



**US Department of the Interior
Bureau of Land Management**



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

NORTHERN GREAT BASIN

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
JFO	Jarbridge Field Office
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
USFWS	United States Fish and Wildlife Service
WA	wilderness area
WSA	wilderness study area

SECTION I

INTRODUCTION AND ASSESSMENT OBJECTIVES

I.1 EXECUTIVE OVERVIEW

The Bureau of Land Management (BLM) issued an instruction memorandum in August 2014 that guided interagency partners in completing Step 2 of the wildfire and invasive species assessments for five priority landscapes in greater GRSG (GRSG) habitats. The five landscapes are as follows:

- Southern Great Basin
- Western Great Basin
- Northern Great Basin
- Central Oregon
- Snake/Salmon/Beaverhead

The three threats—wildfire, invasive annual grasses, and conifer expansion—have now been analyzed 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) GRSG listing decision in 2015. The Fire and Invasive Assessment Team (FIAT) assessments are non-decisional and involve at least two steps.

Step I was completed and documented in the BLM June 2014 (Fire and Invasive Assessment Team 2014). It was based in part on USDA Natural Resources

1 Conservation Service soil surveys and on information on soil temperature
2 regimes associated with ecosystem resistance and resilience properties. This
3 protocol is based on recent scientific research on resistance and resilience of
4 Great Basin ecosystems (Chambers et al. 2014).

5 The FIAT Step 1 assessment identified focal habitats in the five landscapes, also
6 known as the five priority areas for conservation (PACs). Relative to wildfire
7 and invasive annual grasses, focal habitats are areas in priority PACS with 75
8 percent breeding bird density (BBD) in areas that recently or currently support
9 sagebrush. These areas are in the sagebrush landscape cover classes of 0 to 25
10 percent, 26 to 66 percent, and greater than 66 percent. Emphasis areas are
11 portions of the focal habitats in warm and dry soil temperature and moisture
12 regimes, with sagebrush cover greater than 25 percent. Relative to conifer
13 expansion, focal habitats are those in and near conifer expansion in sagebrush
14 landscape cover classes of 25 to 65 percent and greater than 65 percent.
15 Emphasis areas for conifer expansion occur where sagebrush landscape cover is
16 greater than 25 percent in 75 percent BBD areas.

17 The FIAT Step 2 assessments will further inform the next phases of the
18 assessments as the BLM continues to expand into other GRS habitat in 2015,
19 including habitat in the Rocky Mountain states.

20 The scale and scope of the Northern Great Basin landscape is expansive. Its
21 approximate 15,732,000 acres encompass portions of Oregon, Idaho, Nevada,
22 and Utah. Potential treatment areas in project planning areas (PPAs) represent
23 an initial starting point that will need further analysis and refinement under the
24 National Environmental Policy Act (NEPA) planning process. During the
25 development of PPAs, no constraints due to funding or consideration of
26 landownership were taken into account.

27 Additionally, wildfire is an important and dynamic environmental factor in the
28 Northern Great Basin. It is not uncommon for wildfire to spread more than 25
29 miles and impact thousands of acres in a day.

30 The BLM has addressed the following key questions regarding fire management:

- 31 • What are the areas that have the highest likelihood of large fires
32 that fragment GRS habitat?
- 33 • Which GRS habitats are at the highest risk from fire?

34 The 2014 Fire Program Analysis large fire simulator for the fire program analysis
35 system has ranked the wildfire hazard potential in the Northern Great Basin
36 assessment landscape as high to very high. For this reason it is important to
37 recognize that the potential for GRS habitats to be drastically modified in the
38 near future may be underrepresented in this assessment. It may also be
39 recognized that the nonnative cheatgrass (*Bromus tectorum*) is widely present

1 across these landscapes. Due to the parameters of this report, the ability to
 2 identify this threat in a congruent scale and to identify potential treatment areas
 3 to manage this threat may also be underrepresented.

4 This assessment is to identify the following (see **Table I-1**):

- 5 • 10,886,400 acres of 75 percent BBD habitat
- 6 • 16,357,800 acres of PPAs
- 7 • 3,100,500 acres of conifer habitat restoration potential treatment
- 8 area
- 9 • 6,585,500 acres of first priority potential fire operations
- 10 • 4,853,800 acres of first priority potential post-fire rehabilitation
- 11 • 5,240 miles of potential linear fuels management treatments
- 12 • 466,900 acres of potential fuels management treatment area
- 13 • 407,100 acres of potential invasive annual grass habitat restoration
- 14 treatment area
- 15 • 1,387,500 acres of potential habitat restoration (other) treatment
- 16 area

Table I-1
Focal Habitat Acreage in Project Planning Areas in the Northern Great Basin Landscape

PPA	Acres of Focal Habitat in PPA	Percentage of Focal Habitat in PPA	Total Acres in the PPA	Total Acreage in the PPA that is Null
Beulah	448,400	64	702,915	1,809
Bowden Hills	92,029	100	92,029	0
Curlew	201,984	59	342,879	21,994
Greater Owyhee	609,495	56	1,082,879	28,280
Jim Sage	171,916	52	330,839	36,872
Mainstem Malheur	269,399	54	497,969	0
North Fork Owyhee	1,134,218	73	1,542,397	62,641
Oakley	313,378	85	368,497	20,576
Oneil	1,479,785	63	2,340,770	122,796
Otis	223,296	63	351,668	5,643
Owyhee Desert	553,806	81	682,254	12,501
Owyhee North	942,341	53	1,787,140	49,245
Owyhee South	1,812,611	70	2,595,022	30,323
Rogerson	1,055,866	72	1,456,377	25,950
Sheepshead East	40,771	100	40,771	0
Sheepshead West	41,897	100	41,897	4
Tuscarora	698,431	75	928,503	51,405
West Box Elder	796,807	68	1,172,966	23,197
Total for all NGB PPAs	10,886,407	66	16,357,781	493,241

1.2 BACKGROUND

The purpose of this assessment is to identify potential project areas and management strategies in highly valued GRSG habitats. If implemented, these strategies would reduce the threats to GRSG. 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 this assessment, invasive species are limited to invasive annual grasses.) Conifer expansion (also called encroachment) is also addressed in this assessment.

To address these concerns, the BLM and the 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 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:

1. Establish the regional context for priority GRSG habitats and threat factors
2. Incorporate local data with Step 1 findings to identify potential project areas, treatment opportunities, and management strategies to ameliorate threats to GRSG

FIAT Step 1 was performed from February 2013 to August 2014; Step 2 was initiated 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 I-1**).

1.2.1 Issues, Assumptions, and Considerations Common to All Assessments

The following denotes elements that are common to all five FIAT assessments.

Assessments must be revisited as landscape conditions change; as such, 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

1 imperative that the priorities and management themes be revisited and
2 redefined. This form of adaptive management is integrated into the GRSG
3 monitoring strategy described in Section 5.

4 Additional analysis will be required. Most potential treatments identified in this
5 assessment will require further National Environmental Policy Act (NEPA)
6 analysis, during which the exact location and extent of treatment may be
7 adjusted, based on more refined local information. Summary tables presented in
8 Section 4 denote if NEPA is completed, has begun, or is needed for potential
9 treatments. Consequently, many potential treatments detailed in Section 4 are
10 subject to change as a result of refinement during the NEPA analysis.

11 Proper management is required. The assumption is that for treatments to be
12 effective once implemented, ongoing land uses will be properly managed. Land
13 uses such as grazing, wild horses and burros, and off-highway vehicles are
14 potential impediments to successful implementation of FIAT-identified
15 treatments.

16 In order for FIAT-identified treatments to be successful, proper management of
17 land uses must occur at the time of treatment, which may require rest or
18 exclusion from use, and following treatment, such as the proper intensity and
19 location of uses.

20 Identifying potential treatments was highly collaborative. FIAT teams used the
21 data and science from the FIAT Report and General Technical Report RMRS-
22 GTR-326 (Chambers et al. 2014) to identify potential treatment opportunities.
23 In addition, guidance in the FIAT report directed teams to “use the best
24 available local information” and to collaborate with agency partners, the Natural
25 Resources Conservation Service, the USFWS, and state wildlife and fish
26 agencies. As a result, potential treatments identified in this assessment were
27 strongly influenced by local data that was not in the FIAT report, including lek¹
28 locations, seasonal habitats, and projects identified in other collaborative
29 settings.

30 The first, second, and third order priorities identified for fire operations
31 integrate guidance from the FIAT report, General Technical Report RMRS-GTR-
32 326, wildfire potential, and local data. Fire operations priorities are consistent
33 with guidance established in the BLM’s Fire Operations Action Plan Instruction
34 Memorandum (IM No. FA IM-2015-016) and Secretarial Order No. 3336. In
35 addition to these data sources, FIAT fire operations priorities were established
36 using local information, such as fire spread patterns and barriers, ignition
37 frequency, and fire history. Fire operations priorities identified in this
38 assessment are BLM specific.

¹A lek is patch of ground used by male GRSGs for communal display during breeding season.

1 I.3 STATEMENT OF OBJECTIVES

2 This FIAT assessment is consistent with and supports the ongoing
3 environmental impact assessment (EIS) and resource management plan
4 amendment (RMPA) processes that are underway to address GRSG
5 conservation throughout the Northern Great Basin. The following are the
6 primary objectives of the FIAT process:

- 7 • Identify important GRSG occupied habitats and baseline data layers
8 important in defining and prioritizing GRSG habitats
- 9 • Assess the resistance to invasive annual grasses and resilience after
10 disturbance
- 11 • Prioritize focal habitats for conservation and restoration
- 12 • Identify explicit management strategies to conserve GRSG habitats

13 I.4 COLLABORATION AND MEETINGS

14 The BLM Northern Great Basin FIAT 2 assessment team included the following
15 partners: the USFWS, the USDA Forest Service, the US Department of
16 Agriculture Natural Resources Conservation Service, the Idaho Department of
17 Fish and Game, the Idaho Department of Lands, the Oregon Department of Fish
18 and Wildlife, the Nevada Department of Wildlife, and the Utah Division of
19 Wildlife Resources.

20 Team Leader Joe Adamski (Idaho BLM State Forester and Natural Resource
21 Supervisor) led the Step 2 process via phone calls, e-mails, and direct
22 conversations with other team members. Due to this outreach, approximately
23 70 interagency participants contributed to the Northern Great Basin FIAT.
24 During workshops, participants shared local data, such as lek information,
25 seasonal habitat maps, and potential treatments already planned through
26 partnerships outside of FIAT. Collectively, multiple sources of data were
27 combined to provide the basis for an integrated program of work in the
28 Northern Great Basin FIAT assessment area.

29 A complete list of names and affiliations of meeting participants and contributors
30 is in Appendix D.

31 I.4.1 Meetings

32 The BLM hosted 26 remote webinar/conference call workshops with the BLM
33 district offices and other partners in the Northern Great Basin assessment area
34 (see **Table I-2**). These meetings were held to gather information to support
35 this assessment. Meetings attendees participated in the following:

- 36 • Reviewed FIAT Step I data for accuracy
- 37 • Incorporated refined local information, such as lek location, BBD
38 density, telemetry, vegetation, fire occurrence, and other data to
39 augment Step I findings

- 1
- 2
- 3
- 4
- Identified project planning areas (PPAs), potential treatment areas, and appropriate management strategies in the four program areas
 - Documented the rationale and local factors influencing the identification of management strategies

Table I-2
List of Meetings

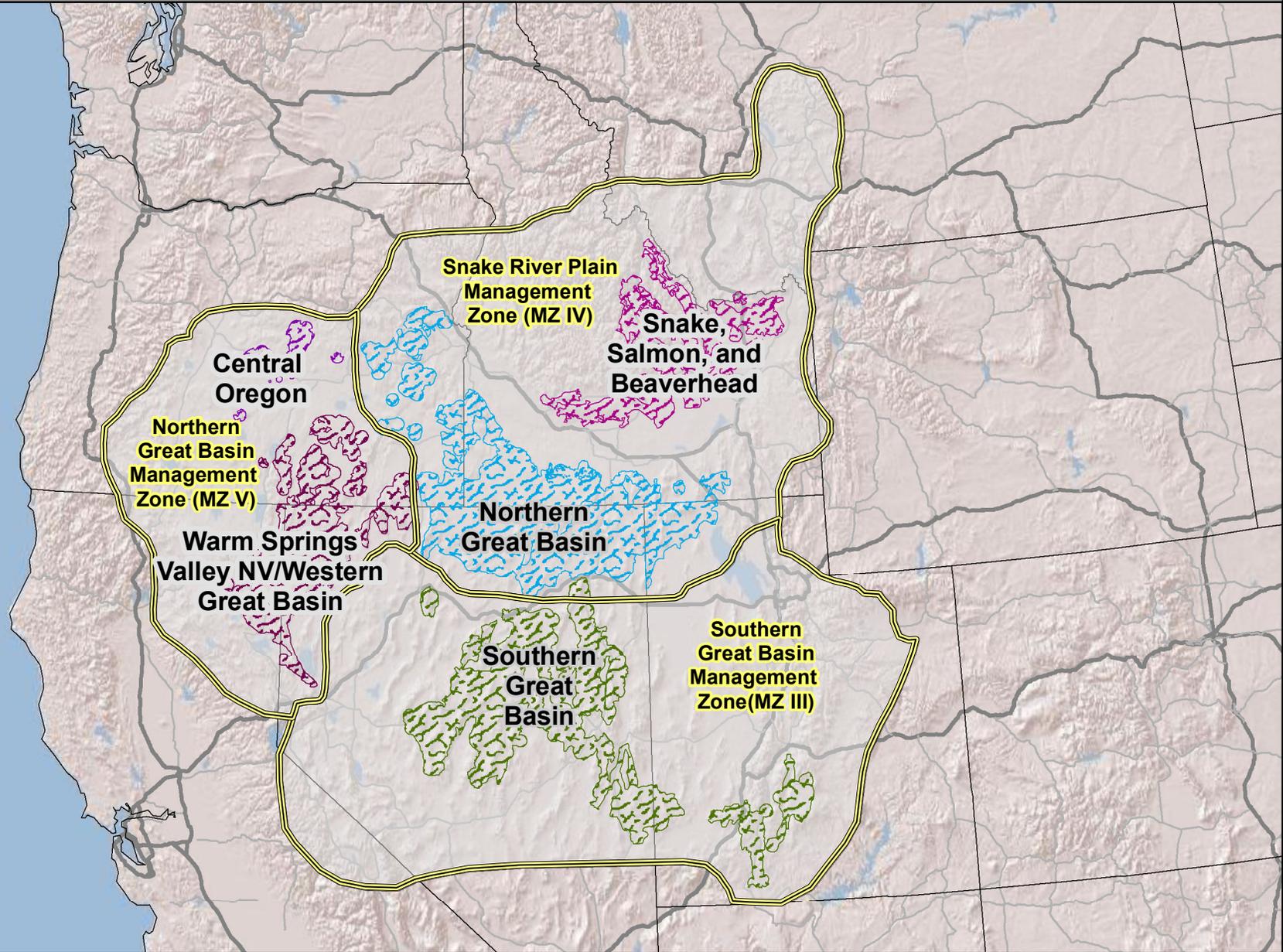
Date	BLM District
October 31, 2014	Boise
November 5, 2014	Boise
November 6, 2014	Twin Falls
November 7, 2014	Twin Falls
November 10, 2014	Winnemucca
November 12, 2014	Winnemucca
November 13, 2014	Idaho Falls
November 14, 2014	Idaho Falls
November 17, 2014	Vale
November 18, 2014	Elko
November 19, 2014	Elko
November 20, 2014	Idaho Falls
November 21, 2014	Salt Lake
December 2, 2014	Vale
December 3, 2014	Burns
December 5, 2014	Boise
December 8, 2014	Boise
December 18, 2014	Idaho Falls
February 19	Idaho Falls
February 20	Winnemucca
February 23	Boise
February 24	Vale
February 25	Salt Lake
February 26	Burns
February 27	Twin Falls
March 2	Elko

5

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



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.



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

SECTION 2

DATA MANAGEMENT AND STEP-DOWN PROCESS

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

2.1 MODIFICATIONS TO FOCAL HABITAT DESIGNATION 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. This resulted in a data set that included only those leks with a maximum male count of 20 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 were strongly biased among separate PACs in the same state.

Second, FIAT Step 2 examined more recent lek data, from 2010 to 2014, to determine if additional leks meet the 75 percent BBD threshold and should be included in the focal habitat delineation. This process addressed the concern that FIAT Step 1 failed to capture recent changes in habitat condition because the most current information available 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 two males in at least one of the past five years (Idaho Fish and Game definition), versus one male in ten years, which was used in FIAT Step 1 (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 was incorporated in FIAT Step 2 (see Section 2.2) that was not included in FIAT Step 1. These

1 additional data were provided in part by state agencies and BLM field office
2 biologists. As a result, FIAT Step 2 provides a finer scale representation of
3 seasonal use areas, such as GRSG brood-rearing and winter habitat.

4 **2.2 INCORPORATION OF LOCAL DATA**

5 The Northern Great Basin assessment team identified individual PPAs using the
6 focal habitat boundaries developed as part of the FIAT Step 1 analysis. Breeding
7 bird density, wildfire threat, sagebrush landscape cover, conifer expansion, and
8 additional local data were also used to define the PPA boundaries and inform
9 each PPA assessment.

10 The local layers used included GIS data from local, state, and federal partners, as
11 follows:

- 12 • BLM district offices
- 13 • Idaho Department of Fish and Game
- 14 • Idaho Department of Lands
- 15 • Oregon Department of Fish and Wildlife
- 16 • Nevada Department of Wildlife
- 17 • USDA Forest Service
- 18 • USDA Natural Resources Conservation Service
- 19 • Utah Division of Wildlife Resources

20 **2.2.1 Data Description**

21 There were many types of local data used in this report, including the following:

- 22 • ID management zone analysis 2010
- 23 • Idaho and Southwestern Montana Greater Sage-grouse Draft Land
24 Use Plan Amendment and EIS priority habitat
- 25 • GRSG landscape importance class
- 26 • Breeding and winter habitat
- 27 • Telemetry data, fire history
- 28 • Fire occurrence
- 29 • Fire behavior modeling
- 30 • Fire suppression, fire threat, and fuel modeling
- 31 • Land fire
- 32 • Vegetation occurrence
- 33 • Cheatgrass occurrence
- 34 • Other GRSG biologically significant unit data

2.2.2 National Data Layers

Data layers are referenced in Appendix B.

2.2.3 Breeding Bird Density

Sources: Individual state GRSG breeding density area from the BLM National Operations Center and data from the GRSG Breeding Bird Density Mapping Project

The model is run on the spatial extent of the data, so the results of dissolving this state data together is not equivalent to the range-wide GRSG breeding density area conifer expansion.

2.2.4 Conifer Expansion

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.

2.2.5 Wildfire Threats

Sources:

- 5 class burn probability derived from fire simulation modeling
- Fire occurrence areas—Regionally leveled fire occurrence areas (FOA) from Westwide Risk Assessment
- Fire threat index—Regionally leveled fire threat index (FTI) from Westwide Risk Assessment
- Suppression difficulty rating—Regionally leveled suppression difficulty rating (SDR) from Westwide Risk Assessment
- Westwide Risk Assessment regionally leveled expected flame length
- Westwide Risk Assessment regionally leveled expected rate of spread

2.2.6 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

2.2.7 Sagebrush Landscape Cover

Sources: Sagebrush distribution from LANDFIRE and sagebrush distribution and percent landscape cover from the Landscape Conservation Management and Analysis

2.2.8 Other Data Layers

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 contains the original WAFWA Management Zones shape file. This data set depicts a preliminary version of the management zone boundaries for GRSG and Gunnison GRSG 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. This data is 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 broad- to mid-scale information available at the time of publication. However, the BLM recognizes that additional site-specific information, particularly concerning areas outside the focal habitats, would support implementation of FIAT objectives and overall GRSG conservation. In this section, limitations of the available data are identified, and the capacity to strengthen future analyses is discussed.

2.3.1 Focal Habitats

Primary concerns with the focal habitat model are that the locations of important seasonal habitats are not well understood for some populations (particularly those GRSG that are more migratory), and that the model 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 manage them to prevent fire 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. Some also argue that restoration treatments should focus on historically occupied habitats in order 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

1 current focal habitats are addressed and additional resources become available.
2 Finer scale studies to examine seasonal habitat use patterns should be
3 conducted to ensure that management actions encompass all seasonal habitat
4 requirements. However, the intent of FIAT Step 2 is to provide a first-tier
5 stratification (e.g., focal habitats) for prioritizing areas where conservation
6 actions could be especially important for GRSG populations. Moreover, FIAT
7 Step 2 does not preclude habitat management activities outside of focal areas.

8 **2.3.2 Mapping Habitat Conditions**

9 Correctly identifying habitat conditions was identified as a potential issue with
10 mapping GRSG habitat, particularly as a result of post-fire recovery. Invariably,
11 there is a lag between when habitat becomes suitable and when BLM staff
12 recognize the change. Therefore, there is an inherent skew toward fewer
13 habitat areas being mapped as suitable for GRSG compared to the amount
14 actually available. Also, broad habitat categories lead to underestimating the
15 importance of habitat that may be slightly reduced in shrub cover but that is
16 rapidly approaching suitable conditions for GRSG. Land treatment information
17 (which includes effectiveness monitoring), could improve decision-making on
18 focal areas.

19 **2.3.3 Project Prioritization Based on Resistance and Resilience Concepts**

20 Actions and tools associated with restoration should be framed in watershed-
21 level restoration plans. These plans incorporate the spatial and temporal
22 relationship of all pertinent resource layers that are needed to achieve resource
23 objectives. The expertise of local field office staff is critical to achieving project
24 success. It should be continually expanded by integrating a range of applied
25 science information.

26 Additional spatial layers that would support more informed restoration
27 treatments are the following:

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

- 1 • Native seed islands for targeted source-identified seed collections
- 2 • Meteorological tower locations
- 3 • Spatial extent of landscape fragmentation (e.g., roads, power lines,
- 4 and fuel breaks)

SECTION 3

ASSESSMENT AREA CHARACTERIZATION

3.1 DISPLAY OF THE FIAT ASSESSMENT AREA IN A BROADER REGIONAL CONTEXT

3.1.1 Northern Great Basin Assessment Area

From both a regional and a range-wide perspective, the South Side Snake and Southwest Idaho GSRG population areas are especially important to long-term conservation in Management Zone IV. This is because these areas comprise a substantial portion of the Great Basin core GRSG 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 provide additional and substantial population contributions in Idaho. The latter also provides known connectivity with the southwest Montana population area.

3.2 BIOLOGICAL SUMMARY

3.2.1 Vegetation

The composition and distribution of plant communities in the Northern Great Basin assessment area are influenced by many factors: climate, elevation, topography, soils, drought, insects, fire, cultivation, invasive plants, and livestock grazing. As a result, there is a wide variety of plant communities, which vary greatly in their relative ecological health. This is 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; they maintain adequate forb and perennial grass in the understory to supply habitat requirements for GRSG.

Data available for this analysis are limited to general overstory vegetation classes of tall shrub (e.g., basin big sagebrush [*Artemisia tridentata* ssp. *tridentata*], Wyoming big sagebrush [*A. t.* ssp. *wyomingensis*], and mountain big sagebrush [*A.*

1 t. ssp. vaseyana]) and low shrub (e.g., black sagebrush [*A. nova*] and low
2 sagebrush [*A. arbuscula*]). This information can be further stratified based on
3 landscape characteristics to approximate the relative proportion of the various
4 types of sagebrush plant communities. Data are not widely available on the
5 relative ecological health of the plant communities in the assessment area.

6 At the time this document was prepared, spatial data were not available that
7 accurately portrayed the distribution of nonnative, invasive, and noxious plant
8 species across the range of GRSG; therefore, these plant species need to be
9 more fully inventoried and monitored in the focal habitats in order to prioritize
10 treatments of these species. Management actions needed in focal habitats are
11 locating infestations, decreasing propagule² pressure (especially along roadside
12 areas), treating satellite infestations, and preventing future infestations.

13 Plant species are the foundation of habitat and ecosystem function. When it is
14 said that GRSG are declining due to a loss of habitat it means that the loss of
15 native plant diversity and distribution is central to the problem. This issue
16 cannot be resolved without restoring native plant communities and their
17 distribution. Therefore, it will be a priority to use of locally adapted native seeds
18 and plant materials of sagebrush-steppe ecosystem appropriate to the location,
19 conditions, and management objectives for vegetation management and
20 restoration (Secretarial Order 3336, January 5, 2015). Strategic project planning
21 will be required to acquire this genetically appropriate seed and other plant
22 material for habitat restoration.

23 3.2.2 Invasive Annual Grasses and Noxious Weeds

24 Noxious weeds are nonnative plants designated by state or federal governments
25 as injurious to public health, agriculture, recreation, wildlife, or property.
26 Invasive plants is a broader category that includes noxious weeds and other
27 weedy nonnative species that compete with native ecosystems. Invasive annual
28 grasses (particularly cheatgrass and medusahead wildrye [*Taeniatherum caput-*
29 *medusae*]) are especially problematic to lower elevation shrub steppe
30 communities of the NGB. Due in large part to the increase in fire frequency,
31 these species have replaced vast landscapes that were historically occupied by
32 native shrub steppe communities.

33 A large host of noxious weed species occur throughout the NGB, with 65
34 designated noxious species occurring in Idaho alone. Many of the species pose a
35 considerable threat to the native plant communities of the NGB, further
36 degrading those areas already dominated by cheatgrass. The more common
37 upland noxious weeds are rush skeletonweed (*Chondrilla juncea*), leafy spurge
38 (*Euphorbia esula*), diffuse knapweed (*Centaurea diffusa*), and spotted knapweed
39 (*C. maculosa*). Although not yet well established in the planning area, yellow
40 starthistle (*C. solstitialis*) is known to have a range similar to that of cheatgrass;

²Part of a plant, for example a bud, that can detach and become a new plant.

1 many of the areas currently supporting annual grass communities could support
2 this noxious weed. Other weeds listed as noxious occur in the planning area but
3 are not as widespread or detrimental as those listed.

4 Invasion by exotic annual grass species has dramatically increased the number
5 and frequency of fires, with widespread detrimental effects on habitat conditions
6 (Young and Evans 1978; West and Young 2000; West and Yorks 2002; Connelly
7 et al. 2004). Increased fire frequency typically removes the sagebrush canopy in
8 affected areas, which is replaced by annual species that provide little to no
9 habitat value (Knapp 1996; Epanchin-Niell et al. 2009; Rowland et al. 2010;
10 Baker 2011; Condon et al. 2011). Invasive annuals are numerous species of
11 annual bromes, most notably cheatgrass (*Bromus tectorum*) and medusahead wild
12 rye. An annual species that may be a threat in higher elevation communities
13 providing GRSG habitat is ventenata (*Ventenata dubia*).

14 Wyoming sagebrush plant communities are particularly susceptible to
15 conversion to annual grasslands after fire when the understory contains higher
16 densities of annual grass. Once converted to exotic annual grasses, these plant
17 communities have crossed a threshold that precludes their returning to
18 traditional plant communities through normal plant succession. These areas are
19 essentially lost in their ability to provide GRSG habitat, unless significant
20 investment in restoration inputs are undertaken. Even then, these projects may
21 fail if conditions do not exist for desired species to become successfully
22 established.

23 **3.2.3 Conifer Encroachment**

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

30 **3.2.4 Fire Regime and History**

31 Fire is an active and dynamic environmental factor on the landscape. Its rate of
32 spread can exceed 30 miles per burn period. See **Figures 4-1** through **4-3**,
33 Historic Fire Locations 1970-2007, Large Fire Simulator module 2013, and Large
34 Fire Perimeter 2000-2012, for a graphic depiction of fire history and burn
35 probability in the Northern Great Basin.

36 Surface water for fighting fires is limited for numerous reasons, such as lack of
37 access and limited surface water. In such cases, water tenders and aircraft are
38 generally used to provide water.

39 The greatest loss of GRSG habitat in the Northern Great Basin assessment area
40 has been from cheatgrass proliferation and wildfire in the lower elevation
41 sagebrush communities, primarily Wyoming big sagebrush.

1 Historically, wildfire was not a common occurrence in Wyoming big sagebrush
2 sites. Current literature estimates the fire interval at approximately 100 years.
3 When these sites did burn, the discontinuous fuels of the scattered native
4 bunchgrasses likely resulted in small discontinuous fires. Conversely, cheatgrass
5 is highly flammable due to its uniformity and because it dries out early in the
6 growing season. Each recurring fire set the stage for further cheatgrass
7 expansion, resulting in an ever-increasing cheatgrass/fire cycle and loss of GRSG
8 habitat. On many of these sites, fire return intervals have been shortened to
9 between two and four years (Whisenant 1990).

10 Lower elevation shrub steppe communities that are successively disturbed and
11 that have lost residual native community components, such as biological soil
12 crusts, will favor annual species that are also at risk for noxious weed invasions.
13 Rehabilitating these areas will require multiple well-timed interventions in the
14 first two years after a fire to achieve functional rehabilitation.

15 **3.2.5 Soil/Moisture Regime (Resistance and Resilience)**

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

19 **3.2.6 Greater GRSG**

20 In the Idaho/Southwest Montana EIS/RMPA area, GRSG occupy all or portions
21 of ten populations and eight subpopulations, described in Connelly et al. (2004).
22 Two large populations (Great Basin Core and Wyoming Basin) encompass
23 portions of Oregon, Nevada, Utah, and Wyoming, which extend beyond the
24 sub-regional boundary.

25 GRSG migration also has been documented between eastern Idaho and
26 southwestern Montana from the Bannack and Red Rock populations. Telemetry
27 data from 1999 to 2012 show that seasonal movements (including both distance
28 and duration) vary significantly between groups of GRSG.

29 **3.2.7 Existing Treatments**

30 A variety of treatments have been performed on the landscape, at least in the
31 last 60 years. Some records are not readily available for treatments said to have
32 been made in the 1950 and 1960s; however, a search of all past projects is
33 beyond the scope of this assessment. Since the National Fire Plan of 2000, a
34 number of hazard fuels reduction projects have been implemented and entered
35 into the NFORS. A number of post fire rehabilitation projects (ESR) have also
36 been implemented on burned acres.

37 In the lower resiliency areas, native plant communities are prioritized over
38 established seedings. Depending on fire severity and the amount of residual
39 early successional native species, recently burned native communities will cross
40 ecological thresholds. This would happen in cases where site disturbances have
41 been frequent enough to limit the recovery of these species, including Sandberg

1 bluegrass and squirreltail, as well as biological soil crusts. ESR treatments will be
2 important in sites where ecological thresholds in native plant communities have
3 been crossed. In seedings, the herbaceous component typically recovers but
4 sagebrush is killed off. Additionally, when seeded areas do burn, the more
5 discontinuous fuels associated with established perennial bunchgrasses often
6 result in a mosaic burn pattern. This maintains some of the sagebrush and
7 results in an existing seed source for natural reestablishment.

8 **3.2.8 Other Management Factors**

9 During the FIAT Step 2 process, the Northern Great Basin assessment team
10 recognized the general influence of other landscape-level factors that contribute
11 to GRSG habitat and population persistence: lands and realty (e.g., transmission
12 lines), wild horses and burros, mining, and livestock grazing.

13 Where particular management factors are recognized to influence the nature
14 and type of potential treatments, those factors are noted. However, any
15 detailed analysis of these factors is outside the scope of this assessment;
16 accordingly, the potential threats of these other management actions to GRSG
17 habitat were not assessed.

18 The BLM is continuing to develop EISs and RMPAs that consider the impacts of
19 proposed management of these resource uses on GRSG and their habitat.

20 **3.2.9 Coordination between and in BLM Districts**

21 In March 2014, fire and fuels program representatives from the BLM's Boise,
22 Elko, Vale, and Winnemucca Districts met in Elko, Nevada. The discussion
23 focused on fire suppression and fuels management issues where Idaho, Nevada,
24 and Oregon geographically meet. During this meeting the group agreed to work
25 on increasing coordination of and planning for wildfire response. Group
26 members also discussed an integrated system of fuel breaks to
27 compartmentalize the tri-state landscape and to minimize the risk of large
28 wildfires in this area.

29 To date, the Elko and Winnemucca Districts are already implementing a series
30 of fuel breaks. The Boise and Vale Districts will begin a joint planning effort to
31 implement fuel breaks. These will tie into the already planned or implemented
32 fuel breaks in the Elko and Winnemucca Districts.

33 During summer and fall 2014 the Boise and Vale Districts completed a ground
34 reconnaissance for proposed fuel break locations across their southern regions.
35 This would compartmentalize the landscape and would provide an integrated
36 network of fuel breaks that ties all four districts together across state and
37 district boundaries.

38 In October, a meeting was held in Winnemucca to discuss the tri-state strategy.
39 The participants also discussed moving forward with planning between the Boise
40 and Vale Districts to analyze a proposed fuel break. The attendees decided that

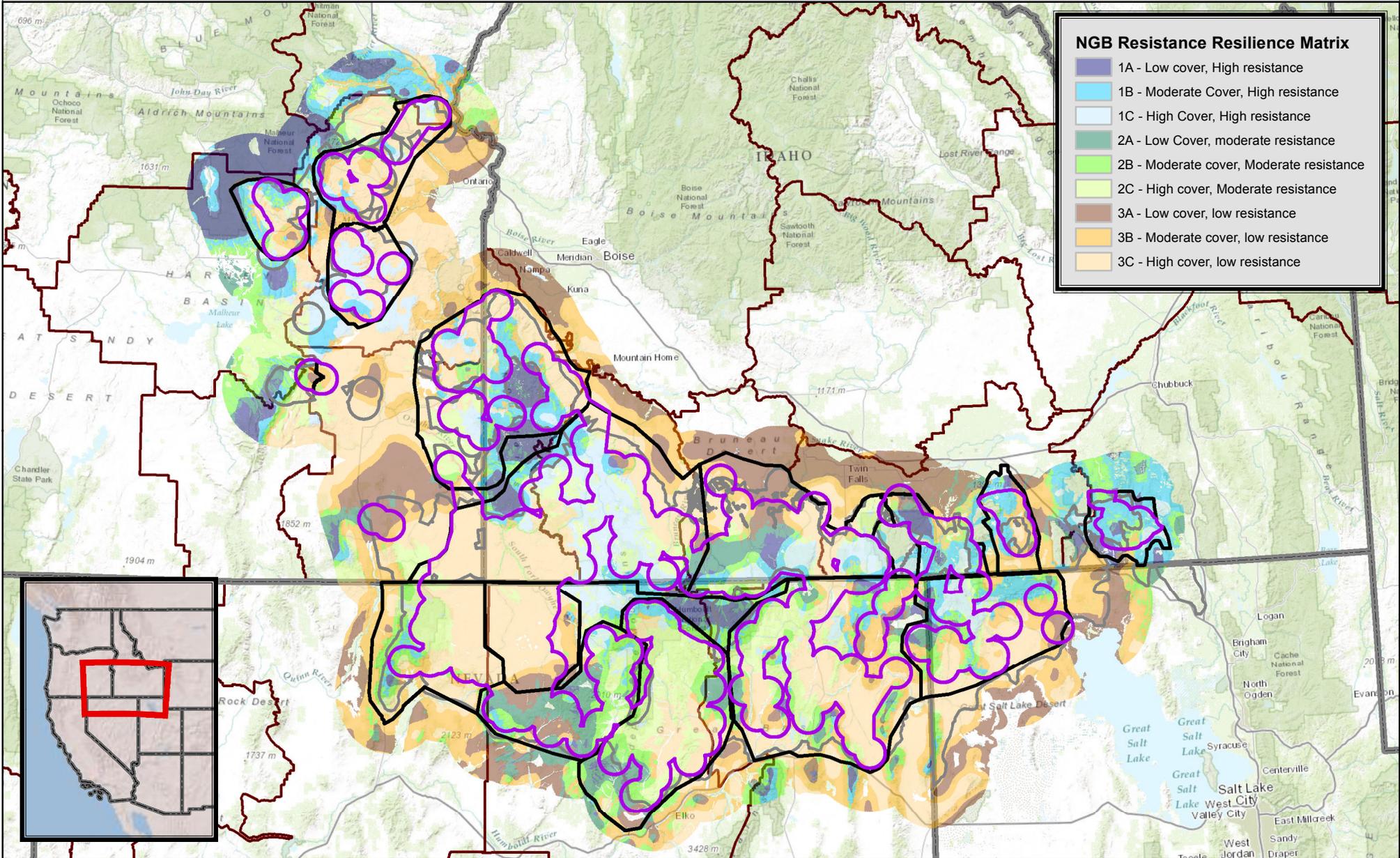
1 a jointly prepared EIS between the Boise and Vale Districts would begin
2 immediately, with fall 2016 as a targeted completion date.

3 Another Boise District project in the planning stage is the Bruneau-Owyhee
4 Sage-grouse Habitat Project (BOSH project). This is targeted at treating phase I
5 and phase 2 juniper vegetation for removal. The BOSH project includes all focal
6 habitat acres in the Owyhee North and Owyhee South Project Planning Areas.
7 This proposed project is currently in the NEPA planning process.

Northern Great Basin Assessment Area

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

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NGB Resistance Resilience Matrix

- 1A - Low cover, High resistance
- 1B - Moderate Cover, High resistance
- 1C - High Cover, High resistance
- 2A - Low Cover, moderate resistance
- 2B - Moderate cover, Moderate resistance
- 2C - High cover, Moderate resistance
- 3A - Low cover, low resistance
- 3B - Moderate cover, low resistance
- 3C - High cover, low resistance



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.



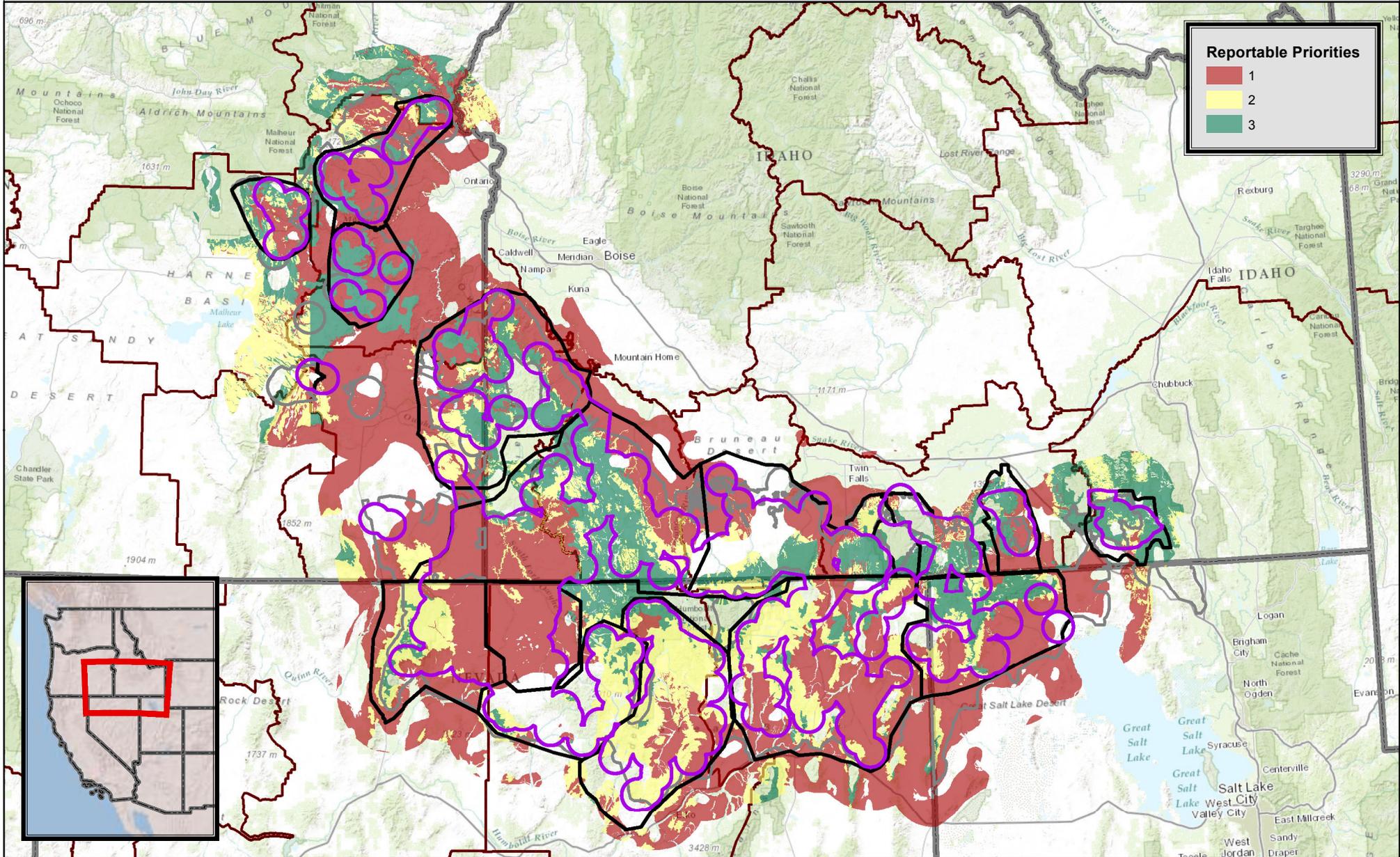
- NGB Focal Habitat
- Northern Great Basin Project Planning Areas
- Northern Great Basin PAC

March 2015
Date Saved: 3/11/2015
Data Sources: Bureau of Land Management, ESRI Basedata
1:2,922,896

Northern Great Basin Assessment Area

Resistance-Resilience Reportable Priorities

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



Reportable Priorities

- 1
- 2
- 3

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.



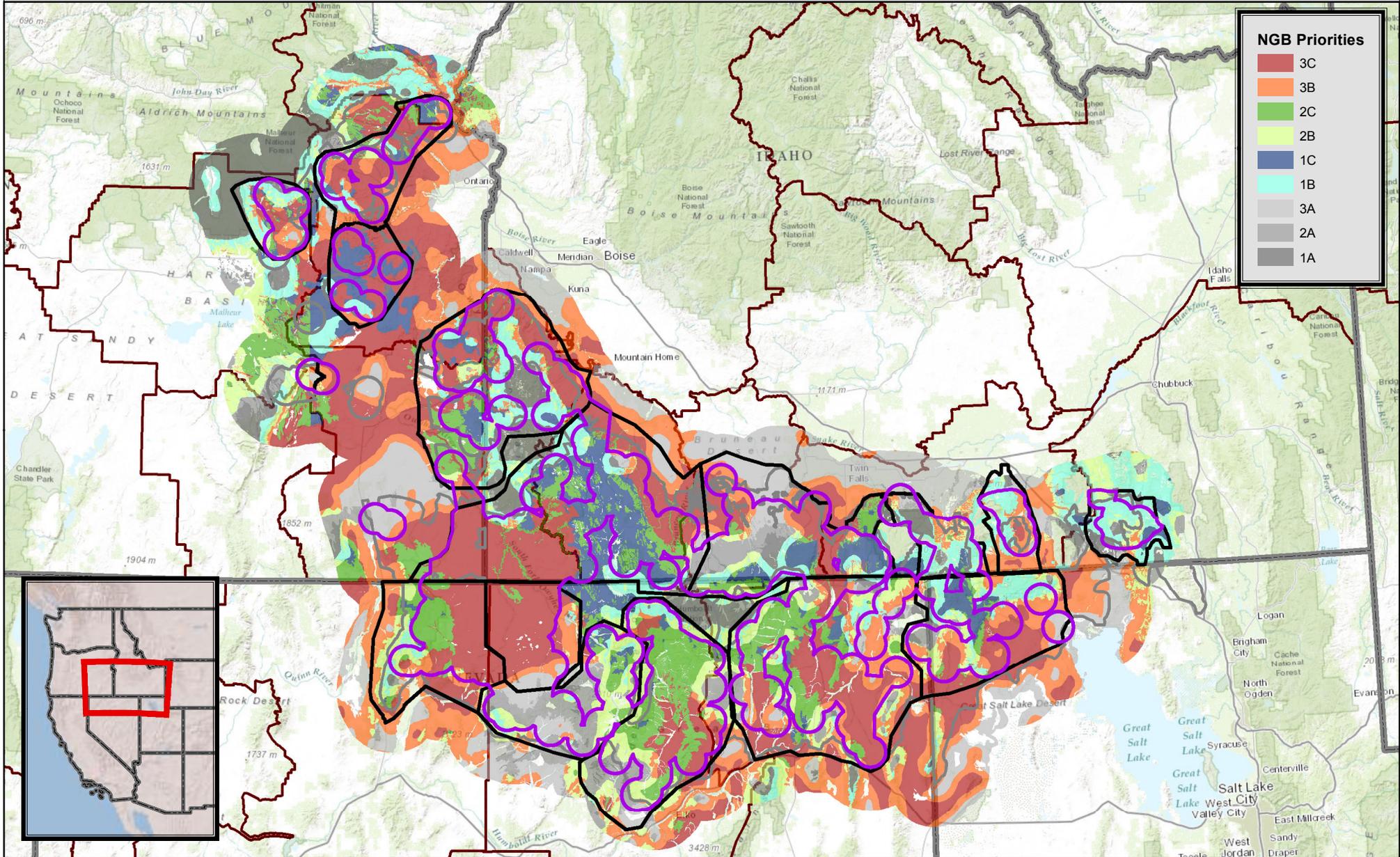
- NGB Focal Habitat
- Northern Great Basin Project Planning Areas
- Northern Great Basin PAC

March 2015
Date Saved: 3/11/2015
Data Sources: Bureau of Land Management, ESRI Basedata
1:2,922,896

Northern Great Basin Assessment Area

Resistance-Resilience Priorities for Application of Management Strategies

Bureau of Land Management
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NGB Priorities

- 3C
- 3B
- 2C
- 2B
- 1C
- 1B
- 3A
- 2A
- 1A

- NGB Focal Habitat
- Northern Great Basin Project Planning Areas
- Northern Great Basin PAC

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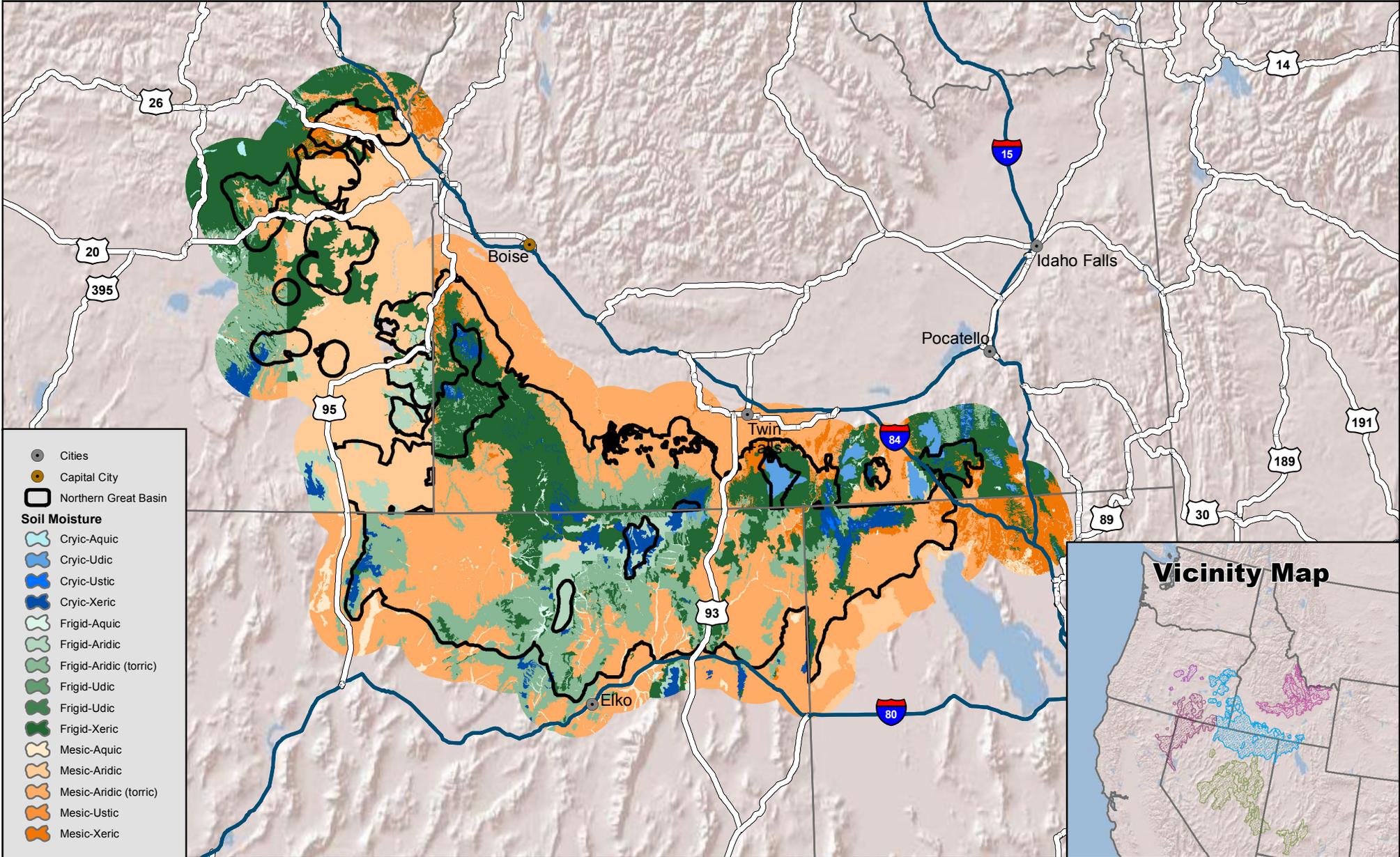


March 2015
Date Saved: 3/11/2015
Data Sources: Bureau of Land Management, ESRI Basedata
1:2,922,896

Soil Moisture Temperature Regime

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

Northern Great Basin Assessment Area
Bureau of Land Management
U.S. Department of the Interior



- Cities
- Capital City
- Northern Great Basin
- Soil Moisture**
- Cryic-Aquic
- Cryic-Udic
- Cryic-Ustic
- Cryic-Xeric
- Frigid-Aquic
- Frigid-Aridic
- Frigid-Aridic (torric)
- Frigid-Udic
- Frigid-Udic
- Frigid-Xeric
- Mesic-Aquic
- Mesic-Aridic
- Mesic-Aridic (torric)
- Mesic-Ustic
- Mesic-Xeric

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 **SECTION 4**
2 **FOCAL HABITAT AND PROJECT PLANNING**
3 **AREAS**

4 **4.1 FOCAL HABITAT AND PROJECT PLANNING AREAS**

5
6 **4.1.1 Focal Habitat Areas Overview**

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

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

4.1.2 Project Planning Areas Overview

As part of the FIAT Step 2 process, the Northern Great Basin 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, fire operations, habitat restoration and recovery, and post-fire rehabilitation management). The team used focal habitats as the spatial starting point and through the Step 2 process, identified 18 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 in the PPA. See **Figures 4-4** through **4-6** for a graphic depiction of the proposed treatment priorities in each PPA.

The team subsequently used a series of worksheet templates prepared for each program area to identify treatment opportunities for the four program areas in 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 fuel breaks to existing roads in order to minimize further disturbance, fragmentation, and reduce the likelihood of increasing invasive annual grass abundance.

The Northern Great Basin Assessment Area covers 15,732,000 acres in Idaho, Oregon, Nevada, and Utah and is in eight BLM District Office boundaries. Landownership in the PPAs is composed of a combination of public (77 percent) and private (23 percent) landownerships, as shown in **Table 4-1**; PPAs by BLM District Office are shown in **Table 4-2**.

Table 4-1
Landownership in Project Planning Areas in the NGB Landscape

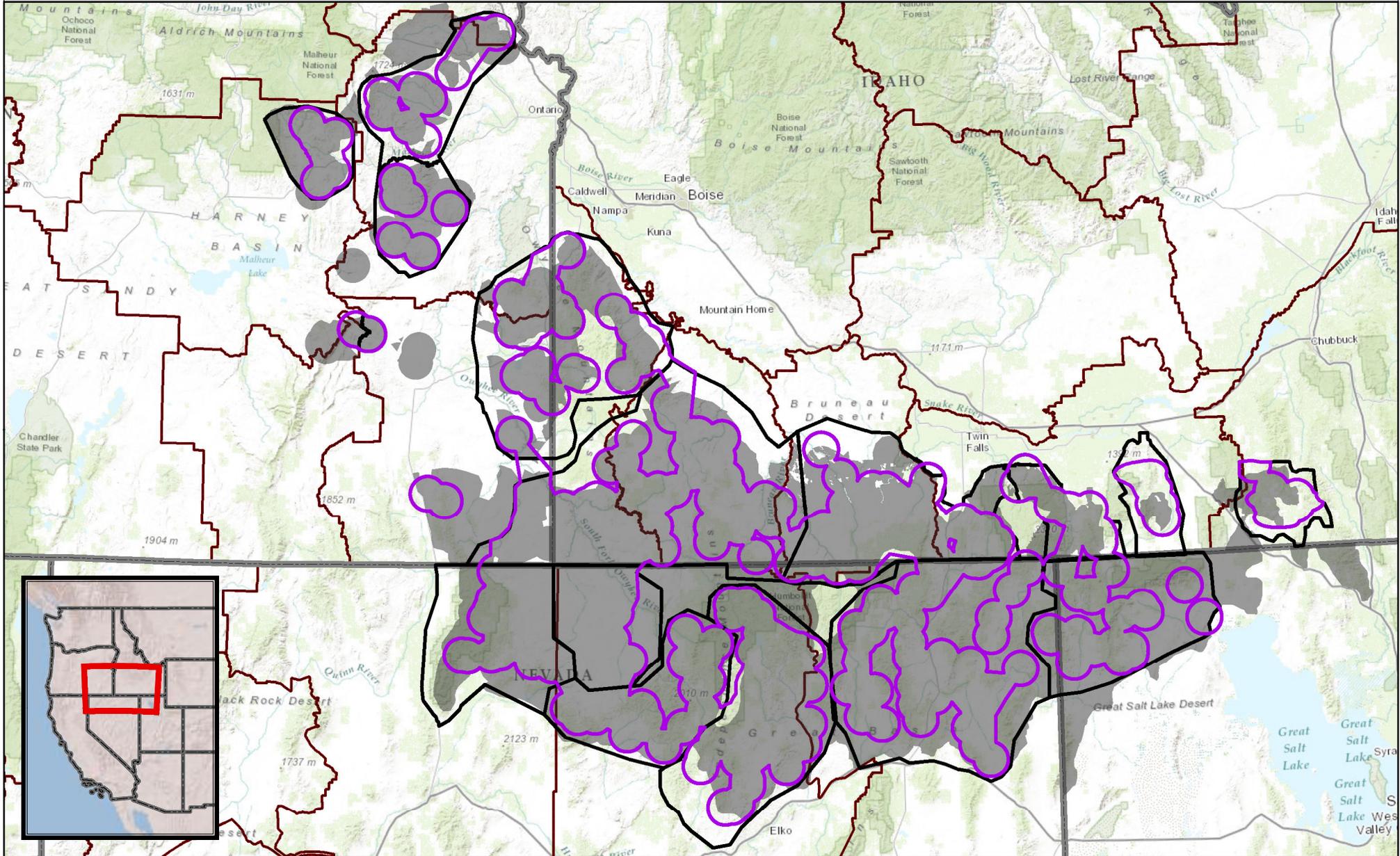
Ownership	Acres	Percentage of NGB Landscape
BLM	17,117,200	66
Forest Service	2,316,100	7
State	1,177,500	3
Private	9,407,100	23
Other Federal Lands ¹	1,177,500	1

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

Northern Great Basin 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.



- NGB Focal Habitat
- Northern Great Basin Project Planning Areas
- Northern Great Basin PAC

March 2015
Date Saved: 3/16/2015
Data Sources: Bureau of Land Management, ESRI Basedata
1:2,569,424

**Table 4-2
Northern Great Basin Project Planning Areas**

Project Planning Area Name	BLM District Office
Beulah	Vale
Bowden Hills	Vale
Curlew	Idaho Falls
Greater Owyhee	Winnemucca
Jim Sage	Twin Falls
Mainstem Malheur	Vale
North Fork Owyhee	Elko
Oakley	Twin Falls
Oneil	Elko
Otis	Burns
Owyhee Desert	Elko
Owyhee North	Boise
Owyhee South	Boise
Rogerson	Twin Falls
Sheephead West	Burns
Sheephead East	Vale
Tuscarora	Elko
West Box Elder	Salt Lake

1
2 **4.2 NORTHERN GREAT BASIN MANAGEMENT STRATEGIES COMMON TO ALL PROJECT**
3 **PLANNING AREAS**
4

5 **4.2.1 Fuels Management**

6 The FIAT Step 2 process identified several existing travel routes for priority
7 fuels treatments. Proposed fuel breaks are identified in the GIS data
8 accompanying this report. The routes identified are those that can be treated in
9 the next five years using a variety of treatment techniques: mowing, mastication,
10 chaining, herbicides, seedings, and targeted grazing. All treatments would be
11 coordinated with other land management agencies and private landowners and
12 post-treatment would be monitored to ensure effectiveness.

13 Fuel break treatment areas were identified using existing roads in the PPA that
14 BLM personnel could access and use. The identified areas represent the highest
15 priority in the PPA for further review and analysis as part of a subsequent
16 implementation strategy. Additional information will be obtained via field work
17 and other appropriate means to determine how to fully use the delineated
18 roads to optimize GRSG habitat conservation in the PPA.

19 **4.2.2 Habitat Recovery and Restoration**

20 In general, treating annual invasive grasses would include such management
21 approaches as spraying, seeding, and monitoring treated sites for proper
22 vegetation communities. The GIS data accompanying this report also identify the
23 ideal locations of potential habitat recovery and restoration projects. In general,
24 habitat restoration treatments would be prioritized in low resistance and
25 resilience areas with degraded habitat (e.g., historic burn areas) and other

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

4 **4.2.3 Fire Operations**

5 The Step 2 FIAT process identified the 3A, 3B, and 3C areas, which have the
6 lowest resistance and resilience, as the highest priority areas for initial fire
7 attack and positioning of resources. The GIS data accompanying this report
8 identifies these areas. The decision to prioritize these areas is supported by the
9 overwhelming evidence throughout the Great Basin that demonstrates these
10 areas are of the greatest risk for conversion to invasive annual grasses after a
11 fire (Chambers et al. 2014).

12 Response to wildfires on National Forest Systems (NFS) Lands, in and around
13 identified priority greater GRSG habitat, will be consistent with the forest plan
14 direction. Identified GRSG habitat is considered a high priority for protection on
15 NFS lands.

16 The response to wildfire will be consistent with the fire management plans on
17 other federal public lands, state lands, and other landownerships. This includes
18 response by private ownerships and forest fire protection associations where
19 applicable.

20 **4.2.4 Post-Fire Rehabilitation**

21 The Step 2 FIAT process identified those areas with moderate to high cover,
22 warm-dry soil conditions and areas without prior revegetation treatments as
23 being the highest priority for post-fire rehabilitation. Areas that have been
24 revegetated are more persistent than the moderate to high cover 3B and 3C
25 soil temperature moisture regime areas. Higher elevation, north-facing slopes
26 with cooler and moister soil characteristics would be lower priority for
27 rehabilitation due to their ability to naturally recover following fire. In all cases
28 of previously seeded or natural recovery areas, shrub seeding or planting may
29 be necessary if desirable shrubs are not present.

30 In the absence of ESR treatments, recently burned, native, low communities
31 would likely be irrevocably converted to invasive annual dominated
32 communities; in existing seedings, the herbaceous component typically recovers
33 naturally, even though the sagebrush would be killed. Additionally, when seeded
34 areas do burn, the more discontinuous fuels associated with established
35 perennial bunchgrasses often result in a mosaic burn pattern. In such cases,
36 some of the sagebrush remains, resulting in an existing seed source for natural
37 reestablishment.

38 **4.3 NORTHERN GREAT BASIN PROJECT PLANNING AREAS**

39 Below are descriptions of each of the PPAs in the Northern Great Basin
40 Assessment Area. Each PPA description includes a 1) characterization of the
41 PPA landscape, 2) examination of the proposed management strategies in 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 the appendices at the end of this document.

4.3.1 Beulah

Project Planning Area Description

Geographic Overview

The 702,900-acre Beulah PPA is in Malheur and Baker Counties in eastern Oregon; the entire PPA is in the BLM Vale District Office. It is generally bounded on the north and northeast by Interstate 84 and the Blue Mountains, on the south by US Highway 20, and on the west by the Malheur National Forest. Farther east, the landscape transitions into the agricultural and suburban areas surrounding the Treasure Valley. Landownership in the Beulah PPA is approximately 60 percent BLM, 39 percent private, and 1 percent state-administered lands.

Topographic features in the PPA are the Cottonwood Mountains, which cross the middle of the PPA from northwest to southeast, and the Birch Creek Meadow area in the northern portion of the PPA. Ground surface elevations in the Cottonwood Mountains consistently exceed 5,000 feet (1,520 meters). Cottonwood Mountain, at approximately 6,500 feet (1,980 meters), is the highest point in the PPA. The Birch Creek Meadows area is approximately 3,700 feet above sea level and the Beulah Reservoir/Agency Valley, in the far southern portion of the PPA, is roughly 3,400 feet above sea level. The lowest elevation areas in the PPA are along the Highway 26 corridor, between Brogan and Jamieson, where the typical elevation is less than 2,600 feet (800 meters). Agricultural uses are prevalent in these low elevation areas.

While slope aspects vary throughout the PPA, the dominant mountain range orientations are north-south, with many corresponding east- and west-facing slopes. South-facing slopes are most prevalent in the northern part of the PPA, north of Birch Creek Meadows and in the southeast.

The Beulah PPA consists predominantly of warm-dry soil moisture temperatures, regimes, with minor instances of cool/dry and cool/wet soil moisture temperature regimes, in all cover types (see **Table 4-3**).

Table 4-3
Beulah GRSG Habitat Matrix Categories

Matrix Category	No Data	1A	1B	1C	2A	2B	2C	3A	3B	3C
Acres	1,809	9,267	77,822	54,092	6,131	25,245	47,334	2,554	149,835	328,821
Percent of PPA	0	1	11	8	1	4	7	0	21	47

1 Surface water features throughout the Beulah PPA are largely confined to
2 ephemeral³ streams and small reservoirs. The Beulah Reservoir, which is only
3 partially in the PPA, is the largest surface water body in or next to the PPA.
4 Other surface water features are the Zotto Reservoir in the south and the Love
5 Reservoir in the northeast. The Snake River, which forms the Idaho-Oregon
6 border, is approximately 0.5 mile from the northeastern boundary of the PPA.

7 The most notable roadways in the Beulah PPA are US Highway 26, which
8 crosses the PPA from northwest to southeast, Highway 20, which crosses the
9 southwestern corner of the PPA, and Interstate 84, which crosses the extreme
10 northern portion of the PPA near Hamilton, Oregon.

11 Over 90 percent of GRSG habitat in the PPA is less than 12 miles from
12 electrical transmission towers. The northeastern and southernmost portions
13 are less than five or five to nine miles from primary roads, affecting about 50
14 percent of the PPA. Less than 10 percent of the southeastern portion of the
15 Beulah PPA is within five to nine miles of transmission lines.

16 *Sage-Grouse Characteristics*

17 Sage-grouse characteristics in the Beulah PPA are generally consistent with the
18 Idaho/Southwest Montana EIS/RMPA planning area, described above.

19 *Vegetation*

20 Sagebrush communities generally correspond with the elevation and soil
21 moisture regimes in the PPA. In lower, drier areas, Wyoming big sage is the
22 dominant species. Areas above 4,500 feet on northern slopes are generally
23 characterized by Mountain big sage.

24 Conifers are most prevalent in the southern portion of the PPA, with expansion
25 notable to the northeast of Beulah Reservoir. Conifer encroachment also exists
26 along the north slope of the Cottonwood Mountains. North of the
27 Cottonwood Mountains and Highway 26, there no conifer encroachment
28 concerns.

29 *Fire*

30 Surface water availability in the Beulah PPA is the limiting factor for GRSG
31 habitat protection during fire season. Combined with the distance from
32 established fire operations centers, early detection of fire starts is an underlying
33 challenge for GRSG habitat conservation efforts, particularly in the south-central
34 PPA. This area also has predominantly warm-dry soil temperature and moisture
35 regime (see **Table 4-4**).

³Existing for a brief period only

Table 4-4
Beulah Summary of Burn Probability

High and very high burn probability in PPA (acres)	682,500
High and very high burn probability in PPA (percent)	97

1
2 *Existing Treatments*
3 The Natural Resources Conservation Service (NRCS) has completed
4 approximately 30,000 acres of phase 1 and 2 conifer treatment in the southern
5 third of the PPA and is planning additional treatments in this area.

6 *Other Management Factors*
7 Other management factors did not influence the selection of treatments for this
8 PPA.

9 *Fuels Management*
10 The potential treatment areas for fuels management activities are as follows:

- 11 • Beulah Linear Fuel Treatments 1st Priority—200 miles
- 12 • Beulah Linear Fuel Treatments 2nd Priority—300 miles
- 13 • Beulah Linear Fuel Treatments 3rd Priority—100 miles

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

Table 4-5
Beulah Potential Fuels Management Treatments

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Miles	200	300	100	—	600

16
17 *Habitat Recovery and Restoration*
18 Proposed restoration consists of 413,800 acres of conifer expansion treatments
19 and 14,200 acres of habitat restoration (other). The GIS information
20 accompanying this report provides more details on the locations of these
21 treatments. Priority treatment areas would be phase 1 conifer areas near the
22 elevation break or in the interior (lower elevation) areas. These areas would be
23 treated on a three- to five-year time frame. Areas along the perimeter and in
24 phase 2 or 3 conifer expansion would be lower priority and would be planned
25 for treatment on a five- to ten-year time frame.

26 Invasive annuals treatments would be prioritized along the elevation break with
27 the intent of containing the spread of invasive annuals into higher elevations
28 (over 5,500 feet). Additional treatments would be planned along roads identified
29 as fuel breaks, such as chemical spraying and seeding to create a 100-foot buffer.

The priority treatment areas for conifer encroachment would be in the 75 percent BBD. These areas would have a treatment timeline of five to ten years.

Habitat Recovery and Restoration priority areas are as follows:

- Beulah Conifer 1st priority—372,300 acres
- Beulah Conifer 2nd priority—40,500 acres
- Beulah Habitat Restoration (Other) 2nd priority—6,000 acres
- Beulah Habitat Restoration (Other) 3rd priority—9,200 acres

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

Table 4-6
Beulah Potential Habitat Restoration Treatments

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	372,300	46,500	9,200	—	428,000
Percent of PPA	53	7	1	—	61

Fire Operations

Through the Step 2 FIAT process, the Vale District Office identified eleven potential water access improvement points, which if completed would likely improve fire suppression capabilities. The GIS data accompanying this report identifies these areas. The Vale District Office will continue working with other stakeholders to further prioritize areas where specific improvements can be made.

The priority area for fire operations is Beulah Fire Operations (1st priority; 360,400 acres). See the associated GIS data layers for the position and extent in the PPA and **Table 4-7**.

Table 4-7
Beulah Potential Fire Operations Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	360,400	43,800	85,800	100	490,100
Percent of PPA	51	6	12	0	70

Post-Fire Rehabilitation

The Step 2 FIAT process identified areas with moderate to high cover in warm-dry soil moisture temperature regimes, minus past ESR treatments, as the highest priority for post-fire rehabilitation. Higher elevation, north-facing slopes with cooler and moister soil characteristics would be lower priority for rehabilitation due to their ability to naturally recover following fire.

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

The priority area for post-fire rehabilitation is the Beulah ESR (1st priority; 298,300 acres). See the associated GIS data layers for the position and extent in the PPA and **Table 4-8**.

Table 4-8
Beulah Proposed Post-Fire Rehabilitation Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	298,300	44,400	85,500	100	428,300
Percent of PPA	42	6	12	—	61

Proposed Management

A 200-mile linear fuels project has been identified in the NEPA process.

Table 4-9 shows projects that are identified in the NEPA planning process. See **Figures 4-7** through **4-14** for a graphic depiction of the proposed treatments and strategies in the PPA.

Table 4-9
Beulah Project Planning Area Treatment Summary Table

Treatment Description		Priority			Threats Addressed				NEPA			Treatments						
Name/Type	Acres/Miles	1st	2nd	3rd	Conifer (C)	Invasive annual grasses (I)	Riparian Degradation (R)	Wildfire (W)	Initiated (I)	Completed (C)	Needed (N)	Time Frame		Certainty of Effectiveness ¹		Maintenance Time Frame (Years) ²	Completion Time Frame (0-2, 3-5, 5+ years) ³	
												Pending Funding (P) ¹	Implementing (I) ¹	Likely	Unlikely			
Fuel Breaks	200 miles	X				X	X		X			X			I		2	3-5

¹If treatment, once completed, is likely or unlikely to be effective, the rationale for effectiveness uses the following codes:

1 = site conditions (soils, resilience, species composition, disturbances) make treatment effectiveness likely

2 = site conditions make treatment effectiveness unlikely

3 = continued current management (grazing, recreation, or other land uses) make likelihood of effectiveness low

4 = based on professional opinion, treatment is likely to be effective

²Describes the frequency of maintenance necessary to continue effectiveness (in years)

³Identifies the potential treatment completion time frame, considering NEPA adequacy, relative priority, and local ranking factors

4.3.2 Bowden Hills

Project Planning Area Description

Geographic Overview

The 92,000-acre Bowden Hills PPA is in Malheur County, in the southeastern corner of the Oregon BLM Vale District Office. Landownership in the Bowden Hills PPA is more than 99 percent BLM-administered lands and less than 1 percent private lands.

Topographic traits in the PPA are characteristic of the Great Basin, with high elevation ranges next to lower elevation basins. The Blue and Battle Mountains bisect the PPA from north to south. Mountainous areas typically exceed 6,000 feet (1,800 meters) and reach a high point of over 7,400 feet (2,260 meters) at Blue Mountain. Lower elevation basin areas also run north to south, along the western edge, central portion, and eastern edge of the PPA. Average basin elevations in the PPA are between 5,000 and 5,500 feet (1,500 and 1,700 meters).

Not all information and data on the GRSG habitat types were available at the time of this assessment. Overall, the PPA consists predominantly of warm-dry soil moisture temperature regimes, with minor amounts of cool/dry and cool/wet soil moisture temperature regimes. Most of the PPA consists of landscape cover classes less than 25 percent (see **Table 4-10**).

Table 4-10
Bowden Hills GRSG Habitat Matrix Categories

Matrix Category	No Data	1A	1B	1C	2A	2B	2C	3A	3B	3C
Acres		537	—	—	16,545	—	—	58,286	14,402	2,256
Percent of PPA	—	1	—	—	18	—	—	63	16	2

The Bowden Hills PPA is an arid landscape with few surface water features. Any surface water is likely to be in the form of an ephemeral stream originating in the Blue or Battle Mountains. The southern end of Rattlesnake Canyon enters the northeastern portion on the PPA and may provide seasonal flows to that area. There are no reservoirs or other notable lentic⁴ water bodies in the PPA boundary or within a 50-mile radius of the PPA.

US Interstate 95 is the only regional roadway that enters the Mainstem Malheur PPA. The paved two-lane highway passes north to south through the western half of the PPA. Other travel routes are mainly unpaved local roads.

⁴Still freshwater

1 All GRSG habitat in the PPA is less than 12 miles from electrical transmission
2 towers. Approximately 50 percent of the habitat is less than five miles from
3 primary roads, 25 percent is five to nine miles from primary roads, 30 percent
4 of the PPA is four to nine miles from transmission lines, and less than five
5 percent is within four miles of transmission lines.

6 *GRSG Characteristics*

7 Sage-grouse characteristics in the Bowden Hills are, in general, consistent with
8 those described above for the broader Idaho/Southwest Montana EIS/RMPA
9 planning area.

10 *Vegetation*

11 Sagebrush communities generally correspond with the elevation and soil
12 moisture regimes in the PPA. In the basin areas, Wyoming big sage is the
13 dominant species. Along the Blue and Battle Mountain Ranges, mountain big sage
14 is the dominant sagebrush species. Conifers are largely nonexistent in the
15 Bowden Hills PPA.

16 *Fire*

17 In the Bowden Hills PPA, extreme lack of surface water and remoteness
18 influence GRSG habitat protection during fire season. The distance from
19 established fire operations centers, lack of surface water, and detection of fire
20 starts present fundamental challenges for GRSG habitat conservation
21 throughout the PPA (see **Table 4-11**).

Table 4-11
Bowden Hills Summary of Burn Probability

High and very high burn probability in PPA (acres)	90,000
High and very high burn probability in PPA (percent)	98

22 *Other Management Factors*

23 Aside from such infrastructure as roads and transmission lines and towers,
24 other management factors did not influence the selection of treatments for this
25 PPA.
26

27 *Fuels Management*

28 Potential fuels treatments in the Bowden Hills PPA include 200 miles of fuel
29 breaks along linear features, primarily US Interstate 95 but also along local
30 unpaved roadways.

31 The potential treatment areas for fuels management activities are the Bowden
32 Hills fuel breaks (1st priority; 100 miles) and the Bowden Hills fuel breaks (2nd
33 priority; 100 miles). See the associated GIS data layers for the position and
34 extent in the PPA and **Table 4-12**.

Table 4-12
Bowden Hill Potential Fuels Management Treatments

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Miles	100	100	—	—	200

Habitat Recovery and Restoration

No potential restoration treatments are proposed in this PPA (**Table 4-13**).

Table 4-13
Bowden Hills Potential Habitat Restoration Treatments

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	0	0	0	0	0
Percent of PPA	—	—	—	—	—

Fire Operations

The priority area for fire operations is Bowden Hills fire operations (1st priority; 16,700 acres). See the associated GIS data layers for the position and extent in the PPA and **Table 4-14**.

Table 4-14
Bowden Hills Potential Fire Operations Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	16,700	—	—	—	16,700
Percent of PPA	18	—	—	—	18

Post-Fire Rehabilitation

The Step 2 FIAT process identified areas with moderate to high shrub cover in warm-dry soil regimes, minus past ESR treatments, as the highest priority for post-fire rehabilitation. Higher elevation, north-facing slopes with cooler and moister soil characteristics would be lower priority for rehabilitation due to their ability to naturally recover following fire. The Vale District Office will continue working with other stakeholders to coordinate and prioritize post-fire rehabilitation activities.

The priority area for post-fire rehabilitation is the Bowden Hills ESR (1st priority; 16,700 acres). See the associated GIS data layers for the position and extent in the PPA and **Table 4-15**.

Table 4-15
Bowden Hills Proposed Post-Fire Rehabilitation Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	16,700	—	—	—	16,700
Percent of PPA	18	—	—	—	18

Proposed Management

Potential fuels treatment opportunities consist primarily of linear fuel treatments to slow the spread of wildfire. No projects were identified in the NEPA planning process at this time. See **Figures 4-15** through **4-20** for a graphic depiction of the proposed treatments and strategies in the PPA.

4.3.3 Curlew**Project Planning Area Description***Geographic Overview*

The Curlew PPA is in the BLM Idaho Falls District in portions of Power and Oneida Counties, Idaho. The PPA is east of Interstate 84 and the Cassia County line, north of the Utah state line, west of portions of the Malad River and Little Malad River, and generally south of Roy and Arbon, Idaho.

There are approximately 342,900 acres in the PPA. Topography varies from rolling hills to rugged and mountainous; elevation ranges from approximately 4,600 to 7,550 feet. (1,400 and 2,417 meters).

Land status is approximately 40 percent BLM-administered, 20 percent USDA Curlew National Grassland, and 40 percent private.

The Curlew PPA consists predominantly of cool/wet soil moisture temperature regimes, with minor amounts of cool/dry and warm-dry and soil moisture temperature regimes, and all cover types (See **Table 4-16**).

Table 4-16
Curlew GRSG Habitat Matrix Categories

Matrix Category	No Data	1A	1B	1C	2A	2B	2C	3A	3B	3C
Acres	21,994	44,984	176,651	26,576	6,302	46,018	265	3,832	16,255	0
Percent of PPA	6	13	52	8	2	13	0	1	5	0

The interior of the Curlew PPA is fairly accessible due to extensive road systems. However, much of the perimeter is characterized by rugged remote country, which can take fire responders hours to reach. Clover-Three Creek Road traverses the PPA in the west, and US Interstate 93 traverses north-south and bisects the eastern portion of the PPA.

All GRSG habitat in the PPA is less than 12 miles from any electrical transmission towers. Nearly all of this PPA is reached by primary roads, with habitat less than five miles from roads on the northwest, southwest, and southeast. Five percent or less of the habitat is more than nine miles from primary roads. Approximately 50 percent of the Curlew PPA is within four

1 miles of transmission lines, and 30 percent is four to nine miles from
2 transmission lines.

3 *GRSG Characteristics*

4 There are approximately 10 distinct 75 percent BBD leks arranged as one
5 contiguous focal habitat in this PPA. Focal habitat has been added to the FIAT
6 Step 1 because important winter habitat information and bird
7 movement/additional seasonal habitat information was supplied by the local BLM
8 District Office. Project planning area boundaries have also been adjusted
9 because of the significant loss of habitat due to wildfires since 2006 and the
10 movement of birds responding to this loss of habitat.

11 *Vegetation*

12 The vegetation of the area is diverse, characterized by sagebrush steppe
13 communities, Utah juniper woodlands, aspen stands, meadows, and coniferous
14 forests.

15 *Fire*

16 Surface water availability is limited due to lack of access to water sources and
17 limited surface water. Some water use agreements are in place with private
18 water rights owners. Water for firefighting is generally supplied by water
19 tenders and aircraft (see **Table 4-17**).

Table 4-17
Curlew Summary of Burn Probability

High and very high burn probability in PPA (acres)	300,000
High and very high burn probability in PPA (percent)	88

21 *Existing Treatments*

22 The BLM District staff have noted that NRCS GRSG habitat improvement
23 projects have been implemented for a number of years under private ownership
24 to the south and southwest of this PPA. The community at large has
25 demonstrated a strong relationship with the NRCS in conserving GRSG and
26 enhancing its habitat.

27 *Other Management Factors*

28 Aside from such infrastructure as roads and transmission lines and towers,
29 other management factors did not influence the selection of treatments for this
30 PPA.

31 *Fuels Management*

32 The potential treatment area is approximately 26,200 acres of linear fuels, which
33 would follow a network of existing travel routes throughout the PPA (see GIS
34 data layers in Appendix B). Proposed treatments primarily include green
35 stripping along the identified roadways. While the primary treatment is reducing
36 hazardous fuels to reduce fire behavior, reducing invasive annual grass, conifers,

1 and invasive weeds would also be used. A potential for roadside treatments
2 exists, especially using chemical methods.

3 The potential treatment for fuels management is Curlew linear fuels treatments
4 (3rd priority; 26,200 acres). See the associated GIS data layers for the position
5 and extent in the PPA and **Table 4-18**.

Table 4-18
Curlew Potential Fuels Management Treatments

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Miles	0	0	0	0	0
Acres	—	—	26,200	500	26,700

6
7 *Habitat Recovery and Restoration*

8 The potential treatments for Habitat recovery and restoration are as follows:

- 9 • Curlew Conifer 1st priority—106,900 acres
- 10 • Curlew Conifer 2nd priority—28,800 acres
- 11 • Curlew Other Restoration 2nd priority—2,000 acres
- 12 • Curlew Other Restoration 3rd priority—8,000 acres

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

Table 4-19
Curlew Potential Habitat Restoration Treatments

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	106,900	20,800	8,000	10,000	145,700
Percent of PPA	31	6	2	3	42

15
16 *Fire Operations*

17 The response to wildfires in and around critical GRSG habitat is primarily
18 engines, dozers, and water tenders, with support from a variety of aircraft BLM
19 stations provide for rapid initial attack response from multiple locations to most
20 focal areas, and response plans have been updated with increased response to
21 such areas.

22 Idaho Falls District Engine Stations are in Malad, Soda Springs, Pocatello,
23 American Falls, Fort Hall, Blackfoot, Atomic City, Idaho Falls, Dubois, and
24 Salmon. The Salmon/Challis National Forest provides initial access to several
25 focal areas, with engines and helicopters from Mackey, Challis, Leadore, and
26 Salmon. The Caribou/Targhee National Forest provides additional resources for
27 several of the focal areas, with engines from Malad, Pocatello, and Ashton being
28 the closest. The response time to most of the focal areas is thirty minutes to
29 one hour to have multiple resources on scene.

1 Additional resources could be staged in Arco to provide more coverage for the
 2 Big Lost and Big Desert focal areas. Resources could also be staged in
 3 Aberdeen, Arco, Clyde, Rexburg, and Holbrook to provide for quicker
 4 response to the more remote focal areas of Curlew, Big Desert, Big Lost,
 5 Pasemerai, Medicine Lodge, and Sand Creek. The Idaho Falls BLM has mutual
 6 aid agreements with over 50 rural and municipal fire departments that can be
 7 used to further supplement the initial attack; many of these departments are the
 8 closest resource to many focal areas and would likely be the first to respond.

9 Sage-grouse suppression guidelines will be discussed with cooperators during
 10 AOP meetings and training so as to increase their capacity where possible.
 11 Contract resources of dozers, engines, and water tenders can be hired and
 12 staged during high fire danger periods, such as times of high winds and predicted
 13 dry lightning at any of the above locations.

14 To supplement the air tanker base in Pocatello, portable SEAT bases can be
 15 operated in Malad, Arco, and Challis to reduce flight times to many of the focal
 16 areas. Portable SEAT bases will be staged in Arco and Malad for the fire season,
 17 with all agreements in place to activate them in a timely manner during the fire
 18 season. Water sources have been mapped in remote locations where water
 19 supply is limited, including contact information on existing wells. In addition,
 20 more wells can be developed and existing wells can be improved with more
 21 funding and completion of NEPA.

22 The priority area for fire operations is Curlew (1st priority; 14,000 acres). See
 23 the associated GIS data layers for the position and extent in the PPA and **Table**
 24 **4-20**.

Table 4-20
Curlew Potential Fire Operations Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	14,000	44,200	138,000	—	196,200
Percent of PPA	4	13	40	—	57

25 *Post-Fire Rehabilitation*

26 The Step 2 FIAT process identified areas with moderate to high shrub cover in
 27 warm-dry soil regimes, minus past ESR treatments, as the highest priority for
 28 post-fire rehabilitation. Higher elevation areas with cooler and moister soil
 29 characteristics are lower priority areas for rehabilitation due to their ability to
 30 naturally recover following fire. The Idaho Falls District Office will continue
 31 working with other stakeholders to coordinate and prioritize post-fire
 32 rehabilitation activities.
 33

34 The priority area for post-fire rehabilitation is the Curlew ESR (1st priority;
 35 8,500 acres). See the associated GIS data layers for the position and extent in
 36 the PPA and **Table 4-21**).

Table 4-21
Curlew Proposed Post-Fire Rehabilitation Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	8,500	41,600	118,700		168,800
Percent of PPA	2	12	35		49

Proposed Management

In the Curlew PPA, five projects are identified in the NEPA planning process, consisting of linear fuel treatments and restoration efforts: shrub plantings, annual grass control/revegetation treatments, and riparian restoration. See **Table 4-22**. See **Figures 4-21** through **4-28** for a graphic depiction of the proposed treatments and strategies in the PPA.

Table 4-22
Curlew Project Planning Area Treatment Summary Table

Treatment Description	Priority	Threats Addressed	NEPA	Treatments						
				Time Frame		Certainty of Effectiveness ¹		Maintenance Time Frame (Years) ²	Completion Time Frame (0-2, 3-5, 5+ years) ³	
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			
Curlew Road Reclamation	180 acres		X	X	X		I		unknown	3-5
Curlew Shrub Planting	71,100 acres		X X	X		X	I		unknown	5+
Curlew Spring/Riparian Restoration	80 acres		X X X	X		X	I		5-10 years	0-2
Curlew Habitat Restoration	unknown		X X X X	X	X		4		5-10	5+
Curlew Fuel Breaks	unknown		X X X	X	X		4		5-10	5+

¹If treatment, once completed, is likely or unlikely to be effective, the rationale for effectiveness uses the following codes:

- 1 = site conditions (soils, resilience, species composition, disturbances) make treatment effectiveness likely
- 2 = site conditions make treatment effectiveness unlikely
- 3 = continued current management (grazing, recreation, or other land uses) make likelihood of effectiveness low
- 4 = based on professional opinion, treatment is likely to be effective

²Describes the frequency of maintenance necessary to continue effectiveness (in years)

³Identifies the potential treatment completion time frame, considering NEPA adequacy, relative priority, and local ranking factors

4.3.4 Greater Owyhee

Project Planning Area Description

Geographic Overview

The Greater Owyhee PPA is in the Winnemucca District Office administrative boundary and covers approximately 1,082,900 acres. The southern boundary of the PPA is just south of the Santa Rosa Range and parallels focal habitat eastward to the Winnemucca and Elko District boundary. The eastern boundary follows the district boundary to the Idaho-Oregon-Nevada tri-state line. The northern boundary is the Oregon and Nevada state line, and the western boundary follows the west side of the Santa Rosa Range to its southern extent. Landownership in the Greater Owyhee PPA is approximately 60 percent BLM-administered lands, 30 percent Forest Service lands, and 10 percent private lands.

IA, IB, and IC habitats occur in the southwestern focal habitats in the PPA. These are characterized by moderate to high sagebrush cover, with moist soils where natural sagebrush recovery is likely to occur. Sixty-one percent of the focal habitats are in 3C habitat, 3A and 3B habitats border the southern and eastern edges of the PPA, which is characterized by moderate to high sagebrush cover. Its drier soils are highly susceptible to invasive annual grass domination following wildfire (see **Table 4-23**).

Table 4-23
Greater Owyhee GRSG Habitat Matrix Categories

Matrix Category	No Data	IA	IB	IC	2A	2B	2C	3A	3B	3C
Acres	28,280	5,591	42,872	11,743	2,874	133,143	204,671	8,247	179,457	465,996
Percent of PPA	3	0	4	1	0	12	19	1	17	43

Topographic features in the Greater Owyhee PPA are the Santa Rosa Range along the western side of the PPA and the Owyhee Desert in the northeastern portions. The Chimney Dam Reservoir is in the southeast corner, just downstream of the confluence of the North Fork Little Humboldt River and the South Fork Little Humboldt River. Elevation ranges from approximately 4,600 feet (1,402 meters) in the valley bottoms near Chimney Dam Reservoir, to 9,732 feet (2,966 meters) at Granite Peak, which is the highest mountain in the Santa Rosa Range.

Surface water features throughout the Greater Owyhee PPA are largely confined to intermittent and ephemeral streams, with some larger perennial rivers and reservoirs. The Chimney Dam Reservoir in the southeastern corner of the PPA is the largest surface water body in it. There are over 250 identified springs and seeps in the PPA, which provide important brood-rearing habitat for GRSG.

1 US Interstate 95 is approximately three miles west of the PPA and parallels its
2 border. Roads throughout the PPA are predominantly smaller county and BLM-
3 administered roads. The 32,020-acre Santa Rosa-Paradise Peak Wilderness Area
4 (WA) is in the southwest corner of the PPA.

5 Approximately 60 percent of the PPA is within 12 miles of nearby electrical
6 transmission towers, and the remaining habitat is 12 to 21 miles from the
7 towers. Also, nearly 10 percent of habitat is less than five miles from primary
8 roads, 10 percent is five to nine miles, and 80 percent is more than nine miles
9 from primary roads.

10 *GRSG Characteristics*

11 There are 62 active GRSG leks in the Greater Owyhee PPA. There were 727
12 males counted on leks during the most recent surveys, with an average of 12
13 and a maximum of 56 males. Surveys indicate that the population was
14 approximately 12 percent below the five-year average. Population estimates
15 vary widely from year to year, but a general decline is evident over the past five
16 years.

17 Telemetry data and landform alignment suggest that peripheral leks may connect
18 to both the Owyhee Desert PPA to the east and the Tuscarora PPA to the
19 southeast. There is very little development in the PPA. Only one gravel-
20 maintained road, no transmission lines, and a small pipeline intersect; thus,
21 habitat is mostly intact.

22 *Vegetation*

23 Conifer expansion is not a major issue in the PPA, so no treatments are
24 proposed.

25 Invasive annuals in the understory are the main concern throughout the
26 southern and western areas of focal habitats on BLM-administered lands and
27 near Forest Service lands to the west of the Greater Owyhee PPA. In the North
28 Fork of the Humboldt River the Forest Service and NDOW are planning
29 potential treatments for invasives and noxious weeds. Past treatments have
30 typically had low to moderate success on Forest Service lands in the volcanic
31 soils that dominate the Santa Rosa Mountains. Treatments for medusahead rye
32 grass are also occurring in and near the northwest sections of the focal habitats,
33 including around the Eastern Santa Rosa Mountains/Paradise Valley area. South-
34 facing slopes are more invaded than other areas. Invasives are typically found
35 below 6,500 feet.

36 *Fire*

37 See **Table 4-24**.

Table 4-24
Greater Owyhee Summary of Burn Probability

High and very high burn probability in PPA (acres)	971,300
High and very high burn probability in PPA (percent)	90

Other Management Factors

Livestock grazing and recreation are the primary land uses in the PPA; grazing has by far the greater impact on grouse habitat. Both the Snowstorm and Little Owyhee Herd Areas intersect with the PPA. Wild horses and burros have been documented to negatively impact riparian areas valuable to grouse.

Fuels Management

In the PPA there are 100 miles of linear fuel breaks planned to be implemented. Fuels treatments are planned throughout the PPA, up to the Elko District boundary, for in the next three years.

The potential treatment area for fuels management is the Greater Owyhee linear fuel treatment (1st priority; 100 miles). See the associated GIS data layers for the position and extent in the PPA and **Table 4-25**.

Table 4-25
Greater Owyhee Potential Fuels Management Treatments

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Miles	100	—	—	—	100
Acres	3,400	—	62,800	1,000	67,200

Habitat Recovery and Restoration

Habitat recovery and restoration projects would coincide with the fuels treatments described above.

The northwest section of the PPA in the focal habitats will be the site of a planned sagebrush manipulation project beginning in 2016. Dominant vegetation includes Wyoming sagebrush, with some fourwing saltbrush.

One primary focus for treatments in the invasive annuals areas is restoration of invasive annuals-dominated areas to reduce the threat of their expansion into surrounding quality habitat in and next to focal areas. Another focus is preventing the further expansion of isolated areas of annual invasives and reestablishing brush in areas that have burned in wildfires.

Invasive annual priority areas are as follows:

- Greater Owyhee Annuals 1st priority—medusahead and cheatgrass invasions (162,400 acres)
- Greater Owyhee Restoration Other 2nd priority--24,600 acres

1 The total is 189,600 acres.

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

Table 4-26
Greater Owyhee Potential Habitat Restoration Treatments

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	162,400	24,600	—	2,600	189,600
Percent of PPA	15	2	—	0	17

4
5 *Fire Operations*

6 Response to wildfires on National Forest Systems (NFS) Lands, in and around
7 identified priority greater GRSG habitat, will be consistent with the forest plan
8 direction. Identified GRSG habitat is considered a high priority for protection on
9 NFS lands.

10 The response to wildfire will be consistent with the fire management plans on
11 other federal public lands, state lands, and other landownerships. This includes
12 response by private ownerships and forest fire protection associations where
13 applicable.

14 Full Suppression would occur throughout the entire Greater Owyhee PPA.
15 The priority areas for fire operations are as follows:

- 16 • 3B and 3C habitats in focal habitats 1st priority—731,000 acres
- 17 • 3B and 3C habitats outside focal habitats in the entire PPA 2nd
18 priority—338,900 acres

19 See the associated GIS data layers for the position and extent in the PPA and
20 **Table 4-27.**

Table 4-27
Greater Owyhee Potential Fire Operations Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	731,000	338,900	—	2,900	1,072,800
Percent of PPA	68	31	—	0	99

21
22 *Post-Fire Rehabilitation*

23 The Step 2 FIAT process identified areas with moderate to high shrub cover in
24 warm-dry soil regimes, minus past ESR treatments, as the highest priority for
25 post-fire rehabilitation. Higher elevation areas with cooler and moister soil
26 characteristics would be lower priority areas for rehabilitation due to their
27 ability to naturally recover following fire. The Winnemucca District Office will
28 continue working with stakeholders to coordinate and prioritize post-fire
29 rehabilitation activities.

1 The potential treatment area for post-fire rehabilitation management is the
 2 Greater Owyhee ESR 1st priority 446,500 acres (3A, 3B, and 3C habitats in
 3 focal habitat areas) and 2nd priority 38,300 acres. These areas have recently
 4 been seeded. See the associated GIS data layers for the position and extent in
 5 PPA and **Table 4-28**.

Table 4-28
Greater Owyhee Proposed Post-Fire Rehabilitation Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	446,500	138,300	—	—	584,800
Percent of PPA	41	13	—	—	54

Proposed Management

6
 7 Six projects in which NEPA analysis has been completed are proposed for this
 8 PPA. They include linear and area fuels treatments intended to reduce current
 9 invasive annual grass issues. The Forest Service has identified the North Fork of
 10 the Little Humboldt River as a priority watershed and is developing a watershed
 11 restoration action plan that will benefit GRSG by seeding and treating invasive
 12 species. NDOW will partner on many of the projects. See **Table 4-29**. See
 13 **Figures 4-29** through **4-36** for a graphic depiction of the proposed treatments
 14 and strategies in the PPA.
 15

Table 4-29
Greater Owyhee Project Planning Area Potential Treatment Summary Table

Treatment Description	Priority	Threats Addressed	NEPA	Treatments				
				Time Frame	Certainty of Effectiveness ¹		Maintenance Time Frame (Years) ²	Completion Time Frame (0-2, 3-5, 5+ years) ³
Name/Type	Acres/Miles	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		
Little Owyhee Fuelbreak	5,000 acres	X X	X	X X	X	I	5-10 years	3-5
US Interstate 95 Fuelbreak	226 acres	X	X	X	X	I	Annual	0-2
Paradise Valley Fuelbreak	835 acres	X X	X	X X	X	I	5-10 years	0-2
Santa Rosa Fuelbreak	2242 acres	X X	X	X X	4		3-5 years	0-2
Santa Rosa Medusahead Control	2,500 acres	X X	X	X	X	I	3-5	0-2

**Table 4-29
Greater Owyhee Project Planning Area Potential Treatment Summary Table**

Treatment Description		Priority	Threats Addressed	NEPA	Treatments					
Name/Type	Acres/Miles	1st 2nd 3rd	Conifer (C) Invasive annual grasses (I) Riparian Degradation (R) Wildfire (W)	Initiated (I) Completed (C) Needed (N)	Time Frame		Certainty of Effectiveness ¹		Maintenance Time Frame (Years) ²	Completion Time Frame (0-2, 3-5, 5+ years) ³
					Pending Funding (P) ¹	Implementing (I) ¹	Likely	Unlikely		
Highway 290 Fuelbreak	50 acres	X	X	X	X		I		Annual	0-2

¹If treatment, once completed, is likely or unlikely to be effective, the rationale for effectiveness uses the following codes:

- 1 = site conditions (soils, resilience, species composition, disturbances) make treatment effectiveness likely
- 2 = site conditions make treatment effectiveness unlikely
- 3 = continued current management (grazing, recreation, or other land uses) make likelihood of effectiveness low
- 4 = based on professional opinion, treatment is likely to be effective

²Describes the frequency of maintenance necessary to continue effectiveness (in years)

³Identifies the potential treatment completion time frame, considering NEPA adequacy, relative priority, and local ranking factors

4.3.5 Jim Sage

Project Planning Area Description

Geographic Overview

The Jim Sage PPA is in the Twin Falls District Office administrative boundary and covers approximately 330,800 acres. The Jim Sage Mountains run north-south through the center of the PPA. The southern boundary extends just south of the Idaho-Utah state border. The western boundary extends north, from the Upper Raft River Valley and along the eastern edge of the Albion Mountains. The northern boundary follows existing fuels management projects just southwest of the junction of Interstates 86 and 84. The eastern boundary follows Raft River Valley south to the Idaho-Utah state border.

Landownership in the Jim Sage PPA is approximately 47 percent BLM-administered lands, 6 percent Forest Service, 40 percent private, and 8 percent state and other federal lands.

In the PPA, 161,200 acres (49 percent) fall in the warm-dry soil moisture and temperature category (3A, 3B and 3C habitats). The lower elevations in valleys in the eastern parts of the PPA are predominantly 3B and 3C habitats. These are characterized by moderate to high sagebrush cover, with drier soils where natural sagebrush recovery may occur, but over a longer period. The higher elevations in the western parts of the PPA, near the Albion Mountains and in the Jim Sage Mountains, are typically 1B and 1C habitats. These are

1 characterized by moderate to high sagebrush cover with moist soils and where
2 natural sagebrush recovery is likely to occur (see **Table 4-30**).

Table 4-30
Jim Sage GRSG Habitat Matrix Categories

Matrix Category	No Data	IA	IB	IC	2A	2B	2C	3A	3B	3C
Acres	36,872	6,800	107,307	454	3,798	14,344	30	20,451	122,701	18,079
Percent of PPA	11	2	32	0	1	4	0	6	37	6

3
4 Topographic features in the 330,800-acre Jim Sage PPA are the Albion
5 Mountains along the west, the Jim Sage Mountains through the center, the
6 Cotterel Mountains in the northern portions, and the Raft River Valley along the
7 eastern portion of the PPA. Elevation ranges from approximately 4,500 feet
8 (1,372 meters) in the valley bottoms to 7,000 feet (2,134 meters) on the
9 mountaintops.

10 While slope and aspect vary throughout the PPA, the dominant mountain range
11 orientation is north-south, with many corresponding east- and west-facing
12 slopes.

13 Surface water features throughout the Jim Sage PPA are largely confined to
14 intermittent and ephemeral streams, with some perennial streams and small
15 reservoirs. Surface water features are Lake Walcott and a private reservoir
16 west of the Cotterels, along Marsh Creek, which runs north-south along the
17 eastern edge of the PPA. In addition to Marsh Creek, the PPA includes portions
18 of Cassia Creek, Raft River, and entire stretches of Parks Creek, Coe Creek,
19 Summit Creek, Grape Creek, Edwards Creek, Conner Creek, Howell Creek,
20 Rice Creek, Blacksmith Creek, Sibley Creek, Nibs Creek, Cottonwood Creek,
21 Quaking Aspen Creek, Black Sands Spring, Kane spring, Red rock spring, Jim
22 Sage spring, Keg Hollow spring, Womack spring, Potter Spring, Parke Spring,
23 Asher Spring, Savage Hollow Spring, and numerous unnamed springs and seeps.

24 Highway 77 bisects the northern portions of the PPA, from the northwest to
25 the central southeast, and junctions with Highway 81 at Malta in the eastern
26 portion of the PPA. The northern border of the PPA is approximately 2 miles
27 south of the junction between Interstates 84 and 86.

28 All GRSG habitat in the PPA is less than 12 miles from electrical transmission
29 towers. Approximately 50 percent of the habitat is less than five miles from
30 primary roads, and 25 percent is five to nine miles from primary roads in the
31 northern portion of the project area. Nearly 60 percent of the Jim Sage PPA is
32 within four miles of transmission lines, and 35 percent is four to nine miles from
33 transmission lines. High voltage transmission lines are generally confined to the
34 PPA's periphery on the east side of the Cotterel and Jim Sage Allotments,
35 aligned with Highway 81 and in the Raft River Valley. Low-voltage distribution
36 lines are scattered throughout the PPA along major roadways, generally along

1 the periphery, tying residences and large agricultural operations to small
2 substations.

3 *GRSG Characteristics*

4 Winter habitat occurs in the central northern areas of the PPA and breeding
5 habitat occurs in the far northern and central southern areas of the PPA.

6 The Jim Sage PPA includes several leks with average attendance of greater than
7 20 males. Leks are scattered throughout the PPA, but the most activity is
8 centered on the east side of Jim Sage Mountain. Recent lek attendance appears
9 to be stable.

10 Lek connectivity in the Jim Sage PPA is somewhat limited by topography and
11 forested areas. However, radio-collared birds have traveled throughout the
12 PPA. There is indication that the populations at the southern end of the PPA are
13 connected to GRSG in Grouse Creek and may be part of a tri-state complex.
14 The northern portion of the PPA is the closest point at which the Northern
15 Great Basin GRSG populations occur with the Snake River Beaverhead
16 populations and may serve as a potential source of genetic exchange.

17 *Vegetation*

18 High conifer encroachment occurs throughout this PPA. The highest priority for
19 potential treatments is removal of phase 1 and 2 conifer in the 3A, 3B, and 3C
20 habitats in the focal habitat and in the wintering habitats in the northern part of
21 the PPA.

22 *Fire*

23 See **Table 4-31**.

Table 4-31
Jim Sage Summary of Burn Probability

High and very high burn probability in PPA (acres)	257,400
High and very high burn probability in PPA (percent)	78

24 *Existing Treatments*

25 Historically, numerous seedings were established in lower elevations as a result
26 of annual grass and halogeton infestations. More recently, the Red Rock
27 restoration area on the east side of Jim Sage has improved approximately 900
28 acres of habitat to a perennial grass and shrub mix. The Clear Creek
29 Restoration treatment was implemented during 2014 and is expected to have
30 similar results on approximately 700 acres. ESR treatments are commonly
31 implemented to restore structure and function to fire-damaged areas and
32 prevent the burned areas from being converted into cheatgrass-dominated
33 communities.
34

35 No site-specific annual grass restoration projects are currently planned.
36 However, the Twin Falls BLM District has nearly completed a programmatic

1 plan and EA that would allow for numerous methods to restore areas
 2 dominated by invasive annual grasses. Once completed, the BLM's Burley Field
 3 Office will continue to identify and restore annual grass-compromised GRSG
 4 habitats. Additionally, the Burley Field Office is working on a programmatic
 5 integrated hazardous fuel break project that would integrate a variety of fuel
 6 break development methods, including mowing, mastication, chaining,
 7 herbicides, seedings, and targeted grazing. This project is expected to protect
 8 GRSG habitat by reducing fire size and preventing fire from reaching important
 9 habitats. The Burley Field Office is also planning future juniper management
 10 projects to augment the Burley landscape effort.

11 The success of past treatments in the PPA has been remarkably high, both in the
 12 long-term productivity of past treatments and in recent efforts. Desired
 13 perennial grasses are becoming established and spreading in treated areas, and
 14 undesirable annual grass cover has been reduced. Shrub planting treatments
 15 have also been moderately successful, with plantings in areas of recent fires.
 16 Conifer treatments have been nearly 100 percent effective, both in hand-treated
 17 and masticated areas. Mastication treatments typically include applying grass by
 18 aircraft before cutting, which has been successfully established throughout the
 19 PPA.

20 *Other Management Factors*

21 Aside from such infrastructure as roads and transmission lines and towers,
 22 other management factors did not influence the selection of treatments for this
 23 PPA.

24 *Fuels Management*

25 The priority fuels management areas are the same ones identified in the invasive
 26 annual polygons and the conifer encroachment polygons, as described under
 27 *Habitat Recovery and Restoration*.

28 The potential treatment area for fuels management is Jim Sage Linear Fuel
 29 Treatments 1st priority 18,800 acres. See the associated GIS data layers for the
 30 position and extent in the PPA and **Table 4-32**.

Table 4-32
Jim Sage Potential Fuels Management Treatments

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Miles	—	—	—	—	—
Acres	18,800	23,800		5,300	47,900

31 *Habitat Recovery and Restoration*

32 The primary focus for treatments in the conifer encroachment priority areas is
 33 restoration of areas with conifer encroachment in high quality GRSG habitat,
 34 the restoration of habitat and population connectivity throughout the Cotterels
 35 and Jim Sage populations, and the continuance of the NRCS, Pheasants Forever,
 36

1 Permitee, IDF&G, and BLM partnership. This area has significant joint funding
 2 contributions through partnerships to fund restoration through conifer removal
 3 and seedings by aircraft.

4 The primary focus for invasive annual treatments is to restore sagebrush/steppe
 5 habitat and reduce the threat of invasive annual expansion into surrounding
 6 quality habitat in and next to focal areas.

7 Habitat restoration priority areas are as follows:

- 8 • Jim Sage conifer expansion 1st priority—24,400 acres
- 9 • Jim Sage invasive annual grass treatments 1st priority—33,800 acres

10 See the associated GIS data layers for the position and extent in the PPA and
 11 **Table 4-33.**

Table 4-33
Jim Sage Potential Habitat Restoration Treatments

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	57,400	—	—	700	58,100
Percent of PPA	17	—	—	0	18

12
 13 *Fire Operations*

14 See the associated GIS data layers for the position and extent in the PPA and
 15 **Table 4-34.**

Table 4-34
Jim Sage Proposed Fire Operations Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	73,600	5,500	65,800	—	144,900
Percent of PPA	22	2	20	—	44

16
 17 *Post-Fire Rehabilitation*

18 The Step 2 FIAT process identified areas with moderate to high shrub cover in
 19 warm-dry soil regimes, minus past ESR treatments, as the highest priority for
 20 post-fire rehabilitation. Higher elevation areas with cooler and moister soil
 21 characteristics would be lower priority areas for rehabilitation due to the ability
 22 of those sites to naturally recover following fire. The Twin Falls BLM District
 23 Office will continue working with other stakeholders to coordinate and
 24 prioritize post-fire rehabilitation.

25 The highest priority areas for post-fire rehabilitation management are in the
 26 conifer encroachment 1st priority polygon and the 3A, 3B, and 3C habitats in
 27 the winter habitat and the focal habitat areas.

1 See the associated GIS data layers for the position and extent in the PPA and
2 **Table 4-35.**

Table 4-35
Jim Sage Proposed Post-Fire Rehabilitation Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	61,000	5,000	62,500	—	128,500
Percent of PPA	18	2	19	—	39

3
4 **Proposed Management**

5 Proposed in the Jim Sage PPA are a variety of conifer expansion, restoration,
6 and fuel treatments in which NEPA analysis has either been completed or is in
7 the development process. See **Table 4-36.** See **Figures 4-37** through **4-44** for
8 a graphic depiction of the proposed treatments and strategies in the PPA.

Table 4-36
Jim Sage Project Planning Area Treatment Summary Table

Treatment Description		Priority	Threats Addressed				NEPA		Treatments								
Name/Type	Acres/Miles	1st	2nd	3rd	Conifer (C)	Invasive annual grasses (I)	Riparian Degradation (R)	Wildfire (W)	Initiated (I)	Completed (C)	Needed (N)	Time Frame		Certainty of Effectiveness ¹		Maintenance Time Frame (Years) ²	Completion Time Frame (0-2, 3-5, 5+ years) ³
												Pending Funding (P) ¹	Implementing (I) ¹	Likely	Unlikely		
TF District ESR	unknown								X			X		X		unknown	0-2
Cassia Weeds	5,000 ac					X	X		X			X	X	X		1-3 years	5+
Rice Canyon Annuals	675 ac					X	X		X			X		X		Na	0-2
Conner Creek Annuals	500 ac					X	X		X			X		X		Na	0-2
Summit Creek	1,350 ac				X		X		X			X		X		5-10	0-2
Cow Creek	1,050 ac				X		X		X			X		X		5-10	0-2
Nibbs Creek	3,400 ac				X		X		X			X		X		5-10	0-2
Coe Creek	1,300 ac				X		X		X			X		X		5-10	0-2
North Cotterel Annuals	2,000 ac					X	X		X			X		X		3-5	0-2
Harroun	850 ac				X		X		X			X	X	X		5-10	0-2
East Hills	1,800 ac				X		X		X			X	X	X		5-10	0-2
Conner Gap	200 ac				X		X		X			X	X	X		5-10	0-2
North Cotterel	1,100 ac				X		X		X			X	X	X		5-10	0-2
Burley Integrated Fuel Breaks	250 ac					X	X		X			X				3-5	5+

Table 4-36
Jim Sage Project Planning Area Treatment Summary Table

Treatment Description		Priority	Threats Addressed				NEPA			Treatments					
Name/Type	Acres/Miles	1st 2nd 3rd	Conifer (C)	Invasive annual grasses (I)	Riparian Degradation (R)	Wildfire (W)	Initiated (I)	Completed (C)	Needed (N)	Time Frame		Certainty of Effectiveness ¹		Maintenance Time Frame (Years) ²	Completion Time Frame (0-2, 3-5, 5+ years) ³
										Pending Funding (P) ¹	Implementing (I) ¹	Likely	Unlikely		
Middle Hill	1,000 ac		X		X		X			X	X			5-10	3-5
Clear Creek	1,000 ac			X	X		X			X				unknown	3-5
Conner Sagebrush Restoration	1,000 ac			X	X		X			X				unknown	3-5
Cottonwood Basin	3,000 ac		X		X		X			X	X			5-10	5+
Burley Landscape 2	3,000 ac		X		X		X			X				5-10	5+
Jim Sage	3,000 ac		X		X		X			X	X			5-10	5+

¹If treatment, once completed, is likely or unlikely to be effective, the rationale for effectiveness uses the following codes:

1 = site conditions (soils, resilience, species composition, disturbances) make treatment effectiveness likely

2 = site conditions make treatment effectiveness unlikely

3 = continued current management (grazing, recreation, or other land uses) make likelihood of effectiveness low

4 = based on professional opinion, treatment is likely to be effective

²Describes the frequency of maintenance necessary to continue effectiveness (in years)

³Identifies the potential treatment completion time frame, considering NEPA adequacy, relative priority, and local ranking factors

4.3.6 Mainstem Malheur

Project Planning Area Description

Geographic Overview

The 498,000-acre Mainstem Malheur PPA is in Malheur County, in eastern Oregon; the entire PPA is in the BLM Vale District Office.

The Mainstem Malheur PPA has a mixed topographic profile with the highest elevation areas (over 5,500 feet (1,700 meters) in the far northern and far southern portions. In general, the center of the PPA, including the Barber Flat area, has elevations below 5,000 feet (1,500 meters). Star Mountain is the highest point in the PPA, at approximately 6,000 feet (1,800 meters). The lowest elevation is approximately 4,000 feet (1,200 meters) in the Barren Valley in the southeastern portion of the PPA, which does not have a distinguishing slope aspect profile.

Elevation does not play a significant role in the location of soil/moisture classes in the Mainstem Malheur PPA. Cool/moist soil temperature and moisture

1 conditions are found in both low and high elevation areas throughout the PPA.
 2 Similarly, warm-dry soils characterize low and high elevation areas, with most
 3 high elevation areas being south-facing slopes fall in the warm-dry (3A, 3B, and
 4 3C) soil condition class category (e.g., the south face of Star Mountain; overall,
 5 281,000 acres, 56 percent of the Mainstem Malheur PPA) and 217,000 acres (44
 6 percent of the Mainstem Malheur PPA) in the cool-moist (1B and 1C) soil
 7 temperature and moisture class (see **Table 4-37**).

Table 4-37
Mainstem Malheur GRSG Habitat Matrix Categories

Matrix Category	No Data	1A	1B	1C	2A	2B	2C	3A	3B	3C
Acres	—	—	29,001	188,000	—	—	—	—	26,500	254,500
Percent of PPA	—	—	6	38	—	—	—	—	5	51

8
 9 Surface water features throughout the Mainstem Malheur PPA are largely
 10 confined to ephemeral streams and small reservoirs. Crowley, Star Creek, and
 11 Easterday Reservoirs are the largest surface water bodies in the PPA; however,
 12 these water features may be subject to significant draw down, especially during
 13 the summer. Dry Creek, which flows east through the central portion of the
 14 PPA toward Lake Owyhee, is the largest lotic⁵ water feature in the PPA. Lake
 15 Owyhee, approximately 10 miles east of the PPA, is the largest year-round
 16 water source in the region. Access to reservoirs and other smaller water bodies
 17 may restrict the viability of surface water for fire operations.

18 US Highway 20 is the only regional roadway that enters the Mainstem Malheur
 19 PPA. The paved two-lane highway enters the extreme northwestern tip of the
 20 PPA as it passes through the town of Juntura. Other travel routes are mainly
 21 unpaved local roads.

22 About 70 percent of the PPA is within 12 miles of electrical transmission towers
 23 and the remaining is 12 to 21 miles from towers. Less than 10 percent of the
 24 habitat is within nine miles from primary roads. Approximately 35 percent of
 25 the PPA is less than four miles from transmission lines, and 35 percent is four to
 26 nine miles from transmission lines.

27 *GRSG Characteristics*

28 Sage-grouse characteristics in Mainstem Malheur are, in general, consistent with
 29 the GRSG characteristics described above for the broader Idaho/Southwest
 30 Montana EIS/RMPA planning area.

31 *Vegetation*

32 Sagebrush communities generally correspond with the elevation and soil
 33 moisture regimes in the PPA. In lower, drier areas, Wyoming big sage is the

⁵Rapid freshwater

1 dominant species. Areas above 4,500 feet and on northern slopes are generally
2 characterized by mountain big sage.

3 Conifers are most prevalent in the focal areas in the northwestern portion of
4 the PPA, including areas surrounding Monument Peak and Tim's Peak and Jones
5 Butte. Conifer encroachment also exists to the north and east of the Dry Buttes
6 in the southwestern portion of the PPA, particularly near Dry Creek Pass.

7 *Fire*

8 In the Mainstem Malheur PPA, surface water availability and remoteness are
9 limiting factors for GRSG habitat protection during fire season. Distance from
10 established fire operation centers, access to surface water resources, and early
11 detection of fires present fundamental challenges for GRSG habitat conservation
12 throughout the PPA (see **Table 4-38**).

Table 4-38
Mainstem Malheur Summary of Burn Probability

High and very high burn probability in PPA (acres)	495,600
High and very high burn probability in PPA (percent)	100

13 *Other Management Factors*

14 Aside from such infrastructure as roads and transmission lines and towers,
15 other management factors did not influence the selection of treatments for this
16 PPA.
17

18 *Fuels Management*

19 Fuels treatments in the Mainstem Malheur PPA is 400 miles of fuel breaks along
20 existing linear features, primarily local unpaved roads in the PPA that BLM
21 personnel could access and use. See the associated GIS data layers for the
22 position and extent in the PPA and **Table 4-39**.

Table 4-39
Mainstem Malheur Potential Fuels Management Treatments

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Miles	200	100	100		400

23 *Habitat Recovery and Restoration*

24 Approximately 254,200 acres of conifer treatments are proposed. Conifers
25 would be removed mechanically and would be coordinated with other land
26 management agencies and private landowners. Post-treatment would occur to
27 assess treatment effectiveness. An additional 54,700 acres of other potential
28 restoration treatments are proposed.
29

30 Potential treatments for habitat recovery and restoration are as follows:

- 31 • Mainstem Malheur Conifer Expansion 1st Priority—213,200 acres

- Mainstem Malheur Conifer Expansion 2nd Priority—41,000 acres
- Mainstem Malheur Other Restoration 2nd Priority—54,700 acres

See the associated GIS data layers for the position and extent in the PPA and **Table 4-40**.

Table 4-40
Mainstem Malheur Potential Habitat Restoration Treatments

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	213,200	95,700	—	—	308,900
Percent of PPA	43	19	—	—	62

Fire Operations

Through the Step 2 FIAT process, the Vale District Office also identified water access improvement points, which if completed, would likely improve fire suppression capabilities. The GIS data accompanying this report identifies these areas. The Vale District Office will continue working with other stakeholders to further prioritize areas where specific improvements can be made. See the associated GIS data layers for the position and extent in the PPA and **Table 4-41**.

Table 4-41
Mainstem Malheur Proposed Fire Operations Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	281,100	—	216,900	—	498,000
Percent of PPA	56	—	44	—	100

Post-Fire Rehabilitation

The Step 2 FIAT process identified areas with moderate to high shrub cover in warm-dry soil regimes, minus past ESR treatments, as the highest priority for post-fire rehabilitation. Higher elevation, north-facing slopes with cooler and moister soil characteristics would be lower priority for rehabilitation due to their ability to naturally recover following fire. The Vale District Office will continue working with other stakeholders to coordinate and prioritize post-fire rehabilitation activities. See the associated GIS data layers for the position and extent in the PPA and **Table 4-42**.

Table 4-42
Mainstem Malheur Proposed Post-Fire Rehabilitation Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	131,700	—	134,000	—	265,700
Percent of PPA	26	—	27	—	53

Proposed Management

See **Table 4-43**. See **Figures 4-45** through **4-52** for a graphic depiction of the proposed treatments and strategies in the PPA.

**Table 4-43
Mainstem Malheur Project Planning Area Potential Treatment Summary Table**

Treatment Description		Priority			Threats Addressed				NEPA			Treatments						
Name/Type	Acres/ Miles	1st	2nd	3rd	Conifer (C)	Invasive annual grasses (I)	Riparian Degradation (R)	Wildfire (W)	Initiated (I)	Completed (C)	Needed (N)	Time Frame		Certainty of Effectiveness ¹		Maintenance Time Frame (Years) ²	Completion Time Frame (0-2, 3-5, 5+ years) ³	
												Pending Funding (P) ¹	Implementing (I) ¹	Likely	Unlikely			
Imazapic	13,000 acres	X				X			X			X			X		unknown	0-2
Bitterbrush Seedling Planting	1780 acres		X			X			X			X			X		25	3-5
Native Grass Seeding (Aerial)	2450 acres		X			X			X			X			X		5	0-2
Non-Native Seeding (Drill)	2100 acres	X				X	X		X			X			X		5	0-2
Sagebrush Planting	2000 acres	X				X	X		X			X					25	3-5

¹If treatment, once completed, is likely or unlikely to be effective, the rationale for effectiveness uses the following codes:

1 = site conditions (soils, resilience, species composition, disturbances) make treatment effectiveness likely

2 = site conditions make treatment effectiveness unlikely

3 = continued current management (grazing, recreation, or other land uses) make likelihood of effectiveness low

4 = based on professional opinion, treatment is likely to be effective

²Describes the frequency of maintenance necessary to continue effectiveness (in years)

³Identifies the potential treatment completion time frame, considering NEPA adequacy, relative priority, and local ranking factors

4.3.7 North Fork Owyhee

Project Planning Area Description

Geographic Overview

The North Fork Owyhee Project Planning Area is in the BLM Elko District Office administrative boundary and covers approximately 1,542,400 acres. The southern and southeastern boundary follows focal habitat areas along the Adobe Range. The western boundary follows focal habitat areas along the Independence Mountains. Landownership in the North Fork Owyhee PPA is approximately 49 percent BLM-administered lands, 18 percent Forest Service, 32 percent private, and 1 percent other federal lands.

Most of the PPA consists of 2 and 3 category habitats, with various landscape cover types typified by warm-dry and cool/dry moisture temperature regimes (see **Table 4-44**).

Table 4-44
North Fork Owyhee GRSG Habitat Matrix Categories

Matrix Category	No Data	1A	1B	1C	2A	2B	2C	3A	3B	3C
Acres	62,641	27,017	45,142	31,331	209,143	317,993	499,609	33,532	60,589	255,395
Percent of PPA	4	2	3	2	14	21	32	2	4	16

1
2 Topographic features in the North Fork Owyhee PPA are the Adobe Range in
3 the southeast corner of the PPA, the Independence Mountains along the
4 western border, and the Humboldt National Forest in the northwest corner of
5 the PPA. Elevation ranges from approximately 5,400 feet (1,646 meters) in the
6 valley bottoms to 10,439 feet (3,182 meters) on McAfee Peak.

7 Surface water features throughout the North Fork Owyhee PPA are largely
8 confined to intermittent and ephemeral streams, with some larger perennial
9 rivers and reservoirs. The Wild Horse Reservoir in the northwest is the largest
10 surface water body in the PPA.

11 Interstate 80 is approximately five miles and roughly parallel to the southeast
12 border of the PPA. Nevada State Route 225 bisects the center of the PPA north
13 to south. Other roads in the PPA are smaller county and BLM-administered
14 roads.

15 About 80 percent of the PPA is within 12 miles of electrical transmission
16 towers, and the remaining habitat is 12 to 21 miles from towers. Approximately
17 60 percent of the habitat is less than five miles from primary roads, and 20
18 percent is five to nine miles from primary roads, which bisect the PPA north to
19 south. Approximately 30 percent of the PPA is within four miles of transmission
20 lines and 40 percent is four to nine miles from transmission lines.

21 *GRSG Characteristics*
22 Sage-grouse characteristics in North Fork Owyhee are, in general, consistent
23 with the GRSG characteristics described above for the broader
24 Idaho/Southwest Montana EIS/RMPA planning area.

25 *Vegetation*
26 Low conifer encroachment occurs in this PPA but is not a major issue; therefore,
27 no applicable treatment strategy for conifer encroachment is needed at this time.

28 *Fire*
29 See **Table 4-45**.

Table 4-45
North Fork Owyhee Summary of Burn Probability

High and very high burn probability in PPA (acres)	1,500,000
High and very high burn probability in PPA (percent)	97

Other Management Factors

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

Fuels Management

A potential treatment areas for fuels management activities is the North Fork Linear fuel treatment of 250 miles. See the associated GIS data layers for the position and extent in the PPA and **Table 4-46**.

Table 4-46
North Fork Owyhee Potential Fuels Management Treatments

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Miles	100	100	50		250

Habitat Recovery and Restoration

The annual grasses fuels treatments identified above will double as habitat restoration measures. Restoration will be followed by seeding, chemical treatments as necessary to prevent invasive annual grasses, and monitoring after the treatment.

Potential treatments for habitat recovery and restoration consists of restoring sagebrush through seeding and seedlings where sagebrush has died off, restoring the sagebrush and herbaceous component in other degraded areas, and removing dense rabbit brush understories:

- North Fork Restoration 1st priority—154,500 acres
- North Fork Restoration 2nd priority—54,900 acres
- North Fork Restoration 3rd priority—52,600 acres

See the associated GIS data layers for the position and extent in the PPA and **Table 4-47**.

Table 4-47
North Fork Owyhee Potential Habitat Restoration Treatments

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	154,500	54,900	52,600	11,000	273,000
Percent of PPA	10	4	3	1	18

Fire Operations

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

The response to wildfire will be consistent with the fire management plans on other federal public lands, state lands, and other landownerships. This includes

1 response by private ownerships and forest fire protection associations where
2 applicable.

3 The priority area for fire operations is the North Fork Fire 1st priority order
4 priority—271,300 acres. See the associated GIS data layers for the position and
5 extent in the project the planning area and **Table 4-48**.

Table 4-48
North Fork Owyhee Proposed Fire Operations Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	271,300	709,500	66,500	—	1,047,300
Percent of PPA	18	46	4	—	68

6
7 *Post-Fire Rehabilitation*

8 The Step 2 FIAT process identified areas with moderate to high shrub cover in
9 warm-dry soil regimes, minus past ESR treatments, as the highest priority for
10 post-fire rehabilitation.

11 Higher elevation, north-facing slopes with cooler and moister soil characteristics
12 would be lower priority for rehabilitation due to their ability to naturally
13 recover following fire.

14 The BLM's Elko District Office will work with other stakeholders to coordinate
15 and prioritize post-fire rehabilitation.

16 The priority area for post-fire rehabilitation is the North Fork ESR 1st
17 priority—252,800 acres. See the associated GIS data layers for the position and
18 extent in the PPA and **Table 4-49**.

Table 4-49
North Fork Owyhee Proposed Post-Fire Rehabilitation Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	252,800	670,000	65,900	—	988,700
Percent of PPA	16	43	5	—	64

19
20 **Proposed Management**

21 Currently, there are no identified project level NEPA efforts underway for this
22 PPA. See **Figures 4-53** through **4-59** for a graphic depiction of the proposed
23 treatments and strategies in the PPA.

24 **4.3.8 Oakley**

25
26 **Project Planning Area Description**

27
28 *Geographic Overview*

29 The Oakley PPA is in the BLM's Twin Falls District Office administrative
30 boundary and covers approximately 368,500 acres. The southern boundary

1 extends just south of the tri-state area of Idaho-Utah-Nevada. The western
 2 boundary follows focal habitat borders that cross Sawtooth National Forest, the
 3 northern boundary follows the focal habitat borders, and the eastern boundary
 4 follows focal habitat borders through the Upper River Valley to the Idaho-Utah
 5 State border. Landownership in the Oakley PPA is approximately 36 percent
 6 BLM-administered lands, 31 percent Forest Service, 25 percent private, and 8
 7 percent state and other federal lands.

8 The higher elevation areas, such as the rolling hills in Cottonwood Ridge and
 9 Middle Mountain in the southeastern and southwestern parts of the PPA, are
 10 typically in IB and IC habitats. These are characterized by moderate to high
 11 sagebrush cover with moist soils, where natural sagebrush recovery is likely to
 12 occur. The lower elevation areas in the northeastern parts of the PPA are
 13 predominantly 2B, 3B, and 3C habitats, which are characterized by moderate to
 14 high sagebrush cover, with cool dry soils in the 2B habitat and warmer drier
 15 soils in the 3B and 3C habitats. These sites are highly susceptible to invasion
 16 following wildfire (see **Table 4-50**).

Table 4-50
Oakley GRSG Habitat Matrix Categories

Matrix Category	No Data	1A	1B	1C	2A	2B	2C	3A	3B	3C
Acres	20,576	54,392	125,647	21,980	12,006	40,289	9,115	23,077	56,439	4,971
Percent of PPA	6	15	34	6	3	11	2	6	15	1

17 Topographic features in the 368,500-acre Oakley PPA are the Albion Mountains
 18 along the eastern portions of the PPA, Middle Mountain and Junction Valley
 19 running north-south through the center, and multiple northeast- to southwest-
 20 oriented ridges and canyons in the northwestern portions of the PPA. Elevation
 21 ranges from approximately 4,500 feet (1,372 meters) in the valley bottoms to
 22 7,400 feet (2,256 meters) on the mountain tops.
 23

24 While slope and aspect vary throughout the PPA, the dominant mountain range
 25 orientations are north-south and northeast to southwest.

26 Surface water features throughout the Oakley PPA are largely confined to
 27 intermittent and ephemeral streams, with some perennial streams and small
 28 reservoirs. The Lower Goose Creek Reservoir is the largest surface water body
 29 in the PPA. The Oakley PPA includes Dry Creek, Big Cottonwood Creek, Little
 30 Cottonwood Creek, Emery Creek, Beaverdam Creek, Cold Creek, Medley
 31 Creek, Goose Creek, Blue Hill Creek, Birch Creek, Little Birch Creek, North
 32 Carson Creek, South Carson Creek, Summit Station Creek, Trapper Creek,
 33 Fish Creek, Owen's Corral creek, Mill Creek, Red Cabin Creek, Cold Spring
 34 Creek, Mountain Meadow Creek, as well as numerous springs, seeps, and
 35 meadows.

1 Most roads in the PPA are county or BLM-administered roads. One notable
2 road is Highway 27, which bisects the northern portions of the PPA from the
3 north to Oakley, Idaho.

4 All GRSG habitat in the PPA is less than 12 miles from electrical transmission
5 towers. Approximately 10 percent of the Oakley PPA, in the southeast, is within
6 nine miles of transmission lines. High voltage transmission lines are generally
7 confined to outside the PPA. Low voltage distribution lines are scattered
8 throughout the PPA, along major roadways and generally along the periphery,
9 tying residences and large agricultural operations to small substations.

10 *GRSG Characteristics*

11 Winter habitat for GRSG is on the landscape near Lower Goose Creek
12 Reservoir in the central northern parts of the PPA; breeding habitat occurs in
13 the southern and far northeastern and northwestern parts.

14 The Oakley PPA includes a few leks, with average attendance greater than 20
15 males and two lek routes. Leks are scattered throughout the PPA, but most
16 activity is centered on the South Hills and along Birch Creek. Recent lek
17 attendance appears to be stable.

18 Little is known about the connectivity of GRSG in the PPA. A small telemetry
19 project tracked some birds from the Sawmill Canyon area of the south hills to
20 Birch Creek, showing there may be some linkage.

21 *Vegetation*

22 High conifer encroachment occurs throughout this PPA. The highest priority for
23 potential treatments is removal of phase 1 and 2 conifer in the 3A, 3B, and 3C
24 habitats.

25 *Fire*

26 See **Table 4-5I**.

Table 4-5 I
Oakley Summary of Burn Probability

High and very high burn probability in PPA (acres)	343,400
High and very high burn probability in PPA (percent)	93

28 *Existing Treatments*

29 Historically, numerous seedings were established in lower elevations as a result
30 of annual grass and halogeton infestations as well as chaining to treat juniper.
31 ESR treatments are commonly implemented to preempt annual grass invasions.

32 No site-specific annual grass restoration projects are planned in this PPA.
33 However, the BLM's Twin Falls District has a nearly completed programmatic
34 plan and EA that would allow for numerous methods of annual grass restoration
35 throughout the PPA. Once completed, the BLM's Burley Field Office fire

ecologist and resource staff will identify specific areas for restoration and will begin further improving annual grass-compromised GRSG habitats.

Additionally, the Burley Field Office is working on a programmatic integrated hazardous fuel break project that would integrate a variety of fuel break development methods: mowing, mastication, chaining, herbicide, seedings, and targeted grazing. This project is expected to protect GRSG habitat by reducing fire size and preventing fire from reaching important habitats. The Burley Field Office is also planning future juniper management projects to augment the landscape effort.

The success of past treatments in the Oakley 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 has also been moderately successful with plantings in recently burned areas. Conifer treatments have been nearly 100 percent effective, both in hand-treated and masticated areas. Mastication treatments typically include an applying grass seed by aircraft before cutting, which has been successfully established throughout the PPA.

Other Management Factors

Aside from such infrastructure as roads and transmission lines/towers, other management factors did not influence the selection of treatments for this PPA.

Fuels Management

The priority fuels management areas are the same areas identified in the conifer encroachment polygons, as described under Habitat Recovery and Restoration.

The potential treatment area for fuels management activities is the Oakley Fuel Breaks—35,100 acres. See the associated GIS data layers for the position and extent in the PPA and **Table 4-52**.

Table 4-52
Oakley Potential Fuels Management Treatments

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Miles	0	0	0	0	0
Acres	18,500	8,800	7,800		35,100

Habitat Recovery and Restoration

Treatments consist of removing expanding juniper and restoring GRSG habitat dominated by invasive annual grasses. Primary focus for treatments in the conifer encroachment priority areas is restoration of areas with conifer encroachment in high quality GRSG habitat, restoration of habitat and population connectivity in and between focal areas, and continuance of the NRCS/Pheasants Forever/Permittee/IDF&G/BLM partnership. This area has significant joint funding contributions through partnerships to fund restoration through conifer removal and aerial seedings. Invasive annual treatments are

1 reducing their threat into surrounding quality habitat in and next to focal areas
2 and reestablishing brush in areas that have burned in wildfires.

- 3 • Oakley Conifer expansion 1st priority—123,300
- 4 • Oakley Invasive Annual 1st priority—10,200 acres
- 5 • Oakley Invasive Annual 2nd priority—31,800 acres

6 *Fire Operations*

7 See the associated GIS data layers for the position and extent in the PPA and
8 **Table 4-53.**

Table 4-53
Oakley Proposed Fire Operations Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	67,400	55,400	172,300	—	295,100
Percent of PPA	18	15	47	—	80

9
10 *Post-Fire Rehabilitation*

11 The Step 2 FIAT process identified areas with moderate to high shrub cover in
12 warm-dry soil regimes, minus past ESR treatments, as the highest priority for
13 post-fire rehabilitation. Higher elevation, north-facing slopes with cooler and
14 moister soil characteristics would be lower priority for rehabilitation due to
15 their ability to naturally recover following fire. The BLM's Twin Falls District
16 Office will continue working with other stakeholders to coordinate and
17 prioritize post-fire rehabilitation activities.

- 18 • Oakley ESR 1st priority—54,600 acres

19 See the associated GIS data layers for the position and extent in the PPA and
20 **Table 4-54.**

Table 4-54
Oakley Proposed Post-Fire Rehabilitation Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	54,600	50,800	171,000	—	276,400
Percent of PPA	15	14	46	—	75

21
22 ***Proposed Management***

23 The Oakley PPA proposes the following restoration projects in which NEPA
24 analysis has either been completed or is in the development process. They
25 include a variety of conifer expansion, restoration, and fuel treatments intended
26 to restore GRSG habitat and protect high quality habitat from wildfire. See
27 **Table 4-55.** See **Figures 4-60** through **4-67** for a graphic depiction of the
28 proposed treatments and strategies in the PPA.

**Table 4-55
Oakley Project Planning Area Potential Treatment Summary Table**

Treatment Description		Priority			Threats Addressed				NEPA			Treatments						
Name/Type	Acres/ Miles	1st	2nd	3rd	Conifer (C)	Invasive annual grasses (I)	Riparian Degradation (R)	Wildfire (W)	Initiated (I)	Completed (C)	Needed (N)	Time Frame		Certainty of Effectiveness ¹		Maintenance Time Frame (Years) ²	Completion Time Frame (0-2, 3-5, 5+ years) ³	
												Pending Funding (P) ¹	Implementing (I) ¹	Likely	Unlikely			
TF District ESR	unknown								X			X			X		NA	0-2
Cassia Weeds	10,000 ac					X	X		X			X	X		X		1-3 years	5+
Walker Hollow	900 ac				X		X		X			X	X		X		5-10	0-2
Camel Rock	690 ac				X		X		X			X			X		5-10	0-2
Burley Integrated Fuel Breaks	250 ac					X	X	X				X					3-5	5+
Oakley	2,600 ac				X		X		X			X	X		X		5-10	3-5
Cold Creek	1,700 ac				X		X		X			X			X		5-10	3-5
Burley Landscape 2	6,000 ac				X		X	X				X			X		5-10	5+
South Hills Sage Restoration	2,000 ac					X	X		X			X			X		NA	5+

¹If treatment, once completed, is likely or unlikely to be effective, the rationale for effectiveness uses the following codes:

1 = site conditions (soils, resilience, species composition, disturbances) make treatment effectiveness likely

2 = site conditions make treatment effectiveness unlikely

3 = continued current management (grazing, recreation, or other land uses) make likelihood of effectiveness low

4 = based on professional opinion, treatment is likely to be effective

²Describes the frequency of maintenance necessary to continue effectiveness (in years)

³Identifies the potential treatment completion time frame, considering NEPA adequacy, relative priority, and local ranking factors

4.3.9 Oneil

Project Planning Area Description

Geographic Overview

The Oneil PPA is in the BLM's Elko District Office administrative boundary and covers approximately 2,340,800 acres. The southern border follows focal habitat just north of Interstate 80; the eastern border nears focal habitat through the Delano Mountains, north to the Idaho-Nevada Stateline; the northern boundary follows the state line west to focal habitats on the eastern boundary of the Humboldt National Forest; the western boundary follows focal habitat areas south near Interstate 80. Landownership in the Oneil PPA is approximately 69 percent BLM-administered lands, 4 percent Forest Service, and 27 percent private lands.

1 The PPA is unique in that it contains large contiguous of 3B, 3C, 2B, and 3C
 2 habitat areas. These are characterized by moderate to high sagebrush cover,
 3 with warm-dry soil moisture temperature regimes, which are highly susceptible
 4 to transitioning into invasive annual grass-dominated communities following
 5 wildfire (see **Table 4-56**).

Table 4-56
Oneil GRSG Habitat Matrix Categories

Matrix Category	No Data	1A	1B	1C	2A	2B	2C	3A	3B	3C
Acres	122,796	58,624	102,590	67,045	127,871	307,254	400,804	74,692	423,843	655,246
Percent of PPA	5	3	4	3	5	13	17	3	18	28

6
 7 Topographic features in the Oneil PPA are the Snake Mountains in the west,
 8 Murdock Mountain in the east, Knoll Mountain through the center, and the edge
 9 of the Humboldt National Forest in the northwest corner. Elevation ranges
 10 from approximately 5,300 feet (1,615 meters) in the valley bottoms to 8,760
 11 feet (2,670 meters) on Knoll Mountain. While slope and aspect vary throughout
 12 the PPA, the dominant mountain range orientation is north-south, with many
 13 corresponding east- and west-facing slopes.

14 Surface water features throughout the Oneil PPA are largely confined to
 15 intermittent and ephemeral streams, with some perennial waterways, such as
 16 Salmon Falls Creek.

17 The main road in the PPA is US Interstate 93, running north-south through the
 18 center. The southern border is within three miles of Interstate 80. Nevada State
 19 Route 765 crosses the northeastern portions of the PPA. Most other roads are
 20 smaller county and BLM-administered roads.

21 Approximately 80 percent of the PPA is within 12 miles of electrical
 22 transmission towers, and the remaining habitat is 12 to 21 miles from towers.
 23 Approximately 25 percent of the PPA is within five miles of a primary road, and
 24 10 percent is within five to nine miles, with a primary road bisecting the PPA
 25 north-south. The Oneil PPA is bisected by transmission lines, with
 26 approximately 15 percent within four miles and 25 percent within four to nine
 27 miles of transmission lines.

28 *GRSG Characteristics*

29 Sage-grouse characteristics in Oneil are, in general, consistent with the GRSG
 30 characteristics described above for the broader Idaho/Southwest Montana
 31 EIS/RMPA planning area.

32 *Vegetation*

33 Cheatgrass invasion is relatively low in this PPA; where it does occur, it is found
 34 in the understory but not in monocultures.

1 *Fire*
2 See **Table 4-57**.

Table 4-57
Oneil Summary of Burn Probability

High and very high burn probability in PPA (acres)	2,322,000
High and very high burn probability in PPA (percent)	99

3
4 *Existing Treatments*
5 The Stewardship Alliance of Northeast Elko County (SANE) has provided
6 polygons of ongoing and proposed treatments, including conifer encroachment,
7 which have been incorporated into the geo-database.

8 *Other Management Factors*
9 Other management factors did not influence the selection of treatments for this
10 PPA.

11 *Fuels Management*
12 Four hundred acres of linear fuels treatments are proposed. See the associated
13 GIS data layers for the position and extent in the PPA and **Table 4-58**.

Table 4-58
Oneil Potential Fuels Management Treatments

Priority	Priority 1	Priority 2	Priority 3	Null	Total
b	100	100	200	—	400

14
15 *Habitat Recovery and Restoration*
16 Habitat recovery and restoration projects would coincide with the fuels
17 treatments described above.

18 Potential treatments for habitat recovery and restoration are as follows:

- 19 • Conifer expansion treatments 1st priority—150,800 acres
20 • Conifer expansion treatments 2nd priority—59,500 acres
21 • Restoration treatments 1st priority—32,500 acres (consists
22 primarily of chemical and seeding treatment treatments for
23 cheatgrass or halogeton)

24 See the associated GIS data layers for the position and extent in the PPA and
25 **Table 4-59**.

Table 4-59
Oneil Potential Habitat Restoration Treatments

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	183,300	59,500	—	7,600	250,400
Percent of PPA	8	3	—	0	11

Fire Operations

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

The response to wildfire will be consistent with the fire management plans on other federal public lands, state lands, and other landownerships. This includes response by private ownerships and forest fire protection associations where applicable.

See the associated GIS data layers for the position and extent in the PPA and **Table 4-60**, Fire Operations Management Strategies.

Table 4-60
Oneil Proposed Fire Operations Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	882,900	498,300	86,700	—	1,467,900
Percent of PPA	38	21	4	—	63

Post-Fire Rehabilitation

The Step 2 FIAT process identified areas with moderate to high shrub cover in warm-dry soil regimes, minus past ESR treatments, as the highest priority for post-fire rehabilitation. Higher elevation areas with cooler and moister soil characteristics would be lower priority areas for rehabilitation due to their ability to naturally recover following fire. The BLM's Elko District Office will continue working with other stakeholders to coordinate and prioritize post-fire rehabilitation activities.

Oneil ESR 1st priority—771,200 acres. See the associated GIS data layers for the position and extent in the PPA and **Table 4-61**.

Table 4-61
Oneil Proposed Post-Fire Rehabilitation Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	771,200	433,500	77,500	—	1,282,200
Percent of PPA	33	19	3	—	55

Proposed Management

The following proposed projects, in which NEPA analysis has been completed, consist of augmenting existing ESR seedings with sagebrush and other native plant species to improve GRSG habitat. See **Table 4-62**. See **Figures 4-68** through **4-75** for a graphic depiction of the proposed treatments and strategies in the PPA.

Table 4-62
Oneil Project Planning Area Potential Treatment Summary Table

Treatment Description	Priority	Threats Addressed	NEPA	Treatments			
				Time Frame	Certainty of Effectiveness ¹		Maintenance Time Frame (Years) ²
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	
SANE Eccles Fire ESR seeding augmentation	1,500 acres	X	X	X	X	I	3-5
SANE 20 Mile ESR seeding augmentation	2,000 acres	X	X	X	X	I	3-5
Savannah ESR seeding augmentation	1,609 acres	X	X	X	X	I	3-5
Salmon Fire ESR seeding augmentation	200 acres	X	X	X	X	I	3-5

¹If treatment, once completed, is likely or unlikely to be effective, the rationale for effectiveness uses the following codes:

1 = site conditions (soils, resilience, species composition, disturbances) make treatment effectiveness likely

2 = site conditions make treatment effectiveness unlikely

3 = continued current management (grazing, recreation, or other land uses) make likelihood of effectiveness low

4 = based on professional opinion, treatment is likely to be effective

²Describes the frequency of maintenance necessary to continue effectiveness (in years)

³Identifies the potential treatment completion time frame, considering NEPA adequacy, relative priority, and local ranking factors

4.3.10 Otis**Project Planning Area Description***Geographic Overview*

The 351,700-acre Otis PPA is the farthest westward PPA in the Northern Great Basin assessment area and is in the BLM Burns District Office in Harney County, Oregon. To the north and west of the Malheur National Forest, and to the south are the conifer-dominated Stinking Water Mountains. A string of mountains along the Harney-Malheur County line form the PPA's eastern edge. Topography in the PPA is tablelands (e.g., the Merlie, Moffit, and Drewsey

1 Tables) and the Otis Valley in the northern focal habitat area and undulating hills
 2 and valleys in the southern focal habitat area. Landownership in the Otis PPA is
 3 approximately 55 percent BLM-administered lands, 7 percent Forest Service, 1
 4 percent state, and 37 percent private lands.

5 In the northern half of the Otis PPA, elevations range from a high point of 6,000
 6 feet (1,850 meters) at Otis Mountain to a low of 3,600 feet (1,100 meters)
 7 throughout the Otis Valley. Average ground surface elevations in the lower half
 8 of the Otis PPA range between 3,600 feet (1,100 meters) and 4,600 feet (1,400
 9 meters). In the more rugged areas along the western edge of the PPA near the
 10 Malheur National Forest, the average elevation exceeds 5,200 feet (1,600
 11 meters). The Otis PPA does not have a distinguishing slope aspect profile.

12 US Highway 20 is the only regional roadway in the Otis PPA. The paved two-
 13 lane highway crosses the southern half, from northeast to southwest. Other
 14 travel routes are a mixture of mainly unpaved local roads.

15 This PPA is characterized by low, moderate, and high shrub cover heights, in
 16 cool-moist, cool-dry, and warm-dry soil moisture temperature regimes.
 17 Warm/dry soil temperature and moisture conditions typify the low elevation
 18 areas in the Otis Valley. Cooler/moist soil conditions ring the PPA's perimeter
 19 and cover approximately half of the northern focal area cluster. Cool/moist soils
 20 also coincide with the higher elevations in the western portion of the PPA (See
 21 **Table 4-63**).

Table 4-63
Otis GRSG Habitat Matrix Categories

Matrix Category	No Data	1A	1B	1C	2A	2B	2C	3A	3B	3C
Acres	5,634	27,084	87,888	30,001	8,160	31,728	20,603	5,726	57,558	77,272
Percent of PPA	2	8	25	9	2	9	6	2	16	22

22
 23 Surface water is present throughout the Otis PPA, one of which is the Malheur
 24 River. A series of tributaries in the northern portion of the PPA form the
 25 Malheur River, which then flows southeastward through the PPA and empties
 26 into the Warm Spring Reservoir outside the PPA boundary to the southeast.
 27 Other surface water features are Griffin Creek, Stallard, and Cottonwood
 28 Reservoirs in the north and North Beede, South Beede, and Stinkingwater
 29 Reservoirs in the south. Several smaller perennial streams flow throughout the
 30 PPA but are generally more prevalent in the north and west.

31 Approximately 60 percent of the PPA is within 12 miles of electrical
 32 transmission towers and the remaining habitat is 12 to 21 miles from towers.
 33 Habitat near the southern and northwestern boundaries of the Otis PPA is
 34 within four miles (15 percent) and four to nine miles (30 percent) of
 35 transmission lines.

GRSG Characteristics

Sage-grouse characteristics in Otis are, in general, consistent with the GRSG characteristics described above for the broader Idaho/Southwest Montana EIS/RMPA planning area.

Vegetation

Conifers are abundant in the Otis PPA, particularly in the northern two-thirds. These areas are mainly phase 3 but also include a mixture of phase 1 and encroachments. In the southern third, conifer is limited to a few high elevation areas (e.g., around Bartlett Mountain) and on the far north end of the Stinking Water Mountains.

Sagebrush communities generally correspond with the elevation and soil moisture regimes in the PPA. Wyoming big sage is the dominant species throughout the PPA. Mountain big sage generally characterizes areas above 5,500 feet, especially in the northern and western portions of the PPA.

Fire

Fire is a significant persistent factor in this PPA as this area is modeled to be approximately 90 percent high and very high burn probability (see **Table 4-64**).

Table 4-64
Otis Summary of Burn Probability

High and very high burn probability in PPA (acres)	313,900
High and very high burn probability in PPA (percent)	89

Existing Treatments

The Bartlett fire in 2007 burned over 40,000 acres in the warm-dry soil, which allowed annual grasses to invade. The fire was in the southern region of the Otis Mountain PPA. This area reburned as part of the larger Buzzard Complex during the 2014 fire season and is at significant risk of complete habitat loss. It has been identified as a high priority for green stripping/fuel break construction in the fuels management section and for suppression in the fire operations section.

In the fall of 2014, as part of the Otis Mountain/Moffet Table Fuels Management Project, the BLM Burns District Office conducted a broadcast burn and is scheduled to follow up the prescribed burn treatment with reseeding. This large-scale juniper reduction project is on 22,547 acres of BLM-administered land and 10,835 acres of private land. The current Moffet Table broadcast burn planned for fiscal year 2015 covers 3,015 acres of BLM-administered land and 985 acres of private land. Juniper-encroached areas in the project that have adequate sagebrush cover for recovery are being cut, piled, and burned to help maintain GRSG habitat.

Other Management Factors

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

Fuels Management

As part of the FIAT Step 2 process, the BLM Burns District Office identified 280 miles of potential fuel breaks. These breaks follow a network of 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 first order priority and can be accomplished in the next five years.

The Potential treatment area for fuels management activities is the Otis linear Fuel Treatments 1st Priority—150 miles. See the associated GIS data layers for the position and extent in the PPA and **Table 4-65**.

Table 4-65
Otis Potential Fuels Management Treatments

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Miles	150	100	100	—	350
Acres	0	—	—	—	—

Habitat Recovery and Restoration

During the fall 2014 prescribed burn treatments, the Burns District Office avoided broadcast burning in a two-mile buffer around active leks. As part of the FIAT Step 2 process, the Burns District Office identified these buffer areas for subsequent treatments using hand or machine piling. These treatments would take place in the five-year window. Along with the existing proposed treatments, the Burns District Office staff identified four areas for conifer reduction (see attached GIS data). Treatment would be mechanical removal followed by chemical treatment to prevent invasives, then seeding and monitoring for habitat restoration.

The Burns District Office staff identified 96,100 acres of invasive annual grass treatment areas in the PPA. In addition, the NRCS has identified priority treatment areas along the southern boundary of the PPA. The GIS data accompanying this report identifies these areas (see shapefile: NRCS_HardyCounty_PriorityArea).

Potential treatments for habitat recovery and restoration area as follows:

- Otis Conifer 1st priority—82,000 acres
- Otis Invasive Annual Grass 1st priority—16,700 acres

1 Otis Invasive Annual Grass 2nd priority—50,600 acres. See associated GIS data
2 layers for position and extent within PPA and **Table 4-66**

Table 4-66
Otis Potential Habitat Restoration Treatments

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	98,700	50,600	—	1,100	150,400
Percent of PPA	28	14	—	0	43

3
4 *Fire Operations*
5 Through the Step 2 FIAT process, the Burns District Office staff established a
6 two-mile buffer around known active leks. These would be priority areas for
7 protection during fire operations. Water access improvements would also likely
8 improve fire suppression capabilities. Additional information is needed to
9 identify water sources and to develop the necessary partnerships to access
10 those resources during fire operations.

11 Response to wildfires on National Forest Systems (NFS) Lands, in and around
12 identified priority greater GRSG habitat, consistent with Forest Plan direction.
13 Identified GRSG habitat is considered a high priority for protection on NFS
14 lands.

15 Response to wildfire on other federal public lands, state lands, and/or other
16 landownerships including private ownerships and/or ownerships protected by
17 (forest) fire protection association's shall be consistent with their respective fire
18 management plans.

19 The priority area for fire operations is Otis Fire 1st priority—219,800 acres.
20 See the associated GIS data layers for the position and extent in the PPA and
21 **Table 4-67**.

Table 4-67
Otis Potential Fire Operations Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	219,800	17,600	—	4,400	241,800
Percent of PPA	62	5	—	1	69

22
23 *Post-Fire Rehabilitation*
24 The Step 2 FIAT process identified those areas with moderate to high shrub
25 cover and warm-dry soil moisture temperature regime, minus prior ESR
26 treatments, as being the highest priority for post-fire rehabilitation. Higher
27 elevation, north-facing slopes with cooler and moister soil characteristics would
28 be lower priority for rehabilitation due to their ability to naturally recover
29 following fire. The Burns District Office staff will work with other stakeholders
30 to coordinate and prioritize post-fire rehabilitation activities.

The priority treatment area for post-fire rehabilitation is Otis ESR High (1st priority)—97,000 acres. See the associated GIS data layers for the position and extent in the PPA and **Table 4-68**.

Table 4-68
Otis Potential Post-Fire Rehabilitation Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	97,000	34,000	54,600	—	185,600
Percent of PPA	28	10	16	—	53

Proposed Management

Conifer encroachment is compromising GRSG habitat health in the Otis PPA. Accordingly, proposed treatments focus mainly on mitigating conifer encroachment and restoring the landscape to a healthy sagebrush steppe ecosystem. After a fire, vegetation in areas characterized by warm-dry soil moisture temperature regimes possess the inherent threat of returning as invasive annual grass communities.

The concern for this catastrophic habitat regime shift is amplified by the extent of woody biomass in higher elevation areas, but it is tempered by the underlying cool-moist soil moisture and temperature regime, which tends to support recovery even in the absence of restoration. See **Table 4-69** for projects in this PPA that are presently identified to be in the NEPA planning process. See **Figures 4-76** through **4-84** for a graphic depiction of the proposed treatments and strategies in the PPA.

Table 4-69
Otis Mountain Project Planning Area Potential Treatment Summary Table

Treatment Description	Priority	Threats Addressed	NEPA	Treatments			
				Time Frame	Certainty of Effectiveness ¹		Maintenance Time Frame (Years) ²
Name/Type	Acres/ Miles	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		
Otis/Moffet Conifer/Fuel Breaks	22,232 acres	X X	X	X X	I	10-15 years	3-5
Pine Craft Conifer	507 acres	X X	X	X	I	10-15 years	0-2
Otis Conifer/Fuel Breaks	19,588 acres	X X	X	X	I	10-15 years	3-5
Miller Canyon/Mahon Cr. Conifer	593 acres	X X	X	X	I	15-20 years	3-5

Table 4-69
Otis Mountain Project Planning Area Potential Treatment Summary Table

Treatment Description		Priority			Threats Addressed				NEPA			Treatments						
Name/Type	Acres/ Miles	1st	2nd	3rd	Conifer (C)	Invasive annual grasses (I)	Riparian Degradation (R)	Wildfire (W)	Initiated (I)	Completed (C)	Needed (N)	Time Frame		Certainty of Effectiveness ¹		Maintenance Time Frame (Years) ²	Completion Time Frame (0-2, 3-5, 5+ years) ³	
												Pending Funding (P) ¹	Implementing (I) ¹	Likely	Unlikely			
Central Malheur Conifer	865 acres		X		X	X				X		X	X		I		10-15 years	3-5
Jane Stewardship	9,755 acres			X	X					X		X	X		I		10-15 years	0-2
Wolf Creek Conifer	5,541 acres		X		X	X			X			X			I		10-15 years	3-5

¹If treatment, once completed, is likely or unlikely to be effective, the rationale for effectiveness uses the following codes:

1 = site conditions (soils, resilience, species composition, disturbances) make treatment effectiveness likely

2 = site conditions make treatment effectiveness unlikely

3 = continued current management (grazing, recreation, or other land uses) make likelihood of effectiveness low

4 = based on professional opinion, treatment is likely to be effective

²Describes the frequency of maintenance necessary to continue effectiveness (in years)

³Identifies the potential treatment completion time frame, considering NEPA adequacy, relative priority, and local ranking factors

4.3.11 Owyhee Desert

Project Planning Area Description

Geographic Overview

The remote Owyhee Desert Project Planning Area is in the Elko District Office administrative boundary and covers approximately 682,300 acres. The southern boundary follows focal habitat areas nearing Scrapper Springs Road. The eastern and western boundaries both closely follow the focal habitat areas north to the Idaho-Nevada state line, which forms the northern boundary of the PPA. Landownership is over 99 percent BLM-administered lands and less than 1 percent private lands.

Most of this PPA is characterized by moderate to high shrub cover in the warm-dry soil moisture temperature regime. Approximately 10 percent is low shrub cover warm-dry soil moisture temperature regime (see **Table 4-70**).

Table 4-70
Owyhee Desert GRSG Habitat Matrix Categories

Matrix Category	No Data	1A	1B	1C	2A	2B	2C	3A	3B	3C
Acres	12,501	736	3,387	4,178	3,177	3,141	15,664	65,185	97,170	477,111
Percent of PPA	2	0	0	1	0	0	2	10	14	70

1 Surface water features throughout the Owyhee Desert PPA are largely confined
2 to intermittent and ephemeral streams, with some perennial waterways, such as
3 the South Fork Owyhee in the eastern portion of the PPA.

4 There are few roads in this PPA; those that are present are small local roads
5 and routes.

6 Approximately 65 percent of the PPA is within 12 to 21 miles of electrical
7 transmission towers, five percent is greater than 21 miles, and the remaining
8 habitat is less than 12 miles from towers. REA data shows no other major
9 development impacts.

10 *GRSG Characteristics*

11 Sage-grouse characteristics in Owyhee Desert PPA are, in general, consistent
12 with the GRSG characteristics described above for the broader
13 Idaho/Southwest Montana EIS/RMPA planning area.

14 *Vegetation*

15 This remote PPA is largely open expanses of Wyoming sage, with an understory
16 component of invasive annual grasses. There is little topographic relief, and the
17 PPA historically has been used for domestic grazing.

18 *Fire*

19 Fire is a constant and dynamic factor of this landscape, which has been modeled
20 to have an approximate 100 percent high and very high burn probability.

21 See **Table 4-71**.

Table 4-71
Owyhee Desert Summary of Burn Probability

High and very high burn probability in PPA (acres)	674,500
High and very high burn probability in PPA (percent)	99

22 *Existing Treatments*

23 Except for hazardous fuels reduction treatments, no other past treatment types
24 have been reported in this assessment.
25

26 *Other Management Factors*

27 Aside from such infrastructure as roads and transmission lines and towers,
28 other management factors did not influence the selection of treatments for this
29 PPA.

30 *Fuels Management*

31 Potential linear fuel treatments along road systems are identified in the fuel
32 treatments polygon. Some of these roads extend outside of the PPA but are
33 included because they are main roads to the area and would slow down the rate
34 of fire spread and would protect the 75 percent BBD in this remote landscape.

1 The potential treatment area for fuels management activities is Owyhee Desert
 2 linear fuel treatments 1st Priority 100 miles. See the associated GIS data layers
 3 for the position and extent in the PPA and **Table 4-72**.

Table 4-72
Owyhee Desert Potential Fuels Management Treatments

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Miles	100	100	—	—	200

4
 5 *Habitat Recovery and Restoration*
 6 Habitat recovery and restoration projects would coincide with the fuels
 7 treatments described above.

8 Predominant invasives in focal habitats are cheatgrass and medusahead.
 9 Roadside and spot treatments are ongoing for noxious weeds when found
 10 throughout the landscape. Existing fuel breaks can be extended and trailed off to
 11 adequately include significant areas. Such treatments as introducing perennial
 12 forbs into these treatment areas would improve the understory and promote
 13 ideal GRSG habitat.

14 Mowing and seeding in areas up to a mile next to the playas would be beneficial
 15 to habitats.

16 The potential treatment for habitat recovery and restoration is Owyhee Desert
 17 Habitat Restoration (Other) 1st priority—54,900 acres. See the associated GIS
 18 data layers for the position and extent in the PPA and **Table 4-73**.

Table 4-73
Owyhee Desert Potential Habitat Restoration Treatments

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	54,900	20,700	—	5,200	80,800
Percent of PPA	8	3	—	1	12

19
 20 *Fire Operations*
 21 Response to wildfires on National Forest Systems (NFS) Lands, in and around
 22 identified priority greater GRSG habitat, will be consistent with the forest plan
 23 direction. Identified GRSG habitat is considered a high priority for protection on
 24 NFS lands.

25 The response to wildfire will be consistent with the fire management plans on
 26 other federal public lands, state lands, and other landownerships. This includes
 27 response by private ownerships and forest fire protection associations where
 28 applicable.

29 Full suppression on BLM-administered lands may occur throughout the entire
 30 Owyhee Desert PPA. All areas in the PPA are 1st order priority due to most of

1 it being in moderate to high shrub cover in the warm-dry soil moisture
2 temperature regime.

3 Response to wildfires on NFS Lands, in and around identified priority greater
4 GRSG habitat, will be consistent with forest plan direction. Identified GRSG
5 habitat is considered a high priority for protection on NFS lands.

6 Response to wildfire on other federal public lands, state lands, and other
7 landownerships, including private ownerships and ownerships under forest fire
8 protection associations, will be consistent with their respective fire management
9 plans.

10 The priority area for fire operations is Owyhee Desert Fire Operations 1st
11 priority—536,000 acres. See the associated GIS data layers for the position and
12 extent in the PPA and **Table 4-74**.

Table 4-74
Owyhee Desert Potential Fire Operations Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	536,000	15,000	400	—	551,400
Percent of PPA	79	2	0	—	81

13 *Post-Fire Rehabilitation*

14 The Step 2 FIAT process identified areas with moderate to high shrub cover in
15 warm-dry soil moisture temperature regimes, minus previous ESR treatment
16 areas, as the highest priority for post-fire rehabilitation. Higher elevation areas
17 with cooler and moister soil characteristics would be lower priority for
18 rehabilitation due to their ability to naturally recover following fire. The BLM's
19 Elko District Office staff will continue working with other stakeholders to
20 coordinate and prioritize post-fire rehabilitation activities.
21

22 The potential treatment area for post-fire rehabilitation management is Owyhee
23 Desert ESR 1st priority—491,800 acres. See the associated GIS data layers for
24 the position and extent in the PPA and **Table 4-75**.

Table 4-75
Owyhee Desert Proposed Post-Fire Rehabilitation Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	491,800	13,400	300	—	505,500
Percent of PPA	72	2	0	—	74

25 *Proposed Management*

26 In this PPA there are 10,000 acres of fuel treatments which have been initiated.
27 The objective of the project is to slow the spread of wildfire in low resistance
28 and resilient (i.e., warm-dry soil) areas along roadways. See **Table 4-76** for
29
30

Table 4-76
Owyhee Desert Project Planning Area Potential Treatment Summary Table

Treatment Description		Priority			Threats Addressed				NEPA			Treatments						
Name/Type	Acres/ Miles	1st	2nd	3rd	Conifer (C)	Invasive annual grasses (I)	Riparian Degradation (R)	Wildfire (W)	Initiated (I)	Completed (C)	Needed (N)	Time Frame		Certainty of Effectiveness ¹		Maintenance Time Frame (Years) ²	Completion Time Frame (0-2, 3-5, 5+ years) ³	
												Pending Funding (P) ¹	Implementing (I) ¹	Likely	Unlikely			
Owyhee Desert Fuel Breaks	10,000 acres	X				X	X		X			X			I	Unlikely		1-5

¹If treatment, once completed, is likely or unlikely to be effective, the rationale for effectiveness uses the following codes:

1 = site conditions (soils, resilience, species composition, disturbances) make treatment effectiveness likely

2 = site conditions make treatment effectiveness unlikely

3 = continued current management (grazing, recreation, or other land uses) make likelihood of effectiveness low

4 = based on professional opinion, treatment is likely to be effective

²Describes the frequency of maintenance necessary to continue effectiveness (in years)

³Identifies the potential treatment completion time frame, considering NEPA adequacy, relative priority, and local ranking factors

1
 2 projects in this PPA that are presently identified to be in the NEPA planning
 3 process. See **Figures 4-85** through **4-91** for a graphic depiction of the
 4 proposed treatments and strategies in the PPA.

5 **4.3.12 Owyhee North**

6 **Project Planning Area Description**

7 *Geographic Overview*

8 The Owyhee North PPA straddles the Oregon/Idaho state line. It is bounded
 9 approximately by US Interstate 95 in the north quadrant and by the North Fork
 10 Owyhee River/Pixley Basin/Castle Creek in the southern quadrant. It is
 11 approximately 15 to 50 miles west of Grand View, Idaho. Elevation ranges
 12 between approximately 3,800 feet (1,158 meters) in the valley bottoms to 7,400
 13 feet (2,260 meters) at the mountaintops.
 14
 15

16 There are approximately 1,787,100 acres in this PPA. Landownership is
 17 approximately 50 percent BLM-administered, 25 percent state, and 25 percent
 18 private. The landscape is somewhat rugged, with isolated rangelands and
 19 numerous segmented drainages. The PPA is bisected by Jordan Creek/Big
 20 Boulder Creek in the south and Spring Creek in the north.

21 Approximately 85 percent of the PPA is within 12 miles of electrical
 22 transmission towers, and the remaining habitat is 12 to 21 miles from towers.
 23 Approximately 25 percent of the PPA is within five miles of a primary road, and
 24 10 percent is five to nine miles; US Interstate 93 runs from the north to

1 southwestern portion of the PPA. About 10 percent of the total habitat in the
2 PPA is within nine miles of transmission lines occurring in the northeastern
3 portion of the PPA.

4 This PPA is characterized by low, moderate, and high shrub cover heights and
5 cool-moist, cool-dry, and warm-dry soil moisture temperature regimes. See
6 **Table 4-77**.

Table 4-77
Owyhee North GRSG Habitat Matrix Categories

Matrix Category	No Data	1A	1B	1C	2A	2B	2C	3A	3B	3C
Acres	49,245	167,393	315,223	117,922	14,779	83,100	229,793	17,189	198,286	594,205
Percent of PPA	3	9	18	7	1	5	13	1	11	33

7
8 Surface water is present throughout the Owyhee North PPA. Primary sources
9 of water are the North Fork Owyhee River and Juniper Creek, which bisects
10 the far southwest quadrant of the PPA.

11 There is limited access to and in the PPA, with only a few gravel roads leading
12 to the interior. The Oregon/Idaho state line defines the west boundary, and US
13 Interstate 95 traverses the northwest quadrant of this PPA. Highway 78
14 somewhat represents the eastern boundary. The few state and county roads are
15 generally limited to the lower elevations.

16 The area is remote, with generally a two- to three-hour or more of drive time
17 to respond to incident locations.

18 *GRSG Characteristics*

19 There are approximately 14 distinct focal habitats arranged as four separate
20 focal habitat groups in this PPA. The assumption is that there is wildlife
21 movement between these focal habitats.

22 *Vegetation*

23 All phases of juniper vegetation are present in the higher elevations of this PPA.
24 Invasive annual grasses are present below 6,500 feet elevation.

25 *Fire*

26 Fire is a constant factor in this PPA, which has been modeled to have a 99
27 percent High And Very High Burn Probability.

28 See **Table 4-78** Summary of Burn Probability.

Table 4-78
Owyhee North Summary of Burn Probability

High and very high burn probability in PPA (acres)	1,666,300
High and very high burn probability in PPA (percent)	99

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Existing Treatments

The Tri-State Project (Idaho, Oregon, and Nevada) has consistently coordinated strategic, landscape-level, fuel treatment projects across state lines.

The BOSH project has planned and implemented projects across political boundaries to enhance sagebrush steppe ecosystems.

Other Management Factors

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

Fuels Management

The potential treatment area is approximately 1,100 miles of linear fuel treatments associated with roads. These treatments follow a network of 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 first order priority and can be accomplished in the next five years. While the primary treatment is reducing hazardous fuels to reduce fire behavior, associated related targets, such as reducing invasive annual grasses, conifers, and invasive weeds, will also be accomplished.

The potential treatment area for fuels management activities is Owyhee North linear fuels treatments 1st Priority—400 miles. See the associated GIS data layers for the position and extent in the PPA and **Table 4-79**.

Table 4-79
Owyhee North Potential Fuels Management Treatments

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Miles	400	500	200	—	1,100

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Habitat Recovery and Restoration

Habitat restoration will include sagebrush treatments, seedings, and plantings. These activities will be followed by chemical treatments as necessary to prevent invasive annual grasses, then seeding and monitoring after the treatment.

Potential treatments for habitat recovery and restoration are as follows:

- Owyhee North Conifer Expansion 1st priority—785,800 acres

- Owyhee North Invasive Annual Treatments 1st priority—17,000 acres

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

Table 4-80
Owyhee North Potential Habitat Restoration Treatments

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	795,400	—	—	7,400	802,800
Percent of PPA	45	—	—	0	45

The Owyhee North and South Conifer Expansion Treatment Areas were developed primarily from the BLM Boise District's BOSH project area. In order to meet the intent of Step 2 of the FIAT process, this area was further refined to the boundaries of the FIAT focal habitats. Areas outside the FIAT focal habitats will still be targeted by the Boise District during implementation of the BOSH where opportunities to improve connectivity and maintain habitat exist.

Below is a brief description of the BOSH project and the proposed action that helped inform the potential treatment areas.

The Boise District BLM collaborated with the NRCS, IDFG, USFWS, Owyhee Local Working Group, Pheasants Forever, and the Nature Conservancy. These groups have proposed a landscape-level project to eliminate juniper that is in the early stages of encroachment into suitable and functioning GRSG habitat. The purpose of the proposed BOSH project is to restore, improve, and maintain suitable GRSG habitat in the Bruneau and Owyhee BLM management areas, by removing juniper at this early stage of encroachment into sagebrush steppe. This type of treatment would improve the long-term viability and persistence of GRSG.

Juniper encroachment is considered to be early stage when adequate densities of shrubs and herbaceous vegetation needed to support GRSG are present; follow-up seeding would not be necessary. Removing juniper under such conditions would provide immediate benefits to GRSG by reducing the risk of avian predation or of GRSG avoiding juniper. There also would be longer term benefits from improved habitat quality. Removing juniper cover during the early stages of encroachment provides immediate results to GRSG.

To help further quantify these early stages of encroachment, the Northern Great Basin FIAT recommends using cover classes developed from the one-meter 2013 4-band NAIP imagery (see attached metadata), in combination with western juniper stand characteristics (Miller et al. 2005). Areas that fall into the phase 1 and phase 2 stand characteristics (cover classes 1 to 10 percent and 10 to 30 percent, respectively) are areas that should be targeted in the Owyhee North and South treatment areas. The general assumption is that these areas

1 still have an adequate density of shrub and understory to recover without
2 further loss of habitat or need for seeding.

3 *Fire Operations*

4 Response to wildfires on NFS Lands, in and around identified priority GRSG
5 habitat, will be consistent with forest plan direction. Identified GRSG habitat is
6 considered a high priority for protection on NFS lands.

7 Response to wildfire on other federal public lands, state lands, and other
8 landownerships, including private land and that protected by forest fire
9 protection associations, will be consistent with their respective fire management
10 plans.

11 The Owyhee Front, along the east side of the Owyhee North PPA, is a high
12 priority area for fire suppression in GRSG habitat. Most of the Owyhee South
13 PPA is a high priority area for fire suppression in GRSG habitat, especially in the
14 lower elevations, where conifer encroachment is not the major threat. The
15 southwest corner of the BLM Boise District has also been identified as one of
16 the largest intact strongholds of GRSG habitat in the Northern Great Basin.
17 Strategic measures have been taken and are underway to protect this habitat.
18 This is due to this area's remoteness, the high potential for large wildfires, the
19 long response time, and limited sites for firefighters to establish safe anchor
20 points to engage wildfires.

21 In the last five years, large fires have threatened focal habitats in the Owyhee
22 South PPA, primarily to the northeast in the BLM Bruneau Field Office. The
23 Crowbar and Blacksheep fires in 2010 burned a combined 33,855 acres within
24 five miles of GRSG habitat with a greater than 75 percent BBD. The following
25 year the Big Hill fire consumed 67,081 acres next to this BBD, while the most
26 recent Jacks fire in 2012 consumed 48,923 acres completely in the BBD. This
27 trend in large fire occurrence has led to a greater likelihood that fires will
28 continue to spread into focal habitats in the Owyhee South PPA and will replace
29 native vegetation with invasive and noxious vegetation.

30 Following the 2012 fire season, BLM Idaho determined specific guidance would
31 be beneficial to BLM agency administrators, fire management officers, resource
32 advisors, and incoming incident management teams for addressing GRSG
33 conservation during fire operations. ID-IM-2013-036, Greater Sage-Grouse
34 Habitat and Wildland Fire Objectives, provides this guidance and resources to
35 assist in the assessment and information sharing process to address GRSG
36 habitat protection in wildfire situations. The BLM Boise District will use the
37 attachments to ID-IM-2013-036 during the preseason, initial attack, and
38 extended attack efforts.

- 39 • Delegation of Authority
- 40 • Agency Administrators Leaders Intent

- 1 • Incident Status Summary (ICS-209)
- 2 • Common WFDSS Examples and Terminology
- 3 • Resource Advisor's Sage-Grouse Toolkit

4 Since 2013, the Boise District has facilitated numerous fire training courses to
 5 assist in the development of Rangeland Fire Protection Associations (RFPAs).
 6 During the fire season, these RFPAs assist in fire suppression and provide
 7 firefighters, which improves suppression capability.

8 The following bullets outline current fire operation strategies and planning
 9 efforts for the Boise District to protect and conserve GRSG habitat. Many of
 10 the resources and actions identified are in addition to the organization's normal
 11 operations and will be accomplished with additional 2015 funding provided for
 12 GRSG habitat conservation.

- 13 • Lease two additional dozers, one from the Eagle Fire Department
 14 and one staffed by a district employee
- 15 • Rent a semi-truck to haul an additional 6,000-gallon water tank
- 16 • Add two equipment operators to staff dozer and water tenders
- 17 • Station two super-heavy engines with 2,500-gallon tanks in areas
 18 that have the quickest response time to focal habitats
- 19 • Extend staffing for an air attack, a type-3 helicopter, a single-engine
 20 air tanker (SEAT), incident type 3 commanders, and additional
 21 resources as needed and based on local and regional preparedness
 22 levels, potential for ignitions, and key weather events

23 The following bullets outline actions that will be considered if additional funding
 24 were available:

- 25 • Purchase a 7,000-gallon water trailer, a semi-truck, and a heavy
 26 equipment trailer for dozer transport
- 27 • Improve well site at Star Valley (southwest corner of Idaho) and
 28 install a 15,000-gallon water storage tank and an open dip tank that
 29 can be used for helicopter operations
- 30 • Improve various well sites and reservoirs (spatially identified in the
 31 FIAT Step 2) throughout the Owyhee North and South PPAs
- 32 • Explore opportunities to staff additional suppression resources at
 33 Duck Valley Indian Reservation, for example, purchase camp trailers
 34 for housing)
- 35 • Order incident command trailers for extended attack fires

1 Currently the Juniper Mountain Strategic Fire Management Area in the BLM
2 Owyhee Field Office is where fire may be managed for multiple objectives. This
3 area incorporates the North Fork Owyhee Wilderness Area. It is in a higher
4 elevation (greater than 5,000 feet), where western juniper dominants and
5 sagebrush cover is minimal, and is not in focal habitat (greater than 75 percent
6 BBD). Although resource objectives do not target focal habitat improvement,
7 opportunities exist to help increase connectivity between leks in the North and
8 South Owyhee PPAs if fire is managed appropriately.

9 In March 2014 fire and fuels program representatives from the BLM Boise, Elko,
10 Vale, and Winnemucca Districts met in Elko. Their intent was to discuss fire
11 suppression and fuels management issues in the tri-state area, where Idaho,
12 Nevada, and Oregon geographically meet. During this meeting the group agreed
13 to work on increasing coordination and planning for wildfire response and an
14 integrated system of fuel breaks to compartmentalize the tri-state landscape and
15 minimize the risk of large wildfires in this area. Three primary action items were
16 identified, as follows:

- 17 • Internal Communication Plan (completed)—The goal was to
18 provide an internal reference for large wildfires that may occur in
19 the tri-state area. These incidents could involve all three states, so
20 providing an internal communications plan would facilitate open
21 communication between all BLM, Forest Service, and state agencies
22 involved in wildfire suppression.
- 23 • Tri-State Local Operating Plan (LOP; completed)—The objectives of
24 the LOP are to establish mutual response areas between agencies.
25 These agencies would use the closest forces concept for initial
26 response to an incident, would enhance communication and
27 coordination of vegetation treatments, and would facilitate
28 reporting. The LOP provides specific direction in meeting the goals
29 of the master agreements already in place. Signatory agencies are
30 the BLM Boise, Elko, Vale, and Winnemucca Districts, the Forest
31 Service’s Mountain City/Ruby Mountains/Jarbidge Ranger Districts,
32 and the its Santa Rosa Ranger District.
- 33 • Fuel Break Joint EIS between Boise and Vale Districts (in
34 progress)—To date, the Elko and Winnemucca Districts have
35 already planned and are implementing a series of fuel breaks in their
36 respective districts. The Boise and Vale Districts have begun a joint
37 planning effort to implement fuel breaks that will tie into the already
38 planned or implemented fuel breaks on the Elko and Winnemucca
39 Districts, with the fall of 2016 as a targeted completion date.

40 The priority area for fire operations Owyhee North Fire 1st priority—451,600
41 acres. See the associated GIS data layers for the position and extent in the PPA
42 and **Table 4-81**.

Table 4-81
Owyhee North Potential Fire Operations Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	451,600	163,400	343,400	1,900	960,300
Percent of PPA	25	9	19	0	54

Post-Fire Rehabilitation

The Step 2 FIAT process identified those areas with moderate to high shrub cover in warm-dry soil regimes and without prior ESR treatments as being the highest priority for post-fire rehabilitation. Areas that have been revegetated are more persistent than the moderate to high cover 3B and 3C soil temperature moisture regime areas. Higher elevation, north-facing slopes with cooler and moister soil characteristics would be lower priority areas for rehabilitation due to their ability to naturally recover following fire.

In the absence of ESR treatments, recently burned native communities will irrevocably be converted to invasive annual-dominant communities; conversely in existing seedings, the herbaceous component typically recovers naturally, even though the sagebrush would be killed. Additionally, when seeded areas 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 vegetation to be reestablished naturally.

The potential treatment area for post-fire rehabilitation management is Owyhee North ESR 1st priority—375,000 acres. See the associated GIS data layers for the position and extent in the PPA and **Table 4-82**.

Table 4-82
Owyhee North Proposed Post-Fire Rehabilitation Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	375,000	141,900	302,600	—	819,500
Percent of PPA	21	8	17	—	46

Proposed Management

Treating conifer expansion is identified for the BOSH project through the NEPA planning process and is a management focus in this PPA. The tri-state fuels management project is another landscape-scale effort coordinated across state boundaries. See **Table 4-83** for projects in this PPA that are identified to be in the NEPA planning process. See **Figures 4-92** through **4-99** for a graphic depiction of the proposed treatments and strategies in the PPA.

Table 4-83
Owyhee North Project Planning Area Potential Treatment Summary Table

Treatment Description		Priority			Threats Addressed				NEPA		Treatments						
Name/Type	Acres/Miles	1st	2nd	3rd	Conifer (C)	Invasive annual grasses (I)	Riparian Degradation (R)	Wildfire (W)	Initiated (I)	Completed (C)	Needed (N)	Time Frame		Certainty of Effectiveness ¹		Maintenance Time Frame (Years) ²	Completion Time Frame (0-2, 3-5, 5+ years) ³
												Pending Funding (P) ¹	Implementing (I) ¹	Likely	Unlikely		
ESR Ground Seeding	unknown			X	X				X			X		I		3-5	0-3
ESR Seedling Planting	unknown			X	X				X			X		I		3-5	0-3
ESR Herbicide	unknown			X	X				X			X		I		3-5	0-3
BOSH Conifer Treatments	800,000	X			X				X			X		I		5-10	5+
Restoration Planting	unknown		X		X				X			X		I		10-20	5+

¹If treatment, once completed, is likely or unlikely to be effective, the rationale for effectiveness uses the following codes:

1 = site conditions (soils, resilience, species composition, disturbances) make treatment effectiveness likely

2 = site conditions make treatment effectiveness unlikely

3 = continued current management (grazing, recreation, or other land uses) make likelihood of effectiveness low

4 = based on professional opinion, treatment is likely to be effective

²Describes the frequency of maintenance necessary to continue effectiveness (in years)

³Identifies the potential treatment completion time frame, considering NEPA adequacy, relative priority, and local ranking factors

4.3.13 Owyhee South

Project Planning Area Description

Geographic Overview

The Owyhee South PPA covers 2,595,000 acres and in part straddles the Oregon/Idaho state line, north of the Nevada state line. It is bounded by the Bruneau River on the east quadrant and by Highway 78 on the north. Elevation ranges between approximately 3,600 feet (1,097 meters) in the valley bottoms to 7,050 feet (2,149 meters) at the mountaintops.

Most of the land in this PPA is administered by the BLM. The landscape is somewhat rugged, with isolated rangelands and numerous segmented drainages. The PPA is bisected by the Owyhee River in the southwest and the Bruneau River in the east.

Approximately two-thirds of the PPA is in generally low ecosystem resilience and low resistance, with a range of moderate site productivity. The other third

of the PPA is a moderate or higher resilience to disturbance and moderate or higher resistance to invasive annual grasses.

A mix of soil/moisture types characterizes resistance and resilience potential in the Owyhee North PPA. Warm/dry soil temperature and moisture conditions typify the low elevation areas covering approximately two-thirds of the PPA. Cooler/moist soil conditions exist in the other third of the PPA and coincide with the higher elevations in the PPA. In total, 1,397,200 acres (54 percent) fall in the warm-dry (3A, 3B, and 3C) soil condition class category and 1,123,700 acres (13 percent) in the cool-moist (1B and 1C) soil temperature and moisture class. See **Table 4-84**.

Table 4-84
Owyhee South GRSG Habitat Matrix Categories

Matrix Category	No Data	1A	1B	1C	2A	2B	2C	3A	3B	3C
Acres	30,323	79,743	224,268	600,455	37,126	53,535	371,452	62,185	109,350	1,026,580
Percent of PPA	1	3	9	23	1	2	14	2	4	40

Surface water is present throughout the Owyhee South PPA. Primary sources are the North Fork Owyhee River and Juniper Creek, which bisects the far southwest quadrant.

There is limited access to and within the PPA, with only a few gravel roads leading to the interior. Highway 51 traverses the PPA in a north-south orientation. The few state or county roads are generally limited to the lower elevations.

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. Approximately 25 percent of the PPA is within five miles of a primary road, and 10 percent is five to nine miles; a primary road bisects the PPA north to south.

The area is remote, with generally a two- to three-hour or more drive to respond to incident locations.

GRSG Characteristics

There are approximately 37 distinct focal habitats arranged as one continuous focal habitat. The assumption is that wildlife move between the focal habitats in the PPA.

Vegetation

All phases of juniper vegetation are present in the higher elevations of this PPA. Invasive annual grasses are present below 6,500 feet elevation.

Fire

Fire is a constant factor in this PPA, which has been modeled to have a 92 percent high and very high burn probability (see **Table 4-85**).

Table 4-85
Owyhee South Summary of Burn Probability

High and very high burn probability in PPA (acres)	2,397,000
High and very high burn probability in PPA (percent)	92 percent

Existing Treatments

The Tri-State Project (Idaho, Oregon, and Nevada) has consistently coordinated strategic, landscape-level, fuel treatment projects across state lines. The BOSH project has planned and implemented projects across political boundaries to enhance sagebrush steppe ecosystems.

Other Management Factors

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

Fuels Management

The potential treatment area is approximately 1,050 miles of linear fuel treatments associated with roads. These treatments follow a network of travel routes throughout the PPA and are depicted in the GIS data accompanying this report.

Proposed treatments primarily include road improvements and hazardous fuels reduction along identified roadways. Proactive fuel breaks would help constrain fire spread or would augment suppression by providing firefighters with improved access and safe locations to establish anchor points. Strategically placed fuel breaks would provide the following:

- Enhance suppression across districts and state boundaries, minimizing response time
- Provide strategic and logistical opportunities
- Compartmentalize wildfires
- Minimize fire growth, helping to reduce the loss of large sagebrush stands

These treatments are first order priority and can be accomplished in the next five years. While the primary treatment is to reduce hazardous fuels to inhibit fire, associated related targets will reduce invasive annual grass, conifers, and invasive weeds.

Potential treatment areas for fuels management activities are as follows:

- Owyhee South Fuel Breaks 1st Priority—350 miles
- Owyhee South area fuel treatments 1st priority—51,700 acres

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

Table 4-86
Owyhee South Potential Fuels Management Treatments

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Miles	350	300	400	—	1,050
Acres	51,700	27,700	—	—	79,400

Habitat Recovery and Restoration

Habitat restoration will include sagebrush treatments, seedings, and plantings. These activities will be followed by chemical treatments to prevent invasive annual grasses, then seeding and monitoring after the treatment.

Potential treatments for habitat recovery and restoration are as follows:

- Owyhee South Conifer Expansion 1st priority—512,400 acres
- Owyhee South Invasive Annual Grass 3rd priority—79,400 acres
- Owyhee South Habitat Restoration (other) 3rd priority—51,200 acres

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

Table 4-87
Owyhee South Potential Habitat Restoration Treatments

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	512,400	—	124,900	5,700	643,000
Percent of PPA	20	—	5	0	25

The Owyhee North and South Conifer Expansion Treatment Areas were developed primarily from the Boise District's BOSH project area. In order to meet the intent of Step 2 of the FIAT process, this area was further refined to the boundaries of the FIAT focal habitats. The BLM's Boise District will still target areas outside the FIAT focal habitats during implementation of the BOSH where opportunities to improve connectivity and maintain habitat exist.

Below is a brief description of the BOSH project and the proposed action that helped inform the potential treatment areas.

The BLM Boise District, in collaboration with the NRCS, IDFG, USFWS, Owyhee Local Working Group, Pheasants Forever, and the Nature

1 Conservancy, has proposed a landscape-level project to eliminate juniper that is
2 in the early stages of encroachment into suitable and functioning GRSG habitat.
3 The purposes of the proposed BOSH project are to restore, improve, and
4 maintain suitable GRSG habitat in the Bruneau and Owyhee BLM management
5 areas by removing juniper at this early stage of encroachment into sagebrush
6 steppe. This type of treatment would improve the long-term viability and
7 persistence of GRSG.

8 Juniper encroachment is considered to be early stage when adequate densities
9 of shrubs and herbaceous vegetation needed to support GRSG are present and
10 follow-up seeding would not be necessary. Removing juniper under such
11 conditions would provide immediate benefits to GRSG by reducing the risk of
12 avian predation or of GRSG avoiding, as well as longer term benefits from
13 improved habitat quality. Removing juniper cover during the early stages of
14 encroachment provides immediate results for GRSG.

15 To help further quantify these early stages of encroachment, the Northern
16 Great Basin FIAT recommends using cover classes developed from one-meter,
17 2013 4-band, NAIP imagery (see attached metadata), in combination with
18 western juniper stand characteristics (Miller et al. 2005). Areas that fall into the
19 phase 1 and phase 2 stand characteristics (cover classes 1 to 10 percent and 10
20 to 30 percent, respectively) are areas that should be targeted in the Owyhee
21 North and South treatment areas. The general assumption is that these areas
22 still have an adequate density of shrub and understory to recover without
23 further loss of habitat or need for seeding.

24 *Fire Operations*

25 Response to wildfires on NFS lands, in and around identified priority GRSG
26 habitat, will be consistent with forest plan direction. Identified GRSG habitat is
27 considered a high priority for protection on NFS lands.

28 The response to wildfire will be consistent with the respective fire management
29 plans on other federal public lands, state lands, or other landownerships. These
30 include private land and land protected by (forest) fire protection associations.

31 The Owyhee Front, along the east side of the Owyhee North PPA, is a high
32 priority for fire suppression in GRSG habitat. Most of the Owyhee South PPA is
33 a high priority for fire suppression in GRSG habitat, especially in the lower
34 elevations, where conifer encroachment is not the major threat. The southwest
35 corner of the BLM's Boise District has also been identified as one of the largest
36 intact strongholds of GRSG habitat in the Northern Great Basin. Strategic
37 measures have been taken and are underway to protect this habitat. This is due
38 to this area's remoteness, its high potential for large wildfires, the long response
39 time, and limited number of sites for firefighters to establish safe anchor points.

40 In the last five years, large fires have threatened focal habitats in the Owyhee
41 South PPA, primarily to the northeast in the Bruneau Field Office. The Crowbar

1 and Blacksheep fires in 2010 burned a combined 33,855 acres within five miles
2 of GRSG habitat with greater than 75 percent BBD. The following year the Big
3 Hill fire consumed 67,081 acres next to greater than 75 percent BBD, while the
4 most recent fire, the Jacks fire in 2012, consumed 48,923 acres completely in
5 greater than 75 percent BBD. This trend in large fire occurrence has led to a
6 greater likelihood that fires will continue to spread into focal habitats in the
7 Owyhee South PPA and will replace native vegetation with invasive and noxious
8 vegetation.

9 Following the 2012 fire season, the BLM Idaho determined specific guidance
10 would be beneficial to BLM agency administrators, fire management officers,
11 resource advisors, and incoming incident management teams for addressing
12 GRSG conservation during fire operations. ID-IM-2013-036, Greater Sage-
13 Grouse Habitat and Wildland Fire Objectives, provides this guidance and
14 resources to assist in the assessment and information-sharing process to
15 address GRSG habitat protection in wildfires. The BLM Boise District will use
16 the attachments to ID-IM-2013-036 during its pre-season initial attack and
17 extended attack efforts.

- 18 • Delegation of Authority
- 19 • Agency Administrators Leaders Intent
- 20 • Incident Status Summary (ICS-209)
- 21 • Common WFDSS Examples and Terminology
- 22 • Resource Advisor's Sage-Grouse Toolkit

23 Since 2013, the Boise District has facilitated numerous fire training courses to
24 assist in the development of RFPAs. During the fire season, these RFPAs assist
25 in fire suppression and provide additional firefighters, which leads to an
26 improvement in suppression capability.

27 The following bullets outline current fire operation strategies and planning for
28 the Boise District to protect and conserve GRSG habitat. Many of the resources
29 and actions identified are in addition to the organization's normal operations
30 and will be accomplished with additional 2015 funding provided for GRSG
31 habitat conservation.

- 32 • Lease two additional dozers, one from the Eagle Fire Department
33 and one staffed by a district employee
- 34 • Rent a semi-truck to haul an additional 6,000-gallon water tank
- 35 • Add two equipment operators to staff dozer and water tender
- 36 • Station two super heavy engines with 2,500-gallon tanks to areas
37 that have the quickest response time to focal habitats

- Extend staffing for an air attack, a type 3 helicopter, a SEAT, incident type 3 commanders, and additional resources; extend staffing and station resources as needed, based on local and regional preparedness levels, potential for ignitions, and key weather events

The following bullets outline actions that will be considered if additional funding were available:

- Purchase 7,000-gallon water trailer, a semi-truck, and a heavy equipment trailer for dozer transport
- Improve well site at Star Valley (southwest corner of Idaho), install a 15,000-gallon water storage tank and an open dip tank that can be used for helicopter operations
- Improve various well sites and reservoirs (spatially identified in FIAT Step 2) throughout the Owyhee North and South PPAs
- Explore opportunities to staff additional suppression resources at Duck Valley Indian Reservation (for example, purchase camp trailers for housing)
- Order incident command trailers for extended attack fires

The Juniper Mountain Strategic Fire Management Area in the Owyhee Field Office is an area where fire may be managed for multiple objectives. This area incorporates the North Fork Owyhee Wilderness Area. It is in higher elevations (greater than 5,000 feet), where western juniper dominants and sagebrush cover is minimal, and is not in focal habitat (greater than 75 percent BBD). Although resource objectives do not target focal habitat improvement, opportunities exist to help increase connectivity between leks in the North and South Owyhee PPAs if fire were managed appropriately.

In March 2014, fire and fuels program representatives from the BLM's Boise, Elko, Vale, and Winnemucca Districts met in Elko to discuss fire suppression and fuels management issues in the area where Idaho, Nevada, and Oregon geographically meet. During this meeting the group agreed to work on increasing coordination and planning in regards to wildfire response and an integrated system of fuel breaks to compartmentalize the Tri-state landscape and minimize the risk of large wildfires in this area. The following primary action items were identified:

- Internal Communication Plan (completed)—The goal was to provide an internal reference for large wildfires that may occur in the tri-state area. These incidents could involve all three states, so providing an internal communications plan would facilitate open communication between all BLM, Forest Service, and state agencies involved in wildfire suppression.

- Tri-State Local Operating Plan (LOP; completed)—The objectives of the LOP are to establish mutual response areas between agencies. These agencies would use the closest forces concept for initial response to an incident, would enhance communication and coordination of vegetation treatments, and would facilitate reporting. The LOP provides specific direction in meeting the goals of the master agreements already in place. Signatory agencies are the BLM Boise, Elko, Vale, and Winnemucca Districts, the Forest Service’s Mountain City/Ruby Mountains/Jarbridge Ranger Districts, and the its Santa Rosa Ranger District.
- Fuel Break Joint EIS between Boise and Vale Districts (in progress)—To date, the Elko and Winnemucca Districts have already planned and are implementing a series of fuel breaks in their respective districts. The Boise and Vale Districts have begun a joint planning effort to implement fuel breaks that will tie into the already planned or implemented fuel breaks on the Elko and Winnemucca Districts, with the fall of 2016 as a targeted completion date.

The priority area for fire operations Owyhee South Fire 1st priority—1,245,000 acres. See the associated GIS data layers for the position and extent in the PPA and **Table 4-88**.

Table 4-88
Owyhee South Potential Fire Operations Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	1,245,000	269,600	547,000	500	2,062,100
Percent of PPA	48	10	21	0	79

Post-Fire Rehabilitation

The Step 2 FIAT process identified those areas with moderate to high shrub cover and warm-dry soil conditions without prior ESR treatments as being the highest priority for post-fire rehabilitation. Areas that have been revegetated are more persistent than the moderate to high cover 3B and 3C soil temperature moisture regime areas. Higher elevation, north-facing slope areas with cooler and moister soil characteristics would be lower priority areas for rehabilitation due to their ability to naturally recover following fire. In all cases of previously seeded or natural recovery areas, shrub seeding or planting may be necessary if desirable resprouting shrubs are not present.

In the absence of ESR treatments, recently burned native communities will irrevocably be converted to invasive annual-dominant communities; conversely, in existing seedings, the herbaceous component typically recovers naturally, even though the sagebrush would be killed. Additionally, when seeded areas 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.

1 The potential treatment area for post-fire rehabilitation management is Owyhee
 2 South ESR 1st priority—915,900 acres. See the associated GIS data layers for
 3 the position and extent in the PPA and **Table 4-89**.

Table 4-89
Owyhee South Proposed Post-Fire Rehabilitation Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	915,900	336,000	553,200	—	1,805,100
Percent of PPA	35	13	21	—	69

4
 5 **Proposed Management**
 6 See **Table 4-90** for projects in this PPA that are identified to be in the NEPA
 7 planning process. See **Figures 4-100** through **4-108** for a graphic depiction of
 8 the proposed treatments and strategies in the PPA.

Table 4-90
Owyhee South Project Planning Area Potential Treatment Summary Table

Treatment Description		Priority			Threats Addressed				NEPA			Treatments						
Name/Type	Acres/Miles	1st	2nd	3rd	Conifer (C)	Invasive annual grasses (I)	Riparian Degradation (R)	Wildfire (W)	Initiated (I)	Completed (C)	Needed (N)	Time Frame		Certainty of Effectiveness ¹		Maintenance Time Frame (Years) ²	Completion Time Frame (0-2, 3-5, 5+ years) ³	
												Pending Funding (P) ¹	Implementing (I) ¹	Likely	Unlikely			
ESR Ground Seeding	unknown			X	X				X			X			I		3-5	0-3
ESR Seedling Planting	unknown			X	X				X			X			I		3-5	0-3
ESR Herbicide	unknown			X	X				X			X			I		3-5	0-3
Tristate Fuel Breaks	50,000	X			X		X	X				X			I		5-10	5+
BOSH Conifer	800,000	X			X				X			X			I		10-20	5+
Upper Castle Cr. Conifer	5,000	X			X				X			X			I		5-10	0-2

¹If treatment, once completed, is likely or unlikely to be effective, the rationale for effectiveness uses the following codes:
 1 = site conditions (soils, resilience, species composition, disturbances) make treatment effectiveness likely
 2 = site conditions make treatment effectiveness unlikely
 3 = continued current management (grazing, recreation, or other land uses) make likelihood of effectiveness low
 4 = based on professional opinion, treatment is likely to be effective
²Describes the frequency of maintenance necessary to continue effectiveness (in years)
³Identifies the potential treatment completion time frame, considering NEPA adequacy, relative priority, and local ranking factors

4.3.14 Rogerson

Project Planning Area Description

Geographic Overview

The Rogerson PPA is in the BLM's Twin Falls District Office administrative boundary and covers approximately 1,456,400 acres. It includes the western portion of the Burley Field Office and the Sawtooth National Forest, including the western South Hills and Shoshone Basin. The eastern boundary is Rock Creek in the South Hills; the southern boundary extends just south of the Idaho-Nevada border; the western boundary follows focal habitat borders through Diamond Desert and Inside Desert; the northern boundary crosses Crow's Nest Flat. Landownership is approximately 72 percent BLM-administered lands, 8 percent Forest Service, 4 percent state, and 16 percent private lands.

This PPA is characterized by low, moderate, and high shrub cover heights in cool-moist, cool-dry, and warm-dry soil moisture temperature regimes. Northwestern portions of the PPA are 3A, 3B, and 3C regimes, which are characterized by low, moderate, and high sagebrush cover, with warm and dry soils. Sagebrush may recover naturally in these areas but over a longer period (see **Table 4-91**).

Table 4-91
Rogerson GRSG Habitat Matrix Categories

Matrix Category	No Data	1A	1B	1C	2A	2B	2C	3A	3B	3C
Acres	25,950	58,353	116,187	194,512	137,974	88,953	125,772	227,424	175,743	305,507
Percent of PPA	2	1	8	13	10	6	9	16	12	21

Topographic features in the 1,456,400-acre Rogerson PPA are the western slopes on Deadline Ridge, Shoshone Basin, Antelope Desert, Inside Desert, and Crow's Nest Flat. Elevation ranges from approximately 4,200 feet (1,280 meters) in the valley bottoms to 7,500 feet (2,286 meters) on the mountaintops.

Surface water features throughout the Rogerson PPA are largely confined to intermittent and ephemeral streams, with some perennial streams and reservoirs. The Salmon Falls Creek Reservoir and the Cedar Creek Reservoir are the largest surface water bodies in the PPA.

Major drainages in the Jarbidge Field Office portion of the Rogerson PPA are Salmon Falls Creek (which forms the boundary with the Burley Field Office), the Jarbidge River, and the Bruneau River. Numerous springs and intermittent and perennial drainages occur in the Rogerson PPA, primarily in the southern half. These are China Creek, Browns Creek, Cedar Creek, House Creek, Deadwood

1 Creek, Flat Creek, Three Creek, Columbet Creek, and Clover Creek. Water
2 bodies in the Burley Field Office portion of the Rogerson PPA are Salmon Falls
3 Creek, Shoshone Creek, Horse Creek, Hot Creek, Cottonwood Creek, Soldier
4 Creek, Big Creek, Mule Creek, Deep Creek, North Cottonwood Creek,
5 McMullen Creek, Horse Creek Reservoir, Rock Creek, Cherry Springs, Indian
6 Springs, Sugarloaf Spring, Rayburn Spring, Winter Spring, Twin Spring, Sagehen
7 Spring, Three Mile Spring, Rabbit Spring, Hole In The Wall Spring, Will Spring,
8 Rice Creek Spring, Bull Spring, Rock Cabin Spring, and numerous unnamed
9 springs, seeps, and meadows.

10 Most roads in the PPA are county or BLM-administered roads. One notable
11 exception is US Interstate 93, which runs north-south and bisects the southeast
12 portion of the PPA. The Three Creek Highway in the southern portion of the
13 Jarbidge Field Office provides the only paved road in the western two-thirds of
14 the Rogerson PPA. This paved access ends at the edge of Jarbidge River Canyon
15 and continues as a gravel county road accessing the Diamond A Desert.

16 About 80 percent of the PPA is within 12 miles of electrical transmission
17 towers, and the remaining habitat is 12 to 21 miles from towers. Approximately
18 20 percent of the eastern portion of the PPA is within nine miles of primary
19 roads. Two transmission line corridors occur in the Rogerson PPA, with about
20 25 percent of habitat within four miles and 40 percent within four to nine miles.

21 One high voltage transmission line comes out of Nevada east of Salmon Falls
22 Creek. It runs north through GRSG habitat along US Interstate 93, then skirts
23 the periphery to the east along the edge of the PPA. The SWIP line has been
24 approved and if developed would follow the existing line out of Nevada. Low
25 voltage distribution lines are mainly peripheral to the PPA, following major
26 roadways and generally tying residences and large agricultural operations to
27 small substations.

28 *GRSG Characteristics*

29 Winter habitat for GRSG occurs on the landscape near in the southeastern
30 parts of the PPA near US Interstate 93 and in the northwestern parts near Big
31 Draw. Breeding habitat occurs in the southwestern and central northern areas
32 in the PPA.

33 This PPA includes a very important focal area for the Northern Great Basin
34 GRSG population. Lek attendance on the Shoshone Basin lek route has ranged
35 from 92 to 148 over the last six years. Average males per lek have ranged from
36 8 to 25 for approximately 16 total leks. Most recently lek attendance has
37 dropped. Focal areas west of Salmon Falls Creek contain 30 to 40 leks, occupied
38 annually by a total of 500 to 700 birds. Lek attendance varies, but it increased in
39 2014. This appears to be due to habitat recovery in areas burned before 2007.

40 Telemetry data shows which that GRSG in the Shoshone Basin generally move
41 east in summer to the south hills, while birds from Brown's Bench move east

1 into the Shoshone Basin during summer. Connectivity occurs between these
2 populations, as well as with Nevada populations to the south.

3 *Vegetation*

4 There are very limited conifer encroachment issues in the PPA, so treatment
5 areas are not identified due to low priority and only isolated areas needing
6 future treatments.

7 Cheatgrass is encroaching from north to south, with isolated spots of
8 medusahead. There is a high concern in the southern part of the PPA due to
9 aspect and slope where southern aspect allows the cheatgrass to occur in
10 elevations up to 7,000 feet.

11 *Fire*

12 Approximately 100 percent of this PPA is modeled to be high and very high
13 burn probability (see **Table 4-92**).

Table 4-92
Rogerson Summary of Burn Probability

High and very high burn probability in PPA (acres)	1,434,900
High and very high burn probability in PPA (percent)	99

14 *Existing Treatments*

15 Historically, numerous seedings were established in lower elevations associated
16 with ESR treatments.
17

18 There are no site-specific annual grass restoration projects planned in the
19 Rogerson PPA. However, the BLM Twin Falls District staff will complete a
20 programmatic vegetation treatment EA in 2015 that will analyze impacts of
21 chemical, mechanical, biological, and prescribed fire treatments for noxious
22 weeds and invasive plants. If the proposed action is approved, the Burley and
23 Jarbidge Field Offices fuels and resource staff will identify specific restoration
24 areas and will develop treatment plans. Additionally, the Jarbidge Field Office has
25 recently completed the Jarbidge Fuel Breaks EA. The BLM signed a record of
26 decision to implement about 200 miles of fuel breaks that could reduce fire size
27 and frequency by slowing fire spread. This is anticipated to slow the loss of
28 remaining GRS habitat and help recovery of previously burned habitats by
29 preventing reburning. The Burley Field Office staff are also working on a
30 programmatic integrated hazardous fuel break project that would integrate a
31 variety of fuel break development methods, including mowing, mastication,
32 chaining, herbicide, seedings, and targeted grazing. This project is expected to
33 protect GRS habitat by reducing fire size and preventing fire from reaching
34 important habitats.

35 The success of past treatments in the Rogerson PPA has been remarkably high,
36 both in the long-term productivity of past treatments and through recent ESR

1 efforts. Perennial grasses are establishing and spreading in treated areas, and
 2 annual grass cover has been reduced. Shrub planting treatments have also been
 3 moderately successful with plantings in areas where there have been recent
 4 fires.

5 *Other Management Factors*

6 Aside from such infrastructure as roads and transmission lines and towers,
 7 other management factors did not influence the selection of treatments for this
 8 PPA.

9 *Fuels Management*

10 Local knowledge and past fire history was used to inform this assessment that
 11 cool-dry soil moisture temperature regimes in this PPA function as warm-dry
 12 regimes. Linear fuel treatments are prioritized based on strategic need to
 13 protect GRSG habitats and the R&R matrix. The boundary for the Rogerson
 14 PPA was extended north to include Balanced Rock Road. Here, a planned fuel
 15 break is intended to reduce the potential for fire starts in the northern portion
 16 of the Jarbidge Field Office from spreading south and burning GRSG habitat.

17 Potential treatment areas for fuels management activities are as follows:

- 18 • Rogerson Linear Fuel Treatments 1st priority—150 miles
- 19 • Rogerson Area Fuel Treatments 1st Priority—195,100 acres

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

Table 4-93
Rogerson Potential Fuels Management Treatments

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Miles	150	0	150	—	300
Acres	195,100	—	61,300	300	256,700

22 *Habitat Recovery and Restoration*

23 Habitat recovery and restoration projects would coincide with the fuels
 24 treatments described above.

26 Shrub restoration has occurred and will be ongoing in the areas west of US
 27 Interstate 93. The entire PPA to the west is the delineated polygon for habitat
 28 restoration and recovery potential projects, excluding any areas with shrubs,
 29 such as the Jarbidge foothills. Over the past three years, 300,000 shrubs have
 30 been planted annually; this project is planned to continue.

31 Treatments in the invasive annual areas would focus on fuels reduction and
 32 restoration in and next to focal areas to protect and expand habitat and
 33 population connectivity. Treatments would include restoring perennial

herbaceous species and shrubs through seeding and large scale plantings, roadside fuel breaks to protect remaining habitat in focal areas, and improved road corridors for fire suppression.

Invasive annual priority areas are as follows:

- Rogerson Invasive Annual 1st priority—177,600 acres
- Rogerson Habitat Restoration (other) 1st priority—102,300 acres
- Rogerson Habitat Restoration (other) 2nd priority—206,700 acres
- Rogerson Habitat Restoration (other) 3rd priority—113,000 acres

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

Table 4-94
Rogerson Potential Habitat Restoration Treatments

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	279,900	206,700	113,000	100	599,700
Percent of PPA	19	14	8	0	41

Fire Operations

Local knowledge and past fire history was used to inform this assessment that cool-dry soil moisture temperature regimes in this PPA function as warm-dry regimes. Fires on BLM-administered land may be fully suppressed in the Rogerson PPA to protect native shrublands and restoration areas.

Response to wildfires on NFS Lands, in and around identified priority greater GRSG habitat, will be consistent with forest plan direction. Identified GRSG habitat is considered a high priority for protection on NFS lands.

Response to wildfires on other federal public lands, state lands, private lands, and lands protected by forest fire protection associations' will be consistent with their respective fire management plans.

The priority area for fire operations is Rogerson Fire (1st priority)—712,400 acres. See the associated GIS data layers for the position and extent in the PPA and **Table 4-95**.

Table 4-95
Rogerson Potential Fire Operations Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	712,400	284,900	321,500	—	1,318,800
Percent of PPA	49	20	22	—	91

Post-Fire Rehabilitation

The Step 2 FIAT process identified previously unburned areas with moderate to high cover in warm-dry soil moisture temperature regimes as the highest priority for post-fire rehabilitation. Higher elevation areas with cooler and moister soil characteristics would be lower priority for rehabilitation due to their ability to recover naturally following fire. However, shrub seeding or planting may be necessary if desirable resprouting shrubs are not present.

The potential treatment area for post-fire rehabilitation management is Rogerson ESR 1st priority—380,000 acres. See the associated GIS data layers for the position and extent in the PPA and **Table 4-96**.

Table 4-96
Rogerson Potential Post-Fire Rehabilitation Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	380,000	287,700	333,700	—	1,001,400
Percent of PPA	26	20	23	—	69

Proposed Management

Proposed fire and habitat restoration management in the Rogerson PPA consists of treatments that are intended to reduce current invasive annual grasses and improve sagebrush steppe ecosystems. Treatments for invasive annuals would prevent their spread from low elevation areas to higher elevation areas (over 5,500 feet). Identified fuel treatments along roadways are intended to stop the spread of wildfire, protecting 75 percent BBD habitat. See **Table 4-97** for projects in this PPA that are presently identified to be in the NEPA planning process. See **Figures 4-109** through **4-116** for a graphic depiction of the proposed treatments and strategies in the PPA.

Table 4-97
Rogerson Project Planning Area Potential Treatment Summary Table

Treatment Description		Priority	Threats Addressed				NEPA		Treatments								
Name/Type	Acres/Miles	1st	2nd	3rd	Conifer (C)	Invasive annual grasses (I)	Riparian Degradation (R)	Wildfire (W)	Initiated (I)	Completed (C)	Needed (N)	Time Frame		Certainty of Effectiveness ¹		Maintenance Time Frame (Years) ²	Completion Time Frame (0-2, 3-5, 5+ years) ³
												Pending Funding (P) ¹	Implementing (I) ¹	Likely	Unlikely		
TF District ESR	unknown								X			X		X		unknown	0-2
Jarbidge Roadside Fuel Breaks	700 ac				X		X		X			X	X	X		Yearly	0-2

Table 4-97
Rogerson Project Planning Area Potential Treatment Summary Table

Treatment Description		Priority			Threats Addressed				NEPA			Treatments						
Name/Type	Acres/Miles	1st	2nd	3rd	Conifer (C)	Invasive annual grasses (I)	Riparian Degradation (R)	Wildfire (W)	Initiated (I)	Completed (C)	Needed (N)	Time Frame		Certainty of Effectiveness ¹		Maintenance Time Frame (Years) ²	Completion Time Frame (0-2, 3-5, 5+ years) ³	
												Pending Funding (P) ¹	Implementing (I) ¹	Likely	Unlikely			
Mud Flat Bitterbrush Restoration	700 ac					X	X		X			X	X			unknown	0-2	
Fenceline Fuel Breaks	1,200 ac					X	X		X			X	X		X		3-5	5+
Jarbidge Twin Falls Weeds	9,000 ac					X	X		X			X	X		X		0-3	5+
Jarbidge Twin Falls Bio Control	3,000 ac					X	X		X			X	X		X		0-3	5+
Cougar Point	215 ac				X		X		X			X	X		X		5+	0-2
Devil Creek	60 ac				X		X		X			X			X		unknown	0-2
Murphy Restoration	35,000 ac					X	X		X			X	X		X		unknown	5+
Jarbidge GRSB Brush Restoration	55,000 ac					X	X		X			X	X		X		unknown	5+
Jarbidge Fuel Breaks	12,600 ac					X	X		X			X	X		X		0-3	5+
Buck Flat Restoration	2,500 ac					X	X	X				X			X		unknown	3-5
TFD Veg EA— Jarbidge Sage-grouse Habitat Restoration	10,000 ac					X	X	X				X			X		unknown	5+
Burley Twin Falls Weeds	9,000 ac					X	X		X			X	X		X		0-3	5+
Shoshone Basin Sage Restoration	500 ac					X	X		X				X		X		unknown	0-2
Burley Integrated Fuel Breaks	500 ac					X	X	X				X					3-5	5+

¹If treatment, once completed, is likely or unlikely to be effective, the rationale for effectiveness uses the following codes:

1 = site conditions (soils, resilience, species composition, disturbances) make treatment effectiveness likely

2 = site conditions make treatment effectiveness unlikely

3 = continued current management (grazing, recreation, or other land uses) make likelihood of effectiveness low

4 = based on professional opinion, treatment is likely to be effective

²Describes the frequency of maintenance necessary to continue effectiveness (in years)

³Identifies the potential treatment completion time frame, considering NEPA adequacy, relative priority, and local ranking factors

4.3.15 Sheepshead East

Project Planning Area Description

Geographic Overview

The 73,600-acre Sheepshead East PPA in the BLM Vale District Office is part of an isolated PPA cluster, which includes the Sheepshead West PPA in the adjacent BLM Burns District Office. The Sheepshead East PPA is mostly in Malheur County, with a small area in the northwestern portion of the PPA in Harney County. Topography in the PPA includes the Sheepshead Mountains to the east and a portion of the Barren Valley extending through the center of the PPA, from northeast to southwest. The Steens Mountains cross through the northwestern PPA. Landownership in the Sheepshead East PPA is approximately 56 percent BLM-administered lands, 39 percent state, and 5 percent private lands.

Average ground surface elevations in the Sheepshead Mountains portion of the PPA is approximately 5,500 feet (1,700 meters), with the highest point at approximately 6,200 feet (1,900 meters). Elevations throughout the Barren Valley generally range between 4,000 feet (1,200 meters) and 4,200 feet (1,300 meters). Along the western edge of the Barren Valley in the northwestern portion of the PPA, the Steens Mountains rise 2,000 feet above the valley floor in most locations to an average elevation of 6,000 feet (1,800 meters).

Because the Barren Valley characterizes much of the PPA, there are few distinguishable slopes there. Slope aspects associated with the Sheepshead Mountains are also varied.

The most notable roadway in the Sheepshead East PPA is State Highway 78/Steens Highway, a paved two-lane roadway that crosses through the PPA from northwest to southeast. Other travel routes are a mixture of paved and unpaved local roads.

Approximately 50 percent of the PPA is within 12 miles of electrical transmission towers, and 50 percent is 12 to 21 miles from towers. The entire PPA is within five miles or less of primary roads.

This PPA is generally characterized with all shrub cover types (low, moderate, and high) in cool-dry and warm-dry soil moisture temperature regimes. The only area in the PPA with cool-moist soil temperature and moisture characteristics is on north-facing slopes in the northwestern portion of the PPA (see **Table 4-98**).

Surface water availability throughout the Sheepshead East PPA is limited to ephemeral streams and seasonal lakes. The nearest year-round surface water body is the roughly 10,000-square-foot Juniper Lake at the base of the Steens

Table 4-98
Sheepshead East GRSG Habitat Matrix Categories

Matrix Category	No Data	1A	1B	1C	2A	2B	2C	3A	3B	3C
Acres	—	0	0	257	33	3,309	967	1,400	17,622	17,178
Percent of PPA	—	—	—	1	0	8	2	3	43	42

1
2 Mountains southwest of the PPA. Malheur Lake, the largest surface water
3 source in the region, is approximately 20 miles northwest of the PPAs.

4 *GRSG Characteristics*
5 In Sheepshead East GRSG characteristics generally are consistent with those
6 described above for the broader Idaho/Southwest Montana EIS/RMPA planning
7 area.

8 *Vegetation*
9 Sagebrush communities generally correspond with the elevation and soil
10 moisture regimes in the PPA. Wyoming big sage and salt desert scrub are the
11 dominant species throughout the PPA. Mountain big sage generally characterizes
12 areas above 5,500 feet, especially in the northern portion of the PPAs.

13 Conifer expansion is of limited concern in the Sheepshead East PPA, and
14 conifers are found in the Steens Mountains, in the northwestern portion of the
15 PPA. These areas are largely on lands not administered by the BLM. A
16 combination of past treatments and wildfire has reduced the overall conifer
17 population in the PPAs.

18 *Fire*
19 Lack of available local and regional surface water sources in the Sheepshead East
20 PPA is a limiting factor for GRSG habitat protection during fire season.
21 Combined with the distance from the nearest fire operations center, early
22 detection of fires is a foremost challenge in GRSG habitat conservation. This
23 area is also almost wholly in a warm-dry soil temperature and moisture regime,
24 which typically supports rapid wildfire spread.

25 A hundred percent of this PPA is modeled to be high and very high burn
26 probability (see **Table 4-99**).

Table 4-99
Sheepshead East Summary of Burn Probability

High and very high burn probability in PPA (acres)	40,600
High and very high burn probability in PPA (percent)	100

27
28 *Existing Treatments*
29 Projects targeting management of invasive annual grasses have been the
30 predominant vegetation management focus in this PPA.

Other Management Factors

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

Fuels Management

As part of the FIAT Step 2 process, the BLM Vale District identified 30 miles of linear fuel treatments in the PPA. These treatments follow a network of travel routes throughout the PPA and are depicted in the GIS data accompanying this report. The proposed treatment primarily is green stripping along the identified roadways. This treatment is the first order priority and can be accomplished in the next five years.

The potential treatment area for fuels management activities is Sheepshead East linear fuel treatments 1st Priority—30 miles. See the associated GIS data layers for the position and extent in the PPA and **Table 4-100**.

Table 4-100
Sheepshead East Potential Fuels Management Treatments

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Miles	30	15	—	—	45

Habitat Recovery and Restoration

No habitat restoration projects are being identified other than the fuel break treatments described above. These treatments would act as habitat restoration measures due to proper chemical treatment, seeding, and monitoring that would occur after the treatment (see **Table 4-101**).

Table 4-101
Sheepshead East Potential Habitat Restoration Treatments

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	0	0	0	0	0
Percent of PPA	—	—	—	—	—

Fire Operations

Highway 78 in this PPA will be used as the primary anchor point and for quick fire access and response time. Response to wildfires on NFS Lands, in and around identified priority greater 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 private land and land protected by forest fire protection associations will be consistent with their respective fire management plans.

1 Water access improvements would improve fire suppression capabilities in this
 2 PPA. Additional information is needed to identify existing water sources and
 3 develop the necessary partnerships to access those resources during fire
 4 operations.

5 The priority area for fire operations is Sheepshead East Fire 1st priority—
 6 36,300 acres. See the associated GIS data layers for the position and extent in
 7 the PPA and **Table 4-102**.

Table 4-102
Sheepshead East Potential Fire Operations Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	36,300	4,300	200	—	40,800
Percent of PPA	90	10	0	—	100

8
 9 *Post-Fire Rehabilitation*

10 The Step 2 FIAT process identified areas with moderate to high shrub cover and
 11 warm-dry soil conditions, minus previous ESR treatments, as the highest priority
 12 for post-fire rehabilitation. Higher elevation, north-facing slopes with cooler and
 13 moister soil characteristics would be lower priority for rehabilitation due to
 14 their ability to naturally recover following fire. The Vale District Office will work
 15 with other stakeholders to coordinate and prioritize post-fire rehabilitation.

16 The potential treatment area for post-fire rehabilitation management is
 17 Sheepshead East ESR 1st priority—34,800 acres. See the associated GIS data
 18 layers for the position and extent in the PPA and **Table 4-103**.

Table 4-103
Sheepshead East Proposed Post-Fire Rehabilitation Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	34,800	4,300	300	—	39,400
Percent of PPA	85	11	0	—	96

19
 20 *Proposed Management*

21 The Sheepshead East PPA contains largely intact sagebrush habitat, with limited
 22 conifer encroachment or invasive annual grass concerns. Because most of the
 23 area is characterized by warm-dry soil conditions, the threat is high for the area
 24 to become a monoculture of invasive annual grasses following a large fire.
 25 Accordingly, the proposed treatment, which is primarily establishing fuel breaks
 26 along roadways, is intended to protect the GRSG habitat from wildfire and
 27 subsequent habitat regime shift. See **Table 4-104** for projects in this PPA that
 28 are presently identified to be in the NEPA planning process. See **Figures 4-117**
 29 through **4-122** for a graphic depiction of the proposed treatments and
 30 strategies in the PPA.

**Table 4-104
Sheepshead East Project Planning Area Potential Treatment Summary Table**

Treatment Description		Priority			Threats Addressed				NEPA			Treatments					
Name/Type	Acres/ Miles	1st	2nd	3rd	Conifer (C)	Invasive annual grasses (I)	Riparian Degradation (R)	Wildfire (W)	Initiated (I)	Completed (C)	Needed (N)	Time Frame		Certainty of Effectiveness ¹		Maintenance Time Frame (Years) ²	Completion Time Frame (0-2, 3-5, 5+ years) ³
												Pending Funding (P) ¹	Implementing (I) ¹	Likely	Unlikely		
Imazapic	67 acres	X				X			X			X			I		0-2

¹If treatment, once completed, is likely or unlikely to be effective, the rationale for effectiveness uses the following codes:

- 1 = site conditions (soils, resilience, species composition, disturbances) make treatment effectiveness likely
- 2 = site conditions make treatment effectiveness unlikely
- 3 = continued current management (grazing, recreation, or other land uses) make likelihood of effectiveness low
- 4 = based on professional opinion, treatment is likely to be effective

²Describes the frequency of maintenance necessary to continue effectiveness (in years)

³Identifies the potential treatment completion time frame, considering NEPA adequacy, relative priority, and local ranking factors

4.3.16 Sheepshead West

Project Planning Area Description

Geographic Overview

Located directly west of the Sheepshead East PPA, the 41,897-acre Sheepshead West PPA is in the BLM Burns District Office in eastern Oregon. The PPA straddles the border of Malheur and Harney Counties. Topographically, the Steens Mountains characterize the western half of the PPA, while the Sunrise Valley defines the topography in the eastern half. The Steens Mountains rise 2,000 feet above the valley floor in most locations to an average elevation of 6,000 feet (1,800 meters). Average ground surface elevations in the western half of the PPA are around 5,500 feet (1,700 meters), while elevations in the Sunrise Valley are generally between 4,000 feet (1,200 meters) and 4,200 feet (1,300 meters). The slope profile in the PPA is largely east and west facing, with the western front of the Steens being more gradual than the abrupt eastern edge. Landownership in the Sheepshead West PPA is 58 percent BLM administered lands, 33 percent state lands, and 9 percent private lands.

The most notable roadway in the Sheepshead West PPA is State Highway 78/Steens Highway, a paved two-lane road that crosses the northern portion of the PPA from northwest to southeast. Other travel routes are a mixture of paved and unpaved local roads.

Approximately 65 percent of the PPA is within 12 miles of electrical transmission towers, and the remaining habitat is 12 to 21 miles from the

towers. About half the habitat in the PPA is less than five miles from primary roads and the remaining half is five to nine miles away.

Approximately half of the PPA is represented by a moderate height shrub cool-dry soil moisture temperature regime; approximately 20 percent is represented by a low shrub cover warm-dry soil moisture temperature regime; approximately 25 percent of the PPA is represented by a moderate height shrub cover warm-dry soil moisture temperature regime. Areas in the PPA with cool-moist (IB and IC) soil temperature and moisture characteristics are along the western front of the Steens Mountains, primarily in and surrounding Burnt Flat, and north of Highway 78. Cool/moist soils account for 3,900 acres (nine percent) of the PPA (see **Table 4-105**).

Table 4-105
Sheepshead West GRSG Habitat Matrix Categories

Matrix Category	No Data	1A	1B	1C	2A	2B	2C	3A	3B	3C
Acres	4	136	2,119	1,770	118	18,456	1,320	7,616	10,354	—
Percent of PPA	0	0	5	4	0	44	3	18	25	—

Surface water availability throughout the Sheepshead West PPA is limited to ephemeral streams and seasonal lakes. Ten Cent Lake, in the southwestern edge of the focal habitat boundary, is dry most of the year. The nearest year-round surface water body is the approximately 10,000-square-foot Juniper Lake at the base of the Steens Mountains southwest of Ten Cent Lake. Malheur Lake, the largest surface water source in the region, is approximately 20 miles northwest of the PPA.

GRSG Characteristics

GRSG characteristics in Sheepshead West are, in general, consistent with those described above for the broader Idaho/Southwest Montana EIS/RMPA planning area.

Vegetation

Sagebrush communities generally correspond with the elevation and soil moisture regimes in the PPA. In lower drier areas, Wyoming big sage is the dominant species. Areas above 5,500 feet are generally characterized by mountain big sage.

Conifers are confined to the Steens Mountains in the western half of the Sheepshead West PPA. These areas are largely on lands not administered by the BLM. A combination of past treatments and wildfire has reduced the overall conifer population in the PPAs.

Fire

Lack of available local and regional surface water sources in the PPA is a limiting factor for GRSG habitat protection during fire season. Combined with the

1 distance from the nearest fire operations center, early detection of fires is a
 2 foremost challenge for GRSG habitat conservation. Areas not dominated by
 3 conifers have a predominantly warm-dry soil temperature and moisture regime,
 4 which typically supports rapid wildfire spread.

5 A hundred percent of this PPA is identified to be high and very high burn
 6 probability.

7 See **Table 4-106** Summary of Burn Probability.

Table 4-106
Sheepshead West Summary of Burn Probability

High and very high burn probability in PPA (acres)	41,700
High and very high burn probability in PPA (percent)	100

8
 9 *Existing Treatments*

10 The Burns District Office staff conducted extensive prescribed fire treatments
 11 in the past to reduce the extent of conifer encroachment in the PPA.

12 *Other Management Factors*

13 Aside from such infrastructure as roads and transmission lines and towers,
 14 other management factors did not influence the selection of treatments for this
 15 PPA.

16 *Fuels Management*

17 As part of the FIAT Step 2 process, the BLM Burns District Office staff identified
 18 71 miles of potential fuel breaks in the PPA. These breaks follow a network of
 19 travel routes throughout the PPA and are depicted in the GIS data
 20 accompanying this report. The proposed treatment primarily is green stripping
 21 along the identified roadways. This treatment is the first order priority and can
 22 be accomplished in the next five years.

23 Potential treatment areas for fuels management activities are as follows:

- 24 • Sheepshead West linear fuel treatments 1st Priority—30 miles
- 25 • Sheepshead West area fuel treatments 1st priority—4,300 acres

26 See the associated GIS data layers for the position and extent in the PPA and
 27 **Table 4-107**.

Table 4-107
Sheepshead West potential Fuels Management Treatments

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Miles	30	20	40	—	90
Acres	4,300	—	—	—	4,300

Habitat Recovery and Restoration

No habitat restoration projects are being identified other than the fuel break treatments described above. These treatments would act as habitat restoration measures due to proper chemical treatment, seeding, and monitoring that would occur after the treatment (see **Table 4-108**).

Table 4-108
Sheepshead West Potential Habitat Restoration Treatments

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	0	0	0	—	0
Percent of PPA	0	0	0	—	0

Fire Operations

District knowledge indicates that a portion of the cool-dry soil moisture temperature regime functions as the warm-dry regime. Thus, 67 percent of this PPA has been identified as a 1st order fire priority. Eastings Road will be a physical boundary for an anchor point, for quick access, and response time. Response to wildfires on NFS lands, in and around identified priority greater 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 private land and land protected by forest fire protection associations will be consistent with their respective fire management plans.

Through the Step 2 FIAT process, the Burns District Office established a two-mile fire management buffer around known active leks in the PPA. These would be priority areas for protection during fire suppression. Water access improvements would also improve fire suppression capabilities. Additional information is needed to identify existing water sources and develop the necessary partnerships to access those resources during fire suppression.

The priority area for fire suppression is Sheepshead West Fire High (1st priority)—28,000 acres. See the associated GIS data layers for the position and extent in the PPA and **Table 4-109**.

Table 4-109
Sheepshead West Potential Fire Operations Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	28,000	10,300	3,600	—	41,900
Percent of PPA	67	25	8	—	100

Post-Fire Rehabilitation

The Step 2 FIAT process identified areas with moderate to high shrub cover in warm-dry soil regimes, minus past ESR treatments, as the highest priority for post-fire rehabilitation. Higher elevation, north-facing slopes with cooler and

1 moister soil characteristics would be lower priority for rehabilitation due to
2 their ability to naturally recover following fire. The Burns District Office staff
3 will continue working with other stakeholders to coordinate and prioritize post-
4 fire rehabilitation activities.

5 The potential treatment area for post-fire rehabilitation management is
6 Sheepshead West ESR 1st priority—32,600 acres. See the associated GIS data
7 layers for the position and extent in the PPA and **Table 4-110**.

Table 4-110
Sheepshead West Proposed Post-Fire Rehabilitation Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	32,600	—	—	—	32,600
Percent of PPA	78	—	—	—	78

8
9 ***Proposed Management***

10 The Sheepshead West PPA contains intact sagebrush habitat with declining
11 areas of conifer encroachment. Where warm-dry soil conditions exist, the
12 threat is high for the area becoming dominated by a monoculture of invasive
13 annual grasses following a large fire. Accordingly, proposed treatments focus on
14 establishing fuel breaks along roadways to protect the GRSG habitat from
15 wildfire and subsequent habitat regime shift.

16 Of these projects, the largest in the PPA is the 73,000-acre Five Creeks project,
17 which is near completion. It contains various treatments, including the
18 prescribed burn of 37,000 acres in an effort to reduce juniper encroachment
19 and invasive annuals.

20 No habitat restoration projects have being identified, other than the fuel break
21 treatments described above. Potential treatments will be identified in the near
22 future to address the invasive annual grass issues in the PPA; however, they are
23 contingent on better information to help identify these priority areas. Treatments
24 include chemical application and seeding. See **Table 4-111** for projects in this
25 PPA that are presently identified to be in the NEPA planning process. See
26 **Figures 4-123** through **4-129** for a graphic depiction of the proposed
27 treatments and strategies in the PPA.

Table 4-111
Sheephead West Project Planning Area Potential Treatment Summary Table

Treatment Description		Priority			Threats Addressed				NEPA			Treatments					
Name/Type	Acres/ Miles	1st	2nd	3rd	Conifer (C)	Invasive annual grasses (I)	Riparian Degradation (R)	Wildfire (W)	Initiated (I)	Completed (C)	Needed (N)	Time Frame		Certainty of Effectiveness ¹		Maintenance Time Frame (Years) ²	Completion Time Frame (0-2, 3-5, 5+ years) ³
												Pending Funding (P) ¹	Implementing (I) ¹	Likely	Unlikely		
5 Creeks Rangeland Restoration	18,839 acres	X			X	X			X			X	X	I		15-20 years	3-5

¹If treatment, once completed, is likely or unlikely to be effective, the rationale for effectiveness uses the following codes:

1 = site conditions (soils, resilience, species composition, disturbances) make treatment effectiveness likely

2 = site conditions make treatment effectiveness unlikely

3 = continued current management (grazing, recreation, or other land uses) make likelihood of effectiveness low

4 = based on professional opinion, treatment is likely to be effective

²Describes the frequency of maintenance necessary to continue effectiveness (in years)

³Identifies the potential treatment completion time frame, considering NEPA adequacy, relative priority, and local ranking factors

4.3.17 Tuscarora

Project Planning Area Description

Geographic Overview

The Tuscarora PPA is in the Elko District Office administrative boundary and covers approximately 928,500 acres. The southern boundary follows focal habitats and the western boundary follows focal habitats near the Elko and Humboldt County line. The northern boundary follows focal habitats east through Burner Hills and continues around Bull Run Mountains and into the Independence Mountains. The eastern boundary follows the Independence Mountains south into Independence Valley. Landownership in the Tuscarora PPA is approximately 54 percent BLM-administered lands, 9 percent Forest Service, and 37 percent private lands.

This PPA is represented by low, moderate, and high shrub cover types in the cool/moist, cool/dry, and warm/dry soil moisture temperature regimes. Approximately 60 percent of the focal habitat areas are in 2A and 3B classes (see **Table 4-112**).

Topographic features in the Tuscarora PPA are the Snowstorm Mountains along the western border, the Tuscarora Mountains near the center, and the Independence Mountains along its eastern border. Elevation ranges from approximately 5,400 feet (1,646 meters) in valley bottoms to 8,580 feet (2,615 meters) on Mount Neva.

**Table 4-112
Tuscarora GRSG Habitat Matrix Categories**

Matrix Category	No Data	1A	1B	1C	2A	2B	2C	3A	3B	3C
Acres	51,405	16,383	37,671	38,945	310,390	231,371	78,474	116,590	39,923	7,348
Percent of PPA	6	2	4	4	33	25	8	13	4	1

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Surface water features throughout the Tuscarora PPA are largely confined to intermittent and ephemeral streams, with some perennial waterways and small reservoirs: South Fork Little Humboldt River, South Fork Owyhee River, Willow Creek Reservoir, Bull Run Reservoir, Wilson Reservoir, and Round Mountain Reservoir.

Nevada State Highway 226 is a paved two-lane highway and crosses the eastern side of the PPA from north to south. Other travel routes are a mixture of mainly unpaved local roads.

Approximately 65 percent of the PPA is within 12 miles of electrical transmission towers, and the remaining habitat is 12 to 21 miles from towers. About 25 percent of the eastern portion of the PPA is less than five miles from primary roads, and approximately 10 percent is five to nine miles away. A transmission corridor from the south runs through the northeast portion of the Tuscarora PPA; approximately 20 percent of habitat is within four miles of this corridor and 25 percent is four to nine miles from this corridor.

GRSG Characteristics

Sage-grouse characteristics in Tuscarora are generally consistent with the GRSG characteristics described above for the broader Idaho/Southwest Montana EIS/RMPA planning area.

Vegetation

Sagebrush communities generally correspond with the elevation and soil moisture regimes in the PPA. Vegetation has been changed by recent fire history, particularly by lowering the height of the shrub cover. Generally there are invasive annual grasses and forbs throughout this PPA.

Fire

Approximately 100 percent of this PPA is high and very high burn probability. This PPA has had repeated fire occurrence including significant fires in 2005, 2006, and 2011. This PPA was identified to have the highest risk from fire in the Nevada Governor's Sage-Grouse Plan (see **Table 4-113**).

**Table 4-113
Tuscarora Summary of Burn Probability**

High and very high burn probability in PPA (acres)	897,300
High and very high burn probability in PPA (percent)	97

Existing Treatments

Recent projects in this PPA are The Snow Canyons Fuels Treatment Project and the Six Mile Fuels Treatment Project; two invasive annual grass treatments are also being implemented.

Other Management Factors

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

Fuels Management

Fuel treatments can be used to protect important winter habitat and prevent the spread of fire into focal habitats. There is a good forb component throughout the area, but the prevalence of perennial grasses could allow recently burned areas to burn again.

Potential treatment areas for fuels management activities are as follows:

- Tuscarora linear fuel treatments 1st priority—50 miles
- Tuscarora fuel treatment areas 2nd priority—31,800 acres

See the associated GIS data layers for the position and extent in the PPA and **Table 4-114**.

Table 4-114
Tuscarora Potential Fuels Management Treatments

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Miles	50	50	100	—	200
Acres		31,800	—	1,300	33,100

Habitat Recovery and Restoration

Habitat recovery and restoration projects would coincide with the fuels treatments described above.

Potential treatments for habitat recovery and restoration are as follows:

- Tuscarora Invasive Annual Grass 1st priority—2,500 acres
- Tuscarora Habitat Restoration (other) 1st priority—46,700 acres
- Tuscarora Habitat Restoration (other) 2nd priority—135,400
- Tuscarora Habitat Restoration (other) 3rd priority—43,700 acres

See the associated GIS data layers for the position and extent in the PPA and **Table 4-115**.

**Table 4-115
Tuscarora Potential Habitat Restoration Treatments**

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	49,200	135,400	43,700	15,600	243,900
Percent of PPA	5	15	5	2	27

1
2 *Fire Operations*
3 Response to wildfires on National Forest Systems (NFS) Lands, in and around
4 identified priority greater GRSG habitat, will be consistent with the forest plan
5 direction. Identified GRSG habitat is considered a high priority for protection on
6 NFS lands.

7 The response to wildfire will be consistent with the fire management plans on
8 other federal public lands, state lands, and other landownerships. This includes
9 response by private ownerships and forest fire protection associations where
10 applicable.

11 BLM-administered land in the Tuscarora PPA may be fully suppressed due to the
12 abundance of recent fires, concentration of leaks, and the need to protect past
13 rehabilitated areas.

14 Response to wildfires on NFS lands in and around identified priority greater
15 GRSG habitat will be consistent with forest plan direction. Identified GRSG
16 habitat is considered a high priority for protection on NFS lands.

17 Response to wildfire on other federal public lands, state lands, and private land
18 or lands protected by (forest) fire protection associations will be consistent
19 with their respective fire management plans.

20 A priority area for fire operations is Tuscarora Fire Ops 1st priority—126,600
21 acres. See the associated GIS data layers for the position and extent in the PPA
22 and **Table 4-116**.

**Table 4-116
Tuscarora Potential Fire Operations Management Strategies**

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	126,600	461,200	80,500	—	668,300
Percent of PPA	14	50	8	—	72

23
24 *Post-Fire Rehabilitation*
25 The Step 2 FIAT process identified areas with moderate to high shrub cover in
26 warm-dry soil regimes, minus past ESR treatments, as the highest priority for
27 post-fire rehabilitation. Higher elevation north-facing slopes with cooler and
28 moister soil characteristics would be lower priority for rehabilitation due to
29 their ability to naturally recover following fire. The Elko District Office will

1 continue working with other stakeholders to coordinate and prioritize post-fire
2 rehabilitation activities.

3 A priority area for post-fire rehabilitation is Tuscarora ESR 1st priority—89,700
4 acres. See the associated GIS data layers for the position and extent in the PPA
5 and **Table 4-117**.

Table 4-117
Tuscarora Proposed Post-Fire Rehabilitation Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	89,700	388,100	76,300	—	554,100
Percent of PPA	10	42	8	—	60

6
7 **Proposed Management**

8 Two projects in which NEPA analysis is complete are proposed for this PPA,
9 which consists of treating areas dominated by hoary cress and medusahead. See
10 **Table 4-118** for projects in this PPA that are identified to be in the NEPA
11 planning process. See **Figures 4-130** through **4-137** for a graphic depiction of
12 the proposed treatments and strategies in the PPA.

Table 4-118
Tuscarora Project Planning Area Potential Treatment Summary Table

Treatment Description	Priority	Threats Addressed	NEPA	Treatments			
				Time Frame	Certainty of Effectiveness ¹		Maintenance Time Frame (Years) ²
Name/Type	Acres/Miles	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		
McCann Cr. Hoary Cress Treatment	4,697 acres	X	X	X	I		0-2
Medusahead Treatment	2,822 acres	X	X	X	I		0-2

¹If treatment, once completed, is likely or unlikely to be effective, the rationale for effectiveness uses the following codes:

- 1 = site conditions (soils, resilience, species composition, disturbances) make treatment effectiveness likely
- 2 = site conditions make treatment effectiveness unlikely
- 3 = continued current management (grazing, recreation, or other land uses) make likelihood of effectiveness low
- 4 = based on professional opinion, treatment is likely to be effective

²Describes the frequency of maintenance necessary to continue effectiveness (in years)

³Identifies the potential treatment completion time frame, considering NEPA adequacy, relative priority, and local ranking factors

4.3.18 West Box Elder

Project Planning Area Description

Geographic Overview

The West Box Elder Project Planning Area is in the Salt Lake District Office administrative boundary and covers approximately 1,173,000 acres. The western boundary follows the Nevada-Utah state line but includes some focal habitats that extend into Nevada. The northern boundary follows the Utah-Idaho state line. The eastern boundary follows focal habitat south through Curlew Valley, and the southern boundary follows connected focal habitats to the Nevada-Utah state line. Landownership in the West Box Elder PPA is approximately 40 percent BLM-administered lands, 6 percent Forest Service, 5 percent state, and 48 percent private.

This PPA is characterized by low, medium, and high shrub cover types in the cool-moist, cool-dry, and warm-dry soil moisture temperature regimes. The southern areas in the PPA are 3A, 3B, and 3C habitat, characterized by moderate to high sagebrush cover with drier soils, where natural sagebrush recovery may occur but over a longer period. The higher elevation areas in the Grouse Creek Mountains, Goose Creek Mountains, and Raft River Mountains are mostly in 1B and 1C habitat, which is characterized by moderate to high sagebrush cover with moist soils where natural sagebrush recovery is likely to occur (see **Table 4-119**).

Table 4-119
West Box Elder GRSG Habitat Matrix Categories

Matrix Category	No Data	1A	1B	1C	2A	2B	2C	3A	3B	3C
Acres	23,197	18,537	175,973	108,148	59,234	155,287	48,171	38,617	238,071	307,725
Percent of PPA	2	2	15	9	5	13	4	3	20	26

Topographic features in the West Box Elder PPA are the Grouse Creek Mountains in the southwest, the Goose Creek Mountains in the northwest, and the Raft River Mountains in the far northeast. Elevation ranges from approximately 4,400 feet (1,341 meters) in valley bottoms near the Great Salt Lake to 9,925 feet (3,025 meters) on Bull Mountain in the Sawtooth National Forest.

Approximately 80 percent of the PPA is within 12 miles of electrical transmission towers, and the remaining habitat is 12 to 21 miles from towers. Approximately 35 percent of the eastern portion of the PPA is less than five miles from primary roads, and about 20 percent is five to nine miles. Two transmission line corridors are in the West Box Elder PPA, with about 30 percent of habitat within four miles and 50 percent within four to nine miles.

GRSG Characteristics

Sage-grouse characteristics in West Box Elder are generally consistent with the GRSG characteristics described above for the broader Idaho/Southwest Montana EIS/RMPA planning area.

Box Elder County has been identified as a key area for restoration projects for GRSG. Due to the higher percentage of non-federal land ownership in the State of Utah, the BLM has planned fewer projects in this PPA compared to others where federal ownership is higher. Most planned projects include conifer treatments. There is wide movement between all focal habitats in the northwest corner of Utah, based on telemetry data, so all focal habits are combined into the West Box Elder PPA.

Vegetation

Conifer encroachment GIS layers submitted from BLM Utah identify two-year encroachment and five-year opportunity layers. These are the main priority areas for conifer expansion treatments. Conifer is primarily phase 1 and 2.

Fire

Approximately 90 percent of this PPA has a high and very high burn probability (see **Table 4-120**).

Table 4-120
West Box Elder Summary of Burn Probability

High and very high burn probability in PPA (acres)	1,027,500
High and very high burn probability in PPA (percent)	88

Other Management Factors

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

Fuels Management

Potential fuel treatment areas were identified to be in association with existing fuel breaks and roads, with an emphasis on protecting winter habitat. Chemical, green stripping, and brown stripping may occur along these fuel breaks. Potential fuel treatments just south of the 75 percent BBD were included to prevent fires from entering GRSG habitat from south of Highway 30.

Potential treatment areas for fuels management activities are as follows:

- West Box Elder linear fuel treatments 1st priority—100 miles
- West Box Elder area fuel treatments 1st priority—41,000 acres

See the associated GIS data layers for the position and extent in the PPA and **Table 4-121**.

Table 4-121
West Box Elder Potential Fuels Management Treatments

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Miles	100	100	50	—	250
Acres	41,000	—	—	—	41,000

Habitat Recovery and Restoration

Habitat recovery and restoration projects would coincide with the fuels treatments described above.

Potential treatment areas for habitat recovery and restoration are as follows:

- West Box Elder Conifer 1st priority—545,700 acres
- West Box Elder Invasive annual grass 1st priority—30,100 acres
- West Box Elder Invasive annual grass 2nd priority—10,800 acres
- West Box Elder Habitat Restoration (other) (2nd priority—50,200 acres

See the associated GIS data layers for the position and extent in the PPA and **Table 4-122**.

Table 4-122
West Box Elder Potential Habitat Restoration Treatments

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	575,800	89,000	29,600	1,400	595,800
Percent of PPA	49	8	2	0	59

Fire Operations

Full suppression may occur on BLM-administered lands in the West Box Elder PPA.

Response to wildfires on NFS lands in and around identified priority greater 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 private land or land protected by forest fire protection associations will be consistent with their respective fire management plans.

A priority area for fire operations is West Box Elder Fire 1st priority—531,500 acres. See the associated GIS data layers for the position and extent in the PPA and **Table 4-123**.

Table 4-123
West Box Elder Potential Fire Operations Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	531,500	130,900	167,500	1,100	831,000
Percent of PPA	45	11	14	0	71

Post-Fire Rehabilitation

The Step 2 FIAT process identified previously untreated areas with moderate to high shrub cover in warm-dry soil moisture temperature regimes as the highest priority for post-fire rehabilitation. Higher elevation north-facing slopes with cooler and moister soil characteristics would be lower priority for rehabilitation due to their ability to naturally recover following fire. The BLM's Color Country District Office will continue working with other stakeholders to coordinate and prioritize post-fire rehabilitation.

Due to the high concentration of leks, the delineated polygon covers the same areas as the fire operations polygon.

The potential treatment area for post-fire rehabilitation management is West Box Elder ESR 1st priority—395,600 acres. See the associated GIS data layers for the position and extent in the PPA and **Table 4-124**.

Table 4-124
West Box Elder Proposed Post-Fire Rehabilitation Management Strategies

Priority	Priority 1	Priority 2	Priority 3	Null	Total
Acres	395,600	141,300	167,500	2,200	706,600
Percent of PPA	34	12	14	0	60

Proposed Management

Proposed fire and invasives management in the West Box Elder PPA consists of active treatments that are intended to reduce current invasive annual and conifer encroachment issues. Treatments for invasive annuals would prevent the spread of invasives from low elevation areas to higher elevation areas (over 5,500 feet). Identified fuel break treatments along roadways are intended to stop the spread of wildfire in low resistance and resilient (i.e., warm-dry soil) areas. See **Table 4-125** for projects that are presently identified to be in the NEPA planning process. See **Figures 4-138** through **4-146** for a graphic depiction of the proposed treatments and strategies in the PPA.

**Table 4-125
West Box Elder Project Planning Area Treatment Summary Table**

Treatment Description		Priority			Threats Addressed				NEPA			Treatments					
Name/Type	Acres/ Miles	1st	2nd	3rd	Conifer (C)	Invasive annual grasses (I)	Riparian Degradation (R)	Wildfire (W)	Initiated (I)	Completed (C)	Needed (N)	Time Frame		Certainty of Effectiveness ¹		Maintenance Time Frame (Years) ²	Completion Time Frame (0-2, 3-5, 5+ years) ³
												Pending Funding (P) ¹	Implementing (I) ¹	Likely	Unlikely		
Cook Canyon Phase 1, 2 nd Entry	221 Acres			X	X				X			X		I		5-10	0-2
Chokecherry Phase 2, 2 nd Entry	265 Acres			X	X				X			X		I		5-10	0-2
Pole Cr. Phase 1, 2 nd Entry	829 Acres			X	X				X			X		I		5-10	0-2
W. Grouse Cr. Phase 1, 2 nd Entry	1,027 Acres			X	X				X			X		I		5-10	0-2
Keg Springs, 2 nd Entry	493 Acres			X	X				X			X		I		5-10	0-2
Grouse Cr. Phase 3 Conifer	705 Acres			X	X				X			X		I		5-10	0-2
Grouse Cr. Phase 3— Seeding	141 Acres			X	X				X			X		I		5-10	0-2
Badger Flat Fuel Break Maintenance	222 Acres		X		X				X			X		I		5-10	0-2
Park Valley Slashing	324 Acres	X			X				X			X		I		5-10	0-2
W. Grouse Cr. Phase 4 Conifer	1,200 Acres		X		X				X			X		I		5-10	0-2
W. Grouse Cr. Phase 4 Seeding	600 acres		X		X				X			X		I		5-10	0-2
W. Grouse Cr. Phase 5 Conifer	600 Acres		X		X				X			X		I		5-10	0-2
W. Grouse Cr. Phase 5— Seeding	200 Acres		X		X				X			X		I		5-10	0-2

¹If treatment, once completed, is likely or unlikely to be effective, the rationale for effectiveness uses the following codes:

1 = site conditions (soils, resilience, species composition, disturbances) make treatment effectiveness likely

2 = site conditions make treatment effectiveness unlikely

3 = continued current management (grazing, recreation, or other land uses) make likelihood of effectiveness low

4 = based on professional opinion, treatment is likely to be effective

²Describes the frequency of maintenance necessary to continue effectiveness (in years)

³Identifies the potential treatment completion time frame, considering NEPA adequacy, relative priority, and local ranking factors

1 **SECTION 5**
2 **LOOKING AHEAD: IMPLEMENTATION, NEPA,**
3 **AND MONITORING**

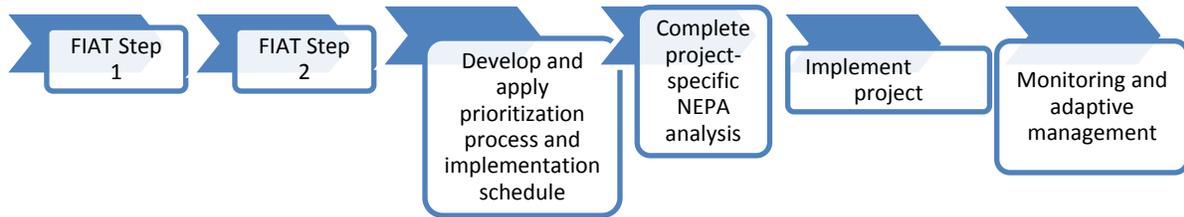
4 **5.1 IMPLEMENTATION STRATEGY: LOOKING AHEAD, NEPA & MONITORING**

5 GRSG land use plans provide the overarching direction for the strategies
6 identified in this assessment. FIAT assessments are referenced in the Appendices
7 of each sub-regional environmental impact statement. As such, the potential
8 implementation of all FIAT management strategies is fully subject to all direction
9 and constraints in the overarching land use plans and treatment level NEPA
10 analysis. Such topics as noxious weed control and native seed use for habitat
11 restoration are included in this section. They are here to assist land managers in
12 selecting appropriate treatments as FIAT Step 2 assessments to develop site-
13 specific treatments and conduct the appropriate NEPA analyses (e.g., Step 3).

14 The planning, implementation, and monitoring cycle for FIAT strategies are a
15 multi-year process. In or near the focal habitats in the FIAT assessment areas,
16 the identified management strategies occur across the spectrum of the planning
17 process. Some FIAT management strategies have planning completed, are NEPA
18 compliant, and are ready for implementation. Others are beyond the NEPA
19 scoping phase, but planning is not yet complete. Finally, many potential
20 treatments identified in this assessment were conceptualized in FIAT
21 workshops, and planning has not begun.

22 Prioritizing the sequence of project/treatment implementation is an important
23 process. Taken into consideration may be NEPA compliance, budgeting, unit
24 capacity, and such other factors as immediacy of the threat to GRSG.
25 Furthermore, this prioritization is a necessary step in order to produce an out-
26 year program of work, which is scheduled to follow the completion of FIAT
27 Step 2 assessments. The program of work will portray the years for
28 implementation, scale of treatment, and type of treatment by
29 program/management strategy area. **Figure 5-1** below illustrates the sequence
30 of FIAT Steps, project implementation, and monitoring.

1 **Figure 5-1**
 2 **Workflow for FIAT Project Identification, Planning, Implementation, and Adaptive**
 3 **Management**



4
 5
 6 FIAT assessments were not designed to address project area practices, such as
 7 specific changes in management to promote habitat recovery and what types of
 8 seed mixtures to use or to address invasive species other than invasive annual
 9 grasses. These activities are fully subject to all direction and constraints in the
 10 overarching land use plans and treatment level NEPA; however, the following
 11 suggestions are provided to assist in the transition from FIAT Step 2 to the
 12 project planning and NEPA stage.

13 **5.1.1 Habitat Restoration and Recovery**

14 Habitat restoration and recovery are two approaches to rebuilding or
 15 maintaining GRSG habitats. Active habitat restoration treatments are on-the-
 16 ground activities; examples are seeding and controlling invasive annual grasses
 17 and conifer expansion; conversely, habitat recovery, the passive approach,
 18 involves changes in management practices. Opportunities for passive restoration
 19 includes changing livestock grazing management to improve GRSG habitat,
 20 applying appropriate wild horse and burro management, spot treating weed
 21 infestations in treatment areas, and limiting or mitigating soil-disturbing
 22 activities, such as off-road vehicle use. These types of management changes
 23 were not specifically identified nor prioritized in the FIAT Step 2 stage.

24 Habitat restoration is expensive and requires time for plants to become
 25 established and recover. Livestock grazing exclusion is a common practice to
 26 promote vegetation recovery or establishment after a surface-disturbing
 27 treatment. Appropriate exclusion periods after habitat restoration should be
 28 considered and incorporated into the project planning/NEPA process. Similar
 29 consideration also should be given to wild horses and burros and recreation.

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

Habitat restoration also includes post-fire rehabilitation treatments and 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 plants to become established or recover.

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 is addressed in land use plans. To the extent practical and in concert with the appropriate land use plans, an agency or project proponent should use locally adapted seeds and native plant materials appropriate to the location. Also conditions and management objectives for vegetation management and restoration should be used, 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, and weed control and 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: invasive annual grasses and conifer species expanding into sagebrush habitats. This does not negate the importance of controlling other noxious plants in sagebrush habitat, but the FIAT assessment was not designed to address other invasive and 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.

Noxious weed risk is recognized as 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 in 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 after 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

1 that this program of work would be developed immediately following the
2 completion of FIAT Step 2 assessments.

3 **5.3 SUMMATION OF TREATMENTS**

4 The time necessary for implementation, the scale of treatment, and the type of
5 treatment by management strategy will be considered. The program of work
6 will portray the years for implementation, scale of treatment, and type of
7 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	3,580,900	859,400	381,000	4,821,300				
Fuels Treatments	235,800	64,500	158,100	458,400	2,100	1,800	1,400	5,300
Fire Operations	6,585,500	3,052,800	2,296,000	11,934,300				
Post-Fire Treatments (ESR)	4,853,800	2,730,200	2,203,600	9,787,600				

8
9 For this assessment the strategies identified in focal habitat are considered to be
10 emphasis areas. Strategies are intended to be implemented in or next to focal
11 habitats.

12 The habitat restoration and fuels management strategies are proactive and
13 planned; the fire operations and post-fire rehabilitation strategies are reactive in
14 response to wildland fire, an environmental factor on the landscape.

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

23 **5.3.1 Fuels Management**

24 Fuels management is a proactive strategy to reduce wildfire behavior. It changes
25 the size, arrangement, and loading (amount) of live and dead vegetation; this aids
26 in fire suppression and in reducing fire expansion. The focus of the FIAT process
27 was very specific to the identified habitats and the associated buffers of these
28 areas (see **Table 5-2**). In the vegetation types being addressed, fire growth can
29 cross large tracts of ground very quickly.

Table 5-2
Focal Habitat Acreage in Project Planning Areas in the Northern Great Basin Landscape

PPA	Acres of Focal Habitat in the PPA	Percentage of Focal Habitat in the PPA	Total Acres in the PPA	Total Acres in the PPA that Are Null
Beulah	448,400	64	702,915	1,809
Bowden Hills	92,029	100	92,029	0
Curlew	201,984	59	342,879	21,994
Greater Owyhee	609,495	56	1,082,879	28,280
Jim Sage	171,916	52	330,839	36,872
Mainstem Malheur	269,399	54	497,969	0
North Fork Owyhee	1,134,218	73	1,542,397	62,641
Oakley	313,378	85	368,497	20,576
Oneil	1,479,785	63	2,340,770	122,796
Otis	223,296	63	351,668	5,643
Owyhee Desert	553,806	81	682,254	12,501
Owyhee North	942,341	53	1,787,140	49,245
Owyhee South	1,812,611	70	2,595,022	30,323
Rogerson	1,055,866	72	1,456,377	25,950
Sheepshead East	40,771	100	40,771	0
Sheepshead West	41,897	100	41,897	4
Tuscarora	698,431	75	928,503	51,405
West Box Elder	796,807	68	1,172,966	23,197
Total for all NGB PPAs	10,886,407	66	16,357,781	493,241

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Due to the focus on the habitats and buffers, many types of existing or planned treatments were not addressed in this process. The areas outside the planning areas will need to be treated in the future. This is because that is often the only option available to minimize the potential for fires to enter the planning areas and the identified leks.

7
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Future efforts should also include fuels and restoration treatments outside of the areas identified. This is because that would connect the identified areas, which would be critical for increasing GRS habitat.

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Additionally, fuel break treatments that use nonnative species, such as forage kochia, should be carefully evaluated. Field office staff should carefully consider where and to what spatial extent these nonnative vegetative treatments occur. An example to avoid is planning multiple concentric polygons of nonnative vegetative fuel breaks in intact resistant and resilient sagebrush communities. This would only exacerbate habitat fragmentation in these ecologically functional communities.

17
18
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20
Extant natives, such as Sandberg bluegrass (*Poa secunda*), are also used successfully as fuel breaks in Nevada and southwest Idaho. At the Next Steppe Conference in Boise (November 5 to 7, 2014), BLM Winnemucca District staff identified the following advantages of using natives for seeding fuel breaks:

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

5.3.2 Habitat Restoration/Recovery

All natural systems vary in space and time; in many cases, restoring a range of target vegetative conditions may be desirable. Where this is not likely, full restoration may not be possible; however, site resilience can be leveraged to increase ecological function over time, assuming 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 in turn be further defined and prioritized at finer local scales.

Habitat restoration is a proactive strategy that includes several types of treatments: reducing phase 1 and phase 2 conifer vegetation, generally through mechanical treatment; managing invasive annual grasses, generally through the use of herbicide, seeding, and planting sagebrush; and other types of treatments with the primary goal of restoring or enhancing native plant species and vegetative structure in the native sagebrush steppe ecosystem. This may include removing undesirable plant species.

Below are considerations for habitat restoration and recovery project planning, project implementation, and NEPA (**Table 5-3**).

Table 5-3
Habitat Restoration and Recovery Potential Treatment Areas in the Northern Great Basin Landscape

PPA	Total Acres of Potential Conifer Encroachment Potential Treatments	Percentage of PPA	Null	Total Acres of Invasive Annual Grasses Potential Treatments	Percentage of PPA	Null	Total Acres of Other Potential Habitat Restoration and Recovery Potential Treatments	Percentage of PPA	Null
Beulah	413,800	59	0				14,200	2	0
Bowden Hills									
curlew	135,700	40	10,000	165,000	15	2,600	10,100	3	0
Greater Owyhee							24,600	2	0
Jim Sage	24,400	7	0	33,800	10	700			
Mainstem Malheur	254,200	51					54,700	11	0
North Fork Owyhee							272,900	18	11,000

Table 5-3
Habitat Restoration and Recovery Potential Treatment Areas in the
Northern Great Basin Landscape

PPA	Total Acres of Potential Conifer Encroachment Potential Treatments	Percentage of PPA	Null	Total Acres of Invasive Annual Grasses Potential Treatments	Percentage of PPA	Null	Total Acres of Other Potential Habitat Restoration and Recovery Potential Treatments	Percentage of PPA	Null
Oakley	123,300	33	7,900	42,000	11	0			
Oneil	217,800	9	6,000				32,500	1	1,500
Otis	82,000	23	900	9,600	3	0	58,800	17	300
Owyhee Desert							80,800	12	5,200
Owyhee North	795,400	45	7,400	17,000	1	0			
Owyhee South	517,800	20	5,400	79,400	3	0	125,200	5	300
Rogerson				177,600	12	100	422,100	29	0
Sheepshead East									
Sheepshead West				4,300	10	0			
Tuscarora				2,500	0	0	241,400	26	15,600
West Box Elder	545,700	47	0	40,900	3	0	50,200	4	1,400
Total for all NGB PPAs	3,100,500	19		407,100	3		1,387,500	8	

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 and species interactions, as well as separate seed boxes for broadcast and drill seed mixes; the capacity for different drill attachments that increase broadcast seed to soil contact; meter and drill the appropriate depths for smaller seeds, such as native forbs; minimize impacts on biological soil crust

Project Implementation

- Develop seed mixes by considering a range of successional species (functional types), with higher seed ratios on early to mid-successional native species that provide ecosystem services more quickly than later successional species; includes such species as rabbit brush (*Ericameria*), which has a high germination and

1 establishment rate and provides rapid site structure and pollinator
2 benefits

- 3 • Select genetically appropriate seed sources, which is one of the
4 most critical aspects for long-term sustainability of restoration
5 projects; if empirical studies do not contain a specific species, collect
6 seeds locally or use provisional seed zones
- 7 • Design restoration islands that are irregular in shape and extent and
8 where more expensive forb seed can be strategically applied
- 9 • Combine seedings and live plantings of target species to achieve
10 more compositionally and structurally diverse restoration projects
11 in shorter time frames
- 12 • Integrate existing site structure and microsites to leverage micro
13 and macro climate for seedings and live plantings; if unavailable, use
14 straw wattles, snow fences, or similar structures to create wind
15 barriers and snow collection sites to improve seed/plant
16 germination and persistence
- 17 • Use existing topographic features to prioritize where seeding or live
18 plantings would occur, including north-facing slopes and swales
- 19 • Consider plant increases for specific species necessary for meeting
20 habitat objectives; this would more often include forb species that
21 are less available and require a minimum two- to three-year
22 planning window from collection to contracting to grow-out

23 **NEPA-Related Considerations**

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

33 **Biological Control**

34 Classical biological weed control involves introducing and managing selected
35 natural enemies to reduce and suppress problematic noxious and invasive
36 weeds. Most of the Northern Great Basin's weeds originated from other
37 continents. These newly introduced plants, free from the natural enemies found
38 in their native range, gained a competitive advantage over native plants. Once

1 these populations become unmanageable, other methods of weed control are
2 not always economical or physically possible.

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

9 Biological control has many benefits and some disadvantages. Benefits are as
10 follows:

- 11 • Long-term self-perpetuating control
- 12 • Low cost per acre, reducing herbicide residues in the environment
- 13 • Host specificity on target weeds
- 14 • Host-finding capabilities
- 15 • Ability to synchronize to hosts' life cycles
- 16 • The unlikelihood that hosts will develop resistance to biological
17 control agents

18 Disadvantages of biological control are as follows:

- 19 • The limited availability of biological control agents from their native
20 lands
- 21 • The dependence of biological control agents on plant density
- 22 • The occasional slow rate at which biological control agents occur
23 and uncertainty of the level of control
- 24 • Biotype matching
- 25 • Host specificity when host populations are low

26 Since 1987, there have been over 1,000 releases of over eight million biological
27 control agents. In the Northern Great Basin, biological control agents have been
28 well documented to control Canada thistle (51 percent reduction), Dalmatian
29 toadflax (77 percent reduction), diffuse knapweed (47 percent reduction), leafy
30 spurge (38 percent reduction), and spotted knapweed (31 percent reduction);
31 these reductions are summarized across the range of the infestations of the
32 target weeds from 2007 to 2013.

33 Additional targets of biological control are cheatgrass, field bindweed,
34 medusahead rye, rush skeletonweed, Russian knapweed, and Russian thistle. The
35 biological control agents for these species are not currently available for release
36 or have not been present long enough for their ability to control their host to

1 be analyzed. This is because it can take several years for their densities to
2 increase and begin impacting weed populations.

3 In the case of cheatgrass and medusahead rye, a new bacterial bio-pesticide,
4 *Pseudomonas fluorescens* D7, was recently registered by the Environmental
5 Protection Agency. *P. fluorescens* does not work alone but is added to an
6 integrated restoration program, where it works well. The bacteria can be
7 applied on the seed coat of desirable seeds during the seeding process or
8 applied in the fall. This approach, combined with an herbicide application in the
9 early fall to kill any of the germinating annual grasses, shows promise as an
10 effective tool for restoring landscapes dominated by cheatgrass and medusahead
11 rye.

12 Russian thistle rust, *Colletotrichum salsolae*, has been recommended for release
13 by the Technical Advisory Group (TAG; the independent review committee for
14 all new biological control petitions). This rust has proven to be aggressive and
15 damaging on Russian thistle, attacking 37 to 100 percent of the test plants in
16 greenhouse and field tests. When *C. salsolae* is combined with *Aceria salsolae*, a
17 recently approved eriophyid mite that causes necrosis⁶ and stunts plant growth,
18 they can damage Russian thistle and rapidly reduce infestations.

19 Both of these agents are awaiting final NEPA clearance from the Animal Plant
20 Health Inspection Service (APHIS; the governing body for biological control) and
21 the USFWS. This approval process has proven to be problematic for a number
22 of potential biological control agents that have been petitioned for release.

23 Biological control can be integrated with other management practices to reduce
24 weed populations, as discussed above. For example, once weeds are weakened
25 by biological control, competitive plantings may be used to out-compete the
26 weeds. In addition, satellite weed populations can be controlled by chemical or
27 physical means to reduce weed spread, while biological control agents attack
28 the primary infestation.

29 Biological control is not a panacea; it will not eradicate noxious and invasive
30 weeds. But it does offer a self-sustaining way of controlling invasives that is cost
31 effective and applicable on a large scale.

32 5.3.3 Fire Operations

33 Fire operations are preparedness, prevention, and suppression. As opposed to
34 proactive, site-specific, planned treatments, fire operations and post-fire
35 rehabilitation are responses to random wildfires. Accordingly, in prioritizing
36 potential scenarios, generally the following rule set was used in the focal habitat
37 derived PPAs (This corroborates priorities between fire operations and ESR,

⁶Cell death

1 based on the soil moisture temperature regimes (SMTRs) resistance and
 2 resilience concepts outlined in Chambers et al. [2014]; see **Table 5-4**).

Table 5-4
Fire Operations Potential Treatment Areas in Project Planning Areas in the
Northern Great Basin 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	Number of Water Improve- ments In PPA
Beulah	360,400	51	42,800	6	85,800	12		11
Bowden Hills	16,700	18						3
curlew	14,000	4	44,200	13	138,000	40		
Greater Owyhee	731,000	67	339,000	31			1,900	
Jim Sage	73,600	22	5,500	2	65,800	20		
Mainstem Malheur	281,100	56			216,900	44		6
North Fork Owyhee	271,300	18	709,500	46	66,500	4		
Oakley	67,400	18	55,400	15	172,300	47		
Oneil	882,900	38	498,300	21	86,700	4		
Otis	219,800	62	17,600	5				
Owyhee Desert	536,000	79	15,000	2	400	0		
Owyhee North	451,600	25	163,400	6	343,400	19	1,900	13
Owyhee South	1,245,000	48	269,600	10	547,000	21	500	20
Rogerson	712,400	49	285,000	20	321,500	22		
Sheepshead East	36,300	89	4,300	11	200	0		
Sheepshead West	28,000	67	10,300	25	3,600	9		1
Tuscarora	126,600	14	461,200	50	80,500	9		
West Box Elder	531,500	45	130,900	11	167,500	14	1,100	
Total for all NGB PPAs	6,585,500	40	3,052,800	19	2,296,000	14	9,900	53

3
 4 Fire suppression and ESR treatments are understandably a high priority
 5 throughout most of the Northern Great Basin. Accordingly, district managers
 6 were often inclined to assign a first priority throughout each project area, until
 7 they understood that the purpose of the exercise was to determine the highest
 8 priorities in these project areas. For that reason numerical priorities were
 9 assigned instead of high, medium, and low.

10 Most project areas contained a first and second priority for fire operations and
 11 ESR. Some areas contained three priorities, and a few smaller project areas

1 consisting of important low resiliency vegetation were categorized entirely as
2 first priority.

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

9 In the lower resiliency areas, native plant communities are prioritized over
10 established seedings. Depending on fire severity and the number of residual
11 early successional native species, recently burned native communities will cross
12 ecological thresholds. Here, site disturbances have been frequent enough to
13 limit the recovery of these early succession native species, including Sandberg
14 bluegrass and squirreltail, as well as biological soil crusts.

15 ESR treatments will be important in sites where ecological thresholds in native
16 plant communities have been crossed. In seedings, the herbaceous component
17 typically recovers, but sagebrush will die.

18 During fire events discontinuous fuel loads associated with established perennial
19 bunch grasses; often result in a mosaic burn pattern. The resulting vegetation
20 cover, which can maintain some of the sagebrush, provides an existing seed
21 source for natural reestablishment.

22 Regardless of the above, practical limitations were acknowledged and
23 incorporated in the prioritization process, specifically the rules on fire
24 operations. Wildfire typically moves rapidly through Northern Great Basin
25 environments. Because of this it is unrealistic and misleading to differentiate fire
26 operations priorities between high resiliency and low resiliency, when both
27 types are evenly distributed on the landscape or when minor amounts of either
28 occur in the other. Where such conditions exist, priorities were adjusted to
29 more realistically reflect the situation.

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

33 **5.3.4 Post-Fire Rehabilitation**

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

Table 5-5
Post-Fire Rehabilitation Potential Treatment Areas In Project Planning Areas in the Northern Great Basin 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	Total Acres in the PPA that Are Null
Beulah	298,300	42	44,400	6	85,500	12	100
Bowden Hills	16,700	18					
curlew	8,500	2	41,600	12	118,700	35	
Greater Owyhee	446,500	41	138,300	13			
Jim Sage	61,000	18	5,100	2	62,500	19	
Mainstem Malheur	131,700	26			134,100	27	
North Fork Owyhee	252,800	16	670,000	43	65,900	4	
Oakley	54,600	15	50,800	14	171,000	46	
Oneil	771,200	33	433,500	19	77,500	3	
Otis	96,900	28	33,900	10	54,600	16	
Owyhee Desert	491,800	72	13,400	2	300	0	
Owyhee North	375,000	21	141,900	8	302,600	17	
Owyhee South	915,900	35	336,000	13	553,200	21	
Rogerson	378,000	26	287,700	20	333,700	23	
Sheepshead East	34,800	85	4,300	11	300	1	
Sheepshead West	32,600	78					
Tuscarora	89,700	10	388,100	42	76,300	8	
West Box Elder	395,700	34	141,300	12	167,500	14	2,200
Total for all NGB PPAs	4,853,800	30	2,730,200	17	2,203,600	13	2,300

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, in accordance with the land use plans. Specifically, monitoring that evaluates the implementation and effectiveness of FIAT management strategies will follow The Greater Sage-Grouse Monitoring Framework, (BLM/USFS 2014).

In this framework and as with all projects designed to enhance or restore GRSG habitats, monitoring and evaluating the individual FIAT actions will use the approved fine- and site-scale monitoring methods. For the BLM, these methods are found in its 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 Sage-Grouse Habitat Assessment Framework (HAF-BLM Technical Reference 6710-1, in press). Fine- and site-scale monitoring methods for the Forest Service are those listed for the BLM and Forest Service

1 Rangeland Ecosystem Analysis and Monitoring Handbook, Chapter 40,
2 Rangeland Trend Monitoring and Monitoring Manual for Grassland, Shrubland,
3 and Savanna Ecosystems, Volumes I and II.

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

9 Wildfires will be evaluated at the end of the fire season to determine if they
10 have occurred in FIAT focal habitats and if so, if they have affected the
11 prioritization or implementation of management strategies. For example, fuel
12 break locations may need to be adjusted if a wildfire burns in an area previously
13 identified as high priority for sagebrush maintenance. Surrounding areas with
14 intact sagebrush stands may now be a higher priority for fuel breaks than the
15 burned area.

16 There are reasons why there must be adaptive management processes to
17 identify new focal habitats and new PPAs to adjust where projects will be
18 implemented.

19 First, the landscape is a changing environmental of physical and biological factors.
20 A focal habitat identified in 2014 may have 50 percent of its GRSG habitat
21 altered by wildfire in 2015, so GRSG populations may relocate to another area
22 outside of a PPA.

23 Second, there are many portions in the landscape assessment area that have not
24 been inventoried and monitored for GRSG populations. As more is learned
25 about GRSG populations from improved monitoring, there needs to be a
26 process to implement activity plans in response to new information on 75
27 percent BBD leks.

28 Third, there are negative and positive trends in wildlife populations. As
29 information becomes available on GRSG lek population growth or reduction,
30 adaptive management mechanisms will need to provide activity plans in other
31 focal habitats outside of this 2015 report. As information comes to light, it will
32 be important to indicate an area outside of a previously identified focal habitat
33 or PPA. The BLM and state and federal partners working to conserve the
34 species need to consider its importance as they make decisions for GRSG
35 conservation.

1 **SECTION 6**
 2 **LIST OF PREPARERS**

BUREAU OF LAND MANAGEMENT	
Name	Title/Role
Doug Havlina	FIAT Project Coordinator
Joe Adamski	FIAT Project Lead, Idaho State Office
Travis Cooper	GIS Specialist, Idaho State Office
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	Emergency Fire Rehabilitation and Weeds Program Lead, Idaho State Office

3

CONTRACTOR	
ENVIRONMENTAL MANAGEMENT AND PLANNING SOLUTIONS, INC.	
WWW.EMPSI.COM	
Name	Role
Jordan Adams	Meeting Support
David Batts	Principal
Amy Cordle	Technical Editing
Sean Cottle	Environmental Scientist
Peter Gower	FIAT Deputy Project Manager
Mario Murillo	Formatting
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
Don Kemner	Liaison	IDFG
Kyra Walton Reid	Liaison	Forest Service
Trisha Cracroft	Liaison	NRCS

USFWS

Name	Title/Role
Jason Pyron	Liaison
Katie Powell	Liaison

This Greater Sage-Grouse Wildfire, Invasive Annual Grasses, and Conifer Expansion Assessment of the Northern Great Basin landscape is due to the strong engagements of the following agencies: The USFWS, NRCS, Forest Service, IDFG, NDOW, 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 here, whose engagement and significant contributions were vital to completing this project. All participants in the meetings and workshops to develop this assessment are listed in Appendix D.

SECTION 7

REFERENCES

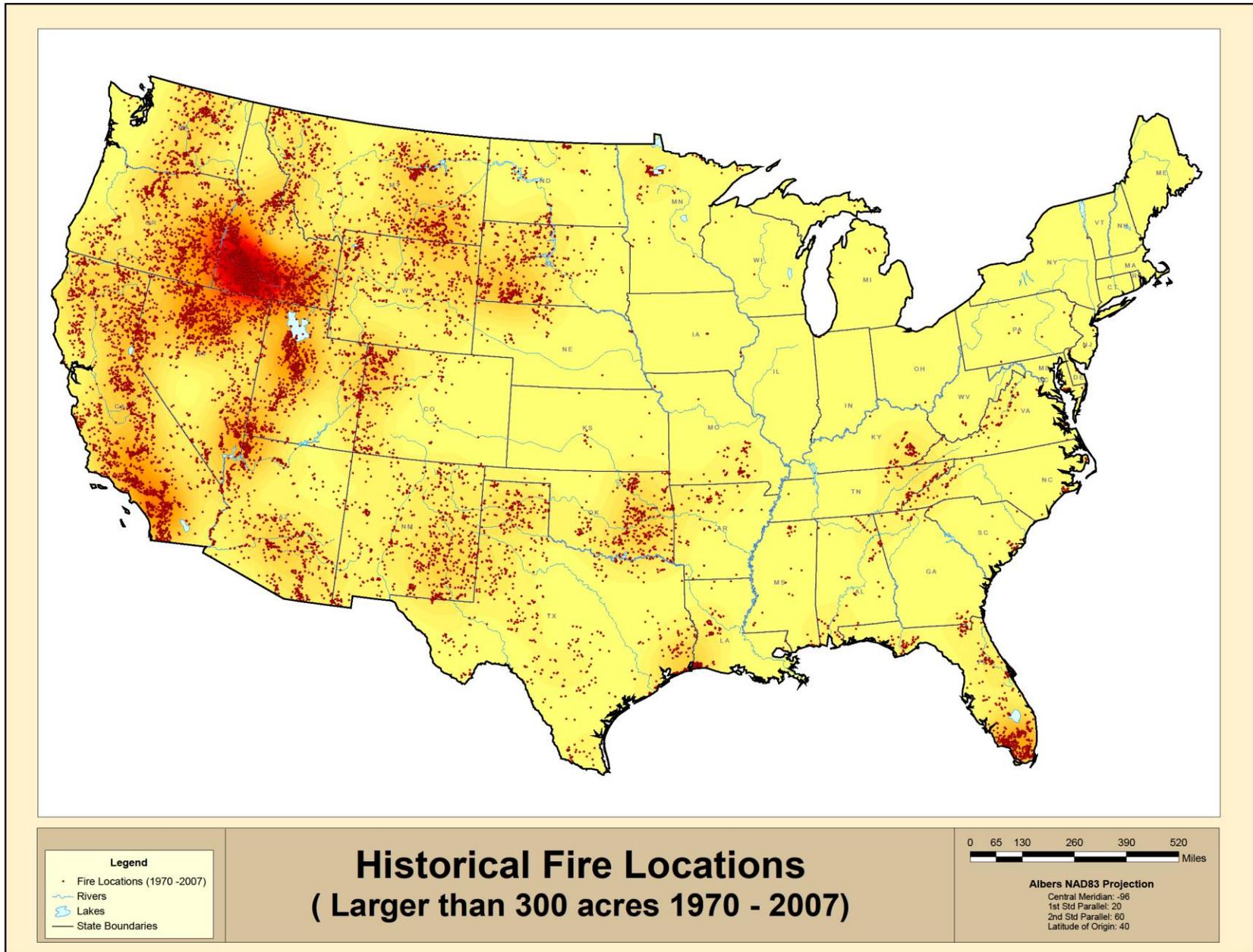
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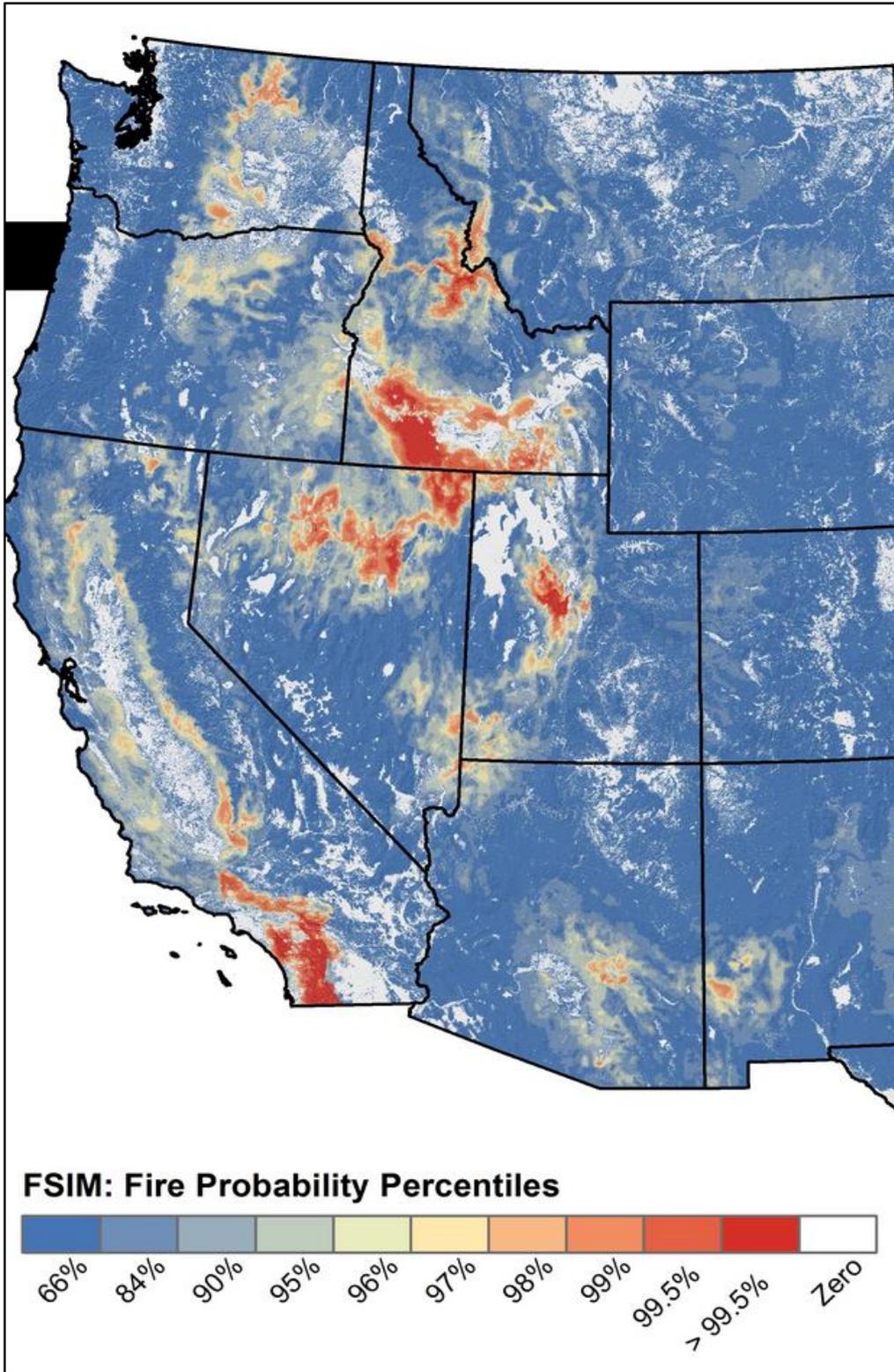
Appendix A

Maps

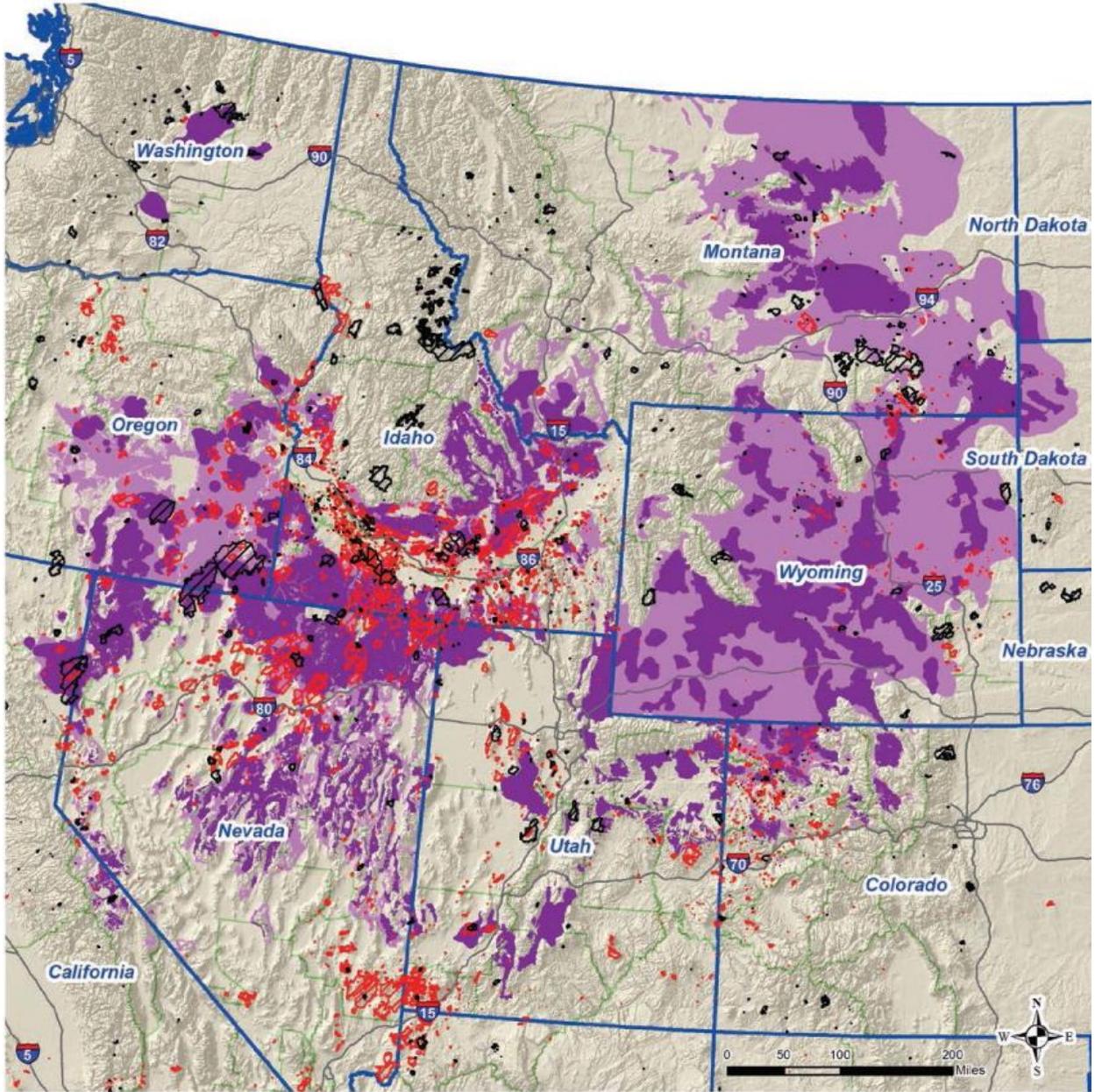
When viewed electronically, hyperlinks embedded throughout this document allow readers to navigate directly to the maps below.



USFS Large Fire Simulator (FSim) model 2013



Large Fire Perimeter 2000-2012

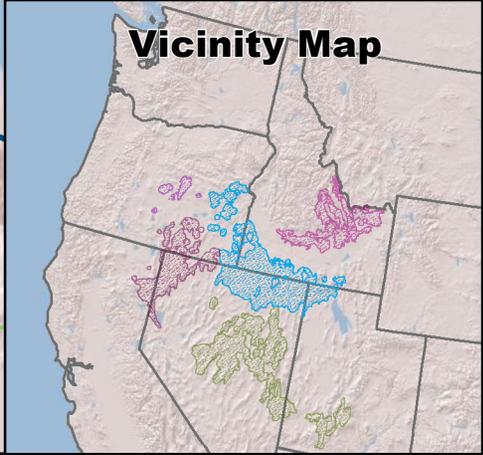
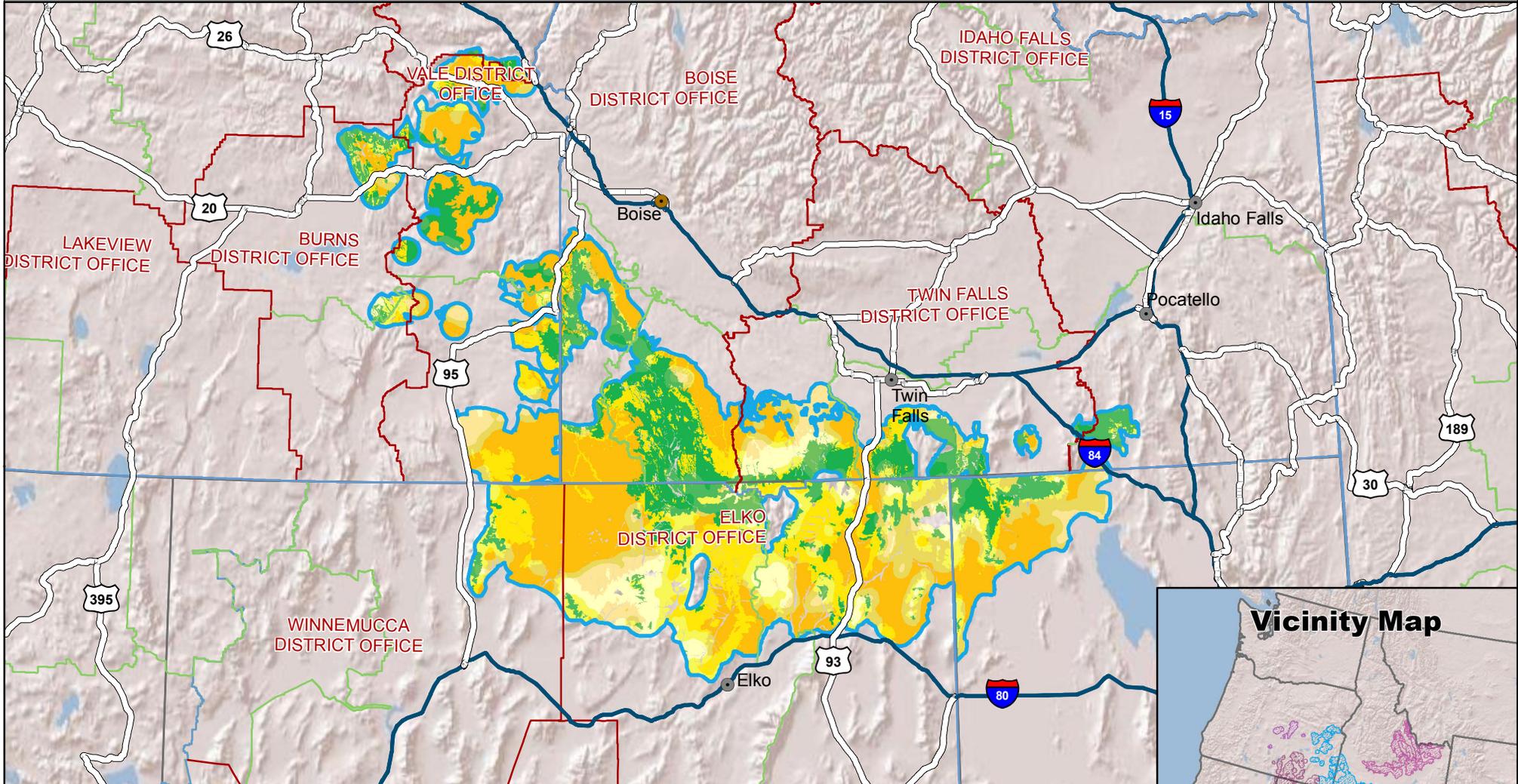


■ Preliminary Priority Habitat (PPH) ■ Preliminary General Habitat (PGH) 🔗 Fire Perimeters 2000-2011 🔗 Fire Perimeters 2012

Sage-Grouse Habitat Matrix

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

Northern Great Basin Assessment Area
Bureau of Land Management
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Cities	1B - High and 25-65% sagebrush cover	2C - Moderate and >65% sagebrush cover
Capital City	1C - High and >65% sagebrush cover	3A - Low and <25% sagebrush cover
Northern Great Basin	2A - Moderate and <25% sagebrush cover	3B - Low and 25-65% sagebrush cover
Resistance & Resiliency Classes	2B - Moderate and 25-65% sagebrush cover	3C - Low and >65% sagebrush cover
1A - High and <25% sagebrush cover		

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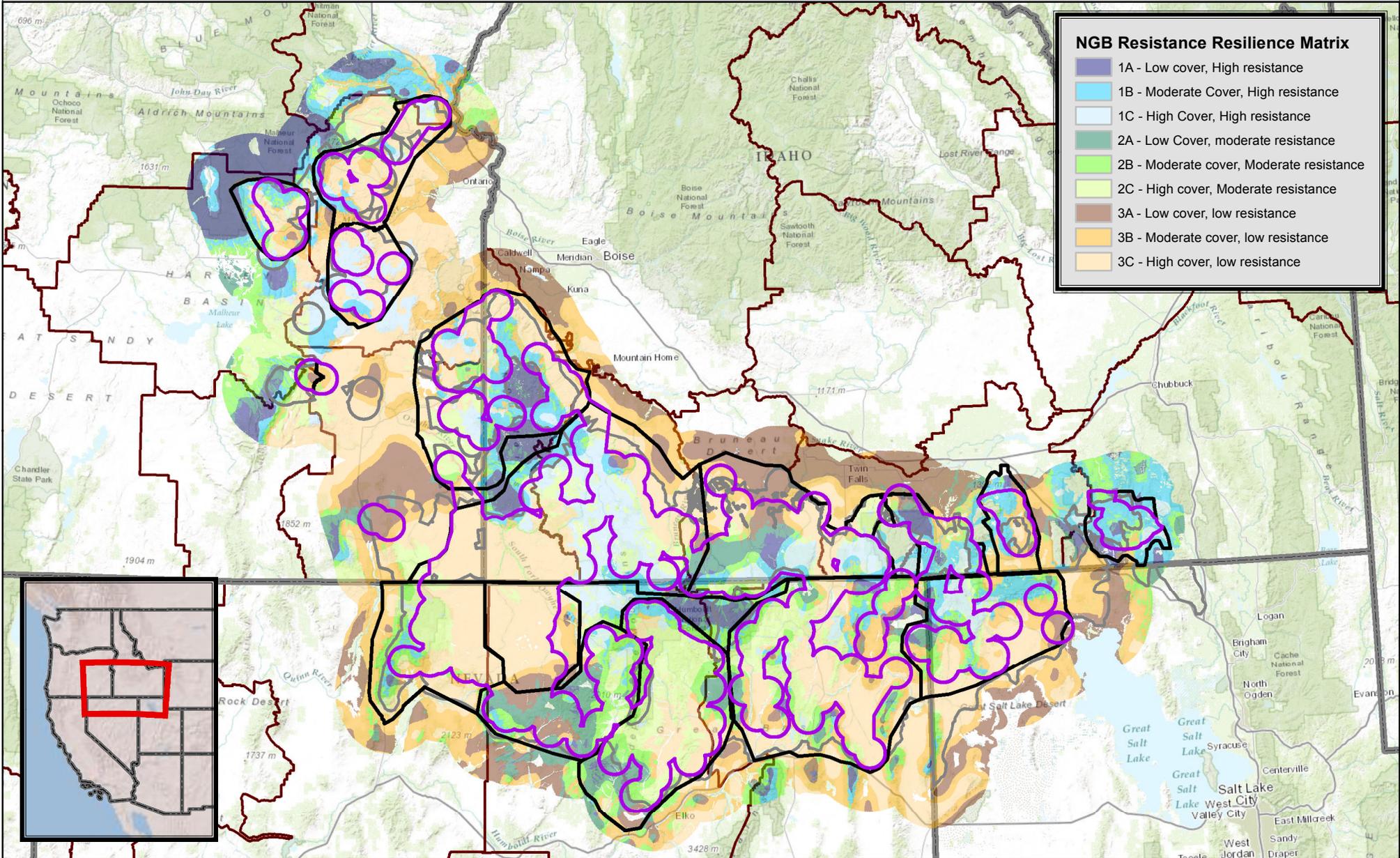


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Northern Great Basin Assessment Area

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

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NGB Resistance Resilience Matrix

- 1A - Low cover, High resistance
- 1B - Moderate Cover, High resistance
- 1C - High Cover, High resistance
- 2A - Low Cover, moderate resistance
- 2B - Moderate cover, Moderate resistance
- 2C - High cover, Moderate resistance
- 3A - Low cover, low resistance
- 3B - Moderate cover, low resistance
- 3C - High cover, low resistance



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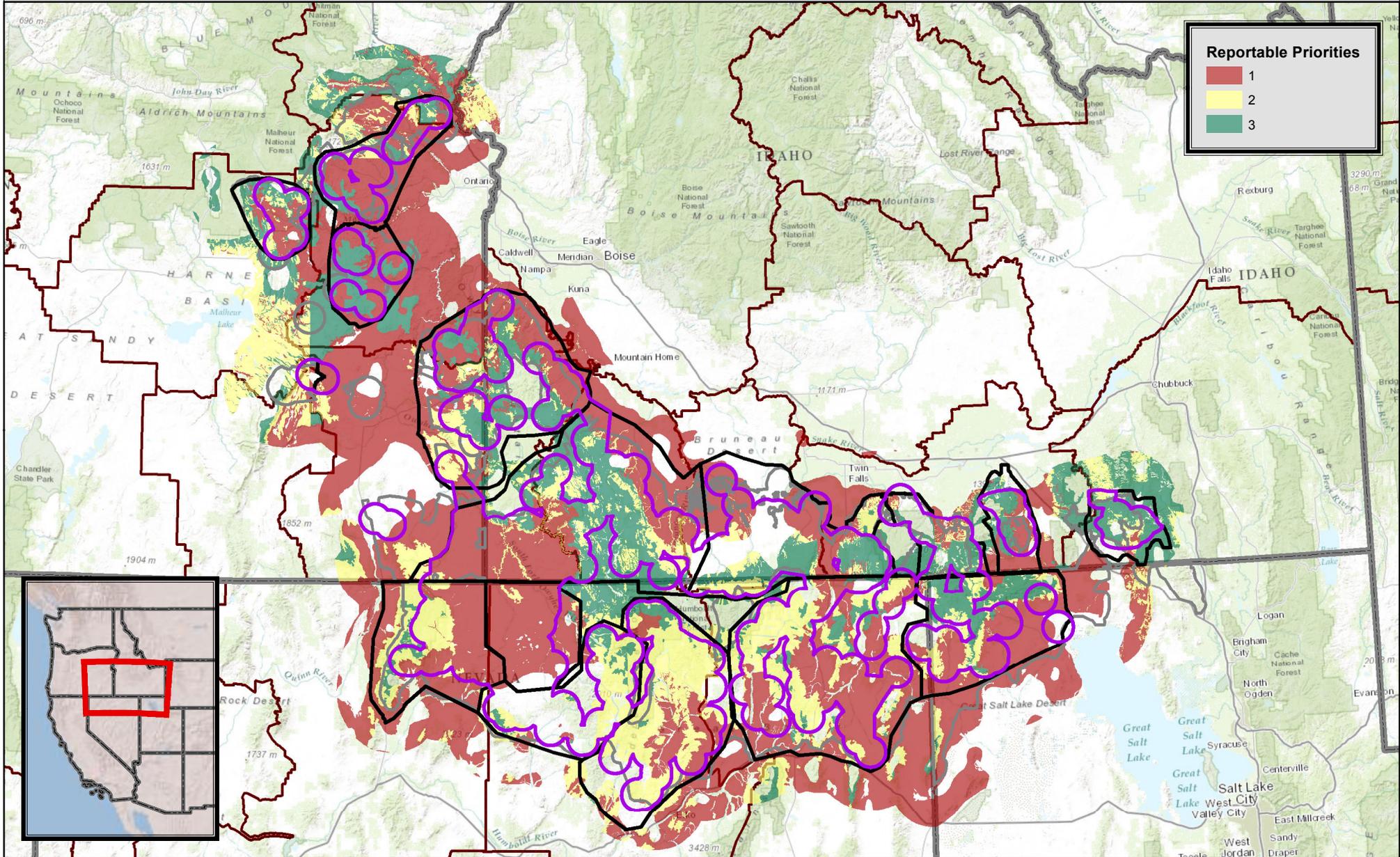
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- Northern Great Basin Project Planning Areas
- Northern Great Basin PAC

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Northern Great Basin Assessment Area

Resistance-Resilience Reportable Priorities

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



Reportable Priorities

- 1
- 2
- 3

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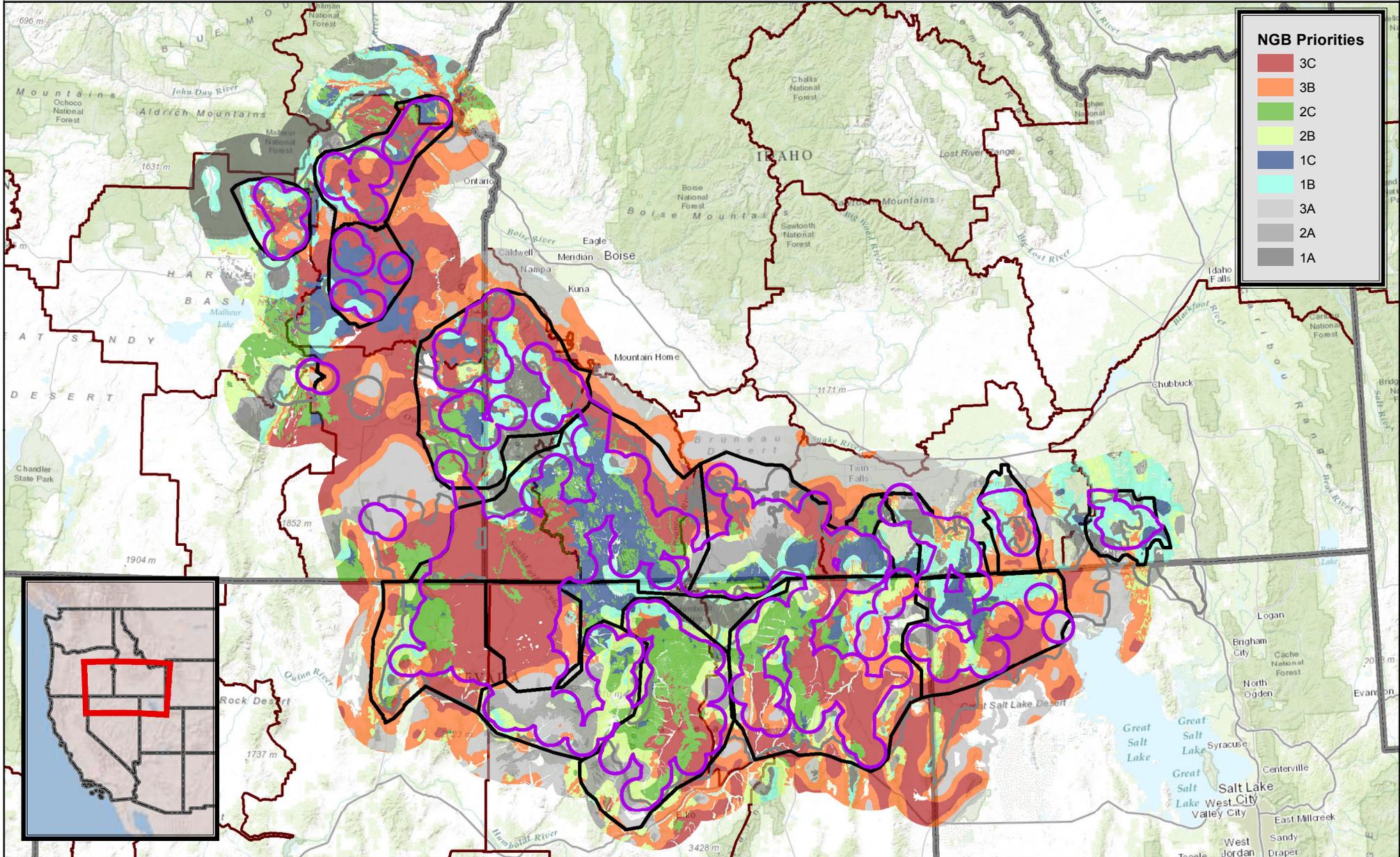
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Northern Great Basin Assessment Area

Resistance-Resilience Priorities for Application of Management Strategies

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U.S. Department of the Interior



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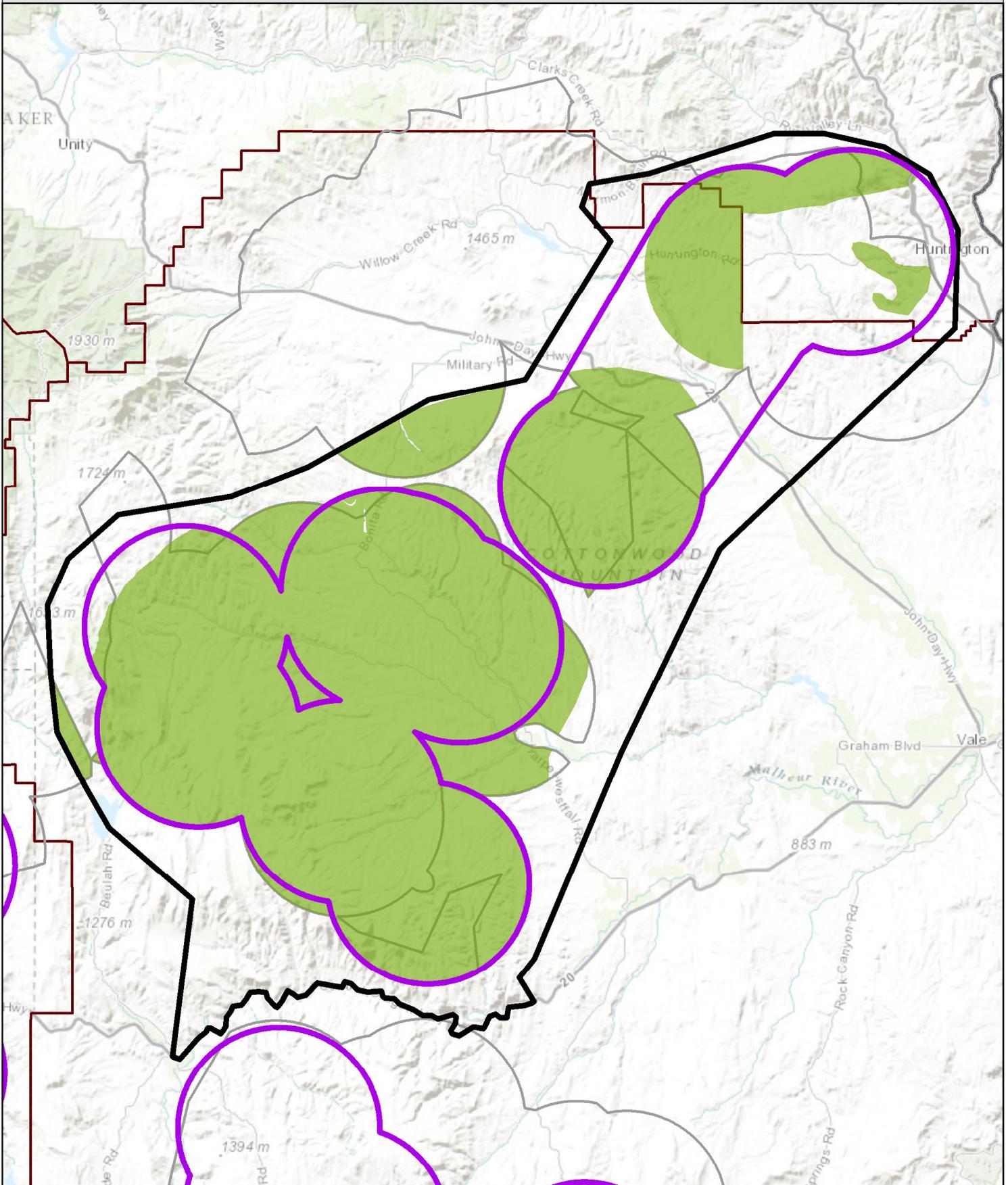


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Beulah Project Planning Area
Conifer Expansion Potential Treatment Areas

Northern Great Basin
Bureau of Land Management
U.S. Department of the Interior



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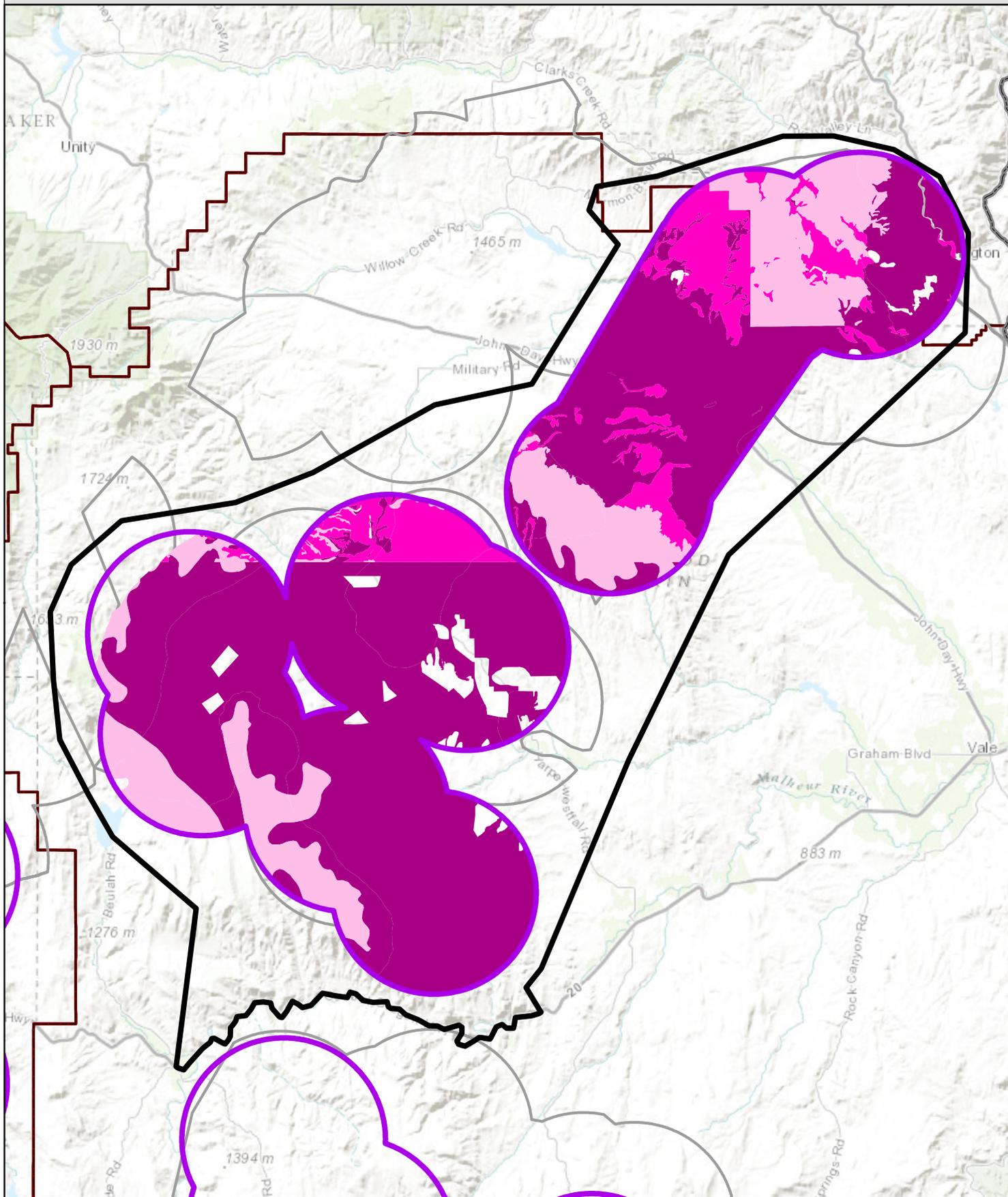


- Beulah Project Planning Area
- Conifer Expansion Potential Treatment Areas

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Beulah Project Planning Area
Emergency Stabilization, Rehabilitation Priority

Northern Great Basin
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U.S. Department of the Interior

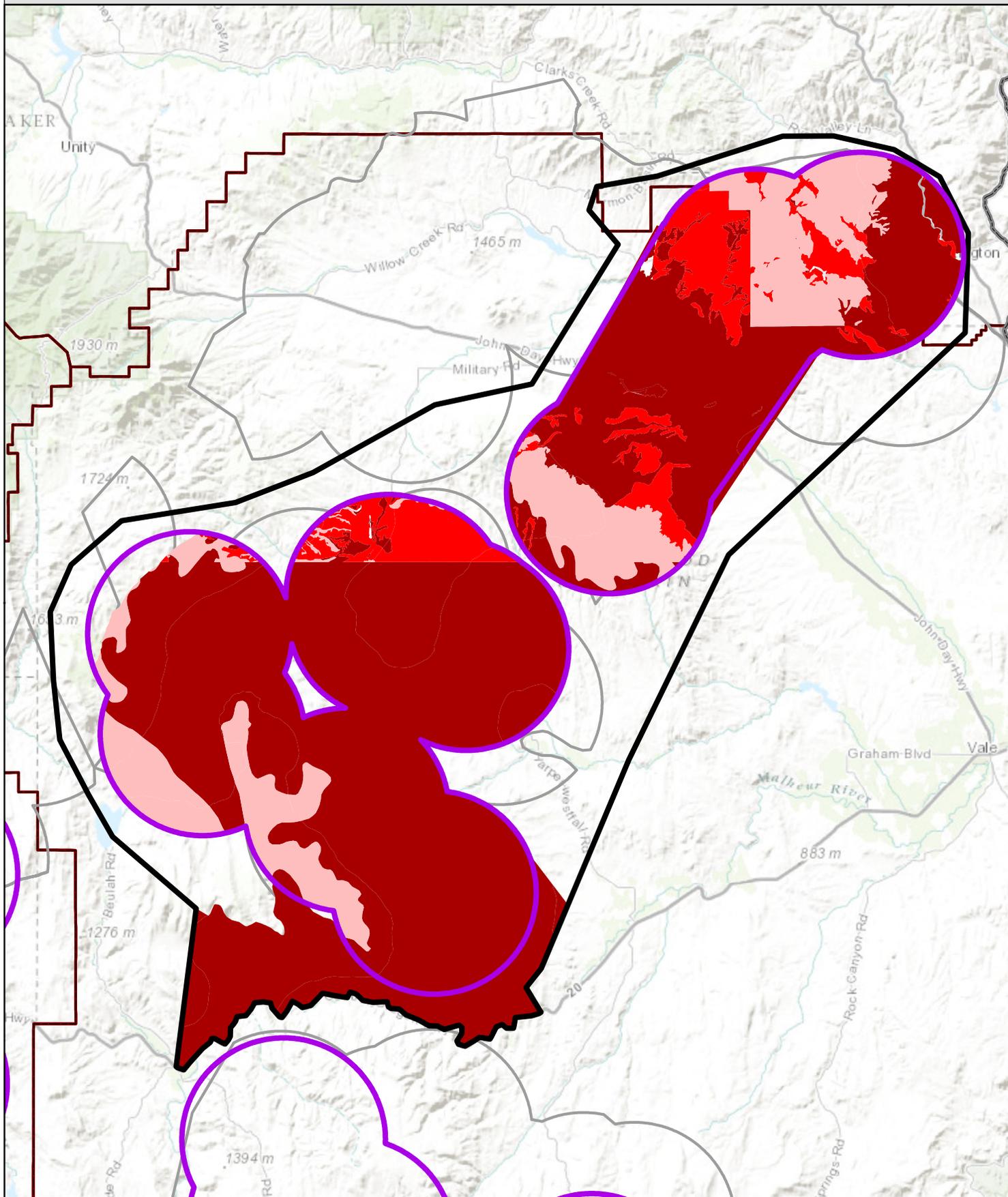


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- Beulah Project Planning Area
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- Beulah ESR 3rd Priority

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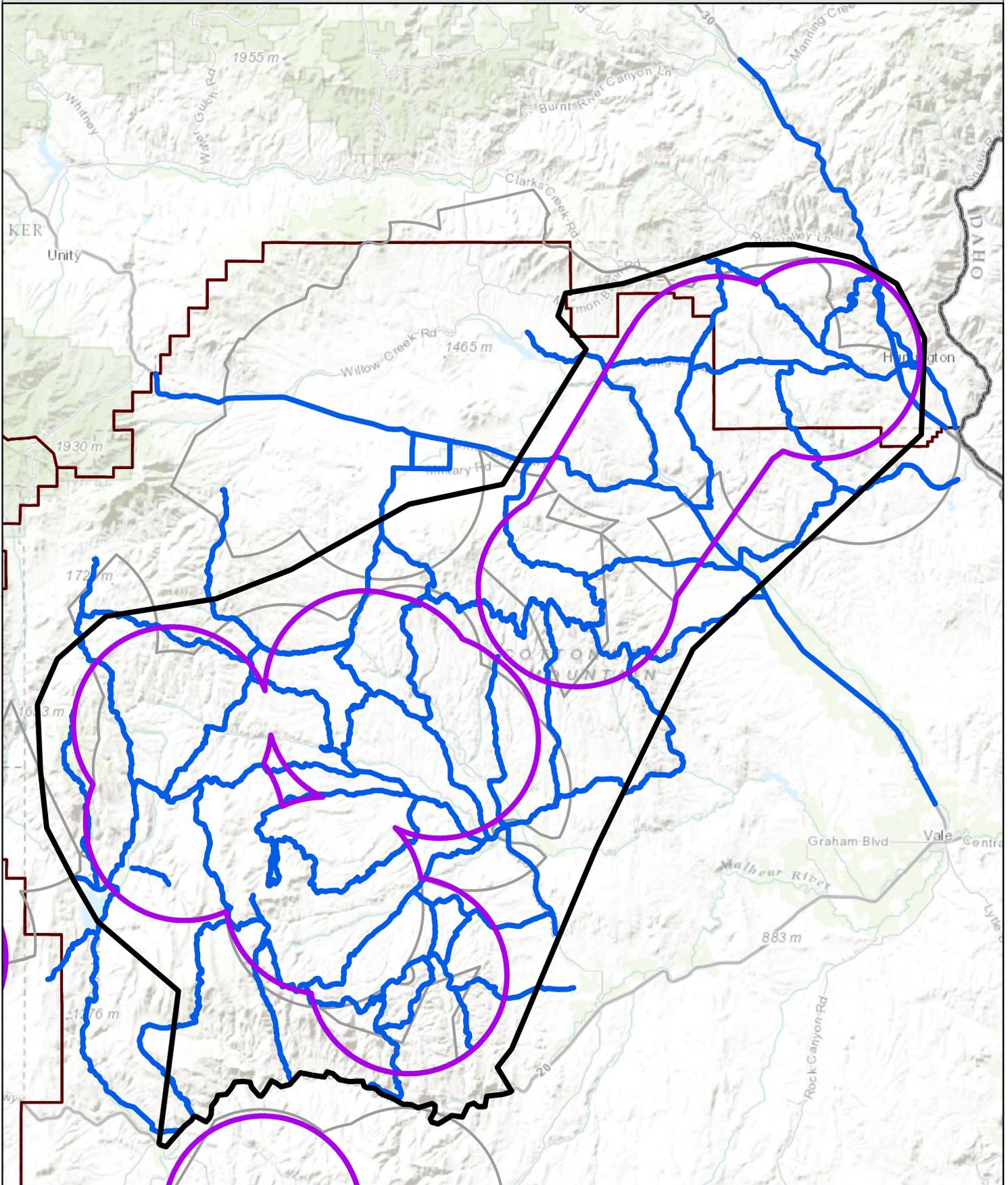


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- Beulah Project Planning Area
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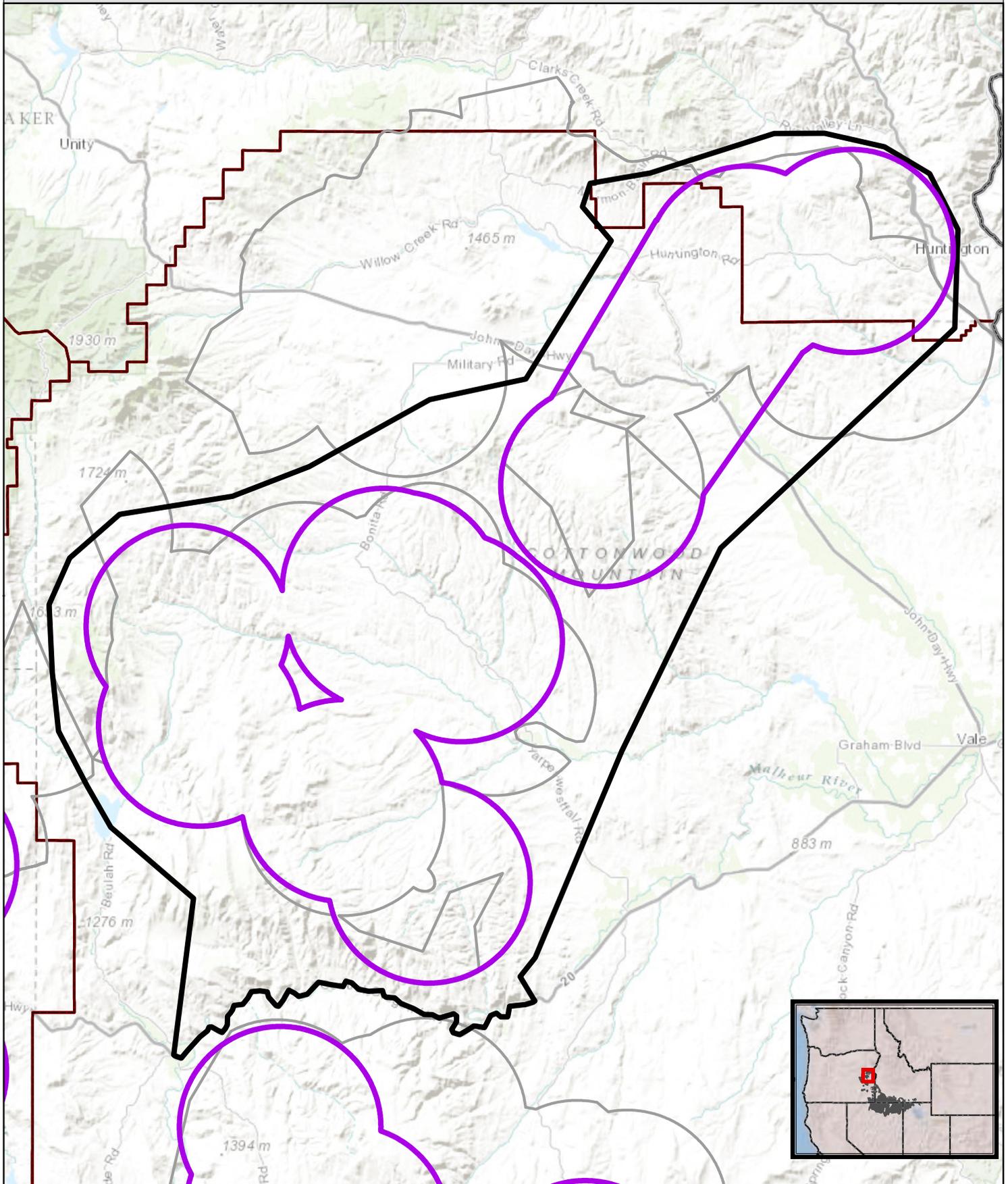


- Beulah Project Planning Area
- Linear Fuels Management Potential Treatment Areas

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Beulah Project Planning Area

Northern Great Basin
Bureau of Land Management
U.S. Department of the Interior

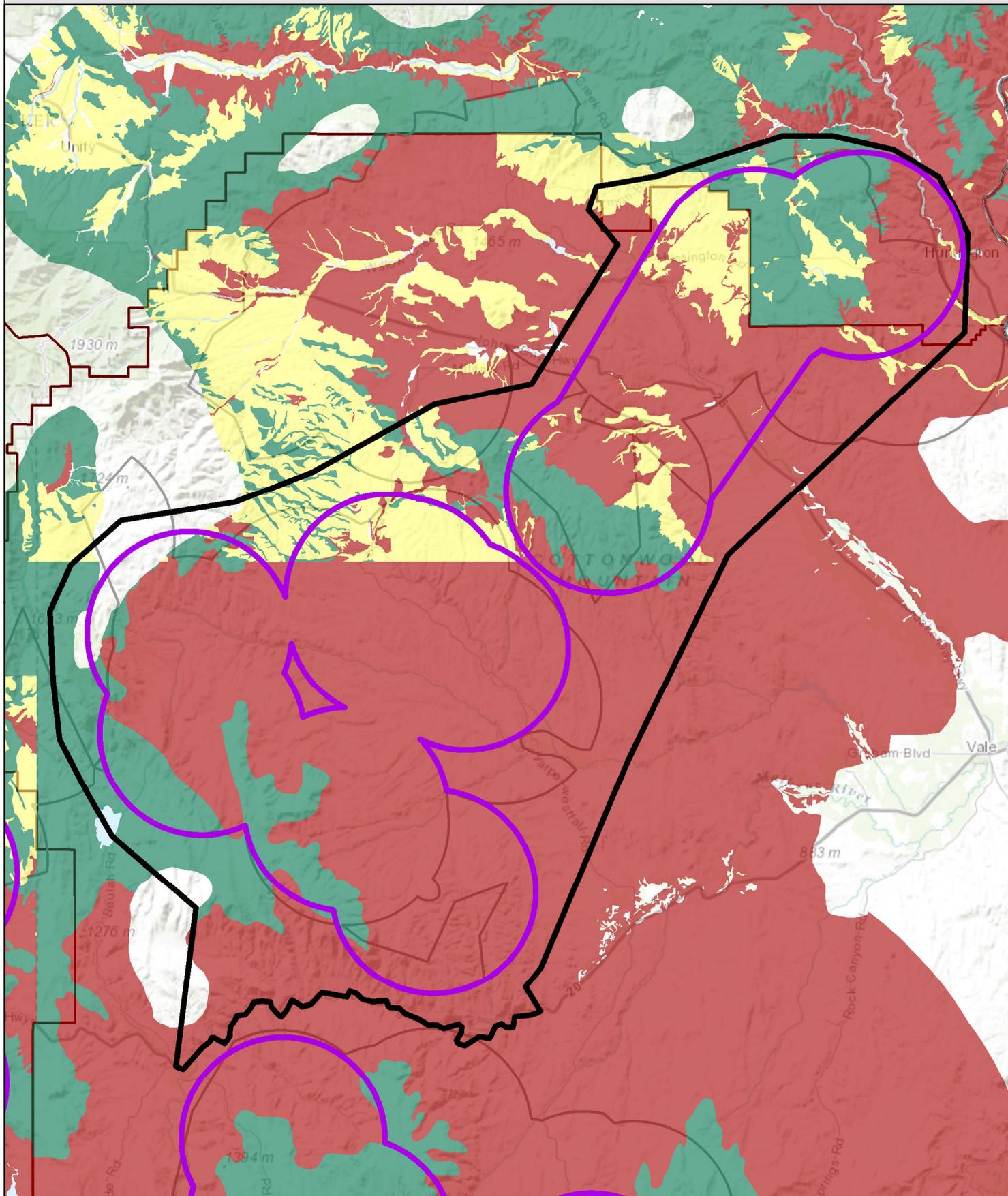


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 Beulah Project Planning Area

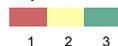
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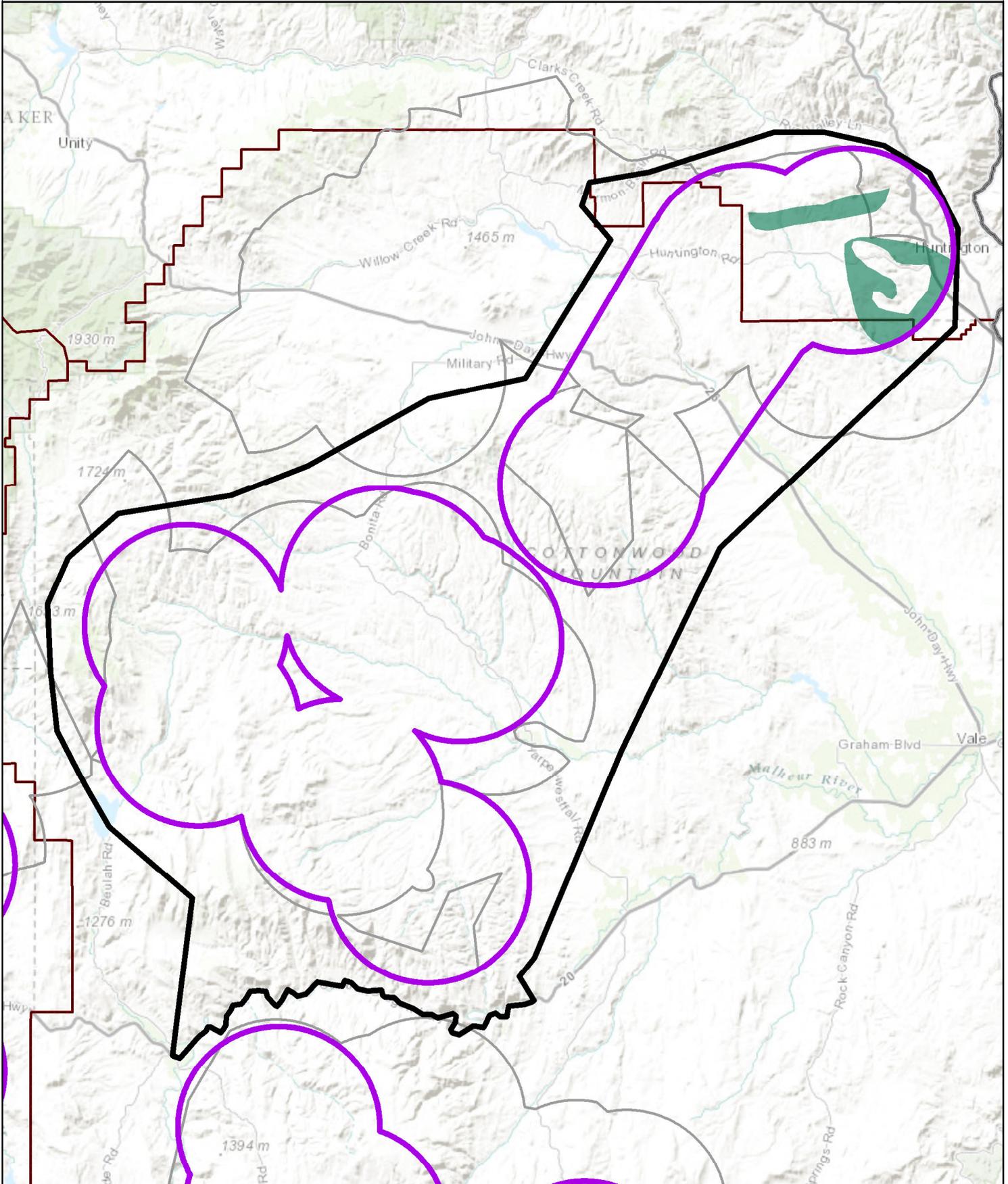
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 Beulah Project Planning Area
Reportable Priorities



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Beulah Project Planning Area

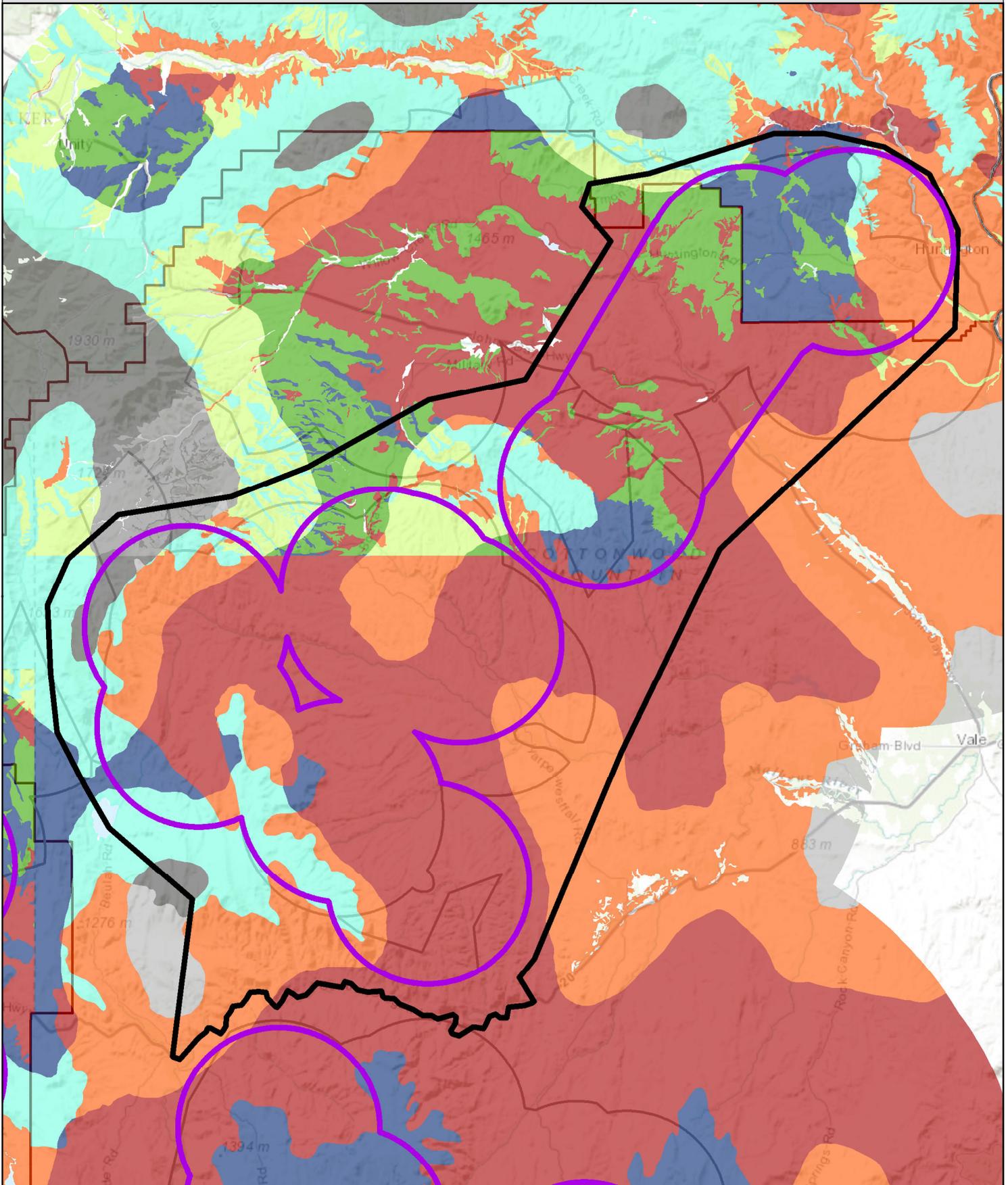


Habitat Restoration Potential Treatment Areas

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**Beulah Project Planning Area
Resistance-Resilience Priorities
for Application of Management Strategies**

**Northern Great Basin
Bureau of Land Management
U.S. Department of the Interior**



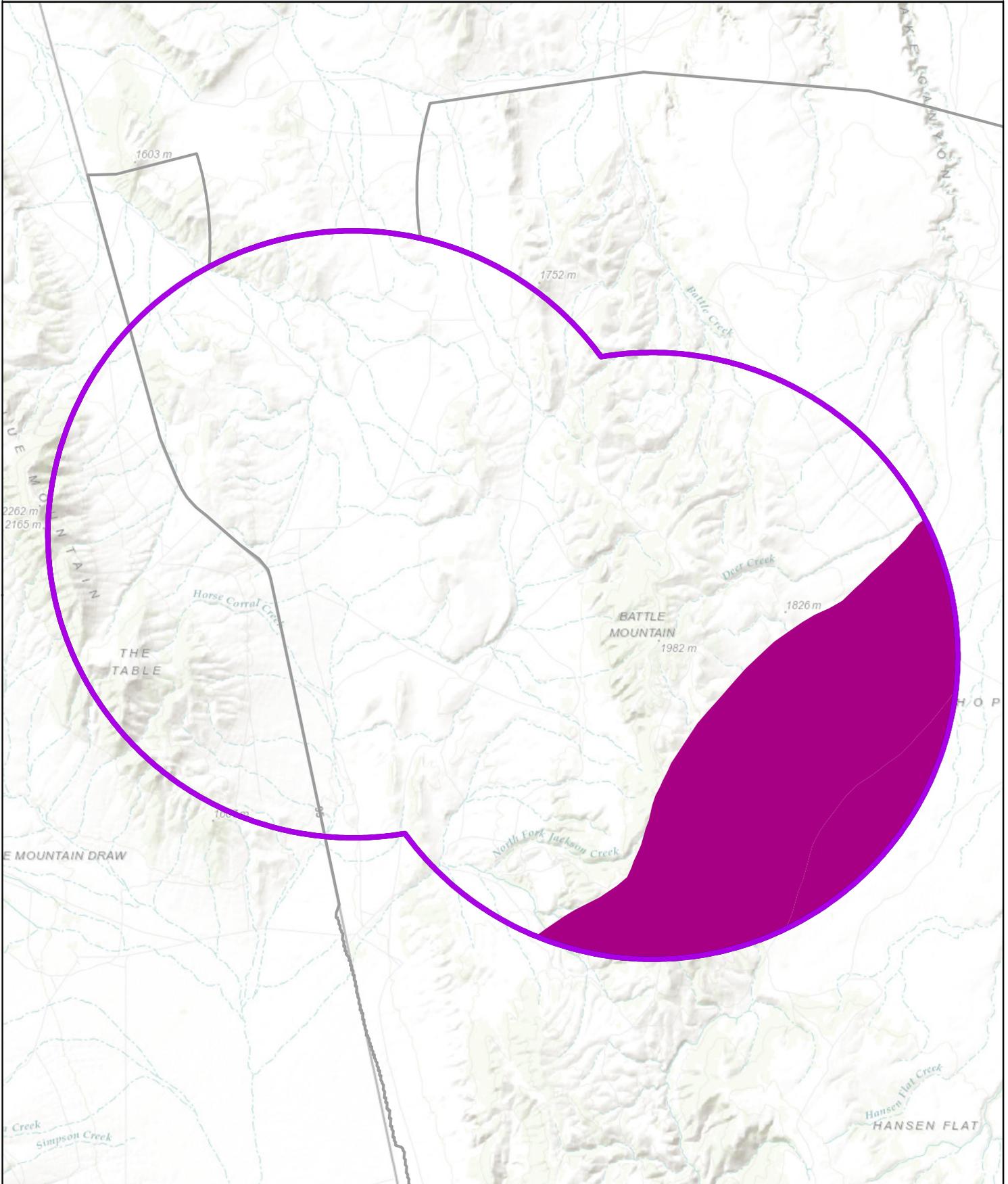
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Bowden Hills Project Planning Area
Emergency Stabilization, Rehabilitation Priority

Northern Great Basin
Bureau of Land Management
U.S. Department of the Interior



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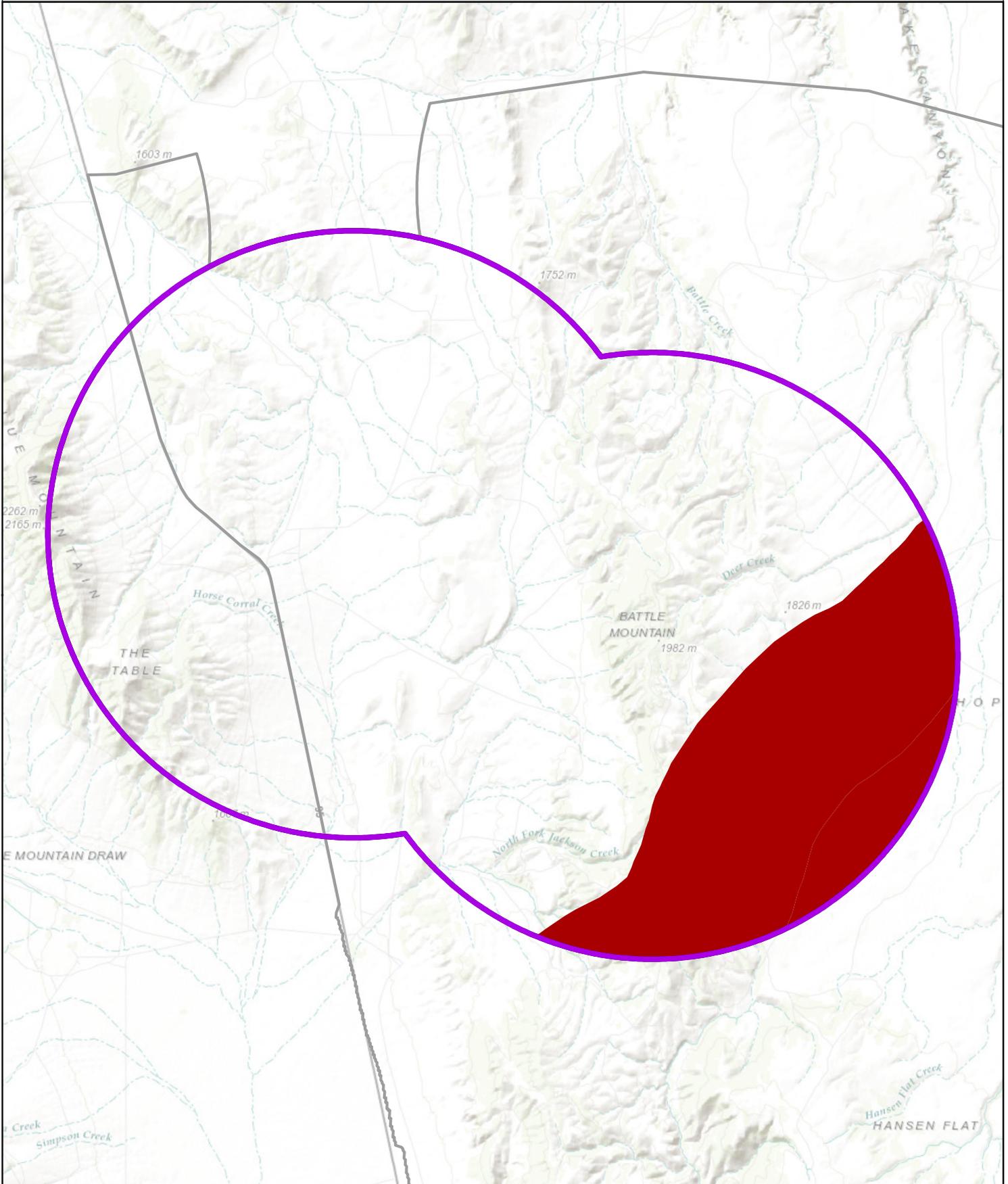


Bowden Hills Project Planning Area



Bowden Hills ESR 1st Priority

February 2015
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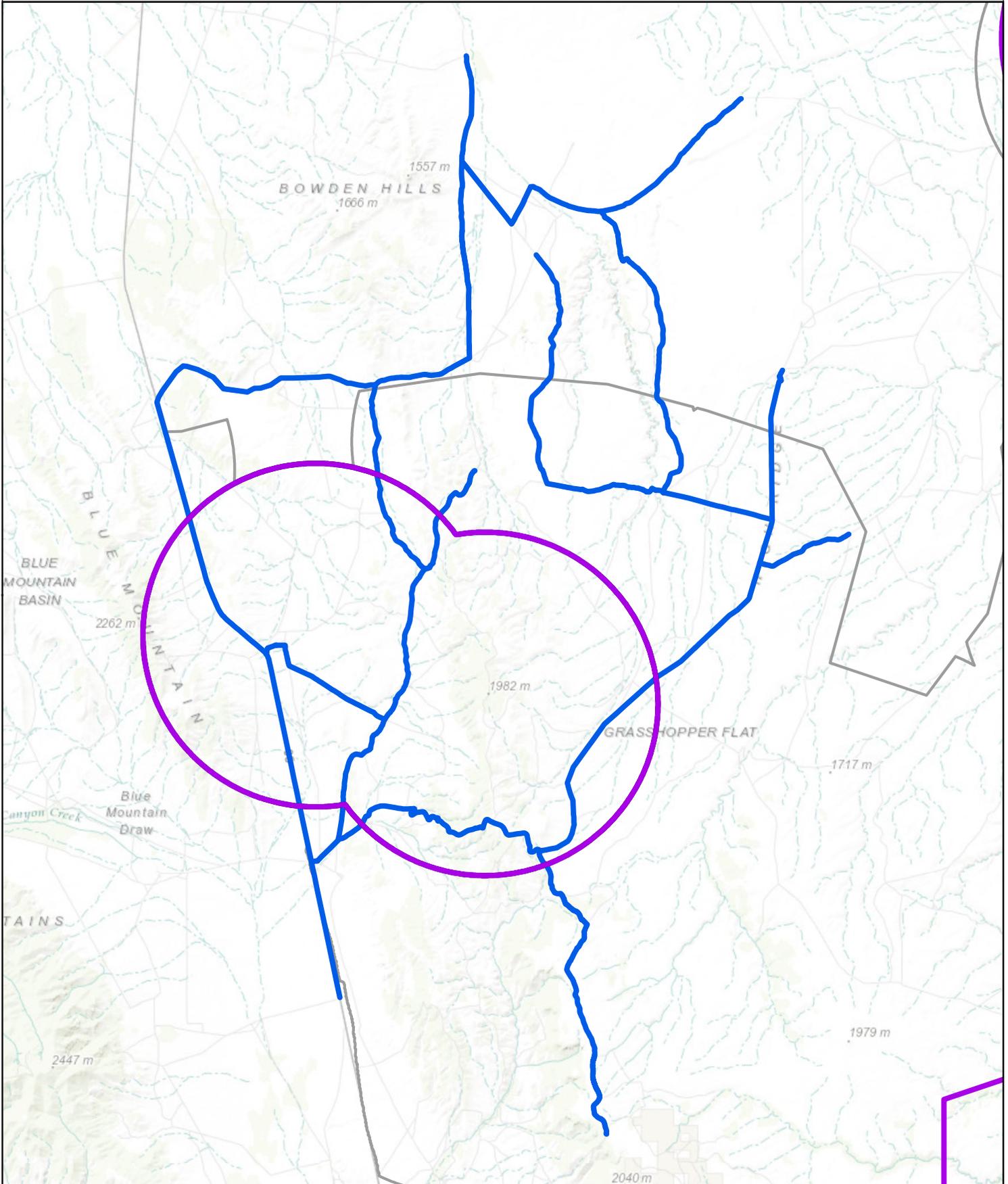


Bowden Hills Project Planning Area
Bowden Hills Fire 1st Priority

February 2015
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Data Sources: BLM, ESRI Basedata
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**Bowden Hills Project Planning Area
Fuels Management Potential Treatment Areas**

**Northern Great Basin
Bureau of Land Management
U.S. Department of the Interior**



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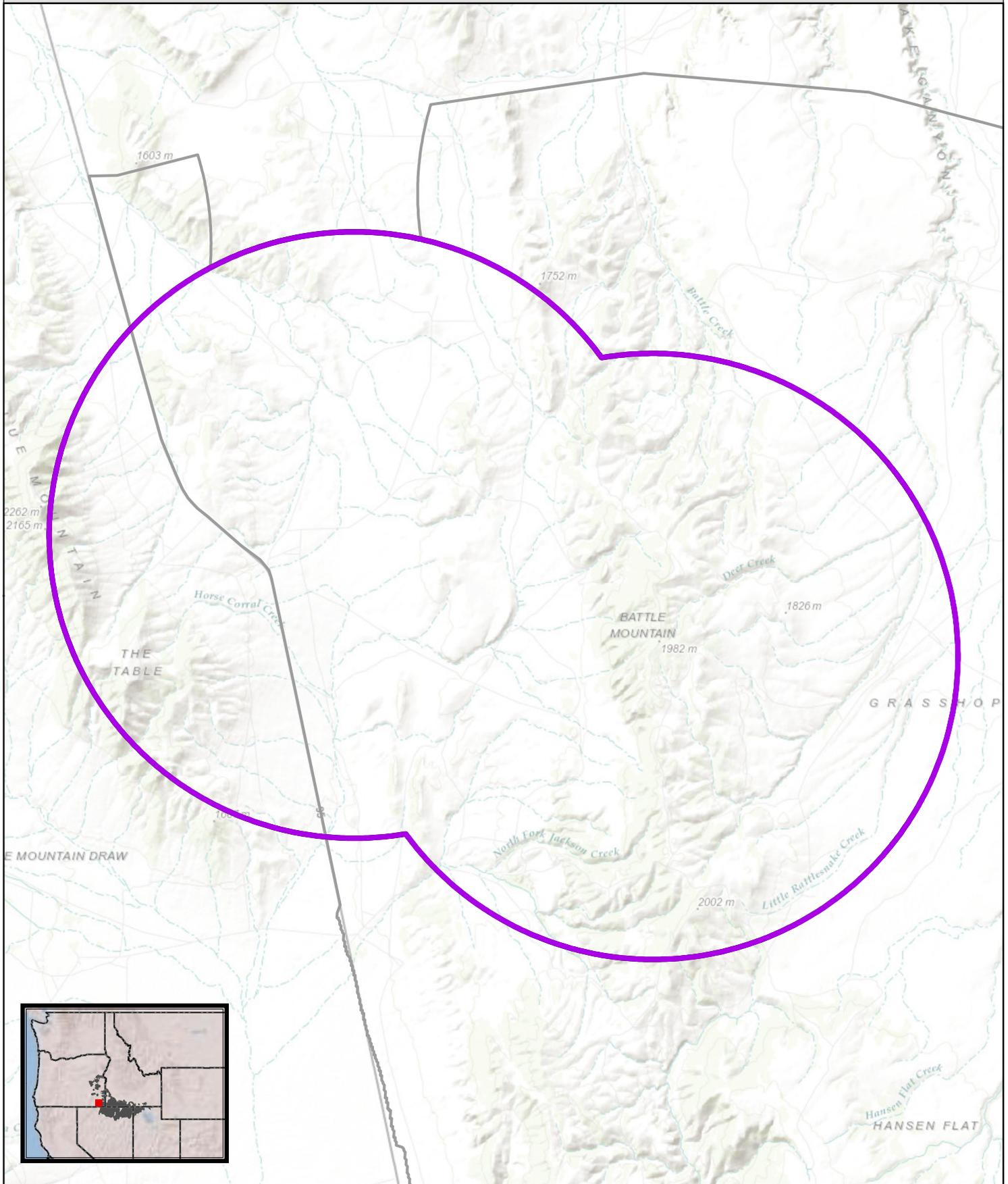


- Bowden Hills Project Planning Area
- Linear Fuels Management Potential Treatment Areas

February 2015
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Bowden Hills Project Planning Area

Northern Great Basin
Bureau of Land Management
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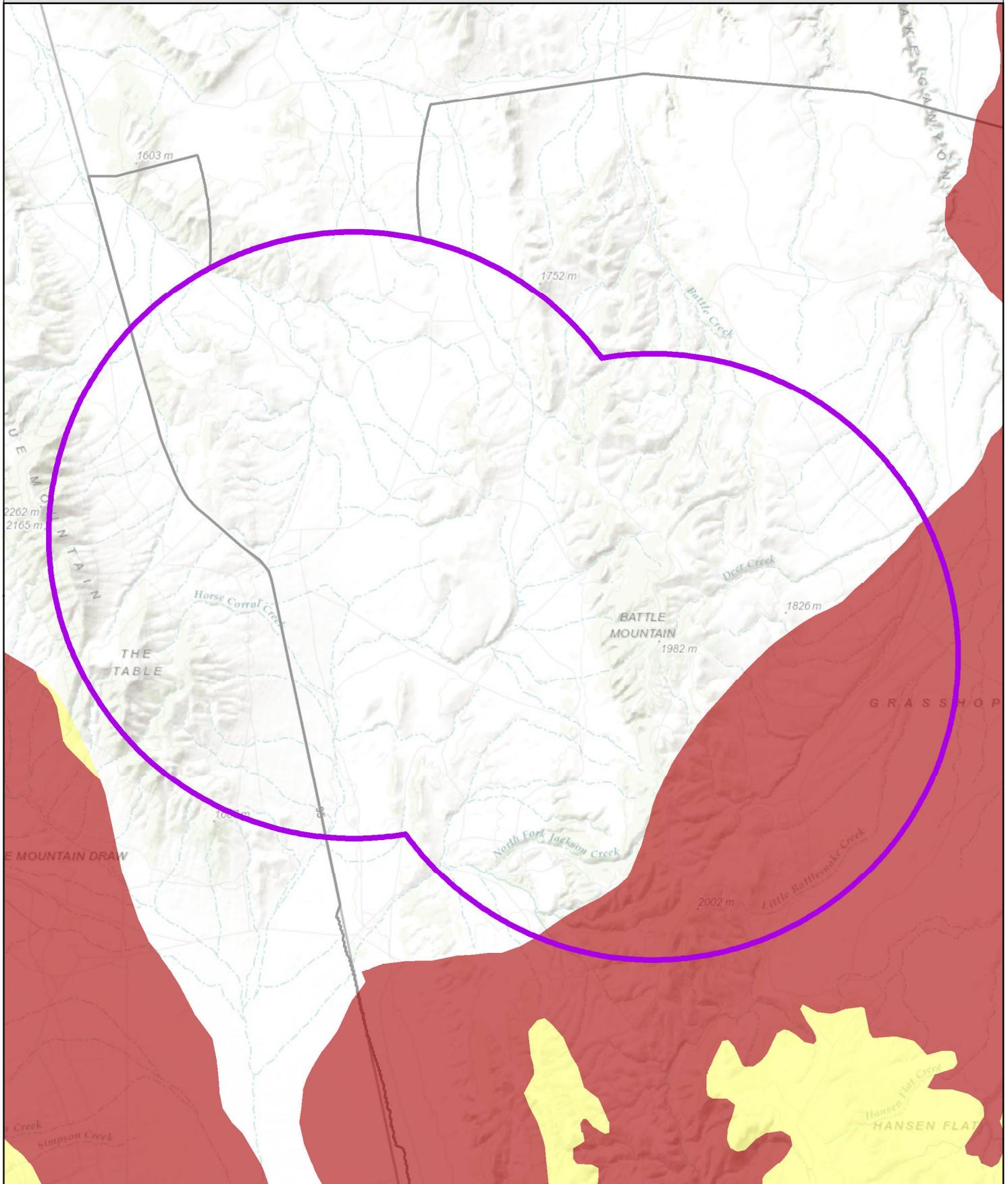


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Bowden Hills Project Planning Area

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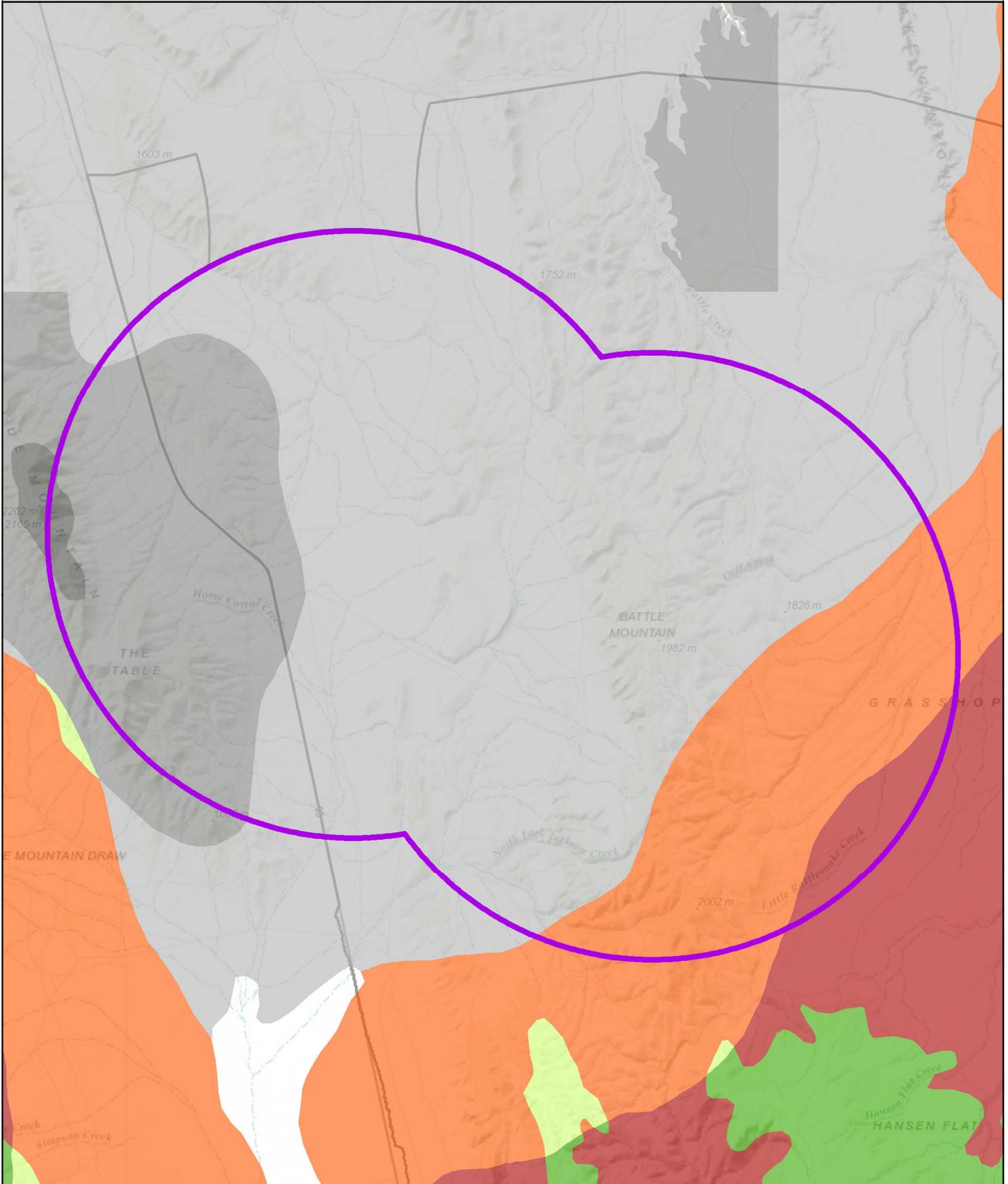


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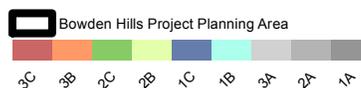


 Bowden Hills Project Planning Area
Reportable Priorities
  
1 2 3

March 2015
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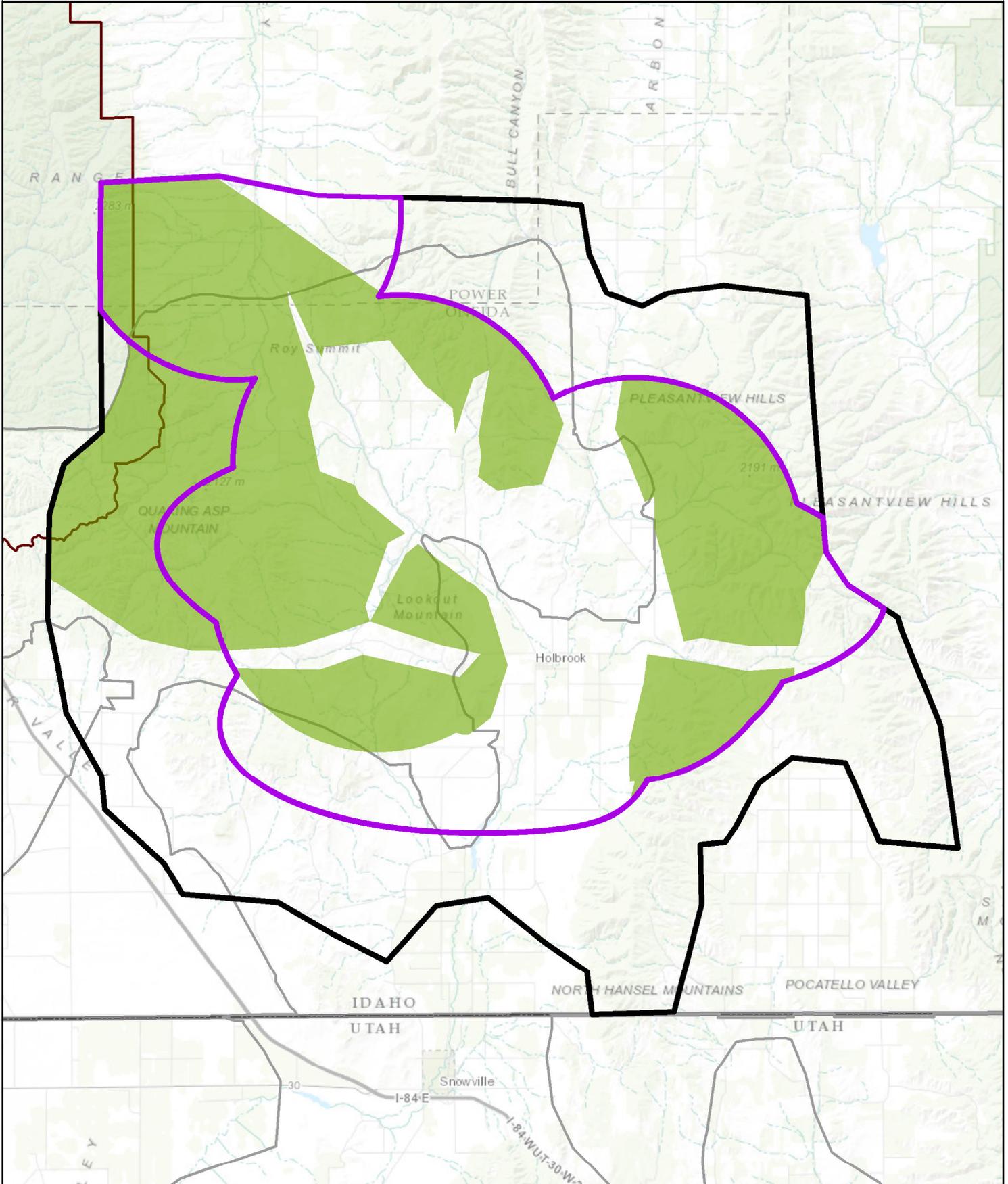
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March 2015
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Curlew Project Planning Area
Conifer Expansion Potential Treatment Areas

Northern Great Basin
Bureau of Land Management
U.S. Department of the Interior



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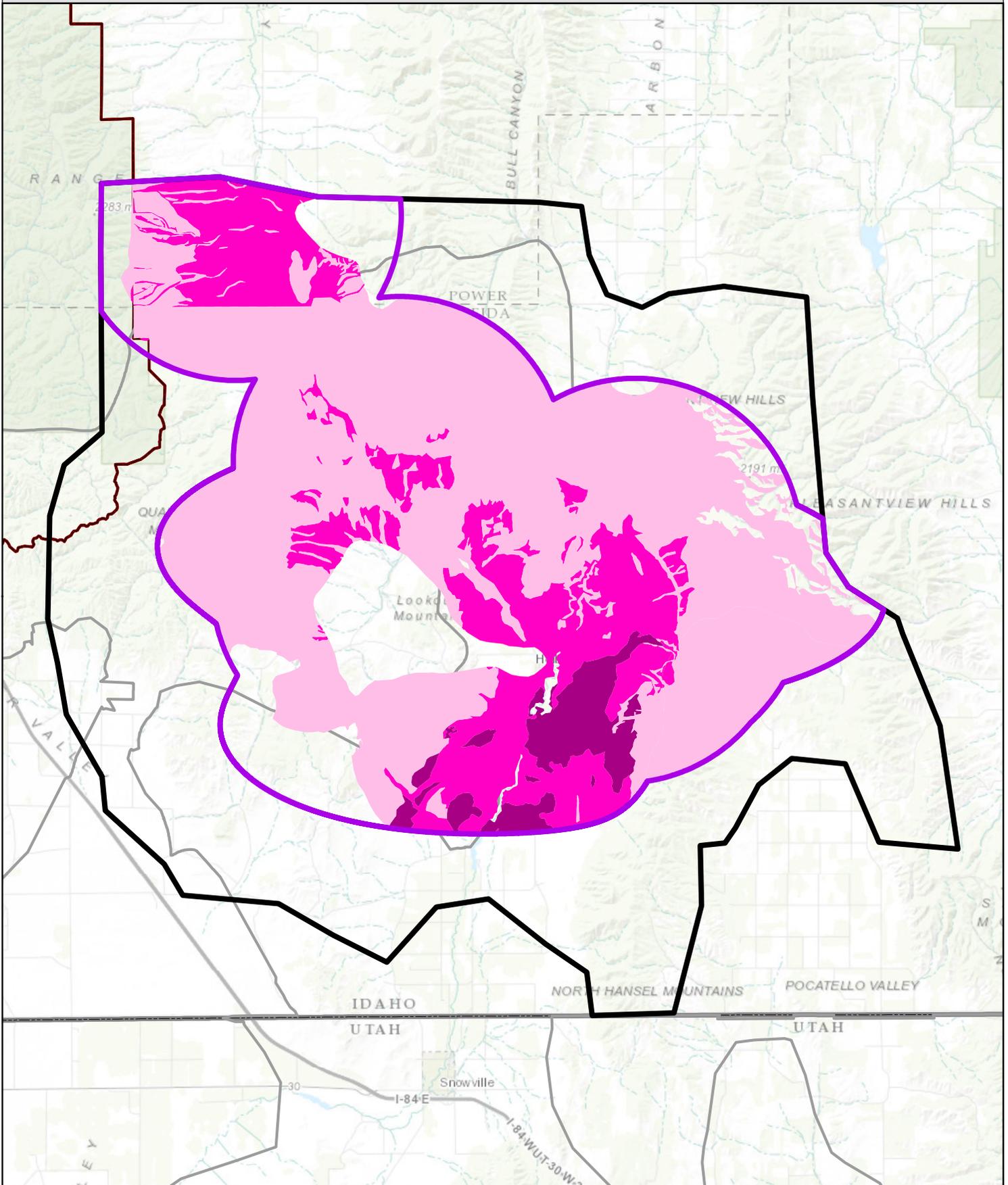
Curlew Project Planning Area

Conifer Expansion Potential Treatment Areas

February 2015
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Curlew Project Planning Area
Emergency Stabilization, Rehabilitation Priority

Northern Great Basin
Bureau of Land Management
U.S. Department of the Interior

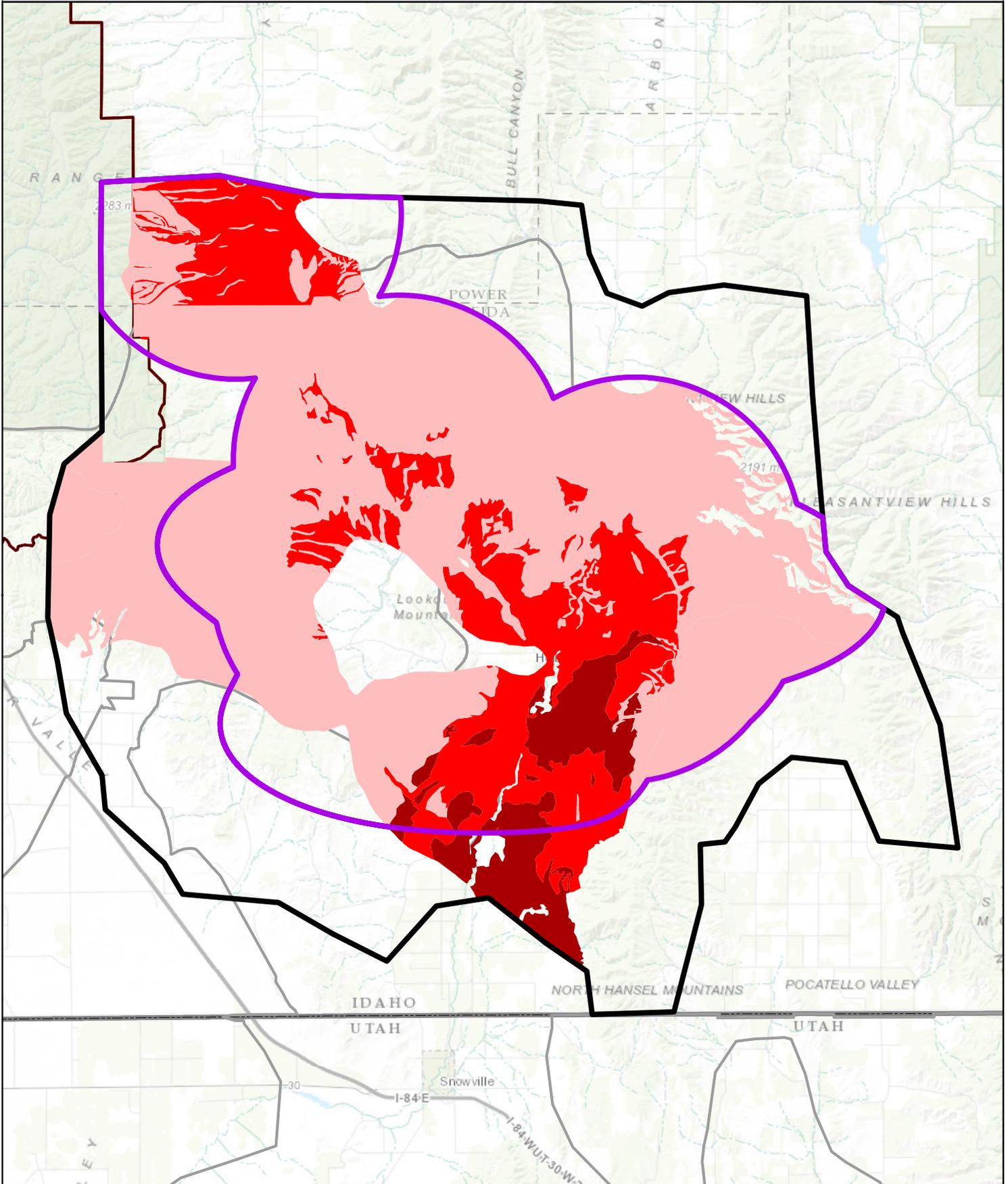


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-  Curlew Project Planning Area
-  Curlew ESR 1st Priority
-  Curlew ESR 2nd Priority
-  Curlew ESR 3rd Priority

February 2015
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Data Sources: BLM, ESRI Basedata
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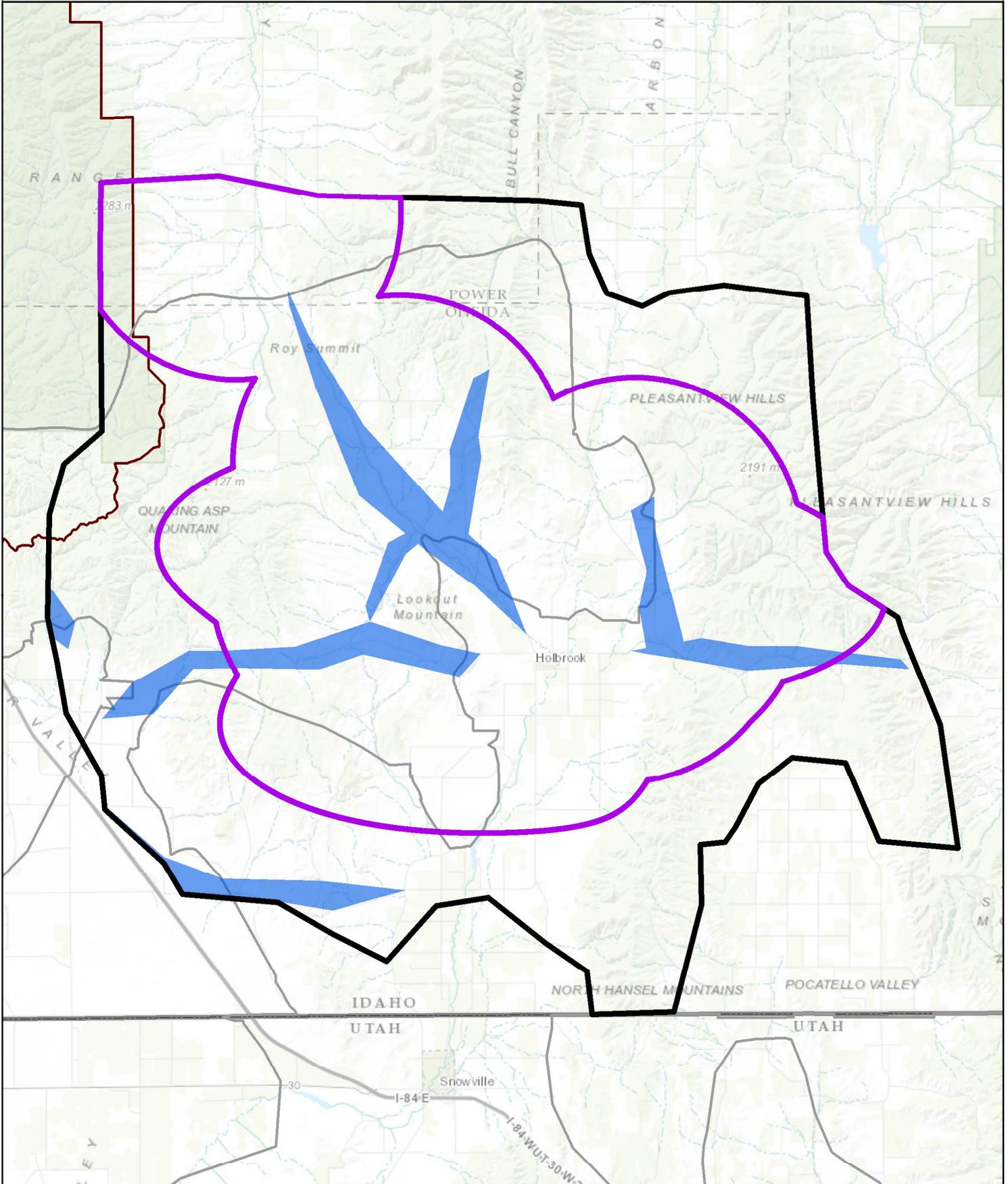


- Curlew Project Planning Area
- Curlew Fire 1st Priority
- Curlew Fire 2nd Priority
- Curlew Fire 3rd Priority

February 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
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Curlew Project Planning Area
Fuels Management Potential Treatment Areas

Northern Great Basin
Bureau of Land Management
U.S. Department of the Interior



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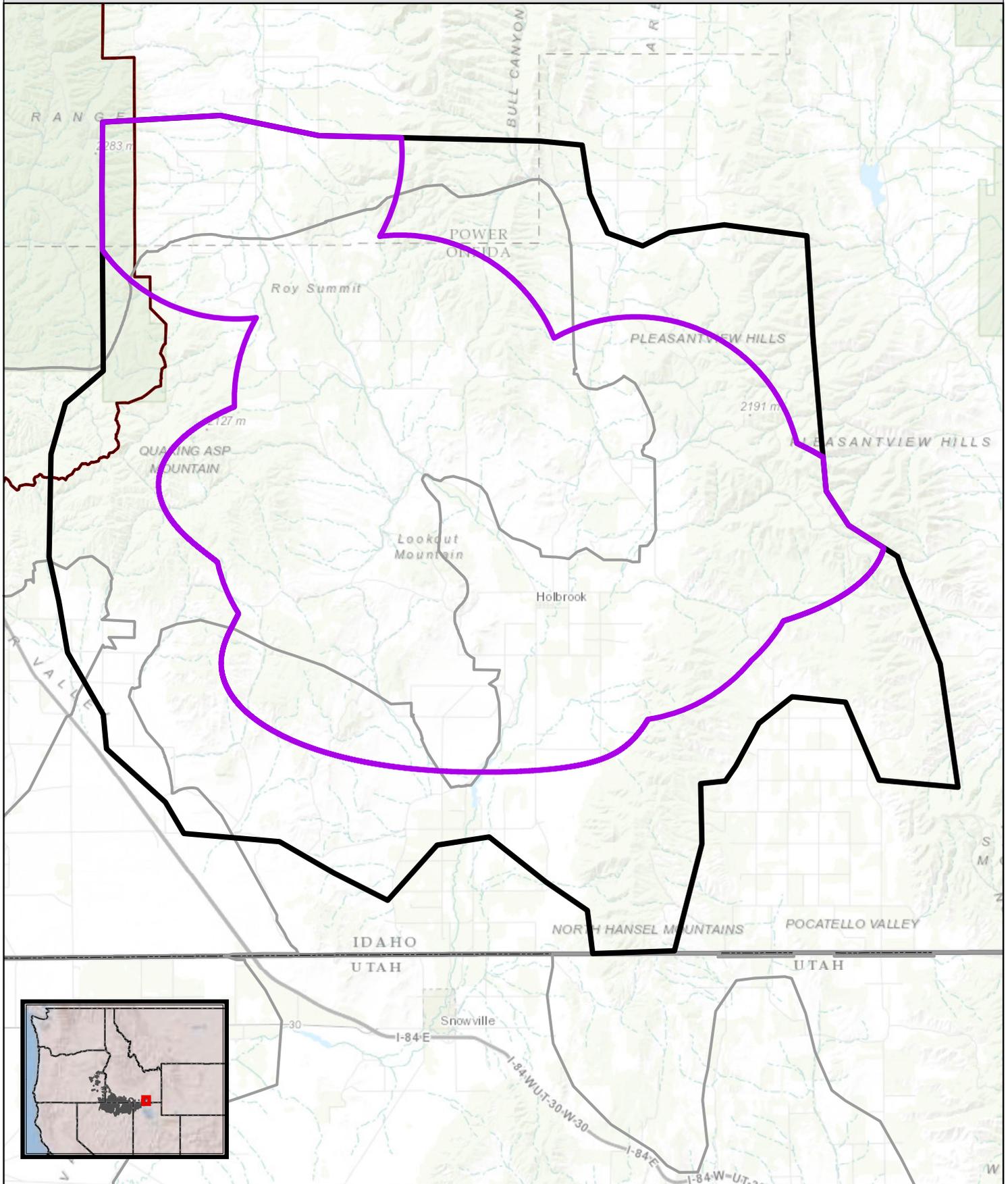


Curlew Project Planning Area
Fuels Management Potential Treatment Areas

February 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:352,650

Curlew Project Planning Area

Northern Great Basin
Bureau of Land Management
U.S. Department of the Interior

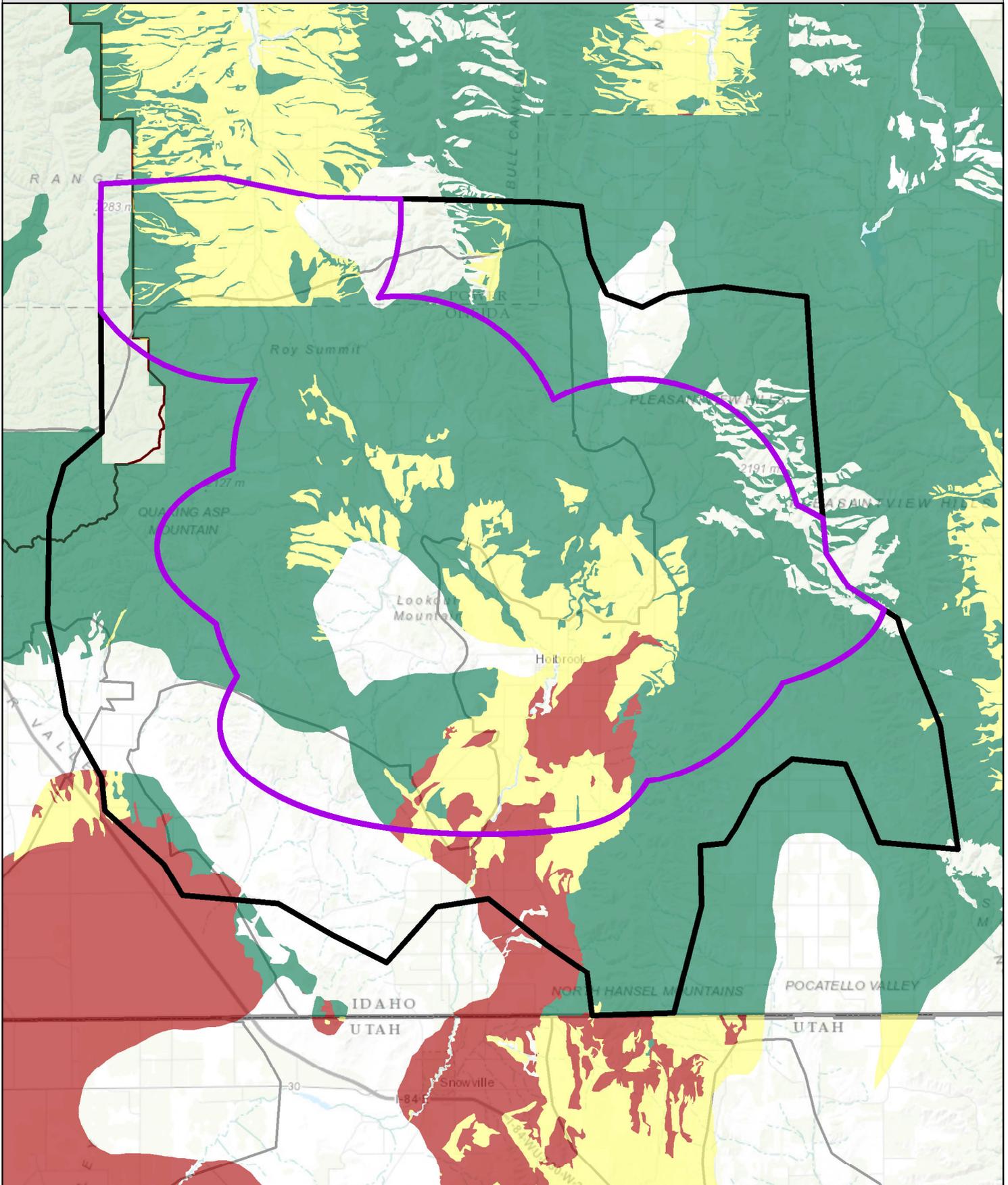


No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.



 Curlew Project Planning Area

February 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:352,650



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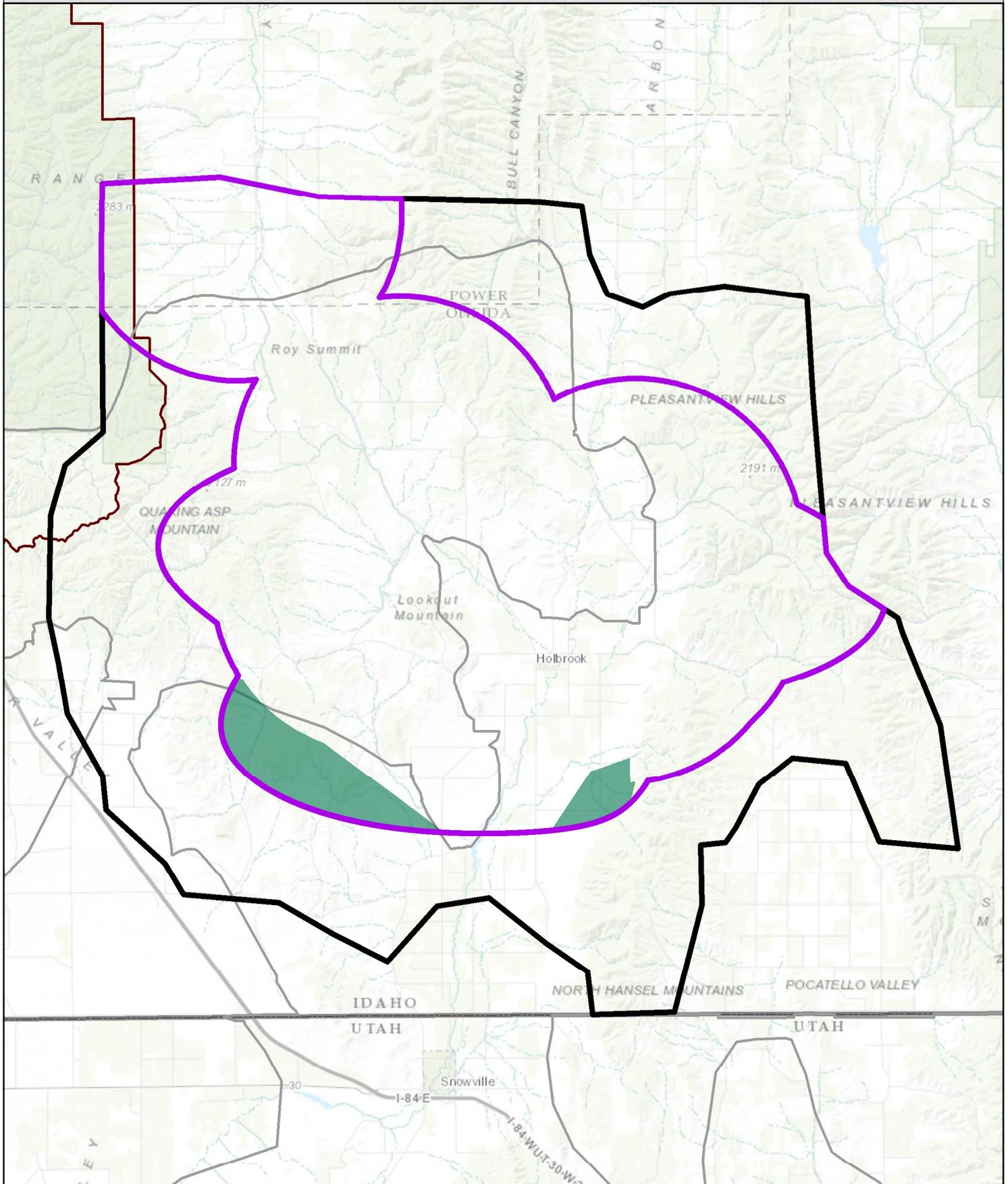


Curlew Project Planning Area
Reportable Priorities
 1 2 3

March 2015
 Date Saved: 3/12/2015
 Data Sources: BLM, ESRI Basedata
 1:352,650

Curlew Project Planning Area
Habitat Restoration Potential Treatment Areas

Northern Great Basin
Bureau of Land Management
U.S. Department of the Interior



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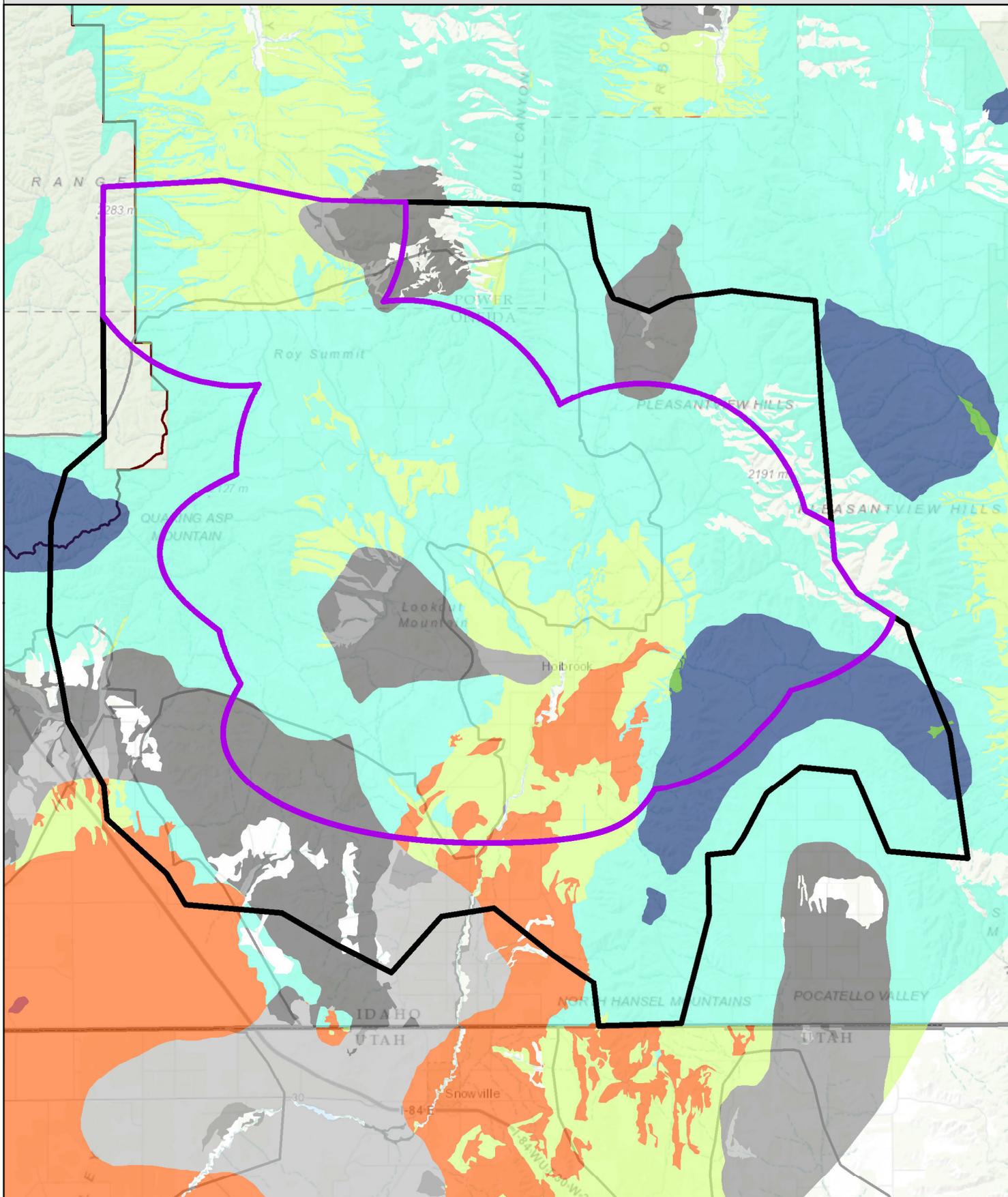


Curlew Project Planning Area



Habitat Restoration Potential Treatment Areas

February 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:352,650



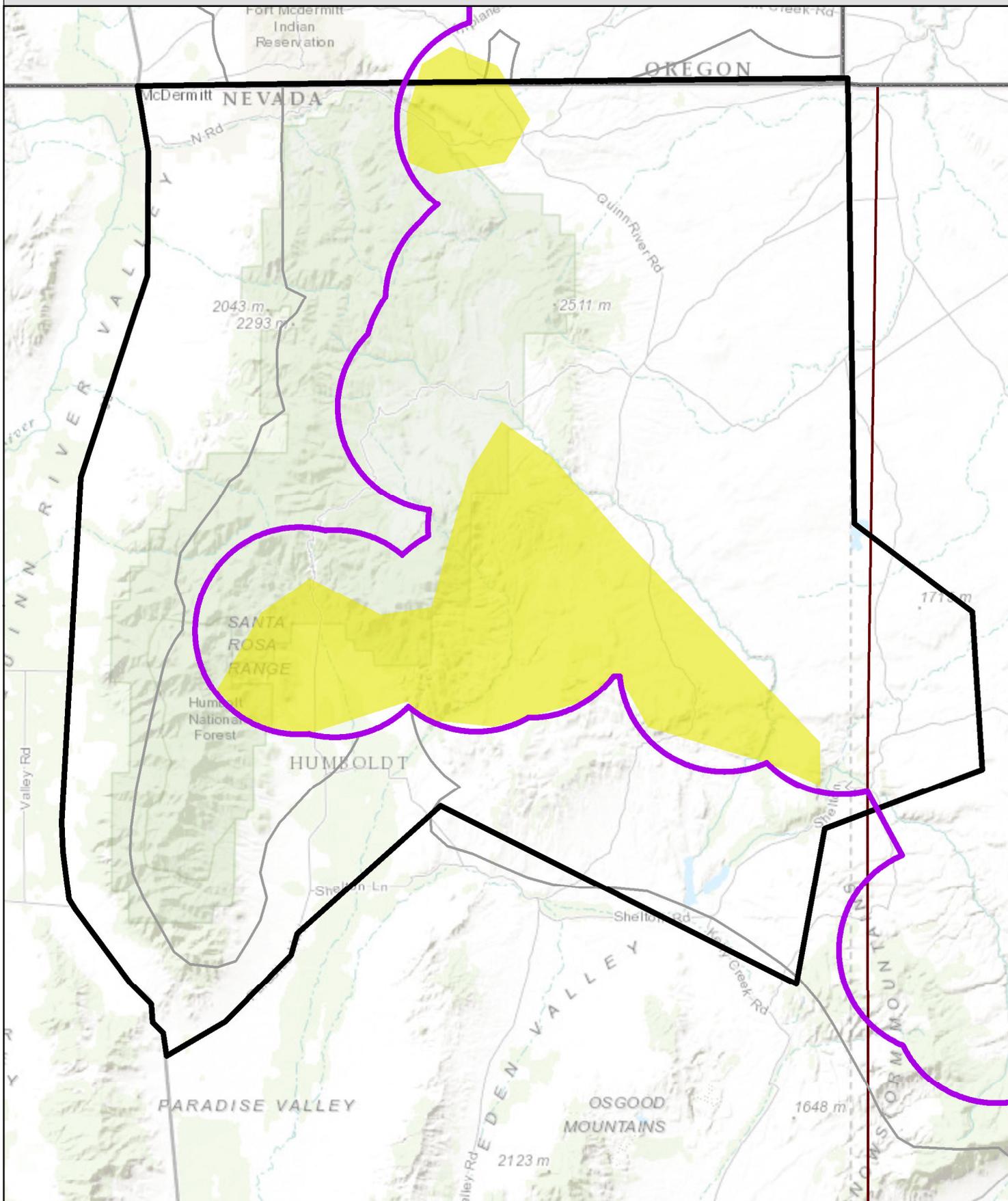
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March 2015
Date Saved: 3/12/2015
Data Sources: BLM, ESRI Basedata
1:352,650

Greater Owyhee Project Planning Area
Invasive Annuals Potential Treatment Areas

Northern Great Basin
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.



Greater Owyhee Project Planning Area



Invasive Annuals Potential Treatment Areas

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:562,330

Greater Owyhee Project Planning Area
Emergency Stabilization, Rehabilitation Priority

Northern Great Basin
Bureau of Land Management
U.S. Department of the Interior

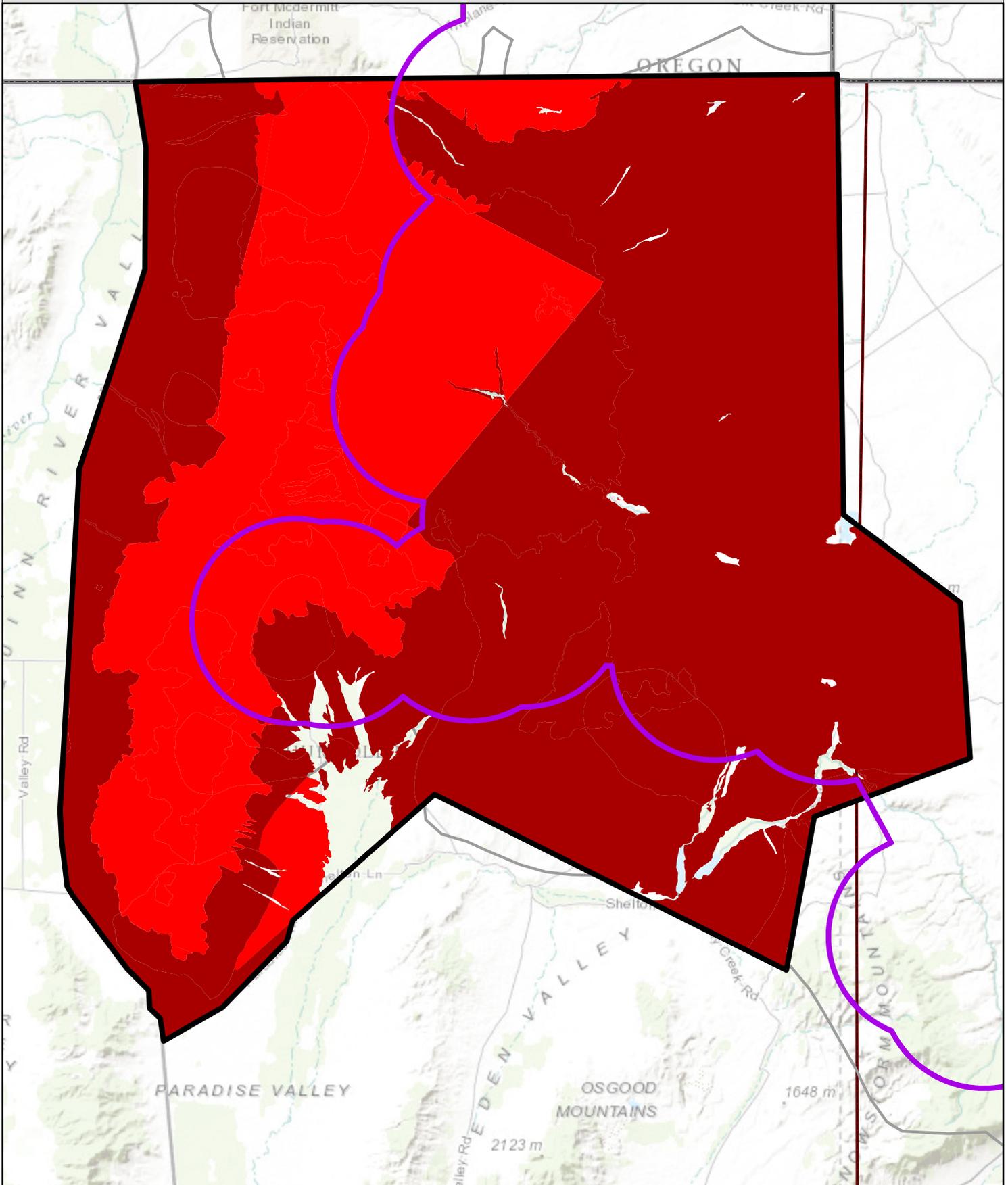


No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.



- Greater Owyhee Project Planning Area
- Greater Owyhee ESR 1st Priority
- Greater Owyhee ESR 2nd Priority
- Greater Owyhee ESR 3rd Priority

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:562,330



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.

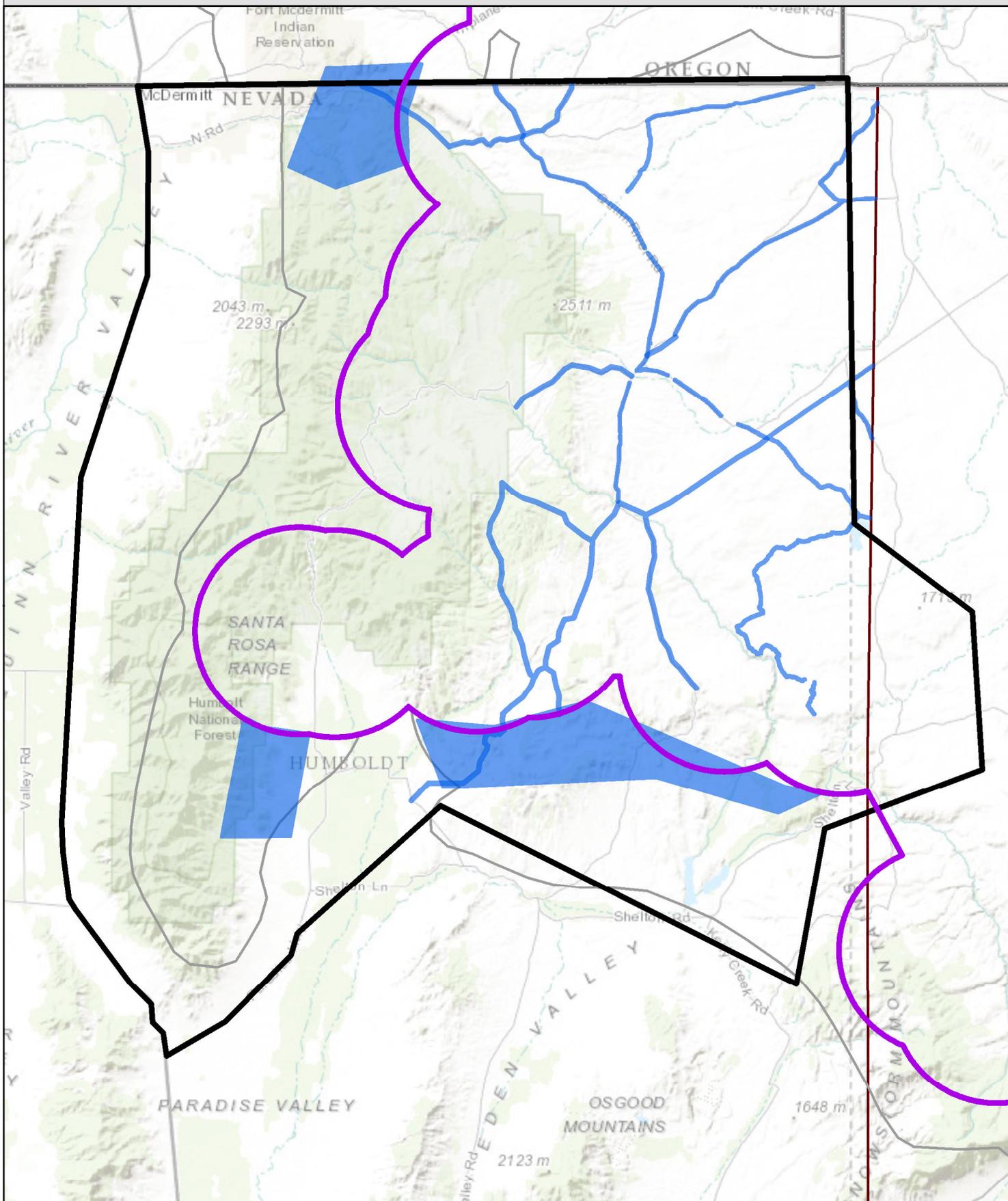


- Greater Owyhee Project Planning Area
- Greater Owyhee Fire 1st Priority
- Greater Owyhee Fire 2nd Priority

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:562,330

Greater Owyhee Project Planning Area
Fuels Management Potential Treatment Areas

Northern Great Basin
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.

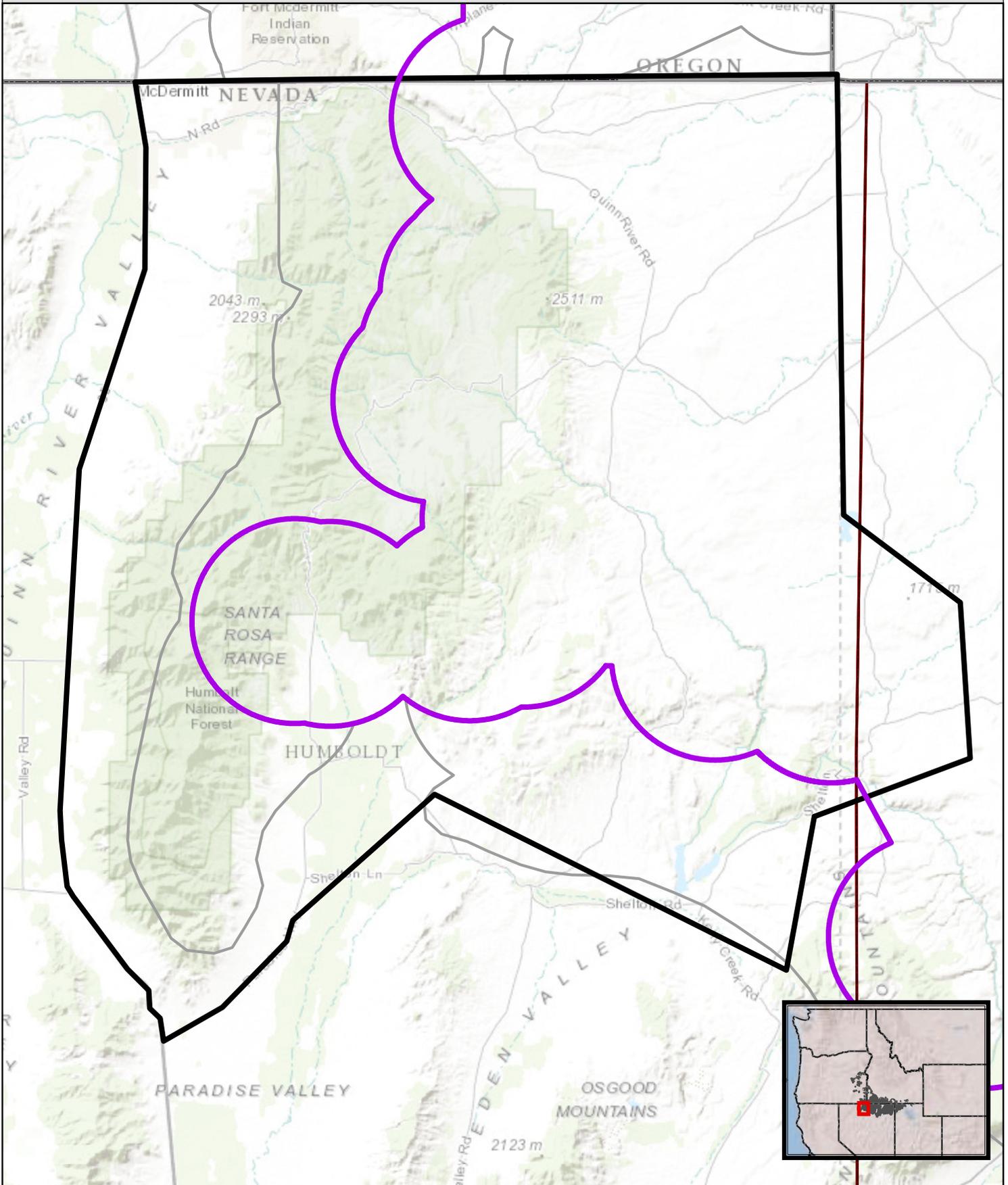


- Greater Owyhee Project Planning Area
- Linear Fuels Management Potential Treatment Areas
- Fuels Management Potential Treatment Areas

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:562,330

Greater Owyhee Project Planning Area

Northern Great Basin
Bureau of Land Management
U.S. Department of the Interior

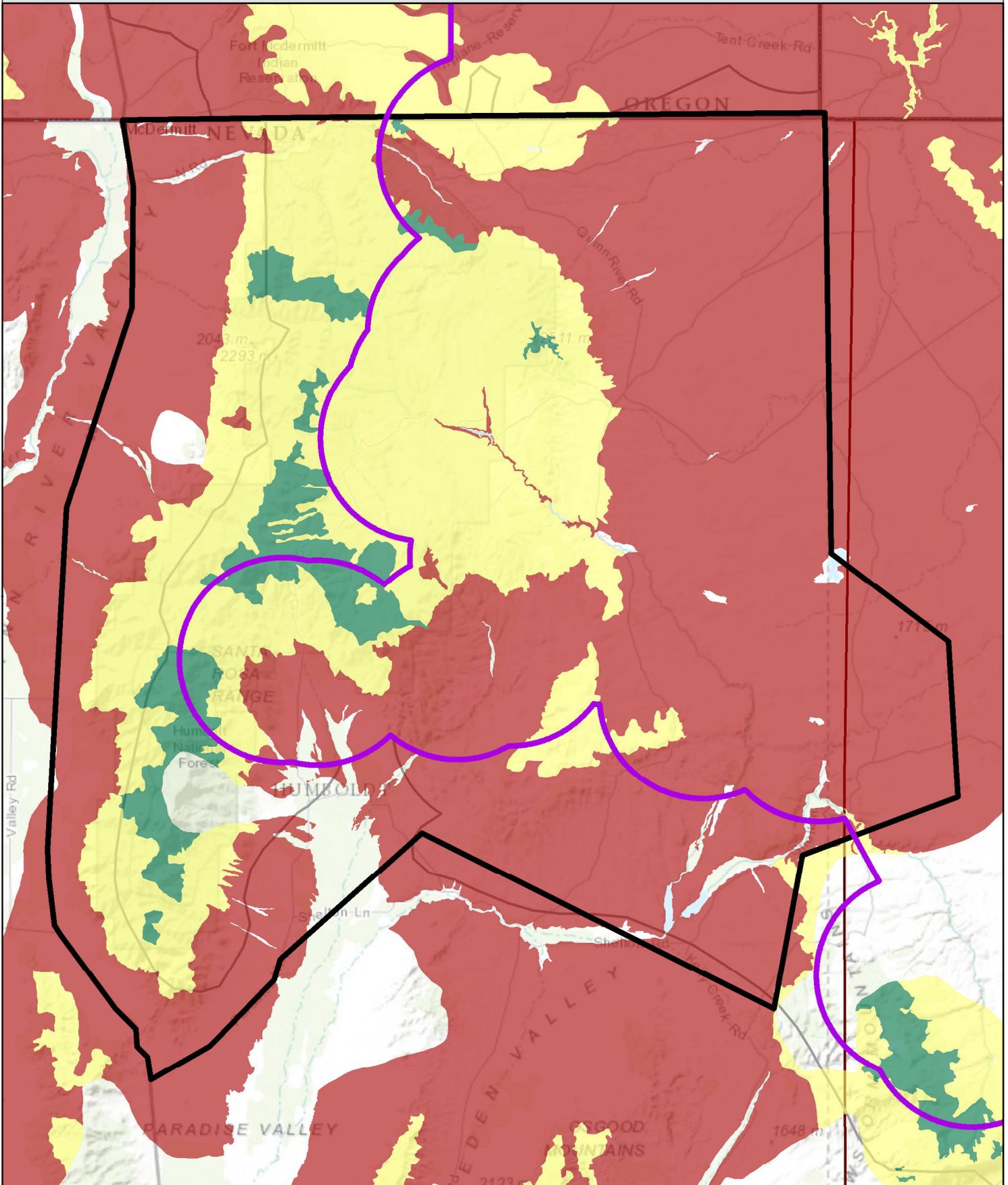


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Greater Owyhee Project Planning Area

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:562,330



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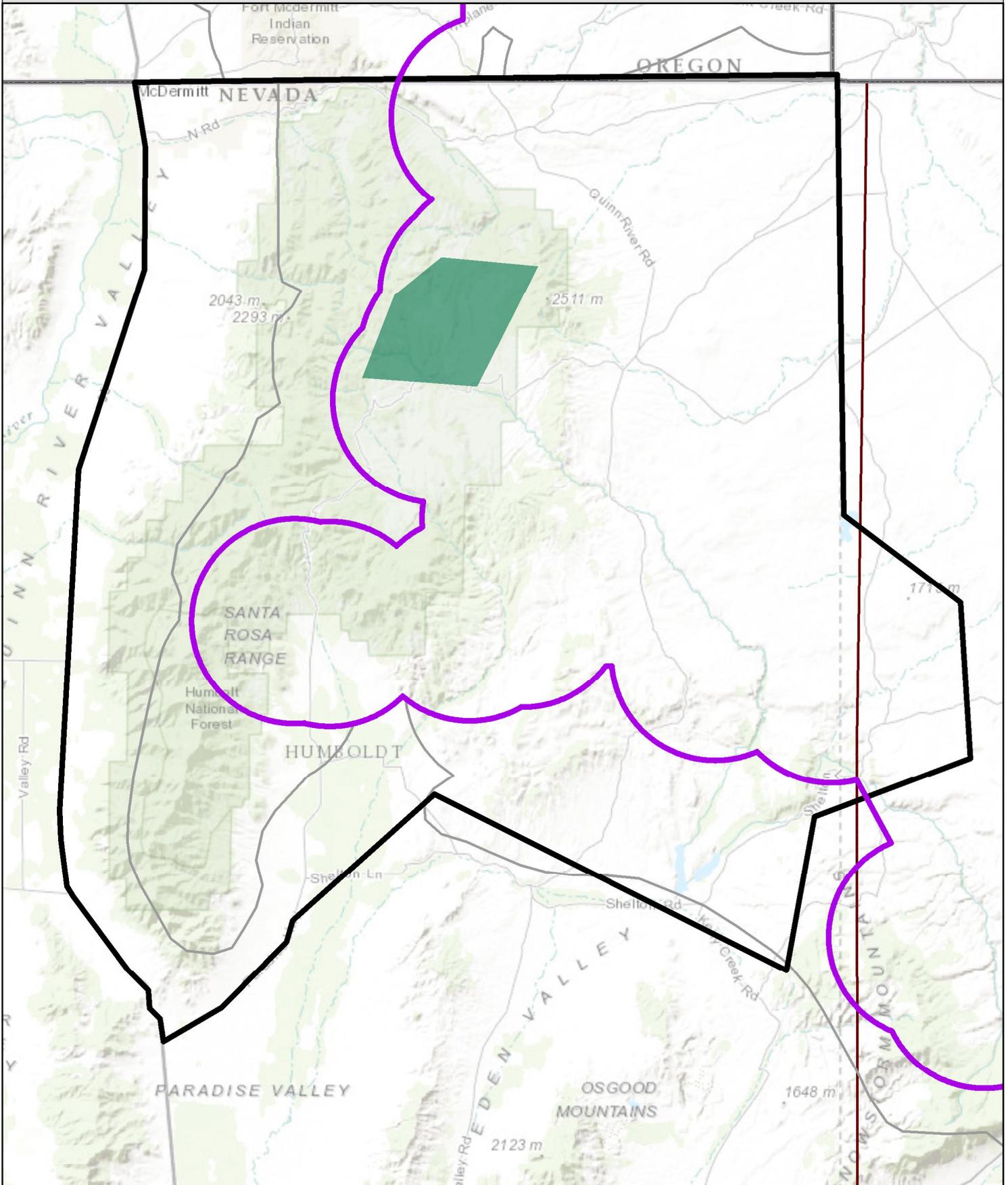


Greater Owyhee Project Planning Area
Reportable Priorities
1 2 3

March 2015
Date Saved: 3/12/2015
Data Sources: BLM, ESRI Basedata
1:562,330

Greater Owyhee Project Planning Area
Habitat Restoration Potential Treatment Areas

Northern Great Basin
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.

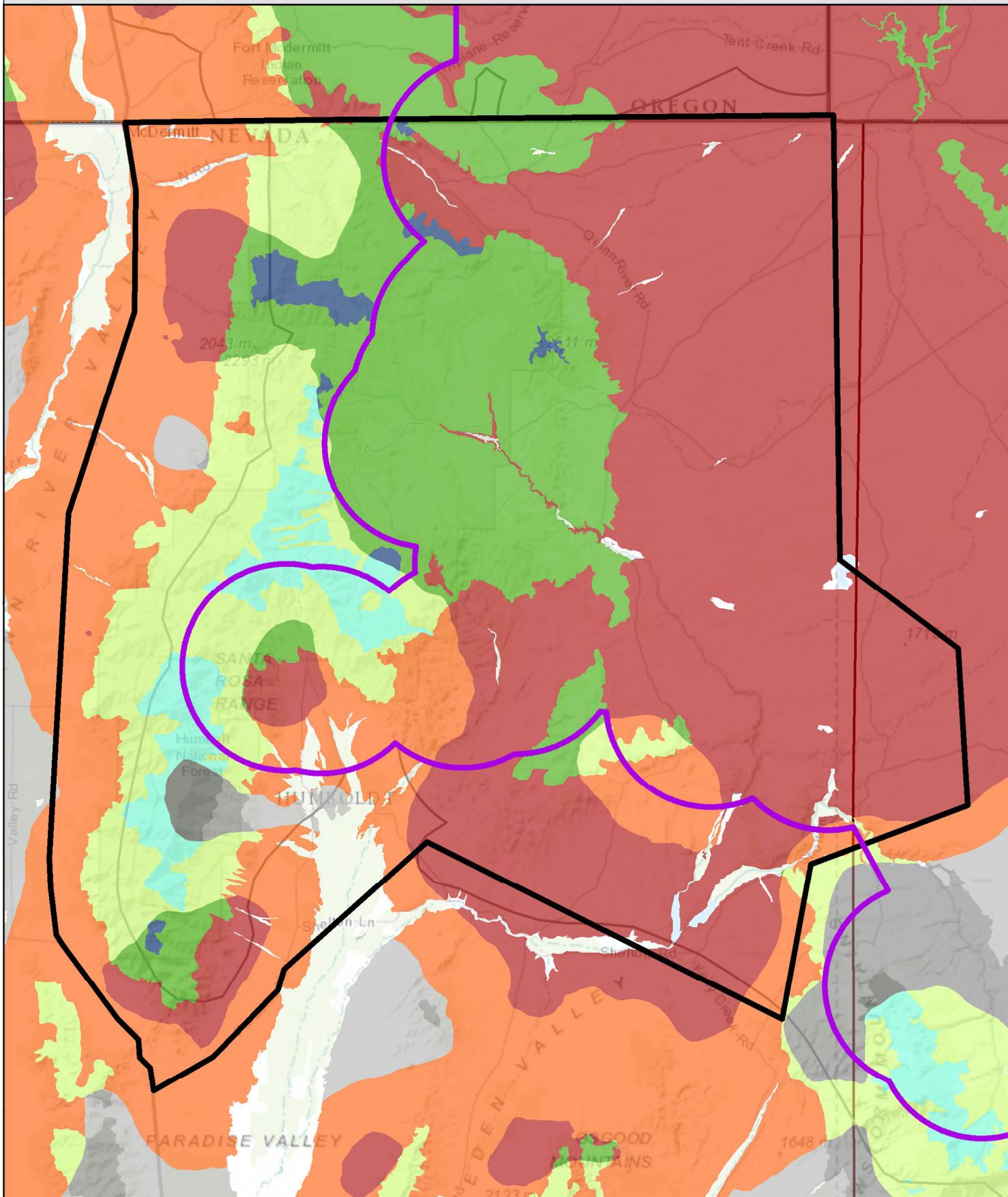


Greater Owyhee Project Planning Area

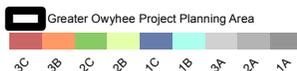


Habitat Restoration Potential Treatment Areas

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:562,330



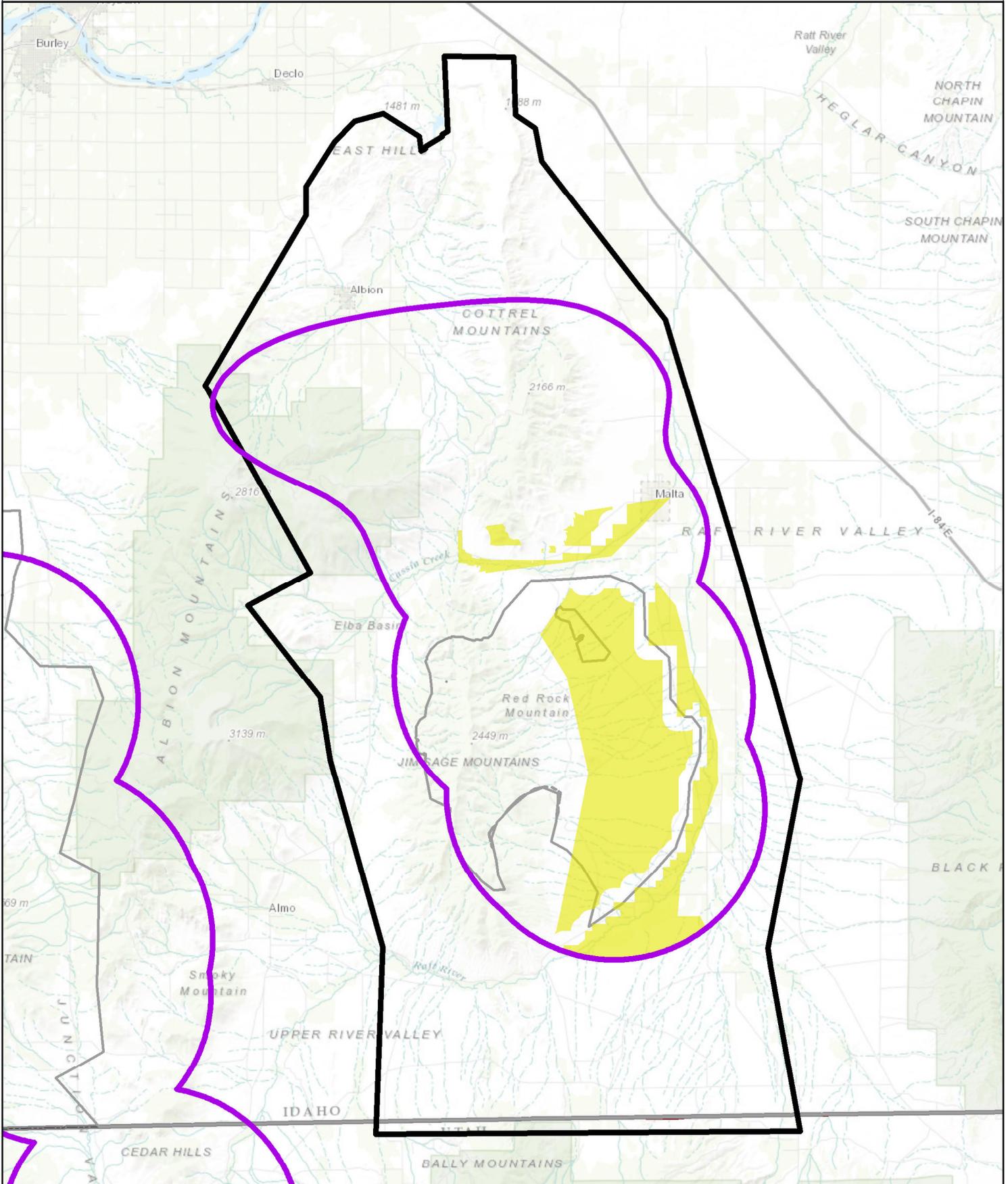
No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.



March 2015
Date Saved: 3/12/2015
Data Sources: BLM, ESRI Basedata
1:562,330

Jim Sage Project Planning Area
Invasive Annuals Potential Treatment Areas

Northern Great Basin
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.



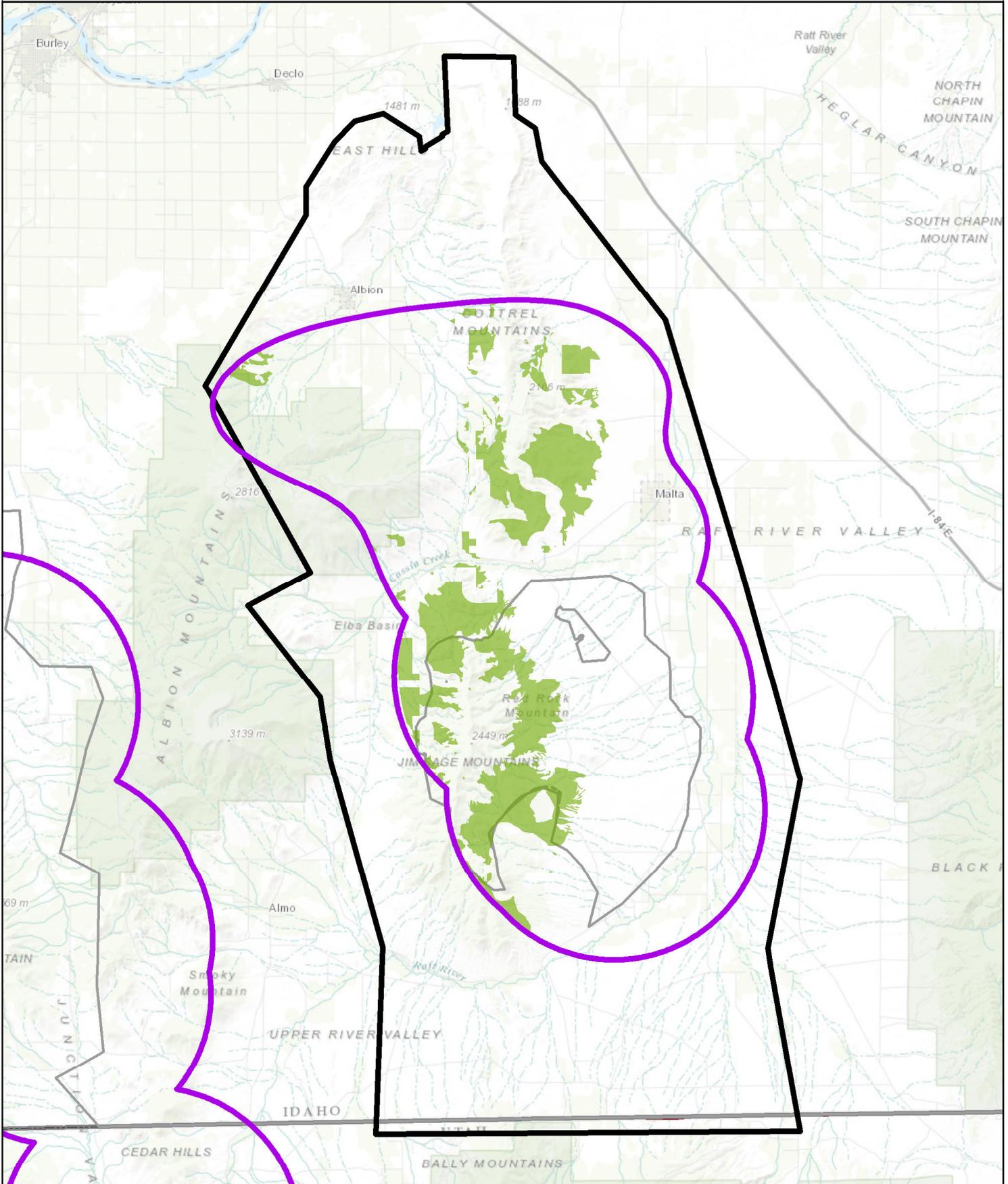
Jim Sage Project Planning Area

Invasive Annuals Potential Treatment Areas

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:387,701

**Jim Sage Project Planning Area
Conifer Expansion Potential Treatment Areas**

**Northern Great Basin
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.



Jim Sage Project Planning Area

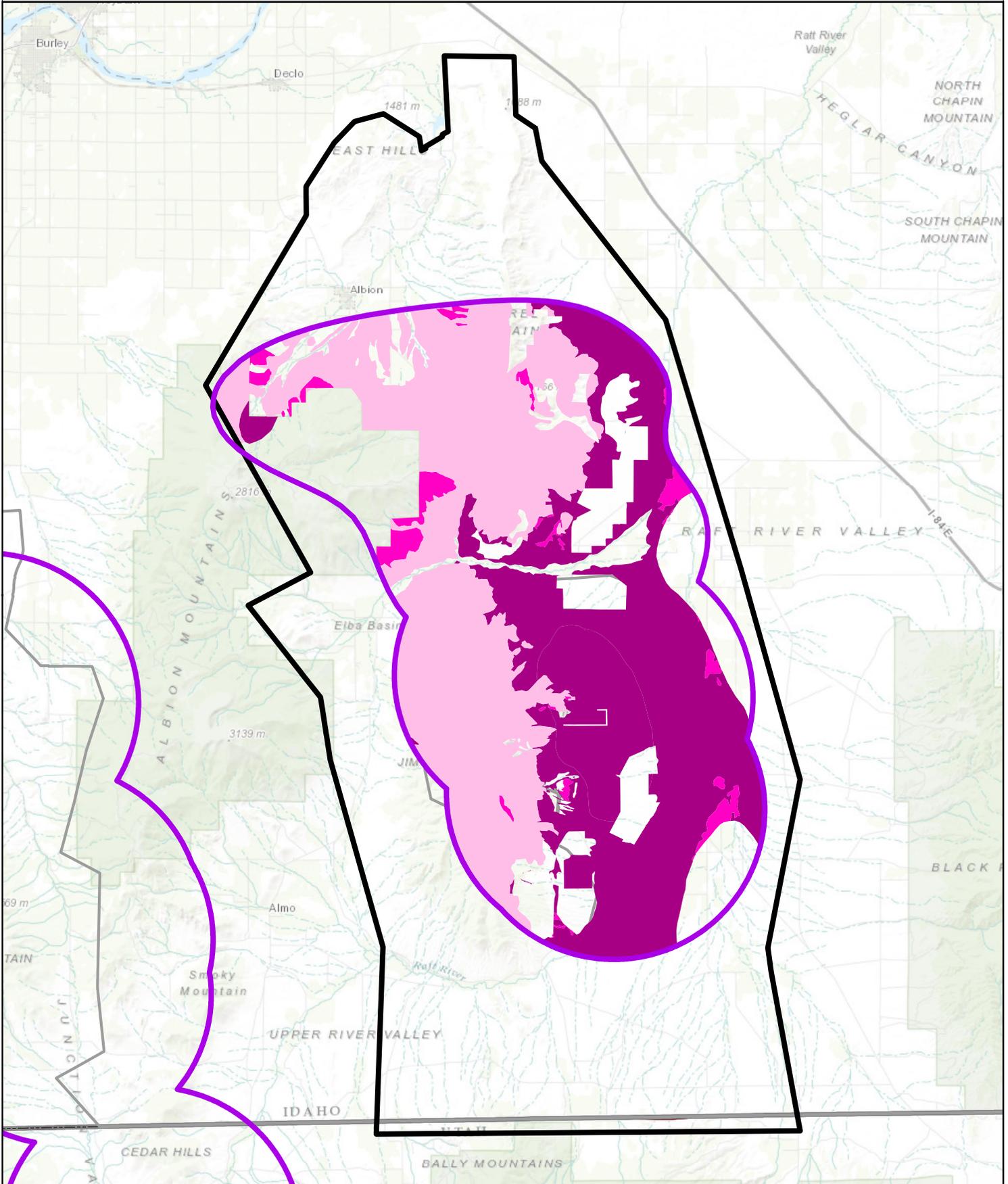


Conifer Expansion Potential Treatment Areas

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:387,701

Jim Sage Project Planning Area
Emergency Stabilization, Rehabilitation Priority

Northern Great Basin
Bureau of Land Management
U.S. Department of the Interior

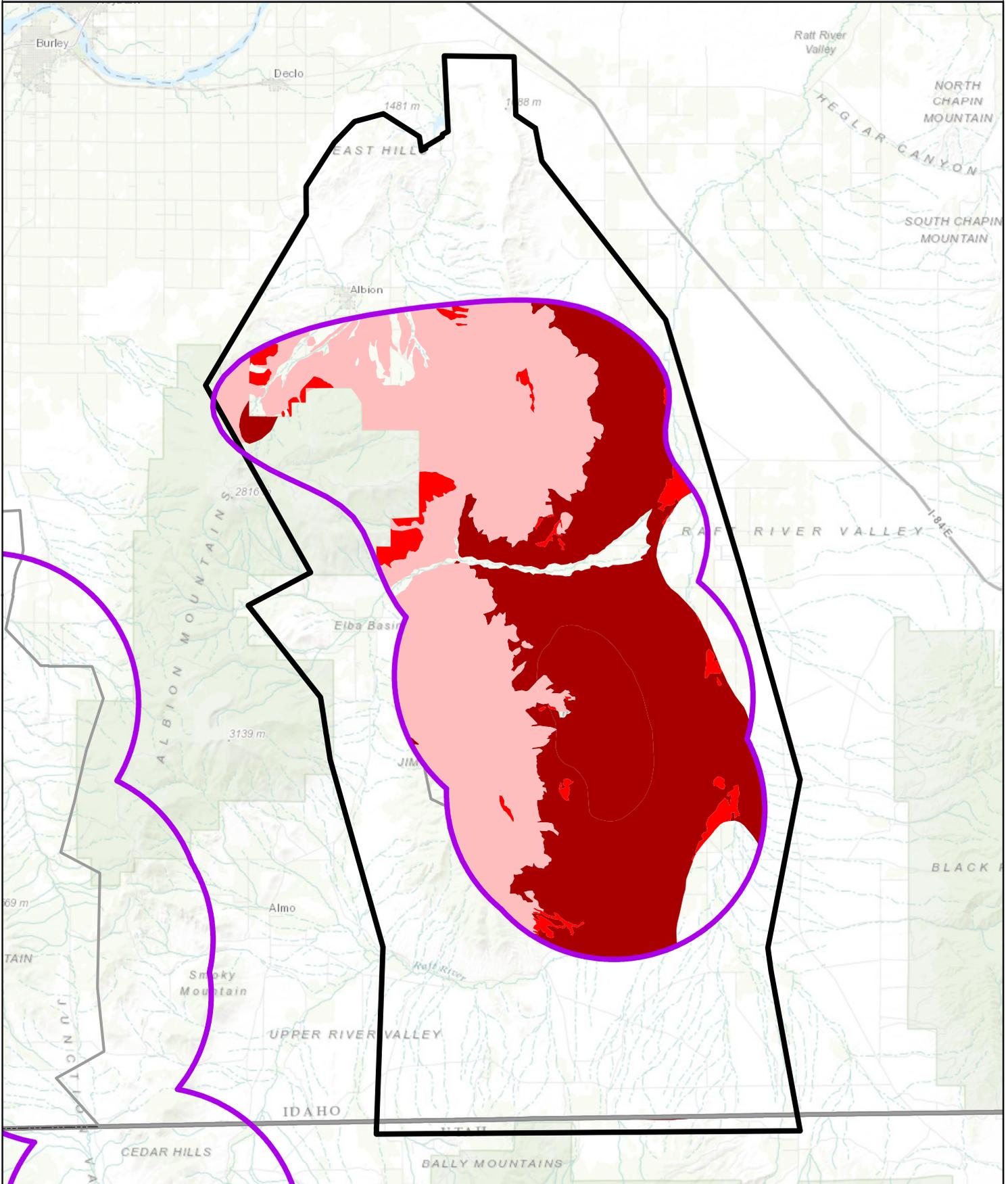


No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.



- Jim Sage Project Planning Area
- Jim Sage ESR 1st Priority
- Jim Sage ESR 2nd Priority
- Jim Sage ESR 3rd Priority

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:387,701



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.

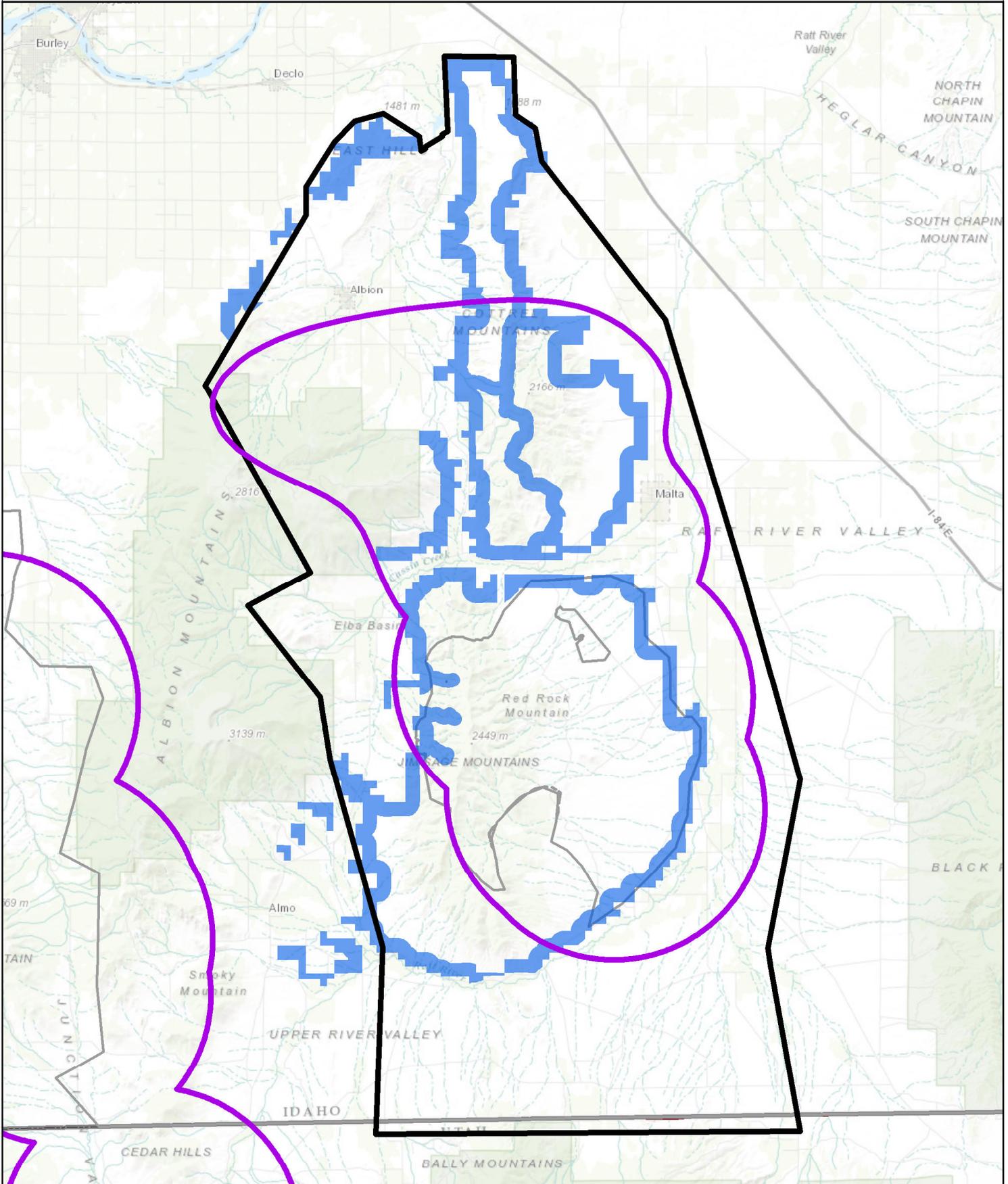


- Jim Sage Project Planning Area
- Jim Sage Fire 1st Priority
- Jim Sage Fire 2nd Priority
- Jim Sage Fire 3rd Priority

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:387,701

Jim Sage Project Planning Area
Fuels Management Potential Treatment Areas

Northern Great Basin
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.



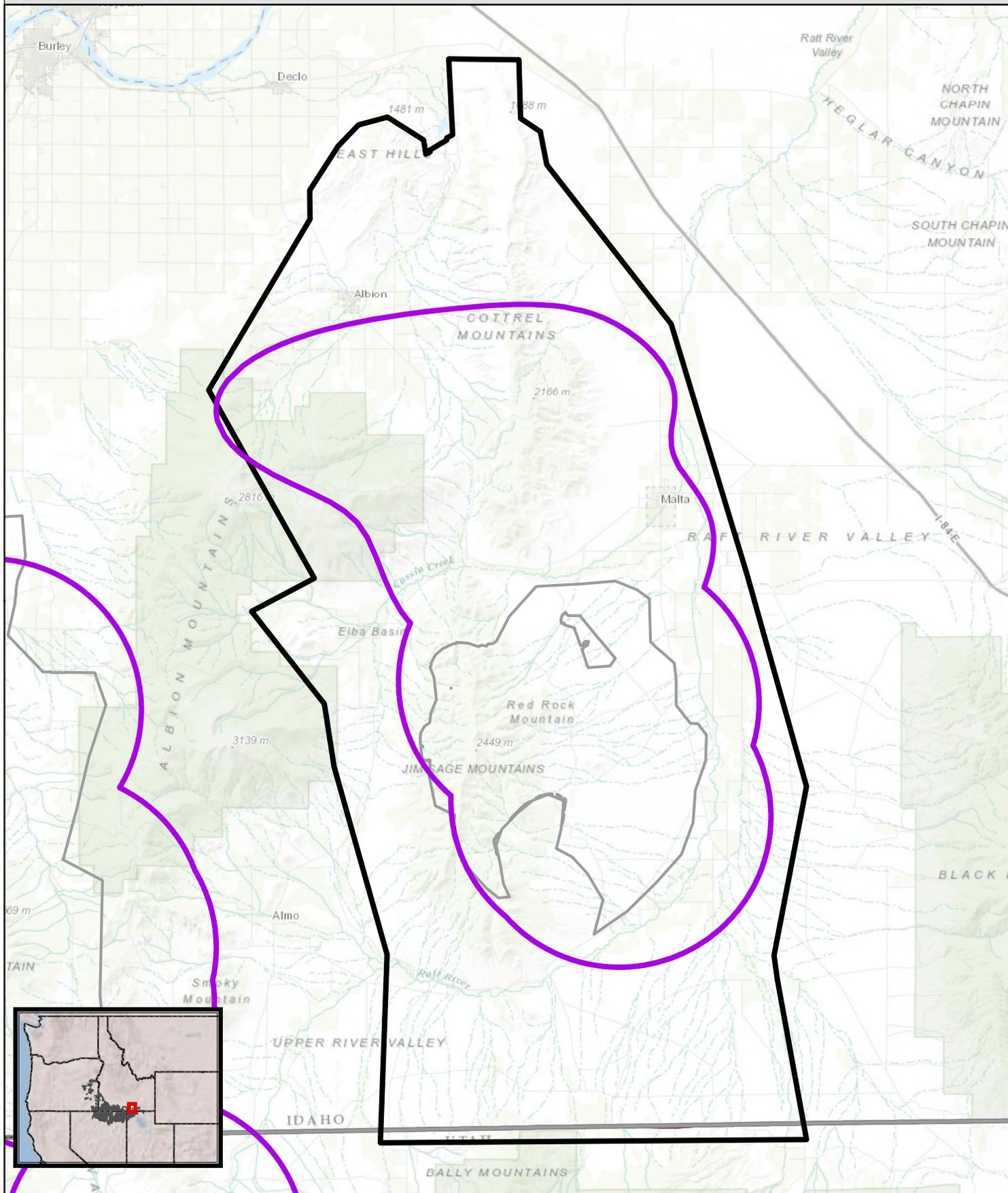
Jim Sage Project Planning Area

Fuels Management Potential Treatment Areas

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:387,701

Jim Sage Project Planning Area

Northern Great Basin
Bureau of Land Management
U.S. Department of the Interior



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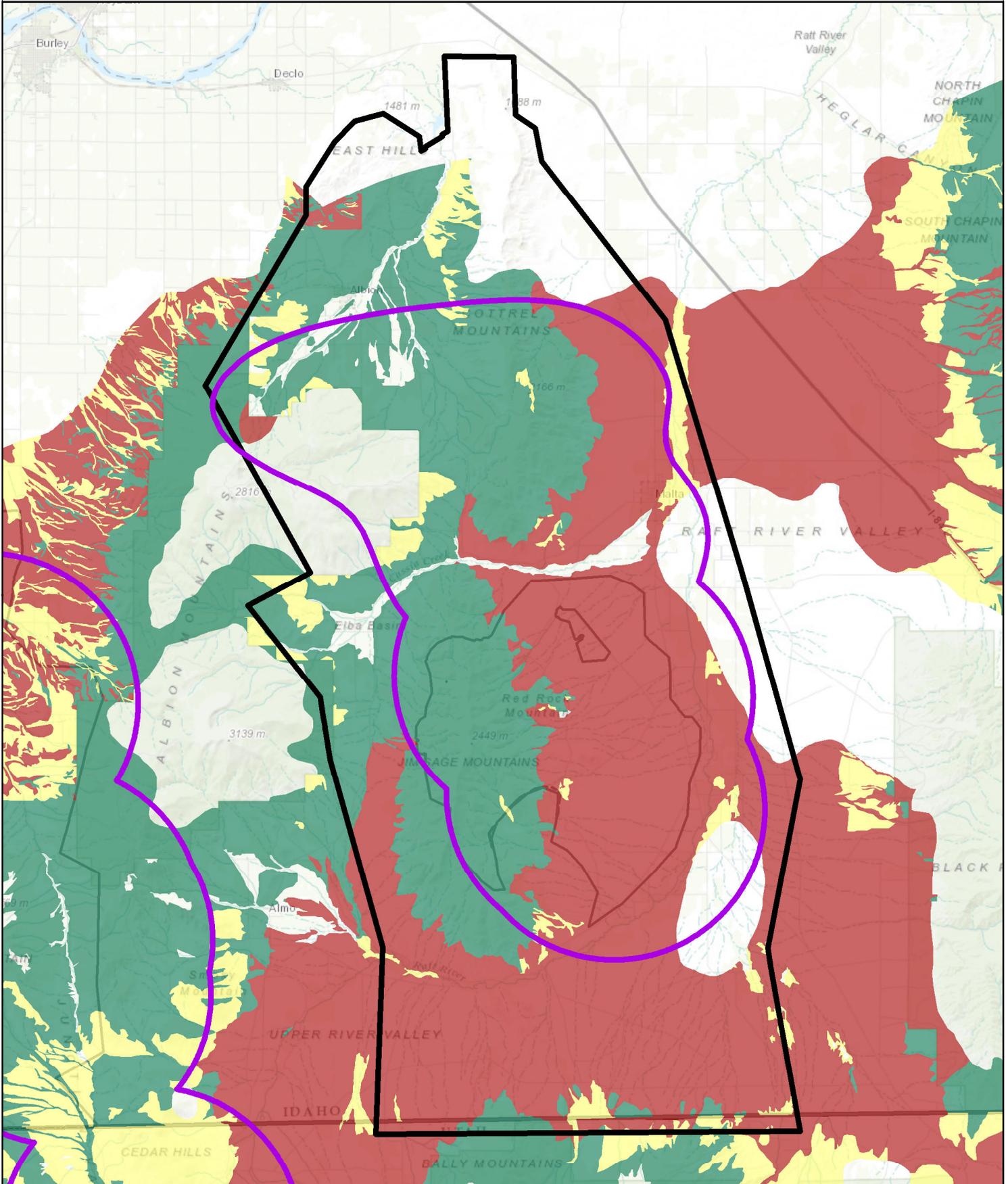


 Jim Sage Project Planning Area

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:387,701

**Jim Sage Project Planning Area
Resistance-Resilience Reportable Priorities**

**Northern Great Basin
Bureau of Land Management
U.S. Department of the Interior**

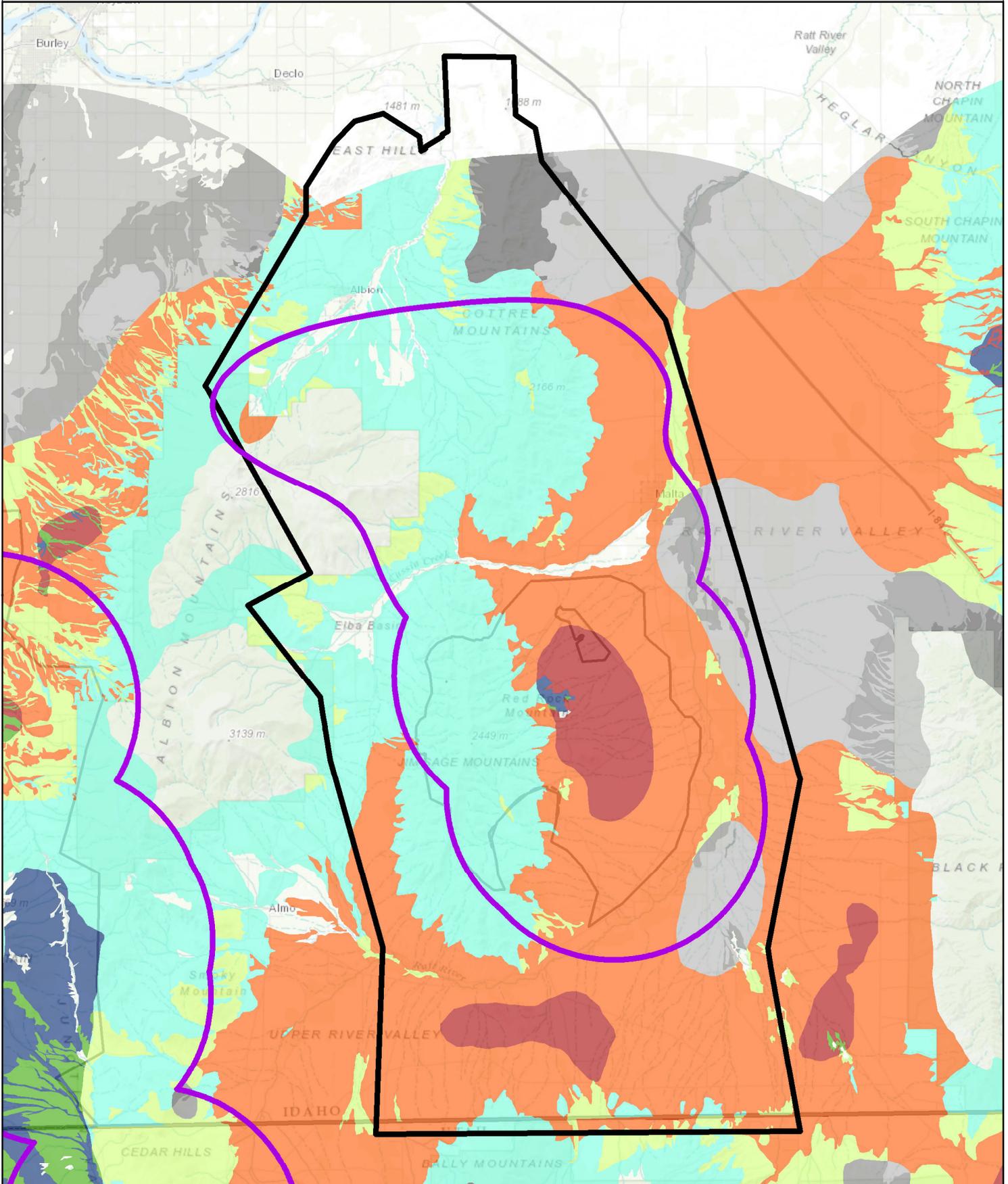


No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.

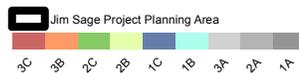


 Jim Sage Project Planning Area
Reportable Priorities
 1  2  3

March 2015
 Date Saved: 3/12/2015
 Data Sources: BLM, ESRI Basedata
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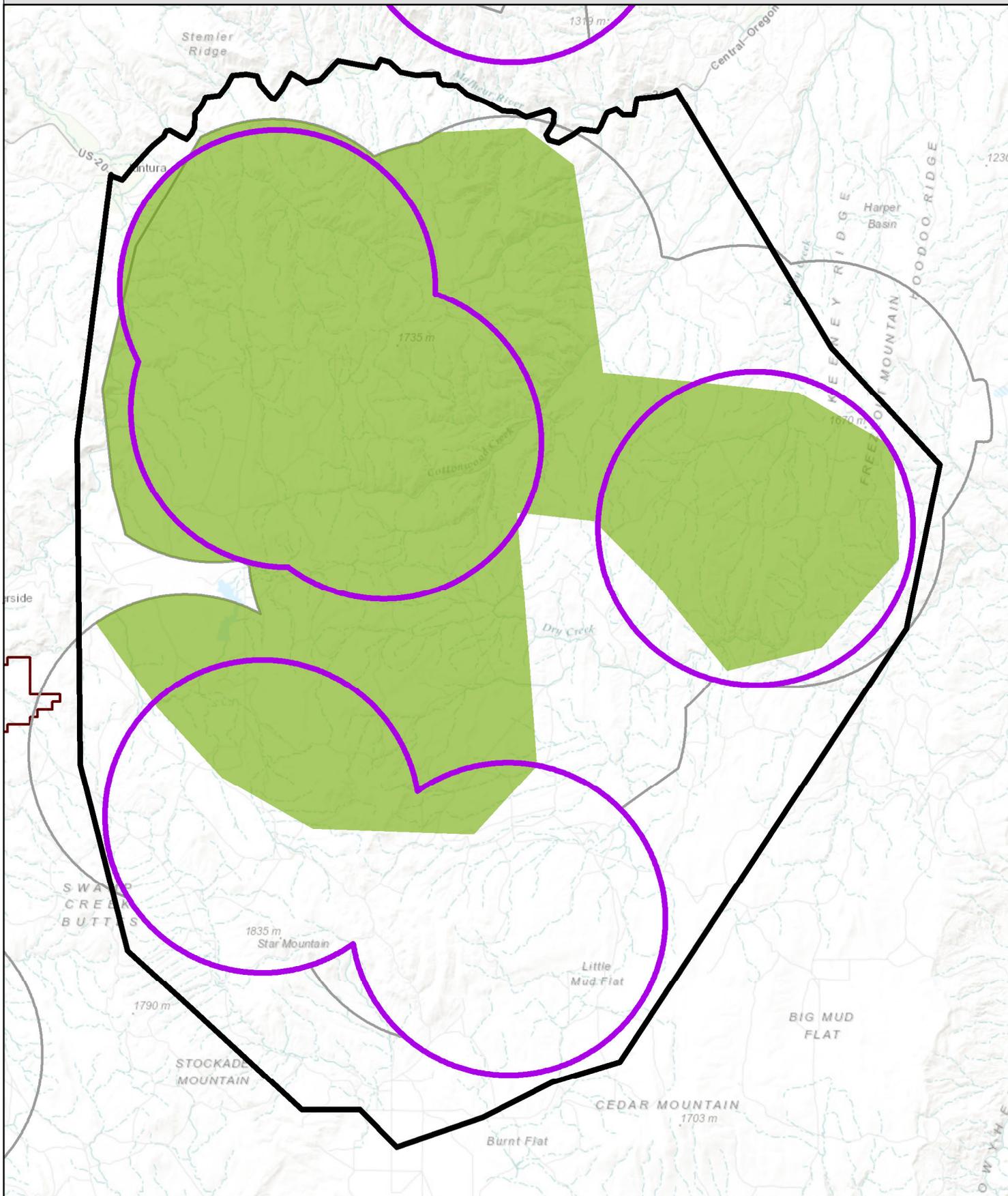
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March 2015
Date Saved: 3/12/2015
Data Sources: BLM, ESRI Basedata
1:387,701

Mainstem Malheur Project Planning Area
Conifer Expansion Potential Treatment Areas

Northern Great Basin
Bureau of Land Management
U.S. Department of the Interior



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Mainstem Malheur Project Planning Area

Conifer Expansion Potential Treatment Areas

March 2015

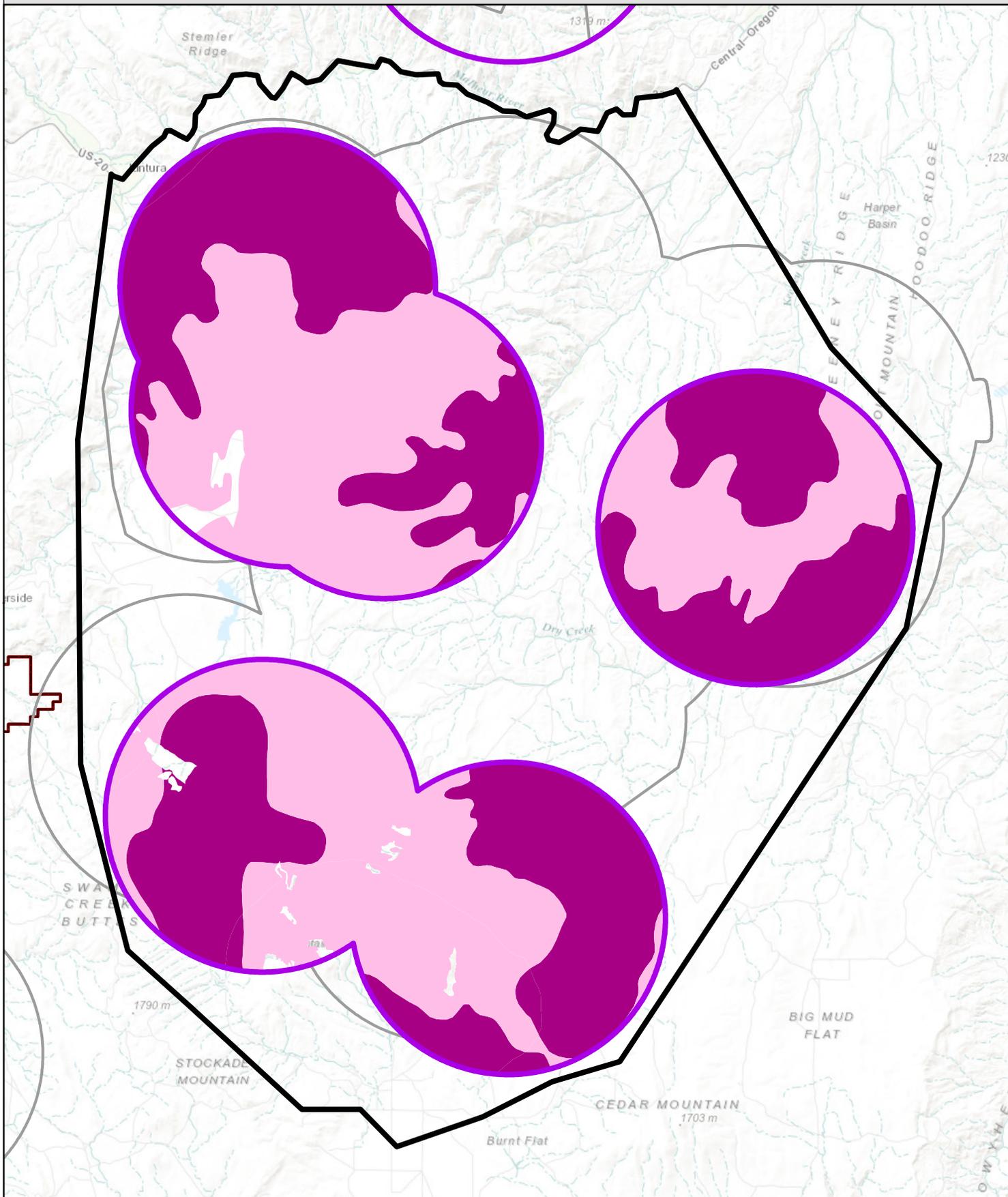
Date Saved: 3/11/2015

Data Sources: BLM, ESRI Basedata

1:383,133

Mainstem Malheur Project Planning Area
Emergency Stabilization, Rehabilitation Priority

Northern Great Basin
Bureau of Land Management
U.S. Department of the Interior

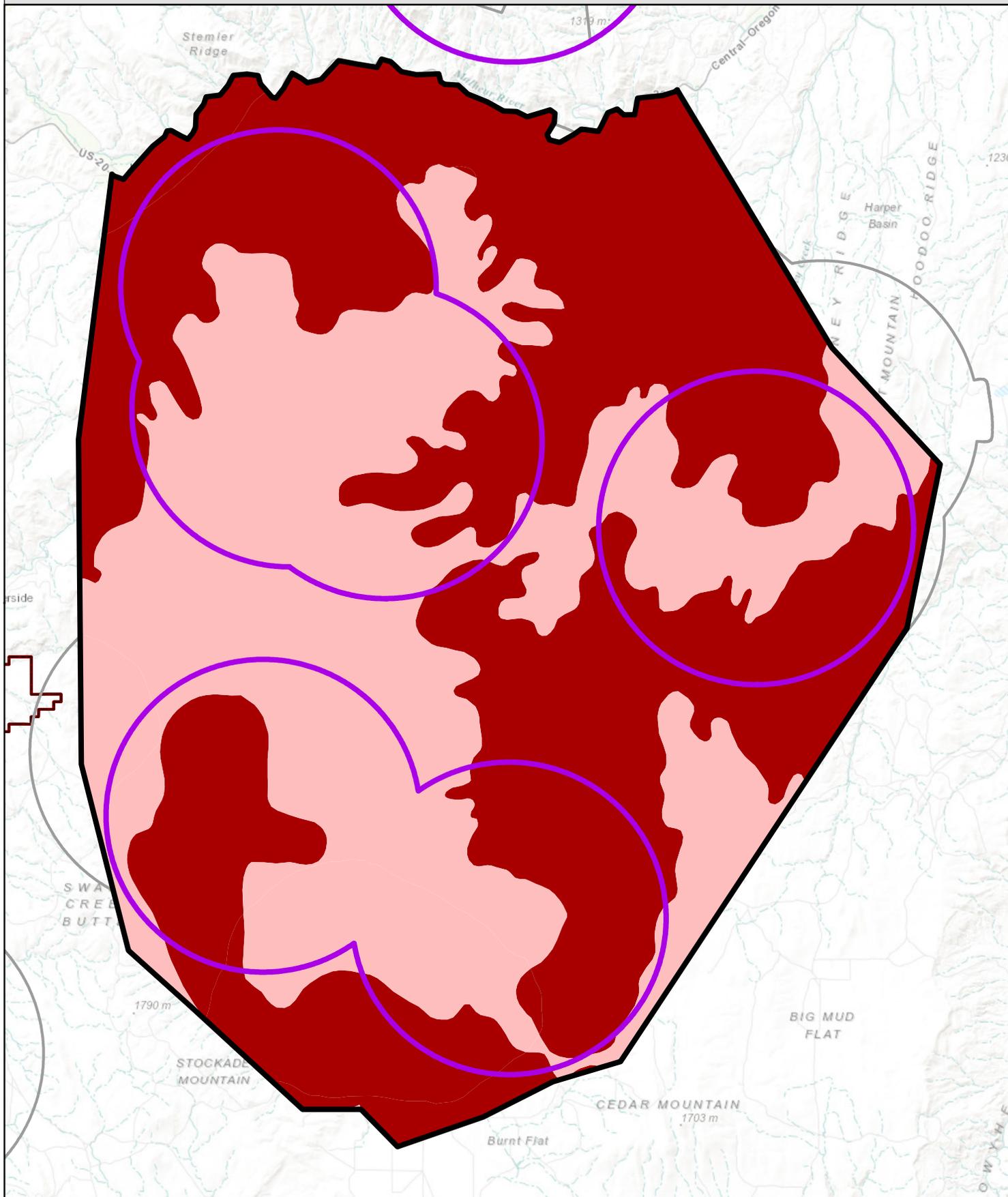


No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.



- Mainstem Malheur Project Planning Area
- Mainstem Malheur ESR 1st Priority
- Mainstem Malheur ESR 3rd Priority

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:383,133



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.

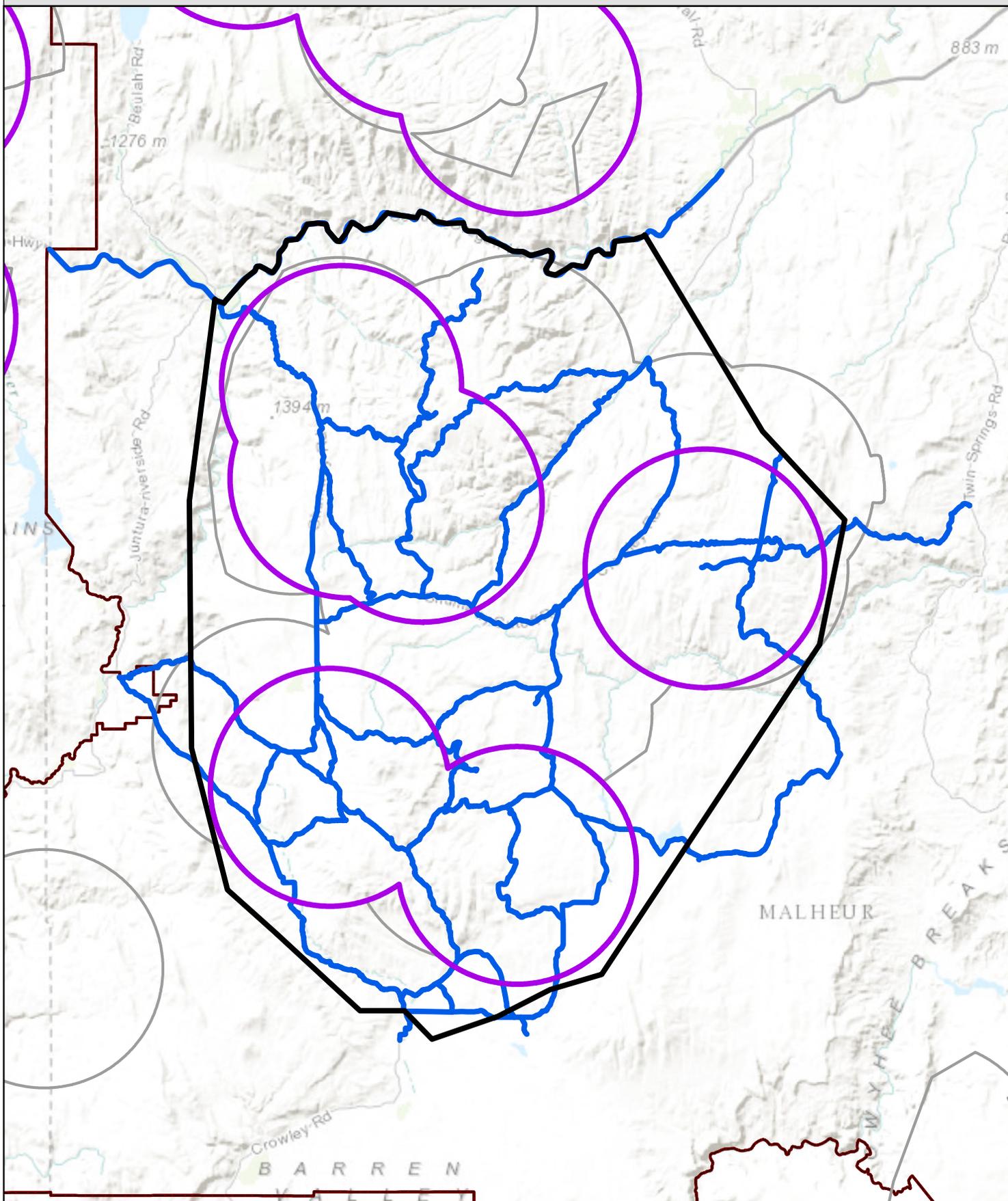


- Mainstem Malheur Project Planning Area
- Mainstem Malheur Fire 1st Priority
- Mainstem Malheur Fire 3rd Priority

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:383,133

Mainstem Malheur Project Planning Area
Fuels Management Potential Treatment Areas

Northern Great Basin
Bureau of Land Management
U.S. Department of the Interior



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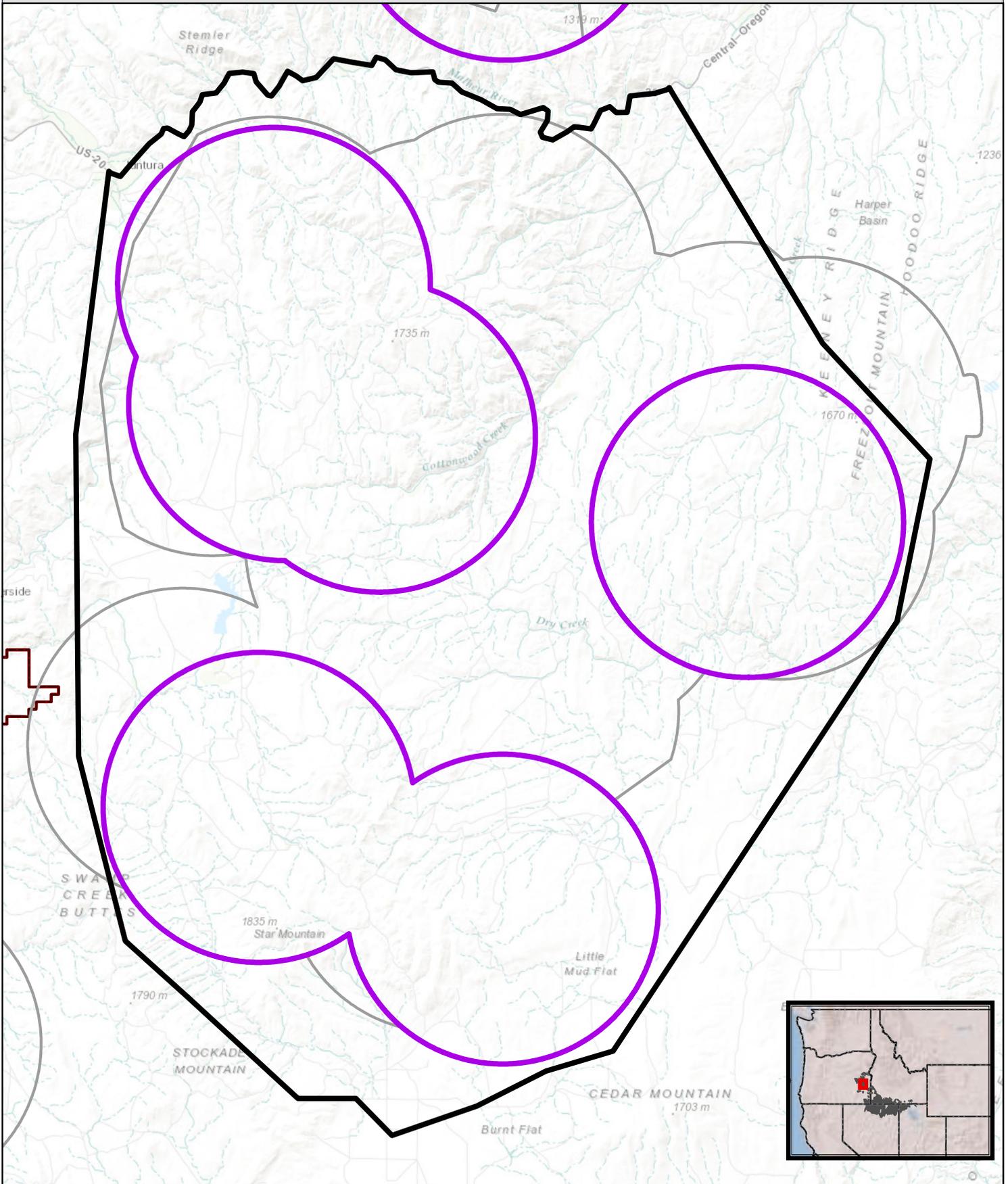


- Mainstem Malheur Project Planning Area
- Linear Fuels Management Potential Treatment Areas

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
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Mainstem Malheur Project Planning Area

Northern Great Basin
Bureau of Land Management
U.S. Department of the Interior

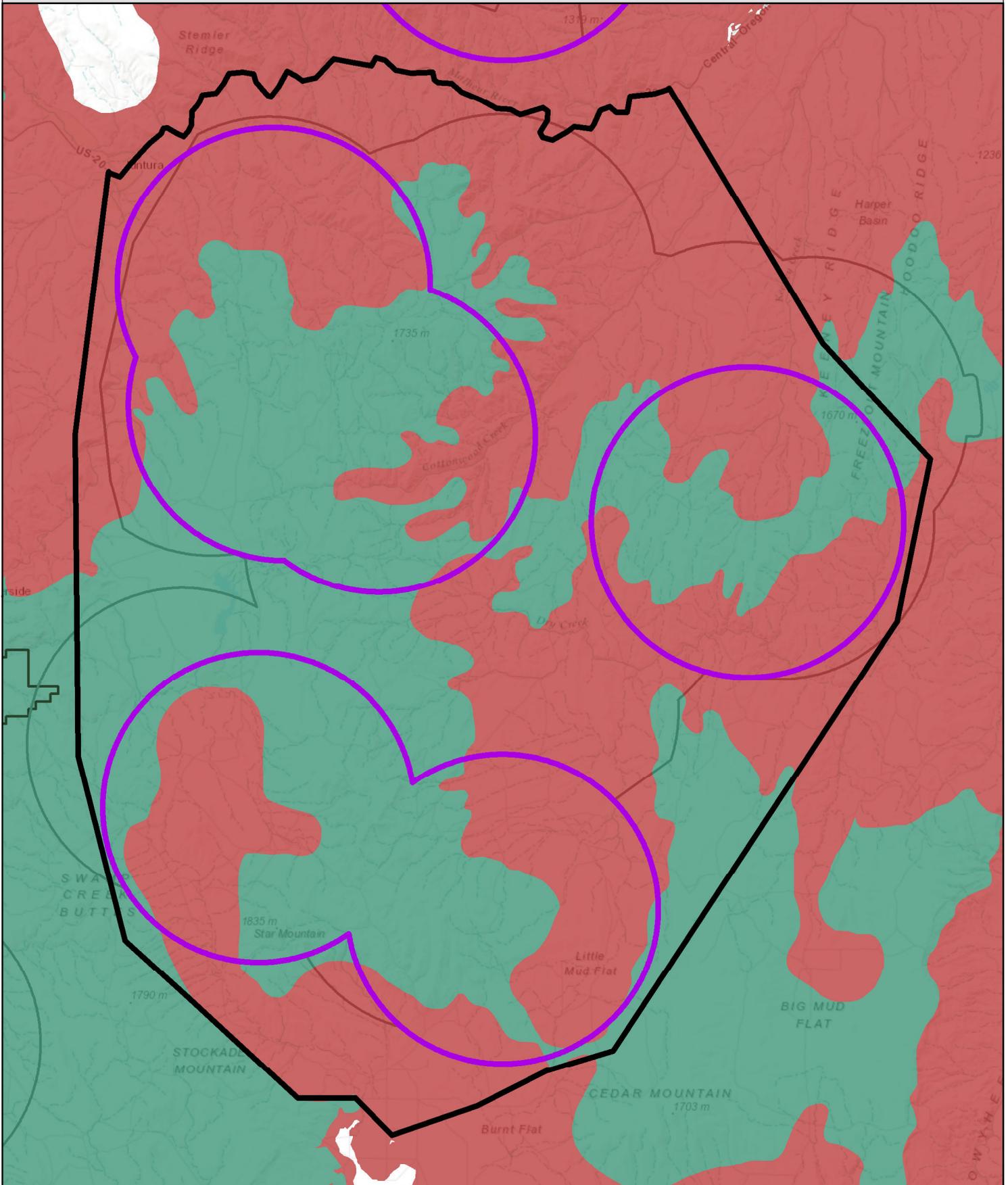


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Mainstem Malheur Project Planning Area

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:383,133



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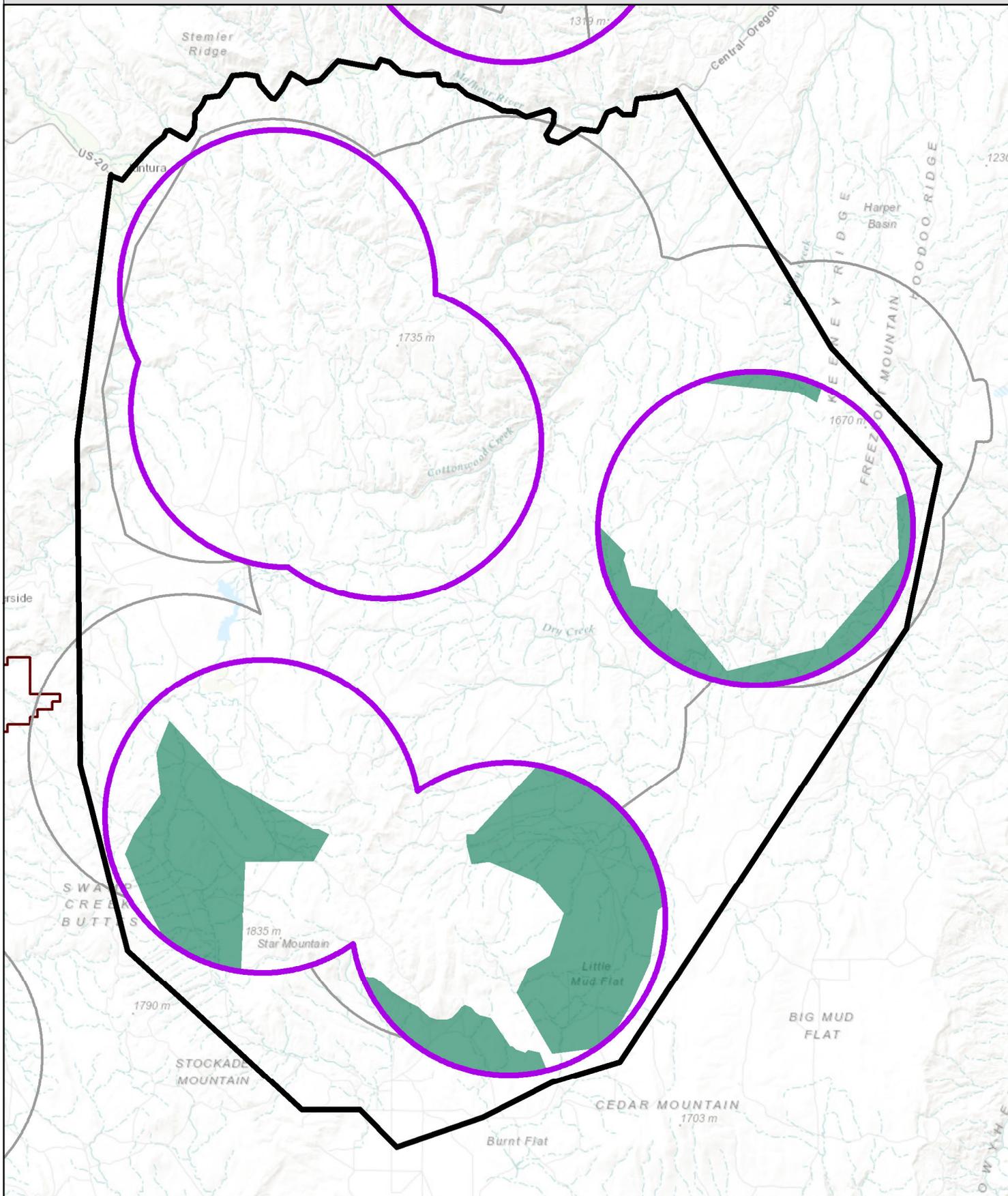


Mainstem Malheur Project Planning Area
Reportable Priorities
 1 2 3

March 2015
 Date Saved: 3/12/2015
 Data Sources: BLM, ESRI Basedata
 1:383,133

Mainstem Malheur Project Planning Area
Habitat Restoration Potential Treatment Areas

Northern Great Basin
Bureau of Land Management
U.S. Department of the Interior



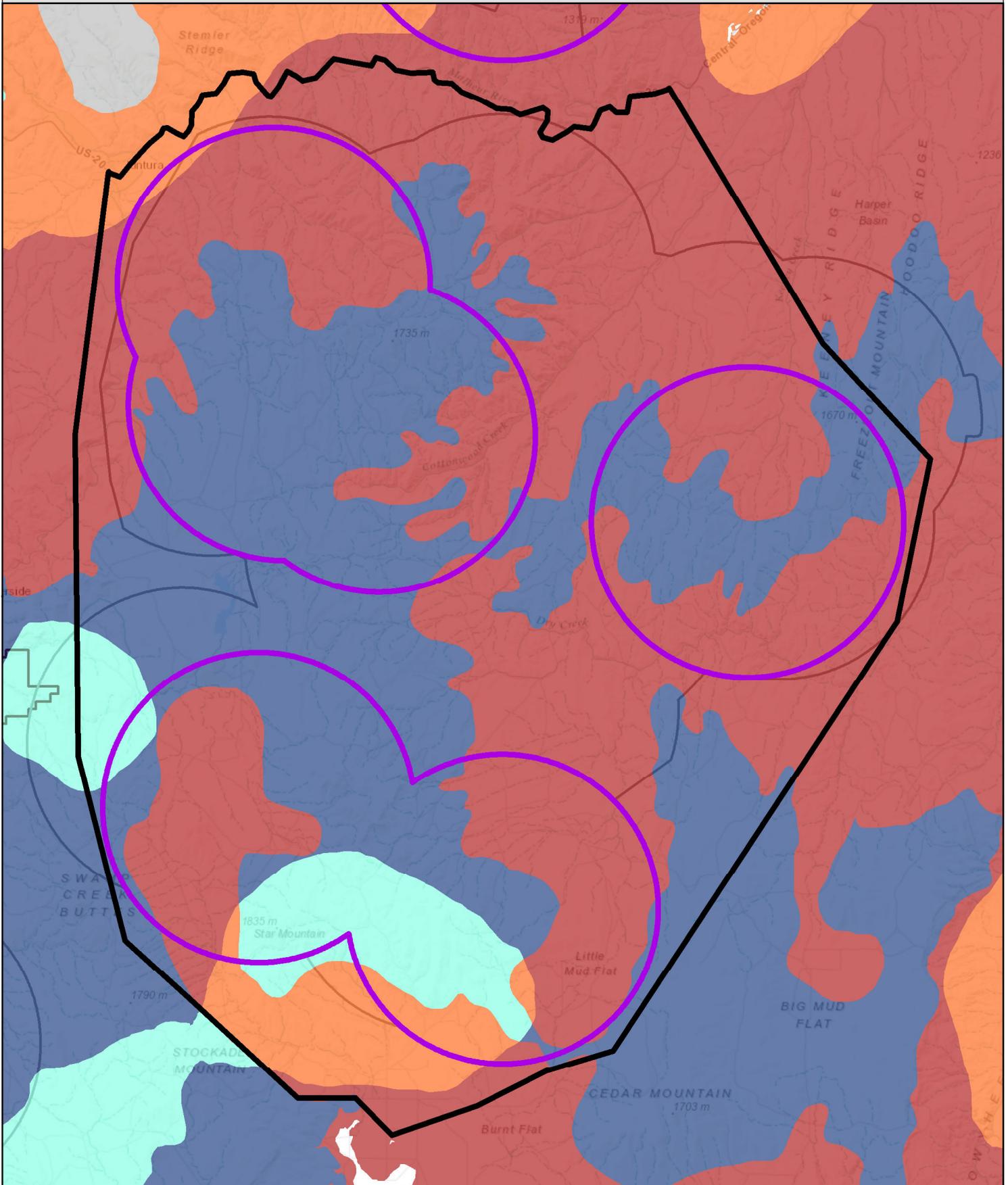
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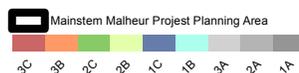
Mainstem Malheur Project Planning Area

Habitat Restoration Potential Treatment Areas

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:383,133



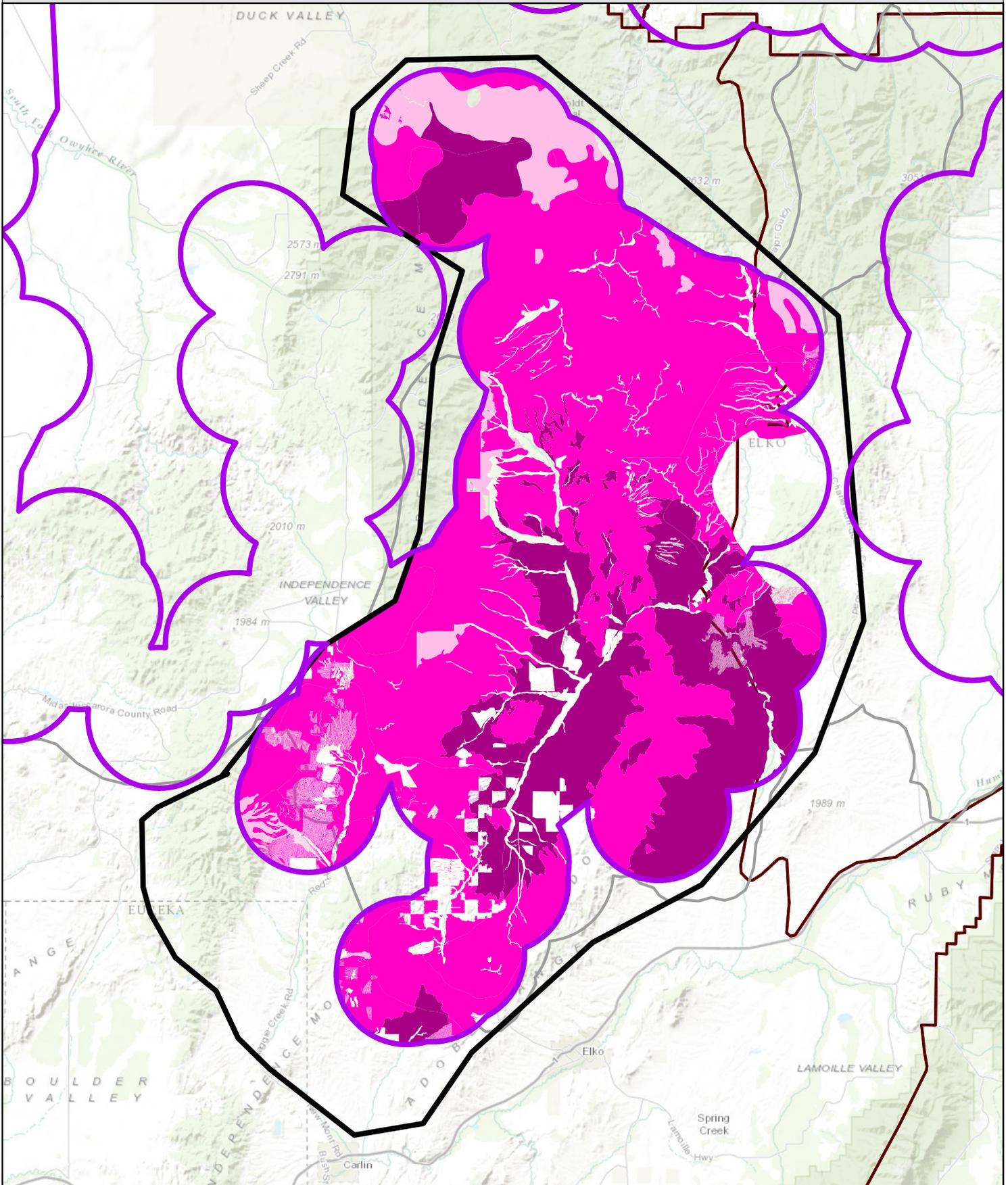
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March 2015
Date Saved: 3/12/2015
Data Sources: BLM, ESRI Basedata
1:383,133

North Fork Project Planning Area
Emergency Stabilization, Rehabilitation Priority

Northern Great Basin
Bureau of Land Management
U.S. Department of the Interior

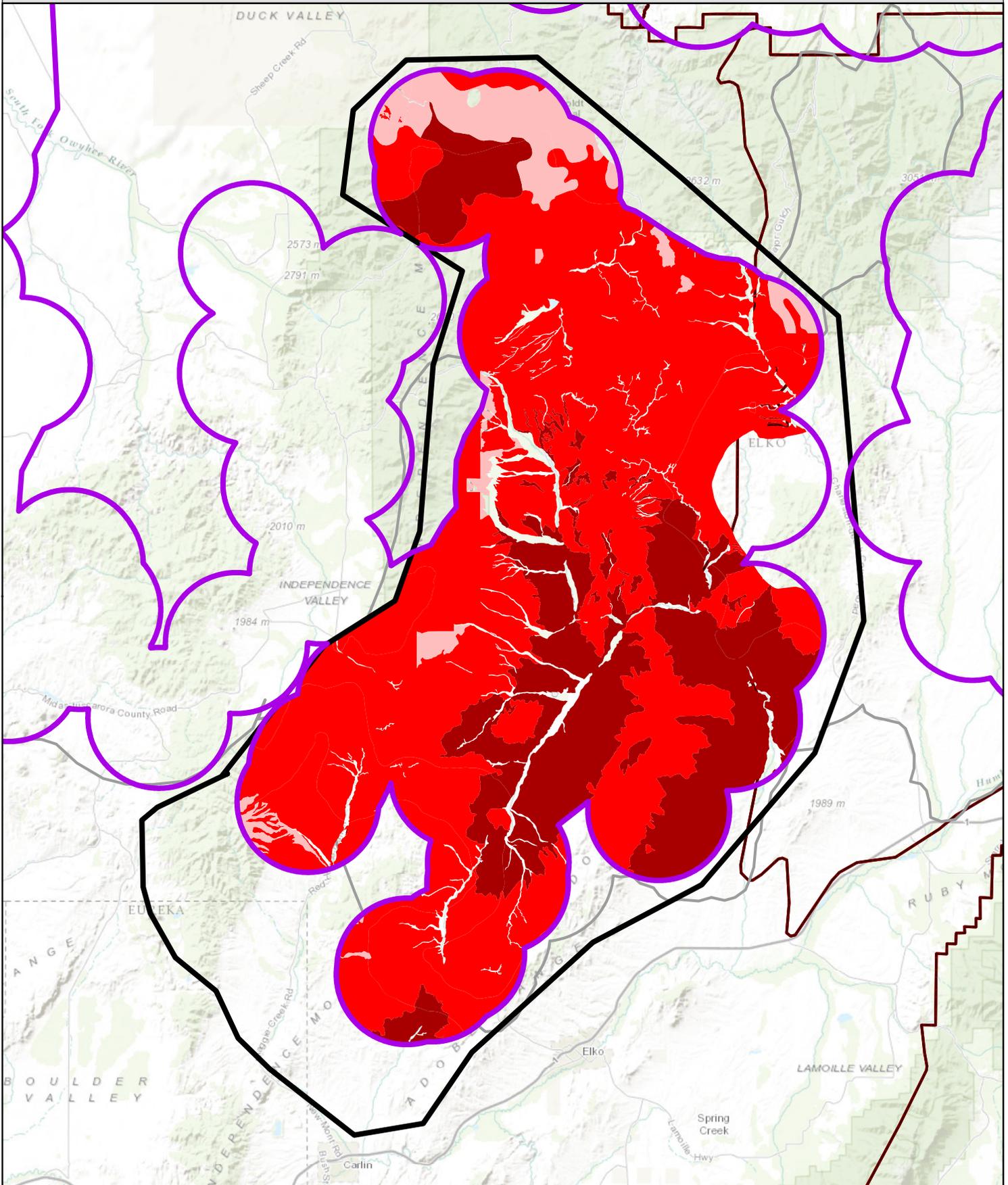


No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.



- North Fork Project Planning Area
- North Fork ESR 1st Priority
- North Fork ESR 2nd Priority
- North Fork ESR 3rd Priority

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:812,834



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.

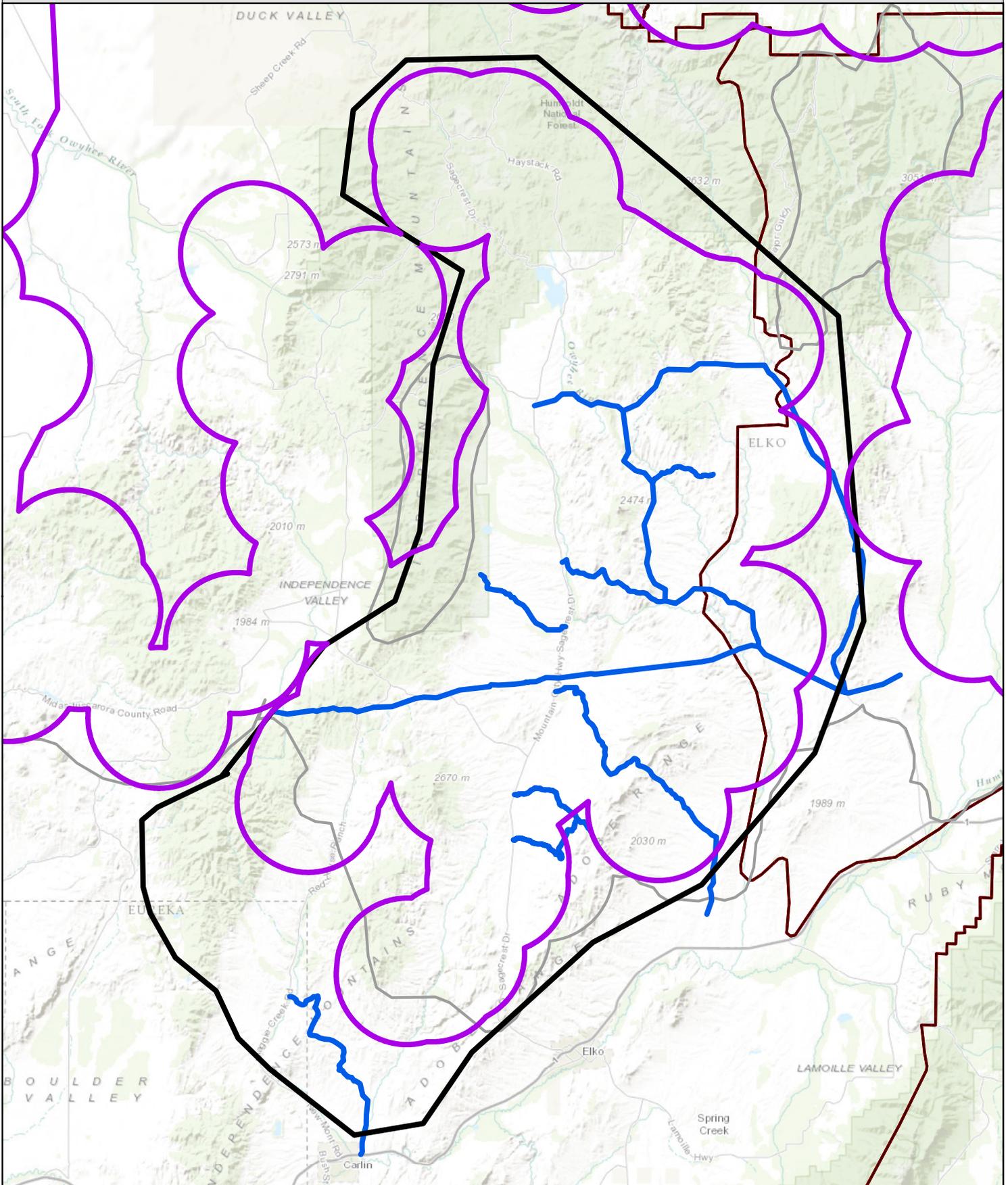


-  North Fork Project Planning Area
-  North Fork Fire 1st Priority
-  North Fork Fire 2nd Priority
-  North Fork Fire 3rd Priority

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:812,834

North Fork Project Planning Area
Fuels Management Potential Treatment Areas

Northern Great Basin
Bureau of Land Management
U.S. Department of the Interior



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North Fork Project Planning Area

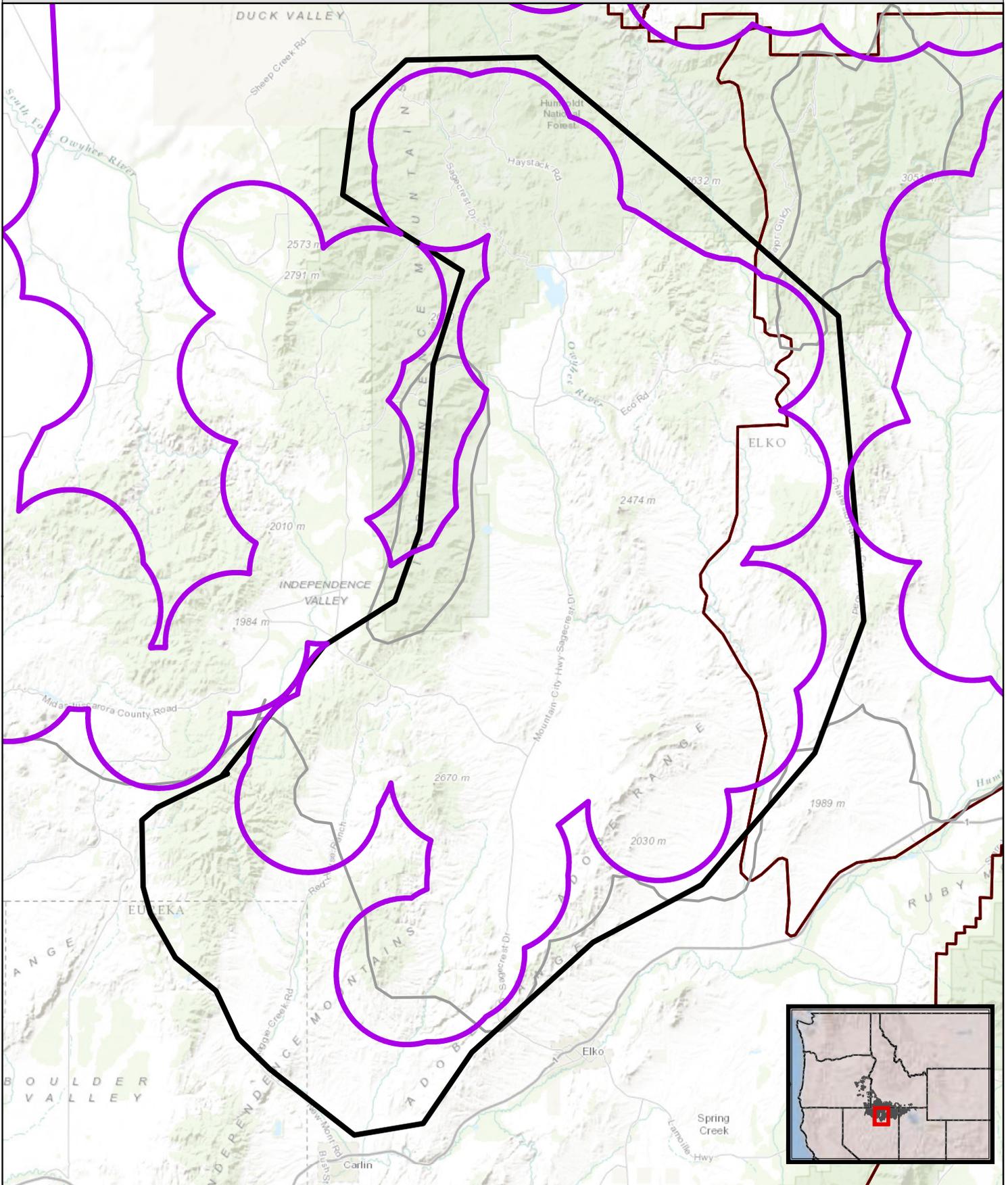


Linear Fuels Management Potential Treatment Areas

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:812,834

North Fork Project Planning Area

Northern Great Basin
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.

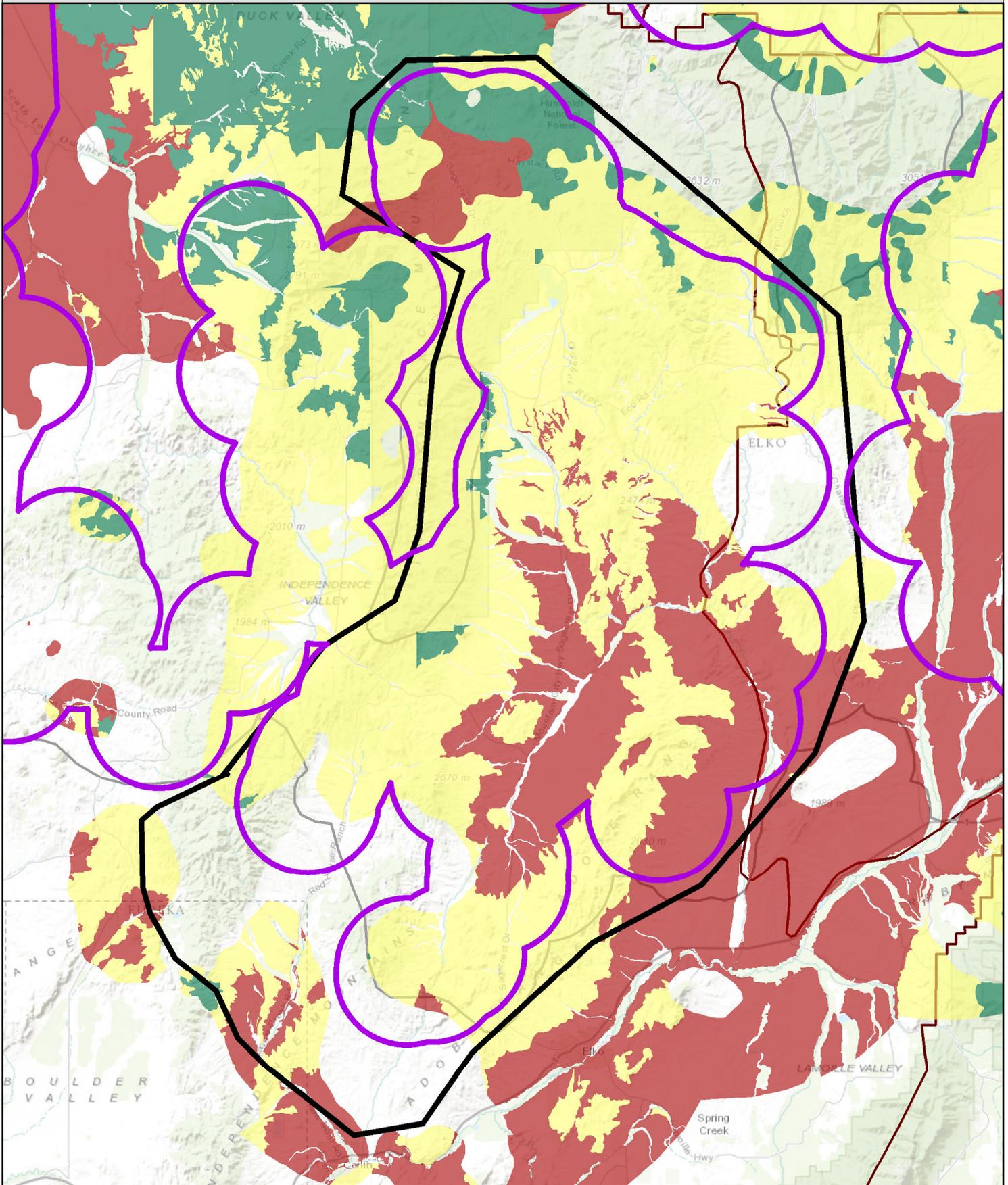


North Fork Project Planning Area

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:812,834

North Fork Project Planning Area
Resistance-Resilience Reportable Priorities

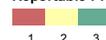
Northern Great Basin
Bureau of Land Management
U.S. Department of the Interior



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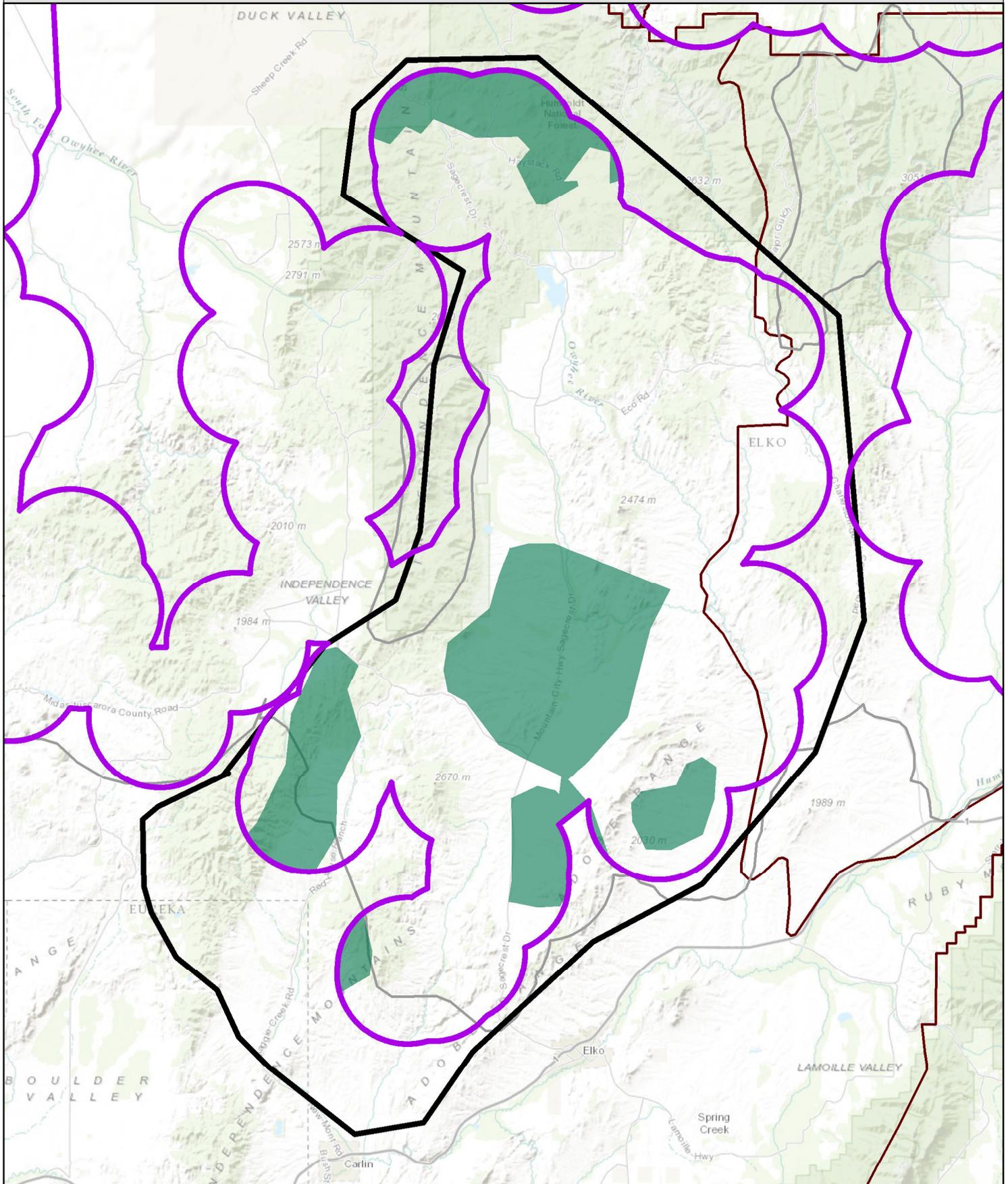
North Fork Project Planning Area
Reportable Priorities



March 2015
Date Saved: 3/12/2015
Data Sources: BLM, ESRI Basedata
1:812,834

North Fork Project Planning Area
Habitat Restoration Potential Treatment Areas

Northern Great Basin
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.

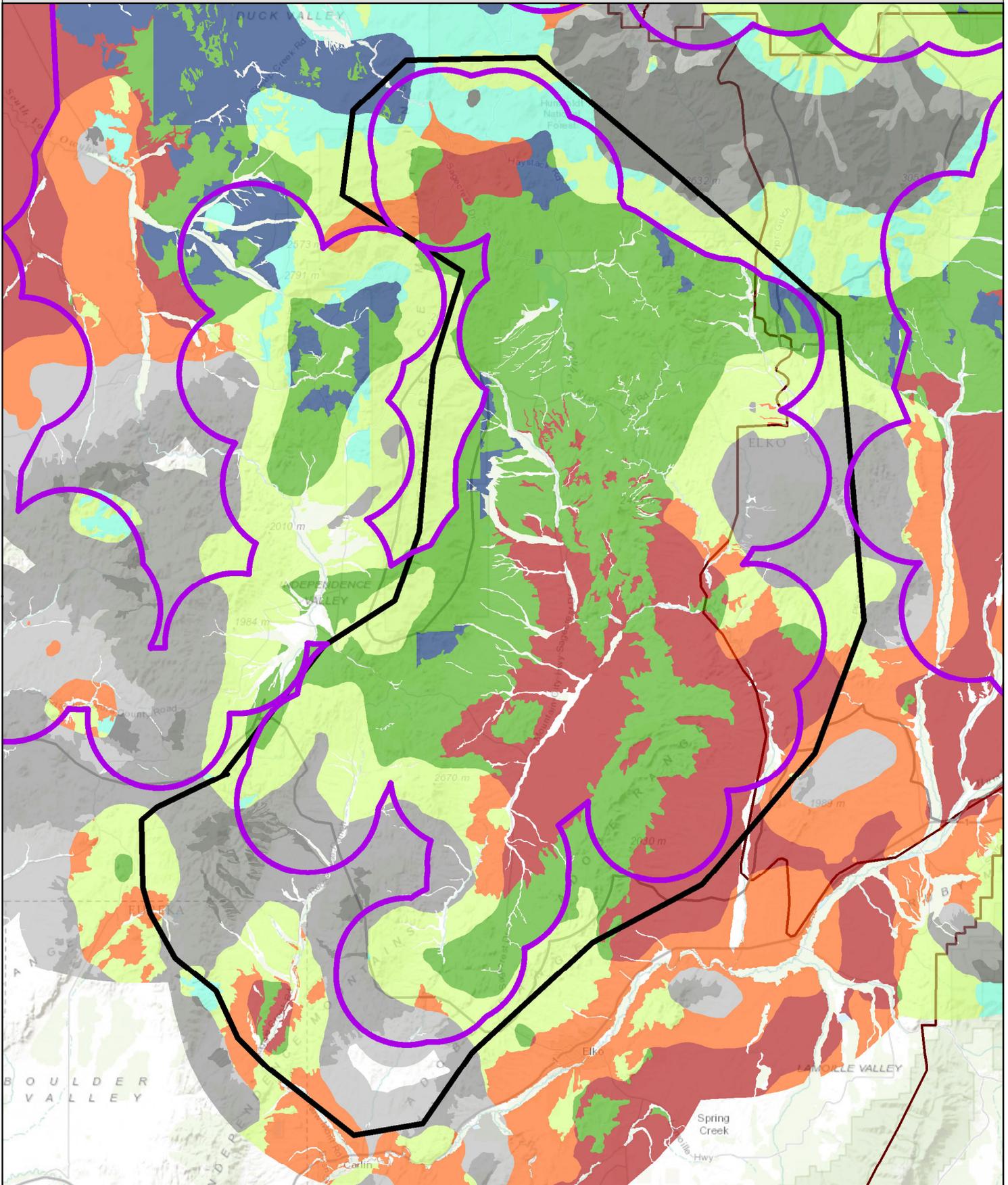


North Fork Project Planning Area

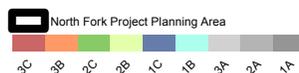


Habitat Restoration Potential Treatment Areas

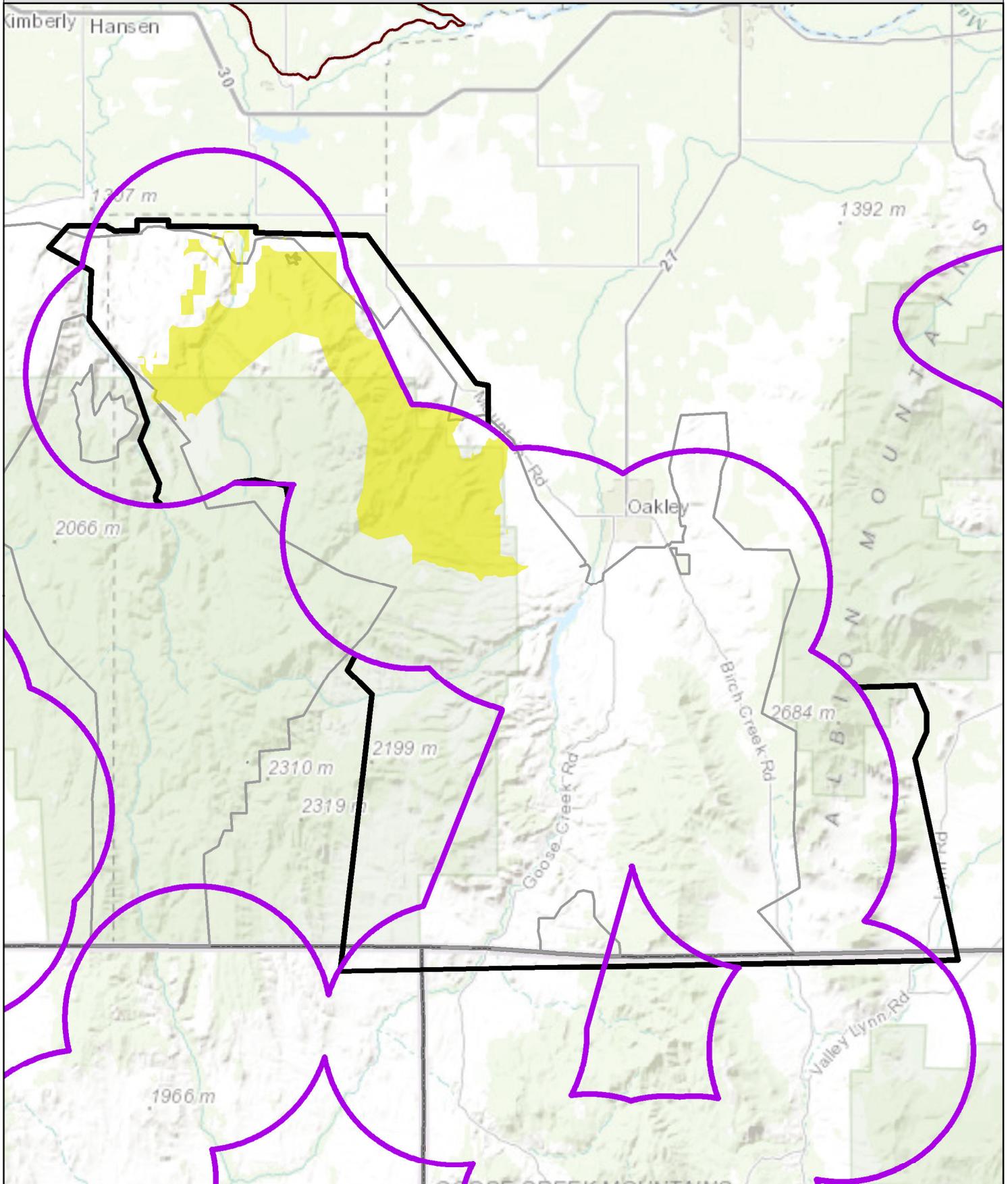
March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:812,834



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March 2015
Date Saved: 3/12/2015
Data Sources: BLM, ESRI Basedata
1:812,834

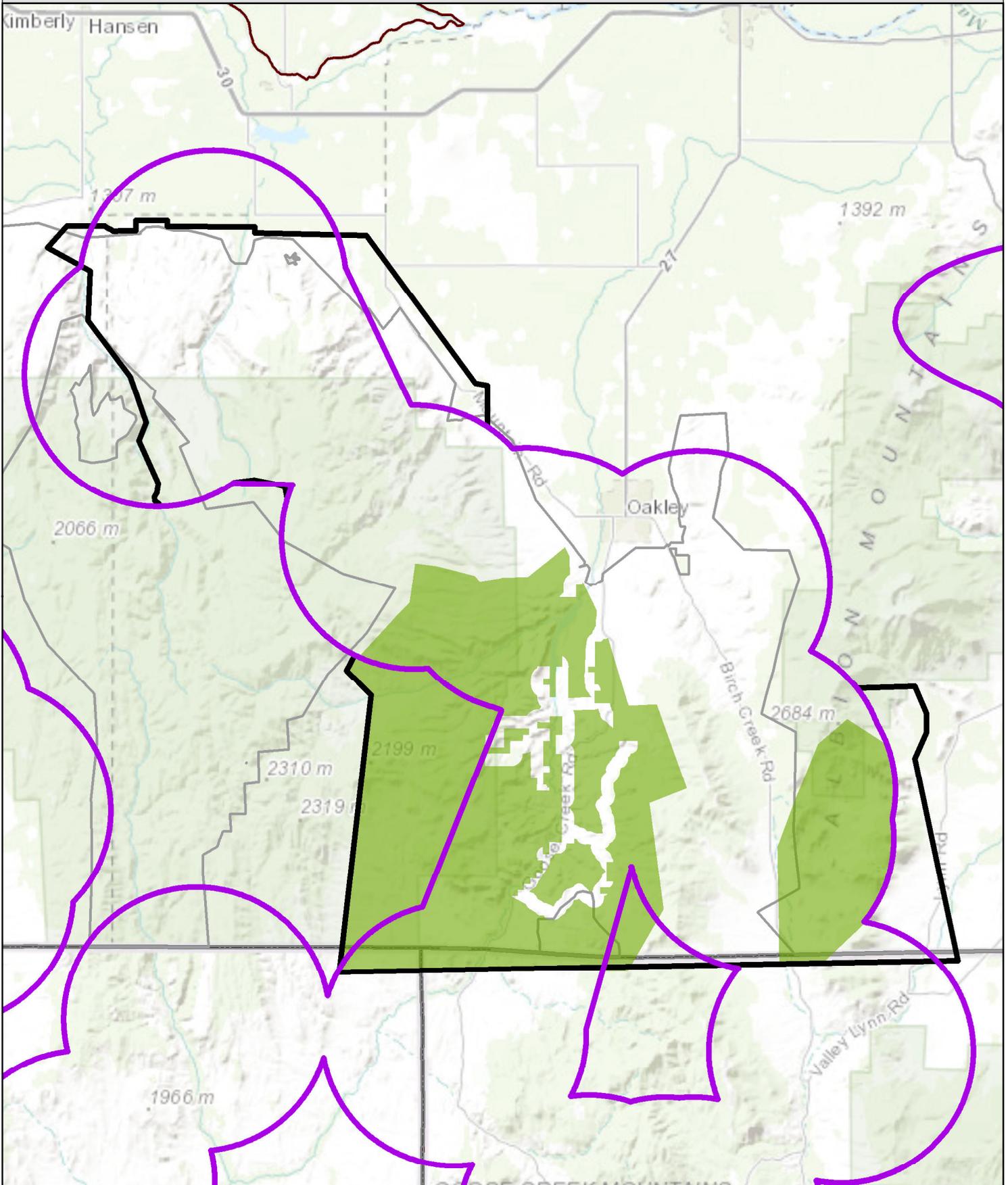


No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.



Oakley Project Planning Area
Invasive Annuals Potential Treatment Areas

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:441,039



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.

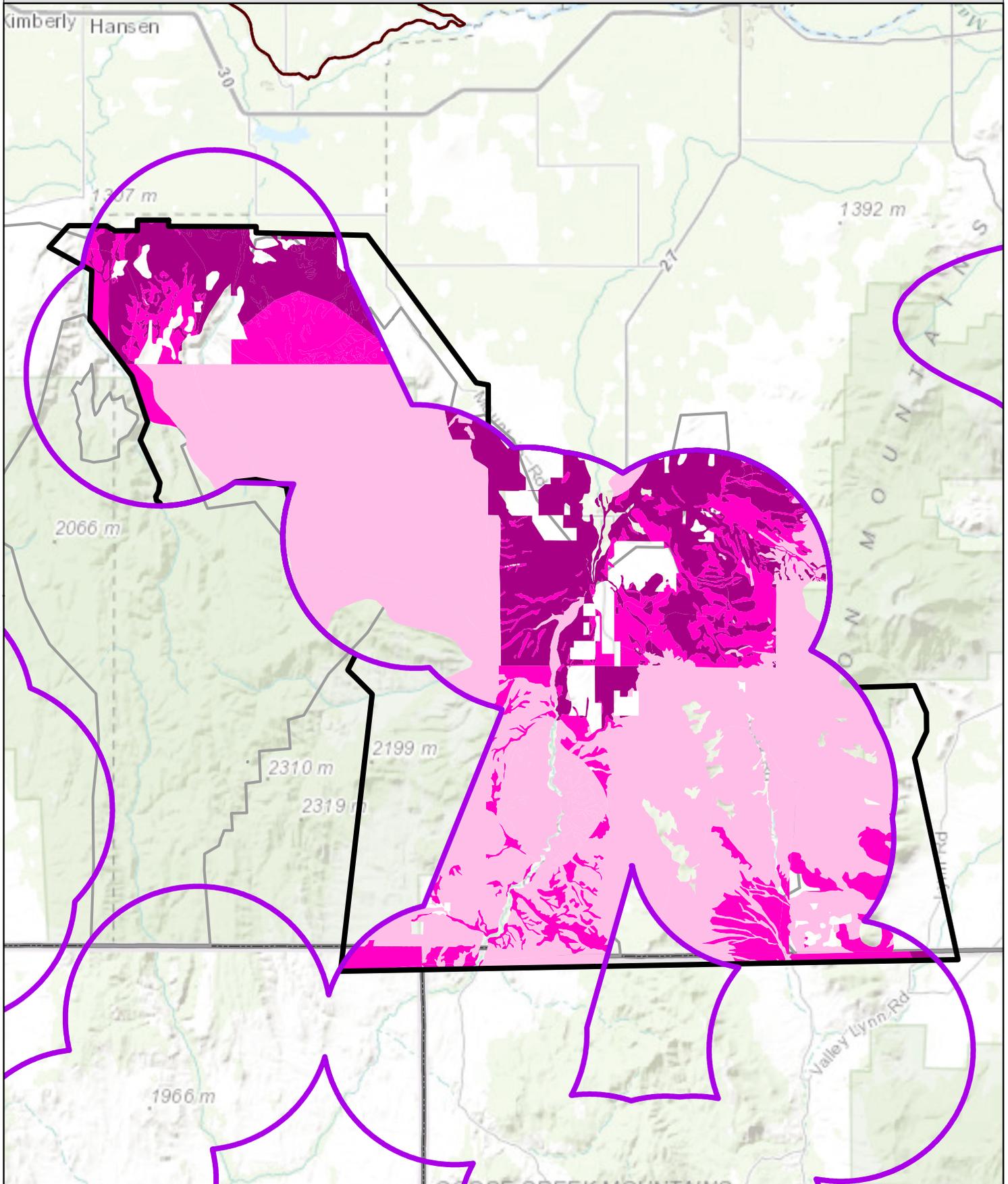


Oakley Project Planning Area



Conifer Expansion Potential Treatment Areas

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:441,039

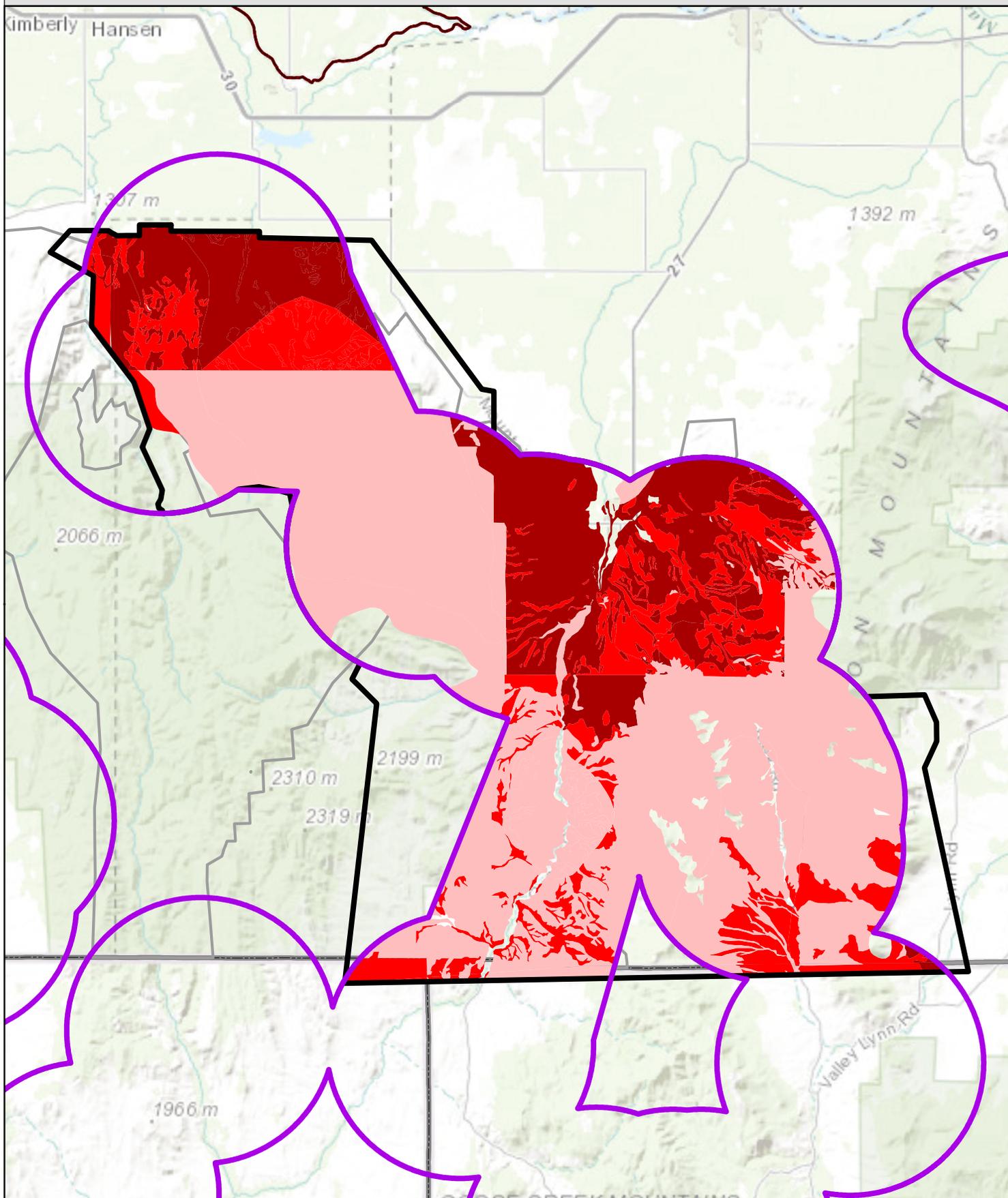


No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.



- Oakley Project Planning Area
- Oakley ESR 1st Priority
- Oakley ESR 2nd Priority
- Oakley ESR 3rd Priority

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:441,039

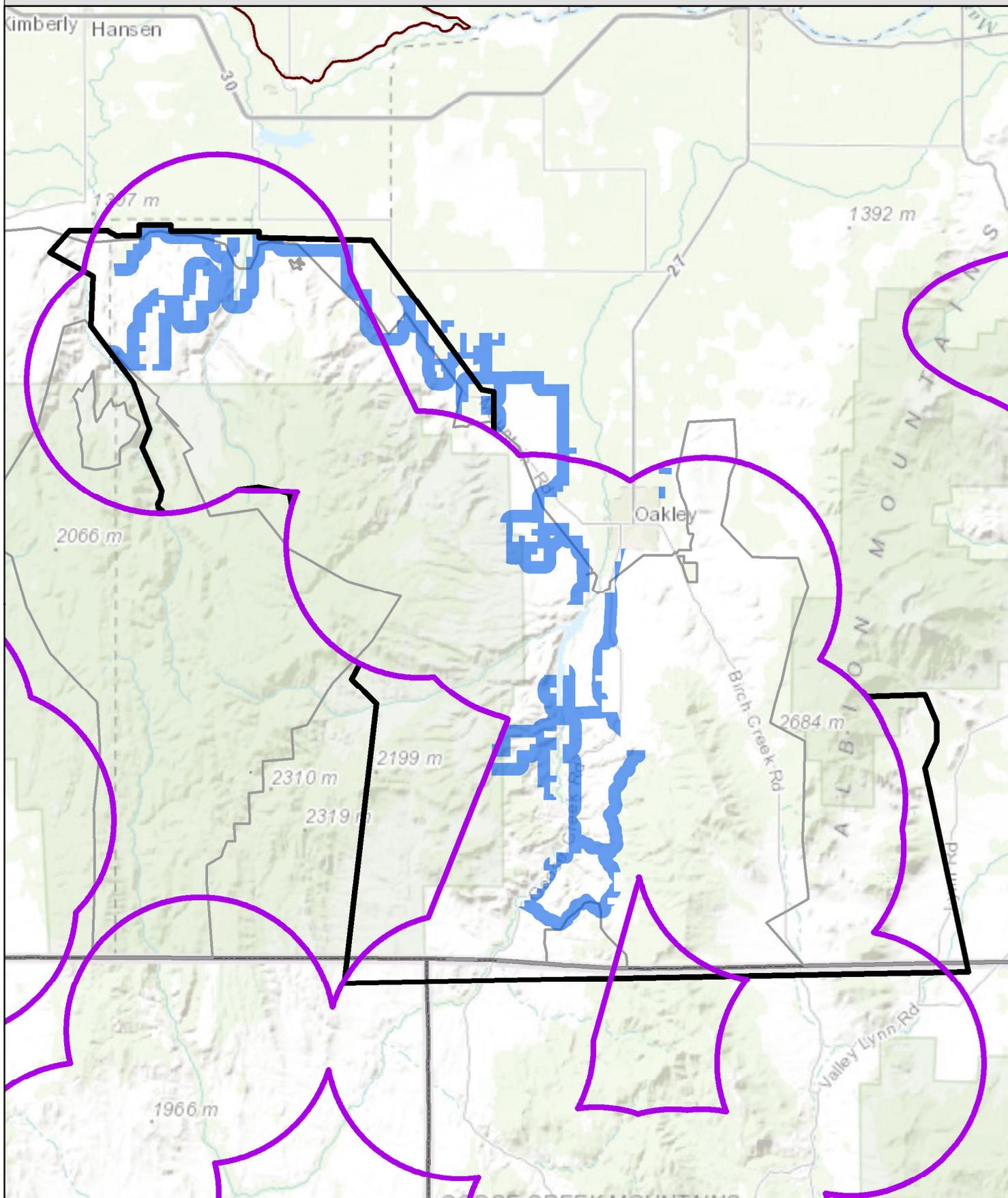


No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.



- Oakley Project Planning Area
- Oakley Fire 1st Priority
- Oakley Fire 2nd Priority
- Oakley Fire 3rd Priority

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:441,039



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.



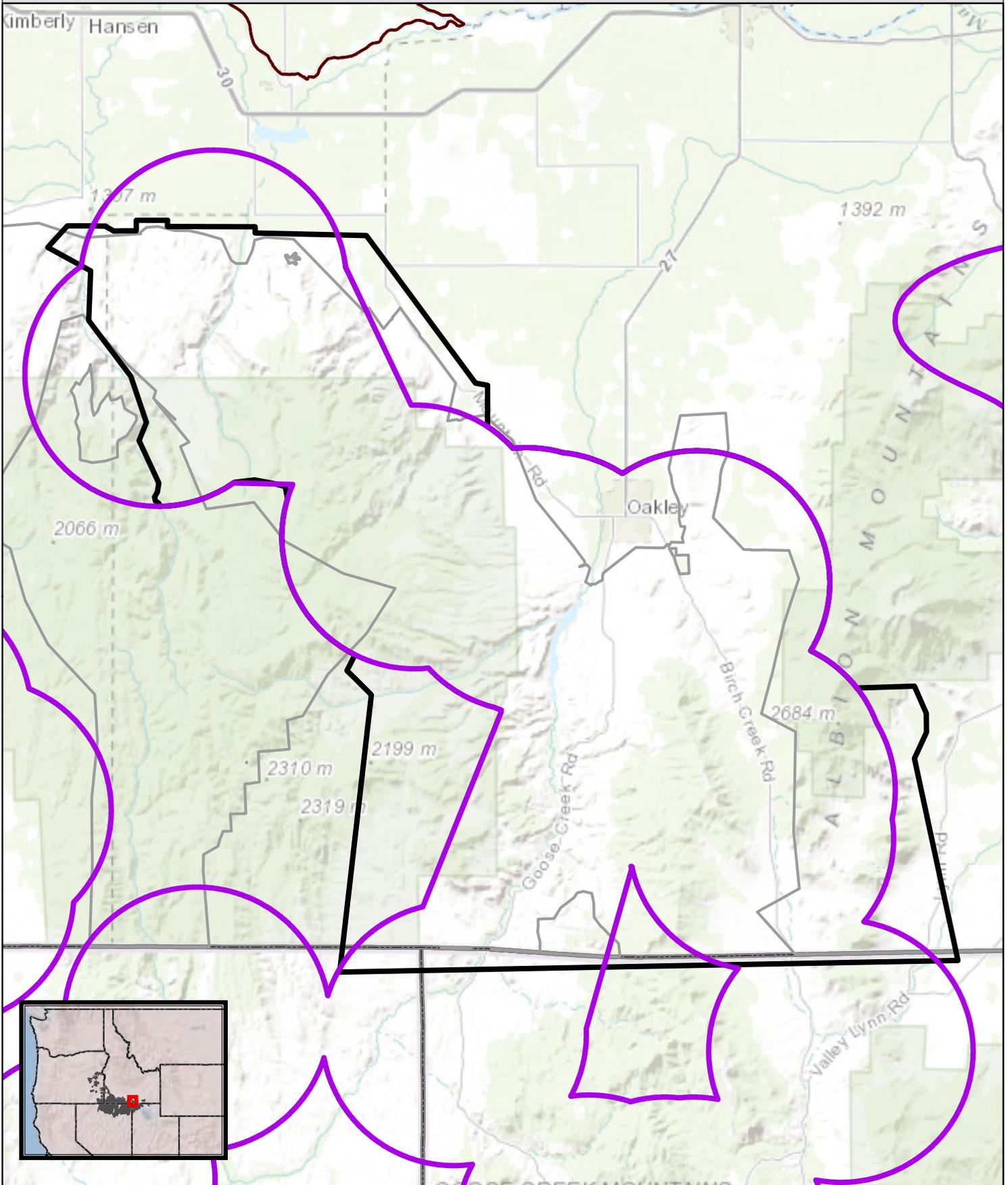
Oakley Project Planning Area

Fuels Management Potential Treatment Areas

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:441,039

Oakley Project Planning Area

Northern Great Basin
Bureau of Land Management
U.S. Department of the Interior

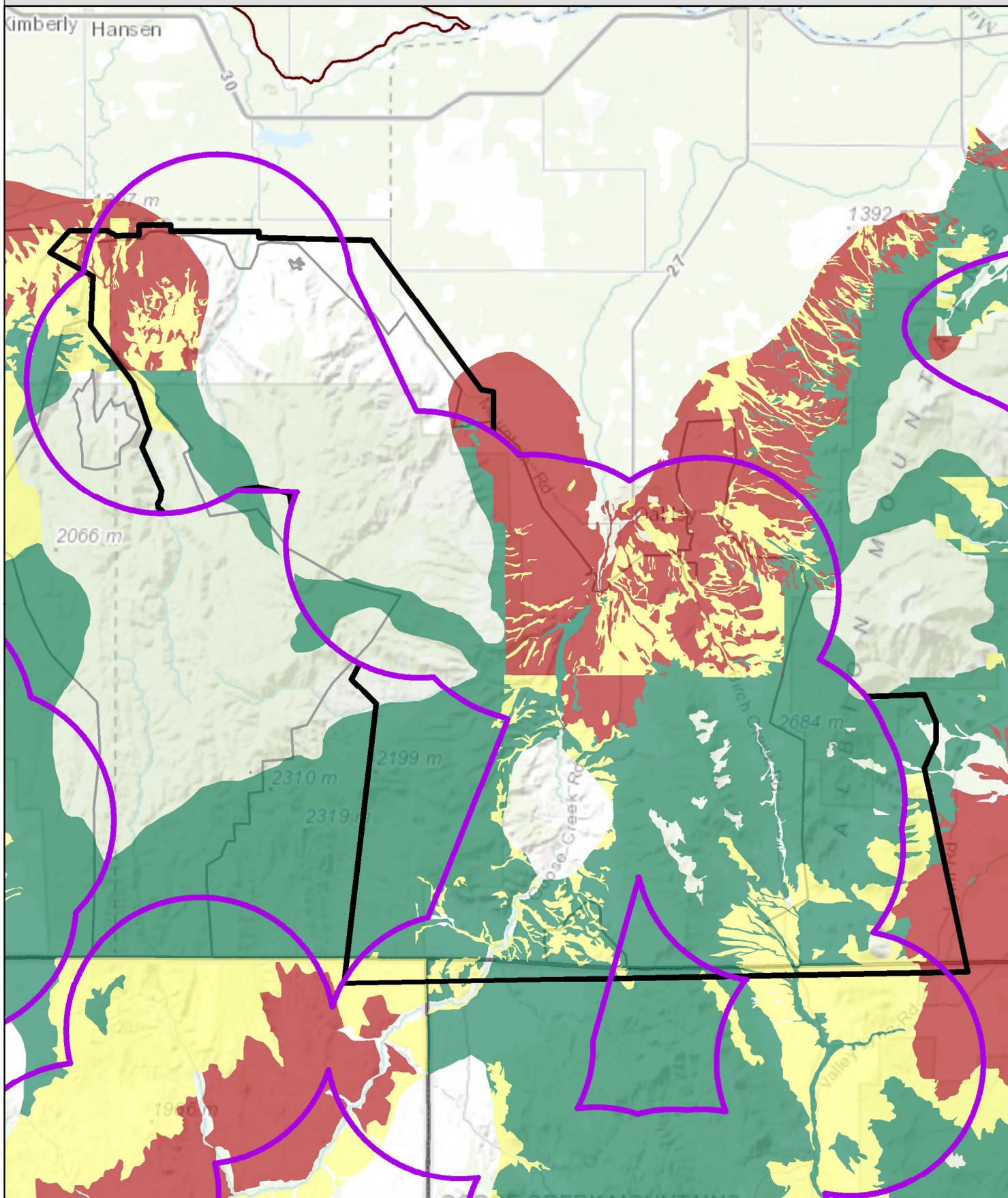


No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.



 Oakley Project Planning Area

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:441,039

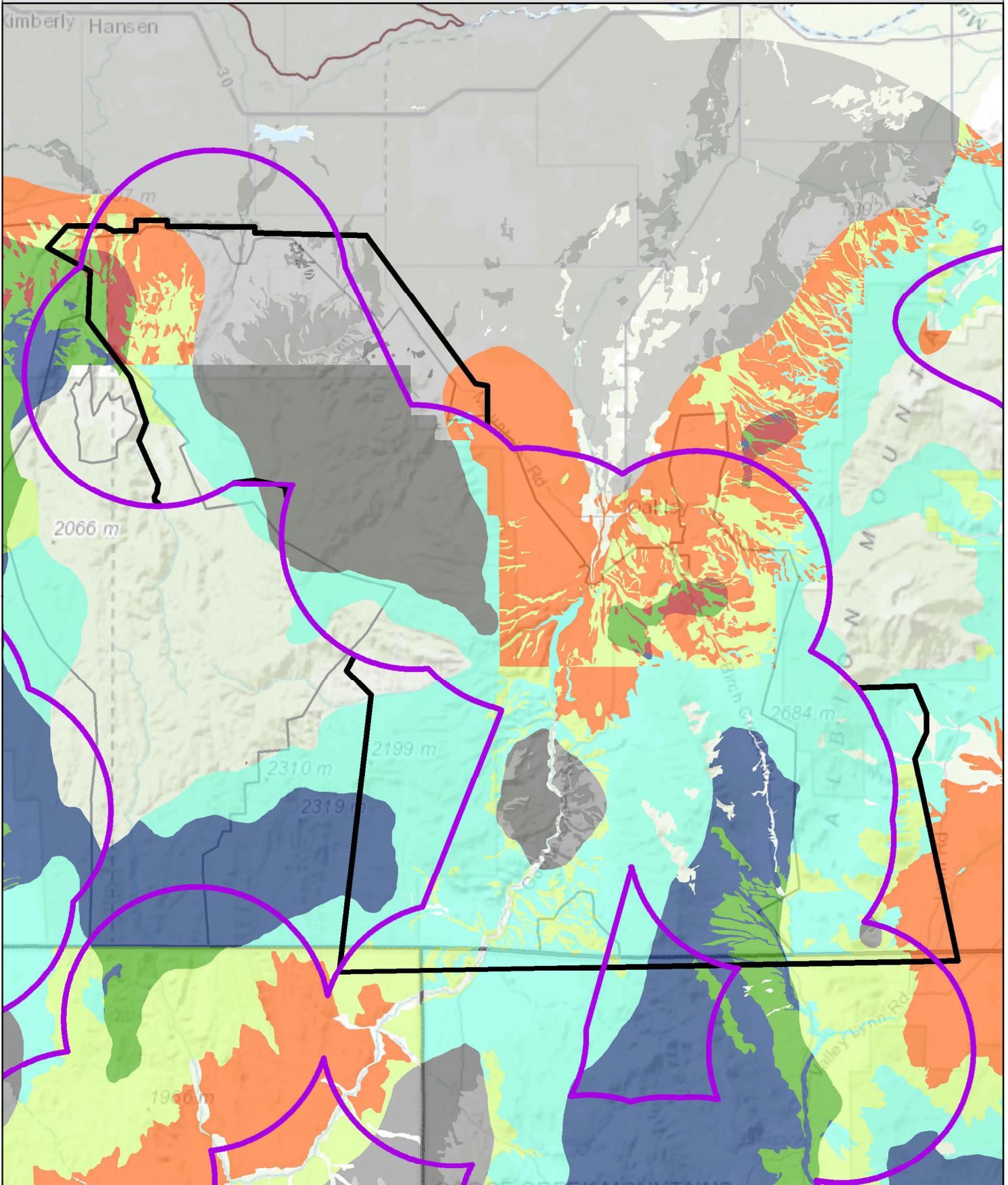


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 Oakley Project Planning Area
Reportable Priorities
 1  2  3

March 2015
Date Saved: 3/12/2015
Data Sources: BLM, ESRI Basedata
1:441,039



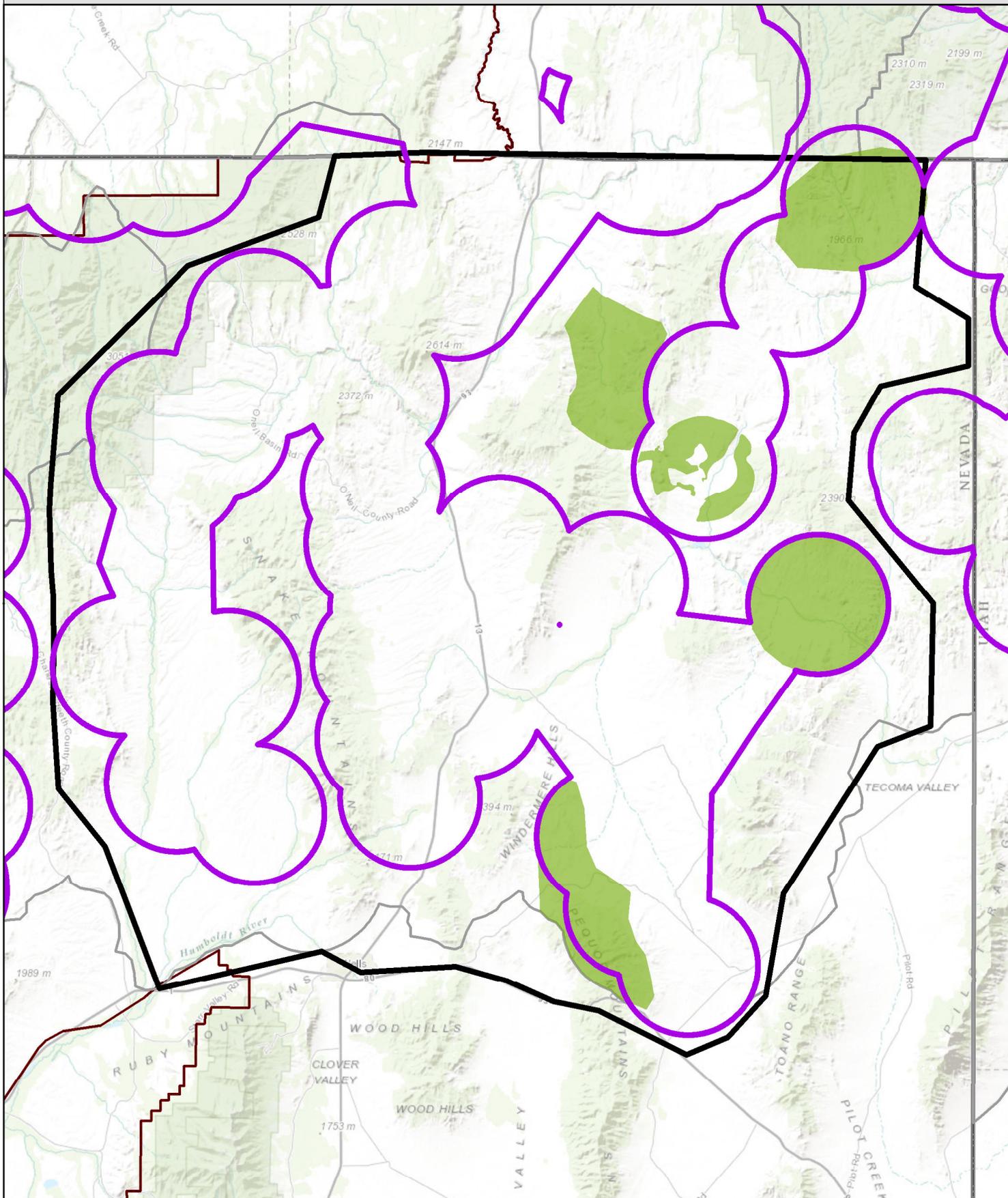
No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.



March 2015
Date Saved: 3/12/2015
Data Sources: BLM, ESRI Basedata
1:441,039

Oneil Project Planning Area
Conifer Expansion Potential Treatment Areas

Northern Great Basin
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.



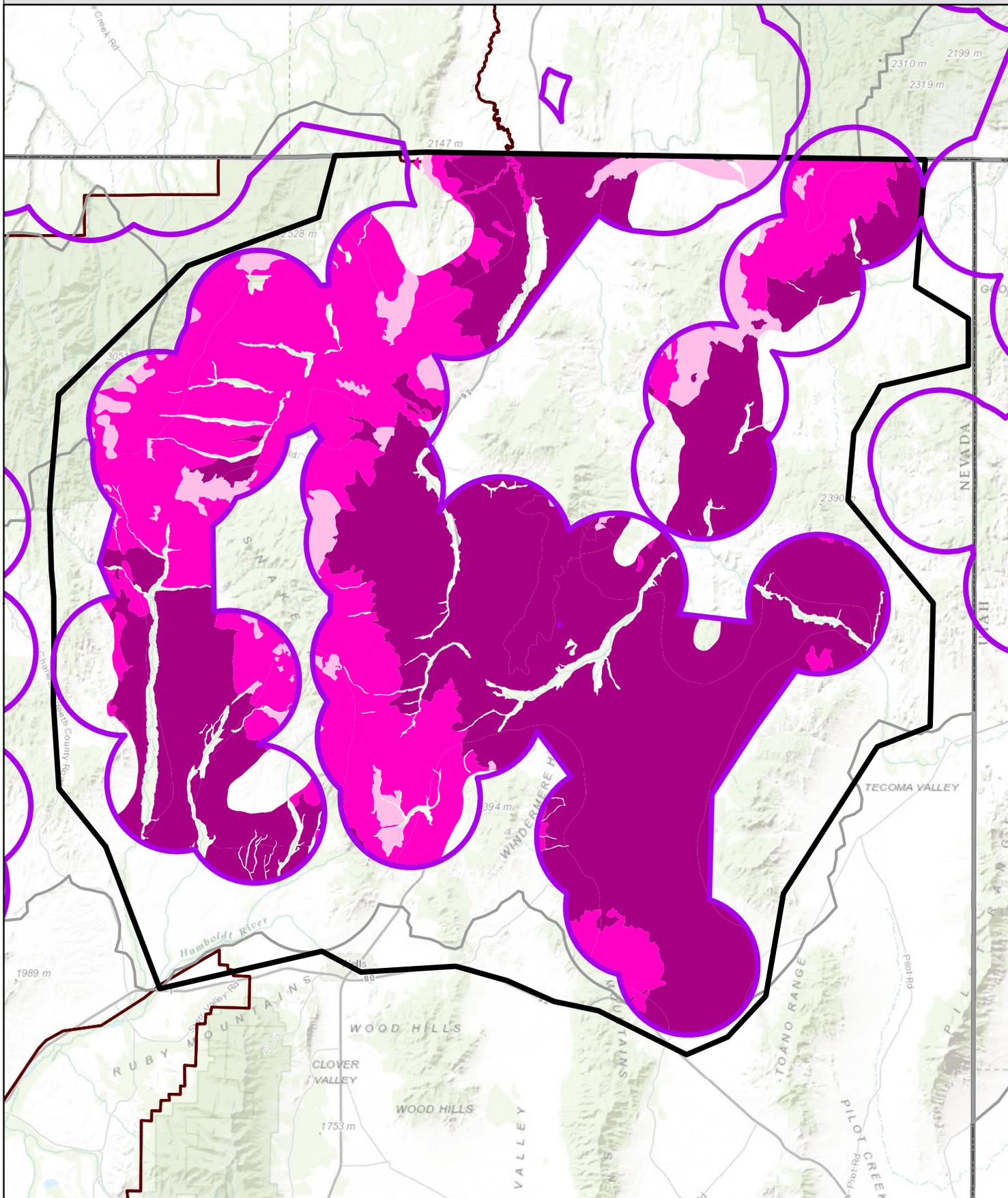
Oneil Project Planning Area

Conifer Expansion Potential Treatment Areas

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:833,303

Oneil Project Planning Area
Emergency Stabilization, Rehabilitation Priority

Northern Great Basin
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.

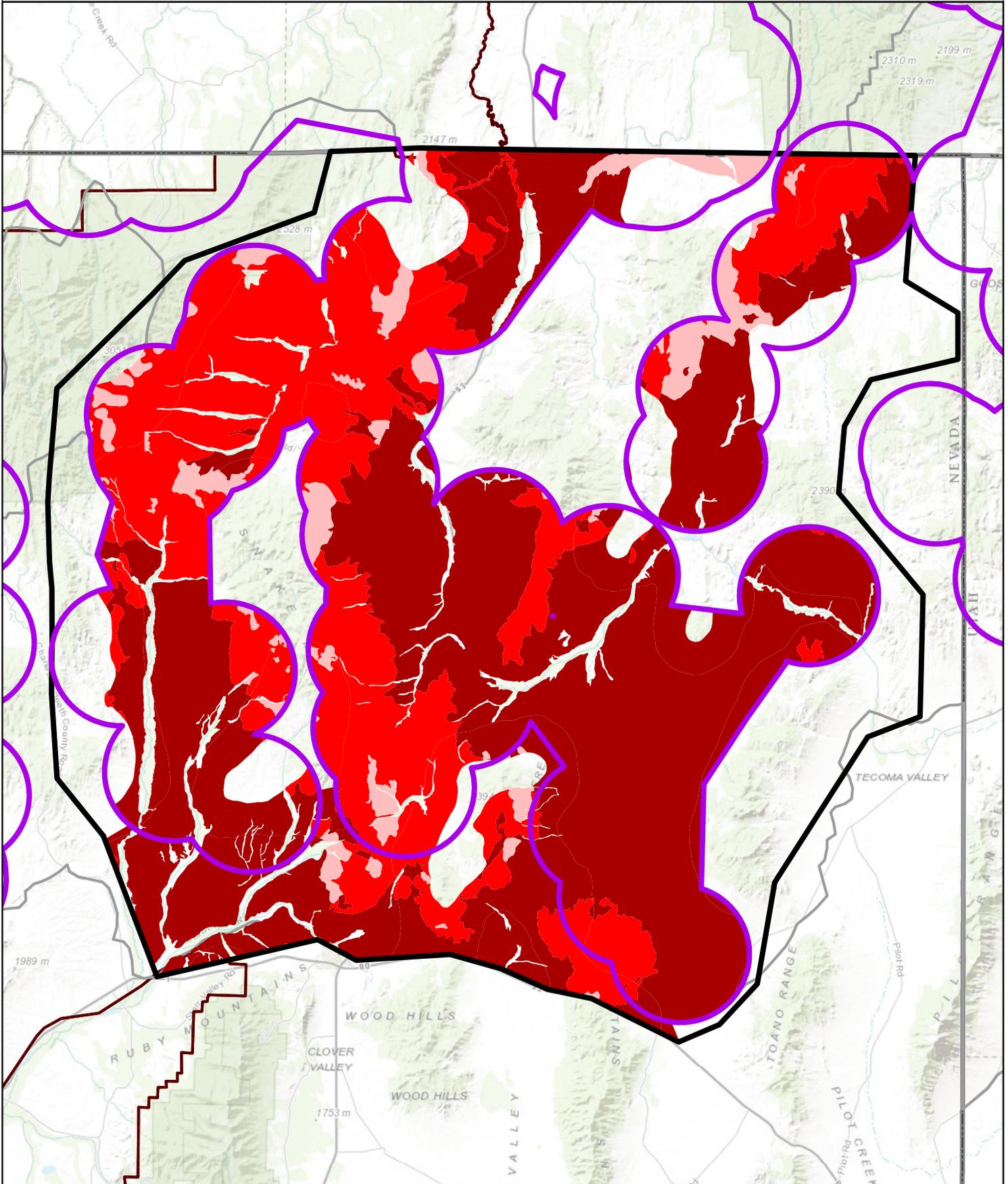


- Oneil Project Planning Area
- Oneil ESR 1st Priority
- Oneil ESR 2nd Priority
- Oneil ESR 3rd Priority

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:833,303

Oneil Project Planning Area
Fire Operations Priority

Northern Great Basin
Bureau of Land Management
U.S. Department of the Interior



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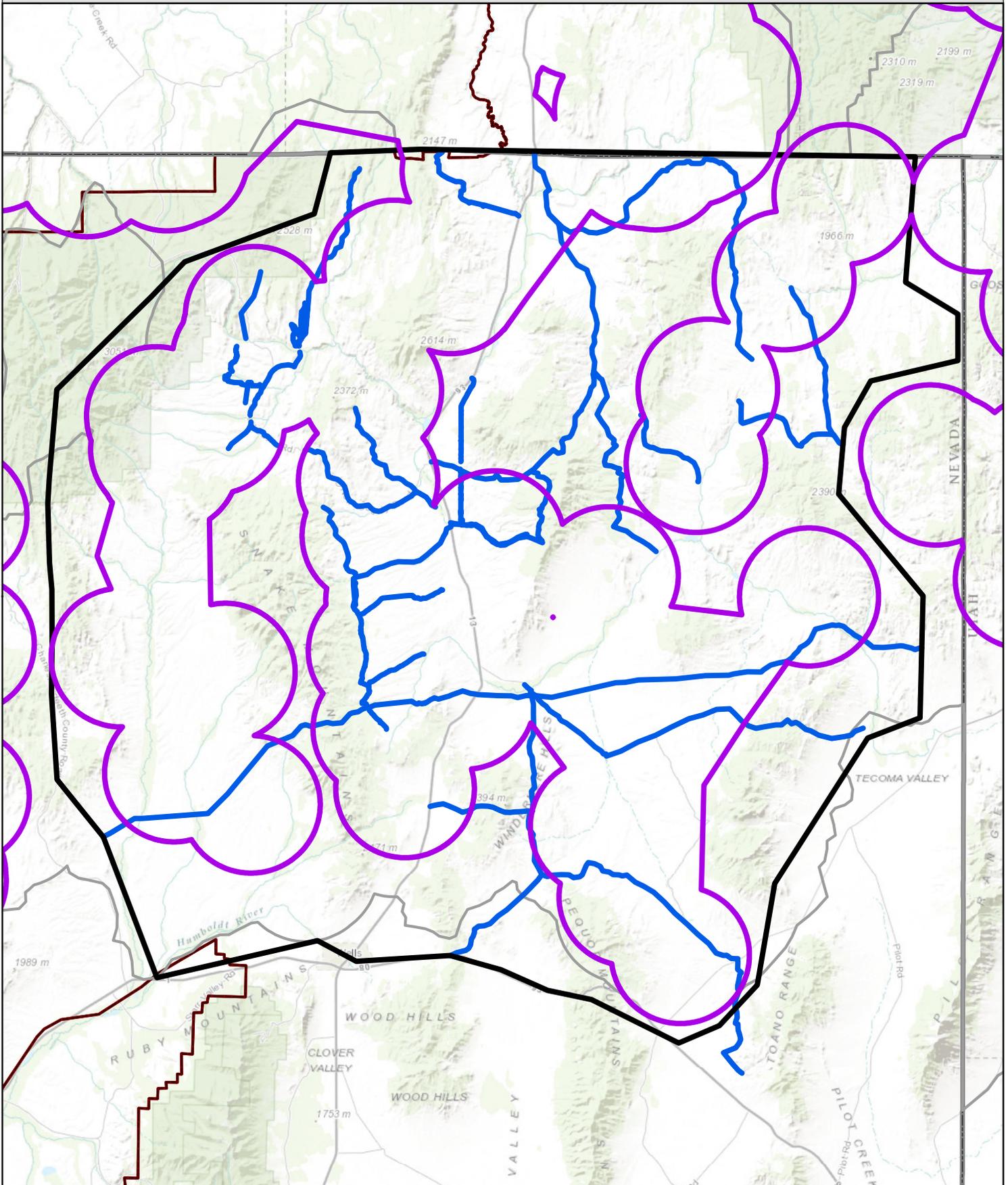


- Oneil Project Planning Area
- Oneil Fire 1st Priority
- Oneil Fire 2nd Priority
- Oneil Fire 3rd Priority

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:833,303

Oneil Project Planning Area
Fuels Management Potential Treatment Areas

Northern Great Basin
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.



Oneil Project Planning Area



Linear Fuels Management Potential Treatment Areas

March 2015

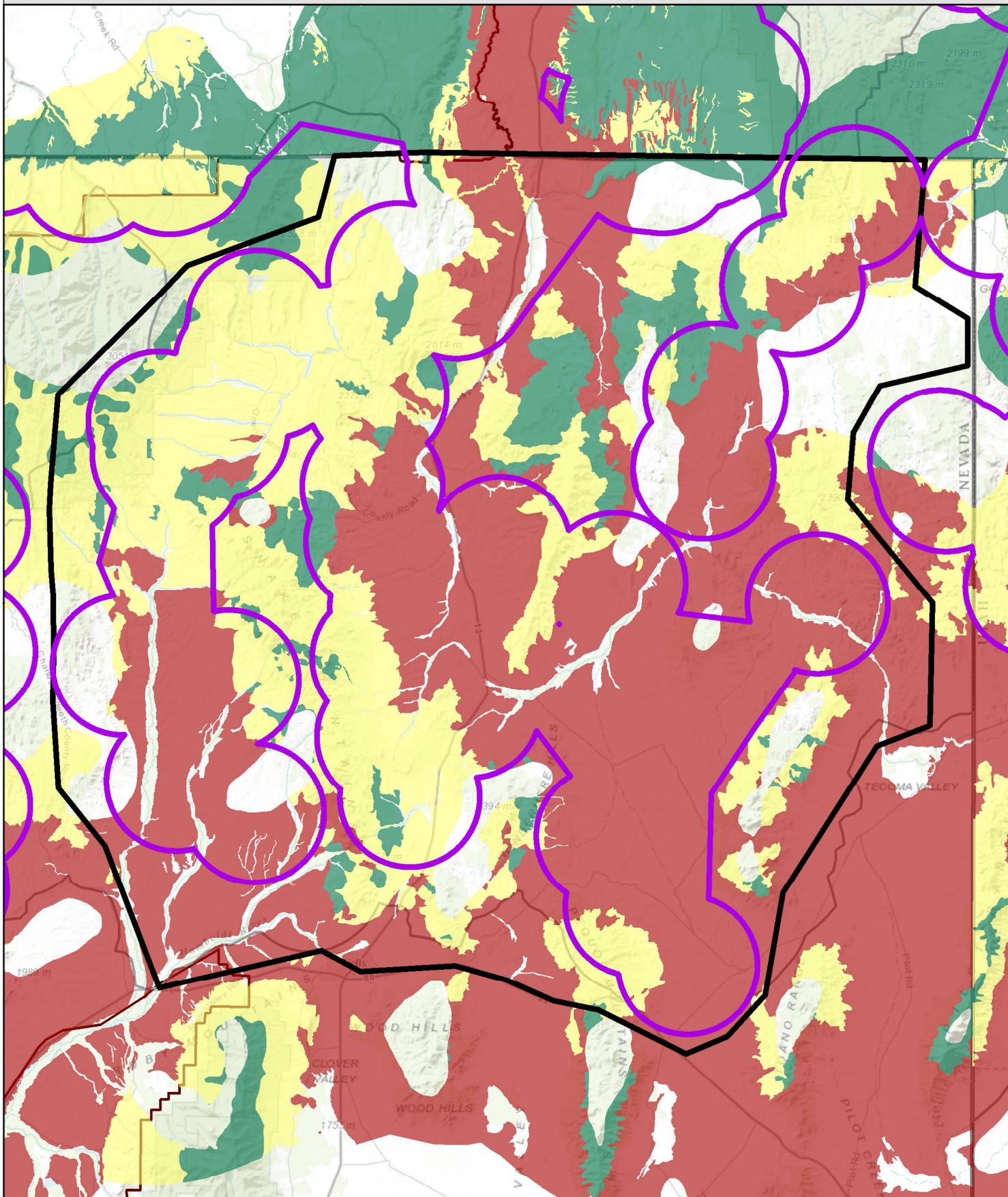
Date Saved: 3/11/2015

Data Sources: BLM, ESRI Basedata

1:833,303

Oneil Project Planning Area
Resistance-Resilience Reportable Priorities

Northern Great Basin
Bureau of Land Management
U.S. Department of the Interior



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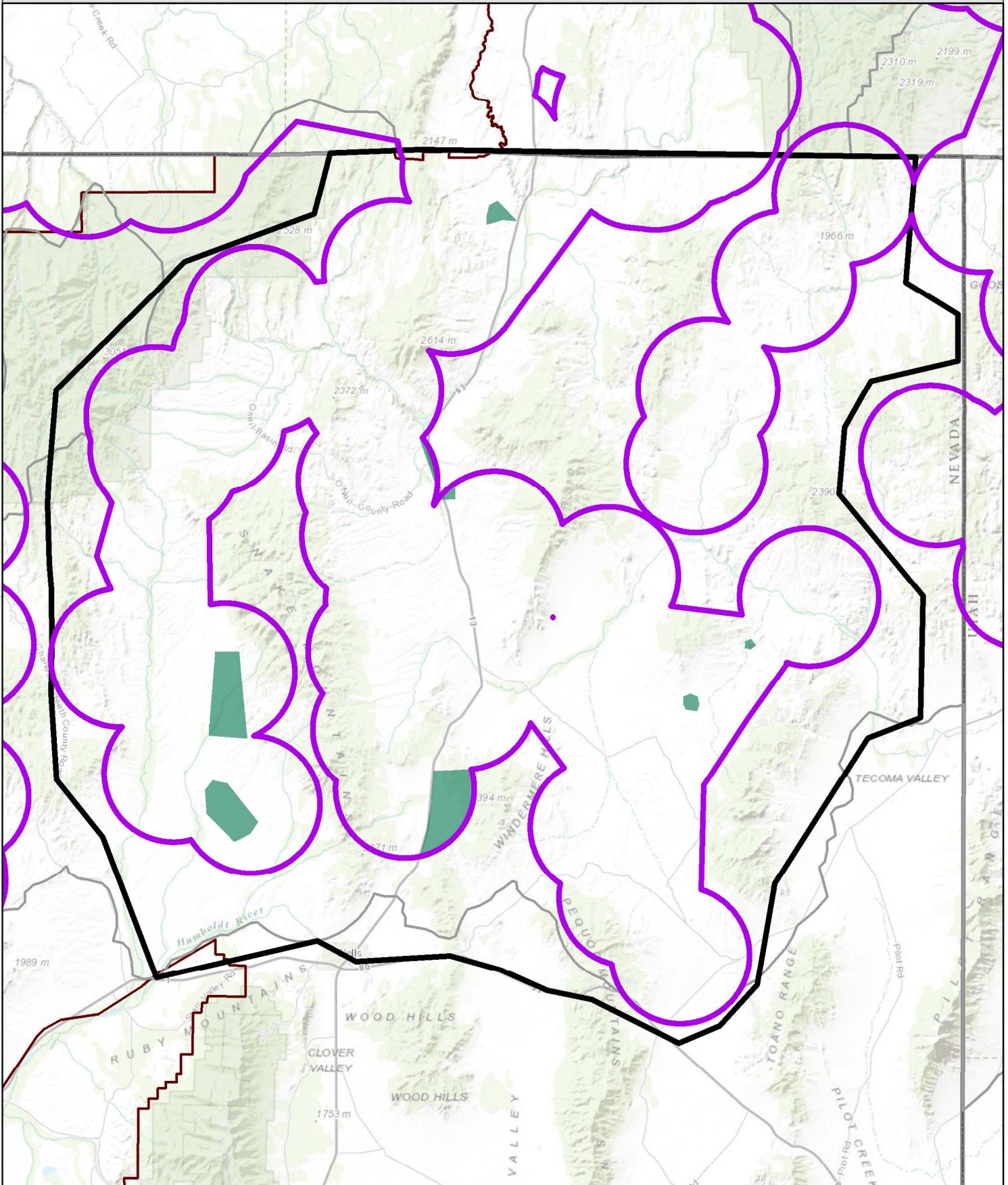
Oneil Project Planning Area
Reportable Priorities

1	2	3
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March 2015
Date Saved: 3/12/2015
Data Sources: BLM, ESRI Basedata
1:833,303

Oneil Project Planning Area
Habitat Restoration Potential Treatment Areas

Northern Great Basin
Bureau of Land Management
U.S. Department of the Interior



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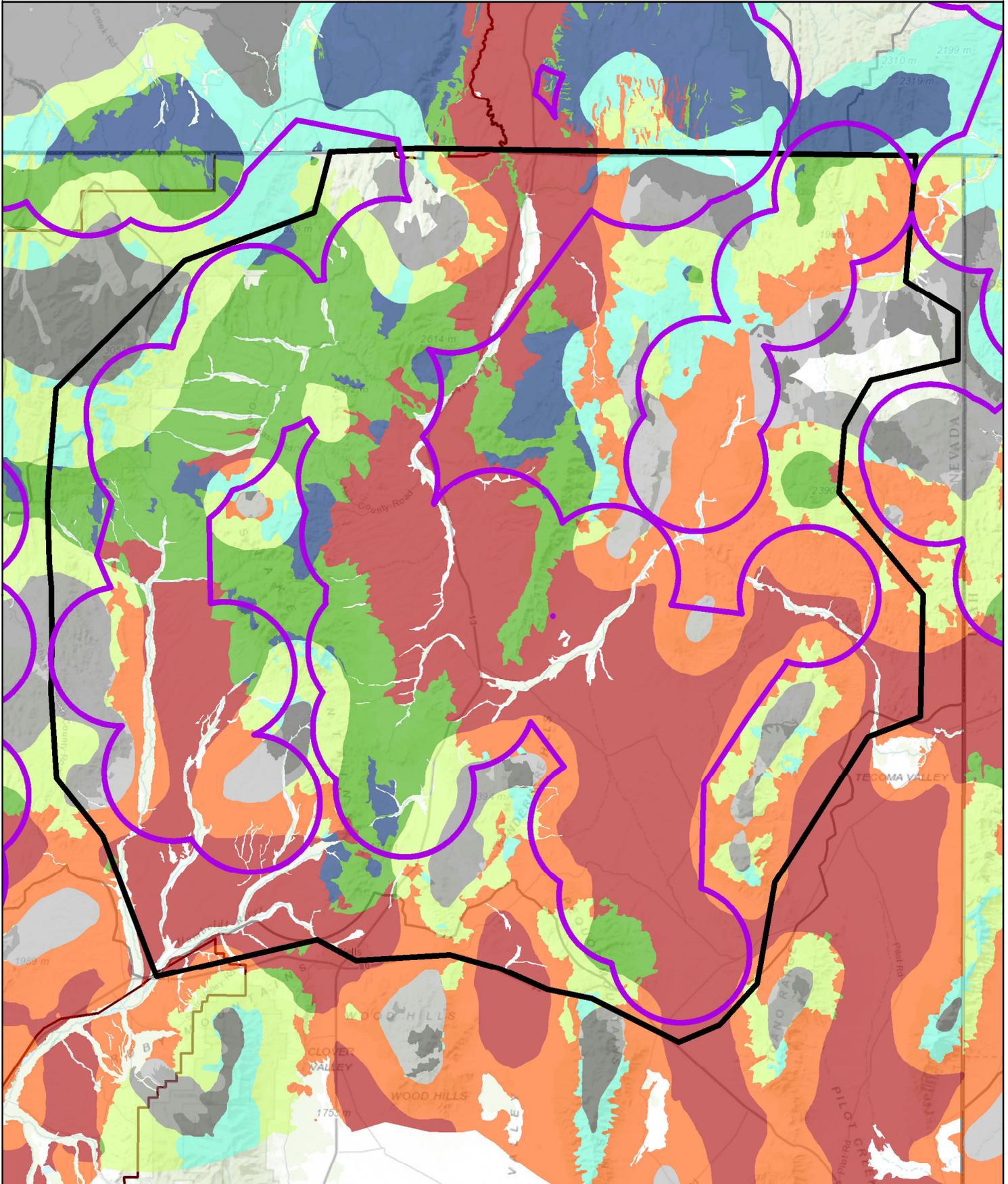
Oneil Project Planning Area

Habitat Restoration Potential Treatment Areas

March 2015

Date Saved: 3/11/2015

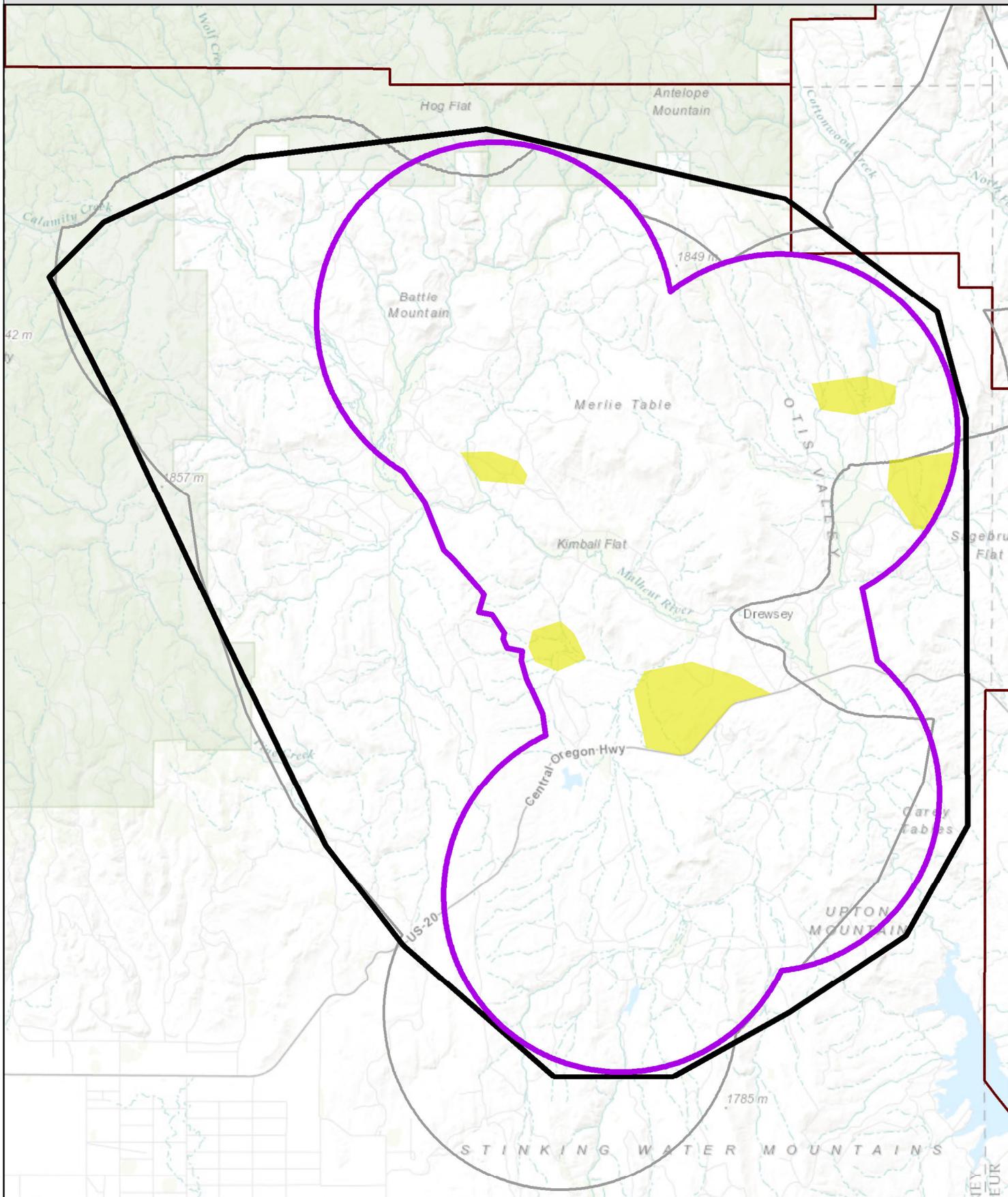
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1:833,303



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March 2015
Date Saved: 3/12/2015
Data Sources: BLM, ESRI Basedata
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Otis Project Planning Area

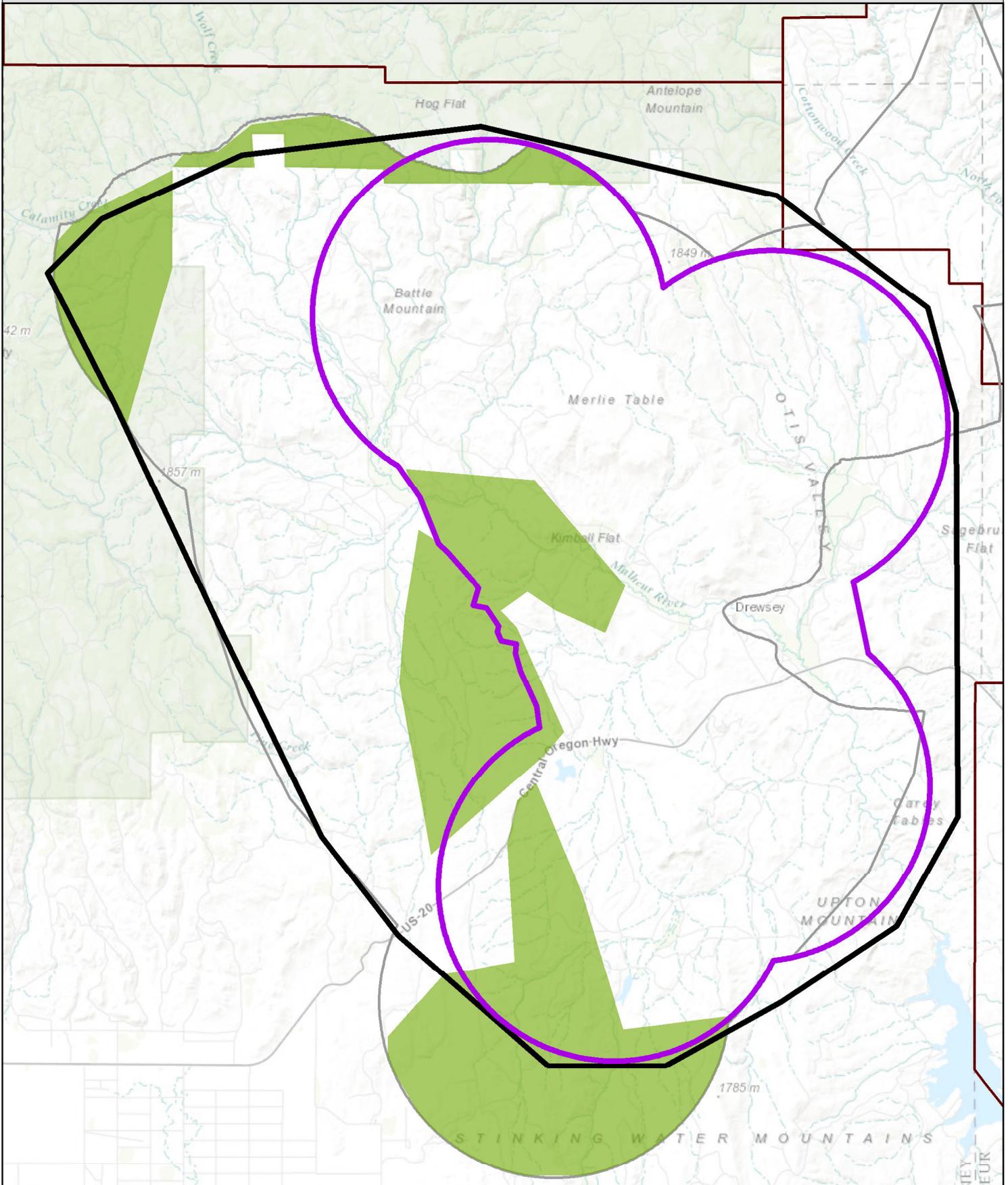


Invasive Annuals Potential Treatment Areas

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:340,917

Otis Project Planning Area
Conifer Expansion Potential Treatment Areas

Northern Great Basin
Bureau of Land Management
U.S. Department of the Interior



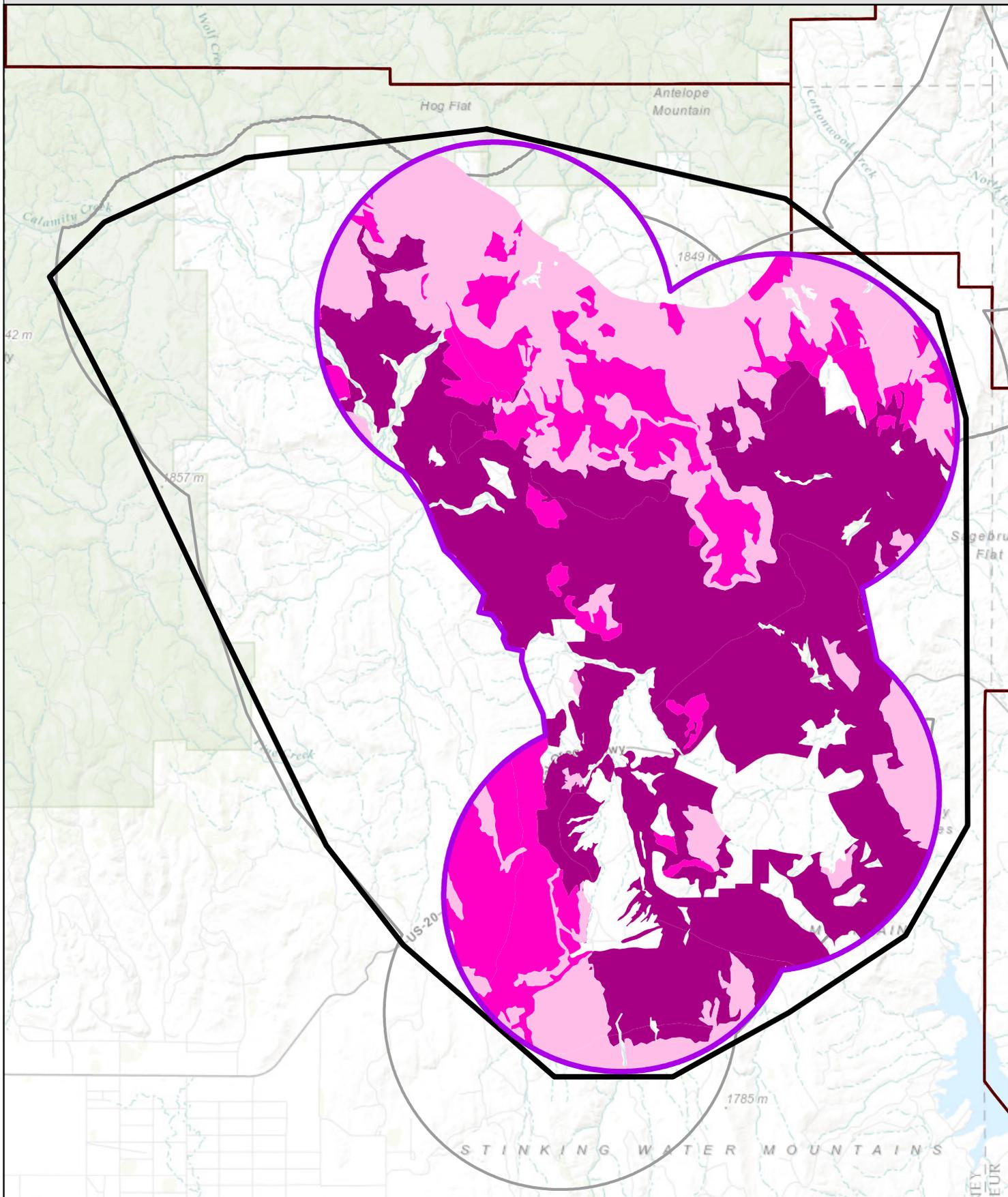
No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.



Otis Project Planning Area

Conifer Expansion Potential Treatment Areas

March 2015
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Data Sources: BLM, ESRI Basedata
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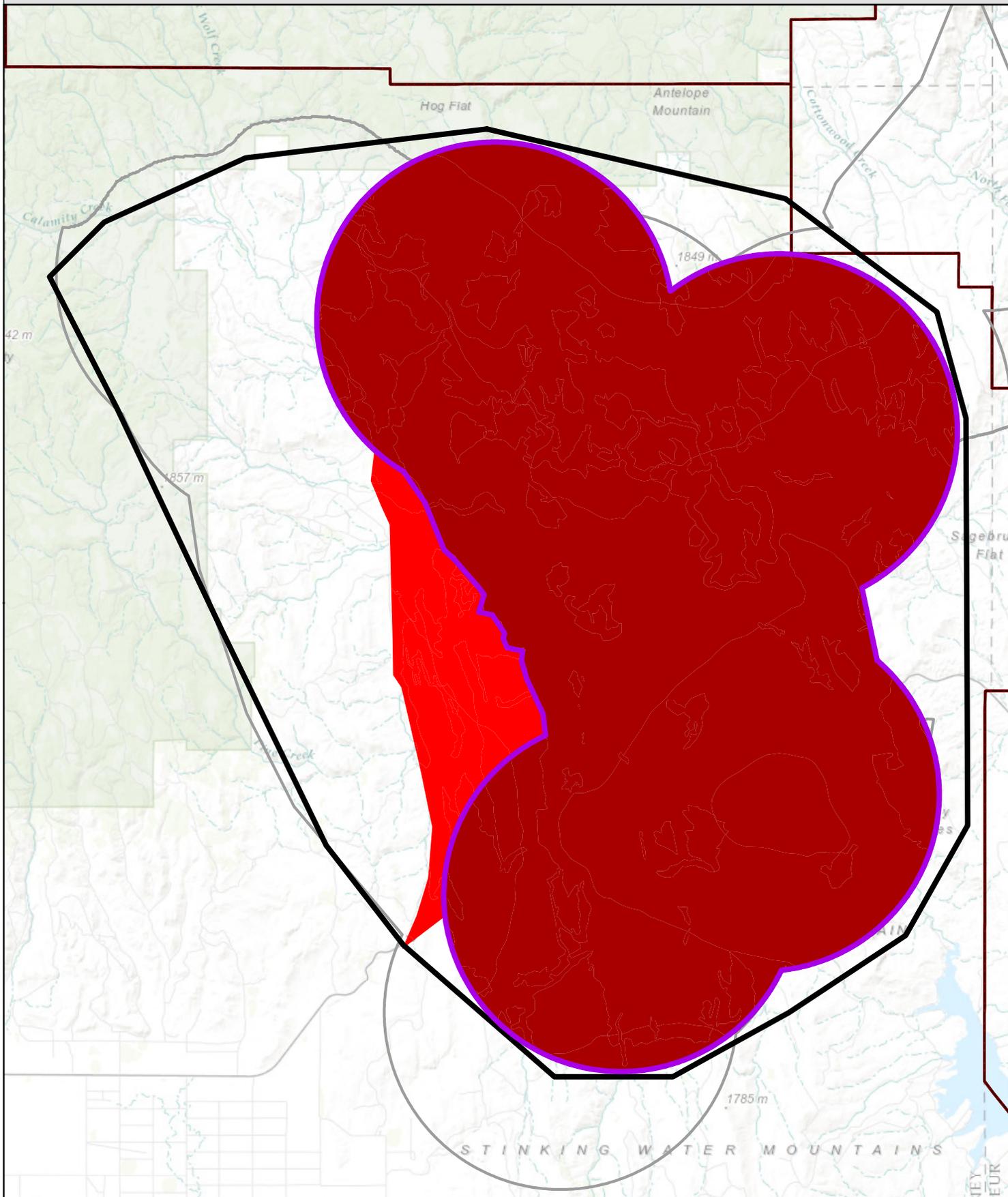


No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.



- Otis Project Planning Area
- Otis ESR 1st Priority
- Otis ESR 2nd Priority
- Otis ESR 3rd Priority

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
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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.

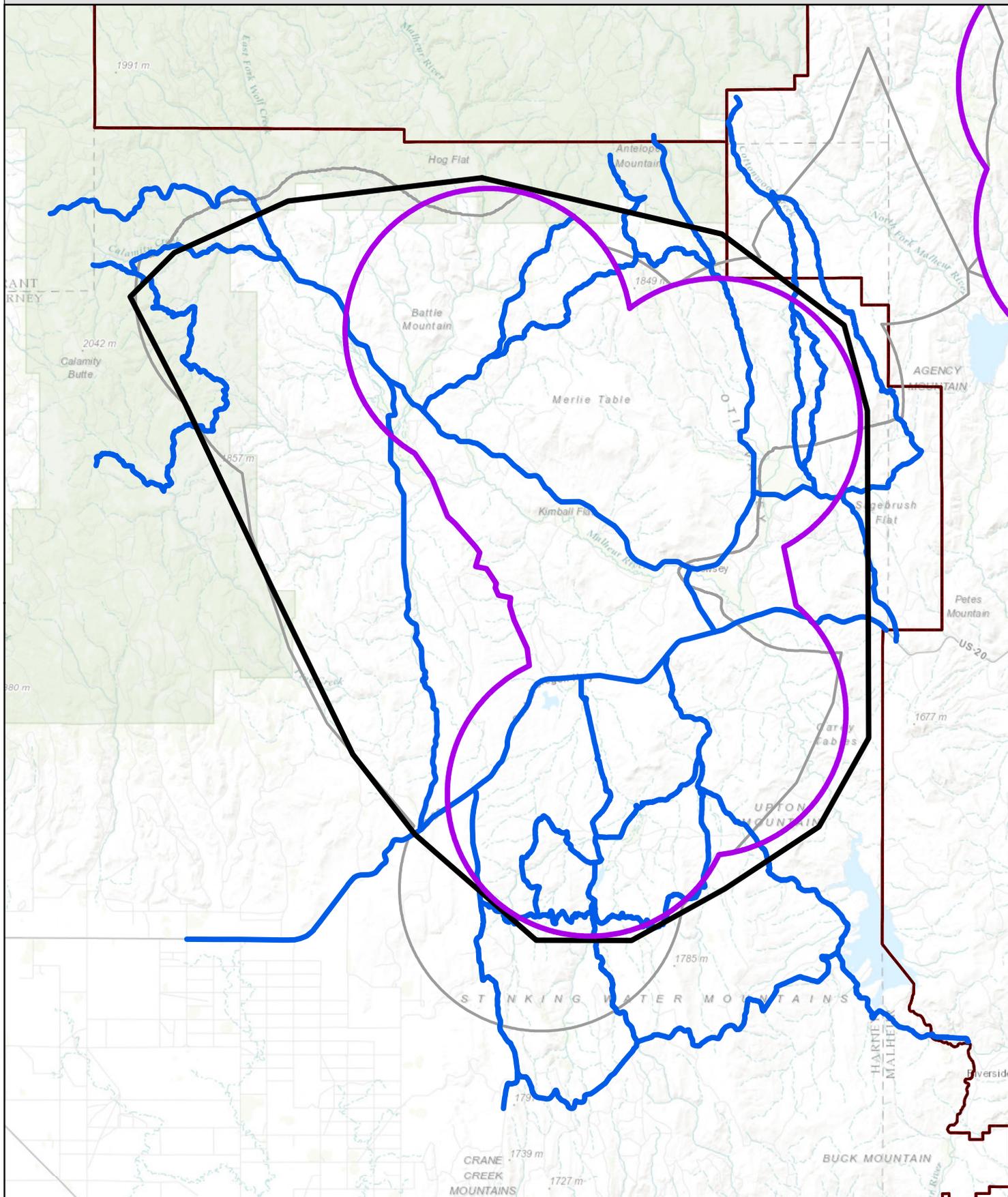


- Otis Project Planning Area
- Otis Fire 1st Priority
- Otis Fire 2nd Priority

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
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Otis Project Planning Area
Fuels Management Potential Treatment Areas

Northern Great Basin
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.



Otis Project Planning Area



Linear Fuels Management Potential Treatment Areas

March 2015

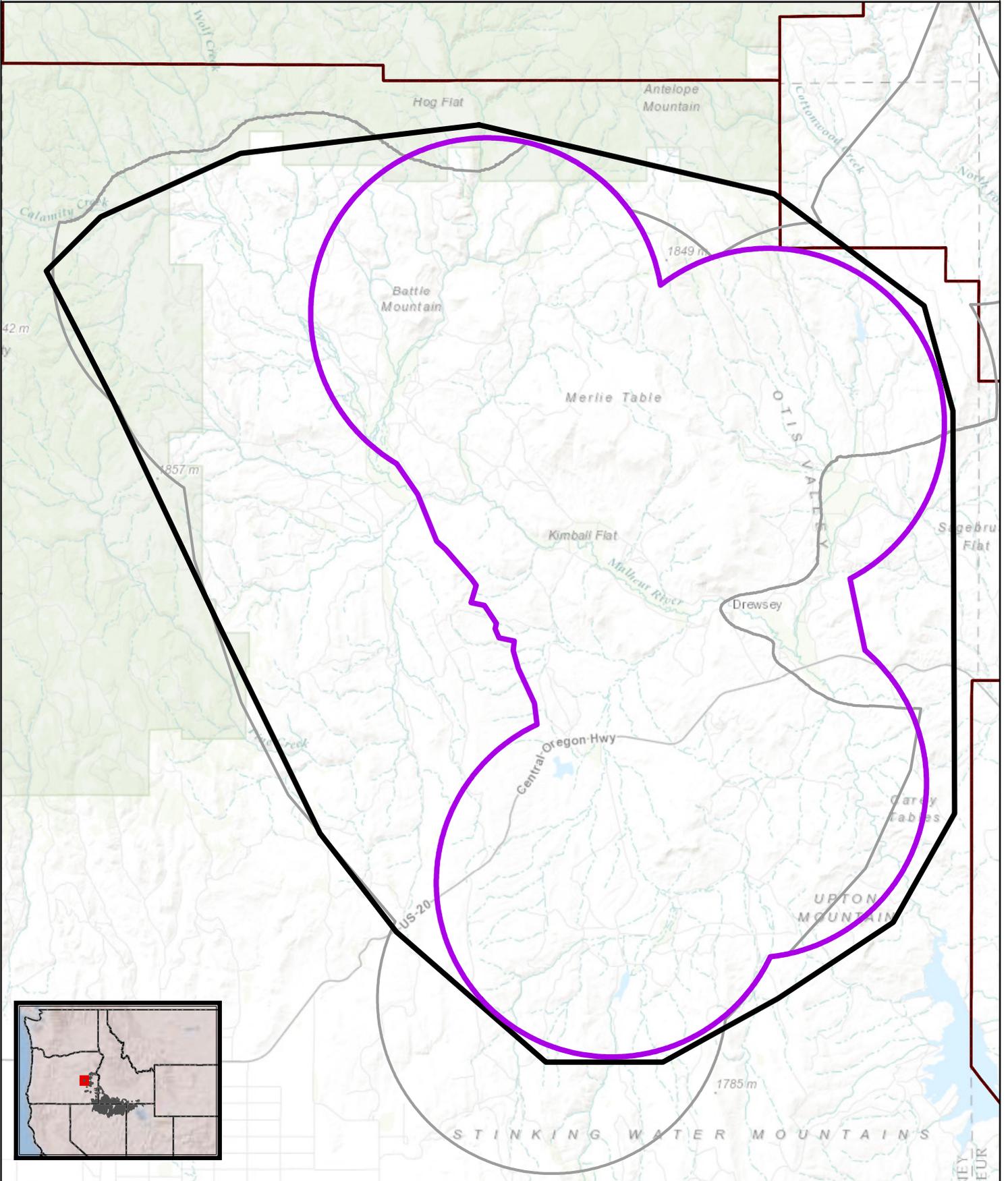
Date Saved: 3/11/2015

Data Sources: BLM, ESRI Basedata

1:423,772

Otis Project Planning Area

Northern Great Basin
Bureau of Land Management
U.S. Department of the Interior



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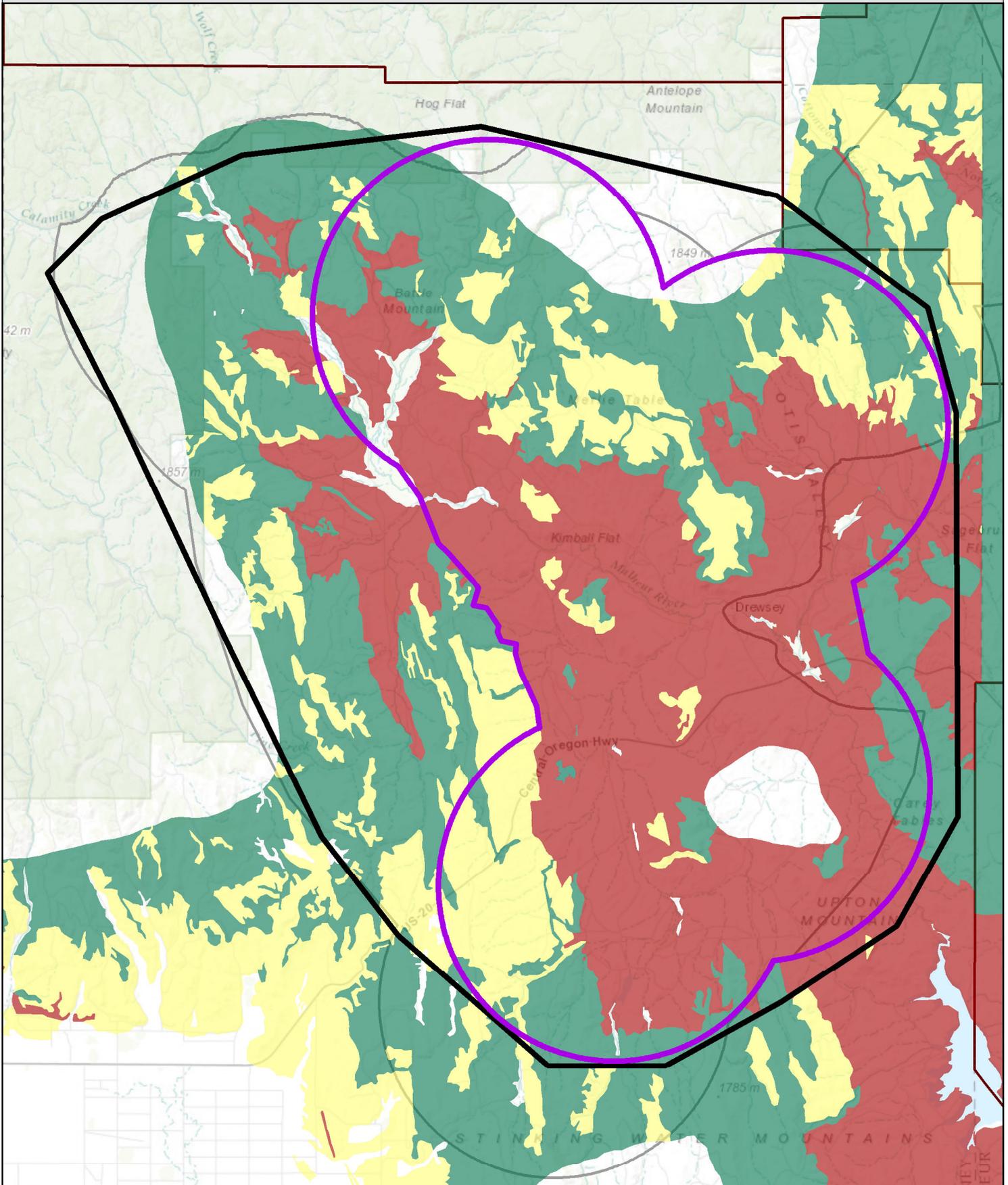


 Otis Project Planning Area

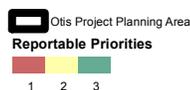
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Data Sources: BLM, ESRI Basedata
1:340,917

Otis Project Planning Area
Resistance-Resilience Reportable Priorities

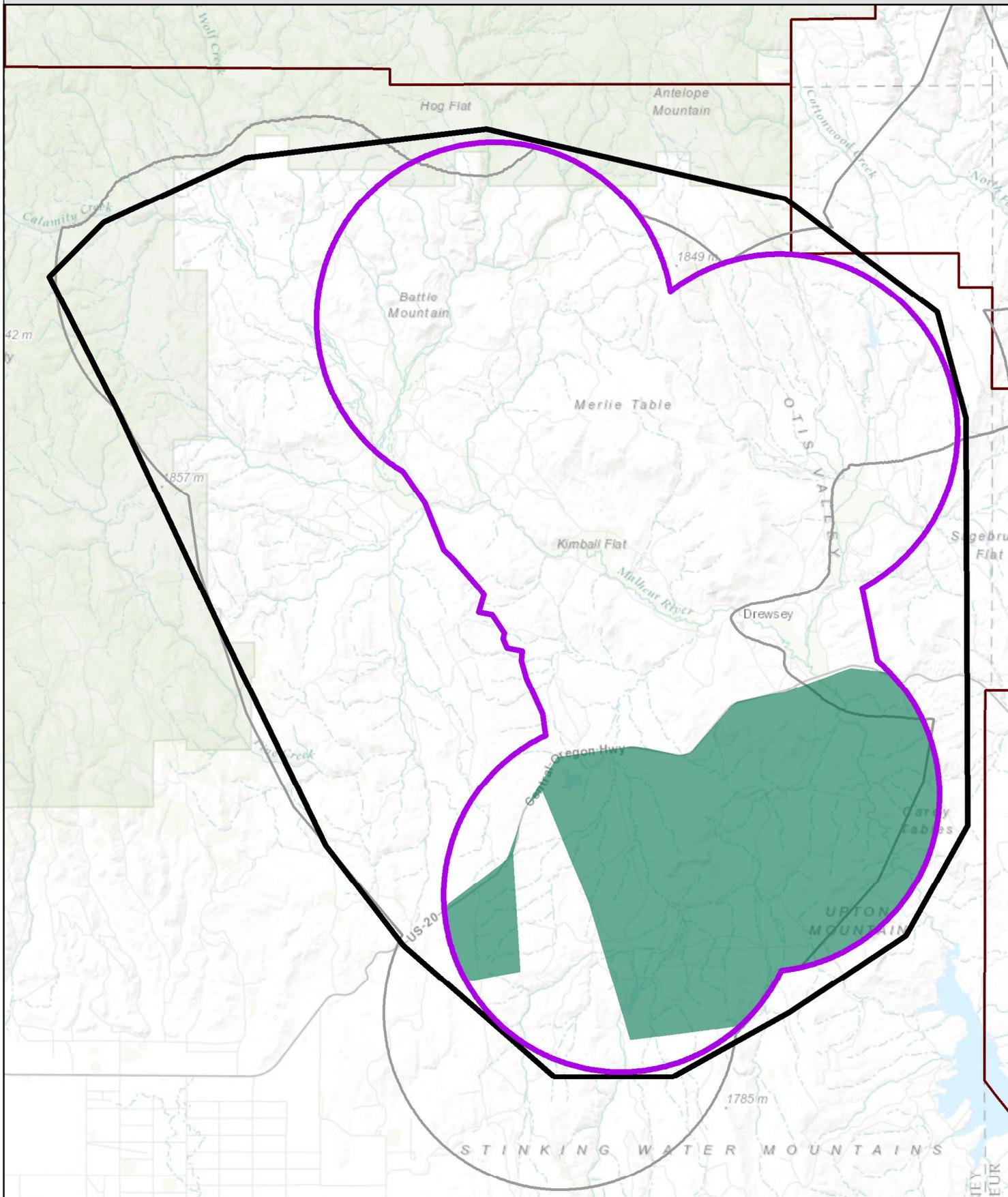
Northern Great Basin
Bureau of Land Management
U.S. Department of the Interior



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March 2015
 Date Saved: 3/12/2015
 Data Sources: BLM, ESRI Basedata
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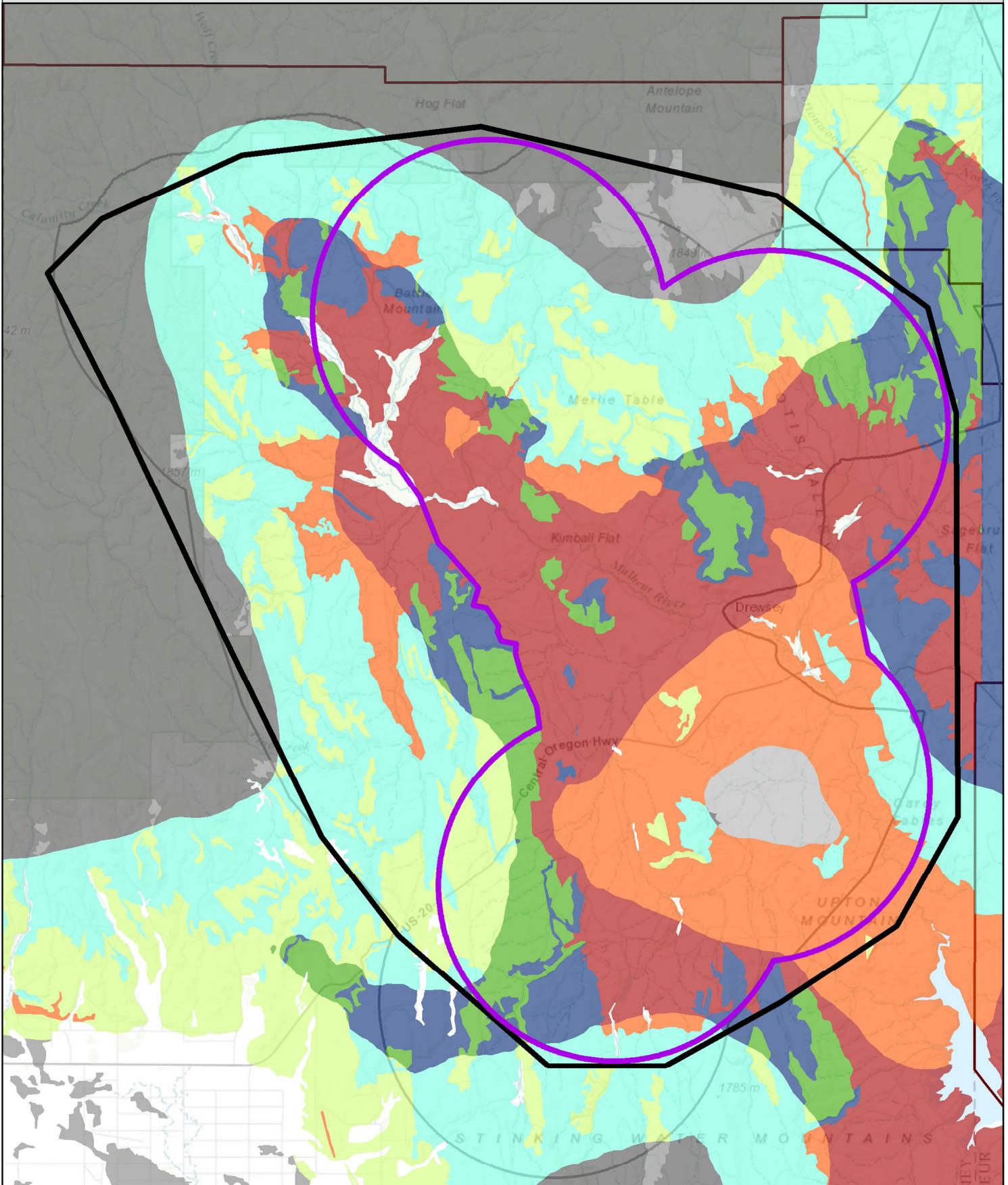
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Otis Project Planning Area

Habitat Restoration Potential Treatment Areas

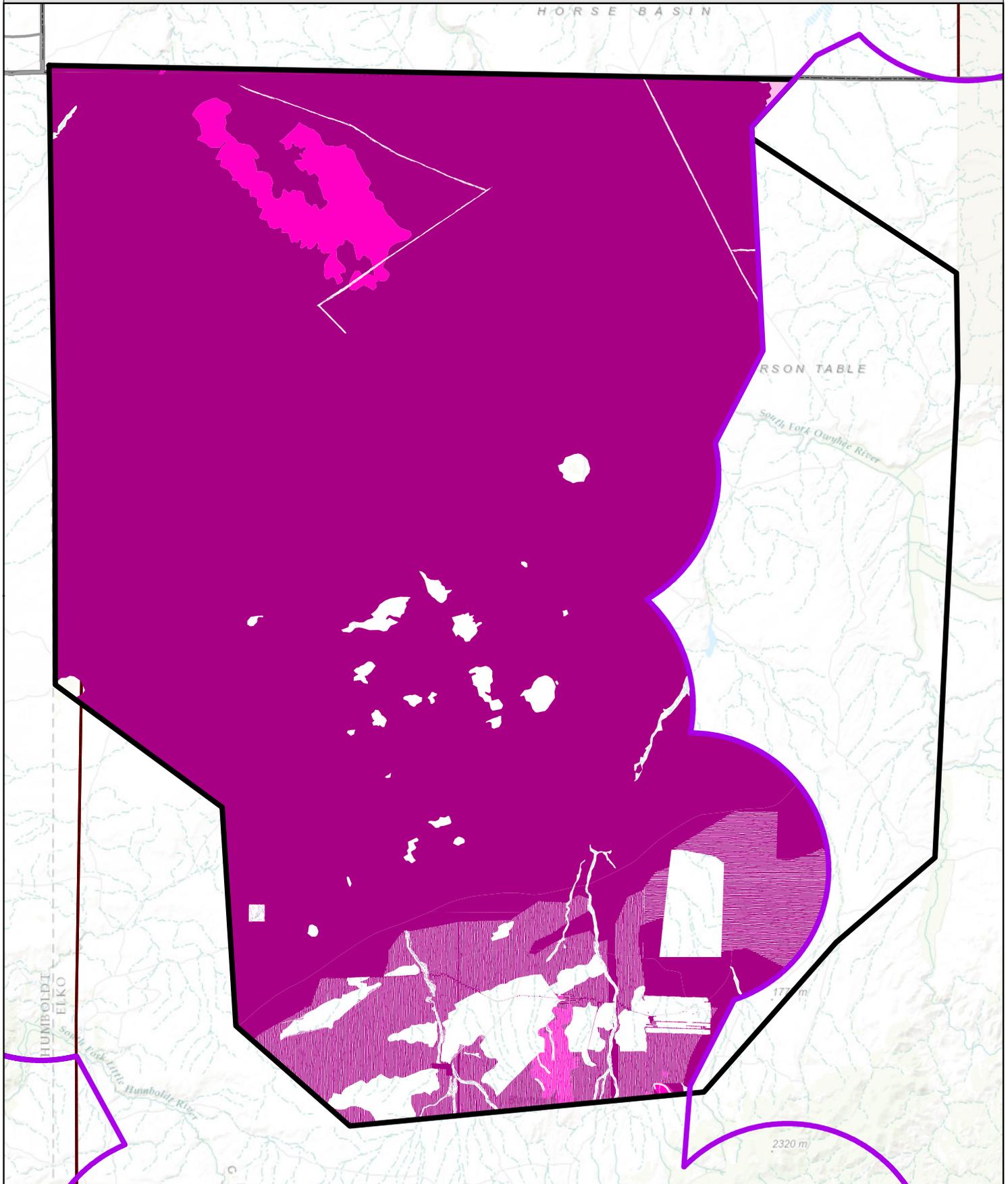
March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:340,917



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March 2015
Date Saved: 3/12/2015
Data Sources: BLM, ESRI Basedata
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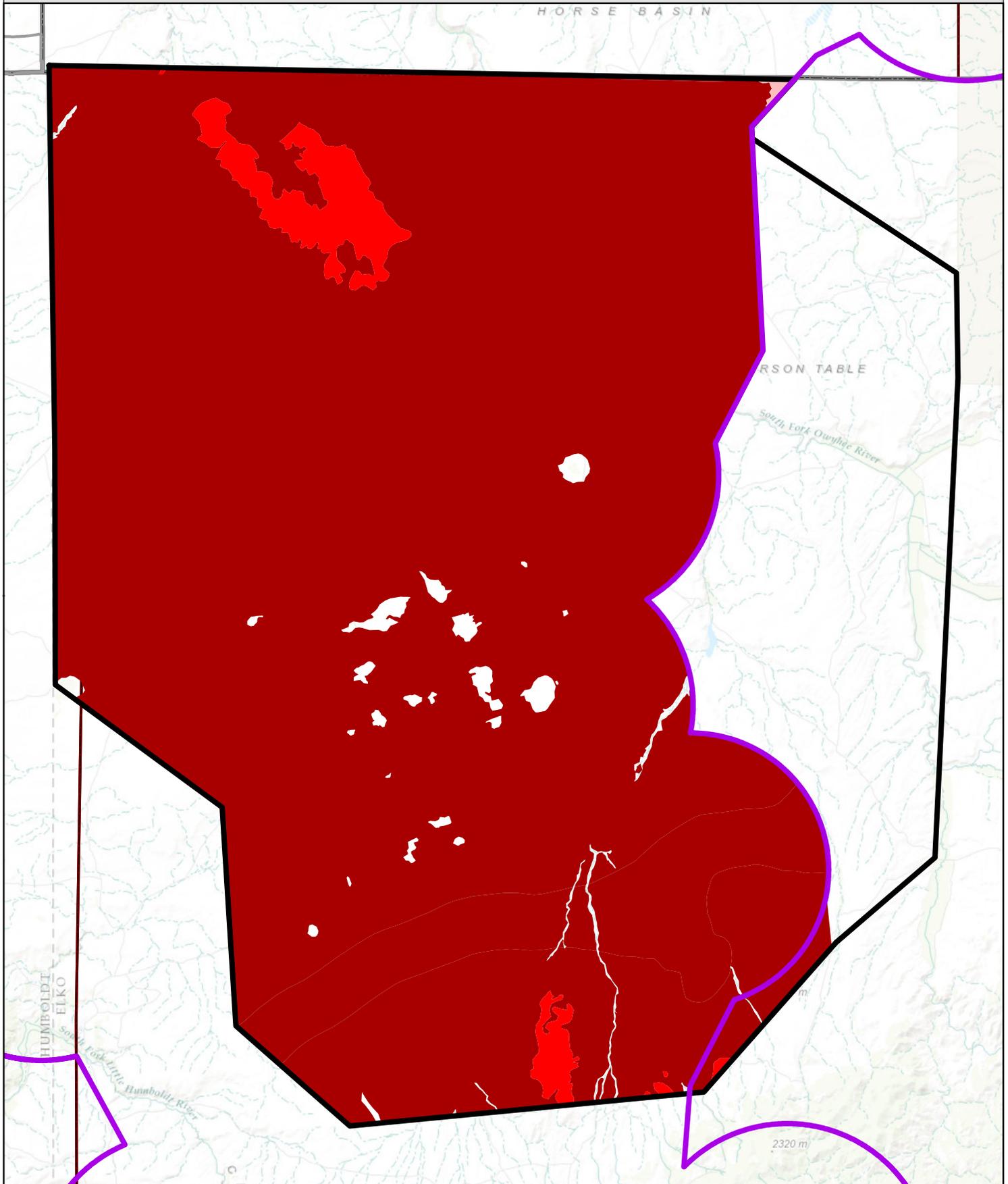


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- Owyhee Desert Project Planning Area
- Owyhee Desert ESR 1st Priority
- Owyhee Desert ESR 2nd Priority
- Owyhee Desert ESR 3rd Priority

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:400,026

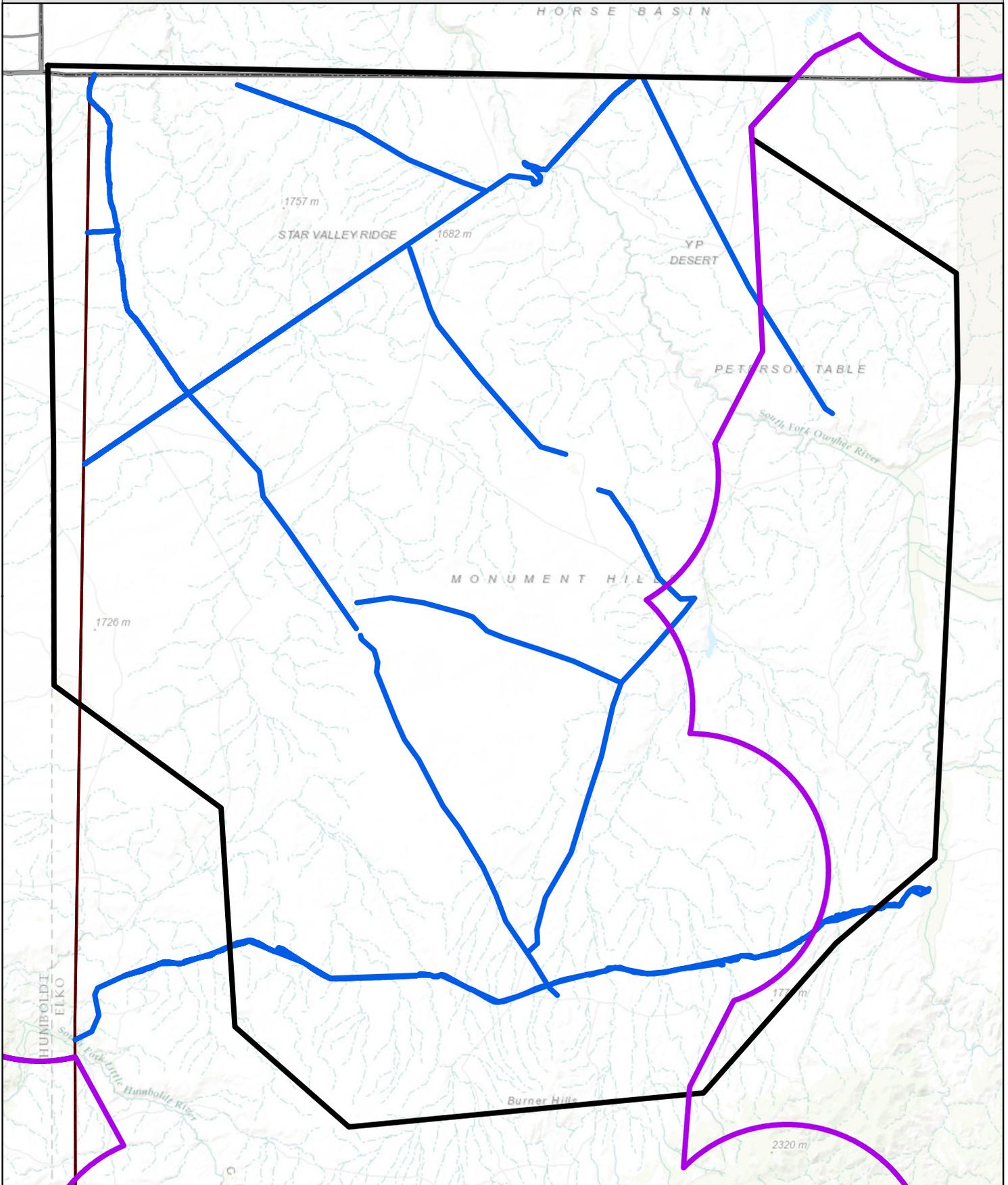


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- Owyhee Desert Project Planning Area
- Owyhee Desert 1st Priority
- Owyhee Desert 2nd Priority
- Owyhee Desert 3rd Priority

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:400,026



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Owyhee Desert Project Planning Area

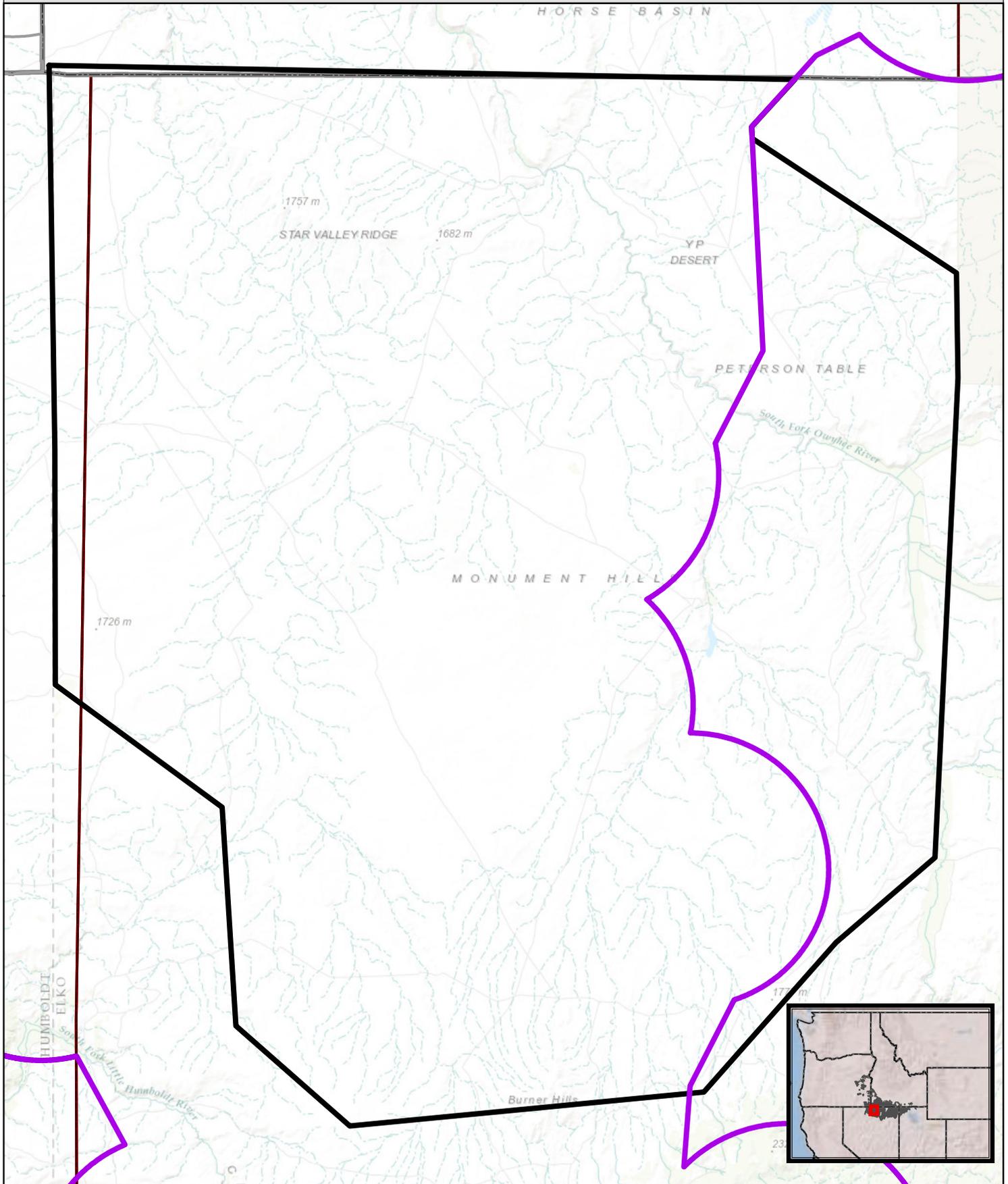


Linear Fuels Management Potential Treatment Areas

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:400,026

Owyhee Desert Project Planning Area

Northern Great Basin
Bureau of Land Management
U.S. Department of the Interior

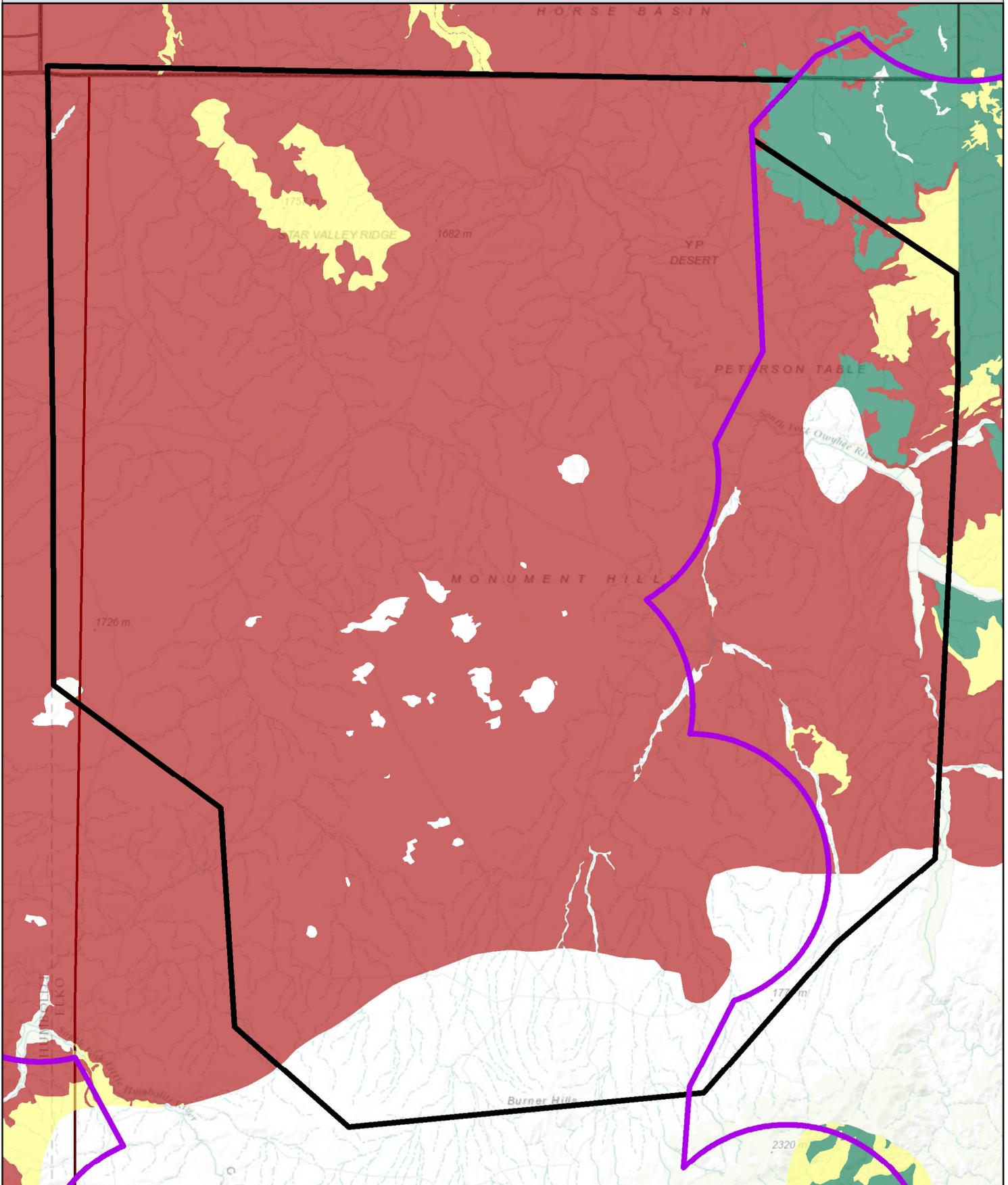


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Owyhee Desert Project Planning Area

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
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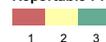


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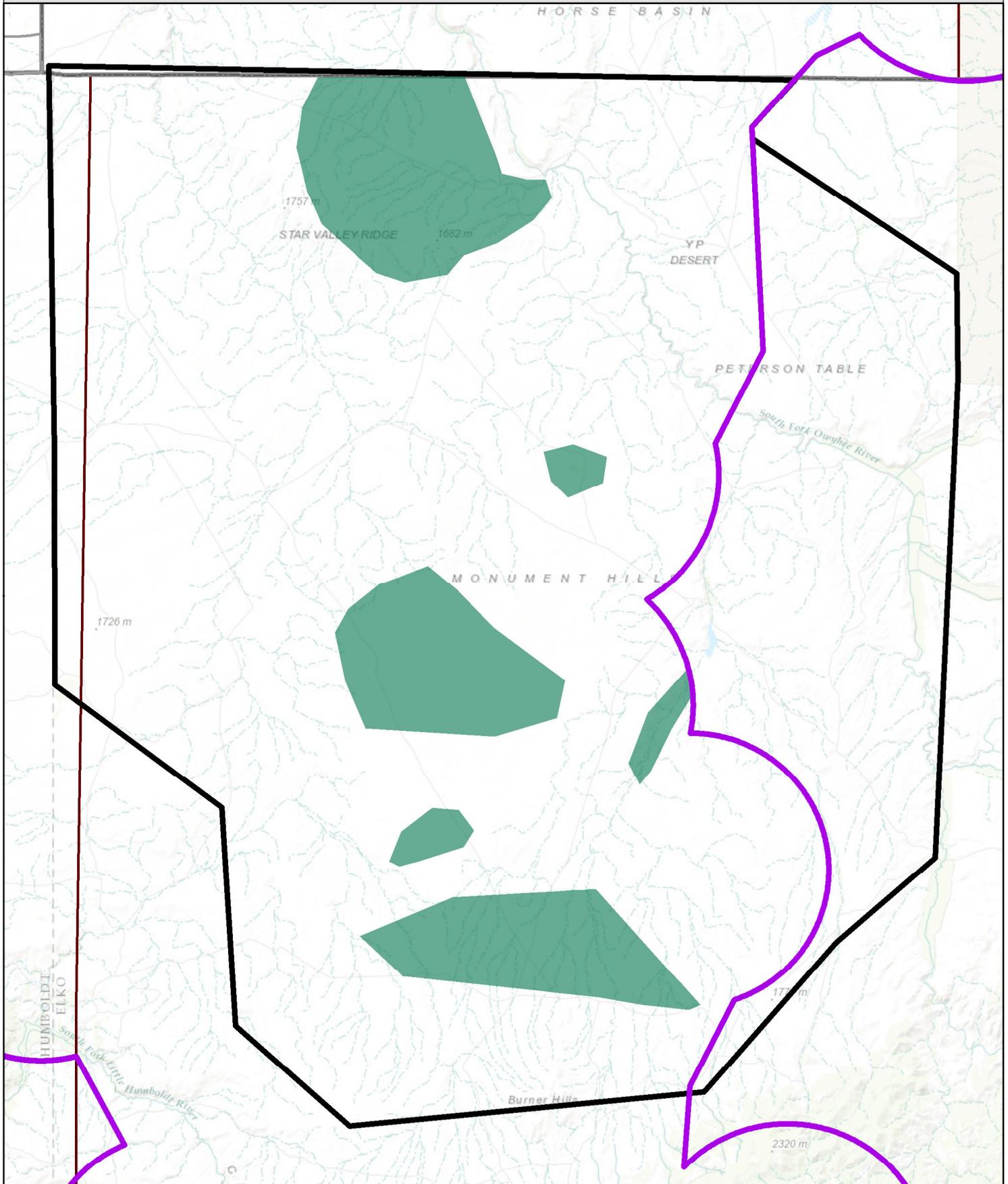


Owyhee Desert Project Planning Area

Reportable Priorities



March 2015
Date Saved: 3/12/2015
Data Sources: BLM, ESRI Basedata
1:400,026

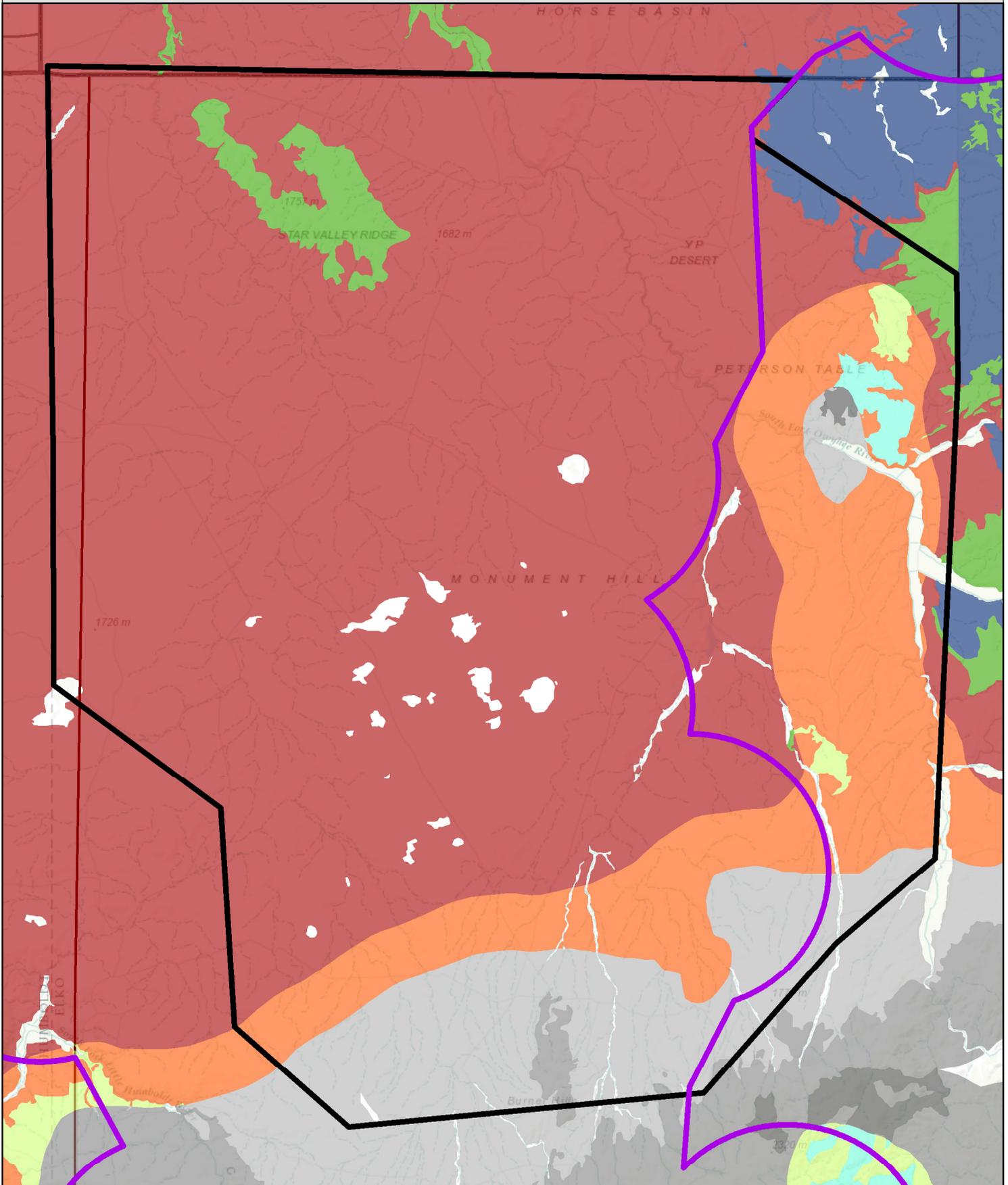


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- Owyhee Desert Project Planning Area
- Habitat Restoration Potential Treatment Areas

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:400,026



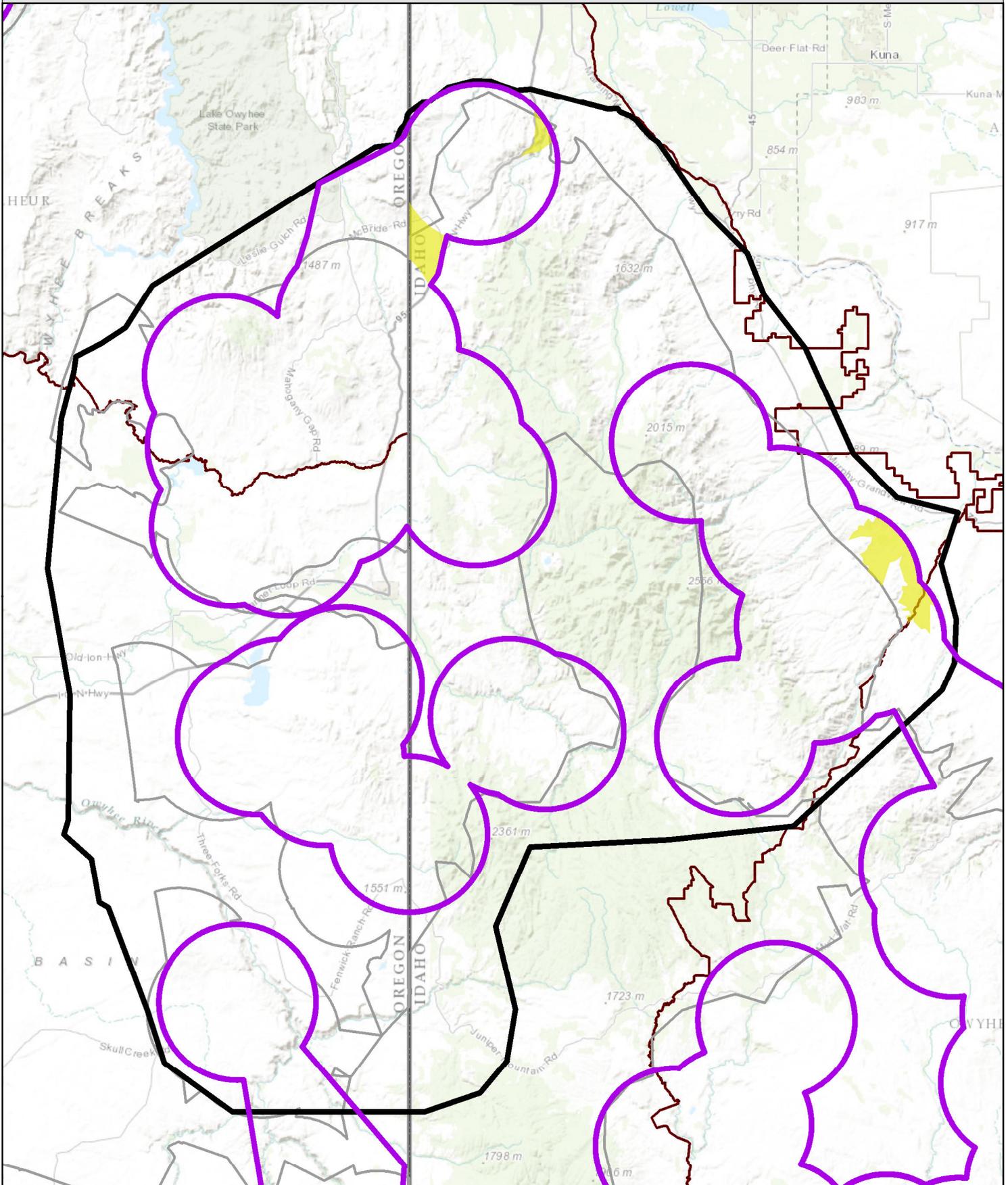
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March 2015
Date Saved: 3/12/2015
Data Sources: BLM, ESRI Basedata
1:400,026

Owyhee North Project Planning Area
Invasive Annuals Potential Treatment Areas

Northern Great Basin
Bureau of Land Management
U.S. Department of the Interior



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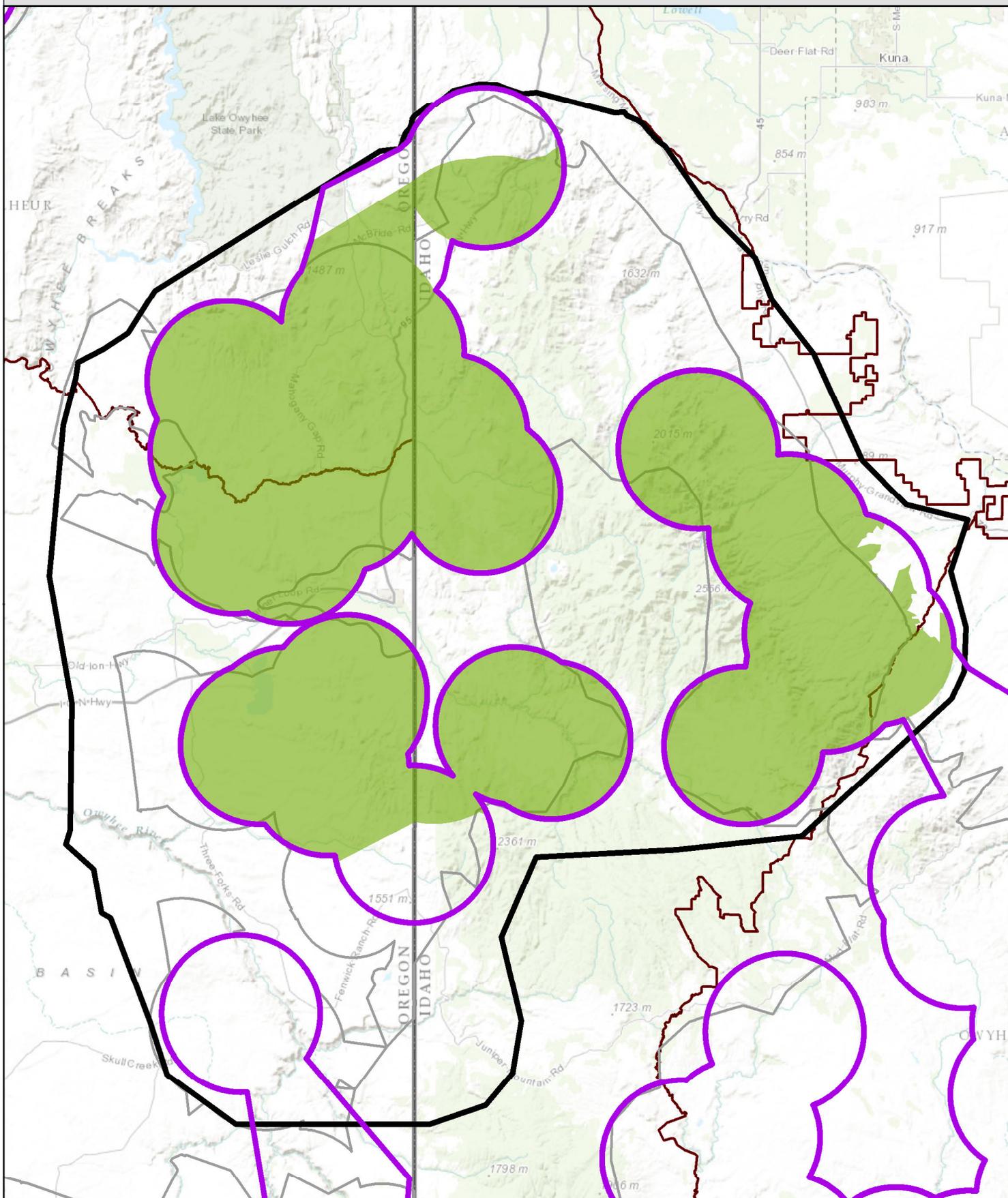


 Owyhee North Project Planning Area
 Invasive Annuals Potential Treatment Areas

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:749,810

Owyhee North Project Planning Area
Conifer Expansion Potential Treatment Areas

Northern Great Basin
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.



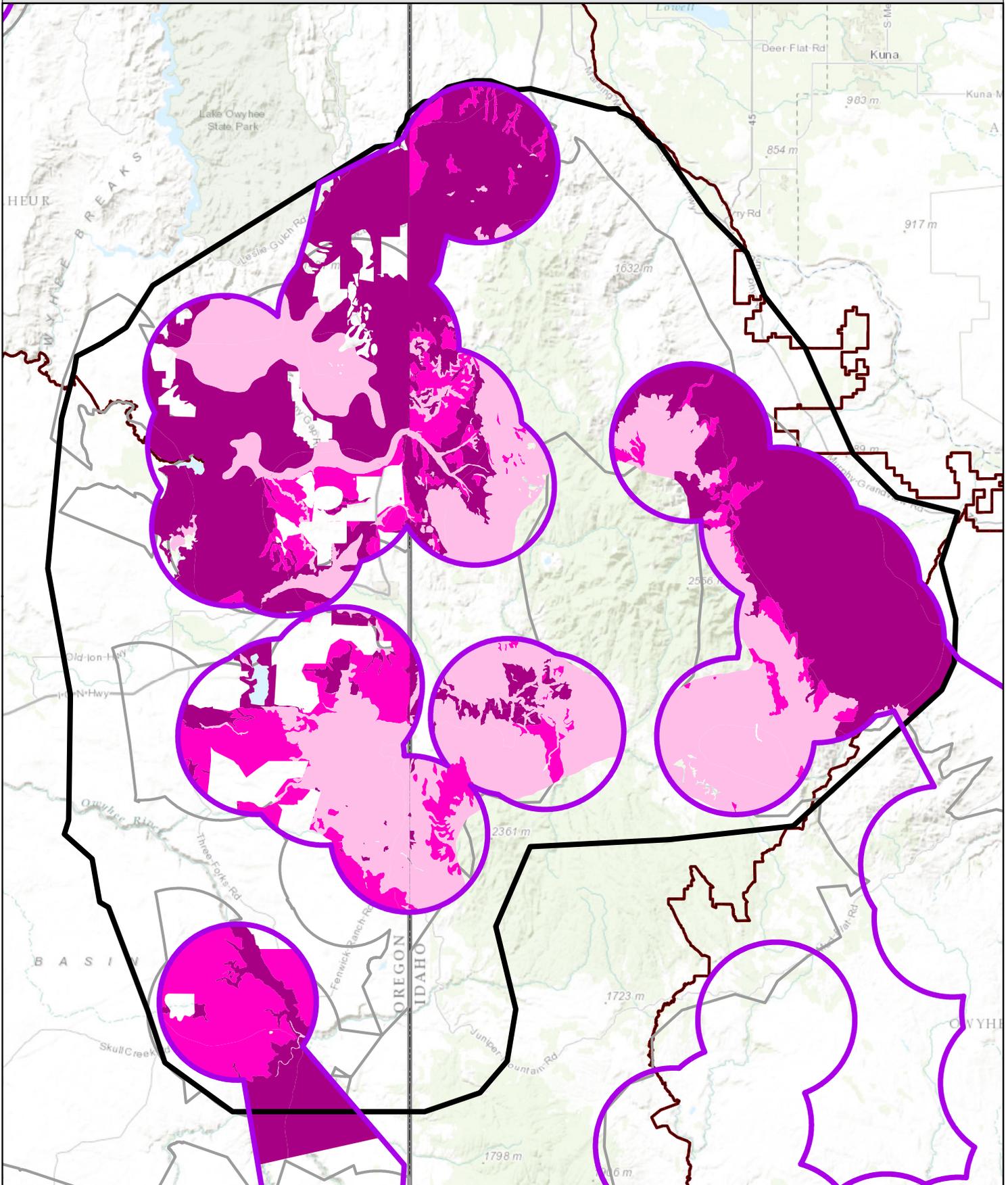
Owyhee North Project Planning Area

Conifer Expansion Potential Treatment Areas

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:749,810

Owyhee North Project Planning Area
Emergency Stabilization, Rehabilitation Priority

Northern Great Basin
Bureau of Land Management
U.S. Department of the Interior



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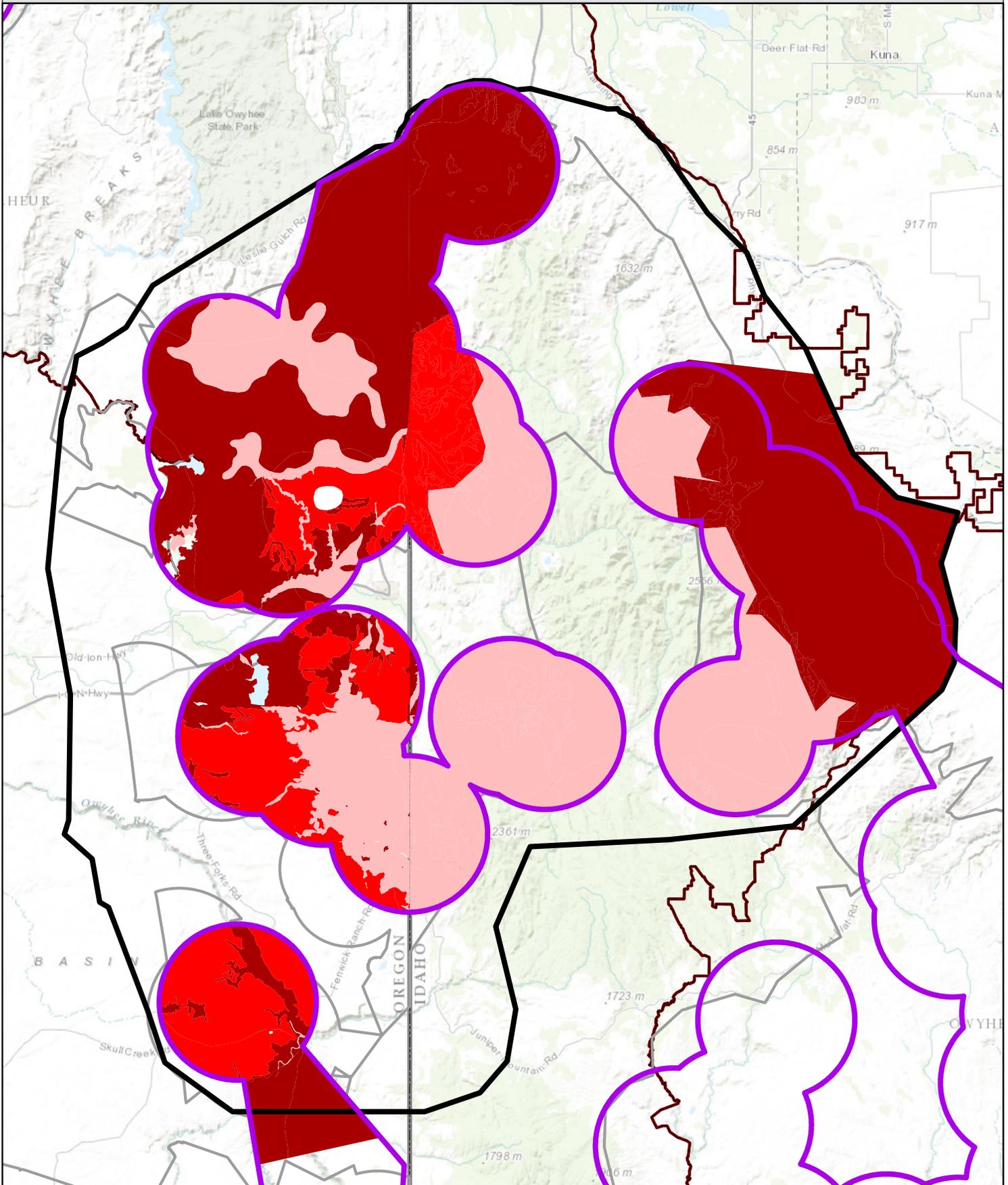


- Owyhee North Project Planning Area
- Owyhee North ESR 1st Priority
- Owyhee North ESR 2nd Priority
- Owyhee North ESR 3rd Priority

March 2015
Date Saved: 3/12/2015
Data Sources: BLM, ESRI Basedata
1:749,810

Owyhee North Project Planning Area
Fire Operations Priority

Northern Great Basin
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.

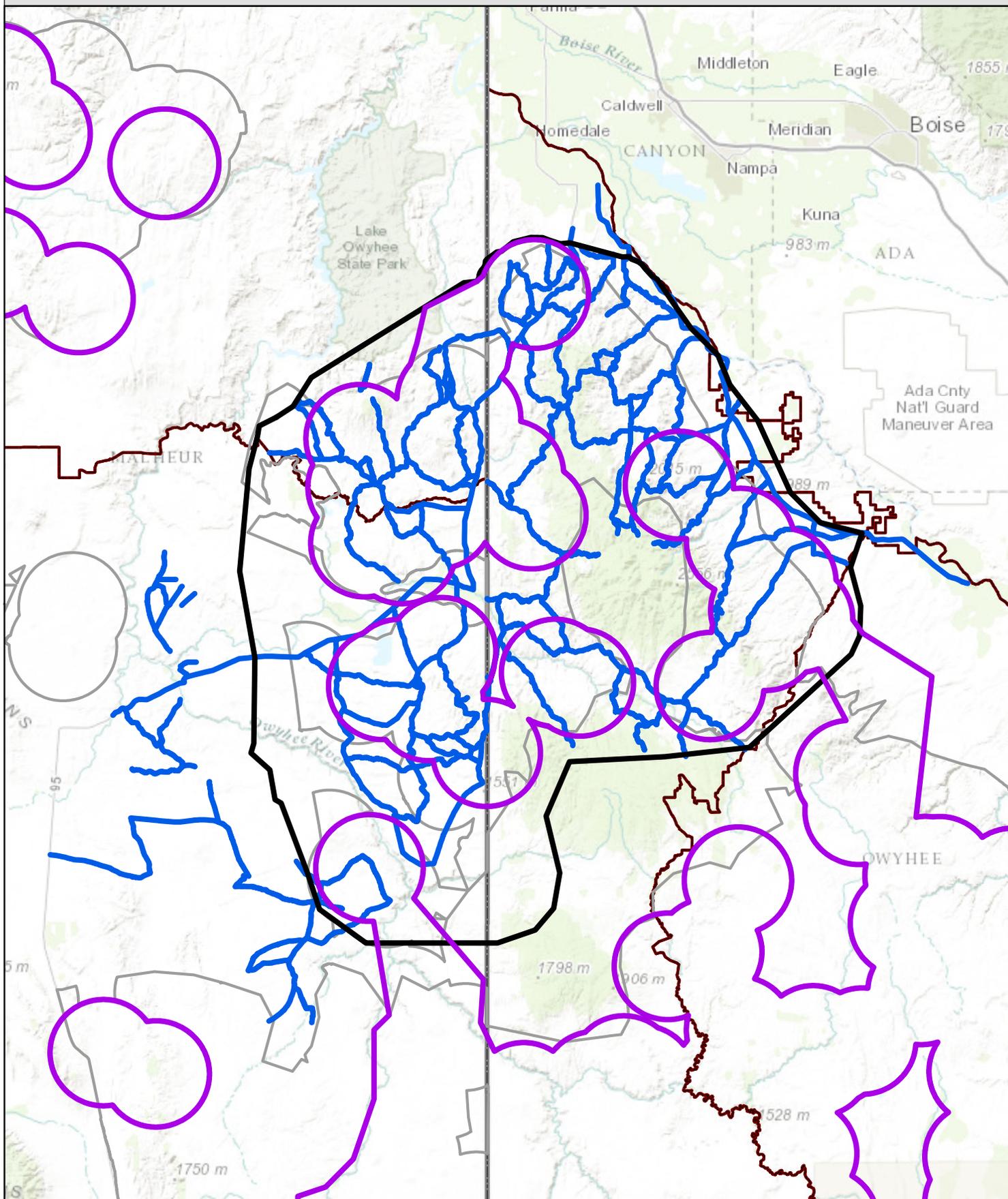


- Owyhee North Project Planning Area
- Owyhee North Fire 1st Priority
- Owyhee North Fire 2nd Priority
- Owyhee North Fire 3rd Priority

March 2015
Date Saved: 3/12/2015
Data Sources: BLM, ESRI Basedata
1:749,810

Owyhee North Project Planning Area
Fuels Management Potential Treatment Areas

Northern Great Basin
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.

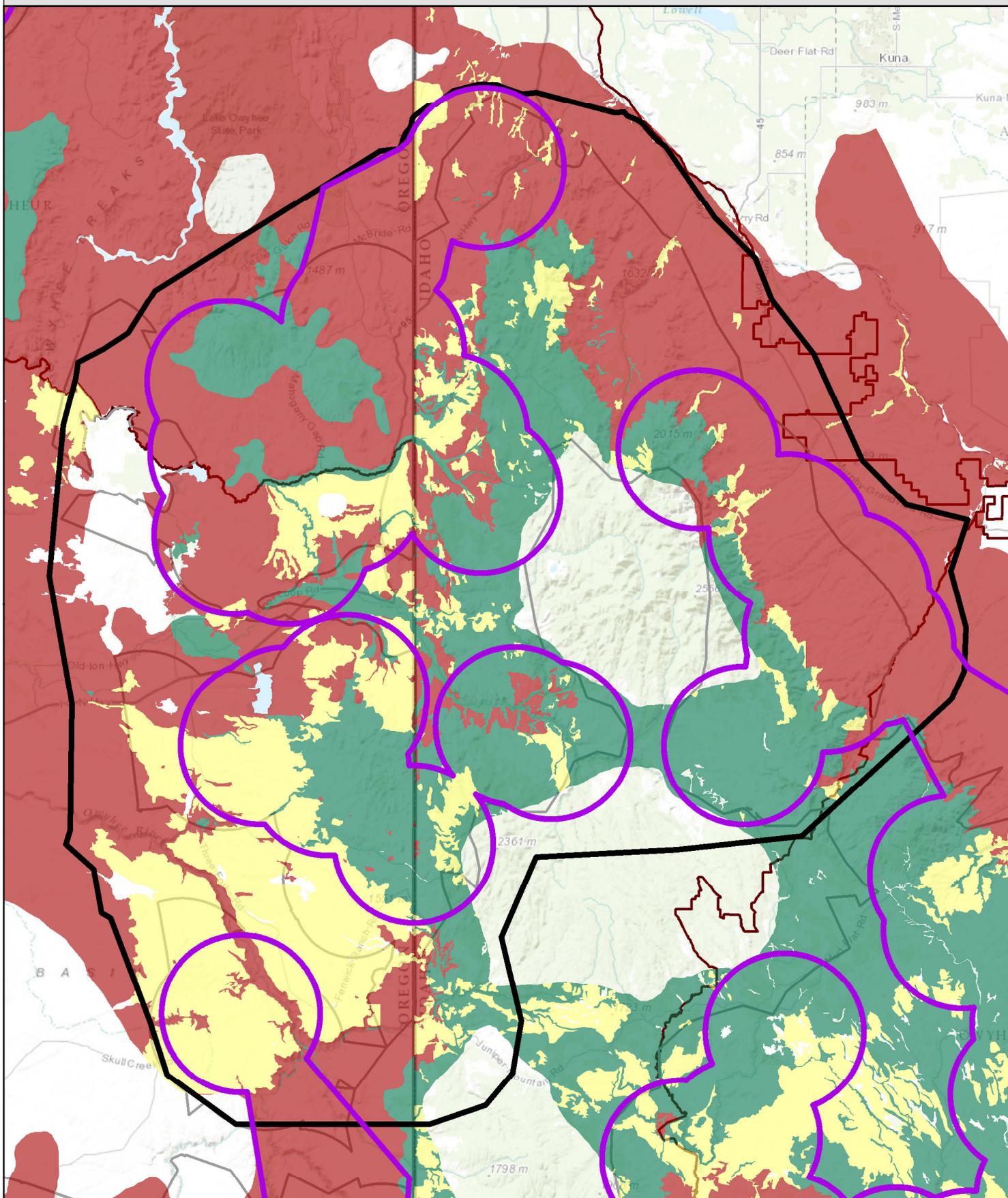


- Owyhee North Project Planning Area
- Linear Fuels Management Potential Treatment Areas

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
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Owyhee North Project Planning Area
Resistance-Resilience Reportable Priorities

Northern Great Basin
Bureau of Land Management
U.S. Department of the Interior

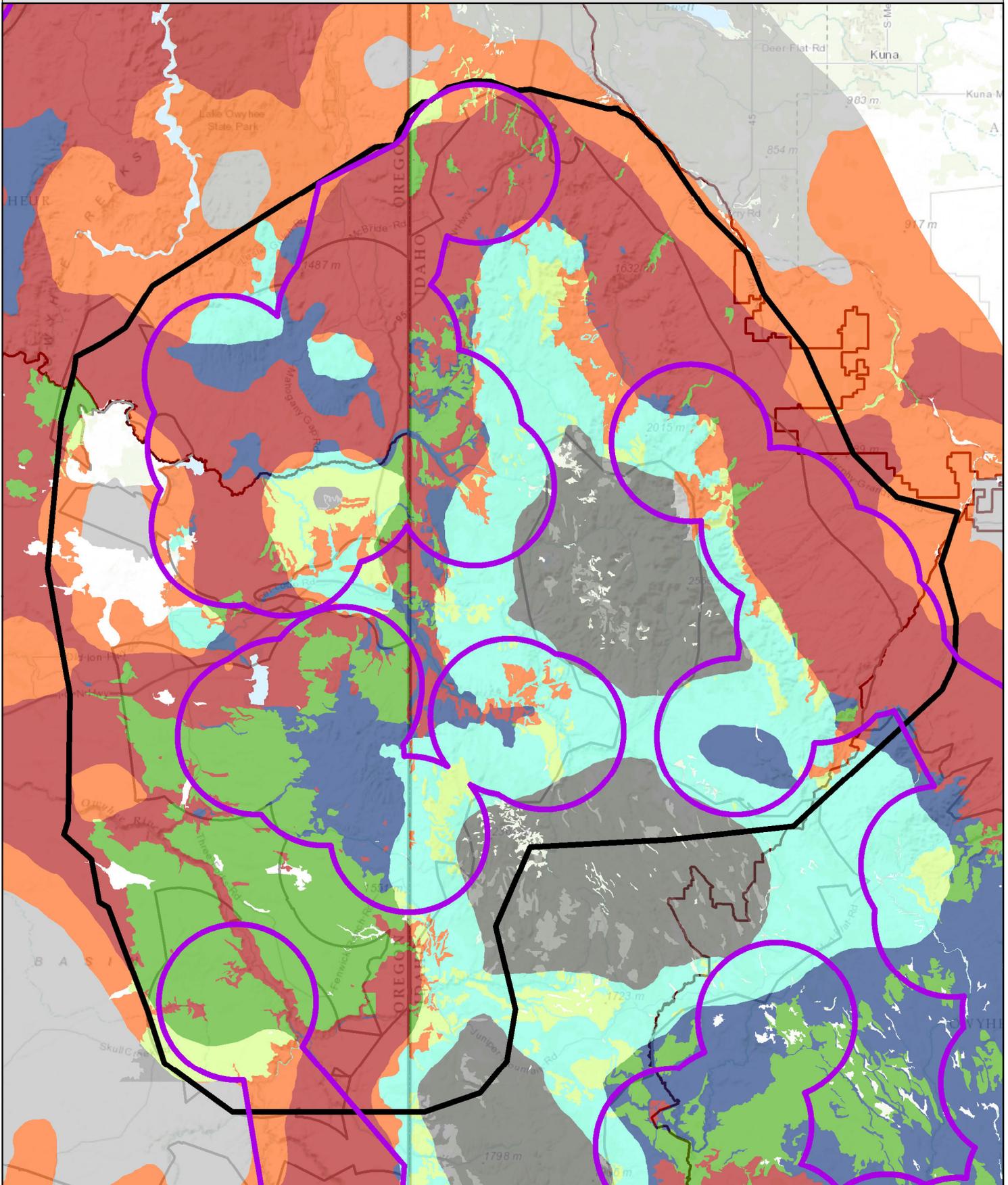


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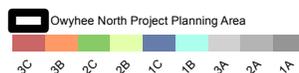


 Owyhee North Project Planning Area
Reportable Priorities
  
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March 2015
 Date Saved: 3/12/2015
 Data Sources: BLM, ESRI Basedata
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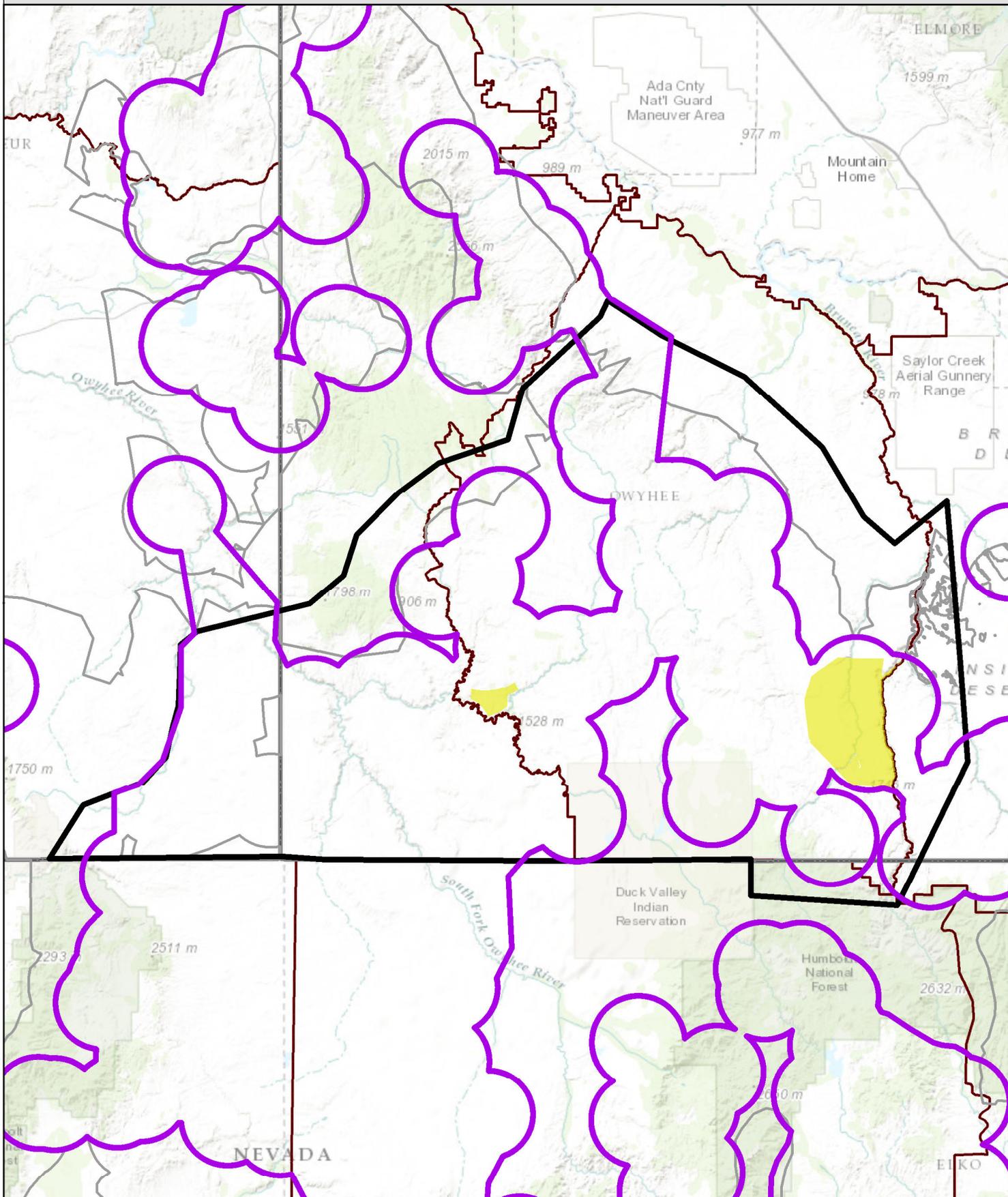
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March 2015
Date Saved: 3/12/2015
Data Sources: BLM, ESRI Basedata
1:749,810

Owyhee South Project Planning Area
Invasive Annuals Potential Treatment Areas

Northern Great Basin
Bureau of Land Management
U.S. Department of the Interior



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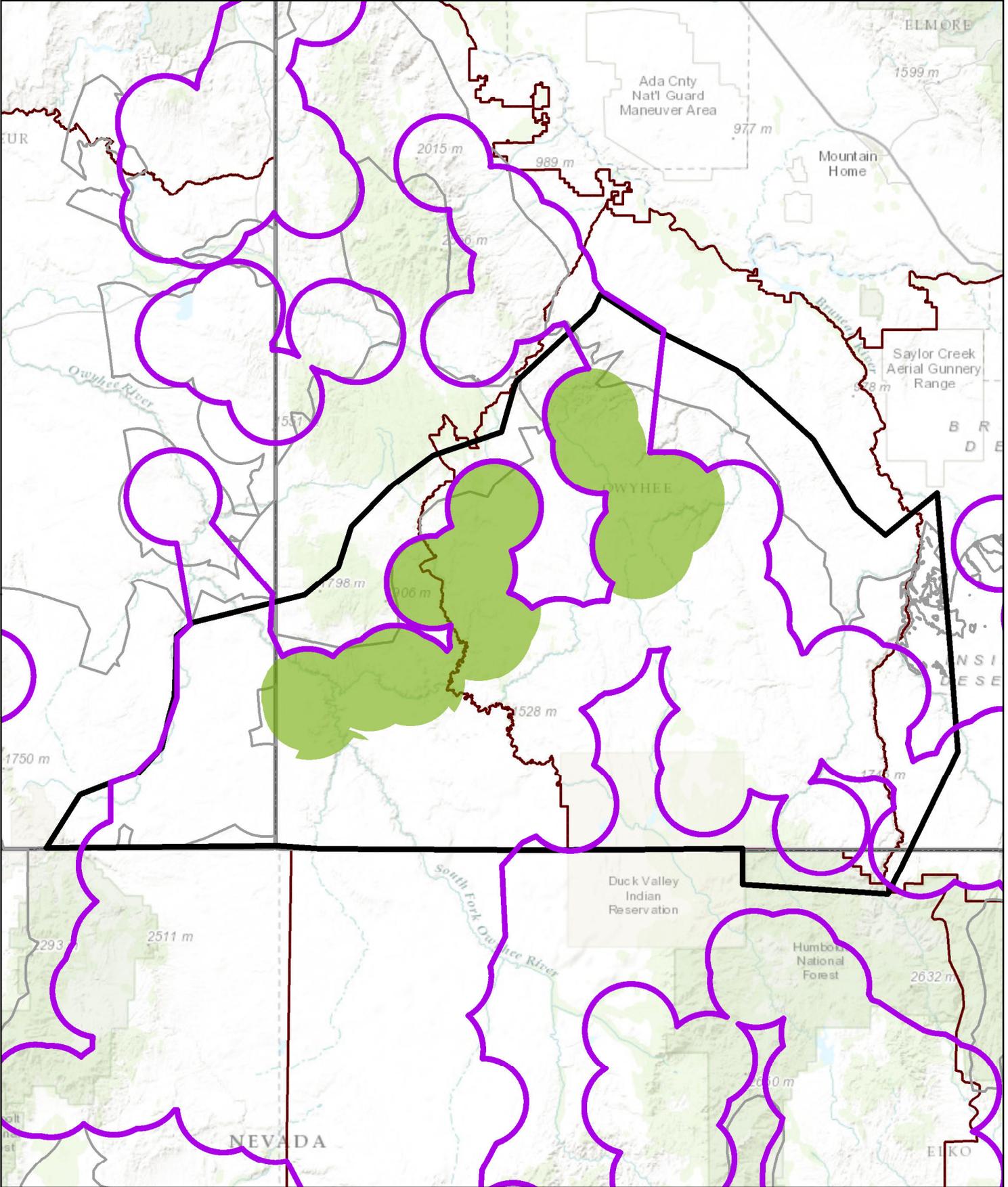


- Owyhee South Project Planning Area
- Invasive Annuals Potential Treatment Areas

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:1,259,722

Owyhee South Project Planning Area
Conifer Expansion Potential Treatment Areas

Northern Great Basin
Bureau of Land Management
U.S. Department of the Interior



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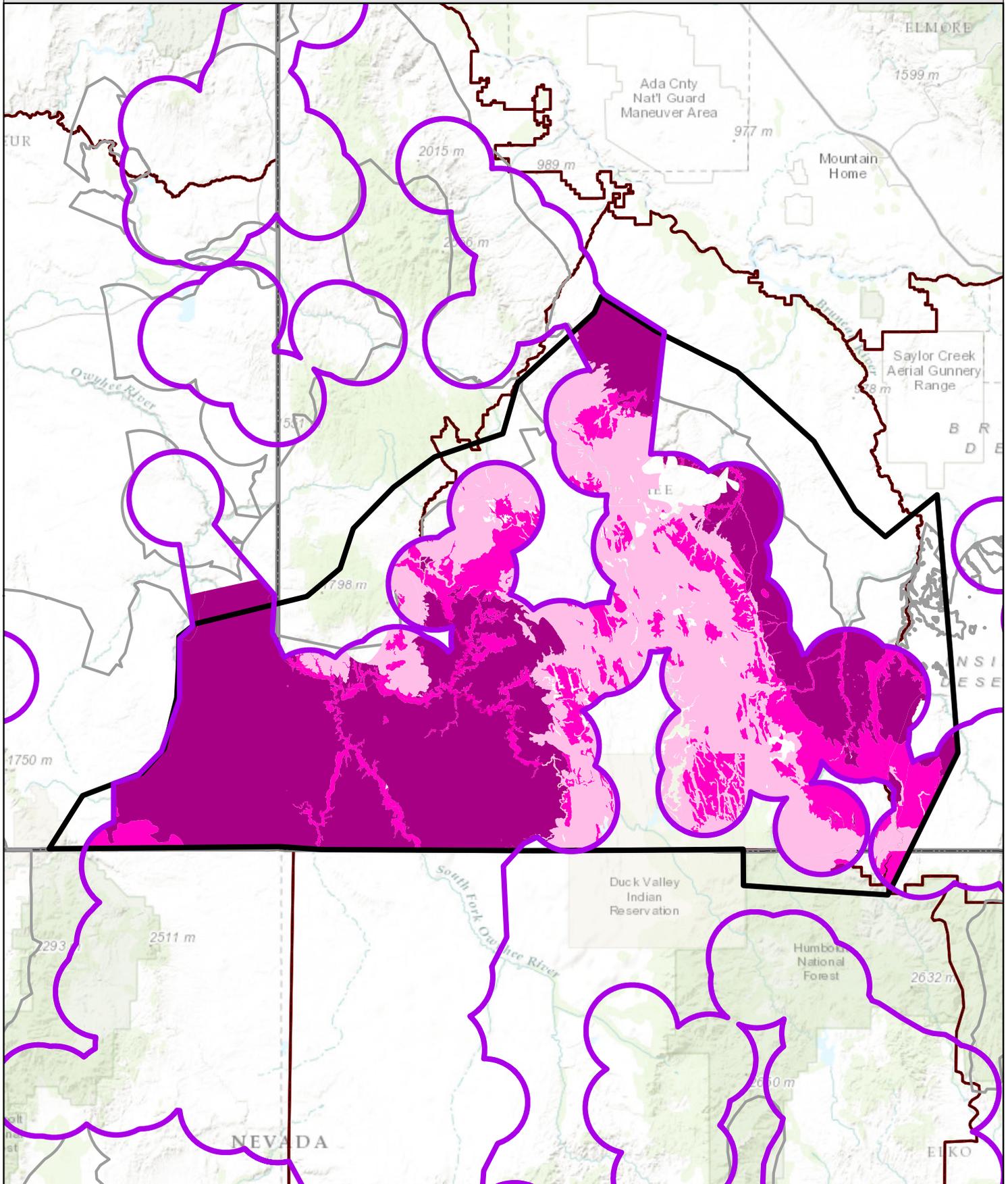


- Owyhee South Project Planning Area
- Conifer Expansion Potential Treatment Areas

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:1,259,722

Owyhee South Project Planning Area
Emergency Stabilization, Rehabilitation Priority

Northern Great Basin
Bureau of Land Management
U.S. Department of the Interior



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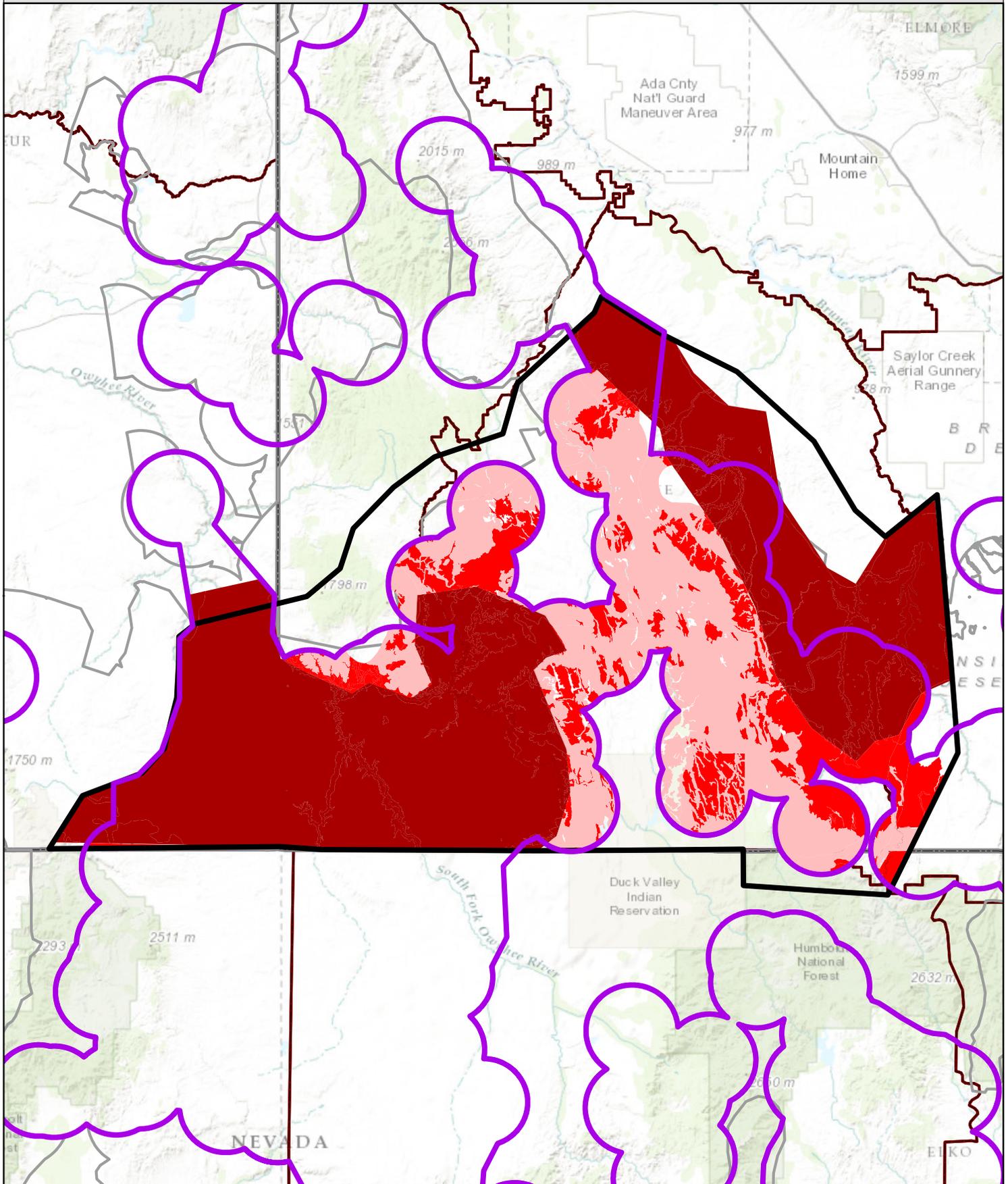


- Owyhee South Project Planning Area
- Owyhee South ESR 1st Priority
- Owyhee South ESR 2nd Priority
- Owyhee South ESR 3rd Priority

March 2015
Date Saved: 3/12/2015
Data Sources: BLM, ESRI Basedata
1:1,259,722

Owyhee South Project Planning Area
Fire Operations Priority

Northern Great Basin
Bureau of Land Management
U.S. Department of the Interior



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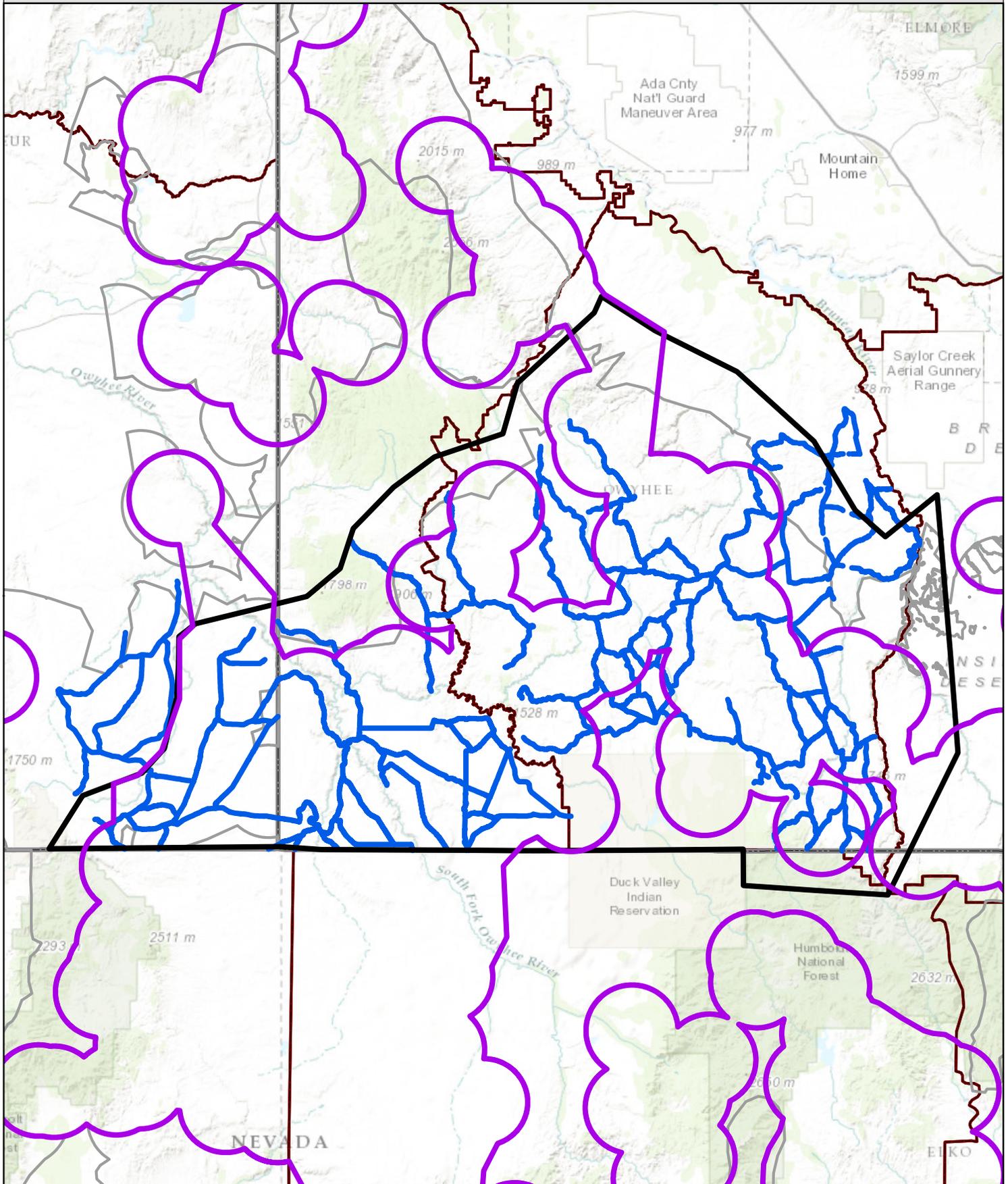


- Owyhee South Project Planning Area
- Owyhee South Fire 1st Priority
- Owyhee South Fire 2nd Priority
- Owyhee South Fire 3rd Priority

March 2015
Date Saved: 3/12/2015
Data Sources: BLM, ESRI Basedata
1:1,259,722

Owyhee South Project Planning Area
Fuels Management Potential Treatment Areas

Northern Great Basin
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.

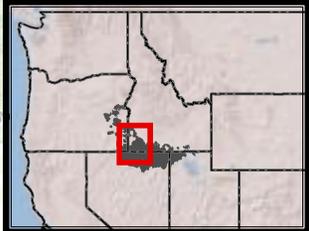
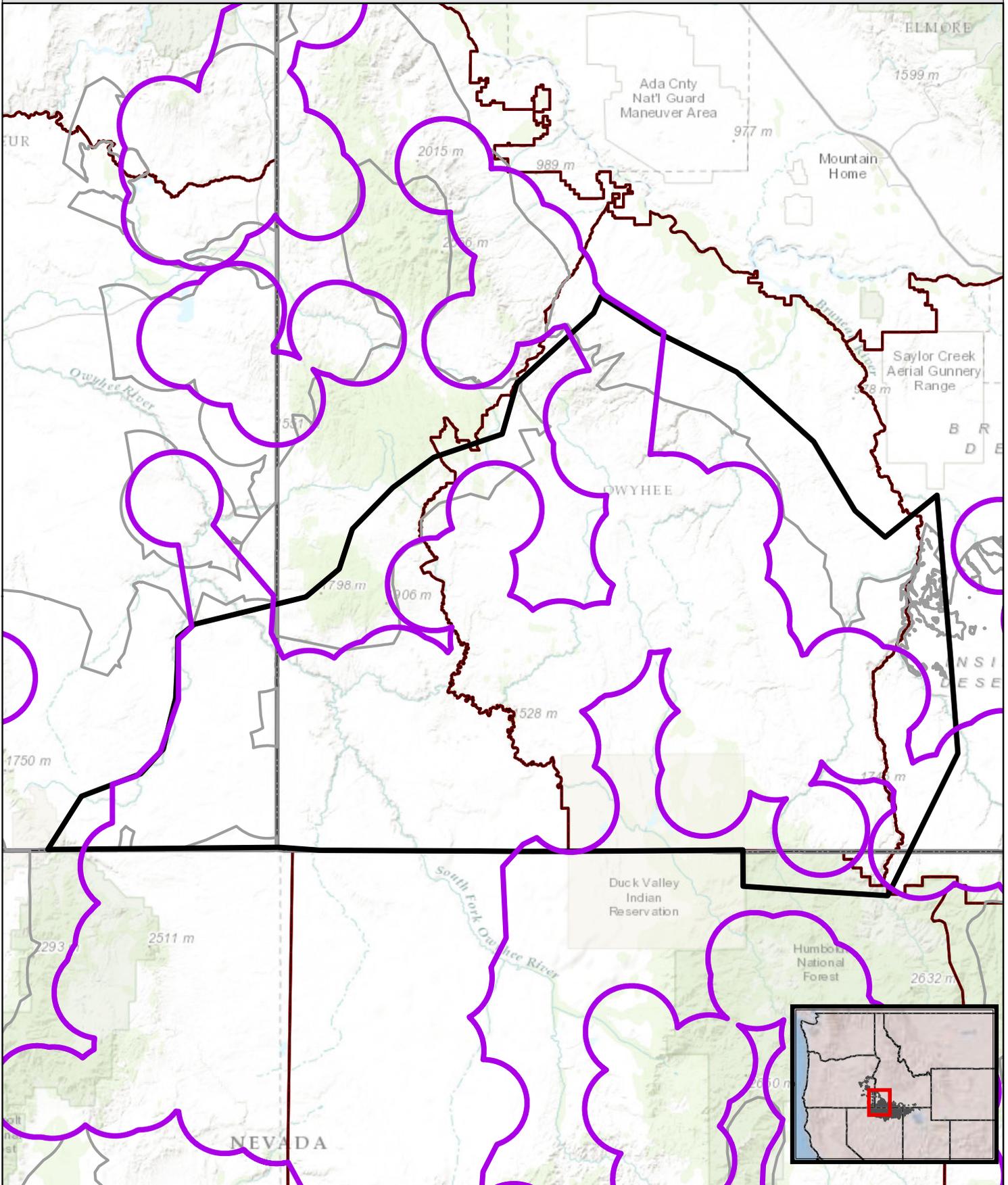


- Owyhee South Project Planning Area
- Linear Fuels Management Potential Treatment Areas

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:1,259,722

Owyhee South Project Planning Area

Northern Great Basin
Bureau of Land Management
U.S. Department of the Interior



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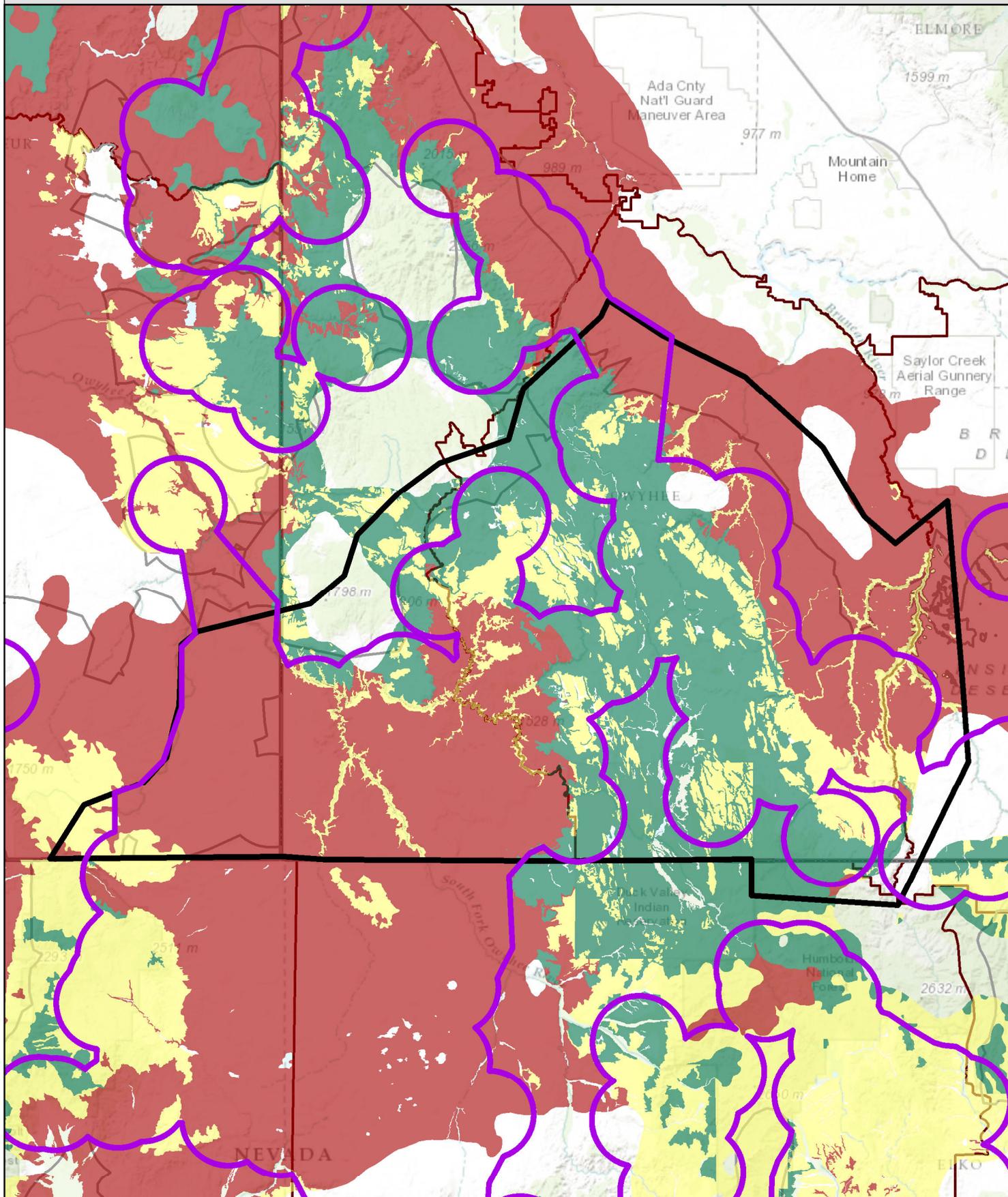


 Owyhee South Project Planning Area

March 2015
Date Saved: 3/11/2015
Data Sources: BLM, ESRI Basedata
1:1,259,722

Owyhee South Project Planning Area
Resistance-Resilience Reportable Priorities

Northern Great Basin
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.

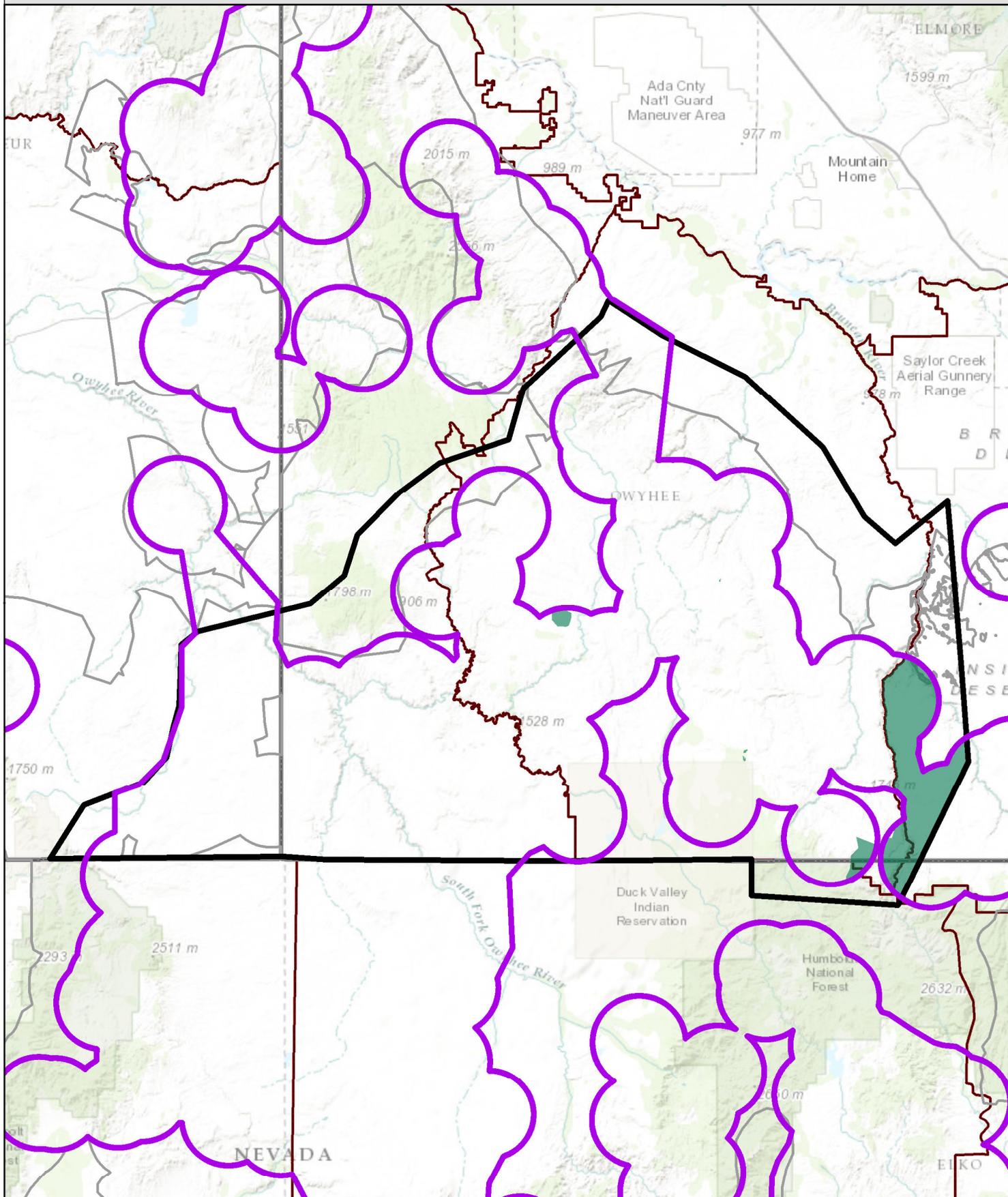


Owyhee South Project Planning Area
Reportable Priorities
 1 2 3

March 2015
Date Saved: 3/12/2015
Data Sources: BLM, ESRI Basedata
1:1,259,722

Owyhee South Project Planning Area
Habitat Restoration Potential Treatment Areas

Northern Great Basin
Bureau of Land Management
U.S. Department of the Interior

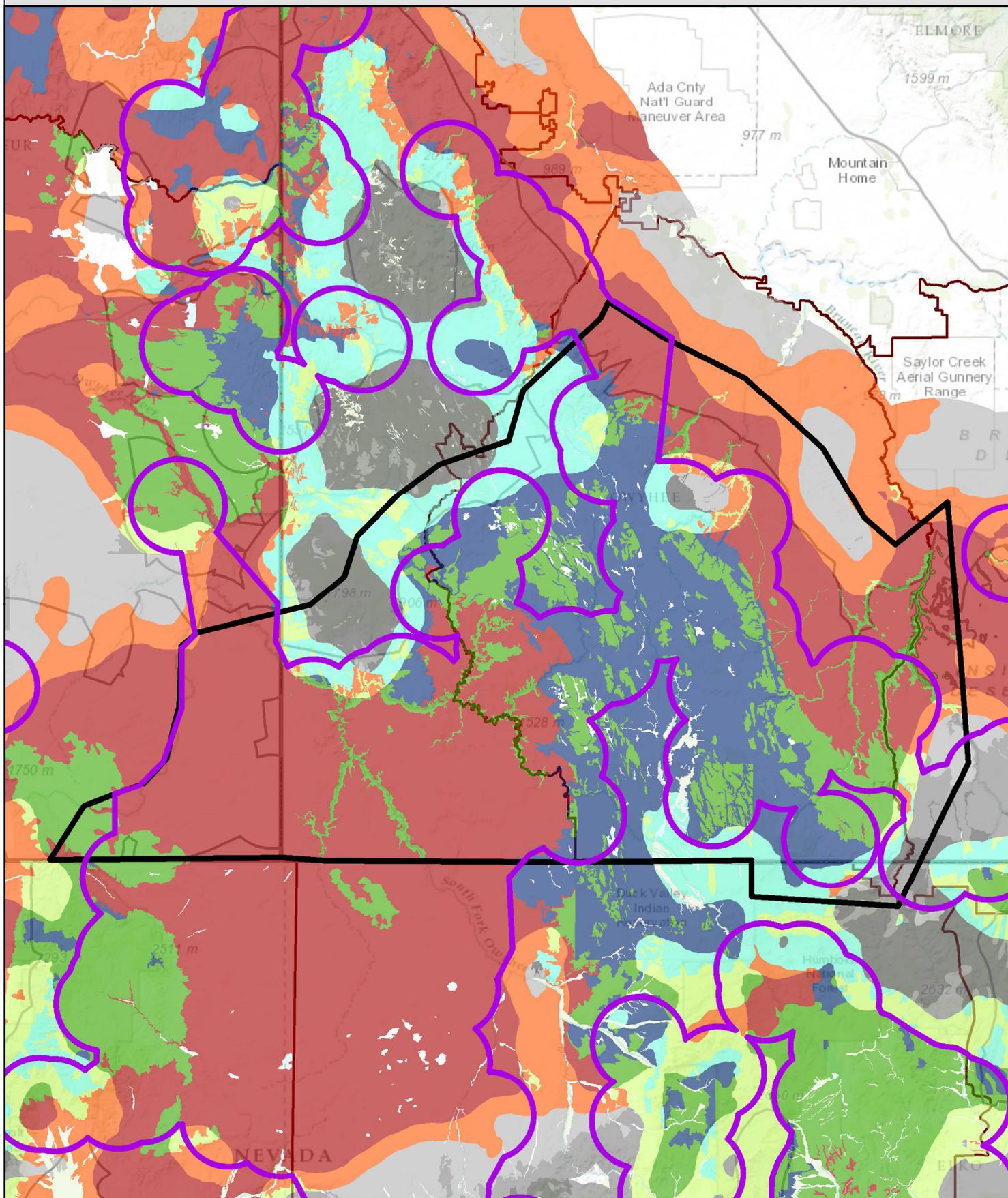


No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.

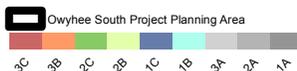


- Owyhee South Project Planning Area
- Habitat Restoration Potential Treatment Areas

March 2015
Date Saved: 3/16/2015
Data Sources: BLM, ESRI Basedata
1:1,259,722



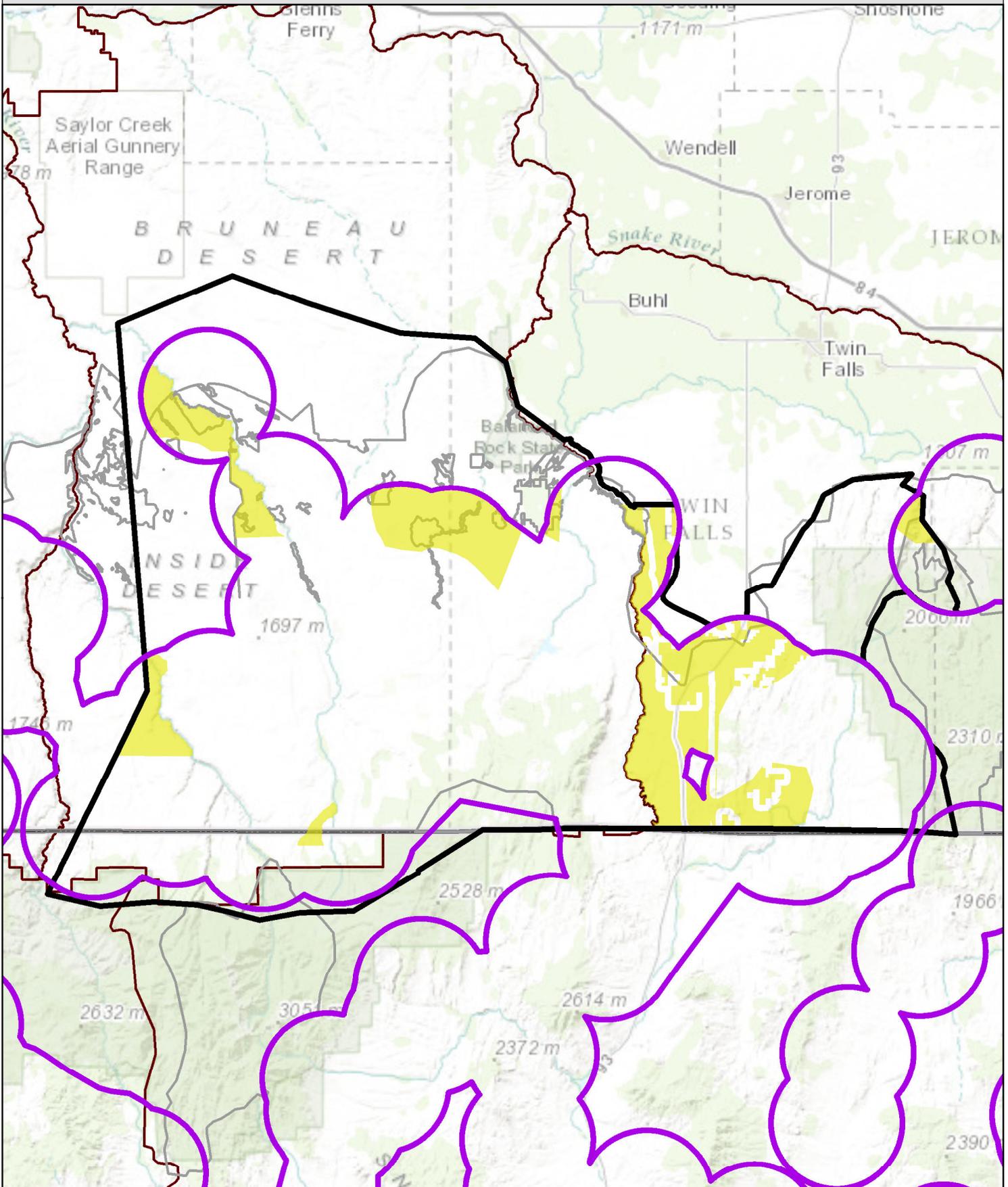
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March 2015
Date Saved: 3/12/2015
Data Sources: BLM, ESRI Basedata
1:1,259,722

Rogerson Project Planning Area
Invasive Annuals Potential Treatment Areas

Northern Great Basin
Bureau of Land Management
U.S. Department of the Interior

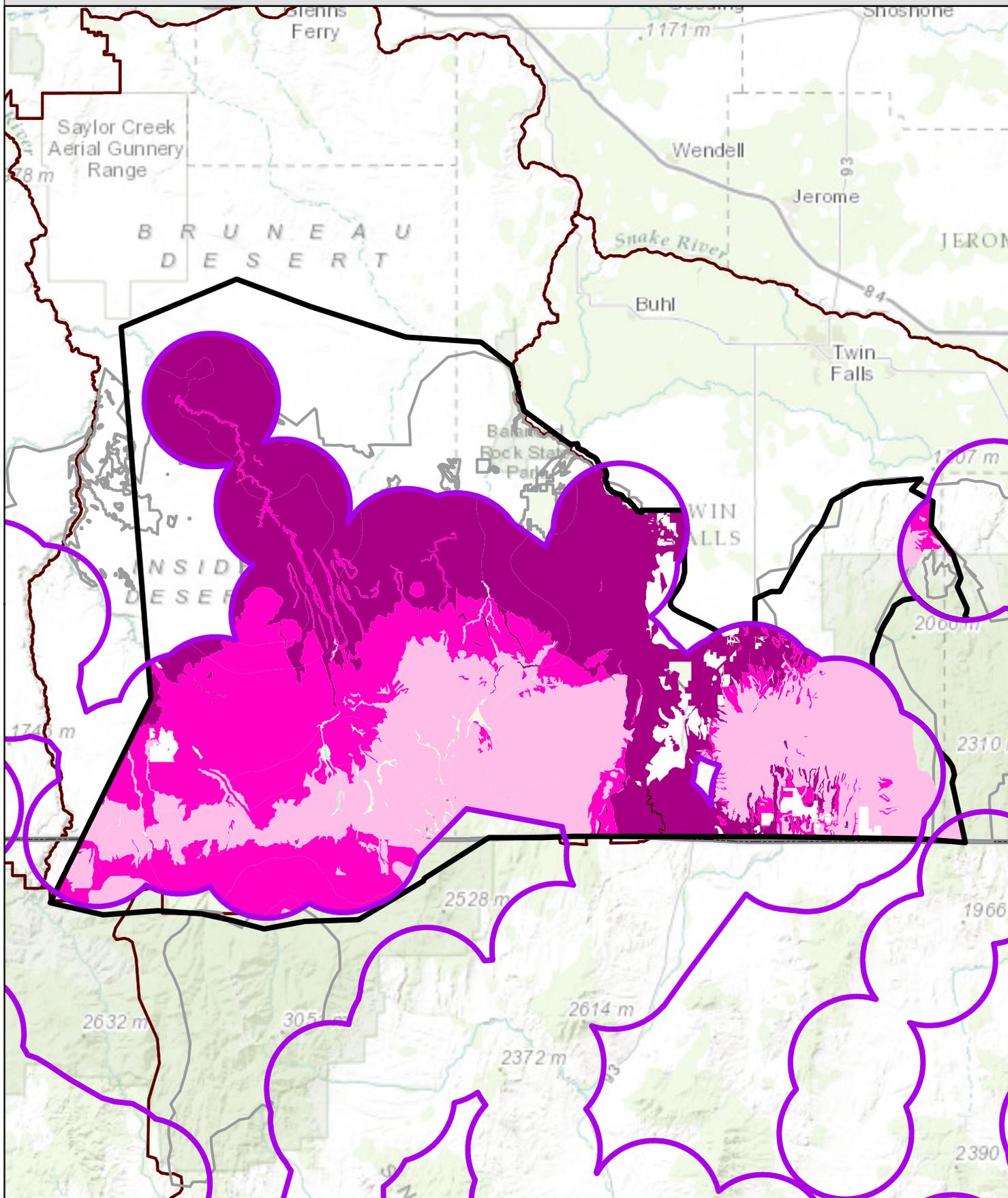


No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.



- Rogerson Project Planning Area
- Invasive Annuals Potential Treatment Areas

March 2015
Date Saved: 3/12/2015
Data Sources: BLM, ESRI Basedata
1:884,477

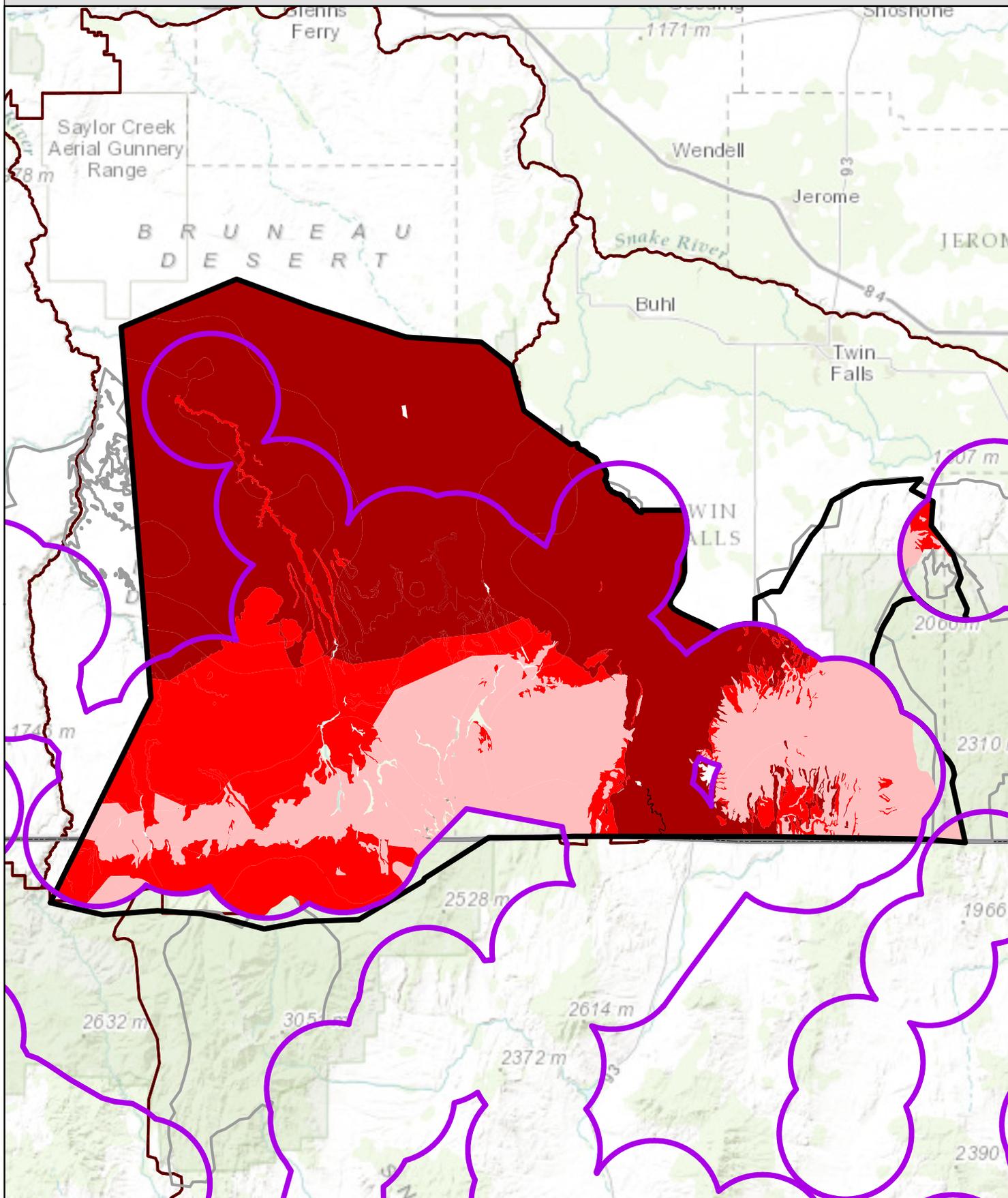


No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.



- Rogerson Project Planning Area
- Rogerson ESR 1st Priority
- Rogerson ESR 2nd Priority
- Rogerson ESR 3rd Priority

March 2015
Date Saved: 3/12/2015
Data Sources: BLM, ESRI Basedata
1:884,477

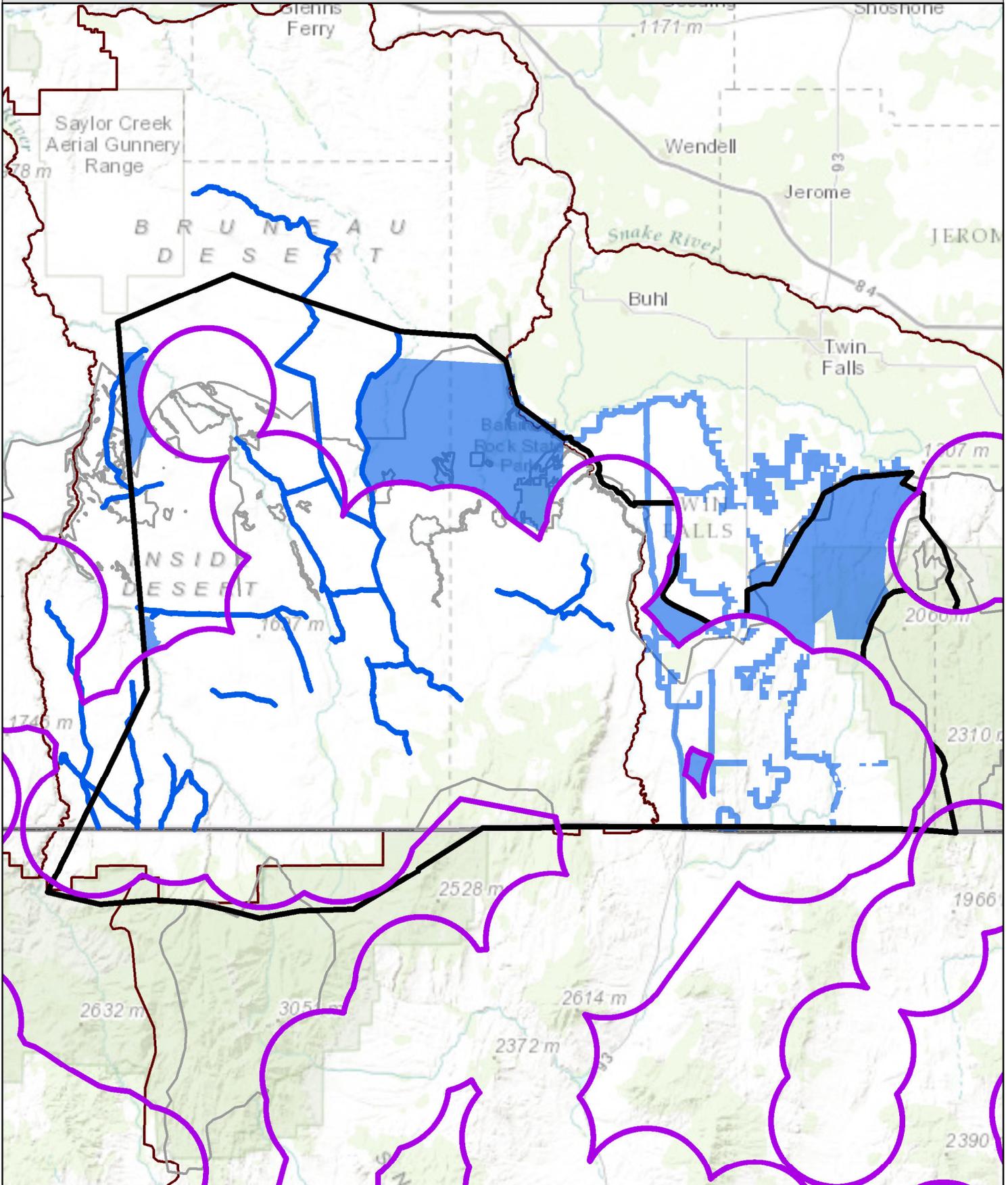


No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.



- Rogerson Project Planning Area
- Rogerson Fire 1st Priority
- Rogerson Fire 2nd Priority
- Rogerson Fire 3rd Priority

March 2015
Date Saved: 3/12/2015
Data Sources: BLM, ESRI Basedata
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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.

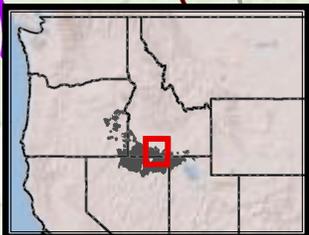
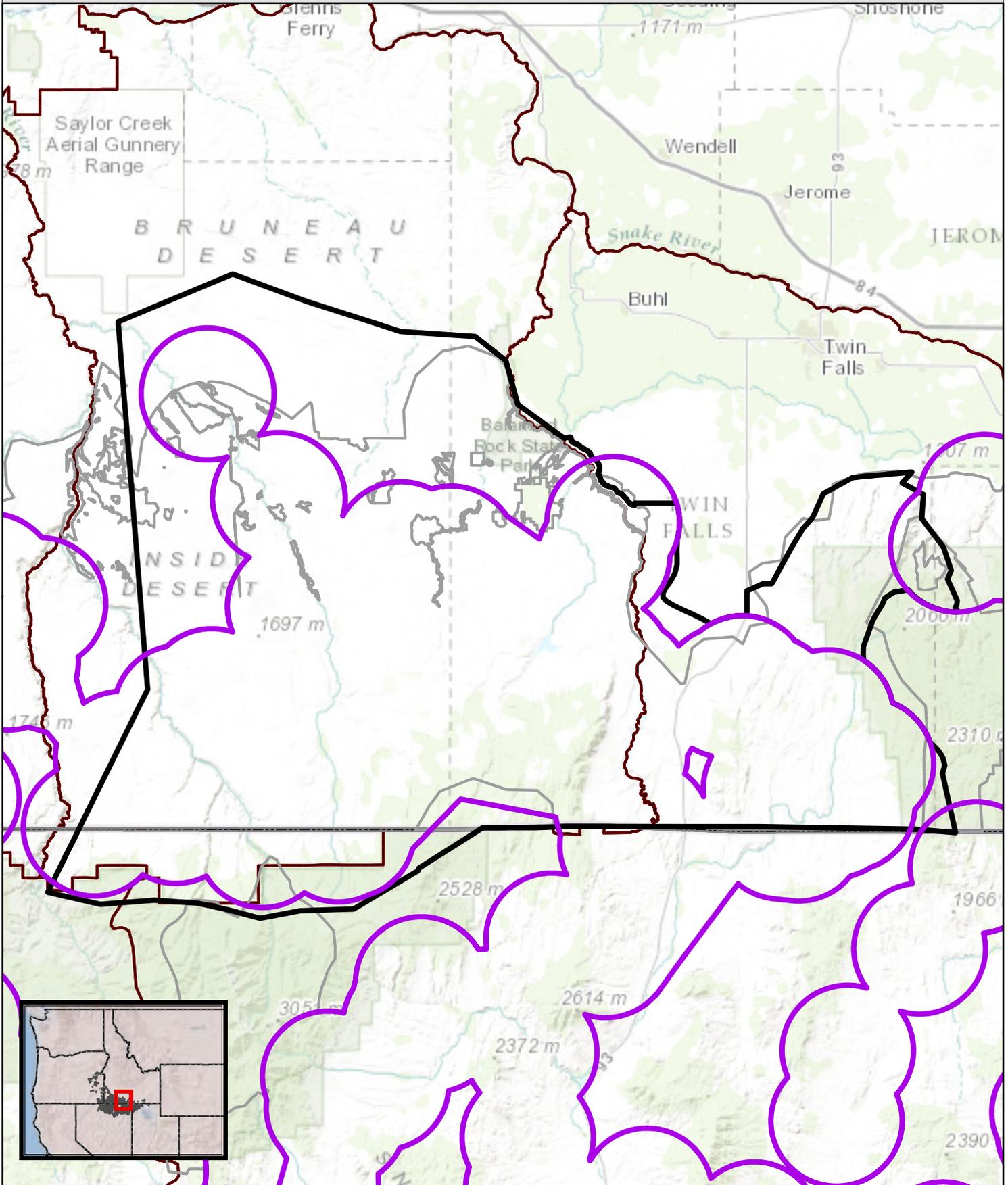


- Rogerson Project Planning Area
- Linear Fuels Management Potential Treatment Areas
- Fuels Management Potential Treatment Areas

March 2015
Date Saved: 3/12/2015
Data Sources: BLM, ESRI Basedata
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Rogerson Project Planning Area

Northern Great Basin
Bureau of Land Management
U.S. Department of the Interior

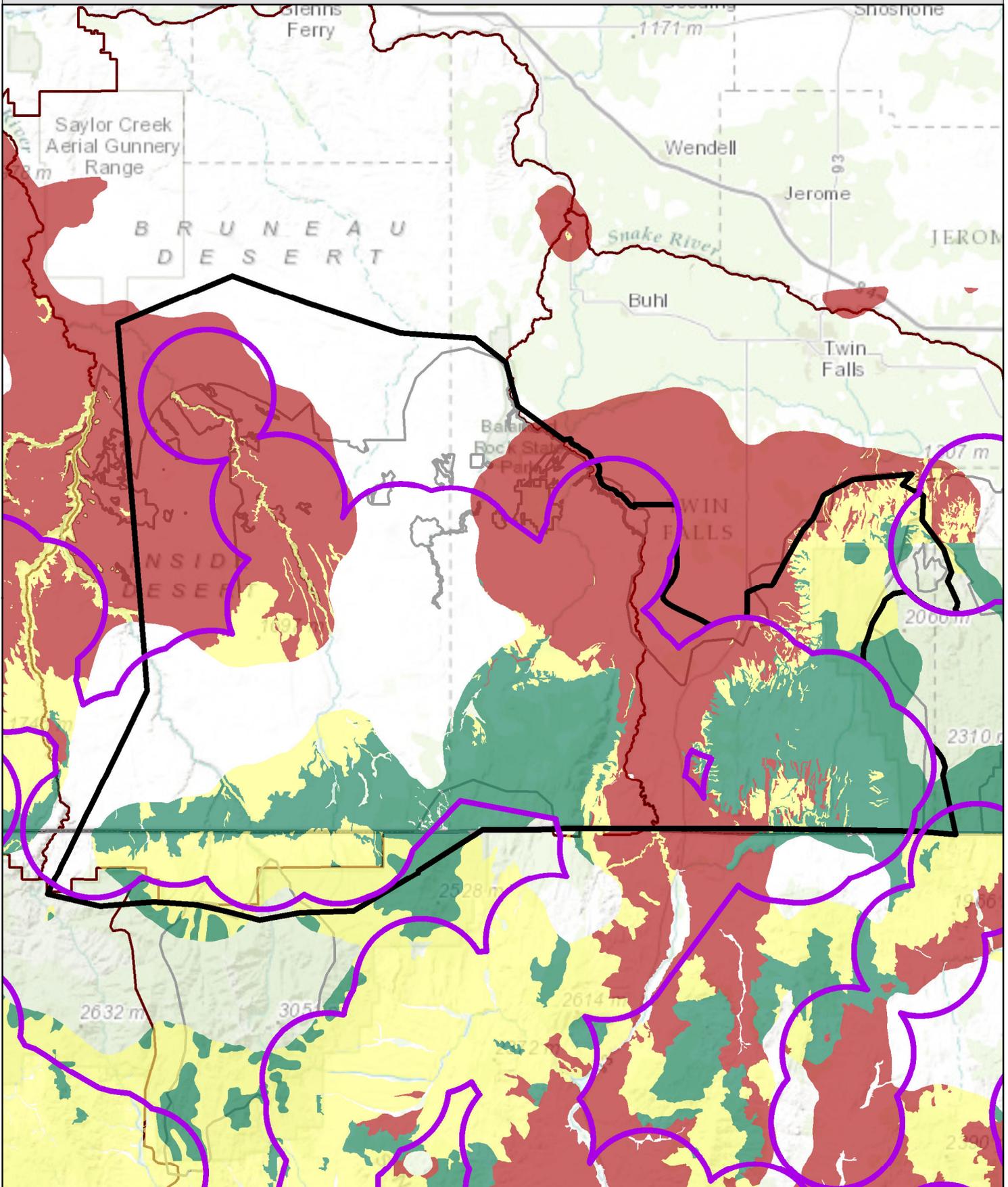


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Rogerson Project Planning Area

March 2015
Date Saved: 3/12/2015
Data Sources: BLM, ESRI Basedata
1:884,477

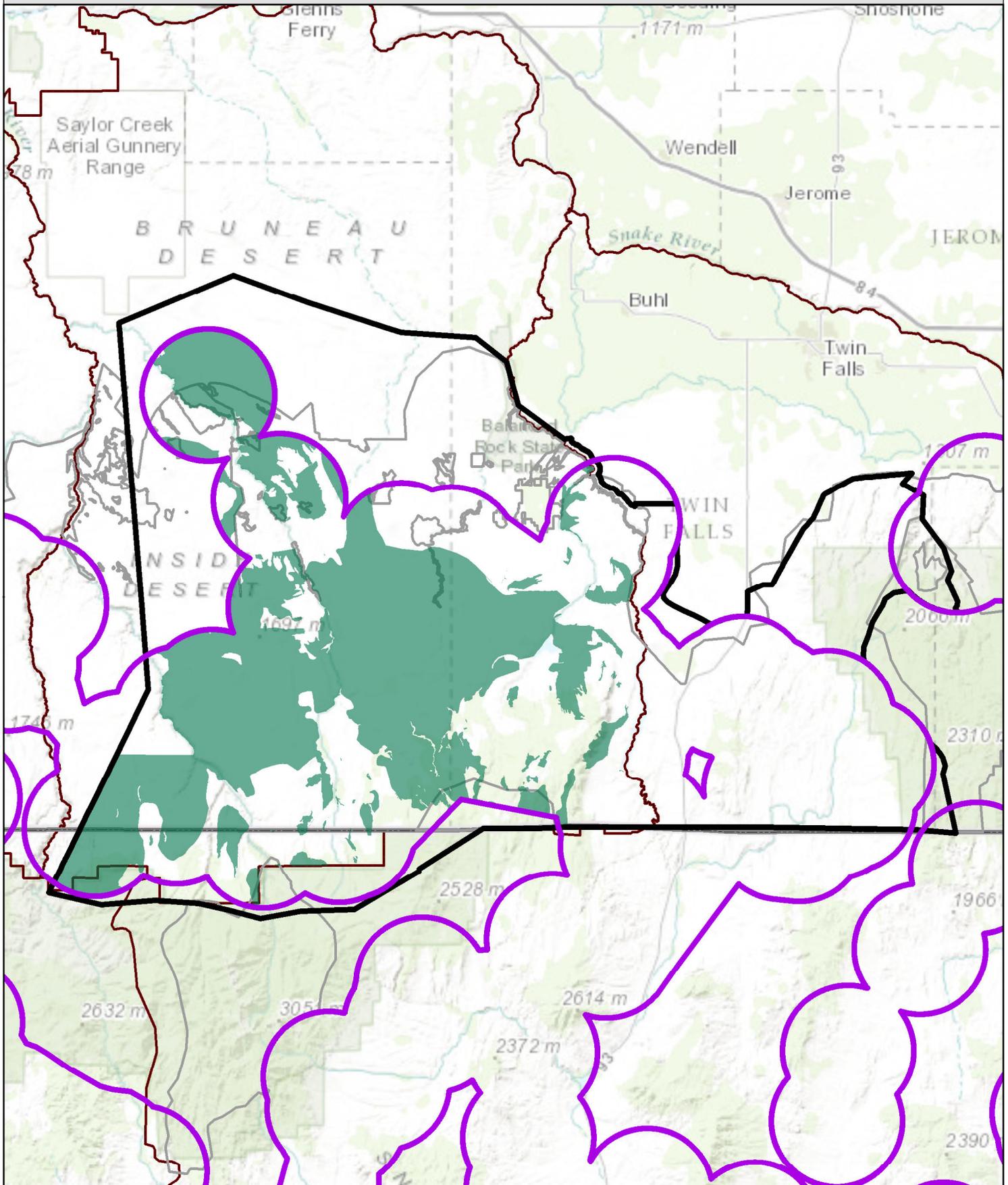


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 Rogerson Project Planning Area
Reportable Priorities
 1  2  3

March 2015
Date Saved: 3/12/2015
Data Sources: BLM, ESRI Basedata
1:884,477

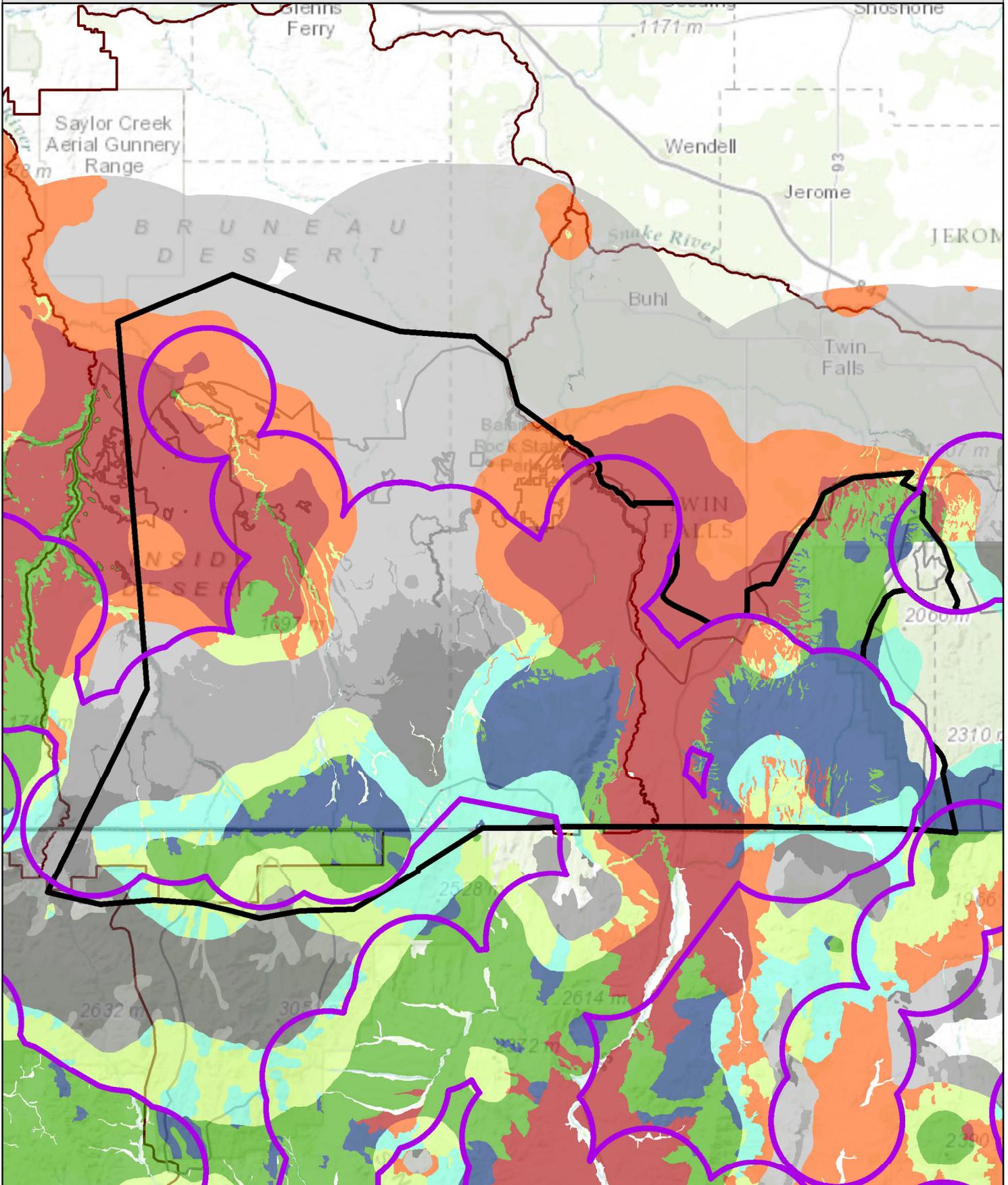


No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.

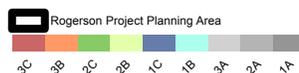


- Rogerson Project Planning Area
- Habitat Restoration Potential Treatment Areas

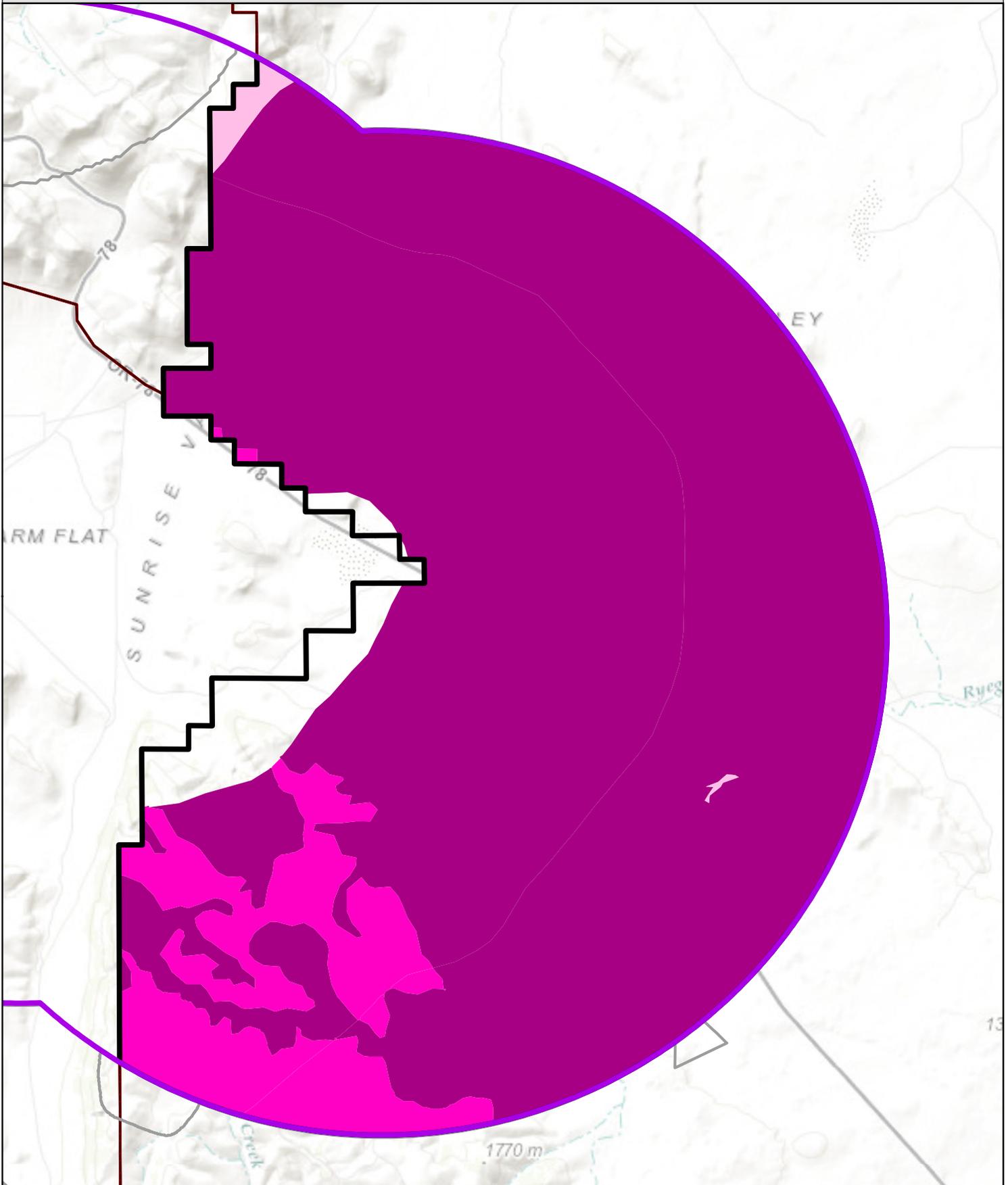
March 2015
Date Saved: 3/12/2015
Data Sources: BLM, ESRI Basedata
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March 2015
Date Saved: 3/12/2015
Data Sources: BLM, ESRI Basedata
1:884,477

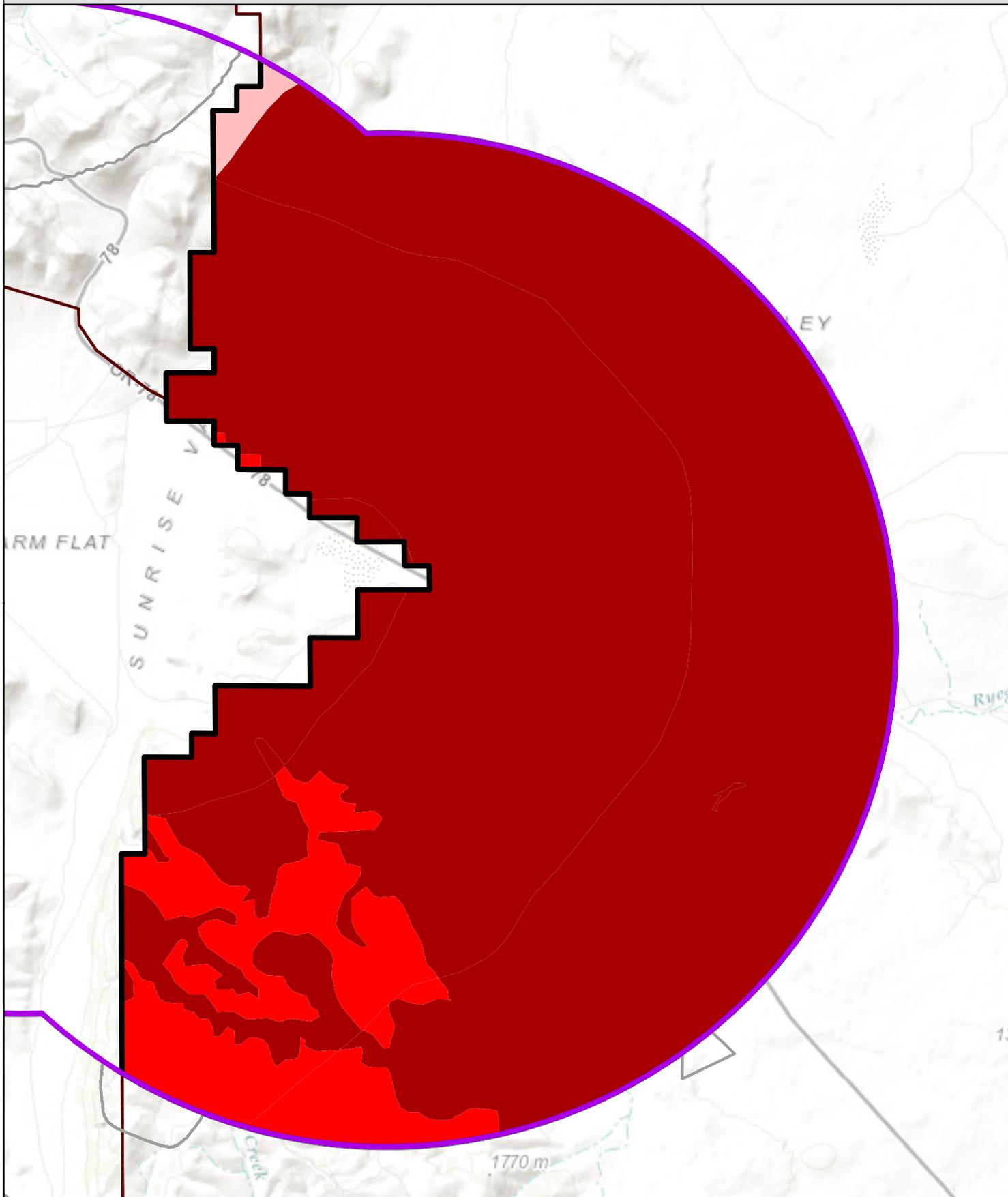


No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.



- Sheephead East Project Planning Area
- Sheephead East ESR 1st Priority
- Sheephead East ESR 2nd Priority
- Sheephead East ESR 3rd Priority

March 2015
Date Saved: 3/12/2015
Data Sources: BLM, ESRI Basedata
1:117,382

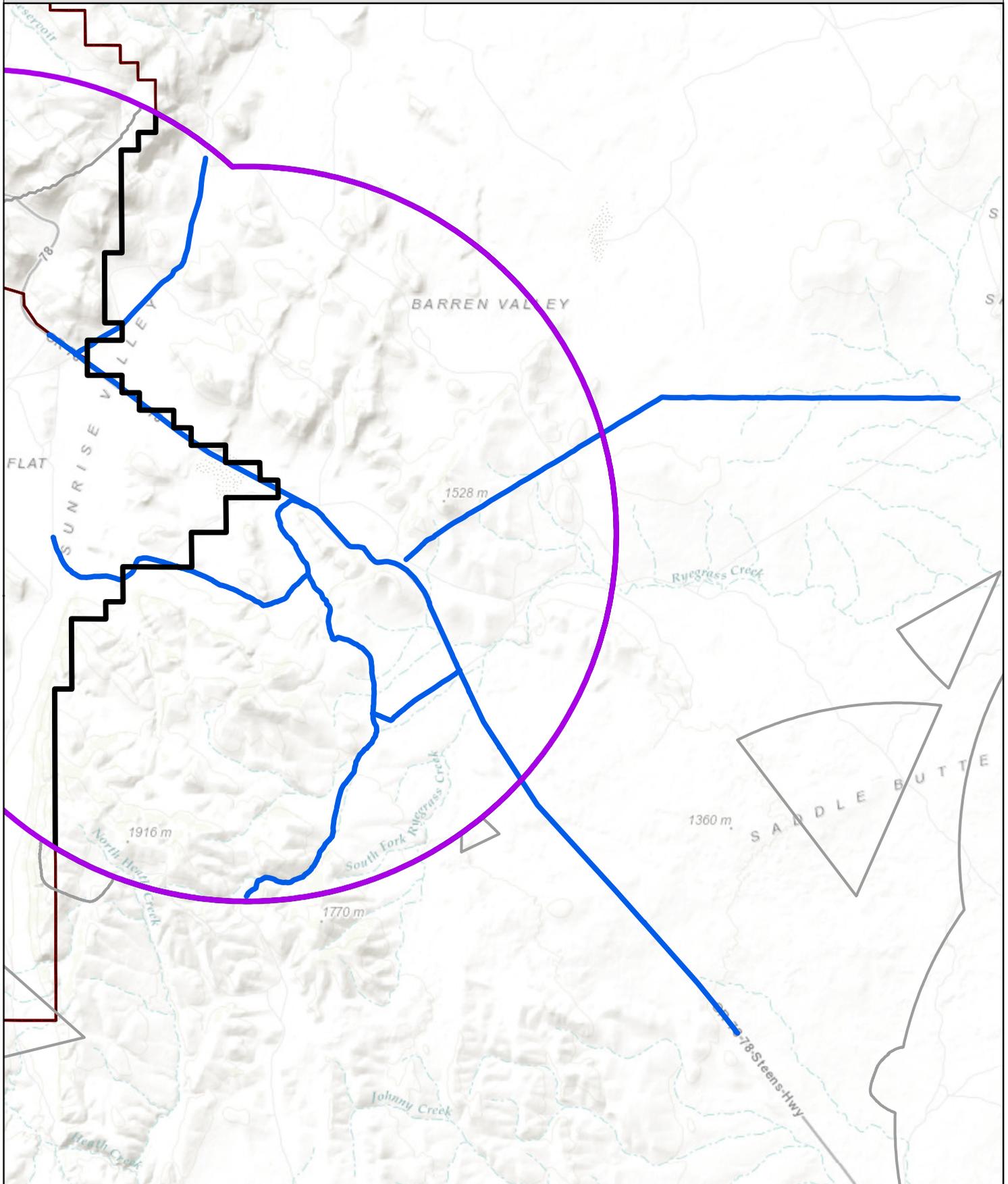


No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.



- Sheephead East Project Planning Area
- Sheephead East Fire 1st Priority
- Sheephead East Fire 2nd Priority
- Sheephead East Fire 3rd Priority

March 2015
Date Saved: 3/12/2015
Data Sources: BLM, ESRI Basedata
1:117,382



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.



Sheephead East Project Planning Area

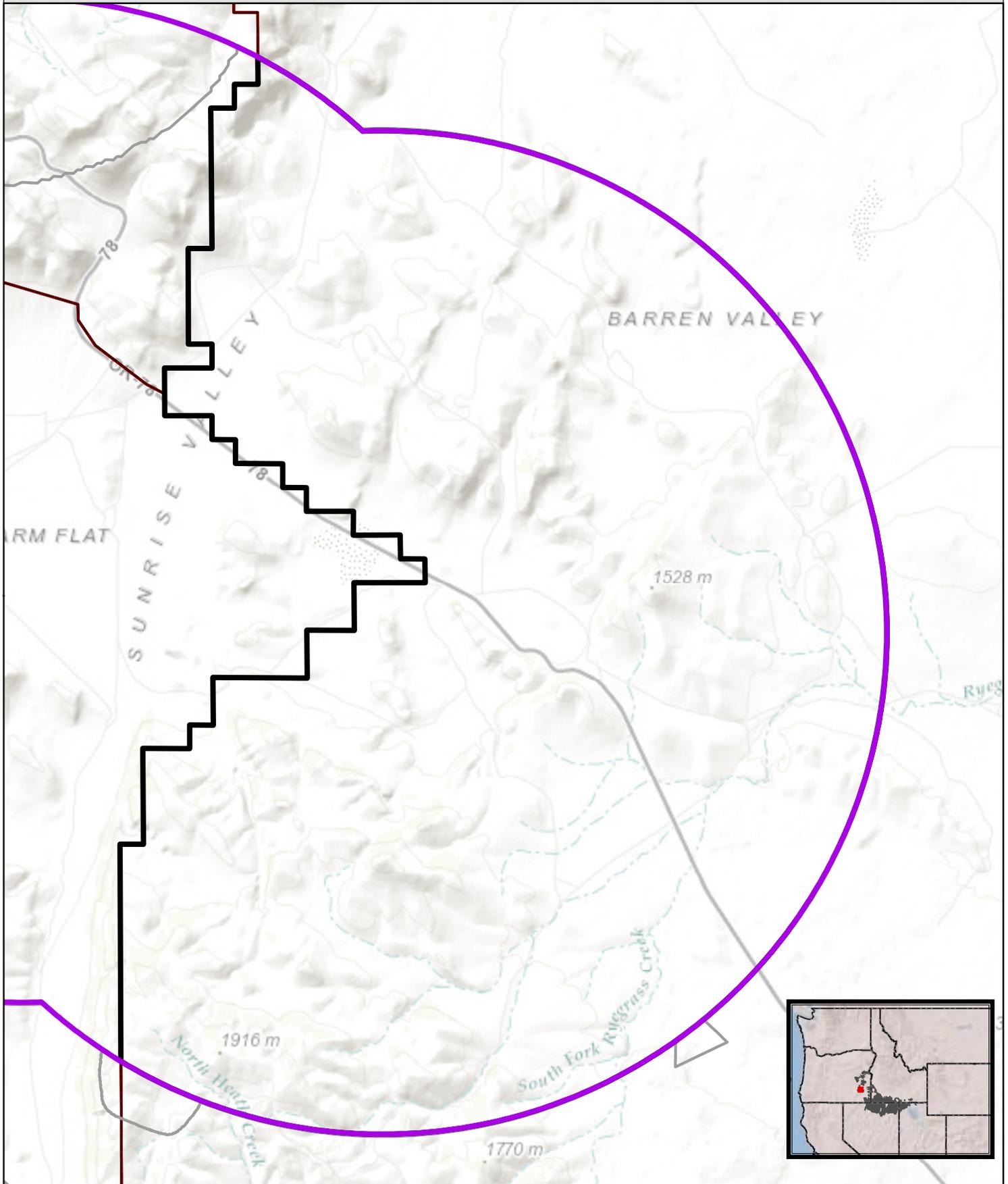


Linear Fuels Management Potential Treatment Areas

March 2015
Date Saved: 3/12/2015
Data Sources: BLM, ESRI Basedata
1:160,276

Sheephead East Project Planning Area

Northern Great Basin
Bureau of Land Management
U.S. Department of the Interior

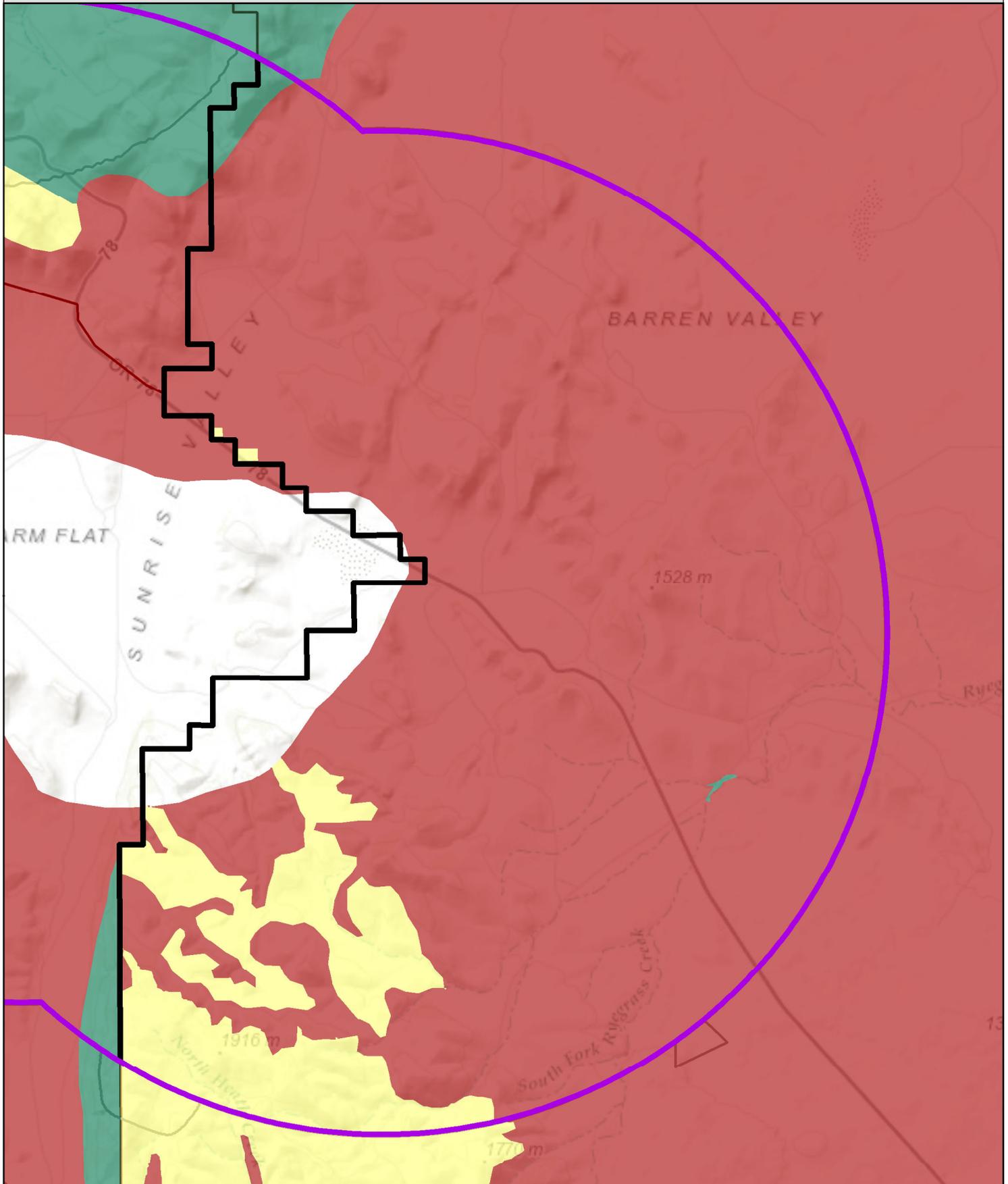


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 Sheephead East Project Planning Area

March 2015
Date Saved: 3/12/2015
Data Sources: BLM, ESRI Basedata
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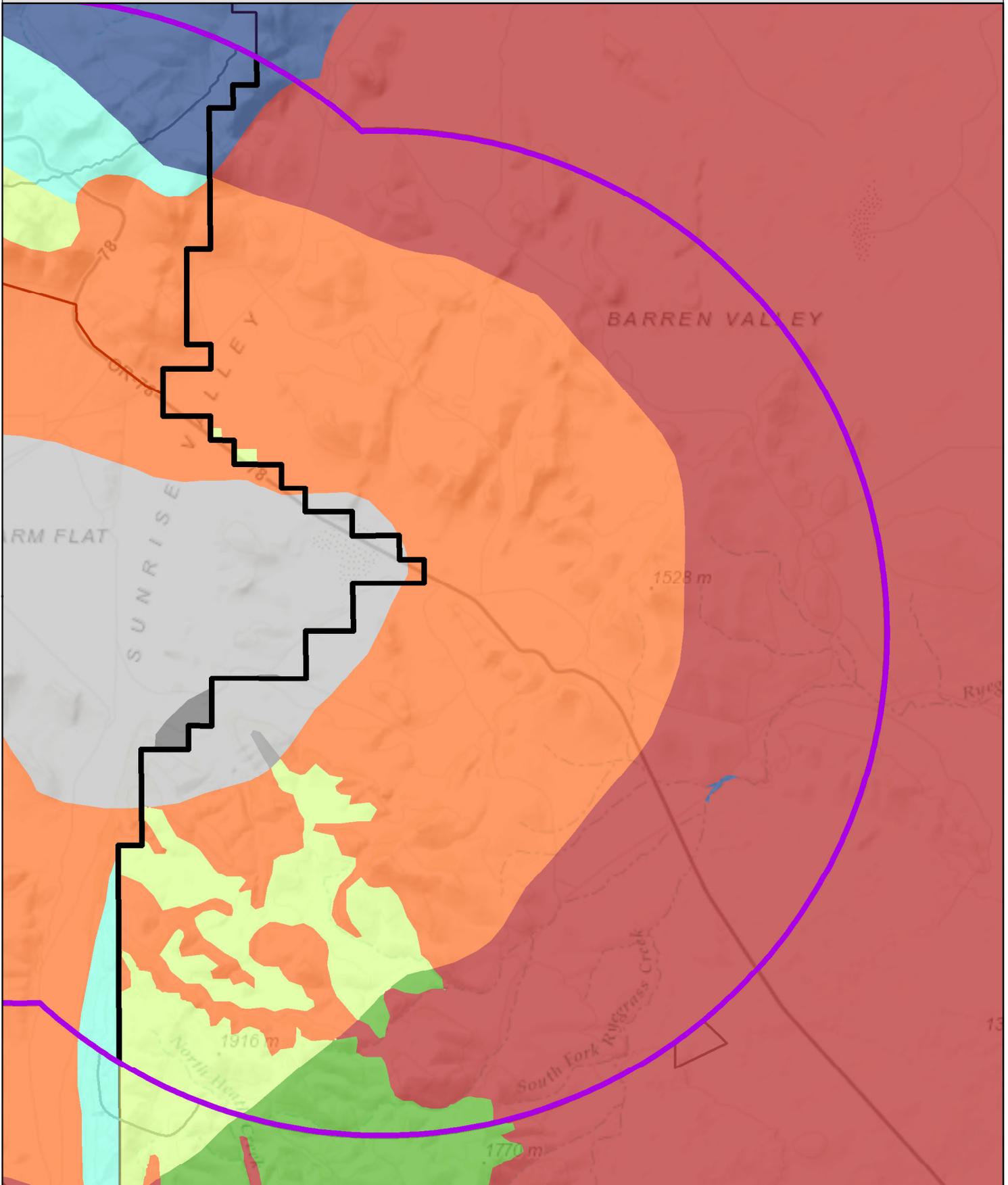


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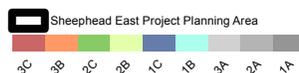


Sheephead East Project Planning Area
Reportable Priorities
1 2 3

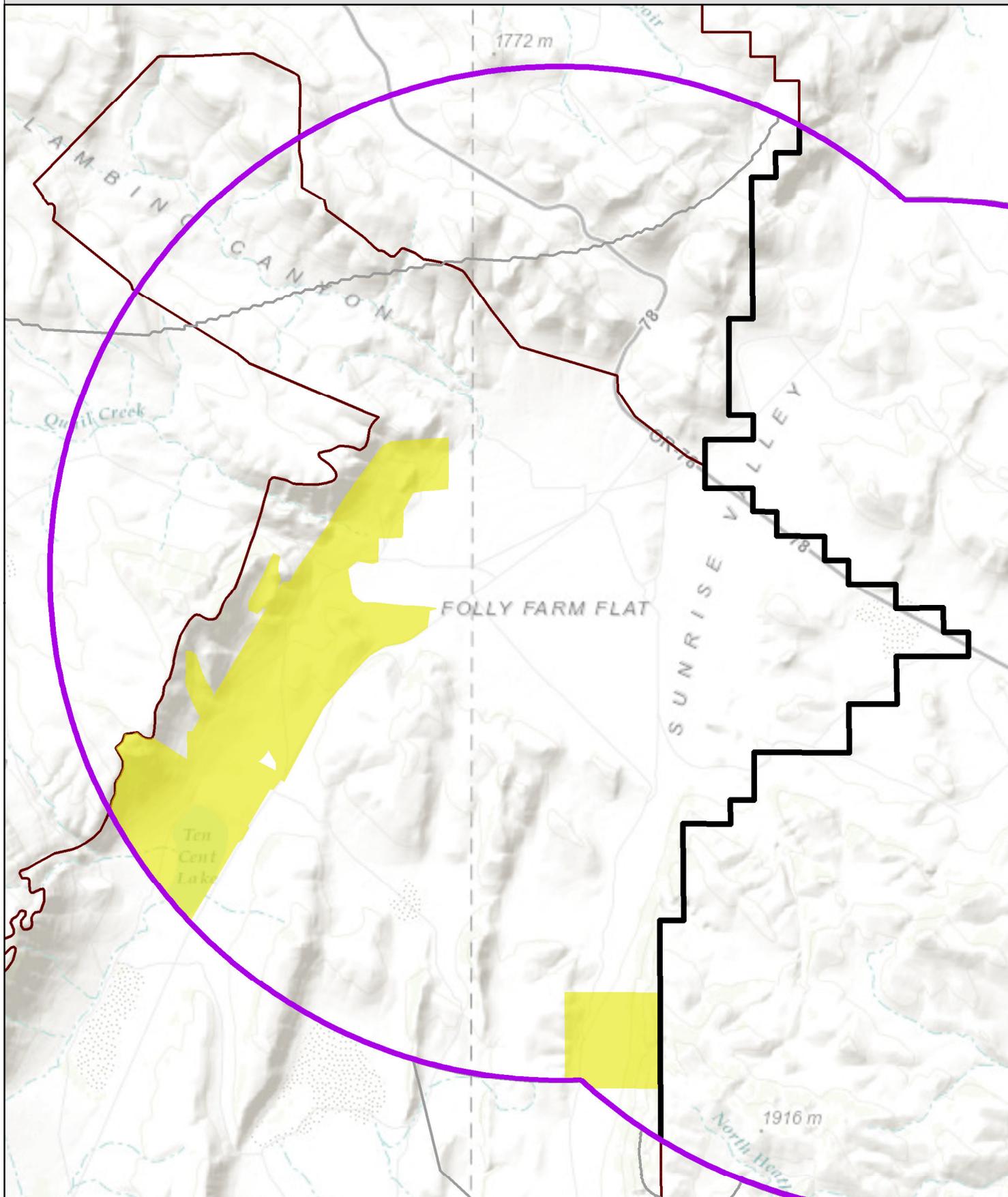
March 2015
Date Saved: 3/12/2015
Data Sources: BLM, ESRI Basedata
1:117,382



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March 2015
Date Saved: 3/12/2015
Data Sources: BLM, ESRI Basedata
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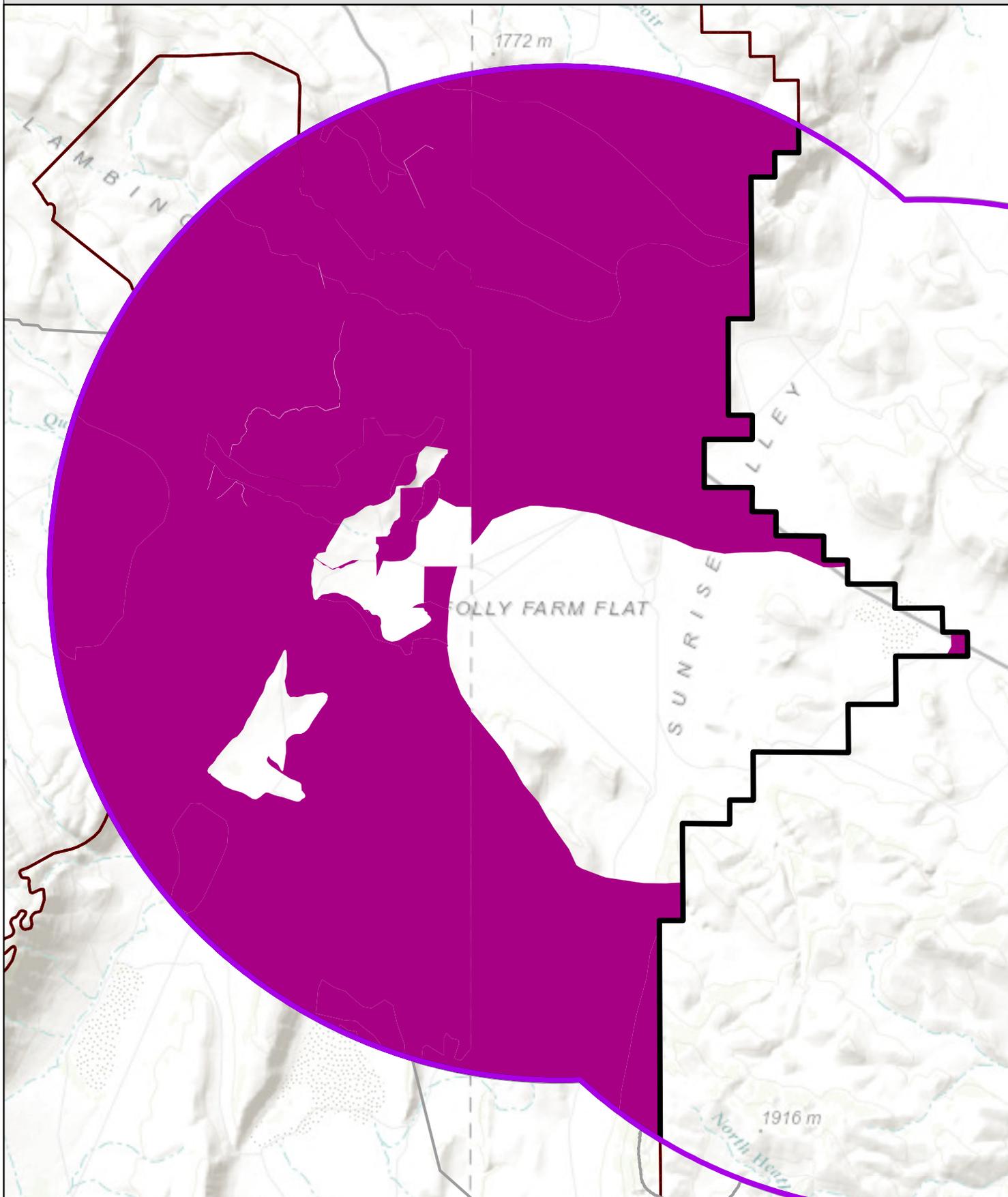


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Sheephead West Project Planning Area
Invasive Annuals Potential Treatment Areas

March 2015
Date Saved: 3/12/2015
Data Sources: BLM, ESRI Basedata
1:117,338



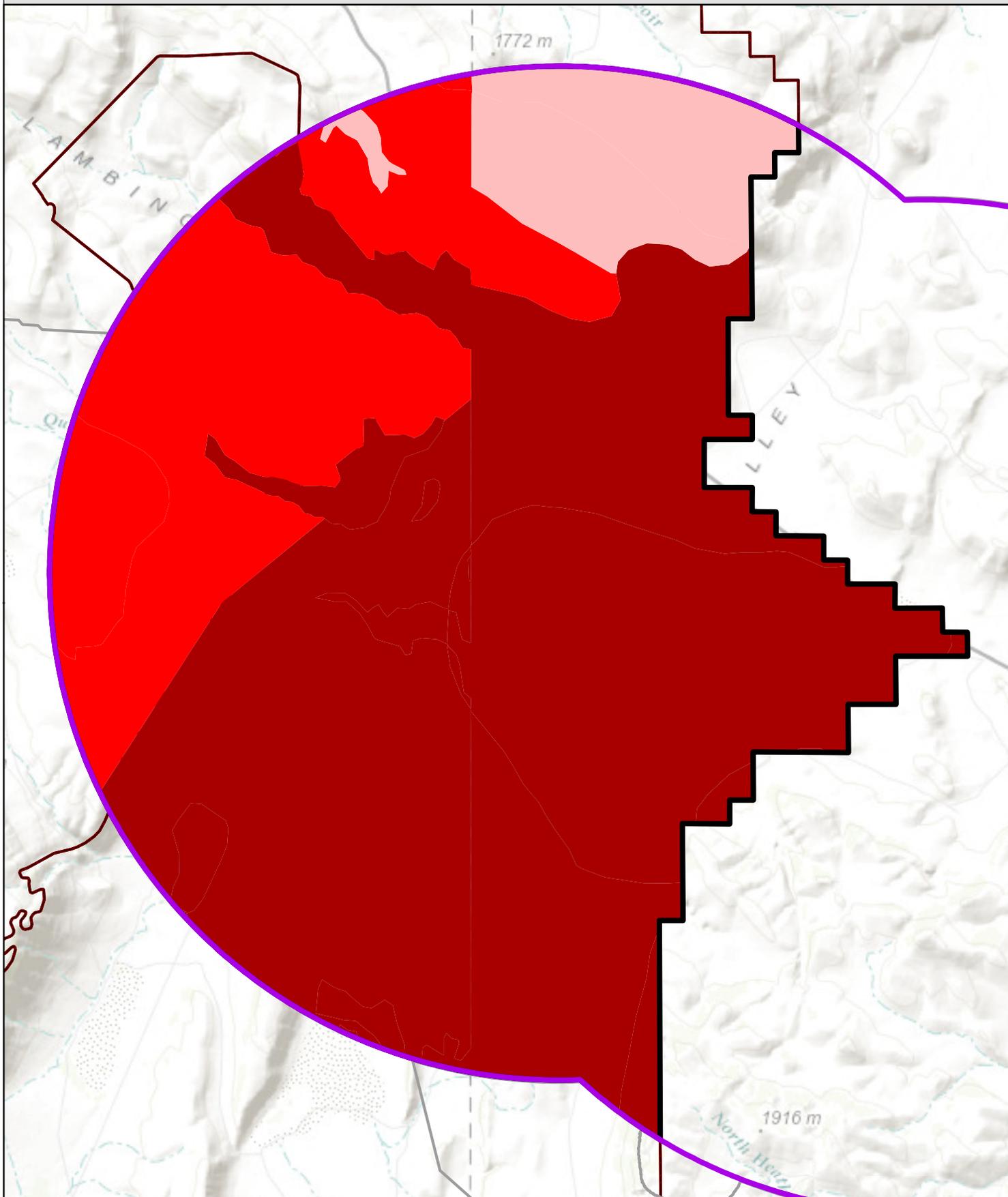
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Sheephead West Project Planning Area

Sheephead West ESR 1st Priority

March 2015
Date Saved: 3/12/2015
Data Sources: BLM, ESRI Basedata
1:117,338

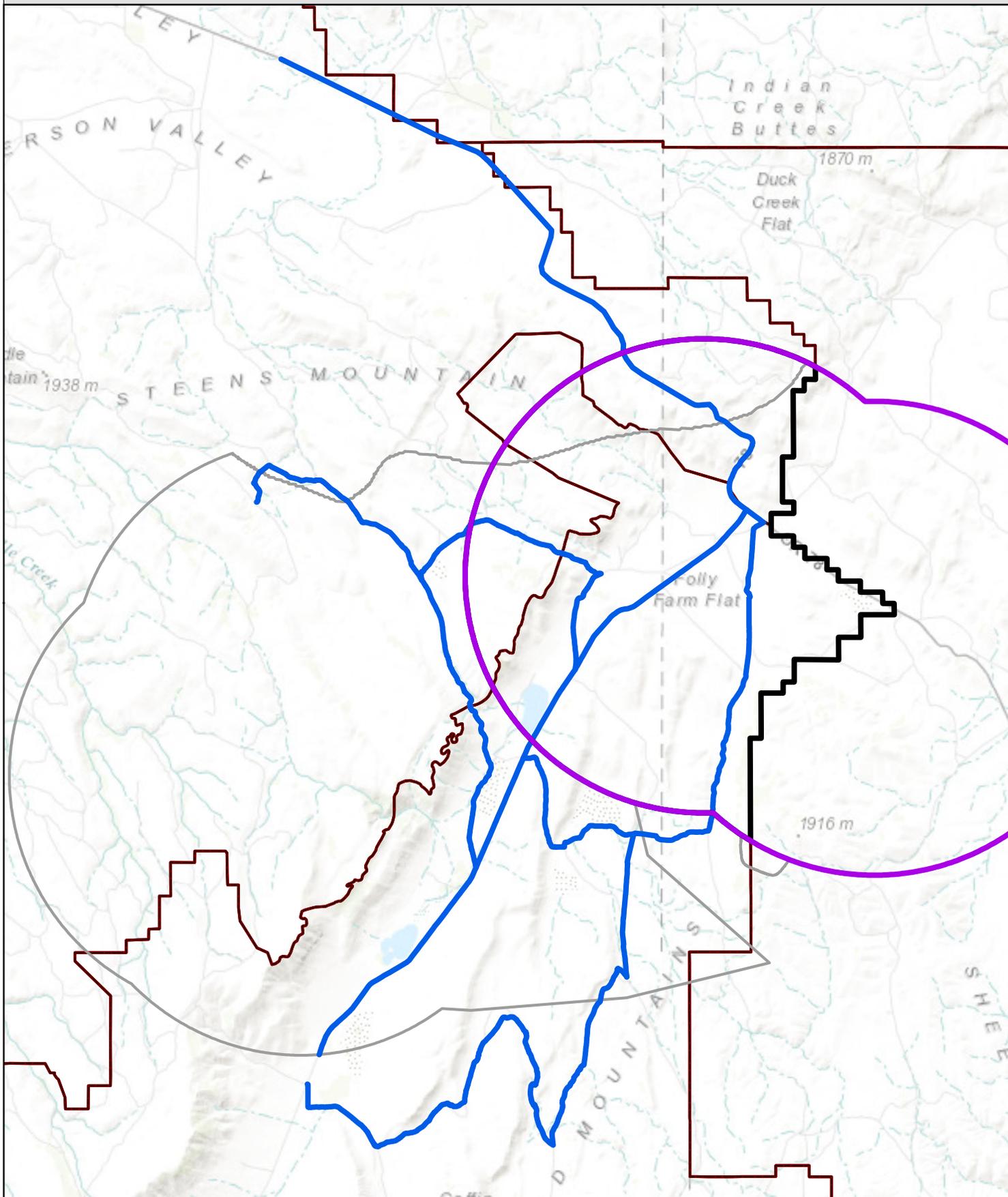


No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.



- Sheephead West Project Planning Area
- Sheephead West Fire 1st Priority
- Sheephead West Fire 2nd Priority
- Sheephead West Fire 3rd Priority

March 2015
Date Saved: 3/12/2015
Data Sources: BLM, ESRI Basedata
1:117,338



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.

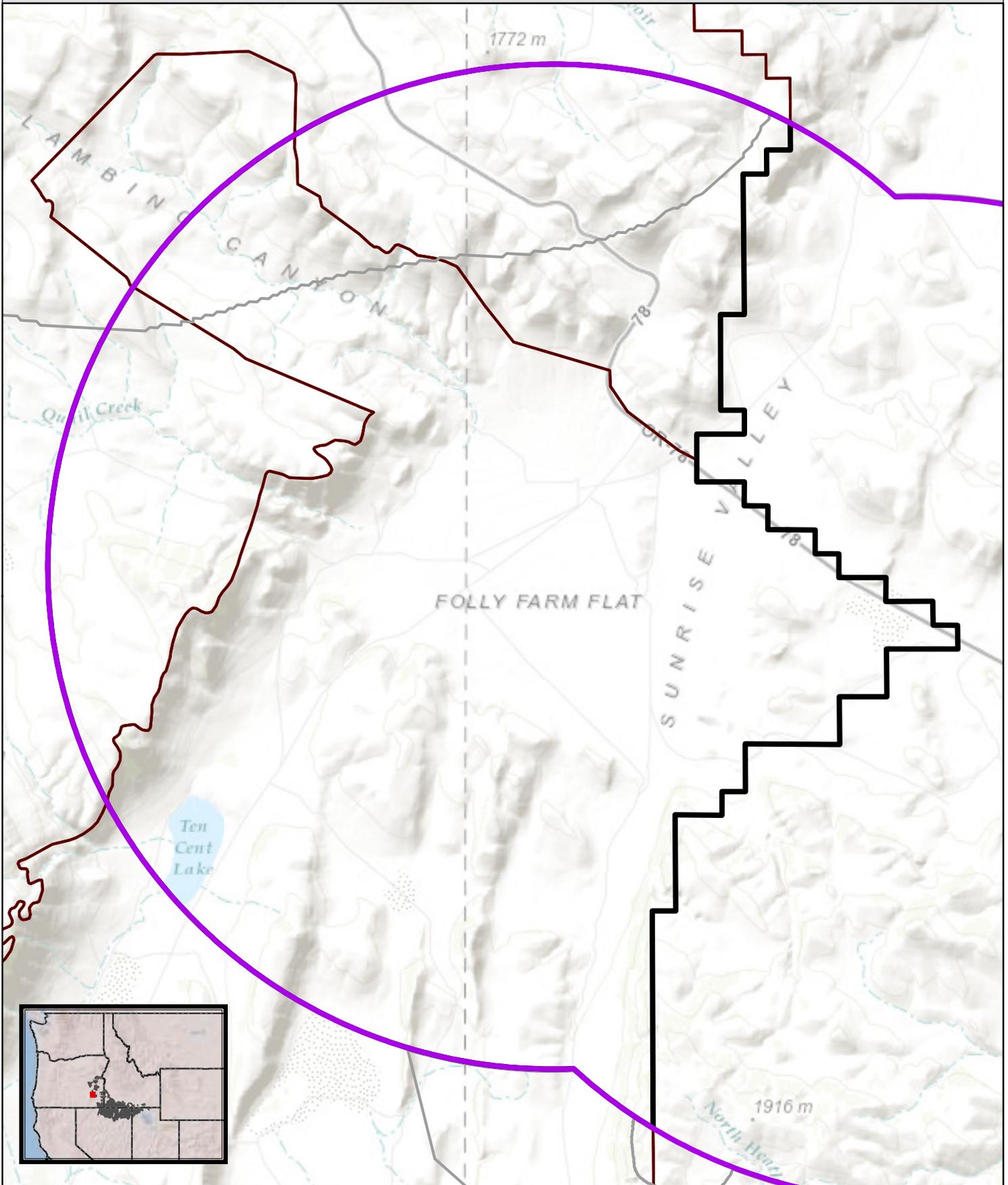


- Sheephead West Project Planning Area
- Linear Fuels Management Potential Treatment Areas

March 2015
Date Saved: 3/12/2015
Data Sources: BLM, ESRI Basedata
1:251,033

Sheephead West Project Planning Area

Northern Great Basin
Bureau of Land Management
U.S. Department of the Interior

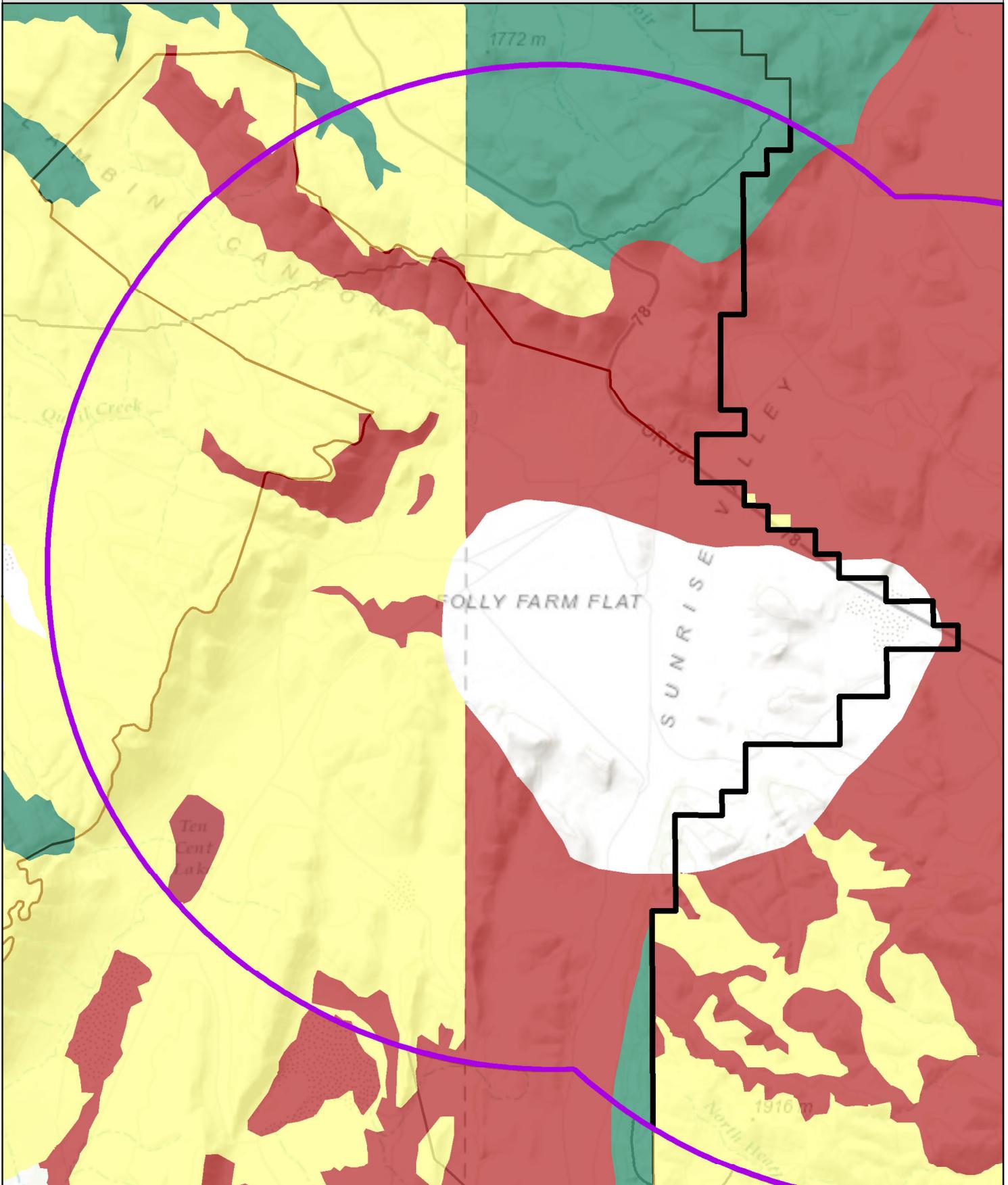


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Sheephead West Project Planning Area

March 2015
Date Saved: 3/12/2015
Data Sources: BLM, ESRI Basedata
1:117,338



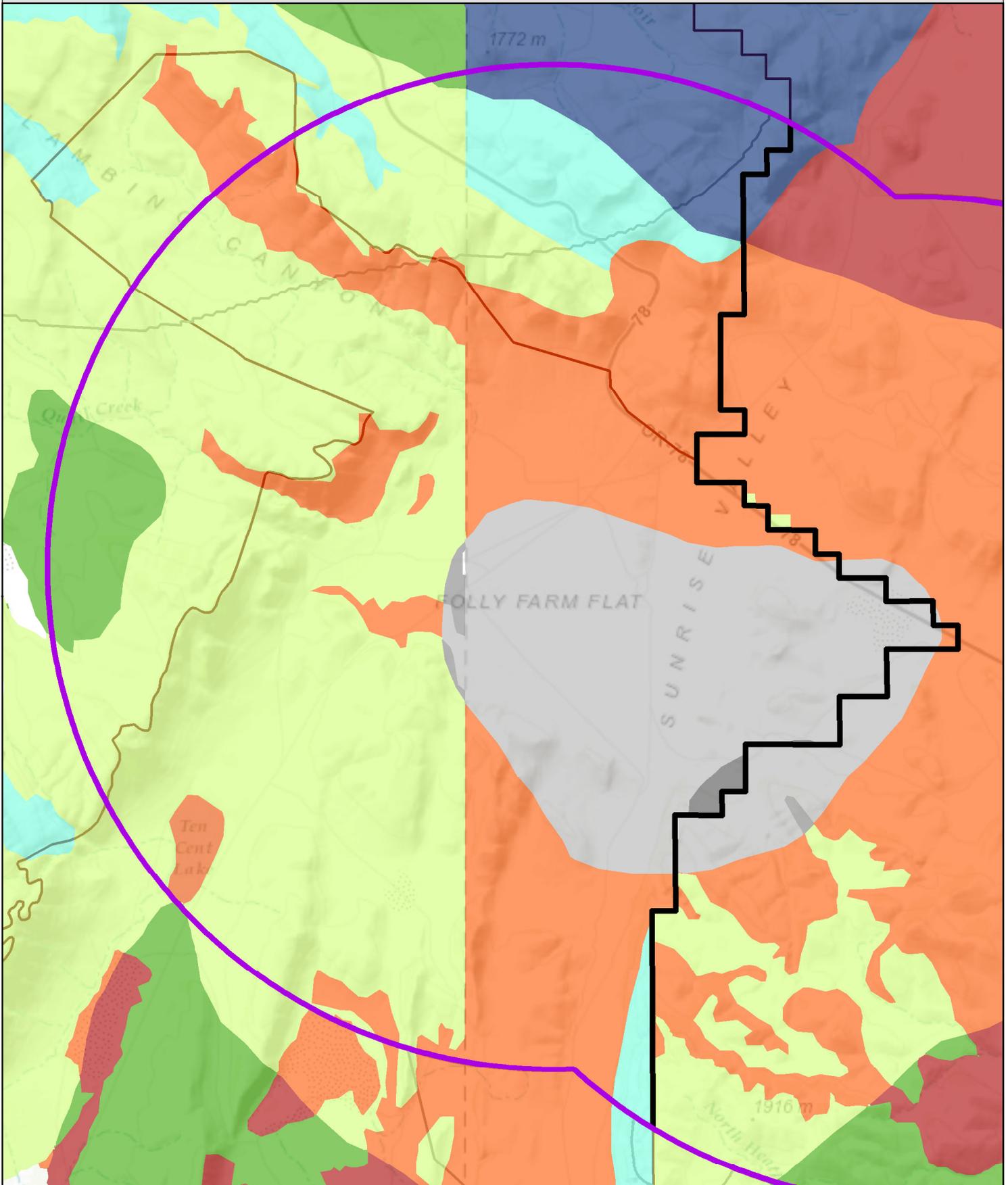
No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.



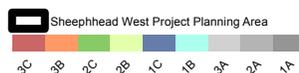
Sheephead West Project Planning Area
Reportable Priorities

Red	Yellow	Green
1	2	3

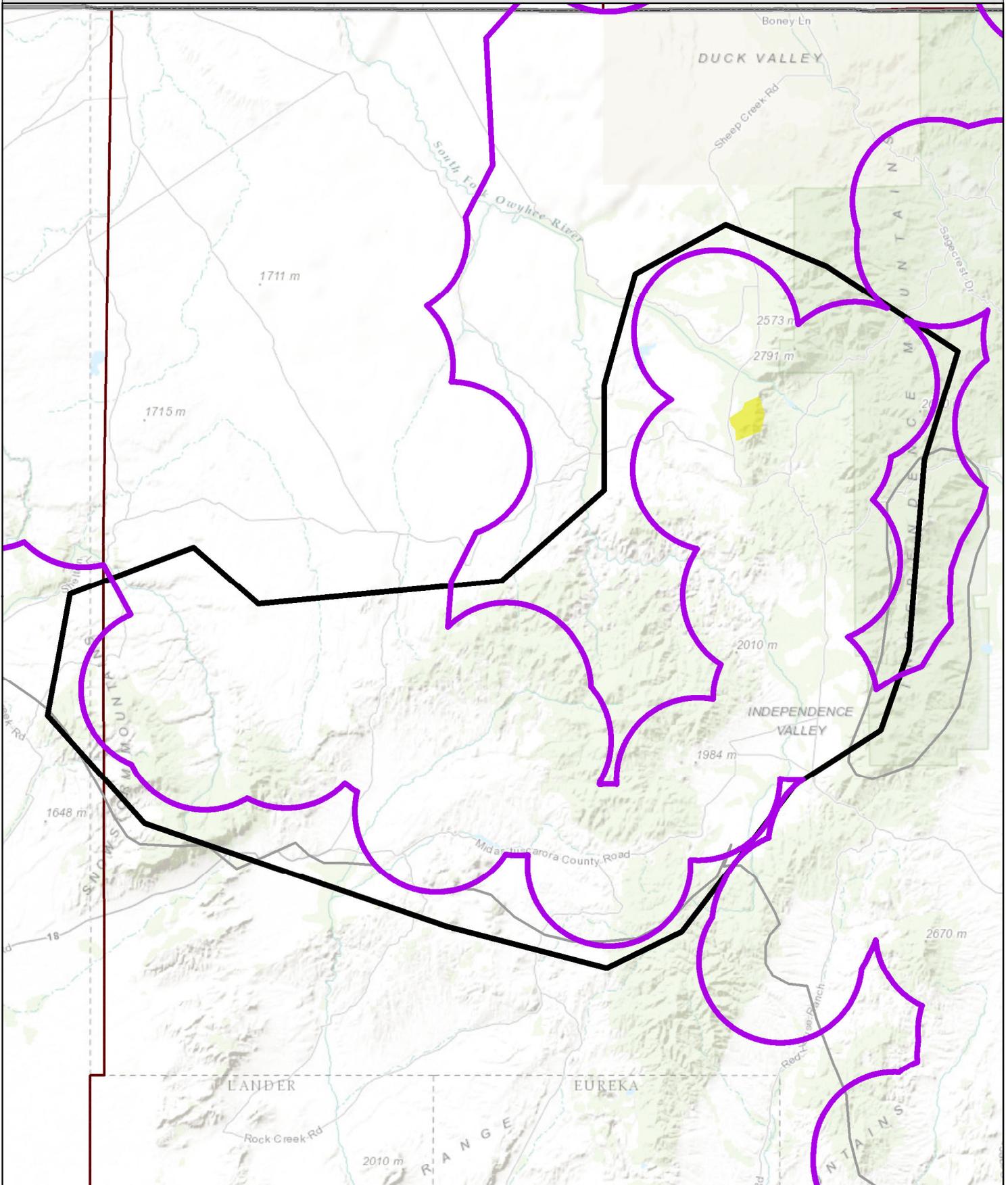
March 2015
Date Saved: 3/12/2015
Data Sources: BLM, ESRI Basedata
1:117,338



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March 2015
Date Saved: 3/12/2015
Data Sources: BLM, ESRI Basedata
1:117,338



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Tuscarora Project Planning Area



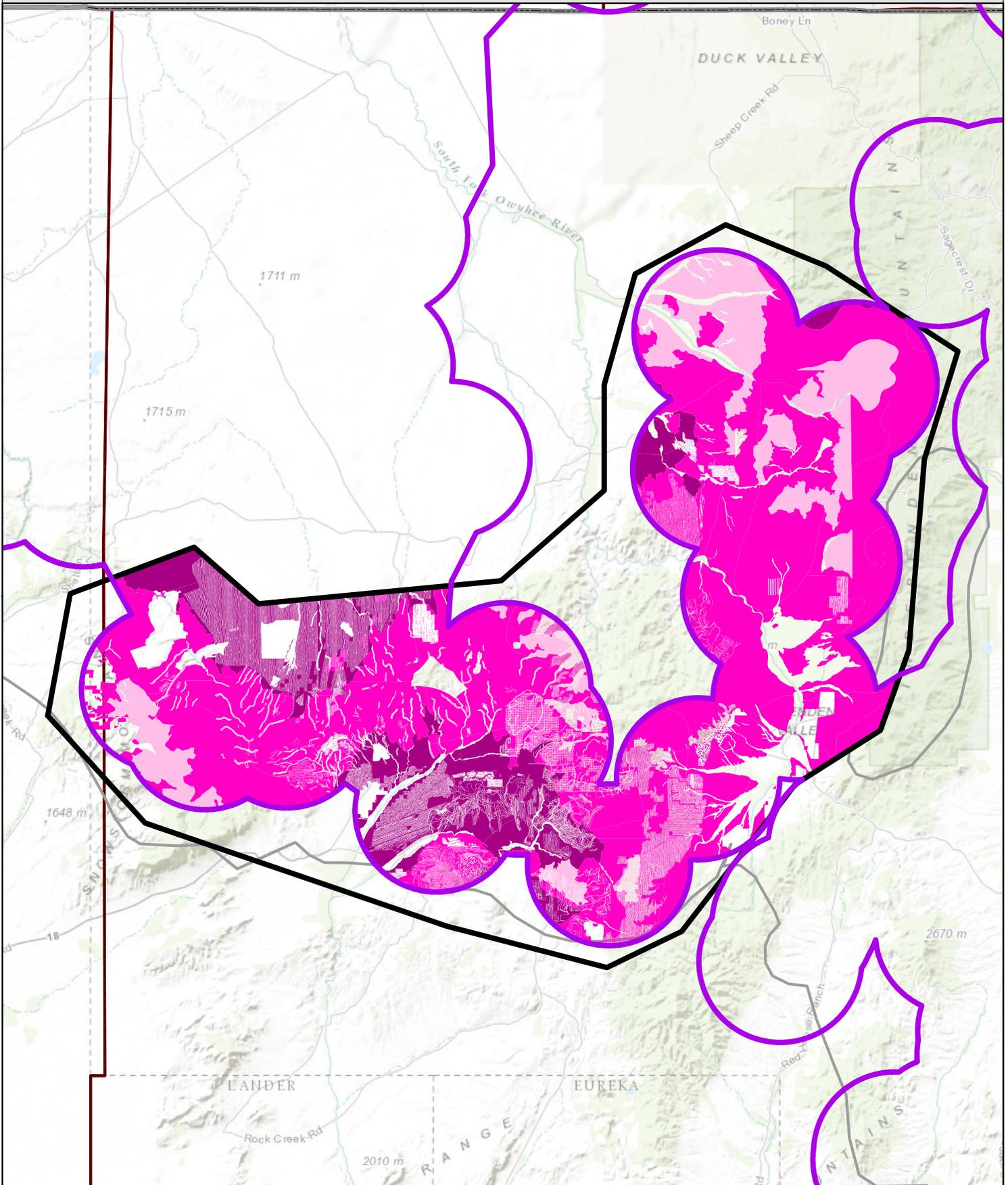
Invasive Annuals Potential Treatment Areas

March 2015

Date Saved: 3/12/2015

Data Sources: BLM, ESRI Basedata

1:707,006

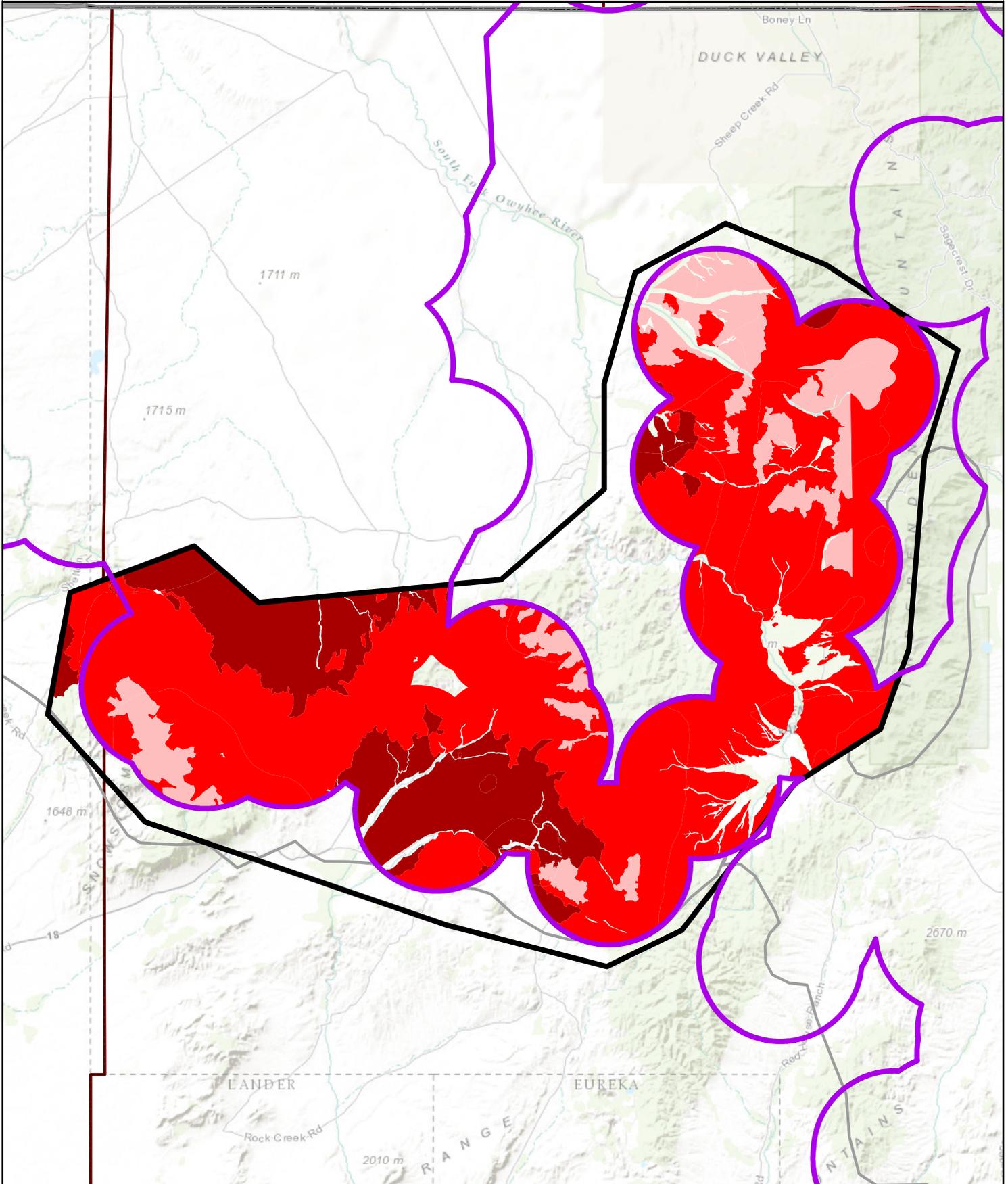


No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.



- Tuscarora Project Planning Area
- Tuscarora ESR 1st Priority
- Tuscarora ESR 2nd Priority
- Tuscarora ESR 3rd Priority

March 2015
Date Saved: 3/12/2015
Data Sources: BLM, ESRI Basedata
1:707,006

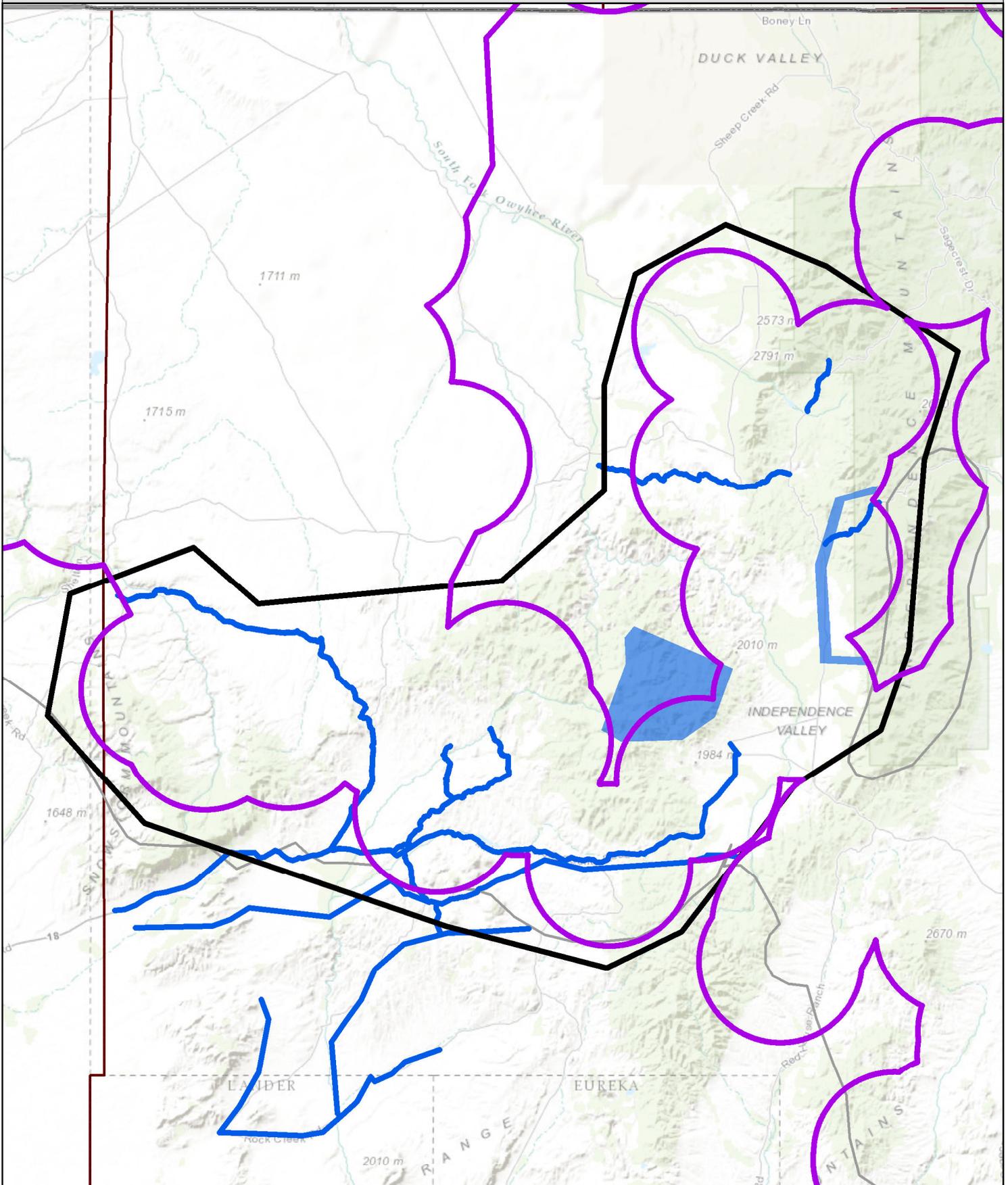


No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.



- Tuscarora Project Planning Area
- Tuscarora Fire 1st Priority
- Tuscarora Fire 2nd Priority
- Tuscarora Fire 3rd Priority

March 2015
Date Saved: 3/12/2015
Data Sources: BLM, ESRI Basedata
1:707,006



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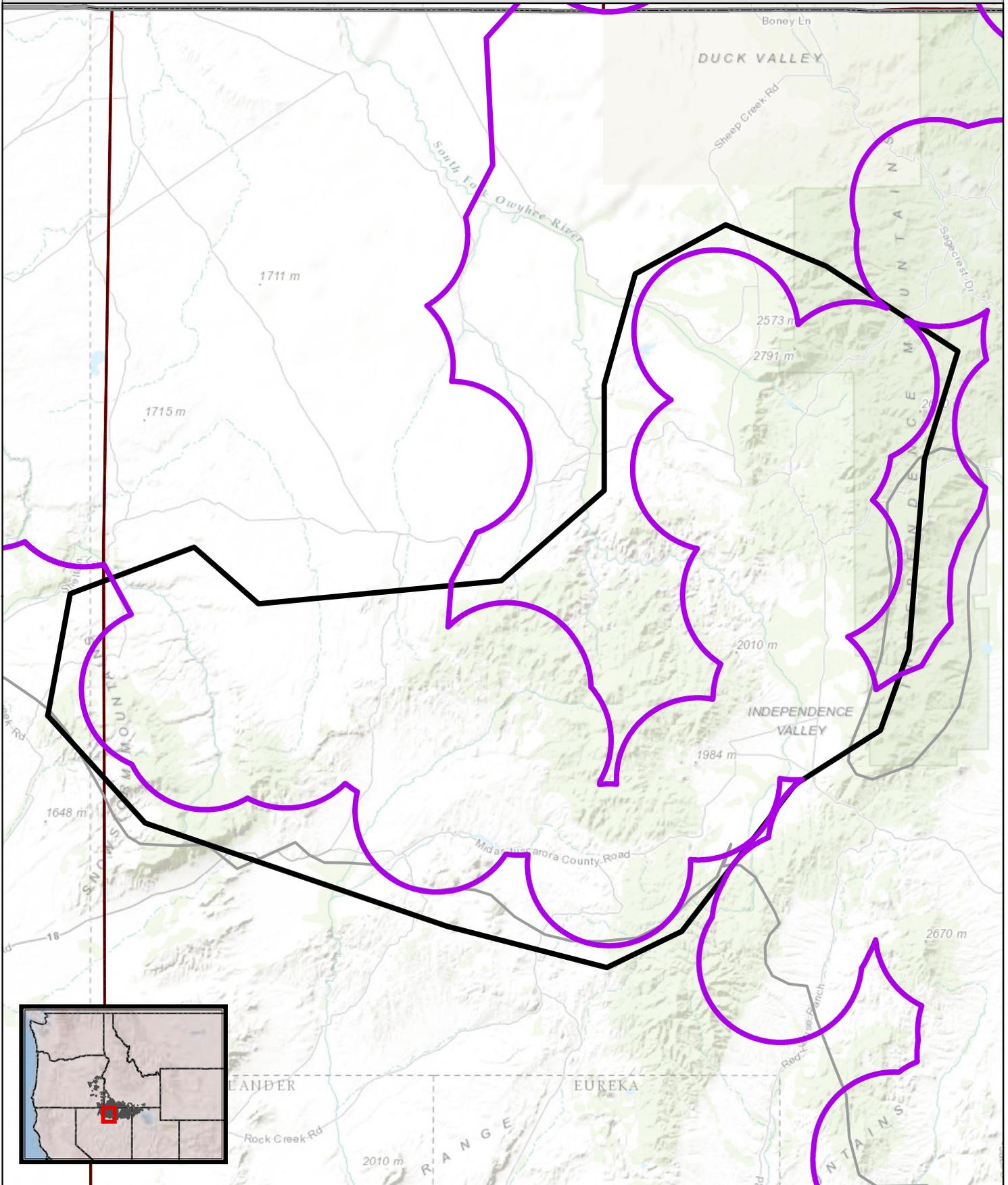


-  Tuscarora Project Planning Area
-  Linear Fuels Management Potential Treatment Areas
-  Fuels Management Potential Treatment Areas

March 2015
 Date Saved: 3/12/2015
 Data Sources: BLM, ESRI Basedata
 1:707,006

Tuscarora Project Planning Area

Northern Great Basin
Bureau of Land Management
U.S. Department of the Interior

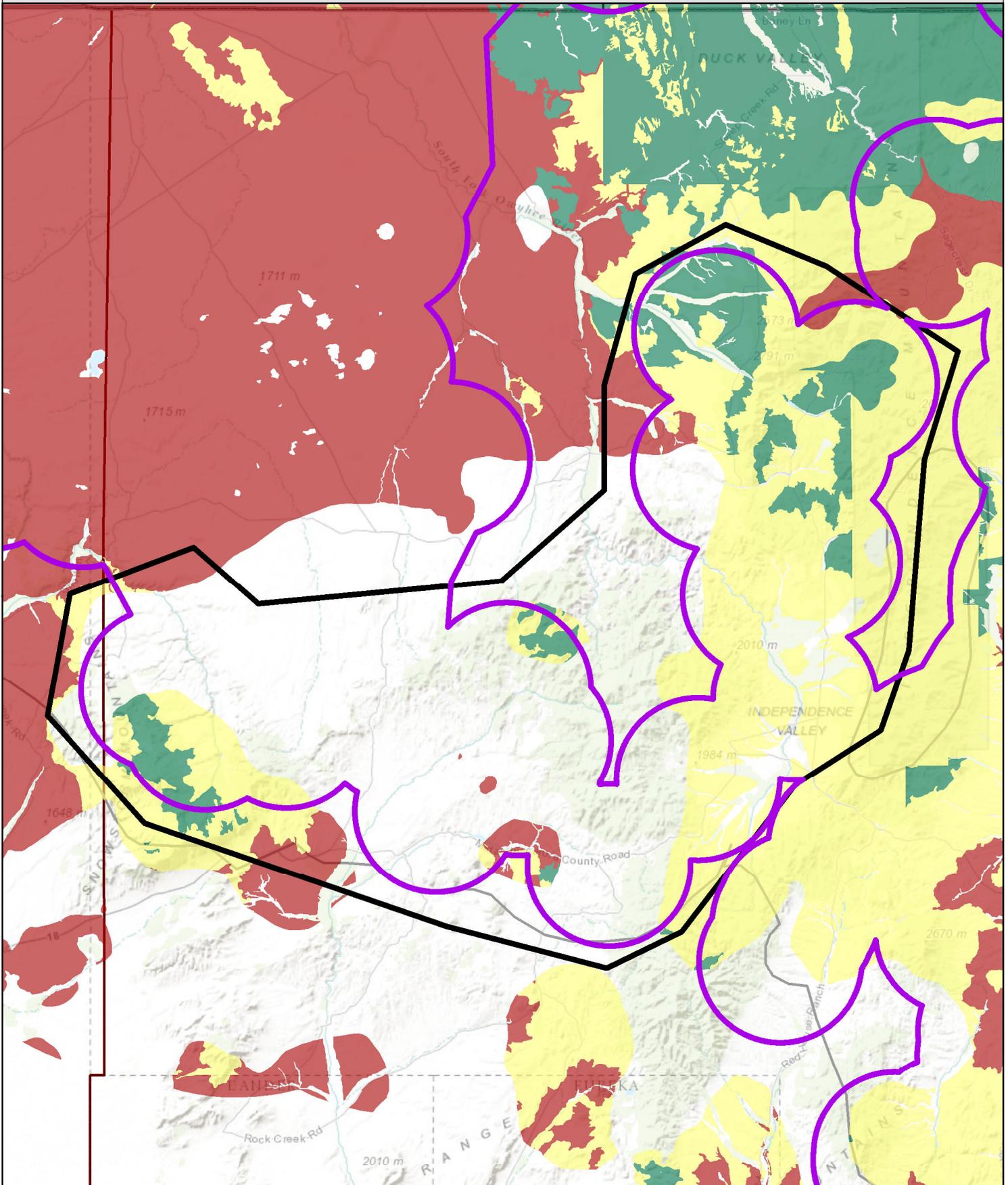


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 Tuscarora Project Planning Area

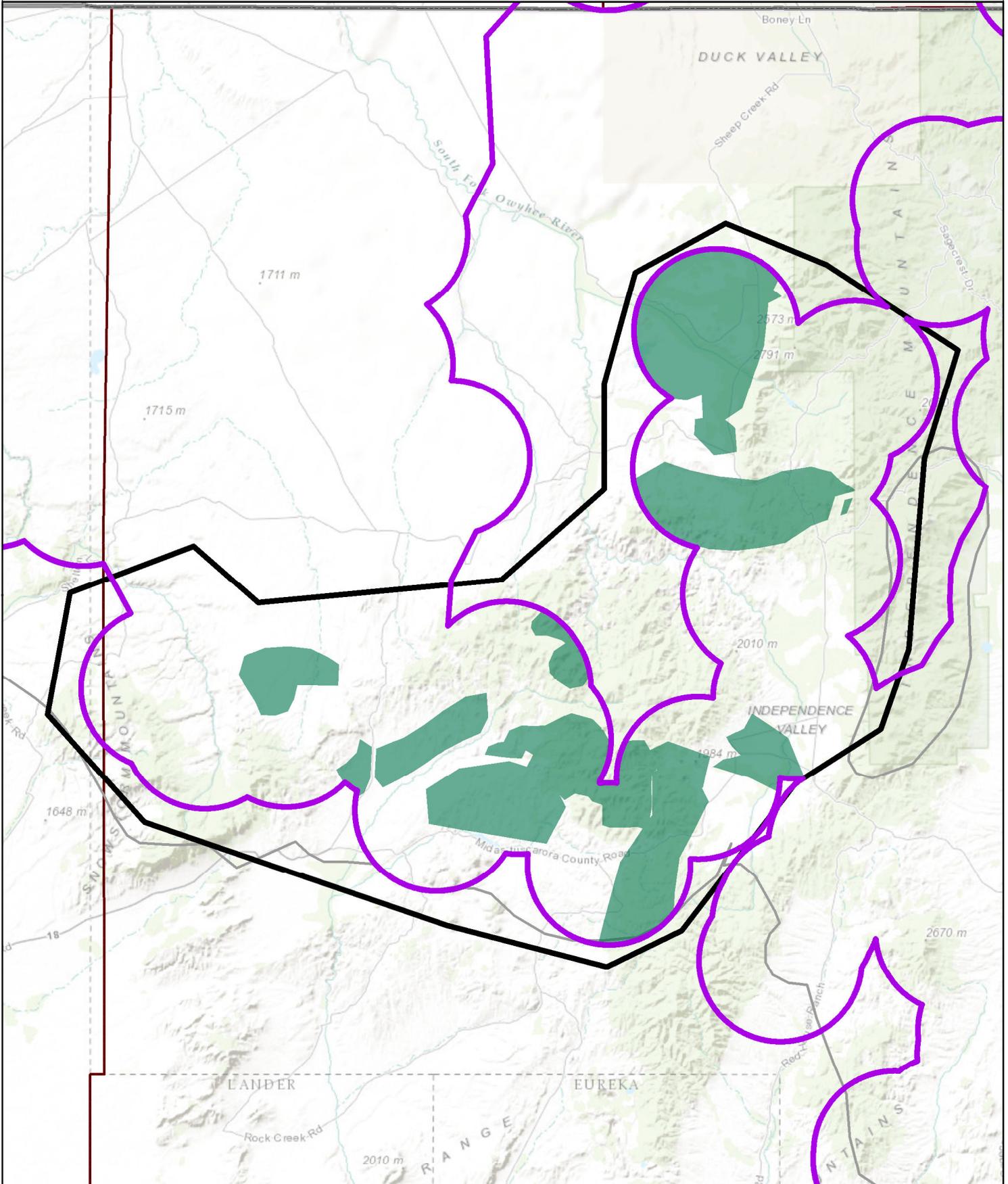
March 2015
Date Saved: 3/12/2015
Data Sources: BLM, ESRI Basedata
1:707,006



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March 2015
Date Saved: 3/12/2015
Data Sources: BLM, ESRI Basedata
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Tuscarora Project Planning Area



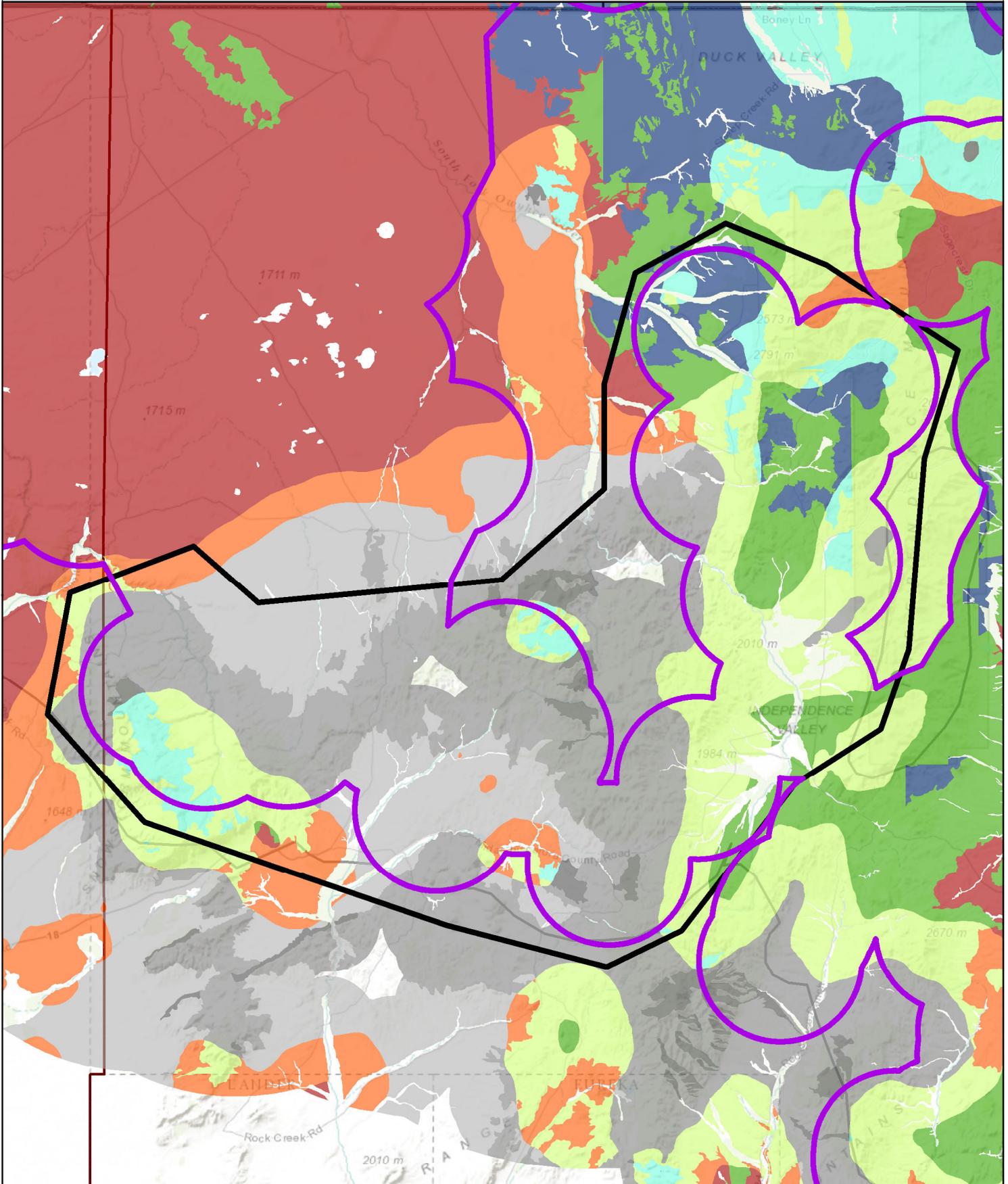
Habitat Restoration Potential Treatment Areas

March 2015

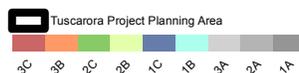
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Data Sources: BLM, ESRI Basedata

1:707,006



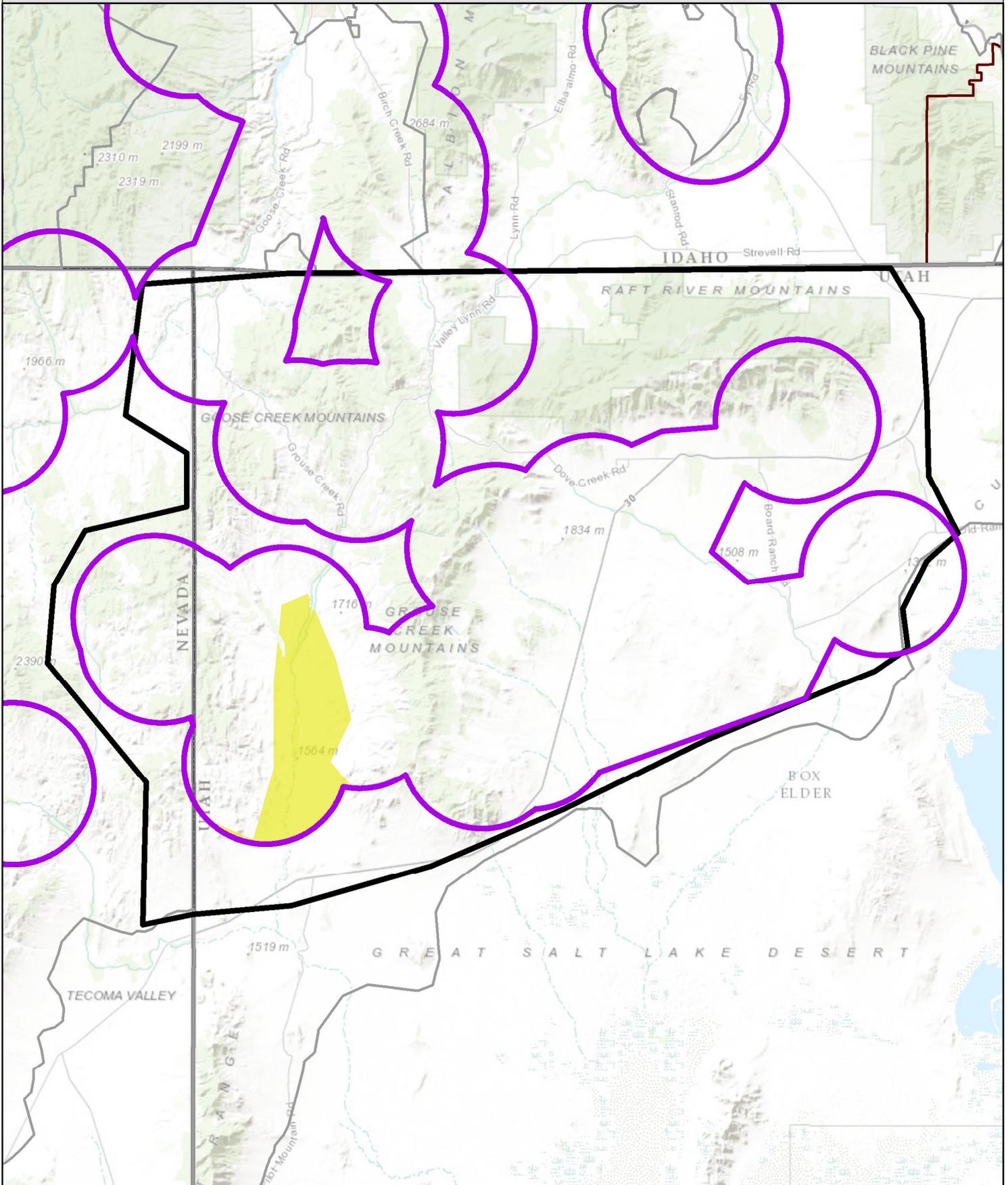
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March 2015
Date Saved: 3/12/2015
Data Sources: BLM, ESRI Basedata
1:707,006

West Box Elder Project Planning Area
Invasive Annuals Potential Treatment Areas

Northern Great Basin
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.

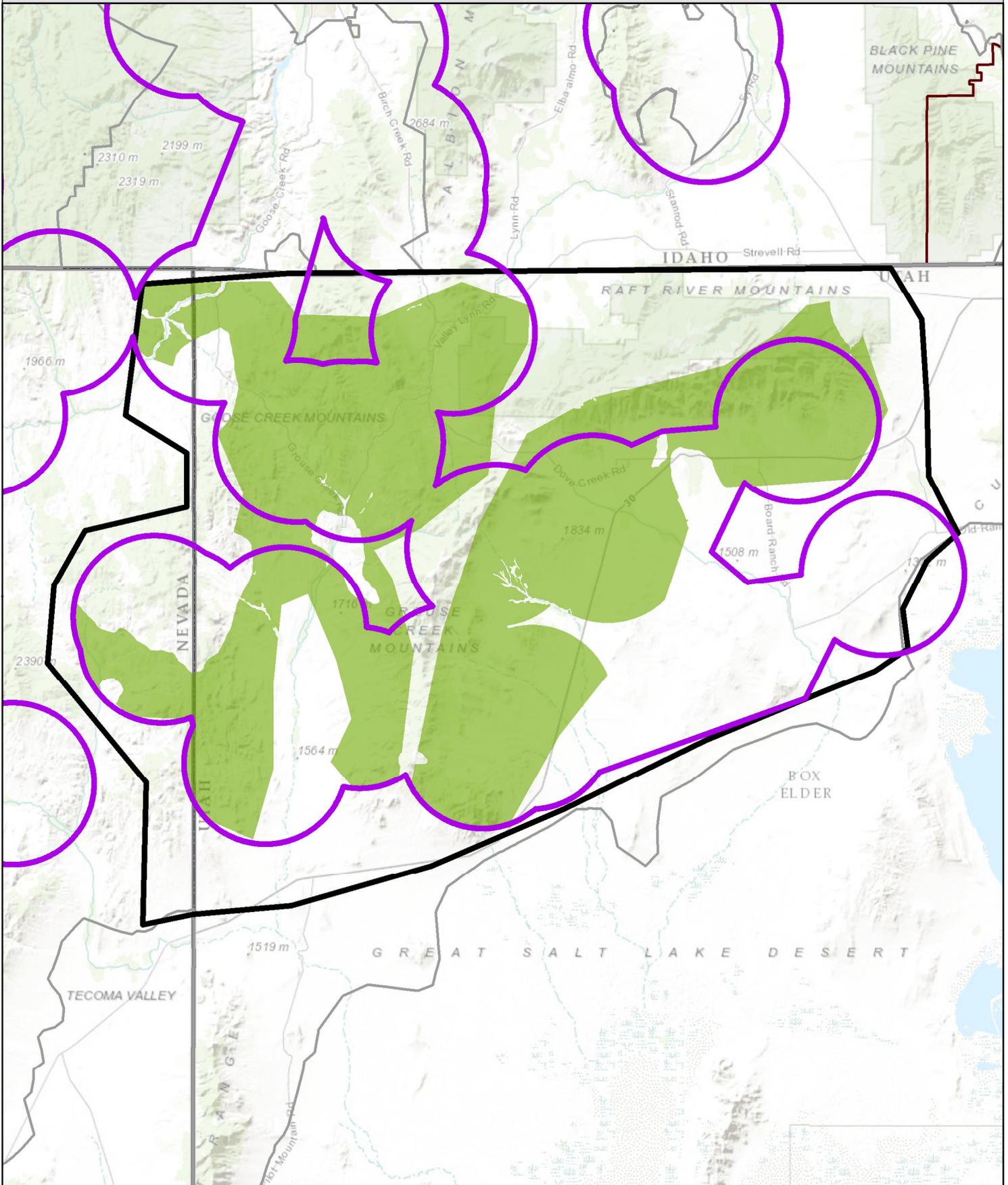


 West Box Elder Project Planning Area
 Invasive Annuals Potential Treatment Areas

March 2015
Date Saved: 3/16/2015
Data Sources: BLM, ESRI Basedata
1:712,352

West Box Elder Project Planning Area
Conifer Expansion Potential Treatment Areas

Northern Great Basin
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.



West Box Elder Project Planning Area

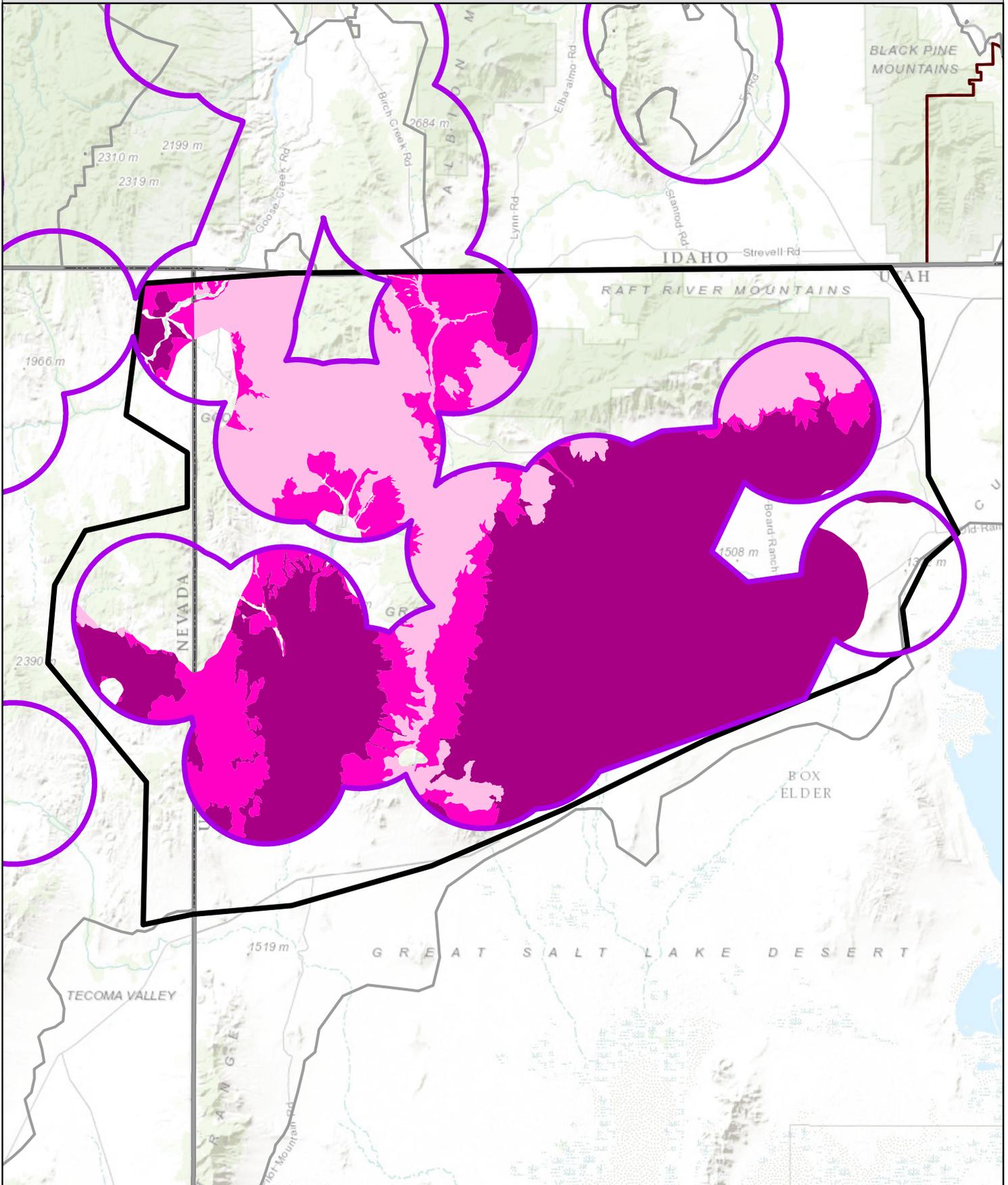


Conifer Expansion Potential Treatment Areas

March 2015
Date Saved: 3/16/2015
Data Sources: BLM, ESRI Basedata
1:712,352

West Box Elder Project Planning Area
Emergency Stabilization, Rehabilitation Priority

Northern Great Basin
Bureau of Land Management
U.S. Department of the Interior



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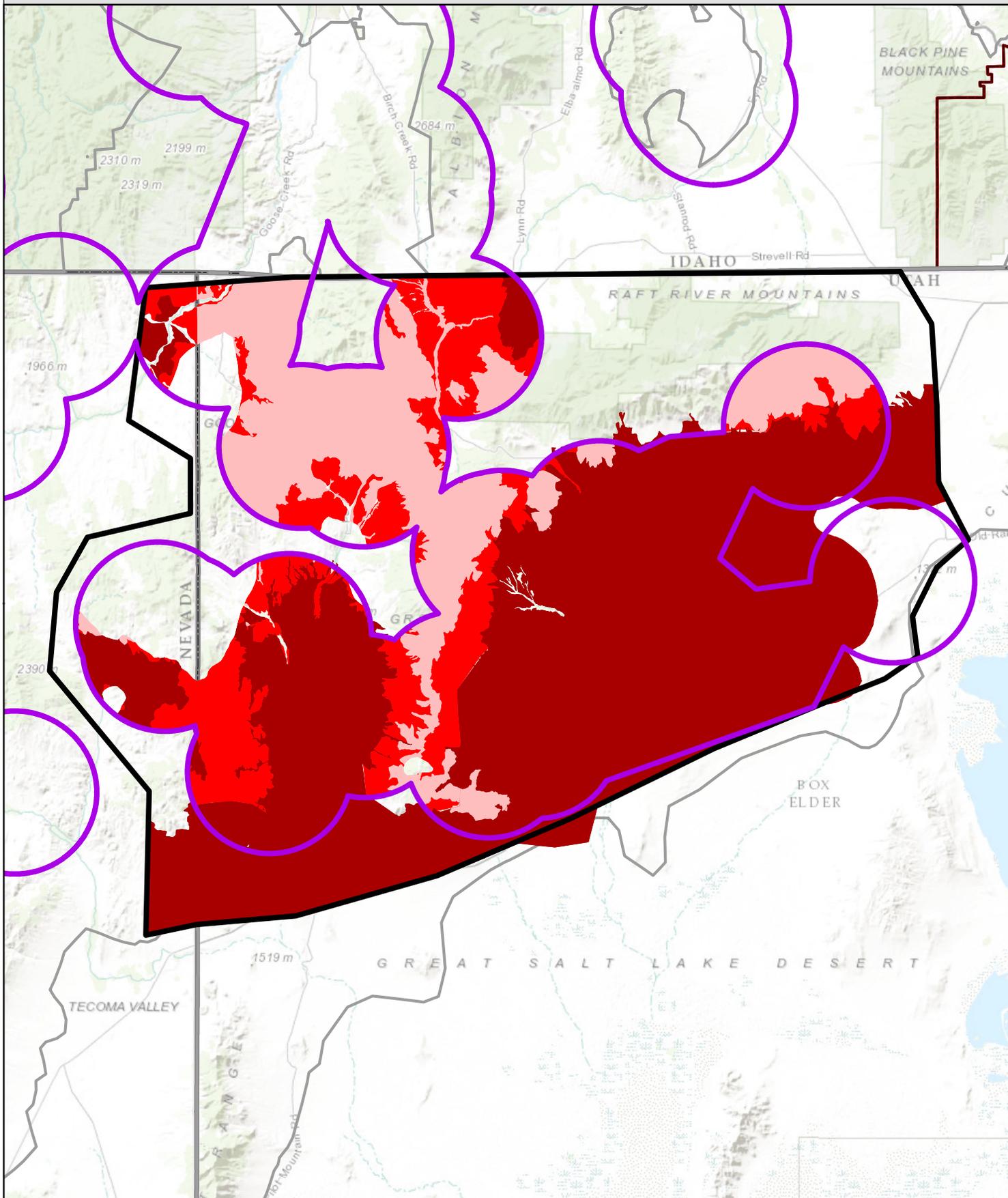


- West Box Elder Project Planning Area
- West Box Elder ESR 1st Priority
- West Box Elder ESR 2nd Priority
- West Box Elder ESR 3rd Priority

March 2015
Date Saved: 3/16/2015
Data Sources: BLM, ESRI Basedata
1:712,352

West Box Elder Project Planning Area
Fire Operations Priority

Northern Great Basin
Bureau of Land Management
U.S. Department of the Interior



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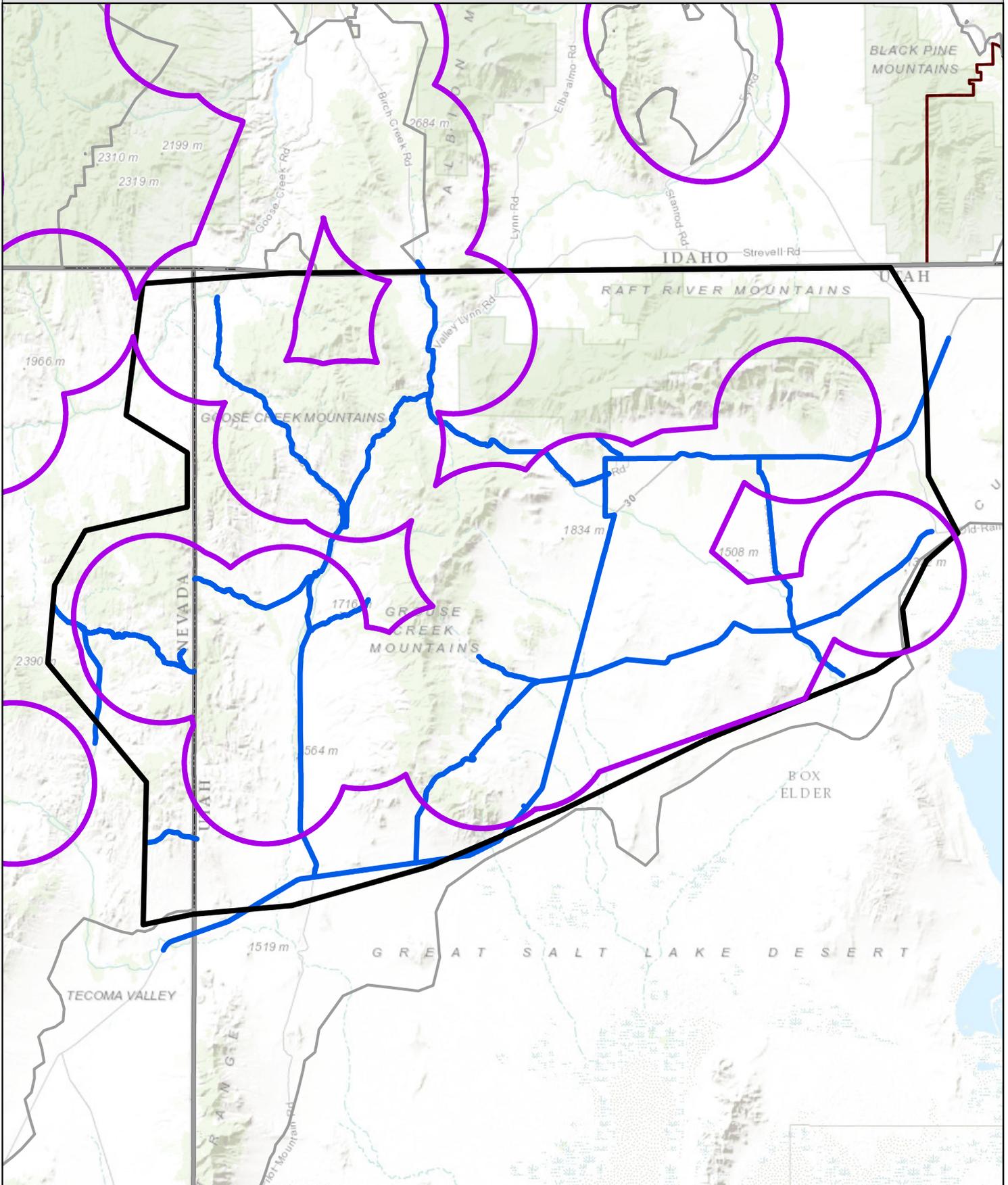


- West Box Elder Project Planning Area
- West Box Elder Fire 1st Priority
- West Box Elder Fire 2nd Priority
- West Box Elder Fire 3rd Priority

March 2015
Date Saved: 3/16/2015
Data Sources: BLM, ESRI Basedata
1:712,352

West Box Elder Project Planning Area
Fuels Management Potential Treatment Areas

Northern Great Basin
Bureau of Land Management
U.S. Department of the Interior



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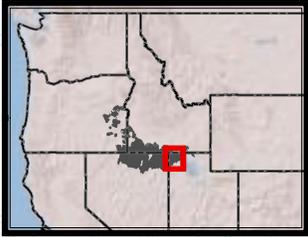
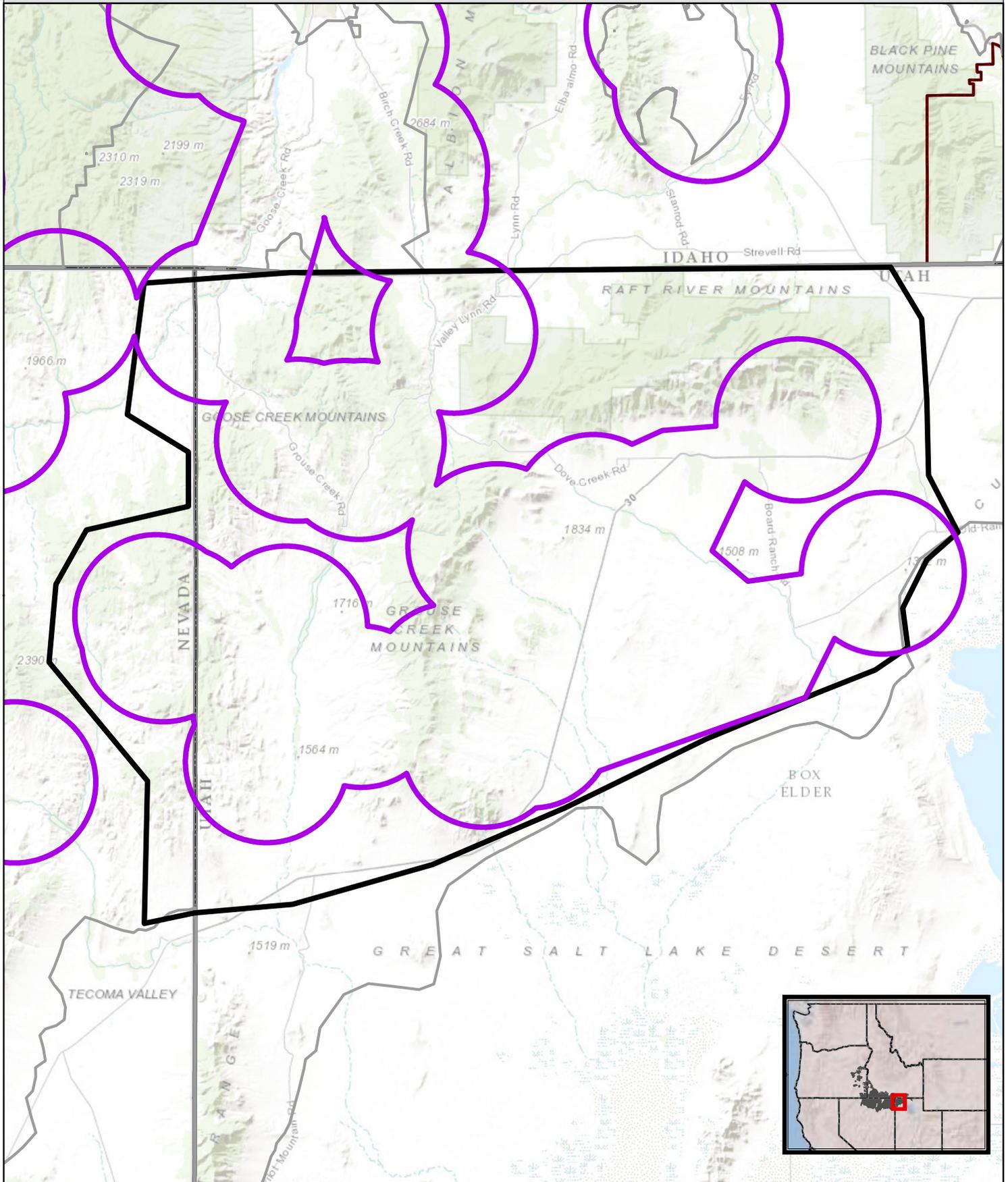


- West Box Elder Project Planning Area
- Linear Fuels Management Potential Treatment Areas

March 2015
Date Saved: 3/16/2015
Data Sources: BLM, ESRI Basedata
1:712,352

West Box Elder Project Planning Area

Northern Great Basin
Bureau of Land Management
U.S. Department of the Interior



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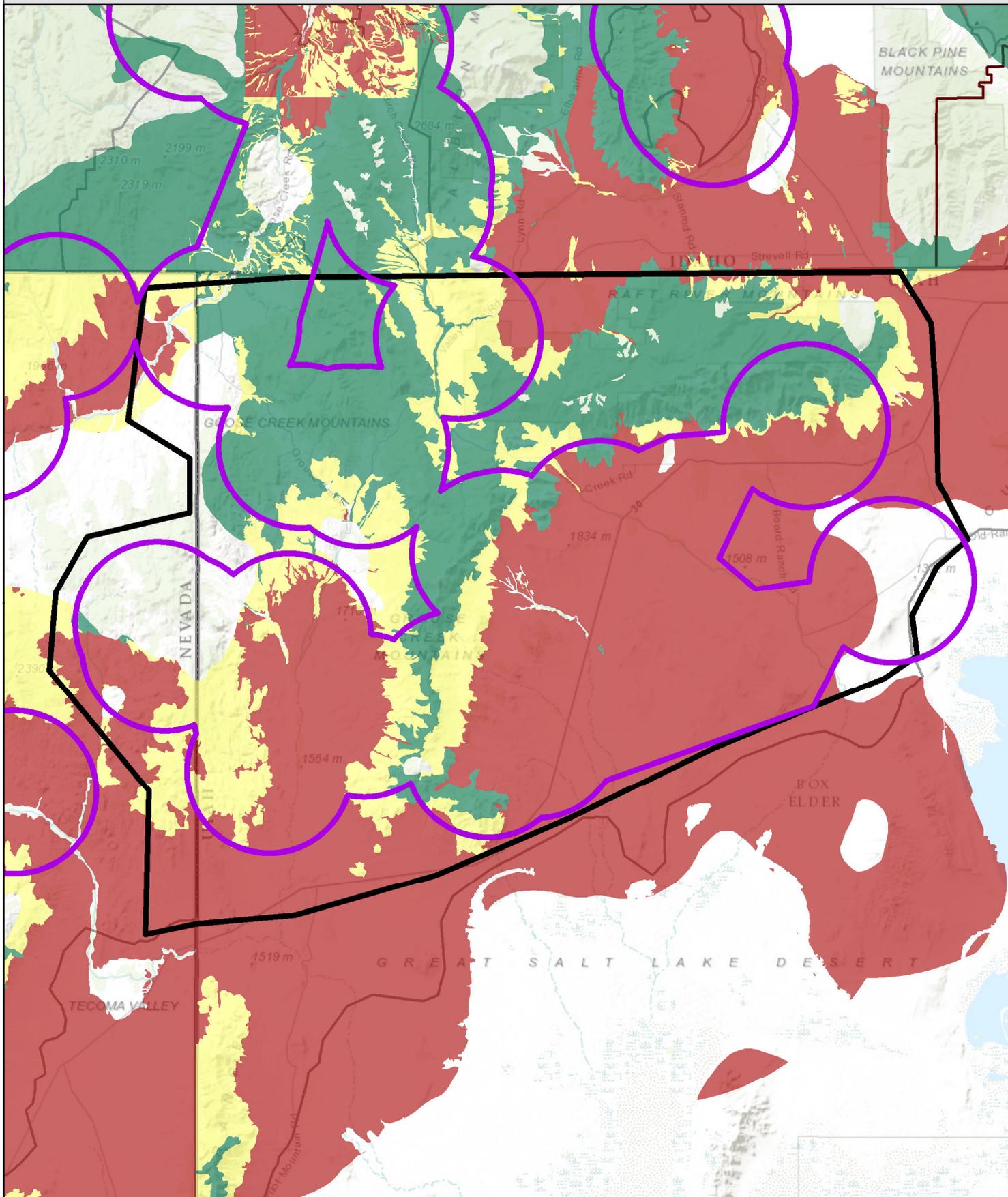


West Box Elder Project Planning Area

March 2015
Date Saved: 3/16/2015
Data Sources: BLM, ESRI Basedata
1:712,352

West Box Elder Project Planning Area
Resistance-Resilience Reportable Priorities

Northern Great Basin
Bureau of Land Management
U.S. Department of the Interior



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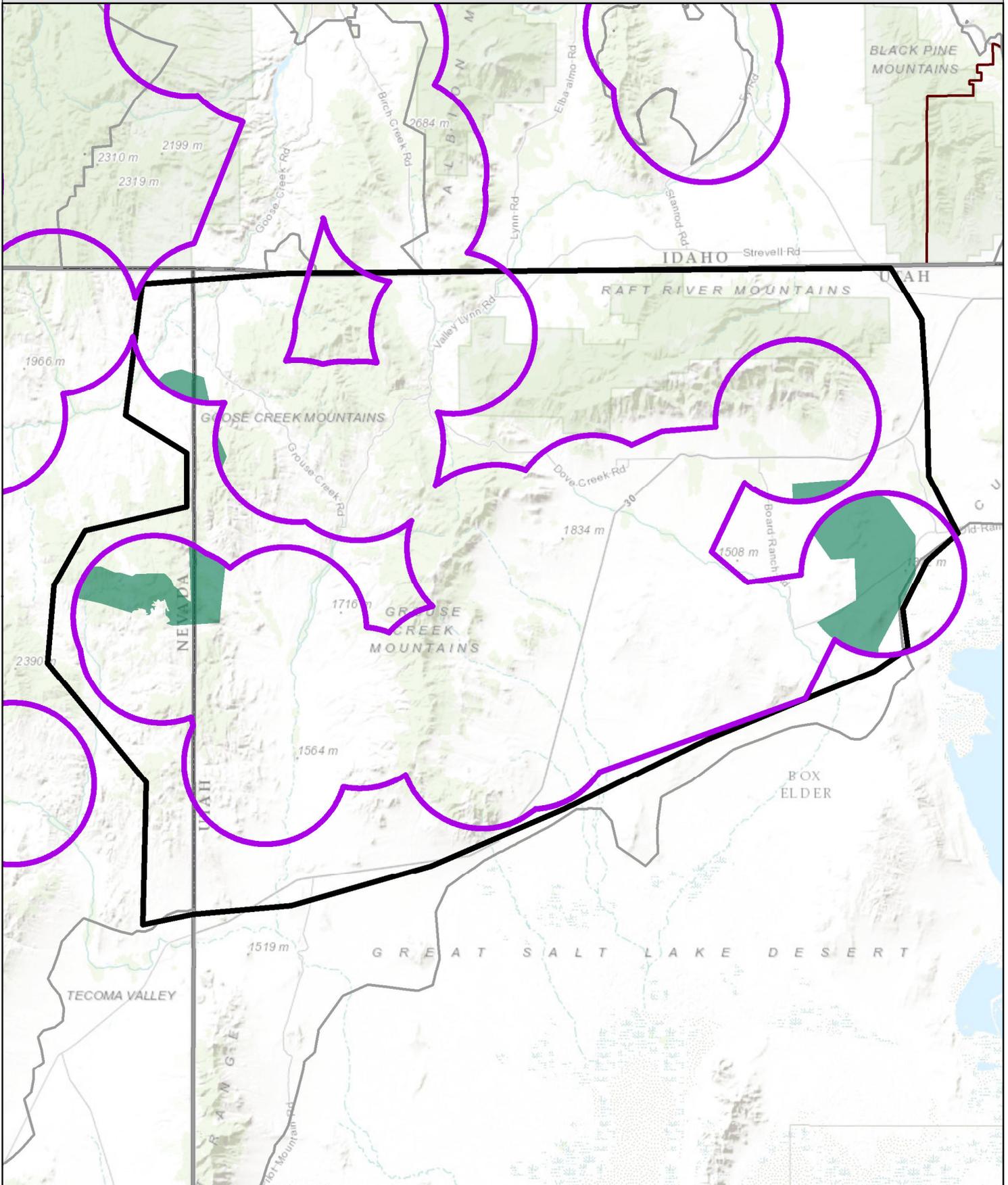


West Box Elder Project Planning Area
Reportable Priorities
1 2 3

March 2015
Date Saved: 3/16/2015
Data Sources: BLM, ESRI Basedata
1:712,352

West Box Elder Project Planning Area
Habitat Restoration Potential Treatment Areas

Northern Great Basin
Bureau of Land Management
U.S. Department of the Interior



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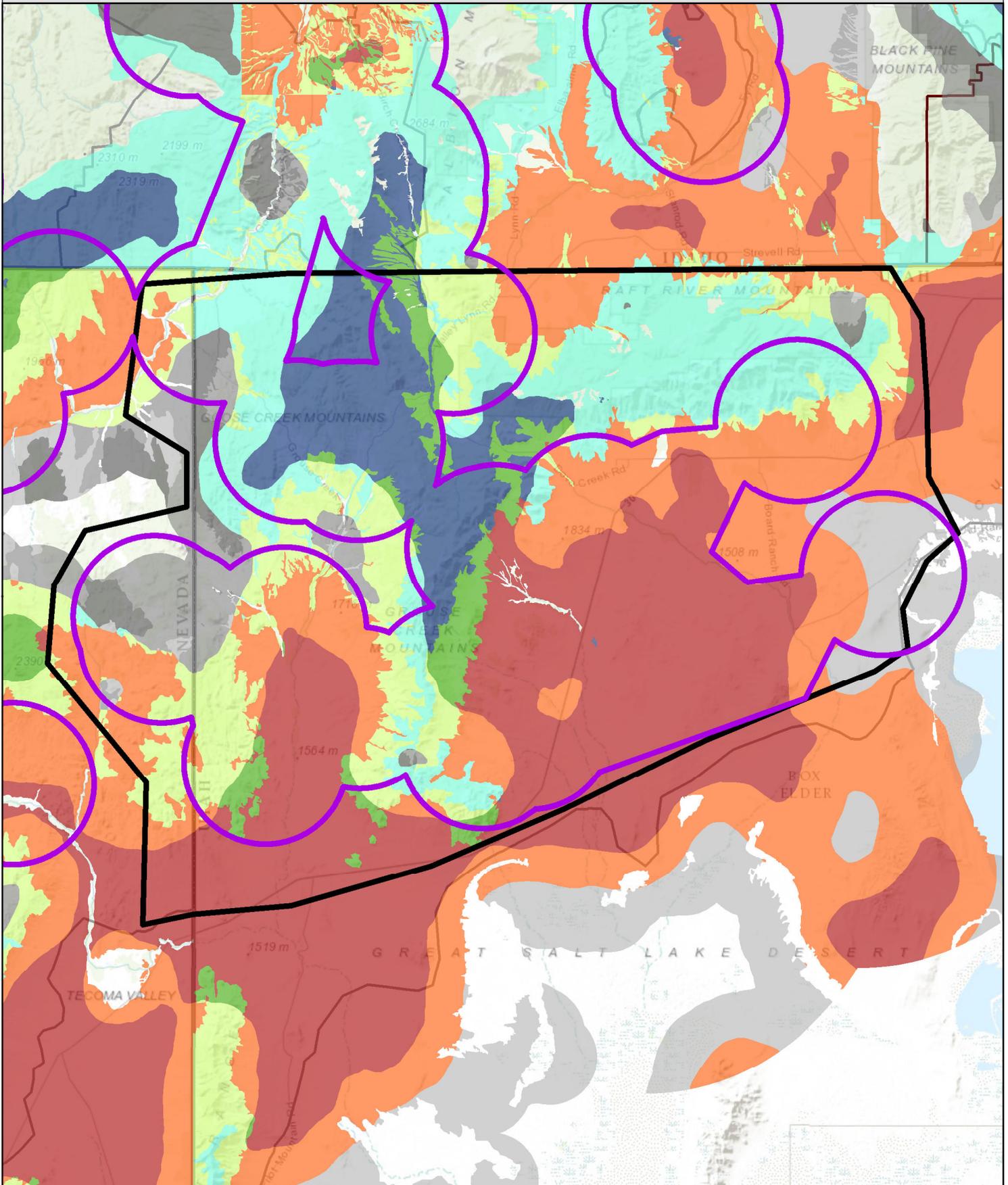


 West Box Elder Project Planning Area
 Habitat Restoration Potential Treatment Areas

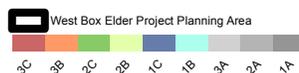
March 2015
Date Saved: 3/16/2015
Data Sources: BLM, ESRI Basedata
1:712,352

West Box Elder Project Planning Area
Resistance-Resilience Priorities
for Application of Management Strategies

Northern Great Basin
Bureau of Land Management
U.S. Department of the Interior



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March 2015
Date Saved: 3/16/2015
Data Sources: BLM, ESRI Basedata
1:712,352

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Appendix B

Data Viewer Link and Explanation

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1 **APPENDIX B**
2 **DATA VIEWER LINK AND EXPLANATION**

3 **VIEWER LINK**

4 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

7

Development Summary by Project Planning Area for Northern Great Basin PAC

Beulah: Over 90% of the habitat in the PPA is less than 12 miles from towers. The northeastern and very southern portions of the PPA are less than 5, or 5-9 miles to primary roads, affecting about 50% of the PPA. Only a small portion (<10%) of the SE portion of the Beulah PPA is within 6-15 km of transmission lines

Bowden Hills: All habitat in the PPA is less than 12 miles from towers. About 50% of the habitat is <5 miles from primary roads, 25% is 5-9 miles from primary roads. About 30% of the PPA is 6-15 km from transmission lines, and <5% is within 6 km.

Curlew: All habitat in the PPA is less than 12 miles from towers. Nearly all of this PPA is affected by primary roads, with habitat <5 miles on the NW, SW and SW portions. 5% or less is >9 miles from primary roads. About 50% of the Curlew PPA is within 6km of transmission lines, and 30% is 6-15 km from transmission lines

Greater Owyhee: About 60% of the PPA is within 12 miles of towers, and the remaining habitat is 12-21 miles from towers. About 10% of habitat is <5 miles from primary roads, 10% is 5-9 miles, and 80% is >9 miles from primary roads.

Jim Sage: All habitat in the PPA is less than 12 miles from towers. About 50% of the habitat is <5 miles from primary roads, 25% is 5-9 miles from primary roads, which occur in the northern portion of the project area. About 60% of the Jim Sage PPA is within 6km of transmission lines, and 35% is 6-15 km from transmission lines.

Mainstem Malheur: About 70% of the PPA is within 12 miles of towers, and the remaining habitat is 12-21 miles from towers. Less than 10% of the habitat is within 9 miles from primary roads. Approximately 35% of the PPA is <6 km from transmission lines, and 35% is 6-15 km from transmission lines

North Fork: About 80% of the PPA is within 12 miles of towers, and the remaining habitat is 12-21 miles from towers. Approximately 60% of the habitat is <5 miles from primary roads, and 20% is 5-9 miles from primary roads, which bisect the PPA running north-south. About 30% of the PPA is <6 km from transmission lines, 40% is 6-15 km from transmission lines.

Oakley: All habitat in the PPA is less than 12 miles from towers. About 10% of the Oakley PPA, in the SE portion, is within 15 km of transmission lines.

Oneil: About 80% of the PPA is within 12 miles of towers, and the remaining habitat is 12-21 miles from towers. Approximately 25% of the PPA is within 5 miles of a primary road, and 10% is 5-9 miles; a primary road bisects the PPA running north-south. The Oneil PPA is bisected by transmission lines, with approximately 15% within 6 km, and 25% within 6-15 km of transmission lines.

Otis: About 60% of the PPA is within 12 miles of towers, and the remaining habitat is 12-21 miles from towers. Habitat near the southern and northwestern boundaries of the Otis PPA are within <6km (15%) and 6-15km (30%) of transmission lines.

Owyhee Desert: About 65% of the PPA is within 12-21 miles of towers, 5% is greater than 21 miles, and the remaining habitat is less than 12 miles from towers. REA data show no other major development impacts.

Owyhee North: About 85% of the PPA is within 12 miles of towers, and the remaining habitat is 12-21 miles from towers. Approximately 25% of the PPA is within 5 miles of a primary road, and 10% is 5-9 miles; Highway 93 runs from the north to southwestern portion of the PPA. About 10% of the total habitat within the PPA is within 15 km of transmission lines occurring in the northeastern portion of the PPA.

Owyhee South: About 85% of the PPA is within 12 miles of towers, and the remaining habitat is 12-21 miles from towers. Approximately 25% of the PPA is within 5 miles of a primary road, and 10% is 5-9 miles; a primary road bisects the PPA running north-south.

Rogerson: About 80% of the PPA is within 12 miles of towers, and the remaining habitat is 12-21 miles from towers. Approximately 20% of the eastern portion of the PPA is within 9 miles of primary roads. Two transmission line corridors occur in the Rogerson PPA, with about 25% of habitat within 6 km, and 40% within 6-15 km. About 10% of habitat has human populations above 2 persons/square km in northeastern corner.

Sheephead East: About 50% of the PPA is within 12 miles of towers, and 50% is 12-21 miles from towers. The entire PPA is within 5 miles or less of primary roads.

Sheephead West: About 65% of the PPA is within 12 miles of towers, and the remaining habitat is 12-21 miles from towers. About half the habitat in the PPA is <5 miles from primary roads, and the remaining half is 5-9 miles.

Tuscarora: About 65% of the PPA is within 12 miles of towers, and the remaining habitat is 12-21 miles from towers. About 25% of the eastern portion of the PPA is <5 miles from primary roads, and about 10% is 5-9 miles. A transmission corridor from the south through the northeast portion of the Tuscarora PPA; approximately 20% of habitat is within 6 km, and 25% is 6-15 km.

West Box Elder: Approximately 80% of the PPA is within 12 miles of towers, and the remaining habitat is 12-21 miles from towers. About 35% of the eastern portion of the PPA is <5 miles from primary roads, and about 20% is 5-9 miles. Two transmission line corridors occur in the West Box Elder PPA, with about 30% of habitat within 6 km, and 50% within 6-15 km. Around 10% of the habitat may be affected by agriculture.

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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.

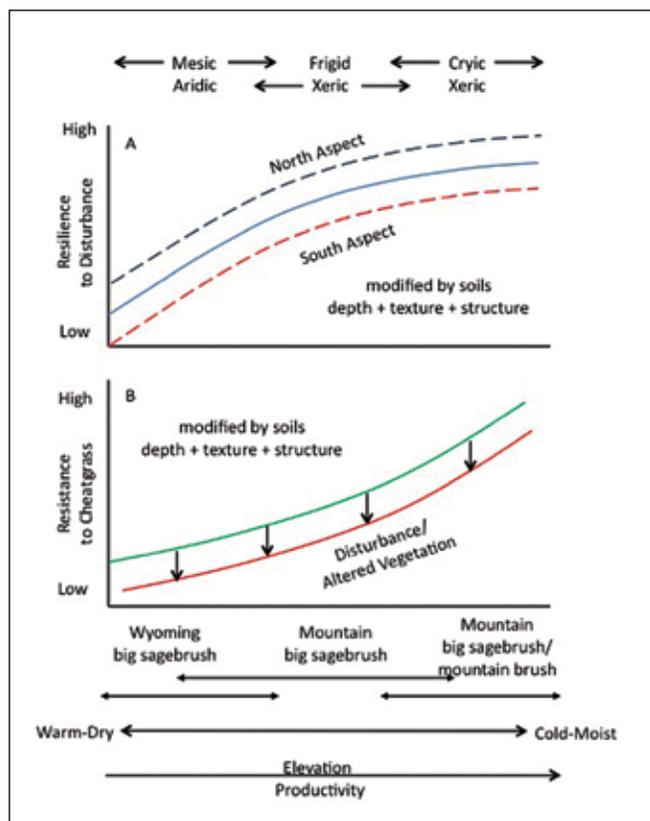


Figure 1. Example of resilience to disturbance (A) and resistance to cheatgrass (B) over a soil temperature and moisture regime gradient in the western portion of the sagebrush ecosystem. Dominant ecological types occur along a continuum from Wyoming big sagebrush communities on warm and dry sites to 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.

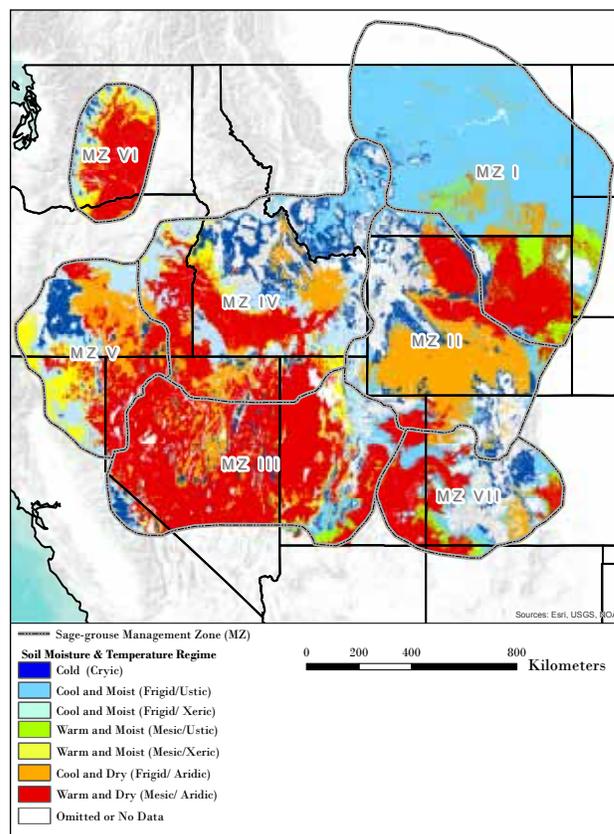


Figure 2. New soils product provides ability to depict potential ecosystem resilience and resistance across the range of sage-grouse using soil temperature and moisture regimes. For more information on interpretation, see Chambers et al. 2014b.

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

We thank the Western Association of Fish and Wildlife Agencies, Fire and Invasives Working Group, for laying the foundation for development of this product. Special thanks to Amarina Wuenschel and Jeanne Chambers for their contributions to this product and to the many USDA Natural Resources Conservation Service specialists who contributed soil survey program data.

Suggested Citation

Maestas, J. D., and S. B. Campbell. Mapping Potential Ecosystem Resilience and Resistance across Sage-Grouse Range using Soil Temperature and Moisture Regimes. Fact Sheet. Sage Grouse Initiative, www.sagegrouseinitiative.com.

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Chambers, J. C.; Pyke, D. A.; Maestas, J. D.; Pellant, M.; Boyd, C. S.; Campbell, S. B.; Espinosa, S.; Havlina, D. W.; Mayer, K. E.; Wuenschel, A. 2014b. Using resistance and resilience concepts to reduce impacts of invasive annual grasses and altered fire regimes on the sagebrush ecosystem and greater sage-grouse: A strategic multi-scale approach. Gen. Tech. Rep. RMRS-GTR-326. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 73 p.

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 Havalina	BLM
		Doug Kile	BLM
		Toby White	BLM
		Andy Daniels	BLM
		Chad Rott	BLM
		Casey Burns	NRCS
		Aaron Roth	NRCS

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