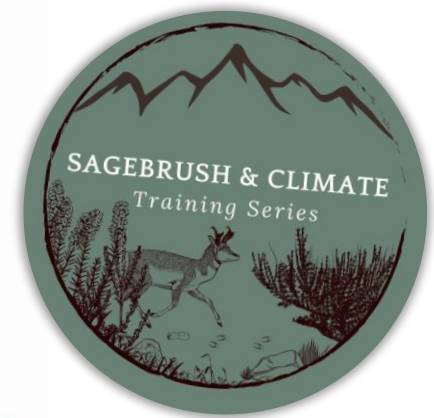


# An Introduction to the Land Treatment Exploration Tool

**Michelle Jeffries, David Pilliod, Justin Welty**  
US Geological Survey Forest and Rangeland Ecosystem Science Center, Boise, ID

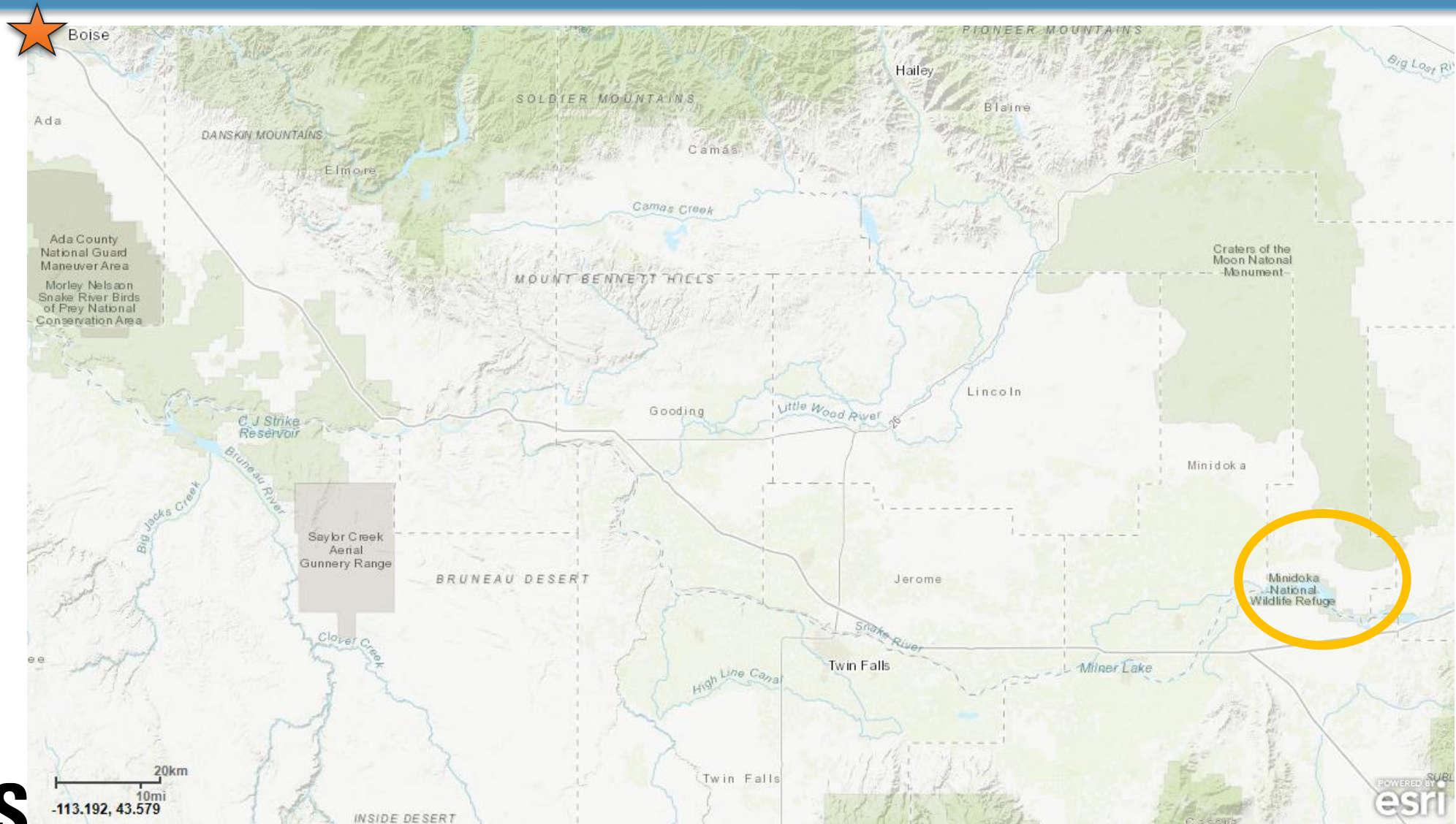


# Land Treatment Exploration Tool

An interactive web tool for resource managers to:

- ✓ Understand ecological context
- ✓ Identify FWS special status species
- ✓ Gather information about drought
- ✓ Identify and learn from past treatments
- ✓ Create maps, summaries, and reports

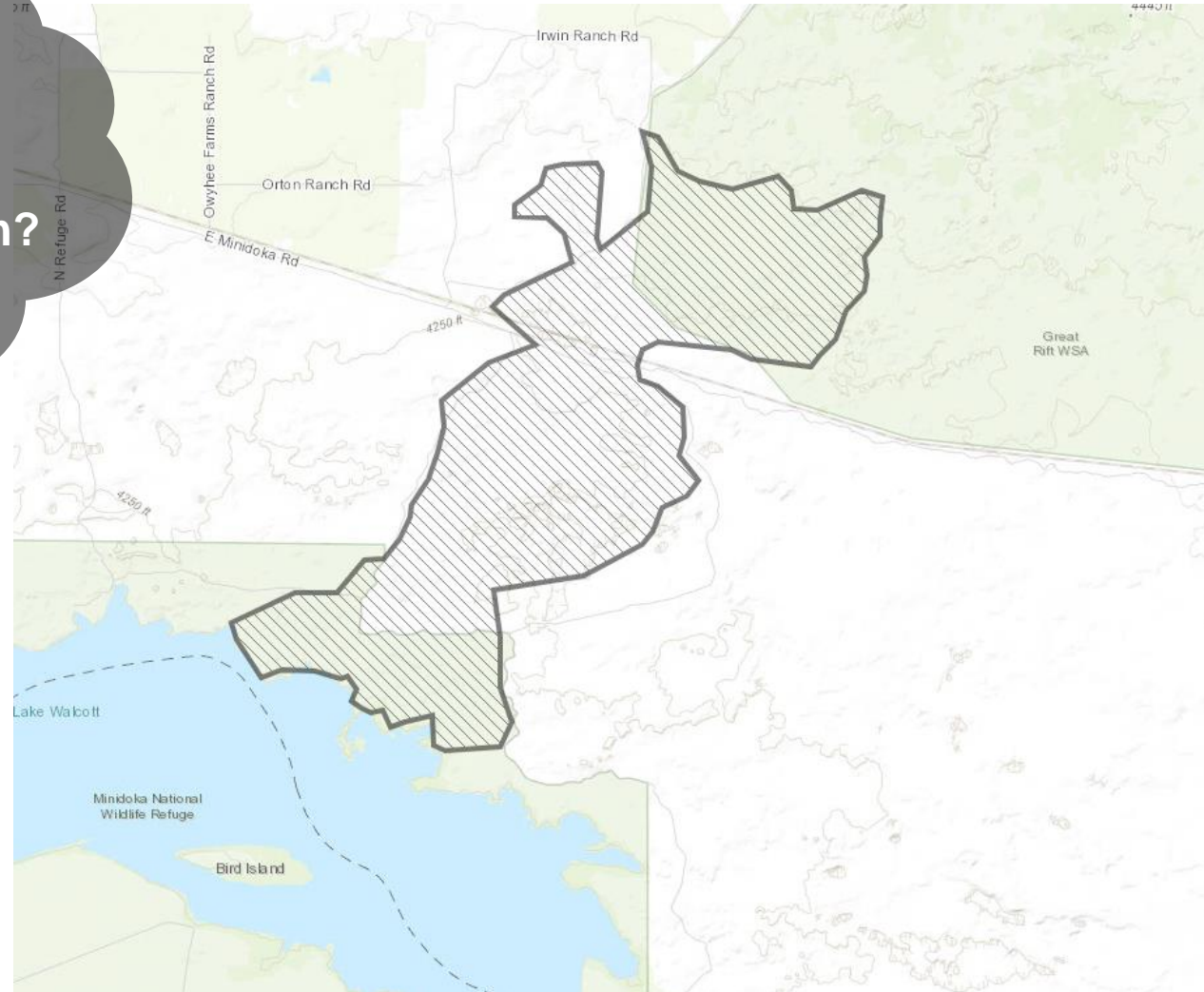
# Demo Treatment – Minidoka Wildfire



\* This is a hypothetical treatment

# Demo Treatment – Minidoka Wildfire

Post-fire treatments?  
Fuel breaks?  
Mesic habitat restoration?  
Species control?





Plan Treatment

Layers/Legend

Step 1: Describe proposed treatment

Project Name:

Type a descriptive name for your project e.g., Cougar Canyon Wildfire Aerial Seeding Rehabilitation 2018.

Minidoka Wildfire Restoration 2024

What kind of treatment are you planning?

Select what type of treatment you are planning from the drop down list.

ESR Wildfire Project

ESR Treatments (multiselect):

- Aerial Seeding
- Drill Seeding
- Seedling, plug planting
- Herbicide - annual grass/site preparation
- Herbicide - noxious weed
- Biological Control
- Area closure/exclosure
- Other fencing
- Facilities repair
- Road, trail, infrastructure repair
- Vegetation/soil manipulation
- Erosion/soil mitigation (waddles, etc)

File Name:

Type a file name to be used for each exported product. To use the Project Name, check the box for 'same as project name'.

same as project name

Minidoka\_Wildfire\_Restoration\_2024

Next Step >>

Planning Map

Site History

Monitoring

Results

Report

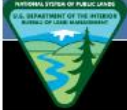
USFWS IPaC

Drought Forecast



Basemaps

Print Map



Plan Treatment

Layers/Legend

▶ Step 1: Describe proposed treatment

▼ **Step 2: Select treatment boundary**

Upload a shapefile:

or Draw a treatment boundary:

*Need to edit your treatment area on the map? Click on it and move the vertices. You will not be able to identify features under your proposed treatment while at this step.*

Minidoka\_Wildfire\_Restoration\_2024\_0 [Zoom](#) [Delete](#)

Calculated Area (acres): 3945.65

Download the proposed treatment polygon as:

[kml](#)

[geoJSON](#)

[ArcGIS JSON](#)

[shapefile](#)

[View layers you can turn on and off.](#)

▶ Step 3: Explore site characteristics

▶ Step 4: Summarize your proposed treatment area

▶ Step 5: Select search parameters

▶ Step 6: Compare to LTDL treatments

**Planning Map**

Site History

Monitoring

Results

Report

USFWS IPaC

Drought Forecast

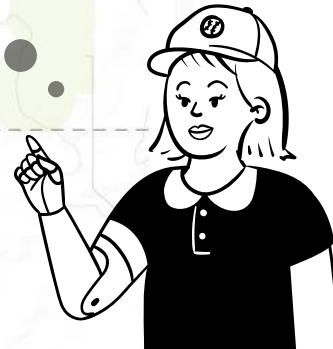
## 2. Upload or draw your boundary

Basemaps

Print Map



Post-fire treatments?



Plan Treatment

**Layers/Legend**

**Planning Map**

Site History

Monitoring

Results

Report

USFWS IPaC

Drought Forecast


 Climate

 Ecological Classifications

 Land Treatments

 Monitoring

 Sage-grouse Specific

 Soil Information

 Topography

 Wildfire

WFIGS Interagency Fire Perimeters Since 2021

Western United States Fire Perimeters Since 1984

Wildfire Probability for the Sagebrush Biome

Combined Wildfire Dataset for the United States Polygons

Combined Wildfire Dataset for the United States Rasters

Sublayers Legend Opacity

USGS\_Wildland\_Fire\_Frequency\_Raster\_FY21\_Version

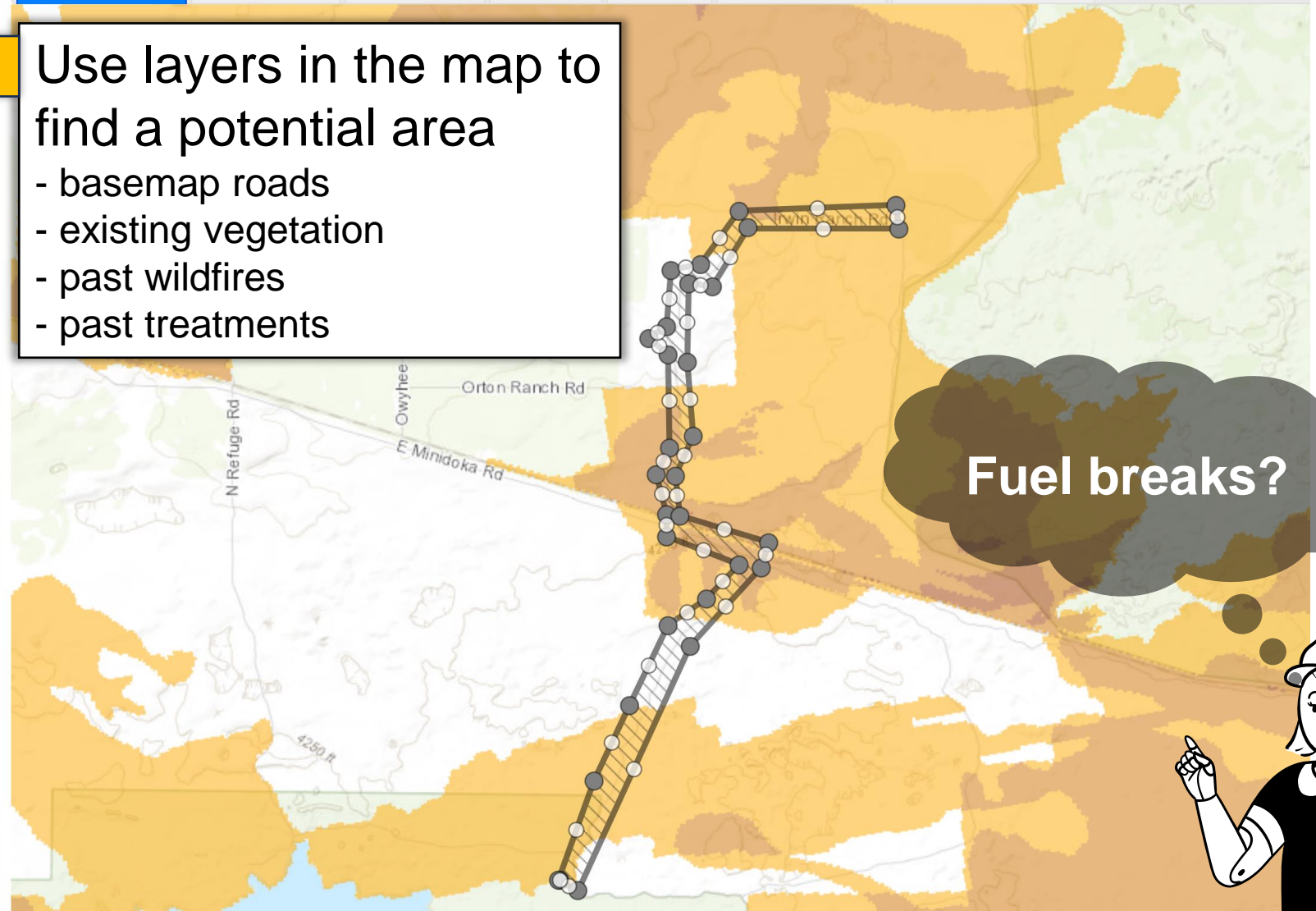
USGS\_Wildfire\_Frequency\_Raster\_FY21\_Version

USGS\_Wildfires\_First\_Year\_Burned\_Raster\_FY21\_Version



Use layers in the map to find a potential area

- basemap roads
- existing vegetation
- past wildfires
- past treatments





Plan Treatment

**Layers/Legend**

**Planning Map**

Site History

Monitoring

Results

Report

USFWS IPaC

Drought Forecast

- Empirical Seed Zones - Blue wildrye (*Elymus glaucus*)
- Empirical Seed Zones - Bluebunch Wheatgrass (*Pseudoroegneria spicata*)
- Empirical Seed Zones - Bottlebrush Squirreltail (*Elymus elymoides*)
- Provisional Seed Zones
- Ecological Site Name
- Heatload
- LANDFIRE 2020 Existing Vegetation Type (EVT) CONUS
- LANDFIRE 2020 Existing Vegetation Cover (EVC) CONUS 2022 Capable
- Landfire Potential Vegetation Type

Legend Opacity

us\_140esp

Ecological Site Potential - Landfire Grouping

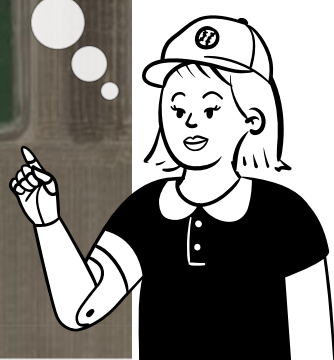
- Sparsely Vegetated
- Undetermined
- Upland Forest
- Upland Herb
- Upland Shrub
- Upland Woodland
- Wetland Forest
- Wetland Herb
- Wetland Shrub
- Wetland Shrub-Herb

Soil Temperature and Moisture Regime



Use layers in the map to find a potential area

- existing vegetation
- potential vegetation
- grouse breeding habitat
- aerial imagery





Plan Treatment **Layers/Legend** **Planning Map** Site History Monitoring Results Report USFWS IPaC Drought Forecast

- Ecological Classifications
- Land Treatments
- Monitoring
- Sage-grouse Specific

Sagebrush Biome Threat-Based Ecostates (2019-2021)

Legend Opacity

Sagebrush Biome Threat-Based Ecostates (2019-2021)

Ecostate

- A: Good condition shrubland
- A-C: Intermediate condition shrubland
- B: Good condition grassland
- B-D: Intermediate condition grassland
- C: Poor condition shrubland
- D: Poor condition grassland
- Juniper and tree: low-mid cover
- Juniper and tree: high cover

- BLM WesternUS GRSRG ROD Habitat Mgmt Areas August 2022
- Sage-Grouse WAFWA Zones
- Sage-grouse Priority Areas for Conservation
- Sagebrush at Risk of Conifer Invasion
- Sage-grouse Breeding Habitat

Orton Ranch Rd

4403 ft

4400 ft

**Use layers in the map to find a potential area**

- existing vegetation
- invasion risk
- ecostates
- core habitat

**Species Control?**

**Plan Treatment** Layers/Legend

- ▶ Step 1: Describe proposed treatment
- ▶ Step 2: Select treatment area
- ▼ Step 3: Explore site characteristics**
- ▶ Step 4: Summarize your proposed treatment area
- ▶ Step 5: Select search parameters
- ▶ Step 6: Compare to LTDL treatments

Toggle the options in the [Site History](#) tab to view treatment, wildfire, vegetation, climate, and recent drought history. Historical climate is viewable as the 30 year (1980 - 2010) averages displayed as a climatogram.

Look up on-the-ground monitoring in the [Monitoring](#) tab.

Preview endangered species, migratory birds, facilities, and wetlands information for your area through the [IPaC](#) tab.

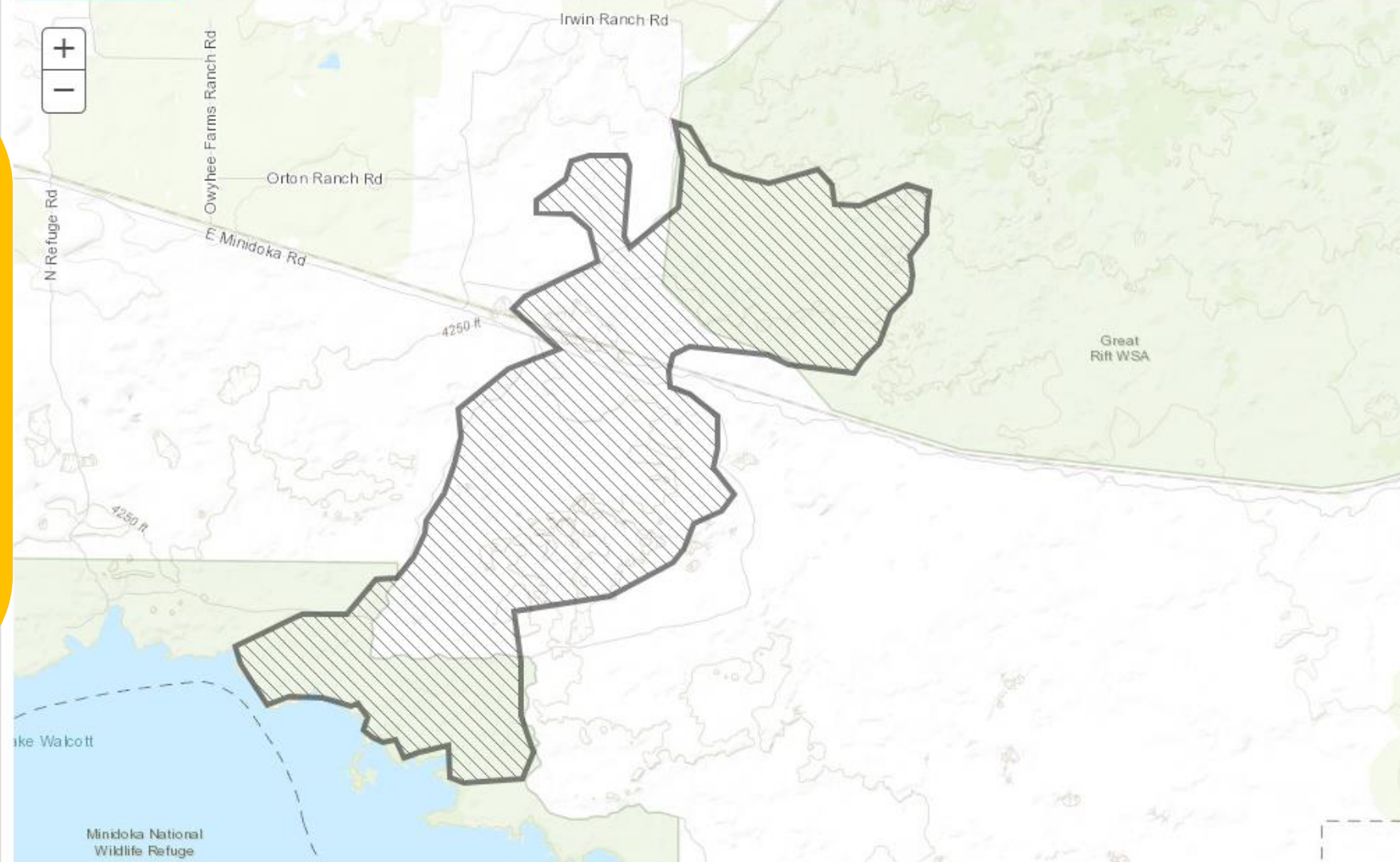
View overlays of the numerous layers available on the [Planning Map](#).

View future drought forecasts for temperature, precipitation and soil moisture on the [Drought Forecast](#) tab.

Go back to [Step 2](#) to adjust your planned treatment boundary, if necessary.

[Next Step >>](#)

**Planning Map** Site History Monitoring Results Report USFWS IPaC Drought Forecast



Plan Treatment Layers/Legend

- Step 1: Describe proposed treatment
- Step 2: Select treatment boundary
- Step 3: Explore site characteristics**
- Step 4: Summarize your proposed treatment area
- Step 5: Select search parameters
- Step 6: Compare to LTDL treatments

Toggle the options in the **Site History** tab to view wildfire, vegetation, climate, and drought history. Historical climate is viewable as the 30 year (1980 - 2010) averages displayed as a climatogram.

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Site History Monitoring Results Report USFWS IPaC Drought Forecast

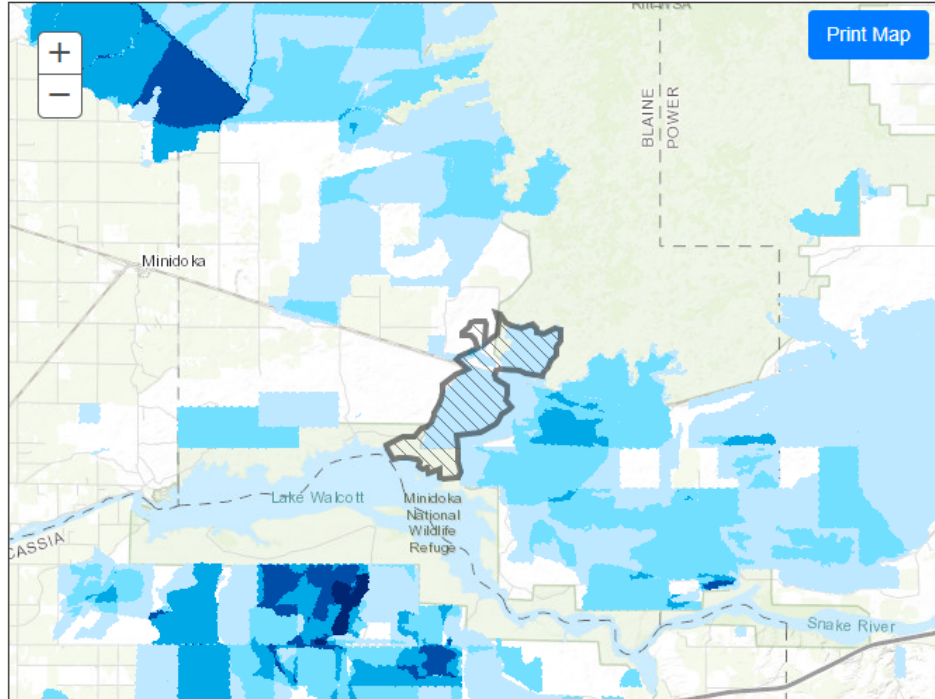
## Project Name: Minidoka Restoration 2024 Treatment Type: General Rehabilitation

### Previously Treated Areas

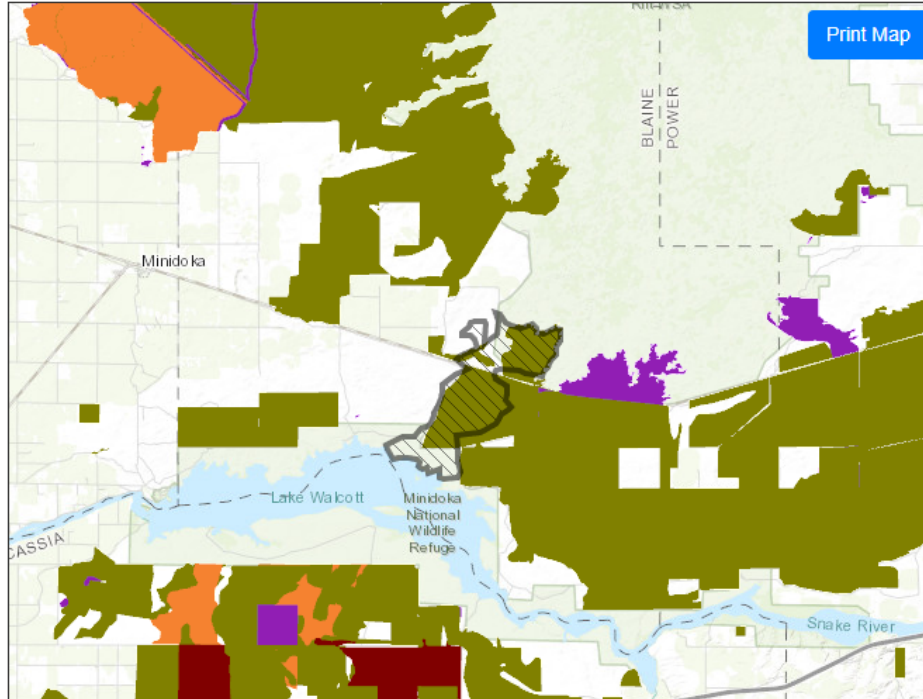
Select Major Treatment: All Treatment Types

Implementation status of treatments:  Confirmed Implementation  Confirmed and Unknown Implementation

#### Times Treated



#### Land Treatment Digital Library Treatments



https://www.usgs.gov/apps/land-treatment-exploration-tool/map#overlapTab

**View information for: treatments, wildfires, vegetation, climate, drought**

Plan Treatment

Layers/Legend

**Monitoring**

Results

Report

USFWS IPaC

Drought Forecast

Step 1: Describe proposed treatment

Step 2: Select treatment boundary

**Step 3: Explore site characteristics**

Toggle the options in the [Site History](#) tab to view treatment, wildfire, vegetation, climate, and recent drought history. Historical climate is viewable as the 30 year (1980 - 2010) averages displayed as a climatogram.

Look up on-the-ground monitoring in the **Monitoring** tab

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Go back to [Step 2](#) to adjust your planned treatment boundary, if necessary.

**Next Step >>**

Step 4: Summarize your proposed treatment area

Step 5: Select search parameters

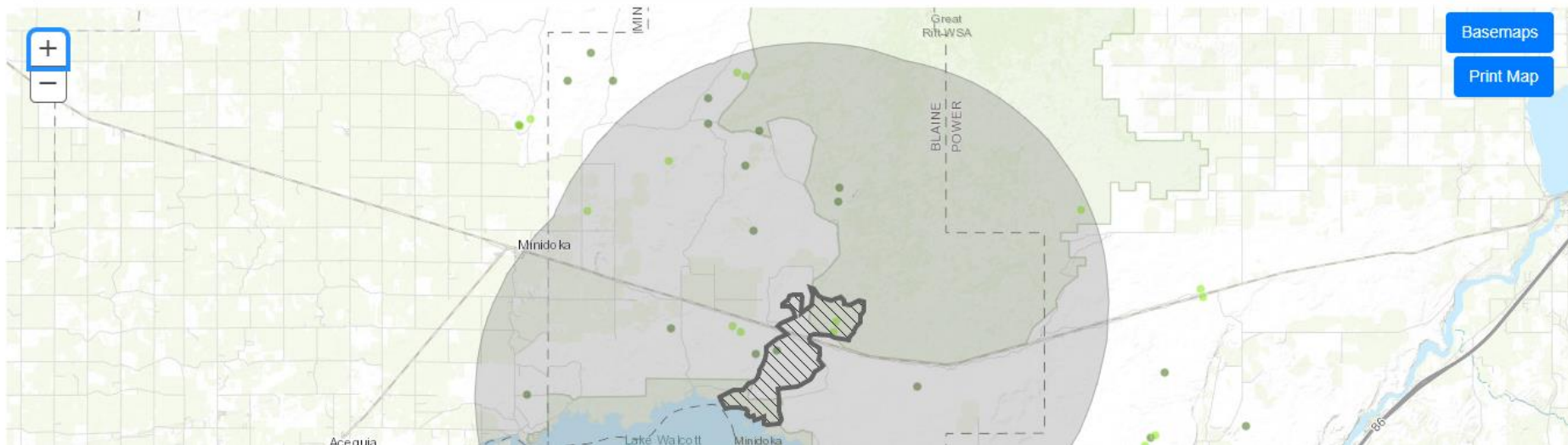
Step 6: Compare to LTDL treatments

## BLM AIM Monitoring Points

The Bureau of Land Management (BLM) Assessment, Inventory, and Monitoring (AIM) program monitors the status, condition, and trend of national BLM resources in accordance with BLM policies. The AIM Strategy - a standardized monitoring strategy for assessing natural resource condition and trend on BLM public lands, specifies a probabilistic sampling design, standard core indicators and methods, electronic data capture and management, and integration of on-the-ground collected field data with remotely sensed data. All data collection and management are carried out by BLM Field Offices, BLM Districts, and/or affiliated field crews with support from the BLM National Operations Center. Data are stored in a centralized database (TerrADat, BLM AIM Lotic Database) at the BLM National Operations Center and available at <https://gpb-blm-egis.hub.arcgis.com/pages/aim>.

This tab identifies monitoring points within and near the proposed treatment polygon. Refine the search distance by typing a distance - in miles, in the box below. The map will display the proposed treatment, the search area, and the monitoring points. The tables under the map display the monitoring point data within and near the polygon. Click a row to highlight the monitoring point in the map. Check the box for a row to add the selected monitoring point data to the Site Characterization Report. Click a species code - the black ovals with white lettering, to view information on that species in the USDA plants database.

Search for monitoring points within  miles of the proposed treatment



**View information for: on-the-ground monitoring data**

Plan Treatment Layers/Legend

Step 1: Describe proposed treatment

Step 2: Select treatment boundary

Step 3: Explore site characteristics

Toggle the options in the [Site History](#) tab to view treatment, wildfire, vegetation, climate, and recent drought history. Historical climate is viewable as the 30 year (1980 - 2010) averages displayed as a climatogram.

Look up on-the-ground monitoring in the [Monitoring](#) tab.

Preview endangered species, migratory birds, facilities, and wetlands information for your area through the [IPaC](#) tab.

View overlays of the numerous layers available on the [Planning Map](#).

View future drought forecasts for temperature, precipitation and soil moisture on the [Drought Forecast](#) tab.

Go back to [Step 2](#) to adjust your planned treatment boundary, if necessary.

Next Step >>

Step 4: Summarize your proposed treatment area

Step 5: Select search parameters

Step 6: Compare to LTDL treatments

USFWS IPaC Drought Forecast

## U.S. Fish & Wildlife Service - Information for Planning and Consultation (IPaC)

The USFWS Information for Planning and Consultation Project (IPaC) tool was developed by the USFWS to streamline their environmental review process. IPaC helps to identify listed species, critical habitat, migratory birds or other natural resources that may be affected by a proposed project.

After the treatment boundary is created and at Step 3 – Explore site characteristics, some of the information available from the IPaC tool will be displayed below. A unique URL to an individual IPaC project will be generated for each project created using the LTET. If you want to log in and explore the full capabilities of the IPaC tool, go to <https://ipac.ecosphere.fws.gov/location/222JJH7435CAZBLCPSCCXHHZ2Y/resources>

The first section below includes listed species that may be affected by the proposed project. IPaC provides the LTET with a list of species that are endangered, threatened, candidate, or proposed for listing. The LTET adds information on the status, description, where they are found, and a link to each Environmental Conservation Online System (ECOS) species profile. The second section below is a list of USFWS Birds of Conservation Concern or other vulnerable bird species. Data are provided from the Avian Knowledge Network data store and are additional species that may warrant attention in the proposed project area. The last section below shows data from the National Wetlands Inventory, including an interactive map, data table(s), and definitions.

Access their Frequently Asked Questions here: <https://ecos.fws.gov/ipac/#faq>

## Endangered Species

### Birds

#### Yellow-billed Cuckoo *Coccyzus americanus*

**Status:** **Threatened** A species likely to become endangered within the foreseeable future throughout all or a significant portion of its range

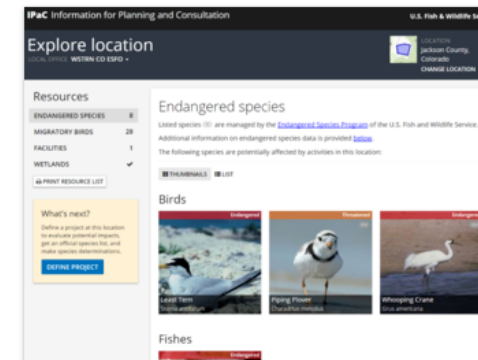
Description: Yellow-billed Cuckoos are fairly large, long, and slim birds. The mostly yellow bill i...[more](#)

Where Listed: Western DPS: U.S.A. (AZ, CA, CO (western), ID, MT (western), NM (western), NV, OR, TX...[more](#)

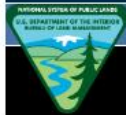
For more information, visit the [ECOS species profile](#)

### Insects

#### Monarch butterfly *Danaus plexippus*



Example Location API output.



## Land Treatment Exploration Tool

Plan Treatment

Layers/Legend

Planning Map

Site History

Monitoring

Results

Report

USFWS IPaC

Drought Forecast

▶ Step 1: Describe proposed treatment

▶ Step 2: Select treatment boundary

▼ Step 3: Explore site characteristics

Toggle the options in the [Site History](#) tab to view treatment, wildfire, vegetation, climate, and recent drought history. Historical climate is viewable as the 30 year (1980 - 2010) averages displayed as a climatogram.

Look up on-the-ground monitoring in the [Monitoring](#) tab.

Preview endangered species, migratory birds, facilities, and wetlands information for your area through the [IPaC](#) tab.

View overlays of the numerous layers available on the [Planning Map](#).

View future drought forecasts for temperature, precipitation and soil moisture on the [Drought Forecast](#) tab.

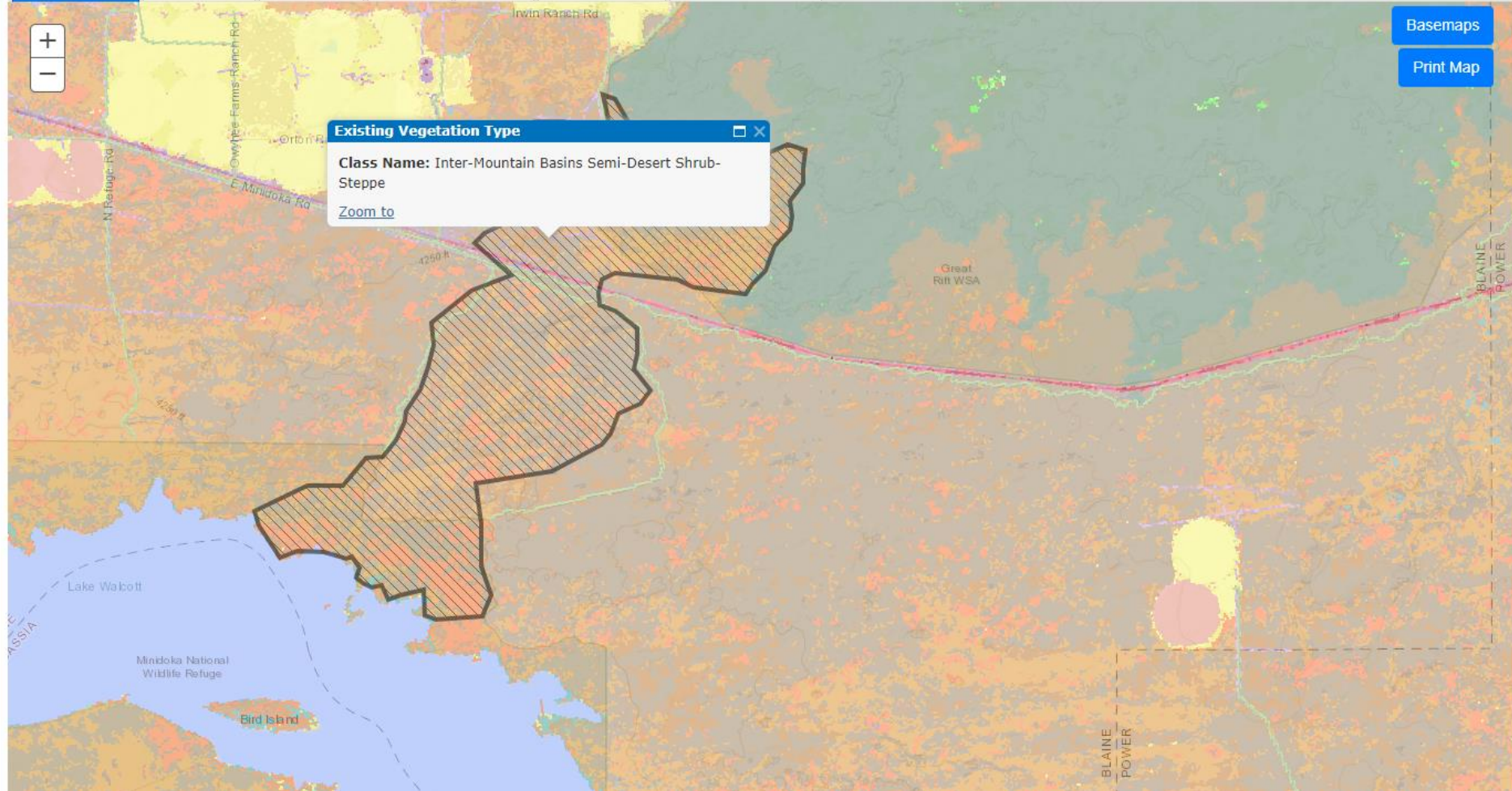
Go back to [Step 2](#) to adjust your planned treatment boundary, if necessary.

[Next Step >>](#)

▶ Step 4: Summarize your proposed treatment area

▶ Step 5: Select search parameters

▶ Step 6: Compare to LTDL treatments



**View information for: over 60 spatial data layers**

[Plan Treatment](#)[Layers/Legend](#)[Drought Forecast](#)

▶ Step 1: Describe proposed treatment

▶ Step 2: Select treatment boundary

▼ Step 3: Explore site characteristics

Toggle the options in the [Site History](#) tab to view treatment, wildfire, vegetation, climate, and recent drought history. Historical climate is viewable as the 30 year (1980 - 2010) averages displayed as a climatogram.

Look up on-the-ground monitoring in the [Monitoring](#) tab.

Preview endangered species, migratory birds, facilities, and wetlands information for your area through the [IPaC](#) tab.

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[Go back to Step 2](#) to adjust your planned treatment boundary, if necessary.

[Next Step >>](#)

▶ Step 4: Summarize your proposed treatment area

▶ Step 5: Select search parameters

▶ Step 6: Compare to LTDL treatments

[Preview Report](#)

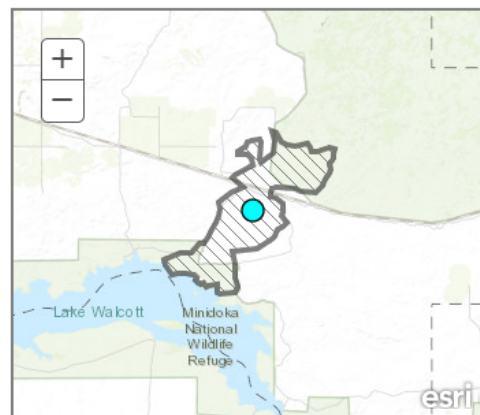
## Seasonal Ecological Drought Forecast

Weather variability is well known to have strong effects on land treatment application and outcomes particularly in dryland ecosystems. Intra-annual variations in seasonal water and temperature is especially important, such as those driven by particular storms or short-term events that last weeks or months. Past research has demonstrated the importance of weather, and drought in particular, on the success or failure of dryland restoration (e.g. Brabec et al. 2017; Hardegree et al. 2018, Shriver et al. 2018, Moffett et al. 2019).

This tool forecasts seasonal weather and soil water availability to help plan treatments such as herbicide or seeding after wildfires. The forecasts may help in understanding past treatment results, and/or evaluate climate and weather effects on treatments.

### Overview of tool

The Seasonal Ecological Drought Forecast Tool estimates soil moisture conditions for 12 months into the future by integrating National Weather Service regional seasonal temperature and precipitation forecasts, including uncertainty, with an ecosystem water balance model. Users select a point location and can specify soil texture or use gridded soils data SSURGO and STATSGO. The Seasonal Ecological Drought Forecast tool generates site-specific temperature, precipitation and soil moisture forecasts and compares forecasted conditions to historical conditions at 4km resolution. These forecasts can help assess the potential impact of drought on land treatments in the next 12 months. The Seasonal Ecological Drought Forecast tool also forecasts sagebrush establishment success for the coming season. Metrics for additional plant species are planned for future versions of the tool.



click button to change the point:

[Point](#)

#### Instructions for using the tool

The latitude and longitude shown in the map box to the left represents a central point for the planned treatment boundary created in Step 2. The point can be changed by clicking on the 'Point' button below the map to clear the current selection and clicking a new point on the map. The Seasonal Ecological Drought Forecast tool is set by default to use gridded soils data to determine the percent clay and sand for the location. Click the 'Specify Soils' radio button to show fields to specify values for the percent clay and sand. Click the 'Calculate' button when location and soils selections are complete. It may take 3-5 minutes for the Seasonal Ecological Drought Forecast tool to return a report. The results will display below and consist of a summary, shown first, and overview graphs of soil moisture, air temperature, and precipitation. Clicking the section headers opens detailed sections for each metric. See the [User Guide](#) Drought Forecast tab for more detailed instructions on how to use this tool and interpret its results.

 Use Gridded Soils Data Specify Soils[Calculate](#)

# View forecast for: soil moisture, temperature, precipitation, sagebrush



Plan Treatment Layers/Legend

- ▶ Step 1: Describe proposed treatment
- ▶ Step 2: Select treatment boundary
- ▶ Step 3: Explore site characteristics
- ▼ **Step 4: Summarize your proposed treatment area**

Select data to add to the report: [Select all](#)

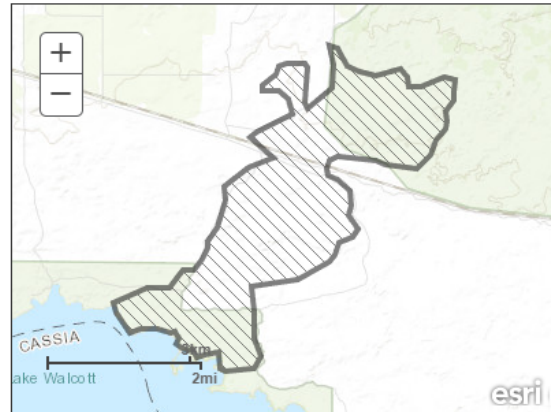
- PRISM Annual Normal Temperature and Precipitation; DEM
- Soil Temperature and Moisture Regime
- Resistance and Resilience
- 2001-2014 1y SPEI Mean and Standard Deviation
- Sage-grouse Breeding Habitat
- Sagebrush at Risk of Conifer Invasion
- Fire Risk Assessment for the Greater Sage-grouse
- Landfire Potential Vegetation Type
- LANDFIRE 2020 Existing Vegetation Cover (EVC) CONUS 2022 Capable
- LANDFIRE 2020 Existing Vegetation Type (EVT) CONUS
- Ruggedness
- Heatload
- Ecological Site Name
- Combined Wildfire Dataset for the United States Rasters
- Provisional Seed Zones
- LANDFIRE 2020 Elevation (Elev) CONUS
- NLCD 2021 CONUS Land Cover
- Wildfire Probability for the Sagebrush Biome
- RCMAP Vegetation Cover (2021)
- Grazing Allotments
- Sage-grouse Priority Areas for Conservation

Planning Map Site History Monitoring Results **Report** USFWS IPaC Drought Forecast

Preview Report

## Project Name: Minidoka Restoration 2024 Treatment Type: General Rehabilitation

### Report ?



No legend

Note: The scale on this map will determine the scale on maps included in the report pdf.

**Area of Proposed Treatment:** 3945.65 acres (15.97 sq km.)

#### BLM Administrative Unit Information

- Burley Field Office, Twin Falls District Office, ID (74.29%)
- Shoshone Field Office, Twin Falls District Office, ID (25.71%)

#### PRISM Annual Normal Temperature and Precipitation; DEM

Category	Mean	Range	St Dev
Waiting for data			

#### Soil Temperature and Moisture Regime

Category	Acres	Percent Area
Waiting for data		

**Calculate summary statistics for your treatment**





## Land Treatment Exploration Tool

**Plan Treatment** Layers/Legend

- ▶ Step 1: Describe proposed treatment
- ▶ Step 2: Select treatment boundary
- ▶ Step 3: Explore site characteristics
- ▶ Step 4: Summarize your proposed treatment area

▼ Step 5: Select search parameters

### How do you want to search for treatments?

To search for matching LTDL treatments spatially, first select a buffer distance, political boundary...more

### Select buffer or boundary search area

User-defined buffer distance

Search for treatments within  miles of proposed treatment

[Show Buffer](#) [Remove Buffer](#)

### Optional Similarity Model

- Climate
- Heat Load
- Landform

[Query LTDL](#) [Clear Query Results](#)

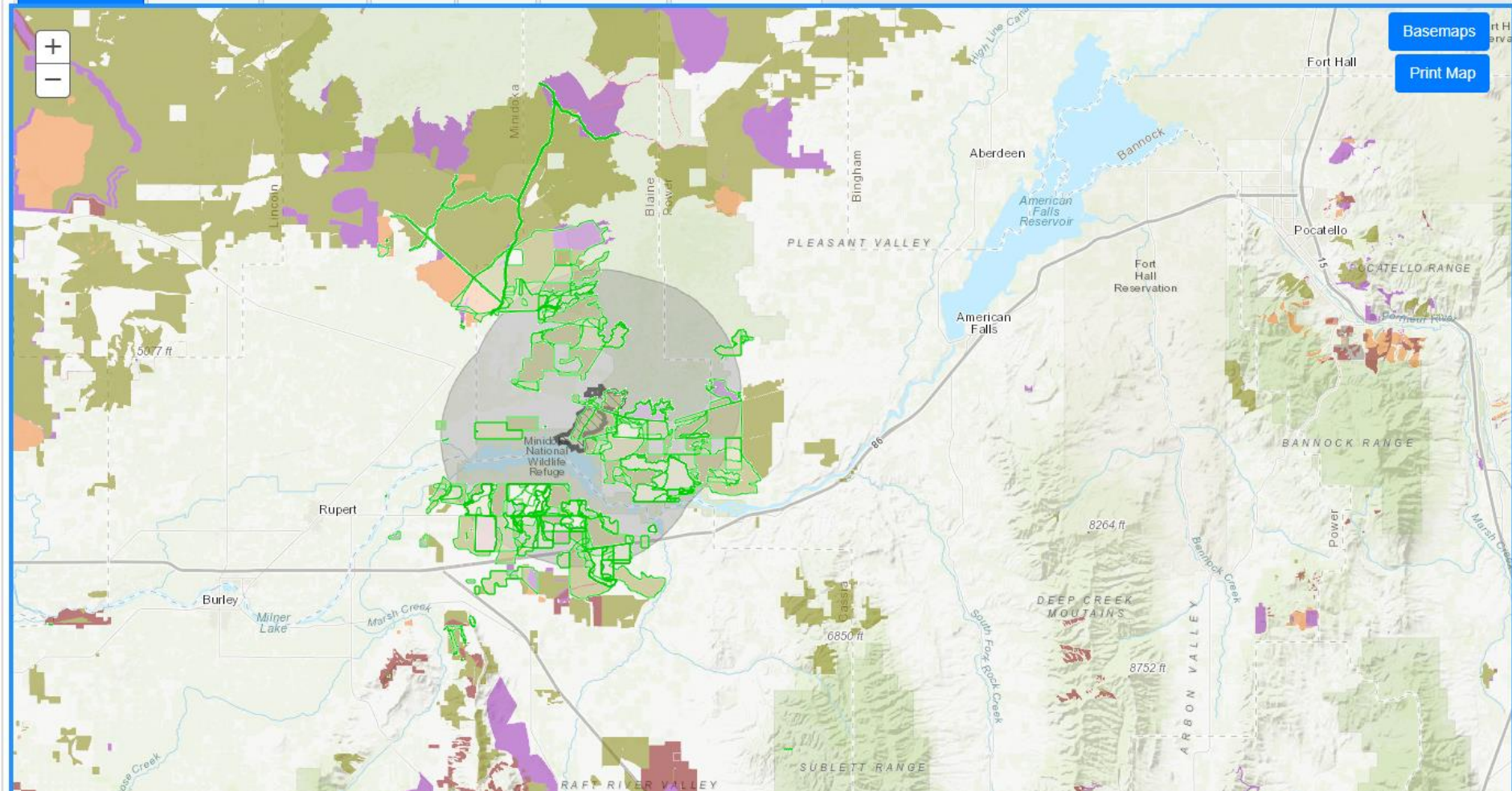
While this processes, explore the [Site History](#) for your proposed treatment area.

Automatically switch to Results Tab when query completes.

Query Status:

All treatments in boundary returned

**Planning Map** Site History Monitoring Results Report USFWS IPaC Drought Forecast



# Search for treatments to learn from



Plan Treatment Layers/Legend

- ▶ Step 1: Describe proposed treatment
- ▶ Step 2: Select treatment boundary
- ▶ Step 3: Explore site characteristics
- ▶ Step 4: Summarize your proposed treatment area
- ▶ Step 5: Select search parameters

▼ Step 6: Compare to LTDL treatments

Filter the results: [Go to the Results table](#)

Climate Similarity Rank Limit: ?

Heat Load Similarity Rank Limit: ?

Landform Similarity Rank Limit: ?

Project Name: ?

Treatment Category: ?

Treatment Type: ?

Start Year: ?

End Year: ?

<https://www.usgs.gov/apps/land-treatment-exploration-tool/map#resultsTable>

Planning Map Site History Monitoring **Results** Report USFWS IPaC Drought Forecast

## Land Treatment Digital Library Matches

108 matching treatments

Note: Check the box on left side of row to include the data in the report.

Expand for details

Similarity to LTDL Treatment ?		Treatment Evaluation ?									
Climate Rank (Value)	Heat Load (Value)	Landform (Value)									
Project	Treatment Category	Treatment Type	Year								
Imp	Poly	SL	Res								
Mon	Ver										
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Basalt Wildfire 1567 1981	Seeding	Ground Seeding: Drill	1981-1982	I	BU	P	N	N	N
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Bear Trap Wildfire F374 1995	Seeding	Aerial Seeding: Rotor Wing	1996	I	LC	C	N	N	N
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Bear Trap Wildfire F374 1995	Seeding	Ground Seeding: Drill	1995	U	ND	P	N	N	N
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Blaine County Frail Land Seeding 1965	Seeding	Ground Seeding: Drill	1965-1966	I	BU	C	N	N	N
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Bonanza 1 North Wildfire G266 1985	Seeding	Ground Seeding: Drill	1985-1986	I	BU	P	N	N	N
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Burley Idaho Office Weed Treatments 1999 to 2008	Herbicide/Weeds/Chemical	Noxious Weeds: Weed Control	1999-2008	I	BU	NA	N	N	N
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Chybo Re seeding 1951	Seeding	Ground Seeding: Drill	1951	I	BU	C	N	Y	N
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Chybo Re seeding #2 1952	Seeding	Ground Seeding: Drill	1952	I	BU	C	Y	N	N
<input type="checkbox"/>	<input checked="" type="checkbox"/>	DeWolf Fire Rehab 1986	Seeding	Ground Seeding: Drill	1987	I	BU	C	N	N	N
<input type="checkbox"/>	<input checked="" type="checkbox"/>	DeWolf Wildfire 1967	Seeding	Aerial Seeding: Rotor Wing	1967	I	BU	C	N	N	N
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Fifteen Mile Wildfire 1586 1977	Seeding	Ground Seeding: Drill	1977-1978	I	BU	P	N	N	N
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Hawley Minidoka Wildfire F393 1988	Seeding	Ground Seeding: Drill	1988	I	BU	P	N	N	N
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Hawley Wildfire F550 1994	Seeding	Ground Seeding: Drill	1994-1995	I	BU	P	N	Y	N
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Highway Wildfire 1957	Seeding	Ground Seeding: Drill	1958	I	BU	C	Y	N	N
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Highway Wildfire 1957	Vegetation/Soil Manipulation	Soil Disturbance: Discing	1958	I	BI	NA	N	N	N
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Highway Re seeding Number 11 1953	Seeding	Ground Seeding: Drill	1953	I	BU	P	N	N	N

**Filter and read details of legacy treatments**


# Site Characterization Report

## Intro Page

## Notes

## Summary Sections

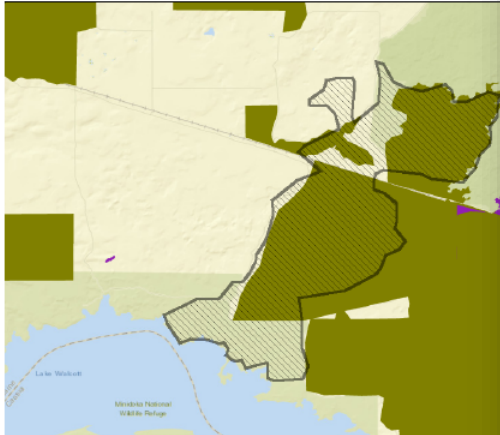
## Treatments



### Site Characterization Report

**Planned Project Name:** Minidoka Wildfire Restoration  
**Planned Treatment Type:** Aerial Seeding, Seedling, plug plant, grass/site preparation, Area closure/exclosure, Vegetation

**Planned Treatment Overview**



**Figure 1.** The general area for the planned treatment (gray, hatched box). The approximate area of the proposed treatment included in the map are past land treatments from the Land Treatment Digital Library.

**LTDL Treatments**

- Biological Control
- Closure/Exclosure
- Facilities/Fences/Roads
- Herbicide/Woods/Chemical
- Prescribed Burn
- Seeding
- Soil Stabilization
- Vegetation/Soil Manipulation
- Other

**BLM Administrative Unit Information**

- Burley Field Office, Twin Falls District Office, ID (4.29%)
- Shaoshone Field Office, Twin Falls District Office, ID (29.71%)

**About the Land Treatment Exploration Tool**

The Exploration Tool is designed for use by resource managers during planning to summarize environmental characteristics of planned treatment areas comparing those characteristics to similar legacy treatments.

**How to cite:**

Site Characterization Report for Minidoka Wildfire Restoration 2024  
 Richards, M.A., and Schueck, L.S., 2023, Land Treatment Exploration Tool  
 date April 29, 2024

### Annotations

This section provides overview notes for the proposed treatment area. For summary tables and maps related to these notes, see the corresponding sections.

**Notes about the summaries:**

**Wildfire:** This area is primarily modeled as unsuitable sage-grouse breeding habitat, but is adjacent to more suitable habitat based on gSSURGO data, this area is highly suitable for Pygmy rabbits.

According to IPaC, this area may contain habitat for the threatened Yellow-billed Cuckoo and the candidate monarch butterfly. Conservation concern, including two eagle species, may also occur in the area.

**Soils:** The area consists of two ecological sites. LOAMY 8-12 ART RT/PSPS occurs on 62% of the northern area and SANDY 1 remaining 38%, primarily in the SW. The soil temperature/moisture regime is Mesic/Aridic bordering on Xeric with low reactivity.

**Habitat:** There are 3 on-the-ground monitoring points within the boundary from 2020 and 2021. They documented high total sagebrush cover. The plots documented high tall and short, perennial grass cover (sandbergs bluegrass, crested wheatgrass, and bulbous bluegrass). Native forbs included Munn's globemallow, sagebrush phlox, plains pricklypear, and forbs included common dandelion, and yellow saxifrage. An additional point just outside the boundary included slightly higher bluebunch wheatgrass, death camas, largeflower hawkbeard, and prickly lettuce.

From remotely sensed data, this area is not considered a core sagebrush area and has been poor to intermediate condition predicts that most of the area had at least 20% shrub cover.

According to the National Wetlands Inventory, there are several, small seasonally flooded and temporary flooded wetland areas in general, this area falls within the 15-20 Deg. F and 6-12 in. precipitation seed zone. According to empirical seed zones, 1 basin big sagebrush and not an area suitable for mountain big sagebrush. This area includes 3 seed zones for sandberg's bluebunch wheatgrass, and 1 for bottlebrush squirreltail.

**Notes about the treatment history:**

There have been six prior restoration treatments documented in the Land Treatment Digital Library.

The oldest documented seedings occurred in 1951 and 1952 and included crested wheatgrass and yellow sweetclover. This refuge and E Minidoka Road.

In 1968, crested wheatgrass and rye were drill seeded after the Minidoka East 9 wildfire in the area north of E Minidoka Road.

A small strip on the NW side of the fire was seeded with Nordan crested wheatgrass, Siberian wheatgrass, sneaker rye, and wheatgrass, Akar tall wheatgrass, appar blue flax, spreader III alfalfa, delar small urnet after the UPRR Mile Post 265 Wildfire.

An additional sagebrush planting in 2017 and mixed species drill seeding in 1999 occurred along the edges of the boundary.

**Notes about the wildfire history:**

Most of the area has experienced wildfire in the past. These include the Chybo Well (1976), Montgomery (1982), Lake Chann southern portion. In the northern portion the unnamed fire (1941), Minidoka East 9 (1968), RR MP2635 (1979), Hawley (1986), (2019).

**Notes about seasonal drought:**

According to the US Drought Monitor and the Drought Index Portal, this area is not currently experiencing drought. The Palmer Drought Index and the 3-month Evaporative Demand Index are in agreement that at least since May of 2023 conditions have not been droughty.


U.S. Department of the Interior  
 U.S. Geological Survey

Land Treatment

### Sagebrush Conservation Design

The three mapped threats (invasive annual grasses, expanding conifers, and human modification) with core sagebrush areas and growth form data were used to create a spatially explicit model that assessed geographic patterns in sagebrush ecological integrity and used these results to identify Opportunity Areas (OAs), and Other Rangeland Areas (ORAs). Source: <https://doi.org/10.5068/2PMYS0V>

Definition	Acres	Percent Area
Other rangeland areas	3,876	88.23%
Non-sagebrush areas (not included in analyses)	70	1.77%




**SEI Core Sagebrush Areas**

- Non-sagebrush areas (not included in analyses)
- Core habitat areas
- Growth opportunity areas
- Other rangeland areas

### Sage Seed Transfer Zones

Contemporary empirical seed zones for sagebrush (*Artemisia tridentata* subsp. *wyomingensis*, *tridentata*, and *vaseyana*). Seed zones are associated with cold hardiness and flower phenology. Seed zones are also divided by regions to account for possible population genetic management. Source: <https://www.fs.usda.gov/westa/forest-map/TRMSSeedZoneData.php>

Zone	Category	Acres	Percent Area
3	Wyoming Big Sagebrush/Big Sagebrush	3,948	100.00%



**Sage Seed Transfer Zones**

- Wyoming Big Sagebrush/Big Sagebrush

U.S. Department of the Interior  
 U.S. Geological Survey

Land Treatment Exploration Tool Report - 2024-4-29 14:11

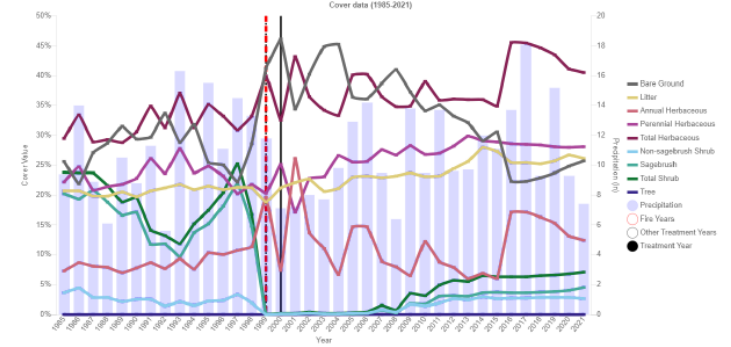
Treatments selected from the Land Treatment Digital Library for reference:

**Project Name:** Wapi Wildfire F480 1999  
**Project ID:** 12414  
**Treatment ID:** 33473  
**BLM Field Office:** Shaoshone Field Office  
**State:** Idaho  
**Major Treatment:** Seeding  
**Sub Treatment:** Aerial Seeding  
**Treatment Type:** Aerial Seeding, Rotor Wing  
**BLM Reported Success:** See Comments  
**BLM Objectives:** Establish Seeded Species

**Purpose:** Wildfire  
**Dates:** (Confirmed)  
**Start:** 2/17/2000  
**End:** 2/17/2000  
**Area:** 960 acres  
**GIS Acres:** 817.02 acres  
**GIS Feature Type:** Polygon  
**Feature Status:** Confirmed

**Actual Implementation:** This project consisted of aerial seeding 960 acres. Rate of application was 1.0 pounds bulk seed per acre on 960 acres which had previously been drill seeded. The seed consisted of Basin Big Sage. The seed was applied to bare and muddy ground, see the attached map for the project location. The contractor was Thomas Helicopters, Inc of Gooding, ID. Pilots for the seeding were Rod Thomas and Dale Thomas. The project was completed using a helicopter and two sling type buckets. The project was started on 2/17/00 and completed on 2/17/00. Grass and Basin Big Sagebrush Seeding The transect was established on a NE-facing slope on the west side of the seeding. This location appeared most representative of the overall success of the seeding. Grasses seemed to take well throughout the seeding. There was a strip along the road, about 200 ft. wide, in which the sagebrush seedlings were particularly dense, although sagebrush seedlings were found scattered sparsely throughout the seeding as well. The sagebrush seedlings were a mix of both three-tip sagebrush (ARTRT) and basin big sagebrush (ARTRI), although the seeding called for only ARTRT. The transect was placed beginning at the edge of the strip and running away from it in order to monitor the success of both the grasses and the sagebrush.

**Treatment Results:** Summer 2001: The transect was established on a NE-facing slope on the west side of the seeding. This location appeared most representative of the overall success of the seeding. Grasses seemed to take well throughout the seeding. There was a strip along the road, about 200 ft. wide, in which the sagebrush seedlings were particularly dense, although sagebrush seedlings were found scattered sparsely throughout the seeding as well. The sagebrush seedlings were a mix of both three-tip sagebrush (ARTRT) and basin big sagebrush (ARTRI), although the seeding called for only ARTRT. The transect was placed beginning at the edge of the strip and running away from it in order to monitor the success of both the grasses and the sagebrush.



**Cover data (1985-2021)**

**Caption:** Cover data (1985-2021) - Rangeland Condition Monitoring Assessment and Projection (RCMAP) fractional component cover year mean - 1985-2021, within the selected treatment. Year of selected treatments indicated by the vertical, solid black line. Years of other treatments at the same site are indicated with vertical, dashed black lines. Years of fire events are indicated with the vertical, dashed red lines. Precipitation by year year are displayed as blue bars with values corresponding to the secondary y-axis. Rows over the chart to see values. Legend items can be selected to display or not on the chart. Unselected legend items will display with a strikethrough. For more information on the RCMAP data, visit the [BLM Rangeland Condition Monitoring Assessment and Projection website](https://www.fs.usda.gov/westa/forest-map/TRMSSeedZoneData.php).

Symbol	Species	Common Name	Seed Variety	Bulk Seed Pounds	Bulk Pounds/Acre	PLS Rate	PLS Seed Pounds	PLS Pounds/Acre	Seeding Number	Seedlings/Acre
ARTRT	<i>Artemisia tridentata</i> Nutt. ssp. <i>tridentata</i>	Basin Big Sagebrush	None	960	1	0.143	137.28	0.143		

U.S. Department of the Interior  
 U.S. Geological Survey

Land Treatment Exploration Tool Report - 2024-4-29 14:11

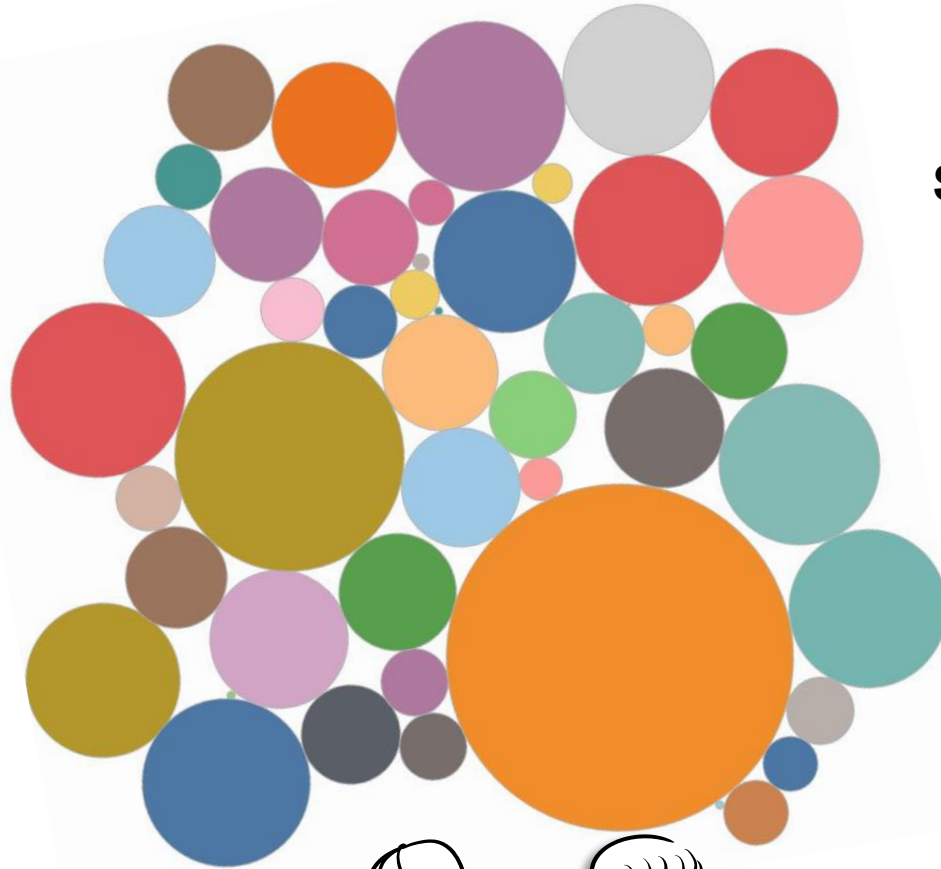
# Acknowledgements

## Pilliod Lab Crew

Justin Welty  
Linda Schueck  
Mark Richards  
Mike Perez  
Scott Price  
Leeland Bennion  
Dozens of techs →

## Short Term Drought Forecast Crew

John Bradford  
Caitlin Andrews  
Daniel Schlaepfer  
Alice Stears  
Gregor Siegmund



# Ready to try yourself?

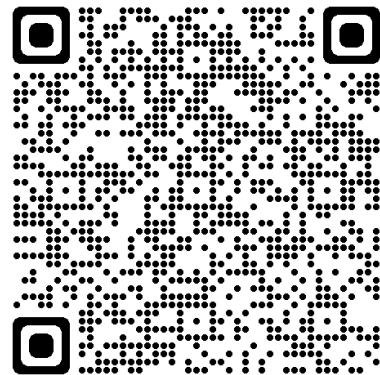
Post-fire treatments?  
Fuel breaks?  
Mesic habitat restoration?  
Species control?

?

## A few things to keep in mind

- The LTET doesn't typically have a room full of people hitting it at the exact same time, be patient with technology
- The LTET runs in front of a cloud ArcGIS server, geoprocessing requests will be queued as it becomes busy
- 'Retry' as prompted if anything fails due to timeout
- Assign a computer leader to move through the tool for your group
- Discuss as you go
- Ask for help when needed

<http://usgs.gov/ltet>



# Explore Site History

## View Historical:

- ✓ Treatment
- ✓ Wildfire
- ✓ Vegetation
- ✓ Climate
- ✓ Drought

# Project Name: Minidoka Wildfire Restoration 2024

Treatment Type: Aerial Seeding, Seedling, plug planting, Herbicide - annual grass/site preparation, Area closure/exclosure, Vegetation/soil manipulation

## Previously Treated Areas

Select Major Treatment

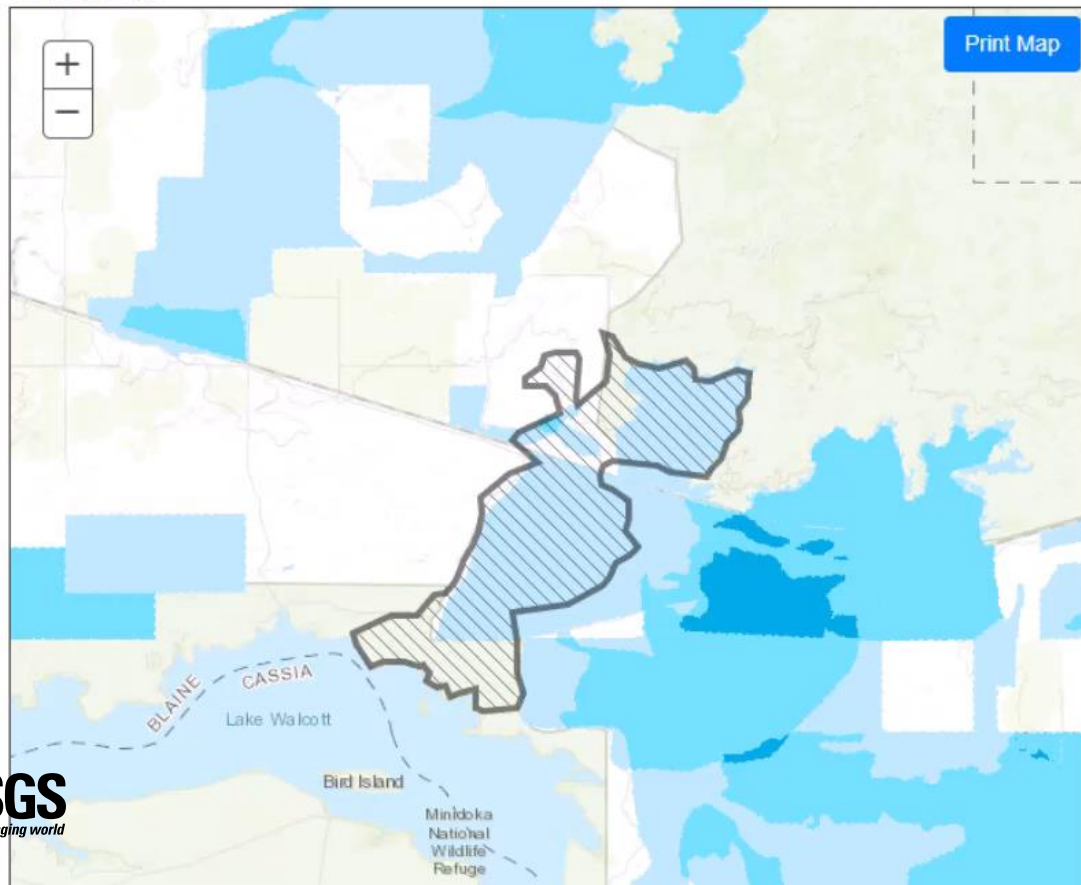
All Treatment Types

Implementation status of treatments: ?

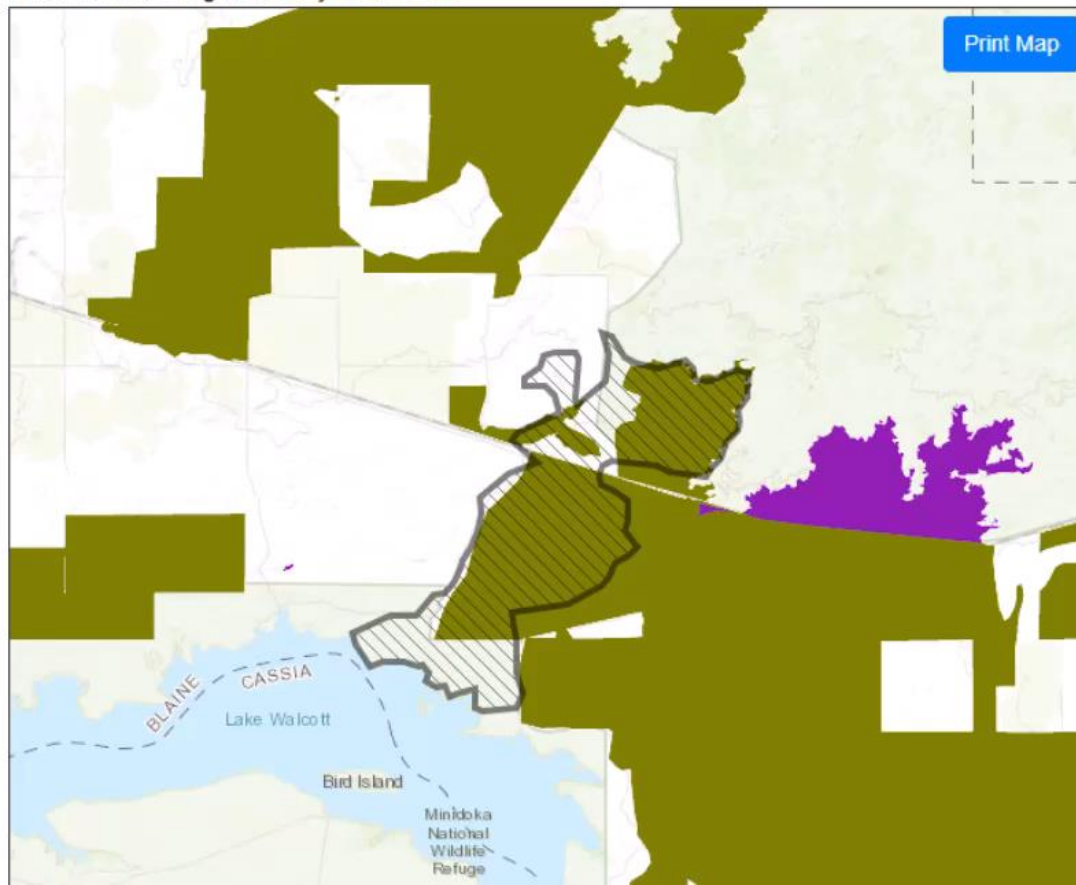
Confirmed Implementation

Confirmed and Unknown Implementation

### Times Treated



### Land Treatment Digital Library Treatments



# Previous Monitoring Locations

## BLM Hosted Monitoring Data:

- ✓ Terrestrial AIM
- ✓ Landscape Monitoring Framework
- ✓ Aquatic AIM





Plan Treatment

Layers/Legend

▶ Step 1: Describe proposed treatment

▶ Step 2: Select treatment boundary

▼ **Step 3: Explore site characteristics**

Toggle the options in the [Site History](#) tab to view treatment, wildfire, vegetation, climate, and recent drought history. Historical climate is viewable as the 30 year (1980 - 2010) averages displayed as a climatogram.

Look up on-the-ground monitoring in the [Monitoring](#) tab.

Preview endangered species, migratory birds, facilities, and wetlands information for your area through the [IPaC](#) tab.

View overlays of the numerous layers available on the [Planning Map](#).

View future drought forecasts for temperature, precipitation and soil moisture on the [Drought Forecast](#) tab.

[Go back to Step 2](#) to adjust your planned treatment boundary, if necessary.

[Next Step >>](#)

▶ Step 4: Summarize your proposed treatment area

▶ Step 5: Select search parameters

▶ Step 6: Compare to LTDL treatments

Planning Map

Site History

**Monitoring**

Results

Report

USFWS IPaC

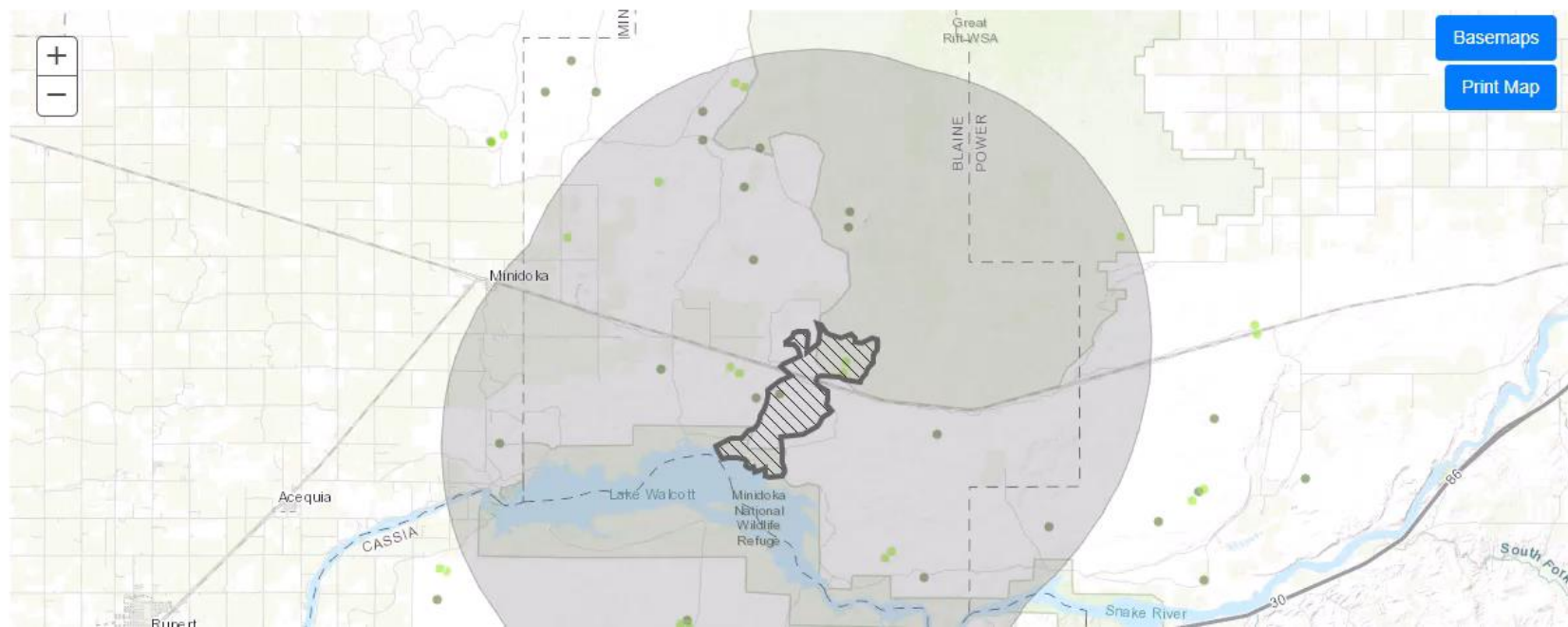
Drought Forecast

## BLM AIM Monitoring Points

The Bureau of Land Management (BLM) Assessment, Inventory, and Monitoring (AIM) program monitors the status, condition, and trend of national BLM resources in accordance with BLM polices. The AIM Strategy - a standardized monitoring strategy for assessing natural resource condition and trend on BLM public lands, specifies a probabilistic sampling design, standard core indicators and methods, electronic data capture and management, and integration of on-the-ground collected field data with remotely sensed data. All data collection and management are carried out by BLM Field Offices, BLM Districts, and/or affiliated field crews with support from the BLM National Operations Center. Data are stored in a centralized database (TerrADat, BLM AIM Lotic Database) at the BLM National Operations Center and available at <https://gbb-blm-egis.hub.arcgis.com/pages/aim>.

This tab identifies monitoring points within and near the proposed treatment polygon. Refine the search distance by typing a distance - in miles, in the box below. The map will display the proposed treatment, the search area, and the monitoring points. The tables under the map display the monitoring point data within and near the polygon. Click a row to highlight the monitoring point in the map. Check the box for a row to add the selected monitoring point data to the Site Characterization Report. Click a species code - the black ovals with white lettering, to view information on that species in the USDA plants database.

Search for monitoring points within  miles of the proposed treatment



# Special Status Species

## USFWS

### Information for Planning and Consultation Tool:

- ✓ Special status species
- ✓ Migratory birds of conservation concern
- ✓ Wetlands



Plan Treatment

Layers/Legend

▶ Step 1: Describe proposed treatment

▶ Step 2: Select treatment boundary

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Planning Map

Site History

Monitoring

Results

Report

**USFWS IPaC**

Drought Forecast

## U.S. Fish & Wildlife Service - Information for Planning and Consultation (IPaC)

The USFWS Information for Planning and Consultation Project (IPaC) tool was developed by the USFWS to streamline their environmental review process. IPaC helps to identify listed species, critical habitat, migratory birds or other natural resources that may be affected by a proposed project.

After the treatment boundary is created and at Step 3 – Explore site characteristics, some of the information available from the IPaC tool will be displayed below. A unique URL to an individual IPaC project will be generated for each project created using the LTET. If you want to log in and explore the full capabilities of the IPaC tool, go to <https://ipac.ecosphere.fws.gov/location/17IKINOKMBEVTRXKIC7AUXB2A/resources>

The first section below includes listed species that may be affected by the proposed project. IPaC provides the LTET with a list of species that are endangered, threatened, candidate, or proposed for listing. The LTET adds information on the status, description, where they are found, and a link to each Environmental Conservation Online System (ECOS) species profile. The second section below is a list of USFWS Birds of Conservation Concern or other vulnerable bird species. Data are provided from the Avian Knowledge Network data store and are additional species that may warrant attention in the proposed project area. The last section below shows data from the National Wetlands Inventory, including an interactive map, data table(s), and definitions.

Access their Frequently Asked Questions here: <https://ecos.fws.gov/ipac/#faq>

## Endangered Species

### Birds

#### Yellow-billed Cuckoo *Coccyzus americanus*

**Status:** **Threatened** A species likely to become endangered within the foreseeable future throughout all or a significant portion of its range

Description: Yellow-billed Cuckoos are fairly large, long, and slim birds. The mostly yellow bill i...[more](#)

Where Listed: Western DPS: U.S.A. (AZ, CA, CO (western), ID, MT (western), NM (western), NV, OR, TX...[more](#)

For more information, visit the [ECOS species profile](#)

### Insects

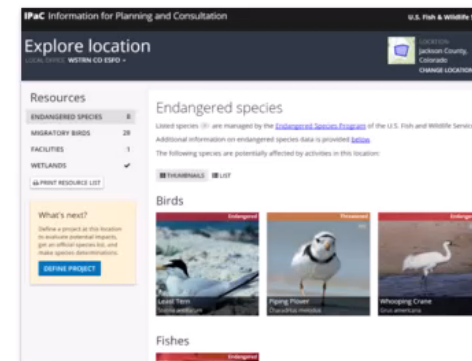
#### Monarch butterfly *Danaus plexippus*

**Status:** Candidate A species under consideration for official listing for which there is sufficient information to support listing

Description: Note - the monarch is a candidate species and not yet listed or proposed for listing. ...[more](#)

**Where Listed:** Wherever found

For more information, visit the [ECOS species profile](#)



Example Location API output.



# Explore Spatial Data

View and interact with >70 data layers

- ✓ Administrative Boundaries
- ✓ Climate
- ✓ Ecological Classifications
- ✓ Land Treatments and Monitoring
- ✓ Soil Information and Topography
- ✓ Wildfire



Plan Treatment

**Layers/Legend**

Select the layers to view on the map. After clicking this, you will see the legend and a tab to change the opacity of the layer. If a layer is currently grayed out, you are outside the visibility scale. Zoom in and the layer will become active.

[Back to Tool Steps.](#)

[View sources and metadata for these layers.](#)

Filter Layers:

Administrative Boundaries

Climate

Ecological Classifications

Land Treatments

Monitoring

Sage-grouse Specific

Soil Information

Topography

Wildfire

**Planning Map**

Site History

Monitoring

Results

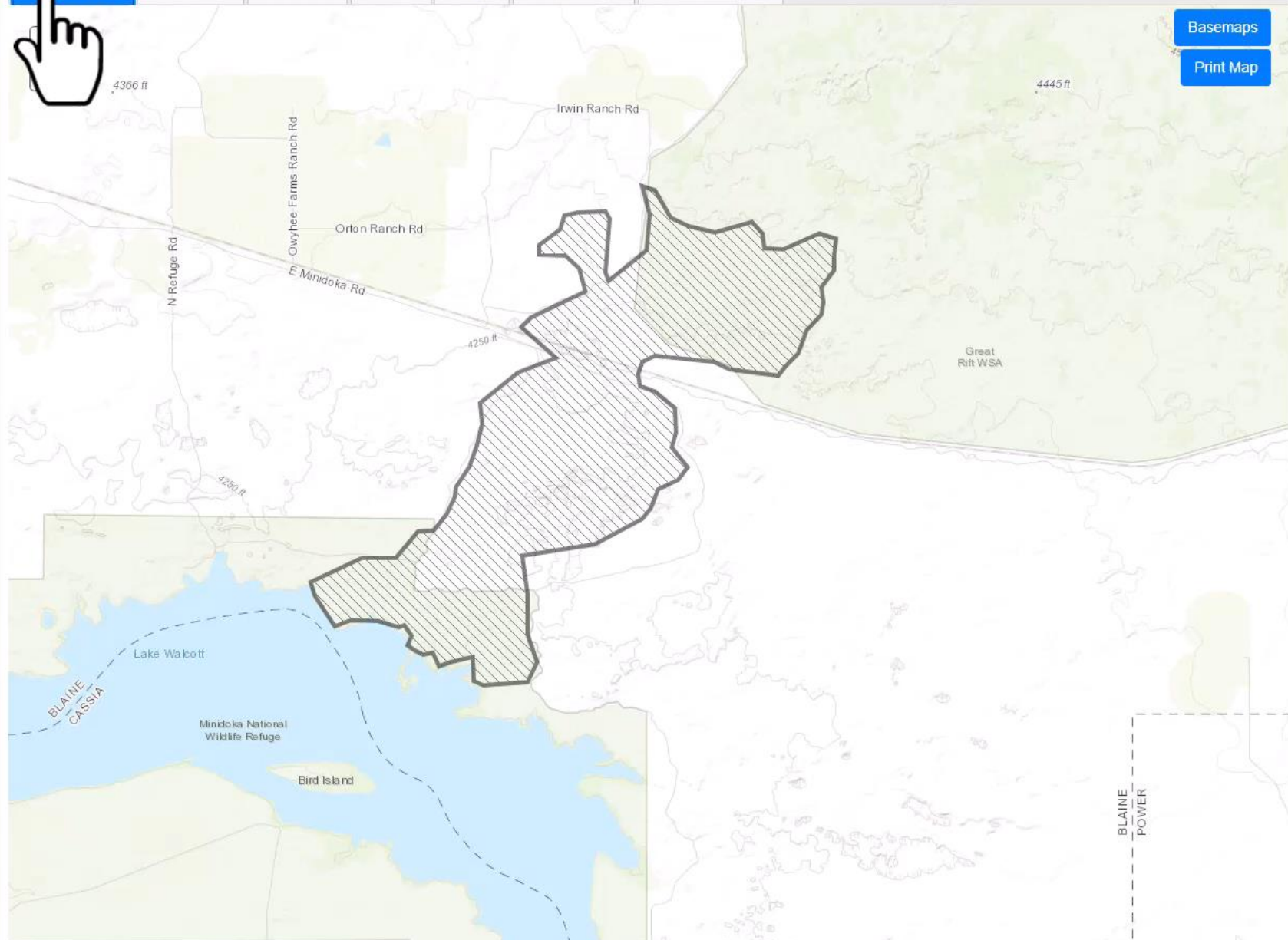
Report

USFWS IPaC

Drought Forecast

Basemaps

Print Map



# Drought Forecast

## Short-term Drought Forecast:

- ✓ Soil Moisture
- ✓ Air Temperature
- ✓ Precipitation



Plan Treatment

Layers/Legend

▶ Step 1: Describe proposed treatment

▶ Step 2: Select treatment boundary

▼ **Step 3: Explore site characteristics**

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[Go back to Step 2](#) to adjust your planned treatment boundary, if necessary.

**Next Step >>**

▶ Step 4: Summarize your proposed treatment area

▶ Step 5: Select search parameters

▶ Step 6: Compare to LTDL treatments

Planning Map

Site History

Monitoring

Results

Report

USFWS IPaC

**Drought Forecast**

## Seasonal Ecological Drought Forecast



Weather variability is well known to have strong effects on land treatment application and outcomes particularly in dryland ecosystems. Intra-annual variations in seasonal water and temperature is especially important, such as those driven by particular storms or short-term events that last weeks or months. Past research has demonstrated the importance of weather, and drought in particular, on the success or failure of dryland restoration (e.g. Brabec et al. 2017; Hardegree et al. 2018, Shriver et al. 2018, Moffett et al. 2019).

This tool forecasts seasonal weather and soil water availability to help plan treatments such as herbicide or seeding after wildfires. The forecasts may help in understanding past treatment results, and/or evaluate climate and weather effects on treatments.

### Overview of tool

The Seasonal Ecological Drought Forecast Tool estimates soil moisture conditions for 12 months into the future by integrating National Weather Service regional seasonal temperature and precipitation forecasts, including uncertainty, with an ecosystem water balance model. Users select a point location and can specify soil texture or use gridded soils data SSURGO and STATSGO. The Seasonal Ecological Drought Forecast tool generates site-specific temperature, precipitation and soil moisture forecasts and compares forecasted conditions to historical conditions at 4km resolution. These forecasts can help assess the potential impact of drought on land treatments in the next 12 months. The Seasonal Ecological Drought Forecast tool also forecasts sagebrush establishment success for the coming season. Metrics for additional plant species are planned for future versions of the tool.



click button to change the point: **Point**

#### Instructions for using the tool

The latitude and longitude shown in the map box to the left represents a central point for the planned treatment boundary created in Step 2. The point can be changed by clicking on the 'Point' button below the map to clear the current selection and clicking a new point on the map. The Seasonal Ecological Drought Forecast tool is set by default to use gridded soils data to determine the percent clay and sand for the location. Click the 'Specify Soils' radio button to show fields to specify values for the percent clay and sand. Click the 'Calculate' button when location and soils selections are complete. It may take 3-5 minutes for the Seasonal Ecological Drought Forecast tool to return a report. The results will display below and consist of a summary, shown first, and overview graphs of soil moisture, air temperature, and precipitation. Clicking the section headers opens detailed sections for each metric. See the [User Guide](#) Drought Forecast tab for more detailed instructions on how to use this tool and interpret its results.

**Use Gridded Soils Data**

**Specify Soils**

**Calculate**

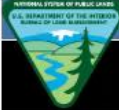


# Summary Statistics

## On-the-fly summary statistics:

- ✓ For the user-drawn area
- ✓ 27 layer options
- ✓ Statistics, map, and legend included





Plan Treatment

Layers/Legend

▶ Step 1: Describe proposed treatment

▶ Step 2: Select treatment boundary

▶ Step 3: Explore site characteristics

▼ **Step 4: Summarize your proposed treatment area**

Select data to add to the report: [Select all](#)

- PRISM Annual Normal Temperature and Precipitation; DEM
- Soil Temperature and Moisture Regime
- Resistance and Resilience
- 2001-2014 1y SPEI Mean and Standard Deviation
- Sage-grouse Breeding Habitat
- Sagebrush at Risk of Conifer Invasion
- Fire Risk Assessment for the Greater Sage-grouse
- Landfire Potential Vegetation Type
- LANDFIRE 2020 Existing Vegetation Cover (EVC) CONUS 2022 Capable
- LANDFIRE 2020 Existing Vegetation Type (EVT) CONUS
- Ruggedness
- Heatload
- Ecological Site Name
- Combined Wildfire Dataset for the United States Rasters
- Provisional Seed Zones
- LANDFIRE 2020 Elevation (Elev) CONUS
- NLCD 2021 CONUS Land Cover
- Wildfire Probability for the Sagebrush Biome
- RCMAP Vegetation Cover (2021)
- Grazing Allotments
- Sage-grouse Priority Areas for Conservation
- BLM WesternUS GRSR ROD Habitat Mgmt Areas August 2022
- Sagebrush Conservation Design
- Sagebrush Seed Transfer Zones

Planning Map

Site History

Monitoring

Results

Report

USFWS IPaC

**Drought Forecast**

[Preview Report](#)

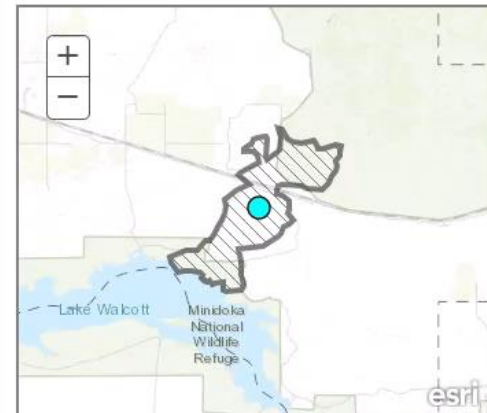
## Seasonal Ecological Drought Forecast

Weather variability is well known to have strong effects on land treatment application and outcomes particularly in dryland ecosystems. Intra-annual variations in seasonal water and temperature is especially important, such as those driven by particular storms or short-term events that last weeks or months. Past research has demonstrated the importance of weather, and drought in particular, on the success or failure of dryland restoration (e.g. Brabec et al. 2017; Hardegree et al. 2018, Shriver et al. 2018, Moffett et al. 2019).

This tool forecasts seasonal weather and soil water availability to help plan treatments such as herbicide or seeding after wildfires. The forecasts may help in understanding past treatment results, and/or evaluate climate and weather effects on treatments.

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Use Gridded Soils Data

Specify Soils

[Calculate](#)

### Your Seasonal Drought Forecast

To the right is a graphical summary of the detailed sections below. The quick view figure displays soil moisture, temperature, and precipitation (30 day rolling average) for the

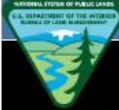
#### Quick view



# Exploring Treatments

## Legacy BLM Treatment Details:

- ✓ Find and filter
- ✓ What was done in the past?
- ✓ Did it work?



**Plan Treatment** | Layers/Legend

- ▶ Step 1: Describe proposed treatment
- ▶ Step 2: Select treatment boundary
- ▶ Step 3: Explore site characteristics
- ▶ Step 4: Summarize your proposed treatment area

**▼ Step 5: Select search parameters**

### How do you want to search for treatments?

To search for matching LTDL treatments spatially, first select a buffer distance, political boundary...more

#### Select buffer or boundary search area

EPA Level III Ecoregion

- User-defined buffer distance
- BLM Field Office
- BLM District Office
- State
- Major Land Resource Area
- EPA Level III Ecoregion**
- EPA Level IV Ecoregion
- EPA Level III Ecoregion

**Query LTDL**

**Clear Query**

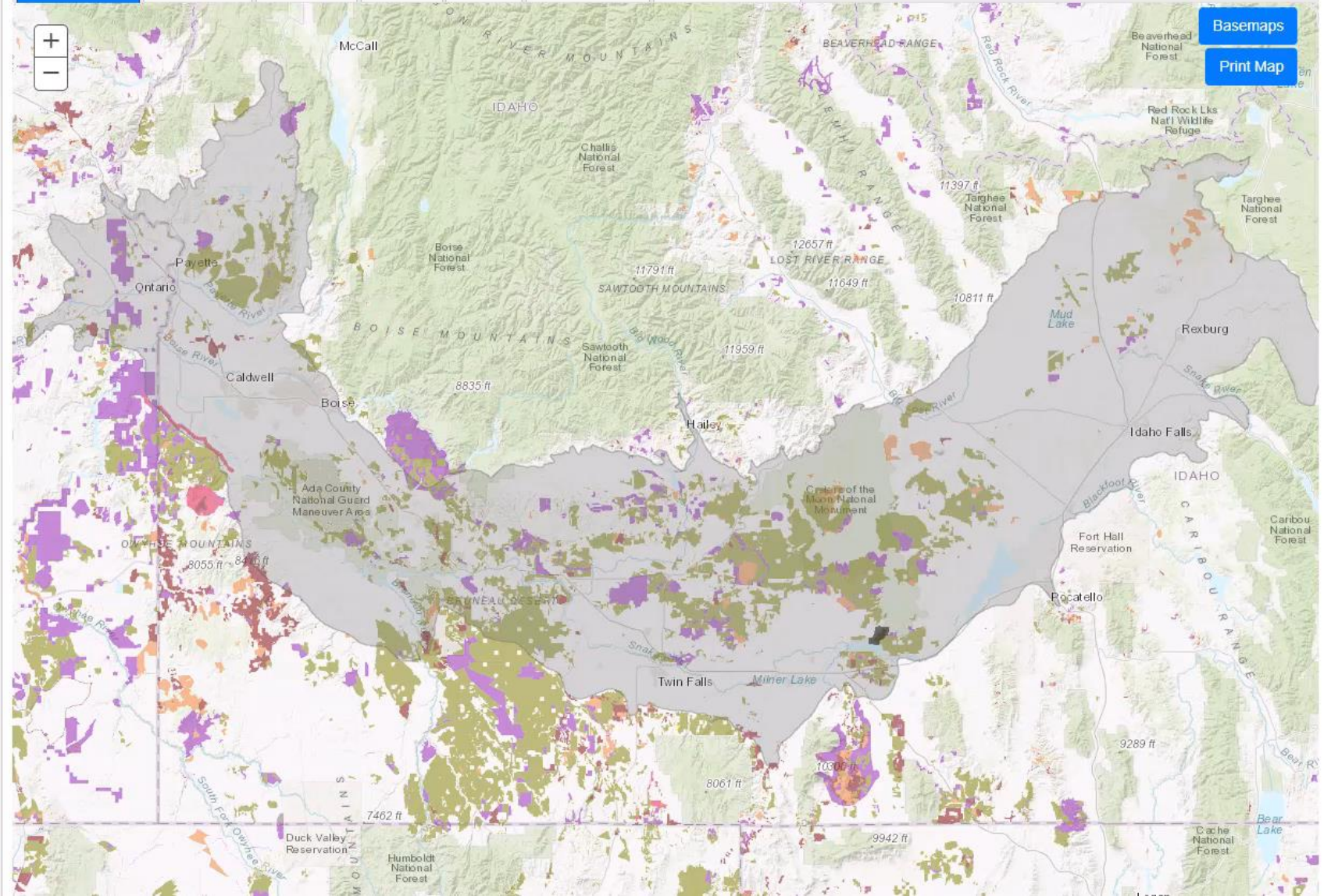
While this processes, explore the [Site History](#) for your proposed treatment area.

Automatically switch to Results Tab when query completes.

Query Status:

- ▶ Step 6: Compare to LTDL treatments

**Planning Map** | Site History | Monitoring | Results | Report | USFWS IPaC | Drought Forecast



# Site Characterization Report

## Intro Page

## Notes

## Summary Sections

## Treatments



### Site Characterization Report

**Planned Project Name:** Minidoka Wildfire Restoration  
**Planned Treatment Type:** Aerial Seeding, Seedling, plug plant, grass/site preparation, Area closure/exclosure, Vegetation

#### Planned Treatment Overview

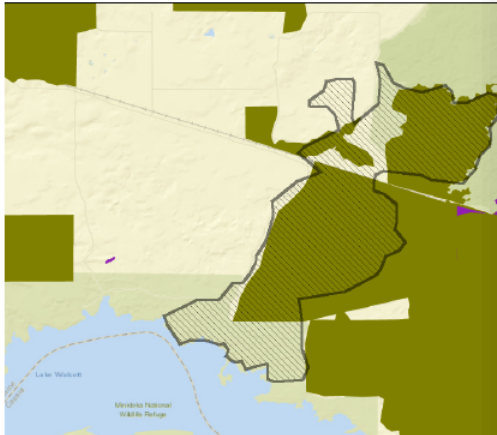


Figure 1. The general area for the planned treatment (gray, hatched box). The approximate area of the proposed treatment (shaded green) is overlaid on the map. The map also shows past land treatments from the Land Treatment Digital Library.

- LTDL Treatments**
- Biological Control
  - Closure/Exclosure
  - Facilities/Fences/Roads
  - Herbicide/Woods/Chemical
  - Prescribed Burn
  - Seeding
  - Soil Stabilization
  - Vegetation/Soil Manipulation
  - Other

#### BLM Administrative Unit Information

- Burley Field Office, Twin Falls District Office, ID (4.29%)
- Shaoshone Field Office, Twin Falls District Office, ID (29.71%)

#### About the Land Treatment Exploration Tool

The Exploration Tool is designed for use by resource managers during planning to summarize environmental characteristics of planned treatment areas comparing those characteristics to similar legacy treatments.

#### How to cite:

Site Characterization Report for Minidoka Wildfire Restoration 2024  
 Richards, M.A., and Schueck, L.S., 2023, Land Treatment Exploration Tool Report, 2024

#### Annotations

This section provides overview notes for the proposed treatment area. For summary tables and maps related to these notes, see the corresponding sections.

#### Notes about the summaries:

**Wildfire:** This area is primarily modeled as unsuitable sage-grouse breeding habitat, but is adjacent to more suitable habitat based on gSSURGO data, this area is highly suitable for Pygmy rabbits.

According to IPaC, this area may contain habitat for the threatened Yellow-billed Cuckoo and the candidate monarch butterfly. Conservation concern, including two eagle species, may also occur in the area.

**Soils:** The area consists of two ecological sites. LOAMY 8-12 ART RT/PSPS occurs on 62% of the northern area and SANDY 1 remaining 38%, primarily in the SW. The soil temperature/moisture regime is Mesic/Aridic bordering on Xeric with low res.

**Habitat:** There are 3 on-the-ground monitoring points within the boundary from 2020 and 2021. They documented high total sagebrush cover. The plots documented high tall and short, perennial grass cover (sandbergs bluegrass, crested wheatgrass, and bulbous bluegrass). Native forbs included Munn's globemallow, sagebrush phlox, plains pricklypear, and forbs included common dandelion, and yellow saxifrage. An additional point just outside the boundary included slightly higher bluebunch wheatgrass, death camas, largeflower hawkbeard, and prickly lettuce.

From remotely sensed data, this area is not considered a core sagebrush area and has been poor to intermediate condition predicts that most of the area had at least 20% shrub cover.

According to the National Wetlands Inventory, there are several, small seasonally flooded and temporary flooded wetland. In general, this area falls within the 15-20 Deg. F and 6-12 in. precipitation seed zone. According to empirical seed zones, 1 basin big sagebrush and not an area suitable for mountain big sagebrush. This area includes 3 seed zones for sandberg's bluebunch wheatgrass, and 1 for bottlebrush squirreltail.

#### Notes about the treatment history:

There have been six prior restoration treatments documented in the Land Treatment Digital Library.

The oldest documented seedings occurred in 1951 and 1952 and included crested wheatgrass and yellow sweetclover. This refuge and E Minidoka Road.

In 1968, crested wheatgrass and rye were drill seeded after the Minidoka East 9 wildfire in the area north of E Minidoka Road.

A small strip on the NW side of the fire was seeded with Nordan crested wheatgrass, Siberian wheatgrass, sneaker rye, and tall wheatgrass, Alkar tall wheatgrass, appar blue flax, spreader III alfalfa, delar small urnet after the UPRR Mile Post 265 Wildfire.

An additional sagebrush planting in 2017 and mixed species drill seeding in 1999 occurred along the edges of the boundary.

#### Notes about the wildfire history:

Most of the area has experienced wildfire in the past. These include the Chybo Well (1976), Montgomery (1982), Lake Chann southern portion. In the northern portion the unnamed fire (1941), Minidoka East 9 (1968), RR MP2635 (1979), Hawley (1986), (2019).

#### Notes about seasonal drought:

According to the US Drought Monitor and the Drought Index Portal, this area is not currently experiencing drought. The Palmer Drought Index and the 3-month Evaporative Demand Index are in agreement that at least since May of 2023 conditions have not been droughty.

U.S. Department of the Interior  
 U.S. Geological Survey

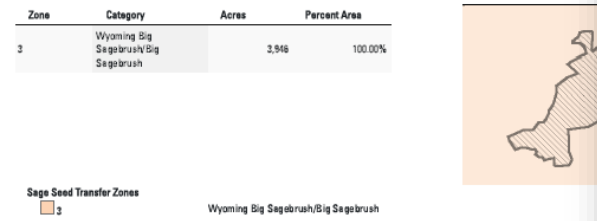
#### Sagebrush Conservation Design

The three mapped threats (invasive annual grasses, expanding conifers, and human modification) with core sagebrush areas and growth sagebrush biomes of the United States for 2020. These data were compiled as a part of a landscape conservation design effort for the sagebrush applying a spatially explicit model that assessed geographic patterns in sagebrush ecological integrity and used these results to identify Opportunity Areas (OAs), and Other Rangeland Areas (ORAs). Source: <https://doi.org/10.5068/2PMYSQCV>



#### Sage Seed Transfer Zones

Contemporary empirical seed zones for sagebrush (*Artemisia tridentata* subsp. *wyomingensis*, *tridentata*, and *vaseyana*). Seed zones are associated with cold hardiness and flower phenology. Seed zones are also divided by regions to account for possible population genetic management. Source: <https://www.fs.usda.gov/westa/forest-map/TRMSSeedZoneData.php>

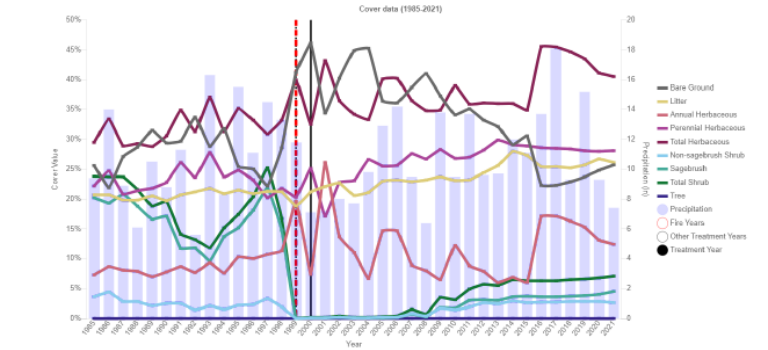


#### Treatments selected from the Land Treatment Digital Library for reference:

**Project Name:** Wapi Wildfire F480 1999  
**Project ID:** 12414  
**Treatment ID:** 33473  
**BLM Field Office:** Shaoshone Field Office  
**State:** Idaho  
**Major Treatment:** Seeding  
**Sub Treatment:** Aerial Seeding  
**Treatment Type:** Aerial Seeding, Rotor Wing  
**BLM Reported Success:** See Comments  
**Objectives:** Establish Sanded Species

**Actual Implementation:** This project consisted of aerial seeding 960 acres. Rate of application was 1.0 pounds bulk seed per acre on 960 acres which had previously been drill seeded. The seed consisted of Basin Big Sage. The seed was applied to bare and muddy ground, see the attached map for the project location. The contractor was Thomas Helicopters, Inc of Gooding, ID. Pilots for the seeding were Rod Thomas and Dale Thomas. The project was completed using a helicopter and two sling type buckets. The project was started on 2/17/00 and completed on 2/17/00. Grass and Basin Big Sagebrush Seeding The transect was established on a NE-facing slope on the west side of the seeding. This location appeared most representative of the overall success of the seeding. Grasses seemed to take well throughout the seeding. There was a strip along the road, about 200 ft. wide, in which the sagebrush seedlings were particularly dense, although sagebrush seedlings were found scattered sparsely throughout the seeding as well. The sagebrush seedlings were a mix of both three-tip sagebrush (ARTRA) and basin big sagebrush (ARTRT), although the seeding called for only ARTRT. The transect was placed beginning at the edge of the strip and running away from it in order to monitor the success of both the grasses and the sagebrush.

**Treatment Results:** Summer 2001: The transect was established on a NE-facing slope on the west side of the seeding. This location appeared most representative of the overall success of the seeding. Grasses seemed to take well throughout the seeding. There was a strip along the road, about 200 ft. wide, in which the sagebrush seedlings were particularly dense, although sagebrush seedlings were found scattered sparsely throughout the seeding as well. The sagebrush seedlings were a mix of both three-tip sagebrush (ARTRA) and basin big sagebrush (ARTRT), although the seeding called for only ARTRT. The transect was placed beginning at the edge of the strip and running away from it in order to monitor the success of both the grasses and the sagebrush.



**Caption:** Cover date (1985-2021) - Rangeland Condition Monitoring Assessment and Projection (RCMAP) fractional component cover year mean - 1985-2021, within the selected treatment. Year of selected treatments indicated by the vertical, solid black line. Years of other treatments at the same site are indicated with vertical, dashed black lines. Years of fire events are indicated with the vertical, dashed red lines. Precipitation by year year are displayed as blue bars with values corresponding to the secondary y-axis. Rows over the chart to see values. Legend items can be selected to display or not on the chart. Unselected legend items will display with a strikethrough. For more information on the RCMAP data, visit the [BLM Rangeland Condition Monitoring Assessment and Projection website](https://www.fs.usda.gov/westa/forest-map/TRMSSeedZoneData.php).

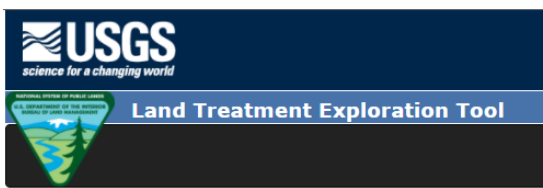
Symbol	Species	Common Name	Seed Variety	Bulk Seed Pounds	Bulk Pounds/Acre	PLS Rate	PLS Seed Pounds	PLS Pounds/Acre	Seeding Number	Seedlings/Acre
ARTRT	<i>Artemisia tridentata</i> Nutt. ssp. <i>tridentata</i>	Basin Big Sagebrush	None	960	1	0.143	137.28	0.143		

U.S. Department of the Interior  
 U.S. Geological Survey

# Resources

## Landing Page

### User Guide



### User Guide

The User Guide contains detailed instructions on how to correctly use assessment(s) of the planned treatment site(s) and may result in deciding additional questions, comments, or suggestions for improvements to [ltld\\_project@usgs.gov](mailto:ltld_project@usgs.gov) or call 541-750-1030.

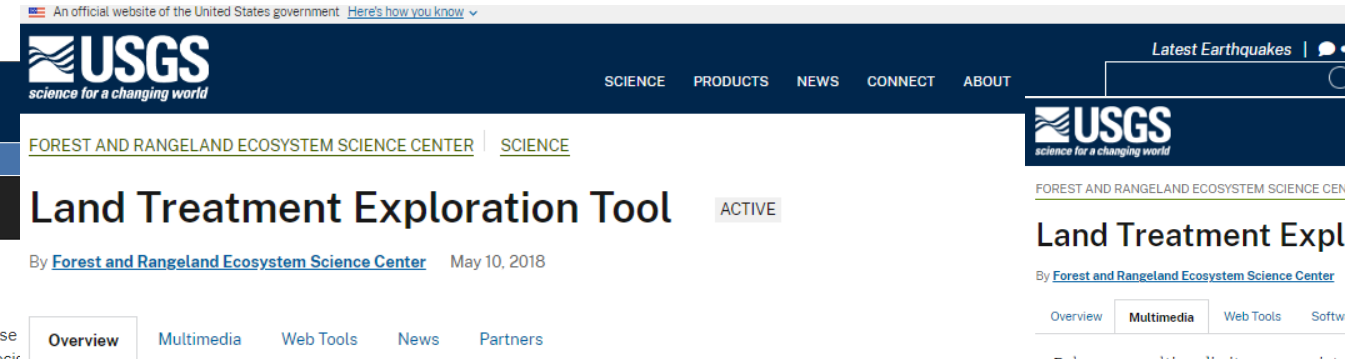
+ Getting Started

+ Step 1: Describe the Proposed Treatment

- Step 2: Create the Planned Treatment Boundary

The Exploration Tool is designed to assist you with the planning process, but requires, at minimum, a general idea of where the land treatment will occur. An existing treatment boundary can be uploaded as a compressed (.zip) shapefile or drawn as a boundary using the interactive web map. The **View layers you can turn on and off** on the lower right will take you back to the Layers/Legend tab where layers can be added or removed to help with boundary determination. Select **'Next Step >>'** to continue the planning process.

**Have a shapefile?** Use the **'Upload zip file'** button (Figure 4 A) to upload a zipped folder containing the shapefile of an identified area. The map will automatically zoom to the location of the uploaded shapefile. To edit the shape, click on the shape and

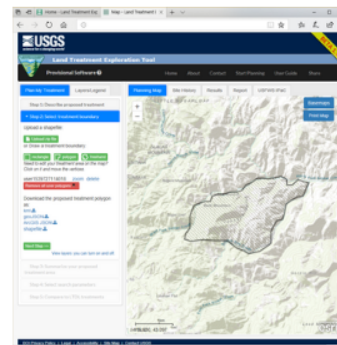


The Land Treatment Exploration Tool provides a practical resource for managers who are planning restoration and rehabilitation actions on public lands. The tool generates a variety of spatial products while being user friendly for all levels of GIS expertise, even to those with little or no experience.

[Start Planning](#)

Each year, public land managers make decisions regarding restoration and rehabilitation actions that influence landscapes and ecosystems. Many of these decisions involve soil and vegetation manipulations, often known as land treatments. Land treatments include activities such as removal or alteration of plant biomass, seeding burned areas, and herbicide applications. These treatments were historically planned on a case by case basis with decisions about implementation approaches, methods, and operations derived from personal experience of past successes or failures.

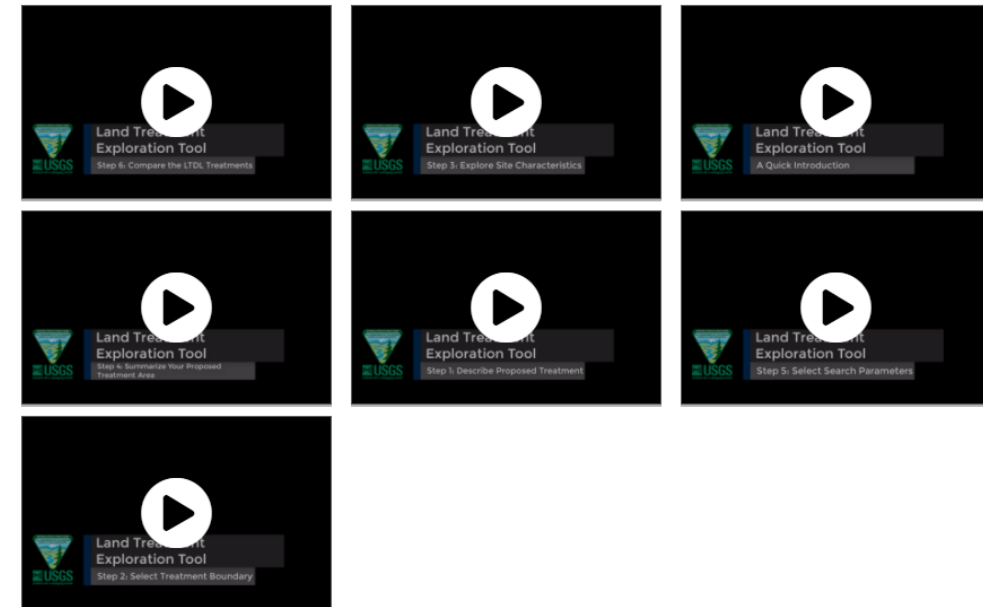
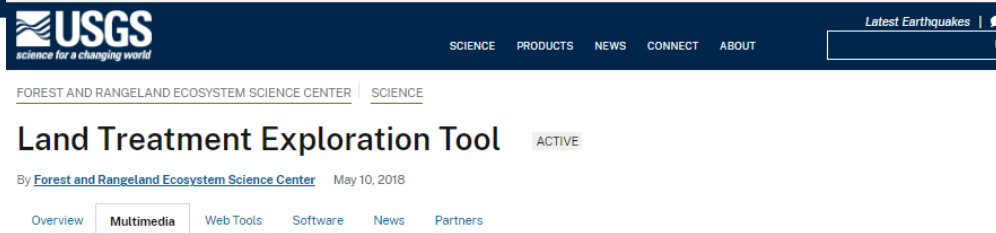
Modern adaptive management strategies strive to capture this local knowledge through time, both locally and regionally. In 2017, the U.S. Geological Survey partnered with the Bureau of Land Management to create the [Land Treatment Exploration Tool](#) to facilitate adaptive management of land treatments. The Exploration Tool taps into a wealth of information about past treatments in the Land Treatment Digital Library (LTDL, <https://ltld.wr.usgs.gov/>), a catalog of information about all known treatments on public lands administered by the BLM in the Western United States.



Sources/Usage: Public Domain. [View Media Details](#)

The Land Treatment Exploration Tool starts with the user identifying a name and

### Tutorial Videos



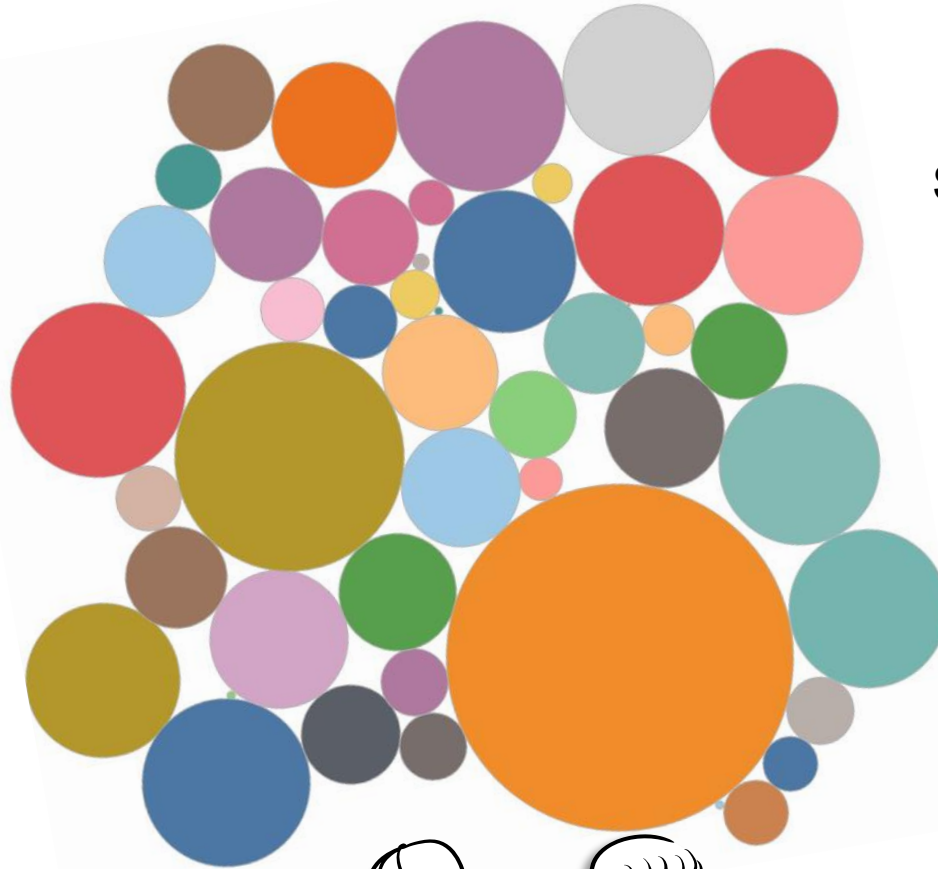
# Acknowledgements

## Pilliod Lab Crew

Justin Welty  
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Leeland Bennion  
Dozens of techs →

## Short Term Drought Forecast Crew

John Bradford  
Caitlin Andrews  
Daniel Schlaepfer  
Alice Stears  
Gregor Siegmund



# Questions?

Plan Treatment Layers/Legend

Step 1 Describe proposed treatment

Project Name:  
Type a descriptive name for your project e.g., Cougar Gaiyoon  
Wildfire Aerial Seeding Rehabilitation 2018

What kind of treatment are you planning?  
Select what type of treatment you are planning from the drop down list

File Name:  
Type a file name to be used for each exported product. To use the  
Project Name, check the box for 'same as project name'

same as project name

Next Step

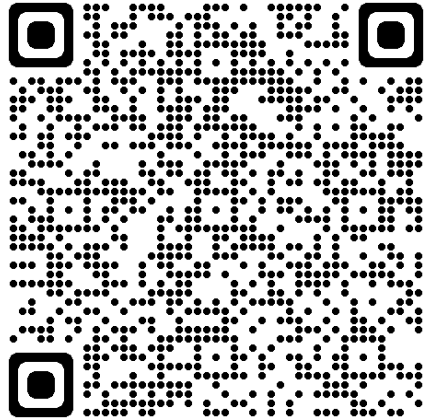
Step 2 Select treatment boundary

Step 3 Export site characteristics

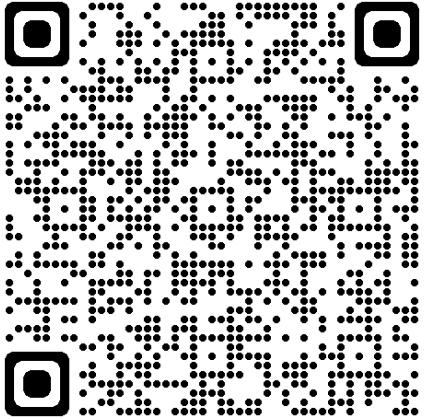
Step 4 Summarize view proposed treatment area

Planning Map Side History Results Report USFWS iPaC Drought Forecast

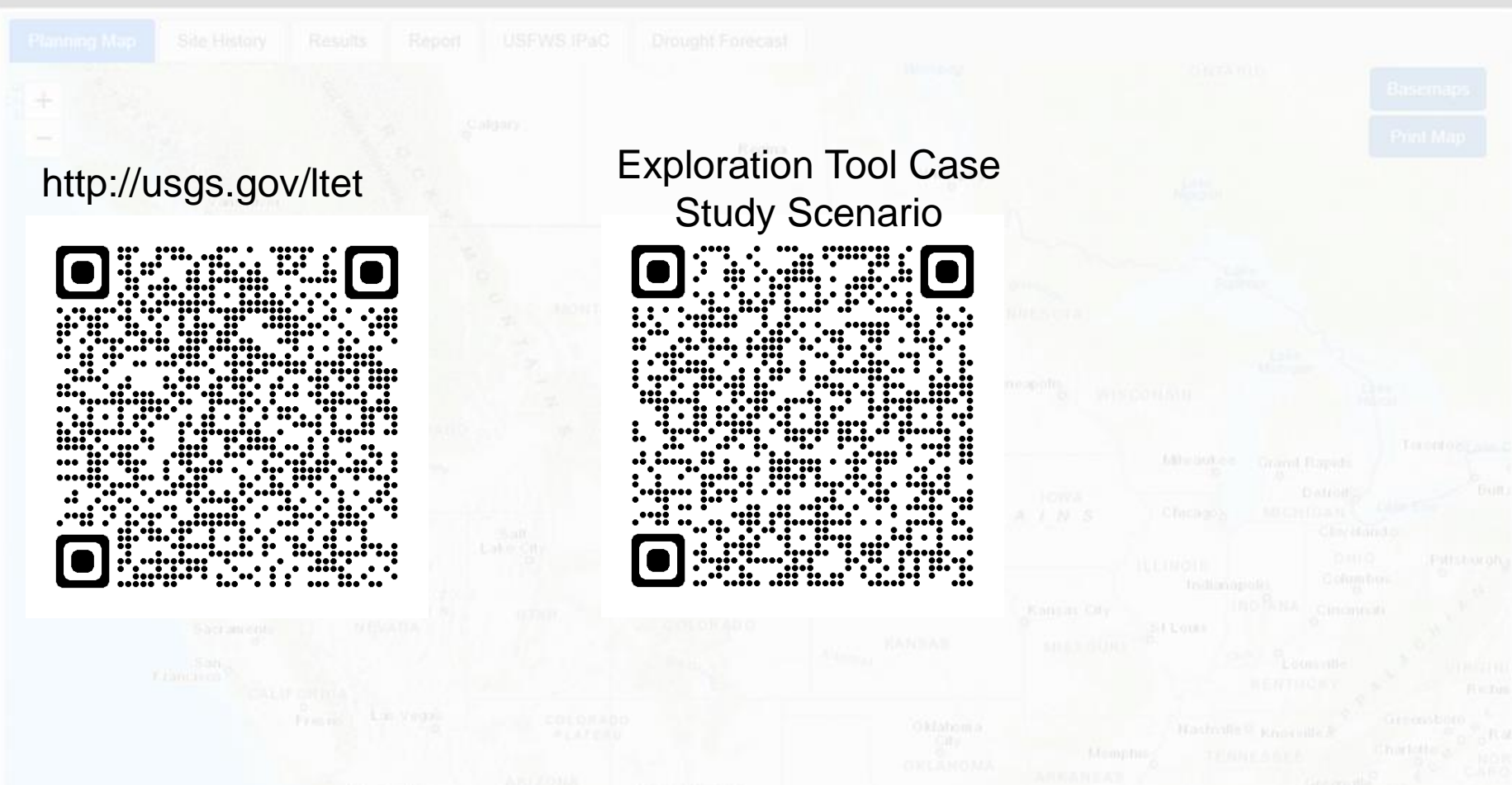
http://usgs.gov/ltet



Exploration Tool Case Study Scenario



Basemaps Print Map



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[LTDL\\_project@usgs.gov](mailto:LTDL_project@usgs.gov)