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Fish and Wildlife Service
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OCT 17 2011

Memorandum

To: Manager, Four Rivers Field Office, Bureau of Land Management, Boise, Idaho

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

Ben Holder FOR Brian Kelly

Subject: Northwest Ada County Rights-of-Way Corridors for the M3 Development—Ada County, Idaho—Biological and Conference Opinion
In Reply Refer To: 14420-2011-F-0148 Internal Use: CONS-100b

Enclosed is the Fish and Wildlife Service's (Service) combined Biological and Conference Opinion (Opinion) for the Bureau of Land Management's (BLM) proposed Northwest Ada County Rights-of-Way (ROW) Corridors for the M3 Development in Ada County, Idaho. In a letter dated April 20, 2011, and received by the Service on April 21, the BLM requested formal consultation on the determination, under section 7 of the Endangered Species Act of 1973, as amended (ESA), that the proposed project is likely to adversely affect the slickspot peppergrass (*Lepidium papilliferum*). With the subsequent publication of proposed critical habitat for the species in the Federal Register on May 9, 2011, the BLM requested that formal consultation be suspended until such time that BLM consultation documents were amended to address proposed critical habitat for the slickspot peppergrass. On August 16, 2011, the BLM provided the Service with an updated Biological Assessment (Assessment) and requested completion of formal consultation on the slickspot peppergrass and formal conference on proposed critical habitat for the slickspot peppergrass.

The enclosed Opinion is based primarily on our review of the proposed action, as described in your Assessment dated August 2011, and the anticipated effects of the action on listed species and proposed critical habitat, and was prepared in accordance with section 7 of the ESA. Our Opinion concludes that the proposed project will not jeopardize the survival and recovery of the slickspot peppergrass, and will not adversely modify proposed critical habitat for this species. A complete record of this consultation is on file at this office.

The BLM may ask the Service to confirm the conclusion of this Conference Opinion should proposed critical habitat for the slickspot peppergrass become designated in the action area in the future (and prior to completion of the 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: BLM, ISO, Boise (Rosentreter)
BLM, Boise (Knapton, Steiger)
M3 Companies, Eagle (Tate)

BIOLOGICAL AND CONFERENCE OPINION
FOR THE
Northwest Ada County Rights-of-Way Corridors for the M3 Development
14420-2011-F-0148

FISH AND WILDLIFE SERVICE
IDAHO FISH AND WILDLIFE OFFICE
BOISE, IDAHO

Supervisor Russell R. Holden
Date 10/17/11

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1. BACKGROUND AND INFORMAL CONSULTATION

1.1 Introduction

The Fish and Wildlife Service (Service) has prepared this Biological and Conference Opinion (Opinion) of the effects of the Northwest Ada County rights-of-way (ROW) corridors for the M3 residential development (Development) on the slickspot peppergrass (*Lepidium papilliferum*). In a letter dated April 20, 2011 and received on April 21, the Bureau of Land Management (BLM) requested formal consultation with the Service under section 7 of the Endangered Species Act (ESA) of 1973, as amended, for its proposal to authorize the action. With the subsequent publication of proposed critical habitat for the slickspot peppergrass in the Federal Register on May 9, 2011, the BLM amended their request on August 16, 2011, to include formal conference on proposed critical habitat for the slickspot peppergrass. The BLM determined that the proposed action is likely to adversely affect the slickspot peppergrass and proposed critical habitat for this species (BLM 2011, pp. 45, D-27). As described in this Opinion, and based on the Biological Assessment (Assessment, BLM 2011) developed by the BLM and other information, the Service has concluded that the action, as proposed, is not likely to jeopardize the continued existence of the slickspot peppergrass, and will not adversely modify proposed critical habitat for the species.

1.2 Consultation History

The Service has maintained open communication with the BLM regarding the proposed Northwest Ada County ROW corridors for the Development since July of 2008. During that time, the Service provided technical assistance to BLM, their consultant (URS), and the project proponent through the section 7 streamlining process with the Boise District Level 1 Team. The consultation history for this proposed permit renewal is as follows.

July 9, 2008	The project proponent, M3 Eagle LLC, provided an overview of the proposed project to the Boise District Level 1 Team and received technical assistance on the section 7 process.
January 14, 2009	The project proponent discussed the proposed western Hartley Road ROW alignment with the Boise District Level 1 Team.
October 8, 2009	The Service's decision to list the slickspot peppergrass as threatened under the ESA was published in the Federal Register.
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 the slickspot peppergrass (14420-2010-F-0019).
December 7, 2009	The Service's decision to list the slickspot peppergrass as threatened became effective.

July 20, 2010	BLM, the Service, and URS participated in a field review of the Linder Road ROW corridor to discuss alternatives and potential effects to the slickspot peppergrass.
November 2010	The Service provided technical assistance to URS for the proposed ROW corridors project regarding the section 7 process and preparation of biological assessments.
March 21, 2011	The Service provided review comments on the draft Assessment to BLM, which were discussed at the March 24, 2011 Boise District Level 1 Team meeting.
April 21, 2011	The Service received a request for formal consultation from BLM on the proposed ROW corridors project.
May 9, 2011	Proposed critical habitat for the slickspot peppergrass was published in the Federal Register.
May 31, 2011	BLM requested that the Service cease review of the biological assessment until an update of the assessment that considers the effects of the action on proposed critical habitat was completed.
July 15, 2011	The BLM provided the Service with a draft updated biological assessment that included effects of the proposed ROW corridors project on slickspot peppergrass and proposed critical habitat for review and comment.
July 26, 2011	The Service provided BLM with review comments on the draft updated biological assessment.
August 16, 2011	The BLM provided the Service with the final updated biological assessment on the effects of the proposed ROW corridors project on slickspot peppergrass and proposed critical habitat. The Service resumed formal section 7 consultation and conference on the proposed project.
October 2, 2011	The Service provided the BLM with the draft Opinion for review and comment.
October 7, 2011	The BLM provided the Service with BLM and applicant 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 proposed ROW corridors are located in northwest Ada County approximately 4 miles north of the City of Eagle, Idaho, and east of State Highway 16 (SH-16) (Figure 1). The ROW corridors are proposed in Township 5N, Range 1W, Sections 21, 22, 23, 26, 27, and 28. In November 2009, the City of Eagle annexed 5,927 acres of the M3 Eagle property for a planned community in the Foothills north of Eagle, and 1,915 acres of public land, including that traversed by Linder Road. A mixture of farmlands and rural residential areas border the proposed ROW area to the south, transitioning into suburban residential development associated with the City of Eagle. Areas to the north are foothill rangelands interrupted occasionally by irrigated agriculture and rural residences. The foothills to the north rise in elevation to the Willow Creek drainage before descending steeply towards the Payette River Valley.

The action area is defined in the ESA as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR 402.02). The action area includes the area bordered on the west by SH-16, the south by the public land boundary north of Homer Road, the eastern edge of slickspot peppergrass Management Area 2B, and the north by the northern boundary of the proposed Development (Figure 2). This area was selected because it considers the population of slickspot peppergrass in the Eagle Foothills and the greatest extent of anticipated indirect impacts of the proposed ROWs. The action area includes slickspot peppergrass Management Areas 2B and 2C.

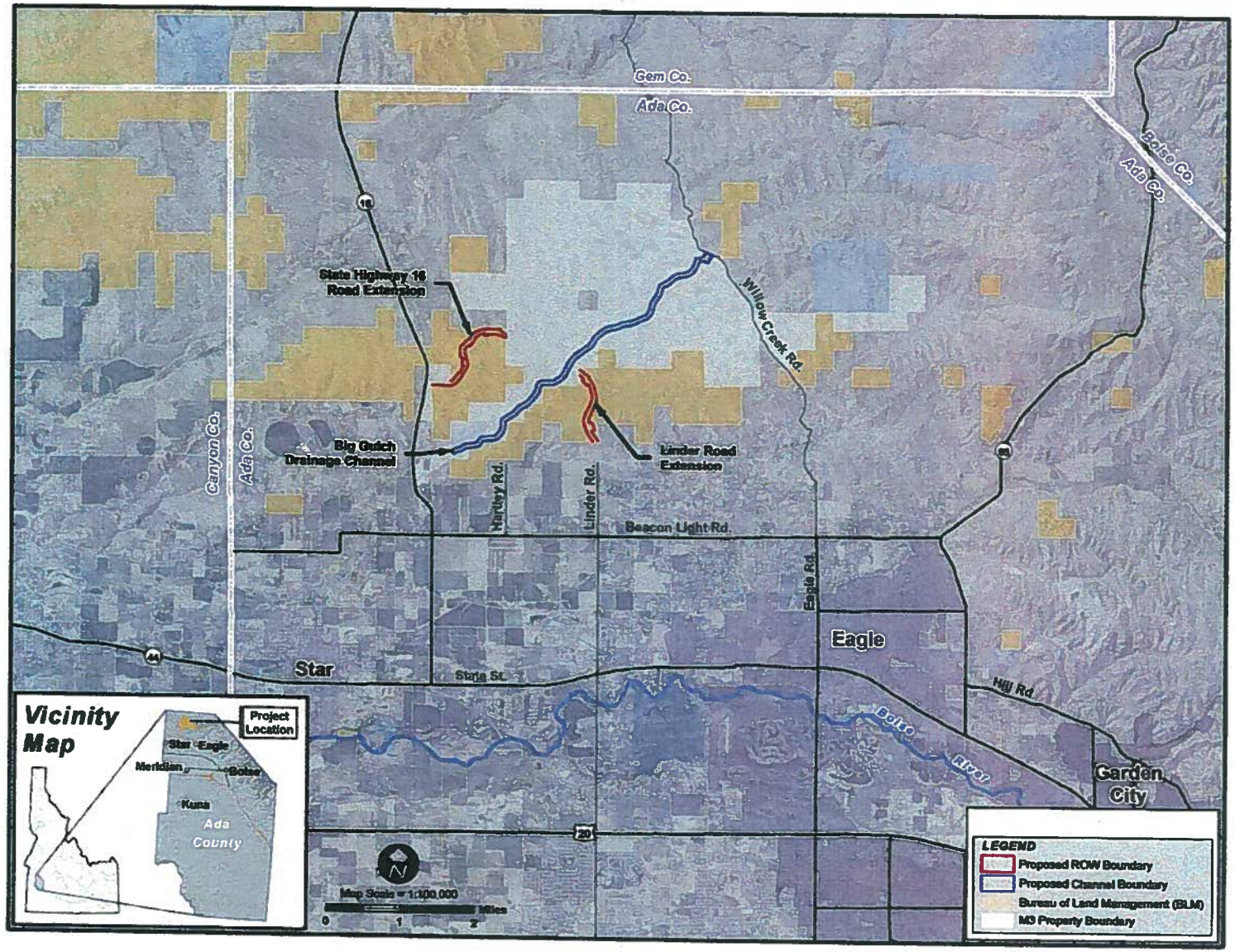

Figure 1. Vicinity map for the proposed Northwest Ada County Rights-of-Way Corridors project.

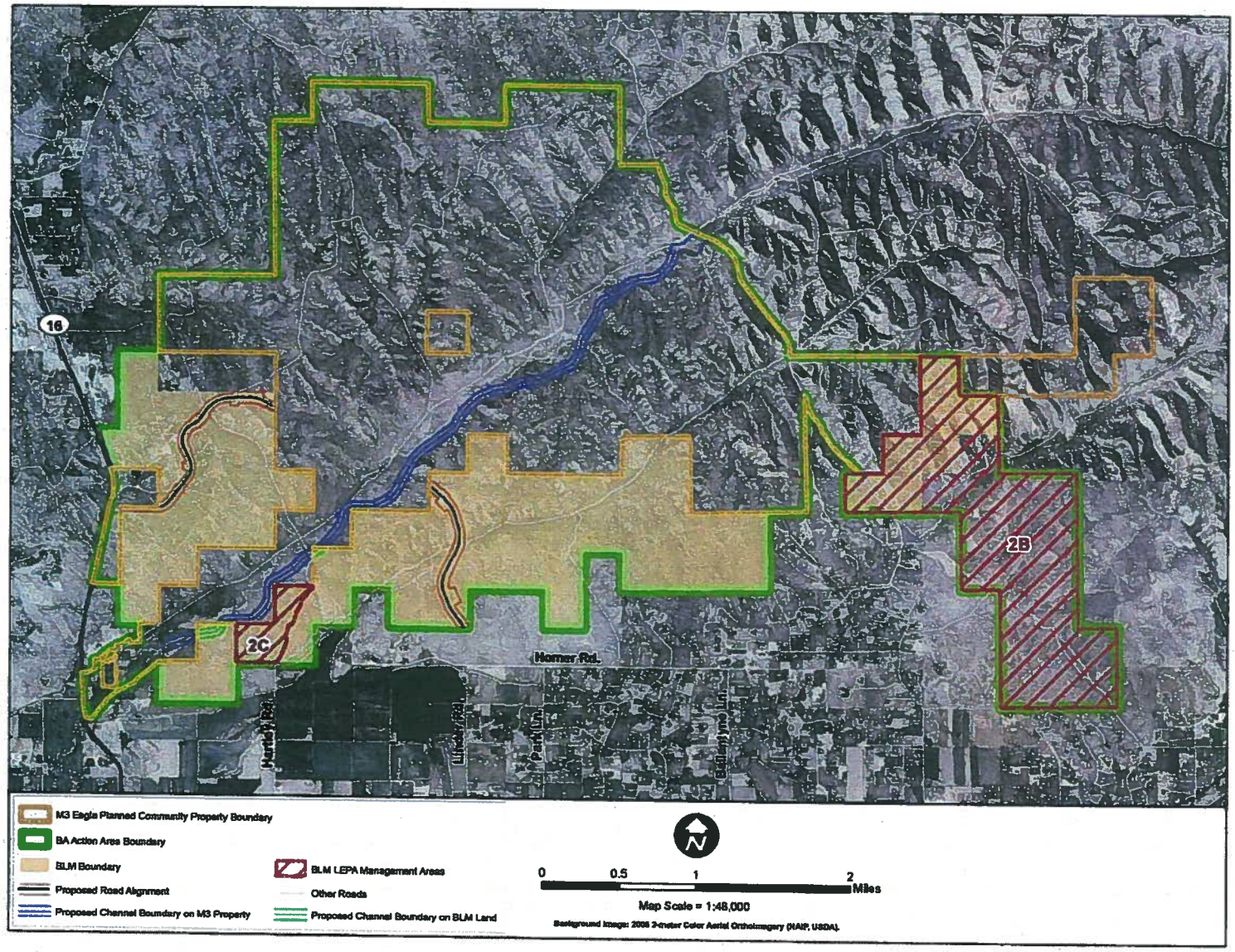

Figure 2. Action Area for the proposed Northwest Ada County Rights-of-Way Corridors project.

The three ROW corridors will become part of a regional transportation, recreation, and drainage infrastructure network that would be interconnected to existing and future roads, trails, and drainages. The ROW corridors are proposed for indefinite year-round use and access. All construction, operation, and maintenance activities, including staging and materials storage areas, will be contained within the ROW corridors or on adjacent private land. It is the Service's understanding that the two ROW Access corridors could have alternatively been located on private land, but the preferred location of these access road is on BLM lands.

Utilities including water, power, gas, sewer, and communications may be placed within each of the two transportation ROW corridors. Overhead 138 kilovolt (kV) electrical transmission lines are proposed along the length of each roadway. Utility poles for the transmission lines will be freestanding, 85-foot tall wooden structures spaced approximately every 300 feet. Up to three lines will be attached vertically to the side of the pole.

The transportation ROW corridors (SH-16 and Linder Road) will be dedicated to, and thus maintained by, Ada County Highway District. The Big Gulch drainage ROW will eventually be dedicated to and maintained by the M3 Eagle Homeowner's Association or the City of Eagle pending future agreements between M3 Eagle and the City. The proposed ROW corridors will be considered permanent.

2.1.2 Proposed Action

The proposed action includes construction, operation, and maintenance of three ROW corridors (Figure 3): two transportation ROWs (SH-16 and Linder Road) and one drainage ROW (Big Gulch Drainage Channel).[1] Permanent stabilization and rehabilitation will be conducted to improve resource conditions, reduce erosion, mitigate fire risk, and minimize noxious weed spread. This will be accomplished by landscaping within the ROW corridors proposed through public land. Cutbanks, fill slopes, and other exposed areas will be planted or seeded as soon as possible following ground disturbance during the optimal seeding period. Seed and plant material applications will be targeted for late fall to promote success. Seeding success criteria will be based on a qualitative assessment of reclaimed areas compared with adjacent, similar type, undisturbed habitat. If the first attempt at seedings and plantings is not successful, additional attempts will be made until vegetation becomes successfully established. Stabilization and rehabilitation projects will include techniques that minimize soil disturbance, such as no-till drills, rangeland drills equipped with depth bands, broadcast seeding with light raking, and/or hydroseeding.

The ROW corridors will be landscaped with groundcover, shrubs, and trees to minimize weed establishment, attenuate noise, minimize fire risk, and promote aesthetics. Landscaped areas will be maintained regularly during the growing season, will be controlled for noxious weeds, and will be kept free of debris and dead plant material that could contribute to fire ignition or spread.

[1] A fourth ROW corridor proposed from Hartley Road to the M3 development was dropped from the project proposal due to the high level of unavoidable impacts to slickspot peppergrass EO 76 associated with this ROW corridor.

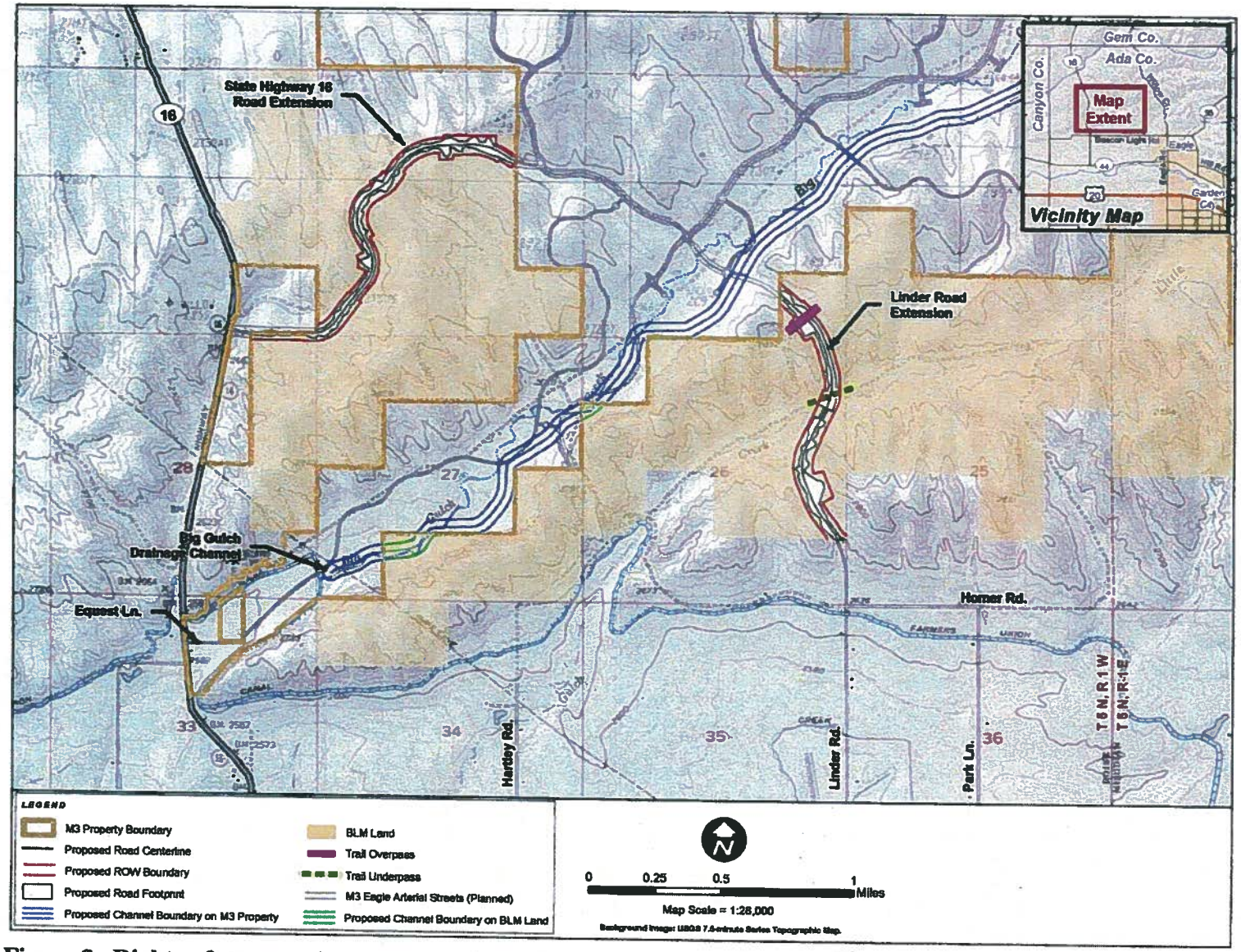

Figure 3. Rights-of-way corridor locations for the proposed Northwest Ada County Rights-of-Way Corridors project.

2.1.2.1 Actions Common to All ROW Corridors

Initial staking of the construction sites would be conducted by a surveyor certified in the State of Idaho. Within the two transportation ROW corridors, a series of test pits will be excavated approximately every 1,000 to 2,000 feet along each ROW for geotechnical analysis of the soils that occur in the ROW corridors. Each test pit will be dug by an excavator and measure approximately 3 feet wide by 8 feet long and 15 feet deep. Slickspots on public land will be marked prior to excavation of test pits and avoided where feasible, and soil will not be piled on slickspots. After measurements and samples are taken, the holes will be backfilled and compacted to resemble their natural state. Disturbed areas that will not be surfaced with asphalt will be seeded with native plant species.

Vegetation within the ROW corridors will be cleared where necessary. Known slickspot peppergrass occurrences near the ROW corridors or near possible operation and maintenance activities will be temporarily fenced to protect habitat. Pre-construction surveys will mark sensitive plant species for avoidance and/or fencing where feasible.

Topsoil removed during grading will be stockpiled on adjacent private lands for use in permanent stabilization. Stockpiling soil on slickspots will be avoided where feasible. Topsoil stockpiles will be covered and/or wetted periodically to mitigate fugitive dust and will be treated for weeds prior to use for revegetation.

Temporary soil stabilization techniques will be employed to prevent soil erosion where soil displacement and sedimentation is likely. Techniques will include covers and barriers such as certified weed free straw, straw bales, silt fences, coir rolls, geo-textile grids and fabrics or similar treatments. If necessary, fill brought in from off site will be certified as weed free. Drainage structures will be inserted when necessary to grade for final design specifications.

Utilities and infrastructure (roads, trails, irrigation, water, power, gas, sewer, communications, and overhead 138 kV transmission) will be installed as necessary taking the same precautions as during the vegetation clearing to avoid sensitive resource locations.

2.1.2.2 Landscaping the Transportation ROW Corridors

Landscaping designs for the transportation ROW corridors will differ from that of the drainage ROW corridor. Landscaping of the transportation ROW corridors will be designed with plants native to the Intermountain Region, including several native to the local area, and would prioritize abatement of wildfire danger. The landscape concept will utilize a specific zoned planting program and would include various fire control techniques. These techniques will include: 1) landscape spacing criteria that minimize the potential spread of wildfire and allow firefighters and firefighting equipment such as engines, trucks, and bulldozers, to maneuver easily between planting areas; 2) the selection of fire resistant plants that do not readily ignite from a flame or other ignition sources; and 3) use of inert (e.g. rock such as cobble/granite gravel) materials in low topographic and drainage areas. The planted street edges will be drip irrigated, targeting specific plants in order to encourage xeric plant materials. Spray irrigation will be used in select areas associated with the proposed trail overpasses and underpass. Nonnative invasive annual plants, such as cheatgrass (*Bromus tectorum*), will be regularly controlled to reduce the risk of and spread of wildfire as outlined in the *Confirmation of Concurrence from the USFWS to the BLM on the Noxious and Invasive Weed Treatment*

(Service, *in litt.*, 2009). If native shrubs become naturally established within the roadway landscape zone, plants will be removed or trimmed, as appropriate, to maintain spacing to minimize the spread of wildfire.

The landscaping will generally follow a three zone concept; Roadway Landscape Zone (first 14 to 38 feet from curb, regularly maintained and irrigated), Accent Zone (out to 200 feet, associated with the trail overpass and underpass, regularly maintained and irrigated), and the Native Revegetation Zone (remainder of the ROW, temporarily irrigated and regularly maintained) (see Appendix A of the Assessment). Plant species lists for the zones are listed in Table 1 below.

Table 1. Proposed Species List for Roadway Landscaping.

Scientific Name	Common Name	Scientific Name	Common Name
NATIVE REVEGETATION ZONE			
Poa secunda	Sandberg bluegrass	*Achillea millefolium*	Western yarrow
Pseudoroegnaria spicata	Bluebunch wheatgrass	*Phlox spp.*	Hoods, longleaf, sagebrush phlox
Elymus elymoides	Squirreltail	*Sanguisorba minor*	Small burnette
Achnathereum hymenoides	Indian ricegrass	*Aster spp.*	Aster
Balsamorhiza sagittata	Arrowleaf Balsamroot	*Erigeron spp.*	Fleabane
Eriogonum spp.	Buckwheat	*Astragalus spp.*	Milkvetch
ROADWAY LANDSCAPE AND ACCENT ZONES			
Forbs			
Ajuga reptans	Carpet Bugleweed	*Gaillardia*	Blanketflower
Aurinia saxatilis	Basket of Gold	*Hemerocallis*	Daylily
Carex spp.	Sedges	*Linum perenne*	Blue Flax
Cerastium tomentosum	Snow in Summer	*Lupinus spp.*	Lupine
Coreopsis	Tickseed	*Mahonia repens*	Creeping Holly
Daphne x burkwoodii	Carol Makie Daphne	*Penstemon Delphinium*	Penstemon
Delosperma nubigenum	Yellow Ice Plant	*Ratibida columnifera*	Prairie coneflower
Delphinium spp.	Delphinium	*Thymus praecox*	Creeping Thyme
Dianthus sp.	Pinks	*Veronica spp.*	Speedwell
Shrubs			
Acer glabrum	Rocky Mountain Maple	*Prunus virginiana*	Chokecherry
Amelanchier alnifolia	Serviceberry	*Purshia tridentata*	Bitterbrush
Arctostaphylos uva-ursi	Kinnikinnick	*Rhamnus frangula*	Tallhedge
Atriplex canescens	Four-Wing Saltbush	*Rhus spp.*	Sumac
Berberis Repens	Barberry	*Ribes spp.*	Flowering Currant
Chrysothamnus viscidiflorus	Green Rabbitbrush	*Spiraea x bumalda*	Bumald spirea
Cornus sericea	Redosier Dogwood	*Symphoricarpos albus*	Common snowberry
Crataegus douglasii	Douglas Hawthorn	*Syringa spp.*	Lilac
Mahonia aquifolium	Oregon Grapeholly	*Yucca spp.*	Yucca
Trees			
Alnus spp.	Alder	*Fraxinus Americana*	White Ash
Celtis reticulata	Netleaf Hackberry	*Robinia pseudoacacia*	Purple Robe Locust
Fraxinus pennsylvanica	Green Ash		

2.1.2.3 Landscaping the Big Gulch Channel Drainage ROW Corridor

Landscaped areas in the Big Gulch Channel ROW corridor will include a combination of native plants, nonnative plants, and cobble/gravel surface. The northern side of the channel will include mostly nonnative species, and the southern side will include more native species, to blend with the existing plant communities. These areas may be irrigated temporarily after planting, if needed for successful establishment of vegetation. Landscaped areas on the north side of the channel, including turf grass, will be spray irrigated and maintained to the same level of a city park. Turf grass will be mowed and fertilized as needed and plantings of other vegetation will be weeded. Nonnative invasive annual plants, such as cheatgrass, will be regularly controlled.

2.1.2.4 SH-16 Access ROW Corridor

The SH-16 Access ROW (see Figure 3 above) will provide an east-west access corridor for connection of a road and utilities from SH-16 to the future Development. The existing access point off of SH-16 will continue to be used and will connect with this ROW corridor. The ROW corridor will pass through approximately 424 linear feet of M3 property that fronts SH-16 before reaching public land. The ROW would contain approximately 1.5 miles (8,055 linear feet) of road on public land, of which 1.3 miles will be located entirely on public land and 0.2 miles of the ROW will be partially split on the property line with approximately half on M3 Eagle property and half on public land in order to follow the natural topography. The ROW width will be variable, with a minimum of 210 feet and a maximum of 360 feet. Operational roadway width from curb to curb will be approximately 89 feet, which will include two traffic lanes in each direction (for a total of four traffic lanes), a bike lane in each direction, curbs, and a landscaped median (Figure 4). The remaining ROW corridor width (121 to 271 feet) will be necessary to accommodate construction, stabilization, landscaping, drainage, a multi-use trail, and utilities. The road design of the SH-16 Access ROW will be capable of servicing up to 20,300 vehicle trips per day. The ROW will be permanently fenced to prevent cross-country off-highway vehicle use and reduce the risk of vehicle-caused wildfire starts. The type of fence installed will be three-strand barbed wire or an equivalent. The BLM Fence Standards for Livestock and Wildlife will be followed to ensure all fences are passable for wildlife.

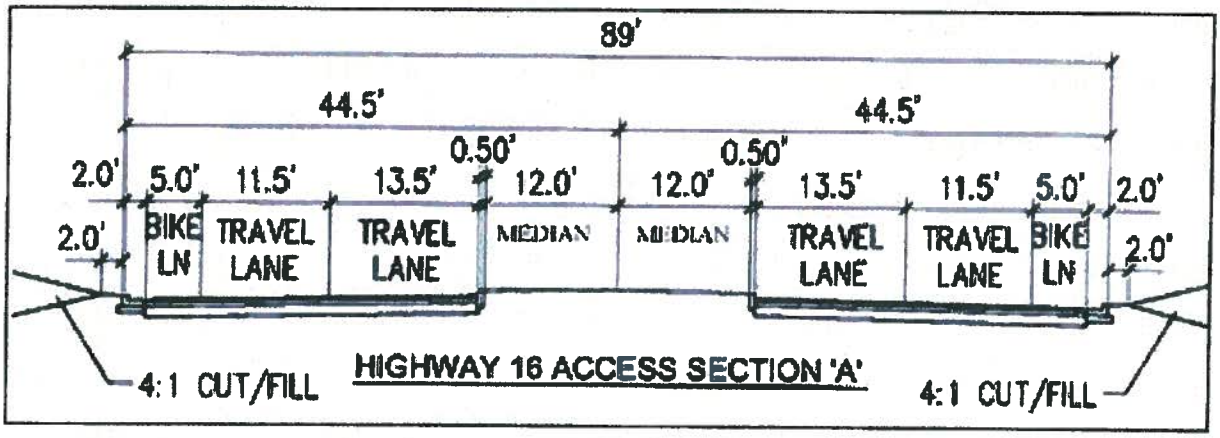

Figure 4. Cross-Section of Proposed State Highway 16 Access Road.

The route will minimize major cuts and fills by following the natural terrain and blending with existing topography. The estimated volume of earthwork necessary to construct the road will total approximately 125,027 cubic yards of cut material and 140,641 cubic yards of fill material. Any fill distribution within the ROW corridor will resemble natural landforms and blend with existing topography. The total surface disturbance of the SH-16 Access ROW corridor will be 27.4 acres. Of this, 10.1 acres will be surfaced with asphalt (paved), 3.6 acres will consist of a median, and 13.7 acres will consist of road cut (unpaved cut and fill areas). The road median and road cuts will be re-vegetated (15.5 acres), with the exception of the area used for the multi-use trail (1.8 acres), with plants designed to minimize wildfire danger. A detached, multi-use trail running along one side of the proposed roadway will be made of stabilized, decomposed granite composition. The trail will be built within the road disturbance/grading area. It will be free of vegetation and sized at 10 feet wide.

Road and utility construction timing will be determined by future roadway phasing studies and Idaho Transportation Department plans for SH-16. Once construction is initiated, the road, multi-use trail, and all associated utilities will be constructed within approximately 1 year. Permanent stabilization with landscaped vegetation will be completed by the end of the second year after construction, assuming successful revegetation efforts. Additional seedings and plantings will occur if the initial efforts are not successful.

2.1.2.5 Linder Road Access ROW Corridor

The Linder Road Access ROW (see Figure 3 above) will provide a road and utility access corridor at the northern terminus of Linder Road at the intersection with Homer Road to the road network of the future Development. This ROW corridor will contain approximately 1.1 miles (6,031 linear feet) of road across public lands. Connection of the southern portion of the ROW corridor to Homer Road will be made through private land. The ROW width will be variable, with a minimum of 300 feet and a maximum of 580 feet.

The operational width of the roadway from curb to curb will be approximately 81 feet, which will include two traffic lanes in each direction (for a total of four traffic lanes), a bike lane in each direction, curbs, and a landscaped median (Figure 5). The remaining ROW corridor width (219 to 499 feet) will be necessary to accommodate construction, stabilization, landscaping, drainage, utilities, a multi-use trail, and trail crossings. A landscaped median will provide 16 feet of separation between directional traffic. Traffic models indicate that there will be approximately 24,000 vehicle trips per day on the road in this ROW. The ROW will be permanently fenced to prevent cross-country off-highway vehicle use and reduce the risk of vehicle-caused wildfire starts as described for the SH-16 ROW.

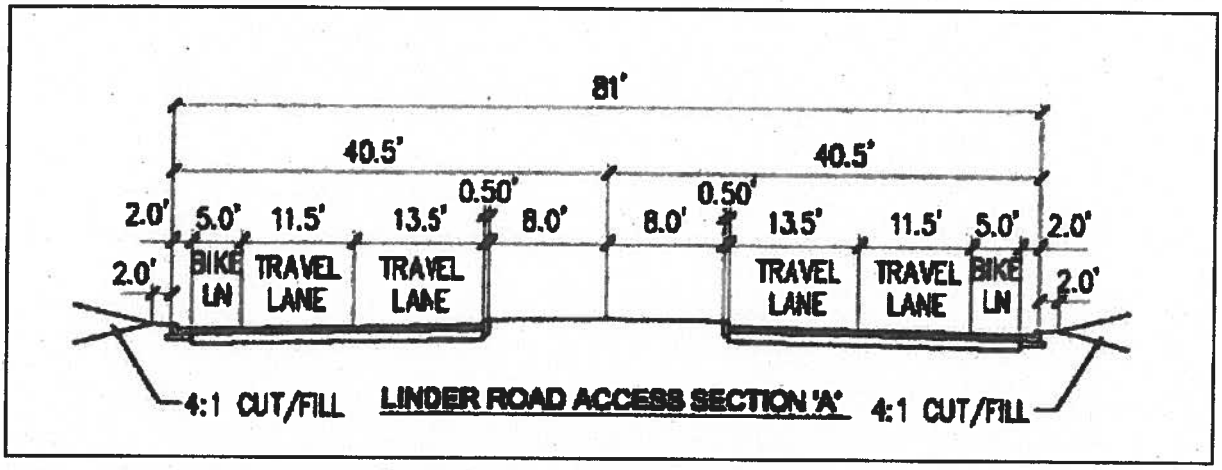

Figure 5. Cross-Sections of Linder Road Access Rights-of-Way.

The volume of earthwork necessary to construct the four-lane road will be approximately 109,594 cubic yards of cut material and 139,971 cubic yards of fill material. The road will be surfaced with asphalt. The total surface disturbance of the four-lane Linder Road Access ROW will be 23.8 acres. Of this, 8.3 acres will be paved, 2.1 acres will consist of a median, and 13.4 acres will consist of road cut. The median and road cuts will be re-vegetated (14.1 acres), with the exception of the area used for the multi-use trail (1.4 acres), with plants designed to minimize wildfire danger, as described above.

The Linder Road Access ROW corridor will include a trail overpass and a trail underpass to accommodate non-motorized recreation (Figures 3 and 6) along existing routes that will be crossed by the road extension. The road at Little Gulch will be elevated to provide a trail underpass. A trail overpass will span the proposed road along the ridge between Little Gulch and Big Gulch. The trail will be maintained either by M3 or the City of Eagle, pending future agreements between all parties involved. Trail crossing maintenance will include periodic inspections by qualified engineers for structural integrity and could include water bars, pruning, weed control, slope maintenance, and signage. A detached, multi-use trail running along one side of the proposed roadway will be made of stabilized, decomposed granite composition. The trail will be built within the road disturbance/grading area. It will be free of vegetation and sized at 10 feet wide.

Construction of all features in this ROW (i.e., road, utilities, a multi-use trail and two trail crossings) will begin with the first phase of the Development (planned for 2012). The ROW features will take approximately 1 year to build, from start to completion. Permanent stabilization with landscaped vegetation will be completed by the end of the second year after construction.

2.1.2.6 Big Gulch Drainage Channel ROW Corridor

The Big Gulch Drainage Channel ROW corridor will improve portions of the existing channel that currently cross public land (see Figure 3 above and Figure 7 below). Channel improvements, trails, and landscaping will occur where the channel crosses public land at two property corners adjacent to the future Development. The channel will also be realigned to the south on private land to follow the natural topography at the toe of the slope at the southern edge

of Big Gulch. Big Gulch will become a linear drainage and park feature extending from Willow Creek Road to SH-16, a distance of approximately 5.1 miles. Development of the majority of this drainage feature will occur on private lands and is addressed in cumulative impacts section of this Opinion. Approximately 0.25 miles of the Big Gulch channel, in its improved state, will continue to occur on public lands in this corridor. The entire Big Gulch drainage channel between Willow Creek Road and SH-16, including the portions on public lands, will be altered to better define the channel, construct recreation trails, improve aesthetics, and reduce the potential for on-site flooding.

The ROW width for the channel will vary between 150 and 250 feet. The channel feature itself will vary from 40 to 100 feet wide. The channel will have a maximum depth of 3 feet and could convey up to 600 cubic feet per second under 100-year storm conditions. The predicted flow down gradient from the ROW under these conditions will be 471 cubic feet per second. Minimal amounts of runoff from the future developed portions of Development will be directed into this channel. Existing flow rates will not increase from natural levels, and it will primarily convey drainage from existing natural watersheds. The total surface disturbance of the Big Gulch Drainage Channel ROW on public land will be 9.1 acres, of which about 6.5 acres will be re-vegetated. The channel will be stabilized with a mixture of vegetation and cobble after disturbance.

Multi-use trails will parallel the north and south sides of the channel features, for a total length of 0.5 miles on public lands. The trails will extend through public lands to connect future regional trails on adjacent private lands planned at the Development. Trails will be 10 feet wide and restricted to non-motorized vehicle uses. The northern pathway will be paved with asphalt and landscaped to blend in with the areas to the north proposed for future development on private land. This landscaped area will include irrigated turf, shrubs, and trees. The southern pathway will be unpaved and planted along the margins with native vegetation to blend with the rangelands to the south.

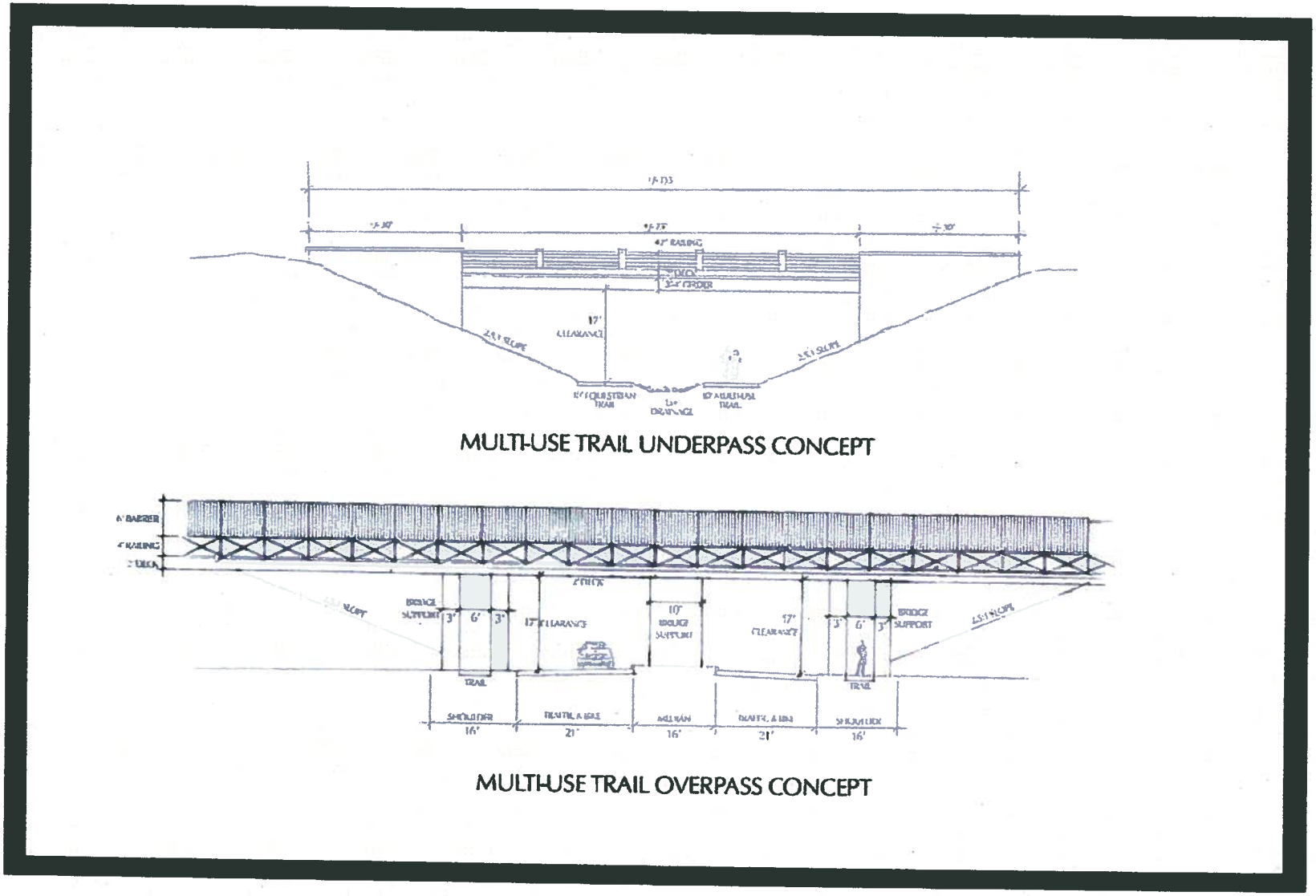

Figure 6. Trail overpass and underpass concept plan.

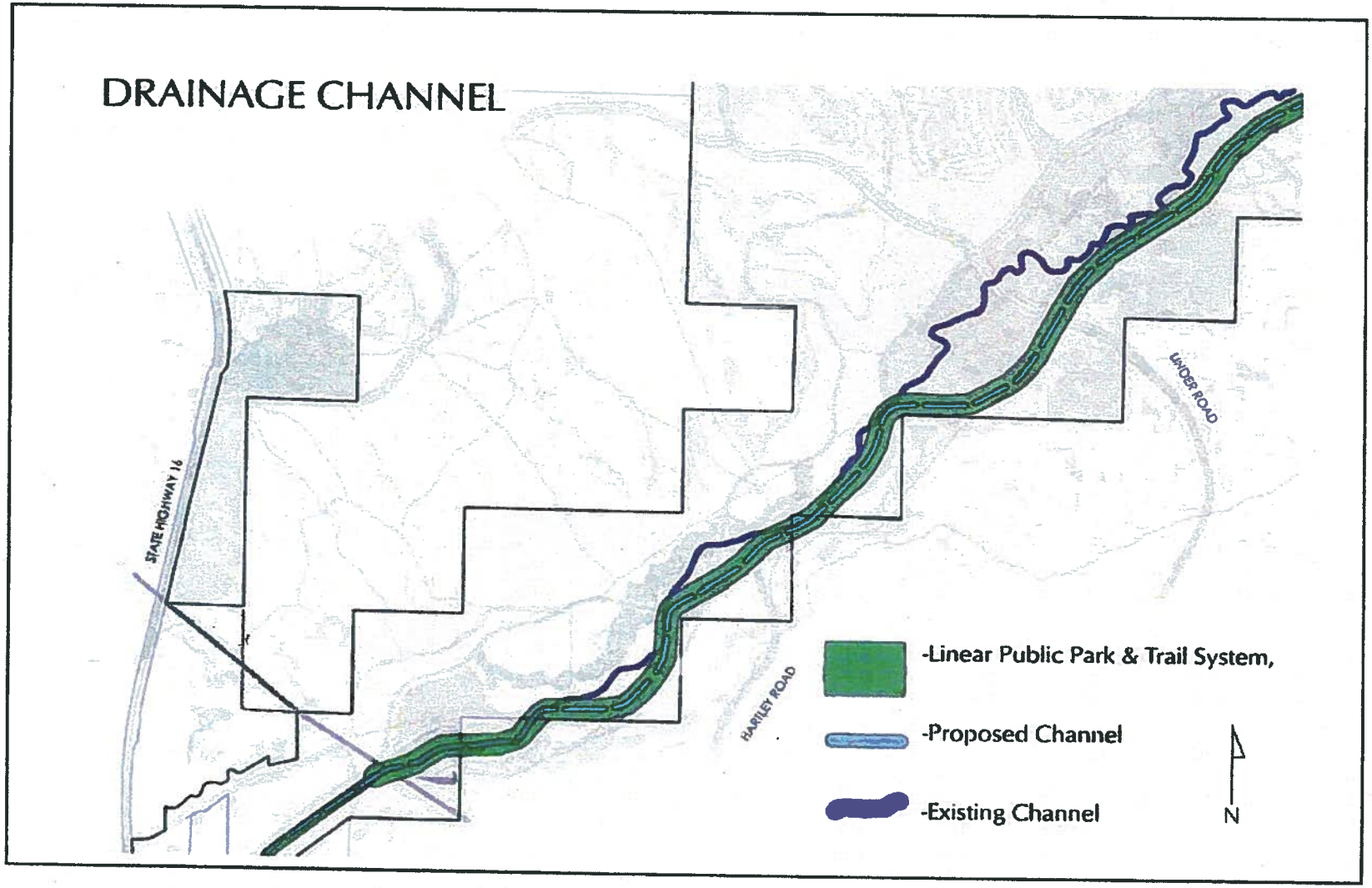

Figure 7. Big Gulch Drainage Channel Right-of-Way Corridor.

2.1.2.7 Conservation Measures

The following measures will be employed during construction:

- Pre-construction surveys will mark sensitive plant species on public land for avoidance where feasible. Current BLM survey protocols will be followed. Surveys will be conducted at the appropriate time of year by a qualified botanist before construction activity begins.
- Known slickspot peppergrass occurrences near the ROW or near possible construction activities on public land will be temporarily fenced to protect habitat.
- Markings will be removed to protect the sensitive plant species from unwanted attention promptly after construction is complete or no longer poses a threat to the species.
- Slickspot microsites on public land will be marked prior to excavation of test pits and avoided where feasible.
- Soil will not be stockpiled on slickspots on public land.
- For slickspot microsites that cannot be avoided, BLM will be given advance notice prior to ground disturbance to allow for analyses of slickspot microsite soil structure prior to their disturbance and/or elimination during construction.
- Slickspot microsites on public land in portions of the ROWs not proposed for excavation (outside of the disturbance footprint) will be temporarily fenced and avoided, where feasible, during construction and landscaping activities.
- Vegetation treatments in disturbed areas of the transportation ROW will use plants native to the Intermountain Region (see Table 1 above) and select native forbs, many of which are expected to benefit slickspot peppergrass insect pollinators.
- Soil stabilization methods will be applied where appropriate with certified weed free products.
- Only certified noxious weed-free seed, fill material, and mulch will be used.
- Construction equipment and materials will be stored at the construction site or at a limited number of specified locations on adjacent private lands to minimize surface disturbance and potential spread of weed seed. All equipment used for off-road construction and grading will be cleaned of soil and debris prior to accessing each site to limit/reduce the potential introduction of noxious weeds. The cleaning process will utilize pressurized water, steam, or air to clean tracks or other parts of equipment that could trap soil and debris. Washing vehicles and equipment prior to entering the ROW area will minimize the potential for transporting weeds to the ROW corridors. Vehicles traveling only on established roads will not require cleaning.
- Vegetation treatment projects will include techniques that minimize soil disturbance such as no-till drills, rangeland drills equipped with depth bands, and/or hydroseeding.
- Firewise landscaping will be used along the roadway to minimize the potential spread of wildfire.
- All gasoline or diesel powered equipment will be fitted with spark arrestors.
- Motor vehicles will stay on existing roads and areas free of vegetation associated with ROW construction. Motor vehicles will be parked in areas free of vegetation, and will be equipped with at least one fire extinguisher.
- Construction crews will maintain an easily accessible cache of the following fire suppression equipment: five shovels, two backpack pumps with water, and one fire extinguisher.

- Used oils, fuels, or other flammable substances will be hauled to an approved offsite disposal location and will not be stored along the ROW corridors.
- The ROW will be permanently fenced to prevent cross-country off-highway vehicle use and reduce the risk of vehicle-caused wildfire starts.
- M3 or its contractor will notify the BLM if a project related fire occurs in or adjacent to the construction area. The following fire emergency notification contact information will be distributed to all employees and contractors working on site:
  - Boise Fire Dispatch Center – (208) 384-3400
  - Emergency Response – 911.

Long-term mitigation during operation and maintenance of the proposed projects includes:

- ROW corridors will be monitored annually for the presence of state-listed noxious weeds. Noxious weeds will be spot treated using an appropriate treatment. Herbicides and other weed prevention measures shall comply with all applicable Federal and state laws and regulations. Standard operating procedures for applying herbicides or other weed prevention measures shall be followed as outlined in the *Final Programmatic EIS for Vegetation Treatments Using Herbicides on Public Lands in 17 Western States* (BLM 2007a) and the *Environmental Assessment for Noxious and Invasive Weed Treatment for the Boise District and Jarbidge Field Offices* (BLM 2007b).
- Weed control conservation measures for slickspot peppergrass will be followed in slickspot peppergrass habitat in the ROWs as outlined in the *Confirmation of Concurrence from the USFWS to the BLM on the Noxious and Invasive Weed Treatment* (USFWS 2009b).
- Nonnative annual grasses and other invasive nonnative plants and weeds will be regularly controlled to reduce the risk and spread of wildfire.
- Tall, naturally regenerating shrubs along the roadway will be controlled periodically to reduce flame height and prevent spread in the event of a wildfire.
- Firewise landscaping will be maintained along the roadways in the access ROW corridors to minimize wildfire danger over the long-term. The northern trail in the Big Gulch Channel ROW corridor will include irrigated landscaping.
- Irrigation and community water supplies in the ROW and future M3 Eagle Planned Development itself will be available to fire fighters for emergency fire suppression operations. Fire hydrants would be located within the community of the Development. Hydrants may also be placed strategically along the ROW corridors. M3 would work with the City of Eagle to facilitate parameters to make a new water tank near Hartley Road available for fire fighters.
- M3 will construct two fire stations as part of their future planned development located to the north of Linder Road and east of the SH-16 connection.

2.2 Analytical Framework for the Jeopardy and Adverse Modification Determinations

2.2.1 Jeopardy Determination

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.

2.2.2 Adverse Modification Determination

This Opinion does not rely on the regulatory definition of "destruction or adverse modification" of critical habitat at 50 CFR 402.02. Instead, we have relied upon the statutory provisions of the ESA to complete the following analysis with respect to proposed critical habitat.

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

1. The *Status of Critical Habitat*, which evaluates the rangewide condition of critical habitat for the slickspot peppergrass in terms of primary constituent elements (PCEs), the factors responsible for that condition, and the intended recovery function of the critical habitat overall.
2. The *Environmental Baseline*, which evaluates the condition of the critical habitat in the action area, the factors responsible for that condition, and the recovery role of the critical habitat in the action area.

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 PCEs and how that will influence the recovery role of affected critical habitat units.
4. *Cumulative Effects*, which evaluates the effects of future, non-Federal activities in the action area on the PCEs and how that will influence the recovery role of affected critical habitat units.

For purposes of the adverse modification determination, the effects of the proposed Federal action on slickspot peppergrass critical habitat are evaluated in the context of the rangewide condition of the critical habitat, taking into account any cumulative effects, to determine if the critical habitat rangewide would remain functional (or would retain the current ability for the PCEs to be functionally established in areas of currently unsuitable but capable habitat) to serve its intended recovery role for the slickspot peppergrass.

The analysis in this Opinion places an emphasis on using the intended rangewide recovery function of slickspot peppergrass critical habitat and the role of the action area relative to that intended function 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 adverse modification determination.

2.3 Status of the Species and Critical Habitat

This section presents information about the regulatory, biological and ecological status of the slickspot peppergrass and its proposed critical habitat that provides context for evaluating the significance of probable effects caused by the proposed action.

2.3.1 Slickspot Peppergrass

2.3.1.1 Listing Status

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

2.3.1.2 Species Description

The 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).

2.3.1.3 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 the 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 the 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 the 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, the 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 the 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 the slickspot peppergrass is somewhat naturally fragmented. However, large-scale fragmentation can pose problems for the slickspot peppergrass by creating barriers in the landscape that prevent effective genetic exchange between populations. Seed dispersal for the 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 the 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 the slickspot

peppergrass suggested that populations in the Snake River Plain and Owyhee Plateau "may have reduced genetic diversity" (Larson *et al.* 2006, p. 1).[2]

Many of the remaining occurrences of the 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).[3] 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, reduced genetic diversity, and increased inherent vulnerability of small populations to extirpation.

2.3.1.4 Status and Distribution

The slickspot peppergrass range 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 8). 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

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

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

Snake River Plain regions, while very little of these types of development have occurred within the Owyhee Plateau region.

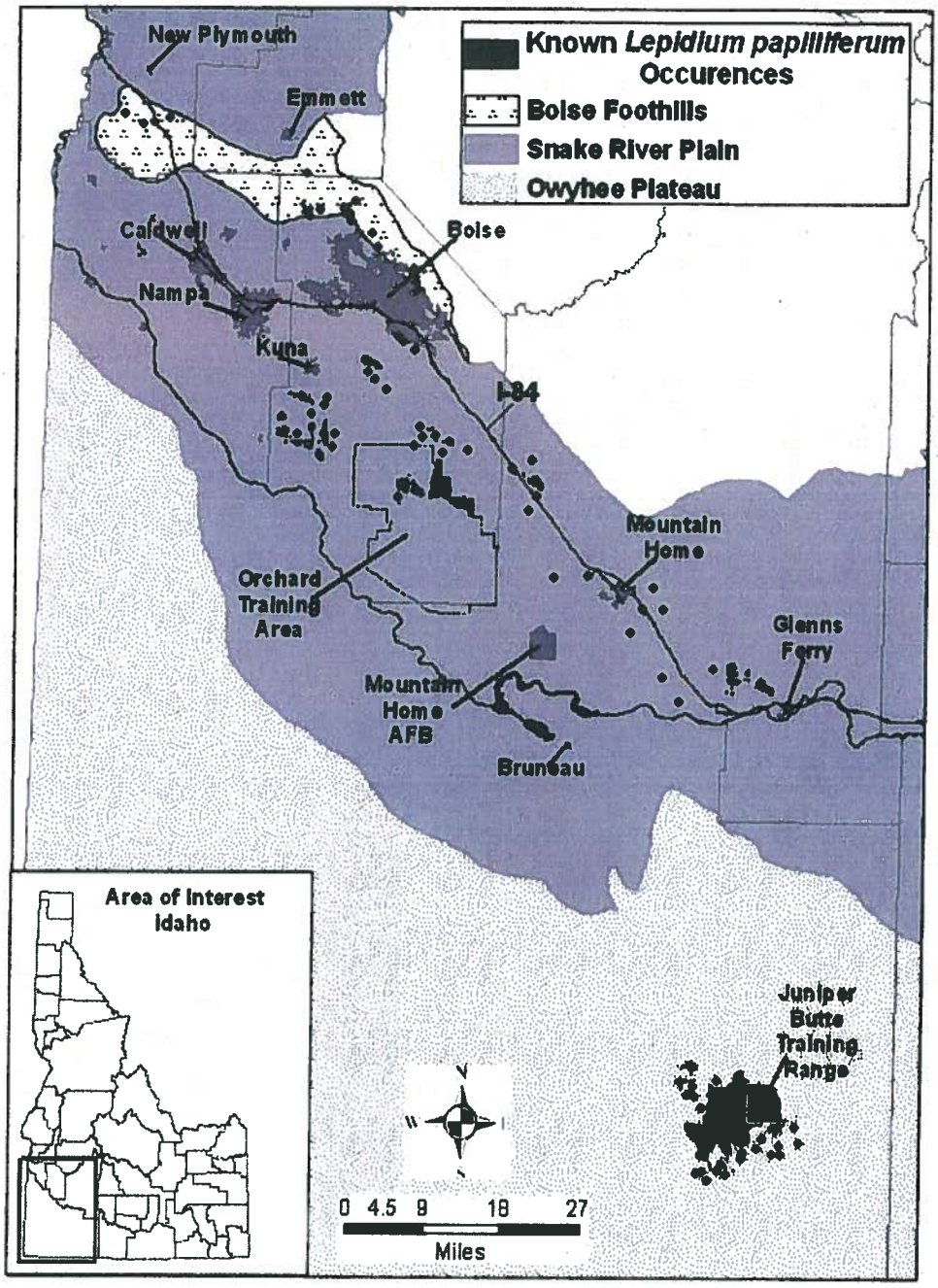

Figure 8. The range of the slickspot peppergrass (*Lepidium papilliferum*) in southwest Idaho, showing its distribution in the Snake River Plain, Boise Foothills, and Owyhee Plateau.

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 the slickspot peppergrass (Cole 2009, threats table). The area actually occupied by the slickspot peppergrass is a small fraction of the total acreage since slickspots occupy only a small percentage of the landscape, and the slickspot peppergrass occupies only a fraction of those slickspots (see U.S. Air Force 2002 , p. 9). Table 2 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 BLM.

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 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).

The 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).

Table 2. Distribution and landownership of slickspot peppergrass (*Lepidium papilliferum*) 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**

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 the 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 the slickspot peppergrass.

The 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 (Service 2006b, p. 20). For example, in 2002, a complete census of an 11,070-ac area recorded approximately 56,500 slickspots (U.S. 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 (U.S. 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 the slickspot peppergrass to identify potential habitat (Colket 2008, p. 1). The Assessment defines potential habitat as areas within the known range of the slickspot peppergrass that have certain general soil and elevation characteristics that indicate the potential for the area to support the slickspot peppergrass although the presence of slickspots or the plant is unknown (BLM 2009,

p. B–2). Although surveys were conducted in 2008 in some areas identified as potential, previously unsurveyed habitat, these did not result in any new locations of the species (Colket 2008, pp. 4–6). The 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 the 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 the 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 the slickspot peppergrass before 2006.
- H-Rank (Historical)[4]—
  - 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 the 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 the 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

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

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 the 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 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 the 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 the slickspot peppergrass (Sullivan and Nations 2009, p. 38). In addition, we do not have any models for the 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 the 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 the 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 the slickspot peppergrass (74 FR 52025, October 8, 2009).

2.3.1.5 Previous Consultations and Conservation Efforts

The Service has completed several consultations under section 7 of the ESA for programs and individual actions located in the vicinity of the proposed ROW corridors project. Some of these were completed as letters of concurrence/conference reports (Normal Fire Emergency Stabilization and Rehabilitation Plan, Big Fire Herbicide Applications) as they were determined to be unlikely to adversely affect listed/proposed species, including the slickspot peppergrass. Following listing of the species in 2009, conference reports for the slickspot peppergrass were converted to letters of concurrence, at the request of BLM, to ensure continued compliance under section 7 of the ESA. The Service has also completed formal consultations with the BLM on several actions (McPherson Allotment #00196, Spring Valley Allotment #00278, Black Canyon Allotment #00310) as well as on the Cascade Resource Management Plan. 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.

The Service and BLM have entered into a Conservation Agreement (CA) committing to implement conservation measures for the slickspot peppergrass to avoid or minimize effects associated with implementing BLM actions planned under the standards and guidelines of their LUPs (BLM and Service 2009). The conservation measures and associated implementation actions for the ongoing BLM LUP programs provide overall guidance for avoiding or minimizing direct and indirect effects to the habitat of the slickspot peppergrass and restoring and maintaining that habitat. Conservation measures and implementation actions for the slickspot peppergrass include conducting species inventories on BLM 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 the slickspot peppergrass as well as direction for completing section 7 consultations on all ongoing and proposed activities on BLM lands that may affect this species.

The BLM is also implementing conservation measures defined in a Candidate Conservation Agreement (CCA) signed between the State of Idaho, BLM, Idaho Army National Guard (IDARNG), and nongovernmental cooperators (private landowners who also hold livestock grazing permits on BLM lands) (State of Idaho *et al.* 2003, 2006). The majority of the individual conservation efforts being implemented for the 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 the 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), an Idaho Army National Guard training area on BLM land; and minimize the impact of ground disturbances caused by livestock penetrating trampling when soils are saturated (State of Idaho *et al.* 2006, p. 3). Penetrating trampling is defined by the CCA as breaking through the restrictive layer (i.e., the middle layer of slickspot soil that supports the 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).

As a signatory of the CCA (State of Idaho *et al.* 2003, 2006), BLM is the primary land management agency responsible for implementing conservation actions for the slickspot peppergrass on their lands. Implementing the conservation measures in the CCA represents a major commitment on behalf of the BLM, which has management authority for the majority of the range where the 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 BLM lands). The BLM 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 BLM to avoid or minimize the adverse impacts of implementing BLM LUPs to the slickspot peppergrass (BLM and Service 2006).

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 the 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 the 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 conservational benefit for the 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 the 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 the 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 BLM will also promote diversity, richness, and health of native plant communities to support pollinators and habitat for the slickspot peppergrass, including conducting weed control activities compatible with slickspot peppergrass conservation. The Service expects the BLM's continued implementation of these general conservation measures will reduce effects from wildfire and nonnative invasive plants across the range of the species.

2.3.1.6 Conservation Needs

Although recovery planning has not been completed for the 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 the slickspot peppergrass;
- Reduction and mitigation of negative effects caused by increased fire frequencies and invasive nonnative plants on the 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 the 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 the 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 the 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 the 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 medusahead (*Taeniatherum caput-medusae*). The Service has identified the modified wildfire regime in the Great Basin and subsequent proliferation of invasive nonnative plants as the primary threats to the 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 the slickspot peppergrass. 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 the 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 Owyhee harvester ants (*Pogonomyrmex salinus*), habitat fragmentation and isolation, and climate change, were identified in the Federal Register notice for listing of the slickspot peppergrass as factors that could impact the 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 the 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 taken to avoid or minimize the impacts of habitat loss on the slickspot peppergrass. Actions that could degrade slickspots to the point that they can no longer provide the essential functions to support the 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 the 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 the 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 the 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 the proposed ROW corridors 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 the slickspot peppergrass over the duration of the project (in perpetuity). 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 the 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 the 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 the 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 2007a, 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 the 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—changing 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 the 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 the 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 the slickspot peppergrass, refer to the final listing rule (74 FR 52014, October 8, 2009).

2.3.2 Slickspot Peppergrass Proposed Critical Habitat

2.3.2.1 Legal Status

Critical habitat was proposed for the slickspot peppergrass on May 10, 2011. We anticipate that the final designation of critical habitat for the slickspot peppergrass will occur in late 2012 following review of public comments on both our May 2011 proposal and the economic analysis of critical habitat designation.

2.3.2.2 Conservation Role and Description of Proposed Critical Habitat

The conservation role of slickspot peppergrass critical habitat is to support the various life history needs and provide for the conservation of the species (76 FR 27190). Four Critical Habitat Units (CHUs) encompassing 57,756 acres in Ada, Elmore, Payette, and Owyhee counties have been identified as being important to the survival and recovery of the slickspot peppergrass. All CHUs currently proposed as critical habitat are located within the geographical area occupied by the slickspot peppergrass at the time of listing, and are currently occupied by the species. These units proposed as critical habitat contain the physical and biological features essential to the conservation of the slickspot peppergrass.

Primary constituent elements (PCEs) include physical and biological features of designated or proposed critical habitat essential to the conservation of the species, including, but not limited to: (1) space for individual and population growth, and for normal behavior; (2) food, water, air, light, minerals, or other nutritional or physiological requirements; (3) cover or shelter; (4) sites for breeding, reproduction, rearing of offspring, germination, or seed dispersal; and (5) habitats that are protected from disturbance or are representative of the historic geographic and ecological distributions of a species [ESA §3(5)(A)(i), 50 CFR §424.12(b)]. In determining which areas to propose as critical habitat, the Service considered the physical and biological features that are essential to the conservation of the slickspot peppergrass and that may require special management considerations or protection. These features are the PCEs laid out in the appropriate quantity and spatial arrangement for conservation of the species. The PCEs of slickspot peppergrass proposed critical habitat are:

PCE 1. Ecologically-functional microsites or "slickspots" that are characterized by:

- A high sodium and clay content, and a three-layer soil horizonation sequence, which allows for successful seed germination, seedling growth, and maintenance of the seed bank. The surface horizon consists of a thin, silty, vesicular, pored (small cavity) layer that forms a physical crust (the silt layer). The subsoil horizon is a restrictive clay layer with an abruptic (referring to an abrupt change in texture) boundary with the surface layer, that is natric or natric-like in properties (a type of argillic (clay-based) horizon with distinct structural and chemical features) (the restrictive layer). The second argillic subsoil layer (that is less distinct than the upper argillic horizon) retains moisture through part of the year (the moist clay layer); and
- Sparse vegetation with low to moderate introduced invasive nonnative plant species cover.

PCE 2. Relatively-intact native Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*) vegetation assemblages, represented by native bunchgrasses, shrubs, and forbs, within 250 m (820 ft) of slickspot peppergrass element occurrences to protect slickspots and slickspot peppergrass from disturbance from wildfire, slow the invasion of slickspots by nonnative species and native harvester ants, and provide the habitats needed by slickspot peppergrass' pollinators.

PCE 3. A diversity of native plants whose blooming times overlap to provide pollinator species with sufficient flowers for foraging throughout the seasons and to provide nesting and egg-laying sites; appropriate nesting materials; and sheltered, undisturbed places for hibernation and overwintering of pollinator species. In order for genetic exchange of slickspot peppergrass to occur, pollinators must be able to move freely between slickspots. Alternative pollen and nectar sources (other plant species within the surrounding sagebrush vegetation) are needed to support pollinators during times when slickspot peppergrass is not flowering, when distances between slickspots are large, and in years when slickspot peppergrass is not a prolific flowerer.

PCE 4. Sufficient pollinators for successful fruit and seed production, particularly pollinator species of the sphecid and vespid wasp families, species of the bombyliid and tachnid fly families, honeybees, and halictid bee species, most of which are solitary insects that nest outside of slickspots in the surrounding sagebrush-steppe vegetation, both in the ground and within the vegetation.

The space for individual and population growth is provided by PCEs 1, 2, and 3; the need for food, water, air, light, minerals, or other physiological requirements is provided by PCEs 1 and 2; the need for cover and shelter is met by PCEs 1 and 2; sites for reproduction, germination, and seed dispersal are provided by PCEs 1, 2, 3, and 4; and habitat free from disturbance is met by PCE 2 (76 FR 27191).

Activities that cause adverse effects to critical habitat are evaluated to determine if they are likely to "destroy or adversely modify" critical habitat by no longer serving the intended conservation role for the species or retaining those PCEs that relate to the ability of the area to at least periodically support the species. Activities that may destroy or adversely modify critical habitat are those that alter the PCEs to such an extent that the conservation value of critical habitat is appreciatively reduced. The Service's evaluation must be conducted at the scale of the entire critical habitat area designated, unless otherwise stated in the final critical habitat rule (Service and NMFS 1998, pp. 4-39). Thus, proposed critical habitat for the slickspot peppergrass is evaluated at the scale of the entire area proposed for designation, which includes the four CHUs described above. All four CHUs contain features or areas essential to the conservation of the slickspot peppergrass. Therefore, if a proposed action would alter the physical or biological features of proposed critical habitat to the extent that appreciably reduces the conservation function of one or more critical habitat units for the slickspot peppergrass, a finding of adverse modification for the entire proposed critical habitat area may be warranted.

2.3.2.3 Current Rangewide Condition of Slickspot Peppergrass Proposed Critical Habitat

The condition of slickspot peppergrass proposed critical habitat varies across its range from poor to good. While some areas contain intact sagebrush steppe habitat, other areas have been fragmented by wildfires and both unseeded and seeded invasive nonnative plants such as cheatgrass and crested wheatgrass. The modified wildfire regime and spread of invasive nonnative plants continues to degrade slickspot microsites and associated sagebrush steppe habitat across the range of the slickspot peppergrass (76 FR 27186).

Many factors have impacted the slickspot peppergrass and its habitat, and continue to do so. Among the factors that contribute to degraded PCEs, those which appear to be particularly significant and have resulted in degraded habitat conditions within areas proposed for critical habitat designation are as follows:

- **Current Wildfire Regime (i.e., increasing frequency, size, and duration)**
  The result of this altered wildfire regime has been the conversion of vast areas of the former sagebrush-steppe ecosystem to nonnative annual grasslands (USGS 1999, *in litt.*, pp. 1–9), resulting in loss reduction in cover of sagebrush, native grasses, and native forbs available for insect pollinator foraging and/or shelter. Frequent wildfires can also promote soil erosion and sedimentation (Bunting *et al.* 2003, p. 82) in arid environments such as the sagebrush-steppe ecosystem. Increased sedimentation can result in a silt layer that is too thick for optimal slickspot peppergrass germination (Meyer and Allen 2005, pp. 6–7). The altered wildfire regime is one of the primary causes of reduced quality of PCEs 1, 2, 3, and 4 of proposed critical habitat for the slickspot peppergrass.
- **Invasive Nonnative Plant Species**
  Invasive, nonnative plants can alter various attributes of ecosystems including geomorphology, wildfire regime, hydrology, microclimate, nutrient cycle, and productivity (for a summary see Dukes and Mooney 2003, entire). Additionally, these invasive nonnative plants can negatively affect native plants, including rare plants like slickspot peppergrass, through competitive exclusion, niche displacement, hybridization, and competition for pollinators; examples of these negative effects are widespread among different taxa, locations, and ecosystems (D'Antonio and Vitousek 1992, pp. 63–87; Olson 1999, p. 5; Mooney and Cleland 2001, p. 1). Recent analyses have revealed a significant, negative association between the presence of weedy species and the abundance or density of slickspot peppergrass, to the point that the species peppergrass may be excluded from slickspots (Sullivan and Nations 2009, pp. 109–112). Although the specific mechanisms are not well understood, some of these plants, such as crested wheatgrass (*Agropyrum cristatum*) and cheatgrass, are strong competitors in this arid environment for such limited resources as moisture, which tends to be concentrated in slickspots (Pyke and Archer 1991, p. 4; Moseley 1994, p. 8; Lesica and DeLuca 1998, p. 4), at least in the subsurface soils (Fisher *et al.* 1996, pp. 13–16). Invasive nonnative plants are one of the primary causes of reduced quality of PCEs 1, 2, 3, and 4 of proposed critical habitat for the slickspot peppergrass.
- **Habitat Loss and Fragmentation due to Agricultural and Urban Development**
  Residential and agricultural development can affect slickspot peppergrass and slickspot habitat through habitat conversion, increased nonnative plant invasions, increased off

road vehicle use, increased wildfire, changes to insect populations, and increased fragmentation. Utility lines such as power and gas lines, as well as roads, also fragment slickspot peppergrass occupied areas and act as corridors for nonnative plant invasions. Habitat fragmentation and loss due to development has resulted in localized reduced quality of PCEs 1, 2, 3, and 4 of proposed critical habitat for the slickspot peppergrass.

- **Livestock Grazing**
  Livestock trampling of water-saturated slickspot soils that breaks through the restrictive layer (referred to as "penetrating trampling" (State of Idaho *et al.* 2006, p. 9)) has the potential to alter the soil structure and the functionality of slickspots (Rengasamy *et al.* 1984, p. 63; Seronko 2004, *in litt.*). Penetrating trampling that occurs when slickspots are wet also has the potential to affect the seed bank for slickspot peppergrass by pushing the seeds below a depth where they can germinate (*i.e.,* below 3 cm (1.5 in.)) (Meyer and Allen 2005, pp. 9–10; Meyer *et al.* 2006, pp. 891, 901–902). Livestock grazing may also locally reduce native forb cover available for insect pollinators. In contrast, with careful management, livestock grazing may be used as a tool to select for certain native species, or even to control cheatgrass (Frost and Launchbaugh 2003, p. 43). Therefore, livestock grazing may result in localized reductions in the quality of PCEs 1, 2, 3, and 4; current livestock management (including continued implementation of conservation measures to avoid or minimize impacts) is not considered to pose a significant threat to proposed critical habitat of the slickspot peppergrass.

Other factors that may result in localized reduced quality of proposed critical habitat PCEs include rangeland revegetation projects, wildfire management practices, and recreational use.

Effects of Climate Change on Proposed Critical Habitat for the Slickspot Peppergrass

Similar to potential effects of climate change on the species, we also recognize that climate change may cause changes in slickspot peppergrass proposed critical habitat. As previously described, under projected future temperature conditions, the cover of sagebrush in the Great Basin region is anticipated to be dramatically reduced (Neilson *et al.* 2005, p. 154). Warmer temperatures and greater concentrations of atmospheric carbon dioxide create conditions favorable to cheatgrass, and perpetuate the positive feedback cycle between annual grasses and fire frequency that poses a significant threat to the sagebrush habitat (Chambers and Pellant 2008, p. 32; Karl *et al.* 2009, p. 83) where slickspot peppergrass occurs.

The direct, long-term impact from climate change to the critical habitat of slickspot peppergrass is yet to be determined. As discussed above, we anticipate that future climatic conditions will favor further invasion by cheatgrass, that fire frequency will continue to increase, and that the extent and severity of fires may increase as well, further changing the species composition of southwest Idaho's sagebrush-steppe habitat. Over a period of decades, climate change may directly threaten the integrity of the essential physical or biological features described in PCEs 1, 2, 3, and 4. Climate change may exacerbate habitat degradation impacts both physically (i.e., degradation or loss of slickspot microsites) and biologically (i.e., reduction of insect pollinators due to habitat degradation as well as increased competition with invasive nonnative plants). Protecting slickspot peppergrass strongholds and remaining intact sagebrush steppe habitat from the effects of the modified wildfire regime and associated spread of invasive nonnative plants as well as ensuring connectivity among populations are important considerations in addressing the potential impacts of climate change.

2.3.2.4 Previous Conference on the Effects of Actions on Proposed Critical Habitat

This Opinion represents the first formal conference on the effects of an ongoing or proposed action on slickspot peppergrass proposed critical habitat. As described in section 2.3.1.5 above, section 7 consultation has occurred on the effects of multiple actions and plans on the species itself. It is anticipated that section 7 conference or consultation, as appropriate, will be completed regarding the potential effects of additional ongoing and new actions on proposed and designated critical habitat for the slickspot peppergrass. Section 7 consultations are expected to include some actions that may degrade the environmental baseline over the short term in many cases. However, existing conservation measures are intended to minimize habitat degradation, and are expected to focus locations for long-term restoration efforts that target PCEs of slickspot peppergrass critical habitat.

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 Slickspot Peppergrass

2.4.1.1 Status of the Species in the Action Area

The three proposed ROW corridors are located in the vicinity of three designated EOs: EO 52, EO 76, and EO 108 (EOs 76 and 108 are shown on Figure 9). All three EOs are located in the Boise Foothills physiographic region. Habitat Integrity and Population (HIP) monitoring transect data from EO 52 and EO 76 were used in the Assessment to develop effects analyses for this ROW corridors project. EO 52 is not bisected by any of the proposed ROW corridors. EO 52 is located about 3 miles east of the Linder Road ROW corridor. The Idaho Natural Heritage Program (INHP) categorizes EO 52 as C-ranked (Colket *et al.* 2006, p. 7). EO 52 is located within Management Area 2B.

EO 76 was first discovered in spring 2005. Additional slickspot peppergrass populations were discovered in the vicinity of the ROW corridors during pre-project surveys in 2007 and 2008, expanding the size of EO 76. EO 76 has exhibited plant numbers ranging from 952 plants observed in 2009 to 6,111 individual plants observed in 2006 over the 5 years of HIP monitoring data available[5] (Colket 2009, p. 31; Kinter *et al.* 2010, Appendix H).

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[5] Note that no HIP transect data was collected in 2004 within EO 76, and the 2010 HIP monitoring report is not available at this time.

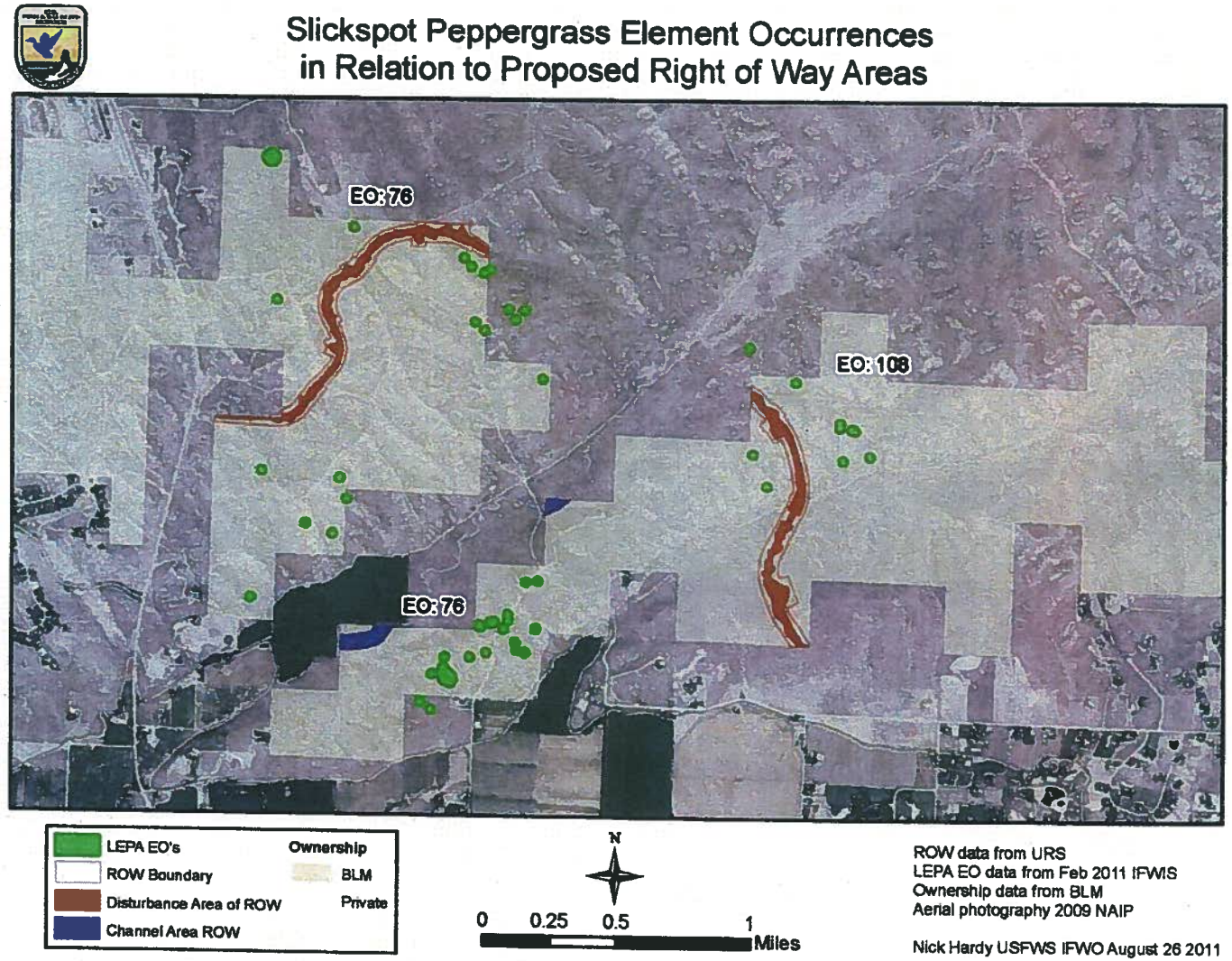

Figure 9. Slickspot Peppergrass Element Occurrences 76 and 108 in Relation to the Proposed Rights-of-Way Corridors Locations. Note that the locations of associated road and drainage structures on adjacent private lands are not illustrated on this map.

Variations in slickspot peppergrass plant numbers are likely due to environmental factors such as spring precipitation levels. No obvious trends are apparent in plant numbers documented at the HIP transects for EO 76 over the 5 years of HIP monitoring data available. As HIP monitoring occurs within the 10 slickspots within the EO identified within the HIP monitoring transect, many more slickspot peppergrass plants occur within EO 76 than are documented within the HIP transect. The INHP has classified EO 76 as B-ranked (Colket *et al.* 2006, p. 7).

The Assessment states that pre-project inventories by URS Corporation in 2008 documented 20-30 plants currently associated with EO 76 occurring within this ROW corridor. The current version of the INHP database does not clearly show that the SH-16 ROW corridor overlaps with a small portion of EO 76 or any occupied slickspot microsites (see Figure 9 above); however, for the purposes of this Opinion, we assume that the information in the Assessment indicating that the SH-16 ROW Access corridor encompasses these slickspot microsites is correct. The Assessment indicates that these slickspot microsites will be avoided by construction activities, if feasible. These slickspot microsites may be protected through micrositing of the proposed roadway and construction of temporary fencing to avoid trampling or other mechanical damage associated with construction in the area. However, for the purposes of analyses within this Opinion, it is assumed that these slickspots and the plants therein will be lost, which represents the worst case scenario. Slickspot peppergrass plants were also observed about 160 feet to the south of the SH-16 ROW corridor. In addition, the proposed Linder Road ROW is located about 0.9 miles to the east of EO 76. EO 76 is located within BLM LEPA Management Area 2C.

As the result of pre-project surveys for the proposed ROW corridors, previously unknown slickspot peppergrass locations were documented. Besides the expansion of EO 76, a new EO, BC-ranked EO 108, was designated by the INHP. EO 108 is located about 0.25 miles to the east and west of the Linder Road ROW corridor, which was sited to avoid slickspot microsites documented to contain slickspot peppergrass. The closest known location of slickspot peppergrass plants from the Linder Road ROW corridor, which are associated with EO 108, have been documented at about 475 feet to the west of the ROW corridor. No HIP data is available for EO 108 at this time as a HIP monitoring transect has not been established for this EO.

Slickspot Peppergrass Surveys

Surveys were conducted by URS Corporation between 2007 and 2010 (URS 2008, entire and URS 2010, entire). Surveys were conducted in two consecutive years in the area of the SH-16 and Linder Road ROW corridors. Additional habitat to the west of Linder Road but east of Hartley Lane was surveyed once in 2010. Only those portions of the Big Gulch Drainage Channel ROW located on public lands were surveyed in 2007 and 2008; it was determined that the drainage channel ROW does not contain slickspot microsites, and thus does not contain habitat that is expected to contain slickspot peppergrass plants. Three years of surveys were not conducted in any of the ROW corridors; thus, occupancy of slickspot peppergrass in the ROWs has not be fully determined as required under BLM protocols for slickspot peppergrass project clearances. Therefore, the Assessment assumes that these slickspot microsites within the SH-16 and Linder Road Access ROW corridors may contain viable slickspot peppergrass seeds and could contain slickspot peppergrass plants in the future.

Survey Results

As described above, slickspot surveys located slickspot microsites in the SH-16 and Linder Road Access ROW corridors (Table 5; Figure 9). Additional slickspot microsites and observations of slickspot peppergrass plants were located in the vicinity of the proposed ROWs within the action area (Figure 9). However, neither slickspot microsites nor slickspot peppergrass plants were observed on public lands in the Big Gulch Drainage Channel ROW.

Less than 0.1 acre (about 0.05 acres) of EO 76 that contains slickspot peppergrass and about 6 acres of individual slickspot microsites and slickspot complexes (clusters of slickspots) with no slickspot peppergrass plants observed were documented within the three ROW corridors combined (Table 5). The 0.05 acre area within RO 76 includes several slickspots microsites where slickspot peppergrass plants have been documented at least once during the 2007, 2008, and 2010 pre-project surveys plus an 82 foot buffer (25 meters) to provide consistency with INHP data. As described above, the new locations of slickspot peppergrass plants were incorporated into the INHP database as extensions of existing EO 76 and as the new EO 108. In addition, individual slickspot microsites and slickspot complex locations that were not observed to contain slickspot peppergrass plants were mapped and buffered by 82 feet (25 meters) to provide for conservation of the plant and its habitat during project planning and implementation.

Table 3. Approximate Acreage of Slickspot Peppergrass, Slickspot Microsites, the 0.5 mile Pollinator Buffer Surrounding Occupied Habitat, and Slickspot Peppergrass Habitat recorded within the Proposed Rights-of-Way (ROW)[1].

Proposed ROW	Slickspot Peppergrass (Plants Observed) (ac)	Slickspots & Slickspot Complexes (No Plants Observed) (ac)	0.5 mi Pollinator Buffer Around EOs in Occupied Habitat (ac)	Slickspot Peppergrass Habitat (ac)
Big Gulch Drainage	0	0	9	0
SH-16	<0.1[2]	3	55	0
Linder Road	0	3	43	5
Total	**<0.1**	**6**	**107**	**5**

[1] Based on field surveys conducted in 2007, 2008, and 2010 (URS 2008 and URS 2010) and INHP data.

[2] A small area currently designated as part of EO 76 was observed within the SH-16 ROW corridor in 2008. Approximately 20 to 30 plants were present on the south side of the eastern end of the ROW corridor.

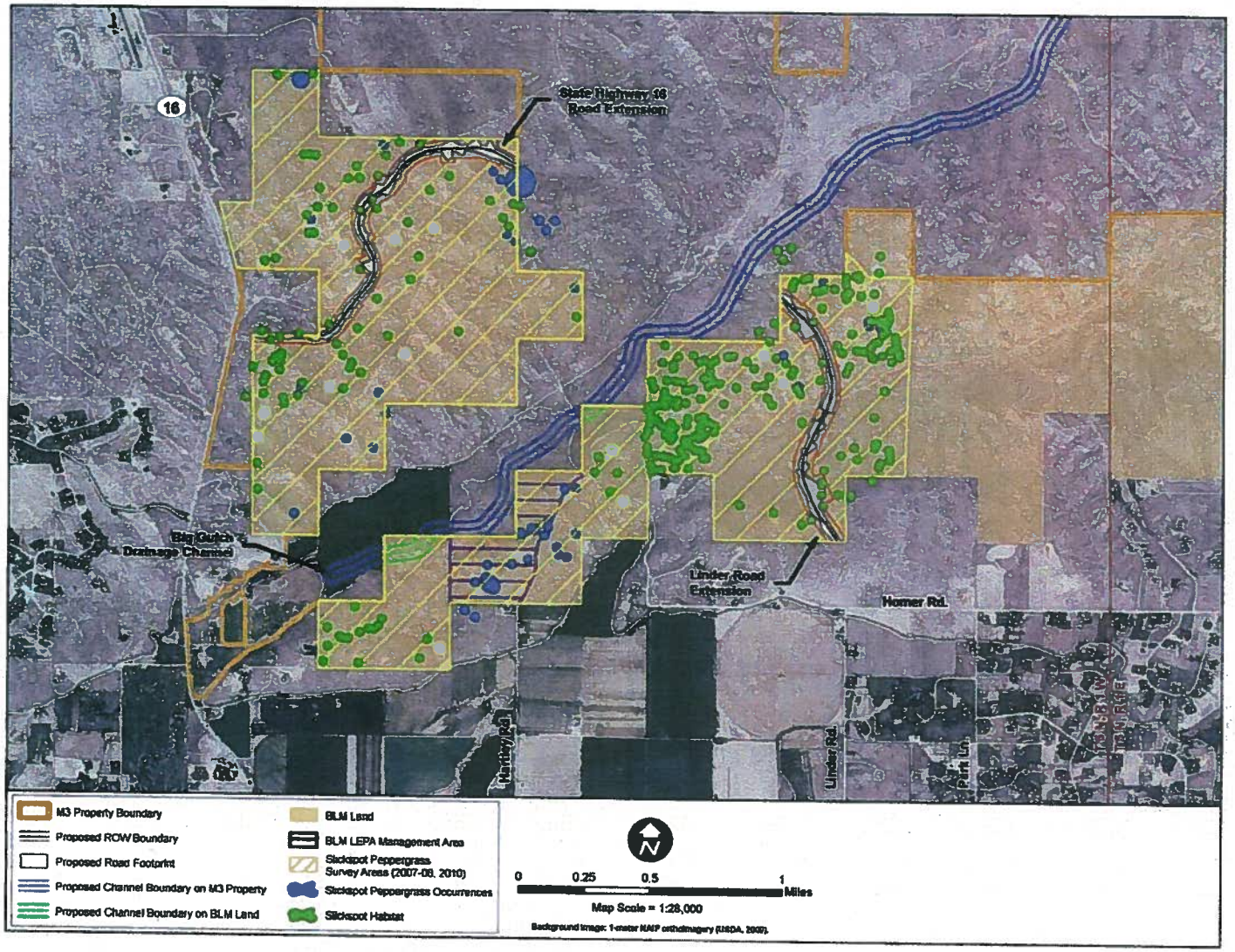

Figure 10. Slickspot peppergrass occurrences and habitat in relation to the proposed Rights-of-Way corridors. Note that private lands have not been fully surveyed so additional slickspot peppergrass occurrences and habitat may be present on private lands.

A total of 107 acres of occupied habitat[6], as defined in the May 2010 BLM *Slickspot Peppergrass Inventory and Clearance Standards*, were recorded in the three ROW corridors combined (Table 3). "Occupied habitat" includes both the slickspot peppergrass EO acreage plus the area contained within a 0.5 mile wide buffer area surrounding the EO. The vast majority of this 107 acres (all but less than 0.1 acre within the SH-16 Road ROW corridor) is located within this 0.5 mile pollinator buffer rather than within EOs. This 0.5 mile area surrounding EOs is important for maintaining or improving habitat integrity and pollinator populations for species conservation (see pollinator discussion in the Status of the Species section of this Opinion). Using the above definition of occupied habitat, 100 percent of the Big Gulch Drainage ROW and SH-16 Access ROW and 90 percent of the Linder Road Access ROW contain occupied habitat, respectively (Figure 10). Pre-project surveys also documented the presence of slickspot microsites within both the Linder Road and SH-16 Access ROW corridors; an estimated 6 ac of slickspot microsites (includes both slickspot microsite areas and their 82 foot consistency buffers) are located within these ROWs. The remaining portion of the Linder Road Access ROW corridor (about 5 ac) encompasses slickspot peppergrass habitat, which is defined as an area documented to contain slickspot microsites, but where adequate surveys have not been conducted in order to determine presence or absence of the species.[7]

2.4.1.2 Factors Affecting the Species in the Action Area

The Assessment determined the environmental baseline conditions in the action area using HIP monitoring data from EO 76 and EO 52 (Colket 2009, entire) as well as data collected from pre-project surveys of the proposed ROW corridors (URS 2008, entire and URS 2010, entire). Threats to the slickspot peppergrass identified in the Assessment in the vicinity of the proposed ROW corridors include wildfire, invasive nonnative plants, fire rehabilitation activities, herbicide and pesticide use, residential development, recreation, fragmentation, and livestock use. These threats are described below.

Wildfire

The Assessment states that documentation of wildfires in the action area began in 1958. Between 1958 and 2010, approximately 6,700 acres have burned. Of this area, 3,325 acres burned once, 1,327 acres burned twice, and 105 acres burned three times. In the past 20 years, approximately 3,900 acres (44 percent) of the action area has burned in wildfires, including 3,674 acres in the 2010 Big Fire. The Big Fire of 2010 burned 75 percent of the SH-16 Access ROW corridor, 76 percent of the Big Gulch Drainage ROW corridor, and 100 percent of the Linder Road Access ROW corridor. The burn severity in this area was variable and resulted in loss of sagebrush cover.

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[6] In the Assessment, acreages of the 0.5 mile pollinator buffer surrounding EOs, which are included within the definition of occupied habitat, also are described as slickspot peppergrass habitat (defined as areas containing slickspot microsites with no documented slickspot peppergrass plants). For the purposes of this Opinion, acreage of the 0.5 mile pollinator buffer areas surrounding EOs are displayed as occupied habitat only to avoid confusion regarding the dual designation of these acreages.

[7] Slickspot peppergrass habitat also includes a 0.5 mile habitat integrity zone established around these slickspot microsites to provide for habitat needs of insect pollinators.

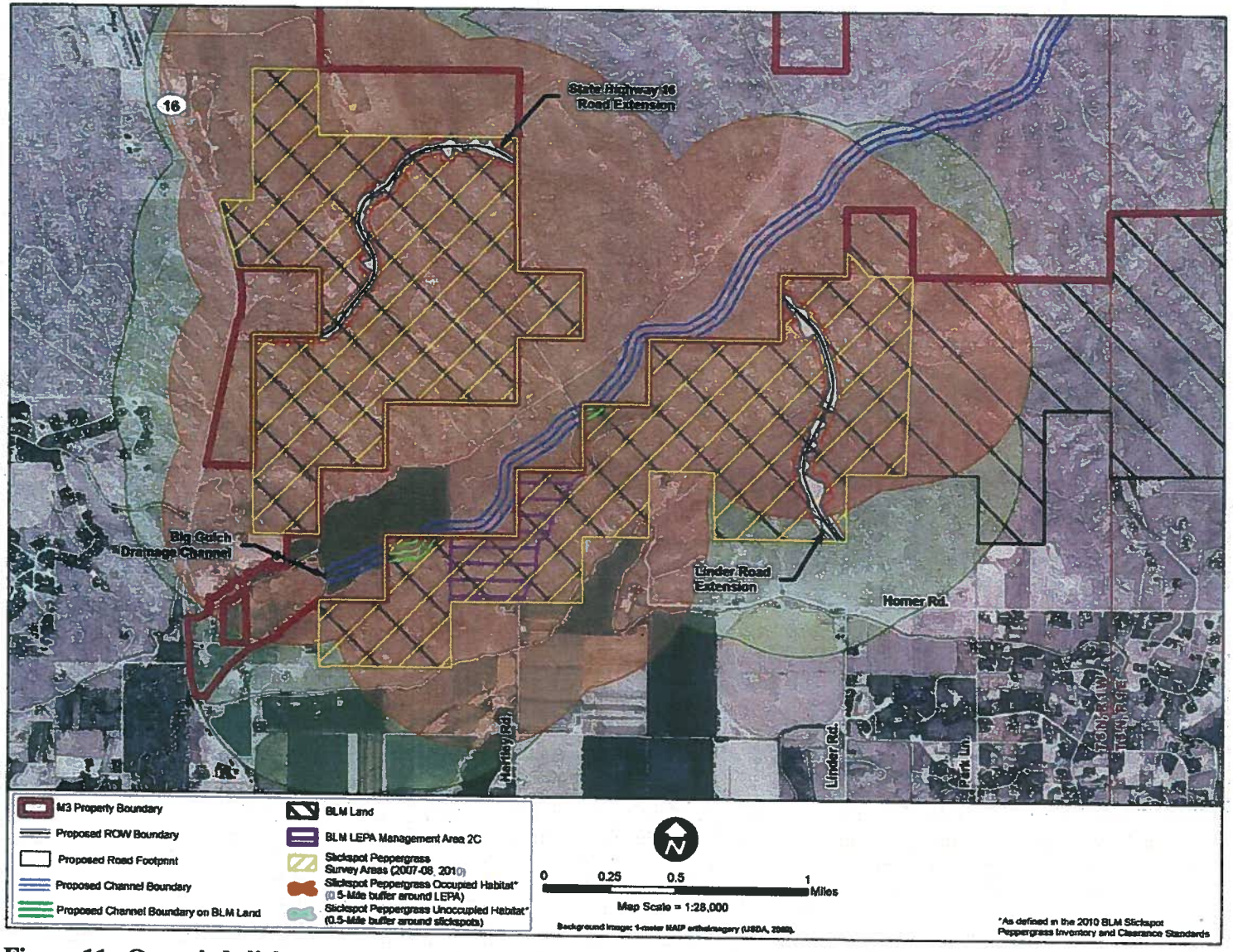

Figure 11. Occupied slickspot peppergrass habitat in relation to the proposed Rights-of-Way corridors on public lands.

EO 76 and approximately 50 percent of BLM LEPA Management Area 2C are located within the fire perimeter. However, the monitoring transect for EO 76 in the action area did not burn during this fire. In addition, the Assessment also states that remnant cheatgrass stubble observed during a 2010 BLM tour of the burn site near this EO and elsewhere in the fire perimeter indicates that the fire did not burn with high intensity within this area; thus, the slickspot peppergrass seedbank associated with EO 76 was likely undamaged by the 2010 Big Fire. However, the complete consumption of sagebrush shrubs in the vicinity of EO 108 indicate that the EO 108 seedbank was likely impacted by the Big Fire. In contrast, EO 52 is located outside of the burn perimeter; and therefore was unaffected by the 2010 Big Fire.

The Service considers the modified wildfire regime along with associated invasive nonnative plants to be the primary threats to the slickspot peppergrass within the action area as well as across the range of the species. Future frequency and intensity of wildfires and subsequent spread of invasive nonnative plants will be a key factor in whether the slickspot peppergrass will persist within the action area.

Invasive Nonnative Plants

Invasive and noxious weed invasions can reduce the quality of slickspot peppergrass habitat. Cheatgrass, often a dominant nonnative annual grass in the understory of slickspot peppergrass habitat, can impact slickspot peppergrass via 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). Cheatgrass is the dominant plant in the understory throughout the majority of the action area. Medusahead and tall tumble mustard are also present in the action area and pose a threat to slickspot peppergrass via plant competition as well as increased risk of frequent wildfire. Noxious weeds observed in the action area include well-established relatively common patches of rush skeletonweed (*Chondrilla juncea*) and uncommon patches of whitetop (*Cardaria draba*), which occur in small, localized populations in the proposed ROW areas (URS 2008, p. A-1). Scattered potential Canada thistle (*Cirsium arvense*) rosettes have also been observed (URS 2008, p. A-1). Russian knapweed (*Acroptilon repens*) and rush skeletonweed have also been documented near the proposed ROW areas by the BLM and were chemically treated.

As described above, the Service considers invasive nonnative plants along with the modified wildfire regime to be the primary threats to the slickspot peppergrass within the action area as well as across the range of the species. Future distribution and density of invasive nonnative plants within the action area will be a key factor in whether the slickspot peppergrass will persist in the vicinity of the proposed ROW corridor areas.

Slickspot Microsites and Habitat Condition

Slickspot peppergrass habitat fragmentation levels within the action area are determined by shrub cover, which is an indicator of fire occurrence within the past 15 to 25 year period. The Assessment indicates that, according to pre-project surveys and HIP monitoring photos, approximately 75 percent of slickspot peppergrass EOs with HIP monitoring transects (EOs 52 and 76) in the vicinity of the ROW corridors project contain native shrub habitat, and 25 percent is dominated by invasive nonnative annual plants (e.g., cheatgrass) with minimal or no native shrub component. In contrast, about 25 percent of the action area for the ROW corridors project contains native shrub habitat, and about 75 percent is dominated by invasive nonnative annual plants (e.g., cheatgrass) with minimal or no native shrub component.

Shrub cover in the action area and in two of the ROW corridors was dramatically reduced by the July 2010 Big Fire. Shrub cover within the Linder Road Access ROW corridor was essentially lost in the 2010 Big Fire, with only a few remnant patches of shrubs remaining within or adjacent to this corridor. Similarly, about 2 acres of the shrub cover in the Big Gulch ROW Drainage Channel ROW corridor was lost. In contrast, the area containing the SH-16 ROW Access corridor had burned in previous wildfires; vegetation cover in the SH-16 ROW Access corridor was predominantly invasive nonnative annual grass prior to the Big Fire. However, the Big Fire is expected to result in further increases of invasive nonnative species cover (i.e., cheatgrass) in the vicinity of the SH-16 ROW Access corridor.

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

Ground disturbance has resulted in the current condition of slickspots in the action area ranging from low to moderate quality for the slickspot peppergrass. In general, higher quality slickspots were observed within Wyoming big sagebrush communities. Higher quality slickspots exhibited higher biological soil crust cover and lower invasive nonnative plant cover. In contrast, poorer condition slickspots were observed within annual grasslands dominated by cheatgrass. These areas exhibited lower biological soil crust cover and higher invasive nonnative plant cover. Areas dominated by invasive nonnative annual plants (such as cheatgrass) are typically characterized by low biological soil crust cover (Belnap *et al.* 2001, p. 47). As much of the action area for the proposed ROW corridors is dominated by exotic annuals, including cheatgrass, biological soil crust cover is likely lower in the ROW corridors than in HIP monitoring transects for EO 52 and EO 76, which are located in remnant sagebrush patches. In addition, Owyhee harvester ants, which are an active and efficient slickspot peppergrass seed predator (White and Robertson 2009, p. 511), have been documented throughout the action area. Ground disturbance (i.e., livestock tracks and scats, and rodent burrows) was also observed throughout the action area. Low cover levels of litter and livestock feces were documented in monitored slickspots within nearby HIP transects.

Plantings in the eastern portion of the Big Gulch Drainage Channel ROW corridor and along the SH-16 and Linder Road Access ROW corridors will shift the vegetation in localized areas from cheatgrass dominated areas to perennial grasses and forbs with scattered shrubs and trees. Plantings in the western portion of the Big Gulch Channel Drainage ROW will modify existing vegetation in this ROW from basin big sagebrush dominated areas to perennial grasses and forbs with strategically placed shrubs and trees. In contrast, the SH-16 and Linder ROW Access corridors will modify vegetation from existing grasslands dominated by cheatgrass to perennial grasses and forbs with strategically placed shrubs and trees. All planted areas will increase the native forb cover within the ROW corridors, potentially benefitting slickspot peppergrass insect pollinators in localized areas.

The overall current condition of slickspot microsites and surrounding habitat near the SH-16 ROW Access corridor is categorized as low quality for the slickspot peppergrass. Slickspot microsites within and adjacent to the SH-16 ROW corridor are within a red three-awn/cheatgrass community. Ground disturbance both within and outside of slickspot microsites is evident from livestock tracks and scats, rodent holes and wildlife burrows, and some off road vehicle tracks. Invasive nonnative plants are present within and outside of slickspots. Past fires, including the

2010 Big Fire, have resulted in additional ground disturbance and associated changes in vegetation composition. The vegetation community consists of highly fragmented Wyoming sagebrush steppe habitat, with less than 10 percent of the area containing shrubs. The density and diversity of native grasses and forbs are low. Nonnative annuals and perennial species are abundant. Diversity and cover of native forbs are important as these factors can affect the availability of insect pollinators required for successful reproduction of the slickspot peppergrass. Biological soil crust cover in this area was not recorded, but in habitat to the south and east, biological crust coverage ranges from 10 to 80 percent.

The overall condition of the Wyoming big sagebrush habitat in the vicinity of the Linder Road ROW Access corridor is categorized as low to moderate quality for slickspot peppergrass. However, the condition of sagebrush habitat within the ROW corridor is categorized as low quality as essentially all shrub covers within this ROW corridor was lost in the 2010 Big Fire. Two small patches of live sagebrush remain adjacent to the southern portion of this ROW, with one additional sagebrush patch observed within the ROW just outside the southern boundary of proposed critical habitat that bisects this ROW. Over 95 percent of the Linder Road Access ROW corridor is comprised of annual grasses and forbs. While some remnant native grasses and forbs are present in the vicinity of the ROW, their density is low with nonnative forbs more abundant than native forbs. The 2010 fire has also likely resulted in increased invasive nonnative plant cover both within and outside of slickspots, further reducing the quality of habitat in the ROW area. Prior to the 2010 fire, ground disturbance within slickspot microsites and surrounding habitat was evident from deer and livestock tracks and scats, rodent holes and wildlife burrows. Nonnative annuals and perennial species are documented as abundant, with biological soil crust cover ranging from 10 to 80 percent. Following the 2010 fire, slickspot microsites in the area range from moderate to low quality for the slickspot peppergrass.

No slickspot microsites are located within the proposed Big Gulch Channel ROW; thus, this area does not contain slickspot peppergrass. However, this ROW corridor is located within 0.5 miles of EO 76 and EO 108, and therefore may contribute to the reproductive success of the species by providing habitat for insect pollinators. Roughly half of the ROW basin was dominated by basin big sagebrush (*Artemesia tridentata* ssp. *tridentata*) prior to the 2010 Big Fire, and the understory was dominated by annual invasive grasses. The other half of the ROW was dominated by a combination of native perennial and nonnative annual grasslands. Within that portion of the Big Gulch Channel ROW crossing public land, habitat was dominated by moderate quality shrublands prior to the Big Fire. The western portion (about 7 acres) of the Big Gulch Drainage Channel ROW was not burned in the fire and is still dominated by basin big sagebrush; however, the east portion (about 2 acres) was consumed in the wildfire and no longer contains shrubs. With the reduction of shrub cover as a result of the 2010 fire, annual grass cover within the Big Gulch Drainage Channel ROW corridor is expected to increase.

Habitat in the vicinity of EO 52, EO 76, and EO 108 has been impacted by past wildfires and associated spread of invasive nonnative plants, including cheatgrass. The modified wildfire regime and invasive nonnative plants are described above as primary threats to the slickspot peppergrass. In addition, ground disturbance in the action area provides additional areas available for the spread of invasive nonnative plants. The lower habitat quality for the slickspot peppergrass due to loss of shrubs to wildfire coupled with high cheatgrass cover in the area may affect the ability of the action area to support the slickspot peppergrass in the future independent of future proposed actions such as this ROW corridors project.

Post-Fire Activities

BLM has initiated emergency stabilization and rehabilitation (ESR) efforts in slickspot peppergrass habitat that burned in the 2010 Big Fire. ESR efforts began in the fall of 2010 and are expected to facilitate restoration of vegetation structure and diversity of the area (BLM 2010b *In*: BLM 2011). ESR activities include fence repair, noxious weed surveys and control, herbicide spraying of cheatgrass, replanting shrubs and forbs in select bitterbrush and sagebrush sites with seedlings and seed caches, broadcast seeding, and temporary livestock closures from treatment areas. Because not all areas within the fire perimeter will be rehabilitated, annual grasslands are expected to increase in the action area from cover levels reported in past surveys. ESR activities in the action area are expected to have long-benefits for the slickspot peppergrass as native and non-invasive nonnative grasses, forbs, and shrubs are being reestablished; the Service has previously concurred with the BLM's determinations that any short-term negative effects associated with ESR or herbicide use, including their associated project design features to avoid any adverse impacts, are not likely to adversely affect the slickspot peppergrass. Therefore, post fire activities for the 2010 Big Fire, if successful, are expected to increase the probability of survival and recovery of the slickspot peppergrass within the action area.

Development

The impacts of development on slickspot peppergrass are currently considered low in the action area due to the current low density of development. Current development in the action area is limited to a few ranchettes, although two-track dirt roads are present and houses and ranchettes exist adjacent to the action area. A greater density of homes and some agriculture is present south of the action area, south of Homer Road between Hartley Road and Park Lane, and both north and south of Homer Road east of Park Lane.

Residential, commercial, and agricultural development prior to 1955 has been reported as the cause for five documented and four probable extirpations of the slickspot peppergrass (Colket *et al.* 2006, p. 4). All forms of development can affect the slickspot peppergrass and slickspot habitat, whether directly or indirectly, through habitat conversion (resulting in direct loss of individuals and permanent loss of habitat), or through habitat degradation and fragmentation as a result of consequent increased nonnative plant invasions, increased OHV use, increased wildfire, and changes to insect populations (ILPG 1999, *in litt.* pp. 1–3; Robertson and White 2007, pp. 7, 13).

The most direct impact of development is the outright loss of slickspot peppergrass populations due to habitat conversion, such as when habitat occupied by slickspot peppergrass is converted to a residential development or an agricultural field, resulting in the permanent loss of the plant population and the habitat. Direct effects to the slickspot peppergrass are also a likely consequence of the linear infrastructure associated with urban and residential development, including road ROW corridors such as the proposed action. Transportation and utility corridors associated with urban and residential development can increase the spread of nonnative invasive plants. Roads appear to create avenues for invasion by cheatgrass because there is generally a positive significant association between nonnative, disturbance-tolerant species such as cheatgrass and proximity to roads (Forman and Alexander 1998, p. 210; Gelbard and Belnap 2003, pp. 424-425, 430-431; Bradley and Mustard 2006, p. 1142). Bradley and Mustard (2006, p. 1146) found an even stronger association between the presence of cheatgrass and power-line corridors, and they suggest that the stronger relationship between cheatgrass and recent

disturbance (that is, power lines; roads were considered an historical disturbance) suggests that future placement of either roads or power lines would very likely result in invasion by cheatgrass.

Increased urban and residential development also increases the probability of human-ignited wildfires, presumably by increasing the area of the urban-wildland interface (e.g., Keeley *et al.* 1999, p. 1829; Romero-Calcerrada *et al.* 2008, pp. 341, 351; Syphard *et al.* 2008, pp. 610–611). Increases in human habitation and activity in the rangelands of southern Idaho have contributed to the increase in wildfire starts in recent years. Proximity to urban areas and roads can be an important causal factor associated with wildfire ignitions (Kalabokidis *et al.* 2002, p. 6; Brooks *et al.* 2004, p. 3; Romero-Calcerrada *et al.* 2008, p. 351; Syphard *et al.* 2008, pp. 610–611).

Insect populations may also be affected by development, potentially impacting the primary vector for pollination and genetic exchange for the slickspot peppergrass. Insect densities have been documented as being lower in developed areas than in native habitats (Gibbs and Stanton 2001, p. 82; McIntyre and Hostetler 2001, p. 215; Zanette *et al.* 2005, p. 117; Clark *et al.* 2007, p. 333). Changes in native habitat caused by ongoing development or conversion of lands to agriculture may impact insect pollinator populations by removing specific food sources or habitats required for breeding or nesting (Kearns and Inouye 1997, p. 298; McIntyre and Hostetler 2001, p. 215; Zanette *et al.* 2005, pp. 117–118). Habitat isolation and fragmentation resulting from development may also impact the slickspot peppergrass by decreasing pollination from distant sources, possibly resulting in decreased reproductive potential (e.g., lower seed set) and reduced genetic diversity. Reductions in pollinators due to development could thus potentially impact slickspot peppergrass reproductive success as well as contribute to reduced genetic variability, as the plant is dependent on insect pollination for successful reproduction and the transfer of genetic material between populations.

Proximity to development carries increased risk of mechanical disturbances (such as from OHV use); increased risk of wildfire ignition and invasion by nonnative plant species, as discussed above; possible decreases in the diversity or abundance of pollinators; and vulnerabilities associated with fragmentation and isolation of small populations, as discussed below. The Service considers development to be a significant threat within the Boise Foothills and Snake River Plain portions of the range of the slickspot peppergrass, as the outcome of this threat is severe where it occurs and likely results in the permanent loss of populations and irreplaceable slickspot microsite habitats. However, this threat is not so imminent or sweeping in scope as to pose an immediate risk of extirpation to the populations of slickspot peppergrass in these regions, nor do we consider the threat of development to be equal to the magnitude and intensity of the primary threats of the modified wildfire regime and invasive nonnative plants. Development is considered to pose a significant but lesser threat to the species.

Recreation

As described above, many of the private lands adjacent in the vicinity of the proposed ROW corridors have been or are currently being subdivided. Increasing development places additional off-site demands on adjacent or nearby public lands, especially from a recreational perspective. The demand for easily accessible recreation areas in general and OHV use areas in particular will continue to increase as the population increases. Impacts from recreation are occurring in the action area from growth in and surrounding the city of Eagle, Idaho. Recreational activities such as OHV use, equestrian use, firearm discharge, hunting, walking, and pet exercise can lead to

negative impacts to slickspot peppergrass. OHV, equestrian, and walking can impact slickspot peppergrass via direct mortality (e.g. trampling) and indirect population decline from habitat loss (i.e. soil crust disturbance especially during wet periods). Recreationalists may also have an indirect effect on slickspot peppergrass via increases in the spread of nonnative annual grasses (e.g. cheatgrass seed dispersal, soil disturbance) or wildfire ignition through disposal of cigarettes, firearm discharge, vehicle heat ignition, fireworks, or other careless or intentional ignition sources. Recreation use within the action area consists of all of the above recreation types. These factors will place additional demands on slickspot peppergrass and its habitat and may lead to further degradation of slickspot peppergrass habitat across its range.

The City of Eagle filed a Recreation and Public Purposes Act application for 1,915 acres of public land that was annexed by the City in December 2009. The City has proposed the creation of a regional park with features that include an extensive pedestrian and equestrian trail system with bridges, trailheads, rodeo grounds, and an amphitheater. The regional park is proposed on public land located south of the future Development. The proposed Linder Road Access ROW is included in the preliminary park master plan in the City of Eagle's pending Recreation and Public Purposes Act application. The area proposed for the regional park includes slickspot peppergrass plants and slickspot peppergrass habitat.

We consider recreation to currently pose a low to moderate threat to the slickspot peppergrass within the action area. We consider this threat to be low rangewide, and not as severe as the threats posed by the modified wildfire regime and invasive nonnative plant species. Threats associated with recreation are greatest in the Boise Foothills physiographic region, and decrease with increasing distance from populated areas. However, threats associated with recreation have the potential to increase in both the Boise Foothills and Snake River Plains physiographic regions over time as the demand for open space for recreational use increases with associated population growth in southern Idaho.

Habitat Fragmentation and Isolation of Small Populations

Due to its occupancy of patchily distributed slickspots, the habitat of the slickspot peppergrass is somewhat naturally fragmented. Fragmentation at a larger scale, however, can pose problems for the slickspot peppergrass by creating barriers in the landscape that prevent effective genetic exchange between populations. Seed dispersal for the 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 pollination 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 the 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 2006, *in litt.* 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 the slickspot peppergrass suggested that populations in the Snake River Plain and the Owyhee Plateau "may have reduced genetic diversity" (Larson *et al.* 2006, p. 17; note the Boise Foothills were not analyzed separately in this study).

Many of the remaining occurrences of the 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 EOs (37 percent) each had fewer than 50 plants during years of average or greater than average rainfall (Colket *et al.* 2006, Tables 1–13). Many of these small remnant EOs exist within habitat that is degraded by the factors identified above. Small slickspot peppergrass populations have likely persisted due to their long-lived seed bank, but the potential risk of depletion of each population's seed bank with no new genetic input makes the persistence of these small populations uncertain. Providing suitable habitats and foraging habitats for the species' insect pollinators are 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 local extinction (Barrett and Kohn 1991, pp. 4, 28). Smaller populations generally have lower genetic diversity, and lower genetic diversity may in turn 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).

Even though the slickspot peppergrass occurs in naturally patchy microsite habitats, the increasing degree of fragmentation produced by wildfires and development may result in the separation of populations beyond the distance that its insect pollinators are capable of traveling. Genetic exchange in slickspot peppergrass is achieved through either seed dispersal or insect-mediated pollination, and plants that receive pollen from more distant sources demonstrate greater reproductive success in terms of seed production. As all indications are that seeds are dispersed over only a very small distance and insect pollinators are also limited in their dispersal capabilities, habitat fragmentation and isolation of populations poses a threat to the slickspot peppergrass in terms of decreased reproductive success (lower seed set), reduced genetic variability, and greater local extinction risk. For these reasons, we consider habitat fragmentation resulting from wildfires and development to pose a moderate degree of threat to the slickspot peppergrass. We consider this threat to be significant, but not as severe as the threats posed by the modified wildfire regime and invasive nonnative plant species. The threat of habitat fragmentation and isolation of small populations is pervasive throughout the range of the slickspot peppergrass.

Livestock Grazing

Livestock use has the potential to result in both positive and negative effects on slickspot peppergrass and its habitat. Impacts vary with stocking rate and season of use. Potential positive effects that livestock grazing may have on slickspot peppergrass include herbivory of invasive plants and the associated lower risk of wildfire through fine fuel reduction and native plant competition in the understory (Pellant 1996, p. 6). The potential negative direct effects of livestock grazing on slickspot peppergrass include trampling of plants leading to direct mortality of individuals or indirect impacts such as altering habitat creating conditions more conducive to other plant species. Analyses of the best available information indicate that impacts from

livestock trampling tend to be localized and are probably not a threat to the population rangewide (Fish and Wildlife Service 2010, pp. 41-45).

Ongoing grazing in the action area is limited to three livestock grazing permits. The McPherson Allotment consists of 240 acres on public land with 34 permitted animal unit months (AUMs; 20 cattle) in April and May. Spring Valley Allotment consists of 7,379 acres on public land with 848 AUMs split between two permits (582 cattle April to October, 950 sheep April and May). The Black Canyon Allotment consists of 11,041 acres on public land with 2,642 AUMs split between two permits (1,600 sheep April and May, 1,800 sheep December, 3,070 sheep March to May, and 3,070 sheep in December). Grazing of livestock in these allotments has contributed to the degradation of slickspot peppergrass habitat via the mechanisms described above, as evident by hoof prints and feces within and adjacent to slickspots (Colket 2009, pp. 11–12; URS 2008, Appendix C). Slickspot peppergrass conservation measures in the 2009 Conservation Agreement between BLM and the FWS are expected to reduce but not eliminate localized trampling damage to individual slickspot peppergrass plants and slickspot microsites as well as potential localized impacts to native vegetation. Therefore, as the effects from livestock grazing within the action area are typically localized, livestock grazing poses a relatively low level threat to the slickspot peppergrass within the action area.

2.4.2 Slickspot Peppergrass Critical Habitat

2.4.2.1 Status of Slickspot Peppergrass Proposed Critical Habitat in the Action Area

The proposed ROW corridors project is located within SubUnit 2a of proposed critical habitat for the slickspot peppergrass. Of the 3,151 total acres of proposed critical habitat within SubUnit 2a, 1,985 acres (63 percent) are located within the action area. Approximately 86 acres of proposed critical habitat within SubUnit 2a overlaps the alignments of the three ROW corridors on public lands, which represents about 77 percent of the total ROW corridors area (Table 4). This 86 acre area of proposed critical habitat located within the proposed ROW corridors represents about 3 percent of the total acreage of SubUnit 2a, about 0.4 percent of the 17,292 acres of proposed critical habitat within Unit 2, and about 0.002 percent of the proposed critical habitat acreage for the slickspot peppergrass rangewide (57,756 acres). As described above, EO 52, EO 76, and EO 108 associated with this proposed critical habitat are categorized by INHP as C-ranked, B-ranked, and BC-ranked, respectively. As described above, habitat in the vicinity of these EOs has been impacted by past wildfires and associated spread of invasive nonnative plants, including cheatgrass. The lowered habitat quality in the area may affect the ability of the action area to support the slickspot peppergrass in the future independent of future proposed actions such as the ROW corridors project.

Table 4. Proposed Critical Habitat for Slickspot Peppergrass Located on Public Land within the Proposed Rights-of-Way (ROW) Corridors.

Proposed ROW	Proposed Critical Habitat (acres)	Percent of ROW within Critical Habitat
Big Gulch Drainage	9	99
SH-16	44	80
Linder Road	33	69
Total	**86**	**77**

Ground disturbance during construction of the ROW corridors would result in the localized direct removal of up to 1 acre of slickspot microsites or slickspot complexes (up to 8 slickspot microsites or slickspot complexes) within proposed critical habitat. Up to 2 additional acres of slickspot microsites/slickpot complexes (up to 2 slickspot microsites or slickspot complexes) within proposed critical habitat may also be damaged within the ROW corridors but outside of the construction footprints through trampling or mechanical damage from construction equipment, damaging the slickspot soil structure and function and reducing biological soil crust cover. These total 3 acres of slickspot microsites (PCE 1) and their associated 82 ft buffer located within proposed critical habitat are within the proposed SH-16 and Linder Road ROW Access corridors (Table 5). No slickspots are present within the Big Gulch Drainage Channel ROW corridor.

Table. 5. Approximate Acreage of Proposed Critical Habitat that encompasses Slickspot Peppergrass, Slickspot Microsites, and the 0.5 mile Pollinator Buffer Surrounding Occupied Habitat recorded within the Proposed Rights-of-Way (ROW)[1].

Proposed ROW	Slickspot Microsites Containing Slickspot Peppergrass[1]	Slickspots & Slickspot Complexes (No Plants Observed)[2]	0.5 mile Pollinator Buffer Surrounding Occupied Habitat
Big Gulch Drainage	0	0	9
SH-16	<0.1[2]	2	44
Linder Road	0	1	33
TOTAL	**<0.1**	**3**	**86**

[1] Based on field surveys conducted in 2007, 2008, and 2010 (URS 2008 and URS 2010) and INHP data.

[2] A small area currently designated as part of EO 76 was observed within the SH-16 ROW corridor in 2008. Approximately 20 to 30 plants were present on the south side of the eastern end of the ROW corridor.

About 7 acres of big sagebrush shrub cover (PCE 2, 3 and 4) remains within the ROW corridors on public lands; these 7 acres of sagebrush are located within the Big Gulch Drainage Channel ROW corridor. No sagebrush cover within proposed critical habitat is located within the SH-16 or the Linder Road ROW Access corridors.

Ground disturbance during construction of the ROW corridors will result in impacts to PCEs of proposed critical habitat for the slickspot peppergrass. In total, up to 86 acres of proposed critical habitat would either be removed or disturbed during construction and maintenance of the ROW corridors (Table 6). A total of about 47 acres of land identified as proposed critical habitat

will be removed within the two road footprint boundaries and Big Gulch Drainage Channel boundary (Table 6). An additional 39 acres of proposed critical habitat for the road ROWs could be disturbed, with portions removed during construction and landscaping (Table 6). This area will not be paved, but will accommodate construction, stabilization, landscaping, drainage, a multi-use trail, and utilities. This area would be monitored and controlled for nonnative species.

Table 6. Acres of Proposed Critical Habitat Removed or Disturbed within the Rights-of-Way (ROW) Corridors.

ROW Name	Acres of Proposed Critical Habitat	Percentage of ROW Area Containing Proposed Critical Habitat
ROW Footprint[1]		
Big Gulch Channel	9	99%
SH-16 Access	22	40%
Linder Road Access	16	33%
Total	**47**	**42%**
Within ROW but Outside of Footprint[2]		
Big Gulch Channel	0	0%
SH-16 Access	22	40%
Linder Road Access	17	36%
Total	**39**	**35%**
Total ROW Area		
Big Gulch Channel	9	99%
SH-16 Access	44	80%
Linder Road Access	33	69%
Total	**86**	**77%**

[1]All habitat within the ROW footprint would be removed and a portion would be revegetated.

[2]Portions of habitat outside of the ROW footprint may be disturbed and/or removed.

As described in the Status of the Slickspot Peppergrass section above, slickspot microsites are known to occur within the SH-16 and Linder Road ROW Access corridors (Table 5, Figure 9). Of the 6 acres of slickspots and slickspot complexes that will be removed during construction, less than 2 acres of the construction footprint area (up to a total of 8 slickspots and slickspot complexes) occur within proposed critical habitat (Table 7). This less than 2 acre area represents about 1 percent of the slickspot acreage and about 5 percent of the number of known slickspots and slickspot complexes within proposed critical habitat in the action area. The total ROW area located outside of the construction footprints for the two access ROWs combined (about 22 acres for SH-16 and about 17 acres for Linder Road) contains about 39 acres of proposed critical habitat. Trampling and/or removal of additional slickspot microsites outside of the road footprint area within the proposed critical habitat in the SH-16 and Linder Road ROW corridors could also occur (up to about 2 acres and up to 2 slickspots or slickspot complexes; Table 7). This could disturb up to an additional 2 percent of the slickspot acreage or an additional 1 percent of the known number of slickspots and slickspot complexes within proposed critical habitat in the action area. In total, up to about 3 acres of slickspots or slickspot complexes (up to 10 in number) would be removed or disturbed during activities associated with the development of the two ROW Access corridors (Table 6). This 3 acre area of slickspot microsites encompassed by

proposed critical habitat within the proposed ROW corridors represents about 0.001 percent of the 3,151 acres within Critical Habitat SubUnit 2a, about 0.0002 percent of the 17,292 acres of proposed critical habitat within Unit 2, and about 0.00005 percent of the proposed critical habitat acreage for the slickspot peppergrass rangewide (57,756 acres). No slickspots occur within the proposed Big Gulch Channel Drainage ROW (Table 5 and Figure 9; Table 7); therefore, none would be removed or damaged during construction of this ROW corridor.

Table 7. Slickspots and Slickspot Complexes within Proposed Critical Habitat Bisected by the Proposed Rights-of-Way (ROW) Corridors.

ROW Name	Slickspots & Slickspot Complexes (acres[3])	Number of Known Slickspots & Slickspot Complexes
ROW Footprint[1]		
Big Gulch Channel	0	0
SH-16 Access	1	6
Linder Road Access	0.2	2
Total	**1**	**8**
Within ROW but Outside of Footprint[2]		
Big Gulch Channel	0	0
SH-16 Access	1	1
Linder Road Access	1	1
Total	**2**	**2**
Total ROW Area		
Big Gulch Channel	0	0
SH-16 Access	2	7
Linder Road Access	1	3
Total	**3**	**10**

[1]All vegetation and slickspot microsites within the ROW footprint would be removed and a portion of this area will be revegetated.

[2]Portions of vegetated areas and slickspot microsites located outside of the ROW footprint but within the ROW area could be disturbed and/or removed during construction activities.

[3]Acreage of slickspots were computed by buffering known slickspot and slickspot complex locations by 82 feet (25 meters).

2.4.2.2 Factors Affecting Slickspot Peppergrass Critical Habitat in the Action Area

Of the four PCEs identified for slickspot peppergrass proposed critical habitat (i.e., functional slickspot microsites, intact big sagebrush habitat, presence of insect pollinators, and habitat requirements for insect pollinators), all occur to some degree within the action area. Ongoing threats to PCEs of proposed critical habitat in the vicinity of the proposed ROW corridors as identified in the Assessment include wildfire, invasive nonnative plants, fire rehabilitation activities, herbicide and pesticide use, residential development, recreation, habitat fragmentation, and livestock use. These same factors affecting the PCEs of proposed critical habitat have been previously described in detail for the species in section 2.4.1.2 above. The primary threats of modified wildfire regime and invasive nonnative plants have significantly impacted the

functionality of PCEs of proposed critical habitat within the action area, and may continue to impact critical habitat PCEs in the future.

Data used to determine condition of the slickspots and habitat in the action area surrounding occupied slickspots included HIP monitoring data for EO 76 and EO 52 (Colket 2009, entire; Kinter *et al.* 2010, Appendix H) and data from surveys of the proposed ROWs (URS 2008, entire and URS 2010, entire). Overall, the quality rankings of the PCE range from low to moderate (Table 8). The Assessment rated slickspot microsites (PCE 1) and intact sagebrush steppe habitat (PCE 2) as being in moderate quality condition. The Assessment rated the presence of insect pollinators (PCE 3) as well as the presence of habitat components required by insect pollinators such as a diversity of native forbs and reproductive nesting sites (PCE 4) as being in low quality condition. Although the entire acreage of the ROW corridors within proposed critical habitat is also located within the 0.5 mile pollinator buffer surrounding EOs, the habitat condition for insect pollinators in the area is categorized as low quality due to the low cover of native forbs and the predominance of invasive nonnative plants such as cheatgrass throughout the project area. For additional details on the Environmental Baseline conditions within and adjacent to the proposed ROW corridors project for both the slickspot peppergrass and proposed critical habitat, see pages 2437 and pages D-7 to D-12 of the Assessment.

Table 8. Current Condition of Primary Constituent Elements for Slickspot Peppergrass Proposed Critical Habitat within the Action Area.

PCE[1]	Corresponding Pathway Indicators[2]	Current Quality Ranking of Pathway Indicators[2]	Quality Ranking of PCE (L, M, H)
1	A-1	L-M	M
	A-2	L-M	
	A-3	H	
2	B-1	H	M
	B-2	L	
	B-3	L	
	B-4	H	
	B-5	L	
3	B-3	L	L
	B-5	L	
4	B-1	H	L
	B-2	L	
	B-3	L	
	B-5	L	
Summary of Overall Status of PCE Baseline within the Action Area			**L-M**

[1] PCE 1 = Ecologically functional slickspots; PCE 2 = relatively intact native Wyoming big sagebrush vegetation; PCE 3 = a diversity of native plants; PCE 4 = sufficient pollinators for successful fruit and seed production.

[2] Described in Appendix B, Table B-2 of the Assessment (L = low quality, M = moderate quality, H = high quality).

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 Actions Analyses

In analyzing the effects of the proposed ROW corridors on the slickspot peppergrass, the Bureau used *A Framework to Assist in Making Endangered Species Act Determinations of Effect for Slickspot Peppergrass (*Lepidium papilliferum*)* (Framework) (Service 2006a, entire). The Framework is a tool developed to assist Federal agencies when working with the Service to assess effects of their actions on the slickspot peppergrass. The Framework was developed based on the species' life history, ecological requirements, and threats. 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 slickspot peppergrass is a desert annual, 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 for 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 BLM applied the Matrix of Pathways and Indicators from the Framework to review both the baseline conditions and ongoing actions affecting slickspot peppergrass occupied habitat. This matrix considers indicators that reflect resource characteristics and their condition that are described as a quality ranking. The actual matrices generated by this analysis process are provided in the Assessment. The Framework matrix categorizes a series of habitat quality indicators both within and outside of slickspot microsites. 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.

As the Framework is based on habitat parameters, it also addresses the components that reflect the PCEs of proposed critical habitat for the slickspot peppergrass. A cross walk was developed for using the Framework to also determine both the environmental baseline and potential effects

of the proposed project on PCEs of proposed critical habitat. A copy of this crosswalk is provided in Appendix A of this Opinion.

Slickspot peppergrass survival and recovery is dependent on maintaining and enhancing Wyoming big sagebrush-steppe habitat and the 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. Maintenance or enhancement of connectivity may involve improving the condition of currently lower ranked EOs (D- through F-ranked) to facilitate 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 the proposed ROW corridors. These INHP criteria address population size of the EO, habitat condition within the EO, and the landscape condition of the area surrounding the EO. The ROWs corridor action area contains EOs that are B-, BC-, and C-ranked. When multiple EOs of varying INHP ranks are located within an action area, the conservation value of the action area is categorized based on the highest ranked EO located within the area. For the purpose of analyses presented in this Opinion, the action area for the proposed ROW corridors was ranked as having a high conservation value for the slickspot peppergrass. Once the conservation value of an action is identified, effects of the action are examined to determine whether the action was 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.

The indicators and quality rankings used to determine the effects of the proposed ROW corridors project on the slickspot peppergrass are based on best available science. However, we acknowledge that information gaps and disagreement exist with respect to the available information on the slickspot peppergrass; however, in accordance with Service policy, the best information available was used to develop this Opinion. Page 1-6 of the *Endangered Species Consultation Handbook* states that "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." Researching the effects of an action 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. Thus, the Service has provided the benefit of the doubt to the slickspot peppergrass and its proposed critical habitat with respect to data gaps regarding the potential effects of the proposed action considered in this Opinion. Therefore, if there is a reasonable possibility that an adverse impact could occur to a single slickspot peppergrass plant (including seeds) or any loss or degradation of PCEs for proposed critical habitat associated with the proposed action, a "may affect, likely to adversely affect" determination has been made.

2.5.2 Slickspot Peppergrass

2.5.2.1 Direct and Indirect Effects of the Proposed Action

Direct Loss or Damage

Slickspot peppergrass plants will likely be trampled, damaged, or removed during construction of the SH-16 ROW; the level of effects will vary depending on the type and location of disturbance within the ROW boundary, and will occur within a 0.05 acre area of EO 76 bisected by the ROW which was documented to contain a total of 20 to 30 plants in slickspot microsites during 2008 pre-project surveys. These slickspot microsites are presumed to contain seeds (based on prior plant presence) and may contain slickspot peppergrass plants at the time of construction. The Assessment indicates that these slickspot microsites will be avoided by construction activities, if feasible. Although these slickspot microsites may be protected through micrositing of the proposed roadway construction footprint and through use of temporary fencing to avoid trampling or other mechanical damage associated with construction in the area, for the purposes of effects analyses within this Opinion, it is assumed that these slickspot microsites and the plants and seeds therein will be lost, which will result in adverse effect to the slickspot peppergrass. The 20 to 30 plants (about 6 percent) observed in the ROW corridor in 2008 were part of about 500 plants observed during 2008 surveys in this area, and represent a relatively small number of plants when considering the thousands of plants documented within EO 76. While this loss of 0.05 acres of EO 76 will be avoided to the extent feasible, this 0.05 acre loss represents only 0.0003 percent of the total acreage of EOs known at the time of species listing (15,801 acres). Therefore, the loss of plants and a portion of the seed bank within this 0.05 acre area is not expected to result in a reduction of the conservation value of EO 76 or a reduction in the survival and recovery of the slickspot peppergrass across the range of the species.

As no slickspot peppergrass plants have been observed within the Linder Road ROW Access corridor, it is not anticipated that slickspot peppergrass plants will be trampled, damaged, or removed during construction of this corridor. However, only two of three survey years required to determine slickspot peppergrass absence from slickspot microsites have been completed within this ROW corridor so it is possible that some slickspot peppergrass seeds may be present within the slickspot microsites that will be lost. No slickspot peppergrass plants will be directly impacted from construction of the Big Gulch Drainage Channel ROW corridor as no slickspot microsites are present in this ROW.

Ground disturbance during construction of the SH-16 and Linder Road ROW corridors will result in the direct removal of up to 2 acres of slickspot microsites/slickspot microsite complexes where slickspot peppergrass plants have not been observed to date. As described above, these slickspots may contain slickspot peppergrass seeds, resulting in direct effects to the plant. Although the complete loss of up to 2 acres of slickspot microsites/slickspot microsite complexes reduces the total amount of slickspot habitat available for recovery of the species over time, this reduction is considered to be minor in relation to the thousands of slickspot microsites in the Boise Foothills physiographic region as well as throughout the range of the species.

Slickspot microsites having no documented slickspot peppergrass plants may also be damaged during construction through trampling or mechanical damage from construction equipment, impairing slickspot soil structure and function and reducing biological soil crust cover. About 6

acres of slickspot microsites/slickspot complexes where slickspot peppergrass plants have not been observed to date are located within the ROW corridors but outside of construction footprints. Slickspot peppergrass habitat is vulnerable to mechanical damage such as trampling, particularly in the spring when slickspot soils are saturated. Ground disturbance such as trampling and other mechanical disturbance can alter and/or damage slickspot soil layers, which would impact the slickspot function, increasing the risk of invasion by nonnative plants such as cheatgrass. Earth-moving activities associated with construction, grading, and landscaping will result in deposition of organic debris and/or soil in slickspots, altering their function and promoting the establishment of invasive plants. Trampling of and deposition of soil on slickspots could also result in slickspot peppergrass seeds being buried too deep to allow for successful emergence from the ground. Project design features such as avoiding the stockpiling of soil on slickspots on public lands, use of temporary fencing to protect slickspots during construction activities, where feasible, and annual weed control along roadsides will avoid or minimize effects associated with ground disturbance in the ROW footprints. However, some direct and indirect adverse effects to the slickspot peppergrass and its habitat are expected to occur due to ground disturbance within the ROW corridors.

Removal of Native Vegetation

Construction of the proposed ROW corridors would result in removal of about 60 acres of existing vegetation, of which about 24 acres would be permanent removal and about 36 acres would be revegetated. A portion of the access ROWs and trails along the drainage ROW will be paved and will no longer provide habitat for vegetation, native or introduced. Native shrubs, grasses, and forbs as well as biological soil crust cover are considered important habitat features for the survival and recovery of the slickspot peppergrass. Most vegetation within the ROW corridors consists of annual grasslands (i.e., cheatgrass); native perennial forbs and grasses are uncommon and only small remnant patches of Wyoming big sagebrush remain. In addition, the majority of biological soil crust in the ROW corridors was burned in the 2010 Big Fire. Given the current condition of the action area following the 2010 wildfire (dominance of cheatgrass), there would be minimal permanent removal of native forbs, grasses, and shrubs associated with ROW corridor construction. However, any remnant patches of sagebrush, native perennial grasses, native forbs, and biological soil crust within the construction footprint will be lost. Project design features such as planting of native forbs along the ROW corridors will compensate in part for the loss of native vegetation available for the slickspot peppergrass and its insect pollinators, although localized adverse effects due to the loss of scattered remnant native grasses and forbs are expected to occur.

Permanent habitat removal from the proposed ROW corridors would include about 12 acres from the SH-16 Access, about 10 acres from the Linder Road Access, and about 3 acres from the Big Gulch Drainage Channel ROW corridors. Revegetated areas would include a combination of native and nonnative species and cobble and gravel surfacing materials, which would alter the plant composition from current conditions. Permanent removal of native vegetation would fragment slickspot peppergrass habitat in the vicinity, and could influence the availability of forbs necessary for pollinators. All three ROW corridors overlap the 0.5 mile pollinator buffers established around EOs 52 and 76. Although native vegetation cover is low in the action area due to the frequent fire return interval in the area, any remnant sagebrush habitat (i.e., sagebrush, native perennial grasses, and native forbs) that could be used for foraging or shelter by insect pollinators will be removed during construction of the roads and drainage channel within the

ROW corridors. Project design features to replant a portion of the ROWs using firewise landscaping that includes native forbs may improve habitat conditions for insect pollinators within the ROW corridors over the short and long term until native vegetation within surrounding burned areas are successfully restored.

Removal of native plants in the vicinity of slickspot peppergrass EOs may result in lowered densities and diversity of insects required for pollination and successful reproduction of the slickspot peppergrass. Currently, low levels of shrubs and native forb cover exist in the action area, including within the ROW corridors. In addition, habitat fragmentation could lead to decreased reproductive success (lower seed set) for the slickspot peppergrass in this area. Given the narrow widths of the proposed ROW corridors, it is expected that insect pollinators will likely still be able to move between slickspot peppergrass plants located within 0.5 miles of the ROW corridors. The planting of native and nonnative forbs, shrubs, and trees along the roadways is also expected to reduce the effects of project-related, localized loss of native forbs and habitat structure on insect pollinators. Therefore, reductions in genetic variability and local extinction are not expected as a result of this project. However, some localized adverse impacts are expected to occur regarding loss of insect pollinator habitat associated with the project-related loss of and damage to up to 6 acres of slickspot microsites in the action area.

Wildfire

Construction of roadways and trails would increase the risk of wildfire in the vicinity of EO 52, EO 76, and EO 108 over both the short- and long-term, which is one of the primary threats to the survival and recovery of the slickspot peppergrass. Fires adversely impact individual plants and the seeds as well as habitat features such as slickspot microsites, and cover of sagebrush, native grasses, and native forbs through direct plant mortality, habitat conversion to invasive nonative annuals, and increased soil erosion. If a fire were to spread in the action area, it could threaten the remaining intact sagebrush habitat, particularly that in the lower portion of LEPA Management Area 2C that contains EO 76. The threat of wildfire will be increased during construction of the roadways and trails (potential spark ignition from construction equipment) and during public use of the roadways and trails (increased potential for fire ignition from vehicle sparks or other sources in areas with a large amount of fine fuels associated with invasive annual grasses such as cheatgrass). Since public access would significantly increase with construction of the road ROW corridors (up to 44,300 trips per day for the two road ROW corridors combined), the potential for human-caused wildfires is expected to significantly increase in the area during operations of the ROW corridors. However, use of fire prevention measures during construction activities, regular control of nonnative annual grasses along roadways to reduce the risk and spread of wildfire, the presence of fire stations in the nearly M3 development, fencing road ROWs to discourage motorized vehicle use off of established roadways, and use of firewise plants in portions of the ROW landscaping will minimize the risk of wildfire and invasive nonnative plant impacts associated with the proposed ROW corridors. In addition, roads will also function to decrease firefighter response time to wildfires, and firewise landscaping could potentially reduce the rate and spread of a wildfire by acting as a fuels breaks. However, these project design features are expected to reduce but not eliminate the risk of wildfire ignitions and associated invasive nonnative plant spread in the vicinity of the ROW corridors. Therefore, adverse effects to the plant and its habitat are expected to occur within the action area.

Although sagebrush steppe habitat in the action area has already been degraded by past wildfire events, any wildfires ignited along the ROWs are expected to further increase the density of nonnative annual plants in the area. However, nonnative annual grasses will be regularly controlled along the roadways to reduce the risk of and spread of wildfire. Further, all ROW corridors will be monitored annually for the presence of state-listed noxious weeds, and noxious weeds will be spot treated as directed by the BLM. Roads could also increase response time to wildfires, and roads and associated firewise landscaping could potentially reduce or slow the spread of a wildfire. However, adverse effects to the slickspot peppergrass from the spread of invasive nonnative plants such as cheatgrass are likely to occur following ROW corridor-related wildfire ignitions.

Invasive Nonnative Plants

Indirect impacts to the slickspot peppergrass and its habitat could occur from the introduction and spread of invasive nonnative plants, including noxious weeds. These plants could become introduced during construction activities when soils are exposed, and during the long-term use of the roadways, where invasive and noxious weeds could be brought in on and spread by vehicles. Invasive plants could also spread naturally to disturbed soils from surrounding areas. Invasive plants could adversely affect the quality of suitable habitat for slickspot peppergrass and could lead to competition for resources. With the spread of annual invasive plant species, there will be more fine fuels and a greater risk of fire, which could threaten the population of slickspot peppergrass. The conversion of sagebrush-steppe into annual grasslands, which could result from a shortened fire regime interval, would further degrade the quality of habitat for slickspot peppergrass and its pollinators, which is known to have lowered abundance in burned areas. Implementation of a noxious weed abatement plan along with fire management design features and roadway landscape maintenance would help minimize the establishment and spread of noxious and invasive weeds and reduce risk of wildfire ignition. However, some adverse effects associated with increased invasive nonnative plant cover are expected to occur in the action area as a result of project implementation, particularly if wildfires are ignited associated with project construction or operations.

Recreation

Existing impacts to slickspot peppergrass and its habitat from motorized and non-motorized recreation activities, such as trampling or driving through slickspot microsites and continued introduction and spread of noxious and invasive weeds, will likely increase in the proposed ROW areas because of the increased access to public land and increased vehicle traffic in the proposed access ROWs. Recreation-related ground disturbance, especially when slickspot soils are wet, could alter the soil structure and the functionality of slickspots and could push potential slickspot peppergrass seeds below a depth that they can successfully reach the soil surface once they germinate. Permanently fencing the ROWs will discourage vehicles and non-motorized recreationists from leaving improved roads and trails, reducing the potential destruction or degradation that could be caused from off-highway vehicle access and dispersed foot or bicycle traffic, as well as reducing fire-ignition risk. The lack of slickspot microsites and slickpot peppergrass plants in the vicinity of the proposed recreational trails along the Big Gulch Drainage ROW corridor reduces the risk of recreational impacts to the plant and its habitat from foot traffic. However, some potential for localized, non-motorized recreation impacts on slickspot microsites or slickspot peppergrass plants along the SH-16 and Linder Road ROW corridors remains. Recreation related impacts will be reduced by permanently fencing road

ROW corridors, reducing the potential habitat destruction or degradation that could be caused by off road driving or trampling, as well as reducing fire ignition risk. However, some adverse effects associated with increased recreational use are expected to occur in the action area as a result of project implementation, particularly if wildfires are ignited associated with increased recreation in the area.

Winter Road Maintenance

Road maintenance in the winter, which could include sanding the roadway, could lead to an accumulation of sand on the roadside, including within slickspot microsites that may occur in potential habitat or have been documented in slickspot peppergrass habitat. Accumulation of sand could alter the function of individual slickspot microsites in localized areas, but this activity would only constitute a minor impact overall and would result in insignificant effects to slickspot peppergrass and its associated habitat.

2.5.2.2 Effects of Interrelated or Interdependent Actions

There are no interrelated or interdependent actions associated with the proposed transportation and drainage ROW corridors. Although the SH-16 and Linder Road ROW corridors will connect to the future Development, and the Big Gulch Drainage Channel ROW will connect to a proposed City of Eagle regional park, if approved, these actions could occur independently of the proposed ROW corridors. In addition, it is the our understanding that the two ROW Access corridors could have alternatively been located on non-Federal lands, but the project proponent's preferred location of these access roads is on BLM lands. Therefore, the Development is addressed as a cumulative effect rather than an interrelated or interdependent action within this Opinion. The proposed City of Eagle regional park is not addressed further in this Opinion because it is proposed to occur on public land and will require separate Section 7 consultation in the future.

2.5.3 Slickspot Peppergrass Critical Habitat

2.5.3.1 Direct and Indirect Effects of the Proposed Action

Direct and indirect effects on proposed critical habitat for the slickspot peppergrass within the action area would result from the construction of the ROWs and use of the roads and trails within the ROW corridors. Similar to effects to the species, direct and indirect effects could result from loss of habitat, ground disturbance, increased risk of wildfire, increased establishment and spread of invasive nonnative plants (including noxious weeds), and increased recreational use.

PCE 1 – Ecologically Functional Slickspots

Ground disturbance during construction of the ROW corridors would result in the localized direct removal of up to 1 acre of slickspot microsites or slickspot complexes (up to 8 slickspot microsites or slickspot complexes) within proposed critical habitat. Up to 2 additional acres of slickspot microsites/slickspot complexes (up to 2 slickspot microsites or slickspot complexes) within proposed critical habitat may also be damaged within the ROW corridors but outside of the construction footprints through trampling or mechanical damage from construction equipment, damaging the slickspot soil structure and function and reducing biological soil crust cover. Project design features such as prohibiting storage of construction equipment and materials and stockpiling soil on slickspot microsites on public lands will minimize effects of

ground disturbance on PCE 1. In addition, slickspot microsites on public land in portions of the ROWs not proposed for excavation would be temporarily fenced and avoided where feasible to minimize potential disturbance and damage to these sites. However, some localized adverse effects to some slickspot microsites associated with construction- and maintenance-related ground disturbance are expected to occur.

In addition, direct and indirect impacts to slickspot microsites from wildfire, invasive nonnative plants, recreation, and road/trail maintenance are also expected to occur, although project design features such as use of firewise landscaping, annual weed control, and fencing of roadways to discourage off road driving will reduce the risk of impacts. These impacts as well as conservation measures to avoid or minimize effects on slickspot microsites is discussed in detail above in the Direct and Indirect Effects of the Proposed Action section for the slickspot peppergrass. The 1 acre of slickspot microsites in proposed critical habitat proposed to be removed within the ROW corridors represents about 0.03 percent of the 3,151 acres within Critical Habitat SubUnit 2a, about 0.006 percent of the 17,292 acres of proposed critical habitat within Unit 2, and about 0.002 percent of the proposed critical habitat acreage for the slickspot peppergrass rangewide (57,756 acres). Although the proposed ROW corridors will result in some localized adverse effects to slickspot microsites, overall the functionality of PCE 1 of proposed critical habitat in SubUnit 2a as well as across the entire area proposed for critical habitat designation will not be reduced by this project.

PCE 2 – Relatively Intact Native Wyoming Big Sagebrush

Of the approximately 60 acres of vegetation to be removed during construction of the roadways, trails, and drainage channel, approximately 47 acres occur in proposed critical habitat, with about 16 acres of vegetation permanently removed in proposed critical habitat and about 31 acres to be revegetated. Permanent vegetation removal within proposed critical habitat in the ROW corridors will include about 7 acres from the SH-16 ROW Access corridor, about 6 acres from the Linder Road ROW Access corridor, and about 3 acres from the Big Gulch Drainage Channel ROW corridor. No Wyoming big sagebrush will be removed from proposed critical habitat within the ROW corridors as the small Wyoming big sagebrush patch that will be removed at the southern end of the Linder Road Access ROW is located outside of proposed critical habitat boundaries. In addition, 7 acres of basin big sagebrush within proposed critical habitat will be removed during construction of the western portion of the Big Gulch Drainage Channel ROW. However, planting of native forbs along the roadways and trails could increase the availability of forbs necessary for slickspot peppergrass pollinators from current conditions. Further, the ROW corridors could serve to protect adjacent remnant habitats in the action area by expediting fire fighter access to the area and by potentially acting as a fuel break. Given the current condition of the habitat in the action area after the 2010 wildfire, construction of the proposed ROWs is expected to result in minimal fragmentation impacts to sagebrush steppe habitat (PCE2).

The proposed ROW corridors may impact intact sagebrush steppe habitat through construction- or operations-related wildfire ignitions, increased spread of invasive nonnative plants such as cheatgrass, and ground disturbance from construction and use of the roads and trails. Project design features such as planting native species as part of firewise landscaping in ROW corridors, regular weed control, and fencing of roadways to discourage off road driving will reduce the risk of impacts to remnant sagebrush steppe habitat in the action (PCE 2). These impacts as well as conservation measures to avoid or minimize effects on slickspot microsites is discussed in detail above in the Direct and Indirect Effects of the Proposed Action section for the slickspot

peppergrass. The 47 acres of proposed critical habitat proposed to be removed within the proposed ROW corridors represents about 2 percent of the 3,151 acres within Critical Habitat SubUnit 2a, about 0.3 percent of the 17,292 acres of proposed critical habitat within Unit 2, and about 0.08 percent of the proposed critical habitat acreage for the slickspot peppergrass rangewide (57,756 acres). Although the proposed ROW corridors will result in some localized adverse effects to intact sagebrush steppe habitat that remains in the action area, overall the functionality of PCE 2 of proposed critical habitat in SubUnit 2a as well as across the entire area proposed for critical habitat designation will not be reduced by this project.

PCE 3 – A Diversity of Native Plants for Foraging, Reproduction, and Shelter of Insect Pollinators

As described above, removal of vegetation during construction of the ROW corridors will result in localized direct effects to native plants occurring in the action area. A portion of the access ROWs and trails along the drainage ROW will be paved and will no longer provide habitat for vegetation, native or introduced. Given the current condition of the action area following the 2010 wildfire (dominance of cheatgrass), there would be minimal permanent removal of native forbs, grasses, and shrubs associated with ROW corridor construction. However, localized impacts to native plants is expected to occur from the removal of basin big sagebrush habitat in the western segment of the Big Gulch Channel Drainage ROW corridor. In addition, construction, operation, and maintenance of the proposed ROW corridors could lead to an increase in nonnative annuals and/or nonnative perennial plants in the action area over time, reducing native forb cover due to competition for resources. Effects of localized loss of remnant remaining native plants are expected to be minimized through revegetation of portions of the ROW corridors with a combination of native and non-invasive nonnative species, although some reduction in native plant diversity will occur associated with the proposed ROW corridors. Although the proposed ROW corridors will result in some localized adverse effects to habitat parameters important to insect pollinators, overall the functionality of PCE 3 of proposed critical habitat in SubUnit 2a as well as across the entire area proposed for critical habitat designation will not be reduced by this project.

PCE 4 – Sufficient Pollinators for Successful Fruit and Seed Production

Habitat requirements for insect pollinators may be locally impacted through ground disturbance and vegetation removal during construction of the roads and trails. Slickspots or slickspot complexes removed and/or damaged during excavation, construction, grading, and possibly landscaping, may result in localized adverse impacts to insect pollinators that nest within the soil, including within slickspot microsites. In addition, remnant native vegetation will be permanently removed in areas where pavement is proposed, and thus no longer be available for pollinator foraging or shelter. A reduction in forb cover could result in reduced pollination of slickspot peppergrass located near the ROW corridors as density and diversity of insects required for slickspot peppergrass pollination and successful reproduction. In addition, construction, operation, and maintenance of the proposed ROW corridors could lead to an increase in nonnative annuals and/or nonnative perennial plants in the action area over time, reducing native forb cover due to competition for resources. However, as described above, effects of localized loss of remnant remaining native plants are expected to be reduced through revegetation of portions of the ROW corridors with a combination of native and noninvasive nonnative species. Given the narrow widths of the proposed ROW corridors, it is also expected that pollinators would still be able pollinate slickspot peppergrass within the action area. Although the proposed

ROW corridors will result in some localized adverse effects to insect pollinators, overall the functionality of PCE 4 of proposed critical habitat in SubUnit 2a as well as across the entire area proposed for critical habitat designation will not be reduced by this project.

2.5.3.2 Effects of Interrelated or Interdependent Actions

There are no interrelated or interdependent actions associated with the proposed transportation and drainage ROW corridors, as described above for the species. Although the SH-16 and Linder Road ROW corridors will connect to the future Development, and the Big Gulch Drainage Channel ROW will connect to a proposed City of Eagle regional park, if approved, these actions could occur independently of the proposed ROW corridors. It is the Service's understanding that the two ROW Access corridors could have alternatively been located on non-Federal lands, but the project proponent's preferred location of these access roads is on BLM lands. Therefore, the Development is addressed as a cumulative effect rather than an interrelated or interdependent action within this Opinion. As described in the species effects section above, the proposed City of Eagle regional park is not addressed further in this Opinion because it is proposed to occur on public land and will require separate Section 7 consultation in the future.

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 ESA.

2.6.1 Slickspot Peppergrass

2.6.1.1 Cumulative Effects

Cumulative effects include the effects of future state, tribal, local or private actions that are reasonably certain to occur in the action area. 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 ESA.

Future state, tribal, local or private actions that are reasonably certain to occur in the action area include livestock grazing, recreation, noxious weed control, and housing developments. In general, these activities are associated with potential increases in noxious weed and nonnative plant cover as well as increased risk of wildfire. Effects of these activities on the slickspot peppergrass are described in detail in the Environmental Baseline section above.

The Development, proposed on private land within the action area, will include development of 7,153 residential lots, commercial shops and office buildings, and a 500-guest hotel. In addition, parks, golf courses, vineyards, and natural open space are proposed. This development will occur on approximately 6,015 acres directly adjacent to the proposed ROW corridors. The majority of this area was annexed into the City of Eagle in December 2009. The development will remove approximately 5,530 acres of grass and shrub vegetation communities and will disturb soil; the remainder would be retained as open space (natural and manicured). Vegetation

removal and soil disturbance could act as a vector and/or increase the spread of invasive and noxious weeds.

Slickspot peppergrass and its habitat are known to occur within the area proposed for the Development. Direct impacts such as trampling, degradation, and/or removal of slickspot peppergrass individuals, its habitat, and its pollinators, damage and/or removal of the potential slickspot peppergrass seedbank, and fragmentation of habitat are expected with development. Most of the area proposed for development has not been surveyed for slickspot peppergrass, so the full extent of impacts to slickspot peppergrass is unknown. The majority of the surveyed area on the M3 Eagle property where slickspot peppergrass is known to occur, in the eastern portion of the action area near EO 52, would be left as natural open space with no houses proposed, thus slickspot peppergrass will be maintained in that area. Currently, as there are no known Federal funding or permitting requirements for the Development, and the project is located entirely on non-Federal lands, section 7 consultation under the ESA is not anticipated for this project.

As part of the future Development, the Big Gulch Drainage will be channelized on M3 property. The channel will be converted to a linear public park and trail system extending approximately 5 miles from Willow Creek Road to SH-16. No direct impacts to slickspot peppergrass plants or slickspot microsites are expected to occur as a result of this channel modification due to lack of suitable habitat in this area.

Increased human density within the action area as a result of the Development would increase both developed (pedestrian/equestrian trails and golf) and dispersed recreation (hiking, equestrian, OHV use, and others), which would increase the risk of direct and indirect impacts to slickspot peppergrass and its habitat. Livestock grazing (cattle and horses) would be allowed in the Development in designated open space where land would not be developed and in 5- to 10-acre rural lots. If these areas coincide with slickspot peppergrass and its habitat, impacts associated with grazing would occur. Livestock grazing (sheep and cattle) currently occurs on M3 property; therefore, this would be a continuation of an existing impact.

Cumulative indirect impacts would include increased population, recreation, roads, and traffic in the action area, which all could be vectors for introduction and colonization of nonnative plants, including invasive and noxious weed species. The spread of invasive annual plants, especially cheatgrass and medusahead, would degrade vegetation communities, slickspot peppergrass suitable habitat, and could reduce the abundance and diversity of insect pollinators needed for slickspot peppergrass. The increase in invasive species also would increase fine fuels in the vegetation understory, which would increase wildfire risk. With greater traffic along more roads, there would be an increased risk of wildfire ignition from vehicles. The risk of wildfire and noxious and invasive weed invasion are the greatest threats to slickspot peppergrass and its habitat. The risk of these indirect impacts from construction and operation of the proposed ROW corridors would be reduced through application of Best Management Practices. However, these impacts would be additive when considering the Development, increased recreation, and continued livestock grazing within the portion of private land in the action area, and would have a cumulative impact on the general vegetation condition, slickspot peppergrass population and habitat, and infestation and spread of invasive and noxious weeds. Ultimately, the complete conversion of shrub and grasslands to annual grasslands with low native diversity could result. If a complete conversion to annual grasslands were to occur, there would likely be a reduction or elimination in the local population of slickspot peppergrass because of the reduction in habitat, its seedbank, and insect pollinators.

2.6.2 Slickspot Peppergrass Critical Habitat

2.6.2.1 Cumulative Effects

Impacts from the proposed ROW corridors on proposed critical habitat for the slickspot peppergrass would add cumulatively to the impacts of future state, tribal, local or private actions that are reasonably certain to occur in the action area. As described above, these actions include livestock grazing, recreation, and housing developments, along with associated increases in noxious weeds and nonnative plants and risk of wildfire. The impacts of these future actions on proposed slickspot peppergrass critical habitat would be the same as that described for slickspot peppergrass habitat above, and therefore are not repeated here. However, effects of the Development are elaborated on further because proposed critical habitat occurs within the boundary of this development.

The Development, proposed on private land within the action area, could result in the disturbance, modification, and/or removal of up to 393 acres of proposed critical habitat for slickspot peppergrass. Of these 393 acres, approximately 135 acres of proposed critical habitat occur in an area planned for residential lots and roads and 258 acres occur in areas proposed as natural open space. The potential for impacts to the PCEs of proposed critical habitat would be less in areas maintained as open space. Some of the areas proposed for open space currently have trails on them; these trails may potentially be maintained and/or improved. Development of the proposed Development, and the associated increase in inhabitants and recreationists, would add cumulatively to the effect of the proposed action on up to 393 acres of proposed critical habitat through trampling, degradation, and/or removal of slickspot microsites, reductions in insect pollinator numbers, fragmentation of remnant intact sagebrush steppe habitat, damage or loss of habitat parameters important to insect pollinators such as native shrub, grass, and forb species, potential spread of invasive and noxious weeds, and increased risk of wildfire. Currently, as there are no known Federal funding or permitting requirements for the Development, and the project is located entirely on non-Federal lands, section 7 consultation under the ESA is not anticipated for this project.

The impacts of future actions that are reasonably certain to occur in the action area combined with the proposed ROW corridors could remove and/or disturb up to 479 approximated acres of proposed critical habitat in the area defined by the Service (76 FR 27184) as Proposed Critical Habitat Unit 2 SubUnit 2a. This 479 acres represents an impact to approximately 15 percent of the 3,151 acres of critical habitat proposed in SubUnit 2a. The permanent loss of 135 acres of PCEs of proposed critical habitat on private lands is expected to increase fragmentation within Critical Habitat Unit 2 and SubUnit 2a. The 135 acres of proposed critical habitat proposed to be removed by the Development represents about 4 percent of the 3,151 acres within Critical Habitat SubUnit 2a, about 0.8 percent of the 17,292 acres of proposed critical habitat within Unit 2, and about 0.2 percent of the proposed critical habitat acreage for the slickspot peppergrass rangewide (57,756 acres). Overall, this reduction in critical habitat is not expected to appreciably diminish the value of the PCEs of proposed critical habitat for the slickspot peppergrass within Critical Habitat Unit 2 or across the range of the species.

2.7 Conclusion

2.7.1 Species

2.7.1.1 Conclusion

The Service has reviewed the current status of the slickspot peppergrass, the environmental baseline in the action area, effects of the proposed action, and cumulative effects, and it is our conclusion that the proposed action is not likely to jeopardize the continued existence of the slickspot peppergrass.

The Service concludes that direct and indirect effects to the slickspot peppergrass will be limited to the potential loss of slickspot peppergrass plants and seeds located within several slickspot microsites on the boundary of EO 76 that may be removed within the SH-16 ROW Access corridor, permanent loss of up to twelve slickspots/slickspot complexes (up to about 2 acres) which may have the ability to support or currently contain the slickspot peppergrass within the SH-16 and Linder ROW access corridors due to road/trail construction, some localized ground disturbance of slickspot microsites located within the ROW corridor but outside of the construction footprint which may have the ability to support or currently contain the slickspot peppergrass, minimal increases in invasive nonnative plant cover within habitat known to contain slickspot microsites, and potential effects to insect pollinator populations due to loss of remnant native vegetation and ground disturbance within the construction footprint, and potential wildfire ignitions associated with construction and operations of the ROW corridors. The effects of the proposed action on the slickspot peppergrass will occur at a localized level. While, direct and indirect impacts to known slickspot peppergrass EOs in the vicinity on BLM, State, or private lands may occur as a result of wildfire ignitions and subsequent invasive nonnative plant spread associated with the proposed ROW corridors, the risk of wildfire ignitions and invasive nonnative plant spread will be reduced by project design features such as the use of firewise landscaping along ROW corridors, regular weed control measures, fencing of roadways to discourage off-highway vehicle use, and rapid fire response measures. The Service expects that the numbers, distribution, and reproduction of the slickspot peppergrass in the action area (which includes EOs 52, 76, and 108 and Management Area 2C), and for the species rangewide in southwestern Idaho, 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 activities associated with construction and operation of the proposed ROW corridors.

The Service reached the no-jeopardy determination on the basis that the aggregate effects of the proposed ROW corridors, inclusive of applicable conservation measures set forth in the Conservation Agreement (CA) (BLM and Service 2009, entire) and project conservation measures, taken together with cumulative effects, are compatible with maintaining the ecological function of slickspot microsites and EOs in the vicinity of the project within the Boise Foothills physiographic region. The ROW corridors are sited to avoid, to the extent possible, adverse impacts to slickspot peppergrass plants and slickspot microsites of unknown slickspot peppergrass occupancy within the action area on BLM-administered lands; construction and operations conservation measures also minimize potential impacts to slickspot microsites. As noted in the "Status of the Species" section of this Opinion, the long-term conservation of the 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. Habitat in the action area in the vicinity of EO 52, EO 76, and EO 108 has been impacted by past wildfires and associated spread of invasive nonnative plants such as cheatgrass, which may reduce the ability of the action area to support the slickspot peppergrass in the future independent of the proposed ROW corridors project. Although the proposed ROW corridors may aggravate current low quality habitat conditions within the action area, the proposed ROW corridors are expected to maintain the current overall condition of the three EOs located within the action area overall.

Slickspot peppergrass conservation measures being implemented by the BLM in conjunction with the ROW corridors 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. The specific measures include management actions such as avoiding impacts to slickspot microsites to the extent possible through temporary fencing and micrositing of the project footprint. These specific measures are intended to reduce the amount or extent of localized impacts, although localized adverse effects will not be completely eliminated. The general conservation measures include management actions designed to maintain or increase the cover of native forbs and grasses, protect sagebrush through fire protection or suppression, and restore degraded habitats to improve connectivity between sites. The general conservation measures are intended to improve habitat conditions across the action area over time.

Although we have concluded that the proposed ROW corridors project, as described herein, will not jeopardize the continued existence of the slickspot peppergrass, we continue to encourage the BLM to work closely with the project proponent to avoid impacts to that portion of EO 76 that is located within the SH-16 ROW corridor. In addition, project construction, operation, and maintenance activities should be implemented to avoid or minimize impacts to the species and its habitat to the greatest extent possible, especially regarding avoidance of future wildfire ignitions and spread of invasive nonnative plants within the action area. Addressing these primary threats will contribute to the survival and recovery of the slickspot peppergrass.

2.7.2 Species Critical Habitat

2.7.2.1 Conclusion

The Service has reviewed the current status of slickspot peppergrass proposed critical habitat, the environmental baseline in the action area, effects of the proposed action, and cumulative effects, and it is our conclusion that the proposed action is not likely to destroy or adversely modify proposed critical habitat for the slickspot peppergrass.

Similar to our conclusion regarding the species as described above, the Service concludes that direct and indirect effects to proposed critical habitat for the slickspot peppergrass will be limited to the permanent loss of up to eight slickspot microsites/slickspot complexes (up to about 1 acre) due to road/trail construction within the SH-16 and Linder Road ROW Access corridors, localized ground disturbance of slickspot microsites located within ROW corridors but outside of the construction footprint (up to about 2 additional acres and up to 2 additional slickspot

microsites/slickspot complexes) within the SH-16 and Linder Road ROW Access corridors, and some increases in invasive nonnative plant cover within slickspots in proposed critical habitat (PCE 1). There may also be localized impacts to insect pollinator populations due to loss of remnant native shrubs and forb cover and ground disturbance within the construction footprint as well as from potential wildfire ignitions associated with construction and operations of all three ROW corridors; however, insect pollinators are expected to benefit from planting native forbs in firewise landscaping of the ROW corridors (PCEs 2, 3, and 4). The effects of the proposed action on the slickspot peppergrass will occur at a localized level in relation to the proposed critical habitat area. While all PCEs within proposed critical habitat SubUnit 2a may be further degraded in localized areas as a result of wildfire ignitions and subsequent invasive nonnative plant spread associated with the proposed ROW corridors, the risk of wildfire ignitions and weed spread will be minimized by project design features such as the use of firewise landscaping along ROW corridors, implementation of weed control measures, and rapid fire response measures. The Service expects that the function of PCEs within proposed critical habitat in the action area and rangewide in southwestern Idaho will not be significantly changed as a result of this proposed action. Therefore, we have concluded that the activities associated construction and operation of the proposed ROW corridors do not appreciably diminish the value of the PCEs of proposed critical habitat for the slickspot peppergrass.

The Service reached the no adverse modification determination on the basis that the aggregate effects of the proposed ROW corridors, inclusive of applicable conservation measures set forth in the Conservation Agreement (CA) (BLM and Service 2009) and project conservation measures, taken together with cumulative effects, are compatible with maintaining the ecological function of slickspot microsites and remnant sagebrush steppe habitat in the vicinity of the project within proposed critical habitat SubUnit 2a. The ROW corridors are sited to avoid, to the extent possible, adverse impacts to slickspot microsites on BLM-administered lands; construction and operations conservation measures also minimize potential impacts to slickspot microsites. As described above, the long-term conservation of the slickspot peppergrass is likely to depend on the maintenance or improvement of 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. As described above, proposed critical habitat (and associated PCEs) in the action area in the vicinity of EO 52, EO 76, and EO 108 has been impacted by past wildfires and associated spread of invasive nonnative plants such as cheatgrass, which may reduce the functionality of PCEs in the action area in the future independent of the proposed ROW corridors project. Although the proposed ROW corridors may aggravate current low quality habitat conditions in the action area, the proposed ROW corridors are expected to maintain or in some instances, somewhat improve the current overall condition of PCEs within the action area.

Slickspot peppergrass conservation measures being implemented by the BLM in conjunction with the ROW corridors also serve to avoid or minimize impacts to PCEs of proposed critical habitat. Specific measures include management actions such as avoiding impacts to slickspot microsites (PCE 1) to the extent possible through temporary fencing and micrositing of the project footprint. These specific measures are intended to reduce the amount or extent of localized impacts, although localized adverse effects to PCEs will not be completely eliminated. The general conservation measures include management actions designed to maintain or increase

the cover of native forbs and grasses, maintain or increase sagebrush cover through fire protection or suppression, and restore degraded habitats to improve connectivity between sites. The general conservation measures are intended to maintain, and in some instances (such as landscaping with native forbs), improve conditions for PCEs 1, 2, 3, and 4 across the action area over time.

Although we have concluded that the proposed ROW corridors project, as described herein, will not adversely modify PCEs of critical habitat proposed for the slickspot peppergrass, we continue to encourage the BLM to work closely with the project proponent to avoid impacts to PCEs such as removal or damage to slickspot microsites or native sagebrush steppe vegetation within ROW corridors. Project construction, operation, and maintenance activities should avoid or minimize impacts to the PCEs of proposed critical habitat to the greatest extent possible, especially regarding avoidance of future wildfire ignitions and spread of invasive nonnative plants within the action area. Addressing these primary threats will contribute to the functionality of critical habitat PCEs required for species recovery.

2.8 Incidental Take Statement

Section 9 of the ESA and Federal regulations pursuant to section 4(d) of the ESA 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 ESA 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 ESA 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 ESA do not apply to listed plants, those sections of the ESA 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 the slickspot peppergrass in this Opinion.

However, section 9(a)(2) of the ESA prohibits, among other actions, the removal and reduction to possession of plants listed as endangered or threatened from areas under Federal jurisdiction. The ESA 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 the slickspot peppergrass as well if State regulations are promulgated.

2.9 Conservation Recommendations

Section 7(a)(1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA 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 BLM implement the following conservation measures:

- Enter into partnerships with the project proponent to apply all slickspot peppergrass conservation measures within the proposed ROW corridors project, as appropriate, to private lands associated with the Development.
- During project construction, place drainage structures in a manner what avoids disturbed soils from settling on downslope slickspot microsites.
- For slickspot peppergrass above ground plants that cannot be avoided, BLM will be given advance notice prior to ground disturbance to allow for collection of these plants for scientific research and/or herbarium specimens prior to their loss during construction.
- Avoid siting any portion of EO 76 or other slickspot microsites that are documented to contain slickspot peppergrass within the construction footprint of the SH-16 ROW Access corridor.
- For subsequent activities that are reasonably certain to occur on non-Federal lands, avoid issuing new rights-of-way or renewing rights-of-way on Federal lands in or adjacent to slickspot peppergrass habitat if negative impacts are expected. In slickspot peppergrass habitat, only issue or re-issue rights-of-way with stipulations to avoid negative impacts to the habitat.
- Avoid issuance of new rights-of-way or renewing existing rights-of-way within proposed or designated critical habitat for the slickspot peppergrass if adverse effects to primary constituent elements may occur.
- Retain occupied slickspot peppergrass habitat in Federal ownership (including the area within the proposed City of Eagle Recreation and Public Purposes Act application, which includes slickspot peppergrass EO 108), unless such a transfer would result in a net benefit to the species.
- 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 the 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.
- Require control of invasive nonnative or weed species on new, renewing, or amending right-of-way authorizations in slickspot peppergrass habitat.
- Continue to implement conservation measures for the 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 BLM actions regardless of the species' status under the ESA.

- Conduct 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 the slickspot peppergrass.
- Actively participate in critical habitat and recovery planning efforts for the 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 the slickspot peppergrass, including restoration techniques for sagebrush-steppe habitat and methods to reintroduce the slickspot peppergrass into areas capable of supporting the species.
- Conduct annual coordination meetings between the BLM 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 the slickspot peppergrass to maintain high quality sagebrush-steppe habitat and for use as research areas.
- Exercise section 7(a)(1) of the ESA to maintain or enhance plant communities in a manner compatible with the needs of the slickspot peppergrass, 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 the slickspot peppergrass.
- Avoid or minimize ground-disturbing activities within EOs when soils are saturated and/or when the slickspot peppergrass is flowering (May–June).
- Avoid pesticide contact with insect pollinators near EOs or with slickspot peppergrass plants.
- For upcoming BLM permit renewals and reissuances and the updated Four Rivers 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 the slickspot peppergrass.
- Continue to encourage the restoration of native sagebrush steppe habitat on BLM lands for species native to this habitat type, including the slickspot peppergrass.
- Conduct annual reporting on herbicide use, fire suppression activities, monitoring results, and any revegetation planned or implemented on BLM lands in relation to potential impacts to the slickspot peppergrass and slickspot microsites as part of annual coordination meetings between the BLM and the Service.

- Consider use of conservation measures for the slickspot peppergrass on BLM lands that also complement conservation of the other sagebrush steppe habitat obligates, including the greater sage-grouse (*Centrocercus urophasianus*), a candidate species, and the pygmy rabbit (*Brachylagus idahoensis*), a species of concern.
- Encourage the conservation of the slickspot peppergrass on non-Federal lands through partnerships with others, such as M3 Eagle L.L.C.

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 the slickspot peppergrass and formal conference on proposed critical habitat for the slickspot peppergrass. Because the "take" prohibitions detailed under section 9(a)(1) of the ESA 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 the 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. APPENDIX

Crosswalk between Primary Constituent Elements for slickspot peppergrass proposed critical habitat and Corresponding Pathway Indicators for making effects determinations on the species.

PCE	PCE Description	Corresponding Pathway Indicator
1	Ecologically functional microsites or "slickspots" that are characterized by: (a) a high sodium and clay content and a three-layer soil horizonation and (b) sparse vegetation with low to moderate introduced plant species cover	A-1. Density of nonnative annual and/or nonnative perennial plants established within slickspots A-2. Level of ground disturbance within slickspots A-3. Level of organic debris (litter or feces) and/or soil deposition and accumulation within slickspots
2	Relatively intact native Wyoming big sagebrush vegetation assemblages within 820 feet (250 meters) of slickspots	B-1. Level of ground disturbance within the action area B-2. Condition of native vegetation within the action area - level of habitat fragmentation B-3. Condition of native vegetation within the action area - presence of nonnative annuals and/or nonnative perennial plants B-4. Condition of native vegetation within the action area - percent cover of biological soil crusts B-5. Condition of native vegetation within the action area - percent cover of native forbs
3	A diversity of native plants	B-3. Condition of native vegetation within the action area - presence of nonnative annuals and/or nonnative perennial plants B-5. Condition of native vegetation within the action area - percent cover of native forbs
4	Sufficient pollinators for successful fruit and seed production	B-1. Level of ground disturbance within the action area B-2. Condition of native vegetation within the action area - level of habitat fragmentation B-3. Condition of native vegetation within the action area - presence of nonnative annuals and/or nonnative perennial plants B-5. Condition of native vegetation within the action area - percent cover of native forbs