

Mulkey Ridge Forest Land Management Plan



Aerial photo by Greg Fitzpatrick

Submitted to:

Bonneville Power Administration and Oregon Department of Fish and Wildlife

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Revision based on Agency comments from 12/10/19, 6/11/20 & 8/19/20

Project site name: Mulkey Ridge Forest (WILWF-WL-29)

Date property was acquired: September 10, 2015

Duration of plan: ten years

Land management entity name: Greenbelt Land Trust (GLT)

Preparer's name:

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2. Does this LMP cover multiple properties? Please include a map and table of land parcels making up the current management area. Include tract ids, acreage, date acquired and whether the parcels are contiguous and being managed similarly.

This Land Management Plan (LMP) covers Mulkey Ridge Forest, tract #WILWF-WL-29. The protected property is located in Benton County, Oregon, comprises 169.96 acres and was acquired on September 10, 2015 (Maps 1 and 2). The property is bordered to the west by Benton County's Fitton Green Natural Area, to the east by Greenbelt's Bald Hill Farm (WILWF-WL-7), and to the north and south by private rural-residential property (Map 3).

3. Briefly summarize the purpose and Conservation Values of this property/acquisition.

The Protected Property, in its present state, comprises approximately 169.96 acres including oak/conifer mixed forests, grassland, upland prairie and savanna and seasonal stream and riparian areas. The Parties agree that the Protected Property includes important species, habitat, and other important ecosystem attributes. The Conservation Values of the Protected Property that currently exist specifically include the following, recognizing that such Conservation Values may periodically fluctuate or trend toward long-term change, due to natural events such as wildfire, floods, interdecadal climate events, and long-term climate change, as well as human-initiated enhancement or restoration actions:

- i. Species of conservation concern identified as sensitive, at-risk, threatened, or endangered in federal or state programs or recovery plans, have been documented to occur on the

Protected Property include western gray squirrel (*Sciurus griseus*), chipping sparrow (*Spizella passerine*), Pacific-slope flycatcher (*Empidonax difficilis*), pileated woodpecker (*Dryocopus pileatus*), acorn woodpecker (*Melanerpes formicivorus*), red-breasted sapsucker (*Sphyrapicus ruber*), black-throated gray warbler (*Dendroica nigrescens*), and mountain quail (*Oreortyx pictus*), or which could occur now or after habitat restoration include Taylor's checkerspot butterfly (*Euphydryas editha taylori*), Fender's blue butterfly (*Icaricia icarioides fenderi*), northern red-legged frog (*Rana aurora*), Oregon vesper sparrow (*Poocetes gramineus affinis*), slender-billed nuthatch (*Sitta carolinensis aculeata*), western bluebird (*Silia mexicana*), western wood peewee (*Contopus sordidulus*), golden paintbrush (*Castilleja levisecta*), Kincaid's lupine (*Lupinus sulphureus* ssp. *kincaidii*), and Willamette daisy (*Erigeron decumbens* var. *decumbens*).

- ii. Oak/conifer mixed forests, grassland/savannas and seasonal stream and riparian areas dominate the Protected Property. The habitats on the Protected Property are diverse because of the history of management and because of variations in physical site characteristics such as soil types, slope, and aspect. The Protected Property includes Oregon white oak (*Quercus garryanna*) forest with mixed age classes including large legacy oaks, young dense oaks, young open-grown oak in the numerous small openings and older snags. There are also seasonal streams with mature bigleaf maple (*Acer macrophyllum*) and Oregon ash (*Fraxinus latifolia*). The conifer forest is a combination of 60-80 year old Douglas-fir (*Pseudotsuga menziesii*) with some grand fir (*Abies grandis*). Snags and other wildlife trees are common throughout the property and provide perching and nesting habitats for many avian guilds including cavity nesters such as pileated (*Dryocopus pileatus*), downy (*Picoides pubescens*), hairy (*Leuconotopicus villosus*), and acorn woodpeckers (*Melanerpes formicivorus*). Understories are characterized by numerous down logs of various decay and size classes, sword ferns, snowberry, vine maple and false brome (exotic).
- iii. Contribution to landscape-scale conservation. The Protected Property is located within a priority conservation area identified by the Oregon Conservation Strategy (OCS), adopted by the Oregon Department of Fish and Wildlife (ODFW) in 2006. The area is specifically called out in the OCS as an important upland site for wildlife. It is also located in the Corvallis Area Forests and Balds Conservation Opportunity Area depicted on The Nature Conservancy's Willamette Synthesis Map. The Protected Property is in the heart of the recovery zone outlined in Benton County's Prairie Species Habitat Conservation Plan (2011) and the USFWS Recovery Plan for the Prairie Species of Western Oregon and Southwestern Washington (2010). The Protected Property is a key link between the Bald Hill Natural Area, Fitton Green Natural Area and Bald Hill Farm.
- iv. Other Ecosystem Attributes and Services. Ecosystem attributes and services, present as of the Effective Date of the Conservation Easement, include but are not limited to the fish and wildlife habitats described above, biodiversity, a scenic resource, clean air and water, maintenance of soil productivity, and carbon sequestration.

Greenbelt's decision to acquire Mulkey Ridge Forest was driven by the presence of remnant upland prairie and Oregon white oak habitat and by its connectivity to key protected natural areas. The OCS identifies grasslands and oak habitat as a priority for conservation and restoration in the Willamette Valley and helped guide our decision making. In addition, the Mulkey Forest Ridge project safeguards critical Willamette fish and wildlife habitat in perpetuity and is aligned with the goals of the Northwest Power and Conservation Council's Columbia River Basin Fish and Wildlife Program (NWPC 2014). Due to altered fire regimes however, the oaks and prairie are being threatened by Douglas-fir encroachment, and active management is urgently needed in order to avoid the loss of this primary Conservation Value (Figure 1). The reviewers of the Willamette Wildlife Mitigation Program (WWMP) acquisition supported this project with the understanding that large-scale active management would be required (Jarod Jebousek, U.S. Fish and Wildlife Service; USFWS, personal communication).

4. Is this a new LMP or an update? If this is an update to an existing plan (e.g., to address changes in habitat, adding additional property, or including more or different activities), please provide the original plan duration.

This is the first LMP for Mulkey Ridge Forest.

5. Does this property provide connectivity to other conservation properties, or is it uniquely related to other habitat/species in the vicinity? If this is a Willamette Wildlife Mitigation Program (WWMP) acquisition, please answer the following: Is your site located in a Conservation Opportunity Area (COA)?

Mulkey Ridge Forest connects two permanently protected properties; Fitton Green Natural Area to the west (309 acres) and Bald Hill Farm to the east (587 acres). These properties in-turn are adjacent to additional permanently protected areas such as Lupine Meadows (GLT) and Bald Hill Natural Area (City of Corvallis) for a total of approximately 1,400 contiguous acres of conserved property. BPA has an existing Conservation Easement (CE) on the adjoining Bald Hill Farm property.

This property is located within the OCS COA 081, Corvallis Area Forests and Balds. Mulkey Ridge Forest is specifically called out in the OCS as a "Special Feature" for habitat restoration. The Protected Property is central to the recovery zone outlined in Benton County's Prairie Species Habitat Conservation Plan (2011) and the USFWS Recovery Plan for the Prairie Species of Western Oregon and Southwestern Washington (2010). One of Greenbelt's overarching goals is to reconnect these isolated conservation properties by restoring prairie habitat and repairing ecosystem processes that are no longer functioning. We have termed this project the "ButterFlyWay" (Map 4). A collaborative group of landowners that manage thousands of acres in this area are all focused on supporting the recovery of rare prairie dependent species and Mulkey Forest Ridge lies at the center of this coordinated effort.

6. What is the current land use? Is there a history of land use on the property covered by this LMP that may be relevant to future land management activities?

The current land use at Mulkey Ridge Forest focuses on management of native habitats for the benefit of wildlife and native plants. Greenbelt's primary activity since acquisition is on controlling key noxious weeds. In addition, there is a 1.1 mile multi-use public trail easement (Map 5) that permits non-motorized recreation, including hiking, biking, and horseback riding. Greenbelt has a community supported volunteer group that patrols the trail on a nearly daily basis, performs maintenance activities, and reports issues to GLT and Benton County staff.

Prior to Euro-American settlement, the site was likely dominated by oak savanna and upland prairie. We presume that this open habitat was maintained through Native American burning practices. The first aerial photo from 1936 shows the property was primarily comprised of oak woodland with extensive prairie habitat (Map 6). The image also shows visible livestock trails and remnant fences, indicating a past history of grazing that may have extended into the 1960s. The timber survey conducted by Trout Mountain Forestry in 2017 concluded that the last timber harvest occurred in the 1940s when scattered mature firs were cut along the upper ridges. Since that time, the property has been largely unmanaged and the current forest is a result of ecological succession, transitioning from open oak savanna to a closed canopy forest of fir and oak. Those two habitat types support very different wildlife species. A homogenous closed canopy forest supports many generalist species such as American crow, American robin, and dark-eyed junco, whereas oak savanna and prairie are among the most endangered habitat types in western North America. The OCS lists oak woodlands and grasslands as strategy habitats for the Willamette Valley while conifer forest is not a priority.

7. Describe interim management activities between the time of acquisition and present.

Greenbelt was awarded funding by Natural Resources Conservation Service (NRCS) and Oregon Watershed Enhancement Board (OWEB) to restore oak habitat on the Mulkey Ridge Forest. Trout Mountain Forestry completed a Forest Stewardship Plan for the property in 2017. This plan developed stand-specific management recommendations with an emphasis on oak savanna restoration. Timber operations are not scheduled to occur until 2021, but Greenbelt began preparing for those activities in 2017 by treating approximately 40 acres of false-brome in the forest understory. In 2018 we treated an additional 40 acres in order to reduce this ODA class-B noxious weed prior to any forestry operations. In 2019 approximately 60 acres of false-brome were treated. Greenbelt has also engaged volunteers to maintain a 3-foot buffer on each side of the hiking trail to keep it clear of noxious weeds and other hazards.

8. List any and all current/existing Land Use Agreement. Include copies of the agreements.

No Land Use Agreements are currently in place.

9. Are there any access issues affecting management on the property?

The property currently lacks effective access for management. Currently Greenbelt accesses the property on foot from the Bald Hill Farm property. While there are historic logging roads, they are mostly overgrown and are unpassable in their current condition. These decommissioned roads do not connect to any public roads or practical access points. Historic access routes entered the property near what is now Wooded Knolls Drive, though no legal access currently exists there due to residential construction. Legal access to the property is limited to the cul-de-sac at the end of Dawnwood Drive, a public county road. However, there are no roads on Mulkey Ridge Forest connecting to this county road. Potential access points include an existing dirt road located on Greenbelt's Bald Hill Farm property and a recreational hiking trail on Benton County's Fitton Green Natural Area. Greenbelt proposes to build a new management road that traverses the property east to west in order to accomplish our habitat restoration as well as long-term maintenance of oak and grassland habitats. A management road is a Permitted Use described in the Conservation Easement in sections L.1., L.3.c. The proposed access network will utilize former logging roads as well as new construction (Map 11). The decision making process for designing a management road with the least environmental impact is described in further detail in Section 31.

10. Are there water rights on the property? If there are water rights, list them, include the water right certificates, and answer the following questions:

There are no water rights associated with this property.

B. Current Ecological Setting (Questions 11-19)

11. List habitat and cover types, including special status habitats, and briefly describe habitat conditions. Please include a map. If this is a WWMP project, please use definitions found in OCS (2016), and briefly describe habitat conditions. Please include a map.

The habitat types at Mulkey Forest Ridge don't fit neatly into the OCS. The forested areas are a complex mixture of species that are on diverging successional trajectories. What is typically referred to as savanna habitat is classified as grassland or oak woodland in the OCS. This may confuse readers of this plan who are accustomed to more granular divisions of habitat types. To help clarify our classification of habitat types, we have included Table 1, which acts as a crosswalk between management-level habitat types versus the higher level OCS habitat designation.

Table 1. Crosswalk of habitat types based on restoration planning needs versus OCS designation. Current and future acreages are provided. There are approximately 144 acres of mixed forest, which we have broken into two sub-categories for management purposes (oak-fir and fir-oak based on which species is dominant).

Habitat Type	OCS Habitat Type	Current Acres	Desired Acres
Oak Woodland	Oak Woodland	0.0	65.4
Oak-Fir	Oak Woodland	96.7	2.7
Fir-Oak	Oak Woodland	47.9	47.9
Riparian	Riparian	13.5	13.5
Savanna	Grassland	10.6	39.3
sum		169	169

Table 2. Simplified habitat types with current and future acreages categorized by best fit to OCS types. Coniferous forest and savanna habitat are not categorized in the OCS for the Willamette Valley so they are lumped into Oak Woodlands and Grassland. Such broad categories make it difficult to differentiate the management required for this complex mixed forest type.

Habitat Type	Current Acres	Desired Acres
Oak Woodlands	144	116
Riparian	14	14
Grassland	11	39
sum	170	170

Oak Woodlands:

The dominant habitat type on Mulkey Ridge Forest is a complex mixture of oak and Douglas-fir (Figure 2, Map 7), covering an area of approximately 144 acres. For planning purposes we have split the forest into two sub-categories and calculated that there are approximately 97 acres dominated by oak with low Douglas-fir density (oak-fir type) and 48 acres where oak has been overtopped by the dominant Douglas-fir (fir-oak type). Please see Map 8 in Appendix A.

The oak-fir type dominates lower south and west facing slopes. Although firs are scattered throughout the stand, oaks are dominant and the average density is 154 trees per acre. Conifer seedlings are common in some areas, indicating that without intervention fir is poised to become more dominant over time. The understory vegetation is dominated by poison oak and false-brome, with variable amounts of invasive English hawthorn (*Crataegus monogyna*), non-native blackberry (*Rubus armeniacus*), and holly (*Ilex aquifolium*). Snag numbers and down wood levels are relatively low in the oak-fir stand.

The fir-oak type has a sparse understory of poison oak, hazel, and other dry-site shrubs, with ground cover in many areas dominated by invasive false-brome. Grand fir has naturally seeded into some areas, though it is a poorly suited tree for such a dry site. There are moderate numbers

of snags and woody debris owing to past oak mortality and some recent wind-throw. Trout Mountain Forestry hypothesized that Douglas-fir seeded into what was once oak savanna and pasture over a 70-80 year time period. While there is evidence of a past selective timber harvest, most of the existing forest is a result of ecological succession in the absence of fire disturbance. Data from the timber cruise, taken in combination with the 1936 aerial photo suggest that the stand was once much more open and dominated by oak and prairie.

Grasslands:

Approximately 11 acres of grasslands persist in this forest dominated landscape. The prairies are quickly being invaded by woody species and the single largest opening is less than one acre in size. The 1936 aerial photo shows extensive prairie habitat, but those areas have converted to woodlands over the past 80-years due to a lack of fire disturbance. The remnant prairies consist mostly of non-native grasses and forbs, such as tall-fescue (*Schedonorus phoenix*), creeping bentgrass (*Agrostis stolonifera*), bristly dogtail grass (*Cynosurus echinatus*), ox-eye daisy (*Leucanthemum vulgare*) and flax (*Linum bienne*). However, the presence of some high value native forbs such as Oregon sunshine (*Eriophyllum lanatum*), self-heal (*Prunella vulgaris* ssp. *lanceolata*), and wild iris (*Iris tenax*) indicates that these prairies still have the potential to play a crucial role in supporting prairie dependent wildlife species such as Fender's blue butterfly. A few widely spaced oaks, with large open canopies are found on the edge of these prairies (see Figure 1 & 8). These legacy oaks will support OCS strategy species such as slender-billed nuthatch and acorn woodpeckers once the firs are removed and a corridor connects to Bald Hill Farm.

Flowing Water and Riparian Habitat:

Except for about 100 meters of perennial water on the southern edge of the property, the waterways on Mulkey Ridge are ephemeral. During the summer months the streams are completely dry and even during the winter, portions of the streams are sub-surface. These ephemeral streams form a braided channel and eventually converge to form Newton Creek on the adjacent private property. ODFW fish biologist Karen Hans visited this site with Greenbelt staff on April 16, 2018 and on April 30, 2020. Karen's description of the stream is found in the Appendix and states that "the creek system on the property was flashy in nature; they respond quickly to rain events then revert to low to no flow in a few days. As evidence of this, in spite of recent rains in the last week, the creeks were running low with many subsurface flow areas in the channels. In general, the creek channels are defined as narrow and shallow with a few areas of pocket water." Based on Karen's evaluation, ODFW determined "the creeks on the Mulkey Ridge property are not native migratory fish bearing streams. Therefore, the culverts do not need to meet ODFW fish passage criteria." Bill Mahr of the Oregon Department of Forestry (ODF) also conducted a site visit in 2018. Bill checked the stream for structural features that are indicative of fish use — mineral soil bottom, active sediment deposition, pools, and lack of upland vegetation in the stream channel. He also determined that migratory fish use stopped at the junction of the two streams at the southern boundary of the property.

Hardwood dominated riparian forest stands are found in three locations for a total of 14 acres (Map 7). The largest stand occupies the flat area described above where the seasonal streams converge in the south center of the tract (Figure 3). Vegetation composition and structure varies significantly between the different riparian units. Riparian areas in the upper slopes contain

white oak, Douglas-fir and occasional grand fir, while the riparian zone at the bottom of the slope contain Oregon ash, bigleaf maple, willow (*Salix* sp.), cherry (*Prunus avium*), white alder (*Alnus rhombifolia*), and red alder (*A. rubra*). Other vegetation includes Douglas hawthorn, snowberry, Indian-plum, Oregon-grape, rose, lady fern (*Athyrium filix-femina*) and sword fern. Introduced species such as false-brome is a dominant ground cover, while blackberry and English hawthorn occur sporadically in small areas of this riparian habitat.

12. List special status, focal fish and wildlife, and/or Oregon Conservation Strategy species. Provide a brief description of their occurrence on the property and their relevance to Conservation Values. Is the list different from the baseline or the last LMP?

Greenbelt contracted with Bob Altman to conduct a breeding bird survey at Mulkey Ridge Forest during May and June of 2014, 2015, and 2018. Six point count stations were monitored and a total of 51 species were documented cumulatively during the breeding season (Map 10). Of those species, two were OCS species; chipping sparrow and purple finch. These two species have small population sizes on the property (possibly two pairs each) due to limited habitat availability. Chipping Sparrow would benefit from restoration activities that promote open canopy conditions, while purple finch prefers sites with greater canopy cover. The oak thinning project on neighboring Bald Hill Farm conducted in 2015 (LUA20150266) resulted in an almost immediate positive response by five OCS species: acorn woodpecker, chipping sparrow, purple finch, western bluebird, and slender-billed nuthatch (Altman 2017). We expect these species will expand into Mulkey Ridge Forest following the proposed restoration activities since the pre-treatment conditions are very similar to those at Bald Hill Farm (Figure 4). In this picture the firs are clearly visible dominating the background and in the foreground one sees the oak savanna we were able to restore by removing encroaching firs.

The majority of the OCS species are dependent on prairie and oak savanna habitat. While the Mulkey Ridge Forest was historically dominated by these habitat types, and likely supported many of these rare species, they have mostly disappeared due to forest succession. Greenbelt's primary goal is to restore prairie and oak savanna habitat in order to support the expansion of wildlife species dependent on these rare habitat types.

In 2017 Dana Ross (private lepidopterist consultant) conducted a survey for Fender's blue butterfly in the southeast corner of the property where Kincaid's lupine grows (Map 4). No Fender's were detected on three visits during the peak flight period in May. There have been incidental observations of western gray squirrel, but very little is known about the size of the population or the extent of its range. There are no other known rare mammals, amphibians, reptiles, fish or invertebrates on the property.

13. What are the most significant invasive species issues on the property? Please include a map of their distributions.

Mulkey Ridge Forest supports a number of species that have the potential to affect significant ecological change. The predominant species of concern on this property is actually a native species, Douglas-fir. The continued expansion of Douglas-fir on the property will result in the

near complete conversion of the rare and declining oak habitat into one of the most common habitat types across the state, Douglas-fir forest. Another native species that poses a threat to the long-term integrity of this site is poison oak. This species poses a significant human health and safety issue and could potentially limit the ability to manage the property for the benefit of rare and declining species. The most significant non-native species that occurs on the property is false-brome. This species forms a monoculture across a majority of the property and extensively excludes native understory plants and animals. No map is included since nearly 100% vegetative cover is assumed. In 2017 Greenbelt initiated herbicide (glyphosate) applications to control false-brome in the understory. Treatments were extremely successful and were continued in 2018 and 2019. These treatments resulted in a 95% decline of false brome in the oak understory. Other common non-native species found sporadically throughout the stand include English hawthorn, holly, and Himalayan blackberry.

14. Are there known Endangered Species Act -listed or candidate species on the property?

There is a small population of the federally threatened Kincaid's lupine (Figure 5), which was found in the southeast corner of the property in 2016 (Map 4). A formal census has not been conducted yet, but the population is estimated at about 100 flowering stems. In 2017 Greenbelt contracted with Dana Ross to conduct a survey for Fender's Blue Butterfly, but he did not detect any of the associated federally endangered species during three visits to the lupine habitat. The Kincaid's lupine is surrounded almost entirely by introduced species such as false-brome and tall fescue and will require immediate active management.

There are no known candidate species on the property.

15. Are there hydrologic considerations **relevant to property management or desired future conditions**?

Mulkey Ridge Forest is a relatively dry, south facing parcel with limited water resources. There are a number of small ephemeral streams originating at higher elevations but they only flow during sustained rain events (Figure 6). The ephemeral streams join at the bottom of the slope and form a channel with perennial water for less than 100 yards before flowing into Newton Creek, downstream of the property. No management activities are planned for the forested wetland, and a hundred foot buffer will be incorporated into forestry operations on adjacent areas. Four new culvert crossings will be installed on the new management road at stream crossings to maintain the flow of water in the natural channel. ODF standards dictate that those culverts be capable of supporting a 50-year peak flow. Stream crossings will have culverts installed that will allow for the passage of aquatic organisms such as amphibians. Culverts will be installed during the dry season, thus avoiding in-water work, but a biologist will monitor construction and salvage aquatic species if necessary. Further details regarding the proposed management road are discussed in Section 31.

16. Are there historical and cultural resources and traditional use resources **relevant to property management**?

Native Americans inhabited the Willamette Valley for millennia and the Mulkey Ridge Forest is part of the Kalapuya's ancestral land. Greenbelt has not conducted any cultural surveys and we are unaware of any significant resources on the site, but given the history, one presumes that resources could be present. Greenbelt follows the guidance of the State Historic Preservation Office that states "If archaeological objects or sites are discovered during construction, all activities should cease immediately until a professional archaeologist can evaluate the discovery." If there is a federal nexus, Greenbelt will comply with Section 106 of the National Historic Preservation Act.

The southern half of the ownership was part of the 1845 Donation Land Claim of William Wyatt. Historically land was used for grazing, with a small portion in the southeast corner possibly used for hay harvest. Remnants of a few old fences cross portions of the property, but are mostly buried in forest debris. A 1936 aerial photo shows no evidence of early structures.

17. Is there public access to the property? Provide a description of access and activities and its relevancy to the property management. If there is no public access, explain why it is not allowed. How will you monitor access and identify potential impacts to Conservation Values should they arise?

There is a publically accessible gravel trail that bisects the Mulkey Ridge Forest east to west (Map 5). The path is part of an extensive trail network that originates at the City of Corvallis Bald Hill Natural Area, passes through Greenbelt's Bald Hill Farm and Mulkey Ridge Forest, and terminates at Benton County's Fitton Green Natural Area (Figure 7). A 99-year trail easement was granted to Benton County by the previous landowner and was recorded on the Deed on September 10, 2014. The easement allows for pedestrian, equestrian, and bicycle use of the trail, although the latter two are excluded from October 31 to April 15 to protect the trail from damage during the wet season. Benton County is responsible for maintaining the trail, but Greenbelt may assist in certain activities. Greenbelt, Benton County, and the City of Corvallis have a recreation plan for this network of trails that includes signage to inform the public about the conservation values of the property. In addition, Greenbelt has approximately 20 volunteer naturalists that walk the trail system and help educate the public about conservation values, the property, and management actions. Greenbelt staff also conducts annual inspections of the property to monitor potential impacts to conservation values and we are able to quickly respond to any issues that may arise.

Overall, public access to neighboring Bald Hill Farm has built wide-spread support for community based conservation. Greenbelt conducts regular guided walks and interpretative events to highlight the importance of rare oak and prairie habitat and the species that depend on them. By promoting public access to protected areas, Greenbelt builds support for wildlife conservation, active land management, and land acquisition.

18. Is there fire history or planned burns **relevant to property management or desired future conditions?**

Virtually all savanna sites in the Willamette Valley were burned by Native Americans on a regular basis prior to settlement. The aerial photos show no evidence of significant burning after 1936. Greenbelt uses controlled ecological burning to meet habitat objectives on other properties that we own. At this time though, it seems unlikely that broadcast burning will be used as a management tool on Mulkey Ridge Forest due to the proximity of houses, topography, and neighboring stands of timber. However, slash piles will be burned following the oak restoration under the guidance of the Oregon Department of Forestry.

19. Are there threats to any of the Conservation Values or other attributes of the Conservation Easement (e.g., boundary issues)? If so, what are the plans to abate those threats?

The primary threat to this habitat is through woody encroachment by Douglas-fir due to lack of management and fire suppression (Figure 8). Greenbelt purchased Mulkey Ridge Forest with the expressed intent of restoring oak and prairie habitat. Greenbelt plans to conduct extensive habitat restoration over the upcoming years, with an emphasis on fir removal, oak thinning, invasive species control, and revegetation with native species. The primary driver behind these restoration activities is to support the recovery of rare prairie dependent species, including the federally endangered Fender's blue butterfly. The other major threat to this property is the persistence of false-brome. When Greenbelt purchased the property, approximately 90% of the understory was covered in false-brome (>150 acres). Over the past three years Greenbelt has conducted herbicide (glyphosate) treatments to reduce that total cover to less than 10%. We will continue to use herbicides to control this invasive species prior to and following forestry operations. Since there are at least 20,000 acres of false-brome directly adjacent to the property, we will never eradicate this species, but we will prioritize higher quality prairie habitat to focus our control efforts.

Greenbelt hired a land surveyor to survey the property and mark boundaries prior to acquisition. While Greenbelt property borders Mulkey Ridge Forest to the east and Benton County to the west, there are private residential properties to the south, and a privately held forest property to the north. Minor encroachments were discovered along the southern boundary that were left to resolve after the acquisition. One neighbor has removed a wood pile and a corner of a wood shed that encroached the property. Greenbelt is working with another neighbor on a fence encroachment and plans to grant a license to the current owner to allow the fence to remain until it is no longer functional or needed, at which point it would be removed. Greenbelt monitors the boundaries annually, and no new encroachments have been identified since acquisition.

C. Goals, Objectives and Actions (Questions 20-26)

20. Describe the present and desired future condition and/or abundance for each habitat type and/or target species (e.g., now a degraded farm field, later will be a high value oak savannah). Describe the overarching goals, objectives (using **SMART** criteria; Specific, Measureable, Achievable, Relevant, Time-specific), and the actions you plan to take to achieve your goals and

objectives. Provide an expected timeframe in which these actions will be executed. Include O&M and restoration activities and timelines for each planned activity. Indicate with an * if stewardship funds will be used to execute the activity.

Greenbelt's overarching vision is to advance regional plant and wildlife goals by restoring oak and prairie habitat by removing encroaching Douglas-fir and extensively revegetating the understory with high value native wildflowers and grasses. The proximity to extensive prairie habitat that supports a number of endangered species at Bald Hill Farm to the east and Fitton Green Natural Area to the west makes this a text book restoration project. The current conditions on Mulkey Ridge are drastically different from what occurred here as little as 85 years ago (see Map 6). The open prairies and savanna are almost all lost and the site is currently 99% forested. Since our most endangered habitat in western Oregon is upland prairie, Greenbelt plans to reclaim the overgrown prairies and convert dense oak woodlands into savanna habitat. Central to this effort is a region-wide goal of recovering the federally endangered Fender's blue butterfly. The USFWS recovery plan highlights the importance of connecting the disjunct populations in the Cardwell Hills with the population at Greenbelt's Lupine Meadows. Greenbelt developed a coordinated plan named the ButterFlyWay, whose goal is to connect those genetically isolated populations of Fender's blue butterflies by restoring prairie habitat across Bald Hill Farm and through Mulkey Forest Ridge (Map 4). That will be accomplished by cutting the rapidly encroaching fir from a number of remnant prairies along the southern half of the property and re-establishing prairie wildflowers through extensive seeding and plug planting. Benton County is planning a forest thinning on Fitton Green in 2021 to meet similar objectives, while oak savanna restoration on neighboring Crestmont Land Trust in Wren has been underway for the past five years. In addition, the Institute for Applied Ecology is working on a regional Kincaid's Lupine and Fender's blue butterfly recovery project, with an emphasis on the Bald Hill Farm / Cardwell Hill connection. This has been a strategic conservation goal for the past twenty years and we are so excited that BPA is supporting this effort.

In the forested portions of the property there are three distinct forest types, oak woodland, fir-oak forest, and riparian forest. Greenbelt's vision is to preserve the oak woodland by removing most of the fir trees that are actively shading and killing the oaks (Figure 2, Map 8). Secondly, in the fir-oak forest where the oaks have mostly died and been replaced by the firs, we plan to locate and release the last remaining legacy oaks that are still alive. In addition, small pockets of uniform firs will be cut to promote an uneven aged stand using a variable retention strategy. No significant management will occur in the riparian zone since it appears relatively stable. While significant management will occur across much of the property, the vast majority of oaks will remain untouched and serve as a refuge for wildlife, epiphytic mosses and lichens.

Following the restoration project we anticipate open oak woodlands to be the dominant habitat type, with an uneven aged fir forest on the upper slopes, and a meandering network of interconnected prairies brimming with wildflowers on the lower slope. Map 9 more clearly shows the location of the proposed fir removal. This is a "leaf off" map, or an aerial picture taken in winter, such that the firs dramatically stand-out. For planning purposes it is easy to see where we can create prairie and savanna habitat by removing almost all of the fir. In areas where firs are the dominant species and the oaks have already been killed by shading, we propose to retain the fir forest, but we will remove patches and re-plant in order to create an uneven aged

stand. In areas that are mostly oak, with an occasional fir, we will remove the fir and promote oak woodland before the firs kill the oaks. These decisions are based on the premise that prairie, oak savanna, and oak woodland are all threatened habitat types in need of restoration.

Greenbelt is proposing to build a gravel road that will traverse the property east to west. Habitat restoration cannot occur without a road and early successional habitats such as prairies require annual management and hence the need for safe equipment access. A road analysis is included in section 31.

Public outreach is a major aspect of this project and is central to its overall success. Our outreach work at Bald Hill Farm proved invaluable in elevating public support for a number of other oak projects in the region. In addition, the trail system through Mulkey Ridge Forest is popular with recreationists and serves as an excellent opportunity to engage with the public about forest stewardship.

Consider the following strategy when developing each GOAL. Objectives should be SMART. Goals should address each management component to ensure the values identified in the Conservation Easement are sustained or improved. Components typically include focus habitats and species, invasive species management, hydrology, public access, monitoring, etc.

- **Goals** should be included to state **generally** what is trying to be achieved;
 - a. **Objectives** should state **specifically** what is trying to be achieved;
 - i. **Strategies** state how, **generally**, objectives will be achieved;
 - 1. **Actions** state how, **specifically**, the strategy will be implemented.

Goal 1: Convert 97 acres of mixed oak and fir forest into 65 acres of oak woodland and 28 acres of savanna/OCS grassland (described in Goal 3).

Objective 1: Release oaks from competition from conifer and hardwood trees on 65 acres while enhancing snag and down wood attributes (2021).

Action 1.1- Remove 95% of Douglas-fir trees and maple from the designated oak-fir stands in mid-summer.

Action 1.2- Retain or create up to two conifer snags per acre for wildlife habitat.

Action 1.3 – Retain three logs per acre over ten inches in diameter and 12 feet in length for soil development and wildlife habitat.

Action 1.4 – Retain occasional Douglas-fir, Oregon ash and bigleaf maple if not competing directly with oak. Determination of the individual trees retained will occur during the harvest layout.

Action 1.5 – Pile, cover, and burn logging slash.

Action 1.6 – Thin young oaks to a maximum density of 40 trees per acre, retaining trees with the largest and healthiest crowns. A range of age classes will be retained to allow for future stand development.

Objective 2: Reduce invasive plants to less than 5% cover throughout the oak-fir stands before, during, and after removal of conifers (2021-2023).

Action 2.1-Treat false brome with glyphosate prior to conifer removal to prevent spread of false brome within stands.

Action 2.2 - Cut conifer saplings and seedlings with logging equipment during conifer removal.

Action 2.3 - In subsequent years remove regenerating conifer saplings and seedlings with loppers, chainsaws, or skid steer.

Action 2.4 - Monitor and treat additional invasive plants with herbicide (glyphosate or triclopyr), including English hawthorn, English holly, English ivy, and exotic blackberries for the first two years after harvest and every five years following.

Objective 3: Revegetate all disturbed areas following removal of conifers (2021).

Action 3.1- Broadcast shade-tolerant native grass seed on disturbed ground.

Goal 2: Manage Fir-Oak habitat for uneven aged conifer forest and pockets of legacy oaks on 48 Acres.

Objective 1: Promote growth, longevity and development of multiple sizes classes, multiple age classes (cohorts) and multiple canopy layers of fir-oak habitats (2021-2023).

Action 1.1- Thin conifers in summer months to reduce competition and promote growth and canopy development of residual conifers and oaks.

Action 1.2- Create gap openings 3-5 acres in size to establish young forest. Plant and establish Douglas-fir and a diversity of other suitable native shrubs in gap openings.

Action 1.3- Retain at least 5% of pre-harvest basal area to serve as biological legacies for the future stand.

Action 1.4 – Retain a buffer of at least 100 feet of intact forest between harvest openings greater than 2 acres.

Action 1.5 - Retain at least two snags per acre, or designate trees for snag creation following harvesting.

Action 1.6 – Retain three logs per acre over ten inches in diameter and 12 feet in length for soil development and wildlife habitat.

Action 1.7 – Retain some untreated areas as a “control” stand.

Action 1.8 – Retain oaks, wherever possible and remove conifers around viable legacy oaks.

Objective 2: Reduce invasive plants throughout the fir-oak stands before, during, and after removal of conifers (2020-2023).

Action 2.1-Treat false brome with glyphosate prior to overstory conifer removal to prevent spread of false brome within stands. Target of less than 10% cover.
Action 2.2 - Monitor and treat additional invasive plants such as English hawthorn, English holly, English ivy, and exotic blackberries (triclopyr). Target of less than 10% cover.

Objective 3: Revegetate disturbed areas following removal of conifers (2021-2022).

Action 3.1- Broadcast shade-tolerant native grass seed on disturbed ground.

Goal 3: Restore remnant grassland habitat on 11 acres and convert 28 acres of oak-fir to grassland/savanna habitat for a total of 39 grassland acres.

Objective 1 – Remove all conifers and select oak trees as described in Goals 2 and 3 and other woody shrubs or trees across 39 acres (2021-2022).

Action 1.1- Minimize disturbance to native forbs and sensitive soils within prairie habitat.

Action 1.2 – Remove all non-native woody species such as cherry and hawthorn with chainsaws and treat stumps with triclopyr to prevent re-sprout.

Action 1.3 – Grind stumps flush with the soil surface to allow mowing.

Action 1.4 – Treat cut stumps with triclopyr the year following harvest.

Objective 2 – Control non-native grasses and introduced forbs outside of grassland bird nesting season (2021-2022).

Action 2.1 – Mow prairie habitat to facilitate botanical surveys and improved efficacy of herbicide treatments.

Action 2.2 – Survey prairies for high-value native forbs.

Action 2.3 – Spray non-native grasses and introduced forbs with glyphosate.

Objective 3 – Establish native prairie wildflowers and grasses that support pollinators.

Action 3.1 – Broadcast seed pollinator specific wildflowers and low statured native grasses as well as plant plugs of slow growing species.

Goal 4: Maintain designated riparian habitat in current condition on 14 acres.

Objective 1 – Retain all existing vegetation on 14 Acres (2021-2022 and ongoing) and serve as a refuge for wildlife during restoration phase.

Action 1.1 - Exclude equipment operation and maintain a 100-foot buffer on riparian zone.

Goal 5: Provide management access for restoration, maintenance, and monitoring.

Objective 1 – Construct and maintain a gravel road to be used exclusively by GLT for long term management of the property to provide three-season vehicle access for invasive species treatments, habitat restoration, maintenance, monitoring, and wildfire response (2020-2021).

Action 1.1- Construct 3,309 feet of road and connect to the existing road on Bald Hill Farm.

Action 1.2- Maintain hydrological integrity by installing ditches, water bars and stream crossings (see Map 11).

Action 1.3 – Design and construct culverts to pass 50-year peak flow.

Action 1.4 – Provide for fish passage at designated crossing structures despite the fact that ODFW states that fish use ends below these crossings.

Action 1.5- Minimize soil erosion by gravelling the road for spring and fall use and seeding cut and fill slopes with native grasses.

Action 1.6 – Use straw bales or sediment traps to prevent sediment from reaching stream.

Action 1.7*- Monitor roads annually for proper function and maintain as needed (annually).

Action 1.8*- If the road is not needed in the future it will be decommissioned (decompact road surface, install water bars, seed with native grasses).

Action 1.9 – Maintain existing locked gate at Oak Creek Drive at Bald Hill Farm which is the only inlet / outlet of the road.

Action 1.10 – Maintain existing signs on Bald Hill Farm stating “No Public Access” on gravel road.

Objective 2 – Construct and rehabilitate temporary skid roads to be used for habitat restoration (2020-2023).

Action 2.1- Construct 3,519 feet of dirt surfaced road using pre-existing prism of skid roads where practical in the late spring or early fall when there is sufficient soil moisture.

Action 2.2- Minimize soil erosion by seeding road bed before the winter and seeding cut and fills.

Action 2.3- Maintain hydrological integrity by installing ditches, water bars and stream crossings.

Action 2.4- Decommission temporary roads when restoration is completed (decompact road surface, install water bars, seed with native grasses to create at least 50% native cover).

Goal 6: Provide public access and trails for non-motorized recreation on a 1.1 mile gravel trail connecting Bald Hill Farm with Fitton Green Natural Area (ongoing).

Objective 1 –Promote public access that protects conservation values.

Action 1.1- Attend meetings and develop maintenance plans with City and County partners.

Action 1.2- Conduct regular trail maintenance with volunteers and staff. Activities include adding gravel, controlling trail-side weeds, removing hazard trees, cleaning culverts, and addressing erosion issues.

Action 1.3- Produce outreach materials and trail-side interpretive signs that communicate a conservation message and trail etiquette to recreationists.

Action 1.4- Install up to three benches and construct up to 150 feet of gravel trail to connect existing trail to the benches in a yet to be determined location.

Objective 2 –Develop feasibility study to extend the existing hiking trail to connect with the management road in the next ten years.

Action 2.1- Install trail counters to determine number of people using trail system.

Action 2.2 – Coordinate with BPA prior to initiating study in order to determine compatibility with existing CE.

Goal 7: Develop community support for the restoration project (2020-2022).

Objective 1 – Hold a neighborhood meeting with adjacent landowners to discuss restoration project and listen to their thoughts and concerns.

Action 1.1- Develop a communication strategy.

Action 1.2- Produce outreach materials.

Action 1.3- Meet with neighbors and answer questions throughout the duration of the project.

Action 1.4- Respond to concerns and/or update plans as necessary.

Objective 2 – Communicate with trail users, Greenbelt members and the public.

Action 2.1- Share outreach materials on trail signs, through Greenbelt newsletters and through other public media.

Action 2.2- Lead interpretive walks for the public before and after project.

Action 2.3- Answer community questions throughout the duration of the project.

21. Briefly provide details regarding past and planned future restoration funding efforts (i.e., to whom, for what, when, success rate, etc.)? To whom do you plan to apply to in the future (e.g., OWEB, PCSRF)? If this is a management plan update, provide funding information (as described above) for the duration of the last plan to present.

Greenbelt has leveraged hundreds of thousands of dollars in grant funding from NRCS and OWEB in 2017 to restore oak woodland and prairie habitats. The funded project is widely supported and will implement the goals outlined in this LMP. Greenbelt completed nearly

identical work on the adjacent Bald Hill Farm property between 2015 and 2018 (Figure 4 & 9). That forest thinning project has been publically lauded as an exemplary demonstration of how selective logging can promote conservation of threatened oak habitat. The Bureau of Land Management, NRCS, USFWS, and the Willamette Valley Oak and Prairie Cooperative Working Group have all requested tours for their leadership teams to see a successful large-scale oak and prairie project. Multiple subsequent oak thinning projects completed by partners have benefitted from the foundation that was built at Bald Hill Farm. The funding Greenbelt has secured for the Mulkey Ridge Forest exhibits the broad support for our restoration project and the regional commitment to oak and prairie management.

22. Are parts or all of the property historically, currently, or planned to be enrolled in other conservation programs (e.g., CRP, WHIP, USFWS Partners)?

Greenbelt will enroll this property in the USFWS Partners for Fish and Wildlife Program. The USFWS is a key partner with Greenbelt and we have enrolled nearly all of our properties into this collaborative partnership.

Greenbelt has enrolled in two Environmental Quality Incentive Program (EQIP) contracts with the NRCS to provide cost share funding and technical advice to restore the oak habitats on Mulkey Ridge Forest, also described in questions 7 and 21.

23. Describe the evaluation criteria or monitoring techniques that you will use to determine progress toward desired future conditions. Include timelines.

Goal 1: Restore and manage oak woodland habitat on 102.3 acres.

Conduct aerial photo analysis to calculate canopy cover of forest types before and one year after treatment.

Document snag and woody debris retention targets were achieved. Fall 2021.

Survey annually for invasive plants in a systematic fashion. Populations of invasives will be mapped and location will be determined with GPS. This information will then be used for rapid response actions while weed populations are small and control is practical.

Document estimated cover in revegetation zones in the first summer after seeding.

Conduct breeding bird surveys by habitat type to document bird species using the property. Pretreatment surveys were conducted in 2018 and will continue periodically post treatment as funding allows.

Goal 2: Enhance and Manage Fir-Oak Habitat on 48.6 Acres.

Same as Goal 1, but these habitats are more stable and will be assessed on a five year cycle.

Goal 3: Restore grassland habitat on 11 acres and convert 28 acres of oak-fir and fir-oak to grassland habitat (for 39 total acres).

Monitor and treat re-sprouting stumps and all non-native woody species in grasslands once a year.

Visually inspect effectiveness of non-native grass and broadleaf weed control during first two years. Conduct herbicide treatments if non-natives exceed 5% total cover (glyphosate or triclopyr).

Visually inspect establishment of native species following revegetation after two growing years. If cover is below 50%, consider additional seeding.

Survey for presence of Fender's blue butterfly every five years or annually if detected.

Re-visit bird count stations one year after timber harvest and subsequently every five years.

Goal 4: Maintain riparian habitat in current condition.

Use aerial photos and site visits to check for significant disturbance annually.

Goal 5: Provide management access for restoration, maintenance, and monitoring.

Inspect and repair roads in order to ensure no transport of sediment to waterways.

Inspect culverts for obstructions annually.

Monitor and treat roadsides for introduced plant species annually.

Monitor revegetation of retired skid roads and ensure >50% native cover.

Goal 6: Provide public access and trails for non-motorized recreation on a 1.1 mile gravel trail connecting Bald Hill Farm with Fitton Green Natural Area.

Maintain records of significant public interactions with Volunteer Naturalists. Reviewed as received.

Inspect condition of trails and coordinate with Benton County to make needed repairs.

Monitor for appropriate non-motorized use.

Goal 7: Develop community support for the restoration project.

Compile and respond to neighbor and community comments (on-going).

Lead outreach and educational events at least twice prior to forest operations, once during and once after completion. Replicate the successful model used on the Bald Hill Farm forest stewardship project.

Organizational Monitoring

Greenbelt is a nationally accredited Land Trust and the BPA monitoring is integrated into our existing organization-wide program that is reviewed by the Land Trust Alliance, the commission that sets national standards and practices. Greenbelt conducts compliance monitoring with the CE as part of our fee property monitoring program. Annual monitoring inspections document human caused alterations to the property, natural alterations, description of current land use activities, impacts caused by neighboring properties, presence of boundary markers, and violations of the CE. Summaries of monitoring reports are included in annual reports to BPA.

All records of restoration and management activities will be kept on Greenbelt's Stewardship Database ("Landscape Conservation Software"). A log of site-management activities will contain: dates and objectives of management treatments, maps and descriptions of treatment locations, information on species seeded or planted at the site, including date, number, type, and source of plant materials, and dates and results of monitoring, with evaluation of treatment effects or planting success.

24. List your partners or potential partners for management activities.

Greenbelt Land Trust employs ten full time professional staff. The stewardship staff consists of four biologists with decades of experience managing natural areas. In addition we have a communications team that specializes in community outreach and engagement. Finally, we have a diverse Board of Directors which includes professionals from the College of Forestry at Oregon State University.

Our primary partner on the Mulkey Ridge Forest project is Trout Mountain Forestry (TMF). They are certified by the Forest Stewardship Council (FSC), an independent organization that sets regional, national, and global standards under which forests and companies are certified as sustainable. Those standards are described in the 2009 Manual of FSC Principles and Criteria for Forest Stewardship, <https://fsc.org/en/document-centre/documents/resource/392> (accessed 8/27/2020). FSC's standards address environmental, social, and economic issues, and its certification system is widely recognized as the most credible one in the world. TMF is subject to annual audits and periodic monitoring of certified properties to ensure that the requirements for responsible forest management are being followed.

Greenbelt also has a close tie with USFWS Partners for Fish and Wildlife. Greenbelt will enter into a "Partners" agreement on this property which will enable USFWS resources to be used to support ongoing restoration activities. The USFWS regularly conducts habitat management activities such as mowing, seeding and equipment work on other Greenbelt properties. The

USFWS also provides critical technical assistance by providing professional advice on habitat management decisions and technical aspects of restoration projects.

Greenbelt has 25 Volunteer Naturalists and Stewards that are involved in various activities on Mulkey Ridge Forest and Bald Hill Farm. In the past, volunteers have removed old fencing, manually controlled weeds, and planted native wildflowers in restoration zones. Volunteers will continue to be involved on Mulkey Ridge Forest and Greenbelt is expanding the program specifically to support the upcoming restoration work.

A number of organizations have provided critical support for ecological monitoring as well as management suggestions. Their contributions include bird surveys, botanical inventories, invertebrate studies, and amphibian and reptile monitoring. Those partners include experts from the Institute for Applied Ecology, Center for Natural Lands Management, multiple researchers from Oregon State University, and the American Bird Conservancy.

25. Do you have, or do you plan to have, income generating activities occurring on the property? Provide details. If you have, or plan to have, a lessee or other income generating activities occurring on the property (e.g., grazing and agriculture leases, timber harvest, grazing etc.) please describe how the funds will be used. Will administering these activities be a cost to the project? Will there be proceeds?

Habitat restoration may generate income through the removal and sale of timber. Timber Harvest is a Permitted Use as described in section L.1 of the CE. Proceeds from the sale of timber will be used to off-set the costs of the habitat restoration project and if proceeds exceed the expenses, those proceeds may be used for long-term stewardship of the property. Section R of the CE further states that “if proceeds exceed the operations, maintenance, and restoration needs of the Protected Property, the Grantor may use the proceeds on other BPA-funded properties in the Willamette River Basin owned or protected by Grantor, or the Grantor may place the proceeds in its stewardship account for the property and roll the funds over to the next fiscal year until an operations or maintenance need arises.” Timber markets can be highly volatile, so it is not yet known whether the proposed restoration project will generate income or not. Due to the large volume of unmerchantable timber and tight environmental constraints put on the operator to protect natural resources, expenses typically exceed profits in oak release projects. Existing grant funds will be used to bridge the cost of restoration.

Greenbelt conducts an independent annual audit that is publically available to ensure the highest financial standards are being upheld. Greenbelt submits annual reports to BPA that disclose the status of the restricted stewardship account.

26. Are you taking a different restoration and/or management approach than what was outlined in the pre-acquisition discussions (i.e., application or intake call) about the property?

No. Creating and managing prairie and oak savanna habitat for the benefit of declining wildlife species continues to be Greenbelt’s primary objective. Greenbelt’s WWMP application clearly

stated the intent to actively restore prairie and oak savanna habitat through vegetation management in an attempt to link oak savanna and prairie habitat between Fitton Green Natural Area and Bald Hill Farm. Of particular interest to the review team was Greenbelt’s vision of creating a prairie corridor that would connect disjunct populations of Fender’s blue butterfly and open new habitat for Taylor’s checkerspot butterfly. The application also notes the importance of invasive species control, which continues to be a priority.

D. Easement Restrictions and Prohibitions (Items 27-31)

27. Using the table structure below, edit and address each prohibited use identified in your specific conservation easement and explain if there are any desired exceptions to the prohibitions. Exceptions will be permitted only if the purpose of such activity is to enhance or maintain Conservation Values and appropriate prescriptions to offset any undesired conditions are included. Below is an example; you should modify this table for your property (i.e., reflect what is in your easement).

Summary of Easement Prohibitions	Compliance Status
1. Residential, Commercial or Industrial Uses. Any residential, commercial, or industrial uses of the Protected Property is prohibited, including timber harvesting, grazing of livestock, and agricultural production,	Timber harvest for restoration is a Permitted Use per this LMP and CE section L.
2. Construction of Buildings, Facilities, Fences or Other Structures. Construction of new buildings, facilities, fences or other structures is prohibited. Wildlife friendly fencing may be installed, repaired, maintained or replaced as needed. Repair, maintenance, or replacement of existing buildings, facilities, fences or other structures identified in the Baseline Documentation Report are permitted at the same location and within the existing footprint of such structures.	None planned.
3. Utilities. Except as provided for in Section J.2, the installation or relocation of new public or private utilities, including electric, telephone, or other communications services is prohibited without the written approval of BPA. Existing utilities on, over, or under the Protected Property may be maintained, repaired, removed or replaced at their current location as that location is documented in the Baseline Documentation	None planned.

Report.	
4. Signs. Except for no trespassing signs, boundary signs, directional signs, condition of access to Protected Property sign, memorial plaques, trail interpretive signs, for sale signs, signs identifying the owner of the Protected Property, and signs that may be erected by the Grantee identifying the Purpose of the Protected Property, all other signs, advertisements, and billboards of any nature are prohibited. The permitted signs may not exceed 15 square feet in size.	Interpretive signs for habitat restoration activities may be posted along recreational trail. Signs marking the trail were installed prior to the CE.
5. Waste. Dumping, collecting, recycling, accumulating, or storing of trash, refuse, waste, sewage, bio-solids, or other debris is prohibited.	None planned.
6. Mining. The exploration, development, mining or extraction of soil, sand, loam, gravel, mineral, oil, gas, or other substance from the surface or subsurface of the Protected Property is prohibited.	None planned.
7. Topography. Altering the existing topography of the Protected Property by digging, plowing, disking, or otherwise disturbing the surface or subsurface is prohibited, except as allowed for trail development or forest management or habitat restoration/management activities described in the agreed to Management Plan.	The proposed management road will alter topography, as will future trail maintenance or construction as permitted in CE sections L.2, L.3(c)
8. Watercourses/Wetlands. Draining, dredging, channeling, filling, leveling, pumping, diking, impounding or any other alteration of any watercourses, ponds, seeps, bogs, springs, wetlands, or any seasonally wet area is prohibited, as is altering or tampering with existing water control structures or devices, except as allowed by trail development or forest management or habitat restoration/management activities described in the agreed to Management Plan.	Culverts designed to handle 50-year peak flows will be installed in association with the proposed management road as permitted in CE section L.3(c)
9. Vegetation. The cutting, trimming, shaping, killing, or removal of any native vegetation from the Protected Property.	Removal of select native vegetation for restoration per this LMP and CE section L.1 Permitted Uses, Timber Harvest and L.3. Permitted Uses, Habitat Restoration and Maintenance.

<p>10. Exotic Species. The introduction, cultivation, or use of exotic plant or animal species on the Protected Property is prohibited. Exotic plants include non-native invasive plant species.</p>	<p>None Planned.</p>
<p>11. Roads and Impervious Surfaces. Construction of new roads and paving of any existing road not paved or otherwise covered in an impervious material as of the Effective Date is prohibited.</p>	<p>Construction of a management road for restoration, maintenance, and monitoring as per this LMP and CE section L.1 and L.3(c)- Permitted Uses, Habitat Restoration and Maintenance, “Grantor may install a management road made of pervious material to access the property for restoration, maintenance and monitoring.” And “Grantor may install temporary skid roads to perform timber harvests.”</p>
<p>12. Vehicle Use. The use of motorized vehicles is prohibited, except as necessary to carry out activities agreed to by the Grantee such as for trail development, forest management, or habitat restoration/management activities, or for limited, de-minimus, non-commercial recreational uses such as hunting or bird watching if those activities are agreed to uses in the Management Plan.</p>	<p>Vehicles are allowed per CE section L.2(c) and L.3(c) and needed per this LMP for restoration, maintenance, and management, and for monitoring of wildlife, habitats, vegetation, trail systems, roads, boundaries, trespass, encroachment, or enforcement.</p>
<p>13. Subdivision. The legal or “de facto” division, subdivision or partitioning of the Protected Property is prohibited.</p>	<p>None planned.</p>
<p>14. Grant of Rights. The granting of any property interest or rights in the Protected Property, including easements, permits, licenses, and leases, without the prior written consent of the Grantee is prohibited, except for trail easements permitted in the Permitted Uses Section.</p>	<p>Grant of revocable license to abutting landowner to allow a fence encroachment until fence is no longer functional or needed or owner transfers ownership of property.</p>

28. Are there any environmental regulations influencing your actions (e.g., Endangered Species Act, National Historic Preservation Act, Clean Water Act, etc.)?

Because the property is forested many activities are regulated by ODF under the Oregon Forest Practices Act. Permits are needed from ODF for management activities such as timber harvest, vegetation management, road building, or operation of motor driven equipment during fire season. Endangered species located on the property may be regulated by the Section 6 of

Endangered Species Act. We intend to enroll the property in the USFWS Partners for Fish and Wildlife Program which will assist with compliance with the Endangered Species Act.

29. If agriculture/livestock grazing/forestry were permitted as a temporary stabilization or restoration measure, describe the phase-out plan. Provide timing and details. Please append a grazing/timber management plan and describe how this activity will enhance the Conservation Values of the property.

Timber harvest is a permitted use in section L.1. of the CE for restoration or enhancement of conservation values. Trout Mountain Forestry developed a Forest Stewardship Plan for Mulkey Ridge Forest in 2017. The goal of the plan was to describe the resources that occur on the property and outline stand-specific management recommendations. This comprehensive plan includes a timber inventory and proposes harvest levels designed specifically to support restoration of oak savanna habitat and sensitive wildlife species. BPA and ODFW reviewed this timber plan and provided comments to Greenbelt. Trout Mountain later revised the plan for the first draft of this LMP. Greenbelt incorporated the goals and objectives to the updated Forest Stewardship Plan following additional meetings and comments from BPA and ODFW. At this point the Forest Stewardship Plan is outdated, due to the discussions and multiple revisions that came out of the management planning review process. Greenbelt proposes to use the specific acreages outlined in this LMP as described in the Goals section. The Forest Stewardship Plan provides technical silvicultural terms and metrics geared towards professionals in the forestry field. This LMP puts those terms in a more readable format. An operations plan will be developed once a contract is awarded to the logging operator.

30. Please describe any actions you have taken or foresee needing to take to protect property from harm (e.g., trespass, illegal camping, etc.)?

Greenbelt conducts annual monitoring visits across all properties in our ownership. We follow the Land Trust Alliance protocol to document the visit and any observed unauthorized uses. Two minor encroachments along property boundaries have been detected. One was resolved when the neighboring landowner removed a wood pile that had been placed over the property boundary. The other involves a fence that is located several feet onto the property. Greenbelt would like to resolve this by granting a revocable license to allow the fence to remain until it is no longer needed or no longer serviceable. Greenbelt staff has met in person or communicated with all of the neighboring landowners to Mulkey Forest Ridge. We plan to hold neighbor meetings prior to implementing the forest restoration project. These meetings also allow us to discuss potential problems with respect to trespass, dumping, etc. The Mulkey Ridge trail is clearly marked and posted restrictions are signed. The maintenance road on Bald Hill Farm that is proposed to connect to Mulkey is locked with a gate and signed “no public access”. Greenbelt’s Volunteer Stewards monitor the trail on a nearly daily basis and report any issues to staff.

31. Is there any other information you would like to include that hasn't been adequately addressed above?

Greenbelt has never had income generation as a primary goal for Mulkey Forest Ridge. Greenbelt's goal has always been to restore oak and prairie habitat for the benefit of rare and endangered species. While it is true that income will be generated by selling timber from the restoration project, for many reasons, oak restoration projects typically lose money despite the sale of merchantable timber. All of the money generated from this timber harvest will go back into managing and restoring the Mulkey Forest Ridge property, as required by the CE. These projects are extremely expensive to undertake and we are proud to have secured over \$400,000 in outside grant funding to complete the vision.

There are two reasons why Greenbelt proposes to re-plant Douglas-fir in areas that were harvested. First, we are adding uneven aged stand characteristics into a forest that is a heterogeneous, single age-class. Second, Douglas-fir is well adapted to these sites and will presumably continue to do so without requiring large amounts of management. Greenbelt is not planting Douglas fir in order to continually manage these stands for revenue. We are creating a diverse fir forest with multiple species of shrubs and understory species, not a plantation. When a stand is thinned at year 20 to improve forest structure, it is called a "pre-commercial" thin. That means the smaller trees that are cut are not sold to a mill and don't generate income. It does not necessarily mean that a commercial harvest needs to follow. Stands are typically overplanted at year zero to compensate for all sorts of mortality risk. Ecologists would want to do a "pre-commercial" thin in order to create more complex open canopies, which support more wildlife. We could call these "non-commercial" thinning projects to avoid confusion on income generation. Finally, we use a "timber cruise" to gather information about a forest. It is a standardized way for people to communicate about species composition, structure, and volume. Conducting a timber cruise can be useful for many other reasons other than planning a timber harvest.

The immediate need for building a road is to allow for an ecologically based timber harvest to protect the oak habitat. Following the creation of prairie and oak savanna habitat, Greenbelt will require a maintenance road for long-term management of this early successional habitat type. The CE specifically addresses roads in the following sections: K.11, L.1, and L.3(c). After listening to ODFW and BPA's comments regarding road construction, Greenbelt paid a contractor to propose three additional road alternatives to address reviewers' concerns about potential impacts to the property's conservation values.

The information below details our decision making process for selecting the preferred alternative and responds to specific reviewer comments.

Table 2. Attributes of three road alternatives compared to original proposal from 2017.

Road Alternatives	Total Length	New Construction	Reconstruction (historic roads)	Trail to Road Conversion
Original Road	9,651'	4,199'	4,887'	565'
Alt. #1- Increased Wetland Buffer, Preferred Alternative	7,393'	3,309'	3,519'	565'
Alt. #2- Tie to BHF Upper Road	6,788'	1,531'	3,650'	1,607'
Alt. #3- Trail/Road Dual Use	7,696'	1,643'	3,477'	2,576'

Alternative #1 is the preferred alternative (Map 11). It reduces the total road length to 3,309 feet by 1.) shortening the western terminus and abandoning the final 700 feet of the road, and 2.) cutting across the slope to increase the riparian zone buffer but thereby increases the cut into the slope, increases the road grade, and increases the amount of soil removed. Alternative #2 connects through the north side of Bald Hill Farm, converts 1,607 feet of a hiking trail into a road, and reactivates an additional 3,650 feet of retired road (Map 12). The combined total road length is estimated to be 6,788 feet. Finally, Alternative #3 also connects on the northern side of the property and creates 1,643 linear feet of new road, reactivates 3,477 feet of retired roads, and converts 2,576 feet of hiking trails, for a total length of 7,696 feet (Map 13).

All roads would have a 12-foot wide travel surface and a 20-foot wide brushed right of way.

habitat loss

The preferred alternative road would result in 3,309 linear feet of new roadway. Additionally, retired skid roads and trails would be reactivated to connect to the new road to create a total road length of 7,393 feet. The roadbed measures 12 feet across, so there will be a total of 88,716 square feet of road surface, or 2.04 acres. We believe that the ecological benefits associated with our proposed habitat restoration on nearly 170 acres far and away dwarf any negative effects associated with 2.04 acres of road conversion. Without active restoration this property will convert to a Douglas-fir forest in about 25 years. Most of the Conservations Values outlined in the Conservation Easement will be lost. What Mulkey Ridge Forest offers is an exceptional opportunity to bridge two fragmented anchor prairie regions (Wren / Bald Hill) for the benefit of a diverse suite of special status species. Taking no action results in the continued expansion of generalist species and a fortification of the fragmented landscape, thus ensuring genetic isolation and the continued downward spiral of our most threatened and endangered species. Greenbelt believes that endangered species recovery requires active habitat management and that management requires a road, despite some associated impacts.

noise (as it relates to roads) and increased traffic

During the forest harvest, there will be approximately six log trucks traveling on the haul road each day. Truck noise increases with road elevation since engine breaking on slopes is the biggest contributor to noise. The loudest road would be Alternative #2 and #3 due to greater elevational changes. The quietest road would be the original road, followed by Alternative #1, since these roads involve the least change in elevation. Following timber operations, Greenbelt estimates we will use the road with a light duty truck or ATV about ten times a year. We don't

consider that a significant source of noise pollution. Without a road we will not be able to effectively maintain restored prairie habitat. Crossing off-camber slopes with herbicide spraying equipment is possible, but not time efficient nor is it the safest option for staff, contractors, or the environment in the event of a spill.

public access

No public access is currently planned for the proposed road. Following rehab and retirement of skid roads, there will be no physical connection between the hiking trail and the road. The start of the road at Bald Hill Farm is marked with multiple signs that state “no public access”. Alternative #2 and #3 would convert between 1,607 to 2,576 feet of trail into road. While the trail will be closed to the public during the forestry operation, Greenbelt will still require access to the restored prairies for annual maintenance. This means that trail users and equipment operators will need to use the same road, thus increasing the potential for conflict, dangerous interactions, and wasted time and money managing closures and public safety.

vehicle mortality

With approximately ten annual trips per year planned for this road following the initial restoration work, we don't anticipate vehicle traffic will result in significant wildlife mortality. On Bald Hill Farm the speed limit is 10 mph and there have been no reported wildlife run-ins with vehicles.

hydrological changes and topographical changes

The proposed road will not directly cross the designated riparian zone, but will remain on upland soils above the riparian zone. This may appear confusing since there appears to be a skip in the riparian zone above the crossing. This gap is a result of sub-surface flow in the stream and a lens of upland soil that supports oaks and not typical riparian vegetation further down slope. The road will cross six extremely small ephemeral streams (Figure 6) and an additional culvert (#2) will be placed in a depression that is not a stream, but will require additional drainage. Culverts # 8 & 9 are temporary installations and will be removed following logging operations and road rehabilitation. It is unlikely that these ephemeral streams will hold water in their brief lifetime. On a site visit during the rainy season on December 26, 2019 only two of the five streams had running water. Seven total culverts will be installed permanently at crossings and will be sufficiently large to handle a 50-year storm event. Even though these ephemeral streams were determined by ODF to be non-fish bearing, the culverts will be installed in a fashion that will still allow the potential for fish passage and other aquatic organisms. All roads and crossings will be built to Forest Stewardship Council (US) Standards (FSC 2010). For roads between 1 to 10% slope, the minimum buffer is 25 feet (p. 101, FSC 2010). The proposed road exceeded that distance and Alternative #1 exceeds that minimum by an even greater margin. FSC Standards also states that “road and trail construction, are conducted only during periods of weather when soil compaction, rutting, surface erosion, or sediment transport into streams and other bodies of water can be adequately controlled. Soils should be dry enough or frozen to minimize disturbance and compaction (p. 41, FSC 2010). If Alternative #2 or #3 is selected, there would be additional culverts required since some of the smaller streams merge lower on the slope. Overall the impact to water resources is considered minimal when compared with the benefits associated with restoring the oak and prairie habitat. Greenbelt anticipates minimal use of the

road during the wettest part of the year which is the most common period for contaminants or sediment to be mobilized and transported to waterways.

erosion

Under this road plan all unneeded roads, landings, and skid trails will be closed and rehabilitated (de-compacted and revegetated). The preferred road is located at the toe of the slopes which results in the lowest overall grades and is less susceptible to erosion than all of the Alternatives, but especially #2 and #3. From an operations standpoint, it is preferable to move logs down-hill since this has the least impact to the soil. Dragging logs uphill creates significantly more erosion since the equipment is fighting gravity and needs to work harder to go uphill, thus digging deeper into the soil. It is therefore preferable from an erosion perspective to locate the road on the bottom end of the unit.

invasive species

Roads are known to serve as travel corridors for non-native species. This road will be no different, but important details need to be considered. First off, when Greenbelt purchased the Mulkey Ridge Forest, invasive false-brome covered 90% of the total ground area. While there are a few pockets of native plants that persist, the ecological reality is that the understory is already a near monoculture of invasive species. The roadside itself is not the problem, in fact, the road is the only way we will even begin to manage this highly invasive species. While we have treated nearly 150 acres of false-brome over the past 3 years, it was twice as expensive and with hindsight, unsafe to do that work without a road. Greenbelt simply will not be able to conduct weed control on this inaccessible property without a road. Roadside weed control efforts already occur regularly on neighboring Bald Hill Farm and will easily be extended to Mulkey Ridge.

road conclusion

After considering all of the different options, Greenbelt selected Alternative #1, the preferred alternative. Alternatives 2 and 3 were rejected due to the following issues: greater total distance of roads, greater soil impacts, significant impact on scenic and recreational resources, loss of public support, greater future conflict between trail users and managers during long-term habitat management phase, and more costly rehabilitation post timber operations. Alternative #1 avoids most potential conflict between trail users and land managers by keeping the road away from the trail. The added stream buffer will reduce the potential for sedimentation into waterways. Greenbelt anticipates minimal use of the road during the wettest part of the year which is the most common period for contaminants or sediment to be mobilized and transported to waterways.

The final alternative would be to take no-action with respect to road building. However, the Technical Review Team based their funding recommendation with the understanding that Greenbelt would actively restore oak and prairie habitat on this degraded site. Achieving habitat goals for oak and prairie requires the use of logging equipment, which in-turn necessarily requires a road. Greenbelt will continue to use this road for habitat management activities since prairie habitats require annual maintenance. In addition, attempting to access distant portions of the property without a road is a health and safety issue, since the likelihood of spilling chemicals or turning over an ATV is greatly increased when traveling off-road on steep slopes.

References

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Oregon Conservation Strategy. 2016. Oregon Department of Fish and Wildlife, Salem, Oregon.

U.S. Fish and Wildlife Service. 2010. Recovery Plan for the Prairie Species of Western Oregon and Southwestern Washington. U.S. Fish and Wildlife Service, Portland, Oregon. xi + 241 pp.



Figure 1. Photo of Douglas-fir encroachment on legacy oak and prairie habitat.



Figure 2. Legacy oaks die when they are shaded-out by competing Douglas-fir trees.



Figure 3. Riparian zone showing overstory of ash and bigleaf maple, with a relatively sparse understory of sword fern and introduced false-brome.



Figure 4. The Mulkey Ridge Forest is dominated by Douglas-fir as seen at the top of the picture, while the prized oak savanna on Bald Hill Farm in the middle of the photo had similar conditions prior to removing fir trees in 2015.



Figure 5. Kincaid's lupine is a federally threatened species found growing in the southeast corner of Mulkey Ridge Forest.



Figure 6. One of the ephemeral waterways with typical winter flows measuring less than a foot in width. Photo taken on 12/26/2019. This is crossing #1 for the proposed road.



Figure 7. A view of the Mulkey Ridge trail. The tread is approximately three feet wide and composed of 3/4 inch minus gravel. Volunteers maintain the trail and interact with visitors.



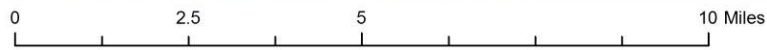
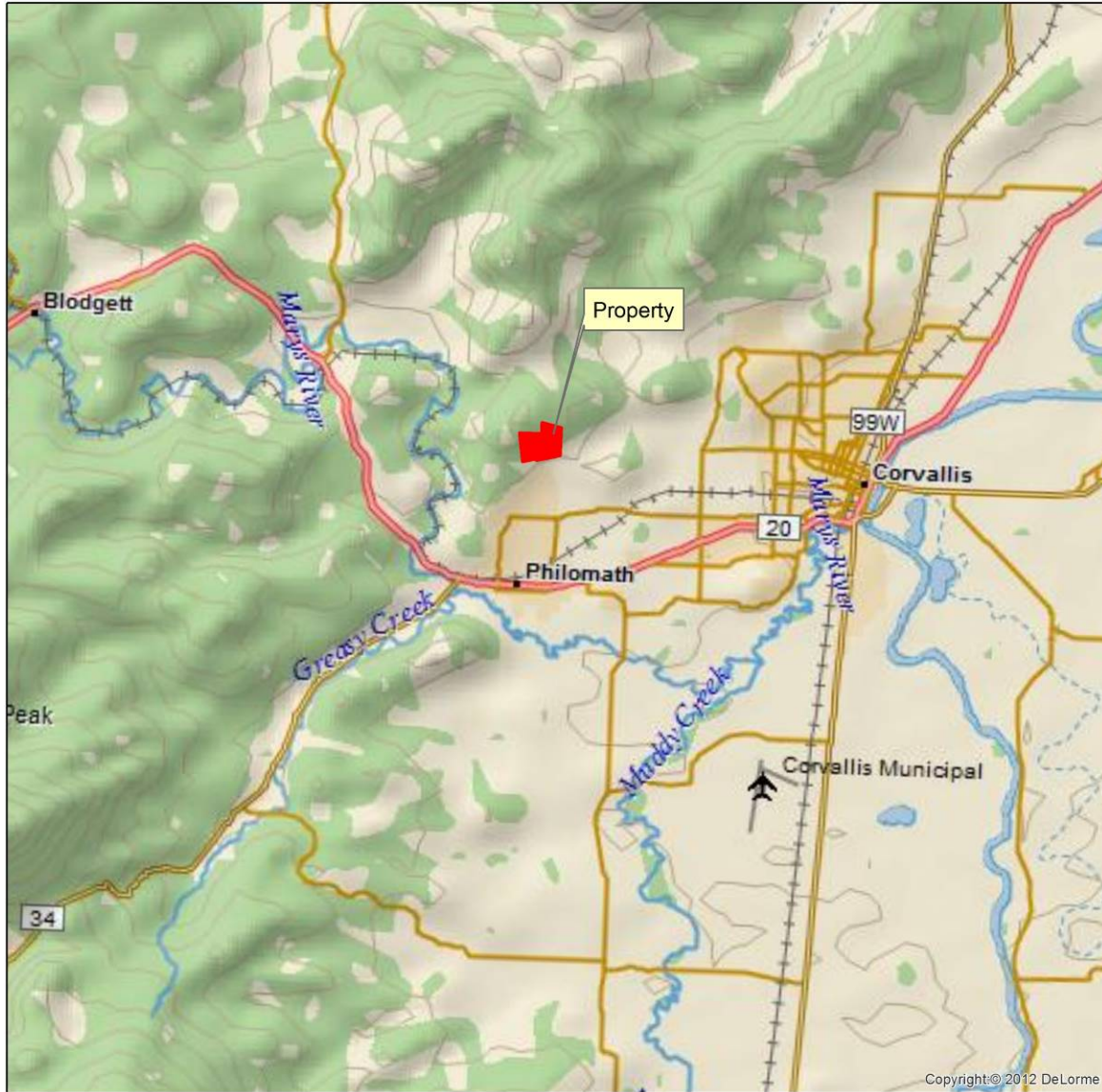
Figure 8. Rapid expansion by Douglas-fir has converted prairie habitat to forest habitat.



Figure 9. Greenbelt completed a similar project to restore oak and prairie habitat on the adjacent Bald Hill Farm, with very similar starting conditions. This photo was taken two years after forest thinning occurred. Oak and prairie species quickly colonized the newly restored habitat.

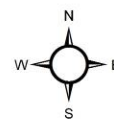
APPENDIX A: MAPS

Location Mulkey Ridge Forest

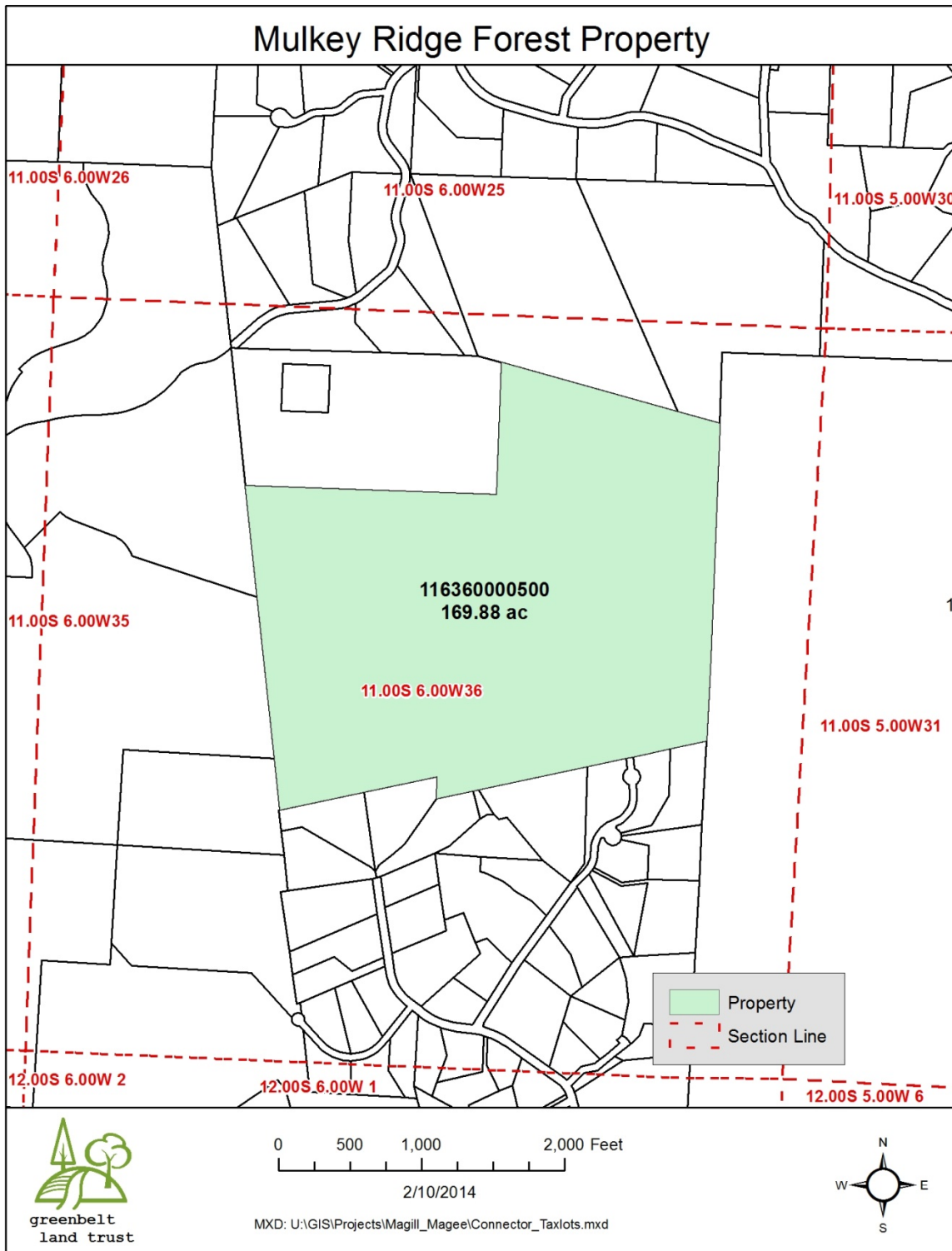


Basemap: DeLorme World Basemap
5/7/2015

Map by Greenbelt Land Trust
MXD: U:\GIS\Projects\MulkeyForestRidge\Baseline\Location.mxd



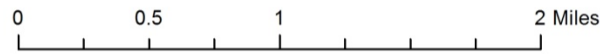
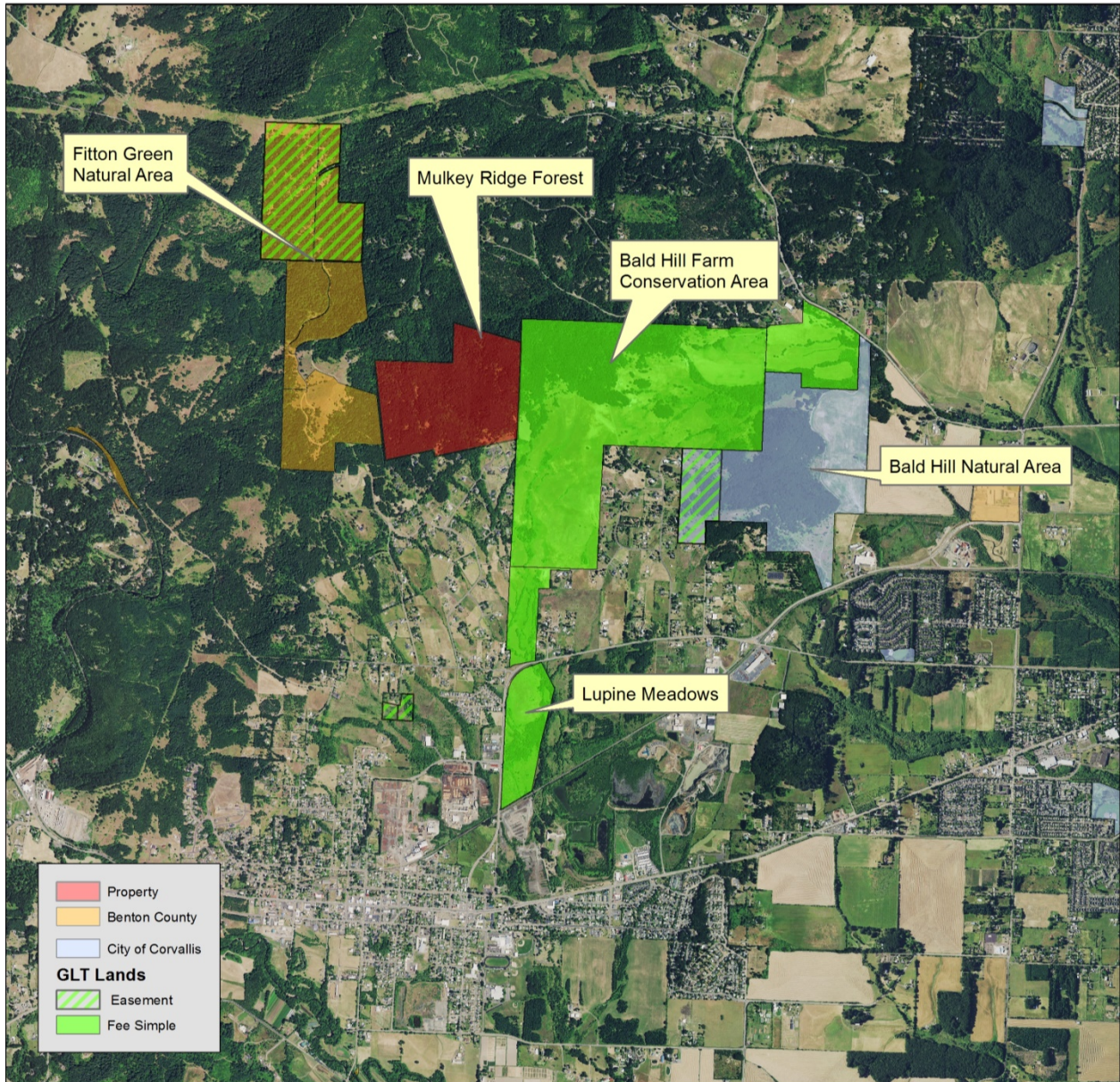
Map 1. The Mulkey Ridge Forest is located in Benton County, Oregon, due north of the town of Philomath.



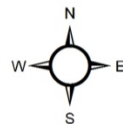
Map 2. The Mulkey Ridge Forest tax lot, acreage, Township, Range, and Section. The property was acquired by Greenbelt on September 10, 2015 and is referenced as tract #WILWF-WL-29.

Conservation Landscape

Mulkey Ridge Forest



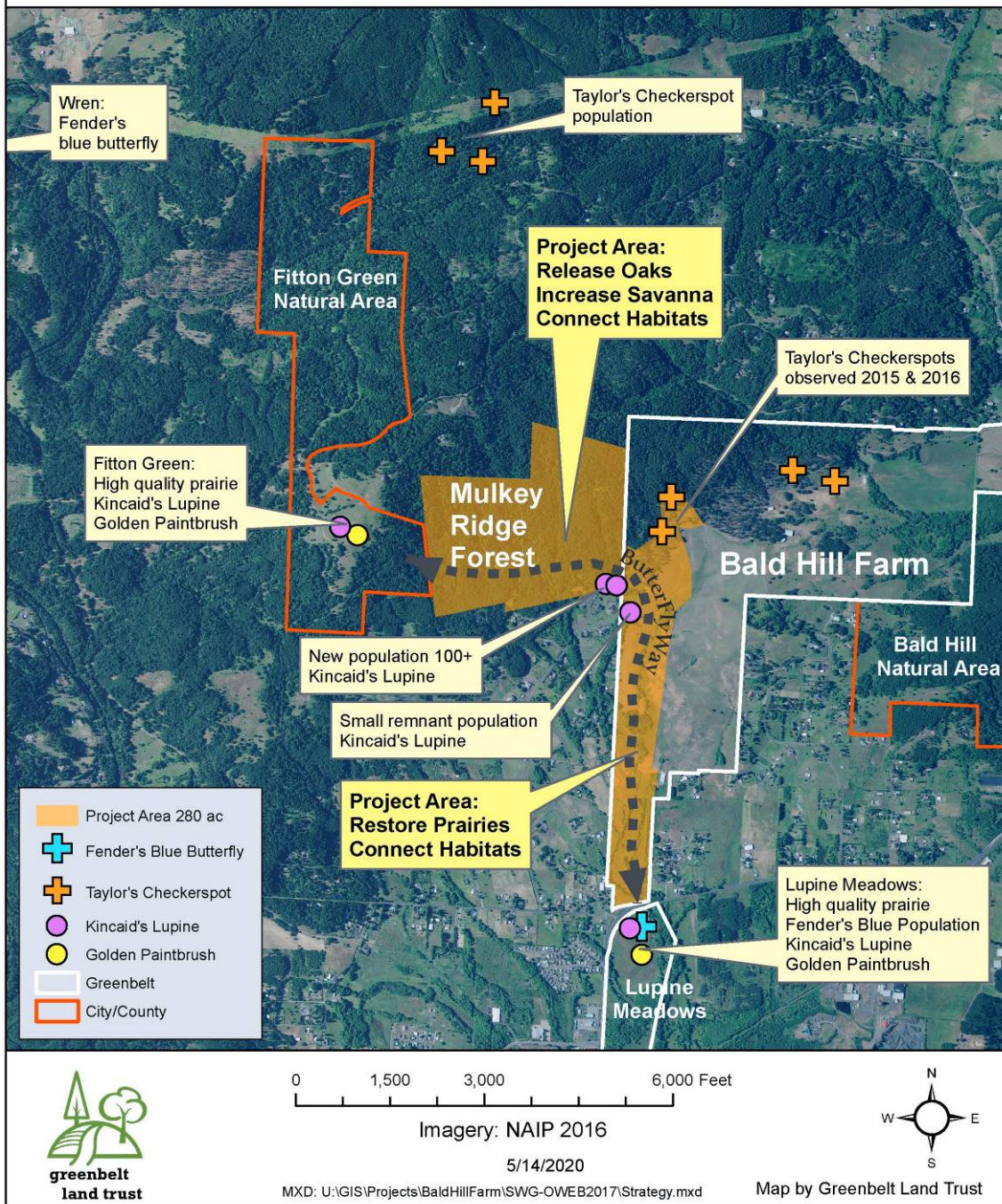
Imagery: NAIP 2014
2/24/2015



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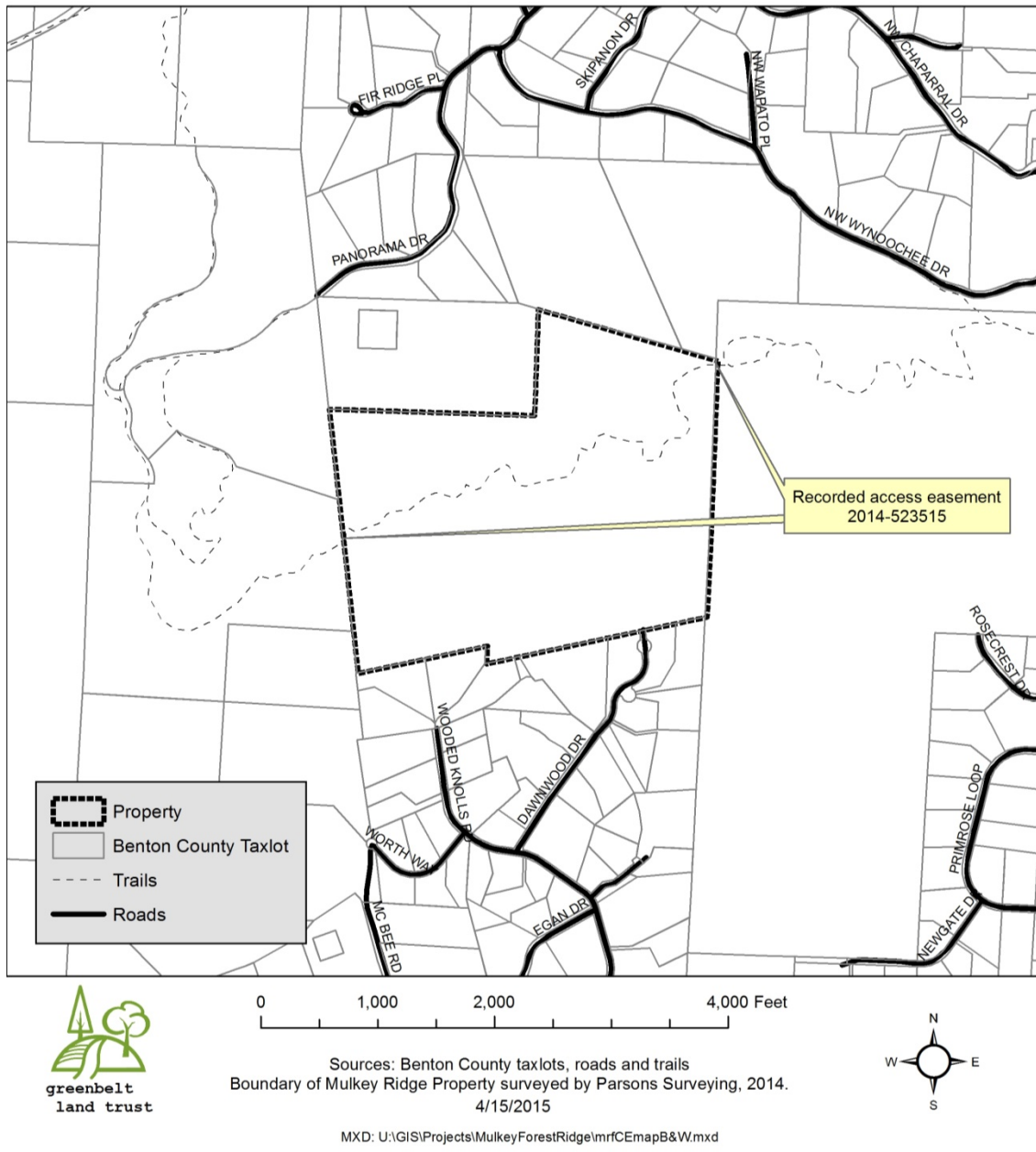
Map 3. The geographic context of Mulkey Ridge Forest in relation to other significant Conservation Areas.

Restoration Strategy



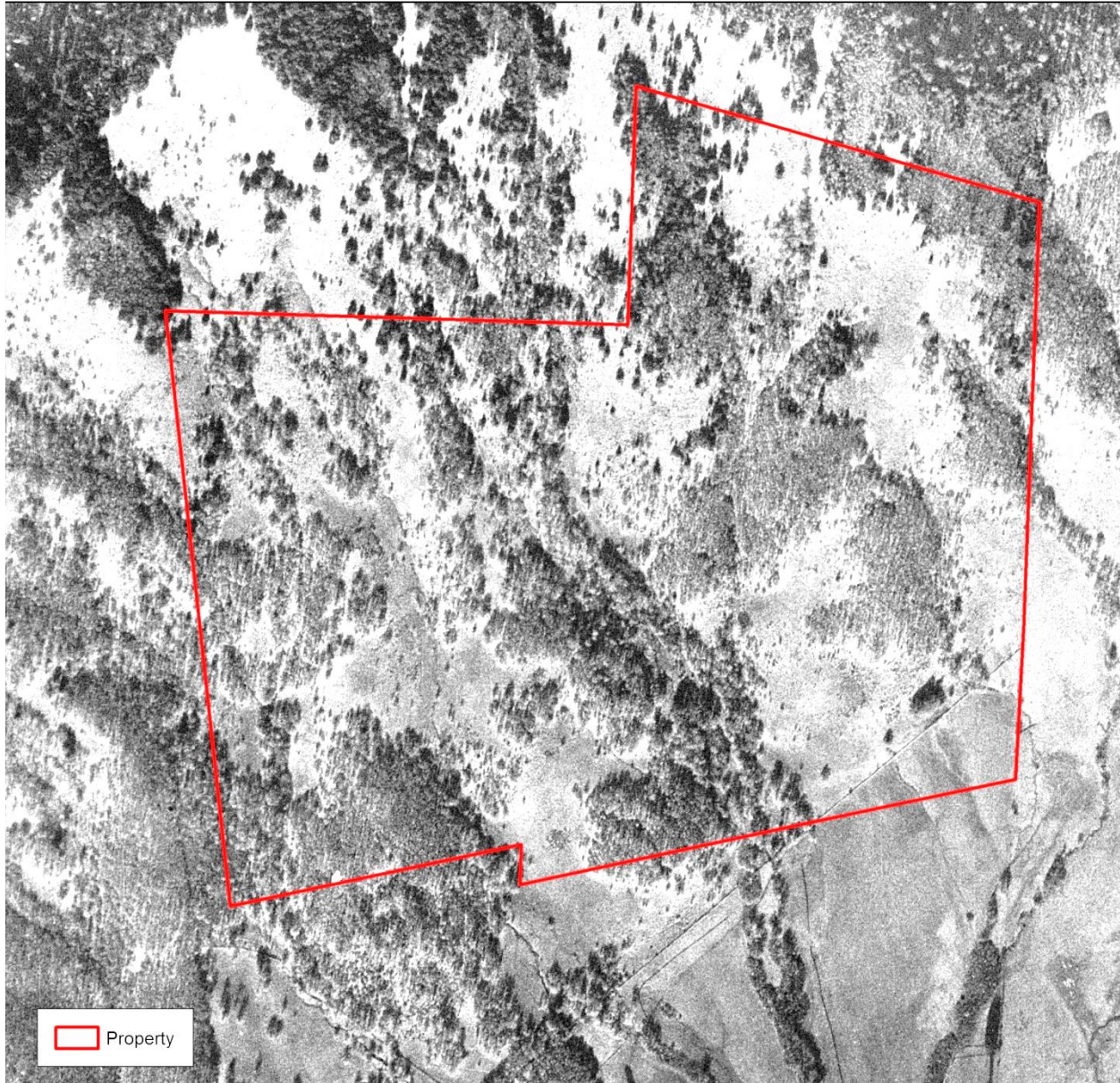
Map 4. The Mulkey Ridge Forest is considered the linchpin that connects two priority conservation areas as outlined in Benton County’s Habitat Conservation Plan. The general location of endangered species are highlighted and the arrows indicate vital pathways for gene flow in Greenbelt’s ButterFlyWay initiative.

Map of Mulkey Ridge Forest Property



Map 5. Trail access easement on Mulkey Ridge Forest as recorded with Benton County prior to Greenbelt’s acquisition and BPA’s CE.

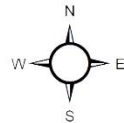
1936
Mulkey Ridge Forest



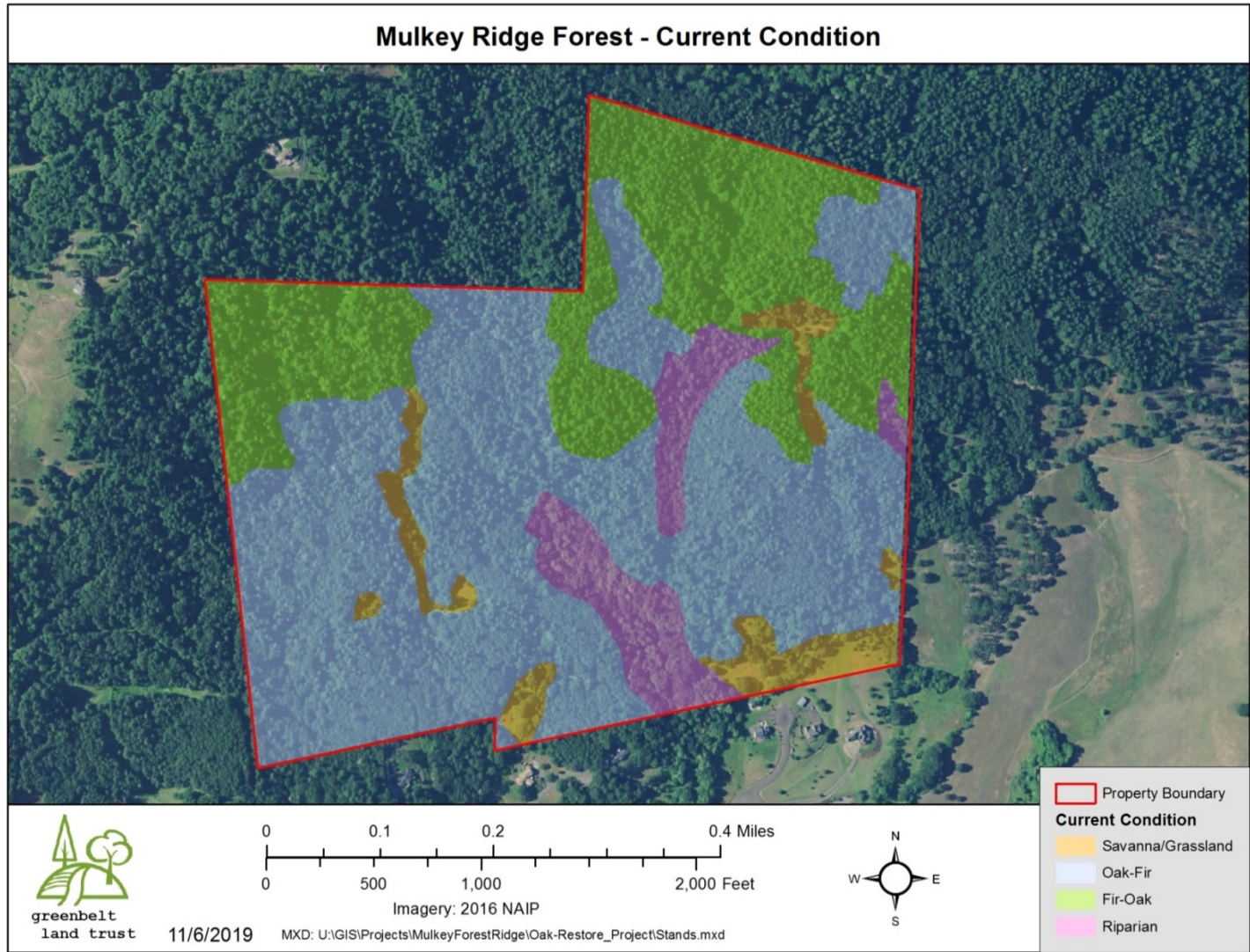
0 500 1,000 2,000 Feet

Imagery: 1936 U.S. Army Corps of Engineers
2/24/2015

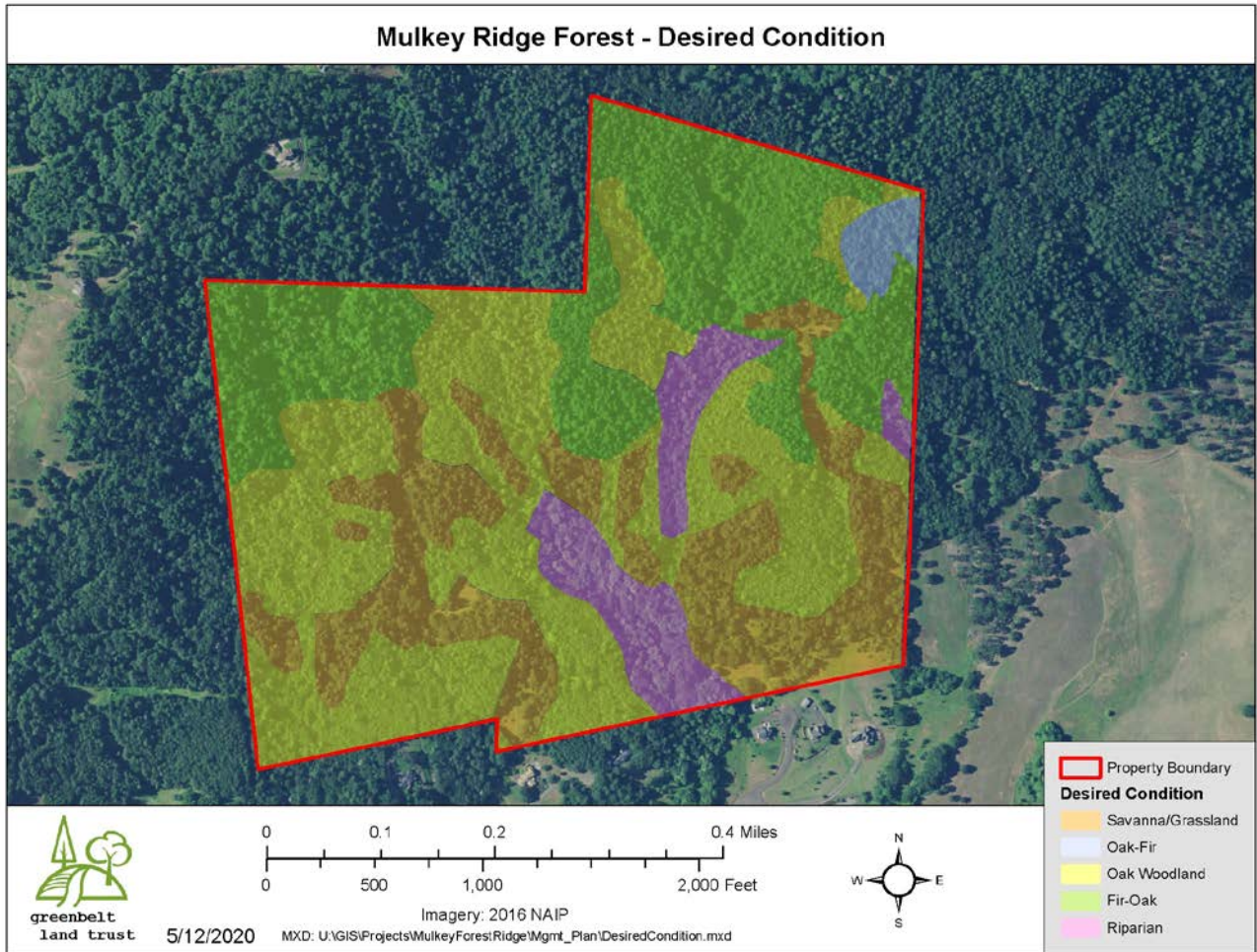
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Map 6. Aerial photo from 1936 illustrating the extensive prairie habitat that once dominated the site, but still much more forested than what would have occurred pre-settlement.

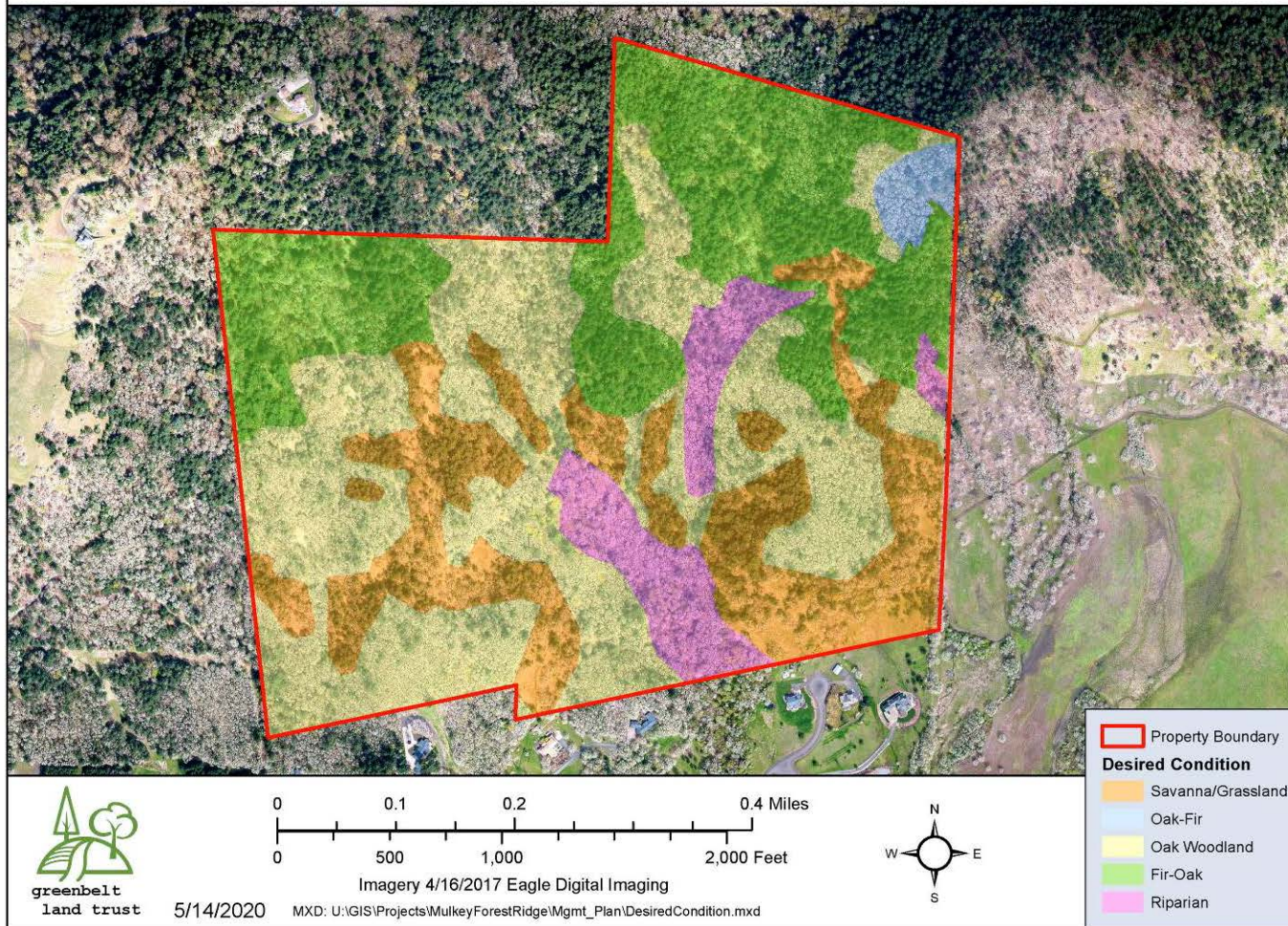


Map 7. Current habitat types on Mulkey Ridge Forest as of 2016. Currently the habitat is classified as follows: Fir-Oak (green/48 acres), Oak-fir (blue/97 acres), Savanna / grassland (yellow/11 acres), and Riparian (purple/14 acres).



Map 8. Desired future habitat types following oak and prairie restoration. The total acreage of riparian forest (purple / 14 acres), fir-oak (dark green / 48 acres), and oak-fir (blue / 3 acres), will remain unchanged, but timber harvest will occur in the fir-oak, thus altering the density and structure of this habitat type. On 97 acres of oak woodland (light green), most firs are removed, leaving 65 acres to remain as oak woodland, and 28 acres are converted to savanna, adding to the existing 11 acres of savanna/grassland (brown) for a total of 39 acres.

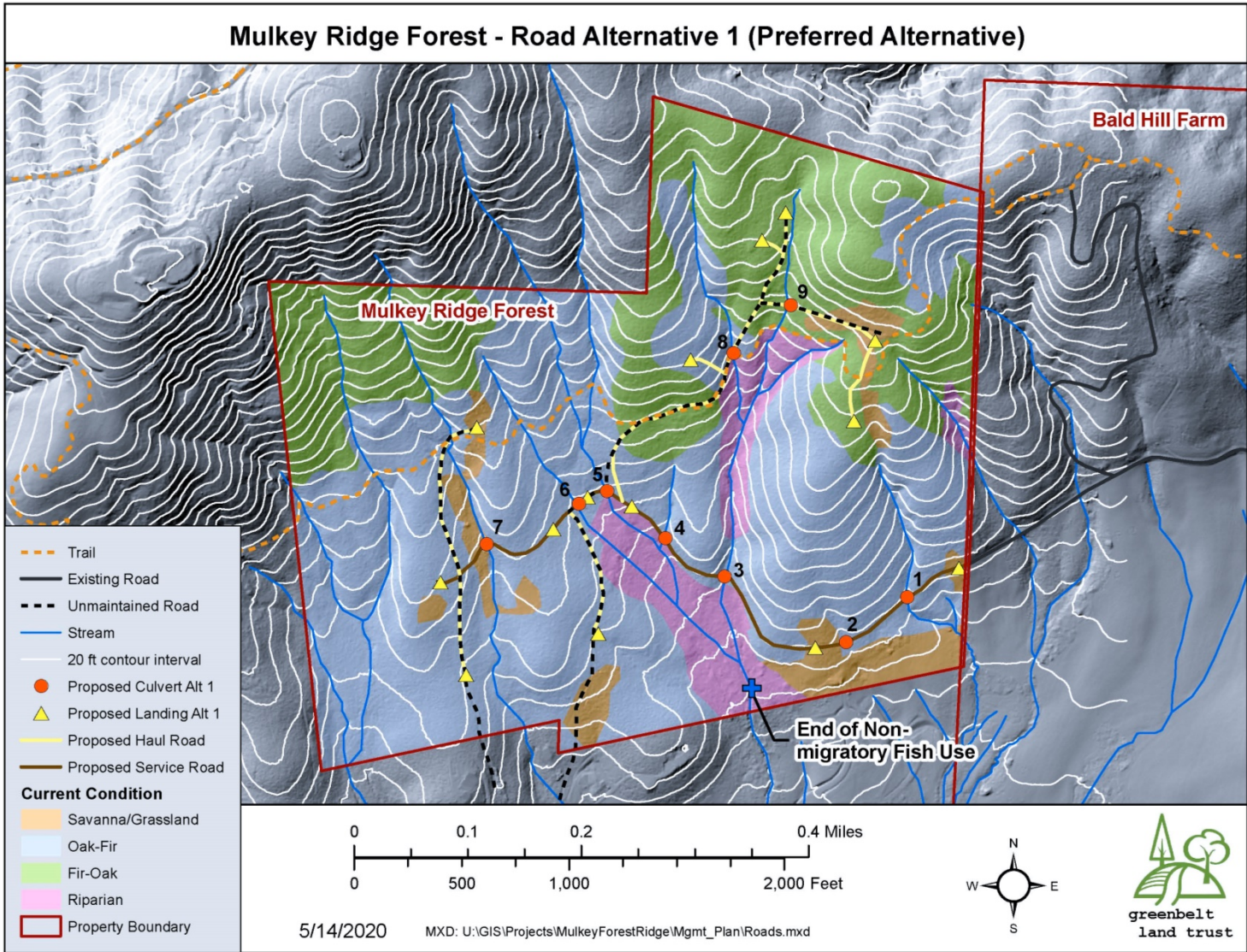
Mulkey Ridge Forest - Desired Condition - Leaf-off Aerial Photo



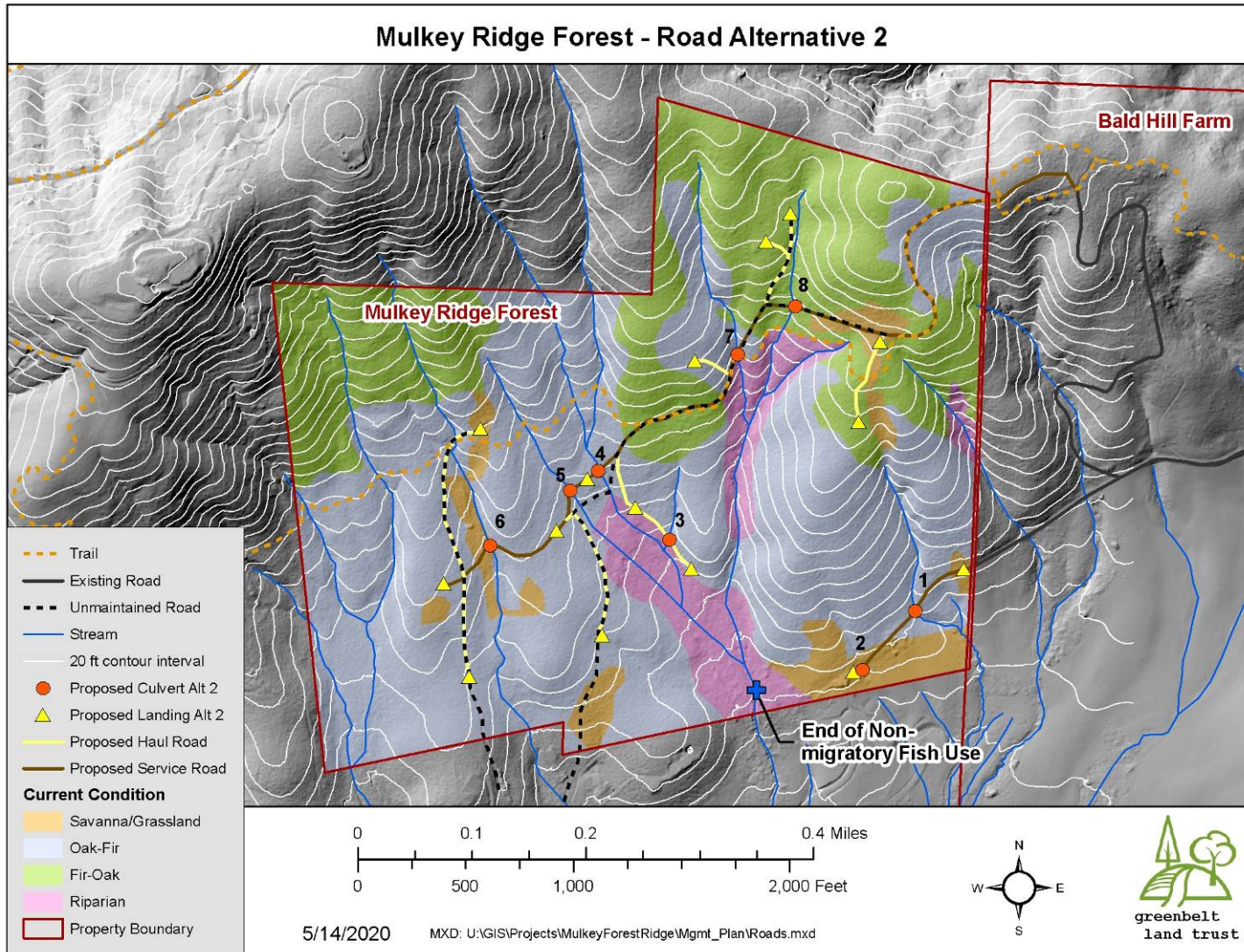
Map 9. This “leaf off” image may be the most helpful map for readers since it illustrates where the conifers are present. No harvest will occur in the riparian zone and most of the conifers in the green fir-oak type will remain, besides a few patch cuts. The most dramatic change will occur in the orange savanna zone where all conifers will be removed. The light yellow oak woodland shows that most of the stand is still oak, but the scattered firs throughout will be removed. The forest to the east shows a similar project 2-years after completion.



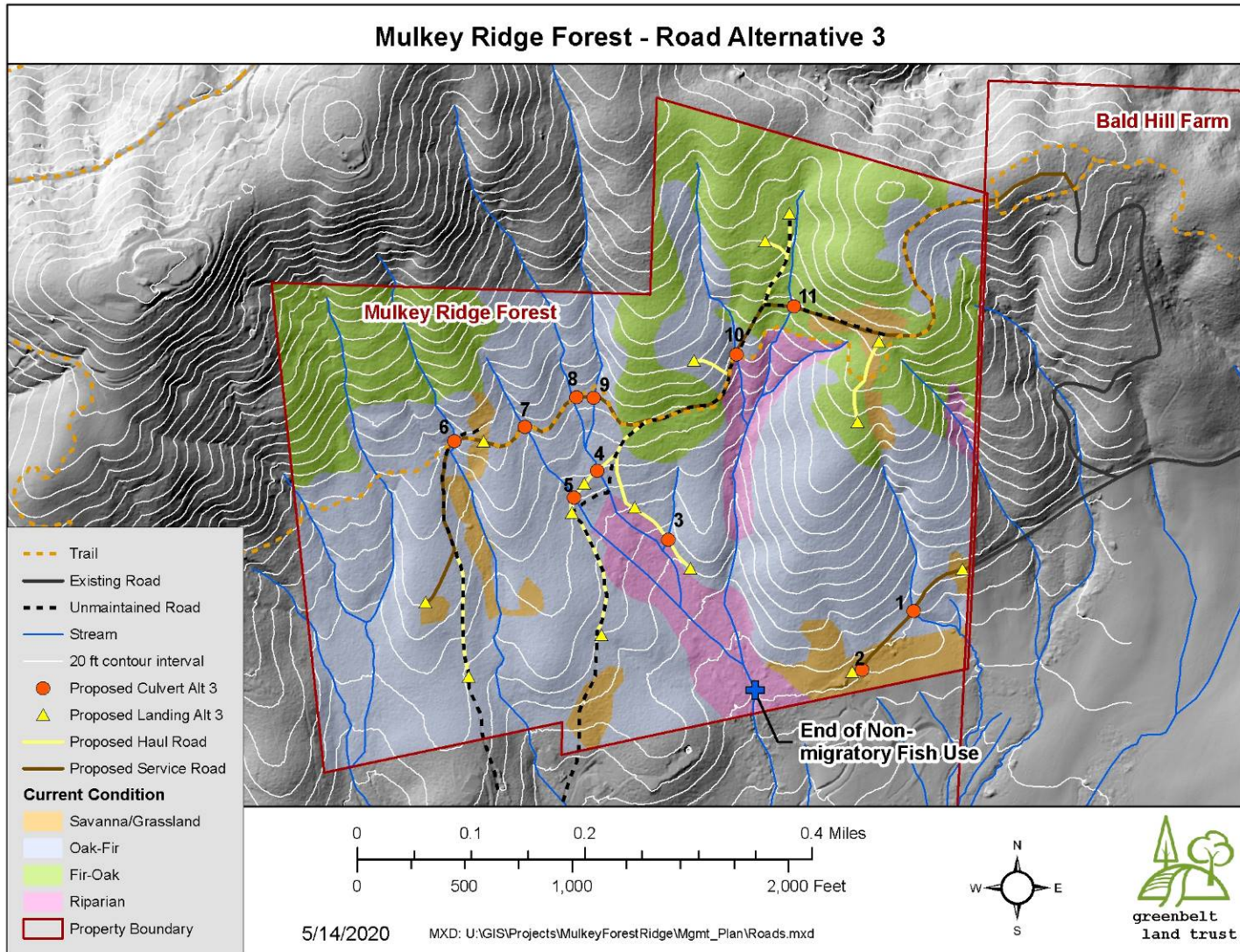
Map 10. Point count station locations for bird monitoring.



Map 11. Preferred road alternative. Culverts 8 & 9 are temporary and would remain in place for less than a year. This road makes the most sense for long-term management of oak and prairie habitat and has the least amount of impacts during the timber operation phase.



Map 12. Road alternative 2.



Map 13. Road alternative 3.

Appendix B

Fish Passage Evaluation Mulkey Ridge Corvallis Notes by Karen Hans

Mulkey Ridge Oak Release Project is proposed for the Mulkey Ridge property owned by Green Belt Land Trust (GBLT). Mulkey Ridge was purchased by GBLT with funds from Willamette Wildlife Mitigation Fund (BPA) and Oregon Watershed Enhancement Board. The proposed project will remove fir trees and non-native vegetation in order to restore historic oak savannah. Timber will be harvested under Oregon Department of Forestry (ODF) rules. The property has several small waterways that converge and eventually become Newton Creek.

In order to facilitate the fir harvest, GBLT proposes to build a temporary and a permanent road on the property. There are six stream crossings on the permanent road and two on the temporary road. GBLT plans to install culverts at these crossing that will meet the ODF standard of passing the 50-year flow event. The temporary road will be used for the harvest activities; it should be installed in May 2021 and decommissioned by October 2021.

ODF surveyed the property and determined fish use ended at the confluence of the largest stream basin on the property (site visit map B). All proposed stream crossings are above the ODF end of fish use. However, ODFW has different criteria for fish use, and, as a conservation property, Mulkey Ridge has different riparian area management objectives that ODF streamside management zones.

On April 30, 2020, I met with Matt Blakely Smith from GBLT to tour the property and evaluate the stream crossing for ODFW's fish passage criteria. Matt explained the creek system on the property was flashy in nature; they respond quickly to rain events then revert to low to no flow in a few days. As evidence of this, in spite of recent rains in the last week, the creeks were running low with many subsurface flow areas in the channels. In general, the creek channels were defined as narrow and shallow with a few areas of pocket water. About 2/3 of the site terrain is steep canyons with 1/3 of area more of a bench. In this bench area, the creeks tend to flow through broader, marshy areas indicating the creeks spread out during flashy flow events.

After walking to the ODF end of fish use site and visiting several of the proposed crossing locations, I agree with the ODF fish use designation. GBLT plans to install culverts that meet the 50 year flow event will allow sediment and small woody debris transport downstream to fish bearing sections of the creek. Based on my evaluation, the creeks on the Mulkey Ridge property are not native migratory fish bearing streams. Therefore, the culverts do not need to meet ODFW fish passage criteria.