



Memo

To:	Todd McLaughlin, Avista Corp
CC:	Michelle Anderson, AEC
From:	Jacob Taylor, AEC
DATE/TIME:	2025/02/05
PROJECT:	Bluebird to Garden Springs 230 kV West Plains Transmission Line Project
SUBJECT:	Shrubsteppe Habitat Screening and Field Verification

1) Introduction

The Avista Bluebird to Garden Springs 230 kV West Plains Transmission Line Project involves construction of a new 230 kV transmission line connecting the proposed Bluebird Substation to the existing Garden Springs Substation over an approximately 13-mile corridor. The project includes installation and replacement of weathered steel single-pole structures, stringing of conductors and optical ground wire, and limited expansion of existing utility easements to accommodate construction access, equipment staging, and long-term vegetation management.

Mapped presumptive shrubsteppe habitat is present throughout portions of the project study area based on the Washington Department of Fish and Wildlife (WDFW) Priority Habitats and Species (PHS) database. Because PHS shrubsteppe mapping is derived from regional-scale modeling and is intended as a screening tool, mapped presence alone does not confirm the existence of shrubsteppe habitat at the site scale.

To ensure due diligence and consistency with best available science, Anderson Environmental Consulting (AEC) completed a shrubsteppe habitat evaluation consistent with WDFW's Management Recommendations for Washington's Priority Habitats: Shrubsteppe (WDFW 2020¹), with particular emphasis on the broad-landscape identification protocol outlined in Appendix 7.

The purpose of this memorandum is to document the methods used to evaluate shrubsteppe habitat within the study area and to summarize the results of desktop screening and field verification.

¹ <https://wdfw.wa.gov/species-habitats/at-risk/phs/recommendations#habitats>

2) Methodology

Desktop Screening

Desktop screening followed the general approach described in WDFW's Appendix 7, which emphasizes interpretation of high-resolution aerial imagery supported by existing datasets, with targeted field verification where warranted.

The following data sources were reviewed:

- National Agricultural Imagery Program (NAIP) aerial imagery (2023)
- Field photographs and photo points collected during prior wetland and stream assessments
- WDFW PHS Shrubsteppe and Eastside Steppe mapping
- Washington Department of Natural Resources (WDNR) Natural Heritage Program current and historical Element Occurrence (EO) data for rare plants and high-quality ecosystems²
- Inaturalist³ observations of common shrubsteppe species in the vicinity of the study area

A systematic review of the project alignment using high-resolution NAIP imagery, available field photographs from prior site investigations, and the datasets described above. The alignment was reviewed sequentially from north to south, and polygons were delineated around areas that exhibited characteristics potentially consistent with shrubsteppe, including open, non-forested uplands with limited apparent disturbance and sparse shrub cover. Steeper slopes and areas dominated by closed-canopy forest, ponderosa pine woodland, Douglas-fir, or dense serviceberry shrub cover were not identified as potential shrubsteppe. Similarly, areas clearly managed for agriculture, livestock grazing, or rural residential use, including mowed fields, pasture, and seasonal crop areas, were excluded due to the absence of shrub structure consistent with shrubsteppe habitat.

Field Verification

Field verification was conducted to confirm the presence or absence of shrubsteppe habitat within polygons identified during desktop screening. Consistent with Appendix 7, field work consisted of pedestrian walk-through surveys rather than intensive plot-based vegetation sampling.

During site visits, AEC staff evaluated vegetation structure and composition with particular attention to whether a "conspicuous but discontinuous layer of shrubs" was present. Field observations focused on identifying shrub species commonly associated with shrubsteppe in eastern Washington, including:

- Big sagebrush (*Artemisia tridentata*)
- three-tip sagebrush (*Artemisia tripartite*)
- scabland sagebrush (*Artemisia rigida*)
- dwarf sagebrush (*Artemisia arbuscula*)
- Antelope bitterbrush (*Purshia tridentata*)
- Rabbitbrush (*Ericameria spp.*)

Where shrubsteppe-associated species were observed, locations were recorded using a Trimble DA2 resource grade GNSS receiver with sub-foot accuracy and documented with representative

² <https://dnr.wa.gov/natural-heritage-program/wnhp-data-explorer>

³ <https://www.inaturalist.org/observations>

photographs. Areas lacking diagnostic shrubsteppe shrubs and exhibiting evidence of long-term land use alteration were documented as not meeting the WDFW shrubsteppe definition.

Field verification was intended to confirm or refute desktop-identified potential shrubsteppe areas and was not intended to evaluate shrubsteppe habitat quality or condition.

3) Results

Desktop Results

Desktop review of available datasets indicates that mapped presumptive shrubsteppe habitat is widespread within the project study area based on WDFW Priority Habitats and Species (PHS) modeled data. As described in WDFW guidance, this mapping represents a regional-scale screening layer and is known to overpredict shrubsteppe presence in areas that have experienced long-term land use alterations. Modeled PHS shrubsteppe data were used as an initial screening layer only and were not treated as definitive.

Review of Washington Department of Natural Resources (WDNR) Natural Heritage Program data identified a *Pinus ponderosa* / *Hesperostipa comata* Woodland and a *Pseudoroegneria spicata* – *Festuca idahoensis* Canyon Grassland within approximately 0.5 mile of the study area. These mapped ecological systems indicate that native steppe and shrubsteppe-associated plant communities occur in the surrounding landscape, but they do not confirm the presence of shrubsteppe habitat within the project alignment.

Review of iNaturalist observation data to identify documented occurrences of shrubsteppe-associated plant species in the vicinity of the study area found several observations of scabland sagebrush (*Artemisia rigida*) were identified within approximately one mile of the project corridor, supporting the presence of shrubsteppe-related species in the broader landscape.

Based on the combined desktop analysis, ten shrubsteppe assessment areas (AA) were identified for field verification as having potential to support shrubsteppe habitat, totaling approximately 17-acres. These polygons span 12 parcels within the project alignment. Parcel ID's are as follows:

- 16201.9022
- 16201.9030
- 16212.9047
- 16272.0201
- 16273.9064
- 16273.9065
- 16273.9067
- 16273.9073
- 16341.9069
- 16341.9070
- 16341.9074
- 25216.9120

Field Results

Field verification confirmed that shrubsteppe habitat is present within discrete portions of the alignment but is more limited and spatially controlled than suggested by regional PHS mapping.

Several desktop-delineated AAs were found to be dominated by larger deciduous shrub communities associated with ponderosa pine (*Pinus ponderosa*), snowberry (*Symphoricarpos albus*), serviceberry (*Amelanchier alnifolia*), rose (*Rosa spp.*), and golden currant (*Ribes aureum*). These areas lacked a conspicuous but discontinuous sagebrush layer and therefore did not meet WDFW's definition of shrubsteppe.

Confirmed shrubsteppe habitat occurred primarily on shallow, rocky upland locations characterized by exposed basalt or thin lithic soils. These areas supported a low-stature shrub layer dominated by scabland sagebrush (*Artemisia rigida*), typically 6–12 inches in height, with shrub canopy cover generally ranging from approximately 20–40 percent. Associated native bunchgrasses included bluebunch wheatgrass (*Pseudoroegneria spicata*) and Idaho fescue (*Festuca idahoensis*). Biological soil crust (moss and lichen) was observed in most mapped shrubsteppe areas. This plant community is consistent with Columbia Plateau scabland shrubsteppe occurring on shallow soils over basalt, where limited soil depth restricts tree establishment and favors drought-adapted dwarf sagebrush systems.

Field results also indicated that shrubsteppe habitat did not always correspond directly with desktop-delineated AA's. Desktop polygons were initially drawn around visually prominent shrub patches visible in aerial imagery; however, many of these shrubs were determined in the field to consist primarily of woodland-associated species rather than sagebrush. Conversely, confirmed shrubsteppe habitat was often more conspicuous on shallow rock outcrops that appeared less vegetated in aerial imagery due to the low stature of scabland sagebrush. As a result, some confirmed shrubsteppe polygons occur outside of the originally delineated Assessment Areas.

Nine shrubsteppe polygons (SS1–SS9) were delineated during field verification, totaling approximately 8.69-acres. Shrubsteppe areas extending outside of the alignment were estimated using aerial imagery and were not field-delineated due to lack of access beyond the designated easement. SS9 was delineated following fieldwork based on review of high-resolution imagery. The area exhibits Mima mound microtopography with shrub clumps similar in size, spacing, and vegetation signature to confirmed scabland shrubsteppe observed elsewhere along the alignment. Based on soil mapping, elevation, and consistency with adjacent verified shrubsteppe communities, this area was conservatively mapped as shrubsteppe. Dominant shrub species in all field-verified polygons was scabland sagebrush.

See **Table 1** for a summary of shrubsteppe areas identified. A map series is included in **Attachment A**, photographs are included in **Attachment B**, and a comprehensive vegetation inventory is included in **Attachment C**.

Table 1. Summary of shrubsteppe identified within the project alignment.

ID	Map Series Page Number	Dominant Shrub (Primary)	Bunchgrass Present	Soil Crust Observed	Acres	Sq. Ft.
SS1	1	Scabland sagebrush (Artemisia rigida)	Yes	Yes	0.865	37,669
SS2	1	Scabland sagebrush (Artemisia rigida)	Yes	Yes	0.478	20,806
SS3	1	Scabland sagebrush (Artemisia rigida)	Yes	Yes	1.403	61,130
SS4	1	Scabland sagebrush (Artemisia rigida)	Yes	Yes	1.332	58,004
SS5	2	Scabland sagebrush (Artemisia rigida)	Yes	Yes	0.299	13,012
SS6	2	Scabland sagebrush (Artemisia rigida)	Yes	Yes	0.585	25,477
SS7	3	Scabland sagebrush (Artemisia rigida)	Yes	Yes	0.162	7,070
SS8	4	Scabland sagebrush (Artemisia rigida)	Yes	Yes	0.403	17,562
SS9	1				3.165	137,860
Totals					8.691	378,591

4) Conclusion

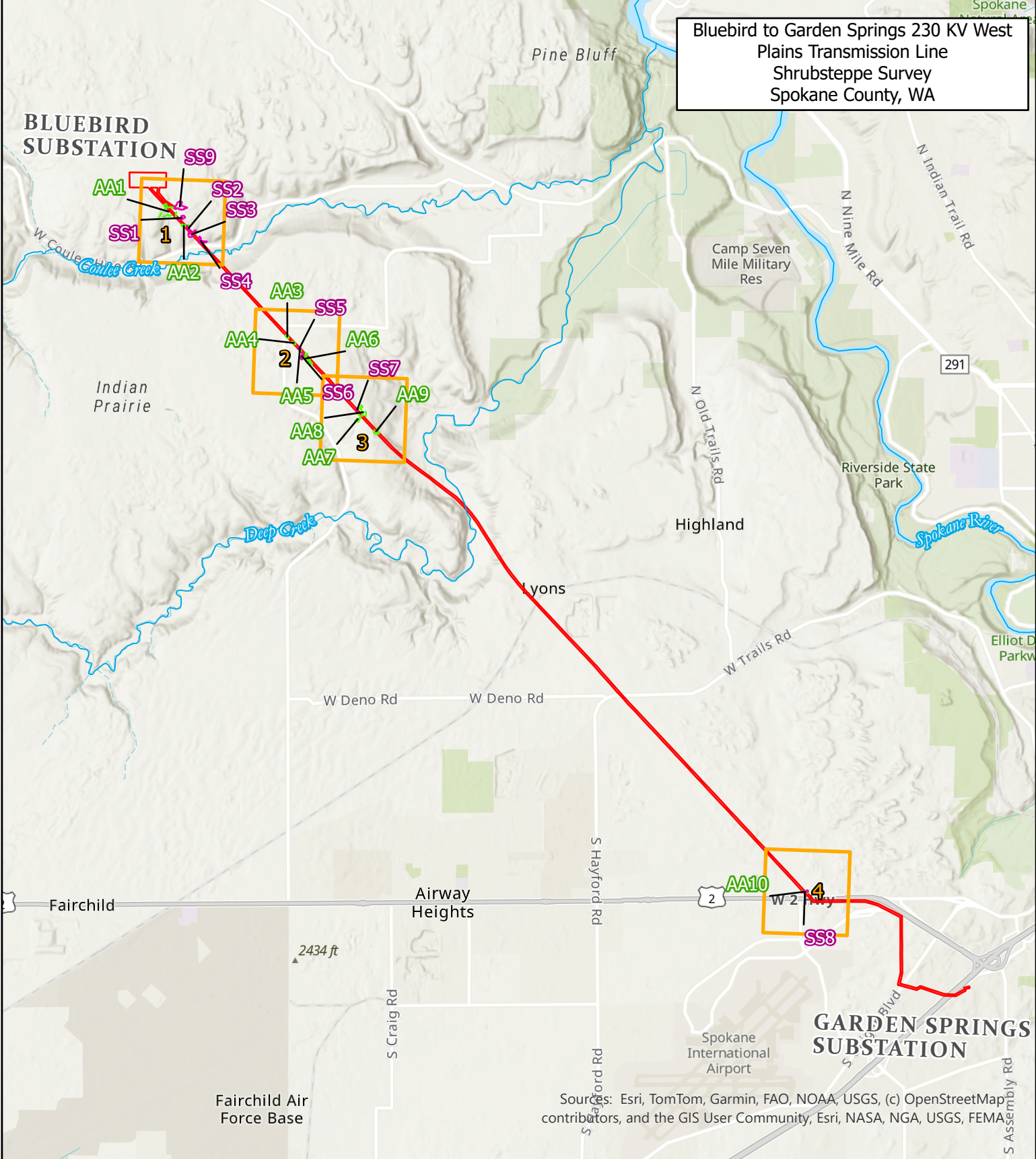
This shrubsteppe evaluation was completed consistent with WDFW management recommendations. Desktop screening was followed by targeted field verification to confirm shrubsteppe presence and refine preliminary assessment areas.

Field results confirm that shrubsteppe habitat is present within discrete portions of the project alignment and is primarily associated with shallow, rocky upland positions characterized by scabland sagebrush and native bunchgrasses. Confirmed shrubsteppe totaled approximately 8.69 acres within the alignment and occurs in patchy, soil-controlled distributions rather than across the broader areas suggested by regional PHS mapping.

Shrubsteppe mapping presented herein reflects site-specific field conditions and refined interpretation of aerial imagery and soil context.

Attachment A - Maps

Bluebird to Garden Springs 230 KV West Plains Transmission Line
Shrubsteppe Survey
Spokane County, WA



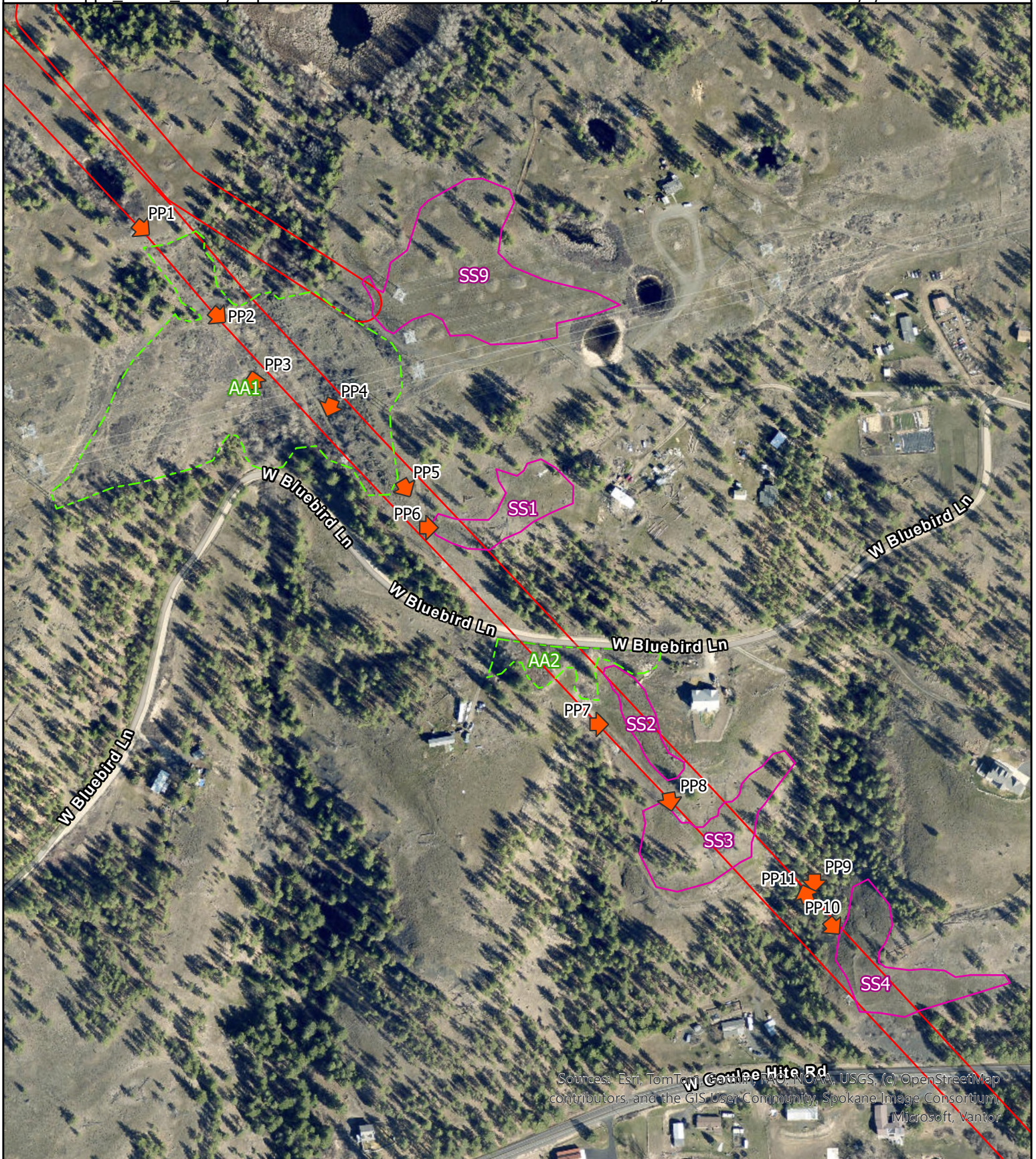
Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, (c) OpenStreetMap contributors, and the GIS User Community, Esri, NASA, NGA, USGS, FEMA

Legend

- Mapbook Series Page
- Delineated Shrubsteppe
- Shrubsteppe Assessment Areas
- Transmission Line Alignment





Scale: 1:80,000





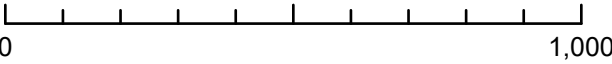
Sources: Esri, TomTom, Garmin, AAC, NOAA, USGS, (c) OpenStreetMap contributors, and the GIS User Community, Spokane Image Consortium, Microsoft, Vantor

Legend


-  Photopoints
-  Delineated Shrubsteppe
-  Shrubsteppe Assessment Areas
-  Transmission Line Alignment

Page 1 of 4

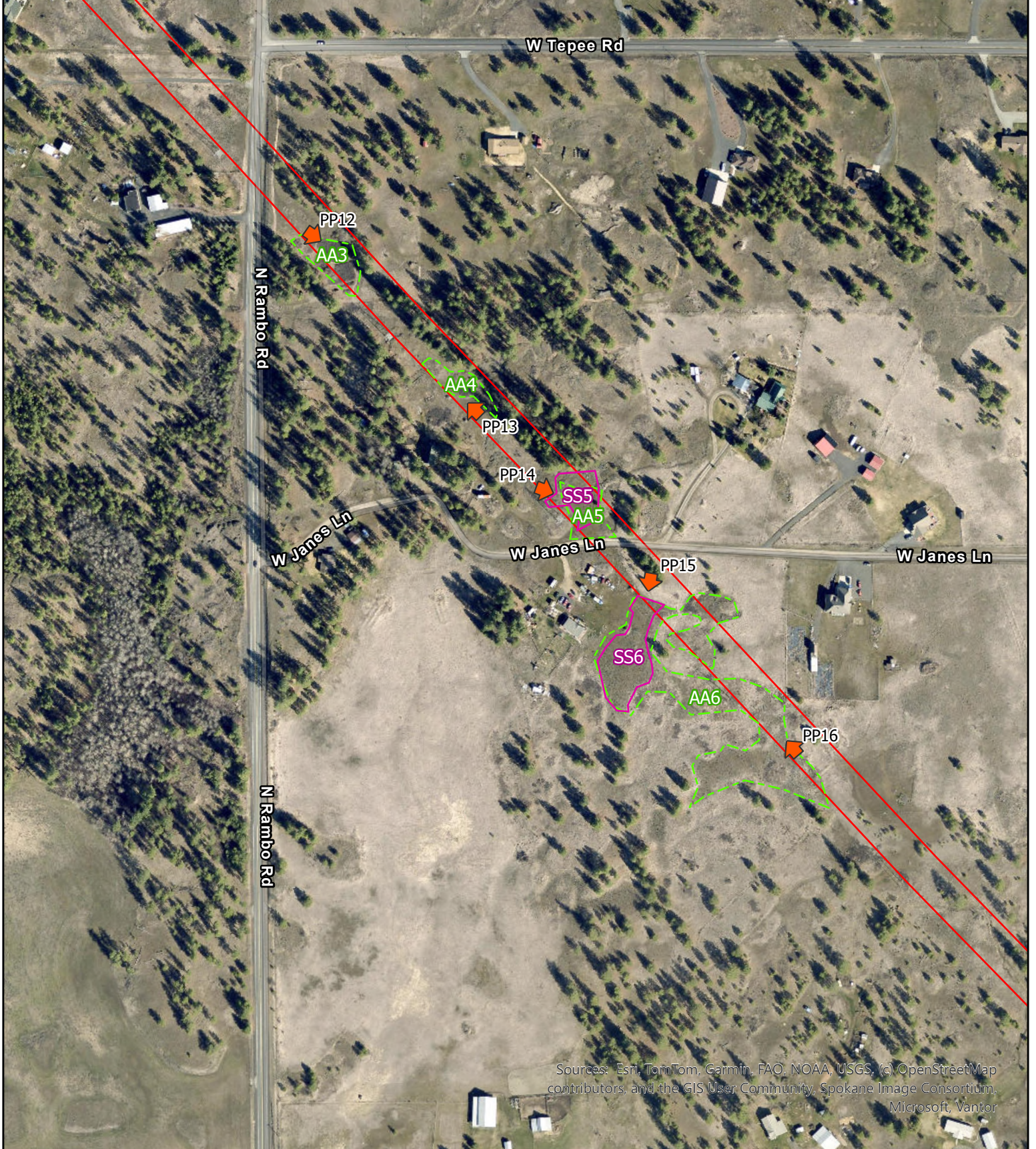
Scale: 1:4,000



0 1,000 US Feet








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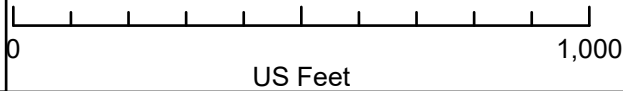
Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, (c) OpenStreetMap contributors, and the GIS User Community, Spokane Image Consortium, Microsoft, Vantor

Legend

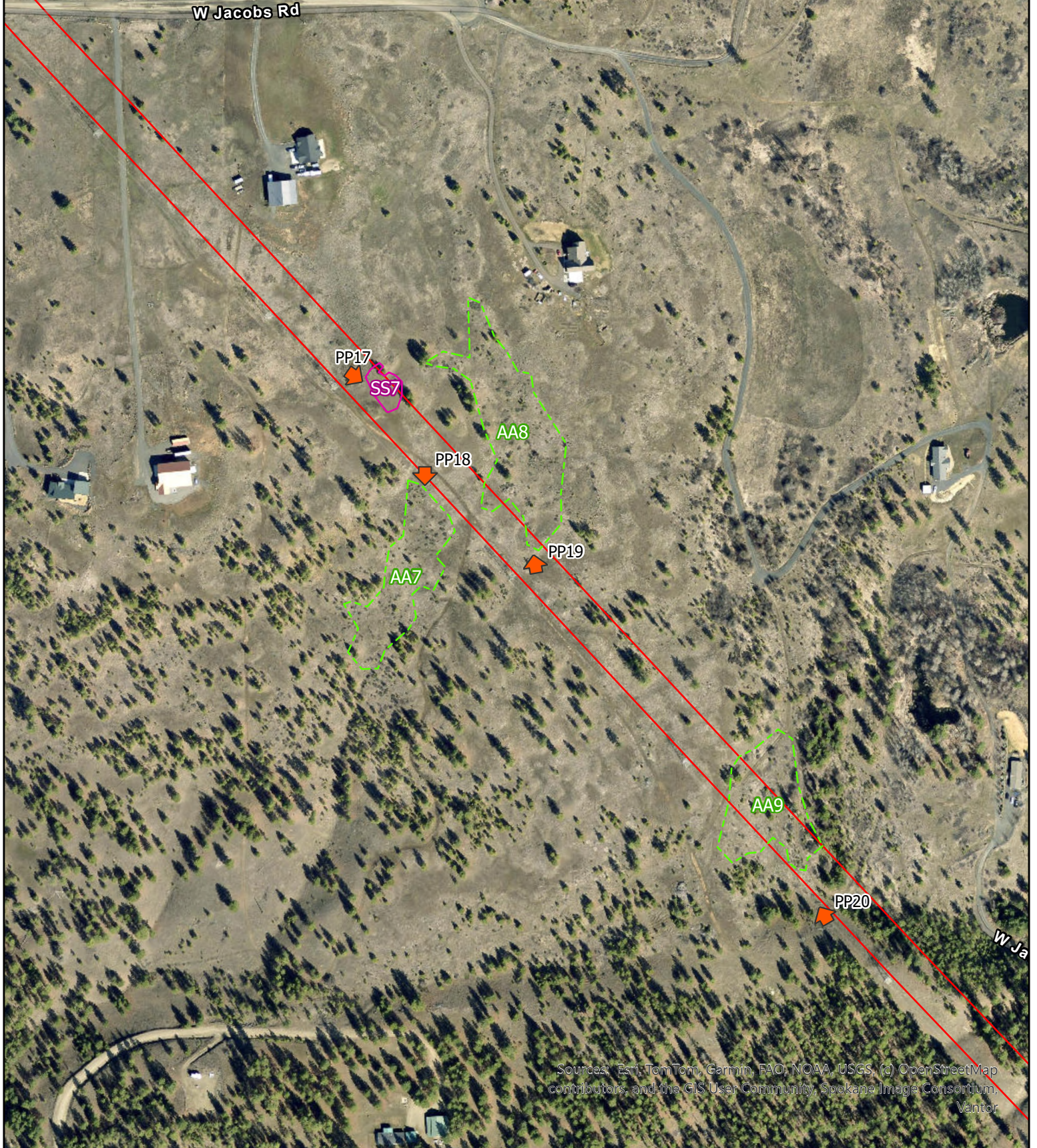
-  Photopoints
-  Delineated Shrubsteppe
-  Shrubsteppe Assessment Areas
-  Transmission Line Alignment

Page 2 of 4

Scale: 1:4,000







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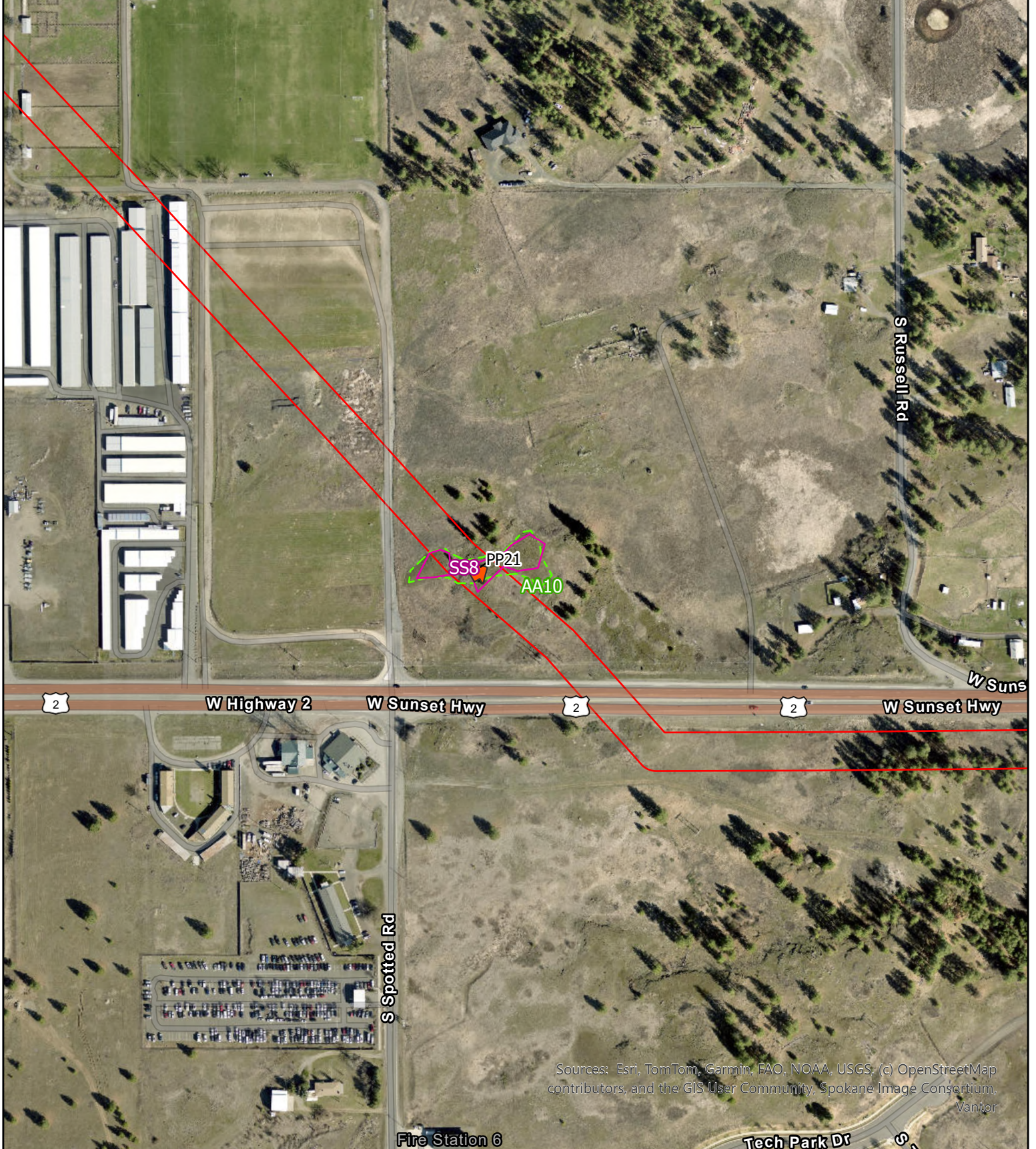


Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, (c) OpenStreetMap contributors, and the GIS User Community, Spokane Image Consortium, Vantor

Legend





-  Photopoints
-  Delineated Shrubsteppe
-  Shrubsteppe Assessment Areas
-  Transmission Line Alignment

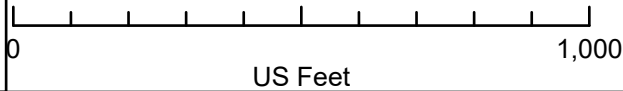




Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, (c) OpenStreetMap contributors, and the GIS User Community, Spokane Image Consortium, Vantor

Legend

-  Photopoints
-  Delineated Shrubsteppe
-  Shrubsteppe Assessment Areas
-  Transmission Line Alignment



Attachment B – Photos



Photo 1. PP1 – AA1 (Map Series Page 1)

Woodland-associated shrub community dominated by snowberry and serviceberry with ponderosa pine and Douglas-fir. Shrubsteppe not present.



Photo 2. PP2 – AA1 (Map Series Page 1)

Snowberry, serviceberry, and hawthorn-dominated shrub layer with scattered balsamroot; woodland ecotone conditions. Shrubsteppe not present.



Photo 3. PP3 – AA1 (Map Series Page 1)

Channelized drainage feature with hawthorn and elderberry; no sagebrush observed. Shrubsteppe not present.



Photo 4. PP4 – AA1 (Map Series Page 1)

Wildlife sign (elk and possibly coyote scat) within woodland shrub matrix; no shrubsteppe vegetation observed.



Photo 5. PP5 – AA1 (Map Series Page 1)

Open area dominated by buckwheat and bunchgrass; no sagebrush observed. Potential shrubsteppe not confirmed.



Photo 6. PP6 – SS1 / AA1 (Map Series Page 1)

Scabland sagebrush (*Artemisia rigida*) with buckwheat and bluebunch wheatgrass on shallow rocky soil. Confirmed shrubsteppe.



Photo 7. PP7 – SS2 / AA2 (Map Series Page 1)

Small patch of scabland sagebrush on rocky slope; mosaic of shallow soil and exposed basalt. Confirmed shrubsteppe.



Photo 8. PP8 – SS3 / AA2 (Map Series Page 1)

Scabland sagebrush with moss and cheatgrass present; shallow lithic soil conditions. Confirmed shrubsteppe.



Photo 9. PP9 – AA2 (Map Series Page 1)

Stream crossing area; no defined shrubsteppe vegetation observed.



Photo 10. PP10 – SS4 / AA2 (Map Series Page 1)

Rocky slope with bluebunch wheatgrass and scabland sagebrush; confirmed shrubsteppe.



Photo 11. PP11 – AA2 (Map Series Page 1)

Elk print near stream crossing; shrubsteppe not confirmed.



Photo 12. PP12 – AA3 (Map Series Page 2)

Snowberry-dominated shrub patch within mowed/managed yard area; shrubsteppe not present.



Photo 13. PP14 – SS5 / AA5 (Map Series Page 2)

Basalt outcrop with bluebunch wheatgrass, buckwheat, and phlox; confirmed scabland shrubsteppe.



Photo 14. PP15 – SS6 / AA6 (Map Series Page 2)

Shallow rocky soil bordered by smooth brome; scabland sagebrush present. Confirmed shrubsteppe.



Photo 15. PP16 – AA6 (Map Series Page 2)

Buckwheat and phlox intermixed with smooth brome and bluebunch wheatgrass; sagebrush absent. Shrubsteppe not confirmed.



Photo 16. PP17 – SS7 / AA7 (Map Series Page 3)

Rock outcrop with conspicuous scabland sagebrush on shallow lithic soil. Confirmed shrubsteppe.



Photo 17. PP20 – AA9 (Map Series Page 3)

Serviceberry-dominated shrub area; woodland-associated species present. Shrubsteppe not confirmed.



Photo 18. PP21 – SS8 / AA10 (Map Series Page 4)

Scabland sagebrush with buckwheat, phlox, bluebunch wheatgrass, and Idaho fescue; biological soil crust observed. Confirmed shrubsteppe.

Attachment C - Vegetation Inventory

Vegetation Inventory

Common Name	Scientific Name	Shrubsteppe	
		Associated (Yes/No)	Native / Non-native
Scabland sagebrush	<i>Artemisia rigida</i>	Yes	Native
Common Yarrow	<i>Achillea millefolium</i>	Yes	Native
Arrowleaf Balsamroot	<i>Balsamorhiza sagittata</i>	Yes	Native
Snow Buckwheat	<i>Eriogonum niveum</i>	Yes	Native
Wild Buckwheat	<i>Eriogonum spp.</i>	Yes	Native
Phlox	<i>Phlox spp.</i>	Yes	Native
Common Bugloss	<i>Anchusa officinalis</i>	No	Non-native
Spotted Knapweed	<i>Centaurea stoebe</i>	No	Non-native
Common Mullein	<i>Verbascum thapsus</i>	No	Non-native
Dalmatian Toadflax	<i>Linaria dalmatica</i>	No	Non-native
Wild Oats	<i>Avena fatua</i>	No	Non-native
Smooth Brome	<i>Bromus inermis</i>	No	Non-native
Cheatgrass	<i>Bromus tectorum</i>	No	Non-native
Bluebunch Wheatgrass	<i>Pseudoroegneria spicata</i>	Yes	Native
Crested Wheatgrass	<i>Agropyron cristatum</i>	No	Non-native
Intermediate Wheatgrass	<i>Thinopyrum intermedium</i>	No	Non-native
Idaho Fescue	<i>Festuca idahoensis</i>	Yes	Native
Sandberg Bluegrass	<i>Poa secunda</i>	Yes	Native
Bulbous Bluegrass	<i>Poa bulbosa</i>	No	Non-native
Common Snowberry	<i>Symphoricarpos albus</i>	No	Native
Serviceberry	<i>Amelanchier alnifolia</i>	No	Native
Wild Rose	<i>Rosa spp.</i>	No	Native
Douglass Hawthorn	<i>Crataegus douglasii</i>	No	Native
Golden Current	<i>Ribes aureum</i>	No	Native
Quaking Aspen	<i>Populus tremuloides</i>	No	Native
Douglas-fir	<i>Pseudotsuga menziesii</i>	No	Native
Ponderosa Pine	<i>Pinus ponderosa</i>	No	Native
Willow	<i>Salix spp.</i>	No	Native
Lupine	<i>Lupinus spp.</i>	Yes	Native
St. John's wort	<i>Hypericum perforatum</i>	No	Non-native
Sulphur cinquefoil	<i>Potentilla recta</i>	No	Non-native
Creeping Oregon grape	<i>Mahonia aquifolium</i>	No	Native
Wooly Plantain	<i>Plantago patagonica</i>	Yes	Native
Basin Wildrye	<i>Leymus cinereus</i>	Yes	Native
Kinnikinnick	<i>Arctostaphylos uva-ursi</i>	No	Native