US Department of the Interior
Bureau of Land Management

Greater Sage-Grouse Wildfire, Invasive Annual Grasses, and Conifer Expansion Assessment

SNAKE/SALMON/BEAVERHEAD

MARCH 2015

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ACRONYMS AND ABBREVIATIONS

	Full Phrase
BLM	United States Department of the Interior, Bureau of Land Management
BBD	breeding bird density
COT	Conservation Objectives Team
EIS	environmental impact statement
ESR	emergency stabilization and rehabilitation
FIAT	Fire and Invasives Assessment Team
Forest Service	United States Department of Agriculture, US Forest Service
GRSG	Greater Sage-Grouse
NEPA	National Environmental Policy Act of 1969
NFPORS	National Fire Plan Operations and Reporting System
NRCS	Natural Resources Conservation Service
PAC	priority area for conservation
PPA	project planning area
RMPA	resource management plan amendment
SMTR	soil moisture temperature regime
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
WA	wilderness area
WSA	wilderness study area

SECTION 1
INTRODUCTION AND ASSESSMENT OBJECTIVES

1.1 EXECUTIVE OVERVIEW

The Bureau of Land Management (BLM) issued an Instruction Memorandum in August 2014 to guide interagency partners in completing Step 2 of the wildfire and invasive species assessments. These assessments focus on five priority landscapes in Greater Sage-Grouse (GRSG) habitats, as follows:

1. Southern Great Basin
2. Western Great Basin
3. Northern Great Basin
4. Central Oregon
5. Snake/Salmon/Beaverhead

Three threats have been analyzed—wildfire, invasive annual grasses, and conifer expansion—for implementing the following management strategies or conservation activities:

- Habitat restoration
- Fuels management
- Fire operations
- Post-fire rehabilitation

These assessments are to help quantify the BLM's planned actions to inform the US Fish and Wildlife Service's (USFWS's) decision in 2015 to put GRSG on its Endangered Species List. The Fire and Invasives Assessment Team (FIAT) reports are in themselves decision documents but involve at least two steps.

Step 1 was completed and documented in the June 2014 Greater Sage-Grouse Wildfire, Invasive Annual Grasses & Conifer Expansion Assessment. This

assessment was based in part on soil surveys conducted by the US Department of Agriculture (USDA), Natural Resources Conservation Service and on information on soil temperature regimes for ecosystem resistance and resilience properties. The assessment was based on recent scientific research on resistance and resilience of Great Basin ecosystems (Chambers et al. 2014).

The FIAT Step 1 assessment identified focal habitats within the five landscapes, also known as the five priority areas for conservation (PACs). Relative to wildfire and invasive annual grasses, focal habitats are areas in priority PACs with 75 percent Breeding Bird Density (BBD) in areas that recently or currently support sagebrush, including the 1-25, 26-65, and greater than 65 percent sagebrush landscape cover classes. Emphasis areas are portions of the focal habitats in warm-dry soil temperature-moisture regimes with sagebrush landscape cover greater than 25 percent. Relative to conifer expansion, focal habitats for addressing conifer expansion are the areas within and near conifer expansion in sagebrush landscape cover classes of 26-65 percent and greater than 65 percent. Emphasis areas for conifer expansion occur where sagebrush landscape cover is greater than 25 percent in 75 percent BBD areas.

This Snake/Salmon/Beaverhead Assessment is one of five FIAT Step 2 assessments of the Great Basin. Collectively, they will inform the next phase of assessments, as the BLM continues to expand into other GRSG habitat in 2015, including the Rocky Mountain states.

The scale and scope of the Snake/Salmon/Beaverhead landscape is expansive. It encompasses approximately seven million acres in Idaho. Potential treatment areas in project planning areas (PPAs) represent an initial starting point that will need further analysis and refinement within the National Environmental Policy Act of 1969 (NEPA) planning process.

During the development the PPAs, no constraints due to funding or consideration of landownership were taken into account. Additionally, wildfire is an important and dynamic environmental factor on the Snake/Salmon/Beaverhead landscapes. It is not uncommon for wildfire to spread more than five miles and impact thousands of acres in one day.

BLM fire management has addressed key questions, including the following:

1) What are the areas that have the highest likelihood of large fires which fragment GRSG habitat?
2) Which GRSG habitats are at the highest risk from fire?

The 2014 Fire Program Analysis Large Fire Simulator (FSim) for the Fire Program Analysis system has ranked the wildfire hazard potential in the Snake/Salmon/Beaverhead assessment landscape as high to very high. For this reason it is important to recognize that the potential for focal habitats to be

drastically modified in the near future may be underrepresented in this assessment. Cheatgrass (*Bromus tectorum*) is also widely present across these landscapes. Due to the parameters of this report, the ability to identify this threat within a congruent scale and to identify potential treatment areas to manage it also may be underrepresented.

The outcomes of this assessment are to identify the following (see **Table 1-1**):

- 4,877,000 acres of focal habitat
- 6,774,500 acres of total PPA
- 508,100 acres of potential conifer habitat restoration treatments
- 2,463,500 acres of first priority potential fire operations
- 990,300 acres of first priority potential post-fire rehabilitation
- 393 miles of potential fuels management treatments
- 95,600 acres of potential fuels management treatments
- 223,400 acres of potential invasive annual grass habitat restoration treatments
- 771,000 acres of potential other types of habitat restoration treatments

Table 1-1
Focal Habitat Acreage within PPAs in the Snake/Salmon/Beaverhead Landscape

PPA	Acres of Focal Habitat within PPA	Percentage of Focal Habitat within PPA	Total Acres in the PPA	Total Acres in the PPA that is Null
Antelope Flat/Big Lost	357,400	64	554,188	98,272
Bennett Hills	305,600	48	636,551	37,157
Big Desert	476,000	84	564,874	10,050
Big Lost	174,800	95	184,666	7,240
Birch Creek	47,600	43	110,001	7,805
Hat Creek	125,900	81	155,344	20,839
Lemhi-Birch	329,600	80	413,167	108,799
Little Lost	143,200	99	143,712	14,204
Little Wood River	232,600	79	295,104	6,129
Magic	1,193,900	67	1,789,410	88,645
Medicine Lodge	224,500	89	251,652	190,455
Pahsimeroi	293,600	78	377,611	87,233
Sand Creek	401,900	87	461,074	112,333
Table Butte	65,000	81	80,595	1,630
Twin Butte	505,400	67	756,691	30,998
Total for all SSB PPAs	4,877,000	72	6,774,540	821,796

1.2 BACKGROUND

The purpose of this assessment is to identify potential project areas and management strategies in highly valued GRSG habitats which, if implemented, would reduce the threats to the species. The Conservation Objectives Team (COT) report (USFWS 2013) and other scientific publications identify two primary threats to the sustainability of GRSG in the western portion of the species range: wildfire and conversion of sagebrush habitat to invasive annual grass-dominated vegetative communities. For the purposes of this assessment, invasive species are limited to, and are hereafter referred to, as invasive annual grasses. Conifer expansion (also called encroachment) is also addressed in this assessment.

To address these concerns, the BLM and United States Forest Service (Forest Service) have committed to completing GRSG wildfire, invasive annual grasses, and conifer expansion assessments (see Greater Sage-Grouse Land Use Plan Amendments, BLM Instruction Memorandum WO-2014-134).

The objective of FIAT assessments is to identify priority habitat areas and management strategies to reduce the threats to GRSG from invasive annual grasses, wildfires, and conifer expansion. In addition, these assessments are designed to provide the United States Fish and Wildlife Service (USFWS) with regulatory certainty on the extent, location, and rationale for management opportunities to address significant threats to GRSG.

In early 2013, an interagency team of wildlife, vegetation, fire, and fuels managers was assembled to develop the FIAT assessment protocols. The FIAT process designed by this team involves the following two steps:

Step 1—Establish the regional context for priority GRSG habitats and threat factors

Step 2—Incorporate local data with Step 1 findings to identify potential project areas, treatment opportunities, and management strategies to lessen threats to GRSG

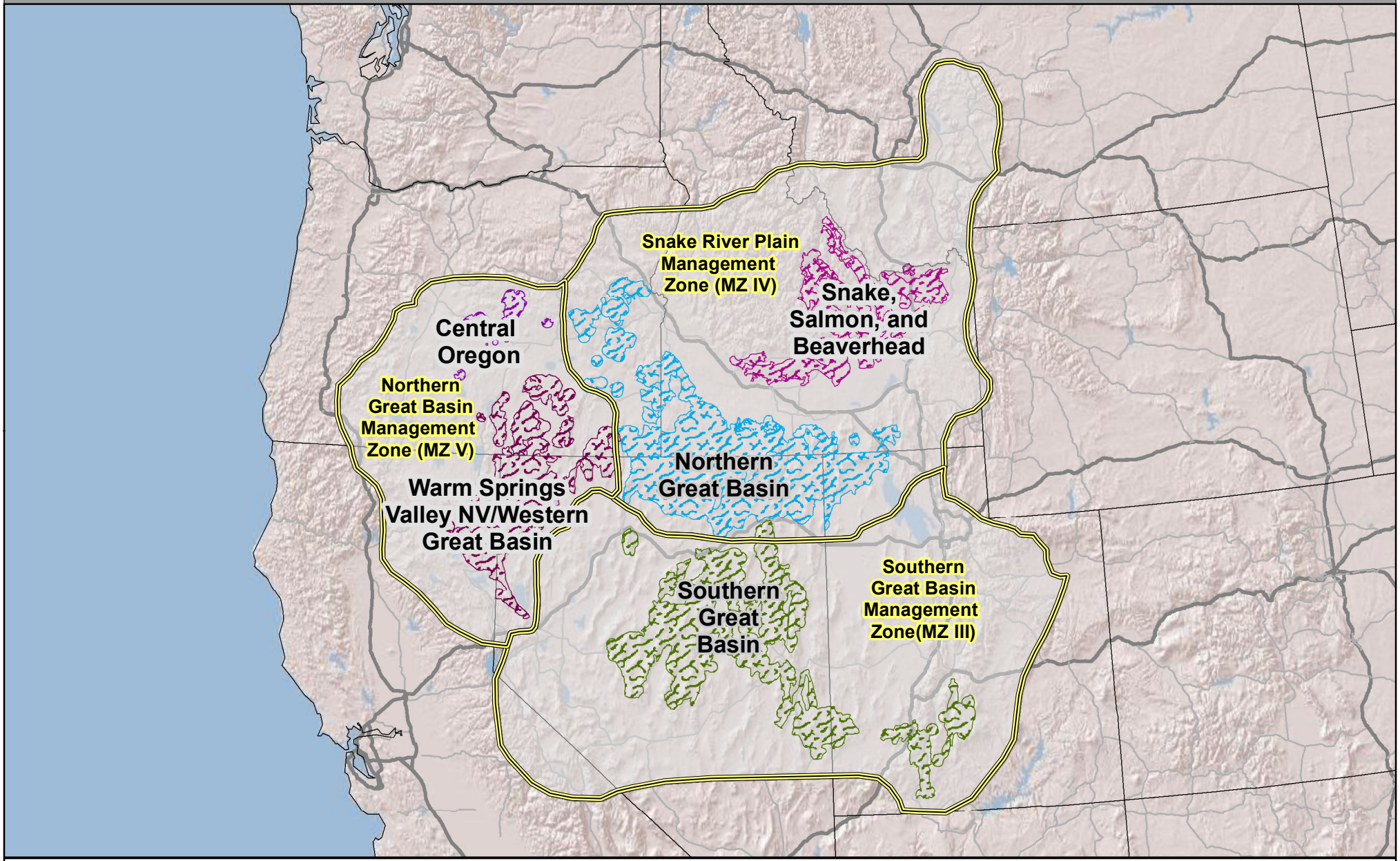
Step 1 began in February 2013 and concluded in August 2014. Step 2 began in September 2014 and concludes at the end of March 2015.

This assessment represents the final product and signals completion of FIAT Step 2 (See **Figure 1-1**).

Assesment Areas in Relation to Management Zones

Greater Sage-Grouse Wildfire, Invasive Annual Grasses, and Conifer Expansion Assessments

All Assessment Areas
Bureau of Land Management
U.S. Department of the Interior



WAFWA SG Management Zones
Central Oregon
Northern Great Basin
Snake, Salmon, and Beaverhead
Southern Great Basin
Warm Springs Valley NV/Western Great Basin

1:8,000,000
March 2015
Date Saved: 3/24/2015
Data Sources: Bureau of Land Management, ESRI Basedata

1.2.1 Issues, Assumptions, and Considerations Common to All Assessments

The following list denotes elements common to all five FIAT assessments.

- Assessments must be revisited as landscape conditions change. Because landscape conditions are highly dynamic, it should be recognized that management needs will change over time. The management opportunities and priorities identified in this assessment are relevant for today's landscape conditions. As disturbances such as wildfire occur in the assessment area, it is imperative that the priorities and management themes be revisited and redefined. This form of adaptive management is integrated into the Greater Sage-Grouse Monitoring Strategy described in Section 5.
- Additional analysis will be required. Most potential treatments identified in this assessment will require further National Environmental Policy Act (NEPA) analysis. During NEPA analysis, the exact location and extent of treatment may be adjusted, based upon more refined local information. Summary tables presented in Section 4 denote if NEPA analysis is completed, initiated, or needed for potential treatments. Consequently, many potential treatments detailed in Section 4 are subject to change as a result of refinement during NEPA analysis.
- Proper management is required. It is assumed that for treatments to be effective once implemented, proper management of ongoing land uses will occur. Land uses such as grazing, wild horse and burros, and off-highway vehicles are potential impediments to successful implementation of FIAT-identified treatments. In order for FIAT-identified treatments to be successful, proper management of land uses must occur:
    - At the time of treatment, which may require rest or exclusion from use; and
    - Following treatment, such as the proper intensity and location of uses.
- Identifying potential treatments was highly collaborative. FIAT teams used the data and science from the FIAT Report and General Technical Report RMRS-GTR-326 (Chambers et al. 2014) to identify potential treatment opportunities. In addition, guidance in the FIAT report directed teams to "use the best available local information" and engage in collaboration with agency partners. These partners included the Natural Resources Conservation Service, USFWS, and State Game and Fish agencies. As a result, potential treatment areas identified in this assessment were strongly influenced by local data

not present in the FIAT report, including lek locations, seasonal habitats, and projects identified in other collaborative settings.

- Fire operations priorities. The 1st, 2nd, and 3rd order priorities identified for fire operations integrate guidance from the FIAT report, General Technical Report RMRS-GTR-326, wildfire potential, and local data. Fire operations priorities are consistent with guidance established in BLM's Fire Operations Action Plan Instruction Memorandum (IM No. FA IM-2015-016) and Secretarial Order No. 3336. In addition to these data sources, FIAT fire operations priorities were established using local information such as fire spread patterns/barriers, ignition frequency, and fire history. Fire operations priorities identified in this assessment are specific to BLM.

1.3 STATEMENT OF OBJECTIVES

This FIAT assessment is consistent with and supports the ongoing environmental impact statement (EIS) and resource management plan amendment (RMPA). These processes are underway to address GRSG conservation throughout the Great Basin.

The objectives originally stated in the FIAT report are as follows:

- Identify important GRSG-occupied habitats and baseline data layers important in defining and prioritizing GRSG habitats
- Assess the GRSG habitats' resistance to invasive annual grasses and resilience after disturbance and prioritize focal habitats for conservation and restoration
- Identify management strategies to conserve GRSG habitats

1.4 COLLABORATION AND MEETINGS

The BLM Snake/Salmon/Beaverhead FIAT 2 assessment team was made up of the following partners:

- USFWS
- USDA Forest Service
- USDA Natural Resources Conservation Service
- Idaho Department of Fish and Game (IDFG)
- Idaho Department of Lands

Team Leader Joe Adamski (Idaho BLM State Forester and Natural Resource Supervisor) led the Step 2 process via phone calls, e-mails, and direct conversations. From this outreach, approximately 70 interagency participants contributed to the Snake/Salmon/Beaverhead FIAT assessment. During workshops, participants shared local data, such as lek information, seasonal

habitat maps, and potential treatments planned through partnerships outside of FIAT. Collectively, multiple sources of data were combined to provide the basis for an integrated program of work in the Snake/Salmon/Beaverhead FIAT assessment area.

A complete list of names/affiliations of meeting participants and contributors is in **Appendix D**.

1.4.1 Meetings

Between October and December 2014, and between February and March 2015, 13 remote webinar/conference call workshops were held to gather information to support this assessment. Participants were the BLM District Office and other partners in the Snake/Salmon/Beaverhead assessment area (see **Table 1-2**).

In these meetings, participants collaborated on the following:

- Reviewed FIAT Step 1 data for accuracy
- Incorporated into Step 1 findings refined local information, such as lek location, breeding bird density, telemetry, vegetation, and fire occurrence
- Identified the extent of the PPAs, potential treatments, and appropriate management strategies in the four program areas
- Documented the rationale and local factors influencing the identification of management strategies

Table 1-2
List of Meetings

Date	BLM District
October 31, 2014	Boise
November 5, 2014	Boise
November 6, 2014	Twin Falls
November 7, 2014	Twin Falls
November 13, 2014	Idaho Falls
November 14, 2014	Idaho Falls
November 20, 2014	Idaho Falls
December 5, 2014	Boise
December 8, 2014	Boise
December 18, 2014	Idaho Falls
February 19, 2015	Idaho Falls
February 23, 2015	Boise
February 27, 2015	Twin Falls

SECTION 2
DATA MANAGEMENT AND STEP-DOWN PROCESS

This section describes the data management method and process used to go from Step 1 to Step 2.

2.1 EXAMINATION OF FIAT STEP 1 FINDINGS

There are several key differences in the manner that focal habitats were delineated between FIAT Steps 1 and 2. First, FIAT Step 2 evaluated 75 percent BBD using PAC rather than state boundaries, which resulted in a data set that included only those leks with a maximum male count of 22 or more. This approach was used to provide a more spatially unbiased 75 percent BBD threshold based on population rather than political boundaries. Alternatively, the state-level analysis of BBD used in FIAT Step 1 could skew the 75 percent BBD threshold if lek size was strongly biased among separate PACs within the same state.

Second, FIAT Step 2 used the most recent lek data available (2010–2014) to determine the 75 percent BBD threshold and focal habitat. This process addressed the concern that FIAT Step 1 failed to capture recent changes in habitat condition because the most current information was not used.

Third, FIAT Step 2 used a more conservative definition of occupied leks than was used by FIAT Step 1. FIAT Step 2 defined occupied leks as having at least 2 males in at least 1 of the past 5 years (Idaho Fish and Game definition), versus 1 male in 10 years, which was used in FIAT Step 1 (see Doherty et al. 2010). As a result, only leks with recent occupancy were included in the data set, which more accurately reflects current habitat condition.

Finally, site-specific telemetry and seasonal habitat information were incorporated in FIAT Step 2 (see Section 2.2) but not in FIAT Step 1. These additional data were provided in part by state agencies and BLM Field Office biologists. As a result, FIAT Step 2 provides a finer-scale representation of seasonal use areas such as GRSG brood-rearing and winter habitat.

2.2 INCORPORATION OF LOCAL DATA

The Snake/Salmon/Beaverhead assessment team identified individual PPAs using the focal habitat boundaries developed as part of the FIAT Step 1 analysis. Breeding bird density, confer expansion, wildfire threat, sagebrush landscape cover, conifer expansion, and additional local data were also used to define the PPA boundaries and inform each PPA assessment.

The local layers used included Geographic Information Systems (GIS) data from the following local, state, and federal partners:

- BLM district offices
- Idaho Department of Fish and Game
- Idaho Department of Lands
- USDA Forest Service
- USDA Natural Resources Conservation Service

Appendix B identifies national, regional, and local data layers used as a starting point for the Snake/Salmon/Beaverhead assessment.

2.2.1 Data Description

The types of local data used in this report are as follows:

- ID Management zone analysis data 2010
- Idaho and Southwestern Montana Greater Sage-Grouse Draft Land Use Plan Amendment and EIS priority habitat data
- Greater Sage-Grouse Landscape importance class data
- Breeding and winter habitat data
- Telemetry data
- Fire history and occurrence data
- Fire behavior modeling data
- Fire suppression and fire threat modeling data
- Fuel modeling data
- Land fire data
- Vegetation and cheatgrass occurrence data
- Other GRSG biologically significant unit data

2.2.2 National Data Layers

Data layers are referenced in Appendix B.

Breeding Bird Density

Sources: Individual state GRSG Breeding Density Area from the BLM National Operations Center and data from the GRSG BBD Mapping Project. The model is run on the spatial extent of the data, so the results of dissolving this state data together are not equivalent to the Range-Wide Sage-Grouse Breeding Density Area Conifer Expansion.

Conifer Expansion Layers Used

The model was run using BLM National Operations Center conifer expansion data provided. Piñon-juniper and conifer encroachment (derived) depicts the combined piñon-juniper and conifer interface in the GRSG study area that is within 120 meters of sagebrush land cover.

Wildfire Threats

Sources:

- 5 Class Burn Probability derived from FSim modeling
- Fire Occurrence Areas (Regionally Leveled Fire Occurrence Areas) from Westwide Risk Assessment
- Fire Threat Index (Regionally Leveled Fire Threat Index) from Westwide Risk Assessment
- Suppression Difficulty Rating (Regionally Leveled Suppression Difficulty Rating) from Westwide Risk Assessment
- Westwide Risk Assessment Regionally Leveled Expected Flame Length
- Westwide Risk Assessment Regionally Leveled Expected Rate of Spread

Soil Moisture/Temperature Regime

Sources: Soil Moisture Temperature Regimes Data from the BLM National Operations Center and Soil Moisture and Temperature Regime Data from the Landscape Conservation Management and Analysis Portal.

Sagebrush Landscape Cover

Sources: Sagebrush Distribution from LANDFIRE and Sagebrush Distribution and Percent Landscape Cover from the Landscape Conservation Management and Analysis Other Data Layers.

2.2.3 Other Data Layers Used

GRSG Data

The 2013 COT GRSG population shape file was produced by the 2013 GRSG Conservation Objectives Team. The GRSG PACs polygon data set represents the GRSG PACs identified in the 2013 GRSG COT Report.

Other Geographies

- The Western Association of Fish and Wildlife Agencies (WAFWA) Management Zones contain the original WAFWA Management Zones shape file. This data set depicts a preliminary version of the management zone boundaries for GRSG and Gunnison Sage-Grouse in the western United States and Canada.
- National Table 2 Sagebrush Soil Regime Overlay Calculation.
- FIAT Region Boundaries (November 18, 2014 cleaned version) includes all five official region boundaries. These data are approved to use in the Step 2 assessment. The boundaries have been modified from the COT-base PAC boundaries and include USFWS recommended PACs.

2.3 DATA LIMITATIONS AND STEP 2 PROCESS CONSIDERATIONS

This report is based on the best information available at the time of publication. The BLM recognizes that there are areas where additional information would enhance the value of this report and would further support implementation of FIAT objectives and overall GRSG conservation efforts. The following are data gaps identified during the Snake/Salmon/Beaverhead Step 2 process.

2.3.1 Focal Habitats

Primary concerns with the focal habitat model are as follows:

1) The locations of important seasonal habitats are not well understood for some populations (particularly those GRSG that are more migratory).
2) It limits restoration opportunities outside of the focal areas.

As a result, it may be that focal habitats identified in FIAT Step 2 fail to include areas that provide some of the best investment for GRSG restoration. For example, it may be that the best strategy to prevent fire from reaching high-quality habitat in some cases is to perform fire prevention management outside of the focal habitats. Indeed, the focus of GRSG fuel reduction and habitat restoration planning in some field offices has been outside of focal habitats. It has also been argued that restoration treatments should focus on historically occupied habitats to promote GRSG recolonization and to reverse their decline over the long term.

The BLM recognizes that the focal habitat analysis in FIAT Step 2 does not necessarily address the full suite of actions needed to maintain the current distribution and connectivity of GRSG habitats. To be sure, future efforts designed to maintain and connect habitats across the range will be needed as current focal habitats are addressed and additional resources become available. Finer-scale studies to examine seasonal habitat use patterns should be conducted to ensure that management actions encompass all seasonal habitat

requirements. However, it should be noted that the intent of FIAT Step 2 is to provide a first-tier stratification (e.g., focal habitats) for prioritizing areas where conservation actions could be especially important for GRSG populations. It should also be noted that FIAT Step 2 does not preclude habitat management activities outside of focal areas.

2.3.2 Mapping Habitat Conditions

Correctly identifying habitat conditions was identified as a potential issue with mapping GRSG habitat, particularly as a result of post-fire recovery. Invariably, there is a lag between the time habitat becomes suitable and the time when BLM staff recognizes the change. Therefore, there is an inherent skew towards fewer habitat areas being mapped as suitable for GRSG compared to the amount actually available on the landscape. Also, broad habitat categories lead to an underestimation of the importance of habitat which may be slightly reduced in shrub cover but which is rapidly approaching suitable conditions for GRSG. A review of time-since-disturbance information coupled with land treatment information (which includes effectiveness monitoring) could improve the process in making decisions on focal areas.

2.3.3 Project Prioritization based on Resistance and Resilience Concepts

The prioritization of actions and tools associated with restoration projects should be framed within watershed-level restoration plans. Such plans incorporate the spatial and temporal relationship of all pertinent resource layers that are needed to achieve resource objectives. The expertise of local field office staff is critical to achieving project success. Their knowledge should be continually expanded by integrating a wide-range of applied science information.

Additional spatial layers that would support more informed restoration treatments could include the following:

- Site disturbance history layers, including agricultural development
- Information on seedings that would be more responsive to inter-seeding/inter-planting treatments (e.g., old seedings where native plants are recovering)
- Provisional and empirical seed zones (for example, see http://www.fs.fed.us/wwetac/threat_map/SeedZones_Intro.html)
- BLM Seeds of Success collection locations to determine seed lots that could be used for restoration
- Chemical treatments where residual herbicides may positively or negatively affect seeding success
- Noxious weed bio-control sites
- Cheatgrass die-off locations

- Native seed island locations for targeted source-identified seed collections
- Meteorological tower locations
- Spatial extent of existing levels of landscape fragmentation (e.g., roads, power lines, and fuelbreaks)

SECTION 3
ASSESSMENT AREA CHARACTERIZATION

3.1 SNAKE/SALMON/BEAVERHEAD ASSESSMENT AREA

From both a regional and a range-wide perspective, the South Side Snake and Southwest Idaho population areas are especially important to long-term conservation of GRSG in Management Zone IV. This is because they comprise a substantial portion of the Great Basin core population (Connelly et al. 2004). Shared with Nevada, Utah, and Oregon, this is one of the two remaining major population strongholds in the range of the species. The North Side Snake and Mountain Valleys populations provide additional and substantial contributions in Idaho. The Mountain Valley population also provides known connectivity with the Southwest Montana population.

3.2 BIOLOGICAL SUMMARY

3.2.1 Vegetation

The composition and distribution of plant communities in the Snake/Salmon/Beaverhead assessment area are influenced by such factors as climate, elevation, topography, soils, drought, insects, fire, cultivation, invasive plants, and livestock grazing. As a result, a wide variety of plant communities occur. Plant communities vary greatly in their relative ecological health, as a result of stressors that influence the distribution and abundance of the plant components in the general community.

Some portions of the planning area contain relatively intact sagebrush steppe communities. Plant communities such as these are in good to excellent ecological condition and maintain adequate forb and perennial grass in the understory to supply habitat requirements for GRSG.

Data available for analysis are limited to general overstory vegetation classes of tall shrub, such as basin big sagebrush (*Artemisia tridentata* ssp. *tridentata*), Wyoming big sagebrush (*A. t.* ssp. *wyomingensis*), and mountain big sagebrush (*A. tridentata* ssp. *vaseyana*), and low shrub, such as black sagebrush (*A. nova*) and

low sagebrush (*A. arbuscula*). This information can be further stratified based on landscape characteristics to approximate the relative proportion of the various types of sagebrush plant communities. Data are not widely available concerning the relative ecological health of the plant communities in the assessment area.

At the time of document preparation, spatial data that accurately portrayed the distribution of nonnative, invasive, and/or noxious plant species across the range of GRSG were not available. Therefore, nonnative, invasive, and/or noxious plant species need to be more fully inventoried and monitored in the focal habitats to prioritize treatments of these species. Management actions needed in focal habitats include the following:

- Locating infestations
- Decreasing propagule pressure (especially along roadside areas)
- Treating satellite infestations
- Preventing future infestations

Plant species are the foundation of habitat and ecosystem function; when we say that GRSG are declining due to a loss of habitat, this means that the loss of native plant diversity and distribution is central to the problem. This issue cannot be resolved without restoring native plant communities and their distribution. Therefore, using locally adapted native seeds and native plant materials of sagebrush-steppe ecosystem appropriate to the location, conditions, and management objectives for vegetation management and restoration activities (Secretarial Order 3336, January 5, 2015) will be a priority. Strategic pre-project planning will be required to acquire this genetically appropriate seed and other plant material for habitat restoration.

3.2.2 Invasive Annual Grasses

Noxious weeds and invasive species include plants listed as noxious by state laws. Also included are those plants known to be altering the dynamics of native plant communities by replacing native plants through competition or altering some ecological process to the detriment of the native plant community. The latter is an example of annual bromes increasing fire frequency.

Specific noxious weeds causing localized impacts in the planning area are rush skeletonweed, leafy spurge, diffuse knapweed, and spotted knapweed. Although not yet well established in the planning area, yellow starthistle is known to have a similar range as cheatgrass; many of the areas currently supporting annual grass communities could support this noxious weed. Other weeds listed as noxious occur in the planning area but are not as widespread or as detrimental as those listed.

Invasion by exotic annual grass species has resulted in dramatic increases in number and frequency of fires, with widespread, detrimental effects on habitat

conditions (Young and Evans 1978; West and Young 2000; West and Yorks 2002; Connelly et al. 2004). Increased fire frequency typically removes the sagebrush canopy in affected areas, which is replaced by annual species that provide little to no habitat value (Knapp 1996; Epanchin-Niell et al. 2009; Rowland et al. 2010; Baker 2011; Condon et al. 2011). Invasive annuals are numerous species of bromes, most notably cheatgrass and medusahead rye (*Taeniatherum caput-medusae*). An annual species that may be a threat in higher-elevation GRSG habitat is ventenata (*Ventenata dubia*). Wyoming sagebrush communities are particularly susceptible to conversion to annual grasslands after fire when the understory contains higher densities of annual grass.

Once converted to exotic annual grasses, these plant communities have crossed a threshold that precludes their returning to traditional plant community composition through normal plant succession. These areas are essentially lost in their ability to provide GRSG habitat, unless significant investment in restoration is undertaken. Even then, these projects may fail if conditions do not exist for desired species to become successfully established.

3.2.3 Conifer Encroachment

The conversion of sagebrush steppe communities into conifer woodlands is a factor contributing to GRSG habitat decline in portions of the planning area. This conversion is mostly an issue in mountain big sagebrush, where reduced fire frequency has allowed the invasion of Utah, Rocky Mountain, or western juniper; in some areas Douglas fir and pine may be expanding into shrub habitats.

3.2.4 Fire Regime and History

Fire is an active and dynamic environmental factor on the landscape. Rate of spread can exceed 5 miles per burn period (see maps: Historic Fire Locations 1970–2007, Large Fire Simulator module 2013, and Large Fire Perimeter 2000-2012).

Surface water availability is limited for numerous reasons, including lack of access to water sources and limited surface water. Water is generally provided by water tenders and aerial support.

The greatest loss of GRSG habitat in the Snake/Salmon/Beaverhead assessment area has been from cheatgrass proliferation and wildfire within the lower-elevation sagebrush communities (primarily Wyoming big sagebrush).

Historically, wildfire was not a common occurrence in Wyoming big sagebrush sites. Current literature estimates the fire interval at approximately 100 years. When these sites have burned, the discontinuous fuels of the scattered native bunch grasses likely resulted in small discontinuous fires.

Conversely, cheatgrass is highly flammable due to its uniform fine fuels, which dry out early in the growing season. Each recurring fire set the stage for further

cheatgrass expansion, resulting in an ever-increasing cheatgrass/fire cycle and loss of GRSG habitat. On many of these sites, fire return intervals have been shortened to between two and four years (Whisenant 1990).

Lower-elevation shrub steppe communities within the assessment area that experience successive disturbances and have lost residual native community components, including biological soil crusts, will cross to ecological thresholds that favor annual-dominated communities that are also at risk to noxious weed invasions. Rehabilitation of these areas will require multiple, well-timed interventions within the first two years following a fire to achieve functional rehabilitation.

3.2.5 Soil/Moisture Regime (Resistance and Resilience)

The average annual precipitation and temperature and associated soil/moisture regime vary greatly by elevation and aspect in the assessment area. See **Table 3-1**, **Figure 3-1**, **Figure 3-2**, **Figure 3-3**, and **Figure 3-4**.

Table 3-1
Snake/Salmon/Beaverhead Landscape Covered by GRSG Habitat Matrix Type[1]

GRSG Habitat Matrix Type	Acres	Percentage of SSB Landscape
1A	479,562	7
1B	778,275	11
1C	1,497,055	22
2A	177,274	3
2B	652,728	10
2C	1,311,132	19
3A	328,518	5
3B	503,371	7
3C	224,828	3
Blank	821,796	12

[1]GRSG Habitat Matrix Type is from the GRSG habitat matrix based on resilience and resistance concepts from Chambers et al. 2014 (1=high resilience and resistance; 2=moderate resilience and resistance; 3=low resilience and resistance; A=1-25 percent sagebrush land cover; B=26-65 percent sagebrush land cover, and C= >65 percent sagebrush land cover)

3.2.6 Greater Sage-Grouse

Within the Idaho/Southwest Montana EIS/RMPA area, GRSG occupy all or portions of ten populations and eight subpopulations (Connelly et al. 2004). Two large populations—Great Basin Core and Wyoming Basin—encompass portions of Oregon, Nevada, Utah, and Wyoming and extend beyond the subregional boundary.

Migratory movements of GRSG also have been documented between eastern Idaho and southwestern Montana from the Bannack and Red Rock populations.

Telemetry data from 1999 to 2012 show that seasonal movements, including both distance and duration, vary significantly between groups of GRSG.

3.2.7 Existing Treatments

A variety of treatments have been performed on the landscape within at least the last 60 years. While anecdotal information (oral history) shares that projects were performed in the 1950s and 1960s, some records are not readily available. A search of all past projects is beyond the scope of this assessment. Since the National Fire Plan of 2000, a number of hazard fuels reduction projects have been implemented and entered into the NFPORS. A number of post-fire rehabilitation projects (ESR) have also been implemented on burned acres.

Within the lower-resiliency areas, native plant communities are prioritized over established seedings. Depending on fire severity and the amount of residual early successional native species, recently burned native communities will cross ecological thresholds where site disturbances have been frequent enough to limit the recovery of these early succession native species, including Sandberg bluegrass and squirreltail, as well as biological soil crusts. ESR treatments will be important in sites where ecological thresholds within native plant communities have been crossed. In seedings the herbaceous component typically recovers, but sagebrush mortality will occur. Additionally, when seedings do burn, the more discontinuous fuels associated with established perennial bunch grasses often result in a mosaic burn pattern that maintains some of the sagebrush, resulting in an existing seed source for natural reestablishment.

3.2.8 Other Management Factors

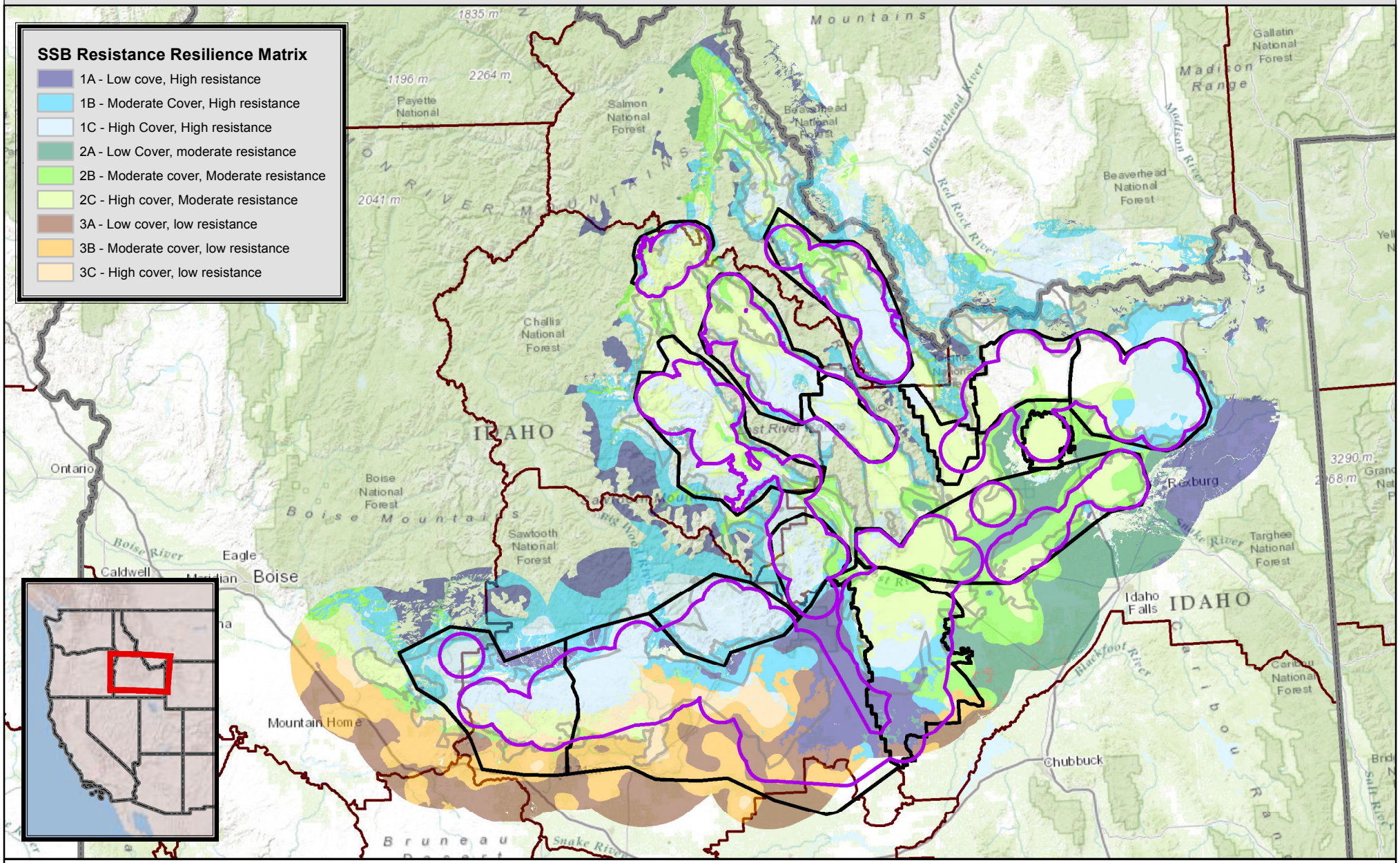
During the FIAT Step 2 process, the Snake/Salmon/Beaverhead assessment team recognized, in a general sense, the influence of other landscape-level factors that contribute to GRSG habitat and population persistence in the assessment area. These other management factors are lands and realty (e.g., transmission lines), wild horses and burros, mining, and livestock grazing. Where a particular management factor is found to influence the nature and type of potential treatments, those factors are noted. However, any detailed analysis of these factors is outside the scope of this assessment; accordingly, this assessment does not consider or assess the potential threats of these other management actions on GRSG habitat.

The BLM is continuing to develop EISs and RMPAs, which consider the impacts of proposed management of these resource uses on GRSG and its habitat.

Snake Salmon Beaverhead Assessment Area

Greater Sage-Grouse Wildfire, Invasive Annual Grasses, and Conifer Expansion Assessments

Bureau of Land Management
U.S. Department of the Interior



No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.

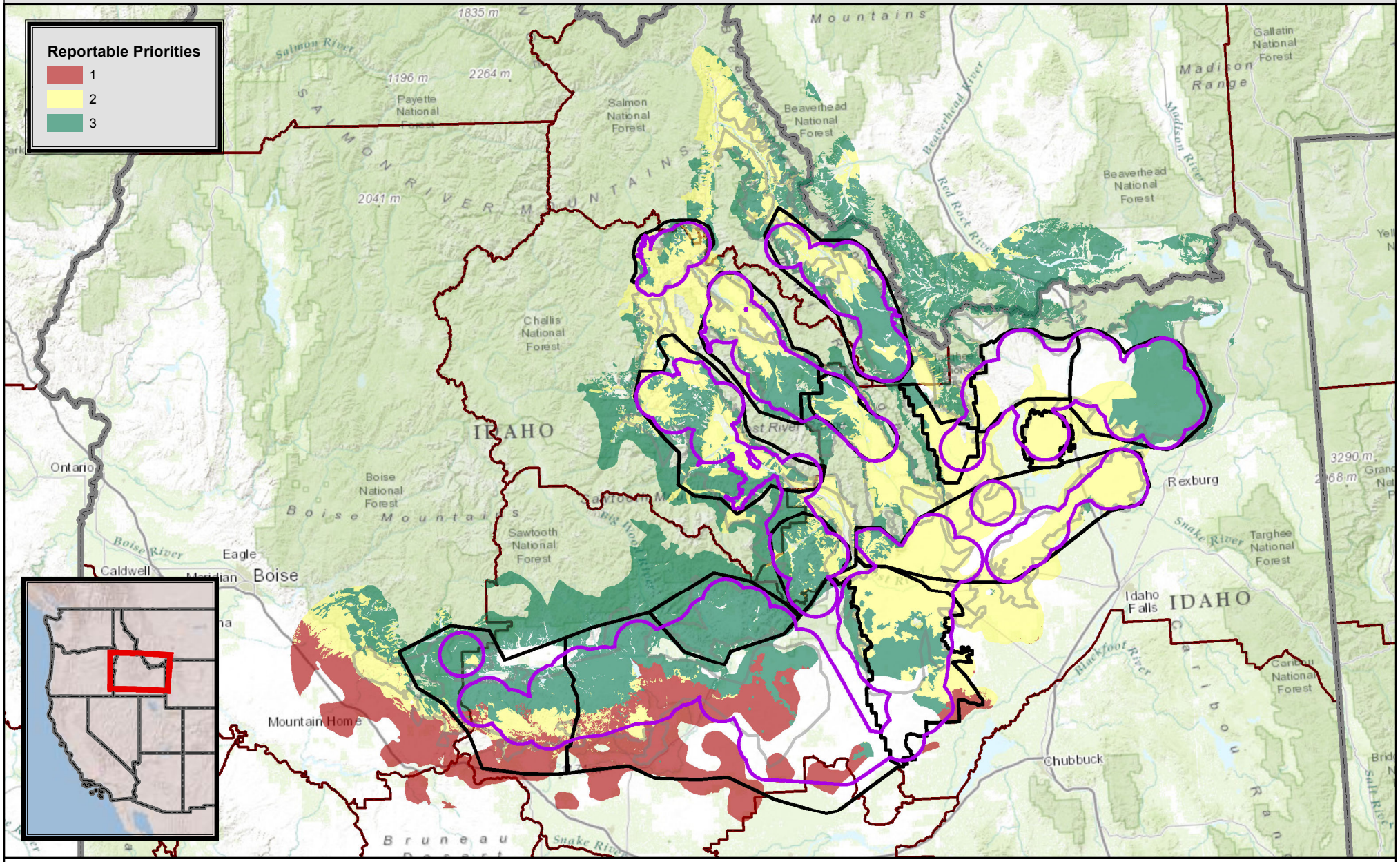
SSB Focal Habitat
Snake Salmon Beaverhead Project Planning Areas
Snake Salmon Beaverhead Assessment Area

March 2015
Date Saved: 3/11/2015
Data Sources: Bureau of Land Management, ESRI Basedata
1:2,019,573

Snake Salmon Beaverhead Assessment Area

Resistance-Resilience Reportable Priorities

Bureau of Land Management
U.S. Department of the Interior



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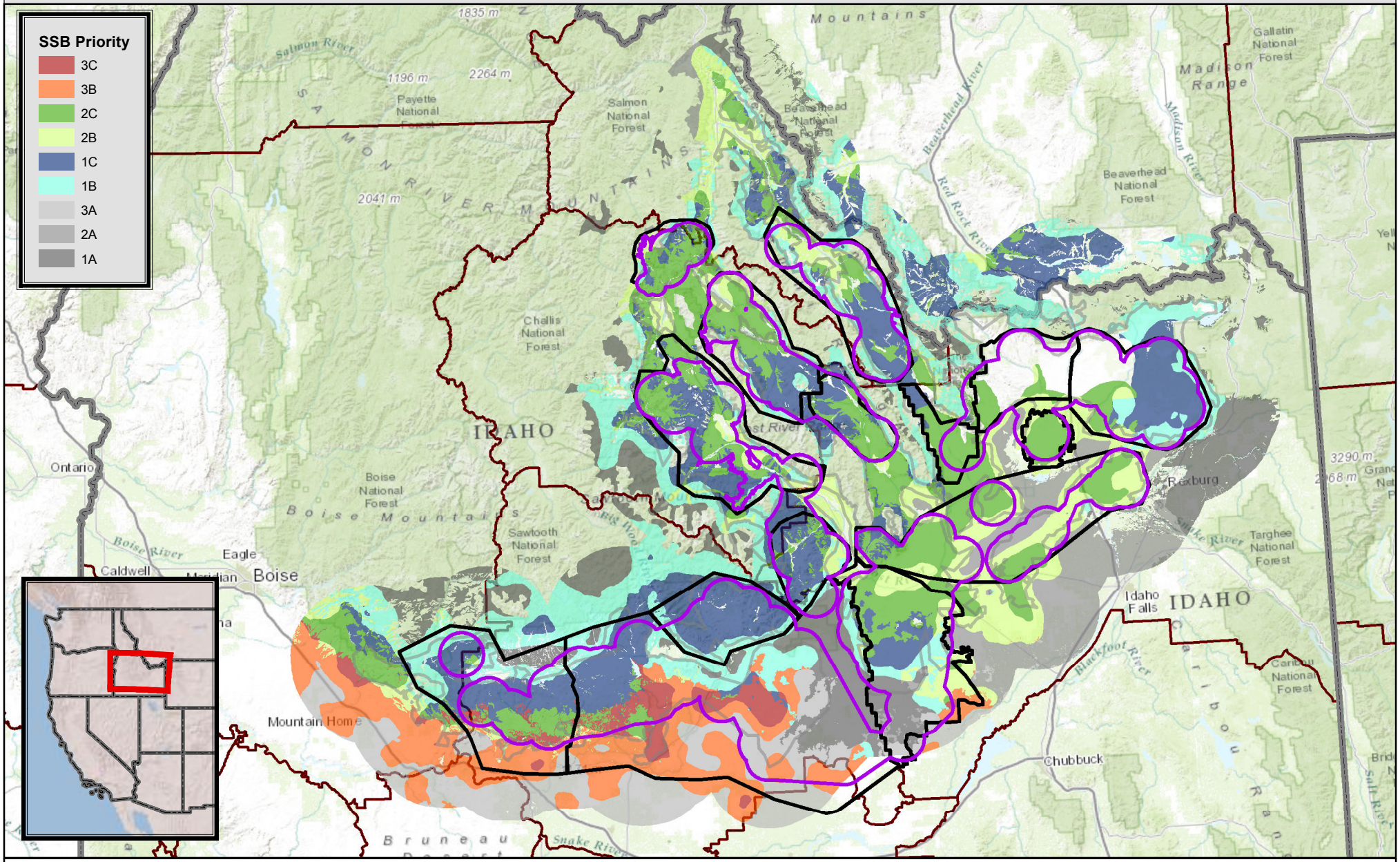
SSB Focal Habitat
Snake Salmon Beaverhead Project Planning Areas
Snake Salmon Beaverhead Assessment Area

March 2015
Date Saved: 3/11/2015
Data Sources: Bureau of Land Management, ESRI Basedata
1:2,019,573

Snake Salmon Beaverhead Assessment Area

Resistance-Resilience Priorities for Application of Management Strategies

Bureau of Land Management
U.S. Department of the Interior



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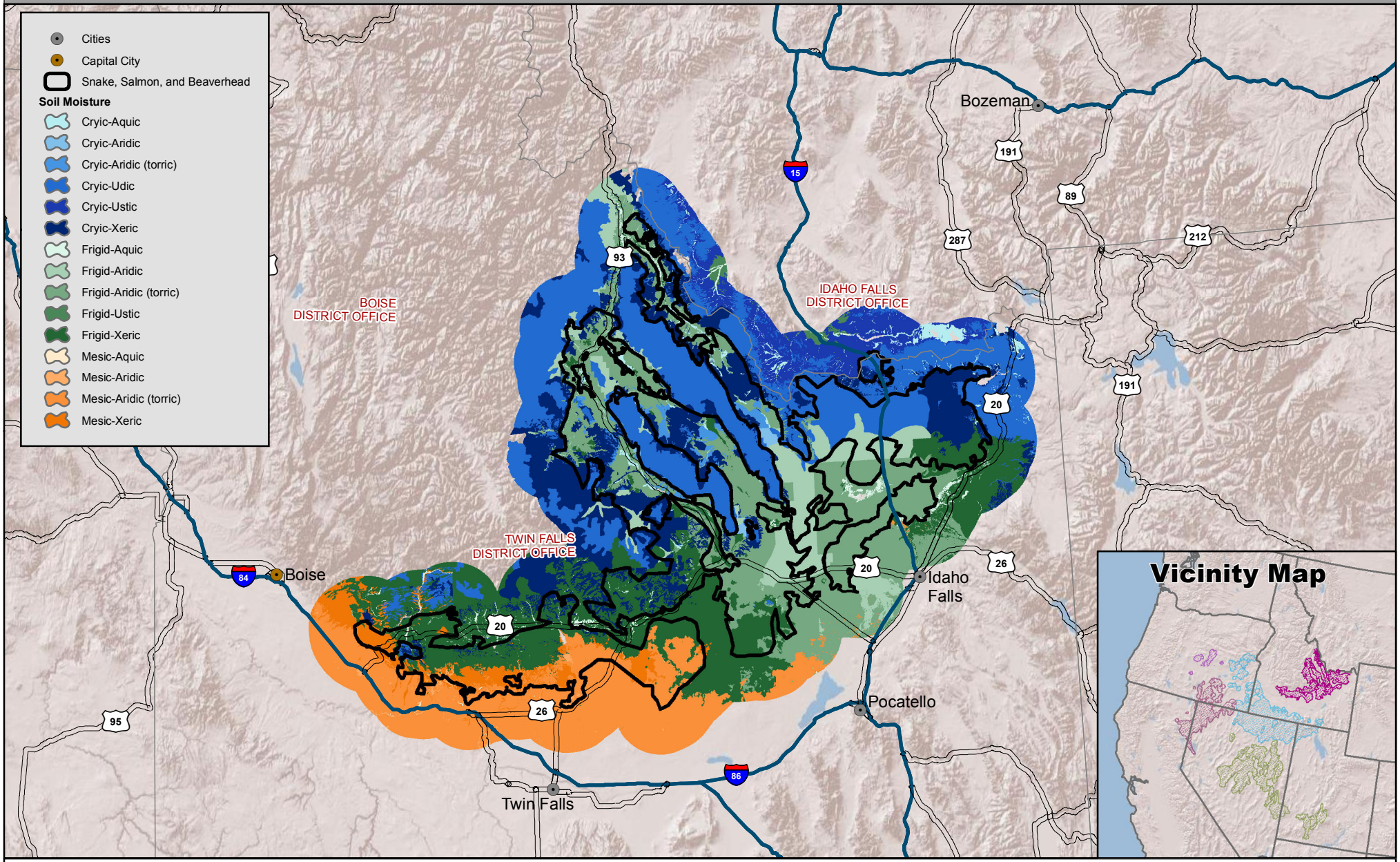
SSB Focal Habitat
Snake Salmon Beaverhead Project Planning Areas
Snake Salmon Beaverhead Assessment Area

March 2015
Date Saved: 3/11/2015
Data Sources: Bureau of Land Management, ESRI Basedata
1:2,019,573

Soil Moisture Temperature Regime

Greater Sage-Grouse Wildfire, Invasive Annual Grasses, and Conifer Expansion Assessments

Snake, Salmon and Beaverhead Assessment Area
Bureau of Land Management
U.S. Department of the Interior



No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.

March 2015
Date Saved: 3/16/2015
Data Sources: BLM, NRCS, ESRI Basedata
1:2,750,000

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SECTION 4
FOCAL HABITAT AND PROJECT PLANNING AREAS

4.1 FOCAL HABITAT AND PROJECT PLANNING AREAS

4.1.1 Focal Habitat Areas Overview

Chambers et al. (2014) illustrates a step-down approach for identifying and assessing priority GRSG habitats across large landscapes and provides guidelines to identify effective management strategies/actions and habitat restoration needs across four primary federal agency program areas: fuels management, fire operations, habitat restoration/recovery, and post-fire rehabilitation. The approach is based on widely available data, described in Section 2.3, to provide consistency across millions of acres and includes: (1) PACs, (2) breeding bird densities, (3) habitat suitability as indicated by the landscape cover of sagebrush (not foliar cover), (4) resilience and resistance and dominant ecological types as indicated by soil temperature and moisture regimes, and (5) habitat threats as indicated by cover of cheatgrass, cover of piñon and juniper, and by fire history.

Using this approach, development and review teams were identified and tasked with initiating the FIAT process in an effort to reduce threats to GRSG resulting from impacts from invasive annual grasses, wildfires, and conifer expansion. Step 1 FIAT team members included individuals from federal agencies that administer the four federal program areas that are the focus of the assessment. They used this approach to identify priority habitat areas, further referred to as "focal habitats." Focal habitats are the portions of a PAC with important habitat characteristics and bird populations that are most impacted by the previously identified threats. See Greater Sage-Grouse Wildlife, Invasive Annual Grasses & Conifer Expansion Assessment (2014) for further Step 1 details. The results of Step 1 of the FIAT process, including geospatial data, were made available as the starting point for the assessment teams identified for Step 2 of the FIAT process.

4.1.2 Project Planning Areas Overview

As part of the FIAT Step 2 process, the Snake/Salmon/Beaverhead assessment team assessed and identified broad PPAs and associated proactive and reactive management strategies and associated vegetation treatments focused on the four program areas (fuels management, habitat restoration and recovery, fire operations, and post-fire rehabilitation management). The team used focal habitats as the spatial starting point and through the Step 2 process, identified 15 unique PPAs.

Each PPA contains at least one focal habitat, and in many cases, several. For most PPAs, management strategies/actions and treatments were identified outside of focal habitats based on local knowledge that these areas are crucial to the long-term viability of GRSG populations within the PPA.

The team subsequently used a series of worksheet templates prepared for each program area to identify treatment opportunities for the four program areas within each PPA. For each District Office in the assessment area, team members participated in one or more interactive webinars to discuss and complete the assessment for each PPA. In order to consider the broadest spectrum of possible treatment opportunities, the team did not consider landownership when conducting these assessments. Additionally, the team restricted potential fuelbreaks to existing roads in order to minimize further disturbance, fragmentation, and reduce the likelihood of increasing invasive annual grass abundance.

All of the Snake/Salmon/Beaverhead assessment area is in Idaho. This area covers approximately seven million acres generally within the Idaho Falls and Twin Falls BLM District Offices. Landownership in the PPAs is composed of a combination of public (78 percent) and private (22 percent) landownership (**Table 4-1**). A list of PPAs by BLM District Office is contained in **Table 4-2**. See **Figure 4-1**.

Table 4-1
Landownership within PPAs in the
Snake/Salmon/Beaverhead Landscape

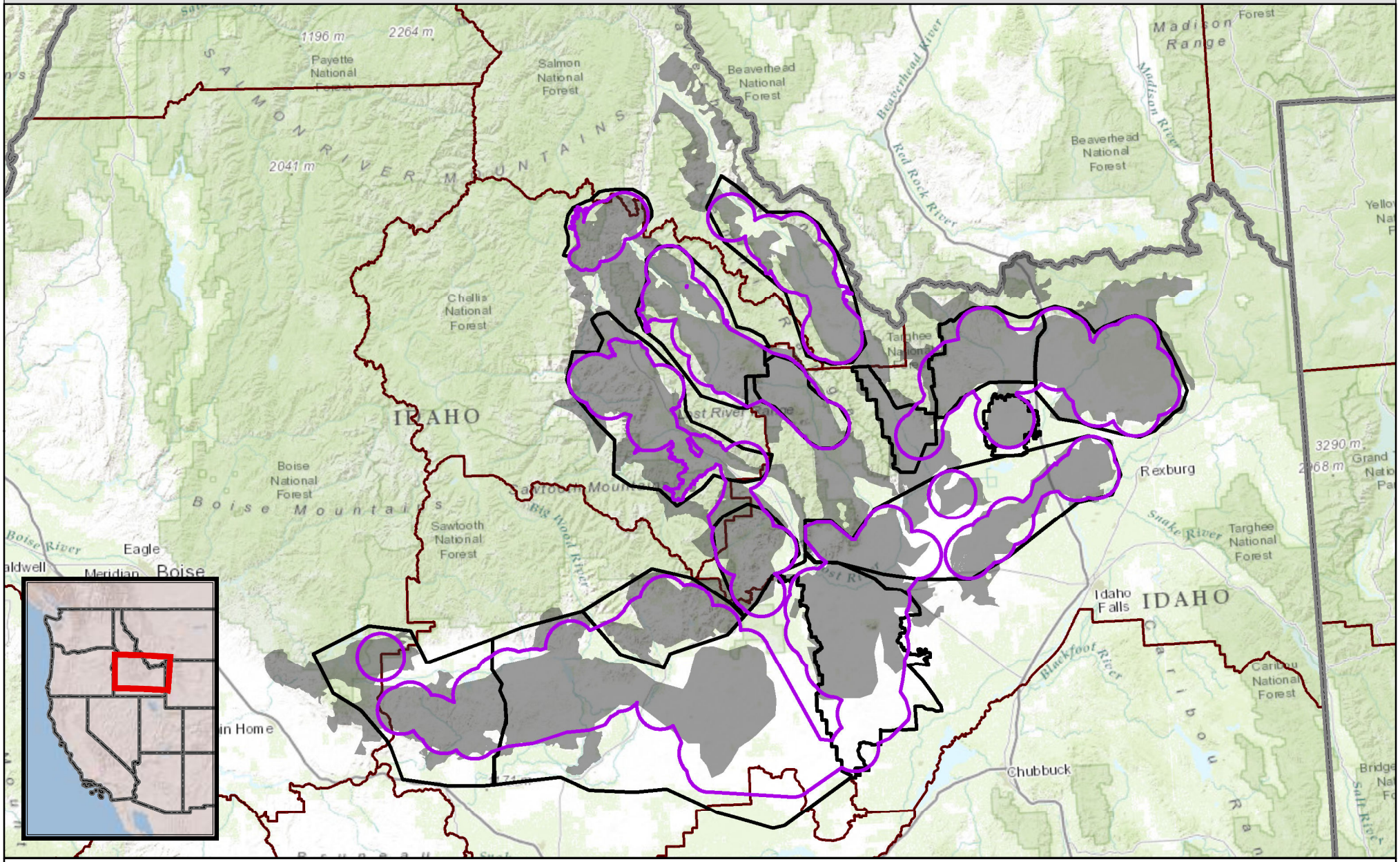
Ownership	Acres	Percentage of SSB Landscape
BLM	3,468,021	55
Forest Service	556,026	9
State	339,757	5
Private	1,496,563	24
Other federal lands[1]	398,932	6

[1]Includes lands administered by the Department of Defense, Bureau of Indian Affairs, National Park Service, and/or Bureau of Reclamation

Snake Salmon Beaverhead Assessment Area

Greater Sage-Grouse Wildfire, Invasive Annual Grasses, and Conifer Expansion Assessments

Bureau of Land Management
U.S. Department of the Interior



No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.

SSB Focal Habitat
Snake Salmon Beaverhead Project Planning Areas
Snake Salmon Beaverhead Assessment Area

March 2015
Date Saved: 3/16/2015
Data Sources: Bureau of Land Management, ESRI Basedata
1:1,878,811

Table 4-2
Snake/Salmon/Beaverhead PPAs

PPA Name	BLM District Office
Antelope Flat/ Big Lost	Idaho Falls
Bennett Hills	Twin Falls
Big Desert	Idaho Falls
Big Lost	Idaho Falls
Birch Creek	Idaho Falls
Hat Creek	Idaho Falls
Lemhi-Birch	Idaho Falls
Little Lost	Idaho Falls
Little Wood River	Twin Falls
Magic	Twin Falls
Medicine Lodge	Idaho Falls
Pahsimeroi	Idaho Falls
Sand Creek	Idaho Falls
Table Butte	Idaho Falls
Twin Butte	Idaho Falls

4.2 SNAKE/SALMON/BEAVERHEAD MANAGEMENT STRATEGIES COMMON TO ALL PPAS

In identifying acreages for potential treatment opportunities/management strategies, some acreage contained no Geographic Information System data. This acreage is identified herein and tabulated as "Null" acreage.

4.2.1 Fuels Management

The FIAT Step 2 process identified several existing travel routes as priority fuels treatments. Proposed fuelbreaks are identified in the GIS data accompanying this report. The routes identified are those that can be treated within the next five years using a variety of treatment techniques, including mowing, mastication, chaining, herbicide applications, seedings, and targeted grazing. All treatments would be coordinated with other land management agencies and private landowners, as appropriate, and monitored post-treatment to ensure effectiveness. Fuelbreak treatment areas were identified using existing roads within the PPA that could be accessed and used by BLM personnel. The identified areas represent the highest priority within the PPA for further review and analysis as part of a subsequent implementation strategy. Additional information will be obtained via field work and other appropriate means to determine how to fully use the delineated roads to optimize GRSG habitat conservation within the PPA.

4.2.2 Habitat Recovery/Restoration

In general, treatments of annual invasive grasses would include active management approaches, including spraying, seeding, and monitoring of treated sites for proper vegetation communities. The GIS data accompanying this report also identifies the ideal locations of potential habitat recovery and restoration projects. In general, habitat restoration treatments would be prioritized in low resistance and resilience areas with degraded habitat (e.g., historic burn areas)

and other warm-dry soil areas. All treatments would be coordinated with other land management agencies and private landowners, as appropriate, and monitored post-treatment to ensure effectiveness.

4.2.3 Fire Operations

The Step 2 FIAT process identified areas with the lowest resistance and resilience and moderate to high cover (3B and 3C areas) as the highest priority areas for initial fire attack and stationing of resources. The GIS data accompanying this report identifies these areas. The decision to prioritize these areas is supported by the overwhelming evidence throughout the Great Basin that demonstrates these areas have the greatest risk for conversion to invasive annual grasses after a fire (see, for example, Chambers et al. 2014).

Response to wildfires on National Forest Systems (NFS) lands in and around identified priority GRSG habitat will be consistent with Forest Plan direction. Identified GRSG habitat is considered a high priority for protection on NFS lands.

Response to wildfire on other federal public lands, state lands, and other landownerships, including private ownerships and ownerships protected by (forest) fire protection associations shall be consistent with their respective fire management plans.

4.2.4 Post-Fire Rehabilitation

The Step 2 FIAT process identified those areas with moderate to high cover, warm-dry soil conditions, and no prior post-fire rehabilitation treatments as being the highest priority for post-fire rehabilitation. Areas that have received revegetation treatment are more resistant and resilient than native 3B and 3C habitat areas. Higher-elevation, north-facing slope areas with cooler and moister soil characteristics would be lower priority areas for rehabilitation due to the ability of those sites to naturally recover following fire. In all cases of previously seeded or natural recovery areas, shrub seeding or planting may be necessary if desirable shrubs are not present.

In the absence of ESR treatments, recently burned native communities may likely be irrevocably converted to invasive annual-dominated communities, whereas in existing seedings, the herbaceous component typically recovers naturally even though the sagebrush would be killed. Additionally, when seedings do burn, the more discontinuous fuels associated with established perennial bunch grasses often result in a mosaic burn pattern that maintains some of the sagebrush, resulting in an existing seed source for natural reestablishment.

4.3 SNAKE/SALMON/BEAVERHEAD PPAS

Below, in order of priority ranking, are descriptions of each of the PPAs within the Snake/Salmon/Beaverhead Assessment Area. Each PPA description includes 1) a characterization of the PPA landscape, 2) examination of the proposed management strategies within the PPA, and 3) spatial depiction of the proposed

treatments. Additional supporting information, such as PPA worksheets, meeting notes, and links to electronic geospatial data, is included in **Appendices A-E**.

4.3.1 Antelope Flat/Big Lost

Project Planning Area Description

Geographic Overview

The Antelope Flats/Big Lost PPA is in the BLM Idaho Falls District Office along Highway 93 between Mackay and Challis, Idaho. Land status includes approximately 60 percent BLM-administered land, 25 percent Forest Service land, and 15 percent state and private land.

There are approximately 554,200 acres within the PPA. Topography varies from open and flat along Highway 93 to rolling hills and rugged mountainous regions. Elevation ranges from approximately 5,800 feet (1,770 meters) to 11,000 feet (3,425 meters).

This PPA is composed of moderate to high cover and cool moist and/or cool dry habitat matrix categories. Approximately 18 percent of the PPA has no habitat matrix data. See **Table 4-3**

Table 4-3
Antelope Flat/Big Lost GRSG Habitat Matrix Categories

Matrix Category	No Data	1A	1B	1C	2A	2B	2C	3A	3B	3C
Acres	98,272		59,386	175,359		42,611	178,558			
% of PPA	18%		11	32		8	32			

Big Lost River runs along the highway, with tributaries to Big Lost occurring throughout much of the PPA.

Agricultural development is likely to occur on the southern end of the PPA; however, private land is limited in this PPA.

A highway runs along the eastern boundary and near the northern boundary of the PPA, and approximately half of the PPA is within five miles of highways. Approximately 40 percent of the PPA is within five miles from transmission lines or towers and 50 percent is five to 13 miles from transmission lines or towers.

Access to more rugged BLM and Forest Service lands are likely to be limited by topography. Highway 93 facilitates access, running the length of the PPA along the eastern side.

GRSG Characteristics

Most of the area is overlapping winter and breeding habitat. Telemetry data show concentrated use in Sand Springs Valley and Cedar Creek Bar. Additional seasonal habitat and bird use in the areas outside the focal habitat are why the PPA is extended southwest of the focal habitats. The northwest and southeast boundaries will follow the local working group polygon.

Vegetation

Conifer expansion occurs in the central parts of the PPA.

No large monocultures are present within PPA; cheatgrass is mostly in drainages towards the northern end of the PPA, based on USGS data.

Fire

Most of the PPA is in the high and very high burn probability categories; a portion of the southeastern end is in the moderate category.

Some reservoirs appear along the Big Lost, but it is unknown whether they are available for fire suppression use. See **Table 4-4**.

Table 4-4
Antelope Flat/Big Lost Summary of Burn Probability

High and Very High Burn Probability in PPA (acres)	403,512
High and Very High Burn Probability in PPA (percent)	73

Existing Treatments

Several small physical treatments and small prescribed fires have been completed in this PPA.

Other Management Factors

BLM lands are grazed by cattle. Current mining is limited; however, historic mining occurred throughout PPA.

Fuels Management

No fuels management is proposed.

Habitat Recovery/Restoration

Priority areas for habitat recovery/restoration include*:

- 62,000 acres of potential conifer encroachment treatments
- 0 acres of potential invasive annual grass
- 5,500 acres of potential habitat restoration
- 104,500 acres of other total habitat recovery/restoration potential treatment

*See associated GIS data layers for position and extent within the PPA and **Table 4-5**.

Table 4-5
Antelope Flat/Big Lost Habitat Restoration Potential Treatments

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	36,900	30,700		36,900	104,500
% of PPA	7	6		7	19

Fire Operations

Priority areas for fire operations include the following*:

- Antelope Flat/Big Lost fire 2nd priority: 126,100 acres
- Antelope Flat/Big Lost fire 3rd priority: 182,000 acres

*See associated GIS data layers for position and extent within the PPA and **Table 4-6**.

Table 4-6
Antelope Flat/Big Lost Potential Fire Operations Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres		126,100	182,000	35,300	343,300
% of PPA		23	33	6	62

Post-Fire Rehabilitation

The Step 2 FIAT process identified areas within the focal habitats with warm-dry soil conditions as the highest priority for post-fire rehabilitation. The Idaho Falls District Office will continue working with other stakeholders to coordinate and prioritize post-fire rehabilitation activities.

Potential treatment areas for post-fire rehabilitation management include the following*:

- Antelope Flat/Big Lost ESR 2nd priority: 113,800 acres
- Antelope Flat/Big Lost ESR 3rd priority: 182,000 acres

*See associated GIS data layers for position and extent within the PPA and **Table 4-7**.

Table 4-7
Antelope Flat/Big Lost Potential Post-Fire Rehabilitation Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres		113,800	182,000	35,300	331,000
% of PPA		21	33	6	60

Proposed Management

Proposed management in the Antelope Flat/Big Lost PPA is intended to improve overall habitat resistance and resilience by reducing conifer encroachment and protecting existing habitat during fire operations. See **Table 4-8** for projects that have been identified within the NEPA planning process. See **Figures 4-8** through **4-14** for a graphic depiction of the proposed treatments and strategies in the PPA.

Table 4-8
Antelope Flat/Big Lost PPA Treatment Summary Table

Treatment Description		Priority			Threats Addressed				NEPA			Treatments					
												Time Frame		Certainty of Effectiveness[1]			
Name/Type	Acres	1st	2nd	3rd	Conifer (C)	Invasive annual grasses (I)	Riparian Degradation (R)	Wildfire (W)	Initiated (I)	Completed (C)	Needed (N)	Pending Funding (P)[1]	Implementing (I)[1]	Likely	Unlikely	Maintenance Time Frame (years)[2]	Completion Time Frame (0-2, 3-5, 5+ years)[3]
Antelope Flat/Big Lost–Weed Treatments	20					X	X	X		X			X	X		1	5+
Antelope Flat/Big Lost–Conifer Encroachment Treatments	8,740				X	X	X	X	X			X		X		5-10	5+
Antelope Flat/Big Lost–GRSG Vegetation Treatment	60,327					X	X	X	X			X		X		5-10	5+

[1] State if treatment, once completed, is likely or unlikely to be effective. Provide rationale using these codes:
1 = site conditions (soils, resilience, species composition, disturbances) make treatment effectiveness likely
2 = site conditions (soils, resilience, species composition, disturbances) make treatment effectiveness unlikely
3 = continued current management (grazing, recreation, or other land uses) make likelihood of effectiveness low
4 = Based upon professional opinion, treatment is likely to be effective
[2]Describe frequency of maintenance necessary to continue effectiveness (years)
[3]Identify potential treatment completion time frame, considering NEPA adequacy, relative priority, and local ranking factors

4.3.2 Bennett Hills

Project Planning Area Description

Geographic Overview

The Bennett Hills PPA is in the BLM Twin Falls District. The PPA is north of Interstate 84 up to Highway 20 from Fairfield, Idaho west to Bennett Mountain. Land status includes approximately 50 percent BLM-administered land, 15 percent Forest Service land, and 35 percent state and private land.

There are approximately 636,600 acres within the PPA. Topography varies from rolling hills to rugged and mountainous. Elevation ranges from approximately 3,609 feet (1,100 meters) to 5,906 feet (1,800 meters).

The PPA has low, moderate, and high landscape cover categories and all ranges of cool-moist, cool-dry, and warm-dry soil temperature and moisture classes. See **Table 4-9**.

Table 4-9
Bennett Hills GRSG Habitat Matrix Categories

Matrix Category	No Data	1A	1B	1C	2A	2B	2C	3A	3B	3C
Acres	37,157	35,238	129,789	198,709	1,733	16,271	76,106	19,716	86,300	35,526
% of PPA	6	5	20	31	0	2	12	3	14	6

More water features exist on the Forest Service portion of the PPA, but water sources occur throughout.

Agriculture and residential development is likely to be common due to the significant amount of private land in this PPA.

Over 90 percent of the habitat in the PPA is less than 12 miles from electrical transmission towers. Approximately 40 percent of the PPA is within five miles of primary roads and approximately 20 percent is between five and nine miles of primary roads. Transmission lines are adjacent to the northwest and southeast corners of the PPA, with approximately 10 percent of habitat within four miles and 20 percent within four to nine miles of transmission lines.

Topography and landownership pattern may limit access to remote areas.

GRSG Characteristics

GRSG telemetry data are concentrated in the northwestern corner of the PPA. Most of the area is breeding habitat, and winter habitat occurs across the southern half. The southern boundary has been extended south of Gooding to include important wintering habitat.

Vegetation

There is scattered conifer expansion in this PPA, but it is not a significant management concern at this time.

Medusahead and cheatgrass understories occur in the southern areas of the focal habitats. There is a high potential for invasive annual expansion within focal habitats.

Fire

Approximately 84 percent of the PPA is in the high and very high burn probability categories. Anderson Ranch Reservoir is on the northwest side of this PPA. Other water availability is unknown. See **Table 4-10**.

Table 4-10
Bennett Hills Summary of Burn Probability

High and Very High Burn Probability in PPA (acres)	535,600
High and Very High Burn Probability in PPA (percent)	84

Existing Treatments

Many treatments have occurred, and they appear to be associated with post-fire activities. ESR treatments and fuel treatments have occurred to control medusahead and cheatgrass.

Other Management Factors

Other management factors did not influence the selection of treatments for this PPA.

Fuels Management

The potential treatment area includes approximately 79 miles of potential linear fuelbreaks and 14,500 acres of potential fuels treatments. These linear fuelbreaks follow a network of existing travel routes throughout the PPA and are depicted in the GIS data accompanying this report. Proposed linear treatments primarily include road blading and roadside spraying along the identified roadways. While the primary treatment is reduction of hazardous fuels to reduce fire behavior, associated related targets such as reduction of invasive annual grass, conifer, and invasive weeds will also be accomplished.

Potential for roadside treatments exists, especially from chemical methods.

Potential treatments for fuels management include the following*:

- Bennett Hills fuelbreaks 1st priority: 51 miles
- Blade and Spray: 7 miles
- Intermittent Spray: 44 miles

*See associated GIS data layers for position and extent within the PPA and **Table 4-11**.

Table 4-11
Bennett Hills Potential Fuels Management Treatments

Priority	Priority 1	Priority 2	Priority 3	Total
Miles	28	4	47	79
Acres	14,500			14,500

Habitat Recovery/Restoration

Conifer encroachment is not a major issue in this FIAT PPA; therefore, no applicable treatment strategy for conifer encroachment is needed at this time. Active restoration would be limited, with higher priority areas being on the edge of the focal habitat.

Priority areas for habitat recovery/restoration include the following*:

- Approximately 82,200 acres of potential invasive annual grass treatments
- Approximately 20,400 acres of potential habitat restoration (other) treatments

*See associated GIS data layers for position and extent within the PPA and **Table 4-12**.

Table 4-12
Bennett Hills Potential Habitat Restoration Potential Treatments

Priority	Priority 1	Priority 2	Priority 3	Total
Acres	42,400	60,200		102,600
% of PPA	7	9		16

Fire Operations

Priority areas for potential fire operations include the following *:

- Bennett Hill fire 1st priority: 227,400 acres
- Bennett Hill fire 3rd priority: 186,900 acres
- Total for potential fire operations: 416,500 acres

*See associated GIS data layers for position and extent within the PPA and **Table 4-13**.

Table 4-13
Bennett Hills Potential Fire Operations Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	227,400		186,900	2,200	416,500
% of PPA	36		29	0	65

Post-Fire Rehabilitation

The Step 2 FIAT process identified areas within the focal habitats with warm-dry soil conditions as the highest priority for post-fire rehabilitation. The Twin Falls District Office will continue working with other stakeholders to coordinate and prioritize post-fire rehabilitation activities.

The Hill City Blues Fire and other fires have occurred within the focal habitat in this area. There has only been natural recovery in the northern zone of this PPA. The 1st priority areas for potential treatments would be in the southern areas in the moderate to high cover warm-dry soils. Annual grass presence potential and burn severity make this a high priority area.

Potential treatment areas for post-fire rehabilitation management include the following*:

- Bennett Hill ESR 1st priority: 30,300 acres
- Bennett Hills ESR 2nd priority: 72,500 acres
- Bennett Hill ESR 3rd priority: 172,000 acres

*See associated GIS data layers for position and extent within the PPA and **Table 4-14**.

Table 4-14
Bennett Hills Potential Post-Fire Rehabilitation Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Total
Acres	30,300	72,500	172,000	274,800
% of PPA	5	11	27	43

Proposed Management

Proposed treatments in the Bennett Hills PPA are intended to improve habitat health through a reduction in invasive annuals, while protecting habitat through a combination of fuelbreaks and designation of fire operations priority areas. See **Table 4-15** for projects that have been identified within the NEPA planning process. See **Figures 4-15** through **4-22** for a graphic depiction of the proposed treatments and strategies in the PPA.

4.3.3 Big Desert

Project Planning Area Description

Geographic Overview

The Big Desert PPA is in the BLM Idaho Falls District Office east of Craters of the Moon National Monument, north of American Falls, Idaho, and south of Highways 20 and 26. Landownership includes approximately 80 percent BLM-administered land, 15 percent Department of Energy, Idaho National Laboratory land, and 5 percent state and private land.

There are approximately 564,900 acres within the PPA. Topography is mostly flat, with no predominant aspect. Elevation ranges from 4,500 feet (1,372 meters) to 6,000 feet (1,829 meters).

Table 4-15
Bennett Hills PPA Treatment Summary Table

Treatment Description		Priority			Threats Addressed				NEPA			Treatments					
												Time Frame		Certainty of Effectiveness[1]			
Name/Type	Acres	1st	2nd	3rd	Conifer (C)	Invasive annual grasses (I)	Riparian Degradation (R)	Wildfire (W)	Initiated (I)	Completed (C)	Needed (N)	Pending Funding (P)[1]	Implementing (I)[1]	Likely	Unlikely	Maintenance Time Frame (years)[2]	Completion Time Frame (0-2, 3-5, 5+ years)[3]
TF District ESR	N/A									X		X		X		N/A	0-2
Bennett Hills Native Restoration Plots	600					X		X	X			X		X		N/A	3-5
Camas Weeds	7,500					X		X		X		X	X	X		2-5	5+
Bennett Hills Fuelbreaks	10,000					X		X	X			X				3	5+
Upper Rim Medusahead Restoration	20,000					X		X	X			X				5+	3-5
Blair Restoration	24,000					X		X		X		X	X			5+	3-5
North Gooding Restoration	3,000					X		X	X			X				N/A	3-5
North Bliss Restoration	2,000					X		X	X			X				N/A	3-5
Bennett Brush Restoration	10,000					X		X		X		X	X			N/A	5+

[1] State if treatment, once completed, is likely or unlikely to be effective. Provide rationale using these codes:
1 = site conditions (soils, resilience, species composition, disturbances) make treatment effectiveness likely
2 = site conditions (soils, resilience, species composition, disturbances) make treatment effectiveness unlikely
3 = continued current management (grazing, recreation, or other land uses) make likelihood of effectiveness low
4 = Based upon professional opinion, treatment is likely to be effective
[2]Describe frequency of maintenance necessary to continue effectiveness (years)
[3]Identify potential treatment completion time frame, considering NEPA adequacy, relative priority, and local ranking factors

This PPA contains all (low, moderate and high) cover types and all soil moisture temperature regimes. See **Table 4-16**.

Due to the lack of water sources within the Big Desert PPA (many of the existing sources are wells), the addition of a well near the southeastern corner of the planning area would help to more evenly distribute water sources throughout the desert and aid in future fire suppression operations.

Table 4-16
Big Desert GRSG Habitat Matrix Categories

Matrix Category	No Data	1A	1B	1C	2A	2B	2C	3A	3B	3C
Acres	10,049	96,271	59,628	80,553	19,240	123,126	136,475	17,230	19,261	3,036
% of PPA	2	17	11	14	3	22	24	3	3	1

A single 230-kV transmission line runs in a north-south direction through the eastern portion of the Big Desert PPA. Approximately 70 percent of the PPA is within 12 miles of electrical transmission towers, and the remaining habitat is 12 to 21 miles from towers. Approximately 20 percent of the Big Desert PPA is within 5 miles of primary roads, which run along the northern boundary of the PPA. Approximately 40 percent of the Big Desert PPA is within four miles and 35 percent is four to nine miles from transmission lines or towers.

GRSG Characteristics

The PPA has mostly breeding habitat, with some winter habitat. Telemetry data are concentrated in the center of the PPA. Due to repeated wildfires over the last 15 years, over half of the Big Desert PPA is categorized as perennial grasslands and lacking sagebrush cover.

Vegetation

Due to repeated wildfires over the last 15 years, over half of the Big Desert is categorized as perennial grasslands and lacking sagebrush cover.

Pockets of conifer expansion focal area occur in the northern half of the PPA.

Cheatgrass reduces habitat connectivity in southern and eastern portions of the PPA.

Fire

Historically fire is a persistent and significant environmental factor on this landscape. Approximately 90 percent of this PPA is identified to have a high and very high burn probability. The cover/soil moisture temperature regime model drastically underrepresents the influence of fire and overrepresents the vegetative resistance/resilience attributes in this PPA, particularly in the southern half of the PPA. Perhaps resistance/resilience is overrepresented in part due to local topographic influences. Strong local winds influence fire starts within this PPA and also carry fire through the lava rock soils along the western and southern portions of the PPA. Wind carries fire from the Magic PPA through the Big Desert PPA. In addition to a high to very high burn probability, fire rates-of-spread are exhibited to exceed 25 miles per burn period. See **Table 4-17**.

Table 4-17
Big Desert Summary of Burn Probability

High and Very High Burn Probability in PPA (acres)	504,400
High and Very High Burn Probability in PPA (percent)	89

Existing Treatments

A minimal number of treatments have been performed on the landscape within the last 60 years. While anecdotal information (oral history) indicates that projects were performed in the 1950s and 1960s, records of these treatments are not readily available. A search of all past projects is beyond the scope of this assessment, and all past work has occurred just outside the PPA boundary. Known past treatments include the following:

- 2,510-acre Cox's Well crested seeding (1997). Successfully reduced cheatgrass dominance of the site that was the result of repeated disturbance.
- 106,313-acre Mule Butte aerial sagebrush seeding (2000). Treatment was initially thought to be a failure, but strips started becoming visible in 2008 throughout seeding area. However, most of the initial seeding area reburned in 2006.
- 11,155-acre sagebrush seedling planting (2006 and 2007). Successfully replanted sagebrush throughout seven project areas to increase sagebrush densities. Success rates ranged between 20 and 80 percent.
- 2,715-acre Cox's Well native grass seeding (2012). Marginally successful seeding that added to the density of perennial grass species.
- 8,550-acre Big Desert fuelbreaks (2012). Compartmentalized the Big Desert through the construction of 300-foot fuelbreaks, thereby reducing the vertical and horizontal continuity of the vegetative fuels adjacent to the main access roads.

Other Management Factors

Existing road and electrical transmission infrastructure was considered in the selection of treatments for this PPA.

Fuels Management

The potential treatment area includes approximately 8,500 acres in which existing road systems would be used for fuelbreaks. These breaks follow a network of existing travel routes throughout the PPA and are depicted in the GIS data accompanying this report. Proposed treatments primarily include mowing and chemical application along the identified roadways to reduce the vertical and horizontal continuity of the vegetative fuels, resulting in the compartmentalization of the PPA into 21 suppression zones. These treatments

are 1st order priority and can be accomplished within the next five years. While the primary treatment is reduction of hazardous fuels to reduce fire behavior, associated related targets such as reduction of invasive annual grass, conifer, and invasive weeds will also be accomplished.

Potential treatments for fuels management include the following*:

- Big Desert Fuelbreaks: 8,500 acres

*See associated GIS data layers for position and extent within the PPA and **Table 4-18**.

Table 4-18
Big Desert Potential Fuels Management Treatments

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Miles	0	0	0	0	0
Acres	8,500			0	8,500

Habitat Recovery/Restoration

Sagebrush and perennial grass would be established after subsequent fire years. Locations in the eastern portions need restoration efforts to reduce density of cheatgrass to improve connectivity between leks with counts between 60 and 70 birds. The main goals in the southern portions of the PPA are to improve GRSG habitat and provide restoration from recent fires, including important habitat that has been changed due to fire behavior.

Priority areas for habitat recovery/restoration include the following*:

- 5,100 acres of potential conifer expansion treatments
- 250,900 acres of potential habitat restoration (other) treatments
- 259,100 acres of total habitat recovery/restoration

*See associated GIS data layers for position and extent within the PPA and **Table 4-19**.

Table 4-19
Big Desert Potential Habitat Restoration Treatments

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	209,900	42,800	3,400	3,000	259,100
% of PPA	37	8	1	1	46

Fire Operations

Response to wildfires in and around critical GRSG habitat is accomplished primarily with engines, dozers, and water tenders, with support from a variety of aviation assets. BLM stations provide for rapid initial attack response from

multiple locations to the majority of focal areas, and response plans have been updated with increased response to such areas.

Idaho Falls District Engine Stations are located in Malad, Soda Springs, Pocatello, American Falls, Fort Hall, Blackfoot, Atomic City, Idaho Falls, Dubois, and Salmon. The Salmon/Challis National Forest provides initial attack to several focal areas, with engines and helicopters from Mackey, Challis, Leadore, and Salmon. The Caribou/Targhee National Forest provides additional resources for several of the focal areas, with engines from Malad, Pocatello, and Ashton being the closest to the focal areas.

The response time to the majority of the focal areas is thirty minutes to one hour to have multiple resources on scene. Additional resources could be staged in Arco to provide more coverage for the Big Lost and Big Desert focal areas. Resources could also be staged in Aberdeen, Arco, Clyde, Rexburg, and Holbrook to provide for quicker response to the more remote focal areas, including Curlew, Big Desert, Big Lost, Pasemeroi, Medicine Lodge, and Sand Creek. The Idaho Falls BLM has mutual aid agreements with over 50 rural or municipal fire departments that can be used to further supplement initial attack, as many of the departments are the closest resource to many focal areas and would likely be the first to respond. GRSG suppression guidelines will be discussed with cooperators during AOP meetings and training will be provided to increase their capacity where possible. Contract resources, including dozers, engines, and water tenders, can be hired and staged during high fire danger periods such as high wind events and predicted dry lightning at any of the above locations. To supplement the air tanker base in Pocatello, portable SEAT bases can be operated in Malad, Arco, and Challis to reduce flight times to many of the focal areas. Portable SEAT bases will be staged in Arco and Malad for the fire season, with all agreements in place to activate them in a timely manner during the fire season. Water sources have been mapped in remote locations where water supply is limited, including contact information on existing wells. In addition, more wells can be developed and existing wells can be improved with more funding and completion of NEPA.

Priority areas for potential fire operations include the following*:

- Big Desert fire 1st order priority: 560,500 acres

*See associated GIS data layers for position and extent within the PPA and **Table 4-20**.

Table 4-20
Big Desert Potential Fire Operations Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	560,500			4,600	565,100
% of PPA	99			1	100

Post-Fire Rehabilitation

The Step 2 FIAT process identified areas within the focal habitats with warm-dry soil conditions as the highest priority for post-fire rehabilitation. The Idaho Falls District Office will continue working with other stakeholders to coordinate and prioritize post-fire rehabilitation activities.

Potential treatment areas for post-fire rehabilitation management include the following*:

- Big Desert ESR 1st priority: 94,500 acres
- Big Desert ESR 2nd priority: 225,400 acres

*See associated GIS data layers for position and extent within the PPA and **Table 4-21**.

Table 4-21
Big Desert Potential Post-Fire Rehabilitation Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	94,500	225,400		3,400	323,300
% of PPA	17	40		1	57

Proposed Management

The emphasis of proposed treatments for this PPA are on improving existing habitat health through habitat recovery/restoration, while maintaining intact habitat through by designating priority areas for fuels management and fire operations. See **Table 4-22** for projects that have been identified within the NEPA planning process. See **Figures 4-23** through **4-30** for a graphic depiction of the proposed treatments and strategies in the PPA.

Table 4-22
Big Desert PPA Treatment Summary Table

Treatment Description		Priority			Threats Addressed				NEPA			Treatments					
												Time Frame		Certainty of Effectiveness[1]			
Name/ Type	Acres/ Miles	1st	2nd	3rd	Conifer (C)	Invasive annual grasses (I)	Riparian Degradation (R)	Wildfire (W)	Initiated (I)	Completed (C)	Needed (N)	Pending Funding (P)[1]	Implementing (I)[1]	Likely	Unlikely	Maintenance Time Frame (Years)[2]	Completion Time Frame (0-2, 3-5, 5+ years)[3]
Cedar Butte	5,210	X			C			W		C		P		LI		20	5+
Big Desert Restoration	292,959		X			I		W	I			P		LI		10	5+
Big Desert Fuelbreaks	8,551	X						W		C			I	LI		4	5+

Table 4-22
Big Desert PPA Treatment Summary Table

Treatment Description		Priority			Threats Addressed				NEPA			Treatments				
												Time Frame		Certainty of Effectiveness[1]		
Name/ Type	Acres/ Miles	1st	2nd	3rd	Conifer (C)	Invasive annual grasses (I)	Riparian Degradation (R)	Wildfire (W)	Initiated (I)	Completed (C)	Needed (N)	Pending Funding (P)[1]	Implementing (I)[1]	Likely	Unlikely	Maintenance Time Frame (Years)[2]	Completion Time Frame (0-2, 3-5, 5+ years)[3]
Stage Road Restoration	27,113		X			I		W	I			P		L4		10	5+
USFO Shrub/Tree Planting EA	564,874		X			I		W		C			I	L1		10	5+
USFO Weed Treatment EA	564,874	X				I				C			I	L1		5	5+

[1] State if treatment, once completed, is likely or unlikely to be effective. Provide rationale using these codes:
1 = site conditions (soils, resilience, species composition, disturbances) make treatment effectiveness likely
2 = site conditions (soils, resilience, species composition, disturbances) make treatment effectiveness unlikely
3 = continued current management (grazing, recreation, or other land uses) make likelihood of effectiveness low
4 = Based upon professional opinion, treatment is likely to be effective
[2]Describe frequency of maintenance necessary to continue effectiveness (years)
[3]Identify potential treatment completion time frame, considering NEPA adequacy, relative priority, and local ranking factors

4.3.4 Big Lost

Project Planning Area Description

Geographic Overview

The Big Lost PPA is in the BLM Idaho Falls District Office north of Highways 20 and 26, east of Highway 93, and north and west of Sheep Mountain and Reserve Mountain. Landownership includes approximately 40 percent BLM-administered land, 20 percent Forest Service land, and 40 percent private land.

There are approximately 184,700 acres within the PPA. Elevation ranges from 5,249 feet (1,600 meters) to 9,678 feet (2,950 meters).

This PPA includes low, moderate, and high landscape cover types in the cool-moist and cool-dry soil temperature moisture regimes. See **Table 4-23**.

Lost River is in the northern third of the PPA; Antelope Creek bisects the PPA and has many tributaries.

Agriculture and dispersed residential development is likely throughout the PPA due to the large proportion of private land.

Table 4-23
Big Lost GRSG Habitat Matrix Categories

Matrix Category	No Data	1A	1B	1C	2A	2B	2C	3A	3B	3C
Acres	7,240	2.69	23,312	113,203		19,724	21,181			
% of PPA	4	0	13	61		11	11			

Highways to the south and east facilitate fire response time; however, access may be restricted due to private lands and the wilderness study area in the northern portion of the PPA.

All focal habitats in the PPA are less than 12 miles from electrical transmission towers. A highway runs along the southern boundary of the PPA, and approximately 30 percent of the area is less than five miles from the highway. A transmission corridor exists adjacent to the eastern portion of the PPA. Approximately 10 percent of habitat is within four miles of this corridor, and 60 percent is within four to nine miles.

GRSG Characteristics

The PPA is mostly breeding habitat; however, telemetry data for this area is lacking.

Vegetation

There is scattered conifer on the higher-elevation north slopes. However, due to the rugged topography and limited access, there are limited treatment opportunities. Invasive annual grasses are present throughout the PPA below 6,500 feet.

Fire

Approximately 51 percent of the PPA is in the high and very high burn probability categories, with the remainder in the moderate category. See **Table 4-24**.

Table 4-24
Big Lost Summary of Burn Probability

High and Very High Burn Probability in PPA (acres)	94,600
High and Very High Burn Probability in PPA (percent)	51

Existing Treatments

A variety of treatments have been performed on the landscape within the last 60 years. While anecdotal information (oral history) indicates that projects were performed in the 1950s and 1960s, records of these treatments are not readily available. A search of all past projects is beyond the scope of this assessment. Since the National Fire Plan of 2000, a number of hazard fuels reduction projects have been implemented and entered into the National Fire Plan

Operations and Reporting System (NFPORS). A number of post-fire rehabilitation projects (ESR) have also been implemented on burned acres.

Within the lower resiliency areas, native plant communities are prioritized over established seedings. In the absence of ESR treatments, recently burned native communities may irrevocably be converted to invasive annual-dominated communities, whereas in existing seedings, the herbaceous component typically recovers naturally even though the sagebrush would be killed. Additionally, when seedings do burn, the more discontinuous fuels associated with established perennial bunch grasses often result in a mosaic burn pattern that maintains some of the sagebrush, resulting in an existing seed source for natural reestablishment.

Other Management Factors

The FIAT Step 2 team considered existing infrastructure, such as transmission lines and roadways, when prioritizing treatments for this PPA. Other management factors were not considered in detail.

Fuels Management

No fuels management is proposed due to the limited road system and linear fuels treatments already in place.

Habitat Recovery/Restoration

No habitat recovery/restoration is proposed.

Fire Operations

Response to wildfires in and around critical GRSG habitat is accomplished primarily with engines, dozers, and water tenders, with support from a variety of aviation assets. BLM stations provide for rapid initial attack response from multiple locations to the majority of focal areas, and response plans have been updated with increased response to such areas.

Idaho Falls District Engine Stations are located in Malad, Soda Springs, Pocatello, American Falls, Fort Hall, Blackfoot, Atomic City, Idaho Falls, Dubois, and Salmon. The Salmon/Challis National Forest provides initial attack to several focal areas, with engines and helicopters from Mackey, Challis, Leadore, and Salmon. The Caribou/Targhee National Forest provides additional resources for several of the focal areas, with engines from Malad, Pocatello, and Ashton being the closest to the focal areas.

The response time to the majority of the focal areas is thirty minutes to one hour to have multiple resources on scene. Additional resources could be staged in Arco to provide more coverage for the Big Lost and Big Desert focal areas. Resources could also be staged in Aberdeen, Arco, Clyde, Rexburg, and Holbrook to provide for quicker response to the more remote focal areas, including Curlew, Big Desert, Big Lost, Pasemeroi, Medicine Lodge, and Sand Creek. The Idaho Falls BLM has mutual aid agreements with over 50 rural or

municipal fire departments that can be used to further supplement initial attack, as many of the departments are the closest resource to many focal areas and would likely be the first to respond. GRSG suppression guidelines will be discussed with cooperators during AOP meetings and training will be provided to increase their capacity where possible. Contract resources, including dozers, engines, and water tenders, can be hired and staged during high fire danger periods such as high wind events and predicted dry lightning at any of the above locations. To supplement the air tanker base in Pocatello, portable SEAT bases can be operated in Malad, Arco, and Challis to reduce flight times to many of the focal areas. Portable SEAT bases will be staged in Arco and Malad for the fire season, with all agreements in place to activate them in a timely manner during the fire season. Water sources have been mapped in remote locations where water supply is limited, including contact information on existing wells. In addition, more wells can be developed and existing wells can be improved with more funding and completion of NEPA.

Priority areas for potential fire operations include the following*:

- Big Lost fire 2nd priority: 47,700 acres
- Big Lost fire 3rd priority: 120,500 acres

*See associated GIS data layers for position and extent within the PPA and **Table 4-25**.

Table 4-25
Big Lost Potential Fire Operations Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres		47,700	120,500	6,600	174,800
% of PPA		26	65	4	95

Post-Fire Rehabilitation

The Step 2 FIAT process identified areas within the focal habitats with warm-dry soil conditions as the highest priority for post-fire rehabilitation. The Idaho Falls District Office will continue working with other stakeholders to coordinate and prioritize post-fire rehabilitation activities.

Potential treatment areas for post-fire rehabilitation management include the following*:

- Big Lost ESR 2nd priority: 47,700 acres
- Big Lost ESR 3rd priority: 120,500 acres

*See associated GIS data layers for position and extent within the PPA and **Table 4-26**.

Table 4-26
Big Lost Potential Post-Fire Rehabilitation Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres		47,700	120,500	6,600	174,800
% of PPA		26	65	4	95

Proposed Management

Proposed management in the Big Lost PPA would be focused on fire operations and post-fire rehabilitation. The FIAT Step 2 process did not identify a need to specify any fuels management or habitat recovery/restoration treatments. See **Table 4-27** for projects that have been identified within the NEPA planning process. See **Figures 4-31** through **4-35** for a graphic depiction of the proposed treatments and strategies in the PPA.

Table 4-27
Big Lost PPA Treatment Summary Table

Treatment Description		Priority			Threats Addressed				NEPA			Treatments					
												Time Frame		Certainty of Effectiveness[1]			
Name/Type	Acres	1st	2nd	3rd	Conifer (C)	Invasive annual grasses (I)	Riparian Degradation (R)	Wildfire (W)	Initiated (I)	Completed (C)	Needed (N)	Pending Funding (P)[1]	Implementing (I)[1]	Likely	Unlikely	Maintenance Time Frame (Years)[2]	Completion Time Frame (0-2, 3-5, 5+ years)[3]
USFO Shrub/Tree Planting EA	184,666	X				I	R	W		C			I	LI		10	5+
USFO Weed Treatment EA	184,666	X				I				C			I	LI		5	5+

[1] State if treatment, once completed, is likely or unlikely to be effective. Provide rationale using these codes:
1 = site conditions (soils, resilience, species composition, disturbances) make treatment effectiveness likely
2 = site conditions (soils, resilience, species composition, disturbances) make treatment effectiveness unlikely
3 = continued current management (grazing, recreation, or other land uses) make likelihood of effectiveness low
4 = Based upon professional opinion, treatment is likely to be effective
[2]Describe frequency of maintenance necessary to continue effectiveness (years)
[3]Identify potential treatment completion time frame, considering NEPA adequacy, relative priority, and local ranking factors

4.3.5 Birch Creek

Project Planning Area Description

Geographic Overview

The Birch Creek PPA is in the BLM Idaho Falls District Office at the southern end of Birch Creek Valley. The PPA runs along Highway 28 to the Highway 22 intersection east of the Lemhi Range and southwest of Copper Mountain.

Landownership includes approximately 75 percent BLM-administered land, 20 percent Department of Energy, Idaho National Laboratory land, and 5 percent private land.

There are approximately 110,000 acres within the PPA. The topography includes gently sloping valley bottoms between mountain ranges. Elevation ranges from 5,000 feet (1,524 meters) to 7,500 feet (2,286 meters).

This PPA has moderate to high shrub cover classes within cool-dry and moist-dry soil moisture temperature regimes. See **Table 4-28**.

Table 4-28
Birch Creek GRSG Habitat Matrix Categories

Matrix Category	No Data	1A	1B	1C	2A	2B	2C	3A	3B	3C
Acres	7,805		11	18,266		143	83,773			
% of PPA	7		0	17		0	76			

Birch Creek and tributaries provide a natural source of surface water.

Highway 28 runs along the eastern edge of the PPA, and there may be development associated with Idaho National Laboratory at the southern end. Highway access is available along the length of the PPA, with two-track roads providing access throughout the area.

All focal habitats in the PPA are less than 12 miles from electrical transmission towers. Nearly all of this PPA is affected by primary roads, with habitat less than five miles from highways. Approximately 40 percent of the Birch Creek PPA is within five miles and 40 percent is within five to 13 miles of primary roads.

GRSG Characteristics

The entire PPA is winter habitat, and much of it is also breeding habitat. There are limited telemetry data for this area.

Vegetation

There is a limited distribution of cheatgrass along highways and along the western edge of the PPA, but it is not a significant issue.

Fire

There are no high or very high burn probability areas in this PPA. The entire PPA is in the moderate burn probability category. See **Table 4-29**.

Table 4-29
Birch Creek Summary of Burn Probability

High and Very High Burn Probability in PPA (acres)	0
High and Very High Burn Probability in PPA (percent)	0

Existing Treatments

A minimal number of treatments have been performed on the landscape within the last 60 years. While anecdotal information (oral history) indicates that projects were performed in the 1950s and 1960s, records of these treatments are not readily available. A search of all past projects is beyond the scope of this assessment.

The 700-acre Birch Creek treatment (2007) focused on reducing the decadent shrub canopy to promote the herbaceous understory growth. Irregular patterns were mowed into the sagebrush canopy, followed by drill seeding using a native seed mix. While the mowing did help to release the existing understory, the drill seeding never took and was later considered a failure.

Other Management Factors

Other management factors did not influence the selection of treatments for this PPA.

Fuels Management

No fuels management is proposed.

Habitat Recovery/Restoration

Juniper expansion treatments would mostly be needed along the western border of the PPA. Invasive annuals are not a significant issue in this PPA; therefore, no treatment strategy for invasive annuals is needed at this time.

Priority areas for habitat recovery/restoration treatments include the following*:

- Birch Creek Mahogany Butte conifer 2nd priority: 22,900 acres

*See associated GIS data layers for position and extent within the PPA and **Table 4-30**.

Table 4-30
Birch Creek Potential Habitat Restoration Treatments

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres		22,900		1,200	24,100
% of PPA		21		1	22

Fire Operations

Response to wildfires in and around critical GRSG habitat is accomplished primarily with engines, dozers, and water tenders, with support from a variety of aviation assets. BLM stations provide for rapid initial attack response from multiple locations to the majority of focal areas, and response plans have been updated with increased response to such areas.

Idaho Falls District Engine Stations are located in Malad, Soda Springs, Pocatello, American Falls, Fort Hall, Blackfoot, Atomic City, Idaho Falls, Dubois, and

Salmon. The Salmon/Challis National Forest provides initial attack to several focal areas, with engines and helicopters from Mackey, Challis, Leadore, and Salmon. The Caribou/Targhee National Forest provides additional resources for several of the focal areas, with engines from Malad, Pocatello, and Ashton being the closest to the focal areas.

The response time to the majority of the focal areas is thirty minutes to one hour to have multiple resources on scene. Additional resources could be staged in Arco to provide more coverage for the Big Lost and Big Desert focal areas. Resources could also be staged in Aberdeen, Arco, Clyde, Rexburg, and Holbrook to provide for quicker response to the more remote focal areas, including Curlew, Big Desert, Big Lost, Pasemeroi, Medicine Lodge, and Sand Creek. The Idaho Falls BLM has mutual aid agreements with over 50 rural or municipal fire departments that can be used to further supplement initial attack, as many of the departments are the closest resource to many focal areas and would likely be the first to respond. GRSG suppression guidelines will be discussed with cooperators during AOP meetings and training will be provided to increase their capacity where possible. Contract resources, including dozers, engines, and water tenders, can be hired and staged during high fire danger periods such as high wind events and predicted dry lightning at any of the above locations. To supplement the air tanker base in Pocatello, portable SEAT bases can be operated in Malad, Arco, and Challis to reduce flight times to many of the focal areas. Portable SEAT bases will be staged in Arco and Malad for the fire season, with all agreements in place to activate them in a timely manner during the fire season. Water sources have been mapped in remote locations where water supply is limited, including contact information on existing wells. In addition, more wells can be developed and existing wells can be improved with more funding and completion of NEPA.

Priority areas for fire operations include the following*:

- Birch Creek fire 2nd priority: 41,500 acres

*See associated GIS data layers for position and extent within the PPA and **Table 4-31**.

Table 4-31
Birch Creek Potential Fire Operations Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres		41,500		6,200	47,700
% of PPA		38		6	43

Post-Fire Rehabilitation

The Step 2 FIAT process identified areas within the focal habitats with warm-dry soil conditions as the highest priority for post-fire rehabilitation. The Idaho Falls

District Office will continue working with other stakeholders to coordinate and prioritize post-fire rehabilitation activities.

Potential treatment areas for post-fire rehabilitation management include the following*:

- Birch Creek ESR 2nd priority- 41,400 acres

Burn probability is moderate in this PPA (low relative to most other PPAs), and no recent fires have occurred.

*See associated GIS data layers for position and extent within the PPA and **Table 4-32**.

Table 4-32
Birch Creek Potential Post-Fire Rehabilitation Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres		41,400		6,200	47,600
% of PPA		38		6	43

Proposed Management

The primary treatment priority in the Birch Creek PPA is conifer reduction. Approximately 85 percent of the PPA is also a high priority for fire suppression and post-fire rehabilitation. See **Table 4-33** for projects that have been identified within the NEPA planning process. See **Figures 4-36** through **4-41** for a graphic depiction of the proposed treatments and strategies in the PPA.

Table 4-33
Birch Creek PPA Treatment Summary Table

Treatment Description		Priority			Threats Addressed				NEPA			Treatments					
												Time Frame		Certainty of Effectiveness[1]			
Name/ Type	Acres	1st	2nd	3rd	Conifer (C)	Invasive annual grasses (I)	Riparian Degradation (R)	Wildfire (W)	Initiated (I)	Completed (C)	Needed (N)	Pending Funding (P)[1]	Implementing (I)[1]	Likely	Unlikely	Maintenance Time Frame (Years)[2]	Completion Time Frame (0-2, 3-5, 5+ years)[3]
USFO Shrub/Tree Planting EA	110,000	X				I	R	W		C			I	LI		10	5+

Table 4-33
Birch Creek PPA Treatment Summary Table

Treatment Description		Priority			Threats Addressed				NEPA			Treatments					
												Time Frame		Certainty of Effectiveness[1]			
Name/ Type	Acres	1st	2nd	3rd	Conifer (C)	Invasive annual grasses (I)	Riparian Degradation (R)	Wildfire (W)	Initiated (I)	Completed (C)	Needed (N)	Pending Funding (P)[1]	Implementing (I)[1]	Likely	Unlikely	Maintenance Time Frame (Years)[2]	Completion Time Frame (0-2, 3-5, 5+ years)[3]
USFO Weed Treatment EA	110,000	X				I				C			I	L1		5	5+

[1] State if treatment, once completed, is likely or unlikely to be effective. Provide rationale using these codes:
1 = site conditions (soils, resilience, species composition, disturbances) make treatment effectiveness likely
2 = site conditions (soils, resilience, species composition, disturbances) make treatment effectiveness unlikely
3 = continued current management (grazing, recreation, or other land uses) make likelihood of effectiveness low
4 = Based upon professional opinion, treatment is likely to be effective
[2]Describe frequency of maintenance necessary to continue effectiveness (years)
[3]Identify potential treatment completion time frame, considering NEPA adequacy, relative priority, and local ranking factors

4.3.1 Hat Creek

Project Planning Area Description

Geographic Overview

The Hat Creek PPA is in the BLM Idaho Falls District Office north of Challis, Idaho. The PPA is mostly northwest of Highway 93 from King Mountain southwest to Red Butte. Landownership includes approximately 65 percent BLM-administered land, 30 percent Forest Service land, and 5 percent state and private land.

There are approximately 155,300 acres within the PPA. The topography is mostly rugged, with gulches draining into the Pahsimeroi Valley. Mountain ranges typically have a southeast aspect. Elevation ranges from 4,921 feet (1,500 meters) to 8,530 feet (2,600 meters).

This PPA is mostly represented by moderate to high cover in the cool-moist and cool-dry soil temperature and moisture classes. See **Table 4-34**.

Table 4-34
Hat Creek GRSG Habitat Matrix Categories

Matrix Category	No Data	1A	1B	1C	2A	2B	2C	3A	3B	3C
Acres	20,839		14,102	26,940	354	11,691	81,315			
% of PPA	14		9	17	0	8	52			

Highway 28 runs along the eastern edge of the PPA, and there may be development associated with INL at southern end. Highway access is available along the length of the PPA, with two-track roads providing access throughout the area.

Highways run through the PPA, but most of the PPA is rugged and may limit accessibility for initial attack when needed.

Approximately 60 percent of this PPA is within five miles of primary roads. The southern half of the Hat Creek PPA is five to 13 miles from transmission lines or towers.

GRSG Characteristics

Telemetry data are concentrated along Dry Gulch to Table Mountain. Overall, GRSG characteristics are consistent with the conditions analyzed in the Idaho/Southwest Montana EIS/RMPA.

Vegetation

Conifer expansion is occurring along the northwest border of the focal habitat.

Some cheatgrass has been found up to 7,500 feet within the PPA. Some of the largest monocultures in the Challis Field Office are between 6,500 feet and 7,500 feet. Concentrated cheatgrass occurs in some areas of the PPA.

Fire

About 5 percent of the PPA has burned, with one major fire on Table Mountain recorded in the 1980-2013 fire perimeter data set, along with portions of other fires. The entire PPA is in the high and very high burn probability category. See **Table 4-35**.

Table 4-35
Hat Creek Summary of Burn Probability

High and Very High Burn Probability in PPA (acres)	153,000
High and Very High Burn Probability in PPA (percent)	99

Surface water availability is limited for numerous reasons, including lack of access to water sources and limited surface water. Water is generally provided with water tenders and aerial support.

Existing Treatments

Roadside treatments and small (less than 3-acre) spot herbicide treatments followed by reseedings are occurring in the PPA. Encroachment and thinning work has occurred in the Morgan Creek area in attempts to return the landscape to proper fire regime and condition class. Vegetation treatments data show less than 5 percent of the area as having physical treatments.

Other Management Factors

Aside from existing roads and a transmission line in the southern portion of the PPA, other management factors did not influence the selection of treatments for this PPA.

Fuels Management

The potential treatment area includes approximately 300 acres that could be used for fuelbreaks. These breaks follow a network of existing travel routes throughout the PPA and are depicted in the GIS data accompanying this report. Proposed treatments primarily include green stripping along the identified roadways. These treatments are 1st order priority and can be accomplished within the next five years. While the primary treatment is reduction of hazardous fuels to reduce fire behavior, associated related targets such as reduction of invasive annual grass, conifer, and invasive weeds will also be accomplished.

Potential treatments for fuels management include the following*:

- Hat Creek Morgan Creek fuels 3rd priority: 300 acres

*See associated GIS data layers for position and extent within the PPA and **Table 4-36**.

Table 4-36
Hat Creek Potential Fuels Management Treatments

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Miles	0	0	0	0	0
Acres			300		300

Habitat Recovery/Restoration

No current or future treatments other than conifer control are necessary due to the good condition of understory grasses and sagebrush cover. Conifer expansion is occurring along the northwestern border of the focal habitats within 3C and 1C habitats.

Priority areas for potential habitat recovery/restoration treatments include the following*:

- Hat Creek conifer 1st priority: 58,000 acres
- Hat Creek conifer 2nd priority: 2,300 acres
- Hat Creel conifer 3rd priority: 300 acres

*See associated GIS data layers for position and extent within the PPA and **Table 4-37**.

Table 4-37
Hat Creek Potential Habitat Restoration Treatments

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	58,000	2,300	300	8,000	68,600
% of PPA	37	1	0	5	43

Fire Operations

Most of the PPA is within high-cover cool-dry soil moisture temperature regime. This polygon includes seasonal habitat for GRSG. The area just outside the focal habitat in the southwest section would also be included in this polygon (Hat Creek Fire High).

Response to wildfires in and around critical GRSG habitat is accomplished primarily with engines, dozers, and water tenders, with support from a variety of aviation assets. BLM stations provide for rapid initial attack response from multiple locations to the majority of focal areas, and response plans have been updated with increased response to such areas.

Idaho Falls District Engine Stations are located in Malad, Soda Springs, Pocatello, American Falls, Fort Hall, Blackfoot, Atomic City, Idaho Falls, Dubois, and Salmon. The Salmon/Challis National Forest provides initial attack to several focal areas, with engines and helicopters from Mackey, Challis, Leadore, and Salmon. The Caribou/Targhee National Forest provides additional resources for several of the focal areas, with engines from Malad, Pocatello, and Ashton being the closest to the focal areas.

The response time to the majority of the focal areas is thirty minutes to one hour to have multiple resources on scene. Additional resources could be staged in Arco to provide more coverage for the Big Lost and Big Desert focal areas. Resources could also be staged in Aberdeen, Arco, Clyde, Rexburg, and Holbrook to provide for quicker response to the more remote focal areas, including Curlew, Big Desert, Big Lost, Pasemeroi, Medicine Lodge, and Sand Creek. The Idaho Falls BLM has mutual aid agreements with over 50 rural or municipal fire departments that can be used to further supplement initial attack, as many of the departments are the closest resource to many focal areas and would likely be the first to respond. GRSG suppression guidelines will be discussed with cooperators during AOP meetings and training will be provided to increase their capacity where possible. Contract resources, including dozers, engines, and water tenders, can be hired and staged during high fire danger periods such as high wind events and predicted dry lightning at any of the above locations. To supplement the air tanker base in Pocatello, portable SEAT bases can be operated in Malad, Arco, and Challis to reduce flight times to many of the focal areas. Portable SEAT bases will be staged in Arco and Malad for the fire season, with all agreements in place to activate them in a timely manner during the fire season. Water sources have been mapped in remote locations where water supply is limited, including contact information on existing wells. In

addition, more wells can be developed and existing wells can be improved with more funding and completion of NEPA.

Priority areas for fire operations include the following*:

- Hat Creek fire 2nd priority: 85,800 acres
- Hat Creek fire 3rd priority: 30,600 acres

*See associated GIS data layers for position and extent within the PPA and **Table 4-38**.

Table 4-38
Hat Creek Potential Fire Operations Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres		85,800	30,600		116,400
% of PPA		55	20		75

Post-Fire Rehabilitation

The Step 2 FIAT process identified areas within the focal habitats with cool-dry soil conditions as second priority for post-fire rehabilitation. The Idaho Falls District Office will continue working with other stakeholders to coordinate and prioritize post-fire rehabilitation activities.

Potential treatment areas for post-fire rehabilitation management include the following*:

- Hat Creek ESR 2nd priority: 85,800 acres
- Hat Creek ESR 3rd priority: 30,600 acres
- Total: 73,300 acres

*See associated GIS data layers for position and extent within the PPA and **Table 4-39**.

Table 4-39
Hat Creek Potential Post-Fire Rehabilitation Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres		85,800	30,600		116,400
% of PPA		55	20		75

Proposed Management

The Hat Creek PPA is a third priority for potential fuels management treatments and a first priority for potential conifer expansion treatments. Roughly half the PPA is identified as second priority for fire suppression and post-fire rehabilitation. See **Table 4-40** for projects that have been identified

Table 4-40
Hat Creek PPA Treatment Summary Table

Treatment Description		Priority			Threats Addressed				NEPA			Treatments				
												Time Frame		Certainty of Effectiveness[1]		
Name/Type	Acres	1st	2nd	3rd	Conifer (C)	Invasive annual grasses (I)	Riparian Degradation (R)	Wildfire (W)	Initiated (I)	Completed (C)	Needed (N)	Pending Funding (P)[1]	Implementing (I)[1]	Likely	Unlikely	Maintenance Time Frame (Years)[2]	Completion Time Frame (0-2, 3-5, 5+ years)[3]
Hat Creek Focal Area – Weed Treatments	20					X	X	X		X			X	X		1	5+
Hat Creek Focal Area – Morgan Creek Encroachment Treatment	604				X	X	X	X		X			X	X		NA	0-2
Hat Creek Focal Area – Conifer Encroachment Treatment	719				X	X	X	X	X			X		X		5-10	5+
Hat Creek Focal Area– GRSG Vegetation Treatment	50					X	X	X	X			X		X		5-10	5+

[1] State if treatment, once completed, is likely or unlikely to be effective. Provide rationale using these codes:
1 = site conditions (soils, resilience, species composition, disturbances) make treatment effectiveness likely
2 = site conditions (soils, resilience, species composition, disturbances) make treatment effectiveness unlikely
3 = continued current management (grazing, recreation, or other land uses) make likelihood of effectiveness low
4 = Based upon professional opinion, treatment is likely to be effective
[2]Describe frequency of maintenance necessary to continue effectiveness (years)
[3]Identify potential treatment completion time frame, considering NEPA adequacy, relative priority, and local ranking factors

presently within the NEPA planning process. See **Figures 4-42** through **4-48** for a graphic depiction of the proposed treatments and strategies in the PPA.

4.3.2 Lemhi-Birch

Project Planning Area Description

Geographic Overview

The Lemhi-Birch PPA is within Lemhi Valley and Birch Creek Valley south of Lemhi, Idaho. The PPA is in the BLM Idaho Falls District Office. Landownership includes about 50 percent BLM-administered land, 25 percent Forest Service land, and 25 percent state and private land.

There are approximately 413,200 acres within the PPA. Valley bottoms tend to be flat and sided by southwestern and northeastern facing hills that typically range in elevation from 4,000 feet (1,219 meters) to 7,000 feet (2,134 meters).

The PPA is mostly represented by moderate to high shrub cover in the cool-moist and cool-dry soil temperature and moisture class. See **Table 4-41**.

Table 4-41
Lemhi Birch GRSG Habitat Matrix Categories

Matrix Category	No Data	1A	1B	1C	2A	2B	2C	3A	3B	3C
Acres	108,799	3,943	77,185	111,656		47,407	64,174			
% of PPA	26	1	19	27		11	16			

Main surface water sources are the Lemhi River and Birch Creek.

Some dispersed development is associated with private land/agriculture; old mines exist around Leadore, Idaho.

A highway runs through the middle of the Lemhi-Birch PPA, and approximately 80 percent of the habitat is within five miles of the highway. Approximately 50 percent of the Lemhi-Birch PPA is five to 13 miles from transmission lines or towers, and less than 10 percent of the PPA at the northern edge is less than five miles from transmission lines or towers.

Highways run through the PPA, but more rugged areas may have limited accessibility for initial attack.

GRSG Characteristics

There is a high concentration of leks within the Lemhi-Birch PPA. Telemetry data seems to be lacking for this area. The PPA contains mostly breeding habitat, with small patches of winter habitat.

Vegetation

Douglas fir is expanding into mountain sage in the PPA. Expansion areas are focused on the moderate cover, cool-moist sites. Encroachment areas consist of primarily young Douglas fir, with the sagebrush understory mostly intact.

Cheatgrass is concentrated along roadsides, with some knapweed present.

Fire

There is limited fire history within the Lemhi-Birch PPA since 1980. Most of the PPA is in the moderate burn probability category, with low probability along the southwestern edge and high probability at the northern end. See **Table 4-42**.

Table 4-42
Lemhi Birch Summary of Burn Probability

High and Very High Burn Probability in PPA (acres)	65,700
High and Very High Burn Probability in PPA (percent)	16

Existing Treatments

Within the Lemhi-Birch PPA, treatments are ongoing. Roadside applications are the primary treatment, and no fuelbreaks are planned. Current and ongoing treatments are focused on trying to break apart shrub canopy to stimulate understory growth with some seedings.

Other Management Factors

The FIAT Step 2 team considered existing infrastructure such as transmission lines and roadways when prioritizing treatments for the PPA. Other management factors were not considered in detail.

Fuels Management

No fuels management is proposed.

Habitat Recovery/Restoration

In the Lemhi-Birch PPA, there are approximately 106,900 acres of proposed sagebrush restoration areas. All potential treatments would be coordinated with other land management agencies and private landowners, as appropriate, and monitored post-treatment to ensure effectiveness.

Conifer encroachment treatments would focus on areas with less than 30 percent slope. In areas with over 30 percent slope, trees would be removed by hand falling. Late brood-rearing restoration may include manipulation of the shrub canopy and interseeding to promote understory cover and diversity of perennial shrubs and grasses in areas with depleted understory.

Potential treatments for habitat recovery/restoration include the following*:

- Lemhi-Birch conifer 1st priority: 52,900 acres
- Lemhi-Birch conifer 2nd priority: 700 acres
- Lemhi-Birch habitat restoration (other) 2nd priority: 5,500 acres
- Lemhi-Birch habitat restoration (other) 3rd priority: 6,200 acres

*See associated GIS data layers for position and extent within the PPA and **Table 4-43**.

Table 4-43
Lemhi Birch Potential Habitat Restoration Treatments

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	52,900	6,200	6,200	41,600	106,900
% of PPA	9	1	1	7	19

Fire Operations

Response to wildfires in and around critical GRSG habitat is accomplished primarily with engines, dozers, and water tenders, with support from a variety of aviation assets. BLM stations provide for rapid initial attack response from multiple locations to the majority of focal areas, and response plans have been updated with increased response to such areas.

Idaho Falls District Engine Stations are located in Malad, Soda Springs, Pocatello, American Falls, Fort Hall, Blackfoot, Atomic City, Idaho Falls, Dubois, and Salmon. The Salmon/Challis National Forest provides initial attack to several focal areas, with engines and helicopters from Mackey, Challis, Leadore, and Salmon. The Caribou/Targhee National Forest provides additional resources for several of the focal areas, with engines from Malad, Pocatello, and Ashton being the closest to the focal areas.

The response time to the majority of the focal areas is thirty minutes to one hour to have multiple resources on scene. Additional resources could be staged in Arco to provide more coverage for the Big Lost and Big Desert focal areas. Resources could also be staged in Aberdeen, Arco, Clyde, Rexburg, and Holbrook to provide for quicker response to the more remote focal areas, including Curlew, Big Desert, Big Lost, Pasemeroi, Medicine Lodge, and Sand Creek. The Idaho Falls BLM has mutual aid agreements with over 50 rural or municipal fire departments that can be used to further supplement initial attack, as many of the departments are the closest resource to many focal areas and would likely be the first to respond. GRSG suppression guidelines will be discussed with cooperators during AOP meetings and training will be provided to increase their capacity where possible. Contract resources, including dozers, engines, and water tenders, can be hired and staged during high fire danger periods such as high wind events and predicted dry lightning at any of the above locations. To supplement the air tanker base in Pocatello, portable SEAT bases can be operated in Malad, Arco, and Challis to reduce flight times to many of the focal areas. Portable SEAT bases will be staged in Arco and Malad for the fire season, with all agreements in place to activate them in a timely manner during the fire season. Water sources have been mapped in remote locations where water supply is limited, including contact information on existing wells. In addition, more wells can be developed and existing wells can be improved with more funding and completion of NEPA.

The top priority for suppression would include areas identified by the local GRSG working group. The local working group polygon is categorized as

second priority. Third priorities are areas within the moderate to high shrub cover and cool-dry soil moisture temperature regimes.

Since most areas are intact sagebrush, the local GRSG working group layer was identified as the higher priority for fire suppression.

*See associated GIS data layers for position and extent within the PPA and **Table 4-44**.

Table 4-44
Lemhi-Birch Potential Fire Operations Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres		96,600	163,000		259,600
% of PPA		17	29		46

Post-Fire Rehabilitation

The Step 2 FIAT process identified areas within the focal habitats with moderate to high shrub cover and cool-dry soil conditions as second priority for post-fire rehabilitation. Second priority areas also include areas identified by the local GRSG working group as higher priority areas. The Idaho Falls District Office will continue working with other stakeholders to coordinate and prioritize post-fire rehabilitation activities.

Potential treatment areas for post-fire rehabilitation management include the following*:

- Lemhi-Birch ESR 2nd priority: 95,500 acres
- Lemhi-Birch EST 3rd priority: 163,000 acres

*See associated GIS data layers for position and extent within the PPA and **Table 4-45**.

Table 4-45
Lemhi-Birch Potential Post-Fire Rehabilitation Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres		95,500	163,000		259,500
% of PPA		17	29		46

Proposed Management

Potential treatments in the Lemhi-Birch PPA focus on reducing conifer encroachment and other habitat restoration work. No potential fuel management treatments were identified. See **Table 4-46** for projects that have been identified presently within the NEPA planning process. See **Figures 4-49** through **4-55** for a graphic depiction of the proposed treatments and strategies in the PPA.

Table 4-46
PPA Treatment Summary Table

Treatment Description		Priority			Threats Addressed				NEPA			Treatments					
												Time Frame		Certainty of Effectiveness[1]			
Name/Type	Acres	1st	2nd	3rd	Conifer (C)	Invasive annual grasses (I)	Riparian Degradation (R)	Wildfire (W)	Initiated (I)	Completed (C)	Needed (N)	Pending Funding (P)[1]	Implementing (I)[1]	Likely	Unlikely	Maintenance Time Frame (Years)[2]	Completion Time Frame (0-2, 3-5, 5+ years)[3]
CWMA Weed Treatments	300	X	X	X		X				X			X	4		annually	5+
CBT Veg (Non-forest)	1,015		X		X	X		X		X		X	X	4		25	0-2
Challis/ Salmon Sagebrush Habitat Improvement (joint EA)	1,250		X		X			X		X		X		4		15-25	3-5

[1] State if treatment, once completed, is likely or unlikely to be effective. Provide rationale using these codes:
1 = site conditions (soils, resilience, species composition, disturbances) make treatment effectiveness likely
2 = site conditions (soils, resilience, species composition, disturbances) make treatment effectiveness unlikely
3 = continued current management (grazing, recreation, or other land uses) make likelihood of effectiveness low
4 = Based upon professional opinion, treatment is likely to be effective
[2] Describe frequency of maintenance necessary to continue effectiveness (years)
[3] Identify potential treatment completion time frame, considering NEPA adequacy, relative priority, and local ranking factors

4.3.3 Little Lost

Project Planning Area Description

Geographic Overview

The Little Lost PPA is within Little Lost River Valley east of the Lost River Range. The PPA is in the BLM Idaho Falls District Office. Landownership includes about 80 percent BLM-administered land, 10 percent Forest Service land, and 10 percent state and private land.

There are approximately 143,700 acres within the PPA. The PPA runs northwest to southeast between two mountain ranges, with flat areas near valley bottoms transitioning to rugged, mountainous areas along PPA boundaries. Elevation ranges from approximately 5,340 feet (1,630 meters) to 8,530 feet (2,600 meters).

The PPA is represented by moderate to high shrub cover in the cool-moist and cool-dry soil temperature and moisture classes. See **Table 4-47**.

Table 4-47
Little Lost GRSG Habitat Matrix Categories

Matrix Category	No Data	1A	1B	1C	2A	2B	2C	3A	3B	3C
Acres	14,204		5,315	51,430		2,037	70,723			
% of PPA	10		4	36		1	49			

The main surface water sources come from the Little Lost River and its tributaries.

All focal habitats within this PPA are more than five miles from any highway. Approximately 15 percent of the Little Lost PPA is within five to 13 miles of transmission lines or towers along the southwestern portion.

This PPA is fairly remote with some areas within drainages outside any highway access points. Hawley Mountain Wilderness Study Area is on the central western side of the PPA and is fully enclosed by the PPA boundaries.

GRSG Characteristics

Telemetry data are limited for this PPA, with use occurring mostly in the northern portions of the PPA. Overall, GRSG characteristics are consistent with the conditions analyzed in the Idaho/Southwest Montana EIS/RMPA.

Vegetation

Conifer encroachment and annual grasses are not significant issues in this PPA.

Fire

There is limited fire history within the Little Lost PPA since 1980. Most of the PPA is in the moderate burn probability category, with low probability in the northwestern portion of the PPA. See **Table 4-48**.

Table 4-48
Little Lost Summary of Burn Probability

High and Very High Burn Probability in PPA (acres)	0
High and Very High Burn Probability in PPA (percent)	0

Existing Treatments

The 1,400-acre Mud Flats treatment (2009) focused on reducing the decadent shrub canopy to promote the herbaceous understory growth. Irregular patterns were mowed into the sagebrush canopy, followed by drill seeding with native seed mix. While the mowing did help to release the existing understory, the drill seeding never took and was later considered a failure.

The 560-acre Williams Creek seeding treatment (1980) focused on improving the herbaceous understory by drill seeding a mix of crested wheatgrass and Russian wild rye. The seeding was considered a success.

Other Management Factors

Aside from existing roads and transmission lines, other management factors did not influence the selection of treatments for this PPA.

Fuels Management

No fuels management is proposed.

Habitat Recovery/Restoration

In the Little Lost PPA, there are approximately 5,600 acres of potential 2nd priority habitat restoration (other) sagebrush restoration areas. All treatments would be coordinated with other land management agencies and private landowners, as appropriate, and monitored post-treatment to ensure effectiveness.

The main goal is to increase perennial grass cover for nesting. Conifer encroachment and invasive annuals are not significant issues in this FIAT PPA; therefore, no treatments are currently proposed.

Potential treatments for habitat recovery/restoration include the following*:

- Little Lost Habitat restoration (other) 2nd priority: 5,600 acres

*See associated GIS data layers for position and extent within the PPA and **Table 4-49**.

Table 4-49
Little Lost Potential Habitat Restoration Treatments

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres		5,000		600	5600
% of PPA		3		0	4

Fire Operations

Response to wildfires in and around critical GRSG habitat is accomplished primarily with engines, dozers, and water tenders, with support from a variety of aviation assets. BLM stations provide for rapid initial attack response from multiple locations to the majority of focal areas, and response plans have been updated with increased response to such areas.

Idaho Falls District Engine Stations are located in Malad, Soda Springs, Pocatello, American Falls, Fort Hall, Blackfoot, Atomic City, Idaho Falls, Dubois, and Salmon. The Salmon/Challis National Forest provides initial attack to several focal areas, with engines and helicopters from Mackey, Challis, Leadore, and Salmon. The Caribou/Targhee National Forest provides additional resources for several of the focal areas, with engines from Malad, Pocatello, and Ashton being the closest to the focal areas.

The response time to the majority of the focal areas is thirty minutes to one hour to have multiple resources on scene. Additional resources could be staged in Arco to provide more coverage for the Big Lost and Big Desert focal areas. Resources could also be staged in Aberdeen, Arco, Clyde, Rexburg, and Holbrook to provide for quicker response to the more remote focal areas, including Curlew, Big Desert, Big Lost, Pasemeroi, Medicine Lodge, and Sand Creek. The Idaho Falls BLM has mutual aid agreements with over 50 rural or municipal fire departments that can be used to further supplement initial attack, as many of the departments are the closest resource to many focal areas and would likely be the first to respond. GRSG suppression guidelines will be discussed with cooperators during AOP meetings and training will be provided to increase their capacity where possible. Contract resources, including dozers, engines, and water tenders, can be hired and staged during high fire danger periods such as high wind events and predicted dry lightning at any of the above locations. To supplement the air tanker base in Pocatello, portable SEAT bases can be operated in Malad, Arco, and Challis to reduce flight times to many of the focal areas. Portable SEAT bases will be staged in Arco and Malad for the fire season, with all agreements in place to activate them in a timely manner during the fire season. Water sources have been mapped in remote locations where water supply is limited, including contact information on existing wells. In addition, more wells can be developed and existing wells can be improved with more funding and completion of NEPA.

Priority areas for fire operations include the following*:

- Little Lost fire 2nd priority: 72,700 acres
- Little Lost fire 3rd priority: 56,300 acres

*See associated GIS data layers for position and extent within the PPA and **Table 4-50**.

Table 4-50
Little Lost Potential Fire Operations Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres		72,700	56,300		129,000
% of PPA		51	39		90

Post-Fire Rehabilitation

The Step 2 FIAT process identified areas within the focal habitats with moderate to high shrub cover in warm-dry soil conditions as the highest priority for post-fire rehabilitation. The Idaho Falls District Office will continue working with other stakeholders to coordinate and prioritize post-fire rehabilitation activities.

*See associated GIS data layers for position and extent within the PPA and **Table 4-51**.

Table 4-51
Little Lost Potential Post-Fire Rehabilitation Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres		71,300	54,600		125,900
% of PPA		50	38		88

Proposed Management

Because conifer encroachment and invasive annual grasses are not significant issues in the Little Lost PPA, a largely passive management approach is being proposed. One shrub planting project environmental assessment and one weed treatment project environmental assessment provides current NEPA documentation. See **Table 4-52** for projects that have been identified presently within the NEPA planning process. See **Figures 4-56** through **4-61** for a graphic depiction of the proposed treatments and strategies in the PPA.

Table 4-52
PPA Treatment Summary Table (Little Lost PPA)

Treatment Description		Priority			Threats Addressed				NEPA			Treatments				
												Time Frame		Certainty of Effectiveness[1]		
Name/Type	Acres	1st	2nd	3rd	Conifer (C)	Invasive annual grasses (I)	Riparian Degradation (R)	Wildfire (W)	Initiated (I)	Completed (C)	Needed (N)	Pending Funding (P)[1]	Implementing (I)[1]	Likely	Unlikely	Maintenance Time Frame (Years)[2]	Completion Time Frame (0-2, 3-5, 5+ years)[3]
USFO Shrub/ Tree Planting EA	143,712	X				I	R	W		C			I	LI		10	5+
USFO Weed Treatment EA	143,712	X				I				C			I	LI		5	5+

[1] State if treatment, once completed, is likely or unlikely to be effective. Provide rationale using these codes:
1 = site conditions (soils, resilience, species composition, disturbances) make treatment effectiveness likely
2 = site conditions (soils, resilience, species composition, disturbances) make treatment effectiveness unlikely
3 = continued current management (grazing, recreation, or other land uses) make likelihood of effectiveness low
4 = Based upon professional opinion, treatment is likely to be effective

[2]Describe frequency of maintenance necessary to continue effectiveness (years)

[3]Identify potential treatment completion time frame, considering NEPA adequacy, relative priority, and local ranking factors

4.3.4 Little Wood River

Project Planning Area Description

Geographic Overview

The Little Wood River PPA is in the BLM Twin Falls District Office north of Carey, Idaho, east from Hailey to Blizzard Mountain, and north generally to the Forest Service boundary. Landownership includes approximately 35 percent BLM-administered land, 15 percent state land, and 50 percent private land.

There are approximately 295,100 acres within the PPA. Topography ranges from hilly to rugged and mountainous, with a complex drainage network to flat valley bottoms. Elevation ranges from approximately 4,800 feet (1,463 meters) to 8,600 feet (2,621 meters) at Garfield Mountain.

This PPA is characterized by moderate to high cover cool-moist soil temperature and moisture classes. See **Table 4-53**.

Table 4-53
Little Wood GRSG Habitat Matrix Categories

Matrix Category	No Data	1A	1B	1C	2A	2B	2C	3A	3B	3C
Acres	6,129	334	58,739	229,900						
% of PPA	2	0	20	78						

Natural water sources occur throughout the PPA, including the Little Wood River, Seamans Creek, and Fish Creek. Major manmade water sources include the High Line Canal, Little Wood Reservoir, and Fish Creek Reservoir.

Agriculture and residential development is likely to be common due to the significant amount of private land in this PPA.

All focal habitats in the PPA are less than 12 miles from electrical transmission towers. A highway runs along the southeastern portion of the PPA. Approximately 15 percent of the PPA is less than five miles from roads and approximately 50 percent is five to nine miles from primary roads. Approximately 25 percent of the habitat in the southwestern portion of the Little Wood PPA is four to nine miles from transmission lines.

Highway 20 bounds the PPA to the south, and Highway 75 runs along the western boundary. Topography and landownership pattern may limit access to more remote portions of the PPA.

GRSG Characteristics

About 80 percent of the area is in breeding and winter habitat. Telemetry data are clustered along Rocky Bar to Muldoon Creek in the northern portion and on Jasper flats in the southeastern portion of the PPA.

Vegetation

Conifer encroachment is not currently a significant concern.

Most annual invasives occur on southern-facing slopes in dryer soils.

Fire

There is a moderate fire history since 1980. Perimeters are of limited size, but significant fires have occurred to the west and south of the PPA.

Over 90 percent of the PPA is in the high burn probability category. See **Table 4-54**.

Table 4-54
Little Wood Summary of Burn Probability

High and Very High Burn Probability in PPA (acres)	257,100
High and Very High Burn Probability in PPA (percent)	87

Existing Treatments

Less than five percent of the PPA has undergone recorded vegetation treatments.

Other Management Factors

Aside from existing roads and transmission lines, other management factors did not influence the selection of treatments for this PPA.

Fuels Management

The PPA includes approximately 85 miles of potential linear fuel treatments. These treatments follow a network of existing travel routes throughout the PPA and are depicted in the GIS data accompanying this report. While the primary treatment is reduction of hazardous fuels to reduce fire behavior, associated related targets such as reduction of invasive annual grass, conifer, and invasive weeds will also be accomplished.

See associated GIS data layers for position and extent within the PPA and **Table 4-55**.

Table 4-55
Little Wood Potential Fuels Management Treatments

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Miles			85		85

Habitat Recovery/Restoration

No habitat restoration treatments are identified at this time.

Fire Operations

Approximately 80 percent of the Little Wood River PPA is third priority for fire suppression. See associated GIS data layers for position and extent within the PPA and **Table 4-56**.

Table 4-56
Little Wood Potential Fire Operations Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres			227,000		227,000
% of PPA			77		77

Post-Fire Rehabilitation

ESR treatments may be limited due to topography. The entire area is a third priority due to the cool-moist soils; however, southern-facing slopes may be targeted for treatment first. Important riparian and brood-rearing habitat exists and is managed by federal and private, current Natural Resources Conservation Service (NRCS) cooperative projects. The Little Wood River ESR moderate polygon follows the boundary of the PPA. The Twin Falls District Office will continue working with other stakeholders to coordinate and prioritize post-fire rehabilitation activities.

See associated GIS data layers for position and extent within PPA and **Table 4-57**.

Table 4-57
Little Wood Potential Post-Fire Rehabilitation Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres			225,200		225,200
% of PPA			76		76

Proposed Management

Potential treatments identified through the Step 2 FIAT process for the Little Wood River PPA include linear fuel treatments along existing roadways. As shown on **Table 4-58** no projects have been identified at this time within the NEPA planning process. See **Figures 4-62** through **4-67** for a graphic depiction of the proposed treatments and strategies in the PPA.

Table 4-58
Little Wood River PPA Treatment Summary Table

Treatment Description		Priority			Threats Addressed				NEPA			Treatments					
												Time Frame		Certainty of Effectiveness[1]			
Name/Type	Acres	1st	2nd	3rd	Conifer (C)	Invasive annual grasses (I)	Riparian Degradation (R)	Wildfire (W)	Initiated (I)	Completed (C)	Needed (N)	Pending Funding (P)[1]	Implementing (I)[1]	Likely	Unlikely	Maintenance Time Frame (Years)[2]	Completion Time Frame (0-2, 3-5, 5+ years)[3]
None	0																

[1] State if treatment, once completed, is likely or unlikely to be effective. Provide rationale using these codes:
1 = site conditions (soils, resilience, species composition, disturbances) make treatment effectiveness likely
2 = site conditions (soils, resilience, species composition, disturbances) make treatment effectiveness unlikely
3 = continued current management (grazing, recreation, or other land uses) make likelihood of effectiveness low
4 = Based upon professional opinion, treatment is likely to be effective
[2]Describe frequency of maintenance necessary to continue effectiveness (years)
[3]Identify potential treatment completion time frame, considering NEPA adequacy, relative priority, and local ranking factors

4.3.5 Magic

Project Planning Area Description

Geographic Overview

The Magic PPA is on the north side of the Snake River Plain from Highway 46 east to Craters of the Moon National Monument. The PPA is in the BLM Twin Falls District Office. Land status includes approximately 60 percent BLM-administered land, 20 percent National Park Service land, and 20 percent state and private land.

There are approximately 1,789,400 acres within the PPA. Topography varies from flat to rolling hills, with a general southern aspect and lava beds on the northeast portion. Elevation ranges from approximately 4,170 feet (1,270 meters) to 8,100 feet (2,470 meters).

This PPA is represented with all shrub cover types (low, moderate, and high) and cool-moist, cool-dry, and warm-dry soil temperature and moisture class. See **Table 4-59**.

Table 4-59
Magic GRSG Habitat Matrix Categories

Matrix Category	No Data	1A	1B	1C	2A	2B	2C	3A	3B	3C
Acres	88,645	340,358	236,608	185,197	1,874	15,644	45,436	291,571	397,809	186,264
% of PPA	5	19	13	10	0	1	3	16	22	10

Most water sources occur on the western side of the PPA and include Magic Reservoir, Little Wood River, and Big Wood River. There are numerous playas and stock ponds that supply surface water for GRSG. Additionally, the lava rock terrain tends to retain water in small cracks and bowls that are occasionally available for use by GRSG. Anderson Ranch Reservoir is over 20 miles northwest of the most northwestern corner of the Magic PPA. The Magic PPA contains Magic Reservoir as well as segments of Camas Creek, Big Wood River, Little Wood River, and Silver Creek. Large irrigation canals that occur in the southern portion of the Magic PPA also act as a water source during the summer fire season.

Approximately 85 percent of the PPA is within 12 miles of electrical transmission towers, and the remaining habitat is 12 to 21 miles from towers. Several primary roads occur in the southern half of the PPA, and approximately half of the habitat is less than five miles from primary roads. One transmission corridor bisects the Magic PPA, with approximately five percent of habitat within four miles, and 10 percent is four to nine miles from a transmission corridor.

Highways on edges and through the PPA make burnable areas accessible; much of the WSAs in the area are lava beds.

GRSG Characteristics

There are several leks in the Magic PPA with average attendance greater than 20 males. Leks are primarily aligned with the Arco Minidoka Road and occur both in BFO and Craters of the Moon National Monument. Lek attendance appears to be stable or increasing, as habitats are recovering from past fires. GRSG in this PPA are well connected to GRSG in the Big Desert PPA and north up to Arco.

Vegetation

There is scattered conifer expansion in this PPA, but it is not a significant management concern at this time.

Former GRSG habitats near and to the south and east of Gooding and Shoshone are now dominated by annual grasses due to recent fires. The PPA has been drawn further south to include more area that has been converted to invasive annuals and noxious weeds.

Fire

Extensive fire perimeters surround this PPA, with several large fires having occurred within the PPA from 1980 to 2013. Over sixty percent of the PPA is in the high and very high burn probability category. See **Table 4-60**.

Table 4-60
Magic Summary of Burn Probability

High and Very High Burn Probability in PPA (acres)	1,154,600
High and Very High Burn Probability in PPA (percent)	65

Existing Treatments

Many treatments have occurred in this PPA, and they appear to be associated with post-fire activities. ESR treatments and fuel treatments have occurred to control medusahead and cheatgrass.

ESR treatments have commonly been implemented to preempt annual grass invasions and have occurred over the majority of the PPA. Shrub planting has been an ongoing effort to aid in the reestablishment of shrubs and has been moderately successful. Forage Kochia fuelbreaks are in place along several major roads.

The success of past treatments in the Magic PPA has been remarkably high both in the long-term productivity of past treatments and through recent ESR efforts. Perennial grasses are establishing and spreading in treated areas, and annual grass cover has been reduced. Shrub planting treatments have also been moderately successful, with plantings in areas having recent fires.

Other Management Factors

Aside from existing roads and transmission lines, other management factors did not influence the selection of treatments for this PPA.

Fuels Management

The potential treatment area includes approximately 230 miles of linear fuel treatments and 70,800 acres of potential fuel treatment area. These linear fuel treatments follow a network of existing travel routes throughout the PPA and are depicted in the GIS data accompanying this report. Proposed treatments primarily include green stripping along the identified roadways. These treatments can be accomplished within the next five years. Twin Falls District has a history of treating 45,000 to 80,000 acres per year. While the primary treatment is reduction of hazardous fuels to reduce fire behavior, associated related targets such as reduction of invasive annual grass, conifer, and invasive weeds will also be accomplished.

See associated GIS data layers for position and extent within the PPA and **Table 4-61**.

Table 4-61
Magic Potential Fuels Management Treatments

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Miles	170		60		230
Acres	52,800	8,600		8,300	70,900

Habitat Recovery/Restoration

Former GRSG habitats near and to the south and east of Gooding and Shoshone are now dominated by annual grasses due to recent fires. The PPA has been drawn further south to include winter habitat and area that has been converted to invasive annuals and noxious weeds. By managing these areas more proactively, this will decrease the risk of invasion further into the 75 percent BBD areas.

Priority areas for potential habitat restoration/recovery include the following*:

- Magic invasive annual grasses potential treatment 1st priority: approximately 141,200 acres
- Magic habitat restoration (other) 1st priority: 150,600 acres
- Magic habitat restoration (other) 2nd priority: 41,600 acres
- Magic habitat restoration (other) 3rd priority: 354,300 acres

*See associated GIS data layers for position and extent within the PPA and **Table 4-62**.

Table 4-62
Magic Potential Habitat Restoration Treatments

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	291,800	41,600	163,400		496,800
% of PPA	16	2	9		27

Fire Operations

Priority areas for fire operations include the following*:

- Magic fire 1st priority: 974,600 acres

*See associated GIS data layers for position and extent within the PPA and **Table 4-63**.

Table 4-63
Magic Potential Fire Operations Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	974,600		626,000		1,600,600
% of PPA	54		35		89

Post-Fire Rehabilitation

The Step 2 FIAT process identified areas within the focal habitats with moderate to high shrub cover and warm-dry soil conditions as the first priority for post-fire rehabilitation. The Twin Falls District Office will continue working with other stakeholders to coordinate and prioritize post-fire rehabilitation activities.

Potential treatment areas for post-fire rehabilitation management include the following*:

- Magic ESR 1st priority: 408,600 acres

*See associated GIS data layers for position and extent within the PPA and **Table 4-64**.

Table 4-64
Magic Potential Post-Fire Rehabilitation Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	408,600	38,600	360,600		807,800
% of PPA	23	2	20		45

Proposed Management

Fuels management and habitat recovery/restoration treatments in the Magic PPA would mitigate invasive annual grass issues resulting from past fires and roadside disturbances. See **Table 4-65** for projects that have been identified presently within the NEPA planning process. See **Figures 4-68** through **4-75** for a graphic depiction of the proposed treatments and strategies in the PPA.

Table 4-65
PPA Treatment Summary Table

Treatment Description		Priority			Threats Addressed				NEPA			Treatments					
												Time Frame		Certainty of Effectiveness[1]			
Name/ Type	Acres	1st	2nd	3rd	Conifer (C)	Invasive annual grasses (I)	Riparian Degradation (R)	Wildfire (W)	Initiated (I)	Completed (C)	Needed (N)	Pending Funding (P)[1]	Implementing (I)[1]	Likely	Unlikely	Maintenance Time Frame (Years)[2]	Completion Time Frame (0-2, 3-5, 5+ years)[3]
TF District ESR	N/A									X		X		X		NA	0-2
Tri-County Weeds	7,500					X		X		X		X	X	X		2-5	5+
Southern Idaho BioControl	12,500					X		X		X		X	X	X		2-5	5+
Shoshone Minidoka Weeds	1,000					X		X		X		X	X	X		2-5	5+
Burley Minidoka Weeds	1,000					X		X		X		X	X	X		2-5	5+
Roadside Fuelbreaks	710							X		X		X	X	X		Yearly	5+
Big Desert Fuelbreaks	108							X		X		X	X	X		Yearly	5+

Table 4-65
PPA Treatment Summary Table

Treatment Description		Priority			Threats Addressed				NEPA			Treatments				
												Time Frame		Certainty of Effectiveness[1]		
Name/ Type	Acres	1st	2nd	3rd	Conifer (C)	Invasive annual grasses (I)	Riparian Degradation (R)	Wildfire (W)	Initiated (I)	Completed (C)	Needed (N)	Pending Funding (P)[1]	Implementing (I)[1]	Likely	Unlikely	Maintenance Time Frame (Years)[2]	Completion Time Frame (0-2, 3-5, 5+ years)[3]
Preacher Sagebrush Restoration	8,000					X		X		X			X	X		NA	0-2
Laidlaw Sagebrush Restoration	4,000					X		X		X			X	X		NA	0-2
Flat Top Sagebrush Restoration	4,000					X		X		X			X	X		NA	0-2
Wildhorse Fuelbreaks	17,000					X		X	X			X		X		3	5+
Jim Brown Annuals	13,600					X		X	X			X		X		3	3-5
Preacher Annuals	20,000					X		X	X			X		X		3	3-5
Arco Minidoka Fuelbreaks	10,000					X		X	X			X		X		3	5+
East Cinder Restoration	5,000					X		X		X		X		X		NA	3-5
East Wildhorse Annuals	5000					X		X	X			X		X		NA	0-2
Shoshone Brush Restoration	30,000					X		X		X		X		X		NA	5+
Minidoka Brush Restoration	5,000					X		X		X			X	X		NA	0-2
Minidoka Annuals	2,000					X		X	X			X		X		5-10	3-5

[1] State if treatment, once completed, is likely or unlikely to be effective. Provide rationale using these codes:
1 = site conditions (soils, resilience, species composition, disturbances) make treatment effectiveness likely
2 = site conditions (soils, resilience, species composition, disturbances) make treatment effectiveness unlikely
3 = continued current management (grazing, recreation, or other land uses) make likelihood of effectiveness low
4 = Based upon professional opinion, treatment is likely to be effective

[2]Describe frequency of maintenance necessary to continue effectiveness (years)

[3]Identify potential treatment completion time frame, considering NEPA adequacy, relative priority, and local ranking factors

4.3.6 Medicine Lodge

Project Planning Area Description

Geographic Overview

The Medicine Lodge PPA is in the BLM Idaho Falls District Office north of Highway 22 and west from Dubois to the Forest Service administrative boundary. Landownership includes about 60 percent BLM-administered land, 20 percent Forest Service land, and 20 percent state and private land.

There are approximately 251,700 acres within the PPA. Topography is flat in the southeastern corner, with increasing mountainous slopes to the north. Aspect is generally southeast and west-southwestern. Elevation ranges from 5,000 feet (1,524 meters) to 8,000 feet (2,438 meters).

Much of the PPA is not defined within the resistance and resilience data layers. Where there are available data, there is moderate to high cover with cool-dry soil regimes in the southern portion of the PPA and moderate cover with cool-moist soil regimes in the northern portion. See **Table 4-66**.

Table 4-66
Medicine Lodge GRSG Habitat Matrix Categories

Matrix Category	No Data	1A	1B	1C	2A	2B	2C	3A	3B	3C
Acres	190,455	159	2,979			10,371	47,685			
% of PPA	76	0	1			4	19			

The main natural surface water sources are Medicine Lodge Creek and tributaries that bisect the PPA.

Private lands may limit access to some areas within the PPA. Existing highways on the southern and eastern boundaries facilitate fire response time.

Over 90 percent of the focal habitat in the PPA is less than 12 miles from electrical transmission towers. A highway runs along the southern boundary of the PPA, and approximately 40 percent of the area is less than five miles from the highway. The western half of the Medicine Lodge PPA is less than five miles from transmission lines or towers, and the western half is five to 13 miles away.

GRSG Characteristics

Telemetry data are limited within this PPA, but nearly all areas are covered by breeding and winter habitat.

Vegetation

Conifer encroachment exists in the northern portion of the PPA.

Invasive annuals are not a significant issue in this FIAT PPA.

Fire

About 20 percent of this PPA has burned between 1980 and 2013. Approximately 50 percent of the PPA is identified in the high and very high burn probability model. See **Table 4-67**.

Table 4-67
Medicine Lodge Summary of Burn Probability

High and Very High Burn Probability in PPA (acres)	120,800
High and Very High Burn Probability in PPA (percent)	48

Existing Treatments

Past treatments have been associated with post-fire rehabilitation efforts, with less than 10 percent of the areas having been treated. Two 1,000-acre fuels treatments (Deep Creek and Crooked Creek) were implemented in 2003 to promote the herbaceous understory growth. Irregular patterns were mowed into the sagebrush canopy, which helped to release the existing understory vegetation. The 2,000-acre Deep Creek aerial sagebrush seeding treatment (2004) focused on increasing the sagebrush component following the 2003 Deep Creek fire. The seeding was considered a success.

A number of prescribed burns were also presumably conducted in the 1980s and early 1990s; however, no written record was available to verify whether the burns were just planned or actually implemented. The burns would have been used to reduce sagebrush and promote the herbaceous understory. The following identifies the burn name, date, and approximate acreage:

- Burnside Butte (1987): 1,920 acres
- Thunder Gulch (1987): 6,380 acres
- Patelzick Creek (1991): 3,075 acres
- Dry Creek (1996): 1,380 acres

Other Management Factors

Aside from existing roads and transmission lines in the PPA, other management factors did not influence the selection of treatments for this PPA.

Fuels Management

No fuels management is proposed.

Habitat Recovery/Restoration

There are approximately 13,600 acres of potential habitat restoration treatment areas. All treatments would be coordinated with other land management agencies and private landowners, as appropriate, and monitored post-treatment to ensure effectiveness.

Invasive annuals are not a significant issue in this FIAT PPA. Therefore, no applicable treatment strategy for invasive annuals is needed at this time. In the high-density GRSG lek and nesting habitat, the main goal would be to increase perennial grass cover.

Potential treatments for habitat recovery/restoration include the following*:

- Medicine Lodge conifer 1st priority: 7,600 acres
- Medicine Lodge conifer 2nd priority: approximately 500 acres
- Medicine Lodge habitat restoration (other) 2nd priority: approximately 5,500 acres

*See associated GIS data layers for position and extent within the PPA and **Table 4-68**.

Table 4-68
Medicine Lodge Potential Habitat Restoration Treatments

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	7,600	6000			13,600
% of PPA	3	2			5

Fire Operations

Response to wildfires in and around critical GRSG habitat is accomplished primarily with engines, dozers, and water tenders, with support from a variety of aviation assets. BLM stations provide for rapid initial attack response from multiple locations to the majority of focal areas, and response plans have been updated with increased response to such areas.

Idaho Falls District Engine Stations are located in Malad, Soda Springs, Pocatello, American Falls, Fort Hall, Blackfoot, Atomic City, Idaho Falls, Dubois, and Salmon. The Salmon/Challis National Forest provides initial attack to several focal areas, with engines and helicopters from Mackey, Challis, Leadore, and Salmon. The Caribou/Targhee National Forest provides additional resources for several of the focal areas, with engines from Malad, Pocatello, and Ashton being the closest to the focal areas.

The response time to the majority of the focal areas is thirty minutes to one hour to have multiple resources on scene. Additional resources could be staged in Arco to provide more coverage for the Big Lost and Big Desert focal areas. Resources could also be staged in Aberdeen, Arco, Clyde, Rexburg, and Holbrook to provide for quicker response to the more remote focal areas, including Curlew, Big Desert, Big Lost, Pasemeroi, Medicine Lodge, and Sand Creek. The Idaho Falls BLM has mutual aid agreements with over 50 rural or municipal fire departments that can be used to further supplement initial attack, as many of the departments are the closest resource to many focal areas and would likely be the first to respond. GRSG suppression guidelines will be

discussed with cooperators during AOP meetings and training will be provided to increase their capacity where possible. Contract resources, including dozers, engines, and water tenders, can be hired and staged during high fire danger periods such as high wind events and predicted dry lightning at any of the above locations. To supplement the air tanker base in Pocatello, portable SEAT bases can be operated in Malad, Arco, and Challis to reduce flight times to many of the focal areas. Portable SEAT bases will be staged in Arco and Malad for the fire season, with all agreements in place to activate them in a timely manner during the fire season. Water sources have been mapped in remote locations where water supply is limited, including contact information on existing wells. In addition, more wells can be developed and existing wells can be improved with more funding and completion of NEPA.

The highest priority areas (2nd priority) are the southern areas of the PPA. As approximately 75 percent of this PPA (190,500 acres) is absent of soil moisture temperature regime data, local knowledge was used to interpolate potential fire operations priority areas.

See associated GIS data layers for position and extent within the PPA and **Table 4-69**.

Table 4-69
Medicine Lodge Potential Fire Operations Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres		146,600	78,100		224,700
% of PPA		58	31		89

Post-Fire Rehabilitation

The Step 2 FIAT process identified areas within the focal habitats with moderate to high brush cover and warm-dry soil conditions as the highest priority for post-fire rehabilitation. The Idaho Falls District Office will continue working with other stakeholders to coordinate and prioritize post-fire rehabilitation activities. As approximately 75 percent of this PPA (190,500 acres) is absent of soil moisture temperature regime data, local knowledge was used to interpolate potential post-fire rehabilitation priority areas.

The moderate to high shrub cover in the cool-dry soil moisture temperature regimes in the southern areas of the PPA are the highest (2nd priority) priority areas for post-fire rehabilitation management.

See associated GIS data layers for position and extent within PPA and **Table 4-70**.

Table 4-70
Medicine Lodge Potential Post-Fire Rehabilitation Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres		146,200	71,800		218,000
% of PPA		58	29		87

Proposed Management

Identified treatments for the Medicine Lodge PPA primarily include conifer, particularly in the northern portion of the PPA. Some potential habitat restoration (other) treatments have been identified. Invasive annual grass treatments and fuel treatments are not proposed due to the limited extent of annual grasses in the PPA. See **Table 4-71** for projects that have been identified presently within the NEPA planning process. See **Figures 4-76** through **4-82** for a graphic depiction of the proposed treatments and strategies in the PPA.

Table 4-71
PPA Treatment Summary Table (Medicine Lodge PPA)

Treatment Description		Priority			Threats Addressed				NEPA			Treatments					
												Time Frame		Certainty of Effectiveness[1]			
Name/Type	Acres	1st	2nd	3rd	Conifer (C)	Invasive annual grasses (I)	Riparian Degradation (R)	Wildfire (W)	Initiated (I)	Completed (C)	Needed (N)	Pending Funding (P)[1]	Implementing (I)[1]	Likely	Unlikely	Maintenance Time Frame (Years)[2]	Completion Time Frame (0-2, 3-5, 5+ years)[3]
Patelzick Creek Restoration	741	X			C			W	I			P		LI		20	5+
USFO Shrub/Tree Planting EA	251,652		X			I	R	W		C			I	LI		10	5+
USFO Weed Treatment EA	251,652	X				I				C			I	LI		5	5+

[1] State if treatment, once completed, is likely or unlikely to be effective. Provide rationale using these codes:
1 = site conditions (soils, resilience, species composition, disturbances) make treatment effectiveness likely
2 = site conditions (soils, resilience, species composition, disturbances) make treatment effectiveness unlikely
3 = continued current management (grazing, recreation, or other land uses) make likelihood of effectiveness low
4 = Based upon professional opinion, treatment is likely to be effective
[2]Describe frequency of maintenance necessary to continue effectiveness (years)
[3]Identify potential treatment completion time frame, considering NEPA adequacy, relative priority, and local ranking factors

4.3.7 Pahsimeroi

Project Planning Area Description

Geographic Overview

The Pahsimeroi PPA is within the Pahsimeroi Valley west of the Lemhi Range. The PPA is in the BLM Idaho Falls District Office. Landownership includes about 70 percent BLM-administered land, 20 percent Forest Service land, and 10 percent state and private land.

There are approximately 377,600 acres within the PPA. Topography includes valley bottoms transitioning to rugged mountainous topography on the western and eastern boundaries of the PPA. Elevation ranges from approximately 7,600 feet (2,300 meters) to 10,800 feet (3,300 meters).

The PPA is represented with moderate to high shrub cover and cool-moist and cool-dry soil temperature and moisture classes. Approximately one-quarter of the PPA (87,200 acres) has no soil moisture temperature regime data. See **Table 4-72**.

Table 4-72
Pahsimeroi GRSG Habitat Matrix Categories

Matrix Category	No Data	1A	1B	1C	2A	2B	2C	3A	3B	3C
Acres	87,233		34,129	99,950	156	36,858	119,282			
% of PPA	23		9	26	0	10	32			

The main natural surface water source is the Pahsimeroi River that runs through the middle of the PPA, with springs and streams occurring throughout the PPA.

Access to upper elevations is limited, but there is good access through the middle of the PPA via a maintained road.

The Pahsimeroi PPA is almost entirely more than five miles from any primary roads. Nearly half of the focal habitat is five to 13 miles from transmission lines or electrical transmission towers, and a small portion at the north end is less than five miles from transmission lines or towers.

GRSG Characteristics

Most of the PPA is within breeding habitat, while winter habitat occurs over about 20 percent of the PPA, mostly at the south end.

Vegetation

Conifer expansion is occurring on the western boundary of the focal habitat areas and in the southeastern sections within 1B and 1C habitat, just northeast of the focal habitats. These areas are where Douglas firs are expanding into sagebrush.

Cheatgrass is found on lower elevations of the northwestern side of the PPA. However, infestations generally occur as patches of less than an acre.

Fire

Approximately 40 percent of the PPA is high and very high burn probability, with the remaining approximately 60 percent of the PPA in the moderate burn probability category. See **Table 4-73**.

Table 4-73
Pahsimeroi Summary of Burn Probability

High and Very High Burn Probability in PPA (acres)	137,800
High and Very High Burn Probability in PPA (percent)	36

Surface water availability is limited for numerous reasons, including lack of access to water sources and limited surface water. Water is generally provided through use of water tenders and/or aerial support.

Existing Treatments

Past treatments have occurred on less than five percent of the PPA in the northeast quadrant.

Other Management Factors

Aside from existing roads and transmission lines in the PPA, other management factors did not influence the selection of treatments for this PPA.

Fuels Management

No fuels management is proposed.

Habitat Recovery/Restoration

Potential habitat recovery and restoration treatment areas were identified for the reduction of Douglas fir and other conifer in the western portion of the PPA. Invasive annual grass is minimal in the PPA. Some potential habitat restoration (other) treatments are identified in this PPA.

All treatments would be coordinated with other land management agencies and private landowners as appropriate and subsequently monitored post-treatment to ensure effectiveness.

Potential treatments for habitat recovery/restoration include the following*:

- Pahsimeroi conifer expansion 1st priority: 99,500 acres
- Pahsimeroi habitat restoration (other) 2nd priority: 63,500 acres

*See associated GIS data layers for position and extent within the PPA and **Table 4-74**.

Table 4-74
Pahsimeroi Potential Habitat Restoration Treatments

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	99,500	63,500		26,700	189,700
% of PPA	26	17		7	50

Fire Operations

The higher priority areas are moderate to high cover, cool-dry soil moisture temperature regime areas, including areas identified by the local GRSG Working Group. Sagebrush in these areas provides nesting and wintering habitat. Local knowledge considered this a higher priority.

Response to wildfires in and around critical GRSG habitat is accomplished primarily with engines, dozers, and water tenders, with support from a variety of aviation assets. BLM stations provide for rapid initial attack response from multiple locations to the majority of focal areas, and response plans have been updated with increased response to such areas.

Idaho Falls District Engine Stations are located in Malad, Soda Springs, Pocatello, American Falls, Fort Hall, Blackfoot, Atomic City, Idaho Falls, Dubois, and Salmon. The Salmon/Challis National Forest provides initial attack to several focal areas, with engines and helicopters from Mackey, Challis, Leadore, and Salmon. The Caribou/Targhee National Forest provides additional resources for several of the focal areas, with engines from Malad, Pocatello, and Ashton being the closest to the focal areas.

The response time to the majority of the focal areas is thirty minutes to one hour to have multiple resources on scene. Additional resources could be staged in Arco to provide more coverage for the Big Lost and Big Desert focal areas. Resources could also be staged in Aberdeen, Arco, Clyde, Rexburg, and Holbrook to provide for quicker response to the more remote focal areas, including Curlew, Big Desert, Big Lost, Pasemeroi, Medicine Lodge, and Sand Creek. The Idaho Falls BLM has mutual aid agreements with over 50 rural or municipal fire departments that can be used to further supplement initial attack, as many of the departments are the closest resource to many focal areas and would likely be the first to respond. GRSG suppression guidelines will be discussed with cooperators during AOP meetings and training will be provided to increase their capacity where possible. Contract resources, including dozers, engines, and water tenders, can be hired and staged during high fire danger periods such as high wind events and predicted dry lightning at any of the above locations. To supplement the air tanker base in Pocatello, portable SEAT bases can be operated in Malad, Arco, and Challis to reduce flight times to many of the focal areas. Portable SEAT bases will be staged in Arco and Malad for the fire season, with all agreements in place to activate them in a timely manner during the fire season. Water sources have been mapped in remote locations where water supply is limited, including contact information on existing wells. In

addition, more wells can be developed and existing wells can be improved with more funding and completion of NEPA.

Priority areas for fire operations include the following*:

- Pahsimeroi fire 2nd priority: 144,000 acres

*See associated GIS data layers for position and extent within the PPA and **Table 4-75**.

Table 4-75
Pahsimeroi Potential Fire Operations Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres		144,000	111,600		255,600
% of PPA		38	30		68

Post-Fire Rehabilitation

The higher priority areas are moderate to high cover, cool-dry soil moisture temperature regime areas, including areas identified by the local GRSG Working Group. The Idaho Falls District Office will continue working with other stakeholders to coordinate and prioritize post-fire rehabilitation activities.

Potential treatment areas for post-fire rehabilitation management include the following*:

- Pahsimeroi ESR 2nd priority: 140,400 acres

*See associated GIS data layers for position and extent within the PPA and **Table 4-76**.

Table 4-76
Pahsimeroi Potential Post-Fire Rehabilitation Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres		140,400	111,600		252,000
% of PPA		37	30		67

Proposed Management

The FIAT Step 2 team identified conifer treatments as the primary need in the Pahsimeroi PPA. Some potential habitat restoration (other) treatment opportunities are identified. The team did not identify a need for invasive annual grass restoration/recovery or fuels management treatment. See **Table 4-77** for projects that have been presently identified within the NEPA planning process. See **Figures 4-83** through **4-89** for a graphic depiction of the proposed treatments and strategies in the PPA.

Table 4-77
PPA Treatment Summary Table

Treatment Description		Priority			Threats Addressed				NEPA			Treatments					
												Time Frame		Certainty of Effectiveness[1]			
Name/Type	Acres	1st	2nd	3rd	Conifer (C)	Invasive annual grasses (I)	Riparian Degradation (R)	Wildfire (W)	Initiated (I)	Completed (C)	Needed (N)	Pending Funding (P)[1]	Implementing (I)[1]	Likely	Unlikely	Maintenance Time Frame (Years)[2]	Completion Time Frame (0-2, 3-5, 5+ years)[3]
Pahsimeroi Focal Area – Weed Treatments	20					X	X	X		X			X	X		1	5+
Pahsimeroi Focal Area – Upper Pahsimeroi GRSG Vegetation Treatment	700					X	X	X	X			X		X		NA	0-2
Pahsimeroi Focal Area-Conifer Encroachment Treatment	4,880				X	X	X	X		X		X		X		5-10	5+
Pahsimeroi Focal Area – GRSG Vegetation Treatment	73,404					X	X	X	X			X		X		5-10	5+

[1] State if treatment, once completed, is likely or unlikely to be effective. Provide rationale using these codes:
1 = site conditions (soils, resilience, species composition, disturbances) make treatment effectiveness likely
2 = site conditions (soils, resilience, species composition, disturbances) make treatment effectiveness unlikely
3 = continued current management (grazing, recreation, or other land uses) make likelihood of effectiveness low
4 = Based upon professional opinion, treatment is likely to be effective
[2]Describe frequency of maintenance necessary to continue effectiveness (years)
[3]Identify potential treatment completion time frame, considering NEPA adequacy, relative priority, and local ranking factors

4.3.8 Sand Creek

Project Planning Area Description

Geographic Overview

The Sand Creek PPA is east of Dubois, Idaho and northwest of Saint Anthony, Idaho. The PPA is in the BLM Idaho Falls District Office. Landownership includes about 30 percent BLM-administered land, 10 percent Forest Service land, 20 percent state land, and 40 percent private land with many checkerboard areas.

There are approximately 461,100 acres within the PPA. Topography is mostly flat to gently sloping with areas punctuated by buttes and St. Anthony Sand

Dunes. There are some steep south-facing slopes on the northern end of the PPA. Elevation ranges from approximately 5,085 feet (1,550 meters) to 7,218 feet (2,200 meters).

The Sand Creek PPA is represented by low, moderate, and high shrub cover in cool-moist and cool-dry soil moisture temperature regimes. Approximately 25 percent of the PPA has no soil moisture temperature regime data. Local knowledge was used to interpolate appropriate resistance and resilience matrix priorities. See **Table 4-78**.

Table 4-78
Sand Creek GRSG Habitat Matrix Categories

Matrix Category	No Data	1A	1B	1C	2A	2B	2C	3A	3B	3C
Acres	112,333	2,088	72,325	185,270	3,921	36,728	48,406			
% of PPA	24	0	16	40	1	8	10			

The main natural surface water source is Camas Creek, which flows from the north-central portion of the PPA through the southwestern corner. Lakes and reservoirs exist around the margins of much of the PPA.

The PPA is bounded by Interstate 15 to the west. Highway 20 runs along the southeastern portion. There are roads throughout the PPA to facilitate fire response.

A single 230-kV transmission line runs in a north-south direction through the western portion of the Sand Creek PPA. Over 90 percent of the habitat in the PPA is less than 12 miles from electrical transmission towers. About 10 percent of the Sand Creek PPA is less than five miles from roads, and an additional 10 percent is five to nine miles away in the northwestern portion. Transmission corridors exist within the western edge and adjacent to the southern edge of the PPA. About 30 percent of habitat is within four miles of transmission lines or towers, and an additional 30 percent is four to nine miles from towers.

GRSG Characteristics

About 75 percent of the PPA is breeding habitat, and wintering habitat exists on about 10 percent of the PPA in the western portion.

Vegetation

Scattered juniper would require minimal treatments of phase 1 encroachment.

Annual grasses are not a significant issue for this FIAT PPA and are mainly confined to the disturbed areas adjacent to roadways.

Fire

One large fire burned about 10 percent of the PPA in 1981. Other smaller fires have burned an additional 10 to 15 percent of the PPA since 1980.

About 15 percent of the PPA along the southern edge is moderate for fire risk, while approximately 80 percent is in the high and very high burn probability category. Small areas are either in the low category or undefined. See **Table 4-79**.

Table 4-79
Sand Creek Summary of Burn Probability

High and Very High Burn Probability in PPA (acres)	360,000
High and Very High Burn Probability in PPA (percent)	78

Existing Treatments

Past treatments have occurred on approximately 12 percent of the PPA in the eastern quadrant.

Approximately 20 prescribed burns were successfully implemented in the Sand Creek PPA between 1980 and 1997, with the intent of reducing sagebrush cover and promoting the herbaceous understory. A total of 49,350 acres were successfully treated over the 18-year period.

The 1,500-acre Hump Ditch chemical treatment (2005) was successfully implemented for the purpose of reducing sagebrush cover and promoting the herbaceous understory.

The 1,000-acre Dry Lakes prescribed burn (2007) was successfully implemented for the purpose of reducing sagebrush cover and promoting the herbaceous understory.

Other Management Factors

Aside from existing roads and a transmission line in the western portion of the PPA, other management factors did not influence the selection of treatments for this PPA.

Fuels Management

No fuels management is proposed.

Habitat Recovery/Restoration

Potential habitat recovery and restoration treatments identified would be designed to reduce conifer encroachment in select areas throughout the PPA. All treatments would be coordinated with other land management agencies and private landowners, as appropriate, and monitored post-treatment to ensure effectiveness.

Potential treatments for habitat recovery/restoration include the following*:

- Sand Creek conifer 1st priority: 153,900 acres
- Phase I scattered juniper would require minimal treatment

*See associated GIS data layers for position and extent within the PPA and **Table 4-80**.

Table 4-80
Sand Creek Potential Habitat Restoration Treatments

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	153,900				153,900
% of PPA	33				33

Fire Operations

The highest priority areas are the 3A, 3B, and 3C habitats in the southwestern areas of the PPA.

Response to wildfires in and around critical GRSG habitat is accomplished primarily with engines, dozers, and water tenders, with support from a variety of aviation assets. BLM stations provide for rapid initial attack response from multiple locations to the majority of focal areas, and response plans have been updated with increased response to such areas.

Idaho Falls District Engine Stations are located in Malad, Soda Springs, Pocatello, American Falls, Fort Hall, Blackfoot, Atomic City, Idaho Falls, Dubois, and Salmon. The Salmon/Challis National Forest provides initial attack to several focal areas, with engines and helicopters from Mackey, Challis, Leadore, and Salmon. The Caribou/Targhee National Forest provides additional resources for several of the focal areas, with engines from Malad, Pocatello, and Ashton being the closest to the focal areas.

The response time to the majority of the focal areas is thirty minutes to one hour to have multiple resources on scene. Additional resources could be staged in Arco to provide more coverage for the Big Lost and Big Desert focal areas. Resources could also be staged in Aberdeen, Arco, Clyde, Rexburg, and Holbrook to provide for quicker response to the more remote focal areas, including Curlew, Big Desert, Big Lost, Pasemeroi, Medicine Lodge, and Sand Creek. The Idaho Falls BLM has mutual aid agreements with over 50 rural or municipal fire departments that can be used to further supplement initial attack, as many of the departments are the closest resource to many focal areas and would likely be the first to respond. GRSG suppression guidelines will be discussed with cooperators during AOP meetings and training will be provided to increase their capacity where possible. Contract resources, including dozers, engines, and water tenders, can be hired and staged during high fire danger periods such as high wind events and predicted dry lightning at any of the above locations. To supplement the air tanker base in Pocatello, portable SEAT bases can be operated in Malad, Arco, and Challis to reduce flight times to many of the focal areas. Portable SEAT bases will be staged in Arco and Malad for the fire season, with all agreements in place to activate them in a timely manner during the fire season. Water sources have been mapped in remote locations

where water supply is limited, including contact information on existing wells. In addition, more wells can be developed and existing wells can be improved with more funding and completion of NEPA.

Priority areas for fire operations include the following*:

- Sand Creek fire 2nd priority: 84,500 acres

*See associated GIS data layers for position and extent within the PPA and **Table 4-81**.

Table 4-81
Sand Creek Potential Fire Operations Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres		84,500	317,400		401,900
% of PPA		18	69		87

Post-Fire Rehabilitation

The Step 2 FIAT process identified areas within the 75 percent BBD with moderate to high cover and warm-dry soil moisture temperature regimes as the highest priority for post-fire rehabilitation. The Idaho Falls District Office will continue working with other stakeholders to coordinate and prioritize post-fire rehabilitation activities.

Potential treatment areas for post-fire rehabilitation management include the following*:

- Sand Creek ESR 2nd priority: 57,500 acres

*See associated GIS data layers for position and extent within the PPA and **Table 4-82**.

Table 4-82
Sand Creek Potential Post-Fire Rehabilitation Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres		57,500	339,000		396,500
% of PPA		12	74		86

Proposed Management

Potential treatments identified for the Sand Creek PPA include those for conifer expansion, which are widely distributed throughout the PPA. See **Table 4-83** for projects that are identified presently within the NEPA planning process. See **Figures 4-90** through **4-95** for a graphic depiction of the proposed treatments and strategies in the PPA.

Table 4-83
PPA Treatment Summary Table (Sand Creek PPA)

Treatment Description		Priority			Threats Addressed				NEPA			Treatments					
												Time Frame		Certainty of Effectiveness[1]			
Name/Type	Acres	1st	2nd	3rd	Conifer (C)	Invasive annual grasses (I)	Riparian Degradation (R)	Wildfire (W)	Initiated (I)	Completed (C)	Needed (N)	Pending Funding (P)[1]	Implementing (I)[1]	Likely	Unlikely	Maintenance Time Frame (Years)[2]	Completion Time Frame (0-2, 3-5, 5+ years)[3]
USFO Shrub/Tree Planting EA	461,074	X				I		W		C			I	LI		10	5+
USFO Weed Treatment EA	461,074	X				I				C			I	LI		5	5+

[1] State if treatment, once completed, is likely or unlikely to be effective. Provide rationale using these codes:
1 = site conditions (soils, resilience, species composition, disturbances) make treatment effectiveness likely
2 = site conditions (soils, resilience, species composition, disturbances) make treatment effectiveness unlikely
3 = continued current management (grazing, recreation, or other land uses) make likelihood of effectiveness low
4 = Based upon professional opinion, treatment is likely to be effective
[2]Describe frequency of maintenance necessary to continue effectiveness (years)
[3]Identify potential treatment completion time frame, considering NEPA adequacy, relative priority, and local ranking factors

4.3.9 Table Butte

Project Planning Area Description

Geographic Overview

The Table Butte PPA is in the BLM Idaho Falls District Office west of Interstate 15 and north of Highway 33 and Mud Lake. Landownership includes about 90 percent BLM-administered land, with less than 10 percent state and private land.

There are approximately 80,600 acres within the PPA. Topography is mostly flat to gently sloping with areas punctuated by Table Butte on the south end and Cedar Butte on the north end. Elevation ranges from approximately 4,800 feet (1,463 meters) to 5,200 feet (1,585 meters).

The Table Butte PPA is represented by moderate to high shrub cover in cool-dry soil condition regimes. See **Table 4-84**.

Water is very limited within the PPA; however, Mud Lake and Camas Creek are just south of the PPA boundary.

The PPA is west of Interstate 15 and is surrounded by state highways. There are roads throughout much of the PPA, which could facilitate fire response.

Table 4-84
Table Butte GRSG Habitat Matrix Categories

Matrix Category	No Data	1A	1B	1C	2A	2B	2C	3A	3B	3C
Acres	1,630					20,044	58,919			
% of PPA	2					25	73			

All focal habitats in the PPA are less than 12 miles from electrical transmission towers. Approximately 30 percent of the habitat around the perimeter of the Table Butte PPA is five to nine miles from primary roads. Transmission corridors run adjacent to the eastern and western boundaries of the Table Butte PPA; about 70 percent of the habitat is within five miles and the remainder is less than nine miles from transmission lines and/or towers.

GRSG Characteristics

The entire PPA provides breeding and winter habitat.

Vegetation

Conifer and annual grasses are not significant issues in this FIAT PPA.

Fire

Approximately 20 percent of the area has burned since 1980. About 95 percent of the PPA is in the moderate burn probability category. See **Table 4-85**.

Table 4-85
Table Butte Summary of Burn Probability

High and Very High Burn Probability in PPA (acres)	0
High and Very High Burn Probability in PPA (percent)	0

Existing Treatments

Past treatments have occurred on approximately 11 percent of the PPA, with many of the treatments focused in and around old fire scars.

Between 1986 and 2001, 8,045 previously burned acres were aerially seeded with sagebrush. All of the seeding treatments were considered a failure.

Between 1950 and 1970, much of the Table Butte area was drill seeded with crested wheatgrass to increase forage. While no official record exists to provide the number and exact acreage of the treatments, most of the seedings still exist and were considered a success.

In 2010 and 2012, approximately 45,000 sagebrush seedlings were hand planted throughout portions of the 7,180-acre Camas Fire (2000). Monitoring revealed that survivability of the seedlings was approximately 80 percent. This hand planting effort was in response to the multiple failed attempts to reestablish sagebrush through aerial seedings within the fire scar.

Other Management Factors

Aside from existing roads, which cross many portions of the PPA, and transmission lines that run along the eastern and western portions of the PPA, other management factors did not influence the selection of treatments for this PPA.

Fuels Management

No fuels management is proposed.

Habitat Recovery/Restoration

Identified treatments would focus on reestablishing sagebrush back into the historic fire scars where natural recovery has not occurred. All treatments would be coordinated with other land management agencies and private landowners, as appropriate, and monitored post-treatment to ensure effectiveness.

Potential treatments for habitat recovery/restoration include the following*:

- Table Butte habitat restoration (other) 2nd priority: 21,900 acres

*See associated GIS data layers for position and extent within PPA and **Table 4-86**.

Table 4-86
Table Butte Potential Habitat Restoration Treatments

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres		21,900			21,900
% of PPA		27			27

Fire Operations

Response to wildfires in and around critical GRSG habitat is accomplished primarily with engines, dozers, and water tenders, with support from a variety of aviation assets. BLM stations provide for rapid initial attack response from multiple locations to the majority of focal areas, and response plans have been updated with increased response to such areas.

Idaho Falls District Engine Stations are located in Malad, Soda Springs, Pocatello, American Falls, Fort Hall, Blackfoot, Atomic City, Idaho Falls, Dubois, and Salmon. The Salmon/Challis National Forest provides initial attack to several focal areas, with engines and helicopters from Mackey, Challis, Leadore, and Salmon. The Caribou/Targhee National Forest provides additional resources for several of the focal areas, with engines from Malad, Pocatello, and Ashton being the closest to the focal areas.

The response time to the majority of the focal areas is thirty minutes to one hour to have multiple resources on scene. Additional resources could be staged in Arco to provide more coverage for the Big Lost and Big Desert focal areas.

Resources could also be staged in Aberdeen, Arco, Clyde, Rexburg, and Holbrook to provide for quicker response to the more remote focal areas, including Curlew, Big Desert, Big Lost, Pasemeroi, Medicine Lodge, and Sand Creek. The Idaho Falls BLM has mutual aid agreements with over 50 rural or municipal fire departments that can be used to further supplement initial attack, as many of the departments are the closest resource to many focal areas and would likely be the first to respond. GRSG suppression guidelines will be discussed with cooperators during AOP meetings and training will be provided to increase their capacity where possible. Contract resources, including dozers, engines, and water tenders, can be hired and staged during high fire danger periods such as high wind events and predicted dry lightning at any of the above locations. To supplement the air tanker base in Pocatello, portable SEAT bases can be operated in Malad, Arco, and Challis to reduce flight times to many of the focal areas. Portable SEAT bases will be staged in Arco and Malad for the fire season, with all agreements in place to activate them in a timely manner during the fire season. Water sources have been mapped in remote locations where water supply is limited, including contact information on existing wells. In addition, more wells can be developed and existing wells can be improved with more funding and completion of NEPA.

The entire PPA would be high priority given the continuous sagebrush habitat throughout.

Priority areas for fire operations include the following*:

- Table Butte fire 1st priority: 79,000 acres

*See associated GIS data layers for position and extent within the PPA and **Table 4-87**.

Table 4-87
Table Butte Potential Fire Operations Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	79,000			1,600	80,600
% of PPA	98			2	100

Post-Fire Rehabilitation

The Step 2 FIAT process identified areas within the focal habitats with moderate to high shrub cover and warm-dry soil moisture temperature regimes minus past ESR acreage as the highest priority for post-fire rehabilitation. The Idaho Falls District Office will continue working with other stakeholders to coordinate and prioritize post-fire rehabilitation activities.

Potential treatment areas for post-fire rehabilitation management include the following*:

- Table Butte ESR 1st priority: 57,500 acres

*See associated GIS data layers for position and extent within the PPA and **Table 4-88**.

Table 4-88
Table Butte Potential Post-Fire Rehabilitation Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	57,500				57,500
% of PPA	71				71

Proposed Management

Conifer encroachment and invasive annual grasses are not notable issues in the Table Butte PPA. Accordingly, the FIAT assessment team identified a passive management approach as the most appropriate strategy for the PPA, with approximately 30 percent of the PPA identified as second priority areas for sagebrush habitat restoration. See **Table 4-89** for projects that are presently identified within the NEPA planning process. See **Figures 4-96** through **4-102** for a graphic depiction of the proposed treatments and strategies in the PPA.

Table 4-89
PPA Treatment Summary Table (Table Butte PPA)

Treatment Description		Priority			Threats Addressed				NEPA			Treatments					
												Time Frame		Certainty of Effectiveness[1]			
Name/ Type	Acres	1st	2nd	3rd	Conifer (C)	Invasive annual grasses (I)	Riparian Degradation (R)	Wildfire (W)	Initiated (I)	Completed (C)	Needed (N)	Pending Funding (P)[1]	Implementing (I)[1]	Likely	Unlikely	Maintenance Time Frame (Years)[2]	Completion Time Frame (0-2, 3-5, 5+ years)[3]
Table Butte Restoration	23,217	X				I		W	I			P		LI		10	3-5
USFO Shrub/Tree Planting EA	80,595		X			I		W		C			I	LI		10	5+
USFO Weed Treatment EA	80,595	X				I				C			I	LI		5	5+

[1] State if treatment, once completed, is likely or unlikely to be effective. Provide rationale using these codes:
1 = site conditions (soils, resilience, species composition, disturbances) make treatment effectiveness likely
2 = site conditions (soils, resilience, species composition, disturbances) make treatment effectiveness unlikely
3 = continued current management (grazing, recreation, or other land uses) make likelihood of effectiveness low
4 = Based upon professional opinion, treatment is likely to be effective
[2]Describe frequency of maintenance necessary to continue effectiveness (years)
[3]Identify potential treatment completion time frame, considering NEPA adequacy, relative priority, and local ranking factors

4.3.10 Twin Butte

Project Planning Area Description

Geographic Overview

The Twin Butte PPA is in the BLM Idaho Falls District Office north of Highway 20 and northwest of Idaho Falls. Landownership includes approximately 20 percent BLM-administered land, 40 percent Department of Energy, Idaho National Laboratory land, and 30 percent state and private land.

There are approximately 756,700 acres within the PPA. Topography is mostly flat to gently sloping with some rugged BLM-administered land in the far western portion. Elevation ranges from approximately 5,000 feet (1,500 meters) to 7,500 feet (2,300 meters).

The Twin Butte PPA is represented by low, moderate, and high cover and cool-moist and cool-dry soil temperature and moisture regimes. Local information advises that in this model, the cool-dry soil moisture temperature regime functions more as a warm-dry regime. See **Table 4-90**.

Table 4-90
Twin Butte GRSG Habitat Matrix Categories

Matrix Category	No Data	1A	1B	1C	2A	2B	2C	3A	3B	3C
Acres	30,998	1,165	4,760	20,614	149,993	270,067	279,091			
% of PPA	4	0	1	3	20	36	37			

Water is limited within the PPA.

The PPA is near Idaho Falls, and there are many roads throughout much of the PPA that could facilitate fire response.

All focal habitats in the PPA are less than 12 miles from electrical transmission towers. Due to highways along the northern and southern portions of the Twin Butte PPA, approximately 50 percent of the focal habitat is less than five miles from primary roads and 40 percent is five to nine miles from any highways. Transmission corridors occur through the western, central, and eastern portions of the Twin Butte PPA; approximately 70 percent of the focal habitat is within five miles and the remaining focal habitat is less than 13 miles from any transmission lines. A single 230-kV transmission line runs north and south through the eastern portion of the Twin Buttes PPA along the Interstate 15 corridor.

GRSG Characteristics

Approximately 40 percent of the area is breeding habitat, and less than five percent is winter habitat.

Vegetation

Some conifer encroachment is occurring on the western side of the PPA.

Invasive annuals are not a significant issue in this PPA.

Fire

Approximately 30 percent of the area has burned since 1980. The Jefferson Fire burned over 100,000 acres in the central part of the PPA in 2010, and an adjacent 44,000 acres burned in 2011. About 70 percent of the area is in the high and very high burn probability categories. See **Table 4-91**.

Table 4-91
Twin Butte Summary of Burn Probability

High and Very High Burn Probability in PPA (acres)	523,100
High and Very High Burn Probability in PPA (percent)	69

Existing Treatments

Some sagebrush planting was completed on BLM-administered lands following the Jefferson Fire. Sagebrush planting efforts are expected to continue into the future, with approximately 50,000 sagebrush seedlings slated to be planted within the Jefferson Fire scar in 2015.

In 2001, 2,870 previously burned acres were aerially seeded with sagebrush. Both of the seeding treatments were considered a failure.

Between 1960 and 1973, approximately 8,590 acres were drill seeded with crested wheatgrass to improve range condition and increase forage. All of the seedings still exist and were considered a success.

In 2007, approximately 900 acres were treated through the Joint Fire Science Program as a way to evaluate the effects of various restoration treatments in sagebrush steppe communities throughout the Great Basin. All treatments were considered a success based upon the parameters of the study.

In 2010, the Jefferson ESR project was initiated, treating 11,640 acres within the Jefferson fire scar. Treatments included aerial sagebrush seedings, drill seeding sagebrush seed, hand planting sagebrush seedlings, and drill seeding native herbaceous seed. While the aerial seeding produced little to no results, many of the other treatments were successful in increasing the native herbaceous and sagebrush cover.

In 2014, the Deadman sagebrush restoration project was initiated. The initial treatment consisted of broadcast seeding and masticating approximately 100 acres of phase II juniper. While it is still too early to tell, initial observations point to a success. An additional 1,100 acres will be treated over the next five to10 years.

Other Management Factors

Aside from roads, including Interstate 15, and a 230-kV transmission line adjacent to Interstate 15, other management factors did not influence the selection of treatments for this PPA.

Fuels Management

The potential treatment area includes approximately 900 acres within the PPA. These treatments are first order priority and can be accomplished within the next five years. While the primary treatment is reduction of hazardous fuels to reduce fire behavior, associated related targets such as reduction of invasive annual grass, conifer, and invasive weeds will also be accomplished.

Potential treatments for fuels management include the following*:

- Twin Buttes fuelbreaks 1st priority: 900 acres

*See associated GIS data layers for position and extent within the PPA and **Table 4-92**.

Table 4-92
Twin Butte Potential Fuels Management Treatments

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Miles	0	0	0	0	0
Acres	900				900

Habitat Recovery/Restoration

Potential treatments for habitat recovery/restoration include the following*:

- Twin Buttes conifer expansion 1st priority: 49,800 acres
- Twin Buttes habitat restoration (other) 1st priority: 32,200 acres
- Increase perennial grass and sagebrush cover for nesting habitat: two to 500 acres

*See associated GIS data layers for position and extent within the PPA and **Table 4-93**.

Table 4-93
Twin Butte Potential Habitat Restoration Treatments

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	82,100				82,100
% of PPA	11				11

All treatments would be coordinated with other land management agencies and private landowners, as appropriate, and monitored post-treatment to ensure effectiveness.

Fire Operations

Response to wildfires in and around critical GRSG habitat is accomplished primarily with engines, dozers, and water tenders, with support from a variety of aviation assets. BLM stations provide for rapid initial attack response from multiple locations to the majority of focal areas, and response plans have been updated with increased response to such areas.

Idaho Falls District Engine Stations are located in Malad, Soda Springs, Pocatello, American Falls, Fort Hall, Blackfoot, Atomic City, Idaho Falls, Dubois, and Salmon. The Salmon/Challis National Forest provides initial attack to several focal areas, with engines and helicopters from Mackey, Challis, Leadore, and Salmon. The Caribou/Targhee National Forest provides additional resources for several of the focal areas, with engines from Malad, Pocatello, and Ashton being the closest to the focal areas.

The response time to the majority of the focal areas is thirty minutes to one hour to have multiple resources on scene. Additional resources could be staged in Arco to provide more coverage for the Big Lost and Big Desert focal areas. Resources could also be staged in Aberdeen, Arco, Clyde, Rexburg, and Holbrook to provide for quicker response to the more remote focal areas, including Curlew, Big Desert, Big Lost, Pasemeroi, Medicine Lodge, and Sand Creek. The Idaho Falls BLM has mutual aid agreements with over 50 rural or municipal fire departments that can be used to further supplement initial attack, as many of the departments are the closest resource to many focal areas and would likely be the first to respond. GRSG suppression guidelines will be discussed with cooperators during AOP meetings and training will be provided to increase their capacity where possible. Contract resources, including dozers, engines, and water tenders, can be hired and staged during high fire danger periods such as high wind events and predicted dry lightning at any of the above locations. To supplement the air tanker base in Pocatello, portable SEAT bases can be operated in Malad, Arco, and Challis to reduce flight times to many of the focal areas. Portable SEAT bases will be staged in Arco and Malad for the fire season, with all agreements in place to activate them in a timely manner during the fire season. Water sources have been mapped in remote locations where water supply is limited, including contact information on existing wells. In addition, more wells can be developed and existing wells can be improved with more funding and completion of NEPA.

Within the PPA, cool-dry soil moisture temperature regimes function as warm-dry regimes.

Priority areas for fire operations include the following*:

- Twin Butte fire 1st priority: 622,000 acres

*See associated GIS data layers for position and extent within the PPA and **Table 4-94**.

Table 4-94
Twin Butte Potential Fire Operations Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	622,000	56,700	47,000	31,000	756,700
% of PPA	82	7	6	4	100

Post-Fire Rehabilitation

The Step 2 FIAT process identified areas within the focal habitats with warm-dry soil conditions as the highest priority for post-fire rehabilitation. Within the PPA, cool-dry soil moisture temperature regimes function as warm-dry regimes. The Idaho Falls District Office will continue working with other stakeholders to coordinate and prioritize post-fire rehabilitation activities.

- Twin Butte ESR 1st priority: 399,400 acres

*See associated GIS data layers for position and extent within the PPA and **Table 4-95**.

Table 4-95
Twin Butte Potential Post-Fire Rehabilitation Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	399,400	1,000	19,700		420,100
% of PPA	53	0	3		56

Proposed Management

Identified treatments within the Twin Butte PPA include a mixture of potential fuel treatments and habitat restoration/recovery strategies intended to enhance the perennial grass understory, while reducing conifer overstory encroachment in some areas. See **Table 4-96** for projects that are identified presently within the NEPA planning process. See **Figures 4-103** through **4-110** for a graphic depiction of the proposed treatments and strategies in the PPA.

Table 4-96
PPA Treatment Summary Table (Twin Buttes PPA)

Treatment Description		Priority			Threats Addressed				NEPA			Treatments				
												Time Frame		Certainty of Effectiveness[1]		
Name/ Type	Acres	1st	2nd	3rd	Conifer (C)	Invasive annual grasses (I)	Riparian Degradation (R)	Wildfire (W)	Initiated (I)	Completed (C)	Needed (N)	Pending Funding (P)[1]	Implementing (I)[1]	Likely	Unlikely	Maintenance Time Frame (Years)[2]	Completion Time Frame (0-2, 3-5, 5+ years)[3]
Deadman	1,211	X			C	I		W		C			I	L1		20	3-5
Twin Buttes Restoration	16,215		X			I		W	I			P		L4		10	3-5
USFO Shrub/Tree Planting EA	756,691	X				I		W		C			I	L1		10	5+
USFO Weed Treatment EA	756,691	X				I				C			I	L1		5	5+

[1] State if treatment, once completed, is likely or unlikely to be effective. Provide rationale using these codes:
1 = site conditions (soils, resilience, species composition, disturbances) make treatment effectiveness likely
2 = site conditions (soils, resilience, species composition, disturbances) make treatment effectiveness unlikely
3 = continued current management (grazing, recreation, or other land uses) make likelihood of effectiveness low
4 = Based upon professional opinion, treatment is likely to be effective

[2]Describe frequency of maintenance necessary to continue effectiveness (years)

[3]Identify potential treatment completion time frame, considering NEPA adequacy, relative priority, and local ranking factors

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SECTION 5
LOOKING AHEAD: IMPLEMENTATION, NEPA, AND MONITORING

5.1 IMPLEMENTATION STRATEGY

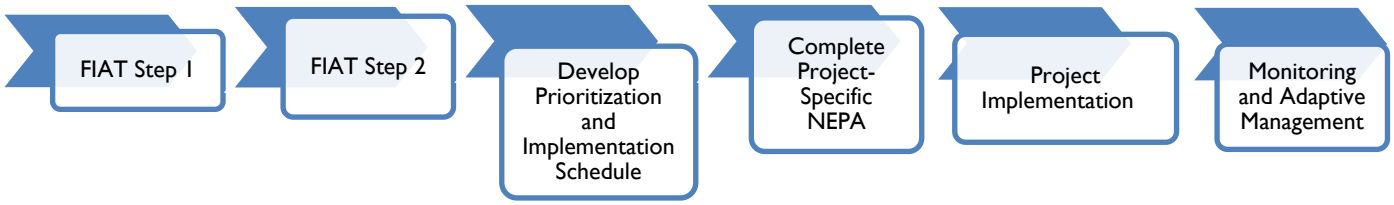
Management strategies identified in this assessment are broadly consistent with and fall within broader land use plan direction. FIAT assessments are referenced in appendices of each subregional environmental impact statement. As such, the **potential implementation of all FIAT management strategies is fully subject to all direction and constraints in the overarching land use plans and treatment-level NEPA.** Topics such as noxious weed control and use of native seed for habitat restoration projects are included in this section to assist land managers in the selection of appropriate treatments as FIAT Step 2 assessments are used to develop site-specific treatments and conduct the appropriate NEPA analyses (i.e., Step 3).

The planning, implementation, and monitoring cycle for FIAT strategies are a multiyear process. Within or near the focal habitats within the FIAT assessment areas, the identified management strategies occur across the spectrum of the planning process. Some FIAT management strategies have planning completed, are NEPA compliant, and are ready for implementation. Others are beyond the NEPA scoping phase, but planning is not yet complete. Finally, many potential treatments identified in this assessment were conceptualized in FIAT workshops, and in these cases planning has not been initiated.

Prioritizing the sequence of project/treatment implementation is an important process, and may consider NEPA compliance, budgeting, unit capacity, and other factors such as immediacy of the threat to GRSG. Furthermore, this prioritization is a necessary step to produce an out-year program of work. This program of work is scheduled to follow the completion of FIAT Step 2 assessments. The program of work will portray the year(s) for implementation, scale of treatment, and type of treatment by program/management strategy

area. **Figure 5-1**, FIAT Process, illustrates the sequence of FIAT steps, project implementation, and monitoring.

Figure 5-1: FIAT Process



FIAT assessments were not designed to address project area practices such as specific changes in management to promote habitat recovery, what types of seed mixtures to use, or to address invasive species other than the invasive annual grasses. These activities are **fully subject to all direction and constraints in the overarching land use plans and treatment-level NEPA**; however, the following suggestions are provided to assist in the transition from FIAT Step 2 to the project planning and NEPA stage.

5.1.1 Habitat Restoration and Recovery

Habitat restoration and recovery are two approaches to rebuilding or maintaining GRSG habitats. Habitat restoration (active restoration) treatments are on-the-ground activities (e.g., seeding, control of invasive annual grasses and conifer expansion), whereas habitat recovery (passive approach) involves changes in management practices. Opportunities for passive restoration includes, but is not limited to, changing livestock grazing management to improve GRSG habitat, applying appropriate wild horse and burro management, spot-treating weed infestations in treatment areas, and limiting or mitigating soil-disturbing activities (i.e., off-road vehicle use). These types of management changes were not specifically identified nor prioritized in the FIAT Step 2 stage.

Habitat restoration is expensive and requires time for plant establishment and recovery. Livestock grazing exclusion is a common practice to promote vegetation recovery or establishment after a surface-disturbing treatment or disturbance. Appropriate exclusion periods after habitat restoration activities should be considered and incorporated into the project planning/NEPA process. Similar consideration should be given to wild horse and burro, recreation, and other uses as well.

It is also important to institute appropriate long-term management strategies that will maintain habitat restoration projects into the future. For example, livestock grazing management should be evaluated and changes implemented to ensure that species diversity in a successful restoration seeding is maintained over time.

Habitat restoration, including post-fire rehabilitation treatments, may need to be repeated if projects initially fail to meet restoration objectives. Therefore, retreatment options should be considered in all proposed actions and implemented if needed. This is especially true in warm and dry soil temperature/moisture regimes where climatic conditions are often problematic for new plant establishment or recovery.

5.1.2 Use of Native Species for Habitat Restoration and Post-Fire Rehabilitation

The use of adapted, native plant seed in restoration and post-fire rehabilitation projects is addressed in land use plans. To the extent practicable and in concert with the appropriate land use plans, it is recommended that agencies use locally adapted seeds and native plant materials appropriate to the location, conditions, and management objectives for vegetation management and restoration activities, including strategic sourcing for acquiring, storing, and using genetically appropriate seeds and other plant materials. In certain circumstances, nonnative species may be needed to achieve site stabilization, fire breaks, weed control, as transitional species for sequential restoration, and to meet restoration objectives (2015 Draft of the National Seed Strategy and Implementation Plan: 2015-2020).

5.1.3 Invasive Species other than Invasive Annual Grasses

FIAT assessments address two categories of invasive species:

1) Invasive annual grasses
2) Expansion of conifer species into sagebrush habitats

This does not negate the importance of controlling other noxious plants in sagebrush habitat; however, the FIAT assessment was not designed to address other invasive plants, including noxious plants. Therefore, locating infestations, decreasing propagule pressure (especially along roadside areas), treating satellite infestations, and preventing future infestations in focal habitats has not been addressed nor prioritized in these assessments.

It is recognized that noxious weed risk is especially high in areas undergoing FIAT treatments that may disturb the soil or remove competitive vegetation. Accordingly, noxious weed management is an important consideration for all land treatments originating from the FIAT assessment. Weed management within these treatment areas can be funded to include noxious weed inventories during the planning process, subsequent weed treatments (preferably before project implementation), and subsequent monitoring and follow up weed treatments following project implementation.

5.2 PRIORITIZATION OF TREATMENTS

Prioritizing the sequence of project/treatment implementation is an important process; NEPA compliance, budgeting, unit capacity, and other factors may be

considered. Furthermore, this prioritization is a necessary step in order to produce an out-year program of work. The FIAT Technical Team concluded that this program of work would be developed immediately following the completion of FIAT Step 2 assessments.

5.3 SUMMATION OF TREATMENTS

The time necessary for implementation, the scale of treatment, and the type of treatment by management strategy will be considered. The program of work will portray the years for implementation, scale of treatment, and type of treatment by program area (see **Table 5-1**).

Table 5-1
Assessment Area Treatment Summary

Treatment Type	Acres				Miles			
	1st Priority	2nd Priority	3rd Priority	Total	1st Priority	2nd Priority	3rd Priority	Total
Habitat Restoration	1,016,300	302,700	173,000	**1,492,000**				
Fuels Treatments	78,400	8,600	300	**87,300**	200	0	200	400
Fire Operations	2,463,400	786,900	1,991,500	**5,241,800**				
Post-Fire Treatments (ESR)	990,200	1,674,800	1,048,900	**3,713,900**				

For this assessment, two strategies identified in focal habitat are considered to be emphasis areas and are intended to be implemented in or next to focal habitats. The two strategies—habitat restoration and fuels management—are to be implemented with prior planning. These two strategies, along with fire operations and post-fire rehabilitation, are in response to wildland fire, an environmental factor on the landscape.

All four strategies have an effect on the vegetative community and may be viewed as a continuum on the landscape. For this assessment, the primary goal or effect on the natural community is how each strategy is primarily identified. For instance, removing hazardous fuels along a roadside may have the primary purpose of modifying fire behavior, but such treatments may also include herbicide application to treat invasive annual grasses. Similarly, removing conifers may be the primary objective of a treatment, but it may also include seeding perennial grasses and planting sagebrush.

Potential projects and treatments contained in this assessment are subject to change based on field verification and other information obtained during project development and environmental analysis process.

5.3.1 Fuels Management

Fuels management is a proactive strategy designed to reduce wildfire behavior by changing the size, structure, arrangement, and amount of live and dead vegetation.

The focus of the FIAT process was very specific to the identified habitats and the associated buffers of these areas (see **Table 5-2**). In the vegetation types being addressed, fire growth can cross large tracts of ground in very short time frames. Due to the focus on the habitats and buffers, many types of treatments, existing or planned, were not addressed in this process. The areas outside of the planning areas will need to be addressed in the future because they are often the only option available to minimize fires entering the planning areas and the identified leks.

Table 5-2
Fuels Management Potential Treatment Areas Within PPAs in the Snake/Salmon/Beaverhead Landscape

PPA	Total Acres of Fuels Management Treatments	Null	Percentage of PPA	Total Miles of Potential Fuelbreaks
Antelope Flat/Big Lost				
Bennett Hills	14,500			80
Big Desert	8,600	0	1	
Big Lost				
Birch Creek				
Hat Creek	300	0	0	
Lemhi-Birch				
Little Lost				
Little Wood River				85
Magic	70,900	8,300	4	228
Medicine Lodge				
Pahsimeroi				
Sand Creek				
Table Butte	400		0	
Twin Butte	900		0	
Total for all SSB PPAs	95,600		6	393

Future efforts should also include fuels and restoration types of treatments outside of the areas identified. This is because these areas will be critical for increasing habitat and connecting the identified areas.

Additionally, fuelbreak treatments that use nonnative species, such as forage kochia, should be carefully evaluated. BLM field office staff should carefully consider where and to what extent these nonnative vegetative treatments are used. An example to avoid is planning multiple concentric polygons of nonnative vegetative fuelbreaks within intact resistant and resilient sagebrush communities. This would only exacerbate habitat fragmentation of these ecologically functional communities.

There are also applicable and successful ways that natives such as Sanberg bluegrass (*Poa secunda*) stands are used as fuelbreaks in Nevada and southwest Idaho. At the Next Steppe Conference in Boise (November 5-7, 2014), the BLM Winnemucca District staff identified the following advantages of using natives for seeding fuelbreaks:

- The low stature of *Poa secunda* reduces the fuel height and fuel loading, as compared to crested wheatgrass.
- *Poa secunda* and squirrel tail (*Elymus elymoides*) compete well with cheatgrass, reducing fine fuel loading and fuel continuity.
- *Poa secunda* and *Elymus elymoides* are tolerant to drought and grazing.

5.3.2 Habitat Restoration and Recovery

Habitat restoration is a proactive strategy that uses the following types of treatments (see **Table 5-3**):

- Reducing usually phase 1 and phase 2 conifers through mechanical treatment
- Managing invasive annual grasses, generally through the use of herbicides
- Seeding or planting sagebrush
- Other types of treatments, with the primary goal of restoring or enhancing native plant species and vegetative structure within the native sagebrush steppe ecosystem; this may include removing undesirable plant species

All natural systems vary in space and time; in many cases, restoring a range of target vegetative conditions may be desirable. Where historic processes are not likely to be reestablished, full restoration may not be possible; however, site resilience can be leveraged to increase ecological function over time. This assumes that proper post-disturbance management does not continue to bring a site back to a ruderal successional state. By further defining the restoration continuum, treatments can be further defined and prioritized at finer local scales.

The following are considerations for habitat restoration and recovery project planning, project implementation, and NEPA.

Table 5-3
Habitat Restoration/Recovery Potential Treatment Areas in the Snake/Salmon/Beaverhead Landscape

PPA	Total Acres of Conifer Encroachment Potential Treatments	Percentage of PPA	Null	Total Acres of Invasive Annual Grasses Potential Treatments	Percentage of PPA	Null	Total Acres of Other Habitat Restoration/ Recovery Potential Treatments	Percentage of PPA	Null
Antelope Flat/Big Lost	62,200	11	36,600				5,500	1	300
Bennett Hills				82,200	13		20,400	3	
Big Desert	5,100	1					250,900	44	3,000
Big Lost									
Birch Creek	22,900	21	1,200						
Hat Creek	60,600	39	8,000						
Lemhi-Birch	53,600	13	41,600				11,700	3	
Little Lost							5,000	3	600
Little Wood River									
Magic				141,200	8		354,300	20	
Medicine Lodge	8,100	3					5,600	2	
Pahsimeroi	99,500	26	25,000				63,500	17	1,700
Sand Creek	146,300	32							
Table Butte							21,900	27	
Twin Butte	49,800	7					32,200	4	
Total for all SSB PPAs	508,100	7	112,400	223,400	3	0	771,000	11	5,600

Project Planning

- Identify site challenges, such as site preparation requirements, anticipated repeated treatments that could be required, topography, soils, climate, and other biotic and abiotic site factors
- Develop goals, objectives, and monitoring triggers
- Identify equipment that takes into consideration seed size, species interactions, and the following:
  - separate seed boxes for broadcast and drill seed mixes
  - the capacity for different drill attachments that increase broadcast seed to soil contact
  - the ability to meter and drill the appropriate depths for smaller seeds, such as native forbs
  - is of a design that minimizes impacts on biological soil crust

Project Implementation

- Develop seed mixes by considering a range of types, with higher seed ratios on early to mid-successional native species that provide ecosystem services more quickly than later successional species. This includes such species as rabbit brush (*Ericameria*) that have high germination and establishment rates and provide rapid site structure and pollinator benefits.
- Select genetically appropriate seed sources. This is one of the most critical aspects for long-term sustainability of restoration projects. If empirical studies do not contain a specific species, local seeds or provisional seed zones can be used.
- Design restoration islands that are irregular in shape and extent and where more expensive forb seed can be strategically applied.
- Combine seedings and live plantings of target species to achieve more compositionally and structurally diverse restoration projects in shorter time frames.
- Integrate existing site structure and microsites to leverage micro and macro climate for seedings and live plantings, and, if these are unavailable, use such structures as straw wattles and snow fences to create wind barriers and snow collection sites to improve seed/plant germination and persistence.
- Use existing topographic features to prioritize where seeding or live plantings would occur, including north-facing slopes and swales.
- Consider plant increases for specific species necessary for meeting habitat objectives. This would more often include forb species that are less available and would require a minimum two- to three-year planning window from collection to contracting to grow out.

NEPA-related Considerations

- Develop analysis at the watershed level
- Use a programmatic approach with a multiyear capacity
- Use robust adaptive monitoring triggers
- Include well documented rationale that is spatially explicit
- Address direct and indirect impacts comprehensively, including type and intensity of management and maintenance, timing and duration, and cumulative impacts
- Address habitat impacts and fragmentation, fuel treatment density, and potential redundancy and user conflicts

Biological Control

Classical biological weed control involves the introduction and management of selected natural enemies to reduce and suppress problematic noxious and invasive weeds. Most of the Great Basin's weeds originated on other continents. These newly introduced plants, free from the natural enemies found in their native ranges, gained a competitive advantage over native plants. Once these populations become unmanageable, other methods of weed control are not always economical or physically possible.

The need for a method of weed reduction that is inexpensive, self-sustaining, and environmentally safe provides opportunities for biological control. The natural enemies for invasive weeds (biological control agents) in the Great Basin have been rigorously tested to ensure that they are host specific. Testing is an expensive and time-consuming task that must be done before the agents are allowed to be introduced into the United States.

Biological control has many benefits and some disadvantages. Its benefits are long-term, self-perpetuating control; low cost per acre; reducing herbicide residues in the environment; host specificity on target weeds; host-finding capabilities; synchronizing agents to hosts' life cycles; and the unlikelihood that hosts will develop resistance to agents. The disadvantages of biological control are the limited availability of agents from their native lands; the dependence of control on plant density; the slow rate at which control sometimes occurs and uncertainty of the level of control; biotype matching; and host specificity when host populations are low.

Since 1987, there have been over 1,000 releases in designated GRSG habitat; over eight million biological control agents have been released over that time. In the Great Basin, biological control agents have shown well-documented success in the control of Canada thistle (51 percent reduction), Dalmatian toadflax (77 percent reduction), diffuse knapweed (47 percent reduction), leafy spurge (38 percent reduction), and spotted knapweed (31 percent reduction). These reductions are summarized across the range of the infestations of the target

weeds from 2007 to 2013. Additional targets of biological control are cheatgrass, field bindweed, medusahead rye, rush skeletonweed, Russian knapweed, and Russian thistle. The biological control agents for these species are not currently available for release or have not been present long enough to determine their ability to control their host weed, as it can take several years for their densities to increase and begin impacting weed populations.

In the case of cheatgrass and medusahead rye, a new bacterial biopesticide, *Pseudomonas fluorescens* D7, was recently registered by the US Environmental Protection Agency. *P. fluorescens* does not stand alone, but works well when added to an integrated restoration program. The bacteria can be applied on the seed coat of desirable seeds during the seeding process or applied in the fall. This approach, combined with an herbicide application in the early fall to kill any of the germinating annual grasses, has shown to be very effective for restoring cheatgrass- and medusahead rye-dominated landscapes.

Russian thistle rust, *Colletotrichum salsolae*, has been recommended for release by the Technical Advisory Group (TAG), which is the independent review committee for all new biological control petitions. This rust has proven to be aggressive and damaging on Russian thistle, with 37 to 100 percent of the test plants in greenhouse and field tests attacked. When combined with *Aceria salsolae*, a recently approved eriophyid mite that causes necrosis and stunts plant growth, *Colletotrichum salsolae* could damage Russian thistle and rapidly reduce infestations. Both of these agents are awaiting final NEPA clearance from the Animal Plant Health Inspection Service, which is the governing body for biological control, and the USFWS, which has proven to be problematic for a number of potential biological control agents that have been petitioned for release.

Biological control can be integrated with other management practices to reduce weed populations, as discussed above. For example, once weeds are weakened by biological control, competitive plantings may be used to out-compete the weeds. In addition, satellite weed populations can be controlled by chemical or physical means to reduce weed spread while biological control agents attack the primary infestation. Biological control is not a panacea; it will not eradicate noxious and invasive weeds, but it does offer a self-sustaining way of controlling invasives that is cost effective and applicable on a large scale.

5.3.3 Fire Operations

As opposed to proactive site-specific planned treatments, fire operations and post-fire rehabilitation are reactive responses to random wildfires. Fire operations are preparedness, prevention, and suppression; accordingly, in prioritizing these "what if" scenarios, the following rule set was used within the focal habitat-derived PPAs, which corroborates priorities between fire operations and ESR, based on the soil moisture temperature regimes resistance and resilience concepts outlined in Chambers et al. (2014; see **Table 5-4**).

Table 5-4
Fire Operations Potential Treatment Areas Within PPAs in the Snake/Salmon/Beaverhead Landscape

PPA	Total Acres of High (1st priority) Fire Suppression Areas	Percent of 1st Priority in each PPA	Total Acres of Moderate (2nd priority) Fire Suppression Areas	Percent of 2nd Priority in each PPA	Total Acres of 3rd Priority Fire Suppression Areas	Total Percent of 3rd Priority Fire Suppression Areas	Nulls in Fire Acres
Antelope Flat/Big Lost			126,100	23	182,000	33	35,300
Bennett Hills	227,400	36			186,900	29	2,200
Big Desert	560,500	99					4,600
Big Lost			47,700	26	120,500	65	6,700
Birch Creek			41,500	38			6,200
Hat Creek			85,800	55	30,600	20	0
Lemhi-Birch			96,600	23	163,000	39	0
Little Lost			72,700	51	56,300	39	0
Little Wood River					227,100	77	0
Magic	974,600	54			626,100	35	0
Medicine Lodge			146,600	58	78,000	31	0
Pahsimeroi			144,000	38	111,600	29	0
Sand Creek			84,500	18	317,400	69	0
Table Butte	79,000	98					1,600
Twin Butte	622,000	82	56,700	7	47,000	6	31,000
Total for all SSB PPAs	2,463,500	36	902,200	13	2,146,500	32	358,300

Fire suppression and ESR treatments are understandably a high priority throughout most of the northern Great Basin. Accordingly, districts were often initially inclined to assign a 1st priority throughout each project area, until they understood that the purpose of the exercise was to determine the highest priorities within these high-priority project areas. For that reason, numerical priorities were assigned as opposed to a high, medium, and low. Most project areas contained a 1st and 2nd priority for fire operations and ESR. Some areas contained three priorities, and a few smaller project areas, consisting of important low resiliency vegetation, were categorized entirely as a 1st priority.

Low resiliency habitat with moderate to high shrub cover was assigned 1st priority for both fire operations and ESR treatments because of their high risk to annual grass conversion following wildfire. Soil temperature regimes associated with the higher resiliency areas were assigned a lower priority because they are more adapted to periodic wildfire and typically recover naturally.

Within the lower resiliency areas, native plant communities are prioritized over established seedings. In the absence of ESR treatments, recently burned native communities may irrevocably be converted to invasive annual-dominated

communities; however, in existing seedings, the herbaceous component typically recovers naturally even though the sagebrush would be killed. Additionally, when seedings do burn, the more discontinuous fuels associated with established perennial bunch grasses often result in a mosaic burn pattern. This maintains some of the sagebrush, resulting in an existing seed source for natural reestablishment.

Regardless of the above, practical limitations to the rule set, especially regarding fire operations, was acknowledged and incorporated in the prioritization process.

Wildfire typically moves rapidly throughout Snake/Salmon/Beaverhead environments. Because of this, it is unrealistic and misleading to differentiate fire operations priorities between high resiliency and low resiliency when both types are distributed equally on the landscape or when minor amounts of either occurs in the other. Where such conditions exist, priorities are adjusted to more realistically reflect on-the-ground conditions.

Other exceptions were applied occasionally, based on district- and project-specific issues. These exceptions are documented for the respective project areas.

5.3.4 Post-fire Rehabilitation

Post-fire rehabilitation includes the BLM's ESR program and the Forest Service's Burned Area Emergency Response Program. Program policies limit available funding from one to three years (see **Table 5-5**).

Table 5-5
Post-Fire Rehabilitation Potential Treatment Areas Within PPAs in the Snake/Salmon/Beaverhead Landscape

PPA	Total Acres of High (1st priority) Post-Fire Rehab Areas	Percent of 1st Priority in each PPA	Total Acres of Moderate (2nd priority) Post-Fire Rehab Areas	Percent of 2nd Priority in each PPA	Total acres of 3rd Priority Post-Fire Rehab Areas	Total Percent of 3rd Priority Post-Fire Rehab Areas	Null
Antelope Flat/Big Lost			113,800	20	182,000	33	35,300
Bennett Hills	30,300	5	72,500	11	172,000	27	3,400
Big Desert	94,500	17	225,400	40			6,600
Big Lost			47,700	26	120,500	65	6,200
Birch Creek			41,400	37			
Hat Creek			85,800	55	30,600	20	
Lemhi-Birch			95,500	23	163,100	39	
Little Lost			71,300	50	54,600	38	
Little Wood River					225,200	76	
Magic	408,600	23	38,600	2	360,600	20	
Medicine Lodge			146,200	58	71,800	28	
Pahsimeroi			140,400	37	111,600	29	
Sand Creek			57,500	12	339,000	73	

Table 5-5
Post-Fire Rehabilitation Potential Treatment Areas Within PPAs in the Snake/Salmon/Beaverhead Landscape

PPA	Total Acres of High (1st priority) Post-Fire Rehab Areas	Percent of 1st Priority in each PPA	Total Acres of Moderate (2nd priority) Post-Fire Rehab Areas	Percent of 2nd Priority in each PPA	Total acres of 3rd Priority Post-Fire Rehab Areas	Total Percent of 3rd Priority Post-Fire Rehab Areas	Null
Table Butte	57,500	71					
Twin Butte	399,400	53	1,000	0	19,700	3	
Total for all SSB PPAs	990,300	15	1,137,100	17	1,850,700	27	51,500

5.4 MONITORING AND ADAPTIVE MANAGEMENT

Once implemented, projects and treatments identified in this assessment will follow the same monitoring protocols as non-FIAT management actions, per overarching guidance in land use plans. Specifically, monitoring that evaluates the implementation and effectiveness of FIAT management strategies will follow the Greater GRSG Monitoring Framework (BLM/Forest Service 2014).

In this framework, monitoring and evaluation of the individual FIAT actions, as with all projects designed to enhance and/or restore GRSG habitats, will use the approved fine- and site-scale monitoring methods. For the BLM, these methods are found in the BLM Core Terrestrial Indicators and Methods (from the AIM Monitoring: A component of the Assessment, Inventory, and Monitoring [AIM] Strategy), Interpreting Indicators of Rangeland Health (BLM Technical Reference 1734-6), and the GRSG Habitat Assessment Framework (HAF – BLM Technical Reference 6710-1 *in press*). Fine- and site-scale monitoring methods for the Forest Service include those listed for the BLM and Forest Service Rangeland Ecosystem Analysis and Monitoring Handbook, Chapter 40–Rangeland Trend Monitoring and Monitoring Manual for Grassland, Shrubland, and Savanna Ecosystems Volume I and II.

During the annual broad- and mid-scale monitoring of GRSG habitats, the FIAT actions will be assessed as they relate to GRSG habitat measures of sagebrush availability, anthropogenic disturbance levels, and sagebrush conditions. Monitoring results from the implemented FIAT actions can provide information to adapt future actions if necessary to enhance and restore GRSG habitats.

Wildfires will be evaluated at the end of the fire season to determine if they have occurred in FIAT focal habitats and, in these habitats, if the wildfires have affected the prioritization or potential implementation of previously identified management strategies. For example, fuelbreak locations may need to be adjusted if a wildfire occurs within an area previously identified as a high priority for sagebrush maintenance. Surrounding areas with intact sagebrush stands may now be a higher priority for fuelbreaks than the burned area.

During the annual broad-scale and mid-scale monitoring of GRSG habitats, the FIAT actions will be assessed as they relate to GRSG habitat measures of sagebrush availability, human disturbance levels, and sagebrush conditions. Monitoring results from the implemented FIAT actions can provide information to adapt future actions, if necessary, to enhance and restore GRSG habitats.

There must be adaptive management processes to identify new focal habitats and new PPAs to adjust where projects are implemented on the future landscape. This is because the landscape is dynamic and a function of changing environmental, physical, and biological factors. A focal habitat identified in 2014 may have 50 percent of its GRSG habitat altered by wildfire in 2015; thus, GRSG populations may relocate to another area outside of a PPA.

A second reason for using adaptive management processes is that there are many portions in the landscape assessment area that have not been inventoried and monitored for GRSG populations. As we learn more about GRSG populations from improved monitoring, there needs to be a process to implement activity plans in response to new information regarding 75 percent BBD leks.

Third, there are negative and positive trends within wildlife populations. As information becomes available regarding GRSG lek population growth or reduction, there need to be adaptive management mechanisms in place to provide activity plans in other focal habitats identified outside of this 2015 report. As information comes to light, indicating an area outside of a previously identified focal habitat or PPA is important; the BLM, state, and federal partners working to conserve the species need to consider its importance as they make decisions for GRSG conservation.

SECTION 6
LIST OF PREPARERS

BUREAU OF LAND MANAGEMENT	
Name	**Title/Role**
Doug Havlina	FIAT Project Coordinator
Joe Adamski	FIAT Project Lead, Idaho State Office
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Don Major	Fire Ecologist, Idaho State Office
Dominika Lepak	Rangeland Management Specialist
Glen Burkhardt	Fire Management Specialist (Fuels)
William Brandon Brown	Supervisory Fire Management Specialist
Justin Boeck	Fire Management Specialist (Planning)
Anne Halford	Vegetation/Restoration Specialist
Jeremy Bisson	Wildlife Biologist
Steve Jirik	Weeds and ESR Specialist

CONTRACTOR	
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Name	**Role**
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David Batts	Principal
Amy Cordle	Technical Editing
Sean Cottle	Environmental Scientist
Peter Gower	FIAT Deputy Project Manager
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Holly Prohaska	FIAT Project Manager
Cindy Schad	Formatting
Morgan Trieger	Meeting Support
Randy Varney	Technical Editing

IDFG, Forest Service, and NRCS		
Name	**Title/Role**	**Agency**
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Tim Metzger	Liaison	Forest Service
Trisha Cracroft	Liaison	NRCS

USFWS	
Name	**Title/Role**
Jason Pyron	Liaison
Katie Powell	Liaison

This GRSG Wildfire, Invasive Annual Grasses, and Conifer Expansion Assessment of the Snake/Salmon/Beaverhead landscape was made possible by the strong engagements of the following agencies: The USFWS, NRCS, Forest Service, IDFG, Nevada Department of Wildlife, Oregon Department of Wildlife, Oregon Department of Fish and Game, and BLM field and district offices across Idaho, Utah, Nevada, and Oregon. In addition, we wish to thank the many partners and contributors, too numerous to list, but whose engagement and significant contributions were vital to the completion of this project. All participants in the meetings and workshops to develop this assessment are listed in Appendix D.

SECTION 7
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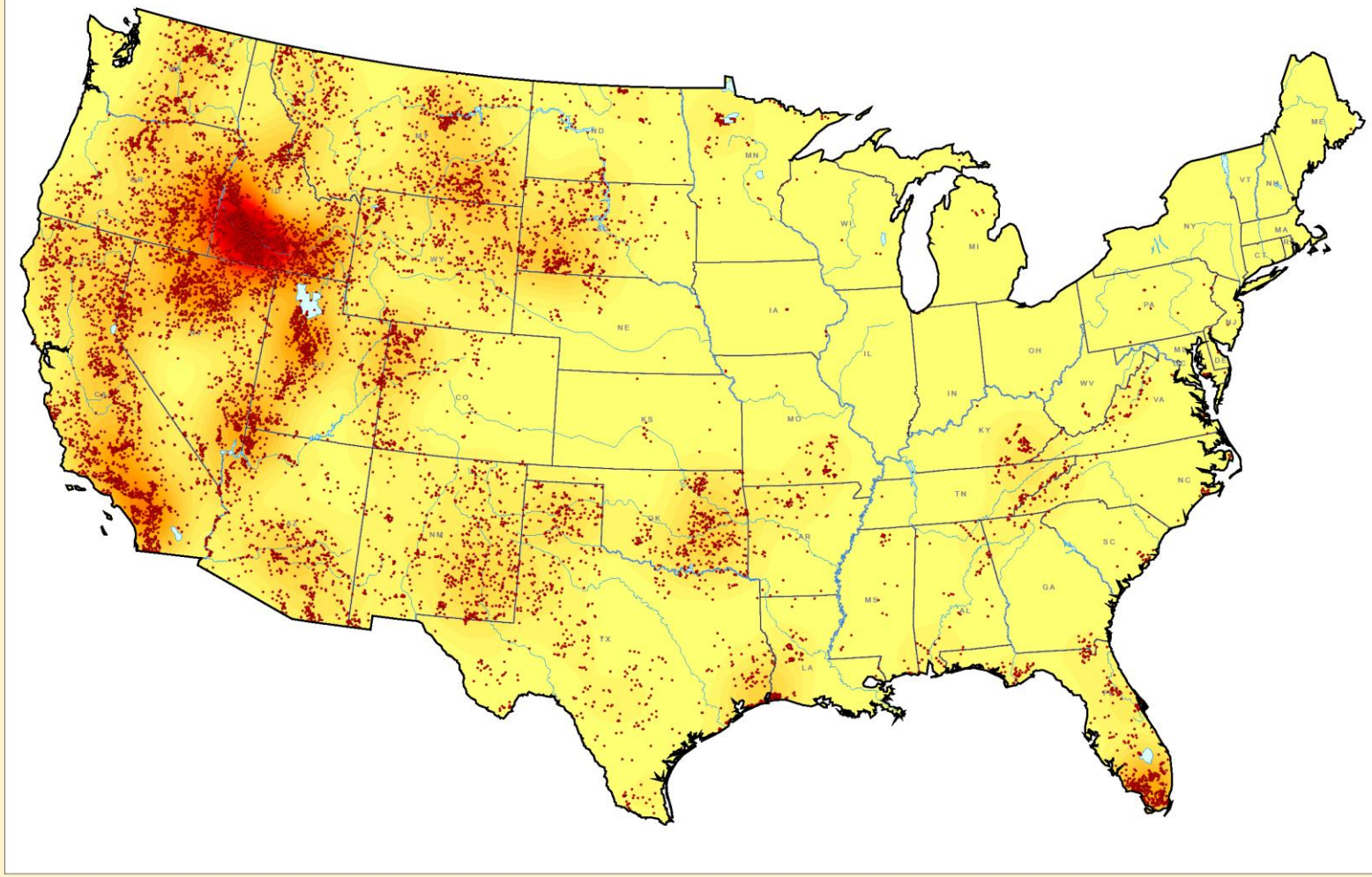
Appendix A
Maps

When viewed electronically, hyperlinks embedded throughout this document allow readers to navigate directly to the maps below.



Legend

- Fire Locations (1970 -2007)
- Rivers
- Lakes
- State Boundaries

Historical Fire Locations

(Larger than 300 acres 1970 - 2007)

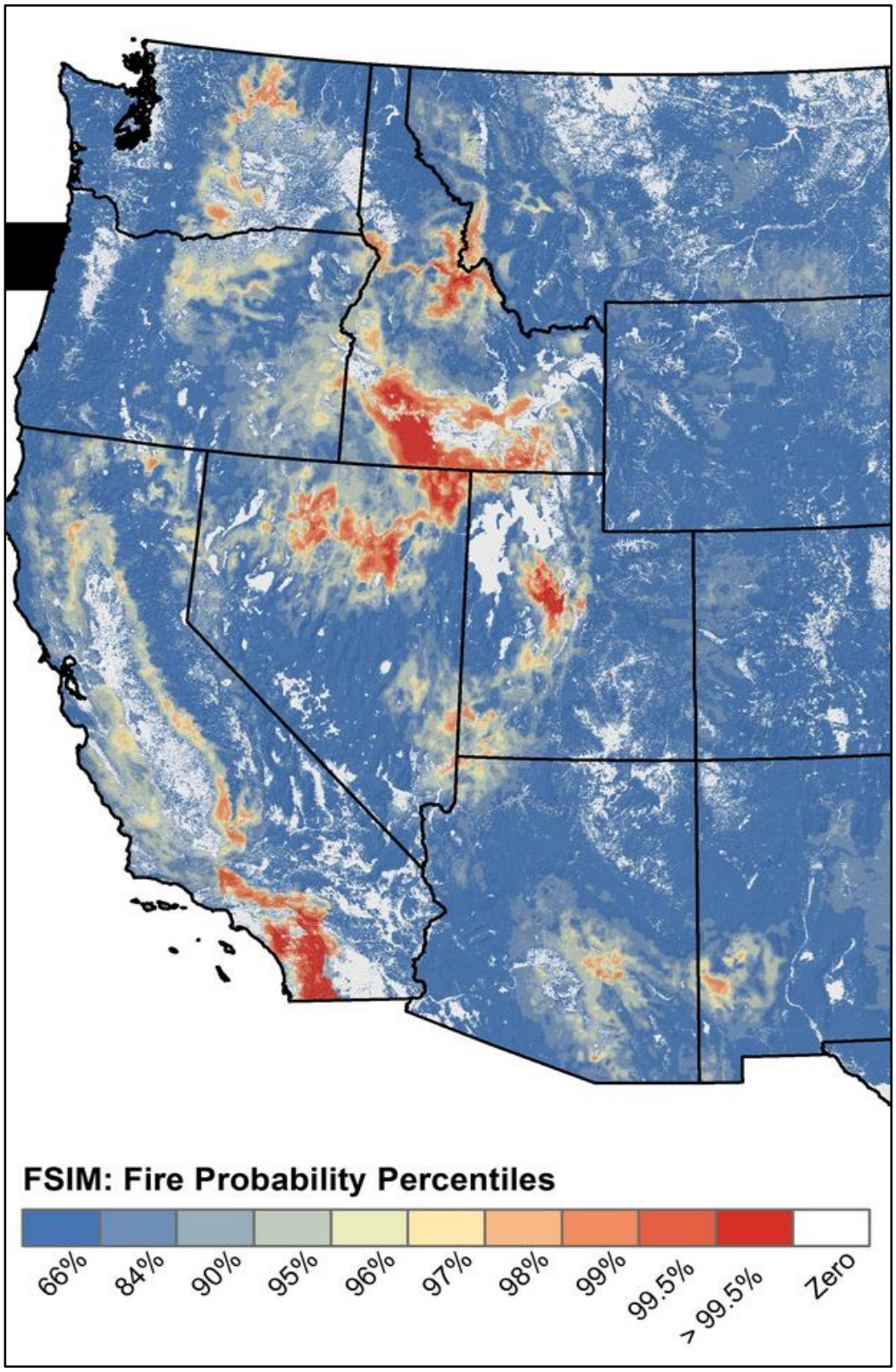
0 65 130 260 390 520

Miles

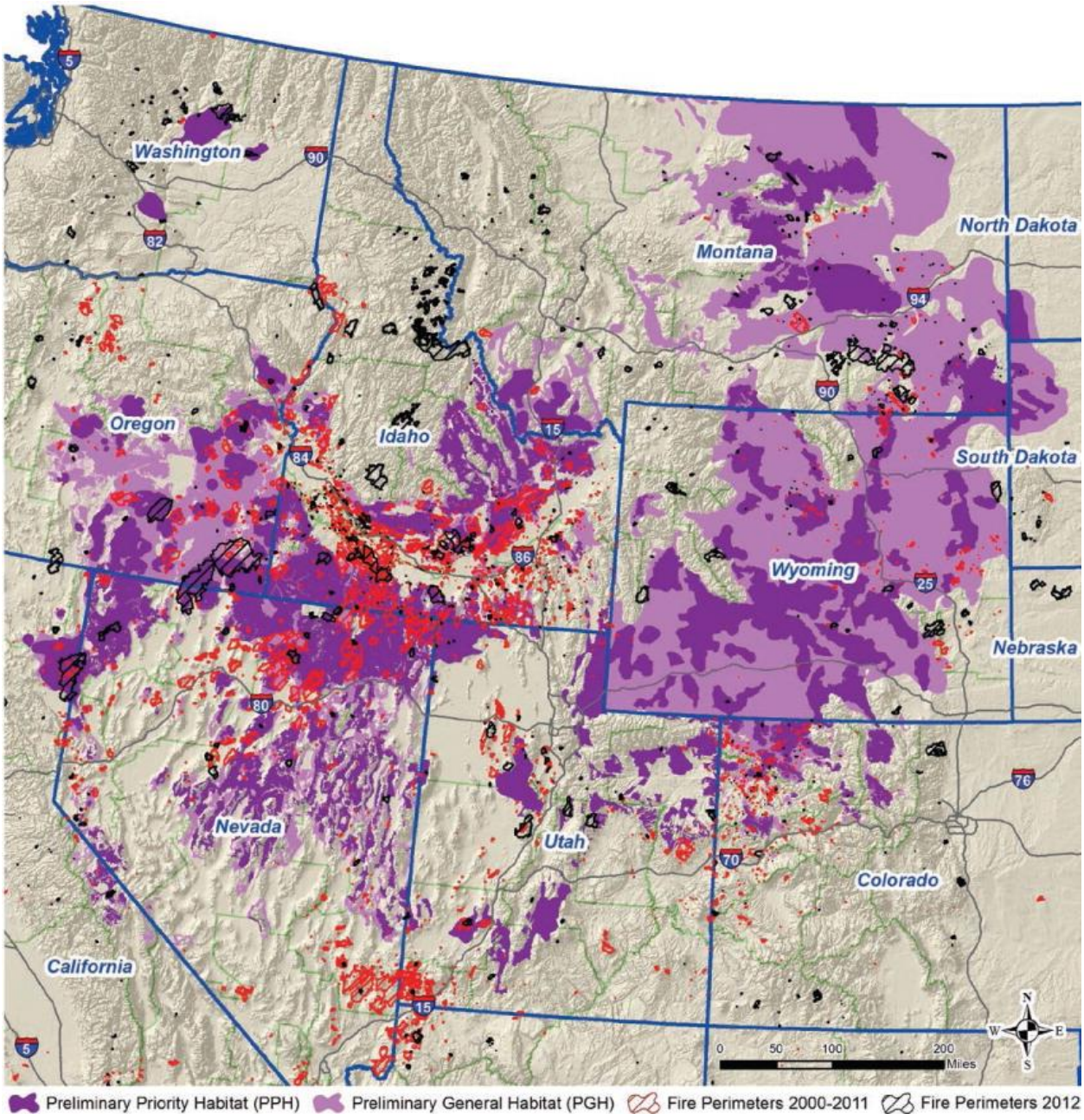
Albers NAD83 Projection

Central Meridian: -96
1st Std Parallel: 20
2nd Std Parallel: 60
Latitude of Origin: 40

USFS Large Fire Simulator (FSim) model 2013



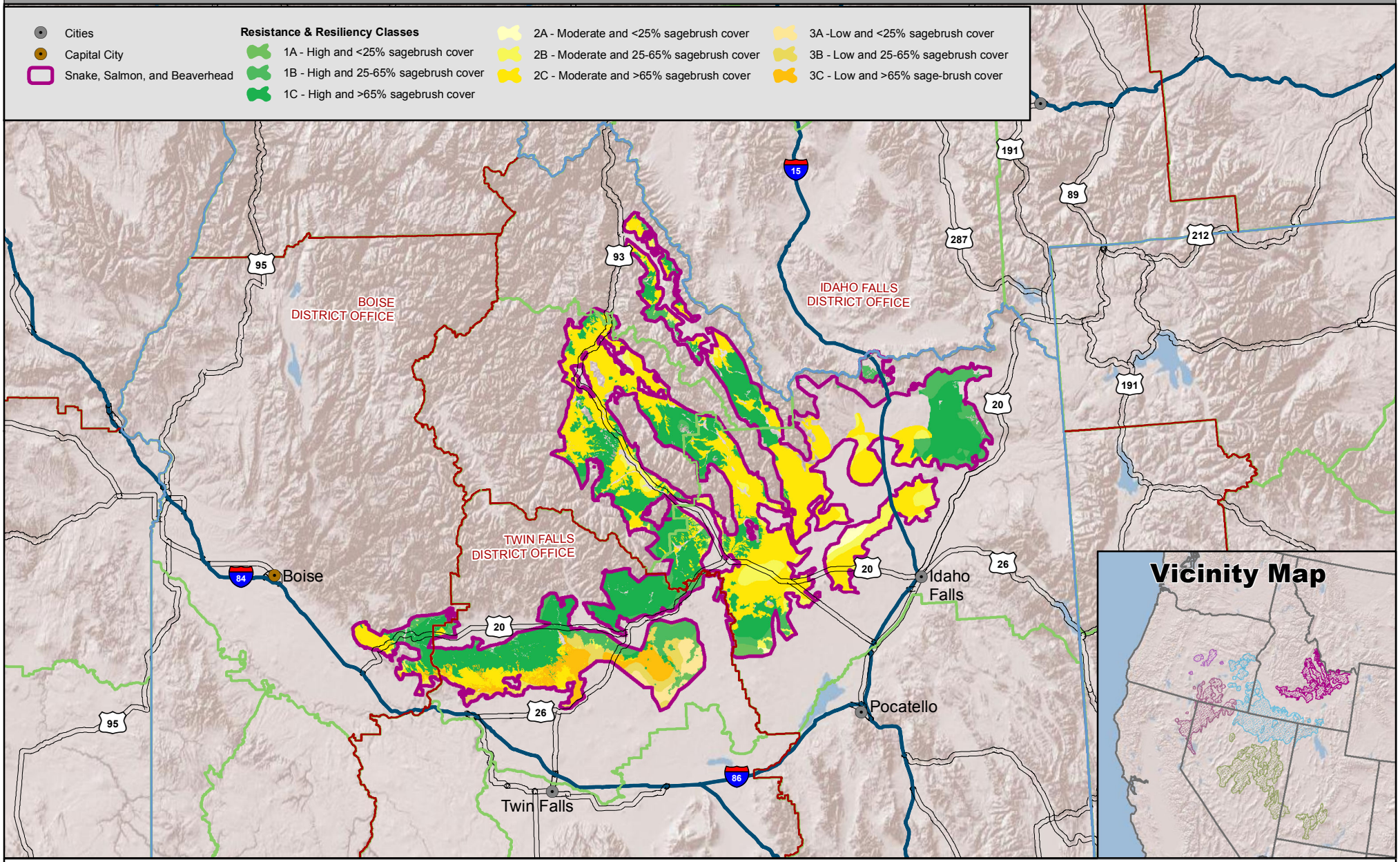
Large Fire Perimeter 2000-2012



Sage-Grouse Habitat Matrix

Greater Sage-Grouse Wildfire, Invasive Annual Grasses, and Conifer Expansion Assessments

Snake, Salmon and Beaverhead Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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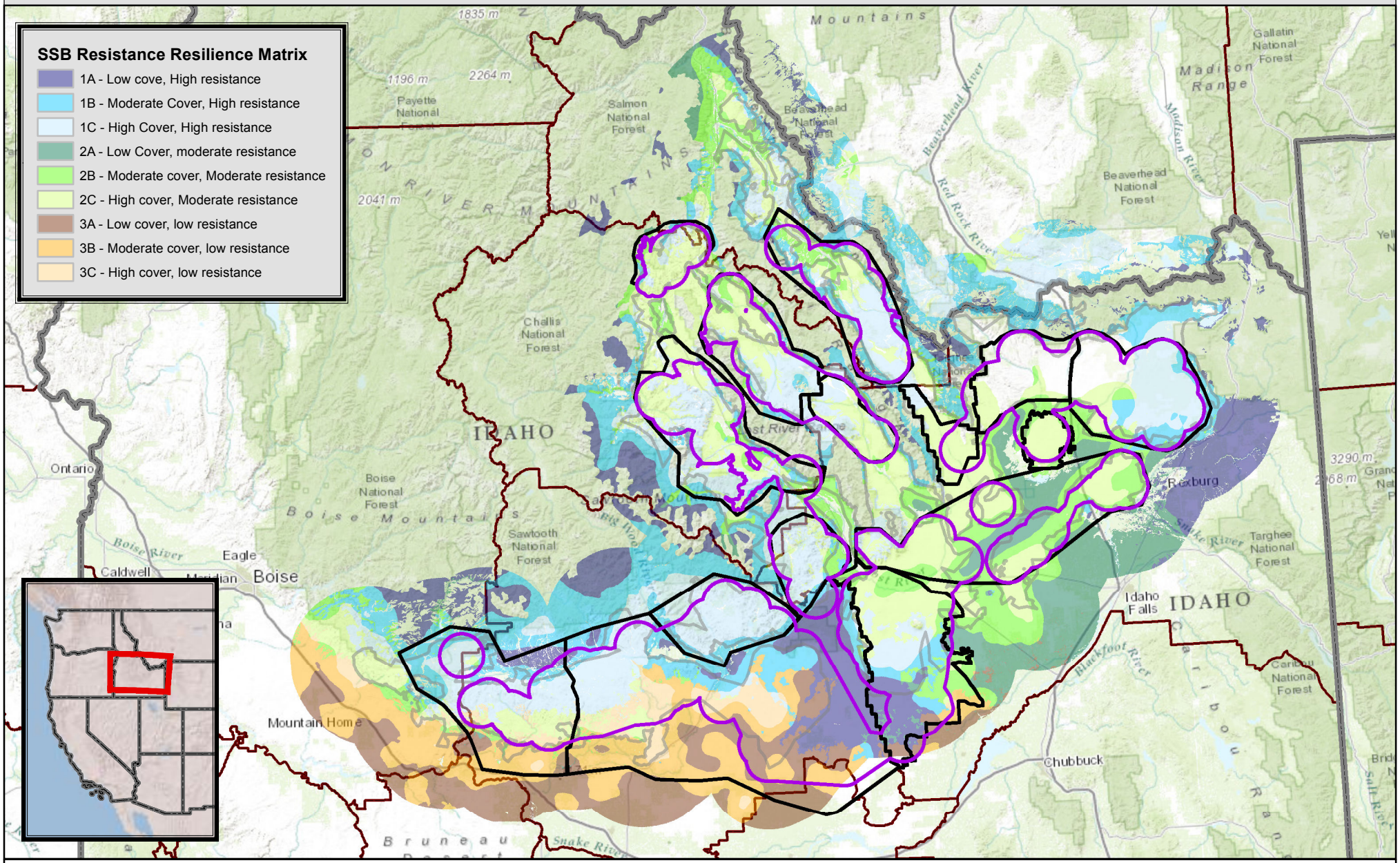
Snake Salmon Beaverhead Assessment Area

Greater Sage-Grouse Wildfire, Invasive Annual Grasses, and Conifer Expansion Assessments

Bureau of Land Management
U.S. Department of the Interior



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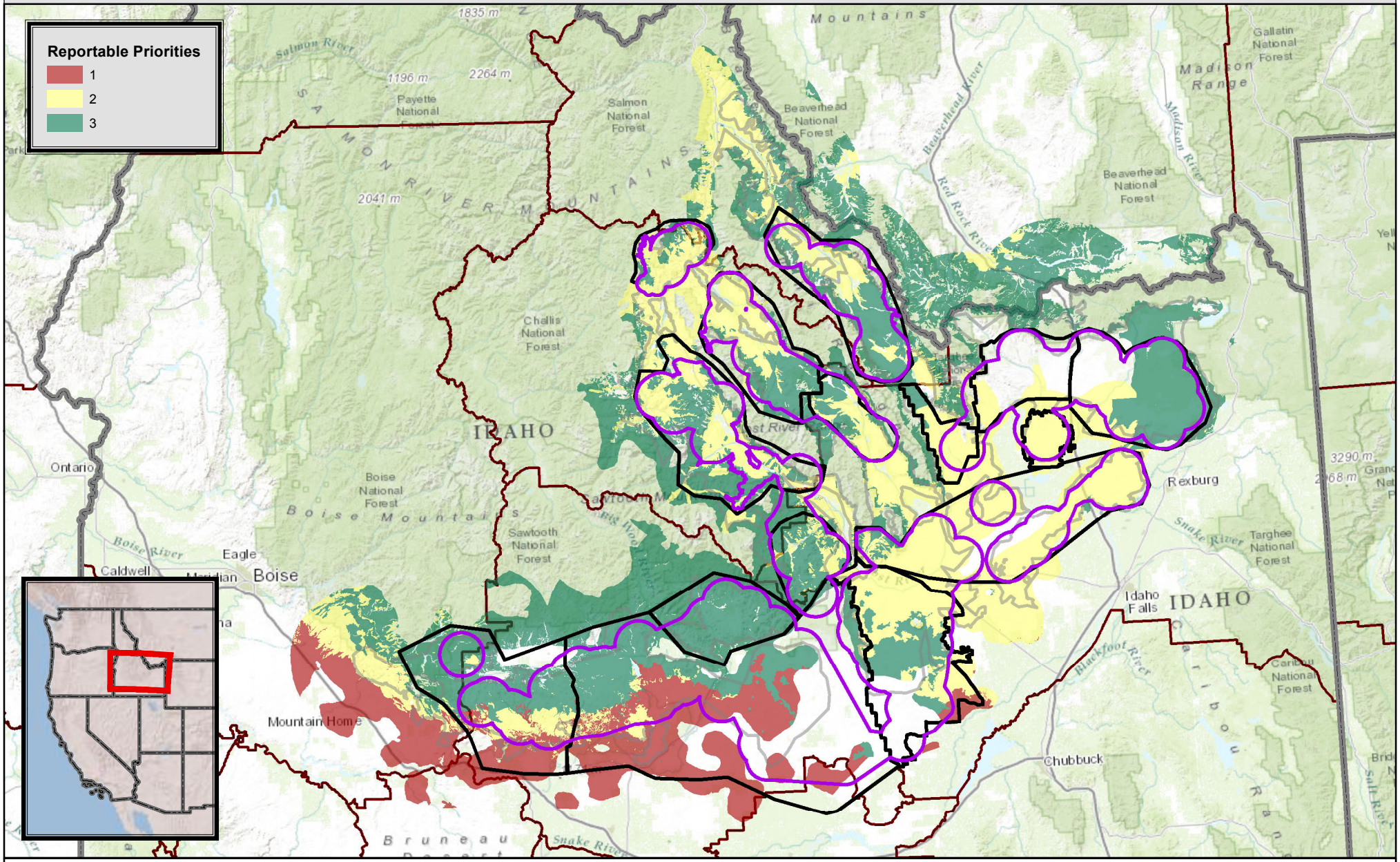
SSB Focal Habitat
Snake Salmon Beaverhead Project Planning Areas
Snake Salmon Beaverhead Assessment Area

March 2015
Date Saved: 3/11/2015
Data Sources: Bureau of Land Management, ESRI Basedata
1:2,019,573

Snake Salmon Beaverhead Assessment Area

Resistance-Resilience Reportable Priorities

Bureau of Land Management
U.S. Department of the Interior



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SSB Focal Habitat
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Snake Salmon Beaverhead Assessment Area

March 2015
Date Saved: 3/11/2015
Data Sources: Bureau of Land Management, ESRI Basedata
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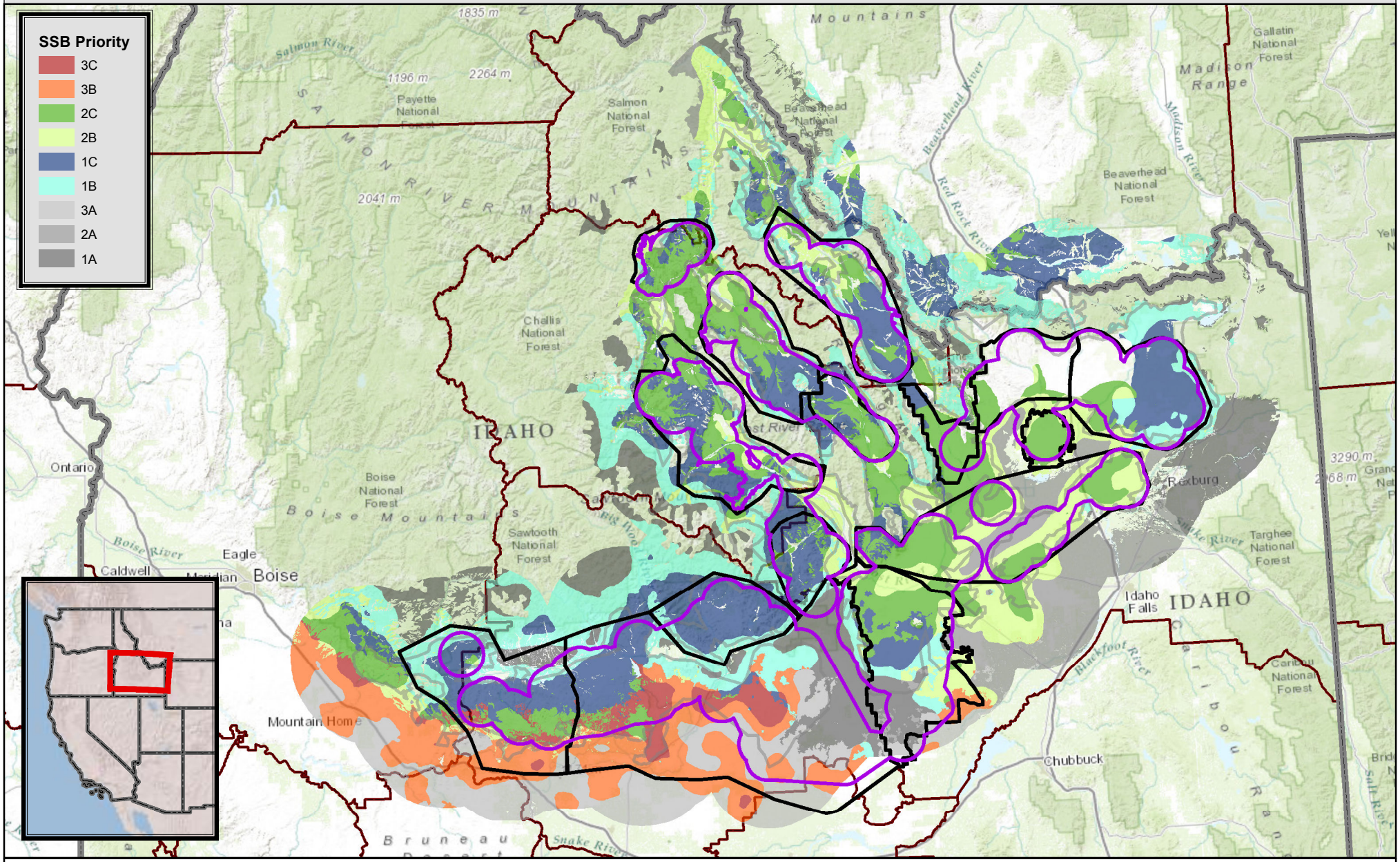
Snake Salmon Beaverhead Assessment Area

Resistance-Resilience Priorities for Application of Management Strategies

Bureau of Land Management
U.S. Department of the Interior



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SSB Focal Habitat
Snake Salmon Beaverhead Project Planning Areas
Snake Salmon Beaverhead Assessment Area

March 2015
Date Saved: 3/11/2015
Data Sources: Bureau of Land Management, ESRI Basedata
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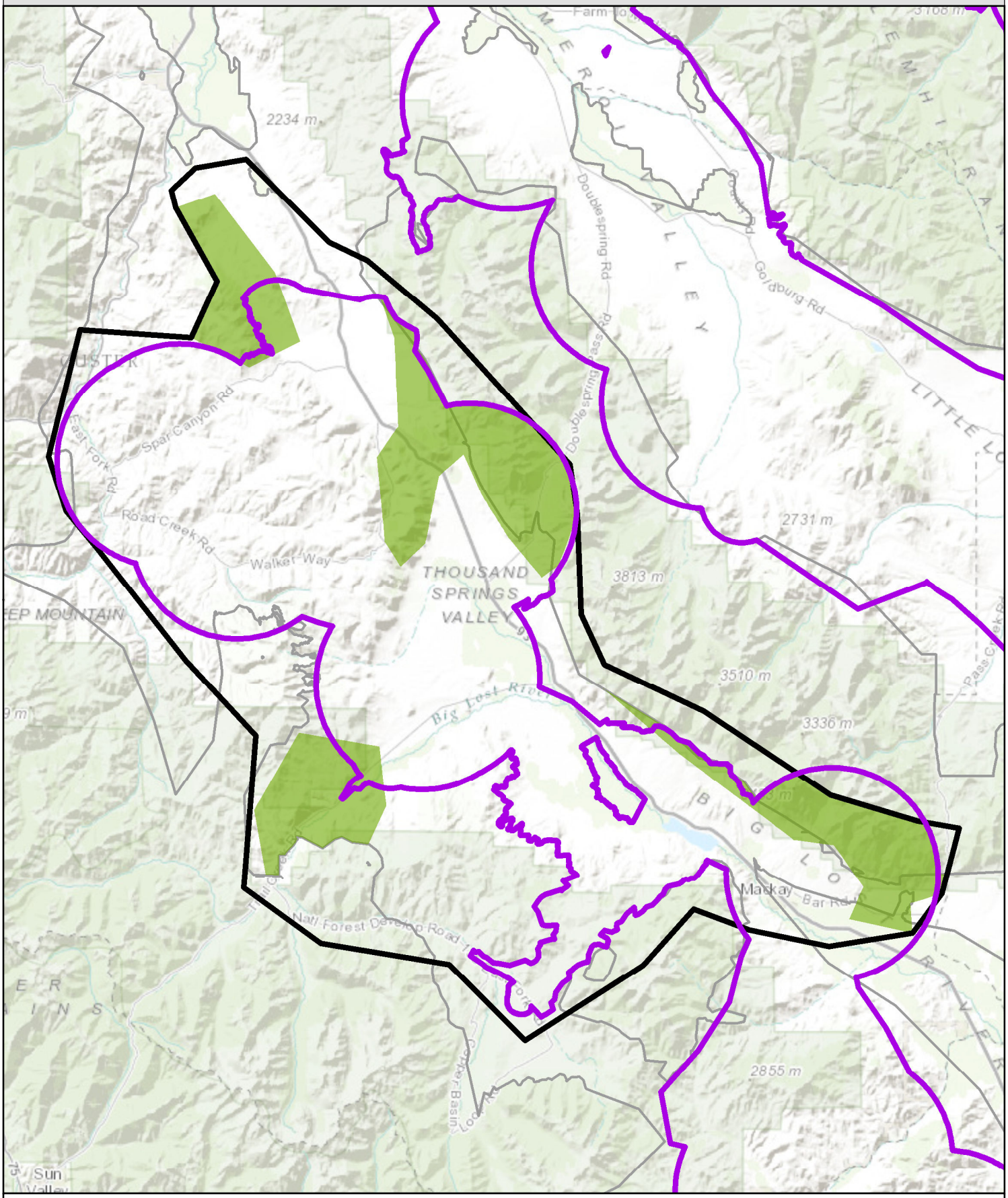
Antelope Flat-Big Lost Project Planning Area

Conifer Expansion Potential Treatment Areas

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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Antelope Flat-Big Lost Project Planning Area

Conifer Expansion Potential Treatment Areas

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
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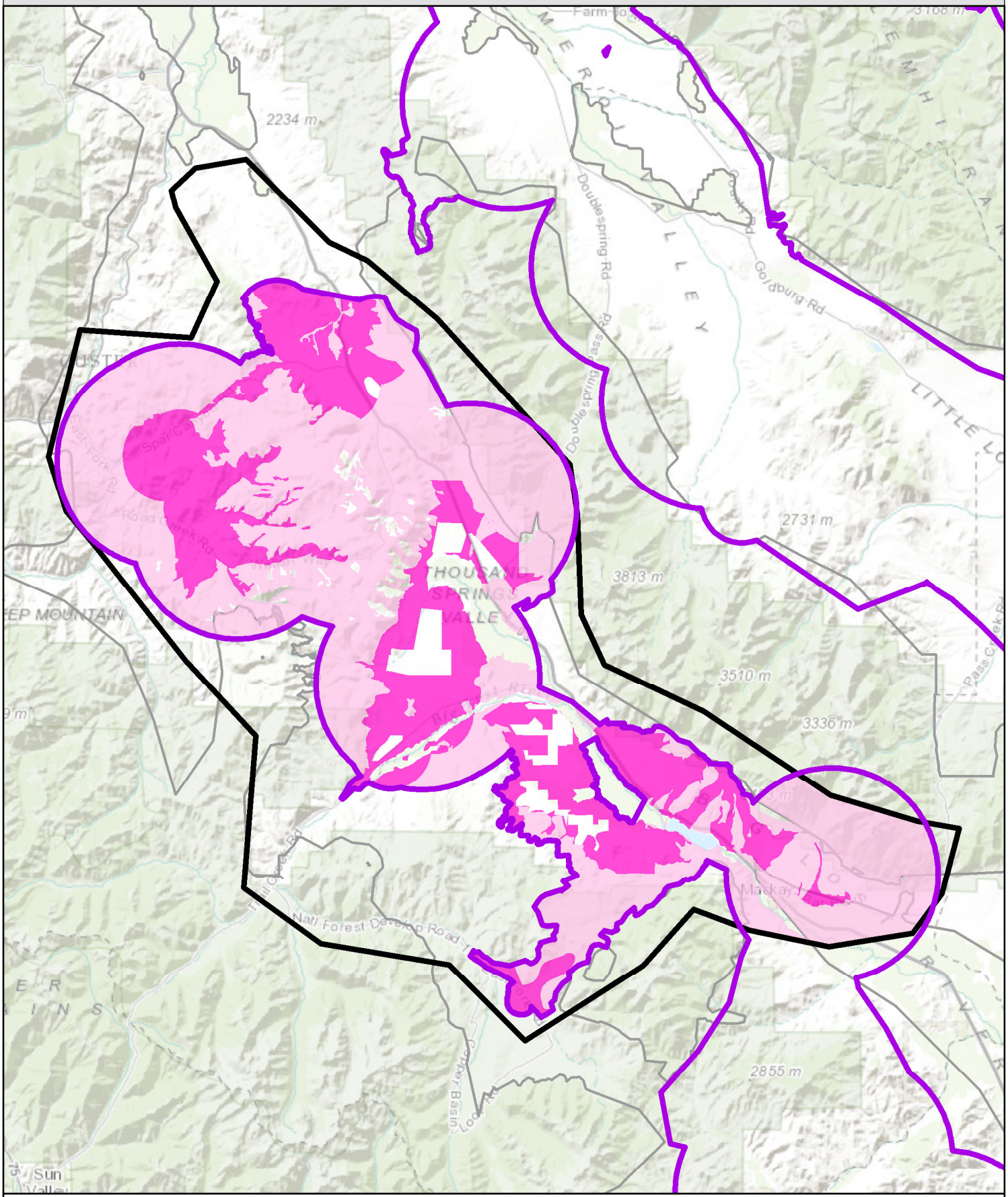
Antelope Flat-Big Lost Project Planning Area

Emergency Stabilization, Rehabilitation Priority

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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Antelope Flat-Big Lost Project Planning Area
Antelope Flat-Big Lost ESR 2nd Priority
Antelope Flat-Big Lost ESR 3rd Priority

March 2015
Date Saved: 3/11/2015
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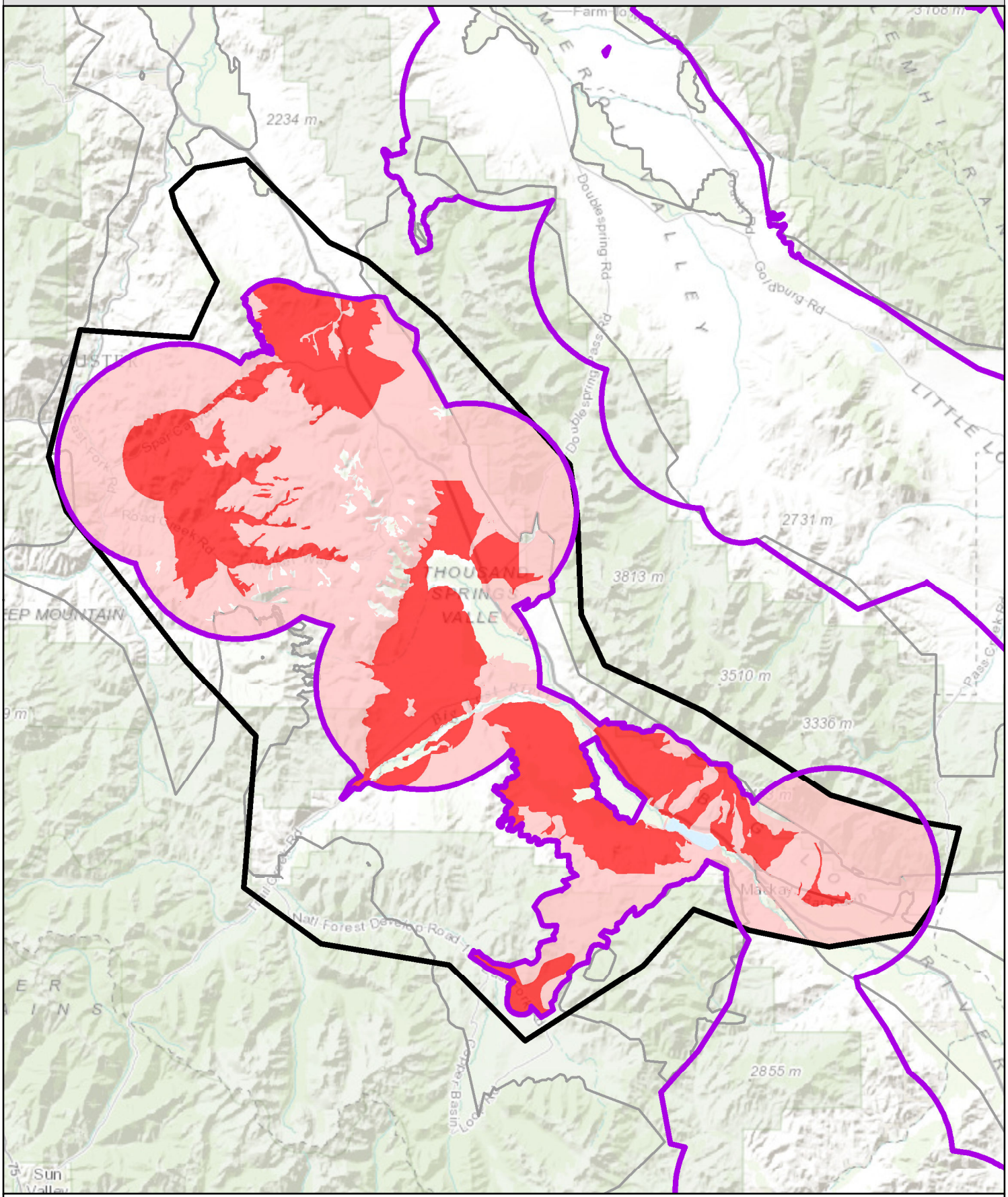
Antelope Flat-Big Lost Project Planning Area
Fire Operations Priority

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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Antelope Flat-Big Lost Fire 2nd Priority
Antelope Flat-Big Lost Fire 3rd Priority

March 2015
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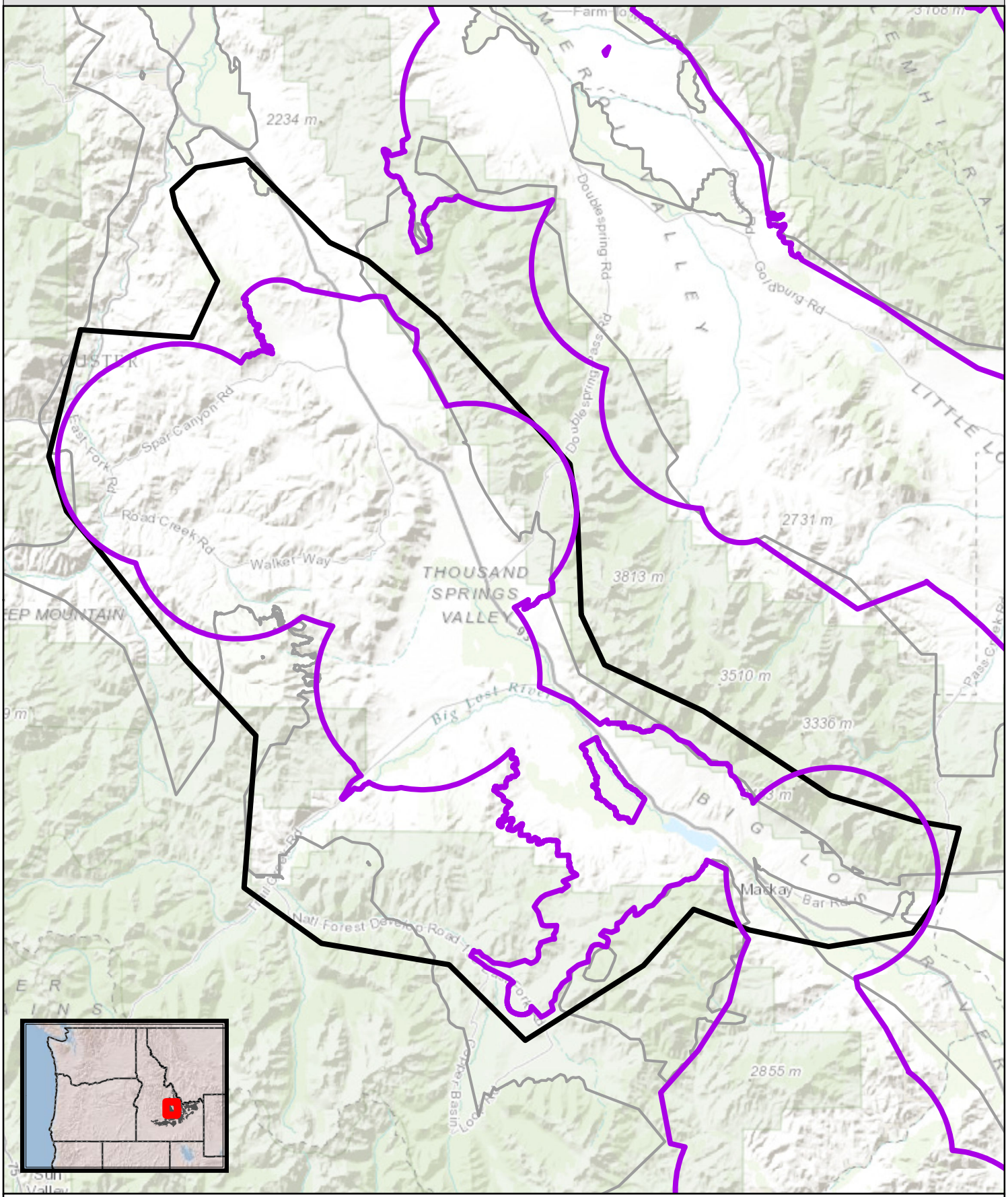
Antelope Flat-Big Lost Project Planning Area

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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Antelope Flat-Big Lost Project Planning Area

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
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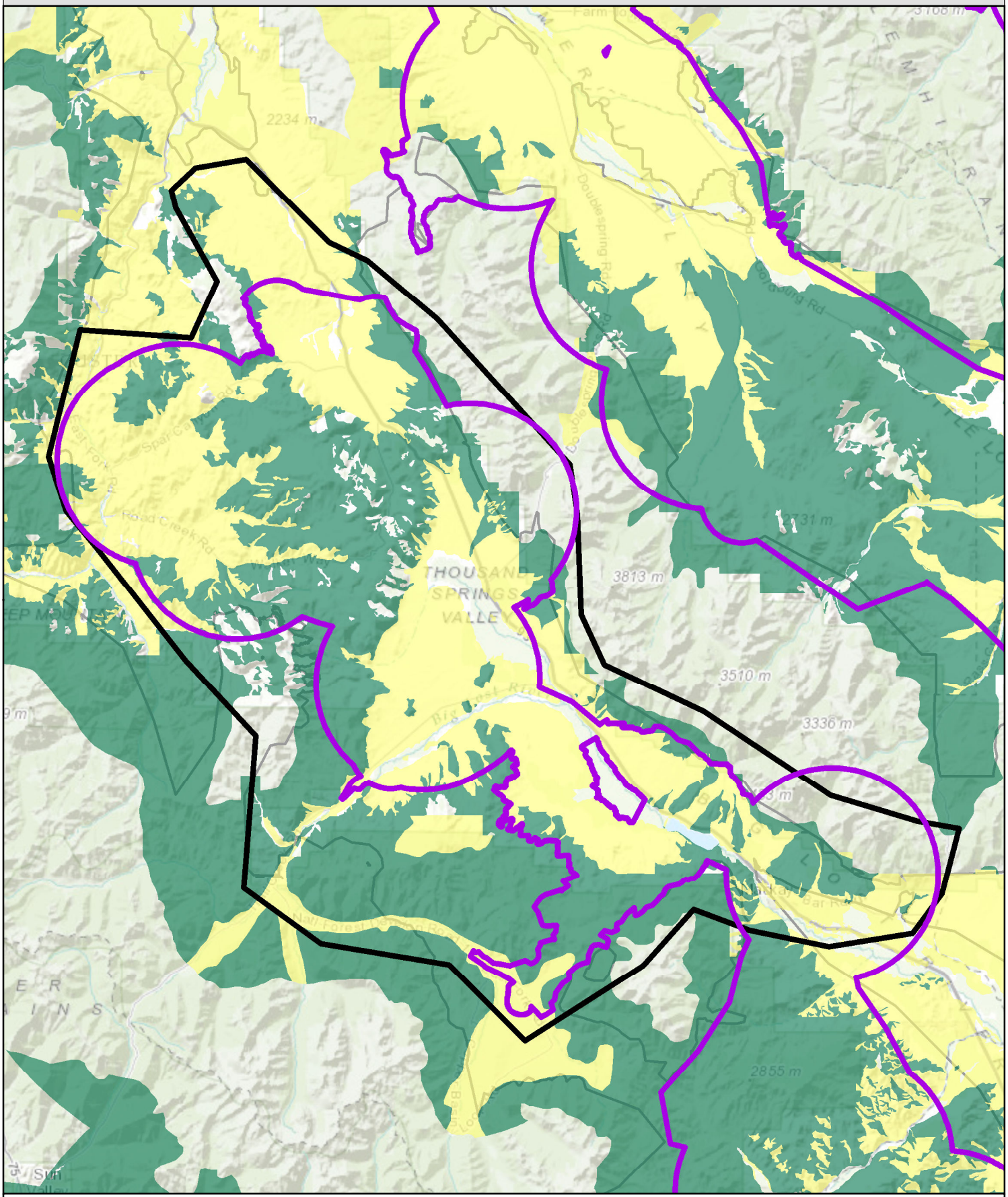
Antelope Flat-Big Lost Project Planning Area
Resistance-Resilience Reportable Priorities

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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Antelope Flat-Big Lost Project Planning Area

Reportable Priorities

1 2 3

March 2015
Date Saved: 3/12/2015
Data Sources: BLM, ESRI Basedata
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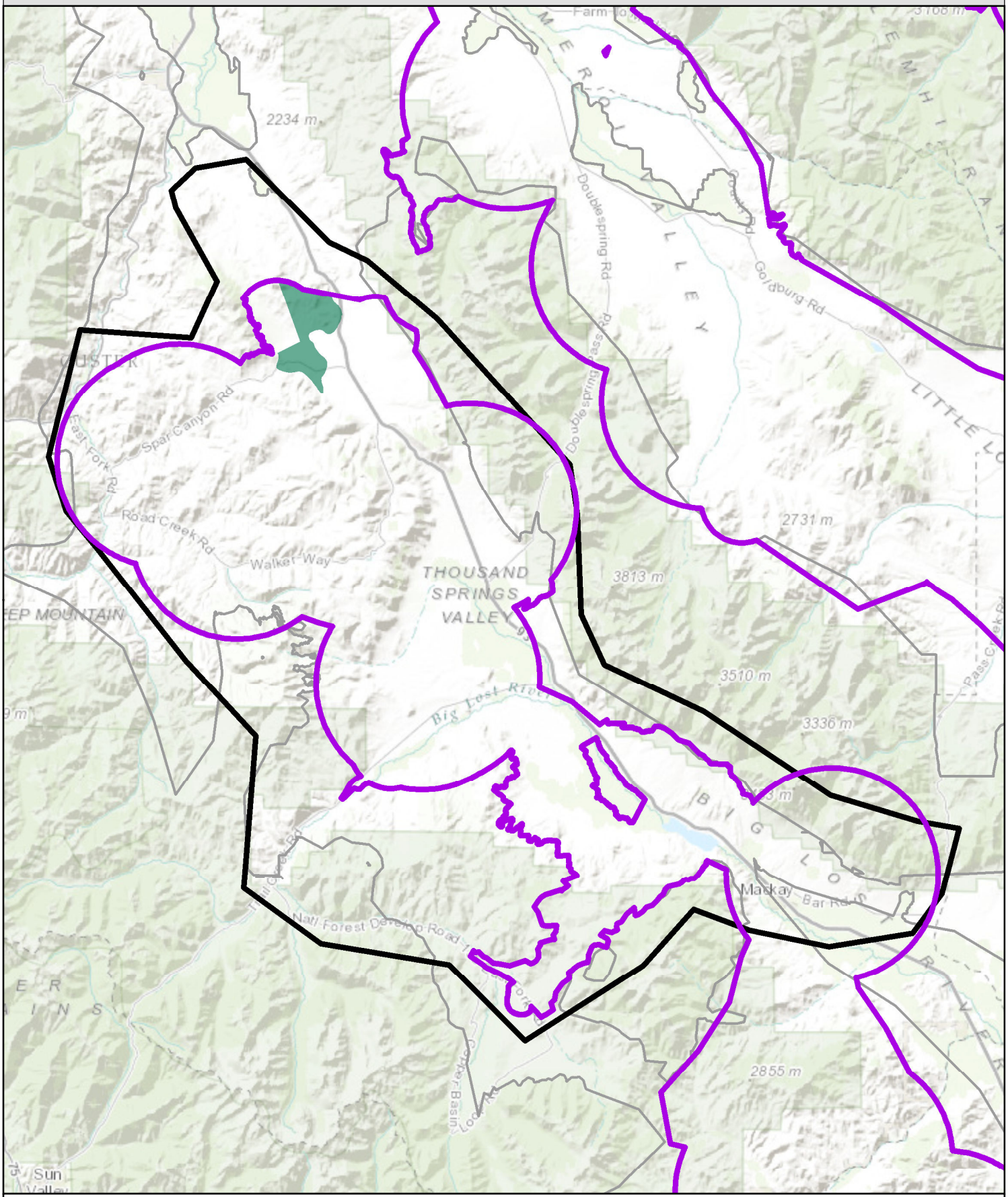
Antelope Flat-Big Lost Project Planning Area

Habitat Restoration Potential Treatment Areas

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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Antelope Flat-Big Lost Project Planning Area

Habitat Restoration Potential Treatment Areas

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
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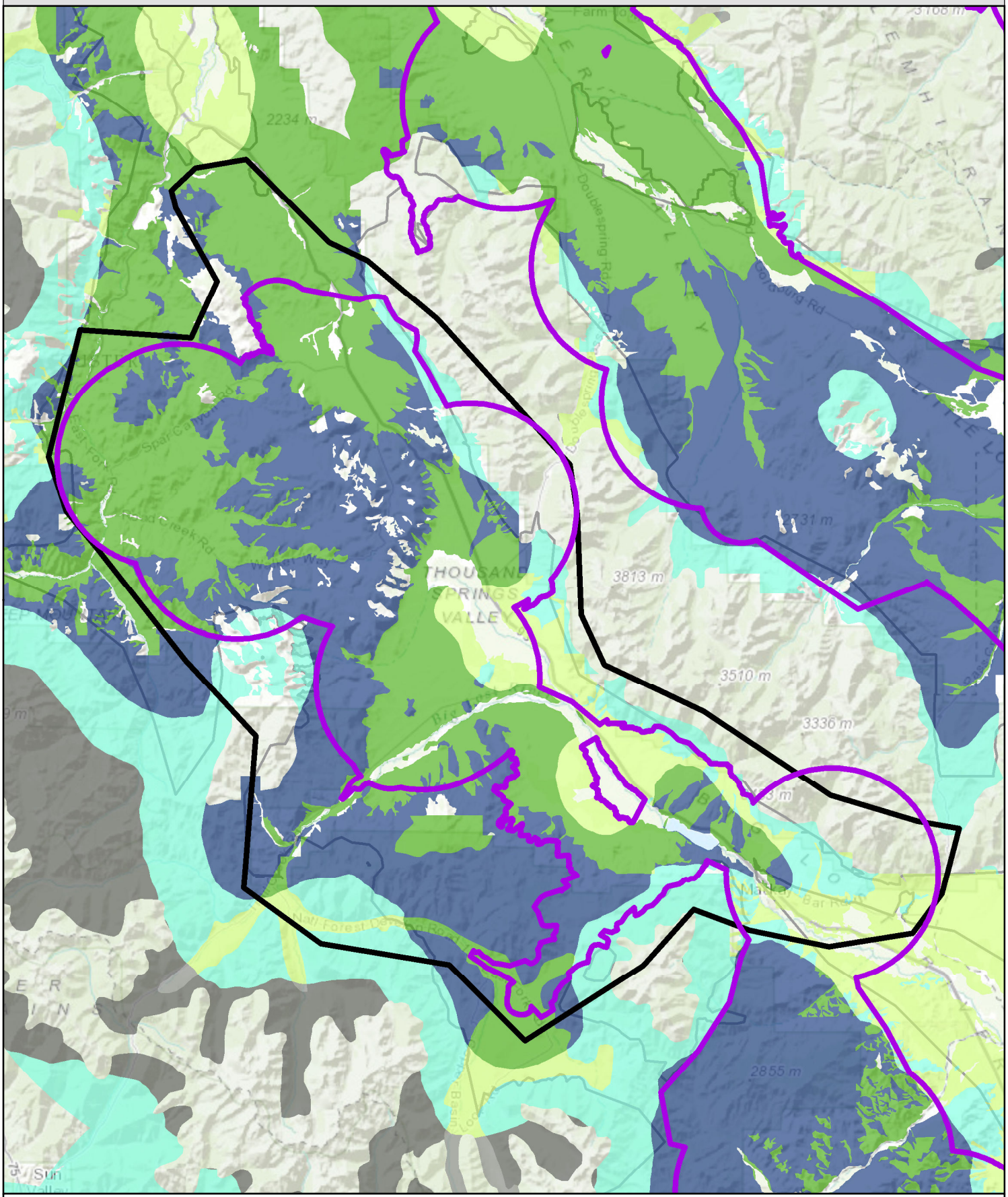
Antelope Flat-Big Lost Project Planning Area
Resistance-Resilience Priorities
for Application of Management Strategies

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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Antelope Flat-Big Lost Project Planning Area

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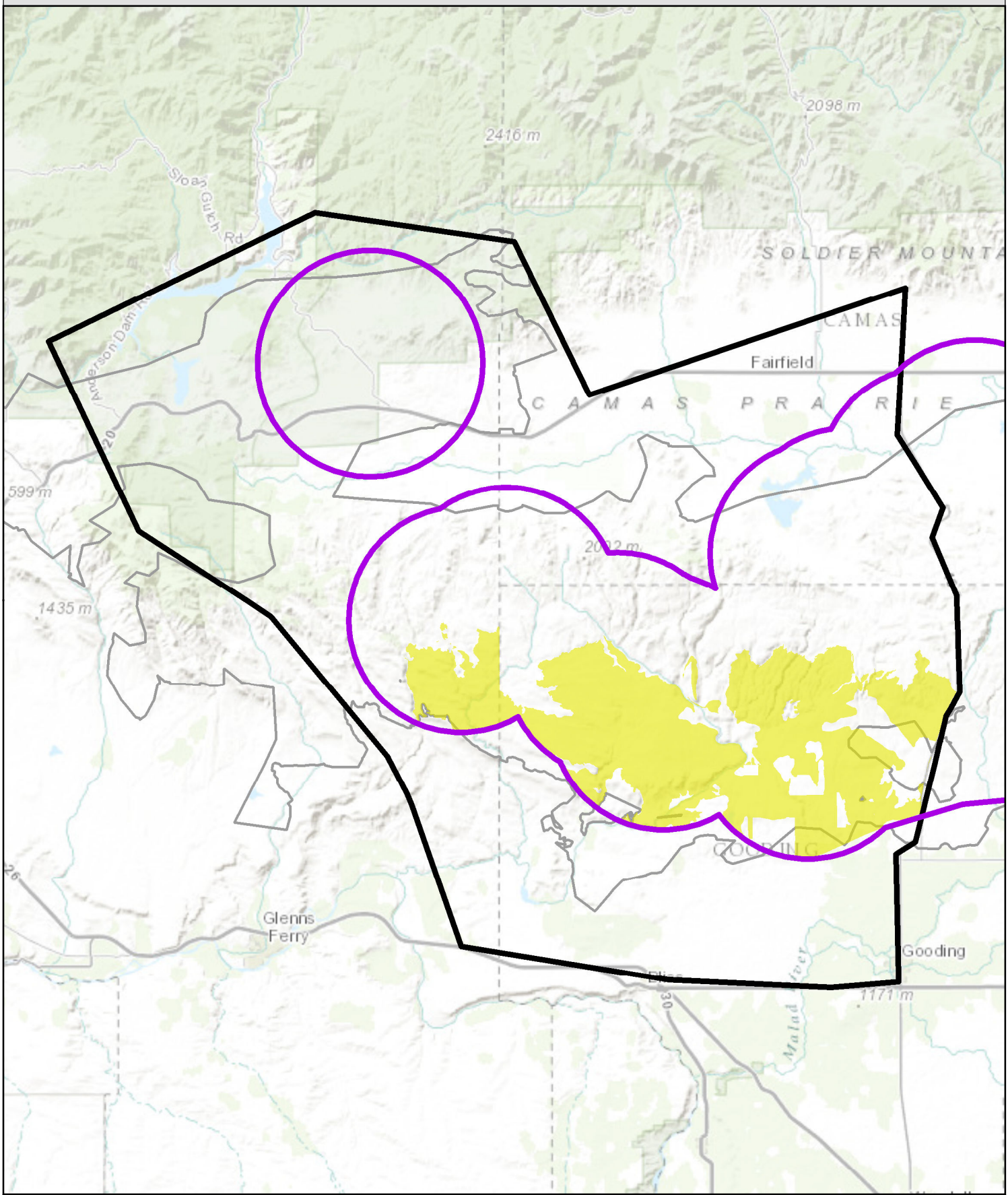
March 2015
Date Saved: 3/12/2015
Data Sources: BLM, ESRI Basedata
1:565,777

Bennett Hills Project Planning Area

Invasive Annuals Potential Treatment Areas

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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Bennett Hills Project Planning Area

Invasive Annuals Potential Treatment Areas

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
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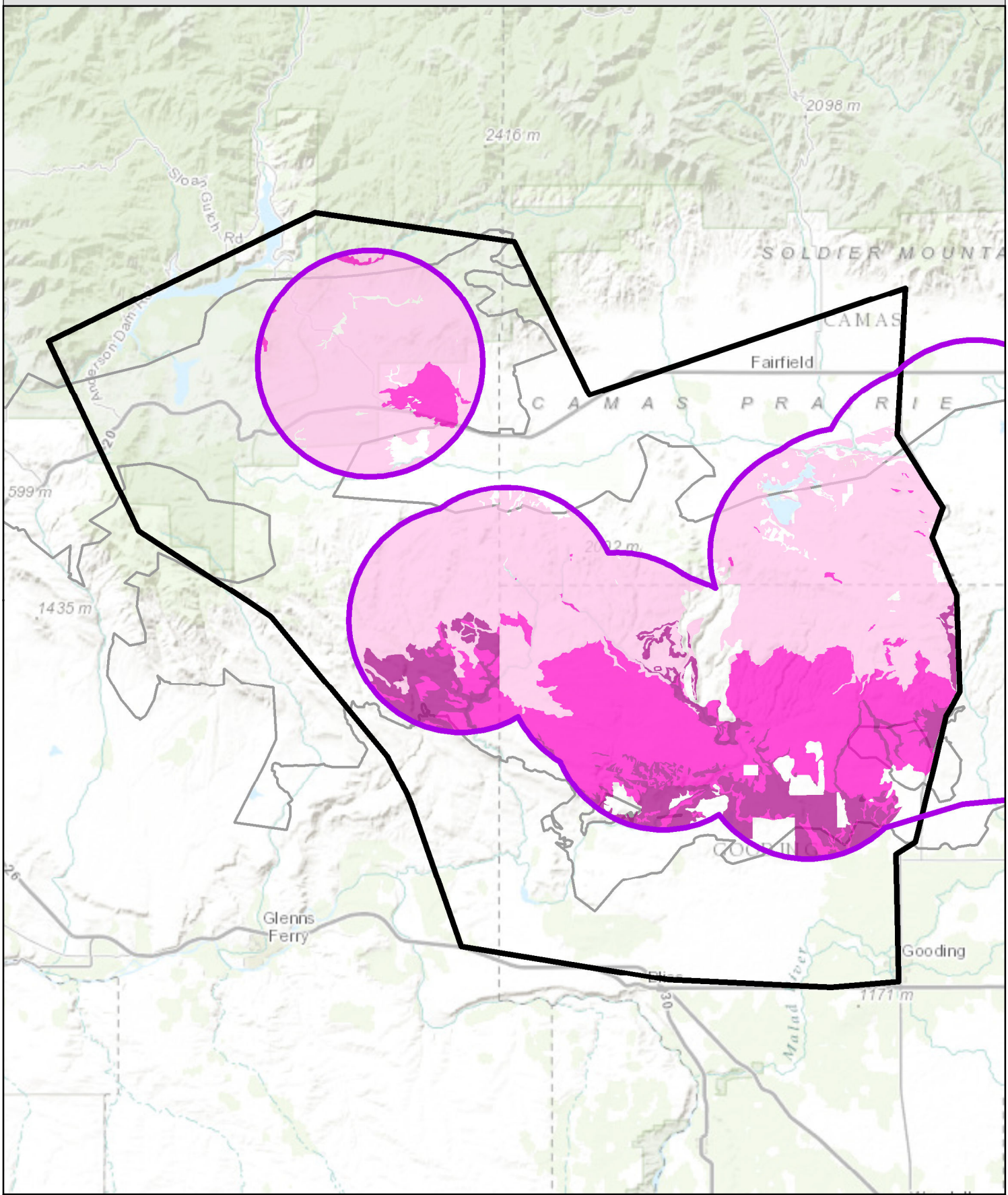
Bennett Hills Project Planning Area

Emergency Stabilization, Rehabilitation Priority

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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N

Bennett Hills Project Planning Area
Bennett Hill ESR 1st Priority
Bennett Hill ESR 2nd Priority
Bennett Hill ESR 3rd Priority

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
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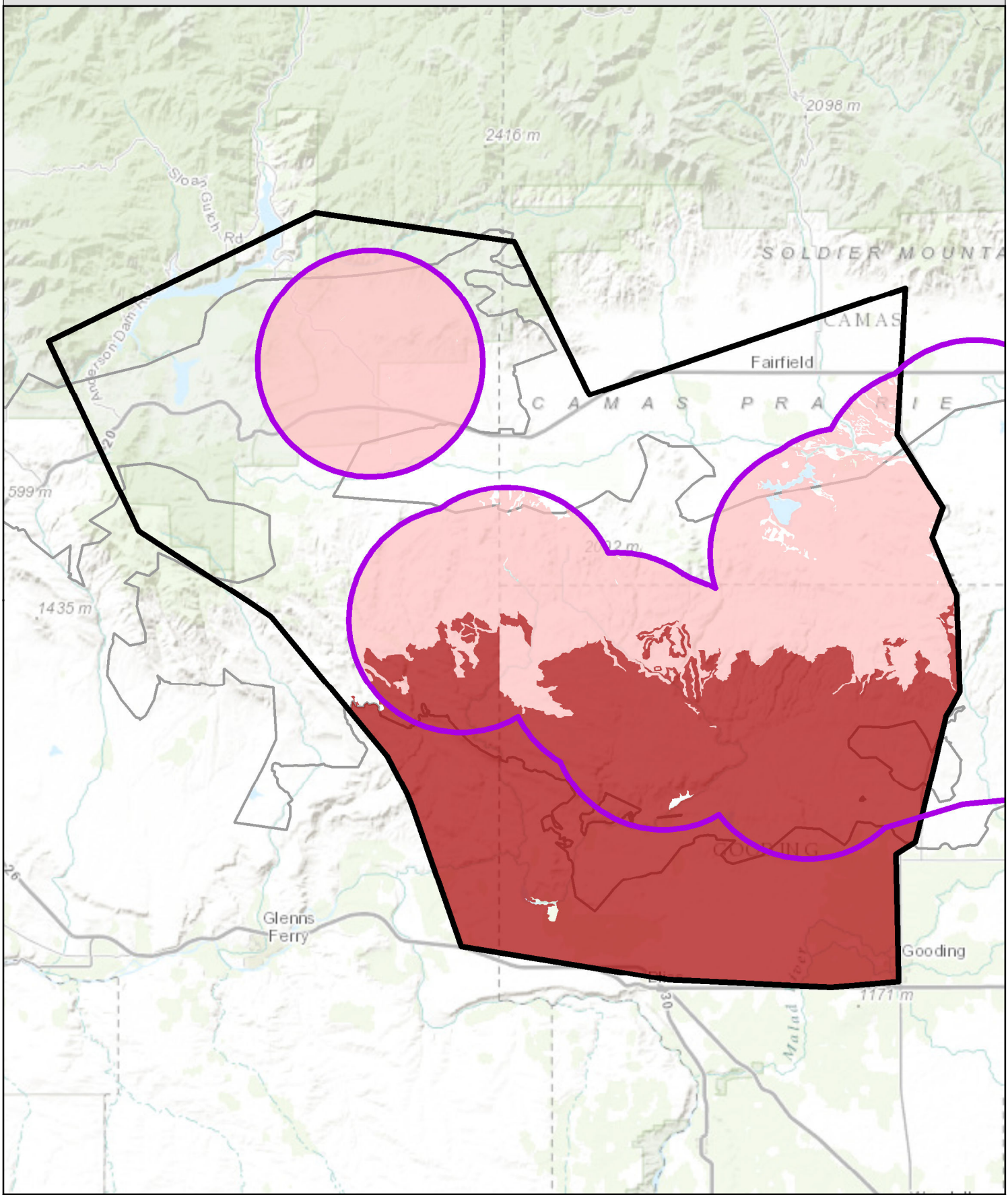
Bennett Hills Project Planning Area

Fire Operations Priority

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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N

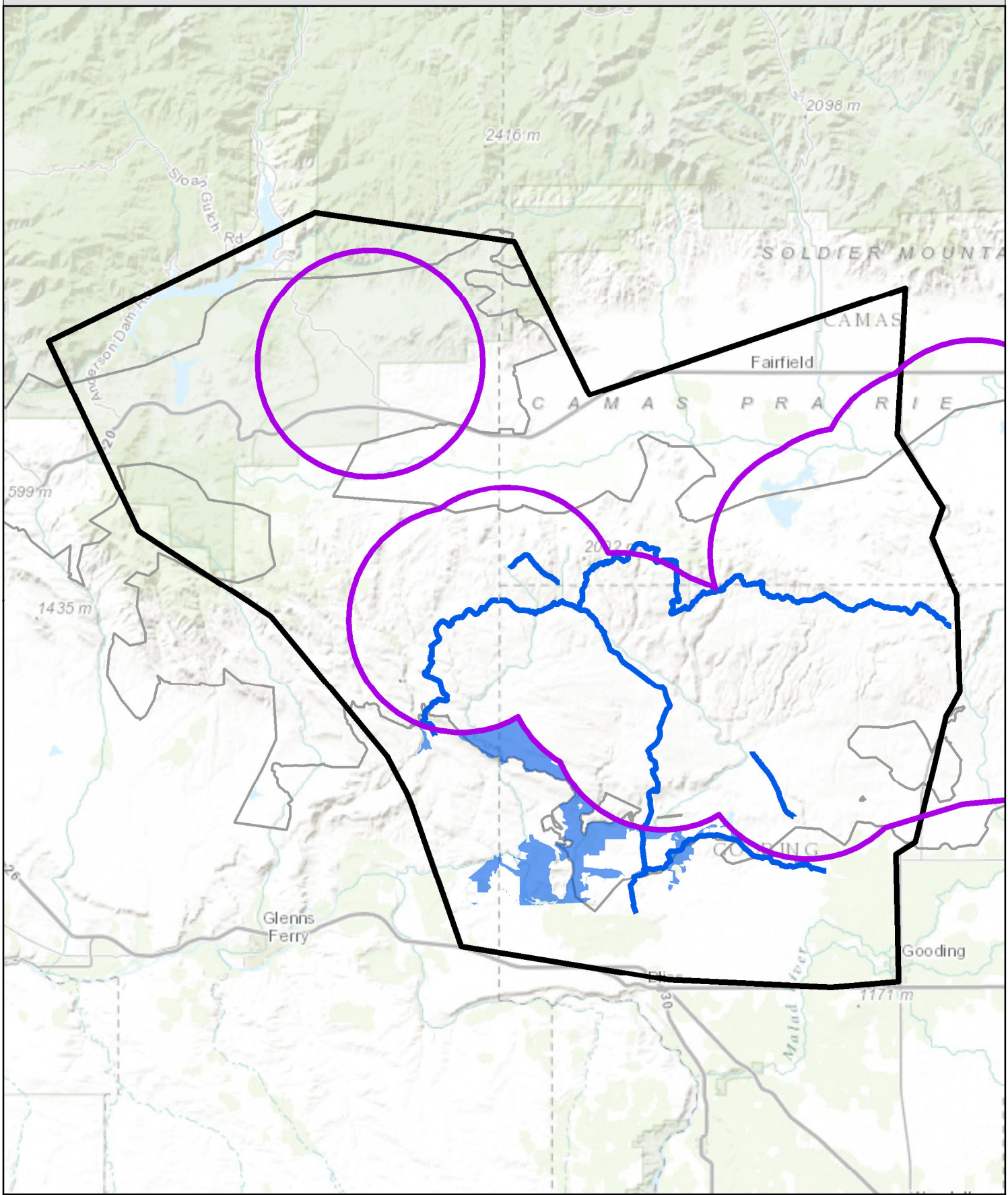
Bennett Hills Project Planning Area
Bennett Hill Fire 1st Priority
Bennett Hill Fire 3rd Priority

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:527,823

Bennett Hills Project Planning Area

Fuels Management Potential Treatment Areas

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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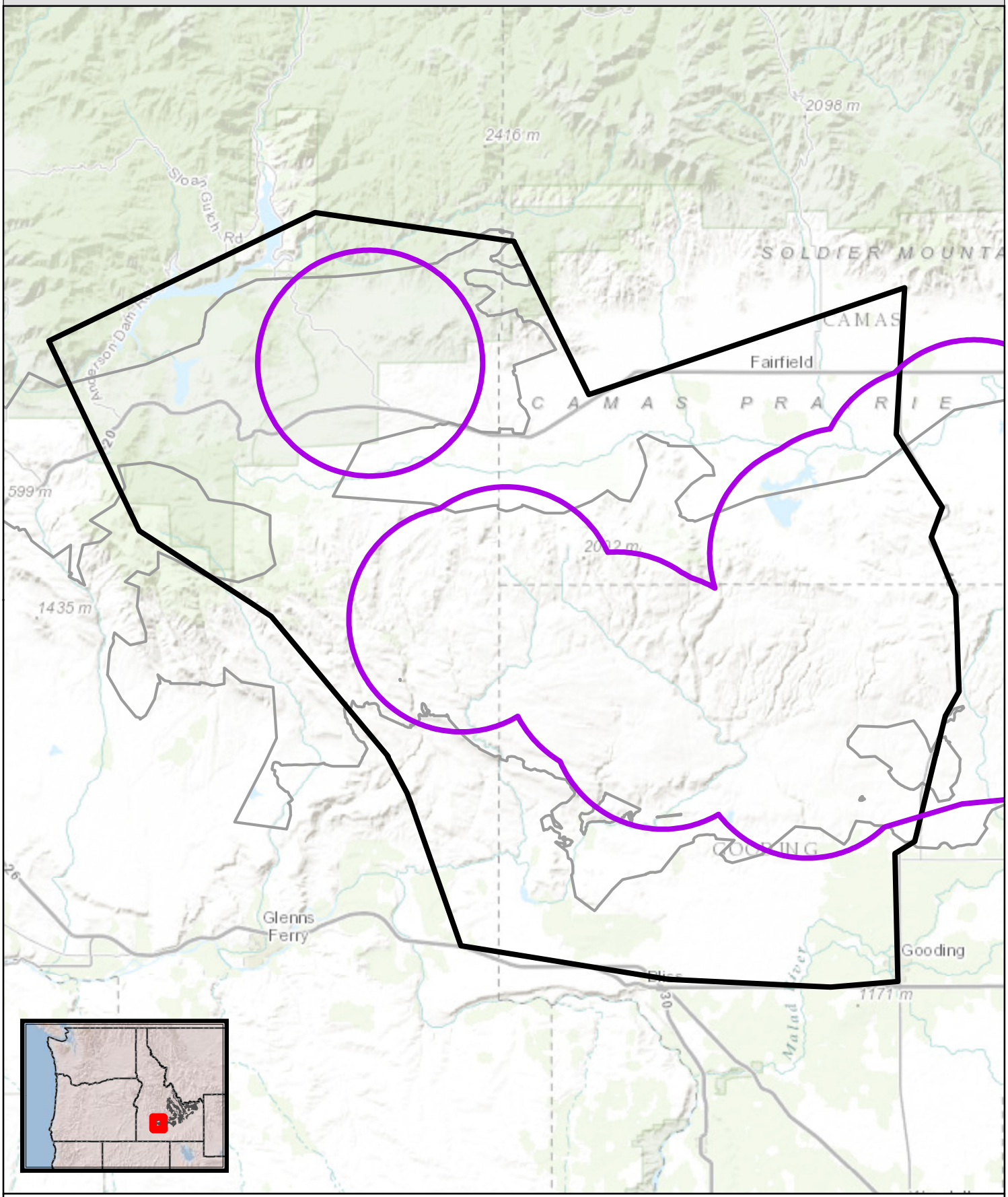
N

Bennett Hills Project Planning Area
Linear Fuels Management Potential Treatment Areas
Fuels Management Potential Treatment Areas

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:527,823

Bennett Hills Project Planning Area

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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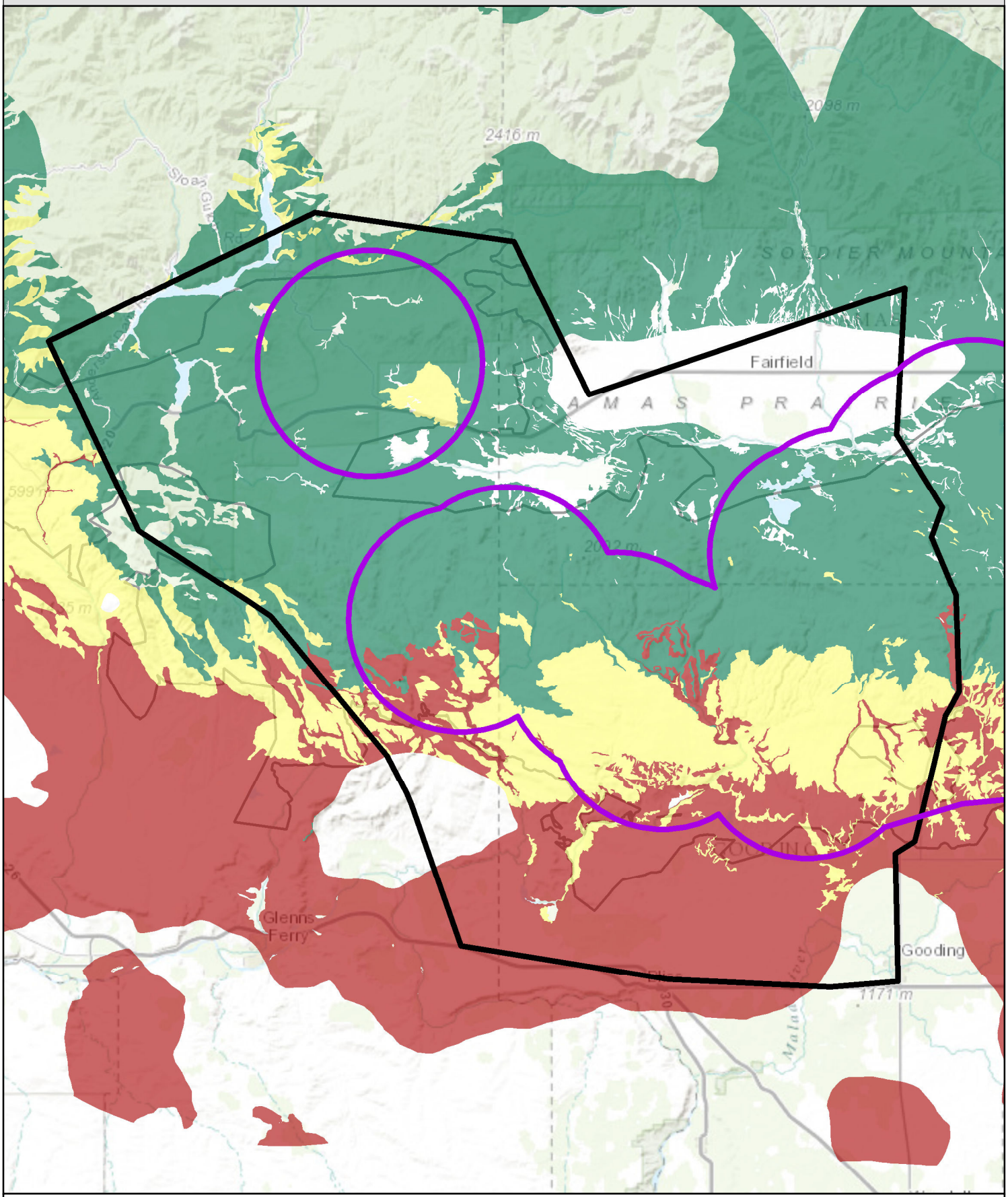
N

Bennett Hills Project Planning Area

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:527,823

Bennett Hills Project Planning Area
Resistance-Resilience Reportable Priorities

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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Bennett Hills Project Planning Area

Reportable Priorities

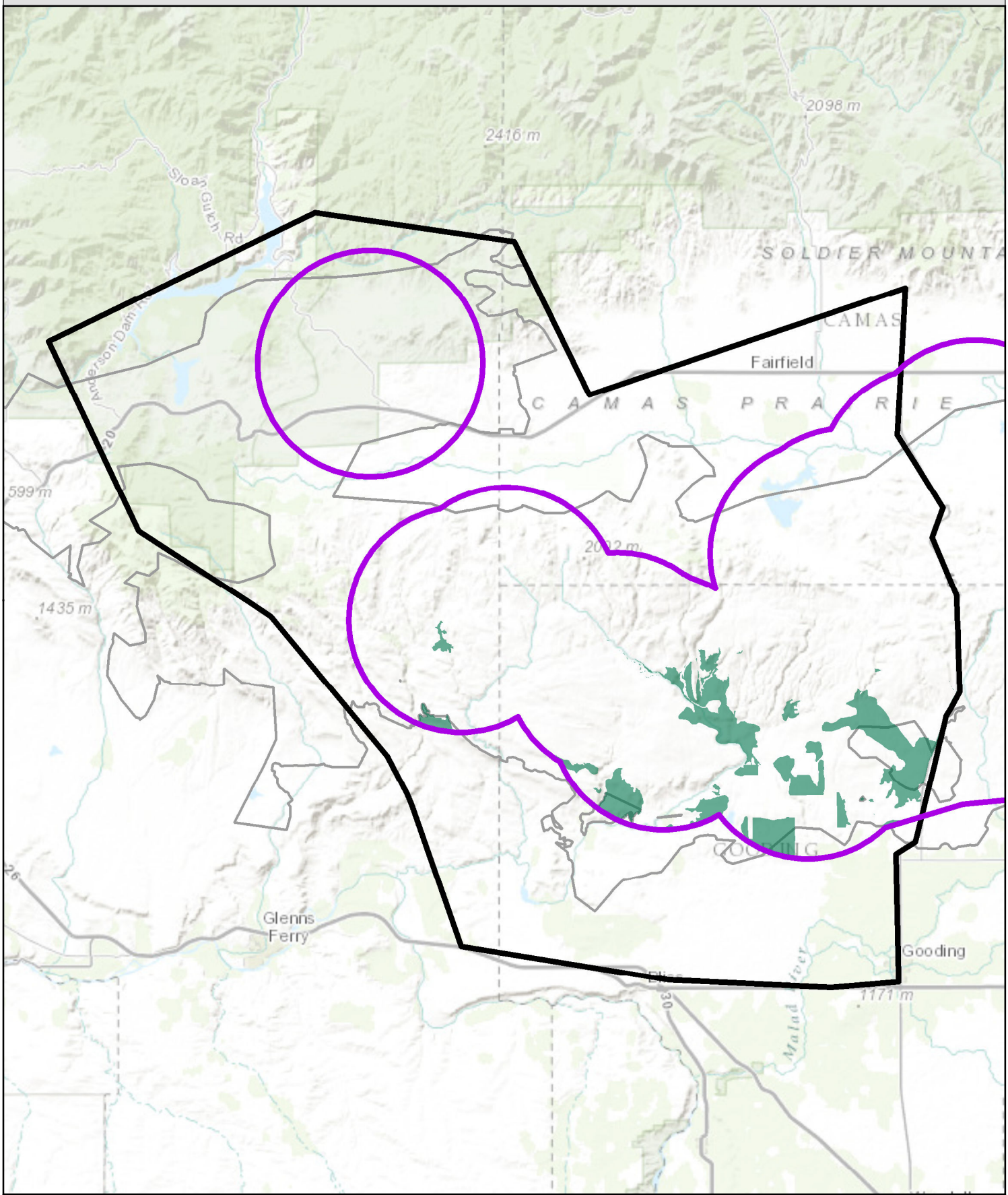
1 2 3

March 2015
Date Saved: 3/13/2015
Data Sources: BLM, ESRI Basedata
1:527,823

Bennett Hills Project Planning Area

Habitat Restoration Potential Treatment Areas

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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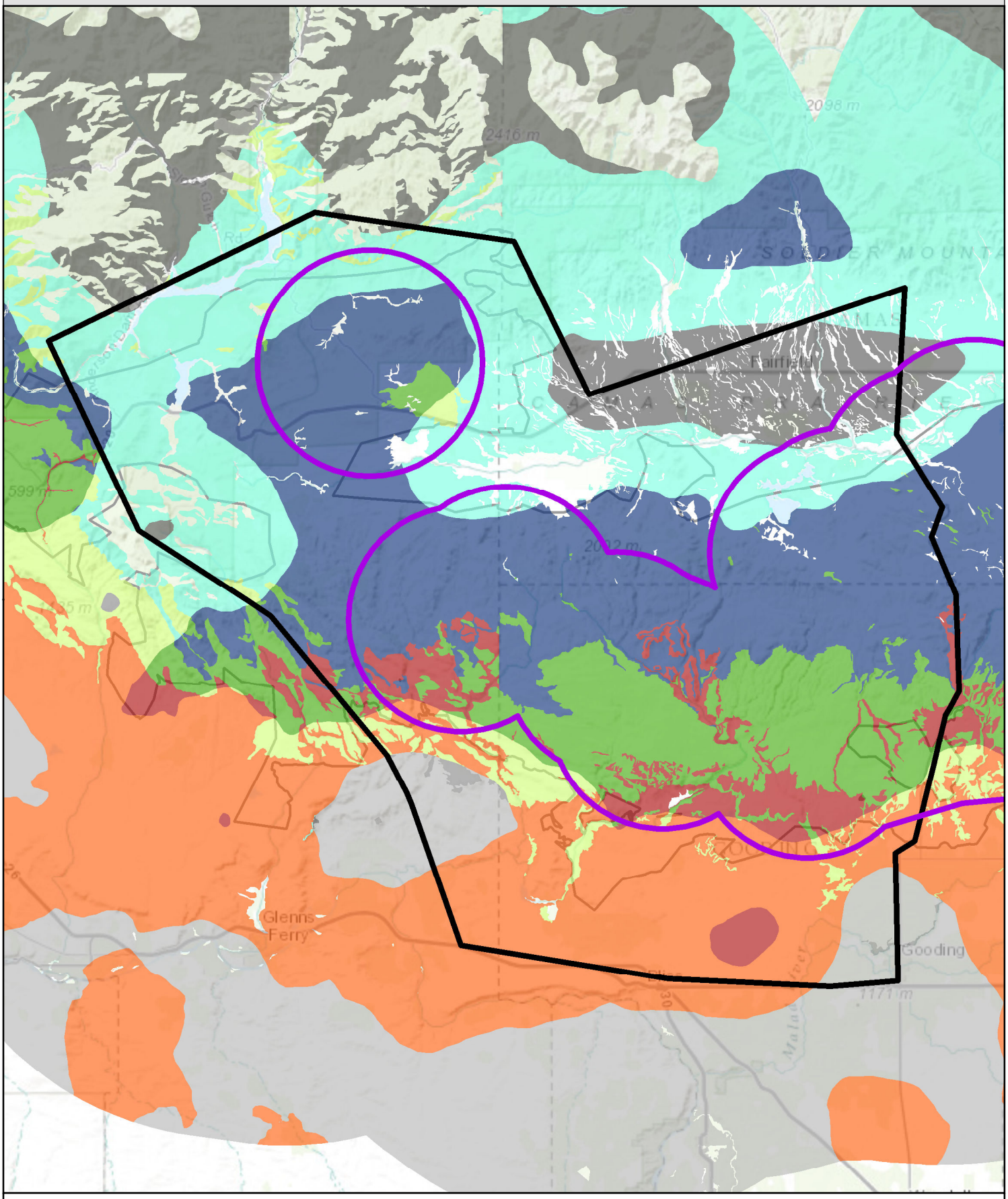
Bennett Hills Project Planning Area

Habitat Restoration Potential Treatment Areas

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:527,823

Bennett Hills Project Planning Area
Resistance-Resilience Priorities
for Application of Management Strategies

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



N

Bennett Hills Project Planning Area

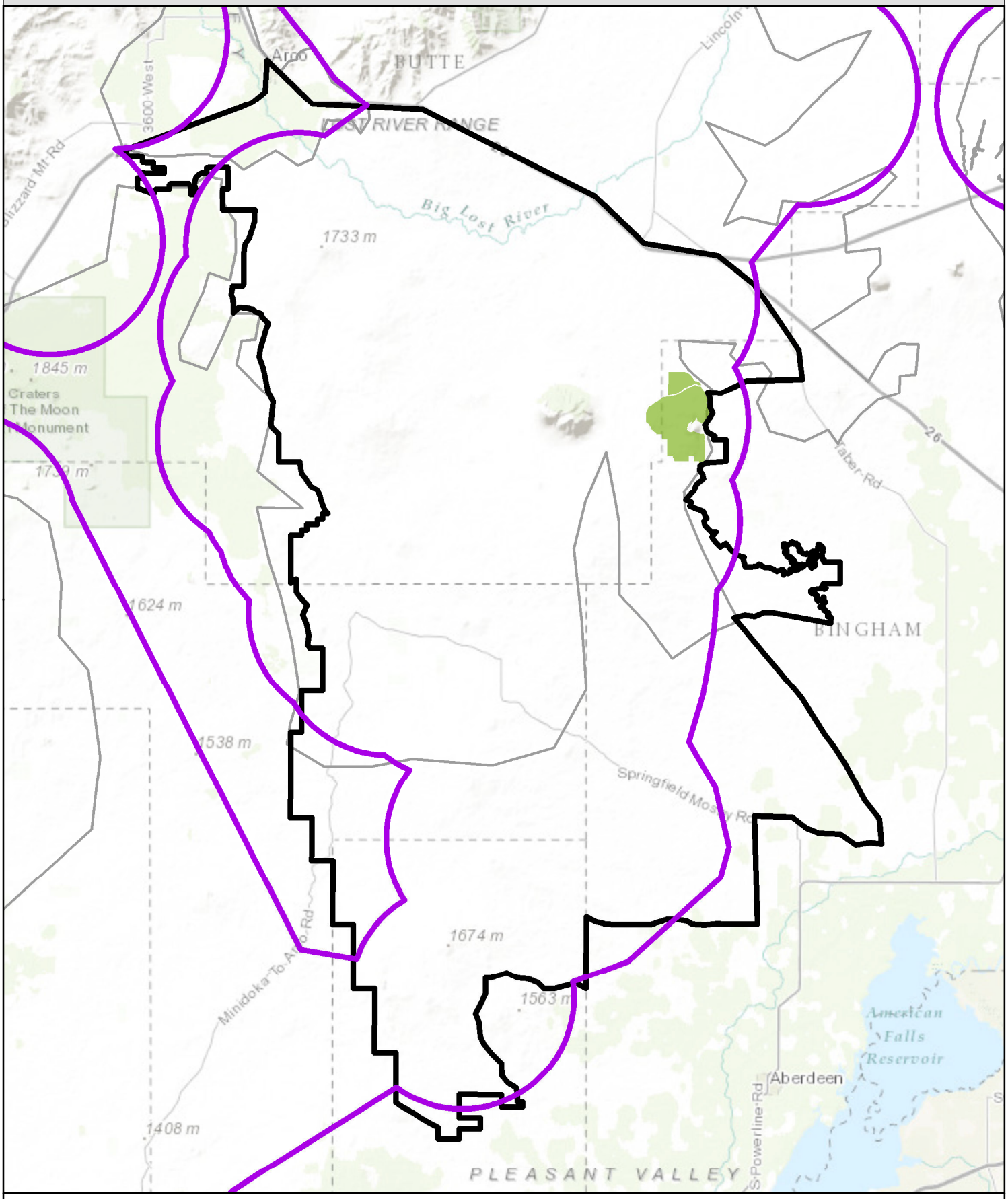
3C 3B 2C 2B 1C 1B 3A 2A 1A

March 2015
Date Saved: 3/13/2015
Data Sources: BLM, ESRI Basedata
1:527,823

Big Desert Project Planning Area

Conifer Expansion Potential Treatment Areas

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.

N

Big Desert Project Planning Area

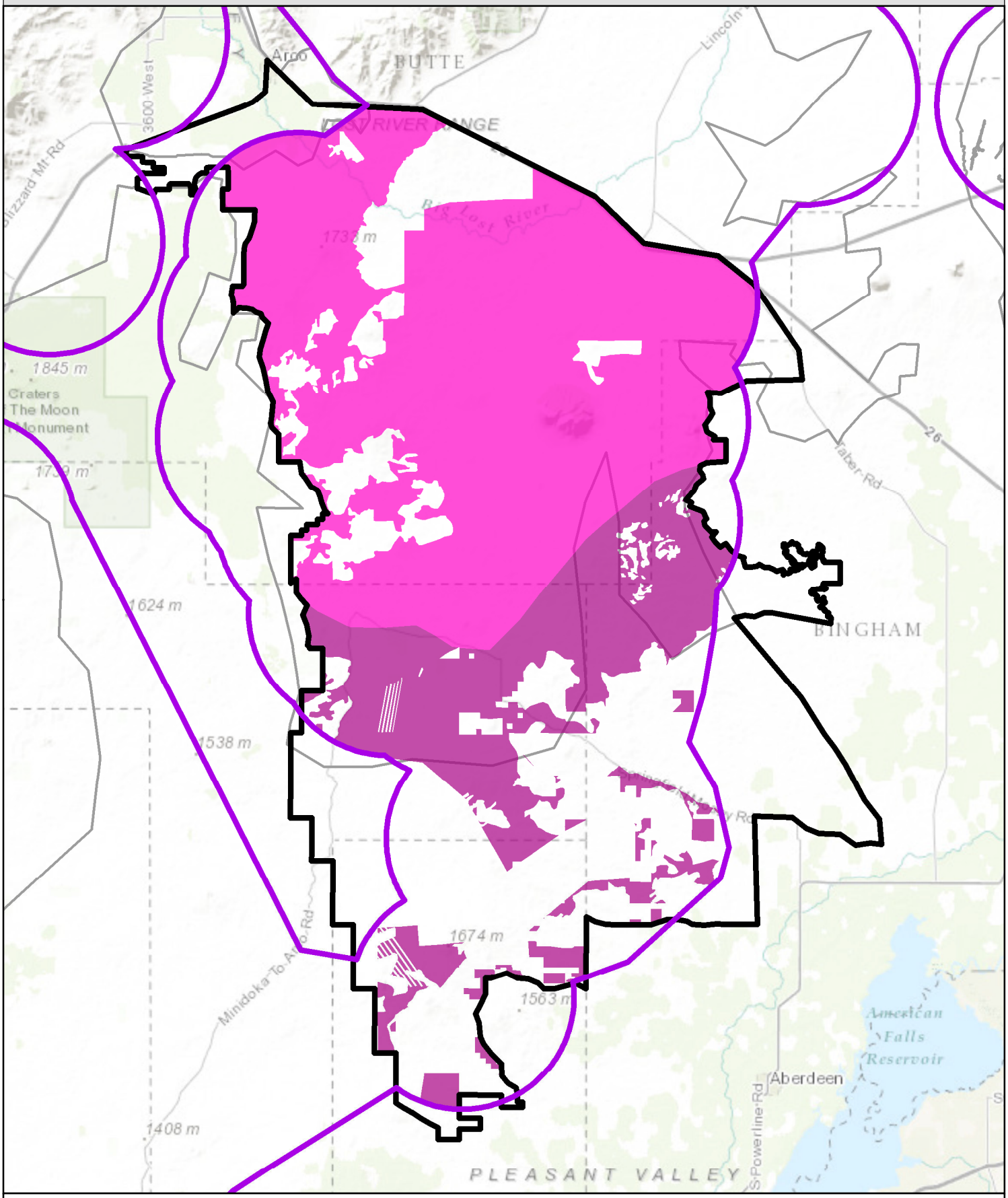
Conifer Expansion Potential Treatment Areas

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:527,556

Big Desert Project Planning Area

Emergency Stabilization, Rehabilitation Priority

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.

N

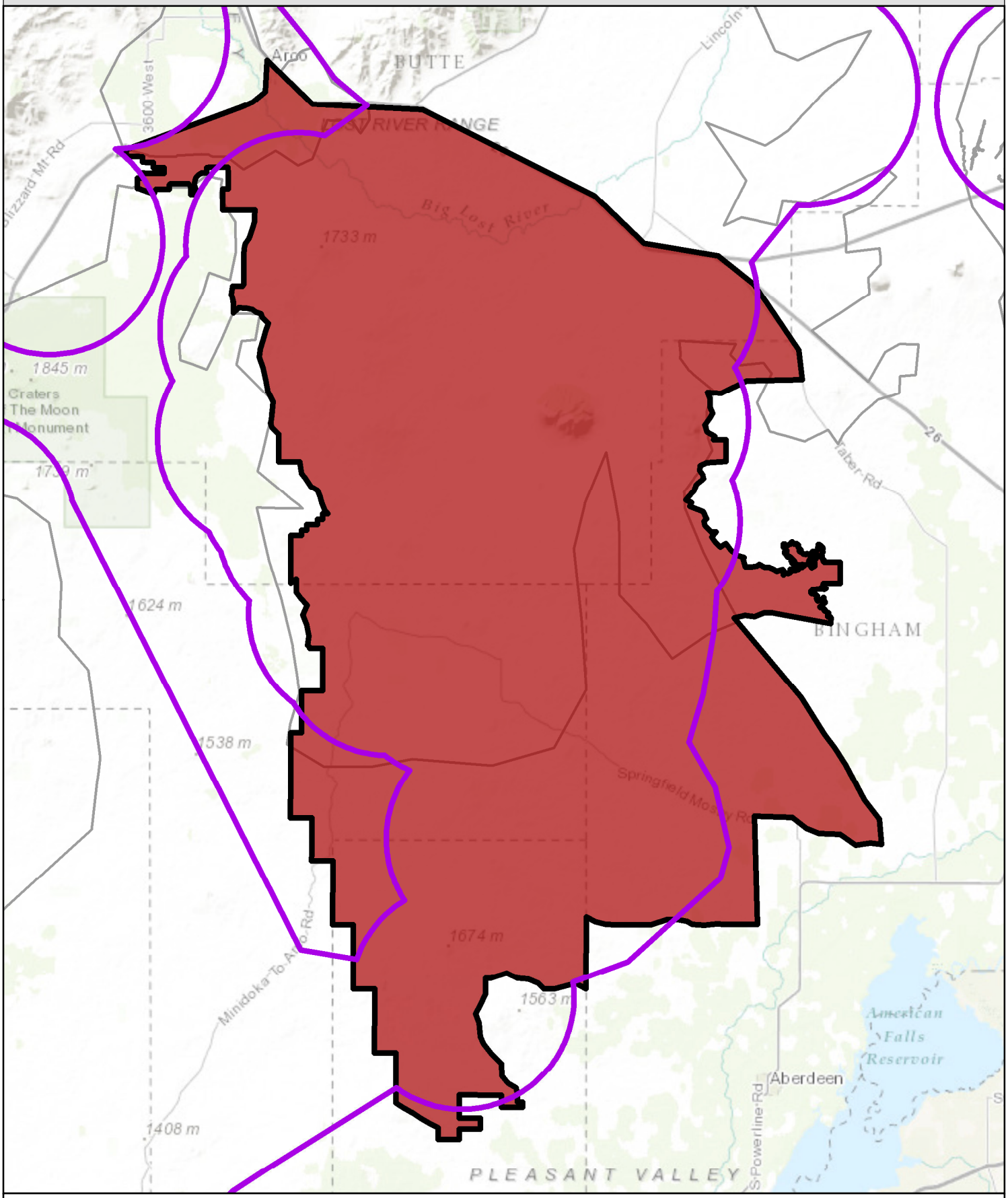
Big Desert Project Planning Area
Big Desert ESR 1st Priority
Big Desert ESR 2nd Priority

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:527,556

Big Desert Project Planning Area

Fire Operations Priority

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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N

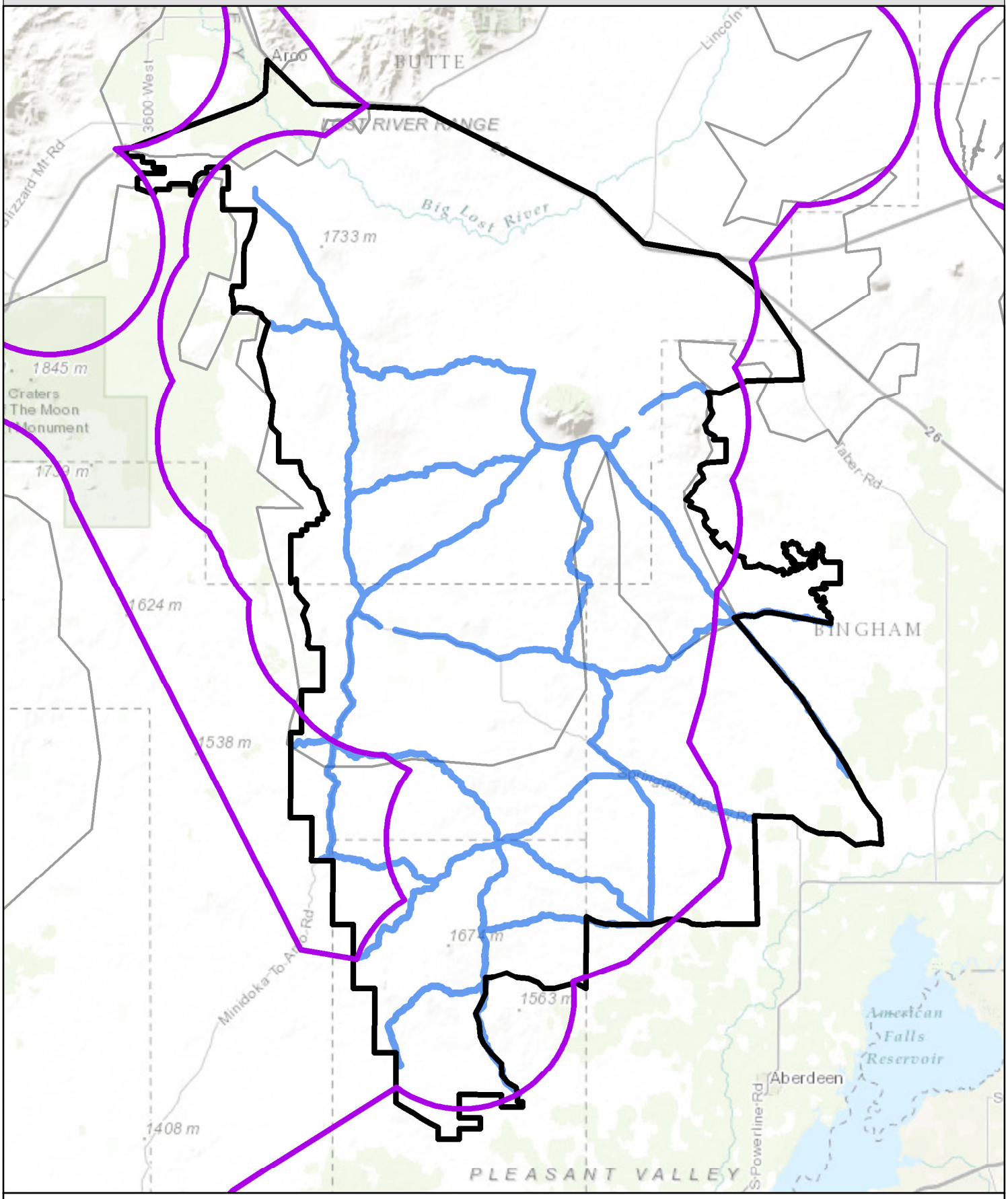
Big Desert Project Planning Area
Big Desert Fire 1st Priority

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:527,556

Big Desert Project Planning Area

Fuels Management Potential Treatment Areas

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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N

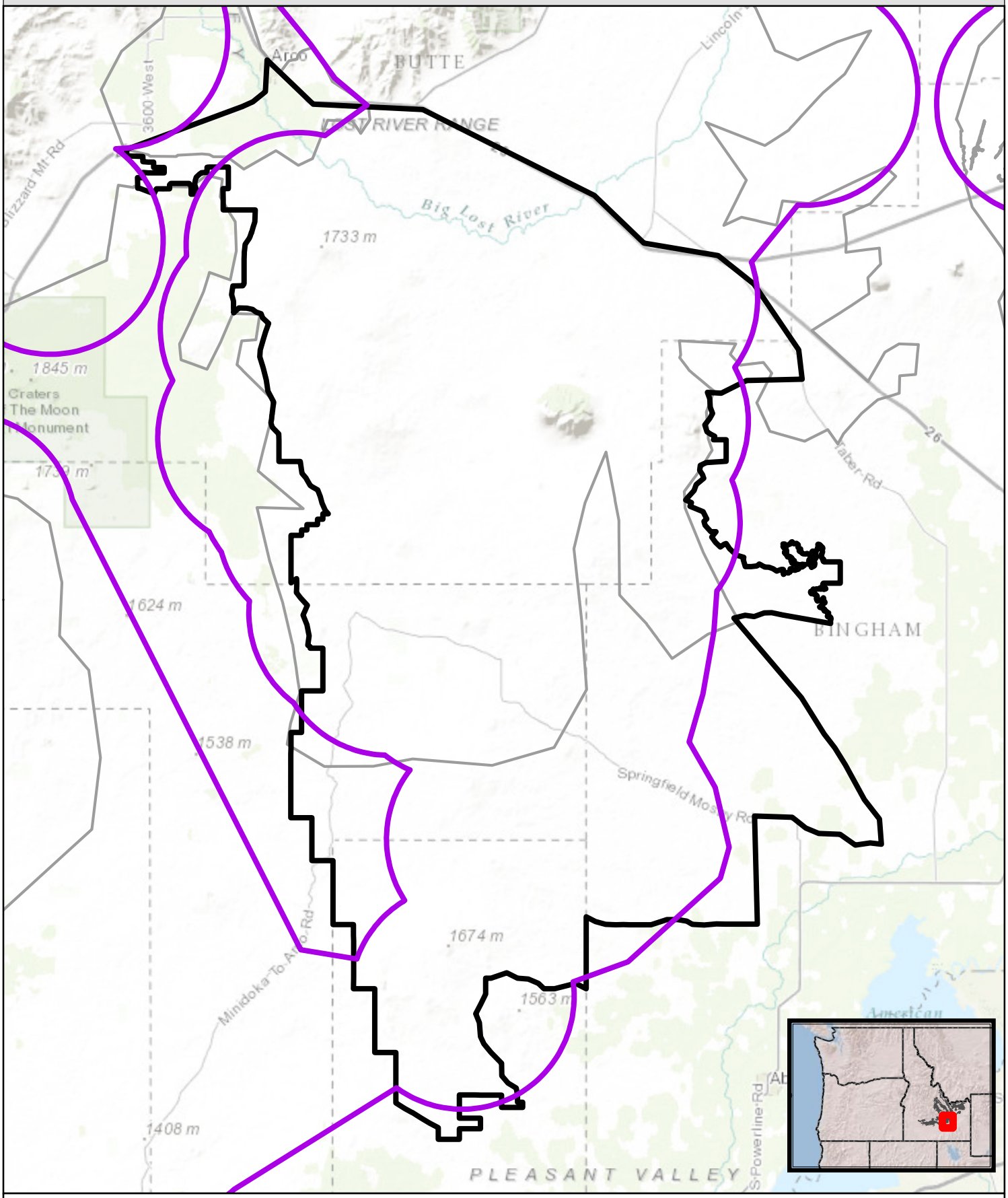
Big Desert Project Planning Area

Fuels Management Potential Treatment Areas

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:527,556

Big Desert Project Planning Area

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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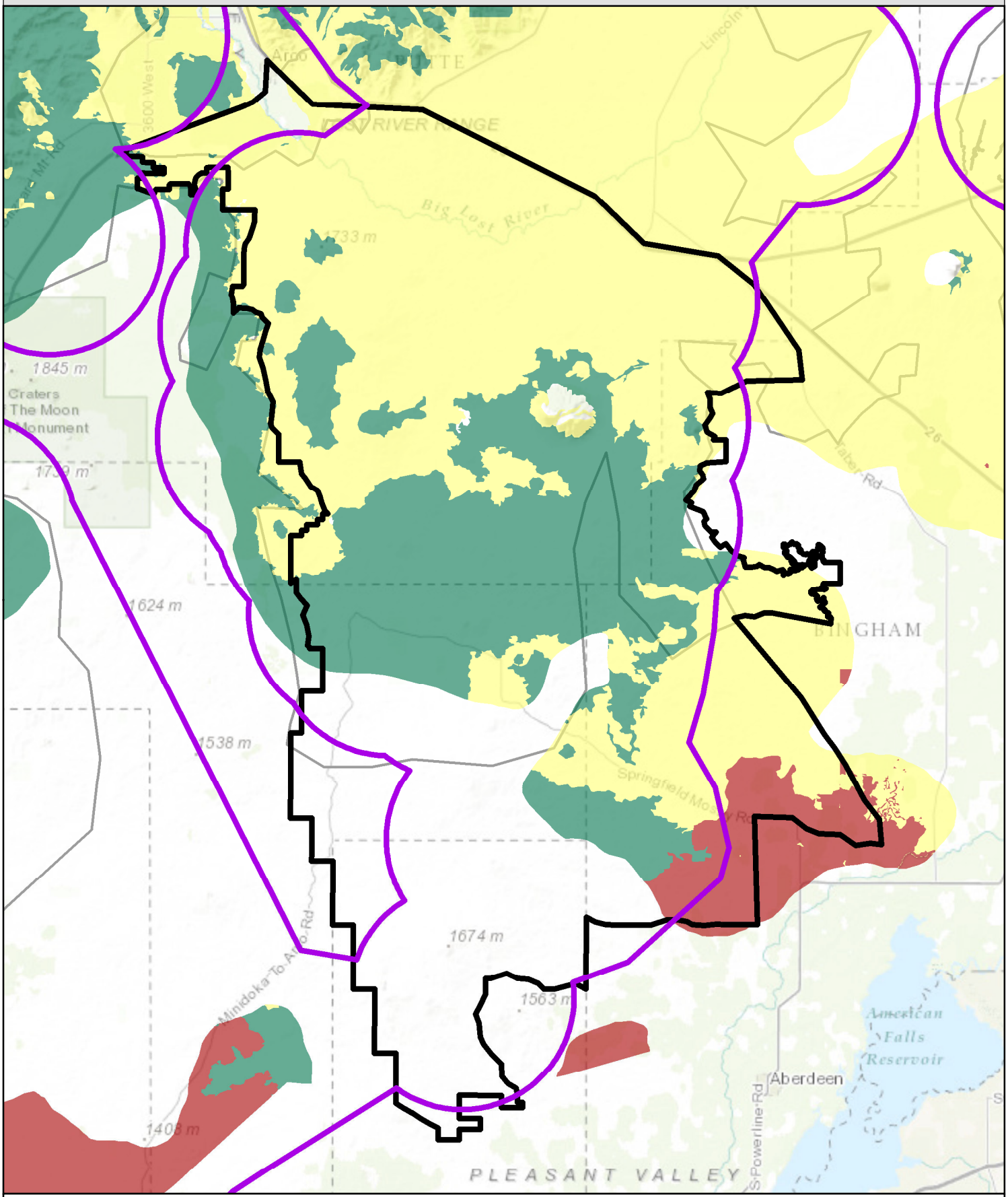
N

Big Desert Project Planning Area

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:527,107

Big Desert Project Planning Area
Resistance-Resilience Reportable Priorities

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.

N

Big Desert Project Planning Area

Reportable Priorities

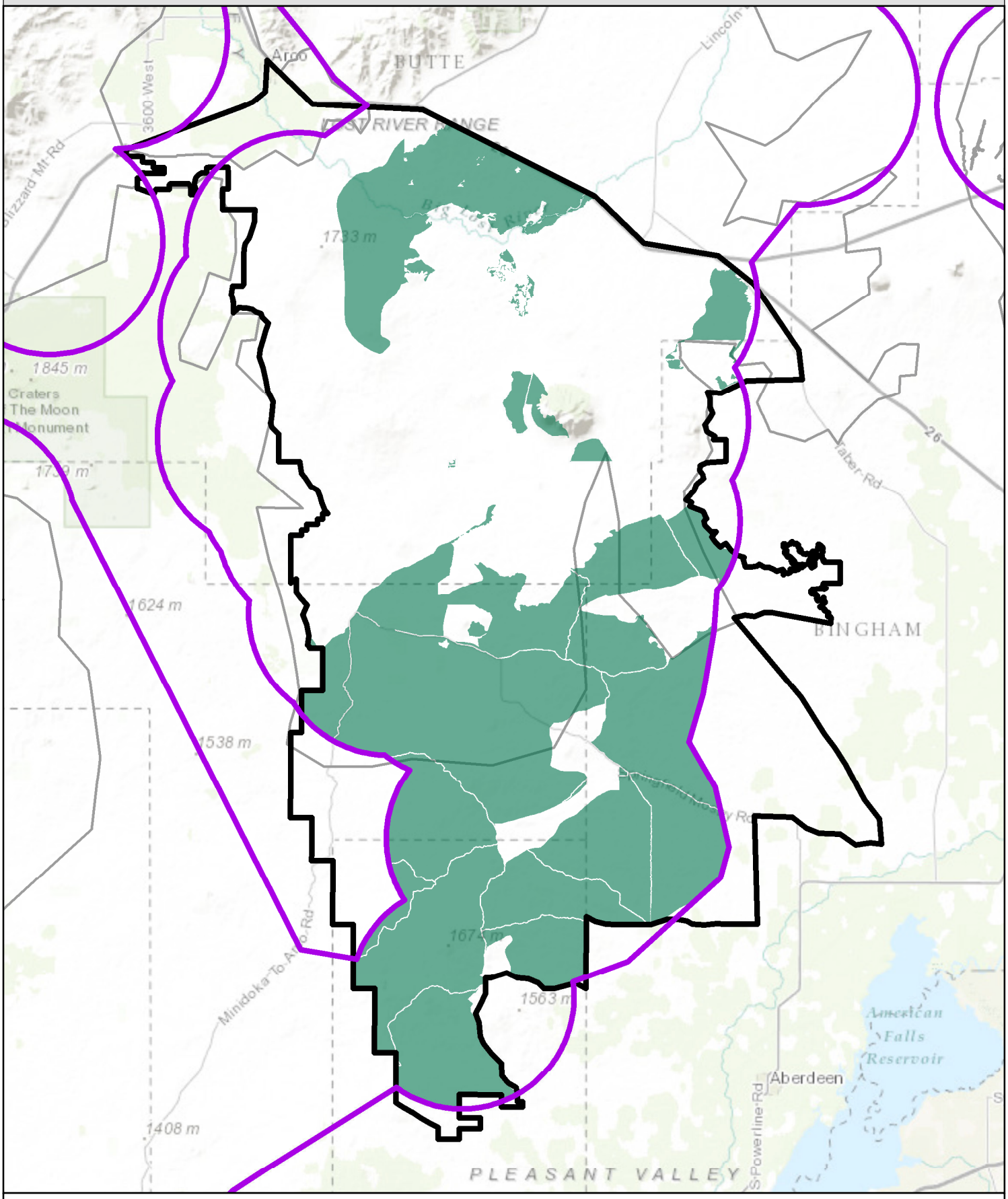
1 2 3

March 2015
Date Saved: 3/13/2015
Data Sources: BLM, ESRI Basedata
1:528,008

Big Desert Project Planning Area

Habitat Restoration Potential Treatment Areas

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.

N

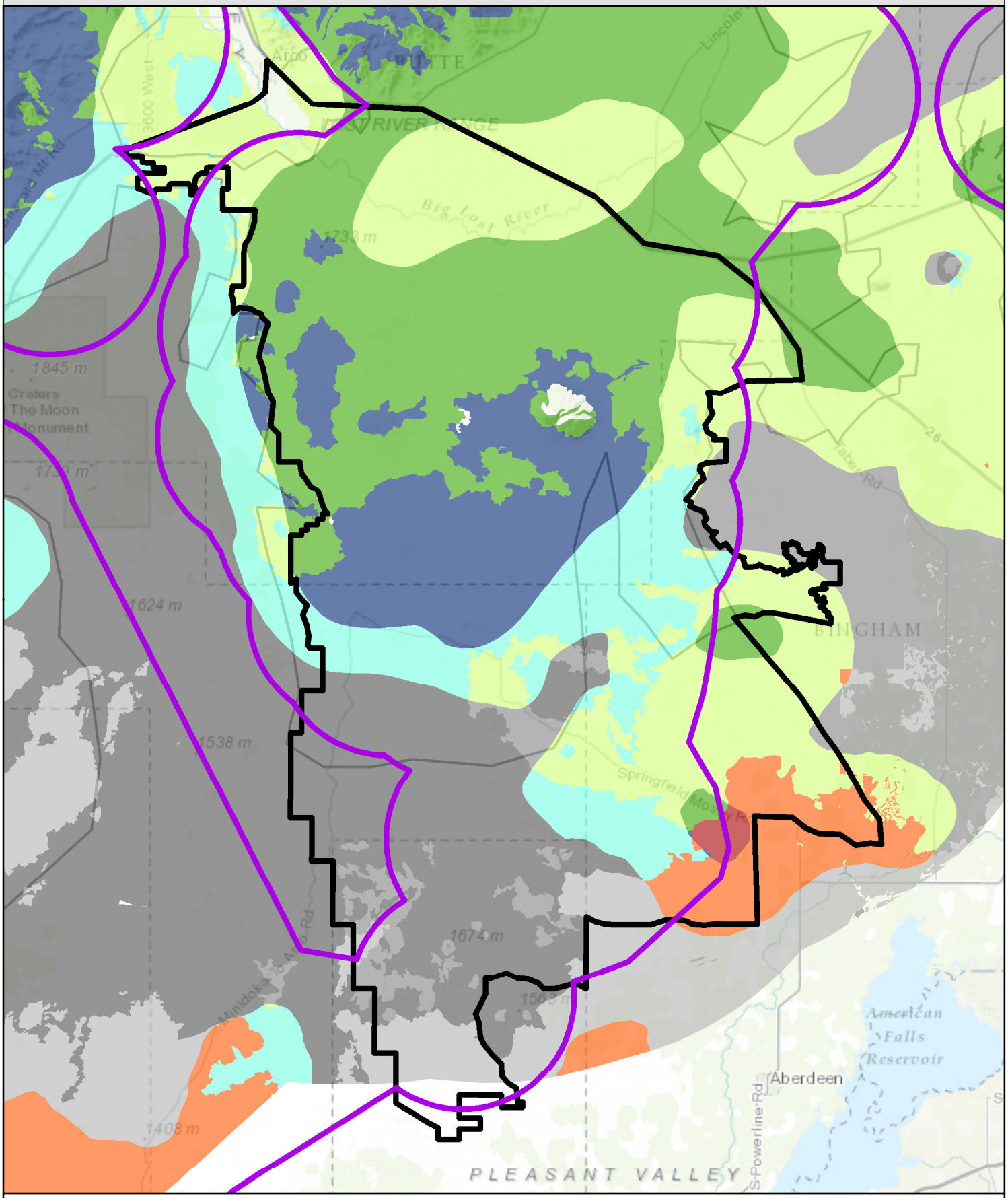
Big Desert Project Planning Area

Habitat Restoration Potential Treatment Areas

March 2015
Date Saved: 3/16/2015
Data Sources: BLM, ESRI Basedata
1:527,107

Big Desert Project Planning Area
Resistance-Resilience Priorities
for Application of Management Strategies

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.

N

Big Desert Project Planning Area

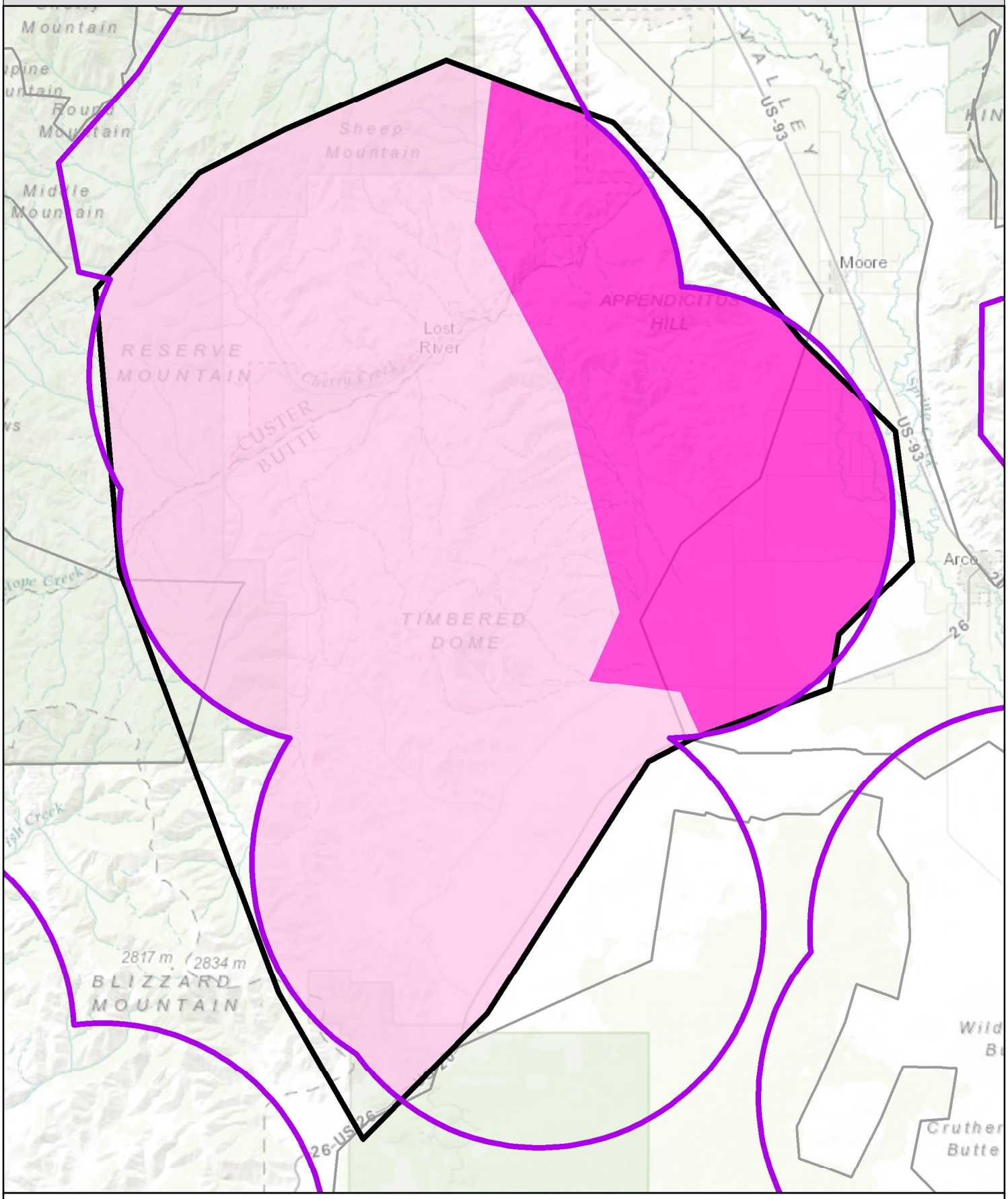
3C 3B 2C 2B 1C 1B 3A 2A 1A

March 2015
Date Saved: 3/13/2015
Data Sources: BLM, ESRI Basedata
1:528,008

Big Lost Project Planning Area

Emergency Stabilization, Rehabilitation Priority

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.

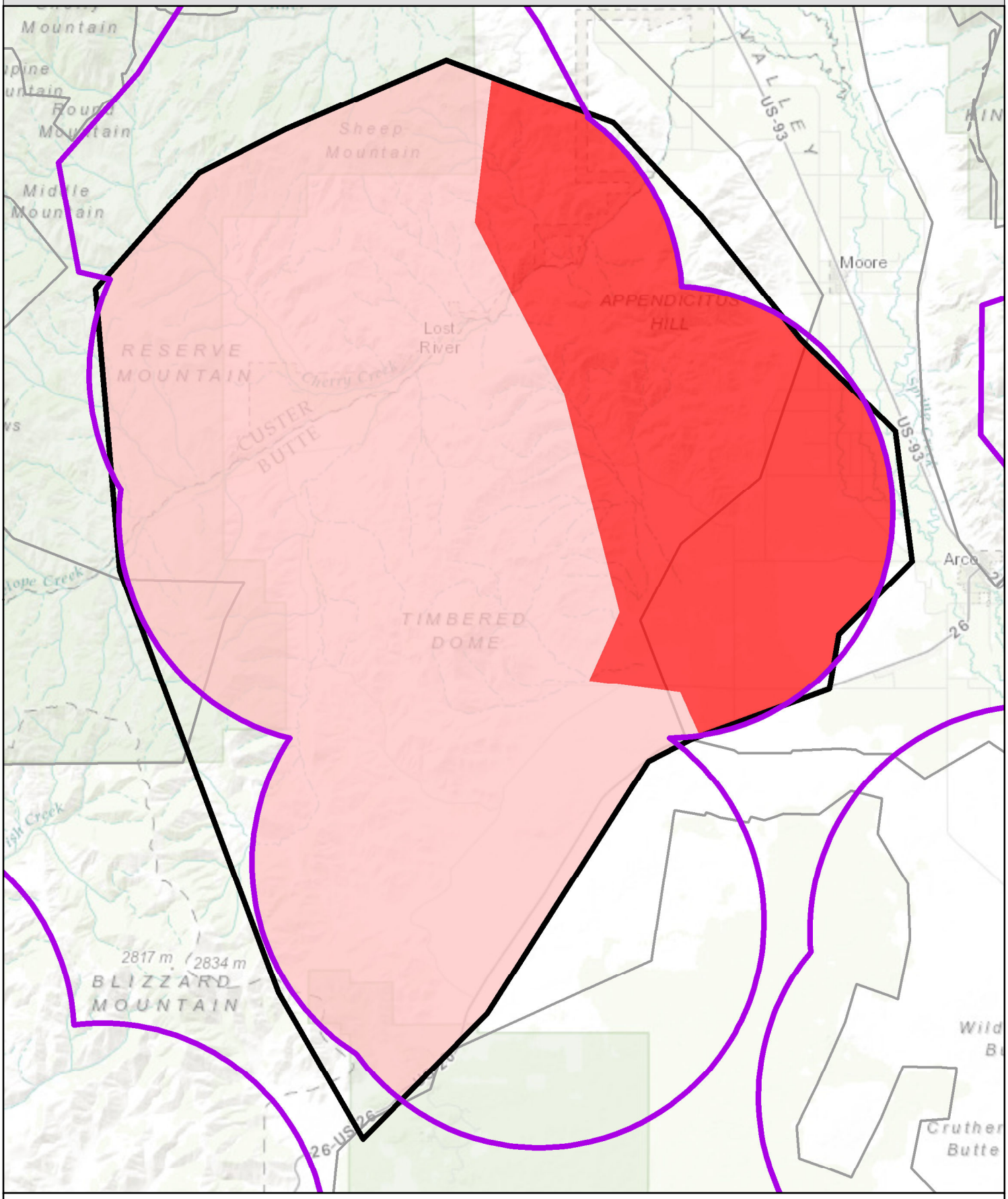
Big Lost Project Planning Area
Big Lost ESR 2nd Priority
Big Lost ESR 3rd Priority

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:264,790

Big Lost Project Planning Area

Fire Operations Priority

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



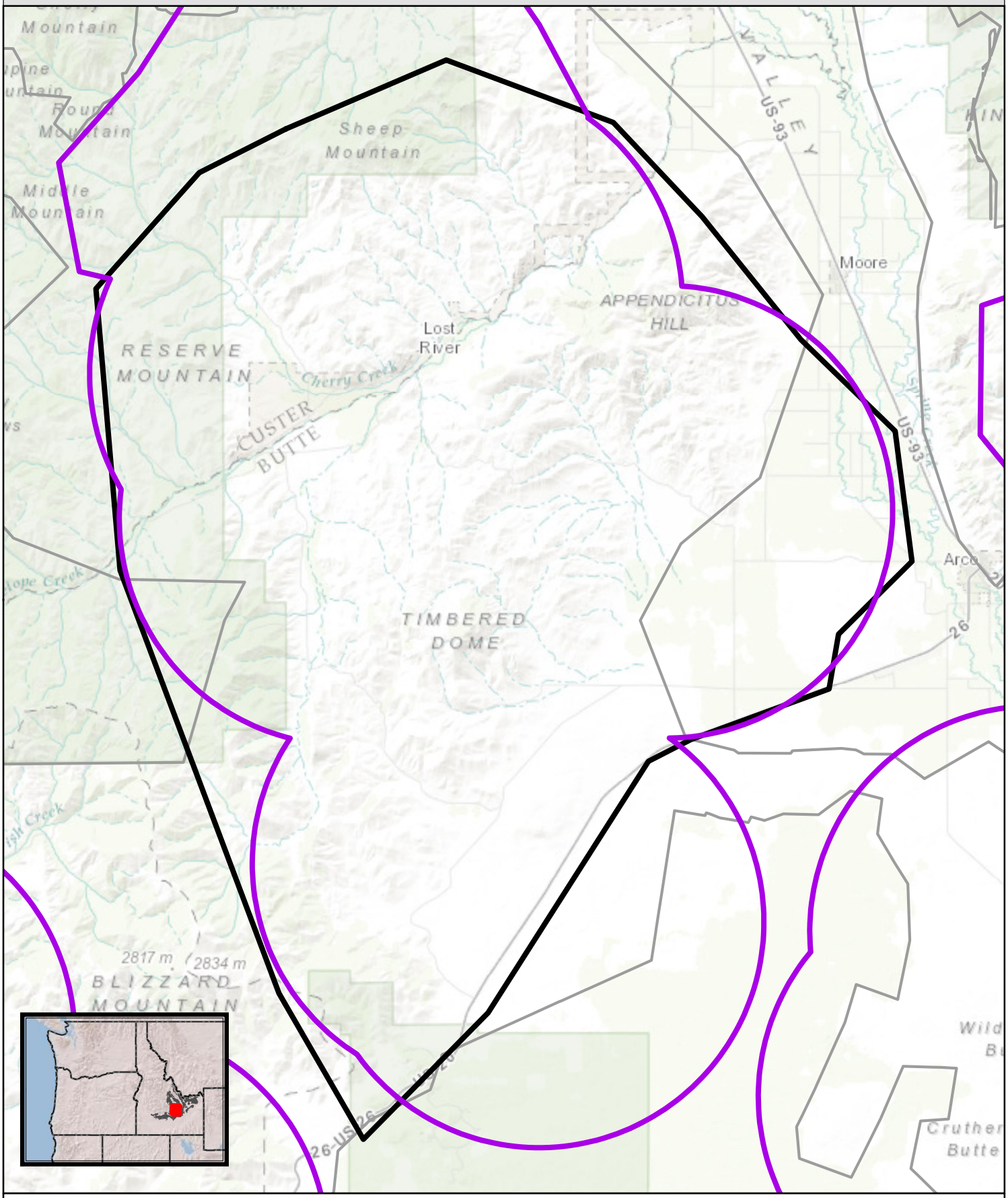
No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.

Big Lost Project Planning Area
Big Lost Fire 2nd Priority
Big Lost Fire 3rd Priority

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:264,790

Big Lost Project Planning Area

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.

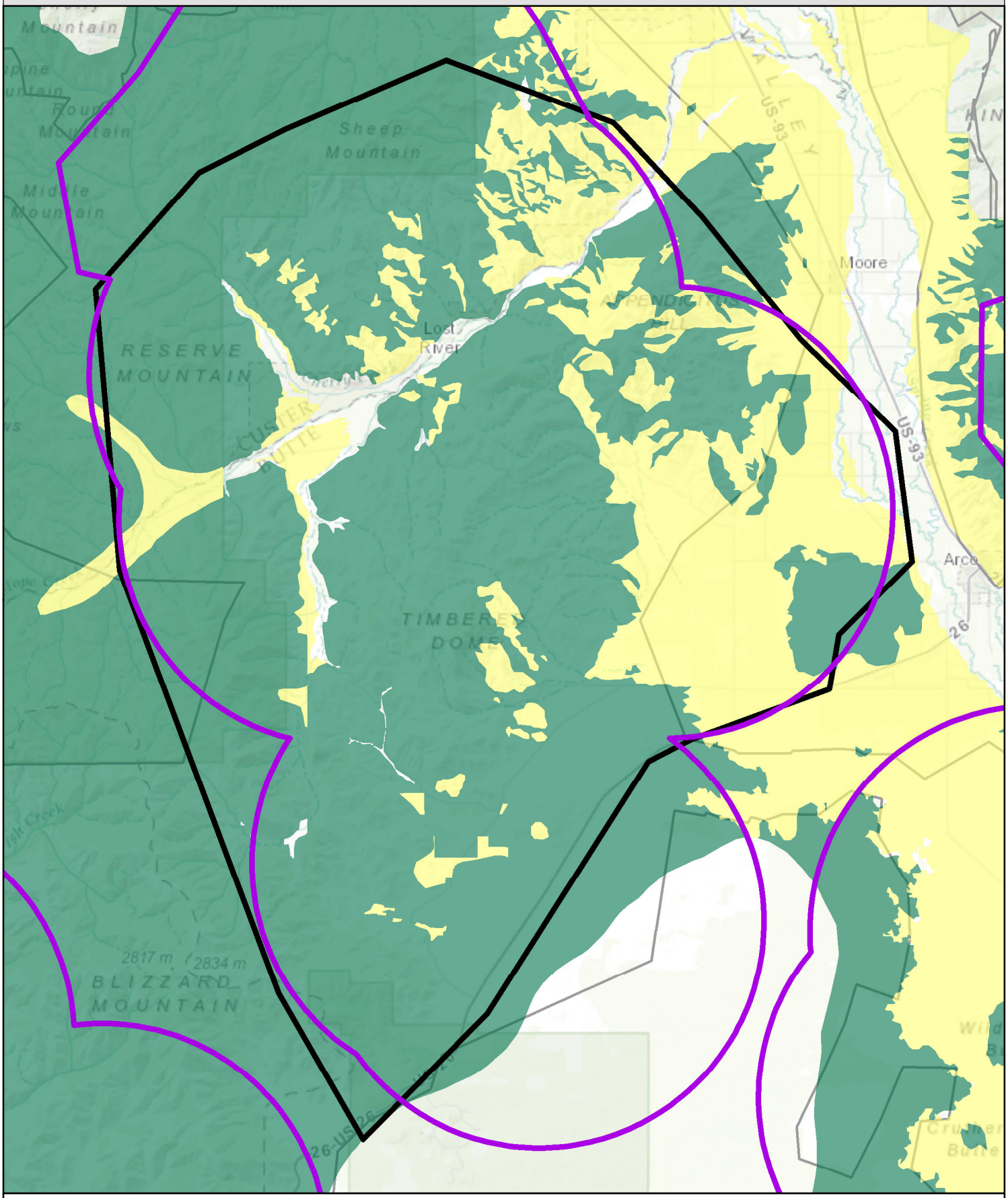
N

Big Lost Project Planning Area

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:264,565

Big Lost Project Planning Area
Resistance-Resilience Reportable Priorities

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.

Big Lost Project Planning Area

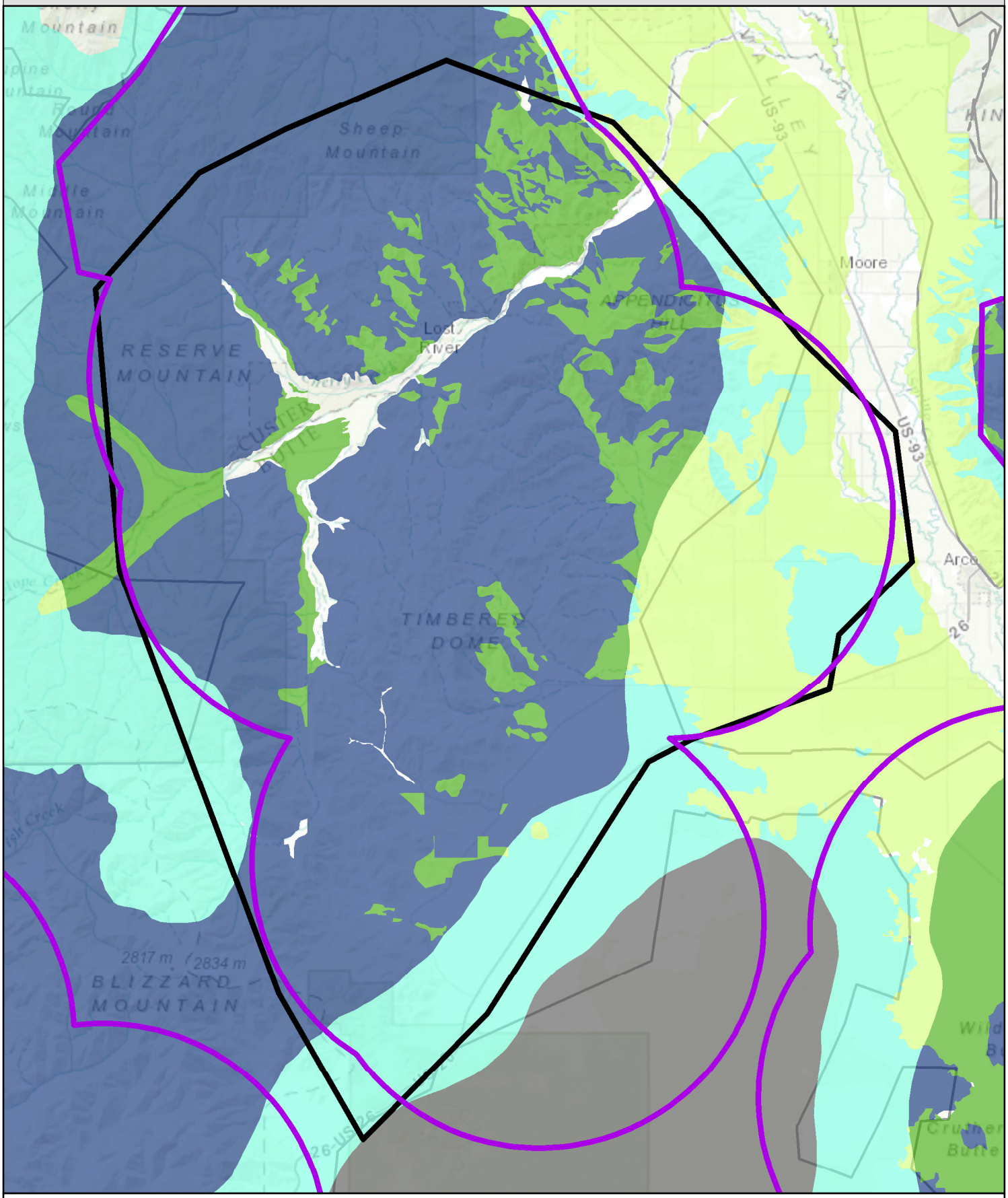
Reportable Priorities

1 2 3

March 2015
Date Saved: 3/13/2015
Data Sources: BLM, ESRI Basedata
1:265,017

Big Lost Project Planning Area
Resistance-Resilience Priorities
for Application of Management Strategies

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.

Big Lost Project Planning Area

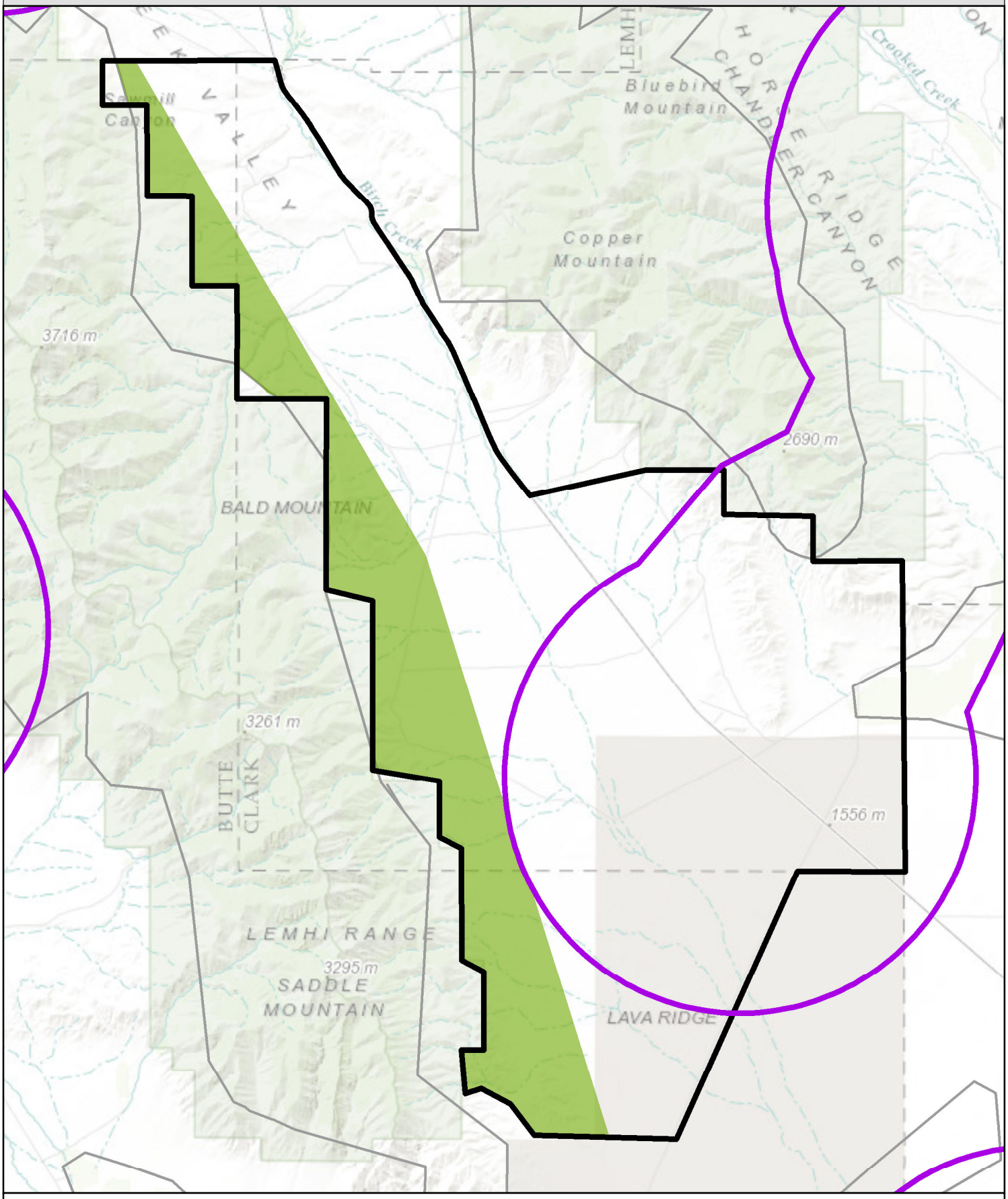
3C 3B 2C 2B 1C 1B 3A 2A 1A

March 2015
Date Saved: 3/13/2015
Data Sources: BLM, ESRI Basedata
1:265,017

Birch Creek Project Planning Area

Conifer Expansion Potential Treatment Areas

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.

N

Birch Creek Project Planning Area

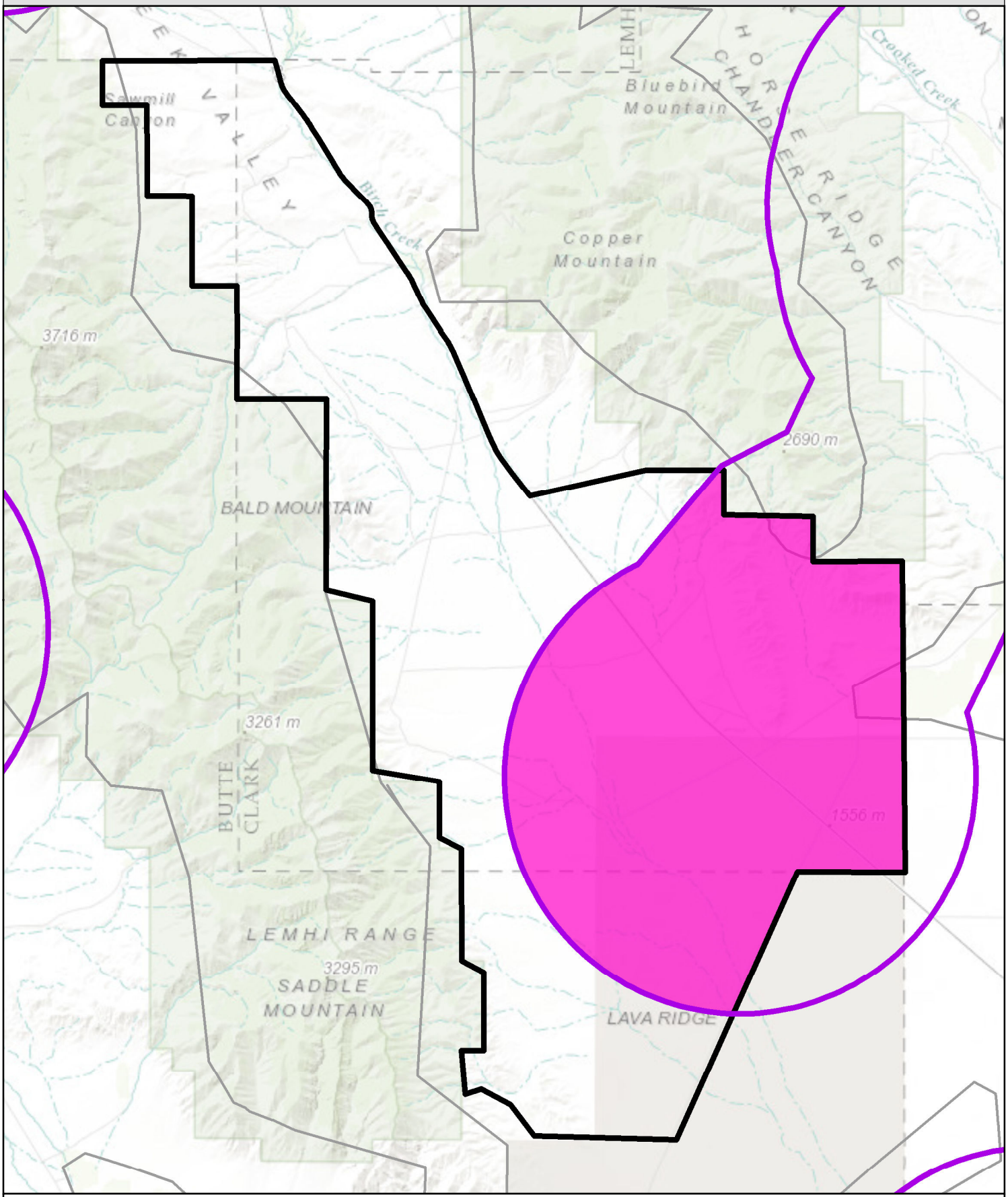
Conifer Expansion Potential Treatment Areas

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:254,751

Birch Creek Project Planning Area

Emergency Stabilization, Rehabilitation Priority

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.

N

Birch Creek Project Planning Area

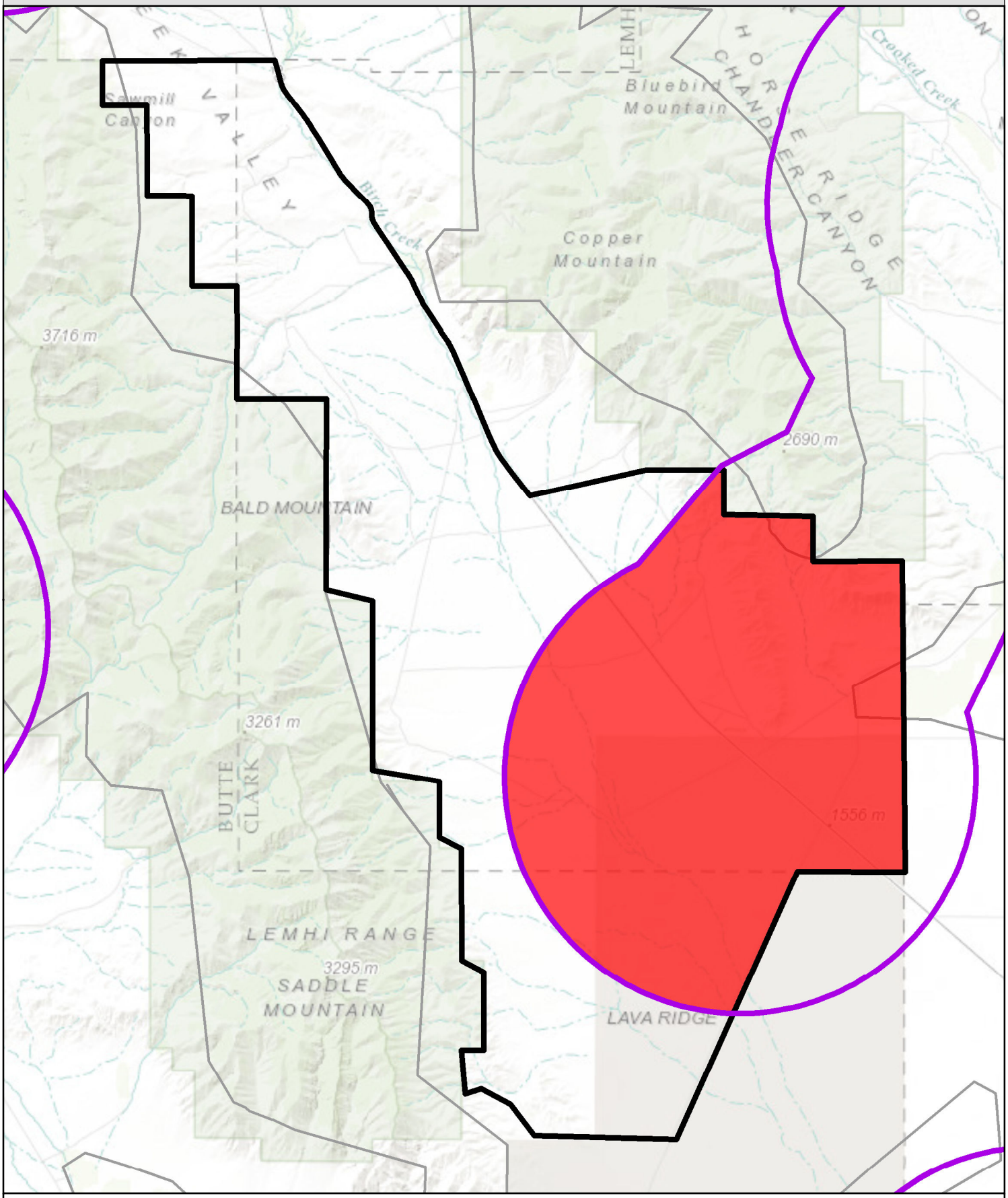
Birch Creek ESR 2nd Priority

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:254,751

Birch Creek Project Planning Area

Fire Operations Priority

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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N

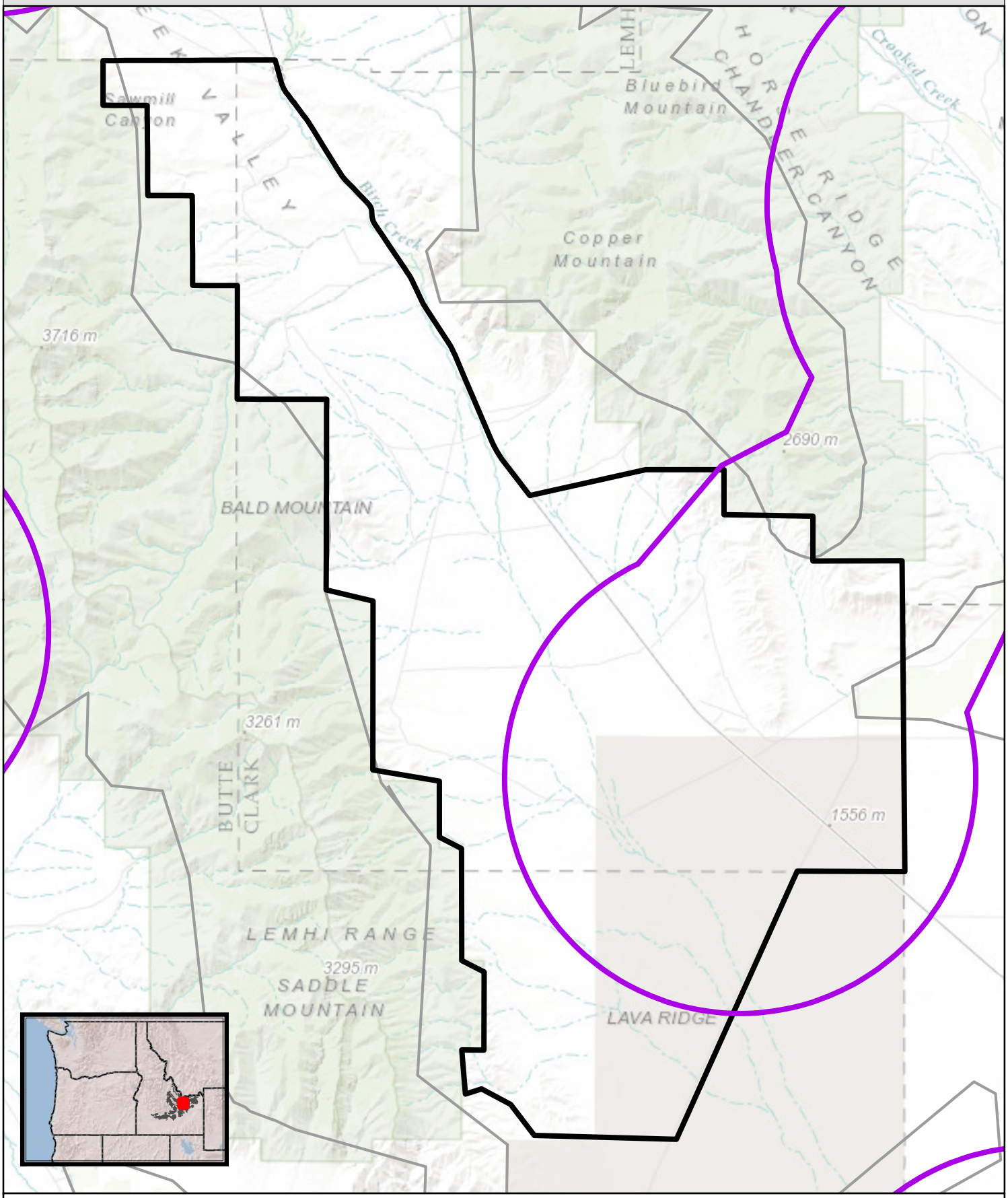
Birch Creek Project Planning Area

Birch Creek Fire 2nd Priority

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:254,751

Birch Creek Project Planning Area

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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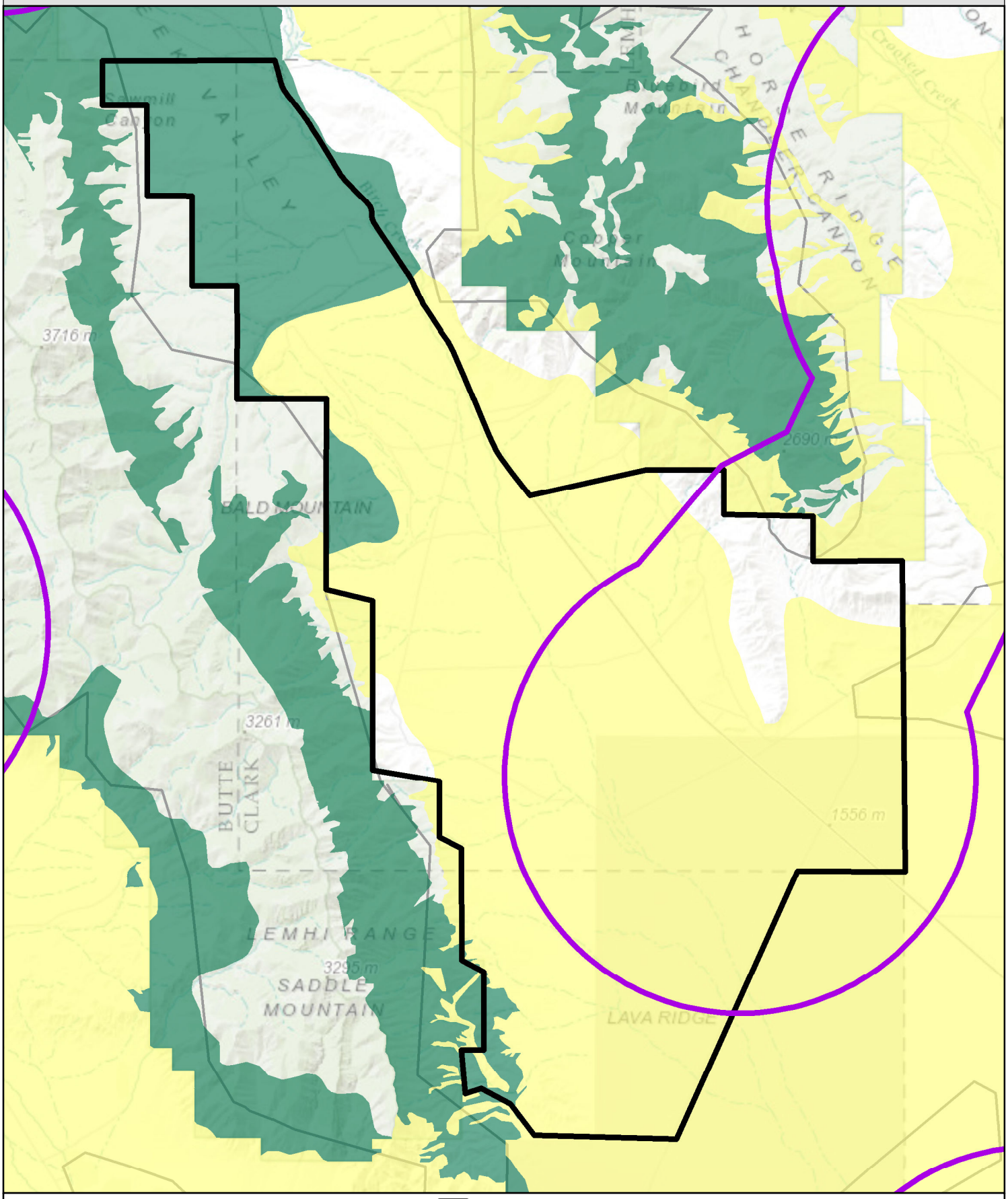
Birch Creek Project Planning Area

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:254,534

Birch Creek Project Planning Area
Resistance-Resilience Reportable Priorities

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.

N

Birch Creek Project Planning Area

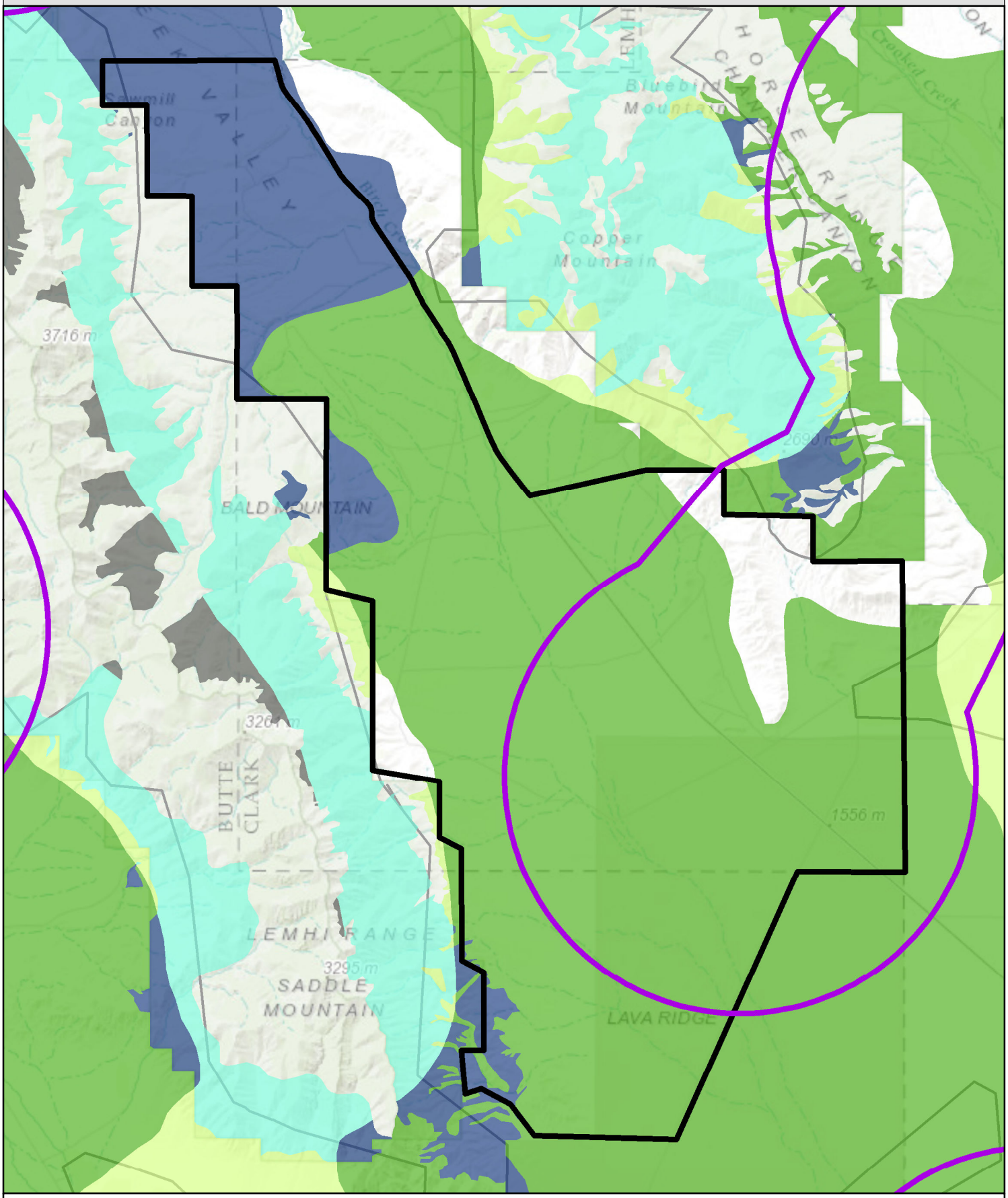
Reportable Priorities

1 2 3

March 2015
Date Saved: 3/13/2015
Data Sources: BLM, ESRI Basedata
1:254,969

Birch Creek Project Planning Area
Resistance-Resilience Priorities
for Application of Management Strategies

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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N

Birch Creek Project Planning Area

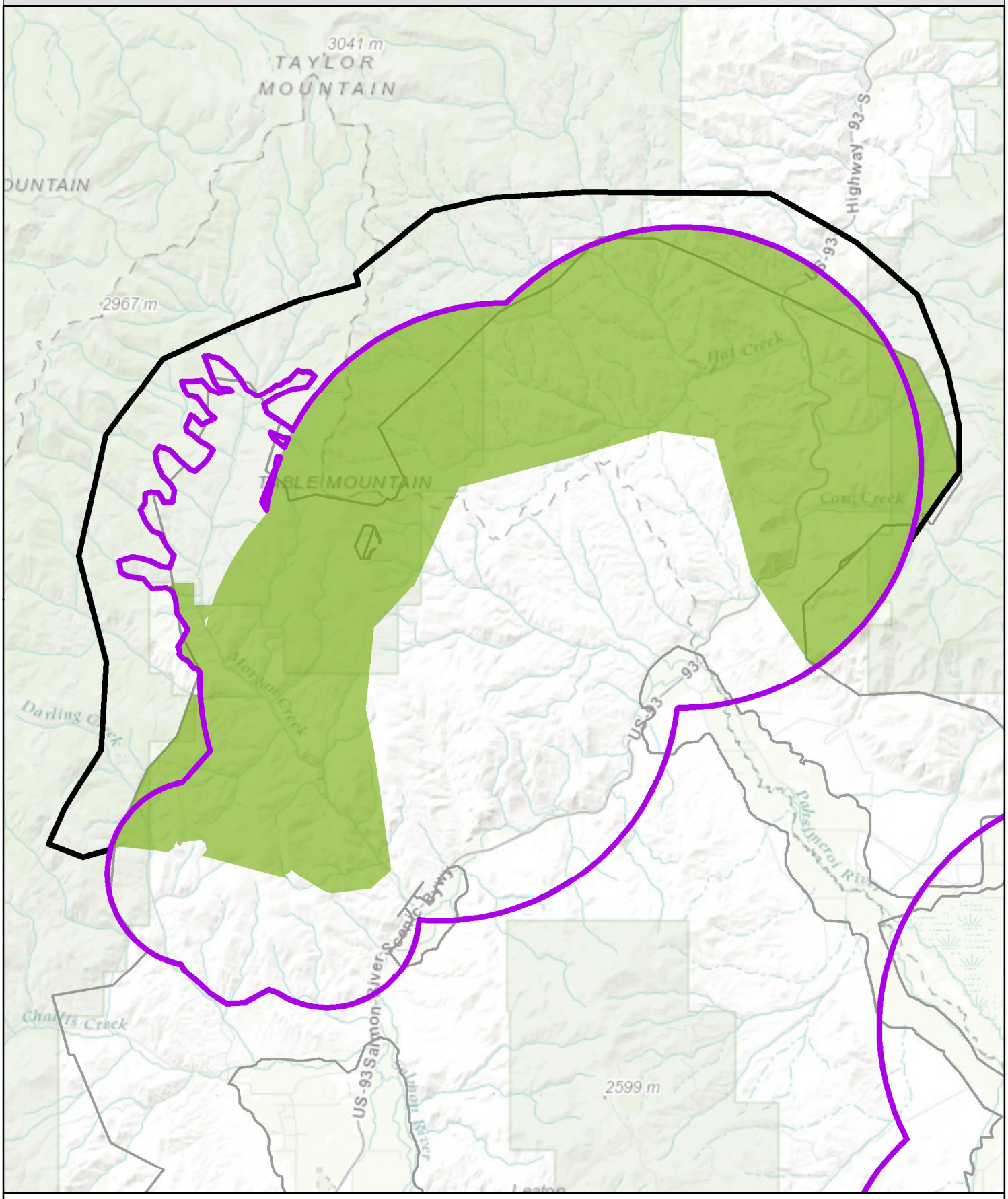
3C 3B 2C 2B 1C 1B 3A 2A 1A

March 2015
Date Saved: 3/13/2015
Data Sources: BLM, ESRI Basedata
1:254,969

Hat Creek Project Planning Area

Conifer Expansion Potential Treatment Areas

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.

Hat Creek Project Planning Area

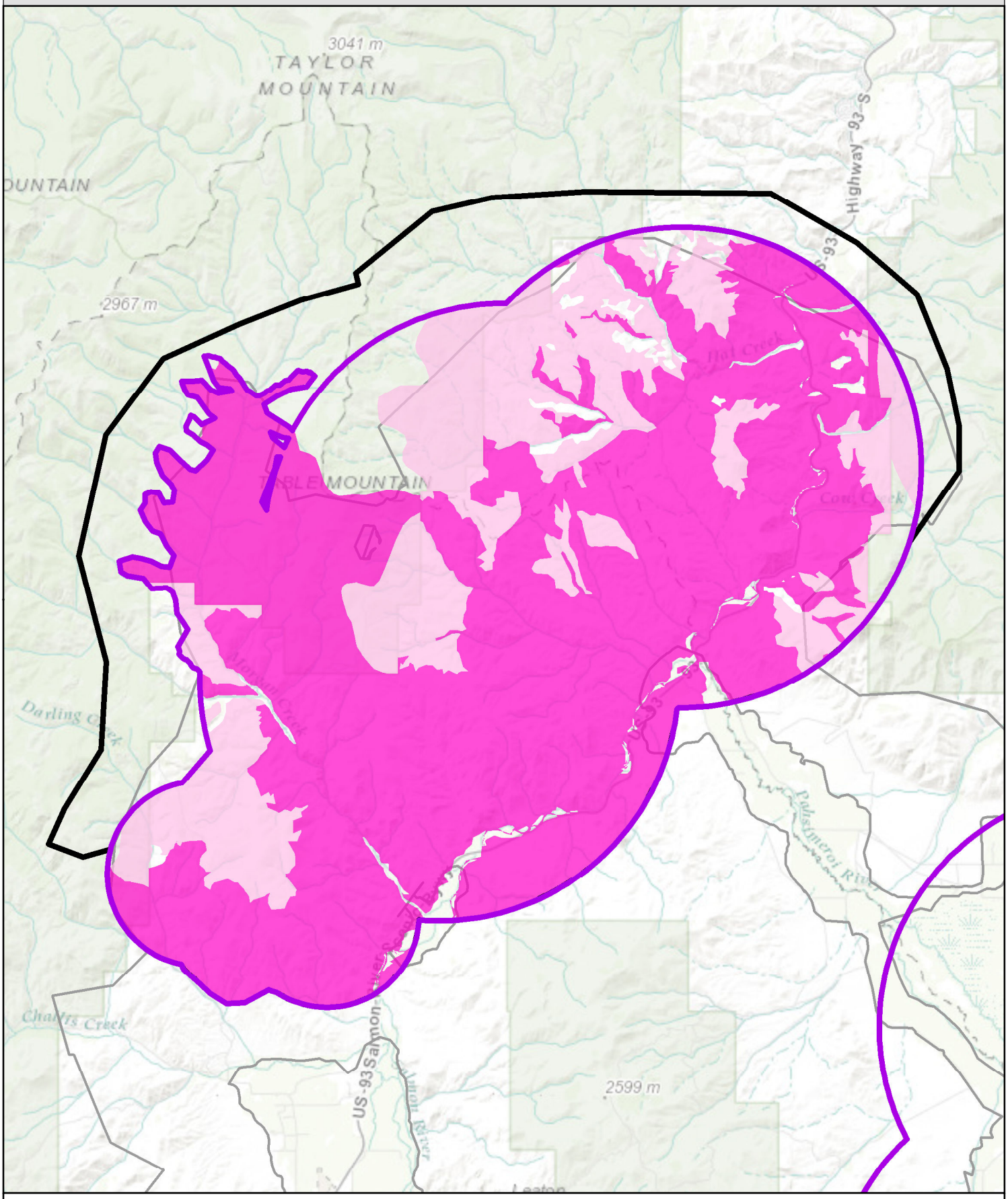
Conifer Expansion Potential Treatment Areas

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:253,696

Hat Creek Project Planning Area

Emergency Stabilization, Rehabilitation Priority

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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N

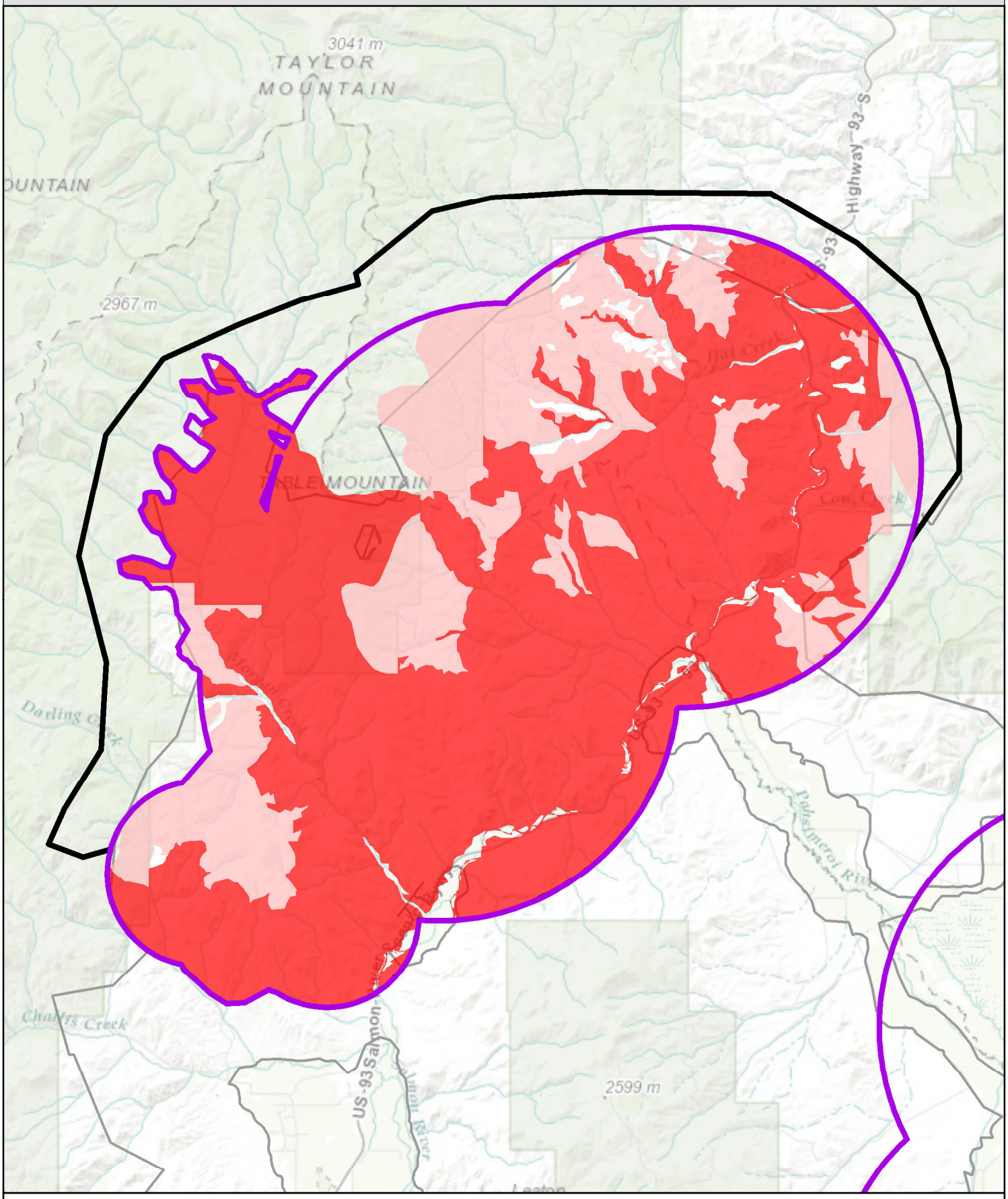
Hat Creek Project Planning Area
Hat Creek ESR 2nd Priority
Hat Creek ESR 3rd Priority

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:253,696

Hat Creek Project Planning Area

Fire Operations Priority

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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N

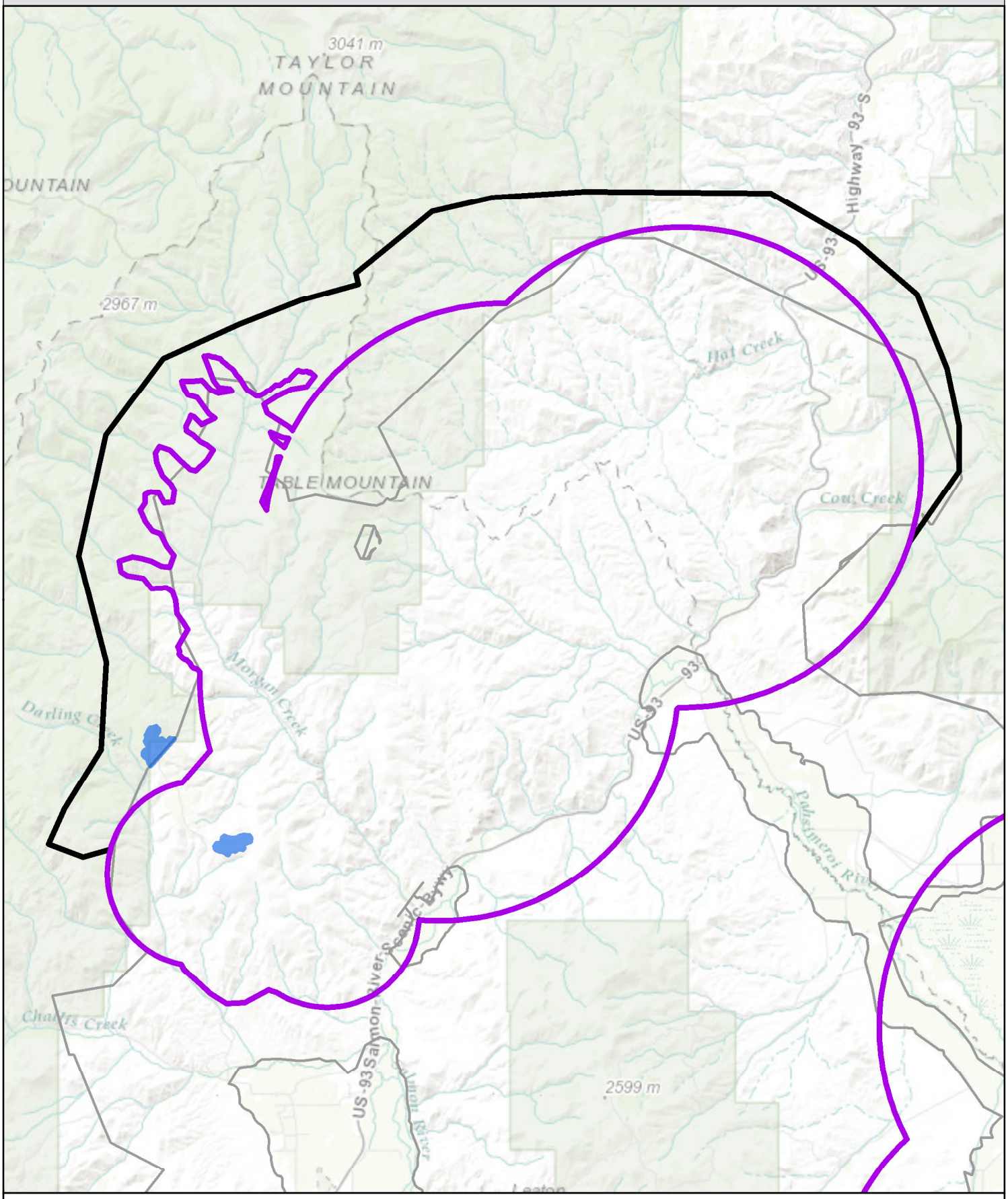
Hat Creek Project Planning Area
Hat Creek Fire 2nd Priority
Hat Creek Fire 3rd Priority

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:253,696

Hat Creek Project Planning Area

Fuels Management Potential Treatment Areas

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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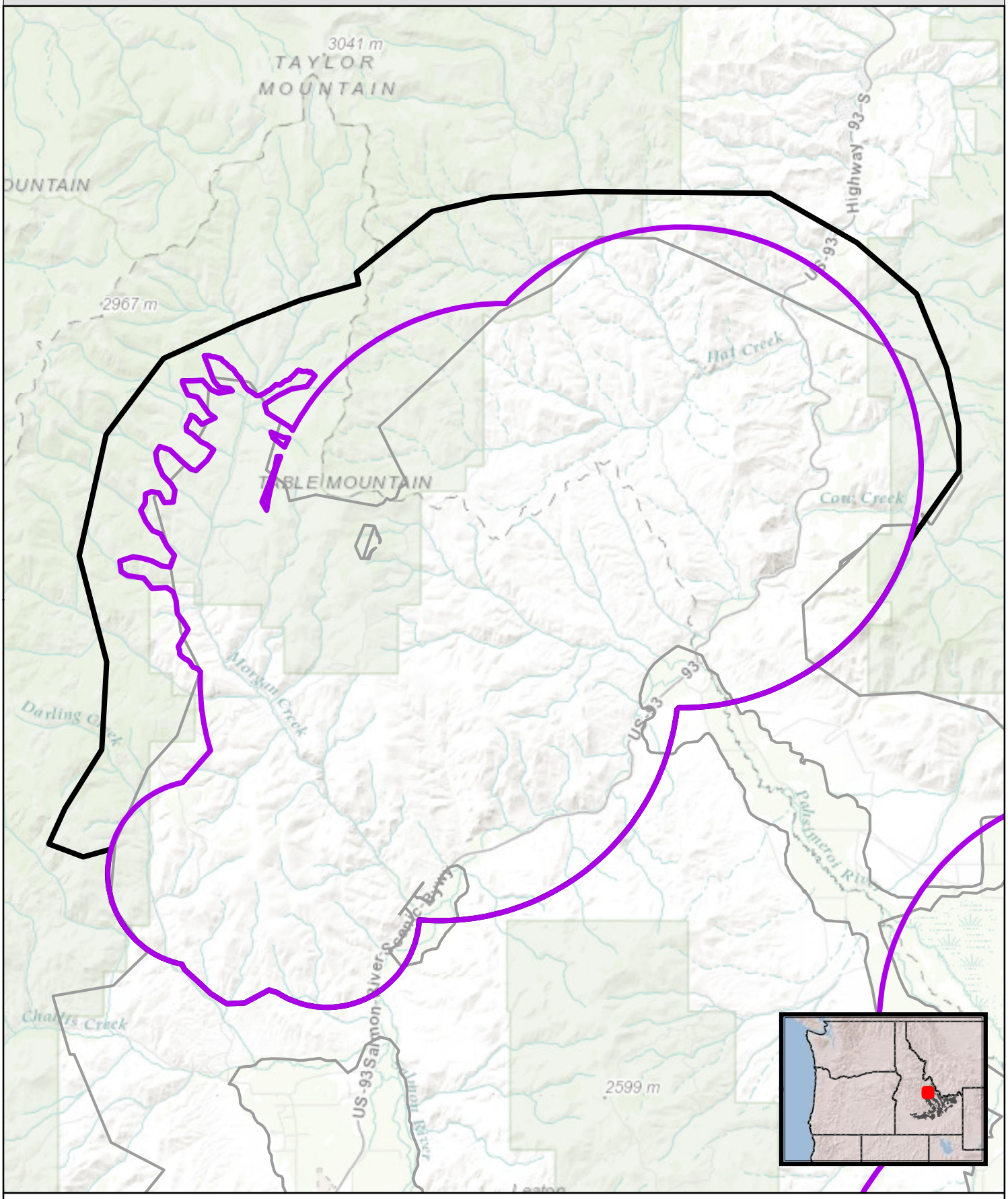
Hat Creek Project Planning Area

Fuels Management Potential Treatment Areas

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:253,696

Hat Creek Project Planning Area

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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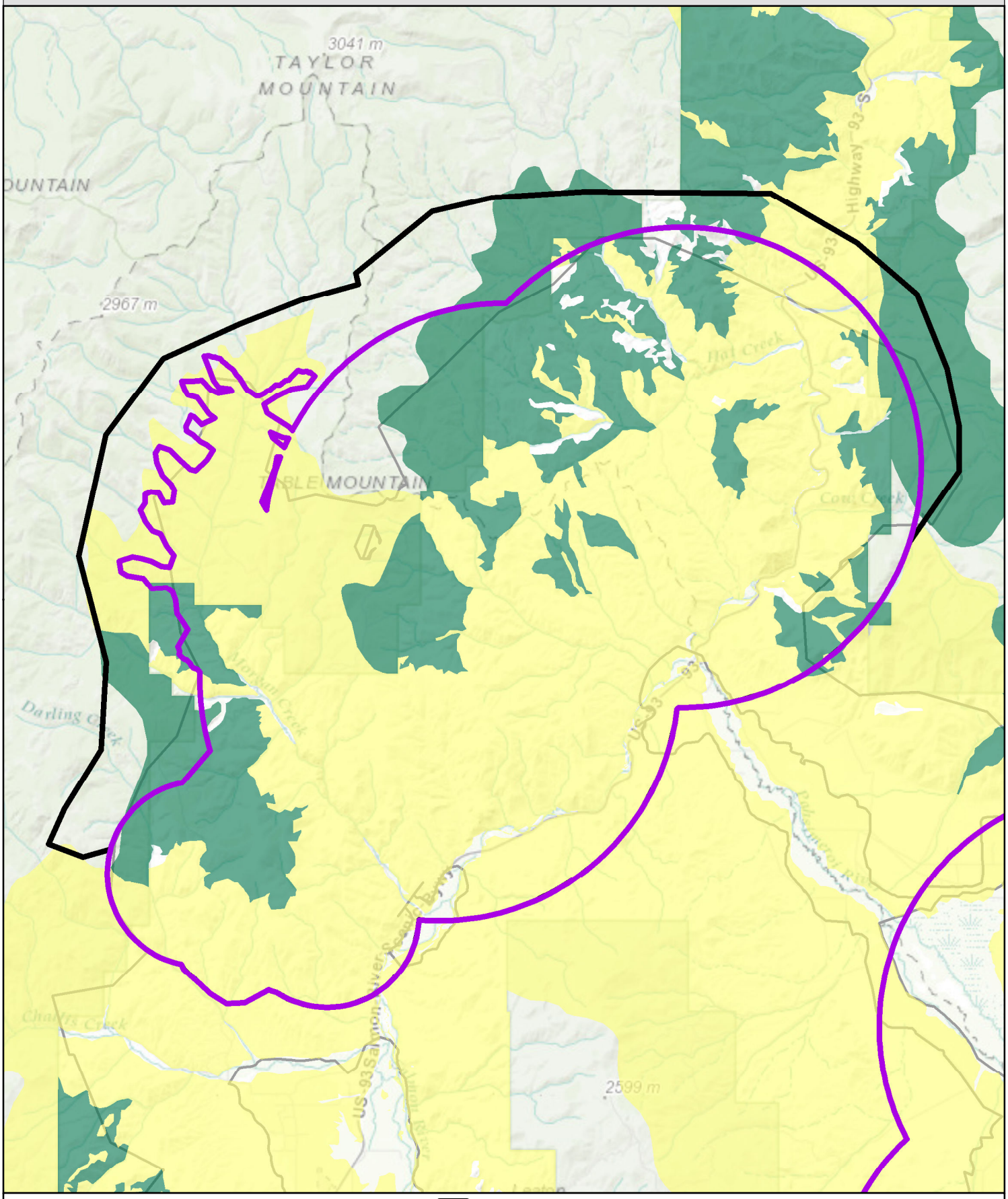
Hat Creek Project Planning Area

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:253,696

Hat Creek Project Planning Area
Resistance-Resilience Reportable Priorities

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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Hat Creek Project Planning Area

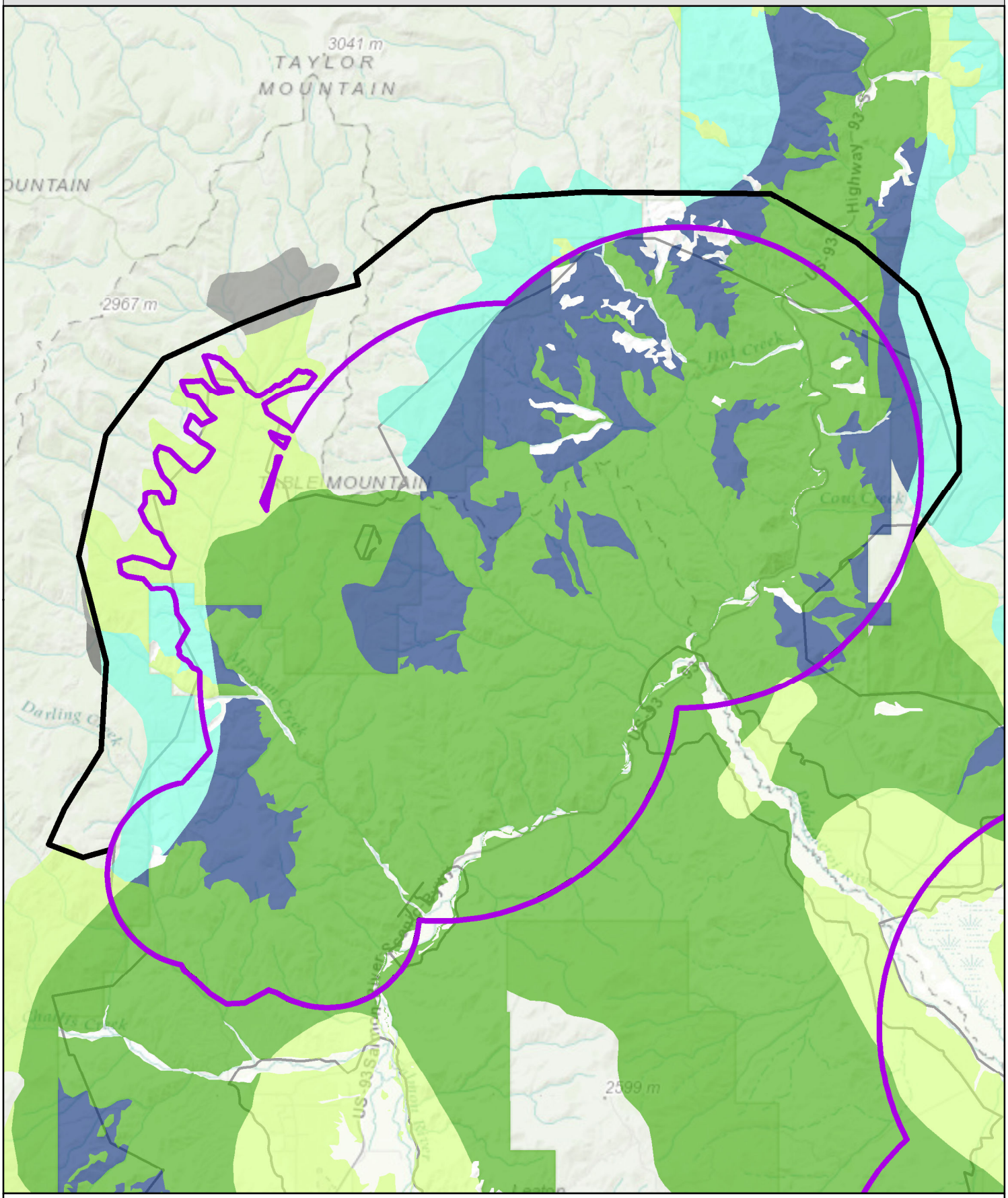
Reportable Priorities

1 2 3

March 2015
Date Saved: 3/13/2015
Data Sources: BLM, ESRI Basedata
1:253,696

Hat Creek Project Planning Area
Resistance-Resilience Priorities
for Application of Management Strategies

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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N

Hat Creek Project Planning Area

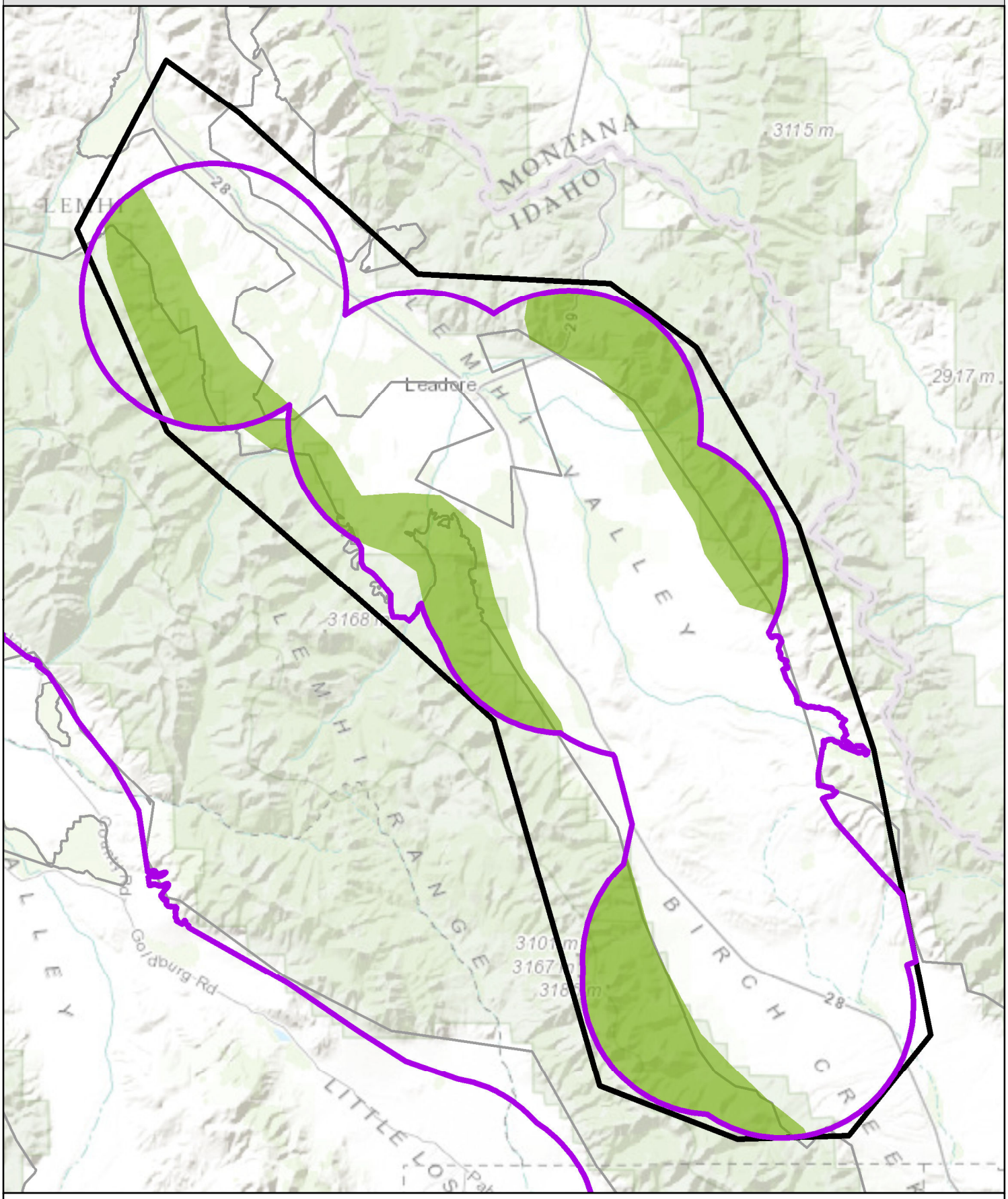
3C 3B 2C 2B 1C 1B 3A 2A 1A

March 2015
Date Saved: 3/13/2015
Data Sources: BLM, ESRI Basedata
1:253,696

Lemihi-Birch Project Planning Area

Conifer Expansion Potential Treatment Areas

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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Lemihi-Birch Project Planning Area

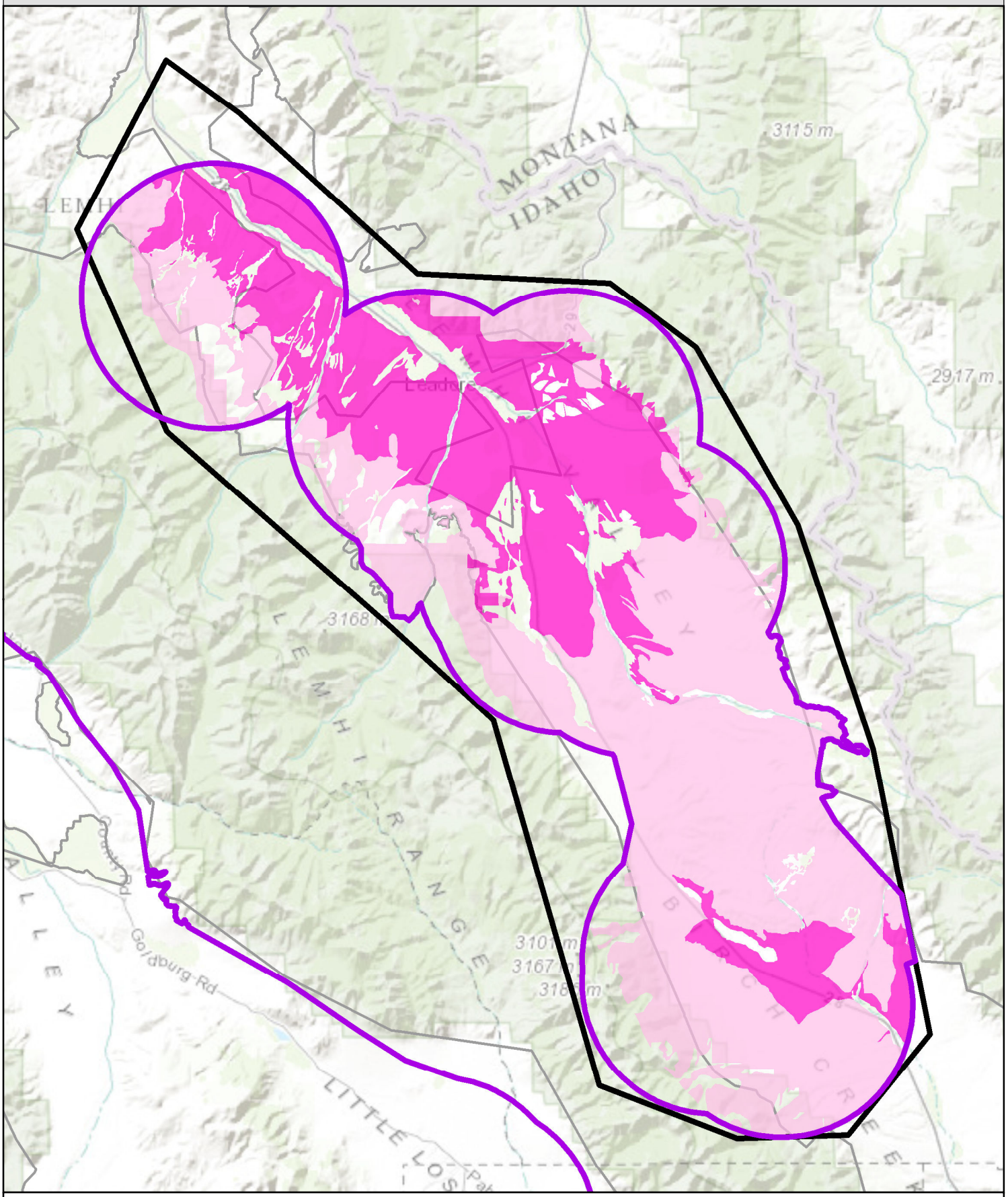
Conifer Expansion Potential Treatment Areas

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:459,370

Lemihi-Birch Project Planning Area

Emergency Stabilization, Rehabilitation Priority

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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N

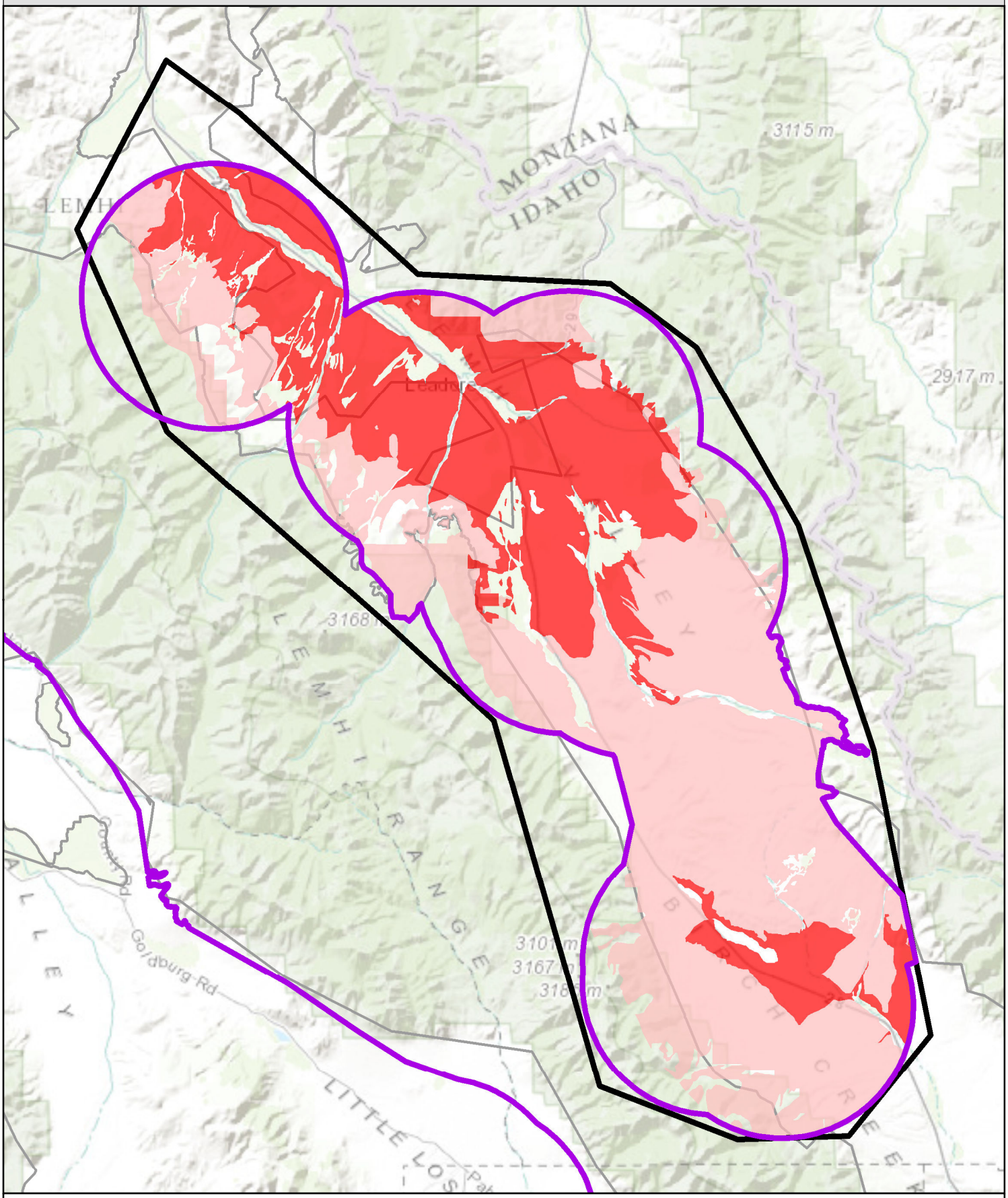
Lemihi-Birch Project Planning Area
Lemhi Birch ESR 2nd Priority
Lemhi Birch ESR 3rd Priority

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:459,370

Lemihi-Birch Project Planning Area

Fire Operations Priority

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



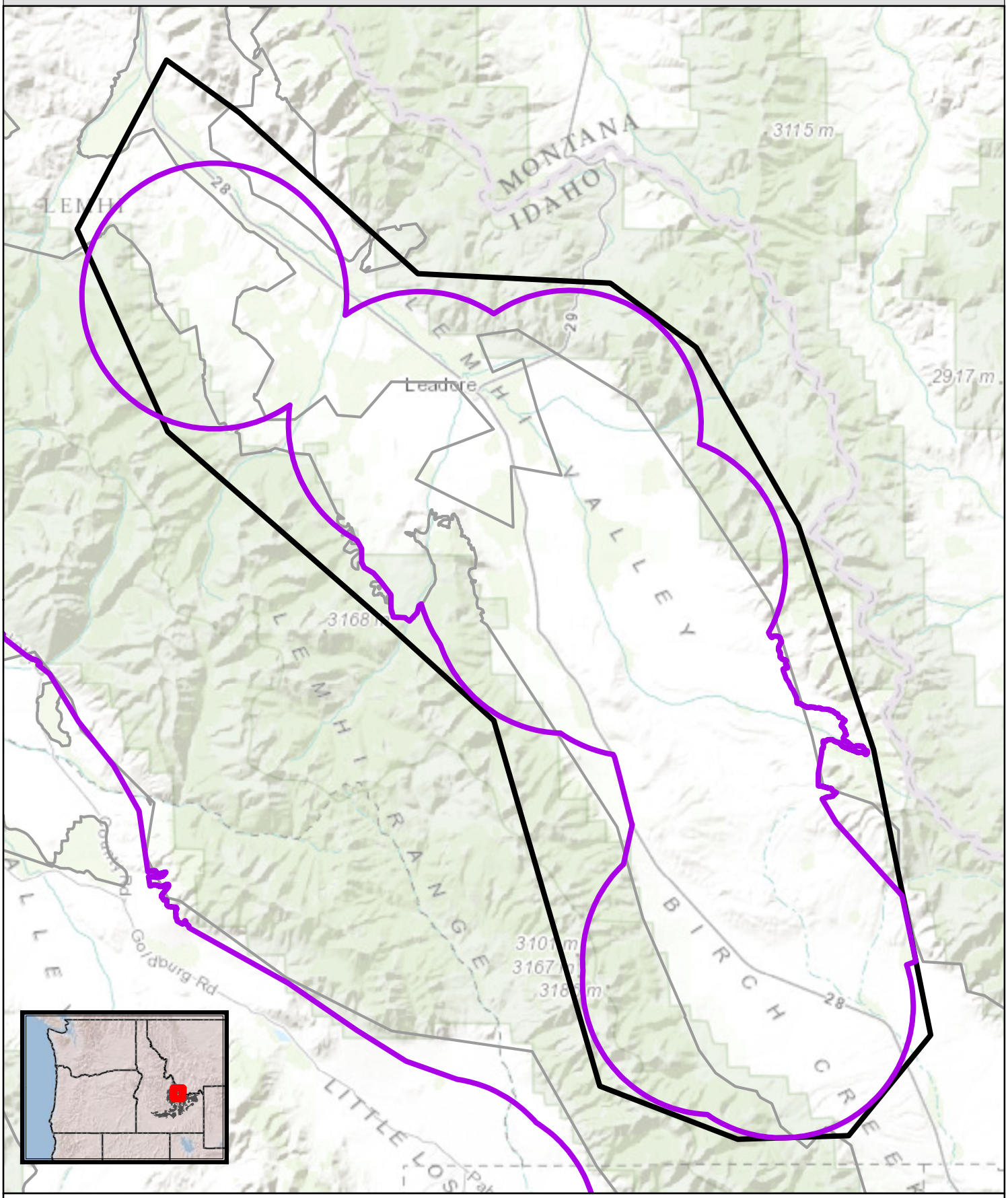
No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.

Lemihi-Birch Project Planning Area
Lemhi Birch Fire 2nd Priority
Lemhi Birch Fire 3rd Priority

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:459,370

Lemihi-Birch Project Planning Area

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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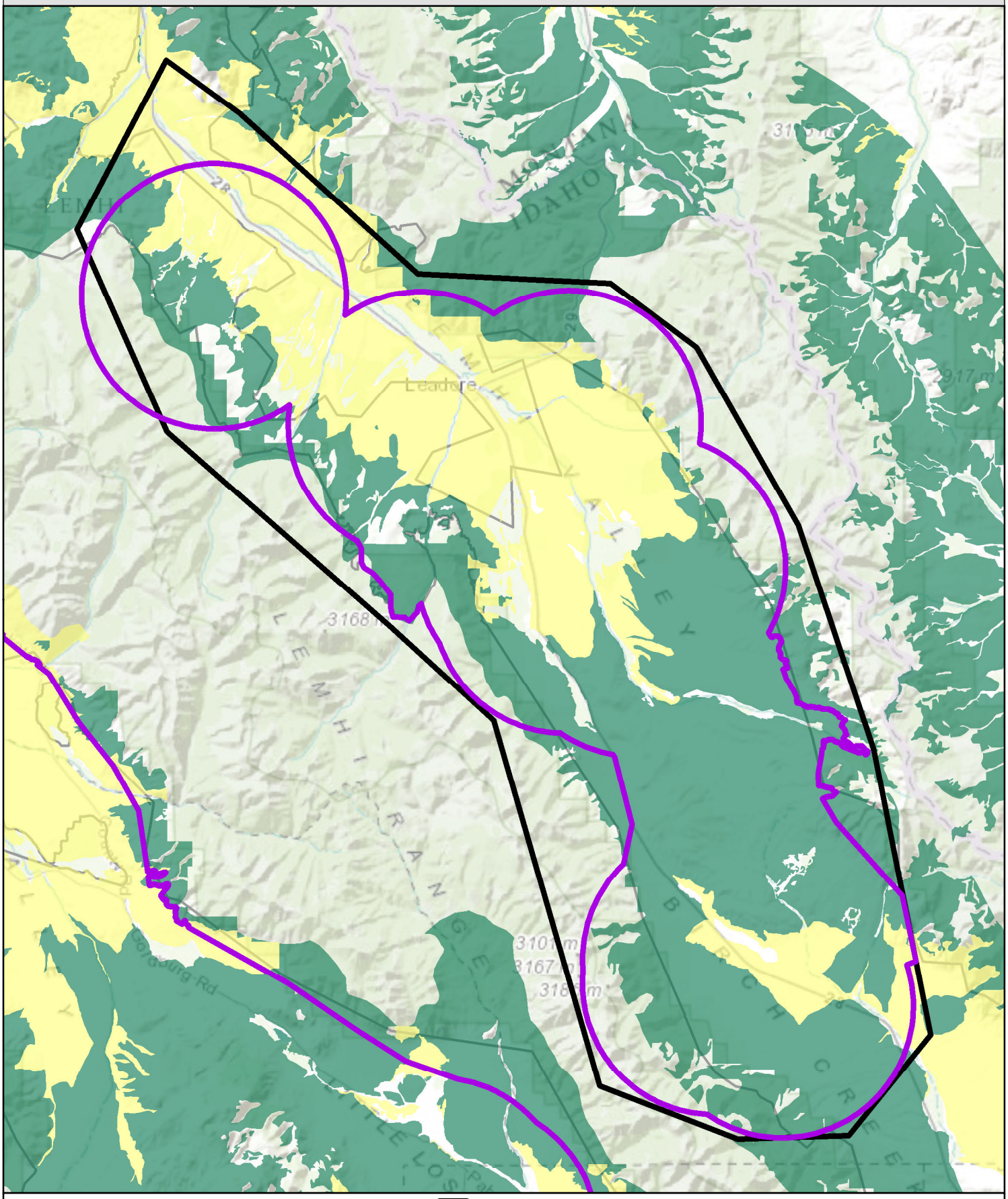
Lemihi-Birch Project Planning Area

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:458,979

Lemihi-Birch Project Planning Area
Resistance-Resilience Reportable Priorities

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.

N

Lemihi-Birch Project Planning Area

Reportable Priorities

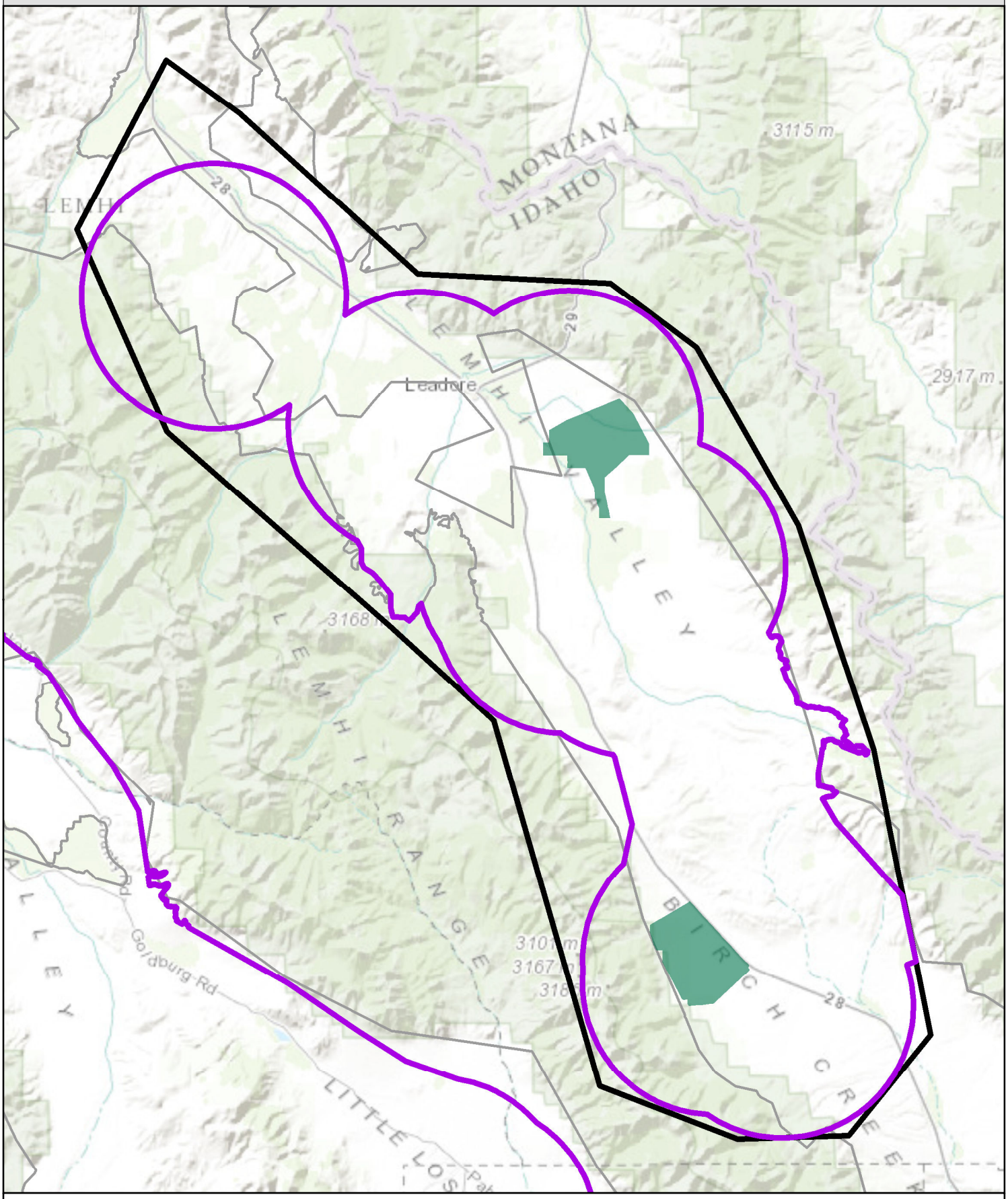
1 2 3

March 2015
Date Saved: 3/13/2015
Data Sources: BLM, ESRI Basedata
1:459,763

Lemihi-Birch Project Planning Area

Habitat Restoration Potential Treatment Areas

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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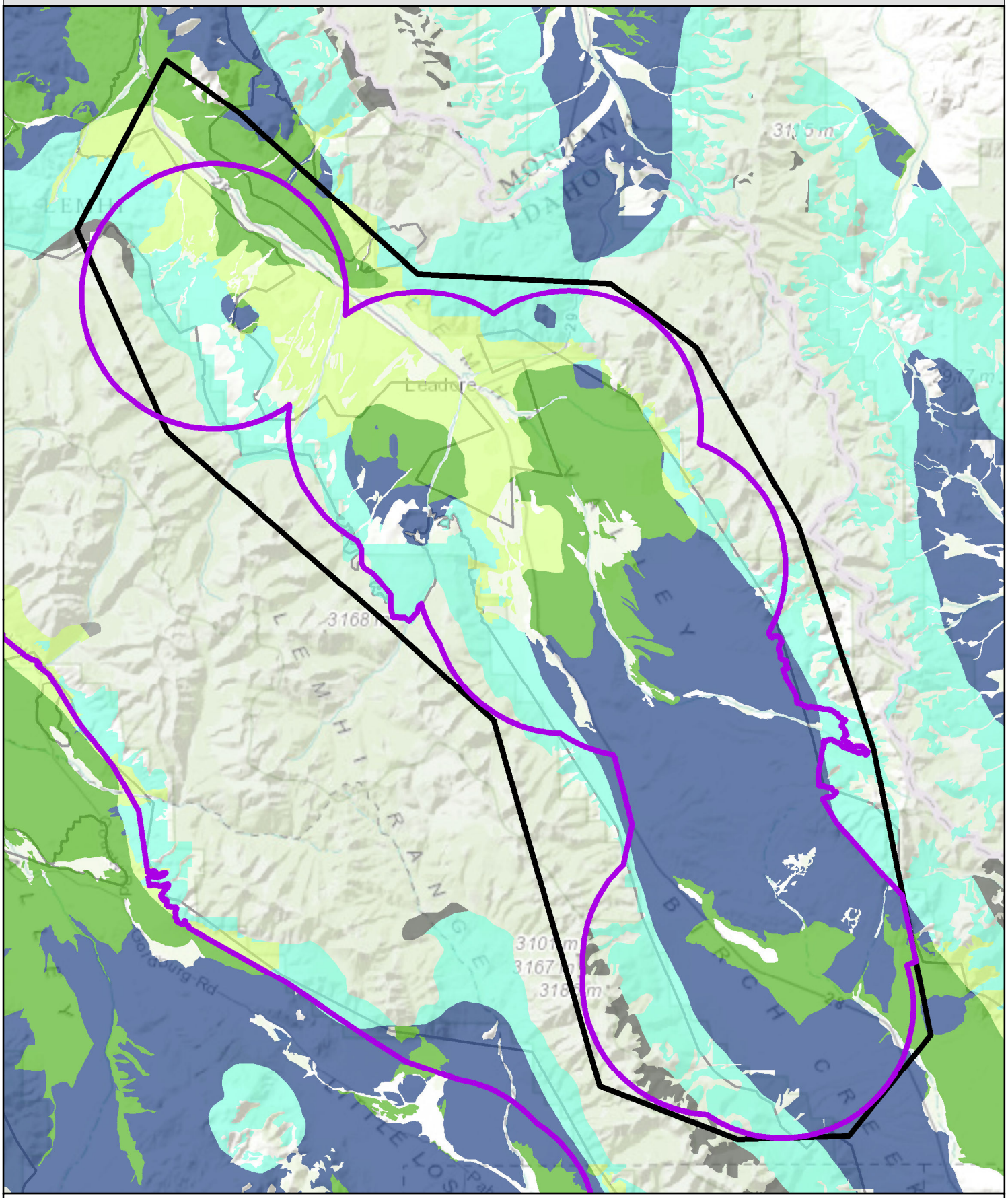
Lemihi-Birch Project Planning Area

Habitat Restoration Potential Treatment Areas

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:459,370

Lemihi-Birch Project Planning Area
Resistance-Resilience Priorities
for Application of Management Strategies

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



N

Lemihi-Birch Project Planning Area

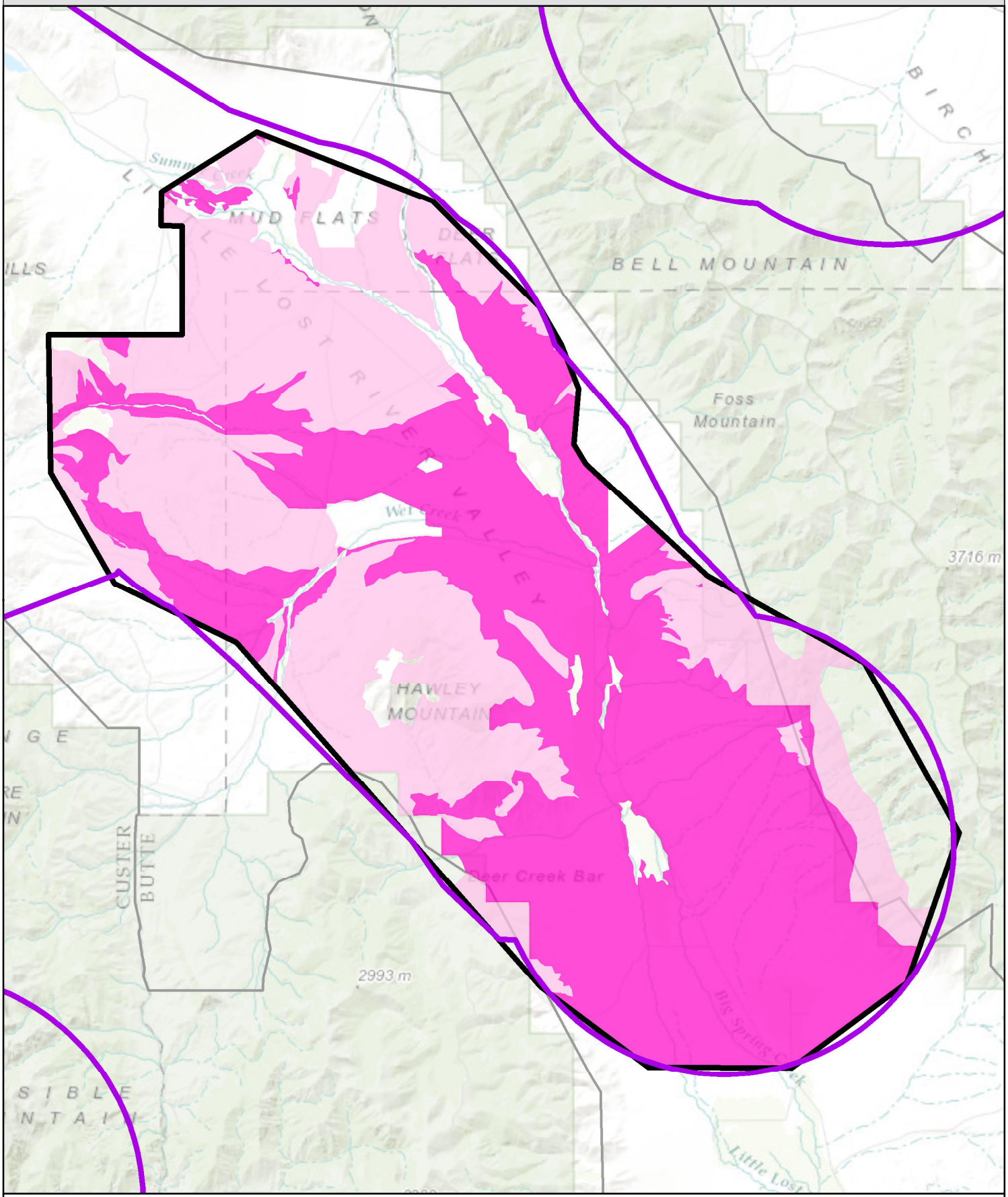
3C 3B 2C 2B 1C 1B 3A 2A 1A

March 2015
Date Saved: 3/13/2015
Data Sources: BLM, ESRI Basedata
1:459,763

Little Lost Project Planning Area

Emergency Stabilization, Rehabilitation Priority

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.

N

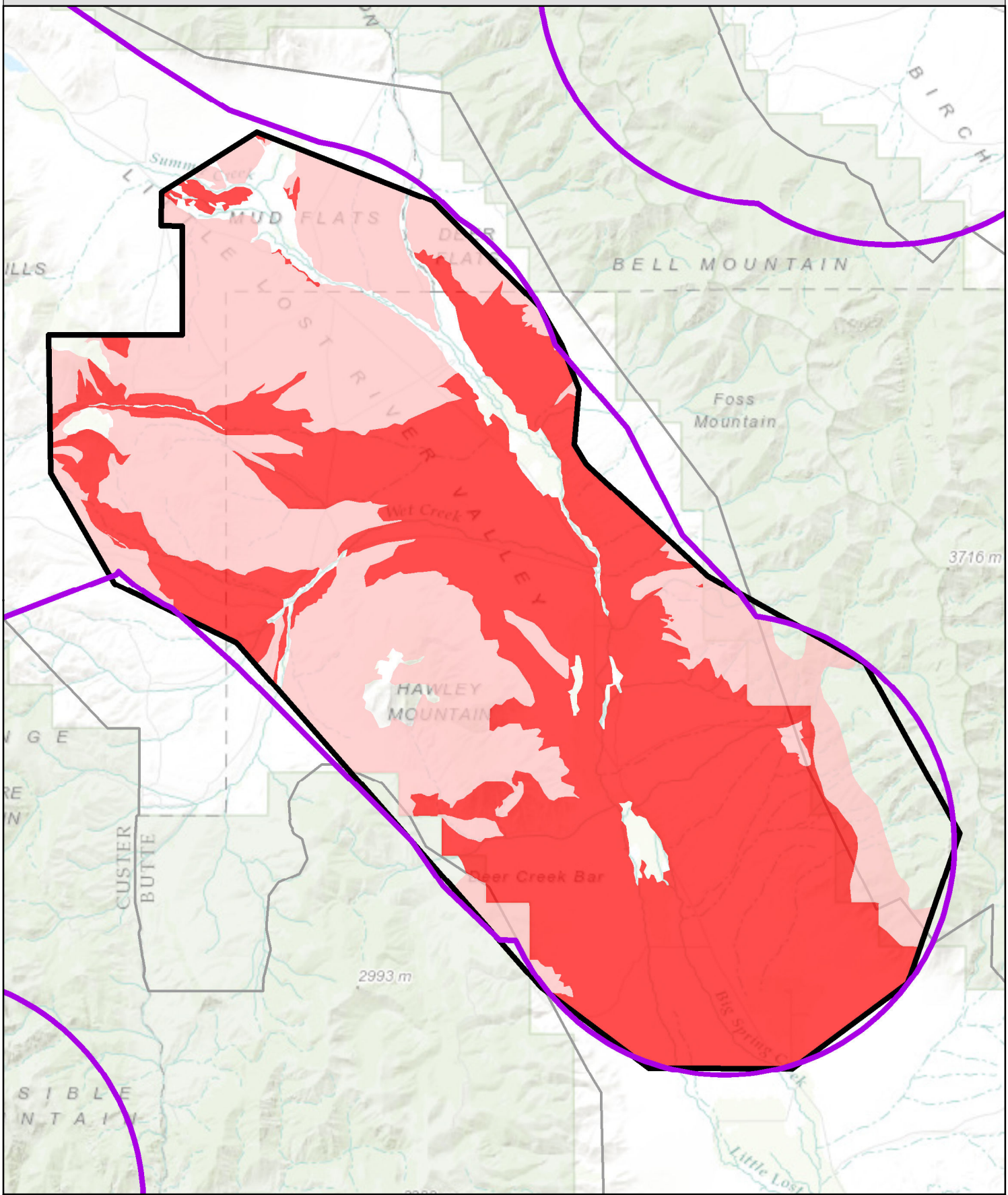
Little Lost Project Planning Area
Little Lost ESR 2nd Priority
Little Lost ESR 3rd Priority

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:261,869

Little Lost Project Planning Area

Fire Operations Priority

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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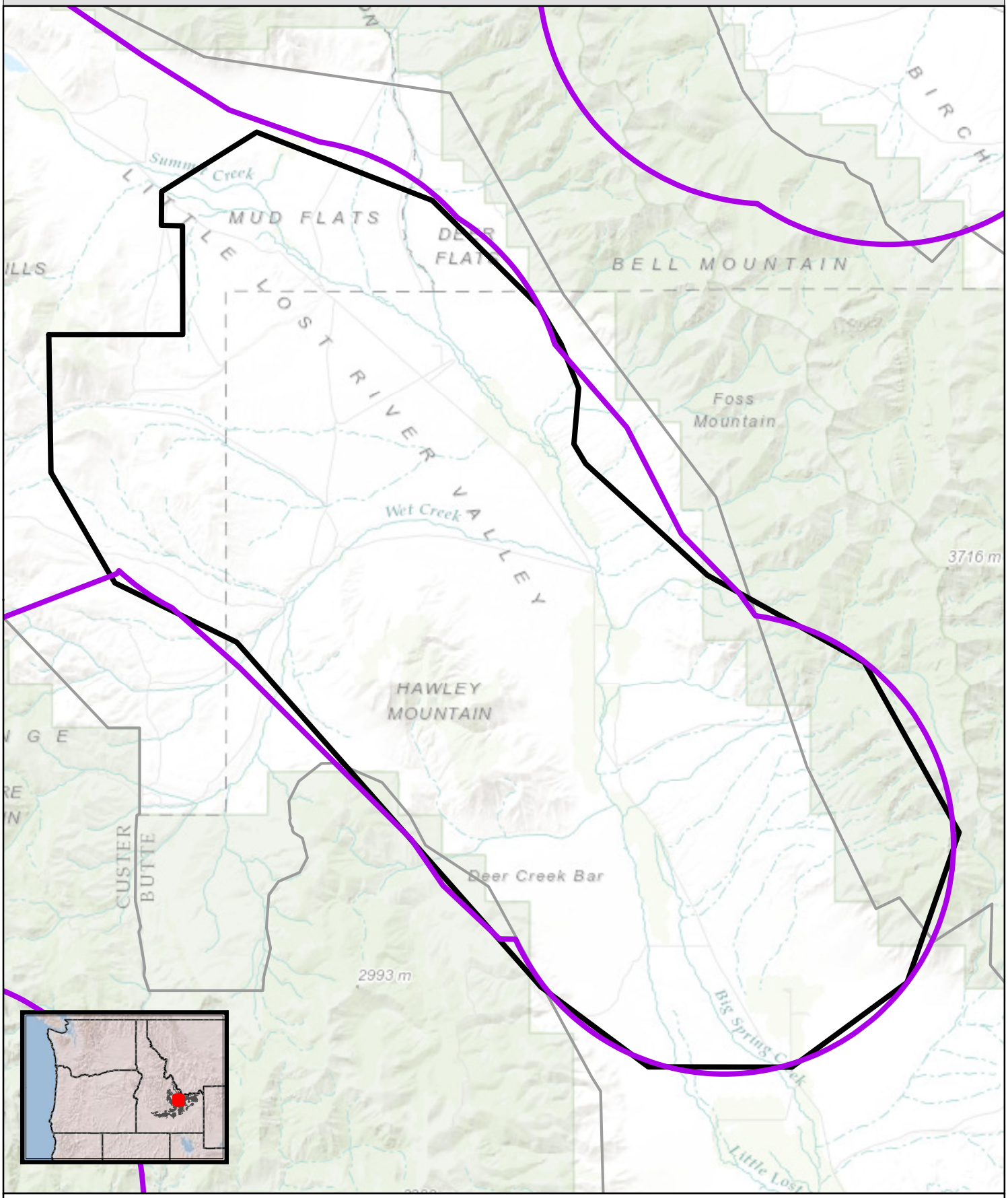
Little Lost Project Planning Area
Little Lost Fire 2nd Priority
Little Lost Fire 3rd Priority

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:261,869

Little Lost Project Planning Area

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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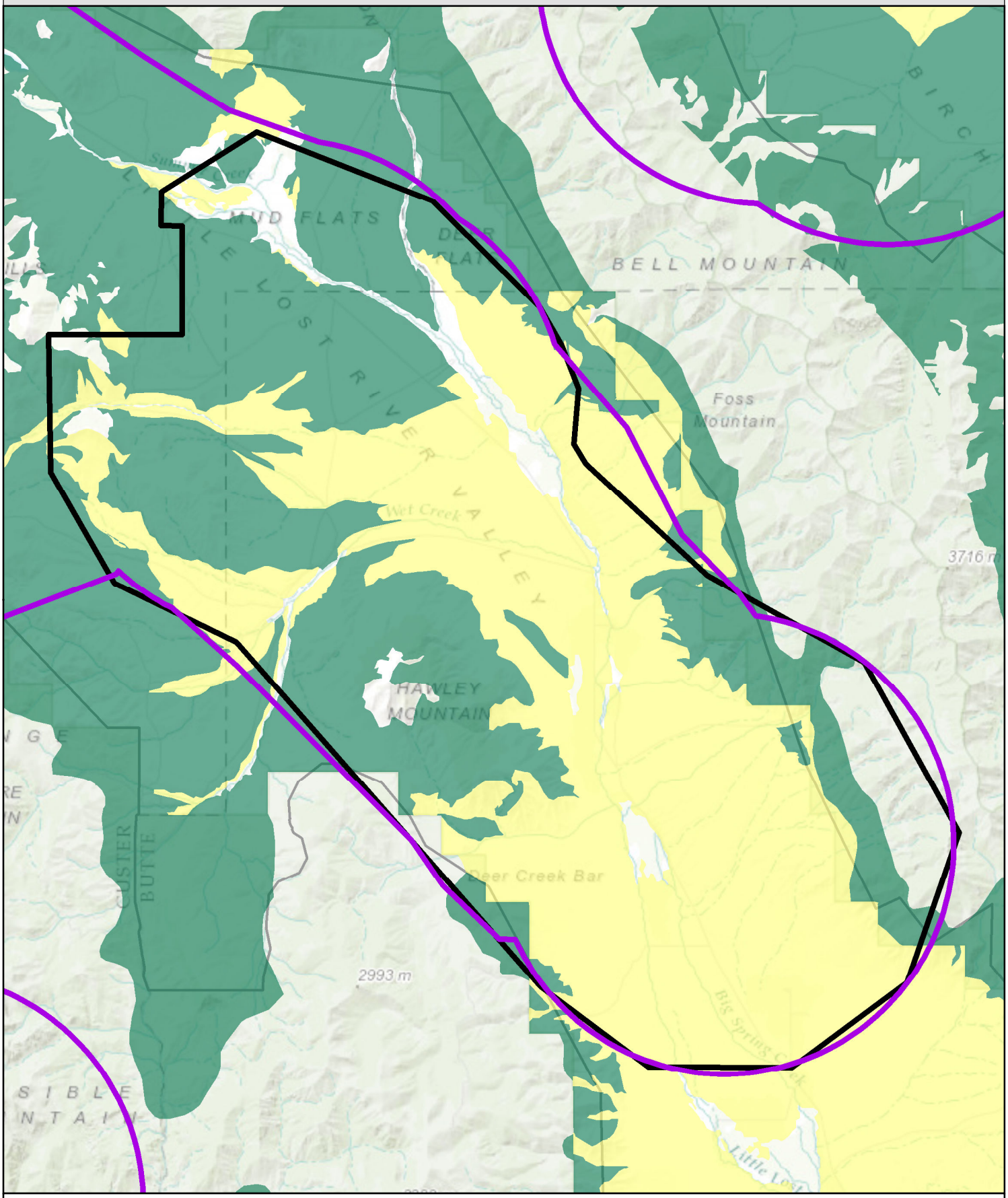
Little Lost Project Planning Area

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:261,869

Little Lost Project Planning Area
Resistance-Resilience Reportable Priorities

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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N

Little Lost Project Planning Area

Reportable Priorities

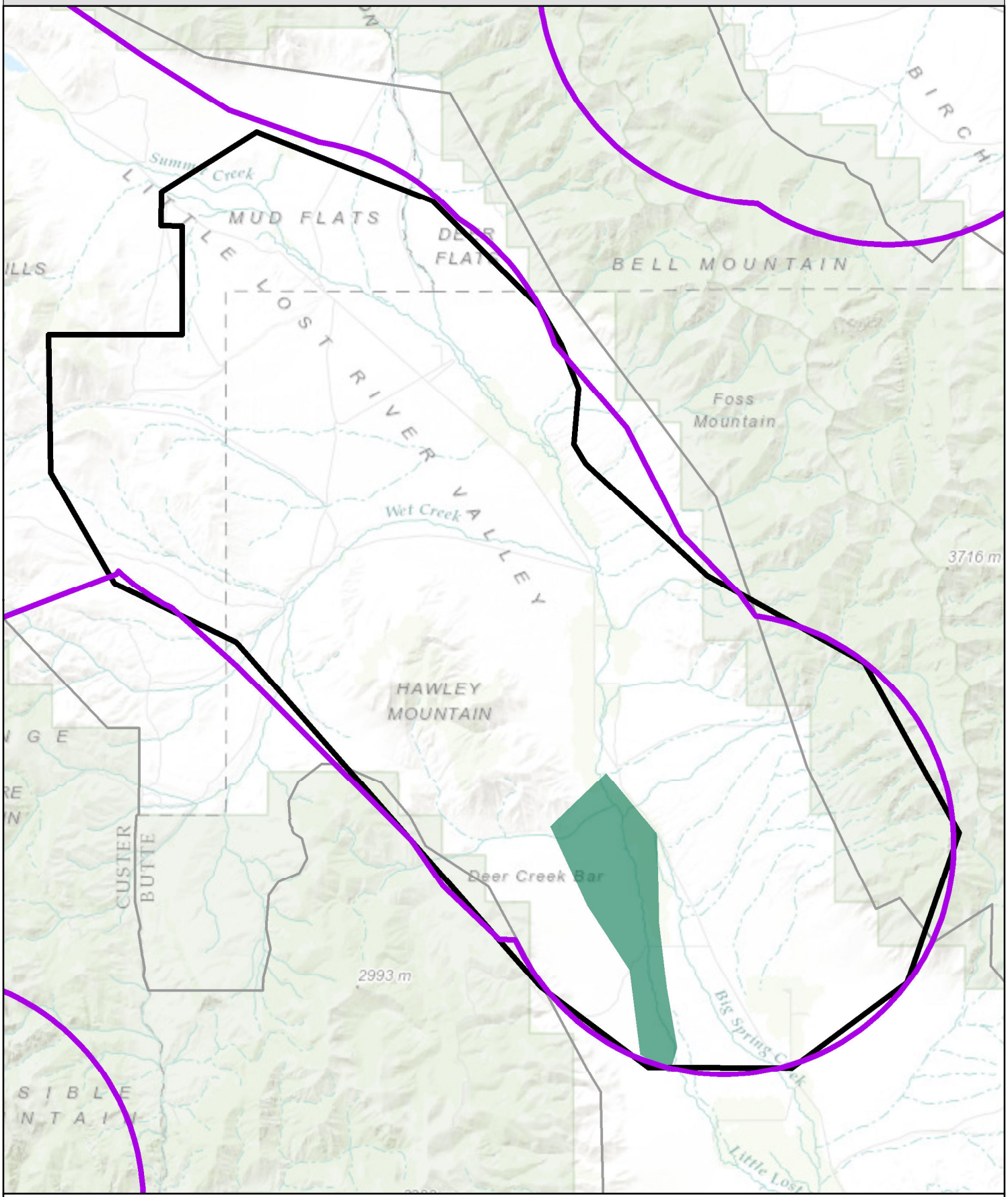
1 2 3

March 2015
Date Saved: 3/13/2015
Data Sources: BLM, ESRI Basedata
1:261,869

Little Lost Project Planning Area

Habitat Restoration Potential Treatment Areas

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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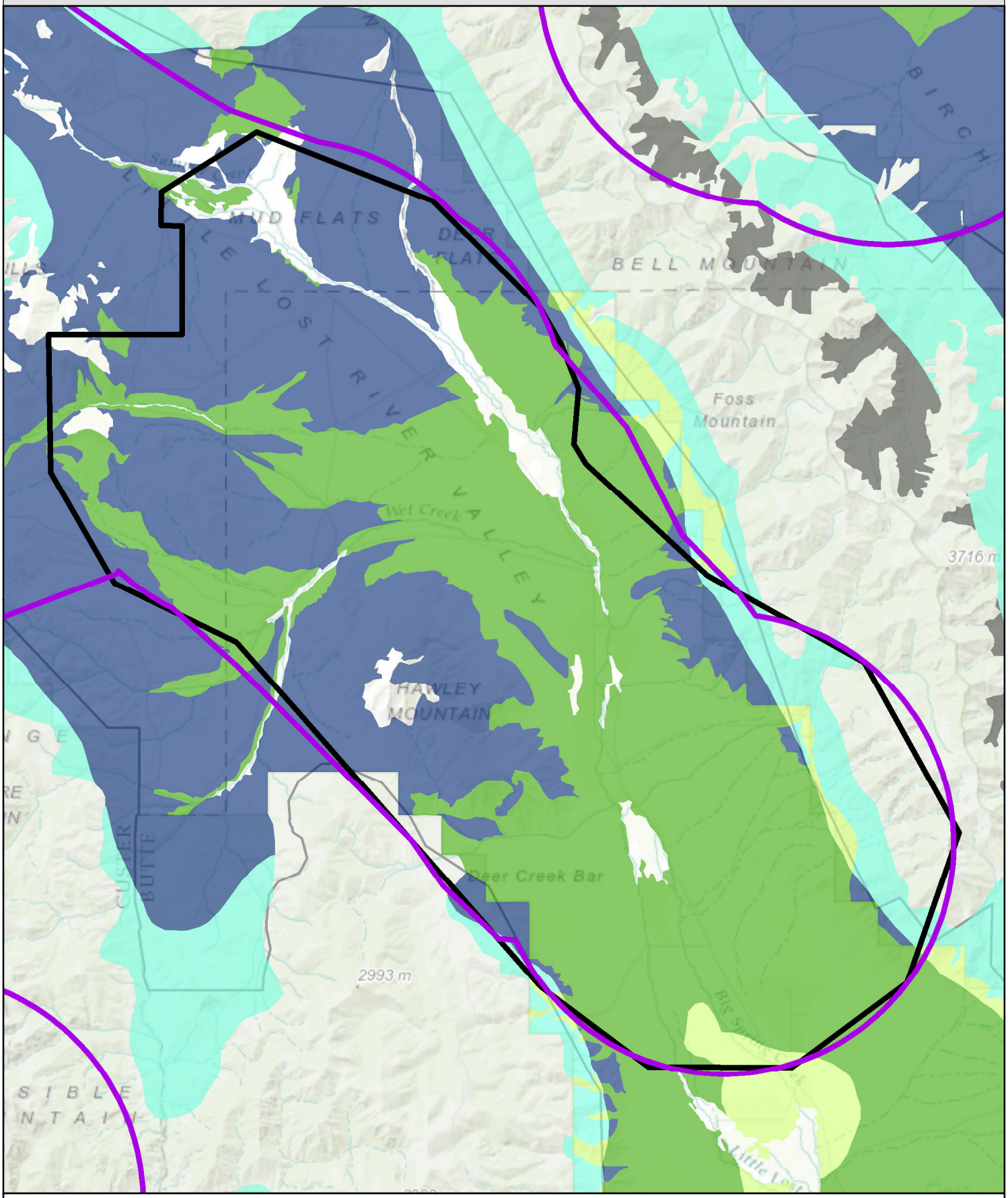
Little Lost Project Planning Area

Habitat Restoration Potential Treatment Areas

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:261,869

Little Lost Project Planning Area
Resistance-Resilience Priorities
for Application of Management Strategies

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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N

Little Lost Project Planning Area

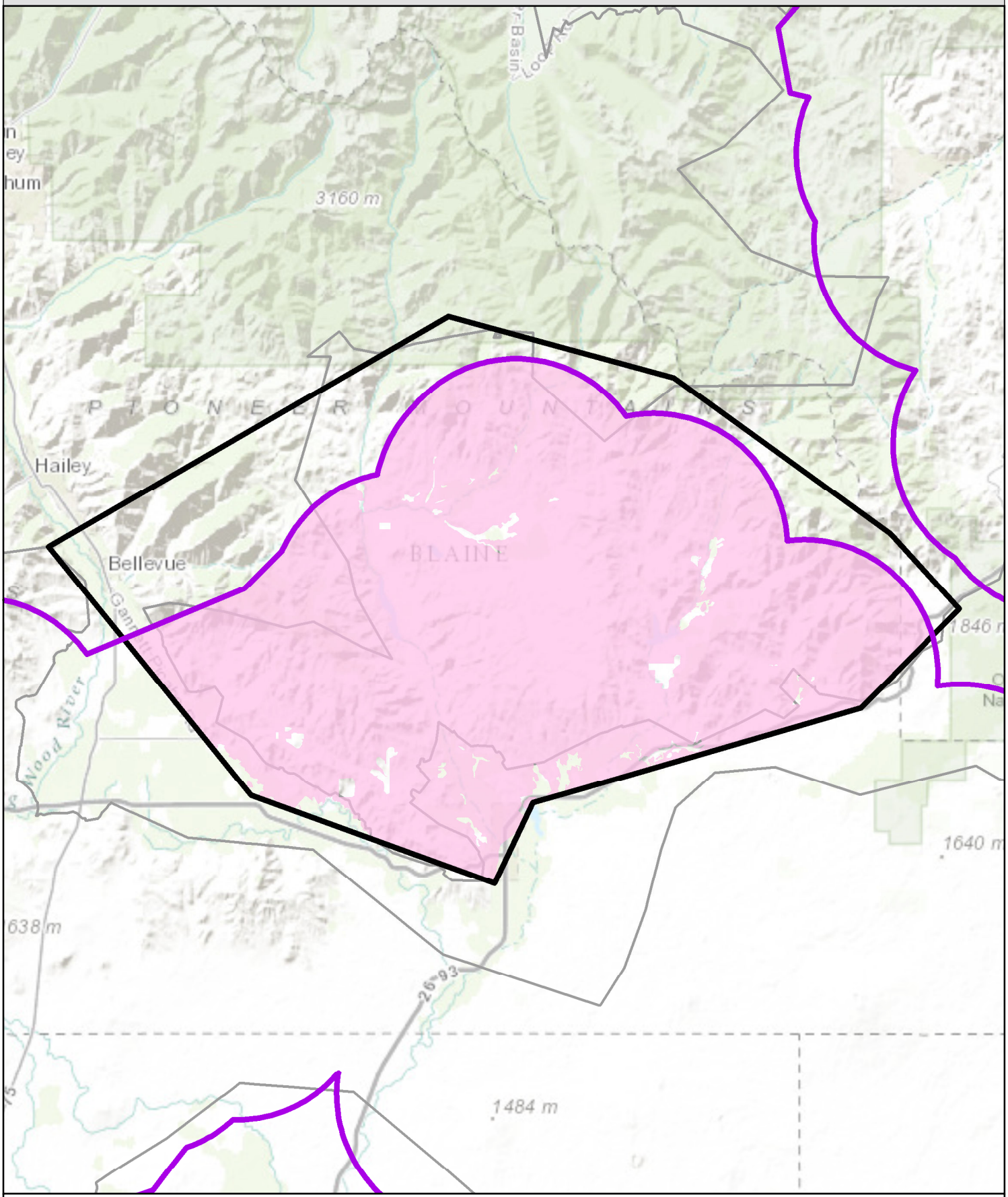
3C 3B 2C 2B 1C 1B 3A 2A 1A

March 2015
Date Saved: 3/13/2015
Data Sources: BLM, ESRI Basedata
1:261,869

Little Wood Project Planning Area

Emergency Stabilization, Rehabilitation Priority

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.

Little Wood Project Planning Area

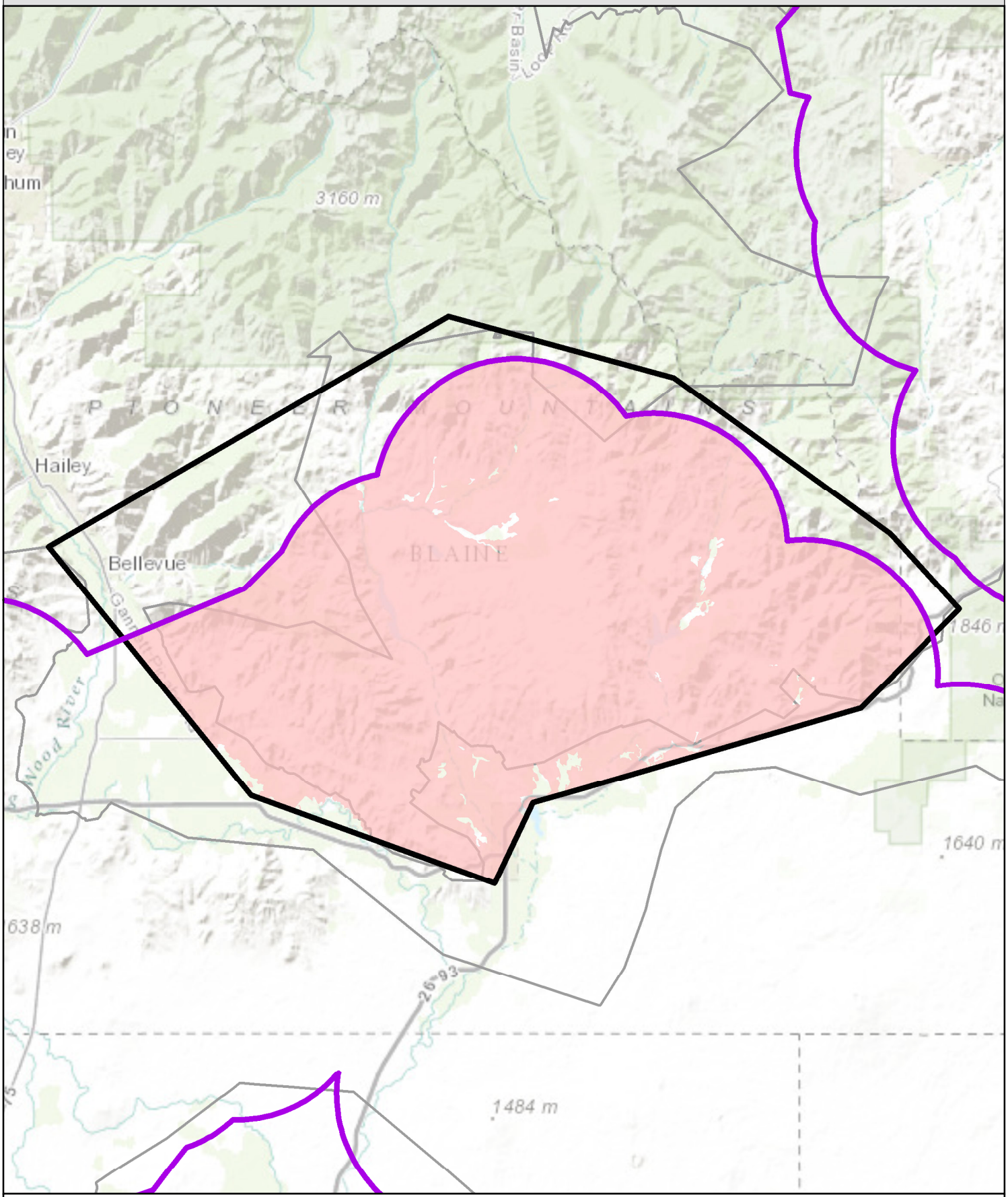
Little Wood ESR 3rd Priority

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:445,168

Little Wood Project Planning Area

Fire Operations Priority

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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Little Wood Project Planning Area

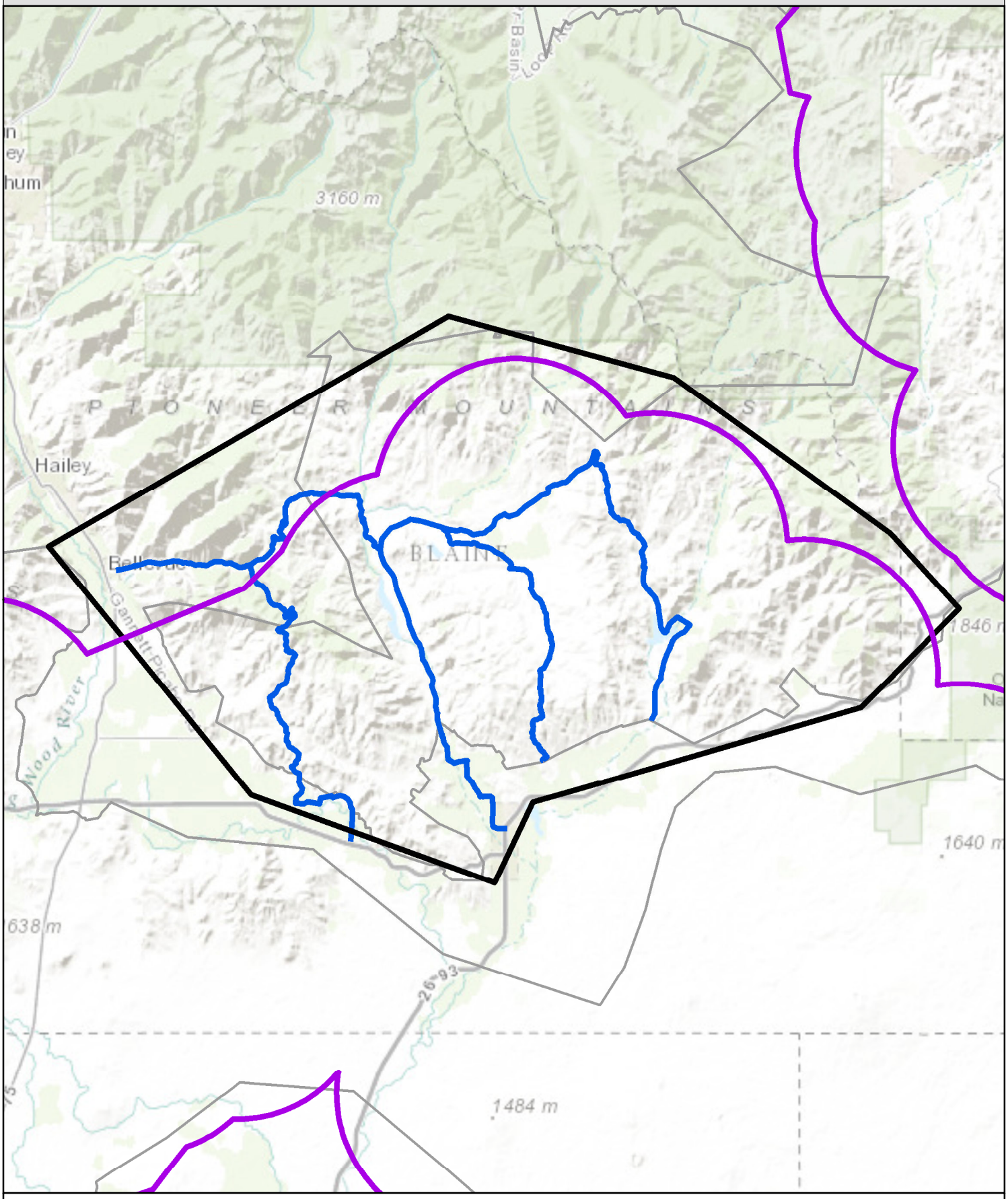
Little Wood Fire 3rd Priority

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:445,168

Little Wood Project Planning Area

Fuels Management Potential Treatment Areas

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.

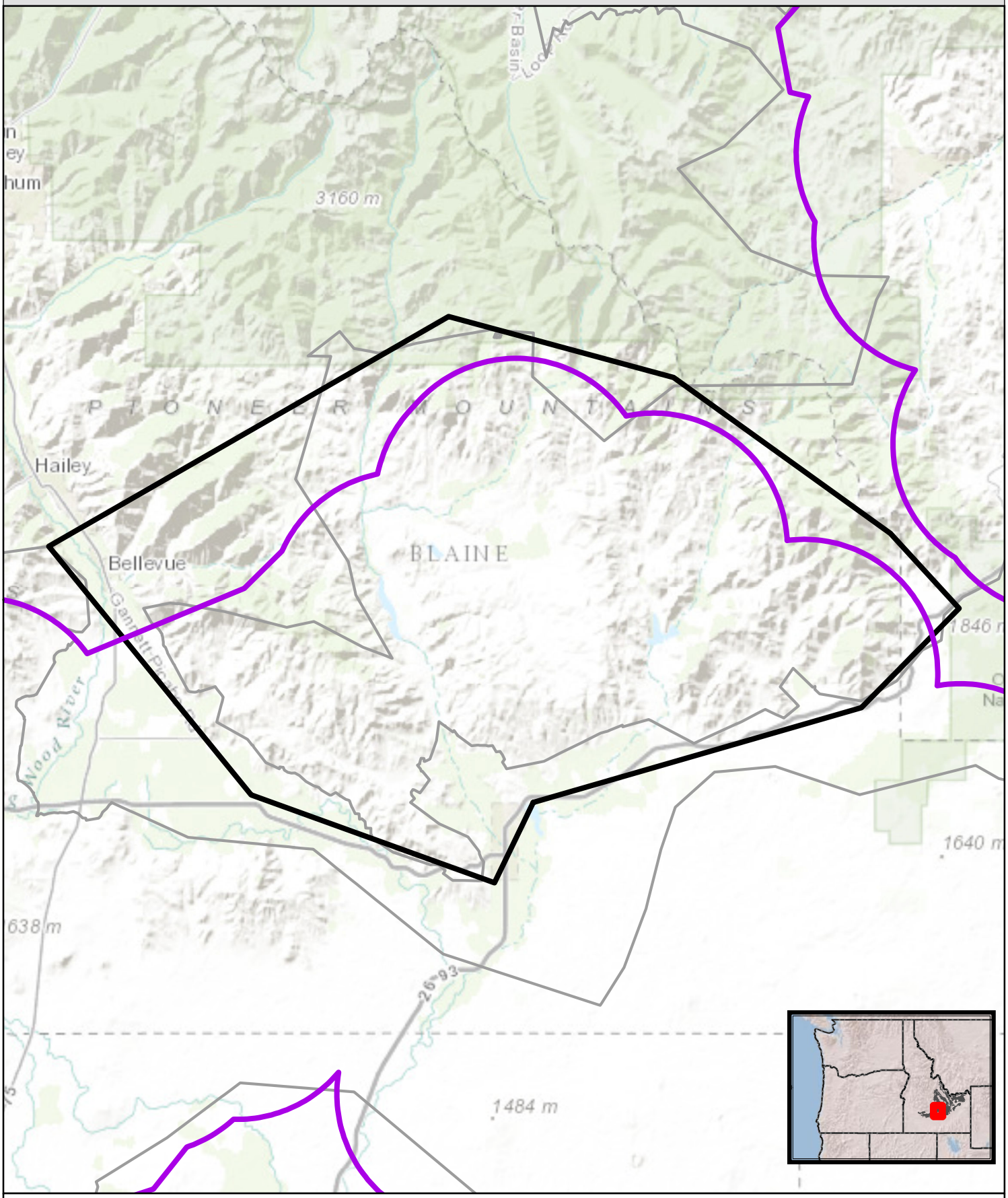
Little Wood Project Planning Area

Linear Fuels Management Potential Treatment Areas

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:445,168

Little Wood Project Planning Area

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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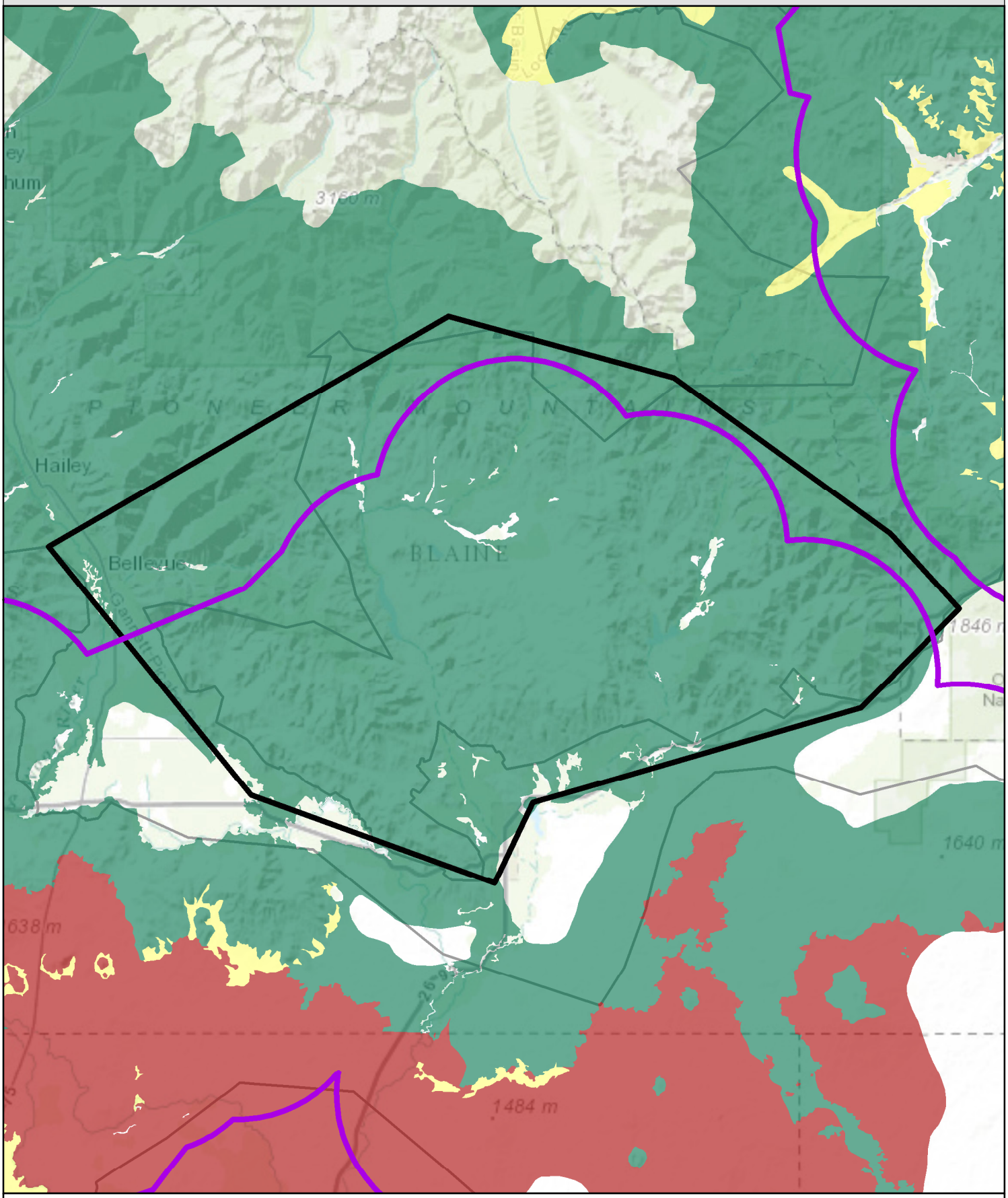
N

Little Wood Project Planning Area

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:445,168

Little Wood Project Planning Area
Resistance-Resilience Reportable Priorities

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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Little Wood Project Planning Area

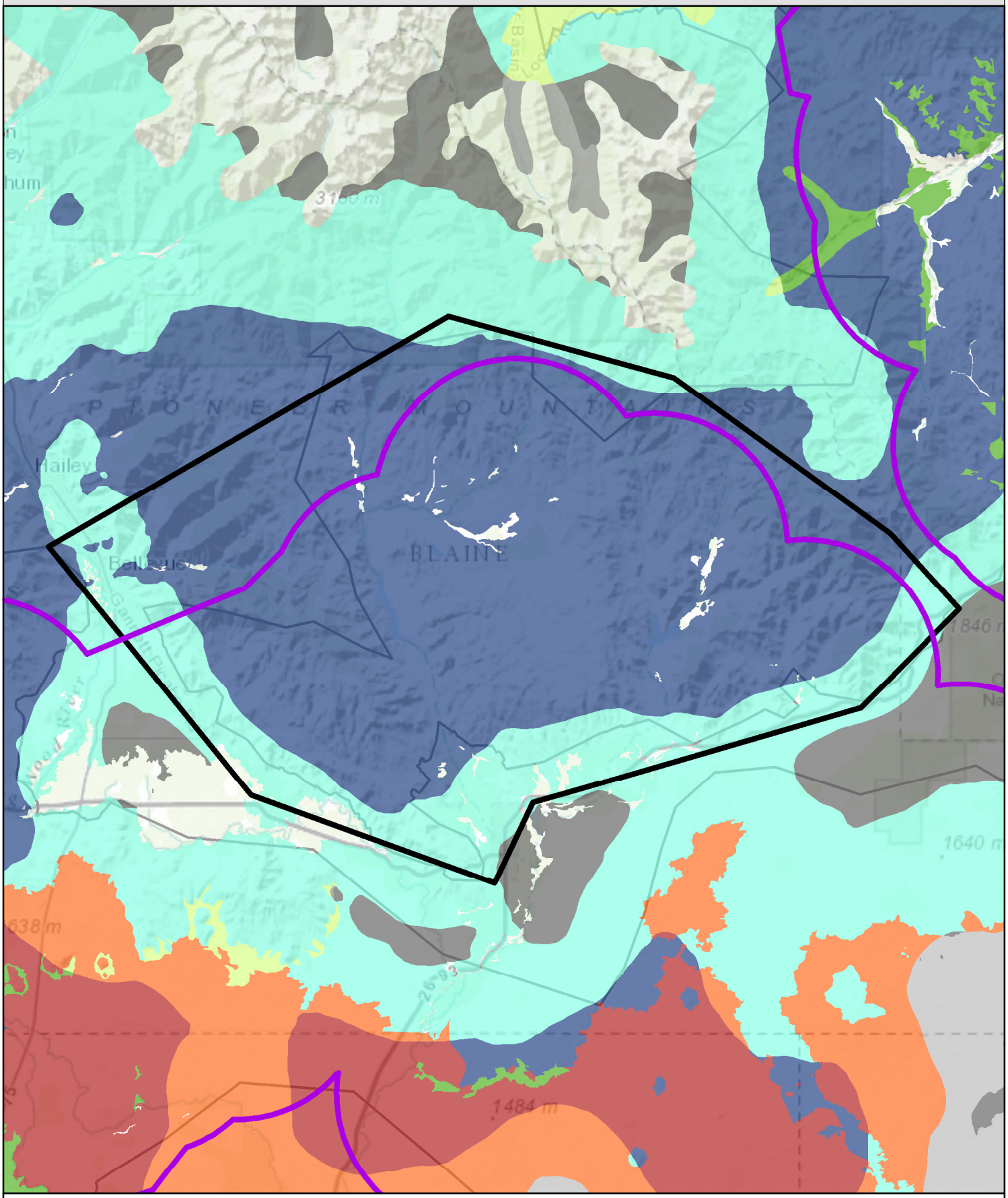
Reportable Priorities

1 2 3

March 2015
Date Saved: 3/13/2015
Data Sources: BLM, ESRI Basedata
1:445,168

Little Wood Project Planning Area
Resistance-Resilience Priorities
for Application of Management Strategies

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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N

Little Wood Project Planning Area

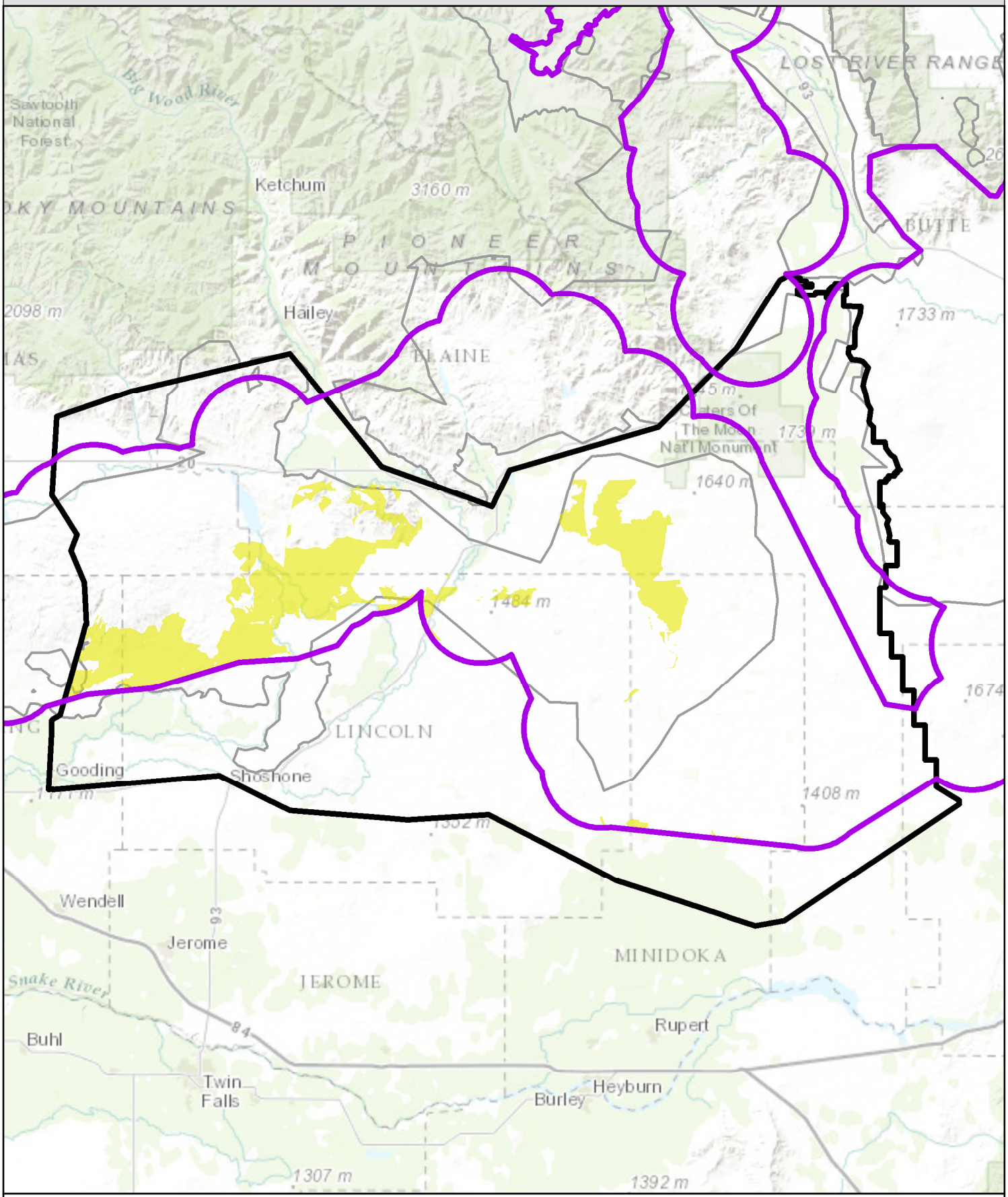
3C 3B 2C 2B 1C 1B 3A 2A 1A

March 2015
Date Saved: 3/13/2015
Data Sources: BLM, ESRI Basedata
1:445,168

Magic Project Planning Area

Invasive Annuals Potential Treatment Areas

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.

N

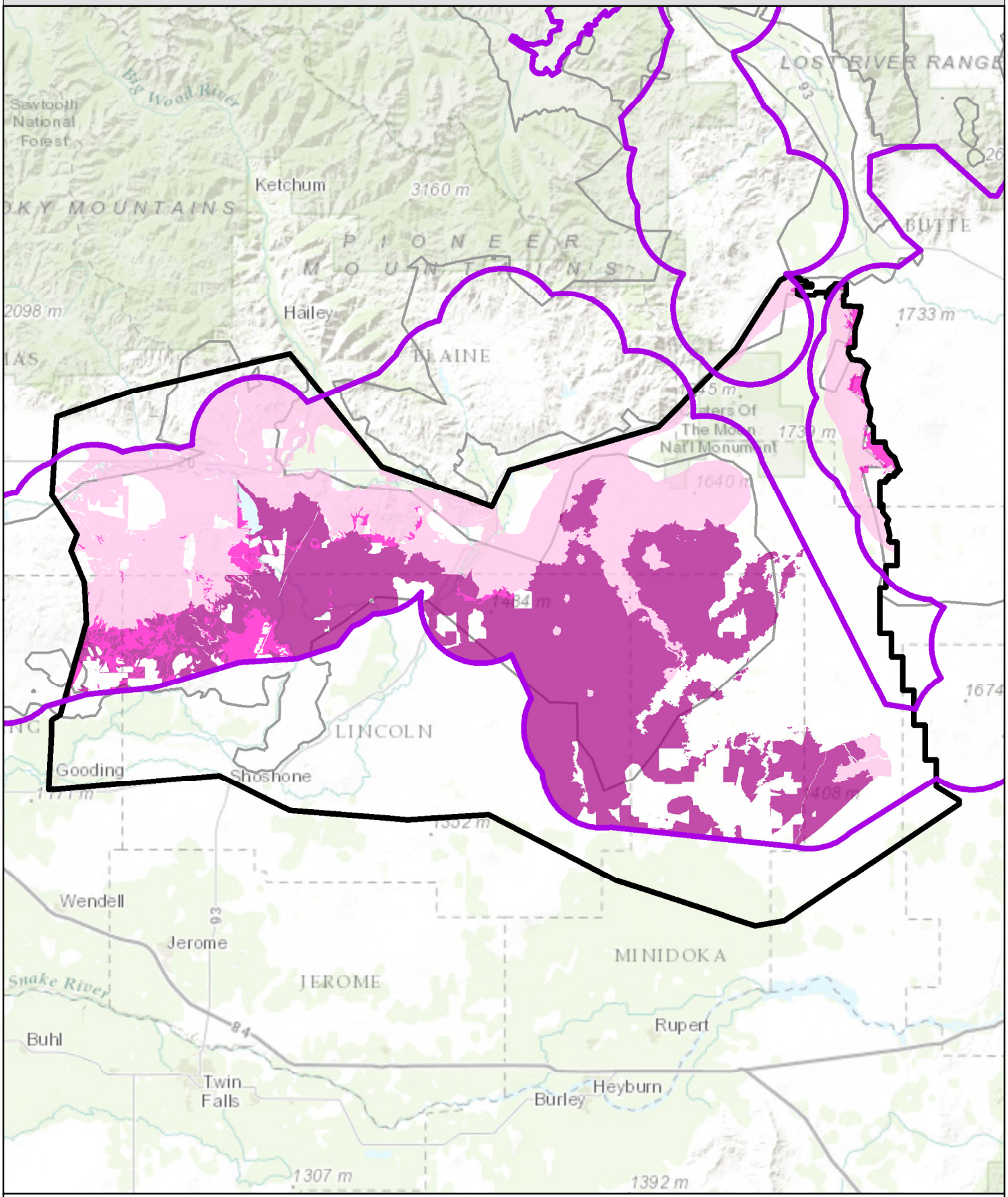
Magic Project Planning Area

Invasive Annuals Potential Treatment Areas

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:981,104

Magic Project Planning Area
Emergency Stabilization, Rehabilitation Priority

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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N

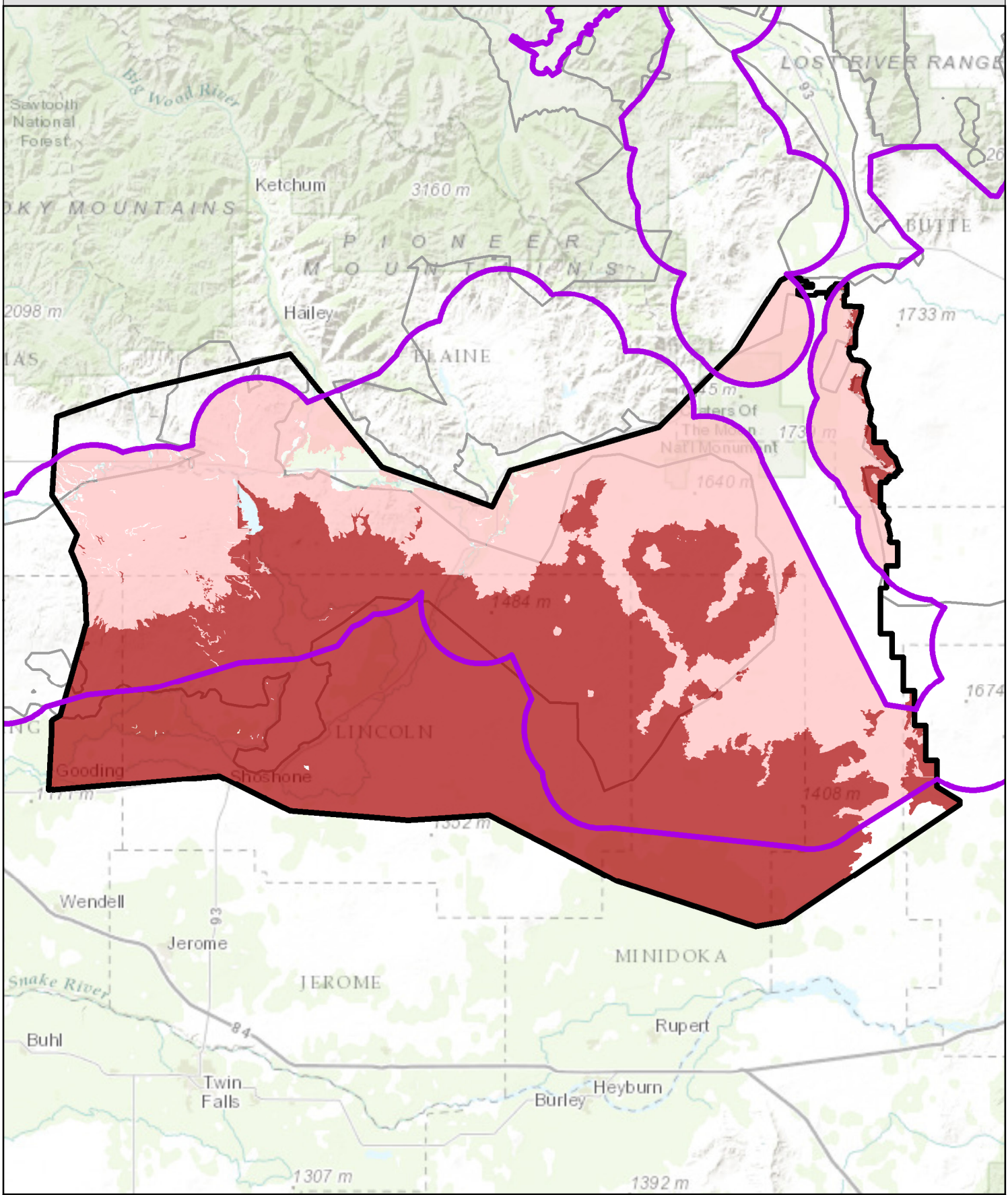
- Magic Project Planning Area
- Magic ESR 1st Priority
- Magic ESR 2nd Priority
- Magic ESR 3rd Priority

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:981,104

Magic Project Planning Area

Fire Operations Priority

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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N

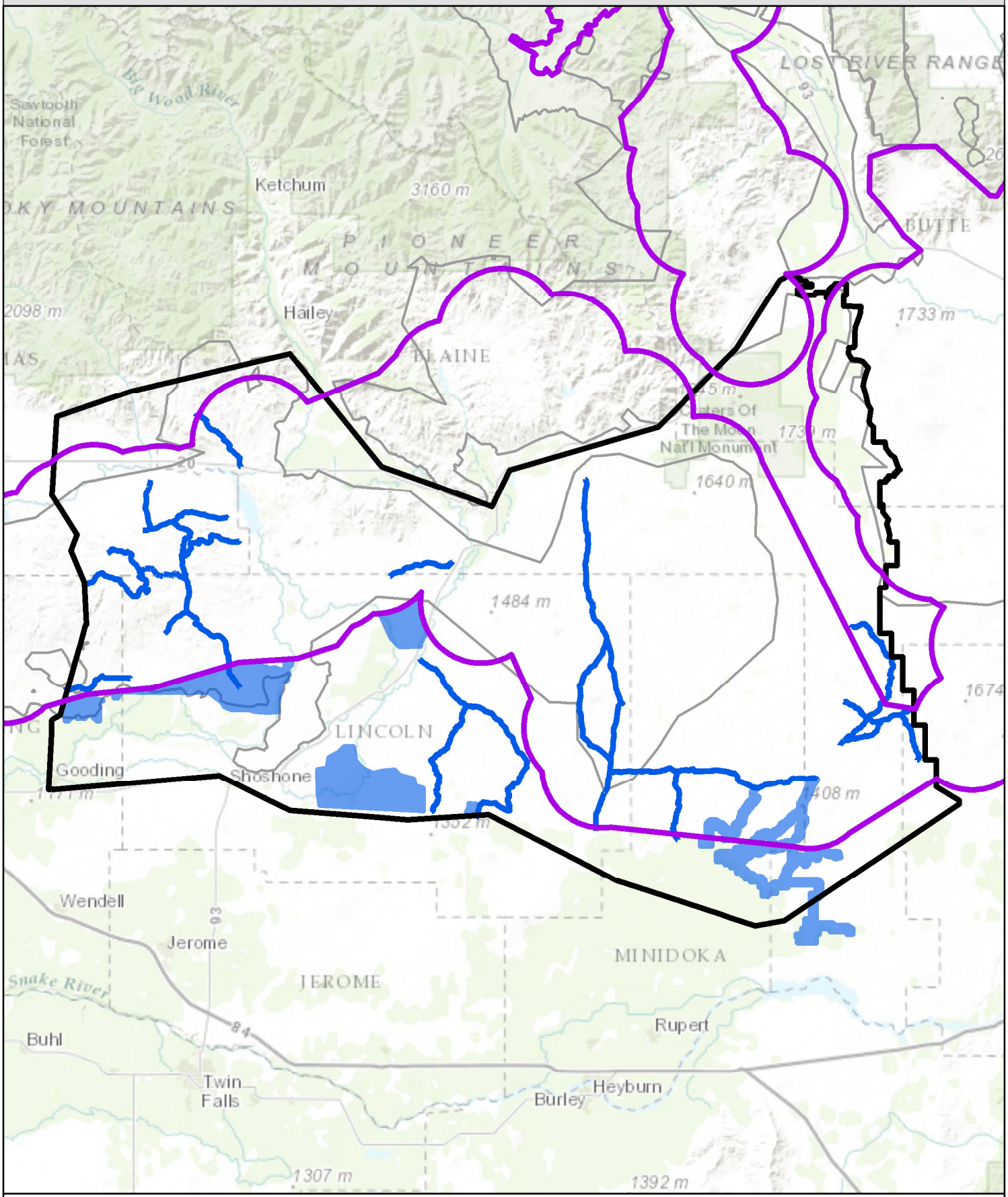
Magic Project Planning Area
Magic Fire 1st Priority
Magic Fire 3rd Priority

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:981,104

Magic Project Planning Area

Fuels Management Potential Treatment Areas

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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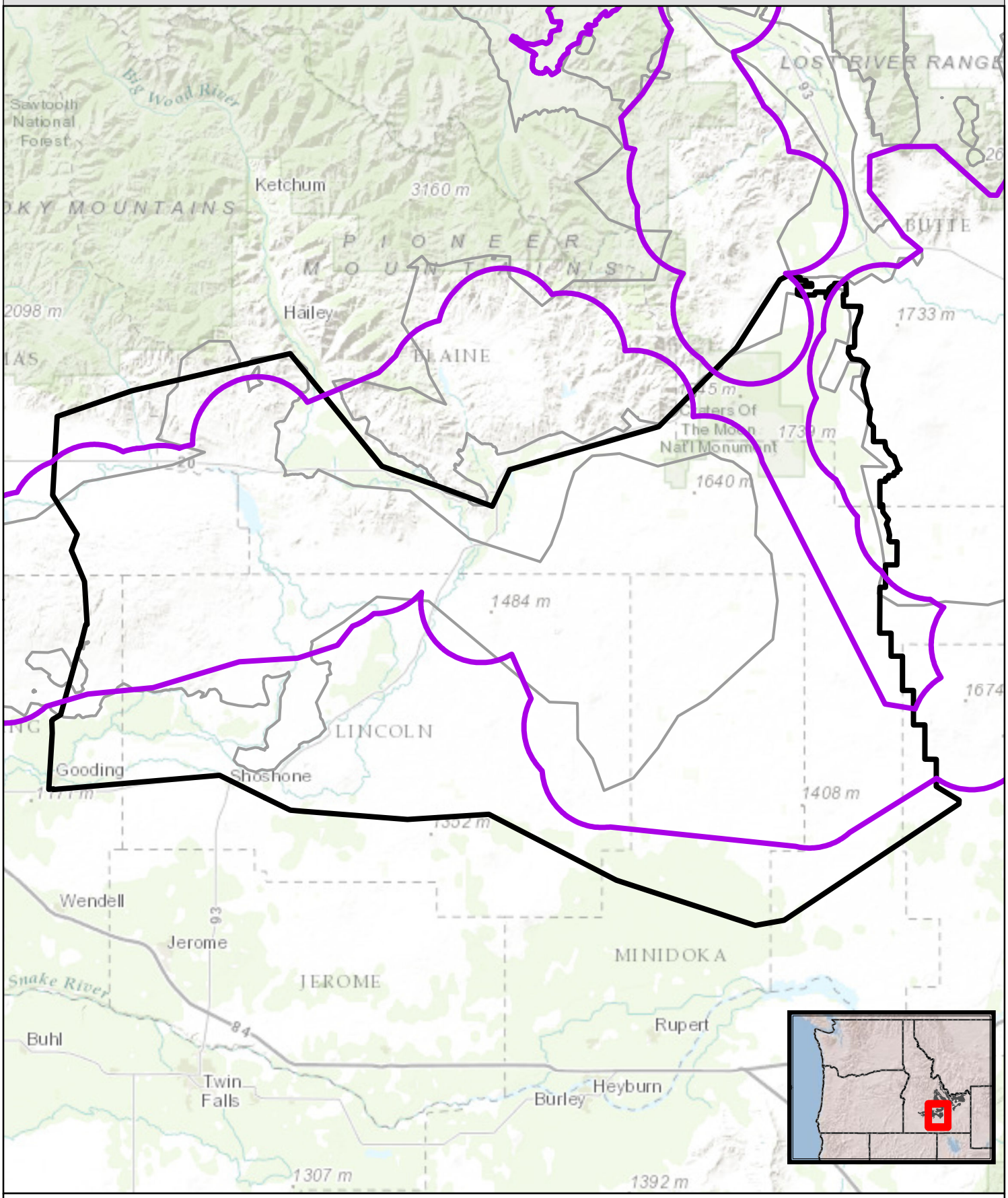
N

Magic Project Planning Area
Linear Fuels Management Potential Treatment Areas
Fuels Management Potential Treatment Areas

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:981,104

Magic Project Planning Area

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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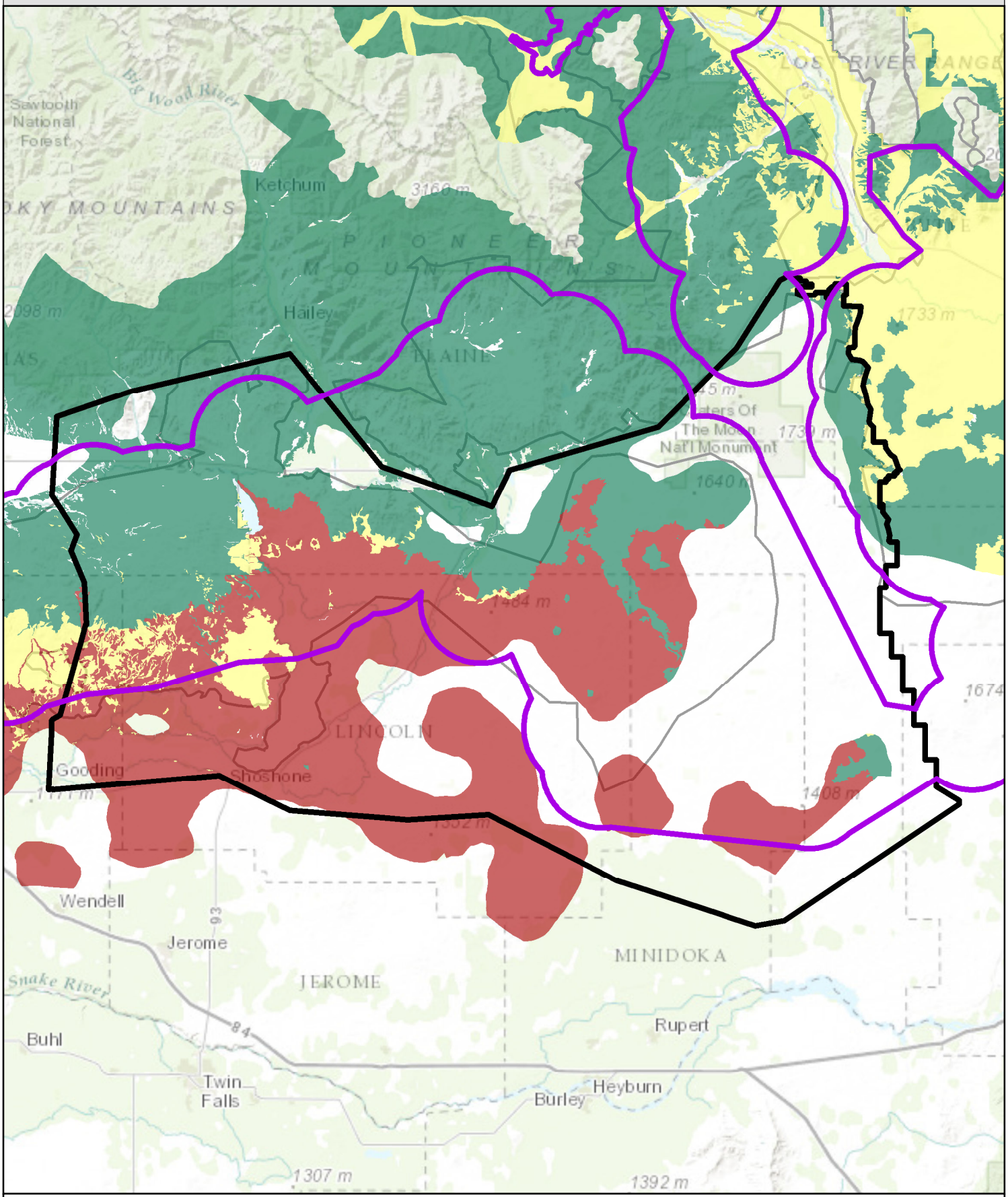
N

Magic Project Planning Area

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:981,104

Magic Project Planning Area
Resistance-Resilience Reportable Priorities

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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N

Magic Project Planning Area

Reportable Priorities

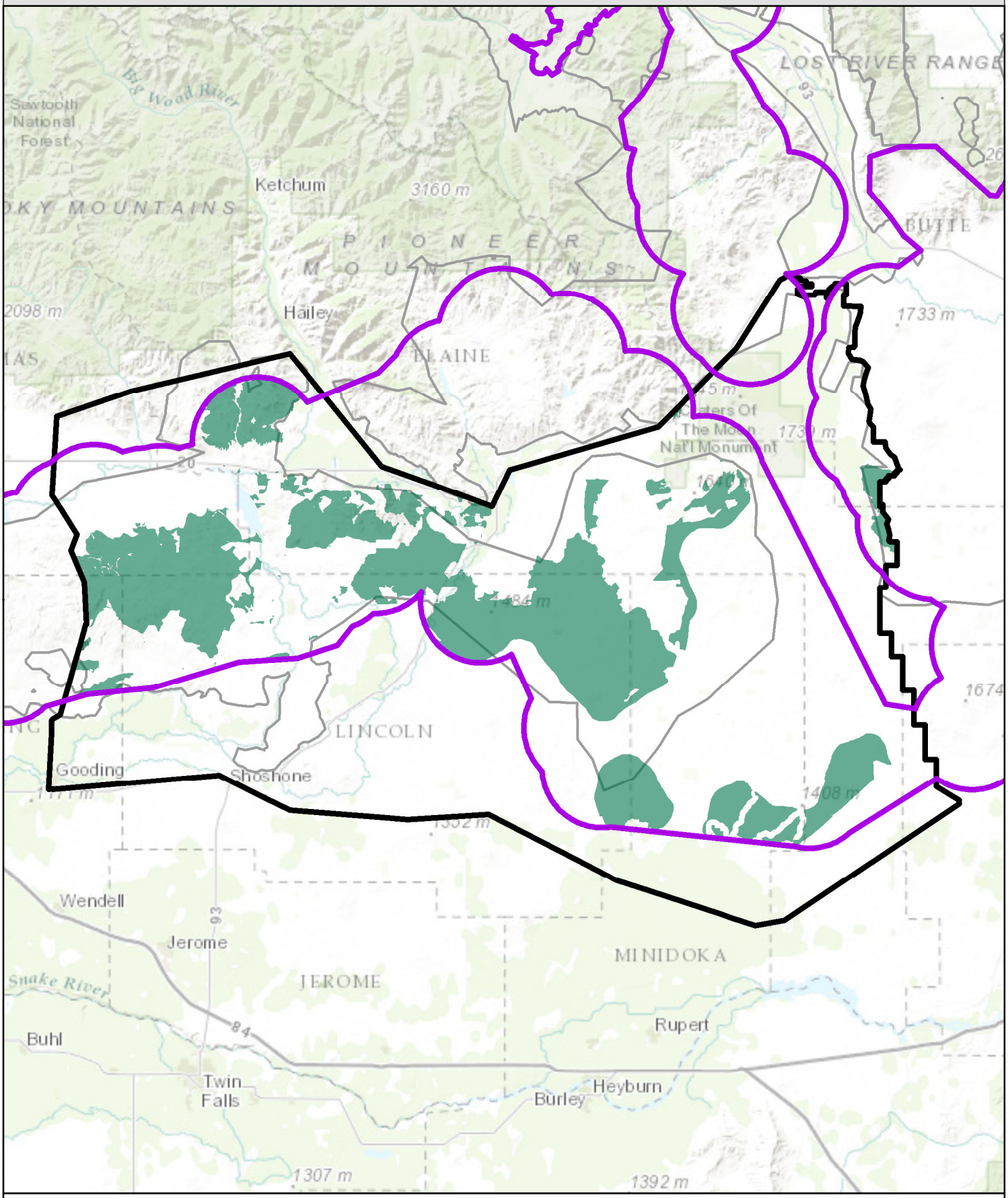
1 2 3

March 2015
Date Saved: 3/13/2015
Data Sources: BLM, ESRI Basedata
1:981,104

Magic Project Planning Area

Habitat Restoration Potential Treatment Areas

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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N

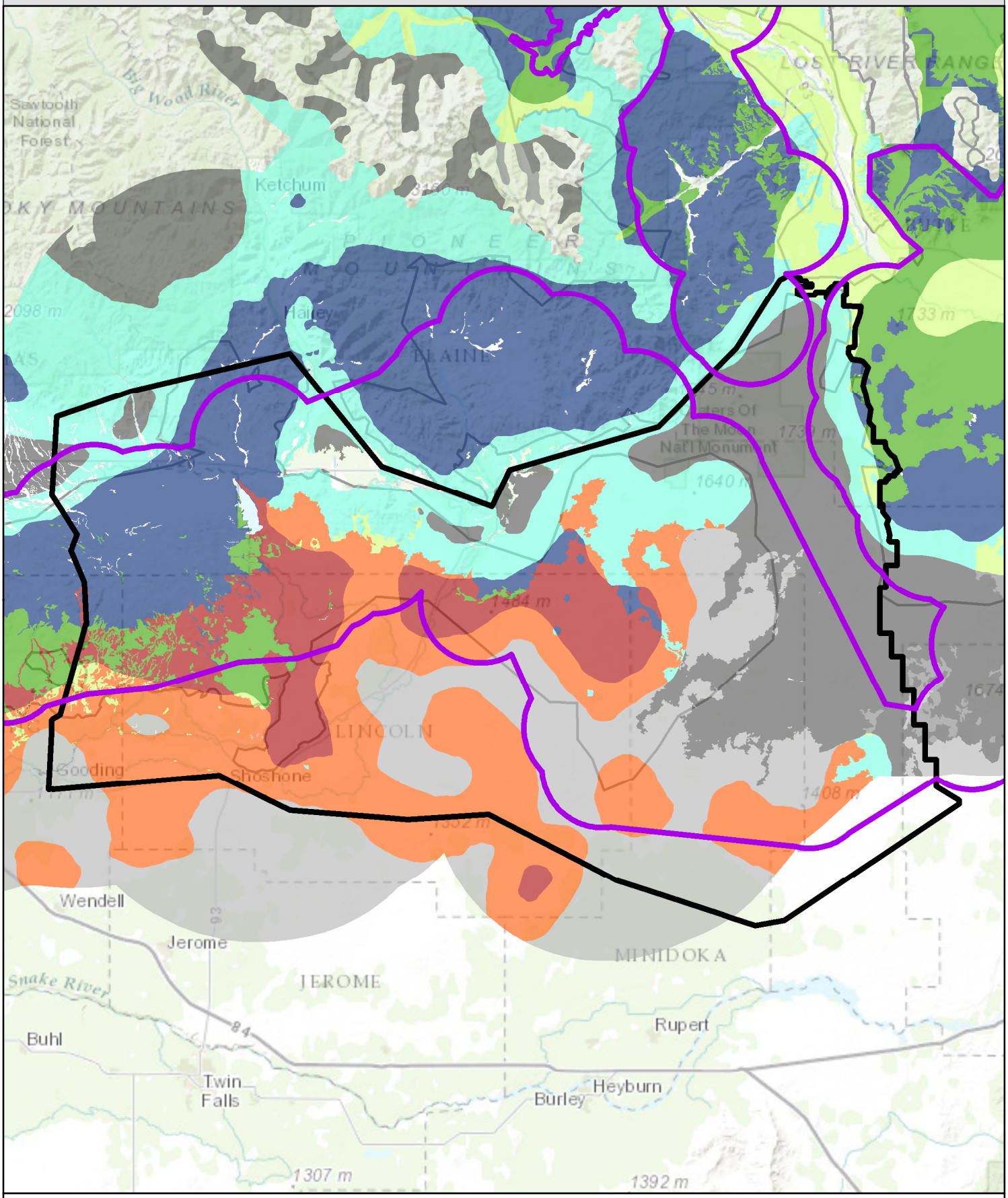
Magic Project Planning Area

Habitat Restoration Potential Treatment Areas

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:981,104

Magic Project Planning Area
Resistance-Resilience Priorities
for Application of Management Strategies

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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N

Magic Project Planning Area

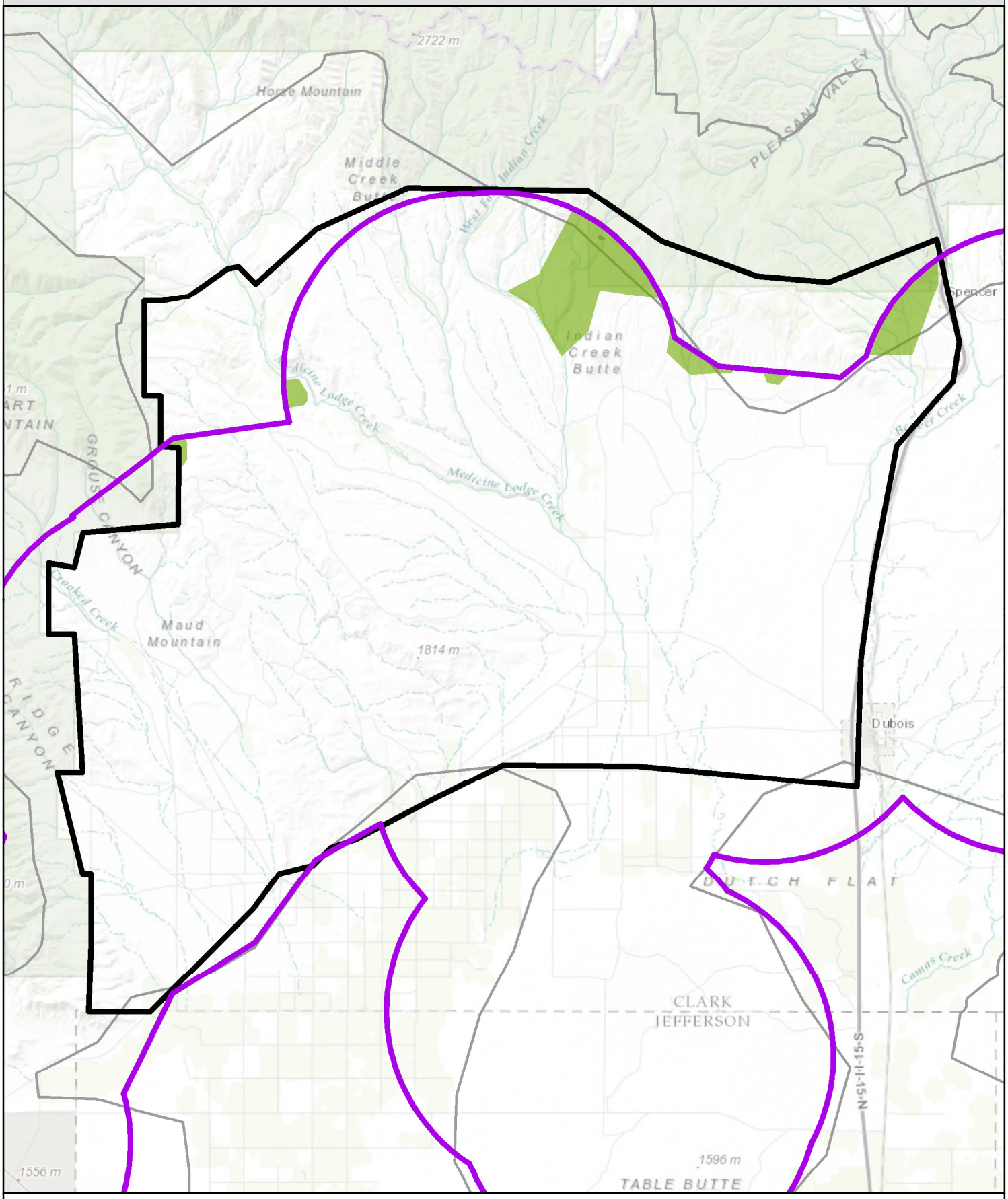
3C 3B 2C 2B 1C 1B 3A 2A 1A

March 2015
Date Saved: 3/13/2015
Data Sources: BLM, ESRI Basedata
1:981,104

Medicine Lodge Project Planning Area

Conifer Expansion Potential Treatment Areas

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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N

Medicine Lodge Project Planning Area

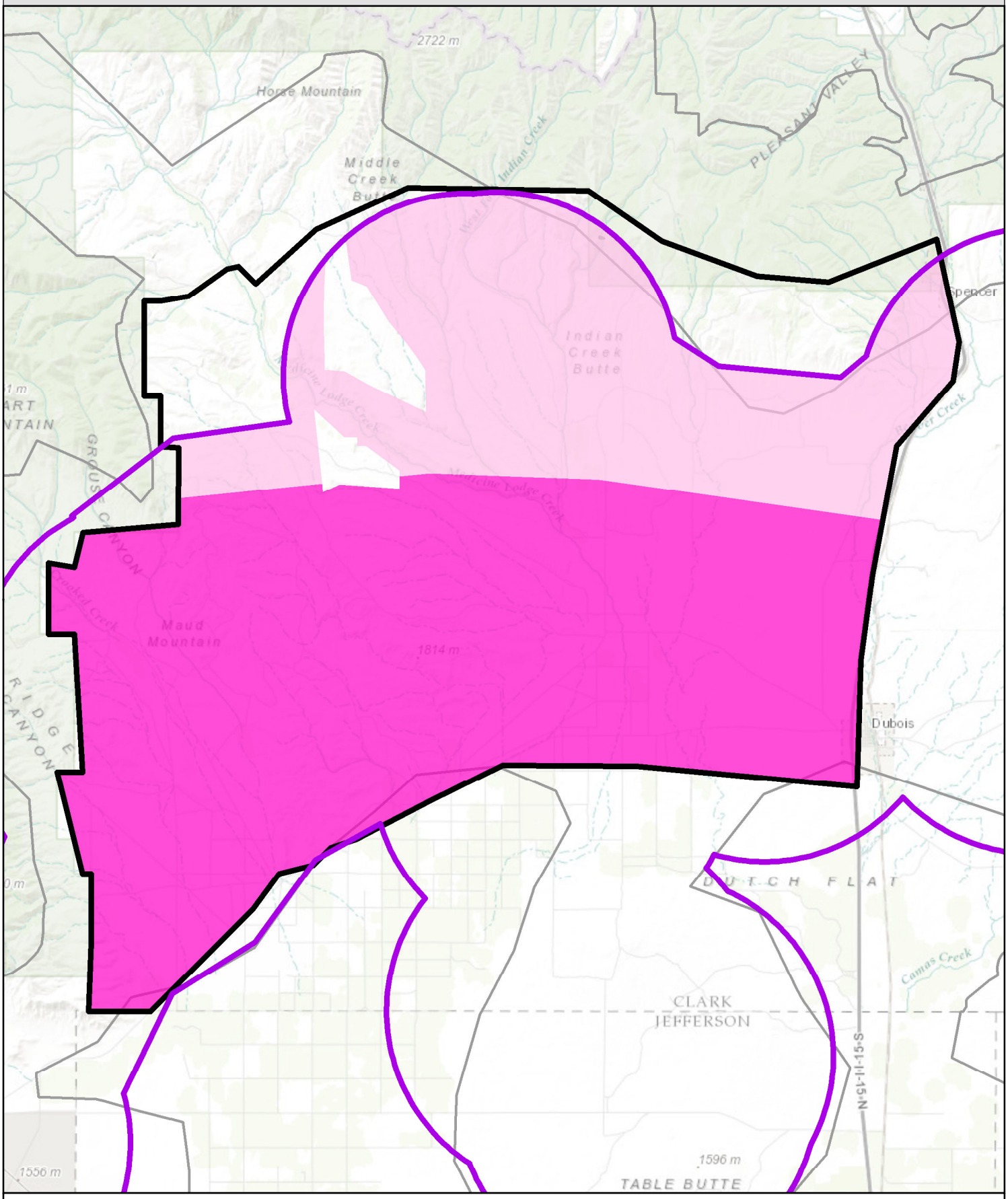
Conifer Expansion Potential Treatment Areas

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:331,888

Medicine Lodge Project Planning Area

Emergency Stabilization, Rehabilitation Priority

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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N

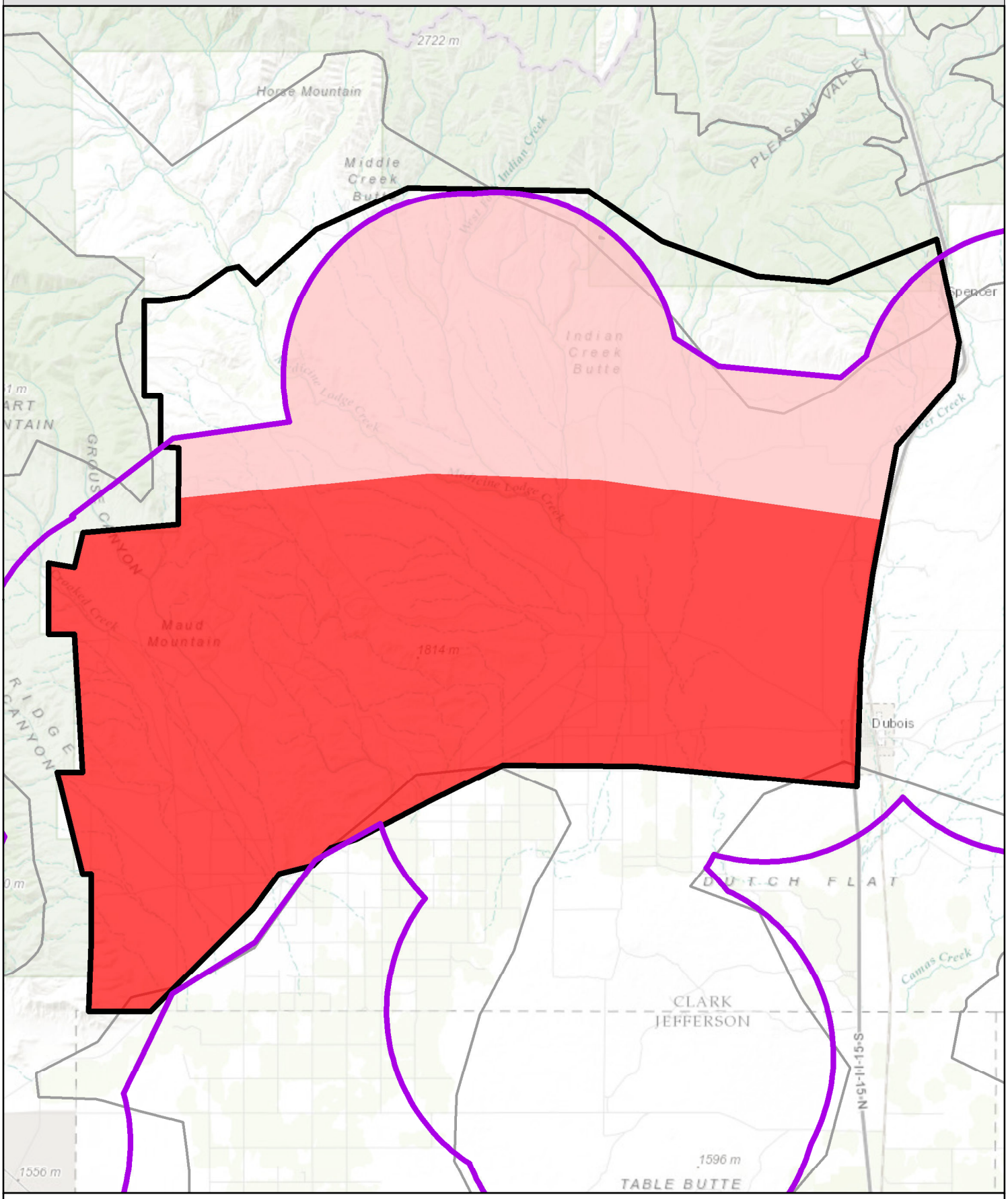
Medicine Lodge Project Planning Area
Medicine Lodge ESR 2nd Priority
Medicine Lodge ESR 3rd Priority

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:331,888

Medicine Lodge Project Planning Area

Fire Operations Priority

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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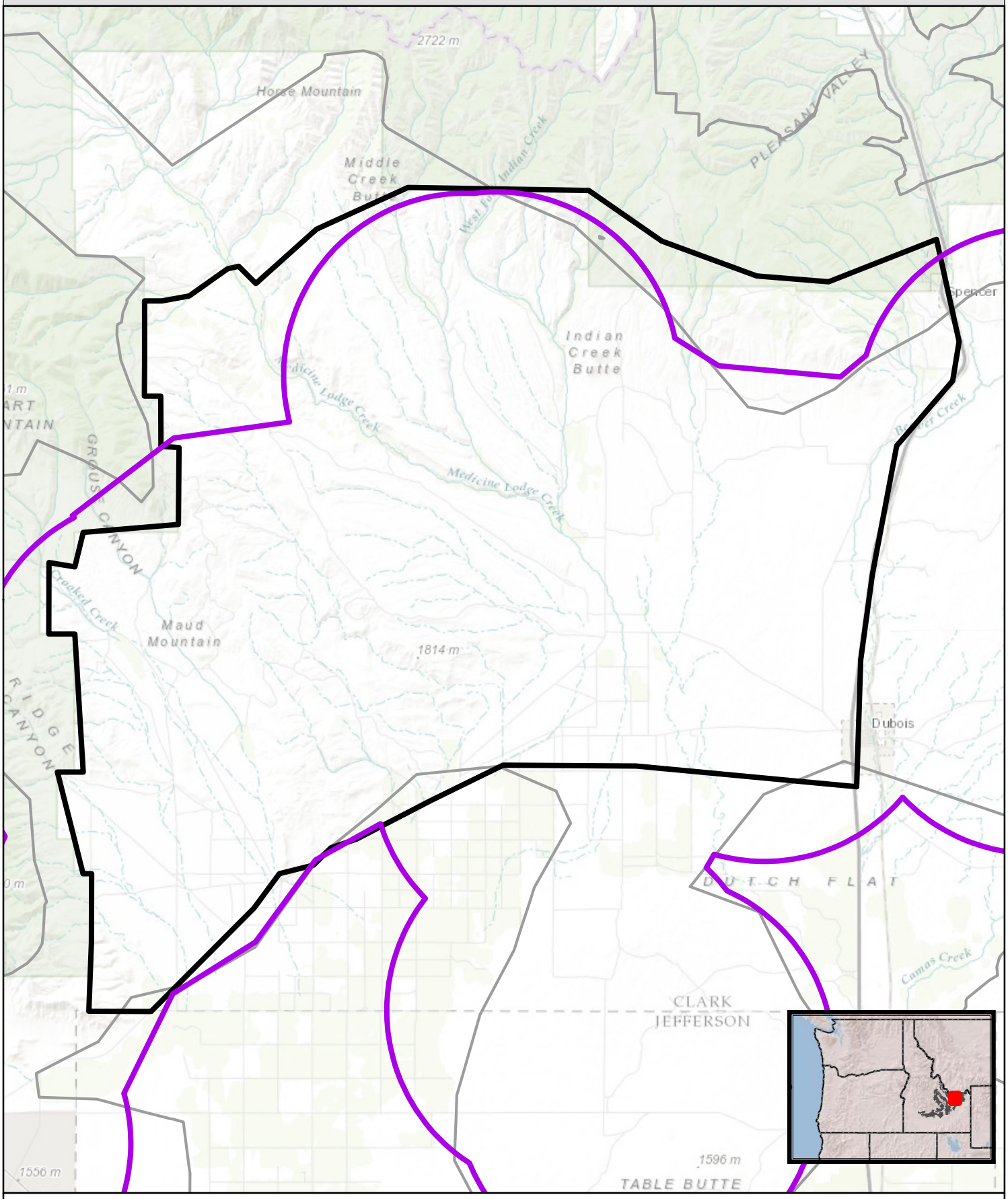
N

Medicine Lodge Project Planning Area
Medicine Lodge Fire 2nd Priority
Medicine Lodge Fire 3rd Priority

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:331,888

Medicine Lodge Project Planning Area

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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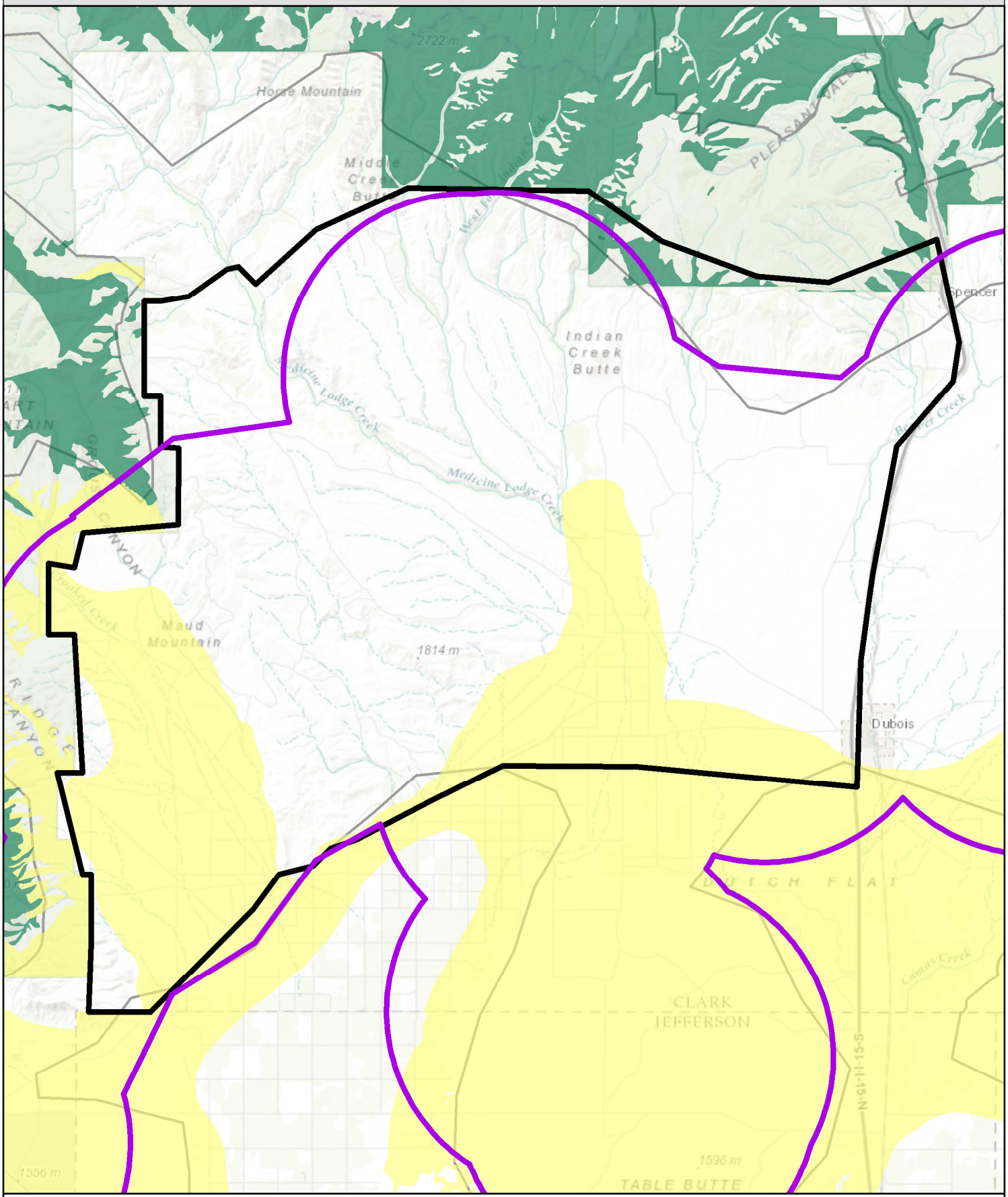
N

Medicine Lodge Project Planning Area

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:331,888

Medicine Lodge Project Planning Area
Resistance-Resilience Reportable Priorities

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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N

Medicine Lodge Project Planning Area

Reportable Priorities

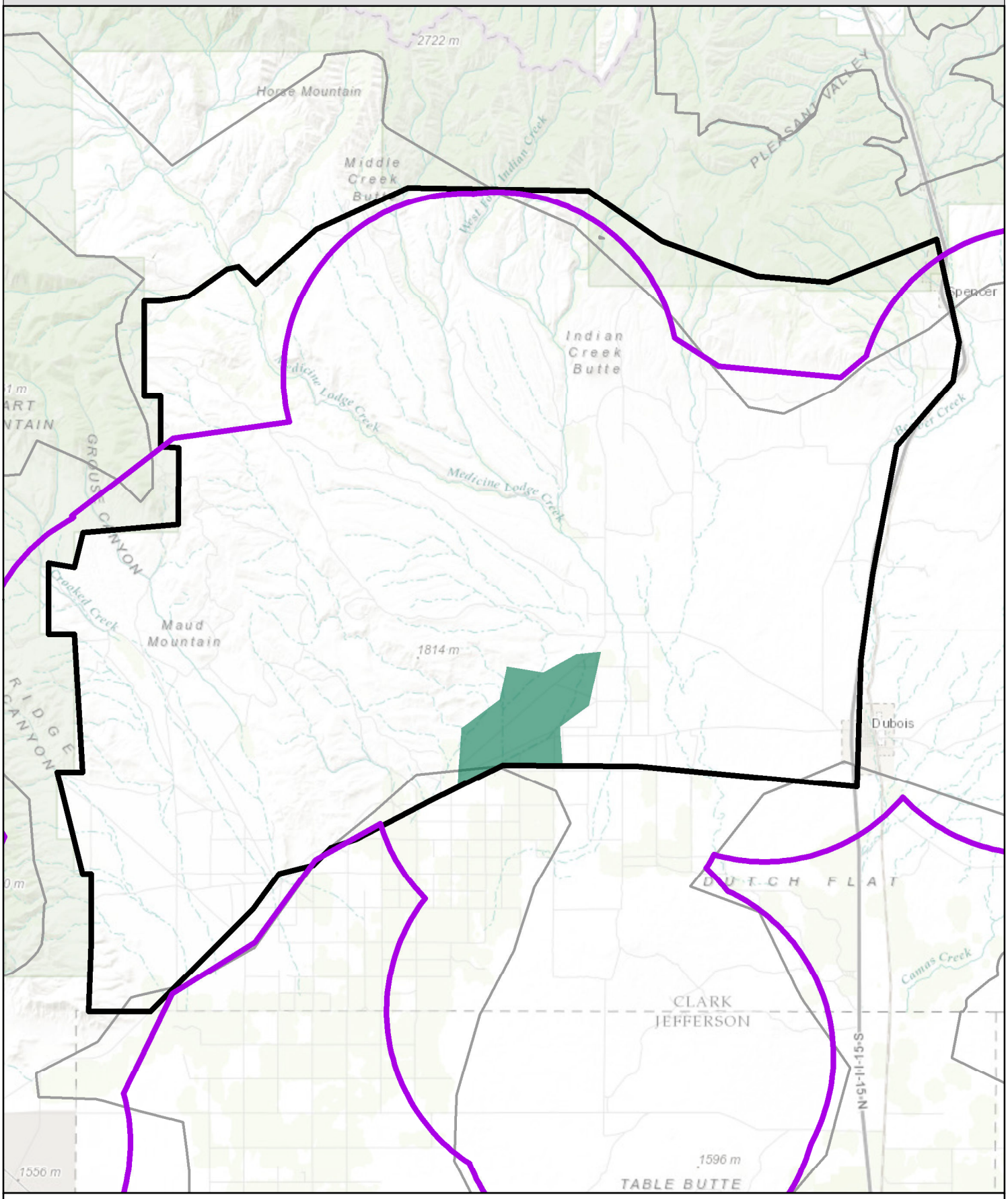
1 2 3

March 2015
Date Saved: 3/13/2015
Data Sources: BLM, ESRI Basedata
1:331,888

Medicine Lodge Project Planning Area

Habitat Restoration Potential Treatment Areas

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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N

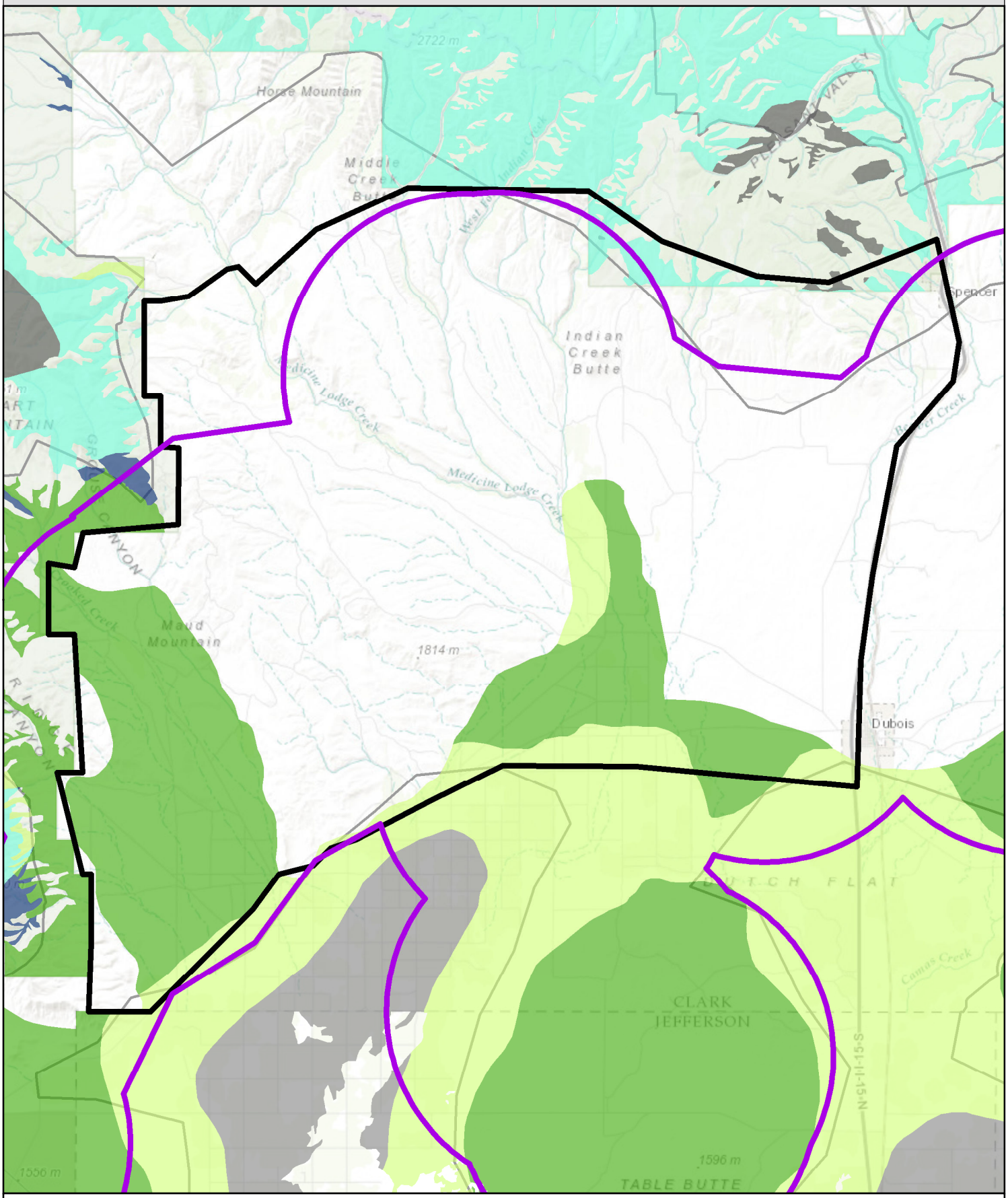
Medicine Lodge Project Planning Area

Habitat Restoration Potential Treatment Areas

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:331,888

Medicine Lodge Project Planning Area
Resistance-Resilience Priorities
for Application of Management Strategies

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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N

Medicine Lodge Project Planning Area

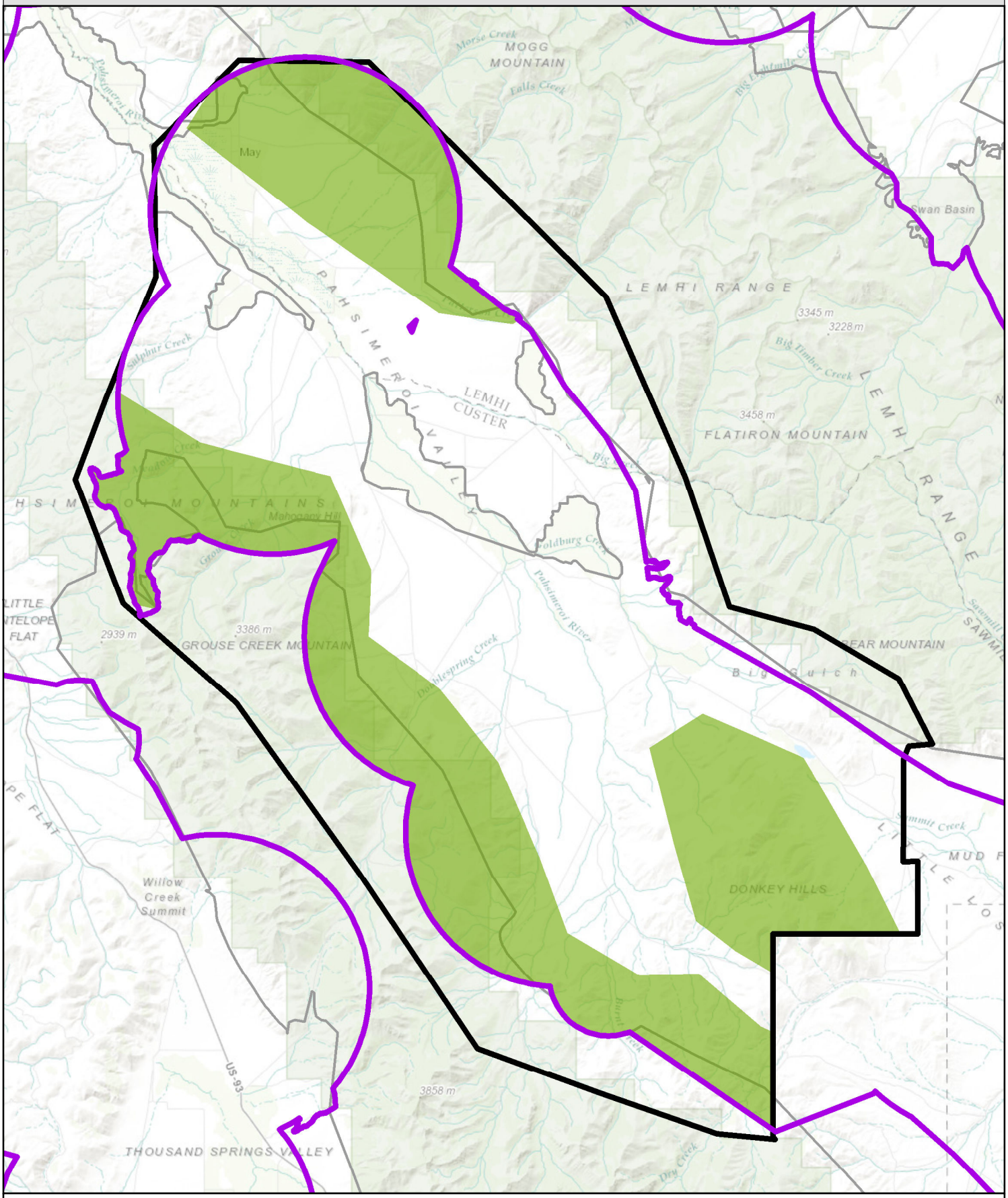
3C 3B 2C 2B 1C 1B 3A 2A 1A

March 2015
Date Saved: 3/13/2015
Data Sources: BLM, ESRI Basedata
1:331,888

Pahsimeroi Project Planning Area

Conifer Expansion Potential Treatment Areas

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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N

Pahsimeroi Project Planning Area

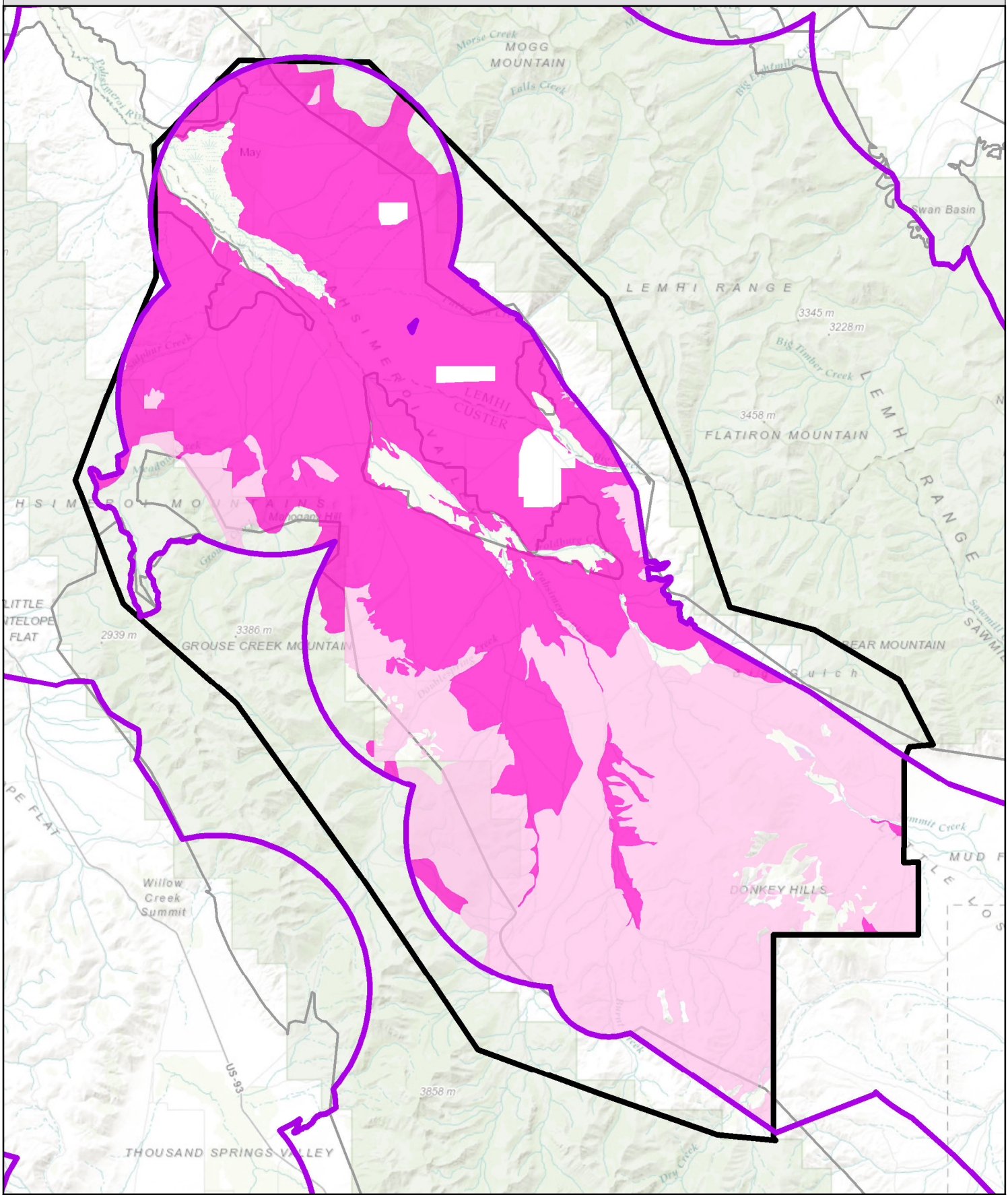
Conifer Expansion Potential Treatment Areas

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:391,935

Pahsimeroi Project Planning Area

Emergency Stabilization, Rehabilitation Priority

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.

N

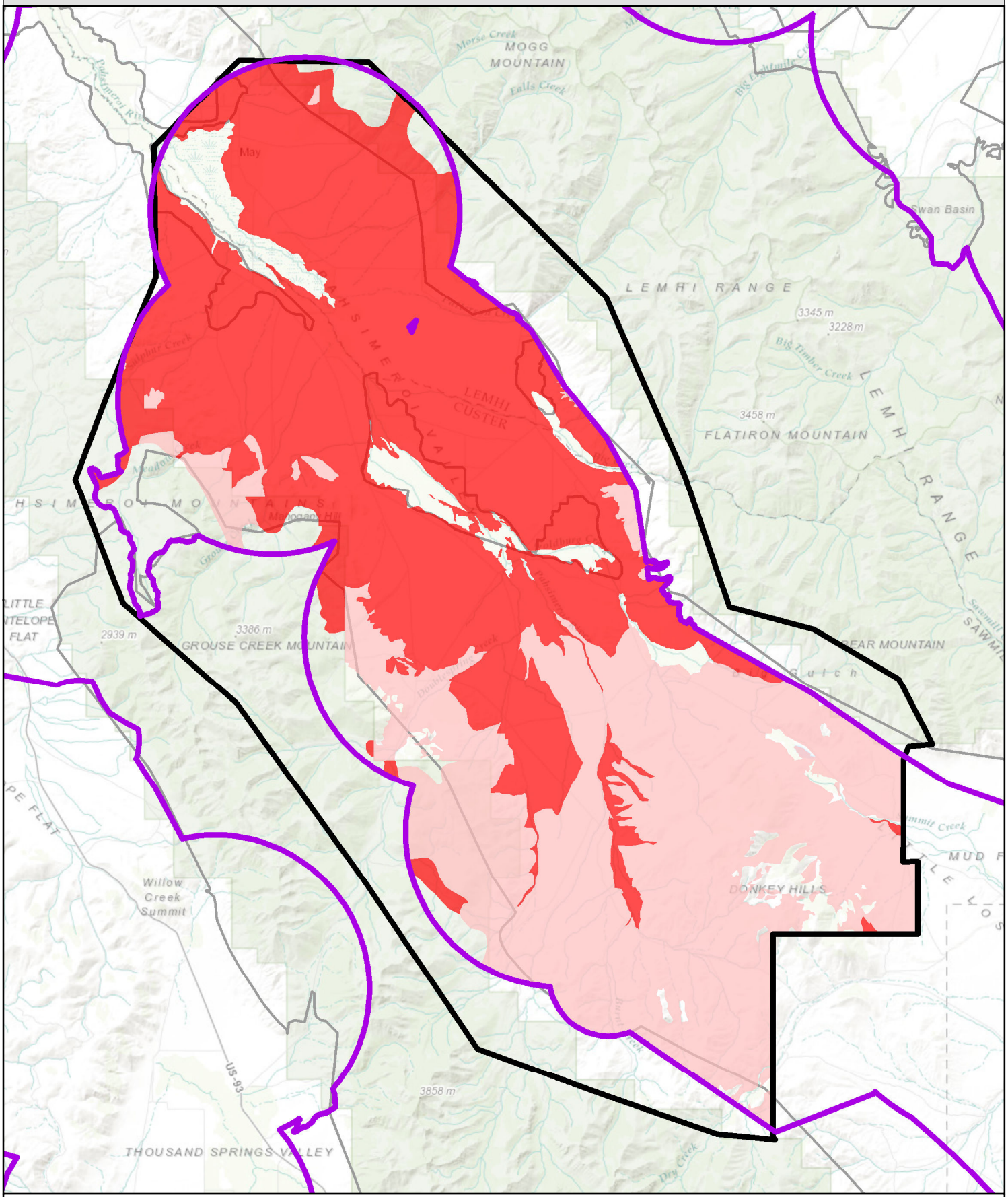
Pahsimeroi Project Planning Area
Pahsimeroi ESR 2nd Priority
Pahsimeroi ESR 3rd Priority

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:391,935

Pahsimeroi Project Planning Area

Fire Operations Priority

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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Pahsimeroi Project Planning Area
Pahsimeroi Fire 2nd Priority
Pahsimeroi Fire 3rd Priority

March 2015
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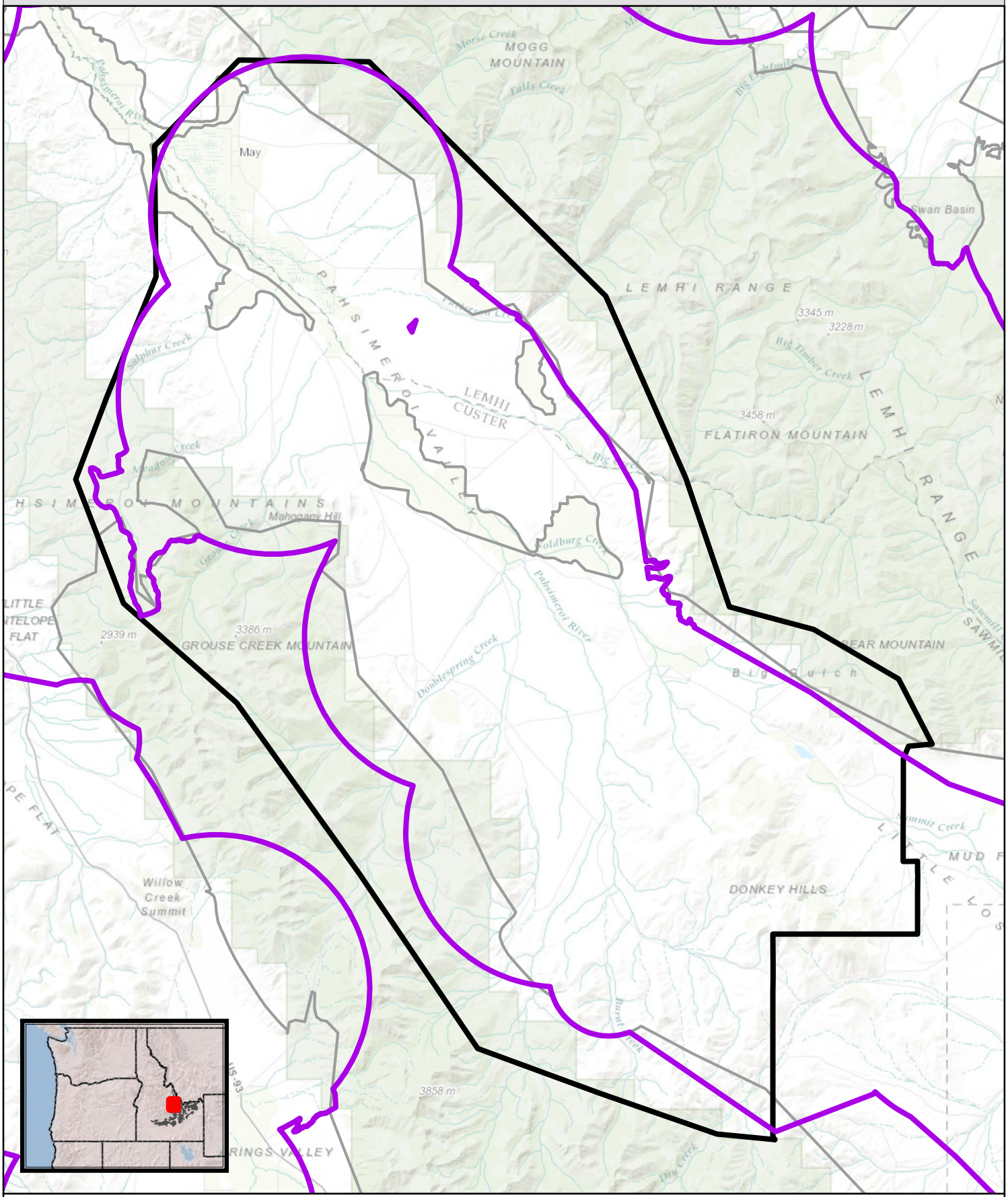
Data Sources: BLM, ESRI Basedata
1:391,935

Pahsimeroi Project Planning Area

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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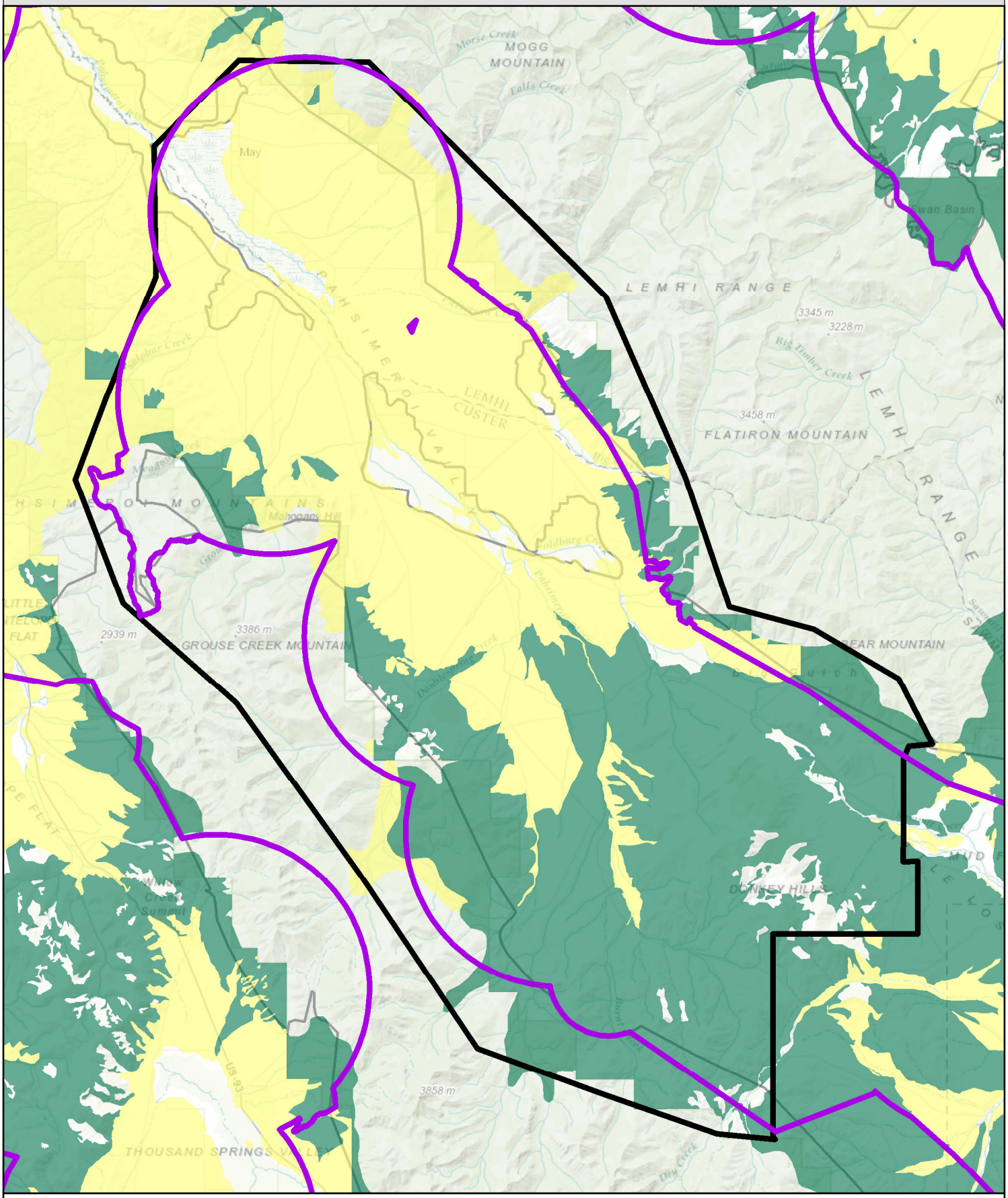
N

Pahsimeroi Project Planning Area

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:391,602

Pahsimeroi Project Planning Area
Resistance-Resilience Reportable Priorities

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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N

Pahsimeroi Project Planning Area

Reportable Priorities

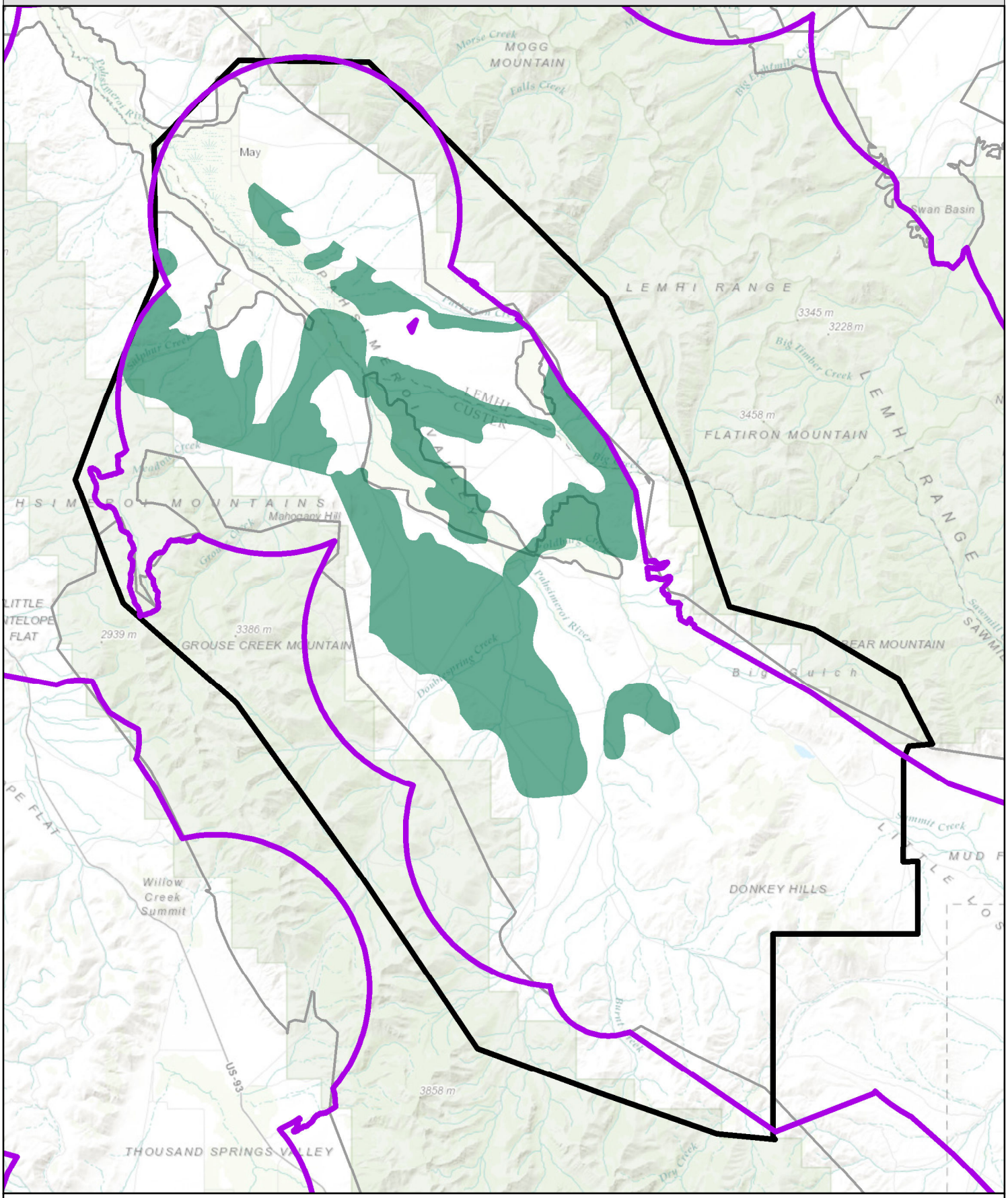
1 2 3

March 2015
Date Saved: 3/13/2015
Data Sources: BLM, ESRI Basedata
1:392,271

Pahsimeroi Project Planning Area

Habitat Restoration Potential Treatment Areas

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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Pahsimeroi Project Planning Area

Habitat Restoration Potential Treatment Areas

March 2015
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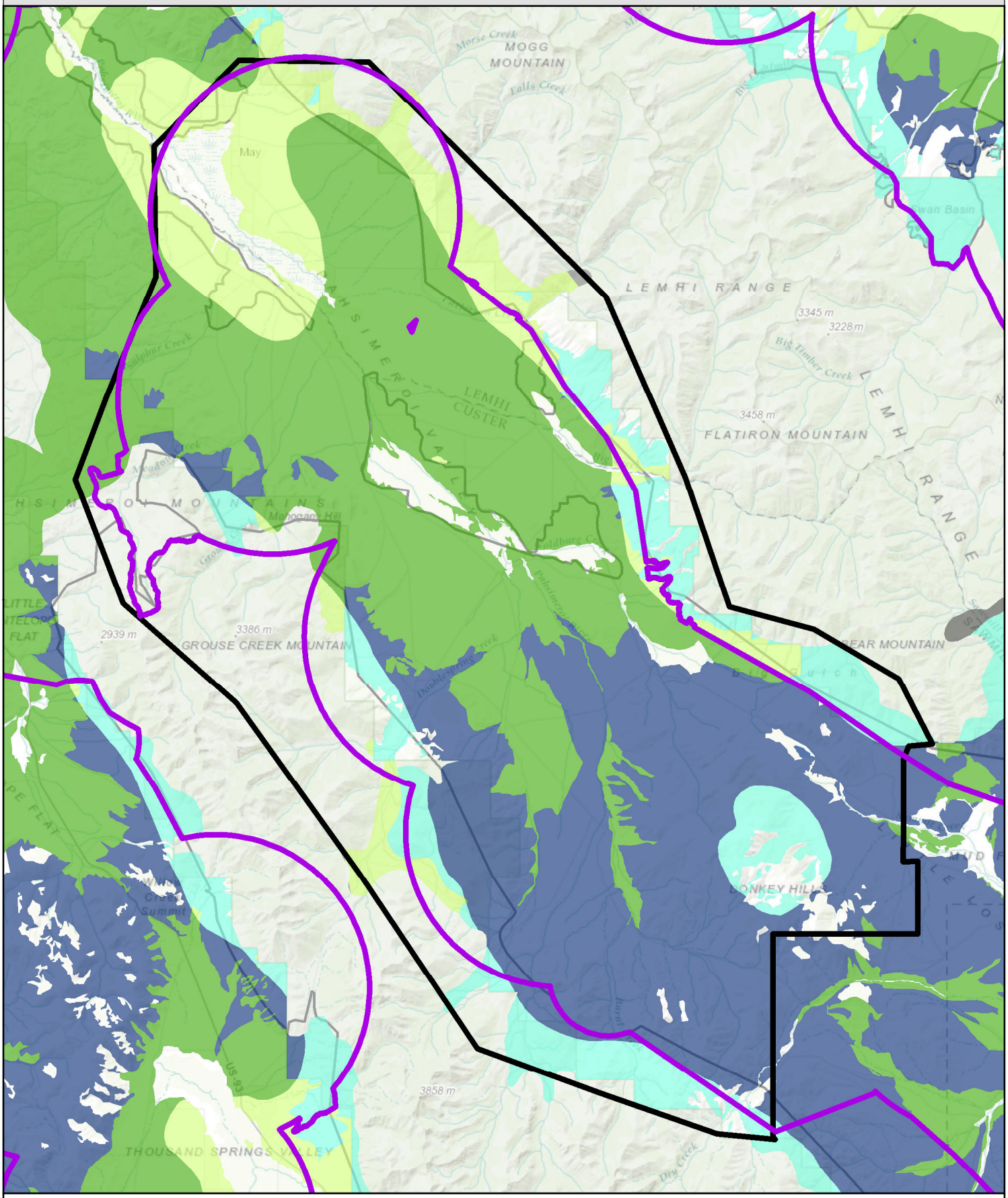
Data Sources: BLM, ESRI Basedata
1:391,935

Pahsimeroi Project Planning Area
Resistance-Resilience Priorities
for Application of Management Strategies

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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Pahsimeroi Project Planning Area

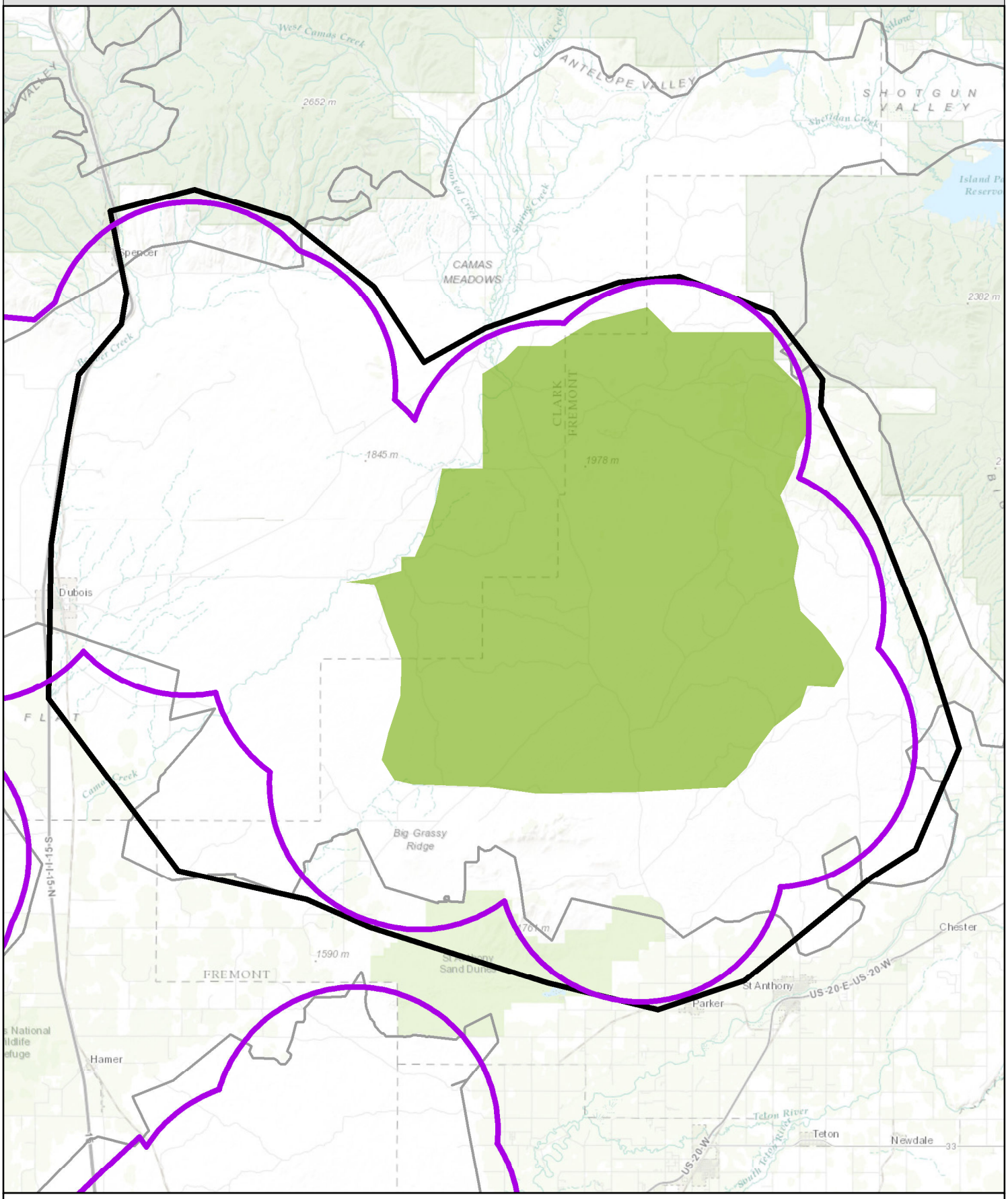
3C 3B 2C 2B 1C 1B 3A 2A 1A

March 2015
Date Saved: 3/13/2015
Data Sources: BLM, ESRI Basedata
1:392,271

Sand Creek Project Planning Area

Conifer Expansion Potential Treatment Areas

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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N

Sand Creek Project Planning Area

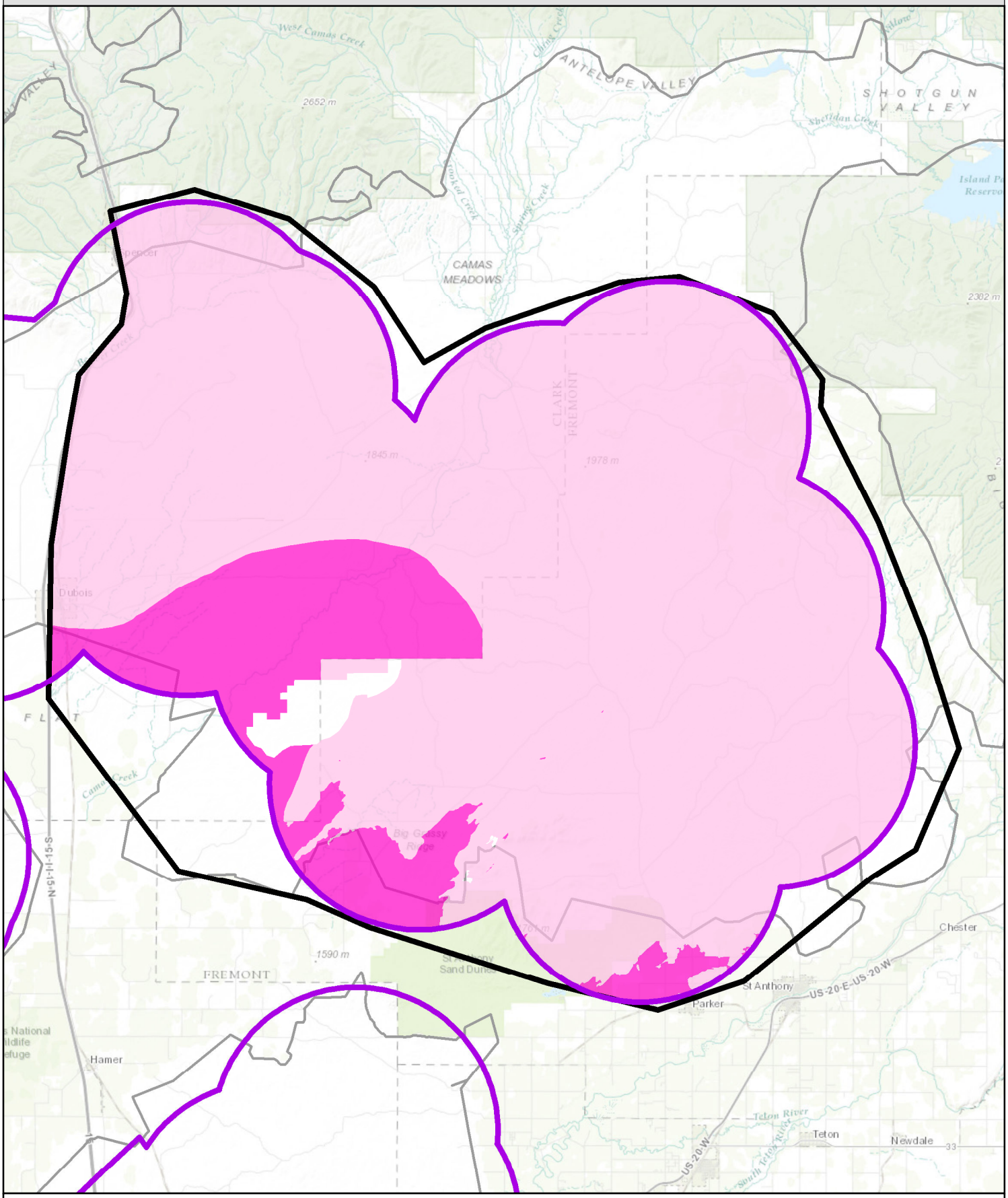
Conifer Expansion Potential Treatment Areas

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:421,261

Sand Creek Project Planning Area

Emergency Stabilization, Rehabilitation Priority

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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N

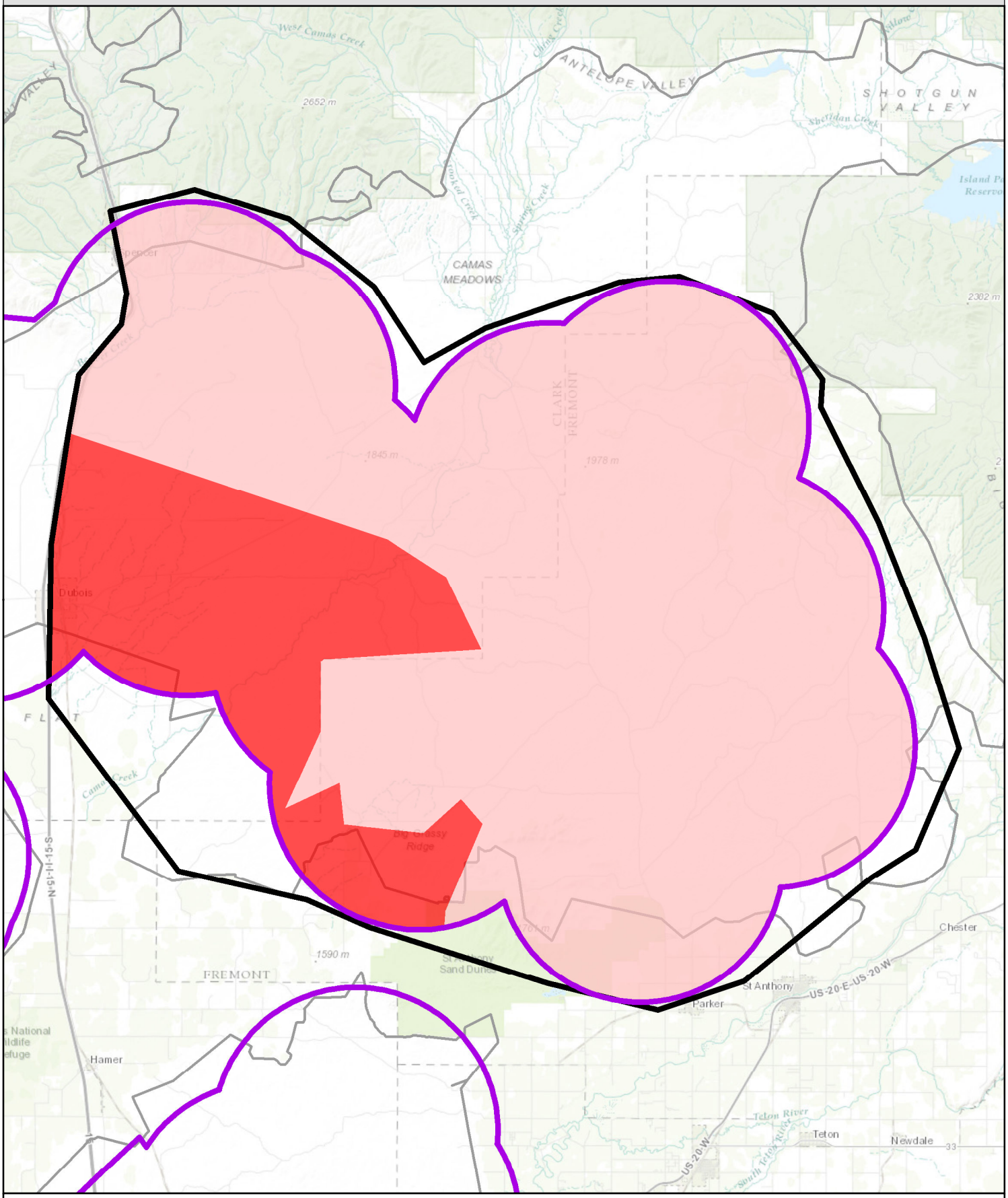
Sand Creek Project Planning Area
Sand Creek ESR 2nd Priority
Sand Creek ESR 3rd Priority

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:421,261

Sand Creek Project Planning Area

Fire Operations Priority

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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Sand Creek Fire 2nd Priority
Sand Creek Fire 3rd Priority

March 2015
Date Saved: 3/11/2015
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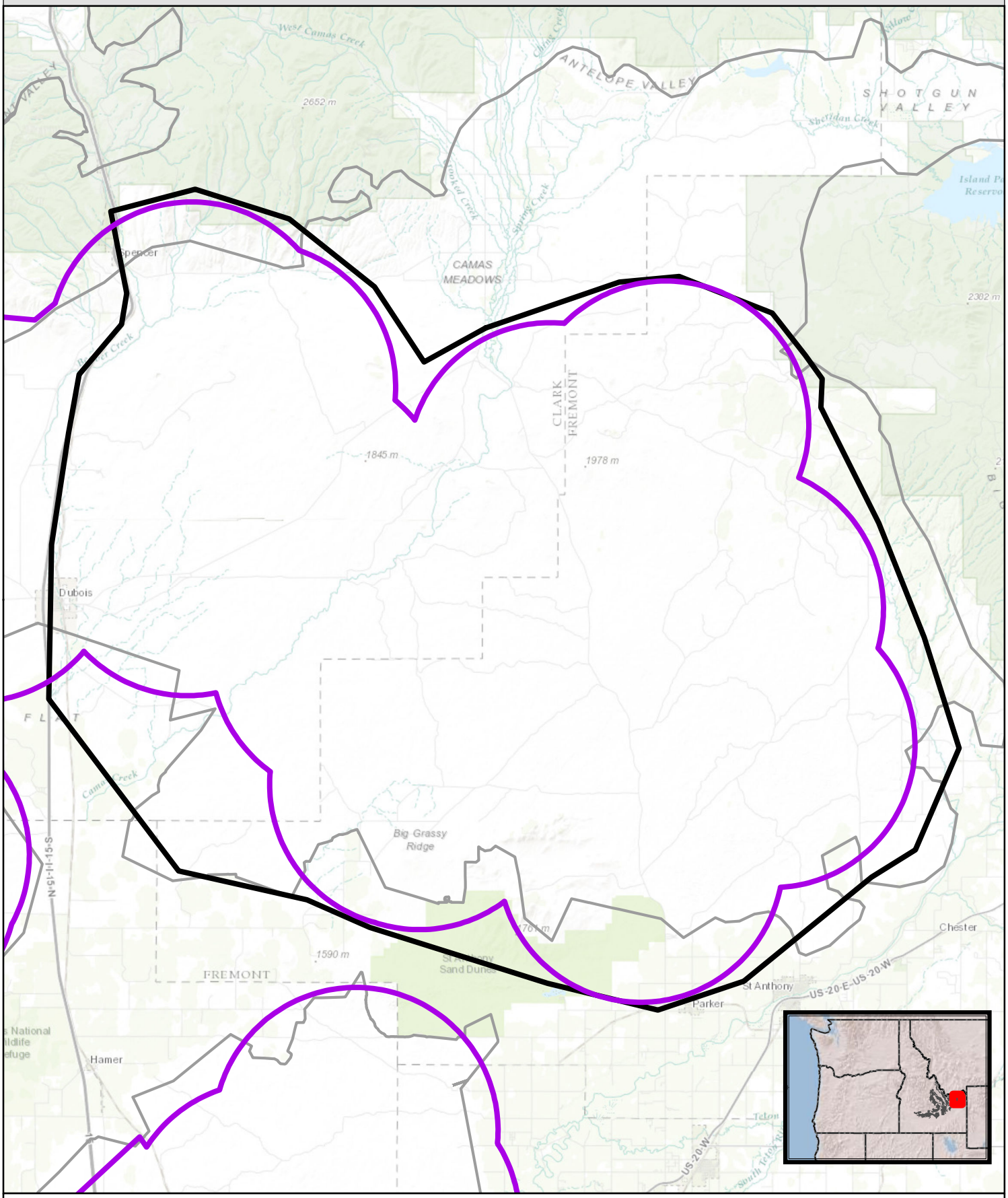
1:421,261

Sand Creek Project Planning Area

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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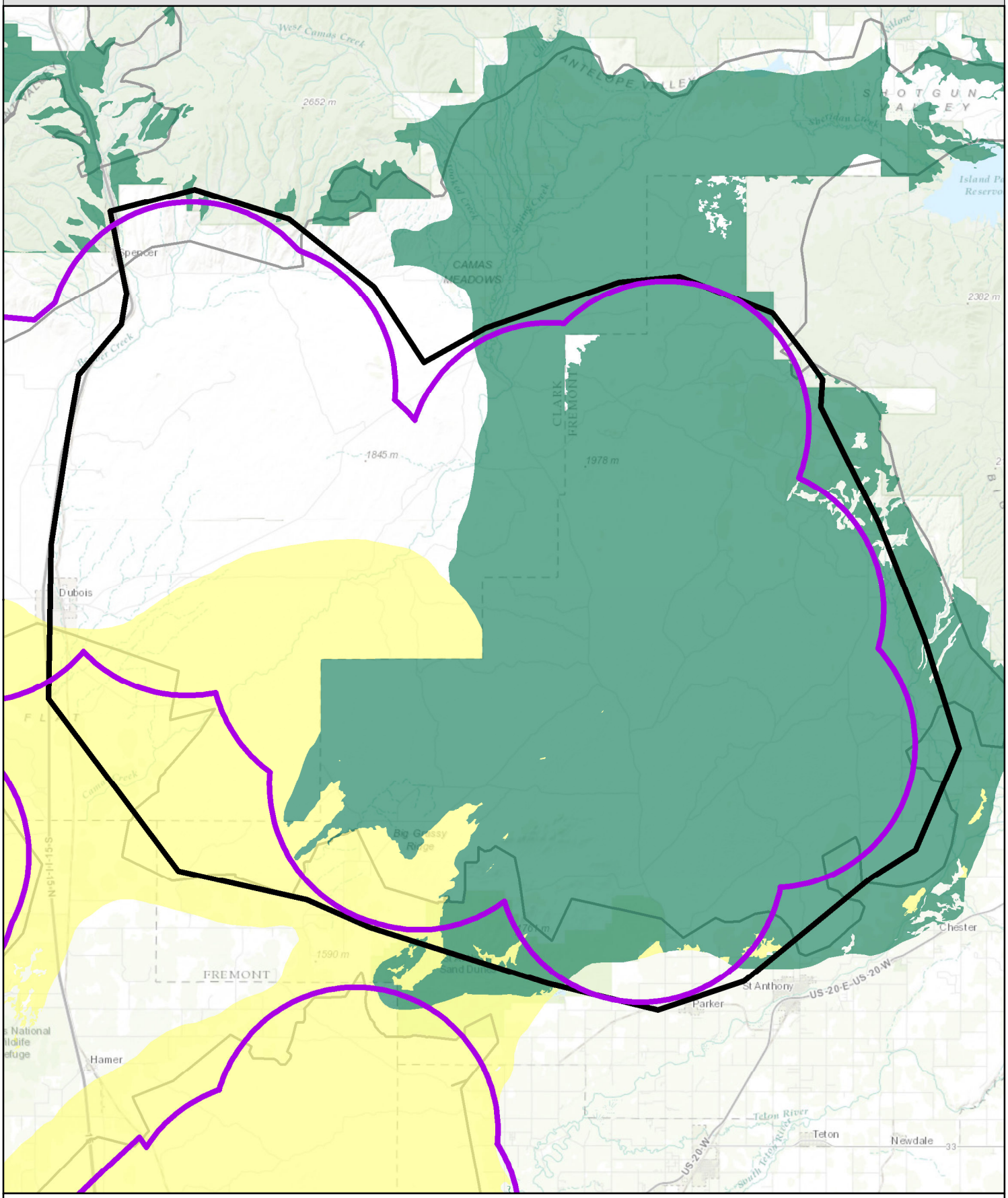
Sand Creek Project Planning Area

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:421,261

Sand Creek Project Planning Area
Resistance-Resilience Reportable Priorities

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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N

Sand Creek Project Planning Area

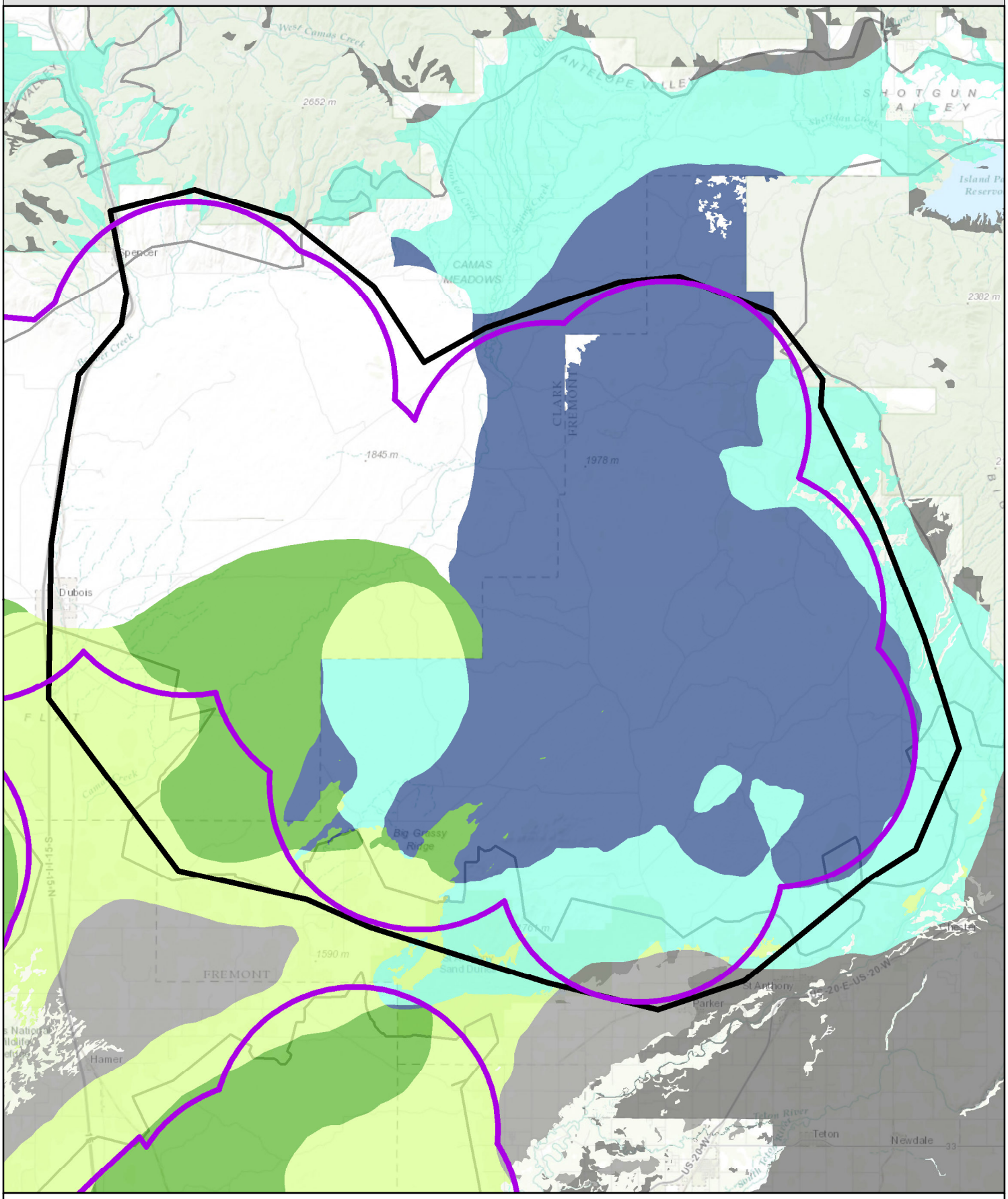
Reportable Priorities

1 2 3

March 2015
Date Saved: 3/13/2015
Data Sources: BLM, ESRI Basedata
1:421,261

Sand Creek Project Planning Area
Resistance-Resilience Priorities
for Application of Management Strategies

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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Sand Creek Project Planning Area

3C 3B 2C 2B 1C 1B 3A 2A 1A

March 2015
Date Saved: 3/13/2015
Data Sources: BLM, ESRI Basedata
1:421,261

Table Butte Project Planning Area

Emergency Stabilization, Rehabilitation Priority

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior

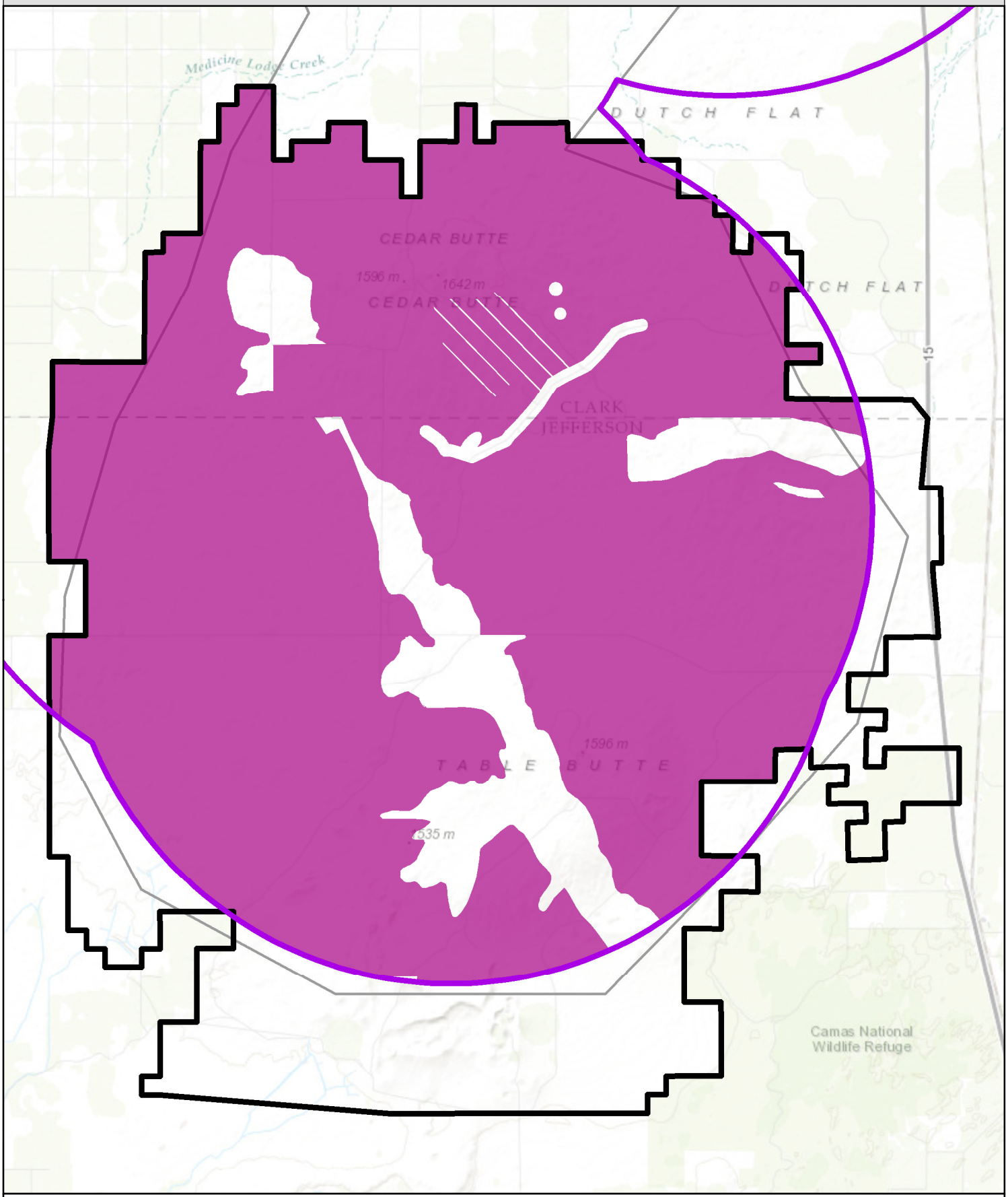

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Table Butte Project Planning Area

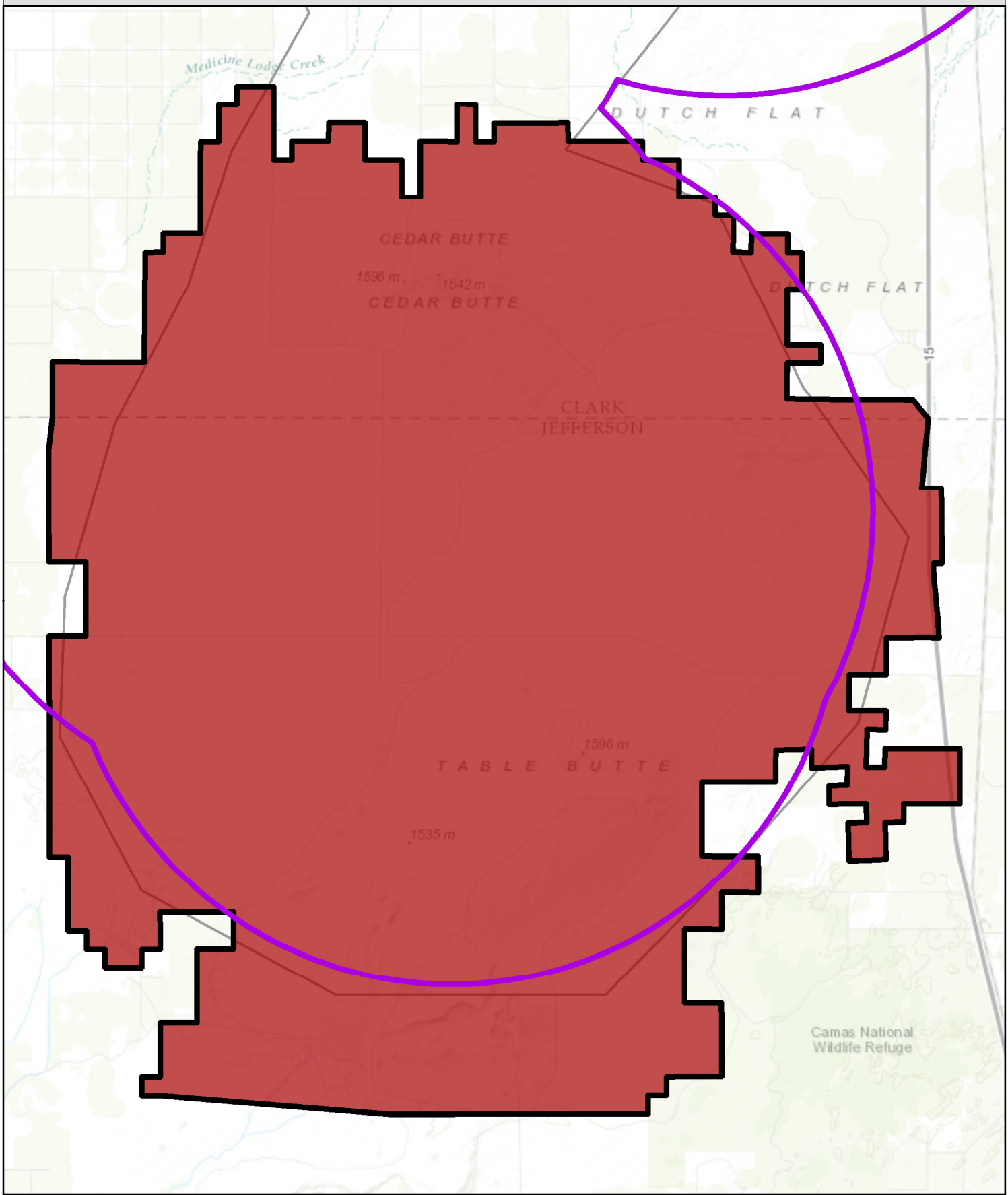
Table Butte ESR 1st Priority

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:154,836

Table Butte Project Planning Area

Fire Operations Priority

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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N

Table Butte Project Planning Area

Table Butte Fire 1st Priority

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:154,836

Table Butte Project Planning Area

Fuels Management Potential Treatment Areas

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior

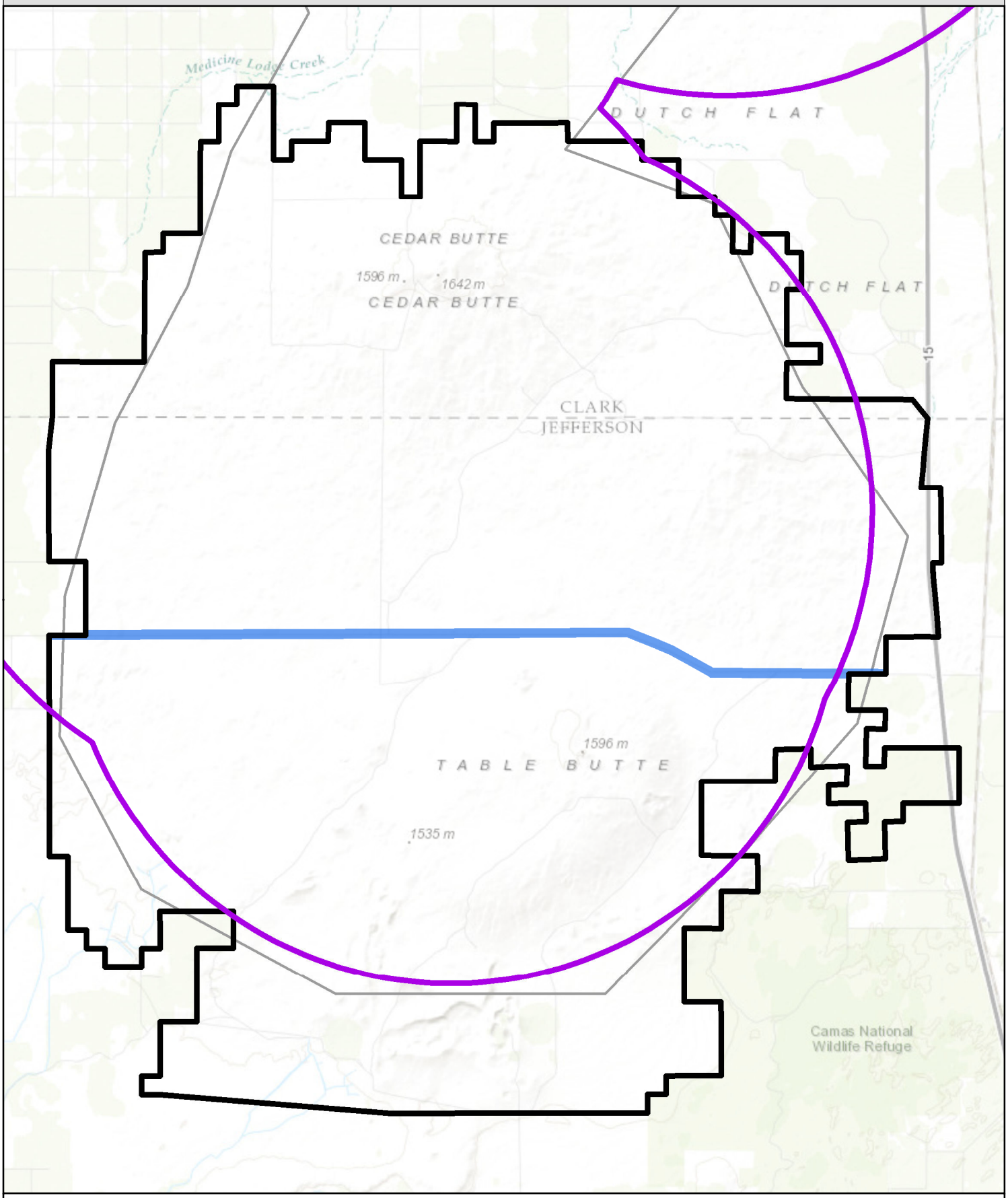

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Table Butte Project Planning Area
Fuels Management Potential Treatment Areas

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
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Table Butte Project Planning Area

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior

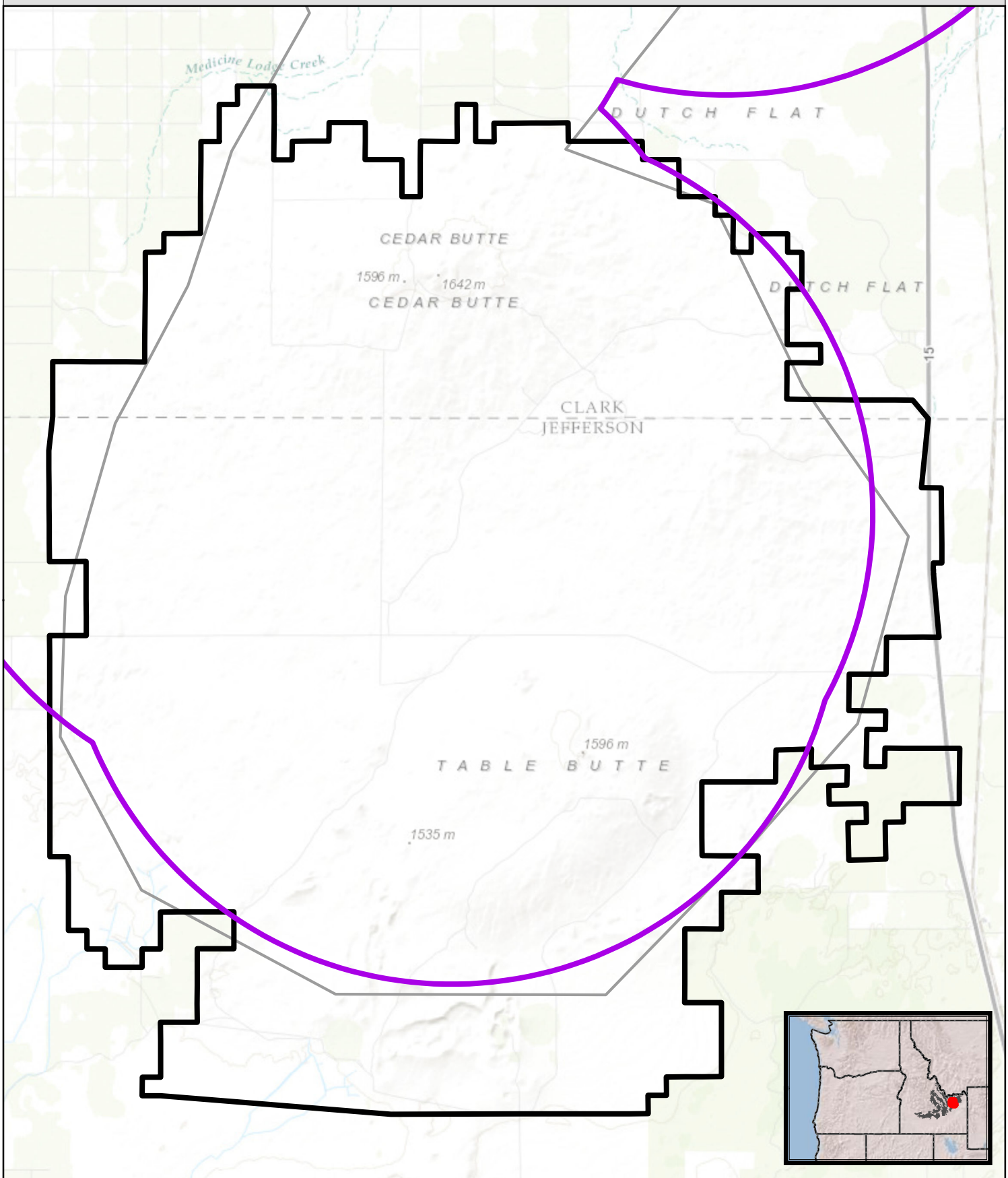

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Table Butte Project Planning Area

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
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Table Butte Project Planning Area
Resistance-Resilience Reportable Priorities

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior

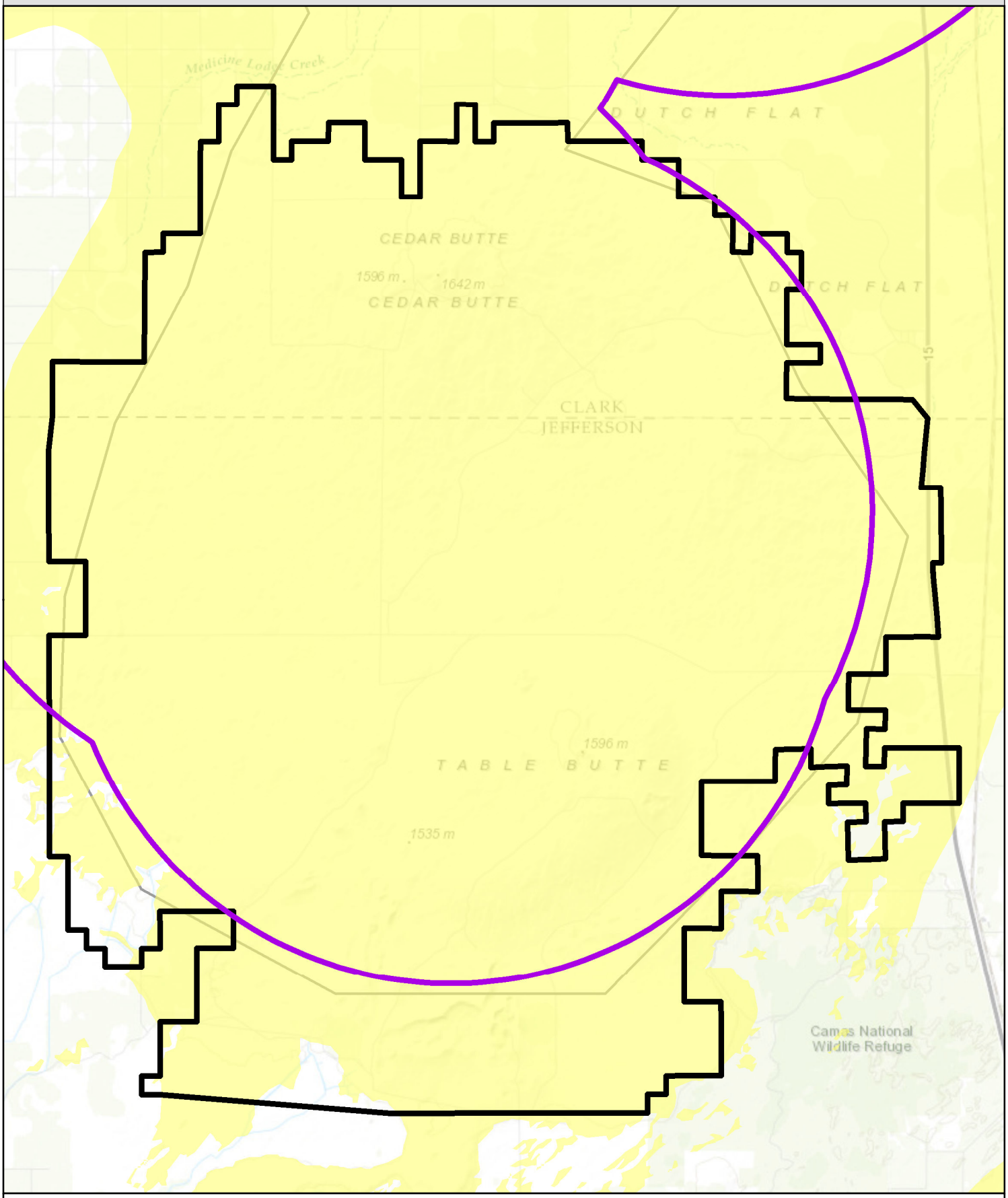

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Table Butte Project Planning Area

Reportable Priorities

1 2 3

March 2015
Date Saved: 3/13/2015
Data Sources: BLM, ESRI Basedata
1:154,836

Table Butte Project Planning Area

Habitat Restoration Potential Treatment Areas

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior

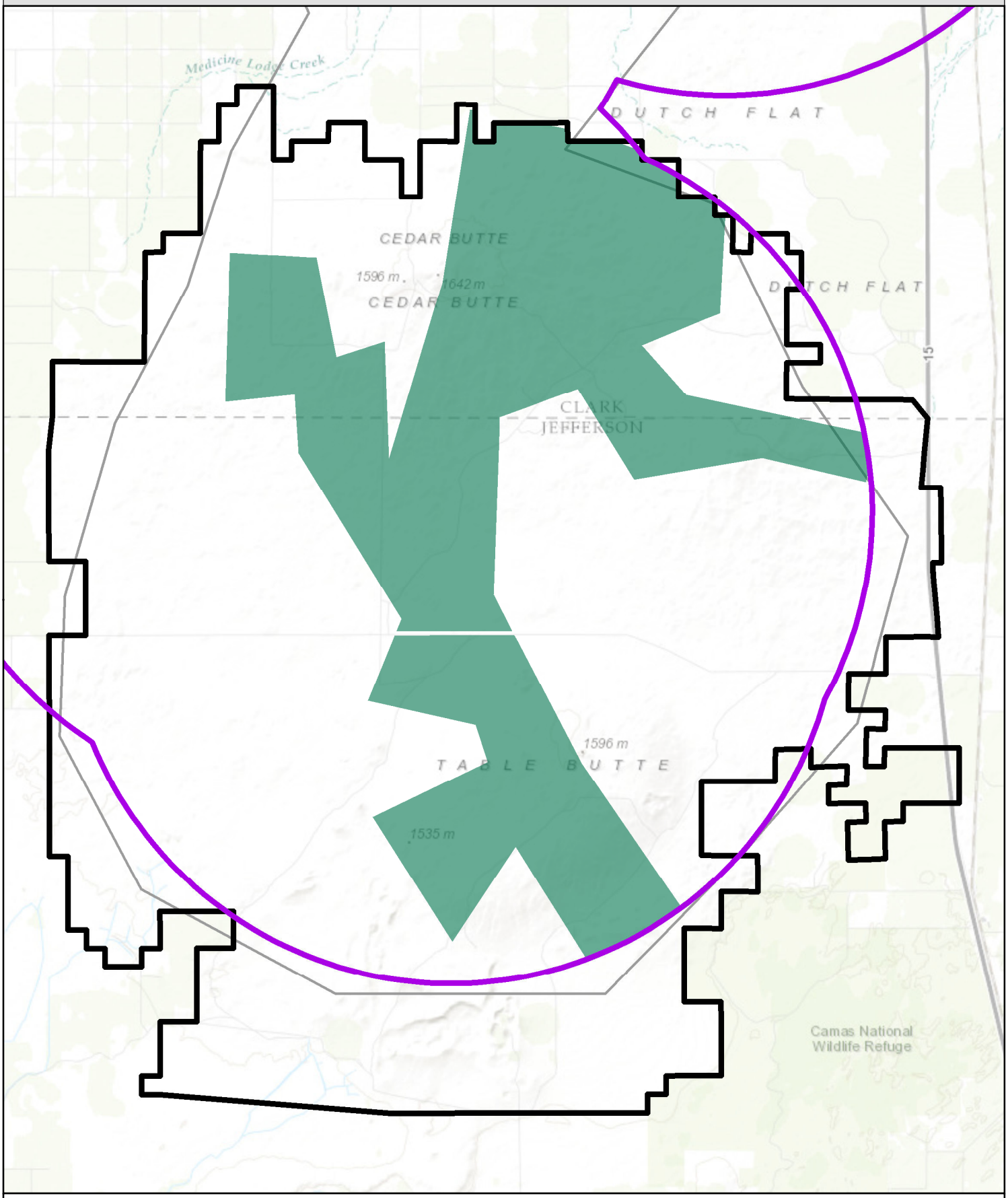

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Table Butte Project Planning Area

Habitat Restoration Potential Treatment Areas

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
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Table Butte Project Planning Area
Resistance-Resilience Priorities
for Application of Management Strategies

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior

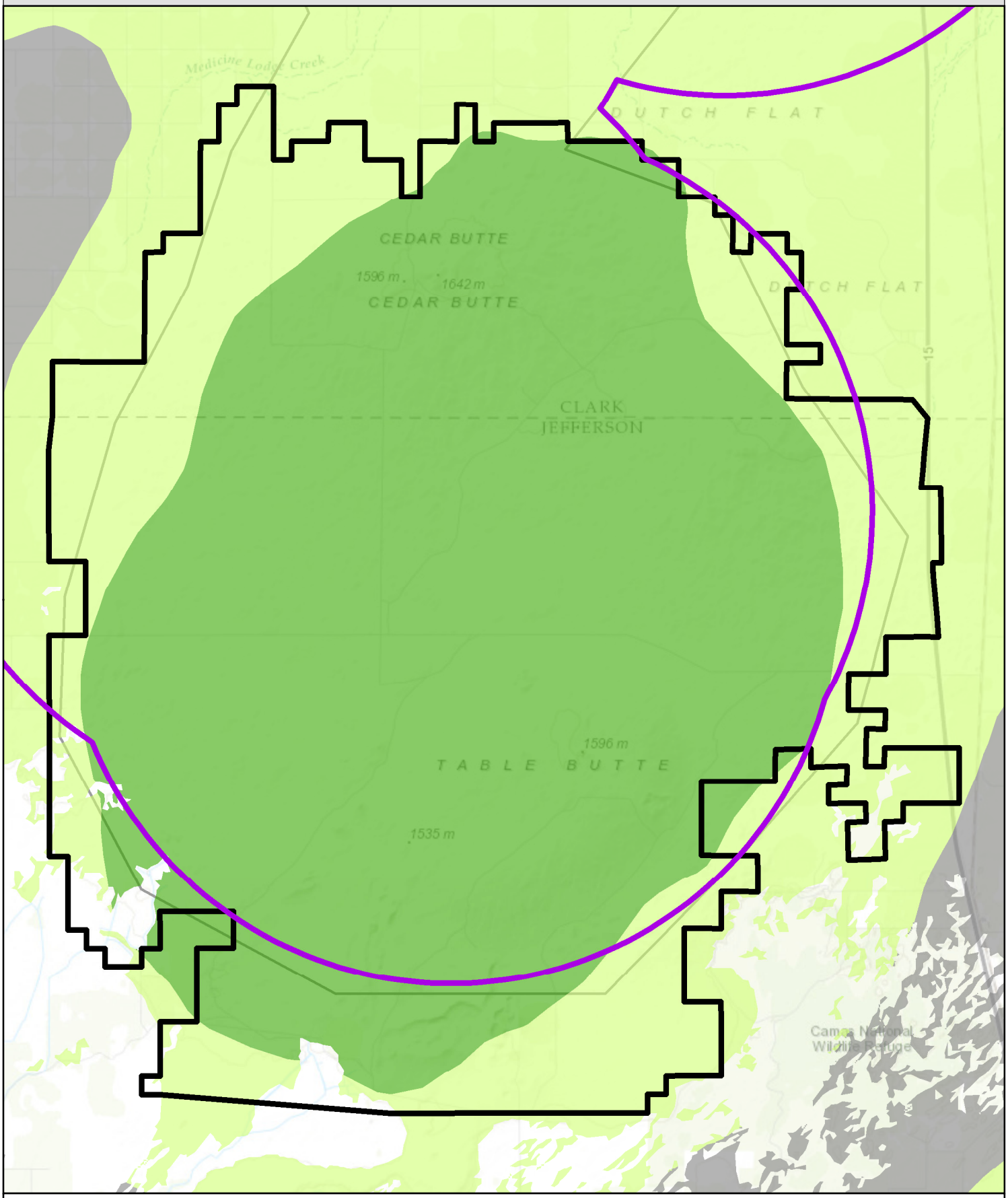

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Table Butte Project Planning Area

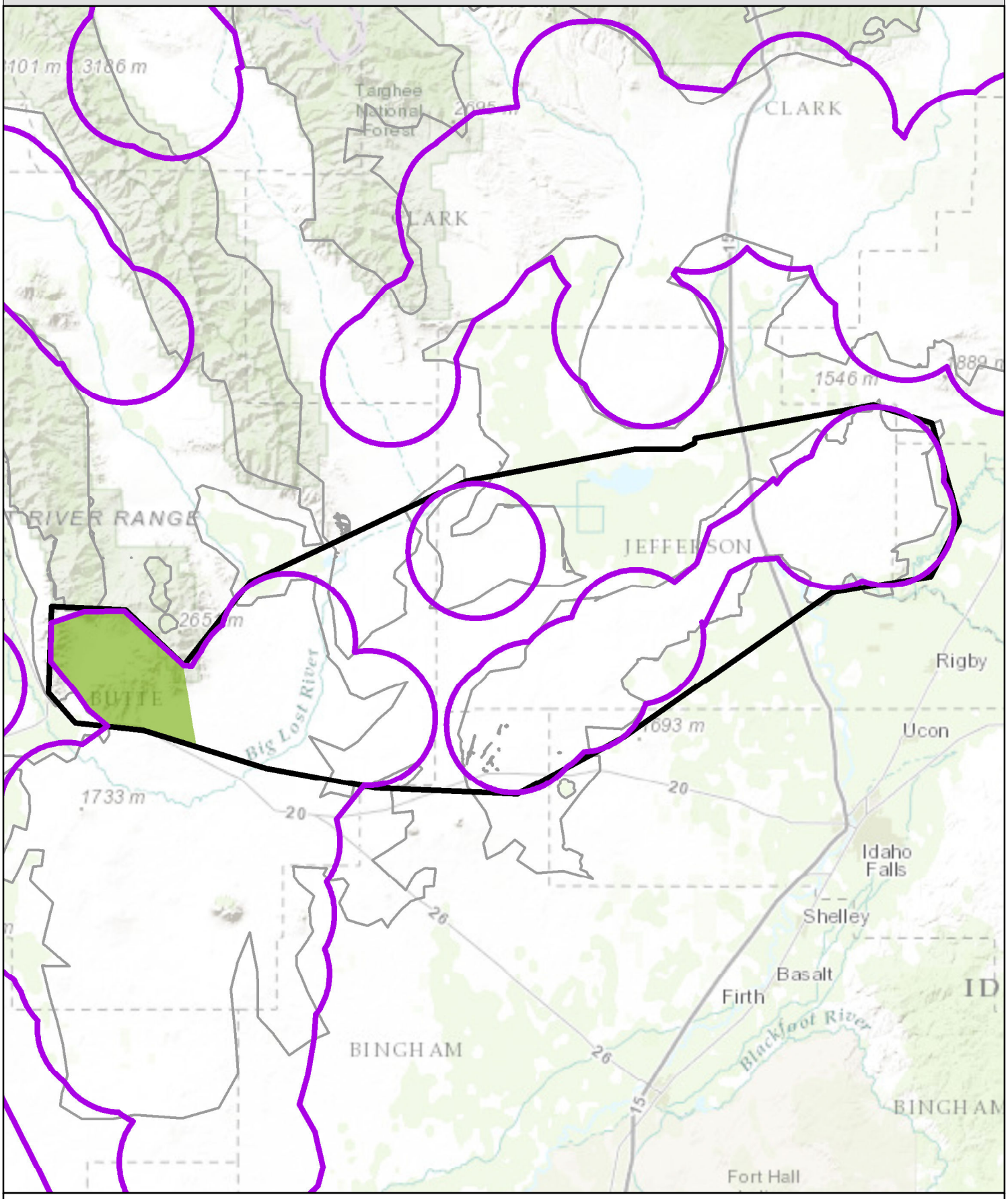
3C 3B 2C 2B 1C 1B 3A 2A 1A

March 2015
Date Saved: 3/13/2015
Data Sources: BLM, ESRI Basedata
1:154,836

Twin Butte Project Planning Area

Conifer Expansion Potential Treatment Areas

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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Twin Butte Project Planning Area

Conifer Expansion Potential Treatment Areas

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
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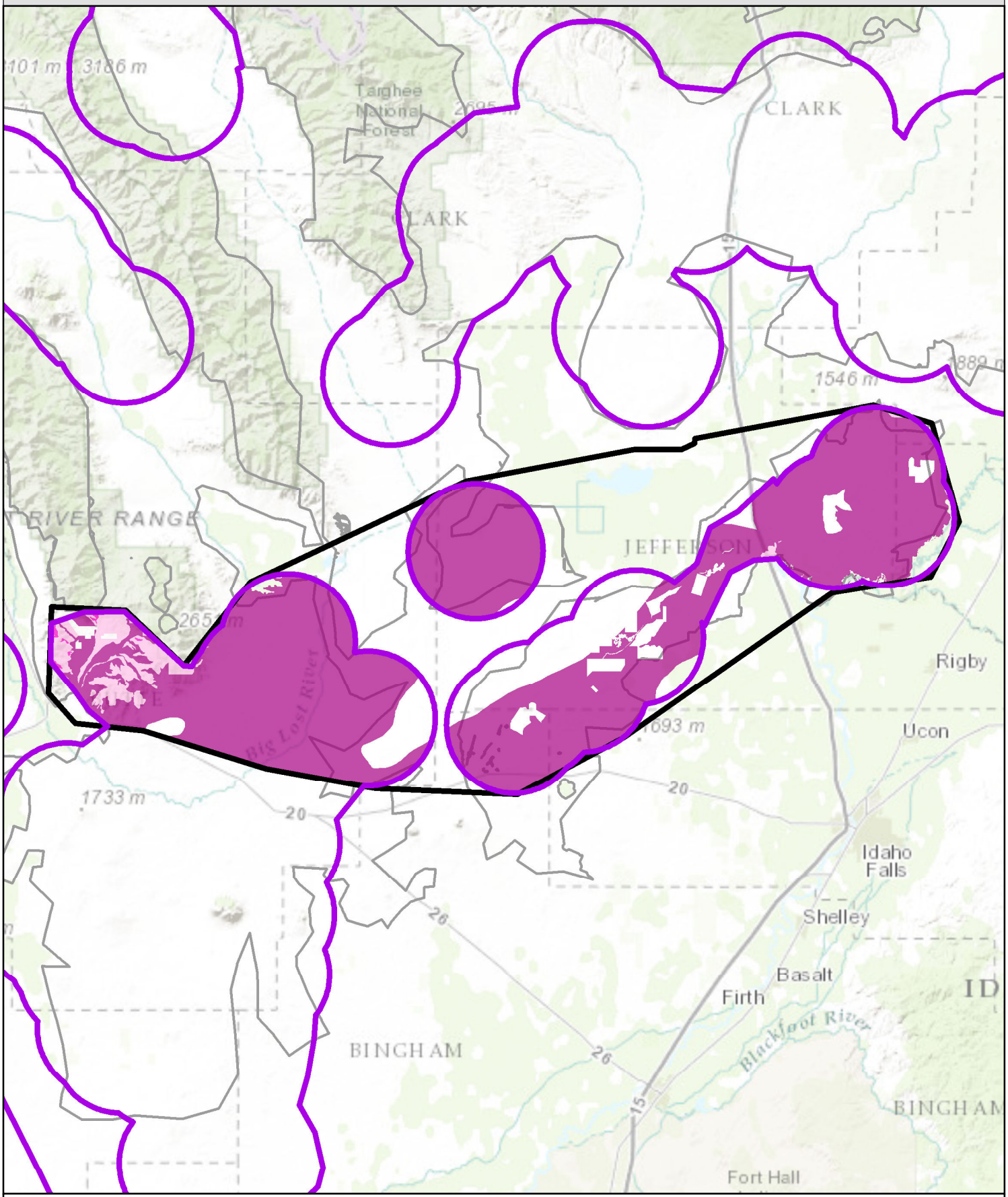
Twin Butte Project Planning Area

Emergency Stabilization, Rehabilitation Priority

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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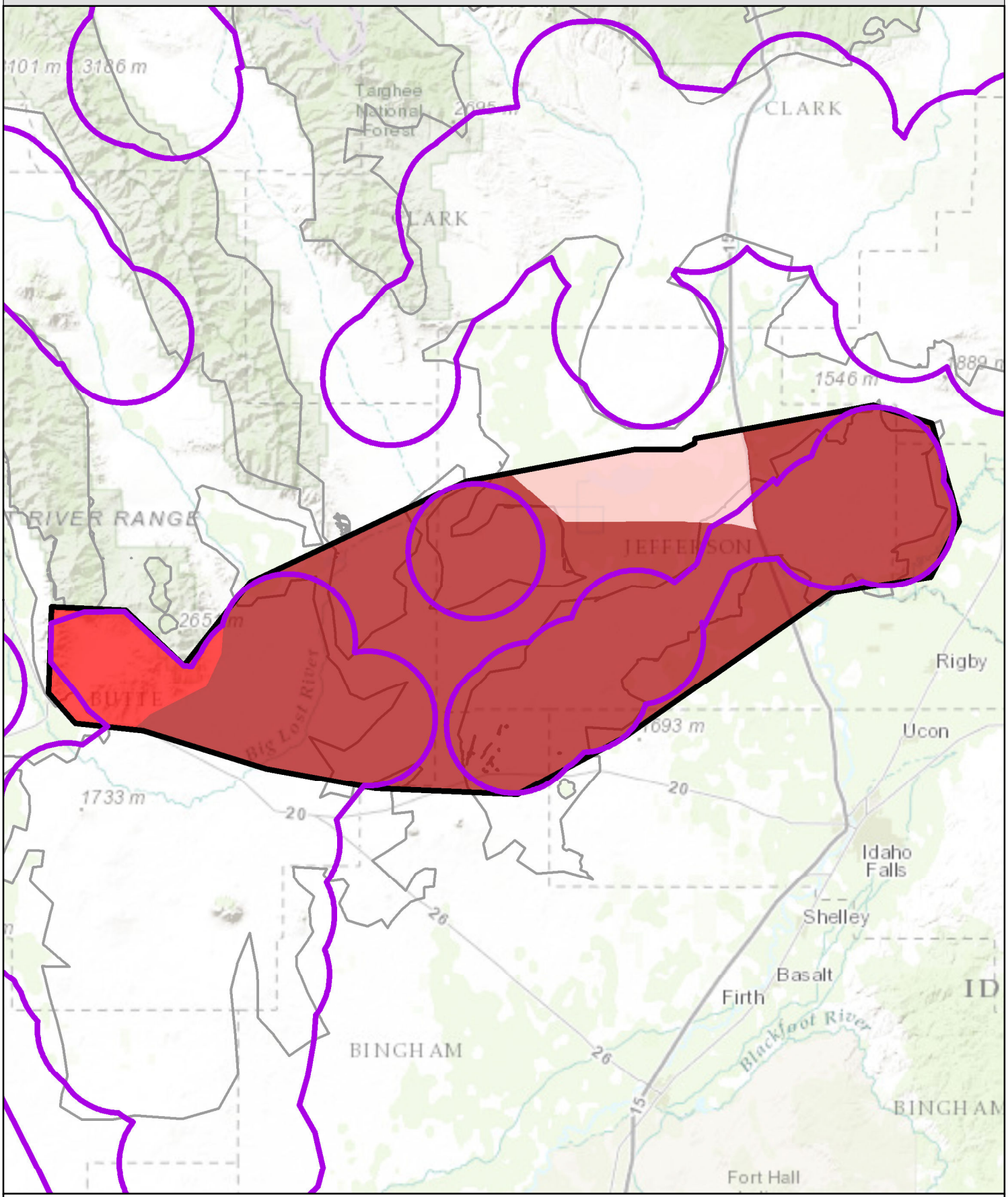
- Twin Butte Project Planning Area
- Twin Buttes ESR 1st Priority
- Twin Buttes ESR 2nd Priority
- Twin Buttes ESR 3rd Priority

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:887,179

Twin Butte Project Planning Area

Fire Operations Priority

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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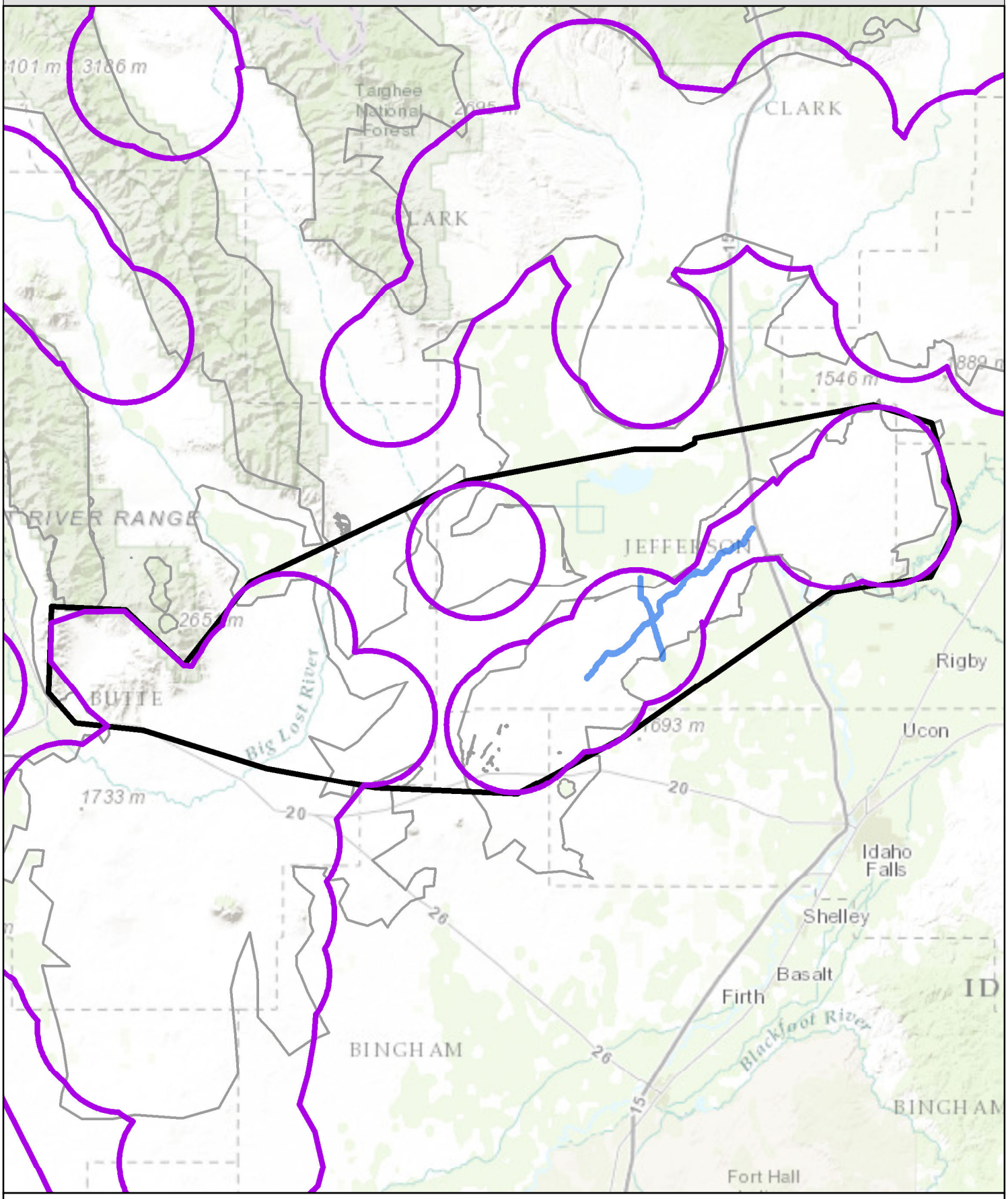
- Twin Butte Project Planning Area
- Twin Buttes Fire 1st Priority
- Twin Buttes Fire 2nd Priority
- Twin Buttes Fire 3rd Priority

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:887,179

Twin Butte Project Planning Area
Fuels Management Potential Treatment Areas

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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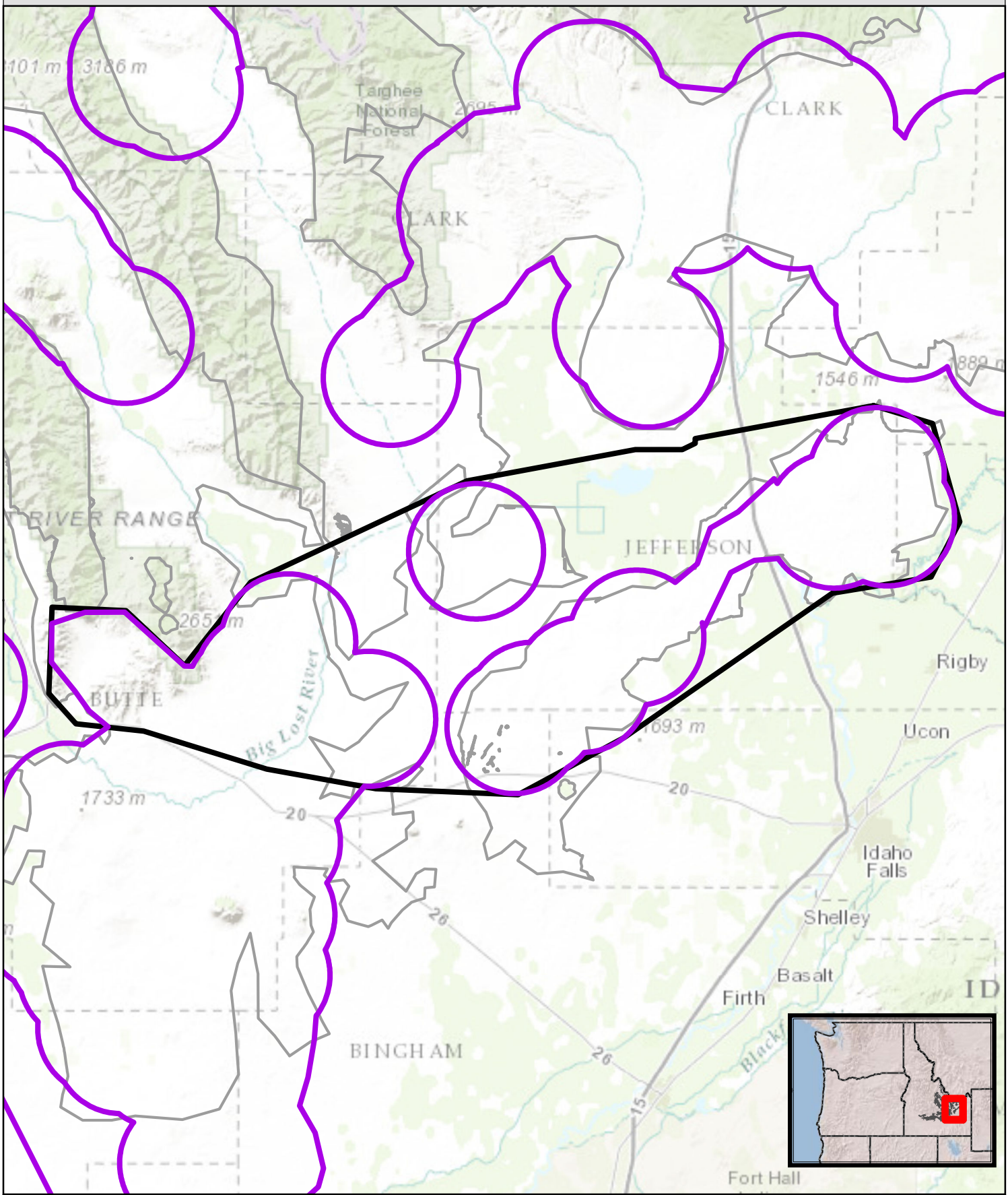
Twin Butte Project Planning Area
Fuels Management Potential Treatment Areas

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:887,179

Twin Butte Project Planning Area

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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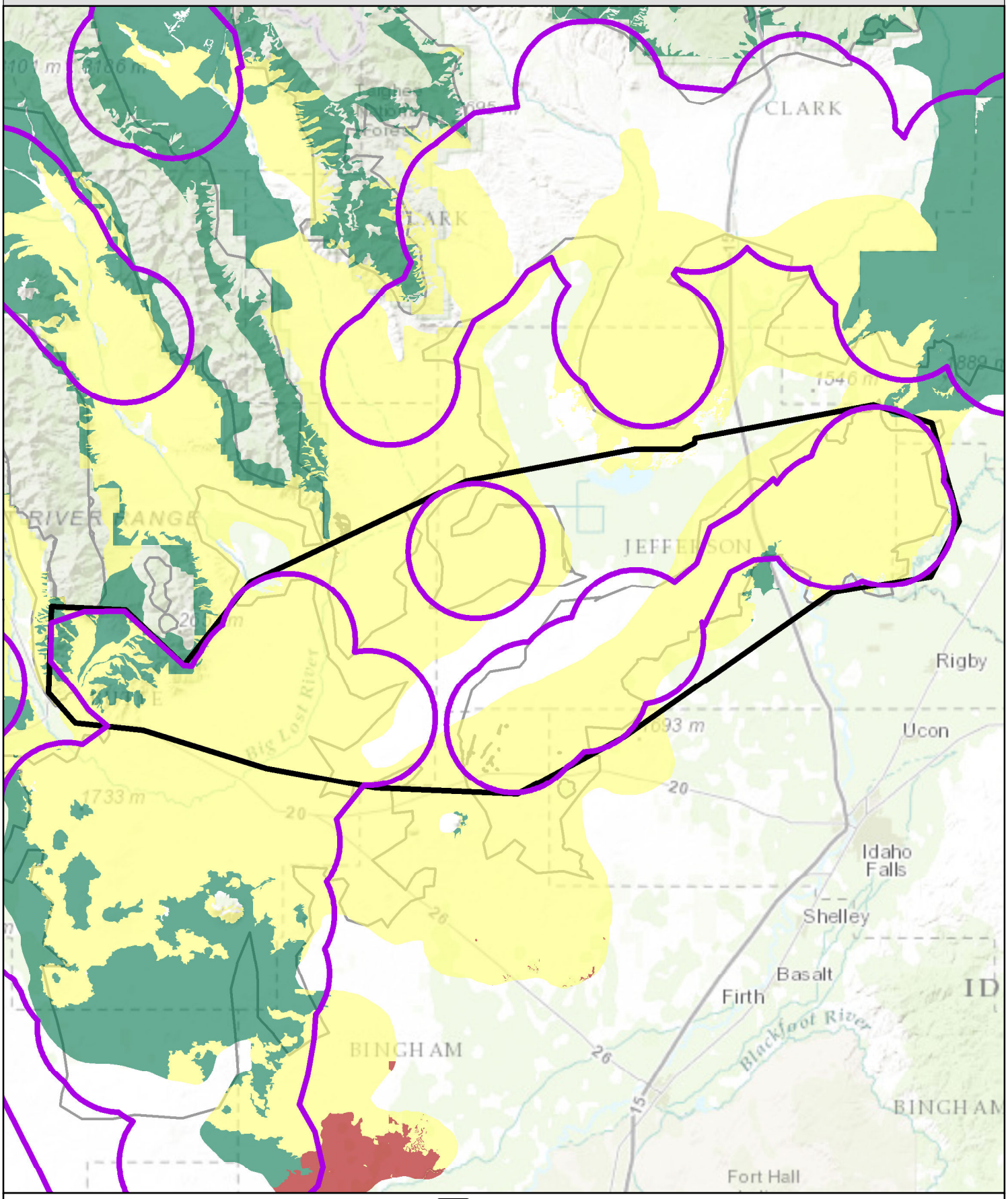
N

Twin Butte Project Planning Area

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:887,179

Twin Butte Project Planning Area
Resistance-Resilience Reportable Priorities

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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Twin Butte Project Planning Area

Reportable Priorities

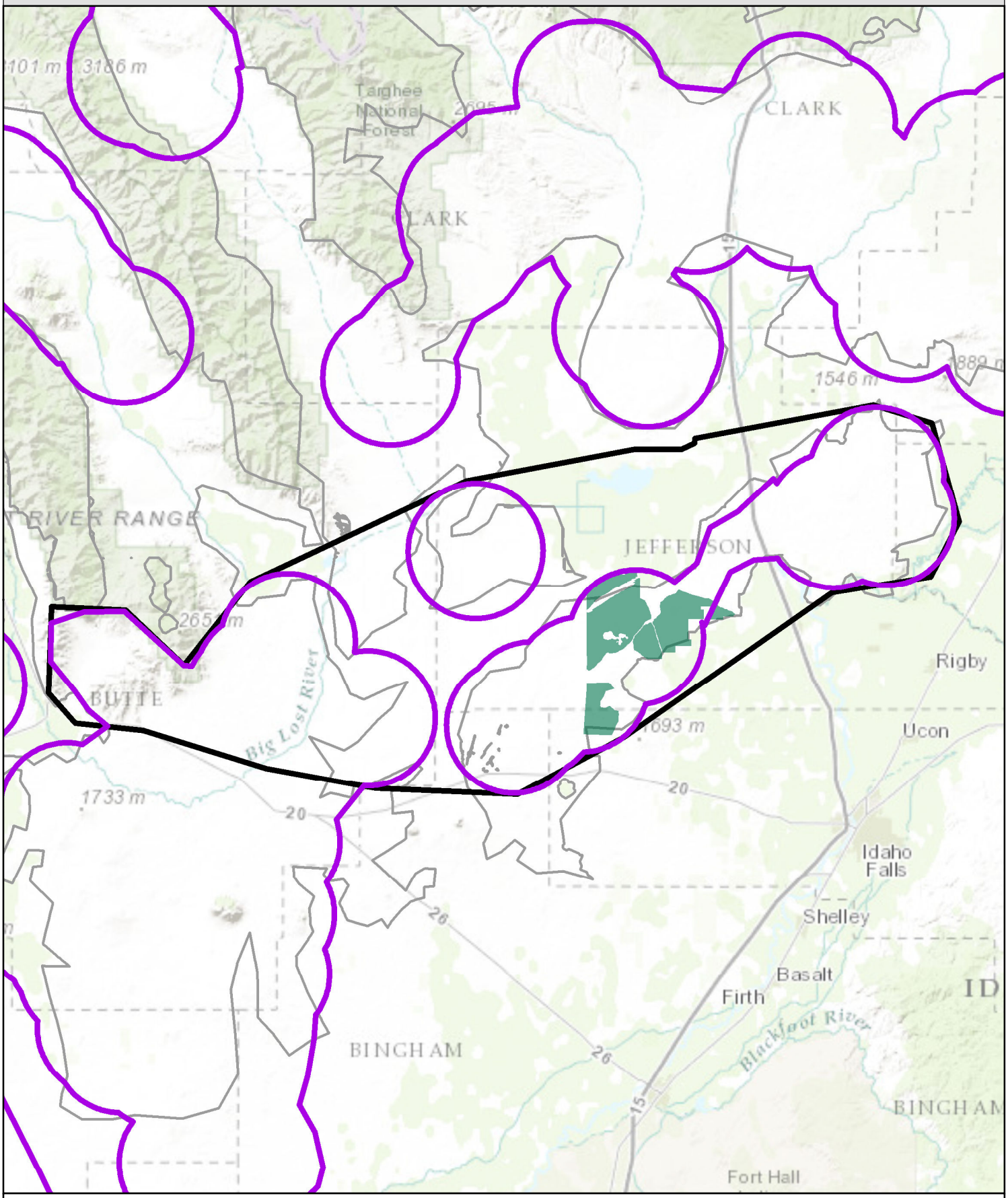
1 2 3

March 2015
Date Saved: 3/13/2015
Data Sources: BLM, ESRI Basedata
1:887,179

Twin Butte Project Planning Area

Habitat Restoration Potential Treatment Areas

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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Habitat Restoration Potential Treatment Areas

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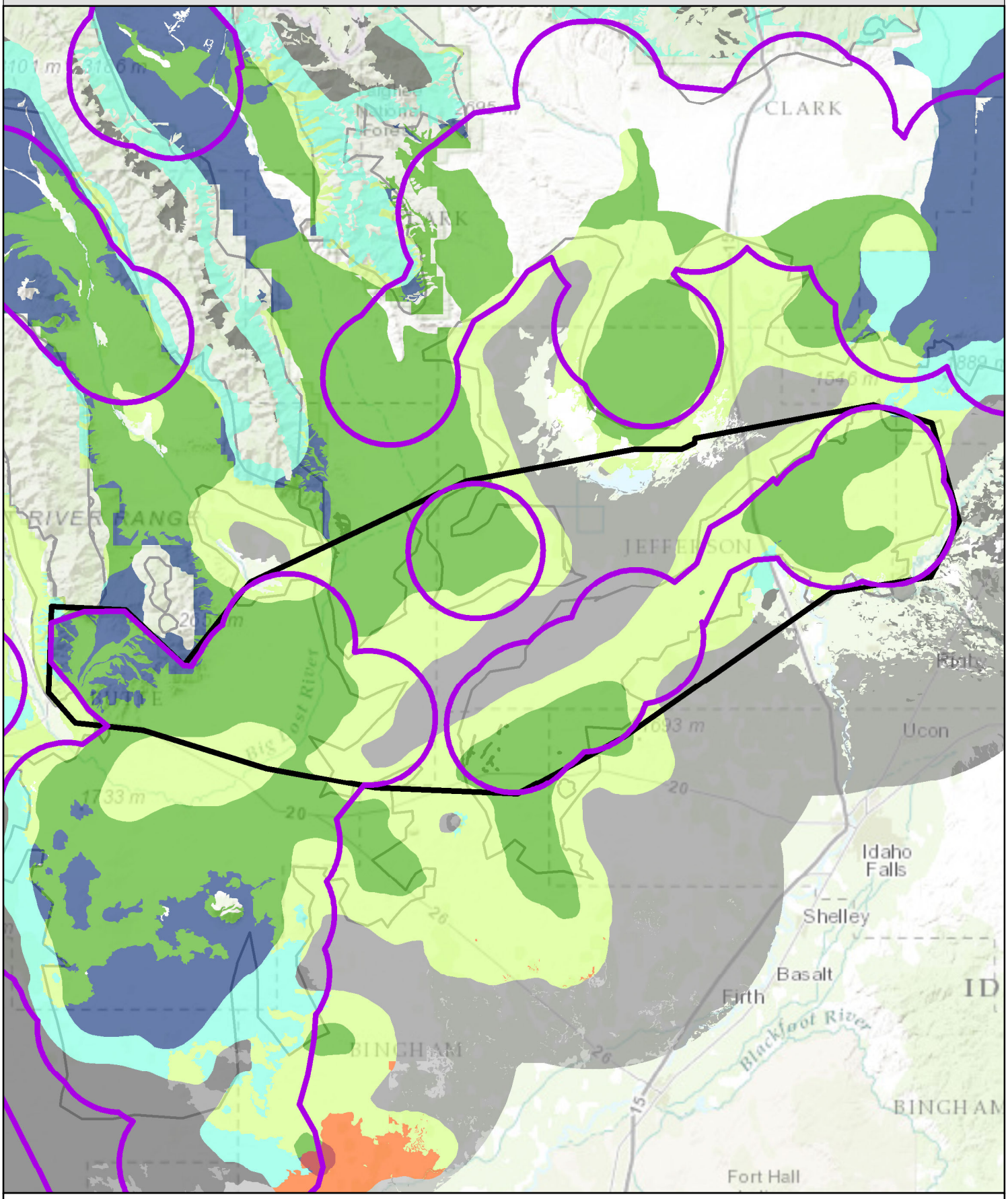
Data Sources: BLM, ESRI Basedata
1:887,179

Twin Butte Project Planning Area
Resistance-Resilience Priorities
for Application of Management Strategies

Snake Salmon Assessment Area
Bureau of Land Management
U.S. Department of the Interior



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N

Twin Butte Project Planning Area

3C 3B 2C 2B 1C 1B 3A 2A 1A

March 2015
Date Saved: 3/13/2015
Data Sources: BLM, ESRI Basedata
1:887,179

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Appendix B

Data Viewer Link

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APPENDIX B
DATA VIEWER LINK

VIEWER LINK

http://ilmidso3gi1.blm.doi.net/SilverlightViewer_2_2/Viewer.html?ViewerConfig=http://ilmidso3gi1.blm.doi.net/Geocortex/Essentials/REST/sites/NGB_FIAT_S2_Boise/viewers/Idaho_FIAT_2014/virtualdirectory/Config/Viewer.xml

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Appendix C

Soil Temperature and Moisture Regime Attribute Table

Soil temperature and moisture regime with moisture subclass	Common Name	Original FIAT R&R Categories	Revised FIAT R&R Categories
Cryic/Aridic-Typic	Cold/dry		2
Cryic/Aridic bordering on Xeric	Cold/dry bordering on moist		1
Cryic/Ustic-Typic	Cold/summer moist		1
Cryic/Xeric	Cold/moist	1	1
Cryic/Xeric-Typic	Cold/moist		1
Cryic/Xeric bordering on Aridic	Cold/moist bordering on dry		1
Frigid/Aridic	Cool/dry	3	2
Frigid/Aridic-Typic	Cool/dry		2
Frigid/Aridic bordering on Ustic	Cool/dry bordering on summer moist		2
Frigid/Aridic bordering on Xeric	Cool/dry bordering on moist		2
Frigid/Xeric	Cool/moist	1	1
Frigid/Xeric-Typic	Cool/moist		1
Frigid/Xeric bordering on Aridic	Cool/moist bordering on dry		2
Frigid/Ustic bordering on aridic	Cool/summer moist bordering on dry		2
Frigid/Ustic-Typic	Cool/summer moist	1	1
Mesic/Aridic	Warm/dry	3	3
Mesic/Aridic-Typic	Warm/dry		3
Mesic/Aridic bordering on Ustic	Warm/dry bordering on summer moist		3
Mesic/Aridic bordering on Xeric	Warm/dry bordering on moist		3
Mesic/Ustic bordering on Aridic	Warm/summer moist bordering on dry		3
Mesic/Xeric	Warm/moist	2	2
Mesic/Xeric-Typic	Warm/moist		2
Mesic/Xeric bordering on Aridic	Warm/moist bordering on dry		3

The above table of soil attributes (soil temperature/moisture regimes) and Resistance/Resilience assignments were used in the original and revised FIAT reports. Soil survey spatial and tabular data were obtained for the Project Planning Areas from the Geospatial Data Gateway (http://datagateway.nrcs.usda.gov/). Gridded Soil Survey Geographic (gSSURGO) file geodatabases were used to display a 10-meter raster dataset. Where SSURGO data were unavailable, gaps were filled in using the State Soil Geographic database (STATSGO2). The attributes of the soil component with the highest component percentage (dominant component) were used to characterize the temperature and moisture regime. Only temperature and moisture regimes applicable to sagebrush ecosystems were displayed. For additional details, see Chambers et al. 2014, and Maestas and Campbell 2014.

Fact Sheet

Mapping Potential Ecosystem Resilience and Resistance across Sage-Grouse Range using Soil Temperature and Moisture Regimes

A cool and moist (frigid/xeric) mountain big sagebrush site in Nevada (left) compared to a warm and dry (mesic/aridic) Wyoming big sagebrush site in Oregon (right) illustrates the natural variability in site potential across sagebrush ecosystems. Mapping soil temperature and moisture regimes can help depict this gradient and indicate potential ecosystem resilience and resistance. Photos: Jeremy Maestas

Background

Our ability to address threats to sage-grouse and the sagebrush steppe can be greatly enhanced by understanding ecosystem resilience to disturbance and resistance to invasive species (Chambers et al. 2014a,b). A recent breakthrough in the practical application of resilience and resistance concepts has been linking *soil temperature and moisture regimes* to sagebrush ecosystem responses to disturbance and annual grass invasion.

Potential resilience and resistance to invasive annual grasses reflect the biophysical conditions of an area, and soil temperature and moisture regimes provide a useful indicator of these conditions at multiple scales. Resilience to disturbance typically increases with higher resource availability and more favorable environmental conditions for plant growth and reproduction. Thus areas with warm *(mesic)* soil temperature and dry *(aridic)* soil moisture regimes typically have low potential resilience, while those with cool *(frigid)* to moderately cold (*cryic*) soil temperature and relatively moist (*xeric* to *ustic*) soil moisture regimes have high potential resilience. Resistance to exotic annual grasses, like cheatgrass, is strongly influenced by climate suitability for establishment and persistence. Cheatgrass germination, growth and reproduction appear to be optimal under relatively warm and dry to moist regimes (*mesic/aridic* or *xeric),* limited by low and sporadic precipitation under dry regimes (*aridic),* and generally constrained by colder regimes (*frigid* to *cryic).* These relationships are modified

by effects of: (1) elevation, landform, slope, aspect, soil characteristics, and resulting vegetation composition and structure, and (2) the ecological condition of an area (Figure 1. Chambers et al. 2014a,b)

Soil climate data (temperature and moisture) are fundamentally important in classifying and mapping soils, and as such, are widely collected as part of the National Cooperative Soil Survey program. This provides us with the ability to map temperature and moisture regimes across the range of sage-grouse to better understand potential resilience and resistance along a diverse environmental gradient.

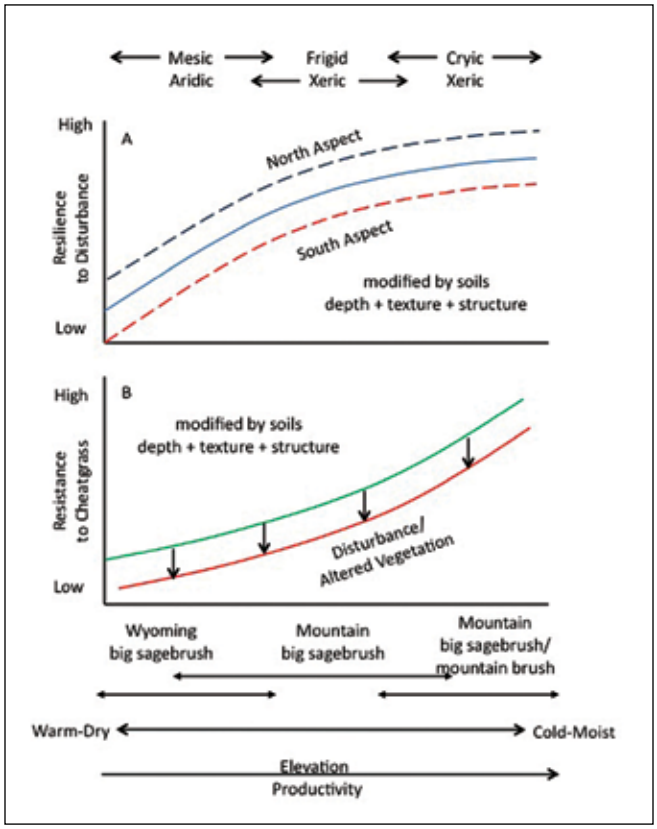

Figure 1. Example of resilience to disturbance (A) and resistance to cheatgrass (B) over a soil temperature and moisture regime gradient in the western portion of the sagebrush ecosystem. Dominant ecological types occur along a continuum from Wyoming big sagebrush communities on warm and dry sites to mountain big sagebrush/mountain brush communities on cold and moist sites (modified from Chambers et al. 2014a,b).

Resilience is the capacity of an ecosystem to regain its fundamental structure, processes and functioning when altered by stressors like drought, and disturbances like altered fire regimes. It is a measure of the ability of an ecosystem to *recover* after stress or disturbance.

Resistance is the capacity of an ecosystem to retain its fundamental structure, processes and functioning despite stresses, disturbances or invasive species, or to remain largely unchanged.

Resistance to invasion is the capacity of an ecosystem to limit the establishment and population growth of an invading species.

New product assembles available data for rangewide use

While soil temperature and moisture regimes can be found in published soil surveys, a single dataset aggregating all available data was compiled to facilitate broad scale analyses and to provide a simple decision support tool for field practitioners. Available soils data from across Sage-Grouse Management Zones (Stiver et al. 2006) were compiled from two primary sources: 1) completed and interim soil surveys (SSURGO), and 2) state soils geographic databases (STATSGO2).

SSURGO – Soil Survey Geographic Database

SSURGO is the most detailed soil survey product produced by the National Cooperative Soil Survey. Information was collected through field inventory and interpretation at scales ranging from 1:12,000 to 1:63,360, with 1:24,000 being the most common. SSURGO datasets consist of spatial data, tabular data, and information about how the data were created. Soil survey maps are linked in the database to information about the component soils and properties for each soil map unit.

For this rangewide product, Gridded Soil Survey Geographic (gSSURGO) file geodatabases were used to display a 10-meter raster dataset. State gSSURGO datasets were then clipped to the extent of the Sage-Grouse Management Zones and merged.

STATSGO2 – State Soil Geographic Database

The Digital General Soil Map of the United States or STATSGO2 is a broad-based inventory of soils and non-soil areas that occur in a repeatable pattern on the landscape and that can be cartographically shown at a scale of 1:250,000. The dataset was created by generalizing more detailed soil survey maps. Where more detailed soil survey maps were not available, data on geology, topography, vegetation, and climate were assembled and related to Land Remote Sensing Satellite (LANDSAT) images. Soils of similar areas were studied, and the probable classification and extent of the soils were determined. STATSGO2 was used in areas of the Sage-Grouse Management Zones where more detailed SSURGO was currently not available.

Where can I access the product?

The aggregated soils data product can be downloaded free-of-charge on the Landscape Conservation Management and Analysis Portal (LCMAP):

https://www.sciencebase.gov/catalog/folder/538e5aa9e4b09202b547e56c

How to work with the files in a Geographic Information System (GIS)

Rangewide layer for rapid application

The data product includes a file geodatabase named *SoilMoistureTemperatureRegimes.gdb* that contains a single raster dataset merging best available SSURGO and STATSGO2 across Sage-Grouse Management Zones. The attribute table includes the temperature and moisture regime for the map unit dominant condition. A layer file named *SoilMoistTempLayer.lyr* can be used to quickly create a fully symbolized map with a legend of the predominant temperature and moisture regimes across sagebrush ecosystems (Figure 2).

Detailed data for more in-depth analyses

Separate geodatabases providing more detailed information are also available for both SSURGO and STATSGO2 data. These products allow users to explore the data in more depth at finer scales. An example of how to work with one of the geodatabases is provided here.

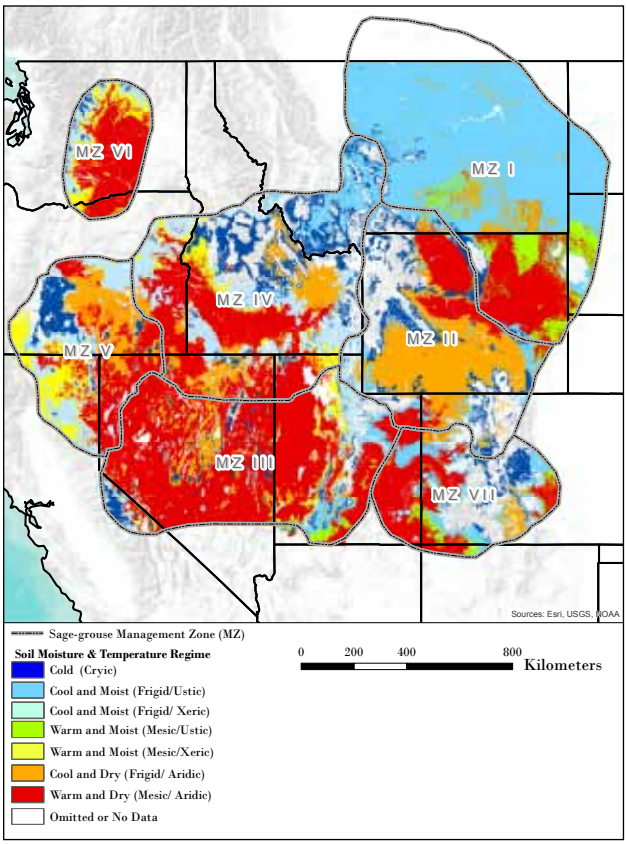

Figure 2. New soils product provides ability to depict potential ecosystem resilience and resistance across the range of sage-grouse using soil temperature and moisture regimes. For more information on interpretation, see Chambers et al. 2014b.

The file geodatabase named *SGMZ_SSURGO_temp_moist_regimes_v2.gdb* contains a raster dataset with all the SSURGO spatial data that is currently available in the Sage-Grouse Management Zones. There are two tables in this file geodatabase that can be joined to the raster dataset using the common mukey field. The table named *SSURGO_SGMZ_temp_moist_dom_cond_v2* contains the temperature and moisture regime and moisture subclass for the dominant condition in each map unit. The table named *SSURGO_SGMZ_temp_moist_components_v2* has data for each major component, including things like soil type, precipitation range, temperature-moisture regimes and subclasses, and ecological sites. When this table is joined to the raster dataset, the data for the dominant component will be in the attribute table. The *Identify* tool in ArcGIS can be used to display many attributes of the dominant component.

For an even finer grain look, the *SSURGO_SGMZ_temp_moist_components_v2* table can be opened to determine the ecological site and temperature and moisture regimes that are associated with each component in a map unit, rather than just the dominant component.

For More Information

Data Contact

Steve Campbell, USDA-NRCS Soil Scientist, 503-273-2421, steve.campbell@por.usda.gov

Background on SSURGO and STATSGO data: http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/survey/geo/

Access to soil surveys: http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm

Acknowledgements

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Suggested Citation

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Stiver, S. J.; Apa, A. D.; Bohne, J. R.; Bunnell, S. D.; Deibert, P. A.; Gardner, S. C.; Hilliard, M. A.; McCarthy, C. W.; Schroeder, M. A. 2006. Greater Sage-grouse Comprehensive Conservation Strategy. Unpublished report on file at: Western Association of Fish and Wildlife Agencies, Cheyenne, WY.

Displaying Dominant Condition Vs. Dominant Component

It is important to understand some fundamental concepts in how soils are mapped in order to properly interpret information provided. Soils and their properties change over a continuous gradient but soils are described in map units. Soil map units commonly contain more than one "component" (soil types or miscellaneous areas such as rock outcrops) with unique data associated with each component. When spatially displaying soil survey information, a decision has to be made as to how to aggregate the component data to the map unit. The two most common aggregation methods are to display either *dominant component* or *dominant condition.* The example below illustrates the difference between these two methods:

Soil map unit: Alpha-Beta-Gamma complex, 8 to 30 percent slopes

Component Name	% of Map unit	Temperature/ Moisture Regime	Aggregation Method
Alpha	45	Warm and Dry (Mesic/Aridic)	Dominant Component
Beta	30	Cool and Dry (Frigid/Aridic)	Dominant Condition
Gamma	25	Cool and Dry (Frigid/Aridic)	

This map unit is on highly dissected hill slopes with a complex pattern of northerly and southerly aspects. The Alpha component is on southerly aspects and the Beta and Gamma components are on cooler northerly aspects. The temperature and moisture regime for the dominant component is Warm and Dry (mesic/aridic) since the Alpha component comprises the highest percentage of the map unit. The dominant condition is Cool and Dry (frigid/aridic) since the Beta and Gamma components cumulatively comprise 55 percent of the map unit, exceeding the 45 percent of the Alpha component. For the majority of soil map units, but not all, the dominant component and dominant condition results are identical. This product provides aggregated data in both dominant condition and component tables to allow users access to advantages of each approach.

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Appendix D

Meeting Locations and Participants

Meeting Place	Dates	Attendees	Agency
Boise, ID	10/31/2014 and 11/5/2014 and 12/5/2014 and 12/8/2014		
		Sean Cottle	EMPSi
		Jordan Adams	EMPSi
		Morgan Trieger	EMPSi
		Doug Havlina	BLM
		Joe Adamski	BLM
		Bruce Schoeberl	BLM
		Brandon Knapton	BLM
		Kavian Koleini	BLM
		Mike McGee	BLM
		Don Major	BLM
		Travis Cooper	BLM
		Lara Hannon	BLM
		Justin Boeck	BLM
		Steve Jirik	BLM
		Cindy Fritz	BLM
		Joe Weldon	BLM
		Kathi Kershaw	BLM
		Glen Burkhardt	BLM
		Anne Halford	BLM
		Mike Pellant	BLM
		Paul Mackela	BLM
		Tom Rinkes	BLM
		Jason Pyron	USFWS
		Katie Powell	USFWS
		Don Kemner	IDFG
Twin Falls, ID	11/6/2014 and 11/7/2014		
		Sean Cottle	EMPSi
		Joe Adamski	BLM
		Glen Burkhardt	BLM
		Don Major	BLM
		Travis Cooper	BLM
		Brandon Brown	BLM

		Jerry Rice	BLM
		Tara Anderson	BLM
		Tony Owens	BLM
		Jim Tharp	BLM
		Jesse Goodwin	BLM
		Scott Sayer	BLM
		Jesse German	BLM
		Jim Klott	BLM
		Julie Hilty	BLM
		Joe Russell	BLM
		Dustin Smith	BLM
		Denise Tolmess	BLM
		Tony Erickson	BLM
		Tom McGinnis	BLM
		Paul Mackela	BLM
		Mike McDonald	IDFG
		Don Kemner	IDFG
		Deb Koziol	NRCS
		Katie Powell	USFWS
Winnemucca, NV	11/10/2014 and 11/12/2014		
		Sean Cottle	EMPSi
		Joe Adamski	BLM
		Glen Burkhardt	BLM
		Don Major	BLM
		Travis Cooper	BLM
		Steve Jirik	BLM
		Anne Halford	BLM
		Mark Williams	BLM
		Kyra Walton Reid	USFS
		Boyd Hatch	USFS
		Katie Powell	USFWS
Idaho Falls, ID	11/13/2014 through 11/14/2014 and 11/20/2014 and 12/18/2014		
		Sean Cottle	EMPSi

		Peter Gower	EMPSi
		Joe Adamski	BLM
		Glen Burkhardt	BLM
		Don Major	BLM
		Travis Cooper	BLM
		Steve Jirik	BLM
		Greg Mann	BLM
		Glen Guenther	BLM
		Tom Rinkes	BLM
		Ben Dyer	BLM
		Jeremy Bisson	BLM
		Jason Wright	BLM
		Scott Minnie	BLM
		Jeremy Casterson	BLM
		Justin Frye	BLM
		Joel Gosswiller	BLM
		Peggy Redick	BLM
		Andrew Hess	BLM
		Brian Weihausen	BLM
		Kasey Hill	BLM
		Bart Zwetzig	BLM
		Michael Kuyper	BLM
		James Kumm	BLM
		Shelly Mavor	BLM
		Brian Holmes	BLM
		Bill Baer	BLM
		Josh Gibbs	BLM
		Ralph Falsetto	BLM
		Anne Halford	BLM
		Katie Powell	USFWS
		Jason Pyron	USFWS
		Terri Thomas	IDFG
		Deb Koziol	NRCS
		Laura Fondow	NRCS
Vale, OR	11/17/2014 and 12/2/2014		

		Jordan Adams	EMPSi
		Joe Adamski	BLM
		Bob Narus	BLM
		Travis Cooper	BLM
		Don Major	BLM
		Glen Burkhardt	BLM
		Steve Jirik	BLM
		Ralph Falsetto	BLM
		Brian Watts	BLM
		Doug Havlina	BLM
		Megan McGuire	BLM
		Amanda Rice	BLM
		Jason Simons	BLM
		Brian Watts	BLM
		Bill Reimers	BLM
		Erin McConnell	BLM
		Tracy Skerjanec	BLM
		Justin Robinson	BLM
		Carolyn Chad	BLM
		Scott Orland	ODFW
		Trisha Cracroft	NRCS
		Aaron Roth	NRCS
		Katie Powell	USFWS
Elko, NV	11/18/2014 and 11/19/2014		
		Sean Cottle	EMPSi
		Joe Adamski	BLM
		Terri Barton	BLM
		Tom Reid	BLM
		Steve Jirik	BLM
		Glen Burkhardt	BLM
		Don Major	BLM
		Travis Cooper	BLM
		Thomas Warren	BLM
		Doug Havlina	BLM
		Terri Barton	BLM

		Tom Reid	BLM
		Tom Rinkes	BLM
		Ethan Ellsworth	BLM
		Kyra Walton Reid	USFS
		Katie Powell	USFWS
		Matt Jeffvess	NDOW
		Kari Hubner	NDOW
NW Utah	11/21/2014		
		Sean Cottle	EMPSi
		Joe Adamski	BLM
		Don Major	BLM
		Travis Cooper	BLM
		Steve Jirik	BLM
		Mace Crane	BLM
		Glen Burkhardt	BLM
		Verlin Smith	BLM
		Robin Naeve	BLM
		Justin Kincaid	BLM
		Shawn Servoss	BLM
		Kacy Burns	BLM
		Brad Washa	BLM
		Chris Bryan	BLM
		Brad Jessop	BLM
		Michael Gates	BLM
		Katie Powell	USFWS
		Jason Pyron	USFWS
		Jay Martini	USFWS
Burns, OR	12/3/2014		
		Jordan Adams	EMPSi
		Travis Cooper	BLM
		Joe Adamski	BLM
		Don Major	BLM
		Steve Jirik	BLM
		Glen Burkhart	BLM

		Jessica Gottlieb	BLM
		Nika Lapak	BLM
		Doug Havilina	BLM
		Doug Kile	BLM
		Toby White	BLM
		Andy Daniels	BLM
		Chad Rott	BLM
		Casey Burns	NRCS
		Aaron Roth	NRCS

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