel breaks will be planted over Long Butte fire fuel breaks. The proposed fuel breaks would be placed within and adjacent to currently burned potions of the HMA to establish strips of vegetation that stay green well into the fire season. Forage kochia is proposed for use due to harsh site conditions, including calcareous and saline soil types, low precipitation, and cheatgrass competition in the proposed fuel break area. The currently proposed fuel breaks would be aerially seeded over the Long Butte fuel breaks, where they exist. The use of forage kochia in the proposed fuel breaks is considered to be a last resort for establishing vegetated fuel breaks to reduce large fire frequency and spread in the northern portion of the Jarbidge Field Office. The application method is consistent with direction outlined in Tilly et al. 2006 (entire).

The proposed fuel break segments were originally part of a proposed action that was scoped in 2011 for a larger-scale fuel breaks project. That proposed action and alternatives involved establishment of vegetated fuel breaks utilizing seedbed preparation (prescribed fire, mechanical disking to remove competitive vegetation, herbicide treatment) as well as drill seeding. The currently proposed fuel break area burned relatively consistently in the Kinyon Road Fire, temporarily reducing competition from cheatgrass and non-native perennial grasses. This proposed action would reduce soil surface disturbance by eliminating seedbed preparation and aerially applying seed during fall/winter when conditions are considered optimal for forage kochia establishment.

Proposed design features to minimize potential impacts of the fuel breaks on slickspot peppergrass occupied or proposed critical habitat, or slickspot microsites (e.g., slickspot peppergrass habitat) outside of the treated area include the following:

1. A 50-foot buffer area will be untreated between the road and the fuel break to reduce the potential for spread of forage kochia by vehicles. This buffer will be comprised of existing vegetation that is anticipated to re-establish following the fire. This vegetation is anticipated to be primarily *Agropyron cristatum* (crested wheatgrass), but may also include cheatgrass, *Poa secunda* (Sandberg's bluegrass), *Agropyron fragile* (Siberian wheatgrass), *Elymus elymoides* (bottlebrush squirreltail), *Achnatherum hymenoides* (Indian ricegrass), *Hesperostipa comata* (needle-and-threadgrass) and a variety of native and nonnative forbs.
2. Monitoring transects will be placed in both treated and adjacent buffer areas to evaluate plant establishment and forage kochia spread. Monitoring methods used will include field observations, photo plots, cover transects utilizing the line-point intercept, and density plot methods. Monitoring will occur for 3 years following treatment, at year 5, then at 5-year intervals to evaluate long-term effects.
    - The fuel break seed treatment will be considered effective if:
        - Forage kochia plants reach a density of 4 plants per square meter; and
        - Seeded forbs reach a density of 1 plant per square meter.

- Forage kochia spread will be evaluated based on the occurrence of plants in untreated areas. Plants occurring outside of the treated areas would be pulled or treated with spot chemical application using Bureau-approved herbicides.

3. Should a wildfire start in or burn into or through the treated area, fuel break effectiveness will be evaluated per Bureau Fire and Aviation Instruction Memorandum No. FA IM-2012-021, dated July 19, 2012, or future policy. This will provide evaluation and documentation of whether the fuel breaks were effective in meeting their intended objectives.

The Jarbidge Field Manager will decide whether to implement aerial seeding of fuel breaks on all or a portion of the proposed fuel break segments.

2.2 Analytical Framework for the Jeopardy Determinations

In accordance with policy and regulation, the jeopardy analysis in this Opinion relies on four components:

1. The *Status of the Species*, which evaluates the slickspot peppergrass rangewide condition, the factors responsible for that condition, and its survival and recovery needs.
2. The *Environmental Baseline*, which evaluates the condition of the slickspot peppergrass in the action area, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of the slickspot peppergrass.
3. The *Effects of the Action*, which determines the direct and indirect impacts of the proposed Federal action and the effects of any interrelated or interdependent activities on the slickspot peppergrass.
4. *Cumulative Effects*, which evaluates the effects of future, non-Federal activities in the action area on the slickspot peppergrass.

In accordance with policy and regulation, the jeopardy determination is made by evaluating the effects of the proposed Federal action in the context of the slickspot peppergrass current status, taking into account any cumulative effects, to determine if implementation of the proposed action is likely to cause an appreciable reduction in the likelihood of both the survival and recovery of the slickspot peppergrass in the wild.

The jeopardy analysis in this Opinion places an emphasis on consideration of the rangewide survival and recovery needs of the slickspot peppergrass and the role of the action area in the survival and recovery of the slickspot peppergrass as the context for evaluating the significance of the effects of the proposed Federal action, taken together with cumulative effects, for purposes of making the jeopardy determination.

2.3 Status of the Species

2.3.1 Listing Status

Effective December 7, 2009, slickspot peppergrass was listed as threatened under the Act (74 FR 52014–52064, October 8, 2009, p. 52014). Critical habitat was proposed for the slickspot

peppergrass on May 10, 2011; however, no critical habitat has been proposed within the Project area. The closest proposed critical habitat is located about 18 miles south of the Project footprint. As no proposed critical habitat for the slickspot peppergrass will be affected by the proposed action, proposed critical habitat for the slickspot peppergrass will not be addressed further in this Opinion.

2.3. 2 Species Description

Slickspot peppergrass is an intricately branched, tap-rooted plant, averaging 2 to 8 inches (in.) high, but occasionally reaching up to 16 in. high. Leaves and stems are covered with fine, soft hairs, and the leaves are divided into linear segments. Flowers are numerous, 0.11 to 0.15 in. in diameter, white, and four-petalled. Fruits (siliques) are 0.10 to 0.15 in. across, round in outline, flattened, and two-seeded (Moseley 1994, pp. 3, 4; Holmgren *et al.* 2005, p. 260). The species is monocarpic (it flowers once and then dies) and displays two different life history strategies—an annual form and a biennial form. The annual form reproduces by flowering and setting seed in its first year and dies within one growing season. The biennial life form initiates growth in the first year as a vegetative rosette but does not flower and produce seed until the second growing season. Biennial rosettes must survive generally dry summer conditions, and consequently many of the biennial rosettes die before flowering and producing seed. The number of prior-year rosettes is positively correlated with the number of reproductive plants present the following year (ICDC 2008, p. 9; Unnasch 2008, p. 14; Sullivan and Nations 2009, p. 44). The proportion of annuals versus biennials in a population can vary greatly (Meyer *et al.* 2005, p. 15), but in general, annuals appear to outnumber biennials (Moseley 1994, p. 12).

2.3.3 Life History

Seed Production

Depending on an individual plant's vigor, the effectiveness of its pollination, and whether it is functioning as an annual or a biennial, each slickspot peppergrass plant produces varying numbers of seeds (Quinney 1998, pp. 15, 17). Biennial plants normally produce many more seeds than annual plants (Meyer *et al.* 2005, p. 15). Average seed output for annual plants at the OTA was 125 seeds per plant in 1993 and 46 seeds per plant in 1994. In contrast, seed production of biennials at this site in 1993 and 1994 averaged 787 and 105 seeds per plant, respectively (Meyer *et al.* 2005, p. 16). Based on data collected from a 4-year demography study on the OTA, survivorship of the annual form of slickspot peppergrass was demonstrated to be higher than survivorship of biennials (Meyer *et al.* 2005, p. 16). Meyer *et al.* (2005, p. 21) hypothesize that the reproductive strategy of slickspot peppergrass is a plastic response, meaning that larger plants will flower and produce seed in their first season, whereas smaller plants that stand less chance of successfully setting seed in their first season will delay reproduction until the following year. Thus, the biennial life form is maintained, despite the higher risk of mortality.

Like many short-lived plants growing in arid environments, above-ground numbers of slickspot peppergrass individuals can fluctuate widely from year to year, depending on seasonal precipitation patterns (Mancuso and Moseley 1998, p. 1; Meyer *et al.* 2005, pp. 4, 12, 15; Palazzo *et al.* 2005, p. 9; Menke and Kaye 2006a, p. 8; Menke and Kaye 2006b, pp. 10, 11; Sullivan and Nations 2009, p. 44). Mancuso and Moseley (1998, p. 1) note that sites with thousands of above-ground plants one year may have none the next, and vice versa.

Above-ground plants represent only a portion of the population; the seed bank (a reserve of dormant seeds generally found in the soil) contributes the other portion and in many years, constitutes the majority of the population (Mancuso and Moseley 1998, p. 1). Seed banks are adaptations for survival in a "risky environment" because they buffer a species from stochastic (random) impacts, such as lack of soil moisture (Baskin and Baskin 2001, p. 160).

Seed Viability and Germination

The seeds of slickspot peppergrass are found primarily within the slickspot microsites where the plants are found (Meyer and Allen 2005, pp. 5–6). Slickspots, also known as mini-playas or natric (high sodium content) sites, are visually distinct openings in the sagebrush-steppe created by unusual soil conditions characterized by significantly greater sodium and clay content relative to the surrounding area (Moseley 1994, p. 7). The vast majority of slickspot peppergrass seeds in slickspots have been located near the soil surface, with lower numbers of seeds located in deeper soils (Meyer *et al.* 2005, p. 19; Palazzo *et al.* 2005, p. 3). Slickspot peppergrass seeds have been found in slickspots even if no above-ground plants are present (Meyer *et al.* 2005, p. 22; Palazzo *et al.* 2005, p. 10). When above-ground plants are present, flowering usually occurs in late April and May, fruit set occurs in June, and the seeds are released in late June or early July. Seeds produced in a given year are dormant for at least a year before any germination takes place. Following this year of dormancy, approximately 6 percent of the initially viable seeds produced in a given year germinate annually (Meyer *et al.* 2005, pp. 17–18). When combined with an average annual 3 percent loss of seed viability, approximately 9 percent of the original seed cohort per year is lost after the first year. Thus, after 12 years, all seeds in a given cohort will likely have either died or germinated, resulting in a maximum estimated longevity of 12 years for seeds in the seed bank (Meyer *et al.* 2005, p. 18).

Billinge and Robertson (2008, pp. 1005–1006) report that both small and large slickspot peppergrass populations share similar spatial structure, and that spatial structuring within its unique microsite slickspot habitats suggests that both pollen dispersal and seed dispersal are low for this species and occur over short distances (Robertson *et al.* 2006a, p. 3; Billinge and Robertson 2008, pp. 1005–1006). Dispersal and seed dormancy modeling of desert annual plants predicts that plants with long-range dispersal will have few dormancy mechanisms and quick germination (Venable and Lawlor 1980, p. 272). Contrary to this prediction, however, slickspot peppergrass has delayed germination (Meyer *et al.* 2005, pp. 17–18), and, therefore, according to the model, may not disperse long distances. The primary seed dispersal mechanism for slickspot peppergrass is not known (Robertson and Ulappa 2004, p. 1708), although viable seeds have been found outside of slickspots, indicating that some seed dispersal is occurring beyond slickspot habitat (Palazzo *et al.* 2005, p. 10). Additionally, beginning in mid-July, entire dried-up biennial plants and some larger annual plants have been observed to break off at the base and are blown by the wind (Stillman, pers. obs., as reported in Robertson *et al.* 2006b, p. 44). This tumbleweed-like action may have historically resulted in occasional long-distance seed dispersal (Robertson *et al.* 2006b, p. 44). Ants are not considered a likely disperser despite harvesting an average of 32 percent of fruits across six sites (Robertson and White 2007, p. 11).

Slickspot peppergrass seeds located near the soil surface show higher rates of germination and viability (Meyer and Allen 2005, pp. 6–8; Palazzo *et al.* 2005, p. 10) and the greatest seedling emergence success rate (Meyer and Allen 2005, pp. 6–8). Viable seeds were more abundant and had greater germination rates from the upper 2 in. of soil (Palazzo *et al.* 2005, pp. 8, 10), while

Meyer and Allen (2005, pp. 6–8) observed the upper 0.08 in. as optimal for germination. Deep burial of slickspot peppergrass seeds (average depths greater than 5.5 in.) can entomb viable seeds and may preserve them beyond the 12-year period previously assumed as the maximum period of viability for slickspot peppergrass seeds (Meyer and Allen 2005, pp. 6, 9). However, seeds buried at such depth, even if they remain viable, are unlikely to regain the surface for successful germination. The effects of environmental factors, such as wildfire, on slickspot peppergrass seed dormancy and viability are unknown although slickspot peppergrass abundance is reduced in burned areas.

Pollination

Slickspot peppergrass is primarily an outcrossing species requiring pollen from separate plants for more successful fruit production and has a low seed set in the absence of insect pollinators (Robertson 2003, p. 5; Robertson and Klemash 2003, p. 339; Robertson and Ulappa 2004, p. 1707; Billinge and Robertson 2008, pp. 1005–1006). Slickspot peppergrass is able to self-pollinate, with a selfing rate (rate of self-pollination) of 12 to 18 percent (Billinge 2006, p. 40; Robertson *et al.* 2006a, p. 40). In pollination experiments where researchers moved pollen from one plant to another, fruit production was higher when pollen from distant sources was used (4 to 12.4 miles (mi)) between patches of plants) than when pollen from plants within the same patch was used (246 to 330 feet (ft)) between plants within the same patch) (Robertson and Ulappa 2004, p. 1705; Robertson *et al.* 2006a, p. 3).

Fruits produced from fertilized flowers reach full size approximately two weeks after pollination (Robertson and Ulappa 2004, p. 1706). Each fruit typically bears two seeds that drop to the ground when the fruit dehisces (splits open) in midsummer (Billinge and Robertson 2008, p. 1003).

Known slickspot peppergrass insect pollinators include several families of bees (Hymenoptera), including Apidae, Halictidae, Sphecidae, and Vespidae; beetles (Coleoptera), including Dermestidae, Meloidae, and Melyridae; flies (Diptera), including Bombyliidae, Syrphidae, and Tachinidae; and others (Robertson and Klemash 2003, p. 336; Robertson *et al.* 2006b, p. 6). In slickspot peppergrass insect pollinator studies conducted at three study sites, seed set was not limited by the number of pollinators at any study site (Robertson *et al.* 2004, p. 14). Studies have shown a strong positive correlation between insect diversity and the number of slickspot peppergrass plants flowering at a site (Robertson and Hannon 2003, p. 8). Measuring fruit set per visit revealed considerable variability in the effectiveness of pollination by different types of insects, ranging from 0 percent in dermestid beetles to 85 percent in honeybees (*Apis mellifera*) (Robertson *et al.* 2006b, p. 15).

Population Dynamics

Due to its occupancy of patchily distributed slickspots, the habitat of slickspot peppergrass is somewhat naturally fragmented. However, large-scale fragmentation can pose problems for slickspot peppergrass by creating barriers in the landscape that prevent effective genetic exchange between populations. Seed dispersal for slickspot peppergrass likely occurs only over very short distances; thus, pollinators and pollen dispersal are the primary means for reproductive and genetic exchange between slickspot peppergrass sites (Robertson and Ulappa 2004, pp. 1705, 1708; Stillman *et al.* 2005, pp. 1, 6–8).

Research indicates that seeds generated by the pollen of nearby plants have reduced viability, and that slickspot peppergrass seed viability increases as the distance to the contributing pollination source increases (Robertson and Ulappa 2004, pp. 1705, 1708). The ability to exchange pollen with distant populations is therefore an advantage for slickspot peppergrass. Barriers or too much distance between slickspots and pollinating insect habitats can reduce the effective range of insects important to slickspot peppergrass pollination (Robertson *et al.* 2004, pp. 2–4). Barriers can include agricultural fields, urban development, and large areas of annual and perennial grass monocultures that do not support diversity and suitable floral resources such as nectar or edible pollen for pollinators. Slickspot peppergrass habitats separated by distances greater than the effective range of available pollinating insects (about 0.6 mi. as described in Colket and Robertson *in litt.* 2006, p. 1) are at a genetic disadvantage and may become vulnerable to the effects of loss of genetic diversity (Stillman *et al.* 2005, pp. 1, 6–8) and a reduction in seed production (Robertson *et al.* 2004, p. 1705). A genetic analysis of slickspot peppergrass suggested that populations in the Snake River Plain and Owyhee Plateau "may have reduced genetic diversity" (Larson *et al.* 2006, p. 1).[1]

Many of the remaining occurrences of slickspot peppergrass, particularly in the Snake River Plain near urban centers, are restricted to small, remnant patches of suitable sagebrush-steppe habitat. When last surveyed, 31 of the 80 EOs (39 percent) each had fewer than 50 plants (Colket *et al.* 2006, Tables 1–13). Many of these small, remnant EOs exist within habitat that is degraded. Small slickspot peppergrass populations have likely persisted due to their long-lived seed bank, but the potential risk of depleting each population's seed bank with no new genetic input makes the persistence of these small populations uncertain. Providing suitable nesting and foraging habitats for the species' insect pollinators is important for maintaining slickspot peppergrass genetic diversity. Small populations are vulnerable to relatively minor environmental disturbances such as wildfire, herbicide drift, and nonnative plant invasions (Given 1994, pp. 66–67) and are subject to the loss of genetic diversity from genetic drift and inbreeding (Ellstrand and Elam 1993, pp. 217–237). Populations with lowered genetic diversity are more prone to extirpation (Barrett and Kohn 1991, pp. 4, 28). Smaller populations generally have lower genetic diversity, and lower genetic diversity may lead to even smaller populations by decreasing the species' ability to adapt, thereby increasing the probability of population extinction (Newman and Pilson 1997, p. 360).

Fragmentation (either by development or wildfires) has occurred in 62 of 79 EOs (15 of 16 on the Boise Foothills, 35 of 42 on the Snake River Plain, and 12 of 21 on the Owyhee Plateau), and within 0.31 mi in 78 of the 79 EOs (all except one on the Owyhee Plateau) (Cole 2009, threats table).[2] Additionally, several development projects are planned within slickspot peppergrass occupied range that would contribute to further large-scale fragmentation of its habitat, potentially resulting in decreased viability of populations through decreased seed production,

[1] The Boise Foothills were not analyzed separately in this study.

[2] Habitat information is known for 79 of the 80 extant EOs; habitat information is not known for 1 EO on the Snake River Plain.

reduced genetic diversity, and increased inherent vulnerability of small populations to extirpation.

2.3.4 Status and Distribution

The range of slickspot peppergrass is restricted to the volcanic plains of southwest Idaho, occurring primarily in the Snake River Plain and its adjacent northern foothills, with a single disjunct population on the Owyhee Plateau (Figure 3). The plant occurs at elevations ranging from approximately 2,200 to 5,400 ft in Ada, Canyon, Gem, Elmore, Payette, and Owyhee Counties (Moseley 1994, pp. 3–9). Based on differences in topography, soil, and relative abundance, we have divided the extant slickspot peppergrass populations into three physiographic regions: the Boise Foothills, the Snake River Plain, and the Owyhee Plateau. The nature and severity of factors affecting the species also vary between the three physiographic regions for the purposes of analysis. For example, urban and rural development, agriculture, and infrastructure development has been substantial in the sagebrush-steppe habitat of the Boise Foothills and the Snake River Plain regions, while very little of these types of development have occurred within the Owyhee Plateau region.

As of February 2009, there were 80 extant EOs in the three physiographic regions that collectively comprise approximately 15,801 ac of total area broadly occupied by slickspot peppergrass (Cole 2009, threats table). The area actually occupied by slickspot peppergrass is a small fraction of the total acreage since slickspots occupy only a small percentage of the landscape, and slickspot peppergrass occupies only a fraction of those slickspots (see Air Force 2002, p. 9). Table 3 presents distribution, land ownership and management information for all slickspot peppergrass EOs, in total and by region. The majority of slickspot peppergrass sites are located on Federal lands, most of which are administered by the Bureau.

Habitat Characteristics

The biological soil crust, also known as a microbiotic crust or cryptogamic crust, is one component of quality habitat for slickspot peppergrass. Such crusts are commonly found in semiarid and arid ecosystems and are formed by living organisms, primarily bryophytes, lichens, algae, and cyanobacteria, that bind together surface soil particles (Moseley 1994, p. 9; Johnston 1997, p. 4). Microbiotic crusts play an important role in stabilizing the soil and preventing erosion, increasing the availability of nitrogen and other nutrients in the soil and regulating water infiltration and evaporation levels (Johnston 1997, pp. 8–10). In addition, an intact crust appears to aid in preventing the establishment of invasive plants (Brooks and Pyke 2001, p. 4 and references therein; Serpe *et al.* 2006, pp. 174, 176). These crusts are sensitive to disturbances that disrupt crust integrity, such as compression due to livestock

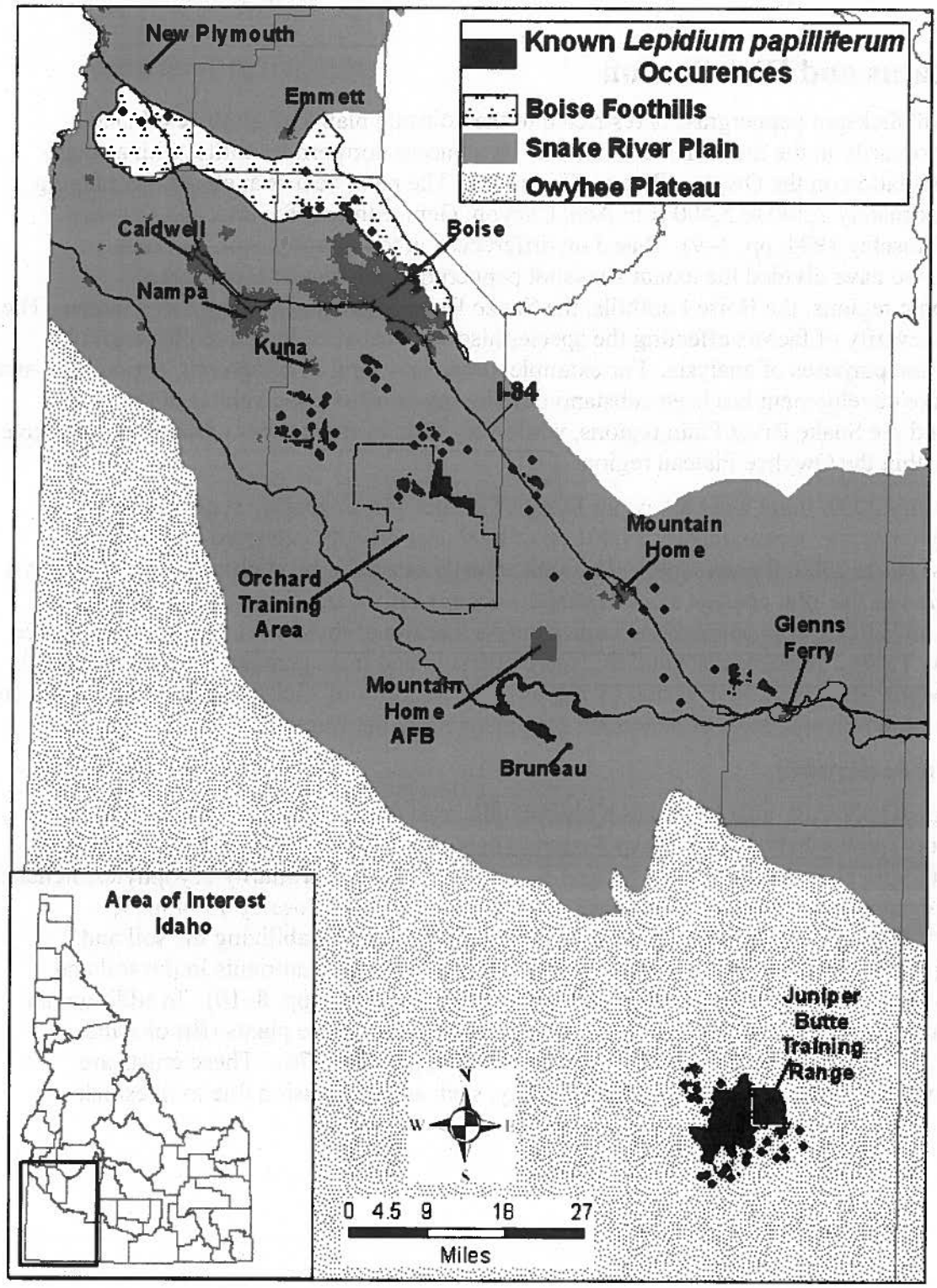

Figure 3. The range of *Lepidium papilliferum* (slickspot peppergrass) in southwest Idaho, showing its distribution in the Snake River Plain, Boise Foothills, and Owyhee Plateau.

Table 3. Distribution and landownership of slickspot peppergrass Element Occurrences (EOs) by physiographic region (Cole 2009, threats table; Sullivan and Nations 2009, p. 77). All areas are estimates and may not total exactly due to rounding.

	Slickspot Peppergrass EOs		Federal		State		Private		Total	
	Number	Percent (%)	Acres	Percent (%)	Acres	Percent (%)	Acres	Percent	Acres	Percent (%)
Snake River Plain	43	54.0	12,754	98.0	55	0.5	164	1.5	12,980	82.0
Boise Foothills	16	20.0	89	48.0	0	0.0	96	52.0	185	1.2
Owyhee Plateau	21	26.0	2,636	99.7	7 ac	0.3	0	0.0	2,643	16.8
All Extant EOs	**80**	**100.0**	**15,479**	**98.0**	**62 ac**	**0.4**	**260**	**1.6**	**15,801**	**100.0**

trampling or off highway vehicle (OHV) use and are subject to damage by fire; recovery from disturbance is possible but occurs very slowly (Johnston 1997, pp. 10–11).

Slickspot peppergrass occurs in slickspot habitat microsites scattered within the greater semiarid sagebrush-steppe ecosystem of southwestern Idaho. On a broad scale, the Snake River Plains and the Owyhee Plateau physiographic regions are volcanic in nature and underlain by Tertiary basalt or rhyolite; the adjacent Boise Foothill sites are underlain by Pliocene/Quaternary lacustrine deposits (Moseley 1994, p. 8). Slickspots are visually distinct openings characterized by natric soils and distinct clay layers; they tend to be highly reflective and relatively light in color, making them easy to detect on the landscape (Fisher *et al.* 1996, p. 3). Slickspots are distinguished from the surrounding sagebrush matrix as having the following characteristics: microsites where water pools when rain falls (Fisher *et al.* 1996, pp. 2, 4); sparse native vegetation, distinct soil layers with a columnar or prismatic structure, higher alkalinity and clay content, and natric properties (Fisher *et al.* 1996, pp. 15–16; Meyer and Allen 2005, pp. 3–5, 8; Palazzo *et al.* 2008, p. 378); and reduced levels of organic matter and nutrients due to lower biomass production (Meyer and Quinney 1993, pp. 3, 6; Fisher *et al.* 1996, p. 4). Fisher *et al.* (1996, p. 11) describe slickspots as having a "smooth, panlike surface" that is structureless and slowly permeable when wet, moderately hard and cracked when dry. Although the low permeability of slickspots appears to help hold moisture (Moseley 1994, p. 8), once the thin crust dries out, slickspot peppergrass seedling survival depends on its ability to extend its taproot into the argillic horizon (soil layer with high clay content) to extract moisture from the deeper natric zone (Fisher *et al.* 1996, p. 13).

How long slickspots take to form is unknown, but is hypothesized to take several thousands of years (Nettleton and Peterson 1983, p. 193; Seronko 2006, *in litt.* p. 2). Climate conditions that allowed slickspot formation in southwestern Idaho are thought to have occurred during a wetter Pleistocene period. Holocene additions of wind-carried salts (often loess deposits) produced the natric soils characteristic of slickspots (Nettleton and Peterson 1983, p. 191; Seronko 2006, *in litt.*, p. 2). Several hundred years may be necessary to alter or lose slickspots through natural climate change or severe natural erosion (Seronko 2006, *in litt.* p. 2). However, some researchers hypothesize that new slickspots are no longer being created given current climatic conditions (Nettleton and Peterson 1983, pp. 166, 191, 206). As slickspots in southwest Idaho appear to have formed during the Pleistocene and current climate conditions may not allow for the formation of new slickspots, the loss of slickspot microsites appears to be permanent.

Some slickspots subjected to past light disturbance may be capable of reforming (Seronko 2006, *in litt.* p.2). However, disturbances that alter the physical properties of the soil layers, such as deep disturbance and the addition of organic matter, may lead to the destruction and permanent loss of slickspots. For example, deep soil tilling and adding organic matter and gypsum have been recommended for eliminating slickspots from agricultural lands in Idaho (Peterson 1919, p. 11; Rasmussen *et al.* 1972, p. 142). Slickspot soils are especially susceptible to mechanical disturbances when wet (Rengasamy *et al.* 1984, p. 63; Seronko 2004, *in litt.* pp. 1–2). Such disturbances disrupt the soil layers important to slickspot peppergrass seed germination and seedling growth and alter hydrological function. Meyer and Allen (2005, p. 9) suggest that if sufficient time passes following the disturbance of slickspot soil layers, the slickspot soil layers

may regain their pre-disturbance configuration yet not support the species. Thus, while the slickspot appears to have regained its former character, some essential component required to sustain the life history requirements of slickspot peppergrass has apparently been lost, or the active seed bank is no longer present.

Most slickspots are between 10 and 20 square feet (ft^2) in size although some are as large as 109 ft^2 (Mancuso *et al.* 1998, p. 1). Slickspots cover a relatively small cumulative area within the larger sagebrush-steppe matrix, and only a small percentage of slickspots are known to be occupied by slickspot peppergrass.

Slickspot peppergrass has infrequently been documented outside of slickspots on disturbed soils, such as along graded roadsides and badger mounds. These are rare observations and the vast majority of plants documented over the past 19 years of surveys and monitoring for the species were within slickspot microsite habitats (USFWS 2006b, p. 20). For example, in 2002, a complete census of an 11,070-ac area recorded approximately 56,500 slickspots (Air Force 2003 *in litt.*, p. 15), of which approximately 2,450 (about 4.0 percent) were occupied by slickspot peppergrass plants (Bashore, pers. comm. 2003, p. 1). Of the approximately 11,300 slickspot peppergrass plants documented during the survey effort, only 11 plants (less than 1 percent) were documented outside of slickspots (Air Force 2002, summary attachment).

Not all potential slickspot peppergrass habitats in southwest Idaho have been surveyed, and additional slickspot peppergrass sites may be found outside of areas known to be occupied. Recent modeling was completed to develop a high-quality, predictive-distribution model of slickspot peppergrass to identify potential habitat (Colket 2008, p. 1). The Assessment defines potential habitat as areas within the known range of slickspot peppergrass that have certain general soil and elevation characteristics that indicate the potential for the area to support slickspot peppergrass although the presence of slickspots or the plant is unknown (USBLM 2009, p. B–2). Although surveys were conducted in 2008 in some areas identified as previously unsurveyed habitat with potential to contain the species, these surveys did not result in any new locations of the species (Colket 2008, pp. 4–6). Slickspot peppergrass has also been surveyed for in eastern Oregon, but the species has never been found there (Findley 2003 *in litt.*, p. 1). We have no historical records indicating that slickspot peppergrass has ever been found anywhere outside of its present range in southwestern Idaho.

The Idaho Natural Heritage Program (INHP) uses an EO ranking system for assessing the status of slickspot peppergrass. This system ranks slickspot peppergrass occurrences based on measures of habitat quality and species abundance. EO ranks are useful for assessing estimated viability or probability of persistence and helping prioritize conservation planning or actions (NatureServe 2002). The ranks are defined as follows (Colket *et al.* 2006, pp. 3–4):

- A-Rank—
  - SIZE: Greater than1,000 detectable genets.
  - CONDITION: Native plant community is intact with trace introduced plant species cover. Slickspots have zero or trace introduced weed cover and/or livestock

disturbance. Zero or few minor anthropogenic disturbances are present. EO is unburned.
  - LANDSCAPE CONTEXT: Surrounding landscape less than 0.6 mi away has not been fragmented by agricultural lands, residential or commercial development, introduced annual grasslands, or drill seeding projects.
- B-Rank—
  - SIZE: 400–999 detectable genets.
  - CONDITION: Native plant community is intact with low introduced plant species cover. Slickspots have low introduced weed cover and/or livestock disturbance. Zero or few minor anthropogenic disturbances present. EO is predominantly unburned.
  - LANDSCAPE CONTEXT: Surrounding landscape less than 0.6 mi away is minimally to partially fragmented by agricultural lands, residential or commercial development, introduced annual grasslands, or drill seeding projects.
- C-Rank—
  - SIZE: 50–399 detectable genets.
  - CONDITION: Native plant community is partially intact with low-to-moderate introduced plant species cover. Slickspots have low-to-moderate introduced weed cover and/or livestock disturbance. Few or several minimally to moderately severe anthropogenic disturbances are evident. EO has partially burned. Portions of EO may have been drill seeded, but slickspots are largely intact.
  - LANDSCAPE CONTEXT: Surrounding landscape less than 0.6 mi away is partially to predominantly fragmented by agricultural lands, residential or commercial development, introduced annual grasslands, or drill seeding projects.
- D-Rank—
  - SIZE: 1–49 detectable genets.
  - CONDITION: Few components of the native plant community remain and introduced plant species cover is high. Slickspots have high introduced weed cover and/or livestock disturbance. Few or several moderately severe anthropogenic disturbances are evident. EO has been predominantly to completely burned. Portions of EO may have been drill seeded, and slickspot soils have been altered by drill seeding.
  - LANDSCAPE CONTEXT: Surrounding landscape less than 0.6 mi away is moderately to completely fragmented by agricultural lands, residential or commercial development, introduced annual grasslands, or drill seeding projects.
- E-Rank (Extant)—
  - EO has been verified extant, but population size, condition, and landscape context have not been assessed.
- F-Rank (Failed to find)—
  - EO has been surveyed by experienced individuals who failed to find any slickspot peppergrass individuals, despite searching under conditions appropriate for the

element at a location where it was previously recorded. Only one visit is required for this rank designation, but the survey should cover the entire extent of the EO. The F-rank was first standardized by NatureServe (2002) and not implemented for slickspot peppergrass before 2006.

- H-Rank (Historical)[3]—
  - An EO that has not been observed since 1970. These are historical EOs indicating where slickspot peppergrass was reported, often based on older herbarium records. Locations associated with these herbarium records are typically geographically vague and may be simply indicated by the name of a town.
- X-Rank (Extirpated)—
  - EO has been extirpated. Extirpation is based on: 1) agricultural conversion, commercial or residential development, or other documented habitat destruction where slickspot peppergrass has been previously recorded, or 2) when an EO has consistently received an F-rank five times within a 12-year time period.
- X?-Rank (Probably Extirpated)—
  - EO has probably been extirpated. The "?" qualifier is used with the most appropriate rank (i.e. X?) if there is incomplete information on the EO size, condition, and/or landscape context factors.

As of February 2009, the INHP has ranked 80 extant EO records for slickspot peppergrass based on habitat quality and abundance (Cole 2009, threats table). No A-ranked EOs for slickspot peppergrass exist. The most common rangewide EO ranks for slickspot peppergrass are C and D. EO ranks also vary by physiographic region. A little more than one-half of the extant EO area in the Boise Foothills region is C-ranked. Approximately three-quarters of the total EO area in the Snake River Plain is B-ranked. The majority of B-ranked EO acreage rangewide occurs on the IDANG's OTA. The majority of the total EO area in the Owyhee Plateau physiographic region is also B-ranked. In addition, nine EOs are ranked as X or X?, and seven EOs are ranked as H.

Population Trends

Extreme variability in annual plant counts makes detecting significant population trends in slickspot peppergrass difficult. However, the best scientific and commercial evidence available collected over the past 18 years from the rough census areas on the OTA shows a significant downward density trend in the abundance of slickspot peppergrass plants during the past two decades (74 FR 52025, October 8, 2009). Furthermore, we believe it is reasonable to infer that

[3] No G-Rank exists in the INHP EO ranking system for slickspot peppergrass.

this negative trend may be similar or possibly even greater rangewide in areas outside the high-quality habitat of the OTA, and this trend appears to be independent of any precipitation trend.

Uncertainties associated with both the data and the model, used by Sullivan and Nations (2009) in their analysis of slickspot peppergrass density and abundance on the OTA over time, preclude our ability to project future population trends for slickspot peppergrass. These uncertainties include, but are not limited to, great annual variability in plant numbers; the confounding influence of the long-lived seed bank; complications associated with annual variability in both precipitation and temperature; and inconsistent results between the special-use plots and the rough census areas on the OTA (see Sullivan and Nations 2009, pp. 28–33 for an explanation of these two OTA survey methodologies). The evaluation by Sullivan and Nations (2009, pp. 1–278) was based on a simple model of slickspot peppergrass abundance or density as a linear function of time and intended only to discern whether there was any general population trend (74 FR 52025, October 8, 2009). The authors acknowledge that the dynamics are complicated, and note their model is not intended to describe (nor explain) the details of the temporal pattern of abundance or density of slickspot peppergrass (Sullivan and Nations 2009, p. 38). In addition, we do not have any models for slickspot peppergrass based on multivariate analyses, which would simultaneously consider additional variables such as precipitation to potentially allow for the prediction of abundance or density of slickspot peppergrass over time based on projected conditions. As stated in our listing rule, although the available descriptive model is helpful for interpreting the population information available to date and indicates that slickspot peppergrass has likely been trending downward for all of the reasons outlined above, it would be inappropriate to rely on this model to predict any future population trajectory for slickspot peppergrass (74 FR 52025, October 8, 2009).

2.3.5 Previous Consultations and Conservation Efforts

The Service has completed several consultations under section 7 of the Act for programs and individual actions located in the vicinity of the proposed Project. Some of these were completed as letters of concurrence/conference reports [Normal Fire Emergency Stabilization and Rehabilitation Plan (USFWS 2006a, *in litt.*, entire); Noxious Weed Management Plan (USFWS 2006b, *in litt.*, entire)] as they were determined to be unlikely to adversely affect listed/proposed species, including slickspot peppergrass. Following listing of the species in 2009, conference reports for slickspot peppergrass were converted to letters of concurrence, at the request of the Bureau, to ensure continued compliance under section 7 of the Act (USFWS 2009, *in litt.*, entire). The Service has also completed formal consultations with the Bureau on the Jarbidge RMP, which provides management direction for the Project area (USFWS 2009, entire). For actions that are underway, standing concurrences and consultations will remain in effect as long as the actions are carried out as proposed and no new information surfaces to indicate the species will be affected in unanticipated ways.

As described above, the Service and Bureau have entered into a CA committing to implement conservation measures for slickspot peppergrass to avoid or minimize effects associated with implementing Bureau actions planned under the standards and guidelines of their LUPs (USBLM and USFWS 2009, entire). The conservation measures and associated implementation actions

for ongoing Bureau LUP programs provide overall guidance for avoiding or minimizing direct and indirect effects to the habitat of slickspot peppergrass and restoring and maintaining that habitat. Conservation measures and implementation actions for slickspot peppergrass include conducting species inventories on Bureau lands, exchanging location information with agency partners, completing site-specific section 7 consultation on both ongoing and new actions, and avoiding or minimizing potential adverse impacts of site-specific projects covered under LUP programs. Site-specific implementation and effectiveness monitoring, including annual reporting requirements, will also be completed to track progress toward achieving conservation objectives. All conservation measures in the CA will be implemented until such time that new LUPs or amendments are approved with completed consultations and signed Records of Decision. The CA provides goals for inventories of slickspot peppergrass as well as direction for completing section 7 consultations on all ongoing and proposed activities on Bureau lands that may affect this species.

As described above, the Bureau is also implementing conservation measures defined in the CCA signed between the State of Idaho, the Bureau, the Idaho Army National Guard (IDARNG), and nongovernmental cooperators (private landowners who also hold livestock grazing permits on Bureau lands) (State of Idaho *et al.* 2003, entire and 2006, entire). The majority of the individual conservation efforts being implemented for slickspot peppergrass that are applicable to individual projects are contained in the CCA, which was originally drafted in 2003 and updated in 2006. The CCA represents an important milestone in the cooperative conservation of slickspot peppergrass given its rangewide scope and coordinated management across lands managed by Federal agencies and the State of Idaho. The CCA includes rangewide efforts that are intended to address the need to maintain and enhance slickspot peppergrass habitat; reduce intensity, frequency, and size of natural- and human-caused wildfires; minimize loss of habitat associated with wildfire-suppression activities; reduce the potential of nonnative plant species invasion from wildfire; minimize habitat loss associated with rehabilitation and restoration techniques; minimize the establishment of invasive nonnative species; minimize habitat loss or degradation from OHV use; mitigate the negative effects of military training and other associated activities on the Orchard Training Area (OTA)[4], an Idaho Army National Guard training area on Bureau land; and minimize the impact of ground disturbances caused by livestock penetrating trampling[5] when soils are saturated (State of Idaho *et al.* 2006, p. 3).

As a signatory of the CCA (State of Idaho *et al.* 2003, 2006), the Bureau is the primary land management agency responsible for implementing conservation actions for slickspot peppergrass on their lands. Implementing the conservation measures in the CCA represents a major

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[4] The Orchard Training Area has recently been renamed and is currently known as the Orchard Regional Combat Training Center (ORCTC).

[5] Penetrating trampling is defined by the CCA as breaking through the restrictive layer (i.e., the middle layer of slickspot soil that supports slickspot peppergrass, as described by Meyer and Allen 2005, p. 3) under the silt surface area of a slickspot during saturated conditions (State of Idaho *et al.* 2006, p. 9).

commitment on behalf of the Bureau, which has management authority for the majority of the range where slickspot peppergrass occurs (i.e., 87 percent of the total Element Occurrence [EO] area [13,470 ac] and partial-to-entire management authority for 69 of the 80 extant EOs comprising the current population of this species occur on Bureau lands). The Bureau also has the lead for implementing CCA-derived conservation measures that were appropriate for LUP-level programs that were included in the August 22, 2006 CA between the Service and the Bureau to avoid or minimize the adverse impacts of implementing Bureau LUPs to slickspot peppergrass, which was updated August 27, 2009 (USBLM and USFWS 2009, entire).

Although the majority of the conservation measures identified in the CCA have been implemented to date, relatively few of these measures have been determined at this time to be measurably effective for conserving slickspot peppergrass. For example, many of the implemented measures include conducting surveys, monitoring, or providing for public outreach and education, which have limited direct or long-term conservation benefits to the species. With the exception of several conservation efforts implemented at the OTA that have been successful in controlling wildfire effects on slickspot peppergrass habitats, many of the remaining conservation efforts and adaptive management provisions identified in the CCA have not been implemented over a long enough period of time to demonstrate their effectiveness in reducing threats to the species. Furthermore, the conservation measures identified in the CCA are concentrated on slickspot peppergrass EOs. While this focus is helpful, effectively controlling the most significant threats to slickspot peppergrass (wildfire and invasive nonnative plant species) requires efforts that extend well beyond the boundaries of the EOs since these threats are naturally expansive and occur throughout the Great Basin. We recognize the conservation efforts identified in the CCA have a conservation benefit for slickspot peppergrass, but rangewide their effectiveness in reducing or eliminating the most significant threats to the species has not been demonstrated at this time.

Conservation measures identified for slickspot peppergrass are either specific measures designed to reduce impacts to the species and its habitat at the local level, or general measures designed to improve the ecological condition of native sagebrush-steppe vegetation at a landscape scale, inclusive of areas supporting slickspot peppergrass. Specific measures include management actions such as varying the timing or season of livestock grazing or trailing and moving water or supplements away from EOs. General measures include management actions designed to maintain or increase native forb and grass cover, protect sagebrush through fire protection or suppression, and restore degraded habitats to improve connectivity between sites. General conservation measures and implementation actions within the CA include direction to prioritize slickspot peppergrass EOs for fire protection and weed control across the range of the species. For example, the CA indicates that fire suppression efforts will be conducted, as possible, to protect slickspot peppergrass habitat; protecting slickspot peppergrass habitat will be a high priority. The Bureau will also promote diversity, richness, and health of native plant communities to support pollinators and habitat for slickspot peppergrass, including conducting weed control activities compatible with slickspot peppergrass conservation. The Service expects the Bureau's continued implementation of these general conservation measures will reduce

effects from wildfire and nonnative invasive plants across the range of the species, including within the Project area.

2.3.1.6 Conservation Needs

Although recovery planning has not been completed for slickspot peppergrass, the Service anticipates that providing for its survival and recovery will entail reducing the threats that are the basis for its being listed: habitat loss, degradation, and fragmentation primarily caused by increased fire frequencies and the invasion of exotic plants; lack of sufficient gene flow between populations; and reduced viability of seed banks. The Service anticipates that the following factors will be important for survival and recovery of the species:

- Protection, restoration, and maintenance of suitable habitat conditions for all life stages of slickspot peppergrass;
- Reduction and mitigation of negative effects caused by increased fire frequencies and invasive nonnative plants on slickspot peppergrass;
- Establishment of vegetation management goals and objectives that are compatible with slickspot peppergrass recovery;
- Identification of what is necessary to conserve genetic diversity and gene flow among populations of slickspot peppergrass; and monitoring to ensure that this diversity and gene flow are being maintained;
- Implementation of an adaptive management based research and monitoring program that uses feedback from implemented, site-specific recovery tasks to implement and evaluate slickspot peppergrass recovery activities;
- Use of all available conservation programs and regulations to protect and conserve slickspot peppergrass and sagebrush-steppe habitats, including slickspot microsites; and
- Development of a management area-based recovery program that relies on adaptive management to implement and revise, as appropriate, recovery actions for slickspot peppergrass.

Slickspot peppergrass survival and recovery depends on maintaining and enhancing Wyoming big sagebrush–steppe habitat and the slickspot microsites located within this ecosystem in southwestern Idaho. The long-term conservation of slickspot peppergrass is dependent upon the maintenance or improvement of ecological function of the higher quality (C- through A-ranked) EOs rangewide, including maintaining or improving connectivity within and between EOs, which may involve the maintenance or enhancement of currently lower ranked EOs (D- through F-ranked) as necessary to facilitate pollinator activity; the maintenance of genetic diversity; and limiting the establishment of invasive nonnative plant species.

Key to maintaining quality habitat includes preserving existing Wyoming big sagebrush stands by avoiding or minimizing adverse effects of wildfire and invasive nonnative plants, such as cheatgrass and *Taeniatherum caput-medusae* (medusahead). The Service has identified the modified wildfire regime in the Great Basin and subsequent proliferation of invasive nonnative plants as the primary threats to slickspot peppergrass. Adequate resources should be made available to reduce the wildfire risk in remaining sagebrush stands, and efforts to maintain and

restore native shrubs, grasses, forbs, and biological soil crust should be identified as a priority in areas that have burned in or nearby slickspot peppergrass population strongholds. Plant species that may invade slickspots and compete with slickspot peppergrass should be avoided for use in emergency stabilization and rehabilitation or habitat restoration seedings in areas that support slickspot peppergrass and its habitat. Native forb cover should be maintained or restored to levels that would encourage diverse insect pollinators available for slickspot peppergrass seed production. Activities that could cause direct plant mortality should be minimized. Ground disturbance that could cause decreased suitability of microsites to support slickspot peppergrass should be avoided or minimized. When soils are saturated, ground disturbing activities should be minimized to reduce the likelihood of directly affecting plants and burying seeds too deep to successfully germinate and emerge. Conservation measures should be implemented to mitigate the effect of actions that create conditions conducive to invasive nonnative plants within and adjacent to slickspot habitat.

Secondary threats, such as commercial and residential development, seed predation by *Pogonomyrmex salinus* (Owyhee harvester ants), habitat fragmentation and isolation, and climate change, were identified in the Federal Register notice for listing of slickspot peppergrass as factors that could impact slickspot peppergrass throughout a significant portion of its range. Other factors, including livestock grazing, fire rehabilitation activities, military training, and recreational use, were discussed as not having significant impacts that would lead to slickspot peppergrass becoming endangered in the foreseeable future. However, both secondary threats and these other factors have been identified as aggravating degraded habitat conditions caused by the modified wildfire regime and associated invasion of nonnative plants. While not identified as rangewide issues, secondary threats and other factors may adversely affect individual slickspot peppergrass plants at the physiographic regional or local level. In areas containing high-quality sagebrush-steppe habitats, conservation measures should be implemented to avoid or minimize the impacts of habitat loss on slickspot peppergrass. Actions that could degrade slickspots to the point that they can no longer provide the essential functions to support slickspot peppergrass should be avoided as losing habitat represents a permanent loss for the species. Using pesticides near EOs should also be minimized to avoid impacts to individual slickspot peppergrass plants or insect pollinators.

Slickspot peppergrass survival and recovery depends on maintaining and enhancing Wyoming big sagebrush–steppe habitat and the slickspot microsites located within this ecosystem in southwestern Idaho. The long-term conservation of slickspot peppergrass is dependent upon the maintenance or improvement of ecological function of the higher quality (C- through A-ranked) EOs rangewide, including maintaining or improving connectivity within and between EOs, which may involve the maintenance or enhancement of currently lower ranked EOs (D- through F-ranked) as necessary to facilitate pollinator activity; the maintenance of genetic diversity; and limiting the establishment of invasive nonnative plant species.

For purposes of this jeopardy analysis, the maintenance or improvement of medium-to-high conservation value EOs (i.e., those currently ranked C through B by INHP, and including any EOs that may be A-ranked in the future) will be an important component of the rangewide conservation strategy for slickspot peppergrass. We anticipate the enhancement of higher-

quality EOs will effectively offset the relatively low contribution made by the lower-ranked EOs of lesser conservation value to the species. In general, small populations of slickspot peppergrass in degraded and fragmented habitat are at high risk of extirpation and are unlikely to significantly contribute to the conservation of the species.

The anticipated beneficial and adverse effects of Kinyon Road Fire fuel breaks project form the basis for our determination as to whether this action is expected to maintain, reduce, or improve the current conservation value of the affected area for slickspot peppergrass. Conservation measures designed to reduce wildfire threats and competition from invasive nonnative plants are expected to be especially important for the survival and recovery of slickspot peppergrass.

Effects of Climate Change on Slickspot Peppergrass Survival and Recovery Needs

Warmer temperature regimes associated with global climate change represent another potentially significant risk factor for slickspot peppergrass. Researchers confirmed "experimentally in an intact ecosystem that elevated carbon dioxide may enhance the invasive success of *Bromus* spp. in arid ecosystems," and suggest that this enhanced success will then expose these areas to accelerated fire cycles (Smith *et al.* 2000, p. 81). Chambers and Pellant (2008, p. 32) also suggest that higher carbon dioxide levels are likely increasing cheatgrass fuel loads due to increased productivity, with a resulting increase in fire frequency and extent. Based on the best available information, we therefore expect continuing production of atmospheric carbon dioxide at or above current levels, as predicted, to increase the threat posed to slickspot peppergrass by cheatgrass and from more frequent, expansive, and severe wildfires (Smith et al. 1987, p. 143; Smith et al. 2000, p. 81; Brown et al. 2004, p. 384; Neilson et al. 2005, pp. 150, 156; Chambers and Pellant 2008, pp. 31-32). Thus, under current climate-change projections, we anticipate future climatic conditions will favor further invasion by cheatgrass, fire frequency is likely to continue to increase, and the extent and severity of fires may also increase.

Current projections for the Pacific Northwest region are that precipitation will increase in the winter but decrease in the summer months (Karl et al. 2009, p. 135). The survivorship of slickspot peppergrass rosettes to flower the following spring is favored by greater summer precipitation (Meyer et al. 2005, p. 15; CH2MHill 2007, p. 14; Sullivan and Nations 2009, pp. 33, 41), and increased winter precipitation appears to decrease survivorship (Meyer et al. 2005, pp. 15-16; Sullivan and Nations 2009, pp. 39, 43-44). As the projected rainfall pattern under climate change would follow the opposite pattern, this alteration in seasonal precipitation could result in decreased survivorship of slickspot peppergrass. Alterations in precipitation patterns, however, are more uncertain than predicted changes in temperature for the Great Basin region (Neilson et al. 2005, p. 153).

The consequences of climate change, if current projections are realized, are therefore likely to exacerbate the existing primary threats—modified wildfire regime and invasive nonnative plants, particularly cheatgrass—to slickspot peppergrass conservation. Because the Intergovernmental Panel on Climate Change (IPCC) projects changes to the global climate system in the twenty-first century will likely be greater than those observed in the twentieth century (IPCC 2007, p. 45), we anticipate that these effects will continue and likely increase into the future. Due to the uncertainty associated with climate change projections, we did not consider climate change in

and of itself to represent a significant rangewide threat to slickspot peppergrass in our listing decision. However, we acknowledge that climate change will likely play a potentially important supporting role in intensifying the most significant current threats to the species in the foreseeable future. The severity and scope of the primary threats of changing wildfire regime and invasive nonnative plants to slickspot peppergrass are likely to be magnified, depending on the realized outcome of climate change. Habitat conservation and restoration efforts are likely to be further complicated by these climatic changes. Additional conservation measures may be needed to mitigate the effects of habitat degradation that are aggravated by climate change. For a more detailed discussion of climate change and slickspot peppergrass, refer to the final listing rule (74 FR 52014, October 8, 2009).

2.4 Environmental Baseline of the Action Area

This section assesses the effects of past and ongoing human and natural factors that have led to the current status of the species, its habitat and ecosystem in the action area. Also included in the environmental baseline are the anticipated impacts of all proposed Federal projects in the action area that have already undergone section 7 consultations, and the impacts of state and private actions which are contemporaneous with this consultation.

2.4.1 Status of Slickspot Peppergrass in the Action Area

As part of the Candidate Conservation Agreement (CCA), 12 Management Areas (MAs) were established to provide an organizational structure that facilitates conservation of the slickspot peppergrass in distinct segments across its range (State of Idaho et. al 2003, pp. 21-22). The 3,311 acre Project area is located outside of these 12 MAs, with MAs 11 and 12 located about 18 miles south of the Project area.

No EOs are known to be located either wholly or partially within the Project area. No Bureau occupied habitat (EOs and surrounding 0.5 mi insect pollinator buffer) exists within the Project area. The closest known occurrence of slickspot peppergrass, EO 16, is located about 18 miles south of the Project area (Bureau 2012, p. 8) in the Owyhee Plateau physiographic region.

Proposed fuel breaks occur in areas that were projected using GIS as having potential for slickspot peppergrass to occur (USBLM GIS data 2003, 2012 as cited in Bureau 2012, p. 5) (Table 4, Figures 2 and 4). Inventories conducted by Idaho Department of Fish and Game and the Bureau from 2001 through 2011 that included areas in or adjacent to the Project area identified the presence of slickspot microsites, but did not expand the range of the population within the Jarbidge Field Office beyond the Inside Desert (Mancuso and Cooke 2001; Bureau GIS data 2006-2011, as cited in Bureau 2012, p. 4). Based upon surveys conducted in and adjacent to the Project area, slickspot microsites were documented to occur within the Project area (see Figure 4). The Jarbidge Field Office has not yet reclassified its surveyed potential habitat areas as "slickspot peppergrass habitat", which are areas documented to contain slickspot microsites but where surveys are inadequate to determine species presence or absence (see Appendix A of this Opinion for Bureau definitions for the Bureau's three habitat categories for

slickspot peppergrass). For the purposes of this Opinion, areas described as "potential habitat" in the Bureau's Assessment that also contain slickspot microsites are considered to be slickspot peppergrass habitat.

As stated above, no slickspot peppergrass plants have been observed within the Project area to date. As described in the Seed Viability and Germination section 2.3.3.2 above, the slickspot peppergrass seed bank may remain viable for up to 12 years. Therefore, several years of survey may be required in order to successfully detect slickspot peppergrass plants. With 1-2 years of survey completed within the area known to contain slickspots, slickspot microsites within the Project area have not been surveyed adequately to determine whether or not they contain the species. Therefore, the Assessment and this Opinion treat these slickspot microsites as though they may contain slickspot peppergrass, including its seeds.

In early 2012, a GIS model was developed to further classify areas identified as potential habitat in the Jarbidge Field Office in 2003 as having high, medium, or low potential for slickspot peppergrass to occur. This further classification of potential habitat was based on soil type, slope, potential and existing vegetation and presence of intact native communities with a shrub component, and fire history over the last 20 years (Bureau GIS data 2012, as cited in Bureau 2012, p. 5). Proposed fuel breaks occur in areas that were projected using GIS as having varying potential for slickspot peppergrass to occur (Bureau GIS data 2003, 2012) (Table 4, Figures 2 and 4). In addition, a portion the area previously identified as potential habitat (USBLM GIS data 2003, as cited in Bureau 2012, p. 5) was re-classified to non-habitat as on-the-ground surveys documented very sandy soils in these areas. The 37 acres of the Project area shown as having high potential for slickspot peppergrass to occur were composed of small, remnant shrub stands; however, these areas have since burned and therefore may no longer meet criteria to be of high potential to contain slickspot peppergrass. In addition, 664 acres in the northern portion of the 3,311 acre Project area has never been identified as habitat for slickspot peppergrass.

Table 4. Slickspot peppergrass potential to occur within the proposed fuel break segments.

Segment	Slickspot Peppergrass Potential To Occur (Acres)				
	High	Medium	Low	Non-Habitat	Total
Balanced Rock	10	331	195	26	562
Crows Nest	0	294	68	43	405
HMA South	26	163	505	268	962
Pot Hole	0	44	547	126	717
Total	36	832	1,315	463	2,646

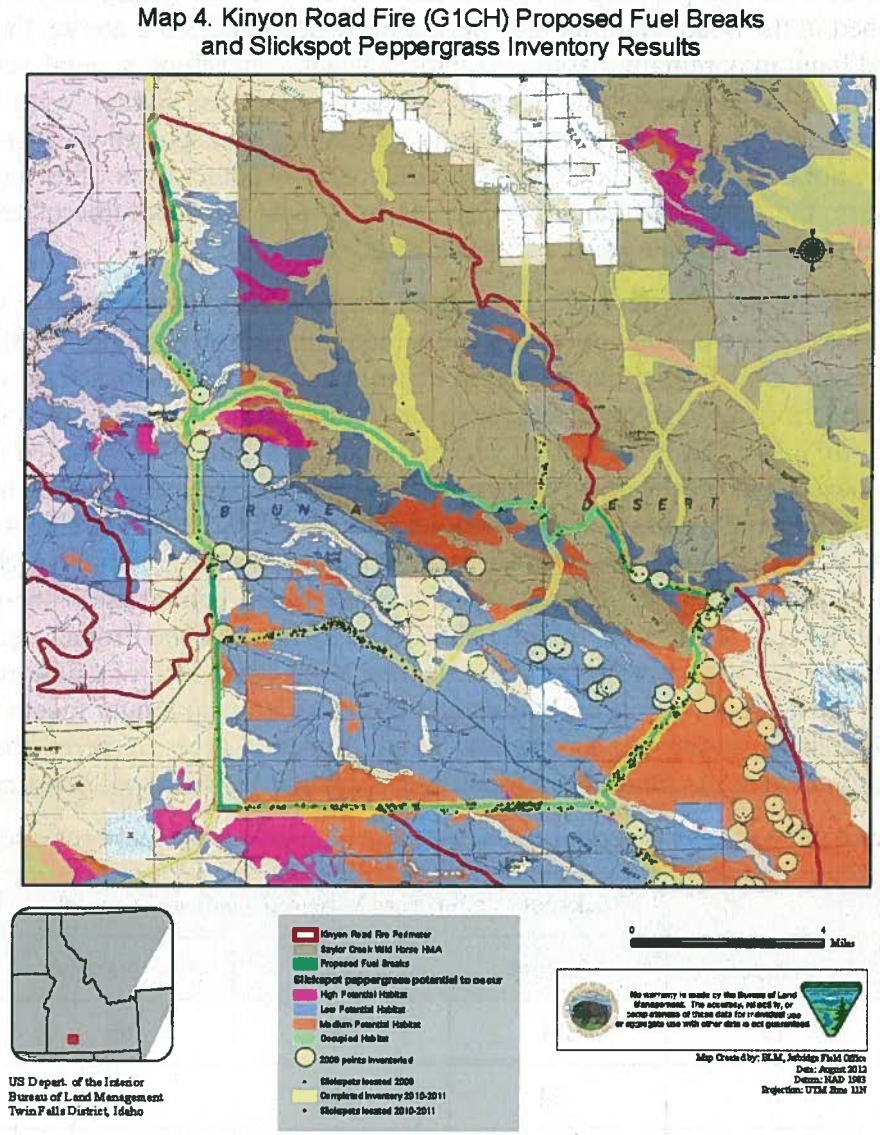

Figure 4. Kinyon Road Fire Fuel Break Project area showing slickspot microsite locations.

Prior to the Kinyon Road Fire, 1,127 acres (34 percent) of the 3,311 acre Project area were categorized as non-habitat, 1,315 acres (40 percent) were categorized as having low potential for slickspot peppergrass to occur, 832 acres (25 percent) were categorized as having medium potential, and 36 acres (1 percent) were categorized as having high potential for slickspot peppergrass to occur. In comparison, about half of the 210,874 acres burned in the Kinyon Road Fire are identified as potential habitat for slickspot peppergrass. Of these 104,636 acres of potential habitat located within the fire perimeter, 15,100 acres (7 percent) of the fire area were categorized as having high potential for slickspot peppergrass to occur; 34,089 acres (16 percent) have medium potential; and 55,447 acres (26 percent) have low potential for slickspot peppergrass to occur (Figure 2). Although not described in the Bureau's Assessment, following the Kinyon Road Fire, the 36 total acres of high potential for slickspot peppergrass occurrence located with the Project area should likely be reclassified as having medium or low potential for slickspot peppergrass to occur due to the fire-related loss of sagebrush cover.

2.4.1.2 Factors Affecting the Species in the Action Area

Threats to slickspot peppergrass identified in the Project area include wildfire, invasive nonnative plants, fire rehabilitation activities, herbicide and pesticide use, and livestock use. Herbivory by insects is also identified as an emerging issue for the species. These threats are described below.

2.4.1.3 Overview of Threats to Slickspot Peppergrass

Several threat factors are contributing to the destruction, modification, or curtailment of slickspot peppergrass habitat across the range of the species, including within the Project area. The sagebrush-steppe habitat of the Great Basin where slickspot peppergrass occurs is becoming increasingly degraded due to the impacts of multiple threats, including increased fire frequency and the subsequent invasion of nonnative annual grasses, such as cheatgrass. Effects of the modified wildfire regime and invasive nonnative plants were identified as the primary threats in the Service's decision to list slickspot peppergrass as threatened. Cheatgrass can impact slickspot peppergrass directly through competition but also indirectly by providing continuous fine fuels that contribute to the increased frequency and extent of wildfires. Frequent wildfires have numerous negative consequences in the sagebrush-steppe system, which is adapted to much longer fire-return intervals, ultimately resulting in the conversion of the sagebrush community to nonnative annual grasslands with associated losses of native species diversity and natural ecological function. Because the modified wildfire regime and invasion of cheatgrass create a positive feedback loop, independently separating the effects of each of these threats is difficult. For a more detailed description of the effects of wildfire and invasive nonnative plants on slickspot peppergrass, see the Service's listing decision.

Climate change is expected to exacerbate this feedback loop between the primary threats of invasive nonnative plants (e.g., cheatgrass) and changes in wildfire regime. As there is some degree of uncertainty regarding the potential effects of climate change on slickspot peppergrass specifically, climate change in and of itself was not considered a significant factor in the Service's determination to list slickspot peppergrass as a threatened species. However, the

Service recognizes that the severity and scope of the primary threats to slickspot peppergrass of frequent wildfire and invasion by nonnative plants such as cheatgrass are likely to magnify, depending on the realized outcome of climate change within the foreseeable future; thus, we consider climate change as playing a potentially important supporting role in intensifying the primary threats to the species.

Secondary threats of residential and commercial development and the emerging threat of seed predation by Owyhee harvester ants; and other factors including livestock use, wildfire management activities, post-fire stabilization and restoration activities, and military training; also may affect slickspot peppergrass. These factors may result in effects that may occur both directly through the damage or mortality to individual plants and loss of slickspot microsites and indirectly through habitat fragmentation and isolation. The loss of slickspot microsites is a permanent loss of habitat for slickspot peppergrass since the species is specialized to occupy these unique microsite habitats that were formed in the Pleistocene; once lost, slickspot microsites likely cannot be re-created on the landscape. For a detailed discussion of these factors, refer to the final listing rule for slickspot peppergrass (74 FR 52014, October 8, 2009).

All of these threats have long been recognized as contributing to the ongoing degradation of the sagebrush-steppe ecosystem of southwestern Idaho. However, the Service has only recently received independent evaluations of the direct relationship between the more significant threats and indicators of population viability, specifically for slickspot peppergrass. New evidence suggests a significant negative association between both cheatgrass cover and wildfire and the abundance of slickspot peppergrass, such that the species appears to be in decline across its range with adverse impacts continuing and likely increasing into the foreseeable future (Sullivan and Nations 2009, pp. 109–112, 114–118, 137). Past and ongoing factors that may affect slickspot peppergrass within the Project area as described within the Bureau's Assessment include wildfire, invasive nonnative plants, fire rehabilitation activities, herbicide use, and livestock use. Herbivory by insects is also identified as a potential issue in the Project area.

The Service acknowledges that gaps exist in available information on slickspot peppergrass. These gaps create uncertainty; however, the best information available was used for developing this Opinion. Science may reduce but can never completely estimate nor eliminate the uncertainty regarding future events (USBLM 2000, p. 3, 5). As stated in the Endangered Species Consultation Handbook, "Where significant data gaps exist there are two options: (1) if the action agency concurs, extend the due date of the biological opinion until sufficient information is developed for a more complete analysis; or (2) develop the biological opinion with the available information giving the benefit of the doubt to the species" (USFWS and NMFS 1998, p. 1-6). Conducting adequate project clearance inventories or research studies on the effects of various management actions to gather missing effects data on a plant with a seed bank cohort that is viable for up to 12 years would likely delay this consultation for many years. Consultation timelines under the Act do not allow for such a delay; thus, for purposes of completing this consultation, the Service has provided the benefit of the doubt to slickspot peppergrass with respect to data gaps regarding the effects of the proposed fuel break Project considered in this Opinion.

Habitat Condition in the Project Area

As described above, the entire Project area burned in the 2012 Kinyon Road Fire. The Kinyon Road Fire re-burned areas that have been subject to repeated, large fires, most recently in 2005 (Clover), 2006 (Sailor Cap), 2007 (Murphy Complex), and 2010 (Long Butte). Most of the fire area has burned two or more times in the last 20 years (Figure 5). Fires in 2005 and 2010 resulted in emergency gathers of wild horses occupying the Saylor Creek Wild Horse HMA. The proposed fuel breaks would be placed within and adjacent to currently burned potions of the HMA to enhance fire suppression abilities, provide for fire fighter and public safety, and reduce fire spread by breaking up fine fuel continuity.

The historical fire return interval for the northern portion of the Jarbidge Field Office, based on potential natural vegetation, was generally in excess of 100 years for Wyoming big sagebrush plant communities (LANDFIRE 2008, as cited in Bureau 2012, p. 2). This interval has been substantially shortened by past fires and modification of vegetation from sagebrush-steppe to grasslands dominated by nonnative and native perennial grasses and nonnative invasive annuals, including cheatgrass. Cheatgrass can impact slickspot peppergrass through direct loss (e.g. plant competition) as well as indirect population declines from habitat loss (e.g. modification of the sagebrush-steppe ecosystem and/or increased wildfire return interval). Slowing the highly modified fire return interval is critical to maintenance and future restoration of vegetation communities in the northern portion of the Jarbidge Field Office.

Inventories, vegetation mapping, and observations within the proposed Project area and surrounding habitats show that nonnative perennial and invasive annual vegetation are dominant in the Project area. Remnant shrub patches (which composed the 36 acres of dispersed habitat mapped as having high potential for slickspot peppergrass to occur) left by previous fires burned in the 2012 Kinyon Road Fire. The 832 acres mapped as having moderate potential for slickspot peppergrass to occur are dominated by nonnative perennial vegetation (such as crested wheatgrass) and residual native grasses, including Sandberg's bluegrass and bottlebrush squirreltail; these grasses are expected to resprout following fire.

Slickspot microsites in the Project area may be occupied by annual and perennial nonnative grasses and forbs in low to high density (1 to greater than 25 plants per square foot). Nonnative vegetation, which may include one or more of the proposed seeded species, is dominant throughout the action area as the result of past fires and vegetation treatments. Cheatgrass and other invasive nonnative plants are common and in some places dominant within the action area.

Native vegetation within the action area is highly fragmented due past wildfires and associated seedings. The action area has been drill-seeded in the past, primarily with crested wheatgrass. Sagebrush was aerially seeded following past fires but has since re-burned; sagebrush is no longer present in the action area. Nonnative invasive annual grasses and forbs are common

Map 3. Kinyon Road Fire (G1CH) and Fire Frequency 1992-2011

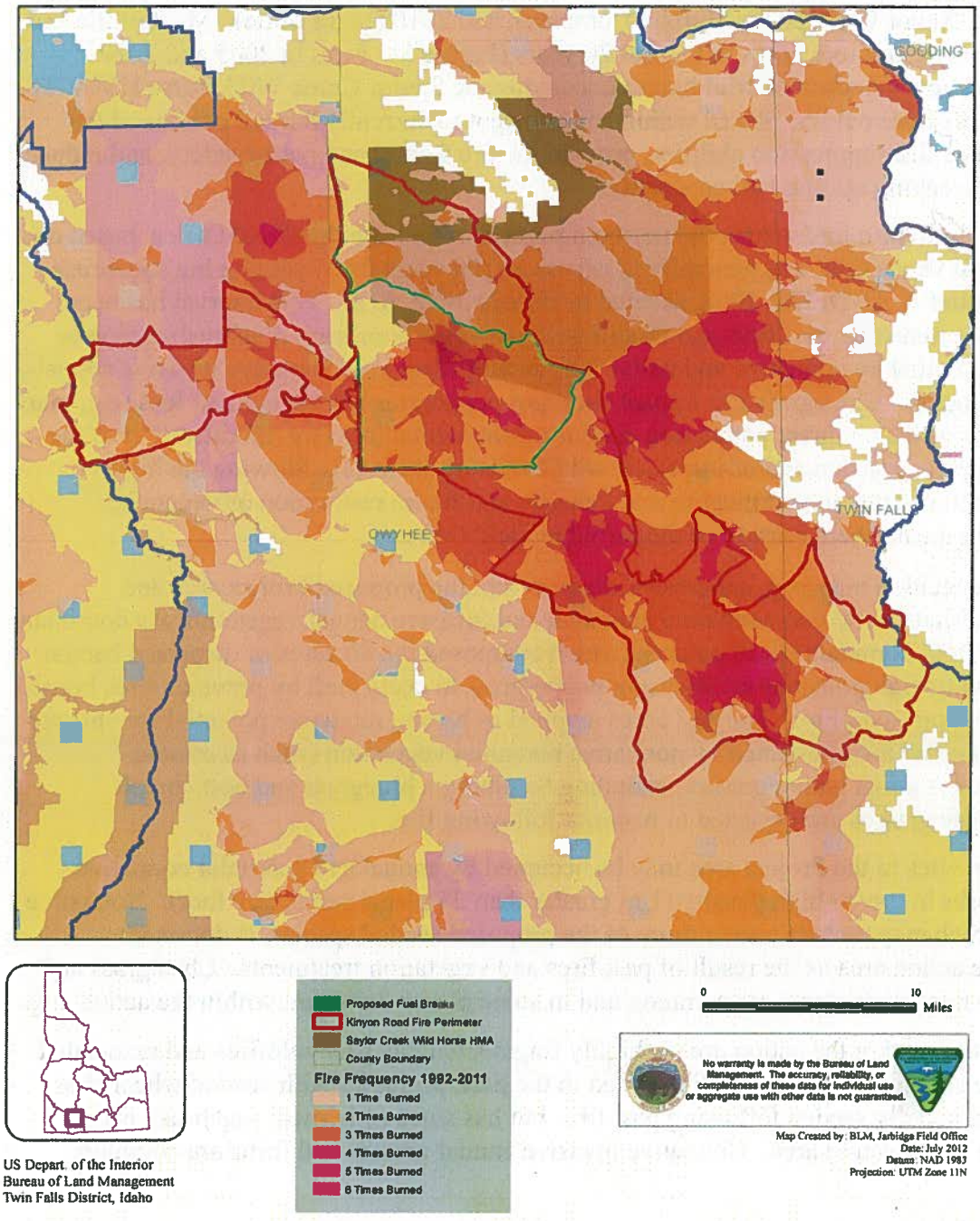

Figure 5. Fire history in the Kinyon Road Fire area.

throughout the action area and dominant in patches. Some remnant native perennial grasses are present, including Sandberg's bluegrass, bottlebrush squirreltail, Indian ricegrass, and needle-and-thread grass. Only Sandberg's bluegrass and bottlebrush squirreltail are common in the action area.

Native annual and perennial forbs are present in the Project area, but not common. Diversity and cover of native forbs are important factors that can affect the availability of insect pollinators required for successful reproduction of slickspot peppergrass. Perennial forb cover and diversity are important for providing season-long sources of pollen and nectar to support insect pollinators upon which slickspot peppergrass depends for seed production. Associated with the degraded condition of habitat in the Project area, forb cover and diversity are limited in the Project area.

Replacement of shrub cover in the vicinity of the Project area is expected to be slow, particularly since much of the vegetation in the areas of the Kinyon Fire burned area are currently dominated by cheatgrass, which increases the risk of future wildfires. Assuming no additional fires occur in the action area, recovery of sagebrush shrub cover in the vicinity of the Project area may take 50 to 120 years (Baker 2006, p. 181).

Biological soil crusts are important to the sagebrush-steppe ecosystem and slickspots where slickspot peppergrass occurs; they stabilize and protect soil surfaces from wind and water erosion, retain soil moisture, discourage annual weed growth, and fix atmospheric nitrogen (Eldridge and Greene 1994 as cited in Belnap *et al.* 2001, p. 4). Biological crust cover is low within the action area due to present and past disturbance associated primarily with frequent fire and past vegetation treatments.

Owyhee harvester ants, which are an active and efficient slickspot peppergrass seed predator (White and Robertson 2009, p. 511), have the potential to increase within the Project area following the Kinyon Fire as remnant sagebrush cover has been lost. Harvester ants are more common in slickspots within areas with little to no shrub cover such as in the Project area.

Slickspot microsites in the Project area have likely been disturbed by current or past fire suppression activities or past vegetation treatments. The action area has a long history of ground disturbance due to repeated fires and associated post-fire drill seeding efforts. In addition, fire suppression activities, including off-road movement of large engines, and disking and blading of control lines, may have affected portions of the action area. Some fire control lines were established along existing roads in the Kinyon Road Fire which may have affected slickspot microsites.

There is likely deposition and accumulation of organic matter on slickspots due to residual materials from nonnative annual or perennial plants and, sometimes, livestock feces. Some slickspots may have had sediment deposition resulting from the Kinyon Road Fire, past fires, or past vegetation treatments. However, rangewide Habitat Integrity and Population (HIP) monitoring data typically have shown levels of organic debris or soil within slickspot microsites as relatively low (Kinter et. al. 2011, Appendix K).

Overall habitat quality for slickspot peppergrass throughout the Project area is categorized as low due to past wildfire and associated low shrub cover, a reduced incidence of native understory

forbs, and the presence of invasive nonnative annual grass (e.g., cheatgrass) and noxious weeds across the Project area. Based on the disturbance history of fire and vegetation treatments, pre-burn vegetation, and inventory results, expectation of finding slickspot peppergrass in the proposed Project area is low. Based on current vegetation types and distribution in the Project area, opportunities for recovery and enhancement of the species appear to be limited.

2.5 Effects of the Proposed Action

Effects of the action considers the direct and indirect effects of an action on the listed species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action. These effects are considered along with the environmental baseline and the predicted cumulative effects to determine the overall effects to the species. Direct effects are defined as those that result from the proposed action and directly or immediately impact the species or its habitat. Indirect effects are those that are caused by, or will result from, the proposed action and are later in time, but still reasonably certain to occur. An interrelated activity is an activity that is part of the proposed action and depends on the proposed action for its justification. An interdependent activity is an activity that has no independent utility apart from the action under consultation.

2.5.1 Overview of the Effects of the Action Analysis

In analyzing the effects of the proposed forage kochia fuel breaks within the Project area on slickspot peppergrass, the Bureau used *A Framework to Assist in Making Endangered Species Act Determinations of Effect for Slickspot Peppergrass (Lepidium papilliferum)* (Framework) (USFWS 2006a). The Framework is a tool developed to assist Federal agencies when working with the Service to assess effects of their actions on slickspot peppergrass. The Framework was developed based on the species' life history, ecological requirements, and threats. As described above, using the Framework includes providing a description of baseline conditions for the species and its habitat in the action area and changes in conditions for the species resulting from the action. Since the vast majority of individual slickspot peppergrass plants are desert annuals (as opposed to the number of individual plants that exhibit the biennial life form), emphasis is placed on the condition of the habitat rather than on the number of plants present in a given year. Populations of desert annuals change drastically in response to annual weather conditions; therefore, habitat condition is a much better long-term measure of the annual plants' potential ecological health (Elzinga *et al.* 1998, p. 55). The Framework is intended for analyzing an individual action's potential effects on the species and may be applied to ongoing and proposed actions. The Framework consists of three major components: (1) a Matrix of Pathways and Indicators, (2) a Checklist of Diagnostics, and (3) a Dichotomous Key of Effects Determinations. To complete the effects analyses, the Bureau consistently applied the Matrix of Pathways and Indicators from the Framework to the proposed action to review both the baseline conditions and the proposed Project's effects on slickspot peppergrass and its habitat. This matrix considers indicators that reflect resource characteristics and their condition that are described as a quality ranking.

The Framework matrix categorizes a series of habitat quality indicators both within and outside of slickspots for the ongoing action. High, moderate, and low quality rankings of habitat represent points on a gradation of habitats rather than absolute thresholds for habitat quality. And while habitat quality may be categorized as low for a particular habitat quality indicator, in a given year slickspot peppergrass plant abundance at that location may be high due to other environmental variables, such as precipitation. To view the Bureau's completed effects matrix for the proposed Project, see the Assessment (Bureau 2012, pp. 7-12) or Appendix B of this Opinion.

Slickspot peppergrass survival and recovery is dependent on maintaining and enhancing Wyoming big sagebrush-steppe habitat and slickspot microsites located within this ecosystem in southern Idaho. The long-term conservation of slickspot peppergrass is dependent upon the maintenance or improvement of ecological function of the higher quality (C- through A-ranked) EOs rangewide, including maintaining or improving the connectivity within and between EOs which may involve the maintenance or enhancement of currently lower ranked EOs (D- through F-ranked). Maintaining the ecological function of higher quality habitat for slickspot peppergrass is necessary to facilitate insect pollinator activity, maintain genetic diversity, and limit the establishment of invasive nonnative plant species. As described in the "Conservation Needs" section above (section 2.3.1.6), the Service used the State of Idaho's INHP EO rankings to characterize the conservation value of action areas being analyzed. These INHP criteria address population size of the EO, habitat condition within the EO, and the landscape condition of the area surrounding the EO.

Once the conservation value of an action area is identified, effects of the action are examined to determine whether the action is expected to increase, maintain, or decrease the current conservation value of the action area over time. These analyses are then used to make our jeopardy determination for the species as well as our adverse modification determination for proposed critical habitat.

The indicators and quality rankings used to determine the effects of the proposed forage kochia fuel breaks within the Project area on slickspot peppergrass are based on best available science. We acknowledge that information gaps and disagreement exist with respect to the available information on slickspot peppergrass. Due to the poor condition of habitat in the Project area and the lack of known EOs in the vicinity, the Project area is considered to have low conservation value for slickspot peppergrass. However, slickspot microsites are documented as occurring in the Project area and the Bureau has classified the Project area as being located within potential habitat for the species. Therefore, the Service has provided the benefit of the doubt to slickspot peppergrass regarding the potential effects of the action considered in this Opinion. If there is a reasonable possibility that an adverse impact could occur to a single slickspot peppergrass plant (including seeds), our analysis will reflect that adverse effects are expected. Adequate surveys to determine presence or absence of slickspot peppergrass have not occurred in the Project area; therefore, for the purposes of this Opinion, the Service assumes that viable slickspot peppergrass seeds may be present within slickspot microsites in the Project area.

The 2009 Conservation Agreement (CA) between the Bureau and the Service states that in areas adjacent to slickspot peppergrass habitat, fuel breaks may include potentially invasive nonnative species such as forage kochia as a last resort if the benefits of their use are demonstrated to outweigh the risks to slickspot peppergrass and its habitat. At this time, the Service has not been provided with data that demonstrates that the use of forage kochia in these proposed fuel breaks outweighs the risks to slickspot peppergrass and its habitat. When information is lacking or conflicting scientific information exists, the Service's policy is to err on the side of the species when conducting section 7 effects analyses. While we acknowledge the Bureau's use of project design features such as placement of vegetated buffer areas along both margins of the fuel breaks to slow the potential spread of forage kochia outside the fuel break areas, based on recent research findings on the spread of forage kochia in southwestern Idaho, use of forage kochia in fuel breaks within potential habitat or slickspot peppergrass habitat[6] will likely result in adverse effects to slickspot peppergrass and its habitat. We acknowledge that the Bureau used alternative vegetation for the fuel breaks planted in 2010 within the Project area; these fuel breaks were established with limited success, and reburned in the 2012 Kinyon Road fire. In addition, the Bureau maintains that in the instance of this Project, forage kochia is being proposed for use as a last resort. We have considered this information within our effects analyses described below.

2.5.2 Slickspot Peppergrass

2.5.2.1 Direct and Indirect Effects of the Action

The proposed fuel breaks Project may result in both adverse and beneficial effects to slickspot peppergrass. Fuel breaks are placed on the landscape by altering or removing vegetation (native or nonnative), and/or planting specific types of vegetation, with the intention of creating conditions that limit the spread of wildfire under normal fire conditions. The utility of fuel breaks is to slow fires, not stop them (Stratton 2004, p. 32; Agee 2000, p. 56); under extreme fire conditions, fuel breaks are likely of limited value related to suppression activities. However, strategically placed and properly maintained fuel breaks could provide beneficial effects to native species by giving an advantage to fire management personnel, resulting in smaller fire footprints, and addressing in part, the threat to native sage-steppe species from the current modified fire regime. Minimizing the size, frequency, and intensity of wildfire in the sagebrush steppe ecosystem would contribute to maintaining the natural ecology of the landscape by decreasing fire impacts and decreasing habitat recovery time in an ecosystem which historically experienced few fire events; this would be beneficial to slickspot peppergrass conservation.

The potential effects of the proposed fuel breaks on the slickspot peppergrass and its habitat include the negative effects of forage kochia establishment within slickspot microsites as well as the beneficial long-term effects of increased fire suppression success from presence of the fuel

[6] No occupied habitat for slickspot peppergrass is located within the Project area as currently proposed, and this occupied habitat is located south of the proposed fuel breaks and identified areas of historic high fire frequency.

breaks. The potential beneficial and adverse effects of the proposed Kinyon Road Fire fuel breaks Project are described in detail below.

Effects to EOs

No direct or indirect effects to known slickspot peppergrass EOs will occur from the Project as the Project area does not contain slickspot peppergrass EOs or associated 0.5 mi pollinator buffer areas; the closest EO is located about 18 miles south of the Project area.

Effects of Ground Disturbance

Ground disturbance within and in the vicinity of slickspot microsites (which may contain a seed bank for the slickspot peppergrass) has the potential to result in adverse effects on the species. Ground disturbance can result in damage or mortality of individual plants, reduction of native forb cover, loss of biological soil crusts, destruction or reduced function of slickspot microsites, soil compaction, and pushing slickspot peppergrass seeds too deep into the soil for subsequent germination and emergence. As described above in the Environmental Baseline section, the Project area has experienced high levels of past ground disturbance due to past fires and post-fire drill seeding at least once over the past 50 years. Plow and seed projects (which were implemented by the Bureau in the 1950s through the 1970s to convert native sagebrush habitat to crested wheatgrass) may have also previously occurred in the action area. However, aerial seeding will not result in ground disturbance; therefore, slickspot microsites and slickspot peppergrass seeds (if present) will not be directly affected by seed application. In addition, use of a cultipacker over aerially seeded areas within some fuel break segments is expected to result in relatively minor ground disturbance in slickspot microsites due to soil compression from tractor wheels and the cultipacker. The cultipacker will gently firm the soil around the aerially broadcast seed to improve seed-to-soil contact. Soils are not expected to be disturbed to the level that rutting or breaking of the soil surface will occur over the most of the cultipacker treatment area. However, some localized ground disturbance may occur in areas where low soil berms may form when the tractor must turn during cultipacker treatments. All other surface disturbing activities associated with the proposed fuel breaks Project, such as installation of temporary livestock exclosure fences, will avoid slickspot microsites.

Ground disturbing activities that will occur within and adjacent to slickspots associated with cultipacker use are expected to result in minimal effects to slickspot peppergrass and its habitat. However, localized adverse effects may occur, particularly in areas where equipment may turn near or over slickspots. Non-slickspot soils disturbed by the Project that may subsequently be transported by wind or water into individual slickspot microsites in the area are expected to be filtered in part by vegetation (both pre-existing and seeded species), although some Project-related soil deposition may occur. Over the long-term, successfully established fuel breaks could result in a decrease in ground disturbance resulting from future fire-related suppression and ESR activities, which could benefit slickspot peppergrass and its habitat. However, some localized adverse effects from short-term ground disturbance associated with equipment operation within and adjacent to slickspot microsites in some fuel break segments may occur. Therefore, effects to slickspot peppergrass associated with the Project-related ground disturbance are likely to adversely affect the species and its habitat over the short-term.

Effects of Nonseeded and Seeded Nonnative Plants

In the 2009 listing decision for slickspot peppergrass, the Service identified two primary threats to this species: the increased frequency and extent of wildfires and invasive, nonnative plant species. Invasive nonnative plants, as described in the listing rule, include not only invasive unseeded species such as cheatgrass and medusahead, but also invasive seeded nonnative species such as *Agropyron intermedium* (intermediate wheatgrass) and forage kochia. Effects of Project-related establishment or spread of nonseeded and seeded invasive nonnative plants on slickspot peppergrass and its habitat are described below.

Fuel breaks have the potential to harbor invasive nonnative plant species and to act as corridors for movement and establishment of both seeded and nonseeded invasive nonnative plant species into adjacent habitat, as well as, provide a seed source for lateral spread into surrounding intact areas (Keeley 2006, p. 6; Merriam et al. 2006, pp. 520-524; Gray 2011, entire). Habitats are particularly susceptible to establishment or spread of invasive nonnative plants following a natural disturbance such as fire (Merriam et al. 2006, p. 516). The spread of nonnative invasive plant species can result in adverse impacts to slickspot peppergrass. However, the proposed fuel breaks are being seeded into existing vegetation without soil surface disturbance; therefore, the proposed fuel breaks are not expected to act as a corridor for the movement and establishment of nonseeded invasive nonnative plants beyond the current baseline condition. Nonseeded invasive nonnative plants (including cheatgrass) are already present within the fuel breaks corridor, and, in some areas, are dominant. Project-related spread of previously existing nonseeded invasive nonnative plants will be limited to areas of ground disturbance. However, competition from aerially seeded forage kochia could potentially reduce the occurrence of nonseeded invasive nonnative plants within the fuel break corridors, particularly in those fuel break segments that may have increased kochia establishment due to cultipacker treatments. Effects to the species and its habitat from Project-related spread of nonseeded invasive nonnative plants are expected to be so small that they cannot be meaningfully measured, detected, or evaluated. Therefore, effects to slickspot peppergrass associated with the Project-related spread of nonseeded invasive nonnative plants are insignificant, and are not likely to adversely affect the species or its habitat.

Establishment of forage kochia fuel breaks in an area that contains slickspot microsites (and may potentially support a seed bank for slickspot peppergrass) has the potential to result in both positive and negative effects on the species. These effects depend on the degree that forage kochia becomes established within slickspot microsites (which may contain slickspot peppergrass seeds) and the effectiveness of the fuel breaks in limiting future wildfire spread.

Forage kochia is known for its ability to compete with aggressive exotic species such as cheatgrass and medusahead (Gray 2011, pp. 3-5 and 26-27). Gray noted that all of the mechanisms that enable forage kochia to be an aggressive competitor against exotic annuals could potentially result in negative impacts to native species. For example, forage kochia's ability to germinate earlier than most native species may enable it to utilize early season soil moisture, which could potentially inhibit the establishment of native species. Forage kochia is also a prolific seed producer; seeds are wind dispersed, and recruitment is often in the direction of prevailing winds, within interspaces between other plants, or in soil depressions. In addition,

forage kochia has been reported to resprout after fire (see Gray 2011 for a more detailed discussion). These characteristics, combined with the ability of forage kochia to move into seeded and unseeded native plant communities, as well as slickspots, could facilitate the expansion of this species and result in negative impacts to both slickspot peppergrass habitat and the shrub-steppe plant communities on which this threatened species depends.

Information has recently been released that examined the spread of forage kochia on the Bureau's Boise District and the Jarbidge Field Office of the Twin Falls District (Gray 2011). This research was conducted within the western Snake River Plain and surrounding uplands in southwestern Idaho. It included 28 Bureau post-fire rehabilitation and greenstrip seedings that were located in the Four Rivers, Bruneau, and Jarbidge Bureau Field Offices. Study results indicate that distances over which forage kochia spreads are greater than previously reported in research reports and proceedings. In this study, forage kochia spread to unseeded areas on 89 percent of sampled sites, with the farthest individual documented 710 meters (m) from the original seeding boundary. Gray (2011, p. 31) added that 710 m is likely a conservative estimate of the distance forage kochia can spread given the search distance in this study was limited to 800 m. The study demonstrated potential for forage kochia to spread from seeded areas into native communities and documented forage kochia spreading into unseeded areas on sites containing slickspots. Gray (2011, pp. 32-33) noted that "slickspots could often be located visually in unseeded areas due to their high abundance of *K. prostrata*".

Several other sources have also documented the spread of forage kochia into slickspot microsites. Data collected in the late 1990s by the Bureau's Boise District documented forage kochia spread and subsequent displacement of slickspot peppergrass in untreated areas associated with the Poen Fire Rehabilitation Project (Debolt in litt, 2002, pp. 1–2). HIP monitoring has also documented the aggressive spread of forage kochia into slickspot microsites in the New Plymouth and Kuna slickspot peppergrass Management Areas (MA 1 and MA 7) (Colket 2009, p. 22, Kinter et al. 2010, p. 13). For example, Colket (2009, pp. 16 and 130) reports that "photographs of HIP transect 019B in 1999 show prostrate kochia [a.k.a., *forage kochia*] invading a slickspot and not the surrounding habitat. In 2008, the prostrate kochia has increased in the same slickspot so much that the slickspot itself is barely visible. In addition, the prostrate kochia has completely invaded the surrounding landscape. These photographs corroborate other accounts that slickspots are highly susceptible to invasion by prostrate kochia".

Forage kochia is known to compete with invasive nonnative plants found in the action area, including cheatgrass, *Halogeton glomeratus* (halogeton), and *Salsola kali* (Russian thistle) (Tilley et al. 2006). It is highly likely that forage kochia will establish within slickspot microsites, particularly in those fuel break segments containing slickspots that may have improved kochia establishment associated with post-seeding cultipacker treatments. Establishment of seeded vegetation in slickspots could also result in additional litter accumulation within slickspot microsites beyond the current condition. Based on the observations of forage kochia establishment in slickspot microsites as described above, any slickspot peppergrass that may occur in these slickspots will likely be unable to successfully compete for water, nutrients, and space once forage kochia becomes established within slickspots. Therefore, slickspot microsites located in the fuel breaks will likely no longer be

available as habitat for slickspot peppergrass until such time that the forage kochia is no longer present. Slickspots located during past inventory efforts were not documented to contain slickspot peppergrass, and known occupied habitat is located 18 miles south of the proposed project area. The action area is currently dominated by nonnative vegetation, with areas dominated by invasive nonnative annuals. Due to the degraded condition of habitat in the Project area, the probability of slickspot peppergrass being present in the action area is considered to be low; thus, the risk of impacting slickspot peppergrass in the Project area is also expected to be low. However, potential adverse effects to slickspot microsites are likely to occur due to forage kochia establishment and subsequent competition with slickspot peppergrass (if present); therefore, the proposed Project is likely to adversely affect slickspot peppergrass.

It is anticipated that effects of forage kochia competition with slickspot peppergrass will be limited to the aerially seeded area. Grasses within the 832 acres categorized as having moderate potential for slickspot peppergrass (e.g., crested wheatgrass, Sandberg's bluegrass, and bottlebrush squirreltail) are expected to resprout following fire. These grasses may provide some competition that would reduce forage kochia recruitment both within and adjacent to proposed fuel breaks, including within the 50-foot untreated buffer areas adjacent to roads. In addition, prevailing winds in the Project area blow primarily from the west to the east, and periodically blow from the east to the west. North or south winds are much less common. Thus, Project–related spread of forage kochia due to seed dispersal by wind is expected to occur primarily toward Saylor Creek AFR to the west, where the Air Force recently seeded another roadside forage kochia fuel break, or toward Saylor Creek Wild Horse HMA to the east. As occupied and proposed critical habitat is located 18 miles south of the Project area, it is unlikely that wind will disperse forage kochia seeds into areas known to contain slickspot peppergrass. Furthermore, design features have been incorporated into the Project to reduce the potential for forage kochia spread beyond the treated area, including leaving 50-foot untreated buffer areas adjacent to roads, monitoring for forage kochia spread, and control of forage kochia plants found outside of the seeded area. The Service believes that monitoring will also provide valuable data on the rate and distance of forage kochia spread from the aerially seeded areas as well as the effectiveness of culipacker treatments following aerial seeding treatments. Information collected on the rate and distance of forage kochia spread can be considered by land managers when making decisions regarding use of forage kochia fuel breaks in other areas that contain habitat components important for slickspot peppergrass recovery. Similarly, comparison of monitoring data from aerially seeded fuel break segments on one side of existing roads that received post-seeding cultipacker treatments with aerially seeded control areas on the opposite side of the roads will contribute to future decisions regarding use of cultipackers for projects on Idaho rangelands.

In contrast, successful establishment of functional fuel breaks could, in the long-term, reduce fire frequency and the associated disturbance that results in introduction and spread of nonnative vegetation. Establishment of successful fuel breaks could also provide opportunities for future vegetation restoration in the vicinity of the Project. To date, the Service is not aware of any long-term data regarding the suppression effectiveness of fuel breaks in sagebrush steppe habitats or data that compares and contrasts the effectiveness of different types of fuel break strategies. We have requested information that demonstrates the ability of various types of fuel

breaks to facilitate effective fire suppression in sagebrush communities; however, we have received no written information to date. It would be beneficial if information on fuel break effectiveness is collected and shared, particularly from an area with relatively low risk of impacts to slickspot peppergrass such as the proposed Project area. The Service encourages use of the best available information to address short- and long-term needs associated with managing fire on the landscape while conserving native habitats and species, including slickspot peppergrass. Data regarding the effectiveness of the proposed forage kochia fuel breaks in altering fire behavior relative to other vegetation alternatives for fuel breaks may be useful in making future fire management decisions for sagebrush steppe habitats within southern Idaho.

In addition, the proposed action is not expected to reduce cover levels for shrubs, native grasses and forbs, or biological soil crust beyond the current condition over the short-term. The three non-native plants proposed to be seeded (forage kochia, alfalfa, and blue flax) may already occur in the action area as a result of past seedings. If the proposed fuel breaks seeding is successful, one or more of these species would be more common than they currently occur. The probability of seeding success may be increased in fuel break segments where a cultipacker will be used. While there could be localized effects on remnant native grasses and forbs due to competition with seeded fuel break species, this is not expected to significantly affect the current low native vegetation cover levels in the action area. In addition, surface stabilization of areas surrounding slickspots by existing vegetation and newly seeded plants could reduce sediment deposition by wind or water into slickspot microsites. Over the long-term, successful establishment of functional fuel breaks is anticipated to increase fire suppression success to facilitate recovery of native shrub, grass, and forb cover in burned areas located outside of the fuel breaks, and to preserve existing native vegetation, including biological soil crust, that may be lost in future wildfires in the Jarbidge Field Office area. Reduced fire frequency could also provide opportunities for future vegetation restoration, benefitting sagebrush steppe obligate species, including slickspot peppergrass.

Summary of Effects

The proposed fuel breaks Project may affect, and is likely to adversely affect slickspot peppergrass and its habitat. The action area has been substantially altered from the natural condition due to past frequent fires and vegetation treatments and is currently occupied primarily by nonnative perennial and invasive annual vegetation. Past Bureau inventories located slickspot microsites in the proposed Project area and adjacent habitats. However, no slickspot peppergrass plants have been found, and, based on current habitat condition and inventory results, expectations of finding the plant in the proposed project area are low. There will be no fuel break treatments within 18 miles of occupied or proposed critical habitat. All proposed treatments are along existing roads in areas that have a history of fire disturbance and vegetation treatments. The Project will result in negligible soil surface disturbance due to use of aerial seeding methods. However, potential adverse impacts may occur due to ground disturbance associated with tractor and cultipacker operation within or near slickspot microsites, establishment of forage kochia in slickspot microsites, accumulation of Project-related organic litter in slickspots due to increased live plant biomass within seeded areas, and

localized competition between seeded species and residual native forbs within the 3,311-acre seeded area.

Potential for spread of forage kochia to known occupied habitat and proposed critical habitat is considered very low due to the distance of the proposed treatment areas from known occupied habitat and proposed critical habitat (approximately 18 miles to the south). Potential for kochia spread will be further reduced by leaving existing vegetation in a strip approximately 50 feet wide between the existing roads and the fuel breaks, monitoring buffer areas for kochia spread, and removal of kochia recruits outside of the seeded fuel break area by hand pulling or chemical means. Therefore, adverse impacts are anticipated to be restricted to the seeded treatment areas. These impacts are expected to be small relative to the amount of higher quality habitat for slickspot peppergrass located within the Jarbidge Field Office.

Over the long-term, successful establishment of functional fuel breaks could reduce fire frequency and the associated repeated disturbance to vegetation and soils, and provide opportunities for future vegetation restoration. Fuel breaks could also reduce fire spread to areas of the Jarbidge Field Office supporting high quality potential habitat for slickspot peppergrass, as well as occupied and proposed critical habitat. Fuel break effectiveness will be monitored under current Bureau policy in the event of future fires.

2.5.2.2 Effects of Interrelated or Interdependent Actions

No effects from interrelated or interdependent actions are anticipated.

2.6 Cumulative Effects

The implementing regulations for section 7 define cumulative effects to include the effects of future State, tribal, local or private actions that are reasonably certain to occur in the action area considered in this Opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

Livestock grazing and chemical treatments for weed or insect control that may directly or indirectly affect the slickspot peppergrass can occur on State lands in the vicinity of the Project. The Service recognizes that some actions on non-Federal lands may have adverse effects on the slickspot peppergrass at the individual plant or EO level. Non-Federal lands within the Project area are not known to contain slickspot peppergrass, and no EOs are documented on non-Federal lands in the vicinity. In addition, because only about 2 percent (about 322 ac) of the total EO acreage rangewide occurs on non-Federal lands (see Table 4), the Service expects that any cumulative effects occurring on non-Federal lands located outside of the Project area are not likely to significantly alter habitat conditions for the slickspot peppergrass either within the Project area or rangewide.

2.7 Conclusion

The Service has reviewed the current status of slickspot peppergrass, the environmental baseline in the action area, effects of the action, and cumulative effects, and it is our conclusion that the activities associated with the proposed Kinyon Road Fire fuel break project are not likely to jeopardize the continued existence of slickspot peppergrass.

The Service concludes that direct and indirect effects to slickspot peppergrass will be limited to increases in forage kochia cover, which may displace slickspot peppergrass (if present) within slickspot microsites in the Project area and localized ground disturbance from equipment operation through or near slickspot microsites. The proposed action may benefit slickspot peppergrass over the long-term if the forage kochia fuel break contributes to fire suppression success by effectively limiting the number and extent of wildfires that may burn EOs or sagebrush steppe habitat that may contain the species. The adverse effects of the proposed action on slickspot microsites, which are important habitat components for slickspot peppergrass, will occur throughout the Project area; however, the probability that these degraded habitat areas currently contain slickspot peppergrass are low. The Service expects that the numbers, distribution, and reproduction of slickspot peppergrass in the action area (if present), in EOs and Management Areas of the Owyhee Plateau physiographic region, and for the species rangewide, will not be significantly changed as a result of this action. As such, we have concluded that the survival and recovery of the slickspot peppergrass will not be jeopardized by the proposed fuel breaks Project.

The Service reached the no-jeopardy determination on the basis that the aggregate effects of the Project, inclusive of applicable conservation measures set forth in the Conservation Agreement (CA) (USBLM and USFWS 2009, entire) and project design features for conservation of slickspot peppergrass, taken together with cumulative effects, are compatible with maintaining the ecological function of slickspot microsites in areas outside of the Project footprint but within the action area. The conservation value of the Project area is considered to be low for slickspot peppergrass. As noted in the "Status of the Species" section of this Opinion, the long-term conservation of slickspot peppergrass is likely to depend on the maintenance or improvement of the ecological function of the higher quality (A- through C-ranked) EOs rangewide, including maintaining or improving the connectivity within and between EOs to facilitate pollinator activity, maintain genetic diversity, and minimize the effects of activities that promote the establishment of invasive nonnative plant species.

Due to the low conservation value of this area and its distance from known occupied habitat, risks to slickspot peppergrass associated with this Project are expected to be low. Project design features such as maintaining a vegetated buffer between the existing roadway and the forage kochia fuel break are expected to reduce the risk of forage kochia spread through transport by motorized vehicles. In addition, the forage kochia fuel break could increase fire suppression success in the Jarbidge Field Office, which may prevent fire from spreading to EOs or sagebrush steppe habitat that could contain slickspot peppergrass. The action is expected to maintain the low slickspot peppergrass conservation value for the Project area over its implementation and monitoring periods (about 10 years).

In our 2009 listing decision for slickspot peppergrass, we identified two primary threats to this species: the increased frequency and extent of wildfires and invasive, nonnative plant species. Invasive nonnative plants, as described in the listing rule, include not only invasive unseeded species such as cheatgrass and medusahead, but also invasive seeded nonnative species such as intermediate wheatgrass and forage kochia. Based on this information, the Service does not typically support the use of forage kochia in any of the three habitat categories for slickspot peppergrass. However, the Service expects post-implementation monitoring for this Project will provide insight as to the degree of spread of forage kochia from roadside fuel breaks that can be used to make wise management decisions on the placement and species composition of future fuel breaks within the three habitat categories for slickspot peppergrass. Additionally, should forage kochia expand beyond the fuel break footprints, the Bureau has committed to controlling the spread of this nonnative plant through hand pulling or chemical treatment of recruits. Project monitoring will also provide information on the relative effectiveness of cultipacker use following aerial seedings on Idaho rangelands; this information can be used in making future decisions on seeding treatment methods.

2.8 Incidental Take Statement

Section 9 of the Act and Federal regulations pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without specific exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm in the definition of take in the Act means an act which actually kills or injures wildlife. Such act may include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as an intentional or negligent act or omission which creates the likelihood of injury to listed species by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering.

Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

Because the "take" prohibitions detailed under section 9(a)(1) of the Act do not apply to listed plants, those sections of the Act dealing with incidental "take", Sections 7(b)(4) and 7(0)(2), generally do not apply to listed plants either. Therefore, we are not including an Incidental Take Statement for slickspot peppergrass in this Opinion.

However, section 9(a)(2) of the Act prohibits, among other actions, the removal and reduction to possession of plants listed as endangered or threatened from areas under Federal jurisdiction. The Act prohibits the malicious damage of Federally listed endangered plants on areas under Federal jurisdiction, or the destruction of endangered plants on non-Federal areas in violation of

State law or regulations or in the course of any violation of a State criminal trespass law. These protections may apply to slickspot peppergrass as well if State regulations are promulgated.

2.9 Conservation Recommendations

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery programs, or to develop new information on listed species.

The Service recommends that the Bureau implement the following conservation measures.

- Use monitoring data and studies to demonstrate the ability of various types of fuel breaks to facilitate effective fire suppression in sagebrush communities.
- Use monitoring data and studies to identify effective treatments for reestablishment of functional sagebrush steppe communities following wildfire.
- Avoid use of forage kochia in areas that are documented as occupied or that may contain slickspot peppergrass.
- Use the conservation measures and associated implementation actions in the 2009 CA as a basis for developing conservation measures for future revised Land Use Plans (LUP) in order to continue recovery of slickspot peppergrass. Given new information resulting from implementation actions identified in the 2009 CA (e.g., completion of surveys) and recent and ongoing research on habitat restoration, insect pollinators, wildfire, and invasive nonnative plants, LUPs may be revised to include more stringent conservation measures and implementation actions as appropriate.
- Continue to implement conservation measures for slickspot peppergrass, regardless of future listing status, to ensure continued species conservation and population expansion over time. The Service's interpretation of the signed 2009 CA is that the conservation measures apply to Bureau actions regardless of the species' status under the Act.
- Continue annual monitoring efforts to ensure that conservation measures are implemented and to assist in determining if these measures are effective in the conservation of the species and report these annual findings to the Service.
- Conduct surveys in cooperation with the Service, Idaho Department of Fish and Game, and other parties to determine slickspot peppergrass locations and densities in potential habitat.
- Encourage research and projects to restore sagebrush-steppe habitat within the range of slickspot peppergrass.
- Actively participate in critical habitat and recovery planning efforts for slickspot peppergrass.
- Continue to participate in the LEPA Technical Team and other cooperative forums for sharing information, developing partnerships, and encouraging research to facilitate the survival and recovery of slickspot peppergrass, including restoration techniques for

sagebrush-steppe habitat and methods to reintroduce slickspot peppergrass into areas capable of supporting the species.

- Conduct annual coordination meetings between the Bureau and the Service to address new information; provide perspective regarding the relationship of new information to ongoing actions; use this information, as appropriate, to modify actions or conservation measures via the established adaptive management strategy; and consider whether this information may modify the analyses in this Opinion and/or the appropriateness of the Service's conclusions.
- Consider establishing conservation reserves for slickspot peppergrass to maintain high quality sagebrush-steppe habitat and for use as research areas.
- Exercise section 7(a)(1) of the Act to maintain or enhance plant communities in a manner compatible with the needs of slickspot peppergrass and its critical habitat, which includes maintaining a functional sagebrush-steppe ecosystem, minimizing ground disturbance in slickspot habitats, and providing native forb cover to maintain or enhance insect pollinator populations.
- Prioritize fire suppression to protect remaining large sagebrush stands within the range of slickspot peppergrass.
- Avoid or minimize ground-disturbing activities within EOs when soils are saturated and/or when slickspot peppergrass is flowering (May–June).
- Avoid pesticide contact with slickspot peppergrass plants or insect pollinators near EOs.
- For upcoming Bureau permit renewals and reissuances and the updated Jarbidge Resource Management Plan effort, cooperate with the Service, the Idaho Department of Fish and Game, permit holders, and other parties to identify strategies for avoiding or minimizing adverse impacts to slickspot peppergrass.
- Continue to encourage the restoration of native sagebrush steppe habitat on Bureau lands for species native to this habitat type, including slickspot peppergrass.
- Conduct annual reporting on fire suppression activities, monitoring results, and any revegetation planned or implemented on Bureau lands in relation to potential impacts to slickspot peppergrass and slickspot microsites as part of annual coordination meetings between the Bureau and the Service.
- Consider use of conservation measures for slickspot peppergrass on Bureau lands that also complement conservation of the other sagebrush steppe habitat obligates, including greater sage-grouse (*Centrocercus urophasianus*), a candidate species, and pygmy rabbit (*Brachylagus idahoensis*), a species of concern.

To remain informed about actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

2.10 Reinitiation Notice

This concludes formal consultation on slickspot peppergrass and formal conference on proposed critical habitat for slickspot peppergrass. Because the "take" prohibitions detailed under

section 9(a)(1) of the Act do not apply to listed plants, requirements for reinitiation of formal consultation associated with incidental "take" as described below are not applicable to listed plants, including slickspot peppergrass.

As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been maintained (or is authorized by law) and if:

1. The amount or extent of incidental take is exceeded.
2. New information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this Opinion.
3. The agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this Opinion.
4. A new species is listed or critical habitat designated that may be affected by the action.

In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

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4. APPENDICES

4.1 APPENDIX A

Definitions of Habitat Categories for Slickspot Peppergrass as described within Bureau of Land Management Biological Assessment (USBLM 2009, p. B-2 and USBLM 2012, pp.7-8)

Potential Habitat –

Areas within the known range of slickspot peppergrass that have certain general soil and elevation characteristics that indicate the potential for the area to support slickspot peppergrass, although the presence of slickspots or the plant is unknown. These areas meet the following criteria:

- Natric and natric-like soils forming "slickspots," and associated soil series, or phases thereof, which support Loamy 7- to 10-inch and 10- to 13-inch Wyoming big sagebrush Ecological Sites (Major Land Resource Areas 11—Snake River Plains, and 25—Owyhee High Plateau) and have a aridic bordering on xeric soil moisture regime; and
- 2,200 to 5,400 feet elevation.

Occupied Habitat –

In the Bureau's 2012 Assessment, the term "occupied habitat" refers to areas where slickspot peppergrass has been documented or identified as an element occurrence (EO) and includes the area generally within 0.5 mile of that occurrence that is important to maintain or improve habitat integrity and pollinator populations necessary for species conservation. For analysis purposes in this BA, a generalized area delineated by a 0.5 mile radius circle was drawn around each EO (this circle may include areas of non-habitat). This area identified as occupied habitat may or may not include additional slickspots or slickspot peppergrass plants beyond the EO. Further refinement of occupied habitat may be accomplished through field surveys considering existing resource conditions as well as specific habitat quality and integrity.

Slickspot Peppergrass Habitat –

Potential habitat areas with Wyoming big sagebrush ecological sites that through Stage 1 surveys have documented slickspot microsites (natric and natric-like soil types) within 2,200 feet and 5,400 feet elevation in Southwest Idaho. Slickspot peppergrass habitat includes areas with slickspots of unknown occupancy and in some cases may be dominated by non-native vegetation such as annual grasses or crested wheatgrass. In addition, to maintain ecological continuity, if there is less than 0.5 mile between areas defined as slickspot peppergrass habitat, then the entire area is considered slickspot peppergrass habitat. Surveyed potential habitat not meeting these criteria will no longer be considered habitat for slickspot peppergrass.

4.5 APPENDIX B EFFECTS DETERMINATION CHECKLIST FOR SLICKSPOT PEPPERGRASS: THE FOLLOWING EFFECTS DETERMINATION FOR THE PROPOSED FUEL BREAKS WOULD BE VALID FOR THE CURRENTLY PROPOSED PROJECT AND CONDITIONS ONLY AND WOULD NOT BE APPLICABLE TO ANY FUTURE PROPOSALS.

SLICKSPOT PEPPERGRASS POPULATION: Owyhee Plateau

NAME OF PROJECT BEING EVALUATED: Kinyon Road Fire Fuel Breaks

PROJECT TYPE: Fuel breaks

PROJECT STATUS: Proposed action

NARRATIVE SUMMARY OF SLICKSPOT PEPPERGRASS OBSERVATIONS WITHIN ACTION AREA: The action area is defined as the proposed fuel breaks and areas adjacent to and between the proposed fuel breaks. The proposed fuel break treatment area (3,311 acres) contains 2,646 acres of potential habitat (BLM GIS data 2003) of which 463 acres have been re-classified as non-habitat due to the presence of very sandy soils (BLM GIS data 2012). The Owyhee Plateau population of slickspot peppergrass and its associated proposed critical habitat it are not part of the proposed action (Map 2). Inventories in 2006, 2010, and 2011 identified slickspots in the proposed project area (Map 5). No occupied slickspots were found. In addition, inventories by Manuso and Cooke (2001) in and near the proposed project area did not detect slickspot peppergrass plants in slickspot microsites.

Segment	Slickspot Peppergrass Potential To Occur (Acres)				
	High	Medium	Low	Non-Habitat	Total
Balanced Rock	10	331	195	26	562
Crows Nest	0	294	68	43	405
HMA South	26	163	505	268	962
Pot Hole	0	44	547	126	717
Total	36	832	1,315	463	2,646

Element Occurrence Number: N/A

HIP Transect Number(s): N/A

POTENTIAL EFFECTS PATHWAYS:	INDICATORS	BASELINE INDICATOR CONDITIONS		EFFECT OF ACTION ON INDICATOR CONDITION		
		Current Condition Description	Current Quality Ranking (H, M, L)	Description of Potential Effects of the Action on the Baseline within the Action Area	Restore, Maintain or Degrade Habitat	Expected Modification of Baseline ↑ → ↓
A. Slickspot Conditions	A-1. Density of non-native annual and/or non-native perennial plants established within slickspots	Slickspots may be occupied by annual and perennial non-native grasses and forbs in low to high density (1 - >25 plants/square foot). Non-native vegetation, which may include one or more of the proposed seeded species, is dominant throughout the action area as the result of past fires and vegetation treatments. Cheatgrass and other invasive non-native plants are common and in some places dominant within the action area.	L	Forage kochia could establish in and around slickspots in areas where seeded. The action area is currently dominated by non-native vegetation, with areas dominated by invasive non-native annuals. Impacts to slickspots would be would be primarily due to the potential increase in live plant density beyond the current condition. Forage kochia is known to compete with invasive non-native plants found in the action area, including cheatgrass, halogeton (*Halogeton glomeratus*), and Russian thistle (*Salsola kali*) (Tilley et al. 2006). Slickspots located during 2001, 2006, 2010, and 2011 were not occupied by slickspot peppergrass and known occupied habitat is 18 miles south of the proposed project area. However, if the species were present, it is likely that any forage kochia that establishes in slickspots could compete with slickspot peppergrass. Design features have been included to reduce potential for forage kochia spread beyond the treated area, including leaving 50-foot buffer areas adjacent to roads, monitoring for forage kochia spread, and control of forage kochia plants found outside of the treated area.	Degrade or maintain slickspots in seeded area; maintain slickspots outside of seeded area.	↓→

POTENTIAL EFFECTS PATHWAYS:	INDICATORS	BASELINE INDICATOR CONDITIONS		EFFECT OF ACTION ON INDICATOR CONDITION		
		Current Condition Description	Current Quality Ranking (H, M, L)	Description of Potential Effects of the Action on the Baseline within the Action Area	Restore, Maintain or Degrade Habitat	Expected Modification of Baseline ↑ → ↓
	A-2. Level of ground disturbance within slickspots	Some slickspots may have been disturbed by current or past fire suppression activities or past vegetation treatments. Ground disturbance within slickspot could also consist of Owyhee harvester ant colonies and native ungulate and cattle hoof prints. Harvester ants are more common in slickspots within areas with little to no shrub cover; hoof prints tend to be uncommon on a large scale with potential for high impact at local levels due to slickspots being in proximity to areas where livestock congregate (i.e., water, fence lines, salting areas, staging areas, etc.).	L-M	There would be no ground disturbance within slickspots associated with proposed action. Seed would be aerially applied. The proposed action contains the stipulation that any ground disturbing activities associated with protection of the seeding from livestock grazing, such as fencing, if necessary, would avoid slickspots.	Maintain	→
A. Slickspot Conditions (continued)	A-3. Level of organic debris and/or soil deposition and accumulation within slickspots	There is likely deposition and accumulation of organic matter on slickspots due to residual materials from non-native annual or perennial plants and, sometimes, livestock feces. Some slickspots may have had sediment deposition resulting from the Kinyon Road Fire, past fires, or past vegetation treatments.	L-M	The proposed action could result in additional living biomass and associated litter in slickspots in the seeded area beyond the current condition. Surface stabilization of areas surrounding slickspots by existing vegetation and newly seeded plants could reduce sediment deposition by wind or water into slickspot microsites.	Degrade slickspots in seeded area; maintain slickspots outside of seeded area.	↓→
The proposed action does not take place within habitat known to be occupied by slickspot peppergrass. However, since all potential habitat within the proposed action area has not been exhaustively surveyed and classified as unoccupied by slickspot peppergrass, the potential habitat is being treated as though there is a chance that slickspot peppergrass plants could occur within slickspot microsites.						

POTENTIAL EFFECTS PATHWAYS:	INDICATORS	BASELINE INDICATOR CONDITIONS		EFFECT OF ACTION ON INDICATOR CONDITION		
		Current Condition Description	Current Quality Ranking (H, M, L)	Description of Potential Effects of the Action on the Baseline within the Action Area	Restore, Maintain or Degrade Habitat	Expected Modification of Baseline ↑ → ↓
B. Habitat Characteristics within the Action Area Surrounding Potentially Occupied Slickspots	B-1. Level of ground disturbance within the action area	The action area has a long history of soil surface disturbance. The action area has been subject to repeated fires and post-fire drill seeding for many years. In addition, fire suppression activities, including movement of large engines, as well as disking and blading of control lines, may have affected portions of the action area. Some control lines were established along roads in the Kinyon Road Fire.	L	The proposed action would not result in soil surface disturbance due to aerial seeding. Successfully established fuel breaks could result in a long-term decrease in ground disturbance resulting from fire-related activities.	Maintain to Restore	→↑
	B-2. Condition of native vegetation within the action area - Level of habitat fragmentation	Native vegetation within the action area is highly fragmented due past wildfires and associated seedings. The action area has been drill-seeded in the past, primarily with crested wheatgrass. Sagebrush was aerially seeded following past fires but has since re-burned. Non-native invasive annual grasses and forbs are common throughout the action area and dominant in patches. Some remnant native perennial grasses are present, including Sandberg's bluegrass, bottlebrush squirreltail, Indian ricegrass, and needle-and-threadgrass. Only Sandberg's bluegrass and bottlebrush squirreltail are common in the action area. Native annual and perennial forbs are present, but not common.	L	The proposed action would not fragment native vegetation beyond the current condition. Three non-native plants would be seeded – forage kochia, alfalfa, and blue flax. One or more of these plants may already occur in the action area as a result of past seedings. If the seeding is successful, one or more of these species would be more common than current. However, this would not fragment native vegetation beyond the current level. Successful establishment of functional fuel breaks could, in the long-term, reduce fire frequency and the associated disturbance to remnant native vegetation. This could also provide opportunities for future	Maintain	→

POTENTIAL EFFECTS PATHWAYS:	INDICATORS	BASELINE INDICATOR CONDITIONS		EFFECT OF ACTION ON INDICATOR CONDITION		
		Current Condition Description	Current Quality Ranking (H, M, L)	Description of Potential Effects of the Action on the Baseline within the Action Area	Restore, Maintain or Degrade Habitat	Expected Modification of Baseline ↑ → ↓
				vegetation restoration.		
	B-3. Condition of native vegetation within the action area - presence of non-native annuals and/or non-native perennial plants	Non-native annual and perennial plants are common to dominant in the action area as result of past fire and vegetation treatments.	L	The proposed action would utilize three non-native perennial plants that may already be present in the action area. These would potentially increase in density in the seeded areas. However, design features are included to avoid the spread of forage kochia beyond the seeded area. Successful establishment of functional fuel breaks could, in the long-term, reduce fire frequency and the associated disturbance that results in introduction and spread of non-native vegetation. This could also provide opportunities for future vegetation restoration.	Maintain	→
	B-4. Condition of native vegetation within the action area - % cover of biological soil crusts	Biological crust cover is low within the action area due to present and past disturbance associated primarily with frequent fire and past vegetation treatments.	L	No soil surface disturbance is associated with the proposed action. Successful establishment of functional fuel breaks could, in the long-term, reduce fire frequency that results in continued disturbance of developing biological soil crusts.	Maintain	→

POTENTIAL EFFECTS PATHWAYS:	INDICATORS	BASELINE INDICATOR CONDITIONS		EFFECT OF ACTION ON INDICATOR CONDITION		
		Current Condition Description	Current Quality Ranking (H, M, L)	Description of Potential Effects of the Action on the Baseline within the Action Area	Restore, Maintain or Degrade Habitat	Expected Modification of Baseline ↑ → ↓
	B-5. Condition of native vegetation within the action area - % cover of native forbs	Native forb cover and diversity in the action area is low due to frequent fires and past vegetation treatments.	L	Seeded plants, particularly forage kochia, could compete with any residual native forbs in the seeded area. Due to design features that would monitor and control the spread of forage kochia, it is anticipated that this effect would be limited to the seeded area. For the scale of the action area, the proposed action is not anticipated to reduce cover of native forbs beyond the current low level. In the long term, successful establishment of functional fuel breaks could reduce fire frequency provide opportunities for restoration projects, including increasing forb cover and diversity.	Maintain	→
SUMMARY		**Summary of Overall Status of Baseline within the Action Area** EO rank: N/A	L	**Summary of Potential Effects of the Action on the Baseline within the Action Area** The effects determination for the proposed action is May Affect, Likely to Adversely Affect slickspot peppergrass or its habitat. The action area has been substantially altered from the natural condition due to past frequent fires and vegetation treatments and is currently occupied primarily by non-native perennial and invasive annual vegetation. Inventories in 2001,	Maintain	→

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				2006, 2010, and 2011 located slickspots in the proposed project area and adjacent habitats. However, no slickspot peppergrass plants have been found. There would be no treatment within 18 miles of occupied or proposed critical habitat. There would be no soil surface disturbance due to use of aerial seeding methods. Potential adverse impacts are limited to establishment of forage kochia in slickspots, accumulation of organic litter in slickspots due to increased live plant biomass, and competition with any remnant native forbs within the seeded area. All impacts would be limited to the seeded area only. The proposed action includes design features that monitor and control spread of forage kochia beyond the treated area. Therefore impacts are anticipated to be restricted to the treatment areas and small relative to the amount of higher quality potential habitat within the Jarbidge Field Office. In the long term, successful establishment of functional fuel breaks could reduce fire frequency and the associated repeated disturbance to vegetation and soils, and provide opportunities for future vegetation		

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				restoration. Functional fuel breaks could also reduce the potential for fire spread to high quality potential habitat, occupied habitat, and proposed critical habitat.		