

ATTACHMENT F: BOTANICAL SURVEY REPORT

Wautoma Solar Energy Project Botanical Survey Report

Prepared for:

INNERGEX

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CONFIDENTIAL BUSINESS INFORMATION

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Acronyms and Abbreviations

EO	Element Occurrence
GPS	global positioning system
Innergex	Innergex Renewable Development USA, LLC
IPaC	Information for Planning and Consultation
NHD	National Hydrography Dataset
Project	Wautoma Solar Project
Tetra Tech	Tetra Tech, Inc.
USFWS	U.S. Fish and Wildlife Service
WNHP	Washington Natural Heritage Program

1.0 Introduction

Innergex Renewable Development USA, LLC (Innergex) plans to develop the Wautoma Solar Project (Project) located in Benton County, Washington approximately 12.5 miles northeast of the city of Sunnyside (Figure 1).

As part of its environmental due diligence, Innergex contracted Tetra Tech, Inc. (Tetra Tech) to conduct botanical surveys for the Project. The purpose of the botanical surveys was to document the presence of rare vascular plant species and noxious weeds within the Project Survey Area in support of permitting requirements for the proposed Project.

2.0 Description of the Survey Area

Botanical surveys were conducted in early May 2021 within the approximately 3,830-acre area shown as the “Spring 2021 Survey Area” on Figure 1. Following these surveys, the Project was expanded by approximately 990 acres. Botanical surveys will be conducted in the expanded area in the spring of 2022 (i.e., Spring 2022 Survey Area, Figure 1). This report will be supplemented with the results of the Spring 2022 surveys.

3.0 Agency Coordination

Innergex and Tetra Tech met virtually with the Washington Department of Fish and Wildlife (WDFW) on March 8, 2021, to introduce the Project and discuss planned wildlife, habitat, and rare plant surveys. At the meeting, WDFW concurred with the survey timing and survey approach. A summary of this meeting is provided as Appendix B to the Habitat and General Wildlife Survey Report prepared for the Project (Tetra Tech 2022).

4.0 Methods

4.1 Background Review

4.1.1 *Rare Plants*

Prior to conducting field surveys, Tetra Tech conducted a pre-field review of existing information on rare vascular plant species with the potential to occur in Benton County and the Survey Area. For purposes of this report, the term “rare plant” includes federally listed and candidate vascular plant species, as well as vascular plant species that are listed in Washington state as endangered, threatened, or sensitive by the Washington Natural Heritage Program (WNHP). Specific sources of information that were reviewed prior to conducting field surveys included the following:

- U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) query for Benton County (USFWS 2021a)

- WNHP Rare Vascular and Nonvascular Species, County Lists (WNHP 2021a)
- Washington Vascular Plant Species of Special Concern (WNHP 2019)
- WNHP Element Occurrence database of rare and imperiled species and plant communities (WNHP 2021b)
- Online Field Guide to the Rare Plants of Washington (WNHP 2021c)
- Wautoma Solar Project Critical Issues Analysis (Tetra Tech 2020)
- USFWS National Wetlands Inventory (USFWS 2021b)
- U.S. Geological Survey National Hydrography Dataset (NHD; USGS 2021)
- Aerial imagery of the Survey Area (GoogleEarth Pro 2021)

Based on review of the above sources, Tetra Tech compiled a list of rare plant species known to occur or with the potential to occur in the Survey Area (Appendix A). As further detailed in Appendix A, each of the species identified as potentially occurring within the Survey Area was assigned a “likelihood of occurrence” (i.e., highly unlikely, low, moderate, high) based on the proximity of known occurrences, whether the known occurrences in Benton County are historical occurrences, and the likelihood of suitable habitat occurring within the Survey Area.

Prior to conducting field surveys, Tetra Tech completed a review of existing literature, herbarium records, and other sources to generate fact sheets or “field guides” for each rare plant species known to occur, or with the potential to occur, within the Survey Area. These fact sheets were used by the surveyors in the field and included the following:

- Photographs of each species and its habitat
- Information detailing habitat associations
- Range and flowering period
- Identifying features
- Characteristics distinguishing the target species from similar species within its range

4.1.2 Noxious Weeds

Prior to field surveys, Tetra Tech reviewed lists of species designated as noxious weeds in Washington state and Benton County (BCNWCB 2020; WSNWCB 2021). Additionally, existing literature and other sources were reviewed to familiarize surveyors with identification of designated noxious weeds that would potentially be encountered within the Survey Area.

4.2 Field Surveys

Tetra Tech conducted botanical surveys within the Spring 2021 survey area May 10–14, 2021. This survey period was chosen to coincide with the identification period for the vast majority of the rare plant species with a potential to occur within the Spring 2021 Survey Area. Supplemental botanical surveys are planned in the spring of 2022 for the expanded Spring 2022 Survey Area Figure 1).

4.2.1 Rare Plants

Field surveys were conducted using the focused intuitive controlled survey method, which is a standard and commonly accepted survey protocol (USFS and BLM 1999). This method incorporates meandering transects that traverse the survey area and targets the full array of major vegetation types (with the exception of agricultural fields as they do not support rare plant species and are exposed to ongoing active disturbances on a regular basis), aspects, topographical features, habitats, and substrate types. The distribution of survey effort is based on habitat conditions observed in the field, surveyor experience, and knowledge of rare plant species and their habitats. Areas that provide marginal potential habitat for rare plant species (e.g., areas dominated by non-native species) are surveyed with less intensity than areas of high-potential habitat for rare plant species (e.g., intact shrub-steppe habitat).

While traversing the Survey Area, the surveyors searched for rare plant species, and when the surveyors arrived at an area of high-potential habitat for rare plant species, they conducted a complete survey for the rare species (i.e., the entire area of high-potential habitat is surveyed). Because this method focuses survey efforts on the parts of the landscape most likely to support rare plant species, surveyors were required to be familiar with all information in each species' fact sheet before beginning surveys.

When surveyors encountered a rare plant species, they recorded the global positioning system (GPS) location with a tablet using ArcGIS Collector software and an external GPS receiver capable of sub-meter accuracy. For individual plants or small patches of individuals, surveyors took a single GPS point. For numerous plants over a larger area, they mapped a polygon that encompassed all individuals. Surveyors completed WNHP rare plant sighting forms for each population (copies available upon request) and took photographs to serve as digital specimen vouchers to illustrate identifying characteristics, plant habits, and habitat.

Data for each population included the following:

- Species phenology
- Number of plants observed
- Habitat information and associated species
- Visible threats
- Representative photos of individuals and habitat

During surveys, Tetra Tech maintained a running list of vascular plant species encountered and made informal collections of unknown species for later identification. Identification was verified through the use of appropriate plant keys—in particular, *Flora of the Pacific Northwest* (Hitchcock and Cronquist 2018). The final vascular plant species list for the Survey Area is included as Appendix B in this report.

4.2.2 Noxious Weeds

Noxious weed surveys were conducted concurrently with rare plant surveys. Tetra Tech recorded observations of state- and Benton County-listed noxious weeds (BCNWCB 2020; WSNWCB 2021). When a noxious weed was encountered in the Survey Area, the location was recorded with a GPS point and the species, estimated size of infestation (i.e., less than 0.1 acre, 0.1 to 1.0 acre, or 1 to 5 acres), and relative abundance (i.e., sparse [only a few individuals noted or low cover of species in area], common [many individuals of the species noted in area], or very high cover [dense population of the species]) was recorded.

5.0 Results and Discussion

5.1 Background Review

5.1.1 Rare Plants

Based on the background review of existing information, one federally listed threatened plant species, the Umtanum desert buckwheat (*Eriogonum codium*), is known to occur within Benton County (USFWS 2021a). However, this species has a highly restricted distribution, and the entire known population occurs in a 1.9-acre area on the eastern end of Umtanum Ridge within the Hanford Reach National Monument, which is more than 6 miles north of the Survey Area (Figure 2; USFWS 2019). Additionally, the approximately 5 acres of designated critical habitat for Umtanum Desert buckwheat is restricted to this region along Umtanum Ridge (i.e., well outside the Survey Area).

Including Umtanum desert buckwheat, which in addition to being federally listed as threatened is also considered a state endangered species, 29 state endangered, threatened, or sensitive vascular plant species are known to occur or potentially occur within Benton County (WNHP 2021a). Appendix A provides the list of the 29 special status plant species known or potentially occurring in Benton County, as well as their state and federal status, preferred habitat, likelihood of occurring in the Survey Area, and recommended survey period. Seven of these species listed as potentially occurring within the Survey Area have been documented within 5 miles of the Survey Area (Figure 2; WNHP 2021b). These include: cespitose evening-primrose (*Oenothera cespitosa* subsp. *cespitosa*), Columbia milk-vetch (*Astragalus columbianus*), coyote tobacco (*Nicotiana attenuata*), desert cryptantha (*Cryptantha scoparia*), dwarf-evening primrose (*Eremothera pygmaea*), small-flower evening primrose (*Eremothera minor*), and Snake River cryptantha (*Cryptantha spiculifera*). An Element Occurrence (EO)¹ for one of these seven species, Columbia milkvetch, overlaps the Survey Area (Figure 2).

¹ An Element Occurrence is an “area of land and/or water in which a species or natural community is, or was present” (DNR 2018). The WNHP provides data on rare plants in Washington, including the locations of documented EOs for rare plant species. However, due to the sensitive nature of this information, rare plant EOs are buffered to protect the exact location of documented occurrences of rare plant populations.

5.1.2 Noxious Weeds

Based on the background review, 155 species are currently designated as noxious weeds in Washington state, and 124 species are currently designated as noxious weeds in Benton County (BCNWCB 2020; WSNWCB 2021). Per the WSNWCB (2021), the following are the definitions for each class of noxious weed:

- **Class A Weeds**: Non-native species whose distribution in Washington is still limited. Preventing new infestations and eradicating existing infestations are the highest priority. Eradication of all Class A plants is required by law.
- **Class B Weeds**: Non-native species presently limited to portions of the state. Species are designated for required control in regions where they are not yet widespread. Preventing new infestations in these areas is a high priority. In regions where a Class B species is already abundant, control is decided at the local level, with containment as the primary goal.
- **Class C Weeds**: Noxious weeds that are typically widespread in Washington or are of special interest to the state's agricultural industry. The Class C status allows county weed boards to require control if locally desired, or they may choose to provide education or technical consultation.

5.2 Field Surveys

5.2.1 Rare Plants

Tetra Tech documented one special-status plant species, the state sensitive Columbia milk-vetch, within the Spring 2021 Survey Area (Figure 3). Columbia milk-vetch is a perennial forb in the pea (Fabaceae) family, which occurs on sandy or gravelly loams, silts, rocky silt loams, and lithosol soils in shrub-steppe habitats (WNHP 2021c). One population of Columbia milk-vetch, consisting of approximately 125 plants occupying approximately 3 acres, was documented within eastside (interior) grassland habitat on a slope and crest of a hill in the southwest portion of the Spring 2021 Survey Area.

Columbia milk-vetch plants were found to occur on the hillcrest and south- and southeast-facing aspects and on relatively steep rocky slopes (i.e., 10 to 15 degrees). Approximately 65 percent of observed plants were vegetative, and the other 35 percent were in fruit. Visible threats to this population included the presence of non-native invasive plant species and moderate grazing. Associated species included the native perennial grasses and forbs bluebunch wheatgrass (*Pseudoroegneria spicata*), Idaho fescue (*Festuca idahoensis*), Sandberg bluegrass (*Poa secunda*), Carey's balsamroot (*Balsamorhiza careyana*), large-fruit desert-parsley (*Lomatium macrocarpum*), and woolly plantain (*Plantago patagonica*), and the non-native grasses and forbs cheatgrass (*Bromus tectorum*), bulbous bluegrass (*Poa bulbosa*), common stork's-bill (*Erodium cicutarium*), jagged chickweed (*Holosteum umbellatum*), and yellow salsify (*Tragopogon dubius*). Representative

photos of individuals and habitat of Columbia milk-vetch observed within the Spring 2021 Survey Area are provided in Appendix C.

Columbia milkvetch was not observed in the location where the EO for this species overlaps the Project area. The polygon for that EO is large (and is centered outside the Spring 2021 Survey Area) and thus likely includes a buffer to protect the exact location of the rare plant and/or to account for uncertainty in the mapping. As a result, the specific occurrence location is likely outside the Spring 2021 Survey Area.

5.2.2 Noxious Weeds

Tetra Tech observed nine state- and/or county-listed noxious weed species during field surveys. Table 1 lists the noxious weed species observed, their noxious weed designation, and the frequency of observations. Figure 4 shows the locations of noxious weeds observed during field surveys.

Two noxious weed species were abundant throughout the Spring 2021 Survey Area: diffuse knapweed and cereal rye. Diffuse knapweed was observed throughout the majority of the Spring 2021 Survey Area, but was most abundant in the eastern portion (Figure 4). Infestations ranged from small (less than 0.1 acre) to large (greater than 1 acre) patches that consisted of sparse scattered individuals to areas with relatively high cover of diffuse knapweed. Tetra Tech documented cereal rye throughout all but the northern portion of the Spring 2021 Survey Area. Most infestations of cereal rye were large (greater than 1 acre) and dense (high cover). In some areas, cereal rye formed almost a complete monoculture in the locations where it was observed.

Table 1. Noxious Weeds Observed within the Spring 2021 Survey Area

Scientific Name	Common Name	State Status/ County Status ¹	Frequency of Observations
<i>Aegilops cylindrica</i>	jointed goatgrass	Class C / Class C	Observed in one location in Spring 2021 Survey Area.
<i>Bassia (Kochia) scoparia</i>	kochia	Class B / Class B	Observed in one location in Spring 2021 Survey Area.
<i>Centaurea diffusa</i>	diffuse knapweed	Class B / Class B	Abundant. Frequently observed in Spring 2021 Survey Area.
<i>Chondrilla juncea</i>	rush skeletonweed	Class B / Class B	Commonly observed in Spring 2021 Survey Area.
<i>Convolvulus arvensis</i>	field bindweed	Class C / Class C	Commonly observed in Spring 2021 Survey Area.
<i>Elaeagnus angustifolia</i>	Russian olive	Class C / Not listed	Observed in one location in Spring 2021 Survey Area.
<i>Rhaponticum (Acroptilon) repens</i>	Russian knapweed	Class B / Class B	Observed in one location in Spring 2021 Survey Area.
<i>Secale cereale</i>	cereal rye	Class C / Class C	Abundant. Frequently observed in Spring 2021 Survey Area.
<i>Taeniatherum caput-medusae</i>	medusahead	Class C / Class C	Observed in two locations in Spring 2021 Survey Area.
¹ Definitions for noxious weed statuses are provided in Section 4.1.2			

Both rush skeletonweed and field bindweed were commonly observed in the Spring 2021 Survey Area (Figure 4). Observations of rush skeletonweed typically consisted of small (less than 0.1 acre), sparse infestations; however, a few larger (0.1 to 1.0 acre) denser infestations were observed in the eastern portion of the Spring 2021 Survey Area. Field bindweed was observed throughout the Spring 2021 Survey Area, with the exception of the northern portion of the Spring 2021 Survey Area. Observations ranged from small (less than 0.1 acre) to medium sized (0.1 to 1.0 acre) relatively dense infestations.

The remaining five noxious weeds—jointed goatgrass, kochia, medusahead, Russian knapweed, and Russian olive—were observed in only one or two locations in the Spring 2021 Survey Area (Figure 4). One large (1 to 5 acres) infestation of jointed goatgrass was observed in the northeast corner of the Spring 2021 Survey Area, and one small (less than 0.1 acre) infestation of kochia was observed in the northern portion of the Spring 2021 Survey Area. Russian knapweed and Russian olive were also only observed in one location. Each was observed in the southeastern portion of the Spring 2021 Survey Area, and both infestations were medium-sized (0.1 to 1.0 acre). Medusahead was observed in two locations: 1) a small (less than 0.1 acre) infestation in the western portion of the Spring 2021 Survey Area, and 2) a medium-sized (0.1 to 1.0 acre) infestation in the southeast portion of the Spring 2021 Survey Area.

6.0 Conclusion and Recommendations

Botanical surveys in 2021 documented one population of the state sensitive species *Columbia milkvetch* within the Spring 2021 Survey Area. This population consisted of approximately 125 individuals and covered approximately 3 acres. Nine noxious weeds were documented during field surveys, several of which were common or abundant within the Spring 2021 Survey Area.

In order to avoid and minimize direct and indirect effects, it is recommended that known populations of *Columbia milkvetch*, plus a 100-foot buffer, be avoided by construction and operation of the Project. Additional surveys are planned for the spring of 2022 within the Spring 2022 Survey Area (Figure 1). If additional rare plant populations are documented in this area, it is recommended that these additional populations, plus a 100-foot buffer, be avoided during Project construction and operation.

In order to minimize the introduction and spread of noxious weeds and invasive plants, it is recommended that a Noxious Weed Management Plan be prepared prior to construction of the Project. This plan should include measures (e.g., cleaning of construction vehicles) that should be implemented during Project construction and operation to prevent and minimize the introduction and spread of noxious weeds and invasive plants.

7.0 References

- BCNWCB (Benton County Noxious Weed Control Board). 2020. 2020 Benton County Noxious Weed List. Available online at: <http://www.bentonweedboard.com/>. Accessed May 2021.
- DNR (Washington Department of Natural Resources). 2018. Washington Natural Heritage Program Element Occurrences – Summary. Available online at: <https://data-wadnr.opendata.arcgis.com/datasets/wadnr::washington-natural-heritage-program-element-occurrences-current/about>. Accessed July 2021.
- GoogleEarth Pro (v7.3.3.7786). 2021. Wautoma Solar Project Area. Google Earth imagery.
- Hitchcock, C. L., and A. Cronquist. 2018. Flora of the Pacific Northwest, An Illustrated Manual, 2nd Edition. Edited by D. E. Giblin, B.S. Legler, P.F Zika, and R. G. Olmstead. University of Washington Press in association with Burke Museum of Natural History and Culture. Seattle, WA.
- Tetra Tech (Tetra Tech, Inc.). 2020. Critical Issues Analysis for the Wautoma Solar Project. Prepared for Innergex Renewable Development USA, LLC.
- Tetra Tech. 2022. Wautoma Solar Project Habitat and General Wildlife Survey Report. Prepared for Innergex Renewable Development USA, LLC. January 2022.
- USFS and BLM (U.S. Forest Service and U.S. Bureau of Land Management). 1999. Survey and Manage Survey Protocol – Vascular Plants.
- USFWS (U.S. Fish and Wildlife Service). 2019. Recovery Outline for Umtanum Desert Buckwheat. Pacific Regional Office, Portland, Oregon. Available online at: https://ecos.fws.gov/docs/recovery_plan/Eriogonum_codium_Recovery_Outline_20190820.pdf. Accessed March 2021.
- USFWS. 2021a. IPaC – Information for Planning and Consultation: Species list for Project location in Benton County, Washington. Available online at: <https://ecos.fws.gov/ipac/location/7TJMIIJWFZBSPK5CG7Q373UM5Y/resources>. Accessed May 2021.
- USFWS. 2021b. National Wetlands Inventory, Wetlands Data by State. Available online at: <https://www.fws.gov/wetlands/Data/Data-Download.html>. Accessed May 2021.
- USGS (U.S. Geological Survey). 2021. National Hydrography Dataset. Available online at: <https://nhd.usgs.gov>. Accessed March 2021.
- WNHP (Washington Natural Heritage Program). 2019. 2019 Washington Vascular Plant Species of Special Concern. Washington Department of Natural Resources. Available online at: https://www.dnr.wa.gov/publications/amp_nh_vascular_ets.pdf?xzkv3. Accessed May 2021.

- WNHP. 2021a. Washington Natural Heritage Rare Vascular and Nonvascular Species, Species List by County. Washington Department of Natural Resources, Natural Heritage Program. Available online at: <https://www.dnr.wa.gov/NHPdata>. Accessed May 2021.
- WNHP. 2021b. Washington Natural Heritage Program Element Occurrences – Current. Washington Department of Natural Resources, Natural Heritage Program. Available online at: <https://data-wadnr.opendata.arcgis.com/search?groupIds=266f0b3bdc014f5ab2a96ad4ea358a28>. Accessed May 2021.
- WNHP. 2021c. Rare Plant Field Guide: Online Field Guide to the Rare Plants of Washington. Washington Department of Natural Resources, Natural Heritage Program. Available online at: <http://www.dnr.wa.gov/NHPfieldguide>. Accessed May 2021.
- WSNWCB (Washington State Noxious Weed Control Board). 2021. 2021 State Noxious Weed List. Available online at: <https://www.nwcb.wa.gov/printable-noxious-weed-list>. Accessed May 2021.

Figures

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Wautoma Solar

Figure 1
Project Location

BENTON AND YAKIMA COUNTIES, WA

- Spring 2021 Survey Area
- Spring 2022 Survey Area
- County Boundary

INNERGEX

TETRA TECH

Reference Map



1:150,000

NAD 1983 StatePlane Washington South FIPS 4602 Feet

0 1 2 4 Miles

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Wautoma Solar

Figure 2
Documented Occurrences
of Rare Plant Species in the
Vicinity of the Project

BENTON AND YAKIMA COUNTIES, WA

- Spring 2021 Survey Area
- Spring 2022 Survey Area
- 5-mile Buffer
- County Boundary
- WNHP Rare Plant Occurrences
 - Cespitose evening-primrose (*Oenothera cespitosa* subsp. *cespitosa*)
 - Columbia milkvetch (*Astragalus columbianus*)
 - Coyote tobacco (*Nicotiana attenuata*)
 - Desert cryptantha (*Cryptantha scoparia*)
 - Dwarf evening-primrose (*Eremothera pygmaea*)
 - Small-flower evening-primrose (*Eremothera minor*)
 - Snake River cryptantha (*Cryptantha spiculifera*)
 - Umtanum desert buckwheat (*Eriogonum codium*)

INNERGEX TETRA TECH

Reference Map



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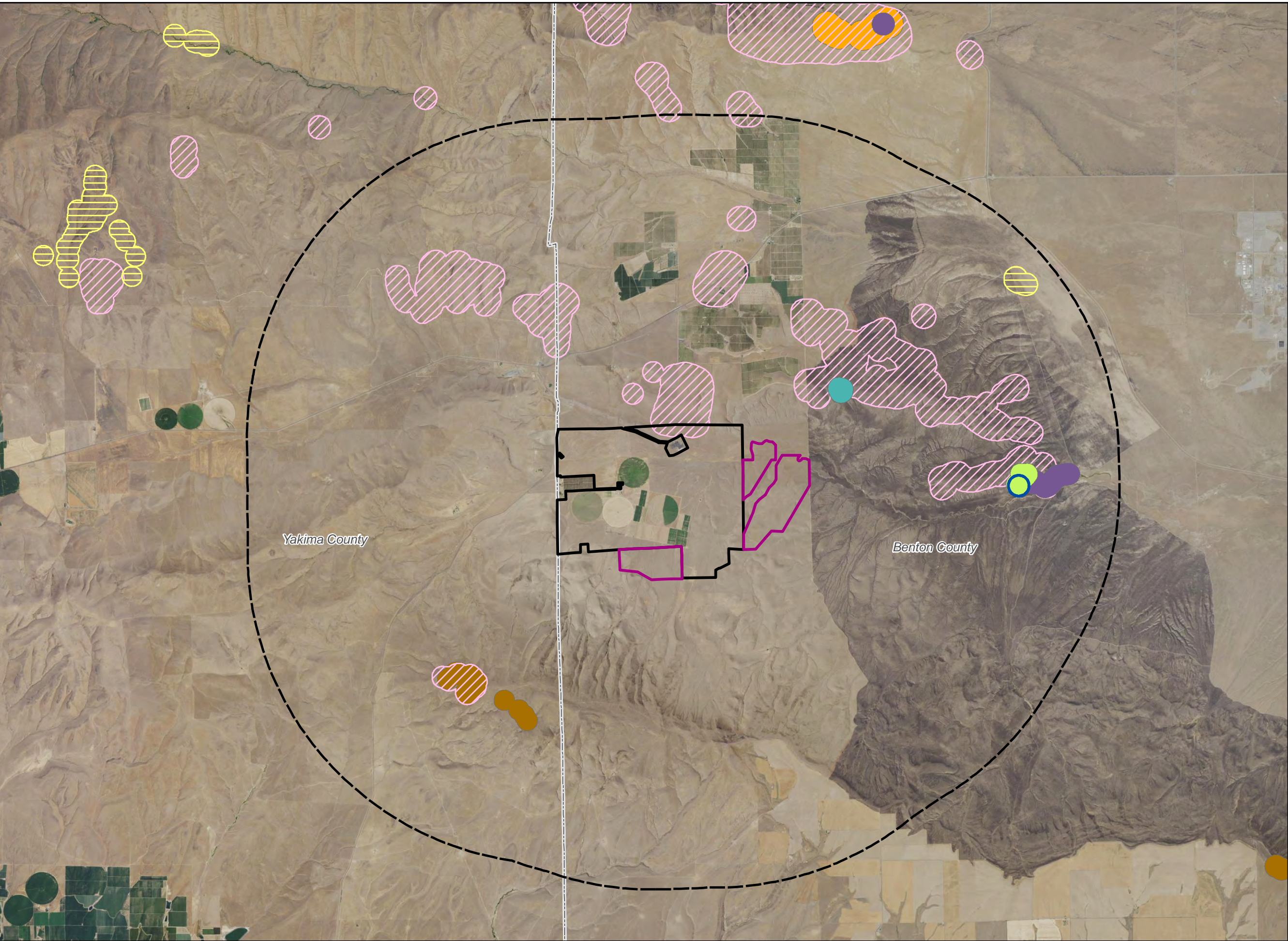


Figure 3 contains confidential information and is not included in this version.

Wautoma Solar

Figure 4
Noxious Weeds Observed
within the Spring 2021
Survey Area

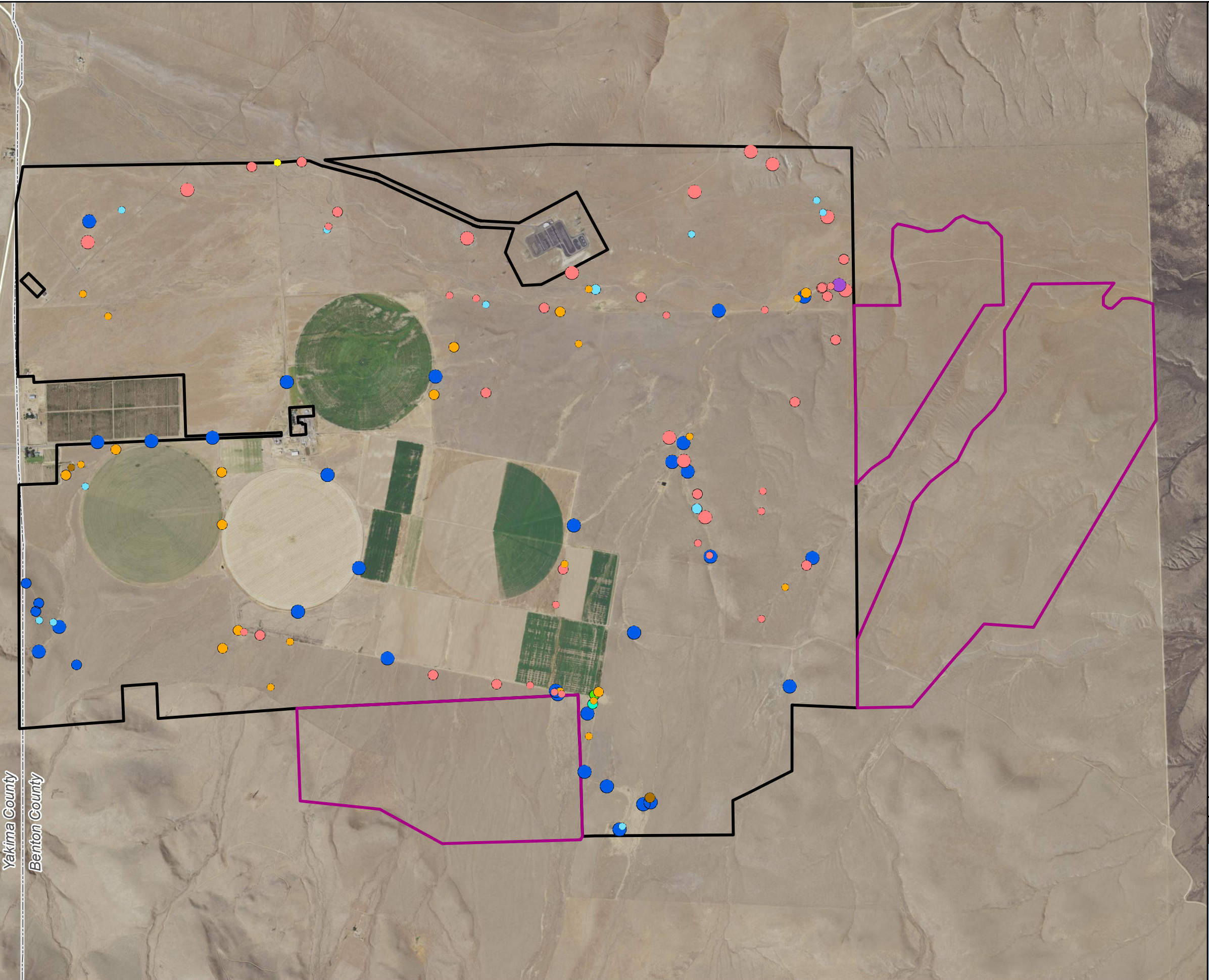
BENTON AND YAKIMA COUNTIES, WA

- Spring 2021 Survey Area
- Spring 2022 Survey Area
- Noxious Weed
- Cereal rye (*Secale cereale*)
- Diffuse knapweed (*Centaurea diffusa*)
- Field bindweed (*Convolvulus arvensis*)
- Jointed goatgrass (*Aegilops cylindrica*)
- Kochia (*Bassia scoparia*)
- Medusahead (*Taeniatherum caput-medusae*)
- Rush skeletonweed (*Chondrilla juncea*)
- Russian knapweed (*Rhaponticum repens*)
- Russian olive (*Elaeagnus angustifolia*)
- Size of Infestation
- < 0.1 acre
- 0.1-1 acre
- 1-5 acres

INNERGEX

TETRA TECH

Reference Map

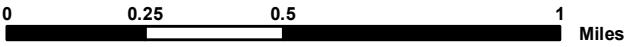


Yakima County
Benton County



1:22,000

NAD 1983 StatePlane Washington South FIPS 4602 Feet



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Appendix A.

**Rare Vascular Plant Species with Potential to Occur
within the Project Area**

Table A-1. Rare Vascular Plant Species with Potential to Occur at the Project¹

<i>Scientific name</i> (Common Name)	State Status/ Federal Status ²	Habitat Characteristics ³	Likelihood of Occurrence Based on Background Review	Survey Period ⁴
<i>Aliciella leptomeria</i> (Great Basin gilia)	T / --	Open, sandy and rocky areas in sagebrush steppe and other open habitats from low to middle elevations. Substrates are often hard, gravelly or sandy, fine reddish to blackish basalt soils, or fine non-basalt gravel with caliche fragments. Associated species include <i>Artemisia tridentata</i> , <i>Grayia spinosa</i> , <i>Purshia tridentata</i> , <i>Bromus tectorum</i> , <i>Poa secunda</i> , <i>Gilia sinuata</i> , <i>Dieteria canescens</i> , and <i>Mentzelia albicaulis</i> . Elev. 470–1,140 feet.	Low to moderate; suitable habitat potentially present in Project area.	April – June
<i>Ammania robusta</i> (grand redstem)	T / --	Shoreline and islands along the Columbia River, in riparian mudflats dominated by annual species. Also known from lakeshores in the channeled scablands and other wet places, often where alkaline. Sites are inundated until midsummer and periodically throughout the growing season. Associated species include <i>Cyperus</i> spp., <i>Eleocharis acicularis</i> , <i>Limosella aquatica</i> , <i>Lindernia dubia</i> , <i>Rotala ramosior</i> , and occasionally <i>Rorippa columbiae</i> .	Highly unlikely; suitable habitat not likely to occur within Project area.	May – June
<i>Astragalus columbianus</i> (Columbian milkvetch)	S / --	Shrub-steppe habitats on sandy or gravelly loams, silts, rocky silt loams, and lithosols. Associated species include <i>Artemisia tridentata</i> , <i>A. rigida</i> , <i>Bromus tectorum</i> , <i>Pseudoroegneria spicata</i> , <i>Astragalus caricinus</i> , <i>A. purshii</i> , <i>A. speirocarpus</i> , <i>A. succumbens</i> , <i>Erigeron filifolius</i> , <i>E. poliospermus</i> , and <i>Phlox longifolia</i> . Elev. 420–2,320 feet.	High; known occurrence within Project area.	Mid-April – mid-June
<i>Astragalus kentrophyta</i> var. <i>douglasii</i> (thistle milkvetch)	X / --	On sandy ground, dunes, or eroded riverbanks at low elevations. Not seen since 1883; this taxon is likely extinct.	Highly unlikely; species is believed to be extirpated in Washington.	June
<i>Astragalus misellus</i> var. <i>pauper</i> (pauper milk-vetch)	S / --	Open ridgetops and upper slopes, rarely middle and lower slopes, along western margin of the Columbia Basin province. In <i>Artemisia tridentata</i> / <i>Pseudoroegneria spicata</i> community. Associated species include <i>Artemisia rigida</i> , <i>A. tridentata</i> , <i>Poa secunda</i> , <i>Pseudoroegneria spicata</i> , <i>Astragalus purshii</i> , <i>Crepis atriobarba</i> , <i>C. occidentalis</i> , <i>Erigeron linearis</i> , <i>Eriogonum sphaerocephalum</i> , <i>Lomatium macrocarpum</i> , <i>Phlox longifolia</i> , and <i>P. hoodii</i> . Elev. 500–3,280 feet.	Highly unlikely; known occurrences in Benton County are historical occurrences ⁵ .	April – June
<i>Calyptridium roseum</i> (rosy pussypaws)	T / --	Sagebrush desert to arid montane forest, in sandy to gravelly soils. In Washington, grows in very dry shrub-steppe, in low swales in dark sandy soil among big sagebrush. In spring, the swale microsites may be moister than the surrounding habitat. Associated species include <i>Artemisia tridentata</i> , <i>Bromus tectorum</i> , <i>Poa secunda</i> , <i>Aliciella leptomeria</i> , <i>Greeneocharis circumscissa</i> , <i>Holosteum umbellatum</i> , <i>Draba verna</i> , <i>Erythranthe suksdorfii</i> , <i>Loeflingia squarrosa</i> subsp. <i>squarrosa</i> , and <i>Microsteris gracilis</i> . Elev. 525 feet.	Low to moderate; suitable habitat potentially present in Project area.	May – June

Scientific name (Common Name)	State Status/ Federal Status²	Habitat Characteristics³	Likelihood of Occurrence Based on Background Review	Survey Period⁴
<i>Cryptantha leucophaea</i> (gray cryptantha)	T / --	Sandy substrates, especially sand dunes that have not been completely stabilized. Appears to be restricted to areas where there is still some wind-derived movement of open sand. Associated species include <i>Artemisia tridentata</i> , <i>Purshia tridentata</i> , <i>Achnatherum hymenoides</i> , <i>Hesperostipa comata</i> , <i>Poa secunda</i> , <i>Astragalus succumbens</i> , <i>Chaenactis douglasii</i> , <i>Eriogonum niveum</i> , <i>Oenothera pallida</i> , and <i>Penstemon attenuates</i> . Elev. 300–2,500 feet.	Highly unlikely; regional endemic from Columbia and lower Yakima Rivers.	May – June
<i>Cryptantha scoparia</i> (desert cryptantha)	S / --	Dry, open slopes in the valleys, plains and foothills, common among sagebrush. In Washington, grows on south-facing slopes and ridges between small canyons with fine, dry silt and talus. Sites may be a little more alkaline than surrounding areas. Associated species include <i>Artemisia tridentata</i> , <i>Krascheninnikovia lanata</i> , <i>Bromus hordeaceus</i> , <i>Bromus tectorum</i> , <i>Pseudoroegneria spicata</i> , <i>Epilobium minutum</i> , <i>Eriogonum niveum</i> , and <i>Eriophyllum lanatum</i> . Elev. 1,200–2,100 feet.	High; known occurrence within 5 miles and suitable habitat likely present in Project area.	April – June
<i>Cryptantha spiculifera</i> (Snake River cryptantha)	S / --	Sandy knolls and badlands and talus at low elevations; dry, open, flat or sloping areas in stable or stony soils. Associated species include <i>Artemisia rigida</i> , <i>A. tridentata</i> , <i>Ericameria nauseosa</i> , <i>Salvia dorrii</i> , <i>Poa secunda</i> , <i>Pseudoroegneria spicata</i> , <i>Eriogonum sphaerocephalum</i> , and <i>Lupinus sericeus</i> . Elev. 450–3,500 feet.	Moderate; known occurrence within 5 miles and suitable habitat potentially present in Project area.	May – July
<i>Cuscuta denticulata</i> (desert dodder)	T / --	Parasitic on a variety of native shrubs in desert areas, including sagebrush (<i>Artemisia</i> spp.) and rabbitbrush (<i>Chrysothamnus</i> / <i>Ericameria</i> spp.). Associated species include <i>Artemisia tridentata</i> , <i>Achnatherum hymenoides</i> , <i>Bromus tectorum</i> , <i>Poa secunda</i> , <i>Astragalus caricinus</i> , <i>Cymopterus terebinthinus</i> , <i>Erigeron poliospermus</i> , and <i>Helianthus cusickii</i> . Elev. 880–1,089 feet.	Highly unlikely; known occurrences in Benton County are historical occurrences.	July – August
<i>Eleocharis coloradoensis</i> (dwarf spike-rush)	X / --	Fresh to brackish bare wet soil, inland. Fresh or brackish drying lake and pond margins, stream beds, flood plains, vernal pools, irrigation ditches, tidal wetlands. Elev. 0–6,900 feet.	Highly unlikely; species is believed to be extirpated in Washington.	Spring – fall
<i>Eremogone franklinii</i> var. <i>thompsonii</i> (Thompson's sandwort)	S / --	Sand dunes, scabland, and sagebrush slopes. Associated species include: <i>Purshia tridentata</i> , <i>Poa canbyi</i> and other bunchgrasses.	Low; limited suitable habitat potentially present in Project area.	May – June
<i>Eremothera minor</i> (small-flower evening-primrose)	S / --	Sagebrush desert, often where vernal moist; silty washes, gravelly basalt slopes, sandy and alkaline soils, and dry rocky hillsides; often with considerable cover of bare soil or cryptogamic crust. Associated species include <i>Artemisia tridentata</i> , <i>Ericameria nauseosa</i> , <i>Purshia tridentata</i> , <i>Bromus tectorum</i> , and <i>Poa secunda</i> . Elev. 460–1,140 feet.	High; known occurrence within 5 miles and suitable habitat likely present in Project area.	May – early June
<i>Eremothera pygmaea</i> (dwarf evening-primrose)	S / --	Sagebrush steppe, on unstable soil or gravel in steep talus, dry washes, banks, and roadcuts. Associated species include <i>Artemisia tridentata</i> , <i>Bromus tectorum</i> , <i>Cryptantha</i> spp., <i>Eriogonum</i> spp., <i>Mentzelia</i> spp., <i>Microgilia minutiflora</i> , <i>Neoholmgrenia (Camissonia) andina</i> , and <i>Salsola tragus</i> . Elev. 450–2,050 feet.	Moderate; known occurrence within 5 miles and suitable habitat potentially present in Project area.	Flowers April – June; Fruits June – August

Scientific name (Common Name)	State Status/ Federal Status²	Habitat Characteristics³	Likelihood of Occurrence Based on Background Review	Survey Period⁴
<i>Eriogonum codium</i> (Umtanum desert buckwheat)	E / T	Endemic to a very narrow range in Benton County. The only known population of this species occurs on flat to gently sloping microsites near the top of the steep, north-facing basalt cliffs overlooking the Columbia River. Associated species include <i>Grayia spinosa</i> , <i>Salvia dorrii</i> , <i>Bromus tectorum</i> , <i>Cryptantha pterocarya</i> , <i>Eremothera minor</i> , and <i>Phacelia linearis</i> .	Highly unlikely; endemic to narrow range in northern Benton County.	May – August
<i>Erythranthe suksdorfii</i> (Suksdorf's monkeyflower)	S / --	Open, moist, or rather dry places, from the valleys and foothills to moderate or occasionally high elevations in the mountains. Occurs in seasonally moist swales, drainages, or vernal pools in shrub-steppe vegetation. Microhabitats are often disturbed by small erosive events (i.e., slumps, slides, bioturbidity, and frost boils). Associated species include <i>Artemisia tridentata</i> , <i>Juniperus communis</i> , <i>Philadelphus lewisii</i> , <i>Bromus tectorum</i> , <i>Poa secunda</i> , <i>Camissonia hilgardii</i> , <i>Collomia linearis</i> , <i>Cryptantha ambigua</i> , <i>Draba verna</i> , <i>Eriogonum</i> spp., <i>Erythranthe floribunda</i> , <i>E. breviflora</i> , <i>Microsteris gracilis</i> , <i>Plectritis macrocera</i> , and <i>Ranunculus testiculatus</i> . Elev. 430–7,100 feet.	Low to moderate; suitable habitat potentially present within Project area.	Mid-April – approx. June
<i>Hypericum majus</i> (Canadian St. John's- wort)	S / --	Along ponds, lakesides, riparian habitats, or other low, wet places (FACW species). In Washington, occurs in habitats that are completely submerged during portions of the growing season or periodically inundated from water controlled by hydroelectric dams. Associated species include: <i>Carex</i> spp., <i>Equisetum</i> spp., <i>Juncus bufonius</i> , <i>J. tenuis</i> , and <i>J. articulatus</i> . Elev. 50–2,340 feet.	Highly unlikely; suitable habitat unlikely to occur within Project area.	July – September
<i>Leymus flavescens</i> (yellow wildrye)	S / --	Sand dunes and open sandy flats, and ditch- and roadbanks, of the Snake and Columbia river valleys. The species has also been found on sandy roadsides.	Highly unlikely; known occurrence in Benton County is a historical occurrence.	June – July
<i>Lipocarpus aristulata</i> (awned halfchaff sedge)	T / --	Wet soil and mud, often comprised of fine sand and silt, in bottomlands, sandbars, beaches, shorelines, stream banks, ponds, and ditches. In Washington, grows along shorelines and islands below high water at elevations up to 500 feet. Associated species include: <i>Ammannia robusta</i> , <i>Cyperus</i> spp., <i>Eleocharis</i> spp., <i>Juncus</i> spp., <i>Limosella</i> spp., <i>Lindernia dubia</i> , <i>Rorippa columbiana</i> , and <i>Rotala ramosior</i> .	Highly unlikely; suitable habitat unlikely to occur within Project area.	June – August
<i>Loeflingia squarrosa</i> (spreading pygmyleaf)	T / --	Low swales and shallow vernal pools in sandy and silty areas. The Washington populations were found during an unusually wet year in swales and vernal wet areas with a great diversity of annuals in an otherwise arid environment. Associated species include <i>Artemisia tridentata</i> , <i>Bromus tectorum</i> , <i>Poa secunda</i> , <i>Ambrosia acanthicarpa</i> , <i>Epilobium minutum</i> , <i>Erythranthe suksdorfii</i> , <i>Gnaphalium palustre</i> , <i>Gilia sinuata</i> , <i>Greeneocharis circumscissa</i> , <i>Holosteum umbellatum</i> , <i>Juncus bufonius</i> , and <i>Microsteris gracilis</i> . Elev. 430–580 feet.	Low; limited suitable habitat likely to occur within Project area.	May
<i>Lomatium tuberosum</i> (Hoover's desert- parsley)	S / --	Rocky slopes and loose basalt talus in sagebrush steppe, typically on east- to north-facing slopes. Associated species include <i>Artemisia rigida</i> , <i>Poa secunda</i> , <i>Pseudoroegneria spicata</i> , <i>Allium acuminatum</i> , <i>Delphinium nuttalianum</i> , <i>Eriogonum niveum</i> , and <i>Galium aparine</i> . Elev. 460–4,000 feet.	Low; limited suitable habitat likely to occur within Project area.	March – April (flowers); fruits mature in May

Scientific name (Common Name)	State Status/ Federal Status²	Habitat Characteristics³	Likelihood of Occurrence Based on Background Review	Survey Period⁴
<i>Micromonolepis pusilla</i> (red poverty-weed)	T / --	Desert regions, in saline or alkaline clay soils, salt-encrusted soils, or edges of alkaline ponds. This species is adapted to extreme conditions. In some sites, it is limited to growing directly beneath greasewood shrubs, due to cattle trampling and soil compaction between the shrubs. Associated species include <i>Sarcobatus vermiculatus</i> , <i>Suaeda depressa</i> , <i>Bromus tectorum</i> , and <i>Phacelia tetramera</i> . Elev. 1,950–2,210 feet.	Highly unlikely; suitable habitat not likely within Project area, and known occurrence in Benton County is historical.	April – June
<i>Mimetanthe pilosa</i> (false monkeyflower)	S / --	Moist, sandy or gravelly soils, especially by small streams, seeps, springs, and disturbed areas. Elev. 1,000–4,500 feet.	Highly unlikely; known occurrence in Benton County is historical.	May – July
<i>Myosurus alopecuroides</i> (foxtail mouse-tail)	T / --	Obligate vernal pool species; found on hard, bare, desiccated clay in sparsely vegetated areas of shallow pools. Associated species include <i>Deschampsia danthonioides</i> , <i>Myosurus minimus</i> , <i>Navarretia leucocephala</i> , <i>Plagiobothrys</i> spp., and <i>Polygonum polygaloides</i> subsp. <i>confertiflorum</i> . Elev. 250–2,500 feet.	Low; limited suitable habitat likely to occur within Project area.	March – June
<i>Nicotiana attenuata</i> (coyote tobacco)	S / --	Dry, sandy bottom lands, dry rocky washes, and in other dry open places. Associated species include <i>Artemisia tridentata</i> , <i>Ericameria</i> spp., <i>Bromus tectorum</i> , <i>Leymus cinereus</i> , <i>Achillea millefolium</i> , <i>Centaurea diffusa</i> , <i>Mentzelia laevicaulis</i> , <i>Solanum triflorum</i> , and <i>Verbascum thapsus</i> . Elev. 320–2,640 feet.	High; known occurrence within 5 miles and suitable habitat likely present in Project area.	June – September
<i>Oenothera cespitosa</i> subsp. <i>cespitosa</i> (cespitose evening-primrose)	S / --	Open sagebrush desert; on loose talus slopes, steep, sandy or gravelly slopes, road cuts, and dry hills; as well as along the flat river terrace of the Columbia River. It occurs within general areas dominated by <i>Artemisia tridentata</i> or <i>Artemisia rigida</i> . Other associated species include <i>Ericameria nauseosa</i> , <i>Eriogonum douglasii</i> and <i>E. niveum</i> , <i>Achnatherum thurberianum</i> , <i>A. hymenoides</i> , <i>Hesperostipa comata</i> , <i>Koeleria macrantha</i> , <i>Poa secunda</i> , <i>Astragalus purshii</i> , <i>A. succumbens</i> , <i>Balsamorhiza careyana</i> , <i>Chaenactis douglasii</i> , <i>Comandra umbellata</i> , <i>Cryptantha pterocarya</i> , <i>Erigeron filifolius</i> , <i>Phacelia hastata</i> , and <i>Cymopterus terebinthina</i> . Elev. 410–1,800 feet.	Moderate; known occurrence within 5 miles and suitable habitat potentially present in Project area.	Late-April – June
<i>Rorippa columbiae</i> (Columbia yellowcress)	T / --	Riverbanks, permanent lakes, snow-fed lakes, and streams, internally-drained lakes with extended periods of dryness, wet meadows, and ditches. All known sites are inundated for at least part of the year. Soil types include clay, sand, gravel, sandy silt, cobblestones, and rocks. All sites in Washington occur along the Columbia River, in the lowest vegetated riparian zone.	Highly unlikely; suitable habitat not likely to occur within Project area and all known sites in Washington are along Columbia River.	April – October
<i>Rotala ramosior</i> (lowland toothcup)	S / --	Damp areas in fine sand and silt, wet, swampy places, mudflats, lakes and pond margins, and along free-flowing river reaches. Found in riparian wetlands growing below high water, often in a community of small emergent annuals. Associated species include <i>Salix exigua</i> , <i>Ammannia robusta</i> , <i>Cyperus acuminatus</i> , <i>Eleocharis acicularis</i> , <i>Juncus</i> spp., <i>Limosella acaulis</i> , and <i>Lindernia dubia</i> . Elev. 200–2,259 feet.	Highly unlikely; suitable habitat not likely to occur within Project area.	June – August

Scientific name (Common Name)	State Status/ Federal Status²	Habitat Characteristics³	Likelihood of Occurrence Based on Background Review	Survey Period⁴
<i>Sabulina nuttallii</i> var. <i>fragilis</i> (Nuttall's sandwort)	T / --	Open, gravelly benches, dry rocky areas, or limestone talus from open sagebrush hills to alpine slopes. In Washington, this taxon has been found on desert ridges of raised basalt, talus, outcrops, and in rocky to gravelly or sandy soil. Associated species include: <i>Ericameria nauseosa</i> , <i>Grayia spinosa</i> , <i>Purshia tridentata</i> , <i>Salvia dorrii</i> , <i>Pseudoroegneria spicata</i> , <i>Balsamorhiza careyana</i> , <i>Eriogonum microthecum</i> , and <i>Lomatium macrocarpum</i> .	Low to moderate; suitable habitat potentially present within Project area.	May – August

¹ Table based on the WNHP's Rare Vascular and Nonvascular Species List for Benton County (WNHP 2021a)

² State Status: WNHP (2019) provides the following explanation of state status:

E = Endangered, in danger of becoming extinct or extirpated from Washington

T = Threatened, likely to become Endangered in Washington

S = Sensitive, vulnerable or declining and could become Endangered or Threatened in Washington

X = Possibly extinct or extirpated from Washington State (includes state historical species).

Federal Status: E = Listed endangered.

³ Sources: Burke Museum 2021; FNA 1993+; Hitchcock and Cronquist 2018; WNHP 2019; WNHP 2021b.

⁴ Sources: Burke Museum 2021; WNHP 2021b.

⁵ Historical occurrence is one that has not been reconfirmed for 40 or more years, or the species is extirpated from the county (WNHP 2021a).

References

Burke Museum. 2021. Burke Herbarium Image Collection. University of Washington. Seattle, Washington. Available online at: <https://biology.burke.washington.edu/herbarium/imagecollection.php/>. Accessed May 2021.

FNA (Flora of North America Editorial Committee, eds). 1993+. Flora of North America North of Mexico [Online]. 21+ vols. New York and Oxford. Available online at: <http://beta.floranorthamerica.org>. Accessed May 2021.

Hitchcock, C. L., and A. Cronquist. 2018. Flora of the Pacific Northwest; an Illustrated Manual. Second Edition. Edited by D.E Giblin, B. S. Legler, P.F. Zika, and R.G. Olmstead. University of Washington Press in association with Burke Museum of Natural History and Culture. Seattle, Washington.

WNHP (Washington Natural Heritage Program). 2019. Washington Vascular Plant Species of Special Concern. Washington Department of Natural Resources. Available online at: https://www.dnr.wa.gov/publications/amp_nh_vascular_ets.pdf?xzkv3. Accessed May 2021.

WNHP. 2021a. Washington Natural Heritage Rare Vascular and Nonvascular Species, Species List by County. Washington Department of Natural Resources, Natural Heritage Program. Available online at: <https://www.dnr.wa.gov/NHPdata>. Accessed May 2021.

WNHP. 2021b. Rare Plant Field Guide: Online Field Guide to the Rare Plants of Washington. Washington Department of Natural Resources, Natural Heritage Program. Available online at: <http://www.dnr.wa.gov/NHPfieldguide>. Accessed May 2021.

Appendix B.

Vascular Plants Observed During 2021 Field Surveys

Scientific Name	Common Name	Family	Type	Non-native	Noxious Weed Class Benton County / Washington State	Synonyms / Notes
<i>Achillea millefolium</i>	common yarrow	Asteraceae	forb			
<i>Achnatherum hymenoides</i>	Indian rice grass	Poaceae	grass			
<i>Achnatherum thurberianum</i>	Thurber's rice grass	Poaceae	grass			
<i>Aegilops cylindrica</i>	jointed goatgrass	Poaceae	grass	x	Class C / Class C	
<i>Agoseris grandiflora</i>	bigflower agoseris	Asteraceae	forb			
<i>Agoseris heterophylla</i>	annual agoseris	Asteraceae	forb			
<i>Agropyron cristatum</i>	crested wheatgrass	Poaceae	grass	x		
<i>Amaranthus blitoides</i>	matweed, prostrate pigweed	Amaranthaceae	forb	x		
<i>Ambrosia acanthicarpa</i>	bur ragweed	Asteraceae	forb			
<i>Amsinckia</i> spp.	fiddleneck	Boraginaceae	forb			
<i>Antennaria dimorpha</i>	low pussytoes	Asteraceae	forb			
<i>Artemisia tridentata</i>	big sagebrush	Asteraceae	shrub			
<i>Artemisia tripartita</i>	threetip sagebrush	Asteraceae	shrub			
<i>Astragalus columbianus</i>	Columbia milk-vetch	Fabaceae	forb			
<i>Astragalus purshii</i>	woollypod milkvetch, Pursh's milk-vetch	Fabaceae	forb			
<i>Astragalus spaldingii</i>	Spalding's milkvetch	Fabaceae	forb			
<i>Astragalus speirocarpus</i>	curve-pod milk-vetch	Fabaceae	forb			
<i>Balsamorhiza careyana</i>	Carey's balsamroot	Asteraceae	forb			
<i>Bassia scoparia</i>	red belvedere, mock cypress, kochia	Amaranthaceae	forb	x	Class B / Class B	<i>Kochia scoparia</i>
<i>Brassica nigra</i>	black mustard	Brassicaceae	forb	x		
<i>Bromus inermis</i>	smooth brome	Poaceae	grass	x		
<i>Bromus tectorum</i>	cheatgrass	Poaceae	grass	x		
<i>Calochortus macrocarpus</i> var. <i>macrocarpus</i>	sagebrush mariposa lily	Liliaceae	forb			
<i>Centaurea diffusa</i>	diffuse knapweed	Asteraceae	forb	x	Class B / Class B	
<i>Chaenactis douglasii</i>	Douglas' dustymaiden, dusty maidens	Asteraceae	forb			
<i>Chenopodium album</i>	lambsquarters, pigweed	Amaranthaceae	forb	x		
<i>Chondrilla juncea</i>	rush skeletonweed	Asteraceae	forb	x	Class B / Class B	
<i>Chorispora tenella</i>	crossflower, blue mustard	Brassicaceae	forb	x		
<i>Chrysothamnus viscidiflorus</i>	yellow rabbitbrush, green rabbitbrush	Asteraceae	shrub			
<i>Cichorium intybus</i>	chicory, wild succory	Asteraceae	forb	x		
<i>Cirsium undulatum</i>	wavy leaf thistle	Asteraceae	forb			
<i>Convolvulus arvensis</i>	field bindweed	Convolvulaceae	forb	x	Class C / Class C	
<i>Conyza canadensis</i>	horseweed, Canadian fleabane	Asteraceae	forb			
<i>Crepis</i> spp.	hawksbeard	Asteraceae	forb			
<i>Cryptantha flaccida</i>	weakstem cat's-eye, flaccid cryptantha	Boraginaceae	forb			
<i>Cymopterus terebinthinus</i>	turpentine spring parsley, turpentine wavewing	Apiaceae	forb			<i>Pteryxia terebinthina</i>
<i>Dactylis glomerata</i>	orchard grass	Poaceae	grass	x		
<i>Dieteria canescens</i>	hoary-aster	Asteraceae	forb			<i>Machaeranthera canescens</i>
<i>Draba verna</i>	spring whitlow-grass	Brassicaceae	forb	x		
<i>Elaeagnus angustifolia</i>	Russian-olive	Elaeagnaceae	tree	x	Not listed / Class C	
<i>Eleocharis palustris</i>	common spikerush	Cyperaceae	graminoid			
<i>Elymus elymoides</i>	squirreltail	Poaceae	grass			
<i>Epilobium brachycarpum</i>	tall annual willowherb	Onagraceae	forb			
<i>Ericameria nauseosa</i>	rubber rabbitbrush, gray rabbitbrush	Asteraceae	shrub			
<i>Erigeron filifolius</i>	threadleaf fleabane	Asteraceae	forb			
<i>Erigeron piperianus</i>	Piper's fleabane	Asteraceae	forb			
<i>Erigeron poliospermus</i>	cushion fleabane	Asteraceae	forb			
<i>Erigeron pumilus</i>	shaggy fleabane	Asteraceae	forb			
<i>Eriogonum strictum</i> var. <i>proliferum</i>	strict buckwheat	Polygonaceae	forb/subshrub			
<i>Erodium cicutarium</i>	redstem, common stork's bill, crane's-bill	Geraniaceae	forb	x		
<i>Festuca idahoensis</i>	Idaho fescue	Poaceae	grass			
<i>Filago arvensis</i>	field cottonrose, field filago	Asteraceae	forb	x		<i>Logfia arvensis</i>
<i>Grayia spinosa</i>	spiny hopsage	Amaranthaceae	shrub			
<i>Gutierrezia sarothrae</i>	broom snakeweed	Asteraceae	shrub			
<i>Helianthus cusickii</i>	Cusick's sunflower	Asteraceae	forb			

Scientific Name	Common Name	Family	Type	Non-native	Noxious Weed Class Benton County / Washington State	Synonyms / Notes
<i>Hesperostipa comata</i>	needle-and-thread grass	Poaceae	grass			
<i>Holosteum umbellatum</i>	jagged chickweed	Caryophyllaceae	forb	x		
<i>Hordeum murinum</i>	mouse barley, smooth barley, wall barley	Poaceae	grass	x		
<i>Juniperus occidentalis</i>	western juniper	Cupressaceae	tree			
<i>Lactuca serriola</i>	prickly lettuce	Asteraceae	forb	x		
<i>Lagophylla ramosissima</i>	slender hareleaf, branched lagophylla	Asteraceae	forb			
<i>Lappula longispinus</i>	long-spined stickseed	Boraginaceae	forb	x		
<i>Lepidium perfoliatum</i>	clasping-leaved peppergrass	Brassicaceae	forb	x		
<i>Linum lewisii</i> var. <i>lewisii</i>	wild blue flax, prairie flax	Linaceae	forb			
<i>Lithospermum ruderales</i>	western gromwell, western stone seed	Boraginaceae	forb			
<i>Lomatium macrocarpum</i>	large-fruit desert-parsley, bigseed lomatium	Apiaceae	forb			
<i>Lomatium papilioniferum</i>	butterfly bearing biscuit-root	Apiaceae	forb			<i>Lomatium grayi</i>
<i>Lomatium triternatum</i>	triternate biscuit-root	Apiaceae	forb			
<i>Lupinus sulphureus</i> var. <i>subsaccatus</i>	sulphur lupine, Bingen lupine	Fabaceae	forb			
<i>Malva neglecta</i>	dwarf mallow	Malvaceae	forb	x		
<i>Medicago sativa</i>	alfalfa	Fabaceae	forb	x		
<i>Mentzelia laevicaulis</i>	giant blazing-star	Loasaceae	forb			
<i>Philadelphus lewisii</i>	Lewis' mock orange	Hydrangeaceae	shrub			
<i>Phlox longifolia</i>	long-leaf phlox	Polemoniaceae	forb			
<i>Plantago patagonica</i>	woolly plantain, indianwheat plantain	Plantaginaceae	forb			
<i>Poa bulbosa</i>	bulbous bluegrass	Poaceae	grass	x		
<i>Poa pratensis</i>	Kentucky bluegrass	Poaceae	grass	x		
<i>Poa secunda</i> ssp. <i>juncifolia</i>	big bluegrass, Nevada bluegrass, alkali bluegrass	Poaceae	grass			<i>Poa ampla</i>
<i>Poa secunda</i> ssp. <i>secunda</i>	Sandberg bluegrass, curly bluegrass	Poaceae	grass			
<i>Polygonum aviculare</i>	prostrate knotweed	Polygonaceae	forb	x		
<i>Prunus</i> spp.	cherry	Rosaceae	shrub/tree	x		planted in hedgerow
<i>Pseudoroegneria spicata</i>	bluebunch wheatgrass	Poaceae	grass			
<i>Rhaponticum repens</i>	Russian knapweed, hardheads	Asteraceae	forb	x	Class B / Class B	<i>Acroptilon repens</i>
<i>Robinia pseudoacacia</i>	black locust	Fabaceae	tree	x		
<i>Rosa</i> spp.	rose	Rosaceae	shrub	varies		
<i>Rosa woodsii</i>	Wood's rose, pearhip rose	Rosaceae	shrub			
<i>Ribes aureum</i>	wax currant	Grossulariaceae	shrub			
<i>Ribes</i> spp.	currant	Grossulariaceae	shrub			
<i>Rhus glabra</i>	smooth sumac	Anacardiaceae	shrub			
<i>Rumex crispus</i>	curly dock	Polygonaceae	forb	x		
<i>Salix exigua</i>	coyote willow, narrow-leaf willow	Salicaceae	shrub			
<i>Salsola tragus</i>	prickly Russian thistle	Chenopodiaceae	forb	x		<i>Salsola kali</i>
<i>Salvia dorrii</i>	purple sage	Lamiaceae	shrub			
<i>Sanguisorba minor</i>	small burnet	Rosaceae	forb	x		
<i>Schedonorus arundinaceus</i>	tall fescue	Poaceae	grass	x		
<i>Secale cereale</i>	cereal rye	Poaceae	grass	x	Class C / Class C	
<i>Sisymbrium altissimum</i>	tall tumbled mustard	Brassicaceae	forb	x		
<i>Sphaeralcea munroana</i>	Munro's globemallow, white-stemmed globemallow	Malvaceae	forb			
<i>Stephanomeria tenuifolia</i>	wire lettuce, narrowleaf wirelettuce	Asteraceae	forb			
<i>Taeniatherum caput-medusae</i>	medusahead	Poaceae	grass	x	Class C / Class C	
<i>Taraxacum officinale</i>	common dandelion	Asteraceae	forb	x		
<i>Thinopyrum ponticum</i>	tall wheatgrass; Eurasian quack grass	Poaceae	grass	x		<i>Elymus elongatus</i> , <i>Elytrigia pontica</i>
<i>Tragopogon dubius</i>	yellow salsify	Asteraceae	forb	x		
<i>Triticum aestivum</i>	wheat	Poaceae	grass	x		
<i>Triteleia grandiflora</i>	blue-lily, Douglas' brodiaea	Asparagaceae	forb			
<i>Typha latifolia</i>	broad-leaf cat-tail, common cattail	Typhaceae	graminoid			
<i>Ulmus</i> cf. <i>pumila</i>	Siberian elm	Ulmaceae	shrub/tree	x		
<i>Verbascum thapsus</i>	flannel mullein, great mullein	Scrophulariaceae	forb	x		
<i>Vulpia bromoides</i>	brome fescue	Poaceae	grass	x		
<i>Vulpia microstachys</i>	small fescue	Poaceae	grass			

Appendix C.

Site Photographs



Photo 1. Columbia milkvetch in fruit.



Photo 2. Columbia milkvetch in fruit.



Photo 3. Vegetative individual of Columbia milkvetch with rabbit droppings.



Photo 4. Columbia milkvetch habitat.



Photo 5. Columbia milkvetch habitat.