Council Study Session

December 18, 2017

Title:	10 by 20 Ordinance –Activity Update	
Item Type:	Update	
Requested by Council?	Yes	
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Discussion Areas:

This is an update to the July 17, 2017 Council Study Session discussion on the 10 by 20 ordinance. City staff has three areas of additional research and information to share with Council followed by a request for confirmation or alteration to a suggested staff direction.

1) A report from Pacific Crest Consulting containing a detailed inventory of plant, lichen and fungi as well invertebrates, mammals, reptiles, amphibians and birds on the Imperatrice Property.

2) Letter from Bonneville Power Administration providing a formal response and explanation of the "take or pay" provision of the City's current wholesale power contract.

3) A more detailed matrix of potential projects developed in conjunction with the Bonneville Environmental Foundation (BEF) that could be undertaken to move the City towards the requirements set forth in the 10 by 20 ordinance.

1) Inventory Report for the Imperatrice Property

Environmental Assessment

With direction from Council at its February 21, 2017 meeting, City staff from the Electric, Parks and Public Works Departments commissioned a consultant to conduct a rare plants and bird assessment of the entire property as a likely required precursor to any formal development application on the site.

BPA Contract

Additionally, Electric Department staff continued communications and dialogue with both Bonneville Power Administration (BPA) and Bonneville Environmental Foundation (BEF) regarding the implications of the project on the City's current bilateral contract agreement for the purchase and delivery of wholesale power to the City's distribution system. Of particular importance and impact is the "take or pay" provision which commits the City to purchase all of

CITY OF ASHLAND

its retail electricity load from BPA based on a pre-determined formula that incorporates expected growth, expected and required energy efficiency achievements and other system elements.

Through these discussions, City staff has re-affirmed its position that the modification or removal of the take or pay provision within the City's current contract is highly unlikely to occur prior to the agreement expiration in 2028. BPA is aware of the growing interest from the City and other public utility customers to incorporate local distributed generation into individual utility resource portfolio's and will likely modify the structure of the agreements post 2028 to address changing customer needs and desires. Doing so prior to the contract expirations would create a significant and detrimental financial impact to the entire BPA system.

2) Letter from BPA Power Account Representative

Because of the significance of the City's wholesale power agreement with BPA to any significant local power generation, City staff has maintained close communication with BPA power accounts staff. The attached letter from the City's BPA Account Executive Paul Garrett provides a clear explanation of the "take or pay" provision of the contract that impacts the City's ability to acquire wholesale power from sources other than BPA.

As staff has previously communicated, the take or pay provision requires that the City purchase its wholesale power needs exclusively from BPA with several exclusions. Exclusions include the following:

- Net metered generation systems under 200 kw per customer meter
- One large, "utility scale" generation system of up to one megawatt (MW)
- Energy Efficiency activities
- Pre-existing generation systems in excess of 200 kw (Reeder Gulch Hydro)

While clarifying the details of the take or pay provision with BPA staff, a previously unknown aspect of an associated contract relating to the transmission of power was identified and described in the attached BPA letter. Should the City decide to move forward with bringing a greater than one MW of non-BPA generation into its distribution grid, an existing, grandfathered transmission agreement will expire and be replaced with a current transmission contract resulting in an annual increase in cost to the Electric Utility of approximately $750,000 per year.

Staff requested our current cost of service and rate design consultant to estimate several rate scenarios to assist in determining end user (customer) rate implications associated with a large scale 10-12 MW solar generation system on the Imperatrice Property using three different hypothetical power purchase agreement (PPA) rates, as well as inclusion of the added interconnection costs and annual transmission cost increases.

PPA Cost per kwh	Estimated retail rate increase*
$0.04	$0.088
$0.06	$0.11
$0.08	$0.13

'* General rate increase estimate in aggregate. Exact rates would differ based on specific customer class

3) Matrix of Alternative Initiatives

Staff had identified and presented an initial list of a variety of potentially cost effective projects and programs that could advance the City towards meeting the anticipated objectives of the 10 by 20 ordinance. At that time, Council provided general direction to further evaluate those options, along with "closing the loop' on two remaining elements relating to a large, utility scale solar system at the Imperatrice Property: The County and State land use permitting process and an interconnection analysis and permit approval from Pacific Power, the City's local balancing authority.

Alternative Initiatives

City and BEF staff developed a spreadsheet to determine what types of projects could conceivably be considered that would not trigger the BPA take or pay contract provision due to the anticipated associated rate implications.

Projects/Programs Include:

Projects/Programs	
Solar Farm – To Regional Grid	City is landlord, maximize system size to meet PURPA
Solar Farm – City owned	1 MW project, costs offset BPA wholesale purchases
Solar installations on City Facilities	Assessments completed for all facilities in 2017 – offsets operational costs
Community Solar	Net Meter rule changes allow distribution of generation t multiple customers
Expand hydro capacity at Reeder Reservoir	Current capacity has potentially to be doubled – could co with WTP work
Expand Commercial Solar Incentive Programs	Limited uptake since BETC was eliminated
Expand Residential Solar Incentive Programs	Heavy activity in 2017 to utilize state tax credit prior to expiration (end 2017)
Expand Energy Efficiency Program	Long standing, smaller scale but consistent uptake

As noted prior, it will be critical for City staff to fully understand the policy objectives associated with the 10 by 20 ordinance. Given the unique circumstances that led to the ordinance creation and approval, an agreed upon clear set of objectives has yet to be developed.

A variety of stated, but unofficial objectives have included energy independence, energy resiliency and carbon reduction. The priority of the policy objectives determine the types and scale of the projects and programs developed to achieve the desired objectives. For example:

Energy independence – The most common usage of this term is a separation from the grid with the community having complete autonomy and independent generation and distribution systems. Due to large swings in daily and seasonal power needs, an independent system would need to be designed and built to accommodate the City's largest electricity needs (system peak), which historically is over twice (43 MW) the average daily need (21 MW).

Energy resiliency – Resiliency involves the ability of a local distribution grid to incorporate local generation and also have the ability to store and deliver it to specific, key community locations based on a particular community need. Typical resiliency projects are designed to ensure operations of key infrastructure like water treatment and waste water treatment plants, hospitals and emergency gathering locations in cases of natural disasters. While often utilizing solar as a generating element, projects are site and use specific and require a storage component as well as distribution system changes to switches and routing design.

Carbon/GHG Reduction – Solar generation systems typically have a very strong GHG reduction element, but that can vary greatly depending on the type of electricity generation it is replacing. In Ashland's case, local solar generation would be replacing hydropower, which is a very low carbon source of electricity (no electricity is carbon free). While the hydropower that it displaces does get redistributed throughout the regional grid, this tier one power supply would be redistributed to other primarily hydropower centric public power customers of BPA.

Resource Requirements:

To date, a total of approximately $22,000 has been expended for the initial feasibility study for the interconnection component of the project and the plant and bird inventory. Roughly $16,000 of that total has come from the Electric Dept and the remaining funds from Public Works and Parks Departments.

Additional staffing "soft costs" have been incurred as further research and meetings have occurred while exploring implications and opportunities. As shown in the Project/Program Initiative Options spreadsheet, long term costs associated with implementation can vary wildly based on Council objectives and direction.

Suggested Next Steps:

1) Should staff move forward in the development of a Request for Proposals (RFP) for a 10-12 MW solar generation facility project on the Imperatrice Property?

   Staff Recommendation – Given the BPA contract implications, staff does not recommend moving forward with an RFP for a project directly connected to the City of Ashland Electric Utility distribution grid.

2) Is Council interested in developing a set of prioritized objectives for the 10 by 20 ordinance with potential suggestions for ordinance revisions?

   Staff Recommendation – Staff feels that clear and agreed upon objectives are critical to providing direction that returns options that Council can review, deliberate on and move forward. Staff can develop a draft set of objectives, framework and aligned draft ordinance revision to assist Council in its deliberation.

3) Should staff move forward in pursuing the alternative projects and programs to move the City and community towards the general objectives of the 10 by 20 ordinance?

Staff Recommendation – Staff is excited to further explore and deliver solid options for Council to consider that could result in cost effective community solutions that also align with the business needs of the Electric Utility. Many of the alternative initiatives will require considerable budget deliberation and be carefully considered alongside current financial planning constraints and concerns noted in the recent Electric Utility Cost of Service study, which already contains rate increases scheduled over the next 3-5 years.

Policies, Plans and Goals Supported:

2015-17 Council Goal

22. Prepare for the impact of climate change on the community.
    22.1 Develop and implement a community climate change and energy plan

Climate and Energy Action Plan

Buildings and Energy

- BE-1-3 – Facilitate and encourage solar energy production
- BE-1-4 – Enhance production of on-site solar energy from City facilities

Background and Additional Information:

See packet materials from February 21, 2017 and July 17, 2017(Attachments)

Attachments:

Biological Assessment of the Imperatrice Property – Pacific Crest Consulting, LLC
BPA Letter of December 1, 2017
Matrix of alternative local renewable energy initiative
Letter from Conservation Commission dated September 27, 2017

Additional Links:

February 21, 2017 - Packet Materials
July 17, 2017 – Packet Materials

Biological Assessment

Imperatrice Property

City of Ashland, Oregon

Prepared for:

CITY OF ASHLAND

Prepared by:

Pacific Crest Consulting, LLC

August 2017

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Acronyms and Abbreviations

BLM	Bureau of Land Management, US Department of the Interior
CS	Oregon State Conservation Strategy Species
City	City of Ashland, Oregon
GIS	Geographic Information System
GPS	Global Positioning System
GRSPs	Grasshopper Sparrows
ODA	Oregon Department of Agriculture
ODFW	Oregon Department of Fish and Wildlife
ORBIC	Oregon Biodiversity Information Center
Pacific Crest	Pacific Crest Consulting, LLC
POE	Port of Entry, Oregon Department of Transportation
Property	Imperatrice Property, City of Ashland, Oregon
TID	Talent Irrigation District
USFS	Forest Service, US Department of Agriculture
USFWS	US Fish and Wildlife Service

1.0 INTRODUCTION

This report presents the methods and results for the biological assessment of the City of Ashland's (City) Imperatrice Property (Property) conducted by Pacific Crest Consulting, LLC (Pacific Crest) during spring and summer of 2017. Efforts requested by the City and undertaken by Pacific Crest included:

- Protocol-level surveys for target species of:
    - Plants (vascular and non-vascular (bryophytes))
    - Lichens
    - Spring fungi (including mushrooms and truffles)

- Protocol-level surveys for grasshopper sparrows (*Ammodramus savannarum*; GRSPs)

- Informal surveys for target species of:
    - Invertebrates
    - Mammals
    - Reptiles
    - Amphibians
    - Birds other than GRSPs (see further notes in 2.1.1 Special Status Species)

- Inventory of all vascular plant species

- Inventory of unique biological features, including:
    - Wildlife passage areas and barriers
    - Dense concentrations and large infestations of noxious weeds
    - Potential migratory bird nest sites
    - Bat hibernacula
    - Other habitats or features viewed as unique

2.0 METHODS

2.1 Target Species

Multiple sources informed the target species lists for each survey included in this report. The categories of target species are described in the following sections. Because many of the plant, lichen, and fungi species addressed in this report do not have common names, all are referred to by scientific names in the text, with common names listed as applicable; a common name is generally given only once for any given species of these taxa groups, at its first occurrence in the text. Primary target species are those for which protocol surveys were conducted; secondary species are those for which informal surveys were conducted.

2.1.1 Special Status Species

Special status species of plants, lichens, and fungi were primary targets for the surveys included in this report (Table 1). This included:

- State and federally listed Threatened, Endangered, and Candidate plants
- U.S. Forest Service (USFS) and U.S. Bureau of Land Management (BLM) Sensitive and Strategic plants, lichens, and fungi
- Oregon Biodiversity Information Center (ORBIC) plants, lichens, and fungi.
- Survey and Manage plants, lichens, and fungi

GRSPs were also a primary target. In addition to the species identified in Table 1, Pacific Crest personnel were prepared to identify and document any unexpected, unknown, or out-of-expected-range species that may have been of conservation concern.

Secondary target special status species included mammals, reptiles, amphibians, invertebrates, and birds other than GRSPs.

Although secondary targets, Pacific Crest elected to create a list of special status mammals, birds, reptiles, and amphibians (Table 2) with the potential to occur in, or near to, the Study Area, developed from the following sources:

- United States Fish and Wildlife Service (USFWS) informal list of threatened, endangered, proposed, candidate, species of concern, and migratory birds, generated using the Information, Planning, and Conservation System (IPaC; USFWS 2017).
- Oregon Department of Fish and Wildlife (ODFW) lists of threatened, endangered, candidate, and sensitive animal species in the State of Oregon (ODFW 2017 a and b);
- Oregon Biodiversity Information Center (ORBIC 2016)
- Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c)

Bird and mammal taxa listed by the ODFW, by the USFWS as species of concern, and/or by ORBIC on Lists 1, 2, 3, or 4 are included, but have no legal status or protection on private land in the State of Oregon. On non-federal public lands (*e.g.*, state, county, city lands), animal

species listed by ODFW as threatened or endangered are protected by the Oregon Endangered Species Act (Oregon Revised Statute 497). Federally listed threatened, endangered, candidate, and proposed taxa are protected under the Federal Endangered Species Act, bald and golden eagles are protected under the federal Bald and Golden Eagle Protection Act, and migratory birds are protected under the federal Migratory Bird Treaty Act.

Lists of target species other than the above taxa groups are available at http://inr.oregonstate.edu/orbic/rare-species/rare-species-oregon-publications.

2.1.2 Noxious Weeds

Species of noxious weeds were primary targets. Pacific Crest documented dense concentrations and large infestations of Oregon Department of Agriculture (ODA) target species (ODA 2017a; Table 3) or those that were uncommon or previously unknown in the area, or had a high potential of infestation.

2.2 Protocol

Pacific Crest implemented the following protocols for primary target species during the survey effort:

- *2008 Sporocarp Survey Protocol for Macrofungi, Version 1.0* (Van Norman et al. 2008)
- *Survey Protocols for Protection Buffer Bryophytes* (USFS and BLM 1999a)
- *Survey and Manage Survey Protocols—Vascular Plants* (USFS and BLM 1999b)
- *Survey Protocols for Survey and Manage Category A and C Lichens in the Northwest Forest Plan Area, Version 2.1* (USFS and BLM 2003a)
- *2003 Amendment to the Survey Protocol for Survey & Manage Category A & C Lichens in the Northwest Forest Plan Area, Version 2.1 Amendment* (USFS and BLM 2003b)
- *Survey Protocol Guidance for Conducting Equivalent Effort Surveys under the Northwest Forest Plan Survey and Manage Standards and Guidelines* (USFS and BLM 2006)
- *Survey and Manage Category B Fungi Equivalent-Effort Survey Protocol, Version 1.0* (Van Norman 2010)

Secondary species were searched for informally and concurrently with protocol surveys for other taxa groups. Except for certain bird species, secondary species were not surveyed for under applicable protocols. See 2.7.4 Point Counts for more information on bird survey methods.

2.3 Study Area

The Study Area encompassed the entire Property (Figure 1), consisting of 876 continuous acres across multiple tax lots, immediately north of Interstate Highway 5 and associated north-bound Port of Entry (POE). The Study Area includes portions of sections T38S R1E 27, 28, 32, and 33.

2.4 Habitat Assessment and Delineation

The Study Area was assessed and delineated for primary target species of vascular plants, lichens, and fungi. The Study Area exists within the Klamath Mountains level 3 ecoregion, only two miles from the western edge of the West Cascades level 3 ecoregion. It includes portions of the Western Oregon Interior Valleys (Rogue / Illinois) and Oak Savannah Foothills level 4 ecoregions. Therefore, it was considered possible that populations of target species known or suspected from interior valley and oak-associated habitats of both aforementioned level 3 ecoregions could be found in the Study Area. Initial topographical map and orthoquad inspection of the entire Study Area, as required by various protocols, revealed a wide variety of suitable primary target special status species habitats, including:

- Oak woodlands
- Rock outcrops and rock gardens
- Meadows
- Drainages (ephemeral / seasonal)

Field surveys confirmed this diversity of habitat types.

The Study Area was also assessed for secondary target species of animals except invertebrates, the results of which are discussed in Table 2.

2.4.1 Threatened and Endangered Plants

Pacific Crest conducted a pre-survey botanical habitat suitability analysis on the Study Area and found that *Fritillaria gentneri* (Gentner's fritillary) was the only species with federal or state listing of Threatened, Endangered, or Candidate with a high likelihood of occurring. *Fritillaria gentneri* has a federal listing of Endangered. The Property is well within the known range of this species and populations have been found nearby. Pacific Crest identified the area containing habitat with highest potential for suitability to be the oak woodlands at the north end of the Property.

Multiple other target special status species with federal or state listing, *Limnanthes floccosa* ssp*. grandiflora* (large-flowered wooly meadowfoam; federally Endangered)*, L. floccosa* ssp*. pumila* (dwarf wooly meadowfoam; state Threatened)*, Lomatium cookii* (Agate Desert lomatium; federally Endangered), *Meconella oregana* (white fairypoppy), and *Eucephalus vialis* (wayside aster) had limited potential to be found in the survey area. The former three taxa are known from vernal pool habitats nearby to the north in the Rogue Valley: *Limnanthes floccosa* ssp*. grandiflora* and *Lomatium cookii* are known from the Agate Desert while *L. floccosa* ssp*. pumila* is known only from the tops of Upper Table Rock and Lower Table Rock. The only potential habitat for these taxa in the Study Area was initially identified as a small seasonal pond near the eastern property line and a small flat area at the extreme northwest near Butler Creek. The valley bottom near Interstate 5 may have had vernal pool habitat historically, but has been heavily grazed and impacted by livestock and the pre-survey analysis revealed no current habitat. There was low probability to find these taxa in other seasonally moist habitats such as seasonal drainages. *Meconella oregana* had potential to be found in various meadow and oak

woodland communities. *Eucephalus vialis* had potential to be found in the shrub or oak communities within the Study Area. Multiple other species with federal and/or state status were included in Table 1 but had relatively lower potential to be found in the Study Area.

2.4.2 Sensitive and Strategic Species

Many of the target Sensitive and Strategic plant and lichen species were found to have a moderate to high likelihood of occurring. Two species, *California macrophylla* (*Erodium macrophyllum*; round-leaved filaree;) and *Ranunculus austro-oreganus* (southern Oregon buttercup) were known to exist in the Study Area (personal communication, Kristi Mergenthaler, Southern Oregon Land Conservancy, 4/25/17). Other species with a moderate to high likelihood of occurring included, but were not limited to, *Calochortus spp* (mariposa lilies)*, Camissonia (Tetrapteron) graciliflora* (hill suncup)*, Carex spp* (sedges)*, Cheilanthes spp* (lipferns)*, Cryptantha milobakeri, Diplacus spp* (monkeyflowers)*, Leptogium burnetiae, Limnathes floccosa ssp bellingeriana, Pellaea andromedifolia* (cliffbrake)*, Plagiobothrys spp* (popcorn flowers)*, Orthotrichum euryphyllum, Schistidium cinclidodonteum,* and *Solanum parishii* (Parish's nightshade)*.*

2.4.3 Survey and Manage Species

The Survey and Manage target species list includes plants, lichens, and fungi. These species were listed with Survey and Manage primarily based on rarity within and dependence on old-growth coniferous or mixed forests. Coniferous and mixed forest habitats do not exist in the Study Area. Therefore, there was very little potential for most Survey and Manage plant, lichen, and fungi species to exist in the Study Area.

2.5 Historical Data Review

The BLM Geographic Biotic Observations and USFS Natural Resource Information System databases track observations of noteworthy species on and near BLM and USFS lands. The Oregon Flora Project rare plant and atlas database (OFP 2017) was also consulted. These databases were queried for known site locations of target species within the vicinity of the Study Area (April 26, 2017). The results showed no site locations within the Study Area. Known target species occurrences within a three-mile radius of the Study Area include two of *Fritllaria gentneri*, one of *Martes pennanti* (fisher), one of *Horkelia tridentata* (three-toothed horkelia), and multiple of *Ranunculus austro-oreganus*.

Further results of the data review and literature reviews for plants, lichens, fungi, and animals (except invertebrates) are detailed in Table 1 and Table 2.

2.6 Survey Schedule

Two separate survey efforts occurred to coincide with optimum detection of target species of vascular plants and grasshopper sparrows, respectively. Optimal fungi fruiting conditions coincided with optimal vascular plant spring phenology. Lichens and non-vascular plants can

generally be surveyed for any time of year. Therefore, plant, lichen, and fungi surveys occurred concurrently and took place from April 28, 2017 through May 23, 2017, including a first visit throughout the entire study area and revisits to selected parts. Revisits for late-season plant species then occurred occasionally until August 5, 2017.

Surveys for GRSPs were conducted on May 2-4, May 6-9, May 15, and May 18, 2017.

2.7 Field Survey Methods

Survey methods from multiple protocols, listed earlier in this report, were used during the Project surveys. The methods in the protocols are detailed below.

2.7.1 Intuitive Controlled Survey Method

Multiple protocols recommend the Intuitive Controlled Survey method for plants, lichens, and fungi in all parcels greater than 2.5 acres in size (USFS and BLM 1999b, USFS and BLM 2003a, USFS and BLM 2003b, USFS and BLM 2006, Van Norman 2010, Van Norman et al. 2008). One protocol, *Survey Protocols for Protection Buffer Bryophytes* (USFS and BLM 1999a), requires this method for all parcels, including those less than 2.5 acres in size. The Study Area is greater than 2.5 acres in size; the Intuitive Controlled Survey method was therefore implemented.

This method incorporates lines that traverse the survey area and target the full array of major vegetation types, aspects, topographical features, habitats, and substrate types within a given area. While en-route, the surveyor searches for target species, and when the surveyor arrives at an area of high potential habitat (as defined in the pre-field review or encountered during the field visit), a Complete Survey for the target species is conducted (see below).

2.7.2 Complete Survey Method

The Complete Survey method for plants, lichens, and fungi was used when special or high potential habitats were encountered. This approach consists of a 100 percent visual examination of the habitat. High potential habitats within the Study Area included large outcroppings, seasonal and perennial drainages, areas with significant native bunchgrass populations, and some areas with *Quercus garryana* (Oregon white oak). A large percentage of the Study Area had moderate potential habitat for target plant species and therefore received a higher intensive survey than that required by the Intuitive Controlled Survey method but not a full 100% examination. The general vascular plant inventory was completed concurrently with surveys for target special status species under the Intuitive and Complete survey protocols.

2.7.3 Hypogeous Fungi

All implemented fungi survey protocols require searches for hypogeous fungi—truffles. These surveys were conducted by raking microhabitats of higher potential (e.g., small mammal digs and the underside of litter mats in the oak woodlands). Surveyors used four-tine rakes to gently

peel back the litter layer, and soil was inspected for the presence of truffles. If no truffles were found, the area was restored and the surveyor moved to a new area.

2.7.4 Point Counts

Point count surveys for GRSPs occurred throughout the entire Study Area and were conducted between the hours of 0630 and 1200 during optimal conditions for detecting this species. For the purposes of these surveys, the property was divided into two portions: the area above the Talent Irrigation District (TID) East Canal and the area below the canal. Point count surveys were conducted along north-south running transect lines above the canal and along east-west running transect lines below the canal. Initially, transect lines were spaced 100 meters apart with call stations approximately every 50 meters; however, the call station placement was changed during the course of the survey in the following way: in areas where traffic noise made auditory detection difficult, call stations were maintained at 50-meter intervals; however, in areas where habitat was open and birds were easy to hear, call stations were spaced at 100 meters for efficiency and to avoid duplicate recordings of individuals. Five minutes was spent at each call station recording all birds observed both visually and by sound.

2.7.5 Monumenting Target Species Sites and Recording Site Data

Target special status plant species sites were generally monumented with orange-glo pin flags placed around population perimeters; exceptions are detailed below in 3.0 Results. Perimeters of most larger populations were recorded on global positioning system (GPS) units for subsequent use in Geographic Information Systems (GIS). All GPS coordinates in this report and associated documents are in Universal Transverse Mercator, Zone 10, North American Datum of 1983 projection. Data for locations of target special status species were recorded on standardized ORBIC report forms (Figure 2), submitted separately from this report. Applicable noxious weed populations were mapped, except for large infestations occupying the entire Study Area, which are noted below in 3.2 Noxious Weeds. GRSP detections were mapped. Special status plant and noxious weed population locations were documented in GIS; the related shapefiles are available upon request. Plant and bird inventory lists were documented in Excel spreadsheets.

3.0 RESULTS

The following sections detail the results of the field surveys.

3.1 Current Environment

Although the Study Area mostly slopes gently to the south and southwest, it covers a wide variety of aspects, with slopes ranging from approximately flat to steep. The Study Area can be viewed as three distinct habitats:

- Oak woodlands in the far northern part of the Study Area
- Meadows between the oak woodlands and the TID canal to the south
- Meadows downslope of the TID canal

3.1.1 Oak Woodlands

The woodlands generally slope steeply to the north from a broad ridgeline and are dominated by *Quercus garryana, Toxicodendron diversilobum* (poison oak), *Symphoricarpos spp* (snowberries), *Prunus subcordata* (Klamath plum), the latter occasionally forming distinct thickets. These woodlands displayed a higher ratio of native versus non-native forb and grass coverage compared to the remainder of the Study Area; *Festuca idahoensis* ssp *roemeri* (Roemer's fescue, Idaho fescue) was found to be common here. Canopy cover varies greatly.

3.1.2 Meadows Between the Oak Woodlands and TID Canal

The meadows between the oak woodlands and the TID canal were dominated primarily by exotic annual grasses and forbs, although dominant native species were also present. Dominant species included *Vicia villosa* (winter vetch)*, Vicia sativa* (garden vetch)*, Centaurea solstitialis, Poa bulbosa* (bulbous bluegrass)*, Erodium cicutarium* (reds-stem stork's bill)*, Geranium dissectum* (cutleaf geranium)*, Geranium molle* (dovefoot geranium)*, Avena fatua* (wild oat)*, Elymus caput-medusae, Trifolium spp* (clovers)*, Galium parisiense* (bedstraw)*, Lomatium utriculatum* (common lomatium)*, Tragopogon dubius* (yellow salsify)*, Madia spp* (tarweeds)*, Bromus japonicus* (field brome)*, B. hordaceous* (soft brome)*, B. tectorum* (cheatgrass)*,* and *Vulpia microstachys* (small fescue)*.* Of these, it is difficult to state what species were more dominant than others. These species occurred in varying concentrations across this part of the Study Area. Additionally, different species became more dominant as seasonal phenology progressed and early-bloomers senesced while late-bloomers became more prevalent. There were additional species that were very common, although not as abundant as the above dominants; these included *Calochortus tolmiei* (Tolmie startulip), *Dichelostemma capitatum* (bluedicks), *Calystegia occidentalis* (chaparral false bindweed), *Achyrachaena mollis* (blow-wives), and many others.

This area was historically grazed and likely was previously dominated by native bunchgrass communities. Non-native plant coverage during 2017 was approximately 85% or more on

average, with native species coverage at approximately 40%, on average. It was difficult to determine exact numbers for these percentages and other percentages given in this report with any accuracy, due to constantly changing plant phenology throughout the growing season and associated changes in biomass of any given species. Nonetheless, Pacific Crest personnel were expecting a higher non-native-to-native ratio than observed.

Outside of areas with summer moisture, shrubs comprised a very small amount of the vegetation coverage and consisted mostly of *Prunus subcordata, Toxicodendron diversilobum,* and exotic fruit trees, as scattered individuals and small patches.

Islands consisting primarily of native vegetation were found in this area, roughly overlapping with populations of *Ranunculus austro-oreganus* (see 3.2 Special Status Plants, Lichens, and Fungi), and were dominated by varying concentrations of native species including *Festuca idahoensis* ssp *roemeri*, *Horkelia daucifolia* (carrotleaf horkelia)*, Eriophyllum lanatum* (Oregon sunshine)*, Achnatherum lemmonii* (Lemmon's needlegrass)*, Pseudoroegneria spicata* (bluebunch wheatgrass)*, Phlox speciosa* (showy phlox), *Lomatium spp* (desertparslies), and *Achillea millefolium* (common yarrow), although non-native species were also common in these areas. These islands are likely not common in most adjacent parcels outside of the Study Area.

Large populations of *Microseris laciniata* ssp *detlingii* (Detling's silverpuffs) were also found, primarily on the flats and gentle slopes in the far northwest part of the Study Area; this species is endemic to southwestern Oregon and adjacent areas in northern California; it was previously a target special status species. *Plectritis congesta* (shortspur seablush) was abundant in the vicinity.

A small seasonal pond was found in the northeast part of T38S R1E S33, approximately 0.25 miles north of the eastern parking area and Property legal access point. Common plants here included *Lolium perenne* (perennial ryegrass), *Hordeum murinum* (mouse barley), and *Eleocharis spp* (spikerushes).

The oak woodlands mentioned above and the slopes between them and the TID canal likely serve as winter range for elk and deer. Elk and deer were observed in the Study Area during the survey efforts; the front cover of this report displays a herd of elk in the Study Area. Additional mammals incidentally observed in the Study Area included one black bear, three coyotes, one grey fox, and many smaller mammals.

3.1.3 Meadows Downslope of the TID Canal

This area had a much higher amount of moisture than areas upslope of the TID canal. This moisture originated from active irrigation diverted from the canal at multiple points along its length as it runs through the Study Area. Several natural springs and seeps added surface moisture; subterranean seepage from the canal was also a possible contributor. The vast majority of the area was observed to be grazed by livestock. Grazing was heavy throughout most of the area and extensive post-holing by cattle was evident. The exception was a narrow strip set apart by active electric fences located to either side of the drainage that runs south through the center of the Study Area; it is in this strip that the only *California macrophylla*

populations downslope of the canal were found. It was uncertain if this strip was part of the grazing lease, as it was fenced and had only light evidence of grazing, which may have originated from livestock that had escaped the fencing but had been quickly and efficiently recovered.

Vegetation in this area included many of the same species dominant upslope of the canal, but often in very different concentrations, with *Vicia spp*, *Calochortus tolmiei, Dichelostemma capitatum*, and others less common, while *Centaurea solstitialis* and others became more abundant. *Brassica rapa* (field mustard), *Shedonorus arundinaceus* (tall fescue), *Alopecurus pratense* (meadow foxtail), and others became dominant downslope of the canal, while existing only in traces upslope of the canal. *Shedonorus arundinaceus* and *Alopecurus pretense* were especially dominant in areas receiving higher volumes of irrigation water, notably at and upslope of the corrals in the southeast part of the Study Area. *Brassica rapa* was especially abundant in the southwest part of the Study Area near the POE. *Juncus effusus* (common rush) was common in some parts. *Rubus armeniacus* and *Rosa canina* (dog rose), with lesser amounts of *Rosa rubiginosa* (*R. eglentaria*; sweetbriar rose) were much more common downslope of the canal than upslope of it. Overall, vegetation in the area downslope of the canal was much denser, taller, and lusher than upslope of the canal; these conditions occasionally impeded foot travel when combined with the often irregular, post-holed, and wet ground surface. This condition receded later in the summer as plants senesced or were grazed down.

As with areas upslope of the TID canal, this area was historically grazed and likely was previously dominated by native bunchgrass communities. Non-native coverage in 2017 was approximately 98%, with native species coverage at approximately 15%, on average.

3.1.4 Other Features of the Study Area

Most drainages in the Study Area were lined with various concentrations of *Salix spp* (willows)*, Rubus armeniacus, Carex densa* (dense sedge)*, Juncus spp* (rushes)*, Dipsacus fullonum* (Fuller's teasel), *Shedonorus arundinaceus*, and other typical riparian species; *Prunus cerasifolia* (cherry plum) was abundant in one drainage. Most of the drainages still had flowing water, at least in the lower stretches, at time of final revisits in early August; Hamby Spring in the southwest area downslope of the TID canal was still flowing strong.

The TID canal traverses the slope through the Study Area. It currently functions as a partial barrier to wildlife travel; certain terrestrial species may find it difficult to cross the flow of relatively deep water when the canal is flowing, although it should be noted that it does not flow for a substantial part of the year and travel may be less impeded then. There are two foot-bridges crossing the canal in the far western and eastern part of the Study Area, respectively, although the western one is composed of metal mesh that would likely inhibit most terrestrial wildlife travel during times of water flow in that canal. A maintenance road follows the canal for its length through the Study Area.

A wooden-pole powerline corridor exists in the northern part of the Study Area and a buried gas pipeline corridor roughly parallels it to the immediate south. Associated maintenance roads

follow these right-of-way corridors. A large pile of treated wood poles, assumingly associated with the powerline corridor construction, was observed at coordinates 524880E/4675620N. A small radio facility exists in the far southeast part of the Study Area near Eagle Mill Road and is accessible by vehicle from it.

A network of trails exists in the Study Area, observed to be used by people on foot, horseback, and OHV. People were seen from distance and personally encountered on the trails throughout the survey efforts, often in relatively large numbers. The trails, for the most part, were found to exist upslope of the TID canal. Most of the OHV use was observed in relation to the grazing leases downslope of the canal. However, OHV use was additionally observed on the trails in the western part of the survey area and their use was evident off-trail in that vicinity as well. The utility right-of-way corridors also had evidence of regular OHV use, much of which was assumingly in relation to infrastructure maintenance. Trails were observed cutting through multiple *California macrophylla* populations (see 3.2 Special Status Plants, Lichens, and Fungi) and trampling was evident at each of those populations. Rerouting of these trails may assist to lessen trampling.

3.2 Special Status Plants, Lichens, and Fungi

Fourteen populations (Figure 3) of *California macrophylla,* (Figure 4) totaling approximately 8.0 acres, were found in the Study Area. This species was originally documented in Oregon by Thomas Howell in 1887, with the associated herbarium collection noting “hills near Ashland”. It is possible that his original collection was made at one of the Study Area populations. ORBIC previously listed this species with an “EX” status (assumed to be extirpated in Oregon) until Pacific Crest personnel discovered a new location near the city of Eagle Point, Oregon. Since then, five populations were found in the Study Area by Kristi Mergenthaler and ODA personnel (personal communication, Kristi Mergenthaler, Southern Oregon Land Conservancy, 4/25/17). *California macrophylla* is currently listed by ORBIC (2016) with a “1” status (threatened or endangered throughout its range), the highest list status that ORBIC can assign. This species may soon receive additional listing through the State of Oregon. The Oregon sites represent the northern-most known extent of this species; it is also known from California and Baja California. The California Native Plant Society (2017) lists *California macrophylla* as a 1B.2 (rare, threatened, or endangered in CA and elsewhere).

Nearly all *California macrophylla* plants were found upslope and north of the TID canal. Two small populations were found downslope from the canal. Active grazing by livestock was observed downslope of the canal, where much of the ground had been trampled, whereas there was no current grazing by livestock observed upslope of the canal. Much of the ground downslope of the canal was observed to be irrigated. It is assumed that active grazing, associated trampling, and wet ground make for unfavorable conditions for the growth of *California macrophylla.* The two small populations downslope of the canal were found in an area between electric fences where grazing did not appear to be nearly as heavy as in the areas outside of the fencing, and irrigation was not evident at the time of population discovery.

One small plant rosette, potentially that of *California macrophylla* (Figure 3), was found downslope of the TID canal in early August. Due to immaturity and a lack of flowers and fruit, it was not possible to be certain of an identification. Although the leaves appear to be those of *California macrophylla*, the observed plant was growing well outside of the normal window of phenology for that species, did not have the reddish coloration that the stems and leaves of that species often have, was growing downslope of the canal in less desirable conditions, and all observed *C. macrophylla* plants in verified populations elsewhere in the Study Area were senescent at that time, casting doubt that the rosette in question was *C. macrophylla.* Nonetheless, it was monumented with several strips of yellow/black-striped flagging tied to small rocks in case a revisit would be made in future years.

Five populations (Figure 5) of *Ranunculus austro-oreganus* (Figure 6), totaling approximately 241 acres, were found in the Study Area, all upslope of the TID canal. The oak woodlands to the far north of the Study Area had the greatest concentrations. *Ranunculus austro-oreganus* is currently listed by ORBIC (2016) with a "1" status (threatened or endangered throughout its range), the highest list status that ORBIC can assign; it is also a state Candidate species with ODA. This species is endemic to Jackson County, found primarily in the Rogue Valley and adjacent foothills.

Approximately 633 acres contained vegetative *Ranunculus* plants (Figure 5), including overlap with verified *Ranunculus austro-oreganus* populations. Densities of vegetative plants within the 633 acres varied greatly, often being very widespread and isolated; very few existed downslope of the canal, those plants were also typically observed as depauperate. Due to a lack of flowers (a diagnostic characteristic for discerning *Ranunculus austro-oreganus*), it was not possible to know what species these vegetative plants were. They might flower in future years and a positive identification could then be made. However, it should be noted that no flowering *Ranunculus occidentalis* (western buttercup) was observed in the Study Area, the only other feasible species that the vegetative plants could be.

One site (Figure 5) of *Collema quadrifidum* (Figure 6) was found, present on multiple *Quercus garryana* trunks in approximately one acre of the oak woodlands in the far northern part of the Study Area. This tiny, gelatinous lichen is difficult to discern in the field, blending in with numerous other dark, similarly-sized lichens and blemishes on the tree trunks, and is best identified by its four-celled, polygonal spores as observed under the microscope. Due to the *Collema quadrifidum* being found off the ground on tree trunks, no pin flags were used to monument the site; a labeled set of yellow/black striped flagging was instead used, positioned on a tree trunk near the population center.

No *Fritillaria gentneri* were found. Vegetative *Fritillaria* plants were found, but these plants were impossible to identify to species without flowers. The vegetative plants were found only in the oak woodlands in the far northern part of the Study Area, existed in same vicinity as numerous flowering *Fritillaria affinis* (a non-target species), and possibly may all be that species. No target special status species of spring fungi were found.

3.3 Noxious Weeds

Silybum marianum (milk thistle; Figure 7) was found in one location along the southern boundary of the Study Area and consisted of approximately 80 specimens covering 10% of a >60 m² population area. The population extended from the property fenceline downslope to the POE exit ramp; it is likely that the POE was the vector of introduction. This species has rarely been found in southwestern Oregon. The Medford District BLM (personal communication, Bryan Wender, Medford District BLM Botanist, 8/14/17) has only one record of this invasive species on their lands, found in the Cow Creek Watershed of Douglas County. WeedMapper (ODA 2017b) revealed one site in Jackson County, near Rogue Valley International Airport.

Spartium junceum (Spanish broom; Figure 7) was found in two locations along the TID canal. Each location consisted of one plant. Though the populations sizes were very small, this species is reported here due to it being an uncommon invader in southwestern Oregon. WeedMapper (ODA 2017b) shows three sites in Jackson County, all in the far northern part of the county. Pacific Crest personnel know of one site in the City of Ashland, on Siskiyou Boulevard, which had apparently been treated (sprayed) recently.

Rubus armeniacus (Himalayan blackberry; Figure 7) was found throughout a substantial portion of the Study Area. The vast majority of the populations were found from the TID canal and downslope to the Study Area boundary. The average percent coverage within the population polygons was 15%. Besides large and dense infestations, multiple smaller infestations were also mapped, primarily in areas upslope of the canal where the species was much less common. A trace amount of *Rubus laciniatus* (cutleaf blackberry) was found mixed in with the *Rubus armeniacus*.

Centaurea solstitialis (yellow starthistle) and *Elymus caput-medusae* (medusahead rye) were found throughout the Study Area and are therefore not represented in Figure 7. Both species had an average coverage across the Study Area of approximately 35% each. Concentrations of both species were lighter in the oak woodlands in the far northern part of the Study Area, found most frequently in openings between trees, and heavier downslope of the TID canal.

Cirsium arvense (Canada thistle), *Cirsium vulgare* (bull thistle), *Conium maculatum* (poison hemlock), and *Phalaris arundinacea* (reed canarygrass) were all found as widely scattered, very small populations (often only as one isolated plant). These species were found primarily in areas of moisture along the TID canal and irrigated areas downslope of the canal. A small trace of *Hypericum perforatum* (St. Johnswort) was found along the canal. These species are not further documented in this report due to the small population sizes within the Study Area and overall commonness of these species in southwestern Oregon.

One potential population of *Cyperus esculentus* (yellow nutsedge) was found downslope of the canal (Figure 7). It was originally observed early in the season while immature and could not be confidently identified. By the time a return visit was made later in the season, cattle had grazed the plants down beyond recognition. The identification could therefore not be verified.

Although not a target noxious weed species, *Thinopyrum ponticum* (*Elymus elongata*; tall wheatgrass, European quackgrass) was observed infesting the entire gas pipeline right-of-way

in the northern part of the Study Area. The pipeline right-of-way was nearly a complete monoculture of *Thinopyrum ponticum*; it had outcompeted other vegetation and was spreading out from there. It has potential to quickly spread and take out other parts of the Study Area. This species is a pale grey-green color and this infestation is visible on aerial photography as a wide, pale strip cutting across the Study Area. This species is similar to the target noxious species *Elymus repens* (quackgrass, couchgrass), and many of the *Thinopyrum ponticum* specimens in the Study Area exhibited some features characteristic of *Elymus repens*, including very wide leaves and acute glumes, although the majority of features still pointed towards *T. ponticum*. There is potential for *Thinopyrum ponticum* to be considered by ODA for noxious weed listing in the future.

The Study Area has multiple possible vectors of noxious weed introduction including: Interstate 5 and associated POE adjacent to the Study Area, vehicular traffic within the Study Area (OHV's, right-of-way maintenance vehicles), livestock, TID canal, non-vehicular trail traffic (foot, bike, horse). Much of the vegetation between the southern property fenceline and Interstate 5 / POE is mowed annually, possibly slowing the spread of weeds from those two dispersal vectors, although the stretch of exit ramp with the *Silybum marianum* had not been mowed; it may be too steep to maintain.

3.4 Birds

Thirty-four GRSPs were detected during the surveys (Figure 8). The majority (thirty-two of thirty-four) were singing males; two GRSPs were flushed from vegetation and the sex of these two birds is unknown. Thirty-two detections were recorded above the TID canal; two were recorded below the canal. GRSPs have Federal Species of Concern, Oregon Department of Fish and Wildlife (ODFW) Conservation Strategy Species, and ORBIC2 status. See Table 4 for ORBIC rank definitions. Other special status bird species detected during the point counts include:

- Acorn woodpecker (*Melanerpes formicivorus*)
- Chipping sparrow (*Spizella passerine*)
- Oak titmouse (*Baeolophus inornatus*)
- Peregrine falcon (*Falco peregrinus*)
- Western meadowlark (*Sturnella neglecta*)
- White-tailed kite (*Elanus leucurus*)
- Yellow-breasted chat (*Icteria virens*)

Table 4 contains further notes on the occurrences of the target special status avian species within the Study Area and includes rank status(es) of each species.

3.5 Other Sites of Interest

No other special status target species were found.

Multiple populations of a species of *Phaeocalicium* (Figure 9) were found on twigs of *Quercus garryana* in the oak woodlands in the far northern part of the Study Area. Species of *Phaeocalicium* belong to a group of organisms commonly known as pin lichens. Their spores

are borne atop a small stalk and are distributed by wind and insects travelling the length of the twigs. The collection in question is similar to *Phaeocalicium interruptum*, a species without special status, but differs by multiple morphological and chemical features. It is possibly a new species: one that is new to science, not described, and un-named. A collection has been sent to a pin lichen expert for another opinion; this report will be updated when a determination has been returned. Determinations are also still out for several invertebrate collections.

One large “log” of petrified wood (Figure 10) was found along the boundary of the study area at coordinates 525445E/4675296N, placing it just within the Study Area. The overall length is unknown; it continued underground and its large size and heavy weight prevented movement and further exploration. This feature may serve as an attraction to visitors.

A series of scattered rock outcrops exist on a steep south-facing slope running approximately 0.25 miles west-east through the Study Area in T38S R1E S27. Other, smaller sets of outcrops are occasional throughout much of the Study Area.

No other biological sites of interest, as defined in 1.0 Introduction, were found in the Study Area.

3.6 Inventories

A total of two-hundred-fifty-two vascular plants were recorded during the surveys (Table 5). Note that multiple taxa are not identified past genus. Additionally, several recorded taxa were observed only along Butler Creek; it is uncertain how much of that creek actually exists in the project area due to conflicts in GIS mapping compared to on-the-ground property line evidence. Pacific Crest elected to document all bird species detected during the surveys for GRSPs; fifty-three avian species in total were detected (Table 4).

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Tables

Table 1: Special status plants, lichens, and fungi

Taxon[1]	Scientific Name	Federal Status[2]	ODA Status[2]	SEN/STR/S&M[2]	Likelihood to Exist in Study Area
VA	*Adiantum jordanii*			SEN	LOW. Habitat includes moist, shaded hillsides, springs, riparian areas. SW OR populations are found mostly on serpentine. No serpentine present in Study Area, although shaded riparian is found to far north in oak woodland. Most known sites in SW OR are west of Grants Pass.
VA	*Agrostis hendersonii*			STR	LOW. Found in vernal pools and other moist areas in valley grasslands. Historical collection from Sams Valley, but is presumed extirpated in OR.
FU	*Alabtrellus ellisii*			SM-B	LOW. Typically found in older coniferous forests at higher elevations than the Study Area, although this species is occasionally found in hardwood communities. Known sites exist in coniferous forest in the SW OR Cascades.
VA	*Allium bolanderi var. bolanderi*			STR	MODERATE. Habitat includes rocky clay soils, although this species typically prefers serpentine. Known sites exist at Howard Prairie and NW of Grants Pass.
VA	*Allium peninsulare*			SEN	LOW. Habitat includes meadows. Many populations nearby in the Hyatt / Howard Prairie area, although these populations are found in higher elevation snowmelt meadows. Found at lower elevations in CA.
VA	*Androsace elongata ssp. acuta*			STR	LOW. Habitat includes dry, primarily north-facing meadows. Previously known from one historic site in Jackson County (1887), now assumed to be extirpated.
BR	*Anoectangium aestivum*			STR	LOW. Lower elevation springs and seeps, often over rock, although this species typically prefers calcareous substrates in SW OR. One known site near Wimer.
VA	*Arabis modesta*			SEN	MODERATE. Shaded slopes at low to moderate elevations; often associated with rock. Known sites near Shady Cove, Applegate, and NW of Grants Pass.
VA	*Astragalus californicus*			SEN	LOW. Low to moderate elevation, dry, open, meadows, woodlands, shrub communities; although known sites in SW OR are south of the Siskiyou crest in CSNM (Cascade-Siskiyou National Monument) and found in communities more similar to those of the Great Basin.
VA	*Astragalus gambelianus*			SEN	MODERATE. Dry, open, grassy areas at low to moderate elevations. Known sites at Sampson Creek and southern part of CSNM.
FU	*Balsamia nigrans*			STR	MODERATE. Associates with species of oak. Known sites in Jackson and Josephine counties.
BR	*Bryum calobryoides*			SEN	LOW. Prefers crevices in rock at higher elevations, occasionally found at lower elevations. Known sites along Siskiyou crest and near Hyatt Lake.
LI	*Calicium quercinum*			STR	LOW. Grows on trunks of oaks at low to moderate elevations. No known sites in SW OR.

VA	*California macrophylla*			SEN	PRESENT. Known sites documented in Study Area prior to 2017 survey efforts.
VA	*Callitriche marginata*			SEN	MODERATE. Primarily a species of vernal pool habitats in SW OR. Could exist in seasonal pond in east part of Study Area or vernal pools undetected during desktop analysis.
VA	*Calochortus greenei*		SC	SEN	LOW. Habitat includes clay soils in meadows, shrub communities, and other areas of exposure as low as 2400' elevation. However, all known sites in SW OR are in the Klamath watershed south of the Siskiyou crest.
VA	*Calochortus monophyllus*			SEN	MODERATE. One known site upslope of the Study Area, higher in elevation, in forest on the south side of Grizzly Peak. Can grow as low as 1300' elevation.
VA	*Calochortus nitidus*			STR	LOW. Habitat includes meadows. One known site near Greensprings, although it is much higher in elevation than the Study Area.
BR	*Campylopus subulatus*			STR	LOW. Found from sea level to moderate elevations. Known sites in Josephine County. Prefers areas without human-induced disturbance or heavy plant competition.
VA	*Carex comosa*			SEN	LOW. Found in wet areas from sea level to 1200'. Nearest known site is historic, found along the Rogue River.
VA	*Carex crawfordii*			STR	MODERATE. Found at pond and lake margins that dry up in summer, from sea level to moderate elevations. Rumored site near Grizzly Peak.
FU	*Cazia flexiascus*			STR	MODERATE. Associates with *Quercus garryana* and other hardwoods. Known sites in Rogue Valley vacinity.
VA	*Cheilanthes covillei*			SEN	MODERATE. Rock crevices at a variaty of elevations and plant communities. Known sites in Jackson County near Heppsie Mt.
VA	*Cheilanthes intertexta*			SEN	MODERATE. Rock crevices at a variaty of elevations and plant communities. Known sites throughout Jackson County.
VA	*Chlorogalum angustifolium*			SEN	MODERATE. Clay soils of dry areas with high light exposure at lower elevations. Widely scattered known sites in Jackson and Josephine counties.
FU	*Clavariadelphus occidentalis*			SM-B	LOW. Typically a species of mixed and coniferous forests, although it is rarely found in hardwood communities. Many known sites in southern Oregon.
FU	*Clavariadelphus subfastigiatus*			STR	LOW. Typically a species of mixed and coniferous forests, although it is rarely found in hardwood communities. Three known sites in SW OR.
LI	*Collema quadrifidum*			STR	PRESENT. Prefers *Quercus garryana* trunks at low to moderate elevations. Many known sites in Jackson County.
VA	*Cryptantha milo-bakeri*			SEN	MODERATE. Rocky or gravelly slopes at low to moderate elevations. Known sites in Jackson (Applegate area) and eastern Josephine counties.
VA	*Cyperus acuminatus*			SEN	LOW. Found at vernal pools, seasonal ponds, ditches, and other wet areas at low elevations. The only previously known sites in SW OR are historic and near Grants Pass.
VA	*Delphinium nudicaule*			SEN	LOW. Grows in well-drained areas (often talus or gravel) and along river banks and low to moderate elevations. Known sites in Jackson and Josephine counties.

FU	*Dendrocollybia racemosa*			STR	MODERATE. Found on decayed remains of other mushrooms in a variety of habitats (including hardwood and shrub communities) at low to moderate elevations. Known sites in Jackson (mostly near Shady Cove) and Josephine counties, including one at French Flat found under manzanita.
BR	*Didymodon norrisii*			STR	MODERATE. Habitat includes a variety of rock substrates in a variety of plant communities from low to moderate elevations. Known sites in Jackson County near Siskiyou Summit and Shady Cove.
VA	*Diplacus bolanderi*			SEN	MODERATE. Grassy areas and openings in chaparral from low to moderate elevations. Observed in areas of disturbance. Known sites in Applegate Valley.
VA	*Diplacus congdonii*			SEN	MODERATE. Oak woodlands, grassy areas, and openings in chaparral from low to moderate elevations. Known sites in Applegate Valley.
BR	*Entosthodon californicus*			STR	MODERATE. Found on clay soils in seasonally wet areas, often associated with disturbance. Known sites at Table Rocks.
BR	*Entosthodon fascicularis*			SEN	MODERATE. Found on a variety of soils in seasonally wet areas, often associated with disturbance. Known sites near Grants Pass.
BR	*Ephemerum crassinervium*			SEN	MODERATE. Found on a variety of soils in seasonally wet areas, often associated with disturbance; one Jackson County site was found in water-filled cow tracks. Known sites in Jackson and Josephine counties.
VA	*Ericameria arborescens*			SEN	LOW. Dry forest, hardwood and shrub communities at low to moderate elevations, often in foothills. Only known sites in OR are in western Curry County; however, it is found throughout CA in a variety of habitats.
VA	*Erigeron cervinus*			SEN	LOW. Prefers rocky areas, but also grows in open areas. Usually at moderate to higher elevations. Occasionally found in vernally wet areas at lower elevations. Nearest known site is in Josephine County.
VA	*Eschscholzia caespitosa*			SEN	LOW. Dry, often brushy areas at lower elevations. Nearest known sites are near Glendale and Hellgate.
VA	*Eucephalus vialis*		ST	SEN	MODERATE. Low to moderate elevation ecotones, but generally involving coniferous and mixed forest.
VA	*Fritillaria eastwoodiae*			STR	LOW. Dry slopes. Rumored sites at Lower Table Rock and near Gold Hill, otherwise no sites in close proximity.
VA	*Fritillaria gentneri*	FE	SE	SEN	HIGH. Low to high elevation ecotones, mixed forests, shrub communities. Study Area is well within species range and known sites are in relatively close proximity.
VA	*Hackelia bella*			SEN	LOW. Moderate to higher elevations. Known from Table Mountain and Grizzly Peak vacinity, but at higher elevations.
VA	*Horkelia tridentata ssp. tridentata*			SEN	LOW. Dry areas, typically in open forest, on granitic or other igneous soils, at low to high elevations. Known sites are in Ashland Watershed, although these are higher elevation than the Study Area, found exclusively on granite, and favor ridgelines.
VA	*Juncus kelloggii*			STR	LOW. Vernal pools, springs, meadows at low elevations. ORBIC lists a known site in Josephine County.
LI	*Leptogium burnetiae*			STR	MODERATE. Found on *Quercus garryana* trunks at low to moderate elevations. Nearest known verified site is near Shady Cove; another unverified site exists near Buckhorn Springs.

VA	*Limnanthes alba ssp. gracilis*		SC	SEN	LOW. Wet meadows, streamsides, ditches, cliff bases at typically low elevations. Only one known site in Jackson County, found near City of Rogue River.
VA	*Limnanthes floccosa ssp. bellingeriana*		SC	SEN	MODERATE. Vernally wet areas with high light exposure, from low to moderate elevations. Many known sites in Cascades of Jackson County.
VA	*Limnanthes pumila ssp. grandiflora*	FE	SE	SEN	LOW. Vernal pool habitat, but endemic to Agate Desert.
VA	*Limnanthes pumila ssp. pumila*		ST	SEN	LOW. Vernal pool habitat, but endemic to Table Rocks.
VA	*Lomatium cookii*	FE	SE	SEN	LOW. Vernally moist habitats, often vernal pools. Known from two concentrations of populations: one in the Agate Desert, the other in the Illinois Valley.
VA	*Meconella oregana*		SC	SEN	MODERATE. Found in a variety of plant communities, often vernally moist, usually with moderate to high light exposure, at low elevations. Known populations near Medford, Jacksonville, Applegate.
VA	*Microseris douglasii ssp. douglasii*			STR	LOW. Meadows with heavy clay soils. The only known site in Oregon was near Ashland but has not been seen since the late 1800's and is presumed extirpated.
VA	*Nemacladus capillaris*			SEN	MODERATE. Dry slopes at a variety of elevations. In SW OR, prefers meadow edges in areas of higher percentages of bare mineral soil. Multiple known sites in Cascades of Jackson County, especially in CSNM.
BR	*Orthotrichum bolanderi*			STR	MODERATE. Rock features at low to mdoerate elevations in a variety of plant communities. Known sites near Sampson Creek and Medford.
BR	*Orthotrichum euryphyllum*			STR	MODERATE. Rocks in seasonal drainages, usually with moderate to high light exposure. Known sites throughout much of the Cascades of southern OR.
BR	*Orthotrichum hallii*			STR	MODERATE. Rock features at low to mdoerate elevations in a variety of plant communities. Known sites near Medford.
VA	*Pellaea andromedifolia*			SEN	MODERATE. Rocky areas at low to moderate elevations. Known sites in Jackson and Josephine counties.
LI	*Peltigera pacifica*			SM-E	LOW. Typically in coniferous or mixed forests, but can be found in a variety of habitats. Known site in Ashland Watershed; several more in western Jackson County.
LI	*Peltula euploca*			STR	MODERATE. Rocky areas (basalt, andesite) at lower elevations. Known sites at Upper Table Rock, Applegate Valley, CSNM, Horseshoe Ranch.
BR	*Phymatoceros phymatodes*			SEN	LOW. Mineral soil substrates that remain wet late into summer. Multiple sites on Medford BLM lands in SW OR.
VA	*Pilularia americana*			SEN	MODERATE. Vernally wet habitats including vernal pools and pond margins. Known sites at Table Rocks.
VA	*Pinus sabiniana*			STR	LOW. Foothill woodlands at low to moderate elevations. Common in the Trinity Mountains and elsewhere in CA; very rare in OR as natural sites, but is frequently planted as an ornamental.
VA	*Plagiobothrys austiniae*			SEN	MODERATE. Vernally wet areas, such as seeps and ephemeral drainages, typically in meadows, at low to moderate elevations. Known sites at Table Rocks and Cascades of Jackson County.

VA	*Plagiobothrys figuratus ssp. corallicarpus*		SC	SEN	MODERATE. Vernally wet areas, often rocky, in meadows at low to moderate elevations. Known sites near Greensprings, Medford, Grants Pass.
VA	*Plagiobothrys greenei*			SEN	MODERATE. Vernally wet areas, such as seeps and ephemeral drainages, typically in meadows, at low to moderate elevations. Known sites in the Cascades of Jackson County.
VA	*Plagiobothrys lamprocarpus*		SE	STR	LOW. Assumed habitat is vernally wet areas with higher light exposure. Known only from one historic site near Grants Pass (1921) and is assumed extinct.
BR	*Porella bolanderi*			SEN	MODERATE. Rock outcrops in oak woodlands. Known sites in Ashland Watershed and Cascades of Jackson County.
FU	*Psathyrella quercicola*			STR	MODERATE. Grows on *Quercus garryana* at low elevations. Known sites from Jackson and Josephine counties, including the type locality.
BR	*Racomitrium depressum*			SEN	LOW. Rocks along ephemeral drainages with high light exposure, mostly at moderate to higher elevations in southern OR. Known sites near Howard Prairie.
VA	*Rafinesquia californica*			SEN	MODERATE. Meadows and post-burn areas in variety of communities from low to high elevations. Large, robust populations were previously found throughout the Squire and Quartz Fire areas in the Applegate.
VA	*Ranunculus austro-oreganus*		SC	SEN	PRESENT. Known sites documented in Study Area prior to 2017 survey efforts.
VA	*Rhamnus ilicifolia*			SEN	MODERATE. Chaparral and oak woodlands from low to moderate elevations. Several sites known along the CA border in CSNM and near Applegate Ranger Station.
VA	*Rhynchospora alba*			SEN	LOW. Wet areas from low to high elevations. Known sites in southern OR are moderate to high elevation, often associated with *Sphagnum*.
VA	*Ribes divaricatum var. pubiflorum*			SEN	LOW. Wet areas and forest edges. Multiple known sites west of Grants Pass.
VA	*Romanzoffia thompsonii*			SEN	LOW. Vernally wet areas, such as seeps and springs, on steep slopes with high light exposure. Known SW OR sites are near Flounce Rock at ~4000' elevation.
FU	*Sarcodon fuscoindicus*			STR	LOW. Typically found in coniferous forests but occasionally in hardwoods. Widely scattered across western OR, inclusing one site in northern Jackson County.
BR	*Schistidium cinclidodonteum*			SEN	MODERATE. Rocks in seasonal drainages, usually with moderate to high light exposure. Known sites throughout much of the Cascades of southern OR.
VA	*Scirpus pendulus*			SEN	MODERATE. Wet areas in a variety of plant communities from low to moderate elevations. Known site near Grizzly Peak.
VA	*Sidalcea hickmanii ssp. petraea*			SEN	LOW. Dry shrub communities on ridges. One known site: Sams Valley
VA	*Solanum parishii*			SEN	MODERATE. Found in a variety of dry plant communities at a variety of elevations. Known sites throughout much of Jackson County.
FU	*Spathularia flavida*			SM-B	LOW. Typically found in coniferous forests and only rarely in hardwoods. Numerous known sites in Jackson County.

VA	***Tetrapteron graciliflorum***			**SEN**	**MODERATE. Meadows, shrub communities, oak woodlands at low to moderate elevations. Known sites in CSNM, Applegate vacinity, and elsewhere in Jackson County.**
BR	***Trichostomum tenuirostris var. tenuirostris***			**STR**	**LOW. Various moist substrates in various plant communities at a wide variety of elevations. Known site near Wagner Butte is in coniferous forest.**
VA	***Triteleia ixioides ssp. scabra***			**STR**	**LOW. Foothill meadows and woodlands, in clay and granitic soils.**
LI	***Umbilicaria hirsuta***			**STR**	**MODERATE. Rock features in a variety of exposures in a variety of elevations. Known sites in CSNM, near Lake of the Woods, near Wimer.**
VA	***Wolffia borealis***			**SEN**	**LOW. Areas of stagnant water such as ponds, lakes. Known sites at Parsnip Lakes in CSNM, and Sharron Fen, both at ~4500' elevation.**
VA	***Wolffia columbiana***			**SEN**	**LOW. Areas of stagnant water such as ponds, lakes. Known site near Gold Hill.**

[1] VA = vascular plant, BR = bryophyte, LI = lichen, FU = Fungus

[2] Federally Listed Species: FE = Endangered, FT = Threatened, SOC = Species of Concern. Oregon Department of Agriculture: SE = Endangered, ST = Threatened, SC = Candidate. STR = Strategic, SEN = Sensitive. S/M Category definitions: Category A = Manage all known sites; pre-disturbance surveys practical, strategic surveys. Category B = Manage all known sites; pre-disturbance surveys not practical and not applicable; strategic surveys; equivalent effort surveys required for most bryophytes, lichens and fungi for habitat-disturbing projects in old growth. Category C = Manage high-priority sites; pre-disturbance surveys practical; strategic surveys. Category D = Manage high-priority sites; pre-disturbance surveys not practical or not necessary; strategic surveys. Category E = Manage all known sites; pre-disturbance survey not applicable; strategic surveys. Category F = known site management and pre-disturbance surveys not applicable; strategic surveys

Table 2: Special status birds, mammals, reptiles, and amphibians

Common Name *Scientific Name*	Status[1] USFWS STATE ORBIC	Habitat and Ecology	Likelihood to Occur in the Study Area
Amphibians			
Northern red-legged frog *Rana aurora*	SOC SV, CS 4	Prefers cool and calm or still waters of streams, marshes or ponds, often near or in moist forests. Breed in winter and early spring laying eggs attached to stems of emergent vegetation or submerged branches in permanent water bodies. Highly terrestrial outside of the breeding season. Known historically from Jackson County including records in the Lower Rogue and Applegate watersheds.	**Low.** Suitable habitat for this species exists along the drainage in the middle of the Study Area and in adjacent wetlands areas; however, it is overall of marginal quality for this species (not within humid woodlands).
western toad *Anaxyrus boreas boreas*	- SV, CS 4	Historically found throughout Jackson County near aquatic sites (streams, rivers, lakes, ponds, and springs). Occurs in a wide variety of habitats as long as there is suitable aquatic habitat for breeding and is adapted to agricultural environments such as vegetated irrigation canals.	**Moderate.** Suitable habitat for this species exists along the drainage in the middle of the Study Area and in adjacent wetlands areas; however, this species has disappeared from much of its original range and is now uncommon.
Reptiles			
California kingsnake *Lampropeltis californiae*	SOC SV 4	Found in a wide variety of habitats. In Oregon, it occurs along the Rogue and Umpqua river valleys, often in dense vegetation along watercourses but also in farmland, chaparral, and deciduous and mixed conifer woodlands.	**Moderate.** There is suitable habitat in the Study Area and there are historic records of this species in the region.
California mountain kingsnake *Lampropeltis zonata*	SOC SV, CS 4	Found in a diversity of habitats often pine forests, oak woodlands, and chaparral; commonly in open wooded areas near streams.	**Moderate.** There is suitable habitat in the Study Area and there are historic records of this species in the region.
western rattlesnake *Crotalus oreganus* ssp. *oreganus*	- SC 4	Occurs in a variety of habitats from deserts to chaparral to open forests, usually near rocks, cliffs, or downed logs.	**Present.** There is suitable habitat for this species in the Study Area and they were observed in the Study Area during surveys.
Birds			
white-tailed kite *Elanus leucurus*	- - 4	Lower elevation grasslands, agricultural areas, meadow, oak woodlands, riparian woodlands, marshes and wetlands; nest in trees or tall shrubs. Breeding season is approximately February to July.	**Present.** This species was observed flying over the Study Area and hunting nearby on several occasions during the breeding season (early May). No nest was observed in the Study Area and there is only limited suitable nesting trees/shrubs available within the Study Area; most likely this bird was nesting nearby, possibly in the trees growing on the adjacent property to the east.

Common Name *Scientific Name*	Status[1] USFWS STATE ORBIC	Habitat and Ecology	Likelihood to Occur in the Study Area
bald eagle *Haliaeetus leucocephalus*	BCC SV 4	This species is usually found near water and breeds in forested areas adjacent to large bodies of water. Nests in trees, rarely on cliff faces and on the ground in treeless areas.	**Present (assumed).** There is no suitable nesting habitat for this species in the Study Area, though it is fairly common to the greater region. A bald eagle was recorded in the Study Area on April 29, 2016 and on January 4 and 25, 2014 (eBird 2017).
ferruginous hawk *Buteo regalis*	SOC SV, CS 4	A rare, but regular winter visitor to Jackson County. Prefers flat, rolling grasslands or shrubsteppe regions including sagebrush shrublands, and edges of western juniper and pinyon-juniper woodlands and other forests. Breeds in northeastern Oregon and found year-round in southeastern Oregon.	**Present (assumed).** A ferruginous hawk was observed in the Study Area on February 27, 2017 (eBird 2017).
golden eagle *Aquila chrysaetos*	- - 4	Inhabits a wide variety of open and semi-open habitat types including grasslands, shrublands, woodlands, and coniferous forests. Often nests on cliffs bordering rivers, will also nest in trees, on ground, on river banks, and on human-made structures.	**Present (assumed).** There is suitable foraging habitat for this species in the Study Area though it would be unlikely to nest there due to a lack of preferred nesting habitat. Two golden eagles were observed in the Study Area on March 4, 2016 and on January 4, 2014 and one was observed in the Study Area on January 25, 2014 (eBird 2017).
short-eared owl *Asio flammeus*	BCC (year-round) CS 3	Inhabits open terrain, most often marshes, but also grasslands, dunes, agricultural fields, meadows, and pastures. Breeding season is typically from April to August.	**Low.** Suitable habitat exists in the Study Area; however, this species is a rare to irregular visitor to Jackson County during the non-breeding season (November - April).
burrowing owl *Athene cunicularia*	SOC SC, CS 4	Habitat includes deserts, open grasslands, shrublands, and other open areas such as vacant lots near human habitation or airports. Nests in abandoned mammal burrows. They have disappeared from the Rogue Valley and are rare in Jackson County, though they once were considered common.	**Low.** The Study Area contains suitable habitat for this species; however burrowing owls are not currently known to breed in Jackson County and are considered a rare to irregular visitor during the non-breeding season (October - April).
common nighthawk *Chordeiles minor*	- CS 4	Forage over wide variety of habitats throughout the state. Nest on bare ground in open areas. Breeding season is typically June to August.	**Moderate.** Species may forage over the Study Area, only reside in the Rogue Valley during the breeding season; unlikely to nest in the Study Area because of limited bare ground.

Common Name ***Scientific Name***	**Status[1] USFWS STATE ORBIC**	**Habitat and Ecology**	**Likelihood to Occur in the Study Area**
rufous hummingbird *Selasphorus rufus*	BCC (breeding)	Breed in the Rogue Valley, typically in open forest near meadows and riparian thickets in mountainous areas. Breeding typically begins anywhere from April to July, depending on elevation.	**Moderate**. This species is common in the region however the habitat in the Study Area is only marginally suitable breeding habitat for this species.
Lewis's woodpecker *Melanerpes lewis*	SOC/BCC (year-round) SC, CS 2	Typically inhabits open forests at lower elevations. Nests in white oak, ponderosa pine, mixed oak-pine, and cottonwood riparian woodlands of eastern Oregon (also in the Klamath River drainage). Common in the Rogue Valley from November through March.	**Present (assumed).** Limited suitable habitat for this species occurs in the Study Area and it is likely to pass through the Study Area during winter foraging. There is a record of six Lewis's woodpeckers in the Study Area from January 4, 2014 (eBird 2017).
acorn woodpecker *Melanerpes formicivorous*	SOC CS 4	Occur in oak woodlands, mixed oak-pine woodlands and oak savannah. Primary food is acorns. Very common resident in the Rogue Valley.	**Present.** This species was detected in the Study Area in the oak woodland area during the breeding season (May) and may nest within the Study Area or nearby.
American peregrine falcon *Falco peregrinus*	BCC (breeding) SV, CS 4	Inhabits a variety of open habitats. Nests on cliff ledges, or buildings or bridges, usually near water. Breeding season is approximately March through August.	**Present.** This species was observed flying through the Study Area during the breeding season (early May); there is no suitable nesting habitat within the Study Area, but this species may nest on nearby cliffs.
little willow flycatcher *Empidonax trailii brewsteri*	- SV, CS 4	Breeds in willows and other riparian vegetation along stream courses, lakes and marshes, also in thickets at edges of forest clearings or fields in proximity to water. Breeding season is typically June to August.	**Low.** This species is a fairly common migrant but a rare and irregular breeder in Jackson County. The habitat in the Study Area is marginal for this species and it is unlikely to occur.
loggerhead shrike *Lanius ludovicianus*	BCC (year-round) CS 4	This species occurs in open habitats with shrubs and trees for perching and nesting.	**Low.** The Study Area contains suitable habitat for this species; however this species is not known to breed in Jackson County and considered a rare and irregular visitor during the non-breeding season.

Common Name ***Scientific Name***	**Status[1] USFWS STATE ORBIC**	**Habitat and Ecology**	**Likelihood to Occur in the Study Area**
streaked horned lark *Eremophila alpestris strigata*	T SC, CS 1	Nest where there is little or no vegetation including sparsely vegetated agricultural areas, pastures, grasslands, shrublands, playa margins, and alpine areas. Wintering habitats used are very similar to breeding habitats. Breeding season is March to August. The streaked horned lark has been extirpated throughout much of its range, including the Rogue Valley. Although this subspecies was known as a common permanent resident of the Rogue Valley in the early 1900s, the last confirmed breeding record was in 1976. Horned larks are currently only expected as rare and irregular visitors to Jackson County during the non-breeding season (September to February); however, these birds could be any of the four subspecies which frequently form mixed flocks in winter (only *E. a. strigata* breeds west of the Cascades). A flock of wintering streaked horned larks was confirmed in the Rogue Valley in winter 2015-2016 (USFWS 2016).	**Low.** There is suitable habitat in the Study Area for this subspecies which used to be a permanent resident of the Rogue Valley, but is currently considered to be extirpated. There is some likelihood that this subspecies could occur in the Study Area in the winter.
purple martin *Progne martin*	SOC SC, CS 2	Forage in open areas on the wing. Nest in cavities, often using woodpecker nest holes or nest boxes. Breeding season habitat typically open areas (open forest, open water, large meadows, fire scars in forests, or open areas near cities and towns) near to nest cavities (in trees, nest boxes, or crevices in cliffs or buildings).	**Moderate.** The Study Area has suitable foraging habitat adjacent to limited suitable nesting habitat for this species which is known to breed near the Study Area (breeding birds observed 2015-2017 off Valley View Road approximately two miles to the northwest [eBird 2017]). There is a record from July 26, 2013 of a juvenile hawking insects along an irrigation ditch off Butler Creek Road (mapped location is approximately 0.5 mile west of the northwest corner of the Study Area) (eBird 2017).
oak titmouse *Baeolophus inornatus*	BCC (year-round) - -	Common resident of the Rogue Valley in oak, mixed oak-pine, and oak-riparian woodlands and in mature chaparral communities. Nest in cavities, usually abandoned woodpecker holes or digs its own nest in soft wood (less common).	**Present.** This species was detected in the Study Area in the oak woodland area during the breeding season (May) and may nest within the Study Area.

Common Name *Scientific Name*	Status[1] USFWS STATE ORBIC	Habitat and Ecology	Likelihood to Occur in the Study Area
slender-billed nuthatch *Sitta carolinensis aculeata*	- SV, CS 3	This subspecies of white-breasted nuthatch generally inhabits the wooded slopes of the major interior valleys west of the Cascades and is a common resident of the Rogue Valley. Inhabits lower elevation deciduous, mixed conifer-deciduous, oak, ponderosa pine, and juniper woodlands. Nests in natural tree cavities or abandoned woodpecker holes.	**Present.** This species was detected in the Study Area in the oak woodland area during the breeding season (May) and may nest within the Study Area.
golden-crowned kinglet *Regulus satrapa*	- - 4	Common breeding bird in coniferous forest habitats in Jackson County; often come down in elevation in winter.	**High.** The Study Area is not suitable breeding habitat for this species, however they are common in the region and could be encountered in the Study Area anytime outside of nesting season.
western bluebird *Sialia mexicana*	- SV, CS 4	Common nesting bird in Jackson County; occupy a variety of habitats including farms, parks, open woodlands (riparian, oak, and oak-ponderosa pine); require cavities for nesting and typically use abandoned woodpecker holes, natural cavities, or nest boxes.	**Present (assumed).** There are multiple eBird records of the species in the Study Area. One record is during the breeding season (May 21) and this species would be likely to nest in the Study Area where suitable nesting cavities exist (eBird 2017).
chipping sparrow *Spizella passerina*	- CS 4	Common breeding bird in Jackson County. Typically found in open woodlands, savannahs, and openings in forests. Most birds have arrived by mid-April and depart by September; rare or irregular in the non-breeding season, though some birds are likely resident.	**Present.** This species was detected at the eastern edge of the Study Area near the end of North Mountain Avenue in early May; the Study Area may contain some marginally suitable nesting habitat.
Oregon vesper sparrow *Pooecetes gramineus affinis*	SOC SC, CS 2	This subspecies of vesper sparrow breeds west of the Cascades in Oregon. In Jackson County, it is an uncommon to fairly common summer resident in mountain grasslands; typically arriving in April and departing between July and October. A range-wide inventory and habitat assessment conducted in 2015 found birds to be notably absent from lower elevation grasslands and pasturelands in the Rogue Valley (where they are common in the Umpqua Valley); all detections in the Rogue Basin were above 2,000 feet and were primarily in montane meadows (Altman 2015).	**Low.** Although the Study Area is suitable habitat for this species, it appears to prefer higher elevation grasslands in the region and has a only low likelihood to occur.
grasshopper sparrow *Ammodramus savannarum*	-- SV, CS 2	Generally inhabit short to mid-height, open to moderately open grasslands, sometimes with scattered shrubs, and prefer large tracts of habitat to small	**Present.** This species was thoroughly documented in the Study Area in a study completed by the Klamath Bird Observatory

Common Name *Scientific Name*	Status[1] USFWS STATE ORBIC	Habitat and Ecology	Likelihood to Occur in the Study Area
		ones. Many pairs often nest close to each other because of limited suitable habitat; territory sizes between one and four acres have been documented. Birds nest on the ground below a dome of grass; frequently have two broods; nesting typically occurs from April to August. A summer resident of limited distribution in Jackson County.	(KBO) in 2016 which found 32 singing males in the Study Area (Stephens 2016). The grasshopper sparrow survey conducted by Pacific Crest Consulting in 2017 also documented 32 singing males in roughly the same locations (Figure 8). An informal survey conducted by KBO in 2014 found 20 grasshopper sparrows mostly in the same area (Stephens 2016).
yellow-breasted chat *Icteria virens*	SOC CS 4	A summer resident found in brush and thickets in open areas and understory of riparian woodlands along streams. They typically arrive in southern Oregon in May and depart in September. Nest in cups build in dense thickets.	**Present.** This species was observed in the Study Area along the small drainage in the center of the property as well as the TID in early May and is likely to nest in suitable habitat within the Study Area and nearby. Brush along the TID in the western portion of the Study Area (and likely along the entire length) was mowed this year sometime between mid-May and mid-June (C. Scott pers. observation), removing some of the suitable nesting habitat for chats in this area.
western meadowlark *Sturnella neglecta*	- CS 4	Very common summer resident in Jackson County and fairly common in winter as well when it may form small flocks. Inhabits open grasslands, pastures, some agricultural fields, meadows, and sometimes open woodlands. Nests are in depressions on the ground under domes of grass; territories sizes reported between several and 10+ acres.	**Present.** The most commonly encountered species during surveys of the Study Area conducted by Pacific Crest Consulting. Known to breed throughout most of the Study Area where suitable habitat is abundant, particularly above the TID.
tricolored blackbird *Agelaius tricolor*	BCC (breeding) -- 2	Uncommon to fairly common summer resident (rare but regular year-round resident); though typically resident in most of their range, most birds migrate to Oregon to breed. Prefer freshwater marshes with emergent vegetation or thickets for nesting; often nest in Himalayan blackberry shrubs around wetlands. They breed in colonies, often alongside red-winged blackbirds (may fly as far as four miles from nesting site to forage).	**Present.** Observed on one occasion (April 29) on the west side of the Study Area below the TID. The latest being from May 1, 2017 where five tricolored blackbirds were observed in the Study Area (eBird 2017). There is suitable nesting habitat in the southern portion of the Study Area for this species and it may breed there or nearby.
Mammals			

Common Name ***Scientific Name***	**Status[1] USFWS STATE ORBIC**	**Habitat and Ecology**	**Likelihood to Occur in the Study Area**
Townsends's big-eared bat *Corynorhinus townsendii*	SOC SC, CS 2	Known to occur in many habitats but typically inhabits forested regions west of the Cascades. Uses caves, abandoned mines, buildings, and tunnels as roosts.	**Low.** There is no roosting habitat in the Study Area and this species is not anticipated to forage over the site.
pallid bat *Antrozous pallidus*	SOC SV, CS 2	This species inhabits a variety of habitats, typically shrublands and woodlands of arid regions but also open woodlands and forests (ponderosa pine, oak), preferably near water. They use narrow crevices in caves, mines, buildings and, less often, rock or debris piles and hollow trees for roosting; night roosts include abandoned buildings, rock overhangs, and bridges.	**Moderate.** This species may forage in the Study Area; the Study Area does contain some roosting habitat (hollow trees, rock piles), but lacks their more preferred sites (caves, bridges).
hoary bat *Lasiurus cinereus*	- SV, CS 4	Forest-dweller, day roosts in trees, resides in coniferous and deciduous forests and forages along riparian corridors and brushy areas.	**Low.** Suitable habitat exists in the limited oak woodland portion of the Study Area and this species may forage along Butler Creek.
California myotis *Myotis californicus*	- SV, CS 4	This bat typically forages over or near open water; it uses cliff faces, tree crevices, or caves for roosting. Seeks shelter after foraging during active season (does not use fixed roosts), and hibernates during winter in northwest.	**Moderate.** Suitable foraging and roosting habitat in the Study Area.
long-eared myotis *Myotis evotis*	SOC - 4	Generally associated with forested habitats or forest edges west of the Cascades; forages in openings in dense forest, between trees in open forest, and over willow-lined streams; roosts in wide variety of refugia including buildings, caves, mines, bridges, hollow trees, loose bark, and rock crevices.	**Low.** Suitable habitat exists near to the Study Area and this species may forage along Butler Creek. Not expected to roost in the Study Area
little brown myotis *Myotis lucifugus*	- - 4	Closely associated with water; found in moist forests or riparian woodlands. Commonly roost in structures and maternity colonies often located in structures, caves, or hollow trees; they hibernate in caves.	**Low.** Limited suitable habitat in the Study Area.
fringed myotis *Myotis thysanodes*	SOC SV, CS 2	Found in a wide variety of habitats but seems to have a presence for forests or riparian areas; roosts in caves, mines, buildings.	**Low.** Limited suitable habitat in the Study Area.
long-legged myotis *Myotis volans*	SOC SV, CS 4	Typically occurs in forests, but also in some desert and riparian habitats. Uses buildings, hollow trees and crevices in rock outcrops for maternity roosts. Uses caves and mines for winter roosts.	**Low.** Suitable habitat exists in the limited oak woodland portion of the Study Area.

Common Name *Scientific Name*	Status[1] USFWS STATE ORBIC	Habitat and Ecology	Likelihood to Occur in the Study Area
Yuma myotis *Myotis yumanensis*	SOC - 4	Highly associated with water; typically forages over open water such as rivers, lakes, ponds. Establish large colonies in buildings, mines, caves and bridges and also take solitary refuge in buildings, tree bark/crevices. In western Oregon, mostly found in Douglas-fir forests, Sitka spruce forest and oak and ponderosa pine woodlands.	**Low.** Limited suitable habitat in the Study Area.
Brazilian free-tailed bat *Tadarida brasiliensis*	- - 4	Colonial species that appears to be a permanent resident in Oregon; roots frequently include caves, hollow trees, and buildings; colonies can be very large. Noted to be common to the Ashland area (Verts and Carraway 1998).	**Moderate.** May forage in the Study Area; less likely to roost in the Study Area due to lack of large roosting areas preferred by this species (caves, barns), but could roost in the limited oak woodland habitat or in structures nearby.
western gray squirrel *Sciurus griseus*	- CS 4	Generally inhabits oak woodlands, also mixed forests with hardwoods and conifers, as well as riparian areas and urban parks and orchards adjacent to natural habitats.	**Moderate.** Suitable habitat exists in the limited oak woodland portion of the Study Area; this species is locally common.
black-tailed jackrabbit *Lepus californicus*	- - 4	This species is found in open habitats including grasslands, shrubland, pastures, fields, and edges of forests.	**Present.** This species was observed in a field adjacent to the Study Area and there is suitable habitat throughout the Study Area for this species.
gray wolf *Canis lupus*	E CS 2	Occur over a wide-variety of habitats, though closely associated with dense coniferous forests west of the Cascades. Wolf territories ranging in size from 25 square miles to more than 1,000 square miles have been reported.	**Low.** Evidence of gray wolves has been documented as near as approximately 15 miles east of the Study Area (Keno Unit) near Howard Prairie as recently as 2017; gray wolves could hunt in the Study Area but would not be expected to reside there (ODFW 2017c).

[1] Status Code Definitions:

USFWS and STATE:

E: Endangered
T: Threatened
C: Candidate
SOC: Species of Concern
BCC: Bird of Conservation Concern
SC: Sensitive - Critical. SC species are imperiled with extirpation from a specific geographic area of Oregon because of small population sizes, habitat loss or degradation, and/or immediate threats.
SV: ODFW Sensitive - Vulnerable. SV species are facing one or more threats to their populations and/or habitats.
CS: ODFW Oregon Conservation Strategy (CS) Species

ORBIC:

List 1: Taxa that are threatened with extinction or presumed to be extinct throughout their entire range.
List 2. Taxa that are threatened with extirpation or presumed to be extirpated from the state of Oregon.
List 3: Taxa for which more information is needed before status can be determined, but which may be threatened or endangered in Oregon or throughout their range.
List 4: Taxa which are of conservation concern but are not currently threatened or endangered.

Table 3: ODA list of noxious weeds

Common Name	Scientific Name	ODA List
Velvetleaf	*Abutilon theophrasti*	B
Biddy-biddy	*Acaena novae-zelandiae*	B
Russian* knapweed	*Acroptilon repens*	B
Jointed goatgrass	*Aegilops cylindrica*	B
Ovate goatgrass	*Aegilops ovata*	A
Barbed goatgrass	*Aegilops triuncialis*	A, T
Quackgrass	*Elymus repens (Agropyron r.)*	B
Tree of Heaven	*Ailanthus altissima*	B
Camelthorn	*Alhagi maurorum (A. pseudalhagi)*	A
Garlic mustard	*Alliaria petiolata*	B, T
Yellowtuft	*Alyssum murale, A. corsicum*	A, T
Ragweed	*Ambrosia artemisiifolia*	B
Skeletonleaf bursage	*Ambrosia tomentosa*	A
Indigo bush	*Amorpha fruticosa*	B
Common bugloss	*Anchusa officinalis*	B, T
Hoary alyssum	*Berteroa incana*	A, T
False brome	*Brachypodium sylvaticum*	B
White bryonia	*Bryonia alba*	A
Butterfly bush	*Buddleja davidii (B. variabilis)*	B
Flowering rush	*Butomus umbellatus*	A, T
Plumeless thistle	*Carduus acanthoides*	A, T
Smooth distaff thistle	*Carduus baeticus*	A
Welted thistle	*Carduus crispus*	A, T
Musk* thistle	*Carduus nutans*	B
Italian* thistle	*Carduus pycnocephalus*	B
Slender-flowered* thistle	*Carduus tenuiflorus*	B
Smooth distaff thistle	*Carthamus lanatus ssp. creticus (C. baeticus)*	A
Woolly distaff thistle	*Carthamus lanatus*	A, T
Purple starthistle	*Centaurea calcitrapa*	A, T
Diffuse* knapweed	*Centaurea diffusa*	B
Iberian starthistle	*Centaurea iberica*	A, T
Meadow* knapweed	*Centaurea pratensis*	B
Yellow starthistle*	*Centaurea solstitialis*	B, T
Spotted* knapweed	*Centaurea stoebe (C. maculosa)*	B, T
Squarrose knapweed	*Centaurea virgata*	A, T
Rush skeletonweed*	*Chondrilla juncea*	B, T
Canada* Thistle	*Cirsium arvense*	B
Bull* thistle	*Cirsium vulgare*	B
Old man's beard	*Clematis vitalba*	B
Poison hemlock	*Conium maculatum*	B

Field bindweed*	*Convolvulus arvensis*	B
Jubata grass	*Cortaderia jubata*	B
Common crupina (bearded creeper)	*Crupina vulgaris*	B
Japanese dodder	*Cuscuta japonica*	A
Houndstongue	*Cynoglossum officinale*	B
Yellow nutsedge	*Cyperus esculentus*	B
Purple nutsedge	*Cyperus rotundus*	A
Scotch* broom	*Cytisus scoparius*	B
Portuguese broom	*Cytisus striatus*	B, T
Spurge laurel	*Daphne laureola*	B
Cape-ivy	*Delairea odorata*	A, T
Cutleaf teasel	*Dipsacus laciniatus*	B
Paterson's curse	*Echium plantagineum*	A, T
South American waterweed	*Egeria densa (Elodea)*	B
Giant horsetail	*Equisetum telmateia*	B
Spanish heath	*Erica lusitanica*	B
Leafy* spurge	*Euphorbia esula*	B
Myrtle spurge	*Euphorbia myrsinites*	B
Oblong spurge	*Euphorbia oblongata*	A
Japanese (fleece flower) knotweed	*Fallopia japonica (Polygonum c.)*	B, T
Himalayan knotweed	*Fallopia polystachyum (Polygonum p.)*	B, T
Giant knotweed	*Fallopia sachalinensis (Polygonum s.)*	B, T
Goatsrue	*Galega officinalis*	A
French* broom	*Genista monspessulana*	B
Herb Robert	*Geranium robertianum*	B, T
Shiny-leaf geranium	*Geranium lucidum*	B, T
Halogeton	*Halogeton glomeratus*	B
Ivy	*Hedera helix, H. hibernica*	B
Texas blueweed	*Helianthus ciliaris*	A
Giant hogweed	*Heracleum mantegazzianum*	A, T
Orange hawkweed	*Hieracium (Pilosella) aurantiacum*	A, T
Meadow hawkweed	*Hieracium (Pilosella) caespitosum*	B, T
Yellow hawkweed	*Hieracium (Pilosella) floribundum*	A, T
Mouse-ear hawkweed	*Hieracium (Pilosella) pilosella*	A
King-devil hawkweed	*Hieracium (Pilosella) piloselloides*	A
Meadow hawkweed	*Hieracium pratense*	A, T
Hydrilla	*Hydrilla verticillata*	A
Common frogbit	*Hydrocharis morsus-ranae*	A
St. Johnswort *	*Hypericum perforatum*	B
Policeman's helmet	*Impatiens glandulifera*	B
Yellow flag iris	*Iris pseudacorus*	B
Dyers woad	*Isatis tinctoria*	B
Kochia	*Kochia scoparia*	B

Yellow archangel	*Lamiastrum galeobdolon*	B
Perennial peavine	*Lathyrus latifolius*	B
Lens-podded whitetop	*Lepidium chalepensis (Cardaria)*	B
Whitetop (hoary cress)	*Lepidium draba (Cardaria)*	B
Perennial pepperweed	*Lepidium latifolium*	B
Hairy whitetop	*Lepidium pubescens (Cardaria)*	B
West Indian spongeplant	*Limnobium laevigatum*	A
Dalmatian* toadflax	*Linaria dalmatica (L.genista)*	B
Yellow* toadflax	*Linaria vulgaris*	B
Garden yellow loosestrife	*Lysimachia vulgaris*	A, T
Purple loosestrife*	*Lythrum salicaria*	B, T
Spikeweed	*Memizonia pungens*	B
Parrots feather	*Myriophyllum aquaticum*	B
Eurasian watermilfoil	*Myriophyllum spicatum*	B
Matgrass	*Nardus stricta*	A
Yellow floating heart	*Nymphoides peltata*	A
Scotch thistle	*Onopordum acanthium*	B
Taurian thistle	*Onopordum tauricum*	A, T
Small broomrape	*Orobanche minor*	B
African rue	*Peganum harmala*	A
Common reed	*Phragmities australis ssp. australis*	B
Sulfur cinquefoil	*Potentilla recta*	B
Kudzu	*Pueraria lobata*	A, T
Lesser celandine	*Ranunculus ficaria*	B
Creeping yellow cress	*Rorippa sylvestris*	B
Himalayan blackberry	*Rubus armeniacus (R. procerus, R. discolor)*	B
Ravennagrass	*Saccharum ravennae*	A, T
Mediterranean sage*	*Salvia aethiopis*	B
Tansy ragwort*	*Senecio jacobaea*	B, T
Milk* thistle	*Silybum marianum*	B
Silverleaf nightshade	*Solanum elaeagnifolium*	A
Buffalobur	*Solanum rostratum*	B
Johnsongrass	*Sorghum halepense*	B
Smooth cordgrass	*Spartina alterniflora*	A, T
Common cordgrass	*Spartina anglica*	A, T
Dense-flowered cordgrass	*Spartina densiflora*	A, T
Saltmeadow cordgrass	*Spartina patens*	A, T
Spanish broom	*Spartium junceum*	B
Swainsonpea (Austrian peaweed)	*Sphaerophysa salsula*	B
Water soldiers	*Stratiotes aloides*	A
Medusahead rye	*Taeniatherum (Elymus) caput-medusae*	B
Saltcedar*	*Tamarix ramosissima*	B
European water chestnut	*Trapa natans*	A

Punctureviné*	*Tribulus terrestris*	B
Coltsfoot	*Tussilago farfara*	A
Gorse*	*Ulex europaeus*	B
Spiny cocklebur	*Xanthium spinosum*	B
Syrian bean-caper	*Zygophyllum fabago*	A

* Indicates weeds targeted for biocontrol

A-Listed Weed: A weed of known economic importance which occurs in the state in small enough infestations to make eradication or containment possible; or is not known to occur, but its presence in neighboring states make future occurrence in Oregon seem imminent. Recommended action: Infestations are subject to eradication or intensive control when and where found.

B-Listed Weed: A weed of economic importance which is regionally abundant, but which may have limited distribution in some counties. Recommended action: Limited to intensive control at the state, county or regional level as determined on a site specific, case-by-case basis. Where implementation of a fully integrated statewide management plan is not feasible, biological control (when available) shall be the primary control method.

T-Designated Weed: A designated group of weed species that are selected and will be the focus for prevention and control by the Noxious Weed Control Program. Action against these weeds will receive priority. T designated noxious weeds are determined by the Oregon State Weed Board and directs ODA to develop and implement a statewide management plan. T designated noxious weeds are species selected from either the A or B list.

Table 4: Avian inventory

Common Name	Scientific Name	Special Status[1] Fed/State/ORBIC
Acorn woodpecker	*Melanerpes formicivorus*	SOC/CS/List 4
American kestrel	*Falco sparverius*	--/--/--
American robin	*Turdus migratorius*	--/--/--
Barn swallow	*Hirundo rustica*	--/--/--
Bewick's wren	*Thryomanes bewickii*	--/--/--
Brewer's blackbird	*Euphagus cyanocephalus*	--/--/--
Brown-headed cowbird	*Molothrus ater*	--/--/--
Bullock's oriole	*Icterus bullockii*	--/--/--
California quail	*Callipepla californica*	--/--/--
California scrub-jay	*Aphelocoma californica*	--/--/--
California towhee	*Melozone crissalis*	--/--/--
Canada goose	*Branta canadensis*	--/--/--
Cedar waxwing	*Bombycilla cedrorum*	--/--/--
Chipping sparrow	*Spizella passerina*	--/--/List 4
Common raven	*Corvus corax*	--/--/--
Common yellowthroat	*Geothlypis trichas*	--/--/--
Downy woodpecker	*Dryobates pubescens*	--/--/--
European starling	*Sturnus vulgaris*	--/--/--
Grasshopper sparrow	***Ammodramus savannarum***	--/SV,CS/List 2
Green-winged teal	*Anas crecca*	--/--/--
Hairy woodpecker	*Leuconotopicus villosus*	--/--/--
House finch	*Haemorhous mexicanus*	--/--/--

House sparrow	*Passer domesticus*	--/--/--
Killdeer	*Charadrius vociferus*	--/--/--
Lark sparrow	*Chondestes grammacus*	--/--/--
Lazuli bunting	*Passerina amoena*	--/--/--
Lesser goldfinch	*Spinus psaltria*	--/--/--
Mallard	*Anas platyrhynchos*	--/--/--
Mourning dove	*Zenaida macroura*	--/--/--
Northern flicker	*Colaptes auratus*	--/--/--
Northern harrier	*Circus cyaneus*	--/--/--
Northern rough-winged swallow	*Stelgidopteryx serripennis*	--/--/--
Oak titmouse	*Baeolophus inornatus*	BCC/--/--
Peregrine falcon	*Falco peregrinus*	BCC/SV/List 4
Red-tailed hawk	*Buteo jamaicensis*	--/--/--
Red-winged blackbird	*Agelaius phoeniceus*	--/--/--
Ring-necked pheasant	*Phasianus colchicus*	--/--/--
Rock pigeon	*Columba livida*	--/--/--
Savannah sparrow	*Passerculus sandwichensis*	--/--/--
Song sparrow	*Melospiza melodia*	--/--/--
Spotted towhee	*Pipilo maculatus*	--/--/--
Tree swallow	*Tachycineta bicolor*	--/--/--
Turkey vulture	*Cathartes aura*	--/--/--
Western kingbird	*Tyrannus verticalis*	--/--/--
Western meadowlark	*Sturnella neglecta*	--/--/List 4
Western wood-peewee	*Contopus sordidulus*	--/--/--
White-breasted nuthatch	*Sitta carolinensis*	--/--/--

White-tailed kite	*Elanus leucurus*	--/--/List 4
Wilson's warbler	*Cardellina pusilla*	--/--/--
Yellow-breasted chat	*Icteria virens*	SOC/CS/List 4
Yellow-rumped warbler	*Setophaga coronata*	--/--/--
Chipping sparrow	*Spizella passerina*	--/--/--
White-crowned sparrow	*Zonotrichia leucophrys*	--/--/--
Violet-green swallow	*Tachycineta thalassina*	--/--/--

[1]Status Code Definitions:

FEDERAL:

SOC: U.S. Fish and Wildlife Service (USFWS) Species of Concern

BCC: U.S. Fish and Wildlife Service (USFWS) Bird of Conservation Concern

ORBIC: Oregon Biodiversity Information Center: 1 = taxa that are threatened with extinction or presumed to be extinct throughout their entire range (1-X designating presumed extirpation from Oregon or extinction); 2 = taxa that are threatened with extirpation or presumed to be extirpated from the state of Oregon; these are often peripheral or disjunct species which are of concern (when considering species diversity within Oregon's borders, they can be very significant when protecting the genetic diversity of a taxon)—ORBIC regards extreme rarity as a significant threat and has included species which are very rare in Oregon on this list; 3 = taxa for which more information is needed before status can be determined, but which may be threatened or endangered in Oregon or throughout their range; 4 = taxa which are of conservation concern but are not currently threatened or endangered; this includes taxa which are very rare but are currently secure, as well as List 4 contains taxa which are declining in numbers or habitat but are still too common to be proposed as threatened or endangered. While these taxa may not currently need the same active management attention as threatened or endangered taxa, they do require continued monitoring.

Table 5: Vascular plant inventory

Species	Relative Abundance	Status
Achillea millefolium	frequent	
Achnatherum lemmonii	frequent	
Achyrachaena mollis	common	
Acmispon wrangelianus	rare	
Agoseris retrorsa	infrequent	
Allium acuminatum	rare	
Allium amplectens	rare	
Allium sp (leaves only)	frequent	
Alopecurus pretense	partially dominant	
Alyssum alyssoides	infrequent	
Amaranthus albus	rare	
Amelanchier alnifolia	infrequent	
Amsinckia menziesii	frequent	
Anthriscus caucalis	infrequent	
Apocynum androsaemifolium	frequent	
Apocynum cannabinum	rare	
Artemesia douglasii	infrequent	
Asclepias fasiculatum	frequent	
Asclepias speciosa	infrequent	
Athysanus pusillus	rare	
Avena fatua	dominant	
Avena sativa	rare	
Balsamorhiza deltoidea	infrequent	
Blepharipappus scaber	rare	
Brassica nigra	infrequent	
Brassica rapa	partially dominant	
Brodiaea coronaria	frequent	

Brodiaea elegans	infrequent	
Bromus carinatus	infrequent	
Bromus diandrus	infrequent	
Bromus hordeaceus	dominant	
Bromus japonicus	dominant	
Bromus tectorum	dominant	
Bromus vulgaris	frequent	
California macrophylla (Erodium macrophyllum)		SS
Calochortus tolmiei	common	
Calycadenia truncata	rare	
Calystegia occidentalis	common	
Camassia quamash	rare	
Campanula prenanthoides	rare	
Capsella bursa-pastoris	frequent	
Cardamine oligosperma	rare	
Carex densa	frequent	
Carex geyeri	rare	
Carex sp (leaves only)	infrequent	
Carex stipata	rare	
Centaurea solstitialis	dominant	
Cerastium dichotomum	common	
Cerastium glomeratum	frequent	
Cercocarpus betuloides	rare	
Chamaesyce serpyllifolia	rare	
Cichorium intybus	infrequent	
Cirsium arvense	infrequent	NOX
Cirsium cymosum	rare	
Cirsium vulgare	infrequent	NOX
Clarkia gracilis	infrequent	

Clarkia purpurea	infrequent	
Clarkia rhombifolia	infrequent	
Claytonia exigua	rare	
Claytonia parviflora	infrequent	
Claytonia perfoliata	infrequent	
Collinisa parviflora	infrequent	
Collinsia linearis	infrequent	
Collinsia sparsiflora	infrequent	
Collomia grandiflora	rare	
Collomia linearis	infrequent	
Conium maculatum	infrequent	NOX
Conyza canadensis	rare	
Crepis modocensis	frequent	
Crocidium multicaule	infrequent	
Cryptantha intermedia	infrequent	
Cynoglossum grande	rare	
Cynosurus echinatus	frequent	
Cyperus cf esculentus	rare	NOX
Dactylis glomerata	infrequent	
Daucus carrota	frequent	
Daucus pusillus	rare	
Delphinium nuttallianum	infrequent	
Dichelostemma capitatum	common	
Dichelostemma congestum	common	
Dipsacus fullonum	frequent	
Dodecatheon hendersonii	rare	
Dowingia yina	rare	
Draba verna	infrequent	
Echinochloa crus-galli	rare	

Eleocharis acicularis	infrequent	
Eleocharis macrostachya (or palustris?)	infrequent	
Elymus glaucus	infrequent	
Epilobium brachycarpum	common	
Epilobium ciliatum var watsonii	frequent	
Equisetum hyemale	infrequent	
Ericameria nauseosa	rare	
Eriogonum compositum	rare	
Eriophyllum lanatum	frequent	
Erodium cicutarium	dominant	
Erysimum capitatum	rare	
Erythronium hendersonii	frequent	
Eschscholzia californica	rare	
Eurphorbia crenulata	rare	
Festuca roemeri	frequent	
Fraxinus latifolia	rare	
Fritillaria affinis	frequent	
Fritillaria sp (leaves only)	frequent	
Galium aparine	frequent	
Galium bolanderi	rare	
Galium divaricatum	infrequent	
Galium parisiense	dominant	
Geranium dissectum	dominant	
Geranium molle	dominant	
Gilia capitata	rare	
Glyceria sp (leaves only; grazed)	rare	
Gnaphalium palustre	rare	
Hemizonia congesta	rare	
Hieracium albiflorum	rare	

Hieracium scouleri	infrequent	
Holcus lanatus	infrequent	
Hordeum murinum	infrequent	
Horkelia daucifolia	frequent	
Hypericum perforatum	rare	NOX
Juncus effusus	common	
Juncus ensifolius	rare	
Juncus patens	rare	
Koeleria macrantha	infrequent	
Lactuca serriola	frequent	
Lagophylla ramossissima	rare	
Lamium amplexicaule	infrequent	
Lathyrus aphaca	infrequent	
Lathyrus cicera	rare	
Lemna minor	rare	
Lepidium campestre	uncommon	
Leptosiphon bilcolor	rare	
Linum bienne	common	
Lithophragma parviflorum	infrequent	
Lolium perenne	infrequent	
Lomatium californicum	rare	
Lomatium macrocarpum	frequent	
Lomatium nudicaule	infrequent	
Lomatium triternatum	infrequent	
Lomatium utriculatum	dominant	
Lonicera hispidula	infrequent	
Lonicera interrupta	infrequent	
Lotus corniculatus	infrequent	
Lotus micranthus	rare	

Lotus nevadensis	infrequent	
Lupinus albifrons	infrequent	
Lupinus bicolor	rare	
Lupinus cf microcarpus	rare	
Lupinus latifolius	frequent	
Madia citriodora	frequent	
Madia elegans ssp densiflora	infrequent	
Madia elegans ssp vernalis	frequent	
Madia exigua	infrequent	
Madia gracilis	common	
Madia sativa	rare	
Mahonia aquifolium	rare	
Maianthemum stellatum	rare	
Malus fusca	infrequent	
Malus pumila	rare	
Medicago polymorpha	rare	
Medicago sp (leaves only; perhaps M. sativa)	rare	
Melilotus albus	infrequent	
Micropus californicus	infrequent	
Microseris laciniata ssp detlingii	infrequent	
Mimulus guttatus	infrequent	
Montia linearis	rare	
Myosotis discolor	rare	
Myosotis laxa	rare	
Nemophila parviflora	rare	
Olysnium douglasii	infrequent	
Orobanche uniflora	rare	
Osmorhiza berteroi	rare	
Penstemon sp (leaves only)	rare	

Phacelia hastata	infrequent	
Phacelia ramosissima	rare	
Phalaris arundinacea	infrequent	NOX
Phlox gracilis	infrequent	
Phlox speciosa	frequent	
Phoradendron villosum	frequent	
Piperia sp (leaves only)	rare	
Plagiobothrys tenellus	infrequent	
Plantago lanceolata	frequent	
Plectritus congesta	common	
Plectritus macrocera	infrequent	
Poa bulbosa	dominant	
Poa pratensis	infrequent	
Polygonum douglasii	frequent	
Polypogon monspeliensis	rare	
Populus balsamifera ssp trichocarpa	rare	
Portulaca oleracea	infrequent	
Prunus avium	infrequent	
Prunus cerasifolia	infrequent	
Prunus subcordata	common	
Pseudoroegneria spicata	frequent	
Quercus garryana ssp breweri	rare	
Quercus garryana ssp garryana	common	
Quercus kelloggii	infrequent	
Ranunculus austro-oreganus	frequent	SS
Ranunculus orthrhynchus	infrequent	
Ranunculus parviflorus	frequent	
Ranunculus sp (leaves only)	frequent	
Ranunculus uncinatus	frequent	

Ribes inerme var. klamathense	rare	
Rosa canina	common	
Rosa eglantina	infrequent	
Rosa gymnocarpa	rare	
Rubus armenicus	common	NOX
Rubus laciniatus	rare	NOX
Rubus ursinus	infrequent	
Rumex acetosella	infrequent	
Rumex crispus	frequent	
Salix cf lucida	rare	
Salix exigua	rare	
Salix lasiandra var. lasiandra	frequent	
Salix scouleriana	rare	
Sambucus cerulea	rare	
Sanguisorba minor	infrequent	
Sanicula crassicaulis	infrequent	
Scandix penctin-veneris	infrequent	
Selaginella wallacei	rare	
Senecio integerrimus	rare	
Shedonorus arundinaceus	partially dominant	
Silybum marianum	rare	NOX
Solanum dulcamara	rare	
Sonchus asper	infrequent	
Spartium junceum	rare	NOX
Stachys ajugoides	infrequent	
Symphoricarpos albus	infrequent	
Symphoricarpos mollis	frequent	
Taeniatherum caput-medusae	dominant	NOX
Taraxicum officinale	infrequent	

Thinopyrum ponticum	common (highly concentrated in one large area)	
Torilis arvensis	frequent	
Toxicodendron diversiloba	common	
Tragopogon dubius	dominant	
Trifolium albopurpureum	frequent	
Trifolium dubium	infrequent	
Trifolium hirtum	common	
Trifolium subterraneum	rare	
Typha latifolia	rare	
Valerianella locusta	frequent	
Verbascum blatteria	rare	
Veronica americana	infrequent	
Vicia americana	frequent	
Vicia sativa	dominant	
Vicia villosa	dominant	
Vulpia bromoides	infrequent	
Vulpia microstachys	dominant	
Wyethia angustifolia	infrequent	
Yabea microcarpa	rare	
Zigadensus venenosus var venenosus	infrequent	

Figures

Figure 1: Study Area

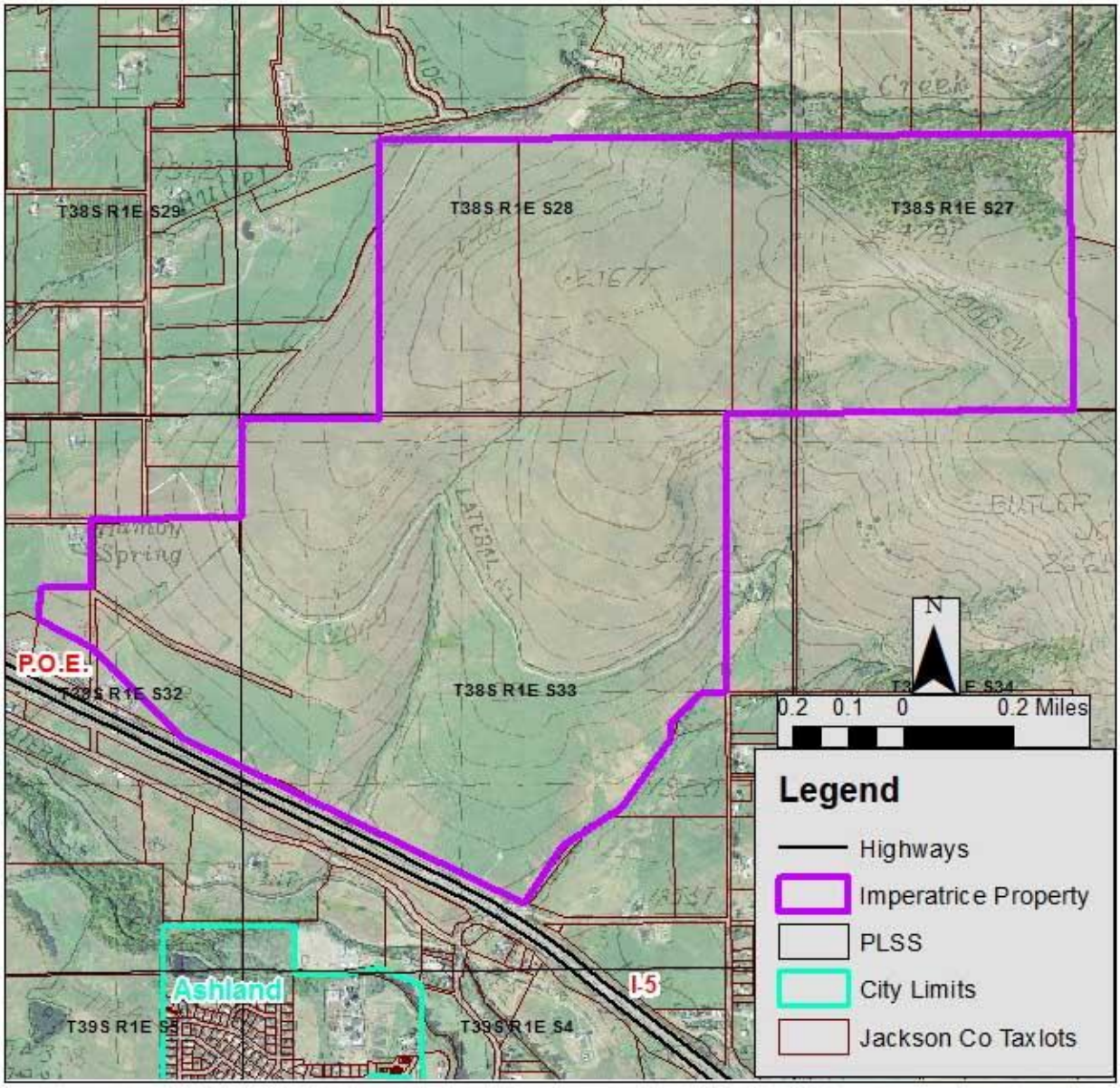


Figure 2: ORBIC Rare Plant Form

OREGON BIODIVERSITY INFORMATION CENTER

RARE PLANT FIELD SURVEY FORM

Please complete all entries in the top section above the heavy line. Please complete as much as possible the more detailed section below the heavy line. You may use the back for comments or additional space. If possible, please attach a map of the location, preferably something of the same quality as a USGS 7.5' map.

Scientific Name: _____

Date of Field Work: _____ (mo. day year) County: _____ Collection: ☐Yes (_____ coll # , herbarium), ☐No

Directions: _____

_____

_____

Reporter: _____ Phone: _____

Address: _____

---

1. LOCATION - Attach separate map or sketch a map indicating exact site, scale and proximity to prominent features.

A. Plant found? _____Yes _____No If no, reason: _____

B. Location: T_____R_____Sec_____ _____1/4 of_____1/4 (use back for more TRS)

C. Source of GPS coordinates (fill one): GPS (make & model_____) or map (type & scale_____)

GPS accuracy distance: _____ ☐Feet or ☐ Meters

Datum: ☐ NAD27 ☐NAD83 ☐ Other: _____. Easting/Longitude_____Northing/Latitude_____

D. Owner/Manager: _____

2. SPECIES BIOLOGY

A. Phenology: _____% in flower, _____% in fruit, _____% in leaf

B. Population size: Number of plants: _____Area occupied: _____

C. Age Class: _____% seedlings, _____% immature, _____% 1st year, _____% mature, _____% senescent

3. HABITAT

A. Plant communities/Habitat Description/Associated Species: _____

_____

_____

B. Aspect: _____(enter compass direction(s) or degrees)

C. Slope: ☐Slight (0°-20°) ☐Moderate (20°-45°) ☐Extreme (45°+) ☐Vertical

D. Topographic position: ☐Crest ☐Upper slope ☐Mid-slope ☐Lower slope ☐Bottom

E. Light: ☐Open ☐Filtered ☐Shaded

F. Moisture: ☐Inundated ☐Saturated ☐Moist ☐Dry

G. Elevation range: _____to_____ ☐Feet or ☐ Meters

H. Substrate/soil: _____

I. Visible threats/potential disturbance: _____

4. DETERMINATION How was plant identified? (choose one or more; please note the source for each choice)

☐Keyed in flora ☐Compared with specimen ☐Compared with photo/drawing ☐Identified by someone else ☐Other

Sources: _____

5. PHOTOGRAPHS/SLIDES

Did you take a photo? ☐Yes (☐Film ☐Digital) ☐ No If yes, may we obtain duplicates at our cost? ☐Yes ☐No

ORBIC-INR / Portland State University / Mail Stop INR / P.O. Box 751 / Portland, Oregon 97201-0751 / 503-725-9950 ph, -9960 fax

Figure 3: *California macrophylla* site locations

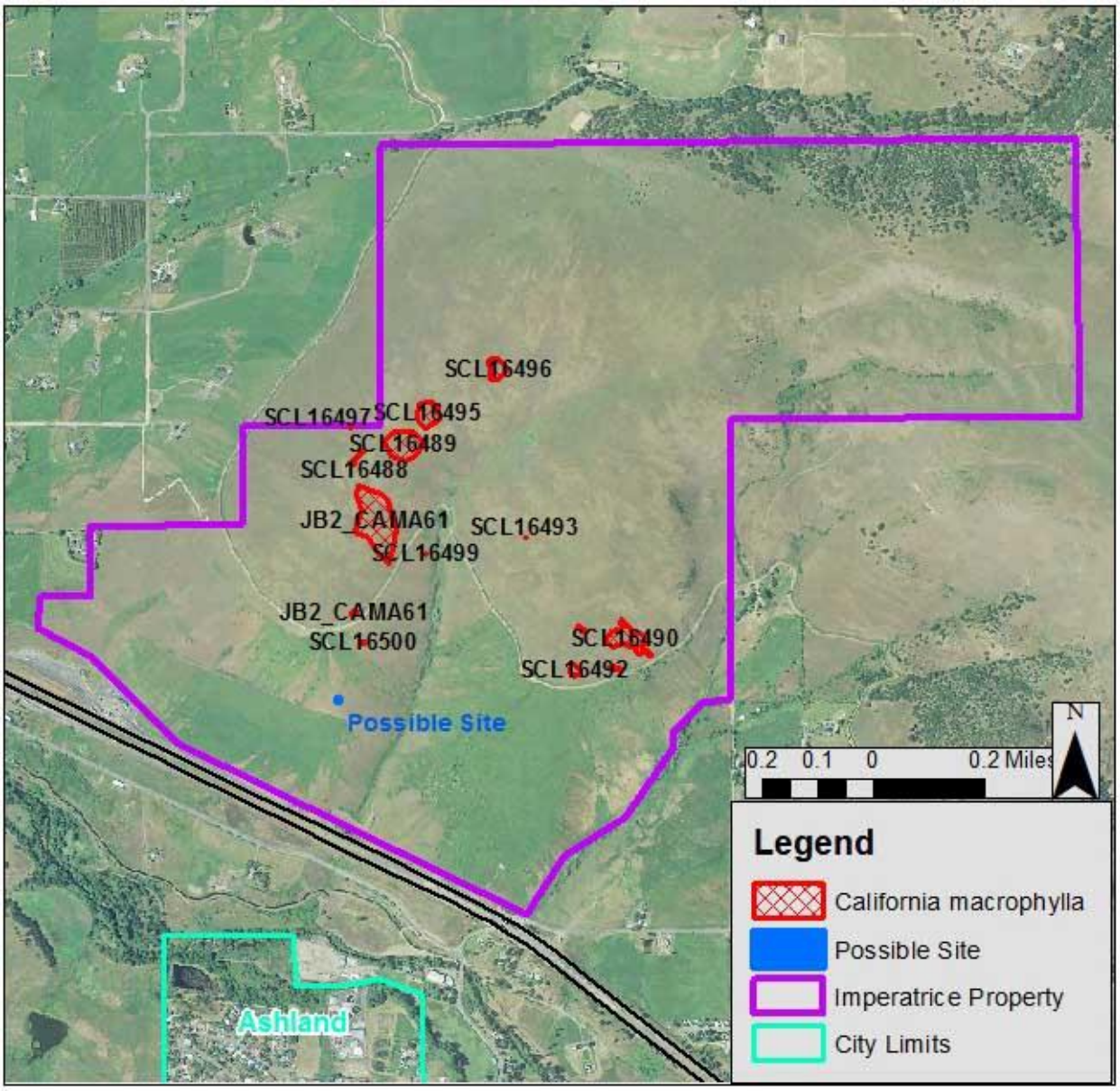


Figure 4: *California macrophylla* specimens

Plants, with fruit (lower right inset) and flower (bottom center inset)

Figure 5: *Ranunculus austro-oreganus* and *Collema quadrifidum* site locations

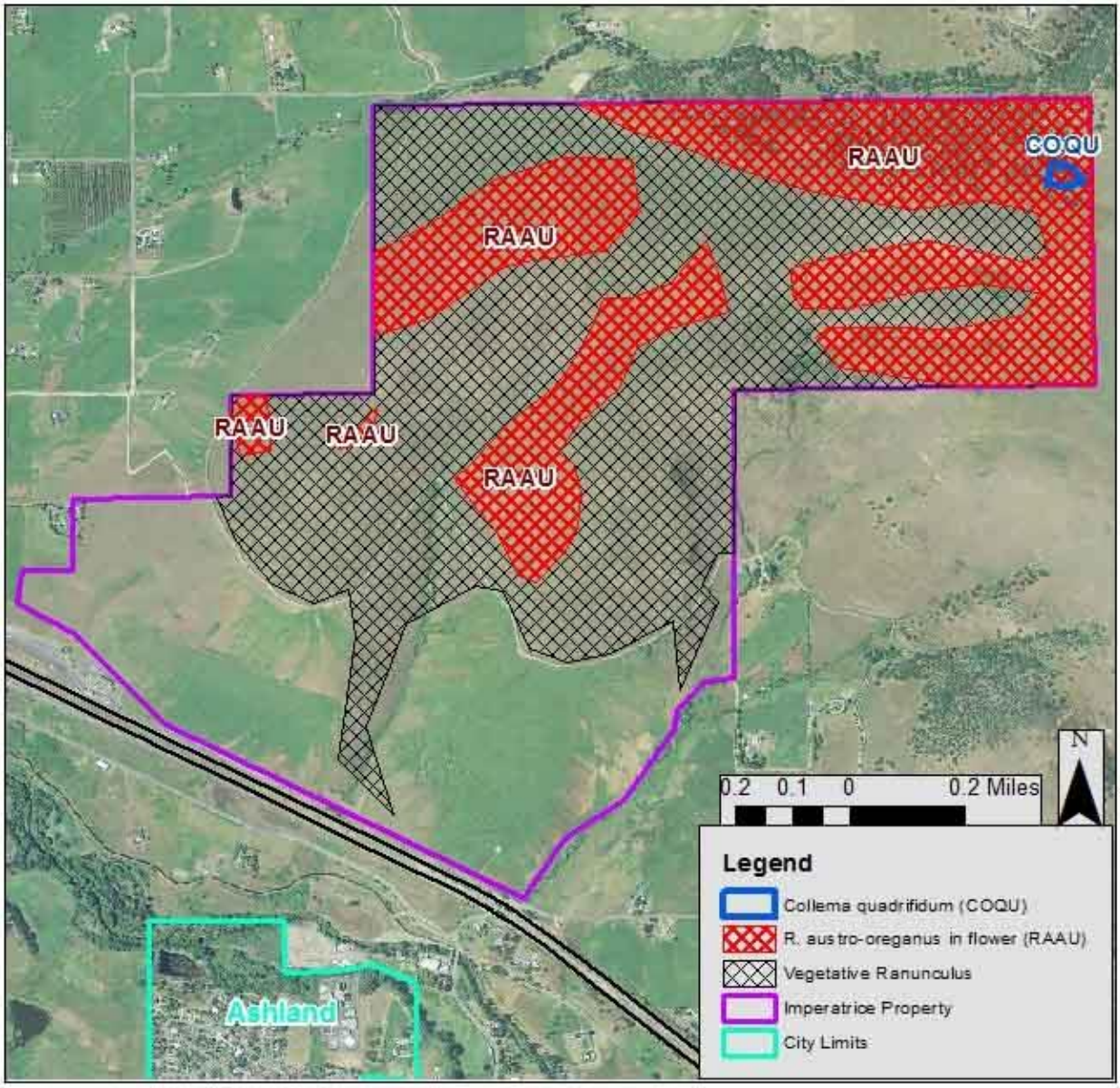
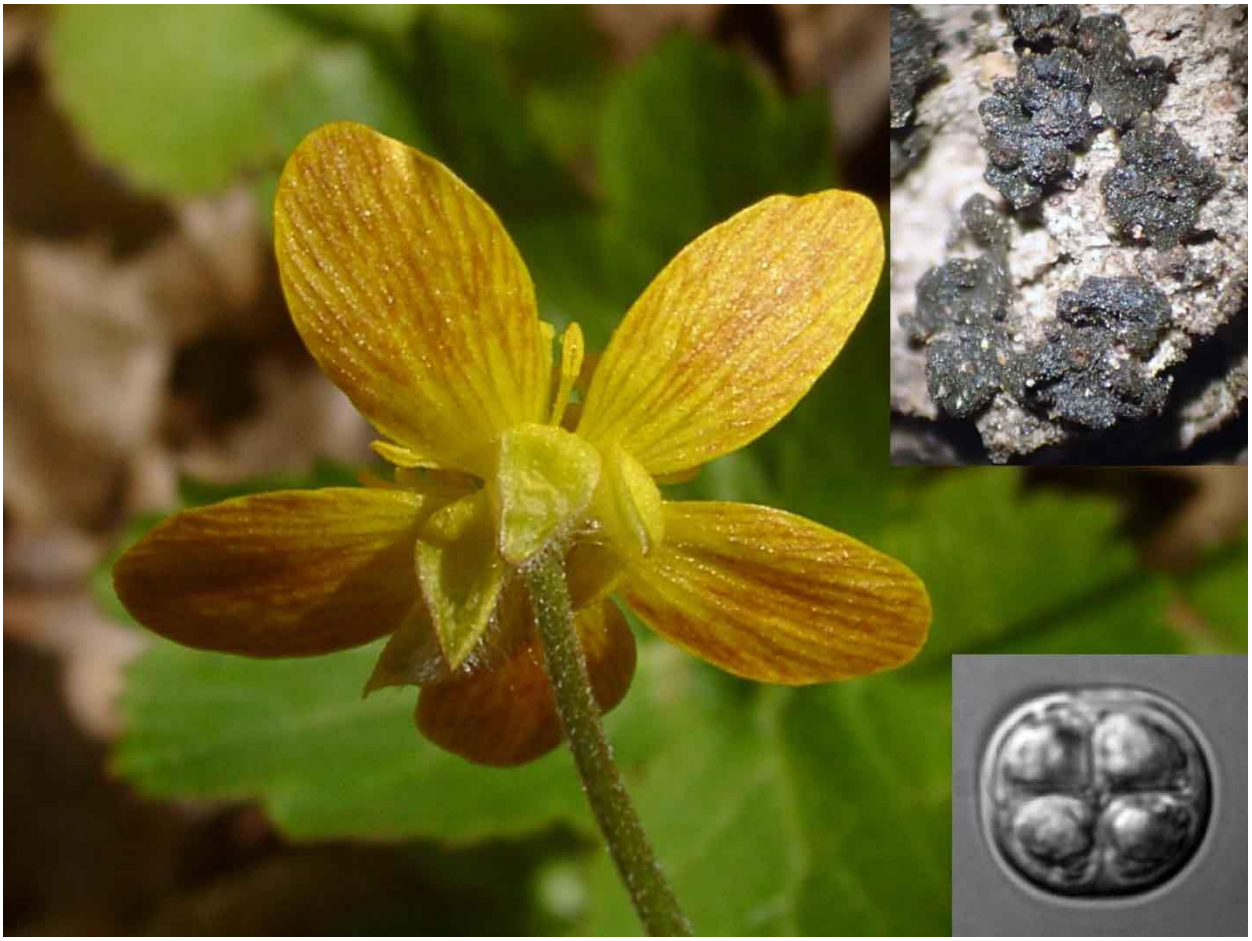


Figure 6: *Ranunculus austro-oreganus* and *Collema quadrifidum* specimens



***Ranunculus austro-oreganus* flower (diagnostic petal backs), with *Collema quadrifidum* thalli (upper right inset) and *C. quadrifidum* spore (lower right inset)**

Figure 7: Noxious weed locations other than *Centaurea solstitialis* and *Elymus caput-medusae*

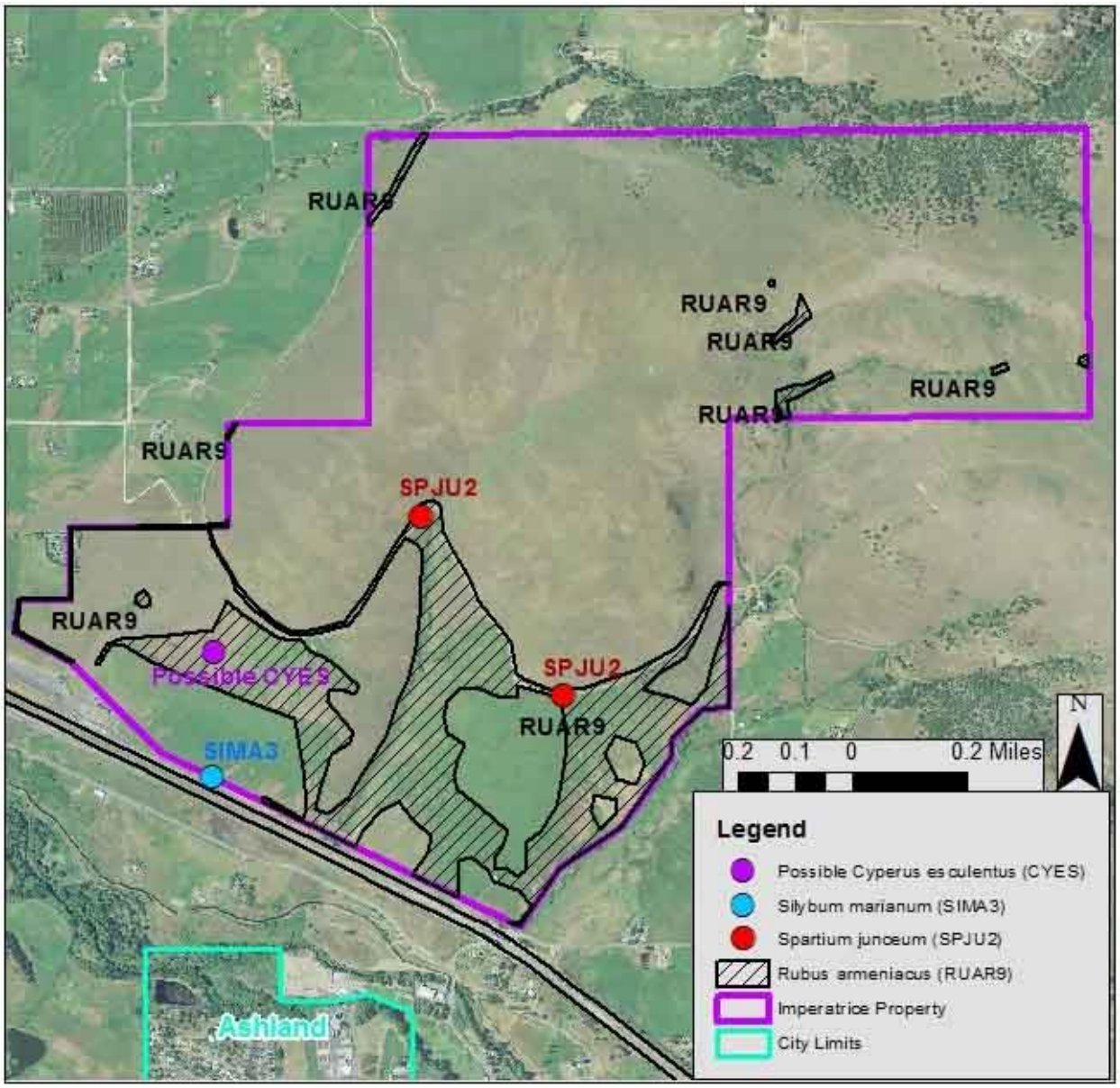


Figure 8: Grasshopper sparrow detections

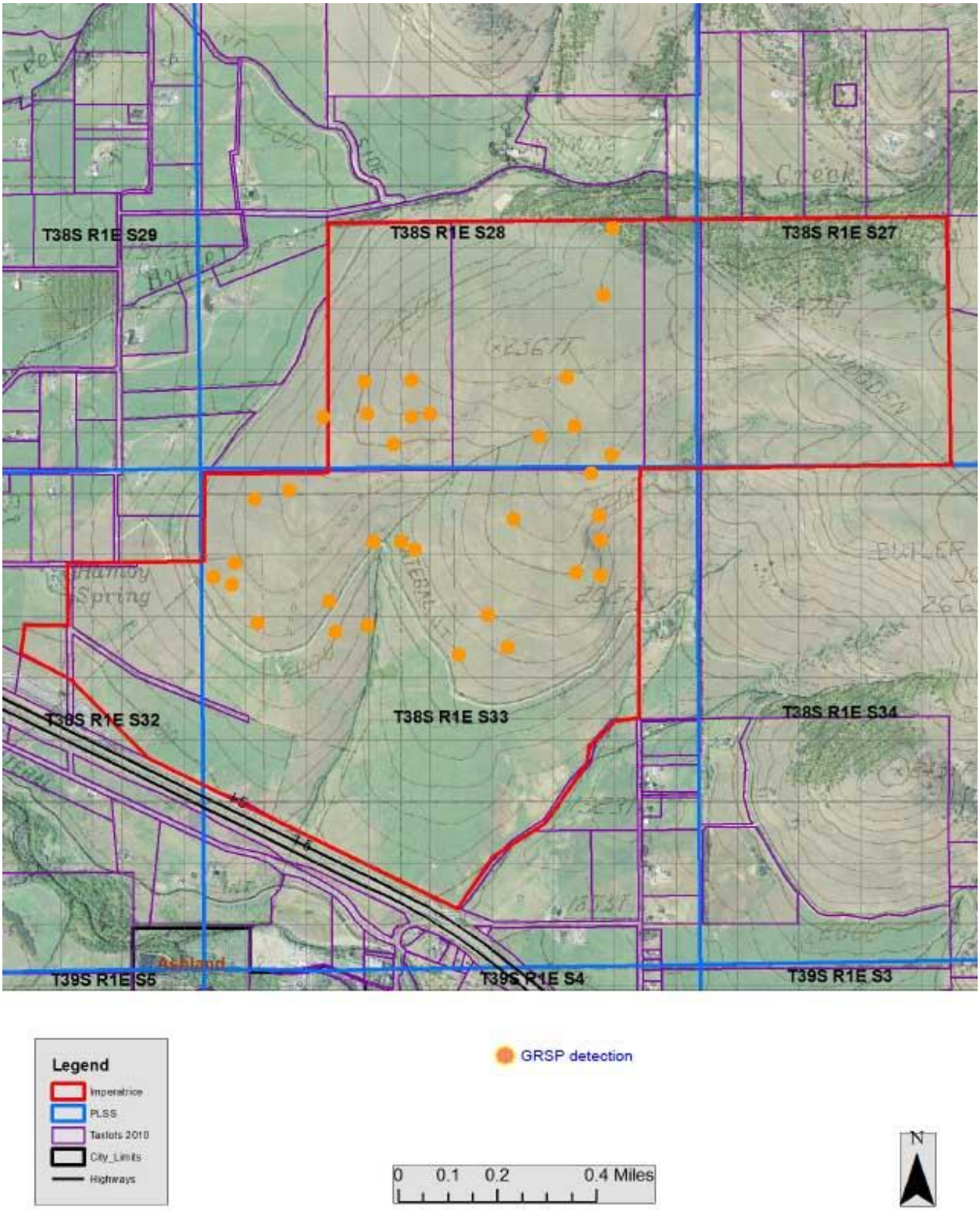


Figure 9: Species of *Phaeocalicium* from the Study Area (micrograph)

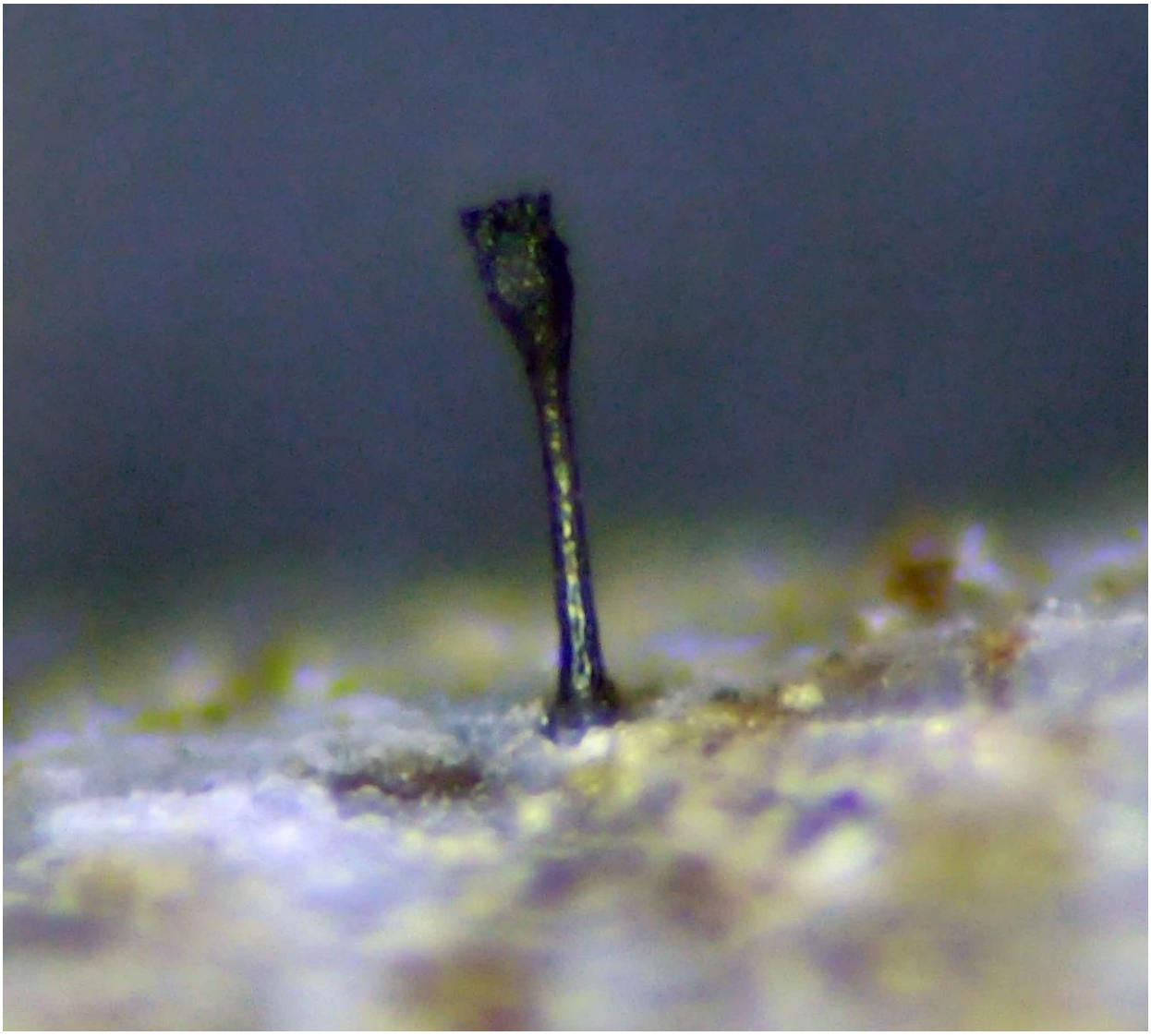


Figure 10: Petrified log

Appendix A: Representative Photos of the Property

Early season view north towards Grizzly Peak (background) from downslope of TID canal

Early season view of the City of Ashland from the Property with Mt Ashland and Ashland Watershed in background

Early season view north towards Grizzly Peak (background) from upslope of TID canal

Early season view of vegetation downslope of TID canal, looking south towards City of Ashland

Oak woodlands at the north end of the Property

Herd of elk, with Bald Mt and Anderson Butte vicinities in far background. (See also photo on front cover page)

Early season view of vegetation upslope of TID canal (yellow flowers are the native *Lomatium utriculatum*)

Looking approximately southeast across the Property, from upslope of the TID canal

View across Property, with seasonal pond (see 3.1 Current Environment) in background; purple flowers in foreground are *Vicia villosa*

View of powerline and gas pipeline corridors on the Property; the pale strip from top to bottom, just left of center, with OHV tracks, is a *Thinopyrum ponticum* monoculture atop the buried gas pipeline (see 3.3 Noxious Weeds)

Pin flags delineating a *California macrophylla* population; background: controlled burning (smoke) from the Ashland Forest Resiliency project within the Ashland Watershed

Field of the native *Plectritis congesta* (shortspur seablush) in far northwest part of property, with Butler Creek in background

Cement “cistern” on broad ridgeline

The native *Calochortus tolmiei* (Tolmie’s startulip)

Saguisorba minor (salad burnet)

The native *Calystegia occidentalis* (field bindweed)

The native *Leptosiphon bicolor* (babystars)

Note: hi-res versions of the above photos are available upon request

Department of Energy

Bonneville Power Administration
P.O. Box 3621
Portland, Oregon 97208-3621

POWER SERVICES

December 1, 2017

In reply refer to: PSW-6

Tom McBartlett, Interim Director of Electric
City of Ashland
20 East Main St.
Ashland, OR 97520-1814

Dear Tom,

I am writing in response to the City of Ashland's (Ashland) recent questions regarding Ashland's Contract High Water Mark (CHWM) Power Sales Agreement Contract No. 09PB-13002 (Agreement) with Bonneville Power Administration (BPA) and its provisions related to Ashland's potential use of a new large non-federal resource to serve Ashland's load in response to the recently approved 10 by 20 citizen initiative.

It is important to remember that BPA provides some of the cleanest wholesale power available in the country. In the most recent Calendar Year BPA's power was 96% carbon free. This is a practically unparalleled carbon composition for power that is available day or night, in amounts exactly equal to Ashland's need. In addition to this contractual composition, the federally owned Green Springs project is electrically adjacent to the city and provides power sufficient to serve a significant portion of the city's load.

As you know, the CHWM Agreement that BPA and Ashland executed in late 2008 is based on the concept and applicaiton of a Tiered Rates Methodology (TRM). Each customer is both entitled and committed to purchase federal power from BPA up to their individual CHWM. The customer's CHWM is adjusted each rate period for the federal system capability and the result is a customer's Rate Period High Water Mark (RHWM). To the extent a customer experiences load growth beyond their high water mark in each rate period, the CHWM Agreement allows that customer to make a choice to pursue and use non-federal resources or buy additional federal power to serve their load that is above their RHWM. At present, Ashland has a small amount of Above-RHWM load (101 aKW in Fiscal Year 2018 and 147 aKW in Fiscal Year 2019) that Ashland has elected to use federal power to serve. With proper notice Ashland could serve its Above-RHWM load with non-federal power beginning in Fiscal Year 2020.

For the remainder of Ashland's load (currently 20.731 aMW), Section 3 of the Agreement obligates Ashland to purchase power from BPA. Specifically, Section 3.2, entitled "Take or Pay" states: "Ashland shall pay for the amount of Firm Requirements Power it has committed to purchase under section 3.1… whether or not Ashland took actual delivery of such power."

Section 3.5 of the Agreement states that Ashland may a add non-federal resource to serve its Above-RHWM load by providing notice to BPA. This does not allow the addition of new non-federal resources to serve its other loads, that is, its RHWM load. In the event that Ashland elects to serve any of its load that is below its RHWM with a new non-federal resource, then Ashland will still be billed for and would continue to be obligated to pay BPA for the cost of the federal power it chose not to take.

In addition to the take or pay implications of using a new large non-federal resource to serve load, I also wanted to take this opportunity to make you aware of the significant increase in transmission costs associated with such action, and Ashland's responsibility for these costs. As you know, BPA currently acquires transmission capacity from PacifiCorp to deliver federal power from BPA facilities to Ashland. BPA purchases this capacity from PacifiCorp under a legacy transmission agreement that does not allow for transmission of a non-federal resource. As a consequence of using a large non-federal resource to serve load all or a potion of this service may need to be converted to Open Access Tranmisison Service (OATT). At present rates BPA estimates the cost of OATT service to be about $1.5 million per year, $750 thousand per year more than current service.

Section 14 of the CHWM Agreement limits BPA's commitment to acquire and pay for transfer service to the delivery of a federal resource to serve Ashland's requiements load, or delivery of a non-federal resource used to serve Ashland's Above-RHWM load. Since Ashland has limited Above-RHWM load and since conversion would be caused by Ashland's election, much of the cost associated with PacifiCorp transmission could be Ashland's responsiblity.

Thank you for involving me early in your planning process on this critical initiative for the city. I look forward to working with you to understand the implications of various approaches to the 10 by 20 initiative.

Sincerely,

Paul Garrett
Account Executive

Draft Altenerative Solar Project Initiatives

Resource	Description	# of Projects	Name Plate (kW DC)	Annual kWh (2020)	Total Cost ($/w DC)	LCOE 25 yr	BPA Bill Savings (25 yr)	Utility Lost Revenue (25yr)	Incentive Payments	Utility Incurred Cost (25 yr)	Comments
Solar Farm - PURPA	3rd party owned, sold to Pacificorp	1	4,500	7,200,000	$1.40	$0.04	N/A	N/A		$2,666,242	PPA less PURPA QF rates
Solar Farm - City Owned	City owned	1	1,400	2,240,000	$1.80	$0.05	$2,450,063	N/A		$69,937.44	Capital cost less BPA savings
Community Solar - Private	Privately owned	2	300	390,000	$2.50	$0.08	$426,573	$1,066,433	$225,000	$864,860	
Solar - City Rooftop	City Owned	11	1,000	1,300,000	$2.50	$0.08	$1,421,911	$3,554,778		$2,132,867	Either/or with "Solar Farm - City Owned"
Solar - Commercial	Privately owned, net metered	60	3,000	3,600,000	$2.50	$0.08	$3,937,601	$9,844,001	$2,250,000	$8,156,401	
Solar - Residential	Privately owned, net metered	250	1,500	1,800,000	$3.50	$0.12	$1,968,800	$4,922,001	$1,575,000	$4,528,200	(LCOE - retail rate) x (annual kWh * 25 years)
Hydro - Reeder Generation	Upgrade current generator	1	300	900,000	$2.00	$0.03	$984,400	N/A		-$384,400	
Energy Efficiency											
Totals :				17,430,000			$11,189,348	$19,387,214		$15,367,865.58	Premium paid by City for new projects

CITY OF ASHLAND

Memo

DATE: December 14, 2017
TO: City Council
CC: Conservation Commission
FROM: Marni Koopman, Risa Buck, Co-Chairs of the Conservation Commission
RE: Conservation Commission Recommendation on Imperatrice Property

Over the past 12-18 months, the Conservation Commission has been actively participating in discussions and review of proposals from citizens and interested organizations on the future potential uses of the Imperatrice Property. This interest was brought into focus with several public forum presentations from citizens interested in a utility scale solar park on the property.

While the local, renewable electricity generation aspect of the project was very intriguing and consistent in one sense with the Commission's overall perspective on energy policy, the Commission was also keenly aware of the unique and fragile ecosystem that exists on the Imperatrice property and was concerned about the impacts of development on the land, the plants and the animals.

Before making any sort of formal recommendation, the Commission heard from representatives from the Southern Oregon Land Conservancy, who have long had an interest in preserving a portion or potentially the entire property for conservation and compatible recreational uses for the community.

As a result of this presentation and further Commission discussion of previous presentations on solar generation potential, the Commission had a formal motion and vote to recommend to City Council that the property be retained for its biological diversity and its active and passive recreational opportunities for the community. The Commission feels that this biodiversity and recreational potential (trails, viewing areas, educational signage, etc) can be done in a very compatible way and best serves the Ashland community, the region and especially the unique and ever scarce plant and wildlife species that make the over 860 acre property so special.

Should the Council desire to move forward in defining and formalizing any particular new use for this property, the Commission is very much interested and hopeful that Council utilize the Commission to assist in the review and recommendation on the proposed uses in the future.

City of Ashland
ADMINISTRATION DEPT
20 East Main St
Ashland, Oregon 97520
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adam@ashland.or.us

Tel: 541-552-2046
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TTY: 800-735-2900