



Draft Environmental Assessment

# Central Oregon Wildfire Mitigation Project

Deschutes County, Oregon

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### Acronyms and Abbreviations

APE	Area of Potential Effects
BLM	Bureau of Land Management
CAA	Clean Air Act of 1970
CCS	cryptocrystalline silicate
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO	carbon monoxide
County	Deschutes County
EA	Environmental Assessment
EO	Executive Order
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act of 1973
FEMA	Federal Emergency Management Agency
FONSI	Finding of No Significant Impact
FPPA	Farmland Protection Policy Act of 1981
F.R.	Federal Register
GIS	Geographic Information System
IHMT	Interagency Hazard Mitigation Team
MBTA	Migratory Bird Treaty Act of 1918
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NFPA	National Fire Protection Association
NHPA	National Historic Preservation Act
NO <sub>2</sub>	nitrogen dioxide
NRHP	National Register of Historic Places
O <sub>3</sub>	ozone
ODEQ	Oregon Department of Environmental Quality
ODF	Oregon Department of Forestry
ODFW	Oregon Department of Fish and Wildlife
OEM	Oregon Office of Emergency Management
OHWM	ordinary high water mark

## **Acronyms and Abbreviations**

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Pb	lead
PDM	Pre-Disaster Mitigation
PM <sub>2.5</sub>	particulate matter with a diameter of 2.5 microns or less
PM <sub>10</sub>	particulate matter with a diameter of 10 microns or less
SHPO	State Historic Preservation Officer
SO <sub>2</sub>	sulfur dioxide
TMDL	Total Maximum Daily Load
URS	URS Group, Inc.
U.S.C.	U.S. Code
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
WQMP	Water Quality Management Plan
WUI	wildland-urban interface

### Glossary

**Area of Potential Effects (APE):** Geographic area or areas within which an undertaking may cause changes in the character or use of historic properties, if such properties exist. The APE is influenced by the scale and nature of the undertaking.

**Best Management Practice:** Environmental protective measure for conducting projects in an environmentally responsible manner.

**Crown fire:** Fire that involves the tops of the canopy trees in the forest; can spread rapidly.

**Defensible space:** Clearing between wildland vegetation and structures.

**Extirpated:** Condition of a species that has ceased to exist in a geographic area.

**Fuels reduction:** Removal of excess flammable vegetation through thinning, limbing, or other methods to reduce the potential for severe wildfires.

**Limbing:** Removal of large tree limbs to reduce fuel load and the potential for crown fires.

**Loam:** Well-drained soils composed of sand, silt, and clay in relatively equal proportions.

**Ordinary high water mark (OHWM):** Point on a bank or shore up to which the presence and action of the water leaves a distinct mark by erosion, destruction of terrestrial vegetation, or other easily recognized characteristic.

**Oregon Forestland-Urban Interface Fire Protection Act (Senate Bill 360):** Requires property owners in forestland-urban interface areas that have been identified by county committees to reduce excess vegetation around structures and drives.

**Prescribed burn:** Fire ignited for vegetation management.

**Slash:** Vegetative debris created by property clearing, right-of-way clearing, or forest management activities.

**Suppression:** Response to a wildfire that results in the curtailment of fire spread and elimination of all identified threats from the fire.

**Thinning:** Partial removal of trees, branches, or shrubs from a stand to reduce fuel loads.

**Wildfire:** Unwanted wildland fire.

**Wildland-urban interface:** Line, area, or zone where structures and other human development meet or intermingle with vegetative fuels in wildlands.

**SECTION ONE INTRODUCTION**

Deschutes County, OR, has applied for fiscal year 2010 funding under the Federal Emergency Management Agency (FEMA) Pre-Disaster Mitigation (PDM) grant program for financial assistance for the Central Oregon Wildfire Mitigation Project in Deschutes County (County) (Proposed Action).

The Proposed Action targets the communities of Black Butte Ranch, Central Oregon Irrigation District (COID) Brookwood, DBLT Whychus Creek/Squaw Creek Estates, Deschutes River Woods, DRRH6, Lane Knolls, Panoramic Estates, Skyliners, TNC Stevens Canyon, and Tollgate. “Community” refers to the area surrounding and the residents who live near a natural feature (e.g., Black Butte Ranch) or manmade feature (e.g., COID Brookwood). The 10 communities are all in Deschutes County and are referred to collectively as the project area.

Table 1-1 is a list of the communities that comprise the project area and the number of acres and lots in each community. The locations of the communities are shown in Appendix A, Figures 1 through 11.

**Table 1-1: Acreage and Number of Lots  
in the 10 Communities in the Project Area**

<b>Community</b>	<b>Acres</b>	<b>Lots</b>
Black Butte Ranch	1,624	1,189
COID Brookwood	155	7
DBLT Whychus Creek/ Squaw Creek Estates	527	6
Deschutes River Woods	2,334	1,950
DRRH6	487	404
Lane Knolls	360	64
Panoramic Estates	645	120
Skyliners	76	57
TNC Stevens Canyon	212	1
Tollgate	414	444

The purpose of the PDM grant program is to provide funding for pre-disaster mitigation planning and projects that primarily address natural hazards in States, Territories, and federally recognized Indian Tribes to reduce risks to vulnerable populations and structures while also reducing reliance on funding from actual disaster declarations. The PDM is administered by the Oregon Office of Emergency Management (OEM).

This Environmental Assessment (EA) has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended (42 U.S.C. §§ 4321–4327); the President’s Council on Environmental Quality (CEQ) regulations to

implement NEPA (40 CFR Parts 1500–1508); and FEMA’s regulations implementing NEPA (44 CFR Part 10). FEMA is required to consider potential environmental impacts before funding or approving actions or projects.

The purpose of this EA is to analyze the potential environmental impacts of the Central Oregon Wildfire Mitigation Project. FEMA will use the findings in this EA to determine whether an Environmental Impact Statement is required or a Finding of No Significant Impact (FONSI) should be issued.

### SECTION TWO PURPOSE AND NEED

The objective of the PDM grant program is to reduce overall risks to vulnerable populations and structures, while also reducing reliance on funding from actual disaster declarations. The purpose of the Central Oregon Wildfire Mitigation Project is to help protect residents and firefighters in the project area in the event of a wildfire and to reduce the potential impacts of a catastrophic wildfire in the communities. The need for this action is detailed below.

The 10 project area communities are included in three Wildlife Protection Plans in the County.

- The *Greater Bend Community Wildfire Protection Plan* (Project Wildfire 2011) contains the communities of COID Brookwood in the West Urban Growth Reserve rating area, Deschutes River Woods in the Southwest rating area, Lane Knolls in the Southeast rating area, and Skyliners in the West rating area. All four rating areas and their communities were ranked as the highest priority for fuels reduction in the Wildfire Protection Plan.
- The *Greater Sisters Community Wildfire Protection Plan* (Project Wildfire 2014) contains the communities of Indian Ford Creek which includes Black Butte Ranch and Tollgate and Whychus Canyon which includes DBLT Whychus Creek/Squaw Creek Estates, Panoramic Estates, and TNC Stevens Canyon. Whychus Canyon was ranked as an extreme risk priority community and Indian Ford Creek was ranked as a very high risk priority community.
- The *Upper Deschutes River Coalition Community Wildfire Protection Plan* (Project Wildfire 2013) contains the community of DRRH6, which is located in the larger Foster Road Corridor rating area. DRRH6 was highlighted as the highest priority because of significantly lacking defensible space and fuels reduction on individual lots, many of which are vacant or owned by absentee owners.

The Wildfire Protection Plans assessed the Oregon Department of Forestry (ODF) risk factors, which include ratings for wildfire occurrence (fire occurrence per 1,000 acres per 10 years), hazards (e.g., weather, topography, fuels), protection capabilities (e.g., capacity and resources for fire prevention measures), values protected (e.g., structural density, critical infrastructure), and structural vulnerabilities (likelihood that structures will be destroyed by wildfire). As shown in Table 2-1, the risk assessment ratings vary from low to extreme.

**Table 2-1: Risk Assessment Ratings for Project Area**

Community	Risk Assessment Rating				
	Wildfire risk	Hazards	Protection capabilities	Values protected	Structural vulnerabilities
Black Butte Ranch	High	High	Low	High	Low
COID Brookwood	High	Extreme	Low	High	Low
DBLT Whychus Creek/ Squaw Creek Estates	High	High	Low	High	Low
Deschutes River Woods	High	Extreme	Low	High	Moderate
DRRH6	High	Extreme	Moderate	Low	Moderate
Lane Knolls	High	Extreme	Low	Moderate	Low
Panoramic Estates	High	High	Low	High	Low
Skyliners	High	Extreme	Moderate	Moderate	Moderate
TNC Stevens Canyon	High	High	Low	High	NA
Tollgate	High	High	Low	High	Low

Sources: Project Wildfire (2011, 2013, 2014)

The recommendations to reduce structural vulnerability are listed in Table 2-2.

**Table 2-2: Recommendations to Structural Vulnerability**

Community	Structural Composition	Defensible Space	Signage	Road Access/Condition	Water Supply
Black Butte Ranch	X	X	X	X	
COID Brookwood	X	X		X	
DBLT Whychus Creek/ Squaw Creek Estates	X	X		X	
Deschutes River Woods	X	X	X	X	X
DRRH6					
Lane Knolls	X	X		X	
Panoramic Estates	X	X		X	
Skyliners	X	X	X	X	X
TNC Stevens Canyon	X	X		X	
Tollgate	X	X	X	X	

Sources: Project Wildfire (2011, 2013, 2014)

According to the *Deschutes County Natural Hazards Mitigation Plan* (Deschutes County 2010), the County ranked wildland fire as the top priority for mitigation initiatives with a high probability of occurrence and high vulnerability.

In the past 10 years, approximately 77,249 acres in the County have been burned by wildfire (Deschutes County 2014). Recent fires that occurred within the project area are as follows:

- Within the Greater Bend planning area, in 2003 and 2010, two major fires burned approximately 9,900 acres and threatened the project community of Deschutes River Woods (Project Wildfire 2011). A relatively small fire occurred within the COID Brookwood community in 2013 which threatened homes. In 2014, the Two Bulls Fire received a FEMA declaration and resulted in an extended evacuation of the Skyliners community and the west side of Bend (Deschutes County 2014).
- Within the Greater Sisters planning area, between 2000 and 2013, 12 large fires burned approximately 165,807 acres and threatened residents and prompted evacuations. In 2002, the Cache Fire resulted in the loss of two homes in the Black Butte Ranch community. Fires have also threatened DBLT Whychus Creek/ Squaw Creek Estates, TNC Stevens Canyon, and Tollgate (Project Wildfire 2014).
- Within the Upper Deschutes River Coalition planning area, between 2002 and 2011, 178 fires burned approximately 69,107 acres and threatened the project area community of DRRH6 (Project Wildfire 2013).

In addition to characterizing wildfire risks and prioritizing mitigation, since 2001 when the County was declared a wildfire hazard zone, the County has increasingly required new construction in the Wildland Urban Interface (WUI) incorporate ignition resistant building materials and that defensible space be established and maintained to Oregon Wildland Urban Interface Act of 1997 (Senate Bill 360) standards. Since 2007, new destination resort developments are required to meet Firewise Community standards. And since 2011, those areas in the County with no fire protection service are required to meet Senate Bill 360 standards (Deschutes County 2011). These current requirements do not fully address wildfire vulnerabilities in WUI developments up to these points.

### SECTION THREE ALTERNATIVES

This section discusses the No Action Alternative, the Proposed Action, to which FEMA funding would contribute, and the alternatives that were considered and dismissed.

#### 3.1 NO ACTION ALTERNATIVE

Under the No Action Alternative, no FEMA-funded fuels reduction and mitigation would occur in the project area. The risk of wildfire in the WUI would continue as a result of the existing untended heavy-ladder fuel and poor access for emergency responders. At-risk property owners would continue to implement wildfire mitigation activities on their own initiative, per homeowners insurance or community homeowner association requirements; or as otherwise assisted or required by the County.

#### 3.2 PROPOSED ACTION

The description of the Proposed Action is based primarily on Deschutes County's 2010 PDM grant application for the Proposed Action and the subsequent revisions to the application.

Deschutes County would work with local fire departments, other local emergency service providers, utility districts, and neighborhood homeowner associations to implement the Proposed Action. Implementation would occur over 36 months.

The Proposed Action would consist of the following activities, which would be implemented only for the property owners in the project area who elect to participate:

- Plan, supervise, manage, and administer project activities and funding.
- Develop and adopt program criteria, policies, and operating guidelines.
- Communicate project readiness to property owners and compile a working inventory of participants.
- Conduct assessments of participating properties, determine appropriate treatment strategies, and establish buffers for avoidance areas.
- Hire contractors or use County staff to implement treatment measures where participating property owners need assistance, and to haul and dispose of curbside vegetative debris.
- Inspect treated properties for compliance.
- Administer grant funds, manage matching contributions, and authorize and monitor expenditures.
- Monitor and evaluate program effectiveness and adjust if needed to achieve treatment goals.
- Prepare and submit status reports and communicate project results to OEM.
- Explore ways to make the program self-sustaining over the long term.

The Proposed Action would be implemented according to the Firewise guidelines for defensible space in *Introduction to Firewise Principles* (NFPA 2009). The National Fire Protection Association (NFPA) Firewise program is sponsored by the U.S. Forest Service (USFS), U.S. Department of the Interior, and National Association of State Foresters.

The Firewise guidelines for defensible space (NFPA 2009) include the following:

- Create a defensible space zone with at least a 30-foot radius around a structure's foundation as a primary fuel break. The radius may be expanded to provide additional defensible space around structures on steep slopes.
- Plant grass and small islands of fire-resistant plants in the defensible space.
- Trim trees in the defensible space so the lowest branches are 6 to 10 feet above the ground.
- Space plants in the defensible space so the plants or plant canopies do not touch; use wider spacing along slopes.
- Plant fire- or drought-resistant plants in the defensible space.
- Do not remove all vegetation in the defensible space because doing so can increase soil erosion, especially on sloped areas, which are found in much of the project area.

Appendix A, Figure 12, illustrates the Firewise guidelines, and Figure 13 shows an example of a treated property that was protected from a wildfire.

The County's requirements for fuels reduction projects, intended to mirror Senate Bill 360, are listed in Appendix B, would also be followed as they pertain to vegetation. The requirements also describe a secondary fuel break which would extend an additional 20 to 70 feet depending on the risk classification and the type of roofing on the structure. Examples of the types of vegetation to be treated are ponderosa pines (*Pinus ponderosa*), Douglas firs (*Pseudotsuga menziesii*), lodgepole pines (*Pinus contorta*), junipers (*Juniperus occidentalis*), sagebrush, bitterbrush, and invasive species. Ladder fuels and other biomass would be treated, consistent with the Oregon Forestland-Urban Interface Fire Protection Act (Senate Bill 360), using chainsaws, clippers, brush mowers, and masticators. Vegetative debris would be chipped onsite or hauled away and disposed of at one of the Deschutes County transfer station and recycling centers in Bend, Black Butte Ranch (collection site), La Pine, Redmond, or Sisters. In DBLT Whychus Creek/ Squaw Creek Estates and TNC Stevens Canyon, disposal may also include burning of slash piles.

Limited ground disturbance would occur during fuel-reduction activities. No work would be allowed in wetlands or water bodies. Per ODF water protection rules, vegetation management activities would be restricted within riparian management areas between 10 to 100 feet from a stream's ordinary high water mark (OHWM) depending on the size

of the stream (i.e., small, medium, large) and water classification (i.e., fish use, domestic use, all other streams) (ODF 2014, OAR 629–635). Riparian management area restrictions would include retaining understory vegetation within 10 feet of the OHWM, trees within 20 feet of the OHWM, all trees leaning over a channel, and all downed wood and snags (ODF 2014, OAR 629–640).

Project activities would occur in the project area on properties that were developed prior to the County's pertinent wildfire mitigation codes/ordinances. See Table 1-1 for a list of the acreages and number of lots in the communities that comprise the project area. Although the focus of defensible space activities will be around residential structures, work may also occur in common areas within the target neighborhoods using the same vegetation removal methodology. Furthermore, treatment activities in Brookwood also include creating defensible space along a portion of the COID's irrigation pipe, considered critical infrastructure.

As part of this project, the County anticipates treating a total of about 1,200 acres scattered within these communities. The site assessment and treatment plan would be documented for each participating property using the checklist in Appendix C. Participating property owners would provide personal labor and/or materials and commit to maintain the property's defensible space once established for 5 years.

### **3.3 ALTERNATIVES CONSIDERED AND DISMISSED**

Three alternatives were considered and dismissed.

The first alternative involved more stringent County and community restrictions to control fires and protect residents than the Proposed Action and would consist of restricting development in the WUI, requiring retrofits on existing homes in the WUI to ignition-resistant building materials, and systematically enforcing the County ordinance mandating property in the WUI be maintained to Senate Bill 360 standards. The measures are potentially more intrusive and unenforceable and would require time for government and/or citizen approval and implementation.

The second alternative was the removal of vegetation through prescribed burning, but the risk of an escaped fire would be high considering the treatment objective is to establish defensible space close to existing structures. Multiple burn locations throughout the project area would be required to effectively manage fuel loads. Prescribed burning is most effective in areas with existing light fuel loads and few structures. The risk to the residual forest increases the heavier the fuel load or the higher the elevations. This alternative was dismissed because it was considered too dangerous.

The third alternative was the replacement of flammable structural materials with fire-resistant materials. This alternative would not address the lack of defensible space or heavy fuel loads. It would also be more costly and potentially less effective than vegetation removal.

## SECTION FOUR AFFECTED ENVIRONMENT AND POTENTIAL IMPACTS

This section discusses the potential impacts of the No Action Alternative and the Proposed Action on six categories of environmental resources (physical, water, biological, cultural, socioeconomic, and recreation). The potential cumulative environmental impacts are also discussed (see Section 4.7).

The impact analysis follows the same approach for all resource categories. When possible, quantitative information is provided to establish potential impacts, and the potential impacts are evaluated qualitatively based on the criteria listed in Table 4-1.

**Table 4-1: Evaluation Criteria for Potential Impacts**

Impact Scale	Criteria
None/negligible	The resource area would not be affected, or changes would either be non-detectable or, if detected, the effects would be slight and local. Impacts would be well below regulatory standards, as applicable.
Minor	Changes to the resource would be measurable, but the changes would be small and localized. Impacts would be within or below regulatory standards, as applicable. Mitigation measures would reduce any potential adverse effects.
Moderate	Changes to the resource would be measurable and have both localized and regional impacts. Impacts would be within or below regulatory standards, but historical conditions would be altered temporarily. Mitigation measures would be necessary, and the measures would reduce any potential adverse effects.
Major	Changes to the resource would be readily measurable and would have substantial consequences on local and regional levels. Impacts would exceed regulatory standards. Mitigation measures to offset the adverse effects would be required to reduce impacts, but long-term changes to the resource would be expected.

Impacts are predicted based on the degree of change or loss of the resource from the baseline conditions. Impacts may be direct or indirect. Direct impacts are caused by an action and occur at the same time and place as the action. Indirect impacts are caused by an action and occur later or are farther removed from the area but are still reasonably foreseeable (40 CFR Part 1508).

### 4.1 PHYSICAL RESOURCES

#### 4.1.1 Geology and Soils

Topography in the County varies from mountainous terrain to the west along the Cascade Crest and broad lava plains in the high desert prairie to the east and south. The Deschutes River Valley drains in the central part of the County, originating in the Cascades. Major geology units in the County include basaltic andesite, basalt flows, basalt of Newberry volcano, sedimentary deposits basalt, tuffaceous sedimentary rocks, and till of Suttle Lake advance. Geologic compositions are primarily volcanic rocks, sediments, vent and pyroclastic rocks, and volcanoclastic rocks (ODGMI 2009).

Soils in the project area are predominantly gravelly/coarse loam and sand (ranging from well-drained to poorly drained) overlaying volcanic deposits, with areas of exposed bedrock. Wind and water typically cause the most erosion in the project area. Major soil types include Wanoga-Fremkle-Henkle complex, Rustlerpeak gravelly loam, Laidlaw sandy loam, Bullards-Bandon-Wadecreek complex, Wintley silt loam, and Brand silty clay loam (USDA 2014).

The Farmland Protection Policy Act of 1981 (FPPA), as amended (7 U.S.C. §§ 4201 et seq.), requires that Federal agencies minimize the extent to which their programs contribute to the unnecessary conversion of prime farmland, unique farmland, and land of statewide or local importance to non-agricultural uses. Farmlands subject to FPPA requirements may be forestland, pastureland, or cropland, but cannot be urban built-up land.

The project area contains the following acreages of prime farmlands and farmlands of statewide or unique importance:

- COID Brookwood: 68 acres
- DBLT Whychus Creek/ Squaw Creek Estates: 387 acres
- Deschutes River Woods: 2,276 acres
- DRRH6: 422 acres
- Lane Knolls: 360 acres
- Panoramic Estates: 143 acres
- Skyliners: 65 acres

Information on prime farmlands and farmlands of statewide or unique importance is available for only part of the Black Butte Ranch, COID Brookwood, and DRRH6 communities and not available for the TNC Stevens Canyon and Tollgate communities (USDA 2014).

### 4.1.2 Air Quality

The Clean Air Act (CAA) of 1970, as amended (42 U.S.C. §§ 7401–7661), requires that States adopt ambient air quality standards. The standards have been established to protect the public from potentially harmful amounts of pollutants.

Under the CAA, the U.S. Environmental Protection Agency (EPA) establishes primary and secondary air quality standards. Primary air quality standards protect the public health, including the health of sensitive populations, such as people with asthma, children, and older adults. Secondary air quality standards protect public welfare by promoting ecosystem health and preventing decreased visibility and damage to crops and buildings (EPA 2013).

The EPA has set National Ambient Air Quality Standards (NAAQS) for the following six criteria pollutants: ozone (O<sub>3</sub>), particulate matter (particulate matter with a diameter of 2.5 microns or less [PM<sub>2.5</sub>], particulate matter with a diameter of 10 microns or less [PM<sub>10</sub>]), nitrogen dioxide (NO<sub>2</sub>), carbon monoxide (CO), sulfur dioxide (SO<sub>2</sub>), and lead (Pb) (EPA 2013).

The Sisters Forest Service and Bend Pump Station sites, which are both in Deschutes County and near to the project area communities, are monitored for PM<sub>2.5</sub> annually, and the sites have current “Good” 1-hour and 24-hour air quality ratings, which indicate that air quality is satisfactory in the vicinity and that air pollution poses little or no risk (ODEQ 2014a).

Given the frequency of wildfires in Oregon, the Oregon Department of Environmental Quality (ODEQ) worked with Federal agencies and other State agencies to produce the *Oregon Wildfire Response Protocol for Severe Smoke Episodes* (ODEQ 2014b), which addresses public health risk from severe smoke and recommends public health actions and agency responsibilities. Wildfire smoke contains gases and fine particles, which include O<sub>3</sub>, CO, and particulate matter (i.e., PM<sub>2.5</sub>). The amount and duration of smoke exposure—and a person’s age and degree of susceptibility—contribute to potential health problems. Communities exposed to wildfire smoke are advised to check current ODEQ air quality information, the Oregon Smoke Blog, and public health messages. Other recommendations include staying inside as much as possible, avoiding outdoor physical activity, keeping windows and doors closed, and recirculating air conditioners. Generally, those who are most at risk from wildfire smoke are older adults, children, pregnant women, smokers, and individuals with respiratory infections or cardiovascular disease.

### 4.1.3 Climate Change

*Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions* (CEQ 2010) contains guidance on how Federal agencies should consider climate change in their decisions and suggests that quantitative analysis should be done if an action would release more than 25,000 metric tons of greenhouse gases per year.

The County is in both the high plateau and high desert region and receives relatively low annual precipitation. During the winter, colder temperatures and higher precipitation occur at higher elevations in the Cascades in the western portion of the County. Temperatures in Bend in degrees Fahrenheit range from highs in the 80s in the summer to the 40s in winter, and lows range from the 40s in the summer to the 20s in the winter. The average annual precipitation is 11.7 inches, and the average annual snowfall at Bend is 30.3 inches (Oregon Climate Service 2014).

Global and regional climate change is expected to accelerate in the coming decades. According to the *Oregon Climate Assessment Report* (OCCRI 2010), temperatures

could increase by 0.2 to 1 degree per decade. Warmer, drier summers are predicted, with summer precipitation decreasing 14 percent by the 2080s (OCCRI 2010). Generally, hotter and drier conditions contribute to larger wildfires and longer fire seasons. Increased fire probability in the region as a result of changing climatic conditions in the coming years could put communities in the WUI at increased risk.

### 4.1.4 Consequences of Alternatives

#### ***No Action Alternative***

Under the No Action Alternative, FEMA would not provide funding for vegetation removal; however, some wildfire mitigation activities would be expected to continue as initiated by property owners, through existing local programs or requirements, or as required by homeowners insurance providers. There would be no impacts on geology. Soil resources in the project area would be affected by erosion if vegetation is burned in a catastrophic wildfire; steep slopes would be particularly affected. A significant loss of mature vegetation along steep slopes could increase the risk of landslides and, thus, the risk to proximate structures and infrastructure.

No increase in open burning and associated negative air quality effects would occur in the County from a minimal number of project area participants burning piles of vegetative debris onsite. Open burning would continue to occur regularly by property owners in the County in accordance with restrictions set forth by the County or pertinent fire district.

In the event of a wildfire, air quality would likely decline, putting the elderly, school children, and other vulnerable populations at risk. Depending on the air quality advisory, the public could be advised to change their daily activities, including outdoor work and essential errands, and school cancellations could occur. If the risk of wildfire increases as a result of climate change, the project area could be even more vulnerable to wildfire impacts in the decades ahead. Although wildfires are a natural element of the ecosystem, a large wildfire can release more than 25,000 metric tons of greenhouse gases, thereby incrementally contributing to climate change. Adverse impacts would range from minor to moderate, depending on the severity and location of a wildfire and the subsequent air pollution and soil erosion.

#### ***Proposed Action***

Adverse impacts on geology and climate would be negligible based on the scale of the project and the limited ground-disturbing activities. Ground-disturbing activities may occur if shrub and tree roots are removed. However, in most cases, thinning and limbing would provide sufficient fuels reduction, and complete removal of shrubs and trees (including roots) would be limited. Some soil could be disturbed during project activities, but adverse impacts would be negligible based on the low-impact nature of vegetation

removal by hand and the proposed protective stream buffers. Since the project does not involve changes in land use, no impacts to prime or unique farmlands would occur.

A slight increase in open burning could occur in the DBLT Whychus Creek/ Squaw Creek Estates and TNC Stevens Canyon neighborhoods from a minimal number of project participants burning slash piles onsite. While this could have a localized temporary negative affect on air quality; it would be minor because of the limited number of participants using open burning as a disposal method, it would be scattered geographically, occur for a very brief time and at different times of the year. Impacts would further be minimized by adherence to the County or pertinent fire district open burning restrictions, including avoidance during the wildfire season.

Fuel-reduction activities would occur on a localized scale and focus on protection of structures in contiguous areas, thus likely reducing the spread/severity of wildfires. Reducing the risk or severity of wildfires would generally have a positive effect on air quality and climate change because of the consequent reduction in air pollution and greenhouse gas releases.

## 4.2 WATER RESOURCES

### 4.2.1 Surface Water

The project area is in the Deschutes Basin, which originates west of the project area in the Cascades, has approximately 10,000 square miles, and is the second largest watershed in Oregon (OSU 2014). Numerous streams flow through the project area in the Deschutes Basin, including Deschutes River, Indian Ford, Tumalo Creek, and Whychus Creek.

The Deschutes Basin has seven subbasins, two of which fall within the project area (OSU 2014). Most of the project area is in the Upper Deschutes subbasin. Lane Knolls is the only community in the Lower Crooked subbasin. The streams in the subbasins that are in the project area are as follows:

- **Black Butte Ranch.** Indian Ford and Captain Jack Creek flow through the northeastern portion of the community and Black Butte Ranch Spring #3 flows through the southeastern portion of the community.
- **COID Brookwood.** A tributary to Deschutes River flows through the community and Deschutes River abuts the community to the west.
- **DBLT Whychus Creek/Squaw Creek Estates.** Whychus Creek flows through the community.
- **Deschutes River Woods.** A tributary to Deschutes River flows through the community and Deschutes River abuts the community to the west.
- **DRRH6.** Deschutes River flows through the western portion of the community.

- **Lane Knolls.** A tributary to Deschutes River is approximately 250 feet west of the community.
- **Panoramic Estates.** Colverdale Ditch is approximately 2,000 feet east and Whychus Creek is approximately 2,600 feet west of the community.
- **Skyliners.** Tumalo Creek flows through the community.
- **TNC Stevens Canyon.** A tributary to Whychus Creek flows through the community.
- **Tollgate.** Trout Creek is approximately 5,000 feet west and Indian Ford is approximately 9,600 feet east of the community.

### 4.2.2 Wild and Scenic Rivers

The National Wild and Scenic Rivers System was created by Congress in 1968 (Public Law 90-542; 16 U.S.C. 1271 et seq.) to preserve certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations.

Rivers may be designated for the National Wild and Scenic Rivers System by Congress or, if certain requirements are met, by the Secretary of the Interior. Each river is administered by either a Federal or State agency. Designated segments do not need to include the entire river and may include tributaries. For federally administered rivers, the designated boundaries generally extend to an average of 0.25 mile on either bank in the Lower 48 States to protect river-related values.

Rivers are classified as wild, scenic, or recreational. Wild river areas are generally inaccessible except by trail, with primitive, unpolluted watersheds or shorelines. Scenic river areas are accessible in places by roads, with largely primitive and undeveloped shorelines. Recreational river areas are readily accessible by road or railroad, may have development along the shoreline, and may have undergone some impoundment or diversion in the past.

A 31-mile reach of the Deschutes River is classified as scenic in the National Wild and Scenic Rivers System, flows through DRRH6 community, and abuts the Deschutes River Woods community. The reach was designated in October 1988 and is managed by the Bureau of Land Management (BLM), Prineville District. This reach is known for sports fishing and flatwater boating in the summer (NWSR 2014). A 15.4-mile reach of Whychus Creek, approximately 1 mile south of Panoramic Estates, is also classified as wild and scenic but, because of its distance away, is not discussed further.

### 4.2.3 Water Quality

Section 303(d) of the Clean Water Act of 1977, as amended (33 U.S.C. § 1313(d)(2)), establishes requirements for States and Tribes to identify and prioritize water bodies that do not meet water quality standards. Total Maximum Daily Loads (TMDLs) are the

maximum amount of a pollutant that a stream can receive and still meet water quality standards. A stream that is below the TMDLs typically requires a Water Quality Management Plan (WQMP). Category 5 waters are water quality limited, do not meet standards, and require a WQMP. Category 3 waters have insufficient data to determine whether a standard is met, and Category 2 waters attain some water quality standards.

Data from ODEQ were queried to determine whether any streams in the project area are considered impaired or waters of concern. Water quality concerns within or near the project area are as follows:

- **Black Butte Ranch.** Indian Ford in this community is rated Category 3 for dissolved oxygen and Category 5 for temperature (ODEQ 2012). Black Butte Ranch Spring #3 in this community is rated Category 2 for temperature (ODEQ 2012). The Upper Deschutes subbasin TMDL (ODEQ 2014c) WQMP is in progress.
- **COID Brookwood.** Deschutes River in this community is rated Category 5 for dissolved oxygen and Category 5 for temperature (ODEQ 2012). The Upper Deschutes subbasin TMDL (ODEQ 2014c) WQMP is in progress.
- **DBLT Whychus Creek/Squaw Creek Estates.** Whychus Creek in this community is rated Category 3 for dissolved oxygen and Category 5 for temperature (ODEQ 2012). The Upper Deschutes subbasin TMDL (ODEQ 2014c) WQMP is in progress.
- **Deschutes River Woods.** Deschutes River, which abuts this community to the west, is rated Category 5 for dissolved oxygen and Category 5 for temperature (ODEQ 2012). The Upper Deschutes subbasin TMDL (ODEQ 2014c) WQMP is in progress.
- **DRRH6.** Deschutes River, which abuts this community to the west, is rated Category 5 for dissolved oxygen and Category 5 for temperature (ODEQ 2012). The Upper Deschutes subbasin TMDL (ODEQ 2014c) WQMP is in progress.
- **Lane Knolls.** No impaired streams or waters of concern were identified (ODEQ 2012).
- **Panoramic Estates.** No impaired streams or waters of concern were identified (ODEQ 2012).
- **Skyliners.** Tumalo Creek in this community is rated Category 3 for dissolved oxygen and Category 5 for temperature (ODEQ 2012). The Upper Deschutes subbasin TMDL (ODEQ 2014c) WQMP is in progress.
- **TNC Stevens Canyon.** No impaired streams or waters of concern were identified (ODEQ 2012).
- **Tollgate.** No impaired streams or waters of concern were identified (ODEQ 2012).

The stream temperature standard is designed to protect the rearing and spawning of cold water fish (salmonids). Stream temperature can be affected by the condition of riparian vegetation and associated shading. A minimum amount of dissolved oxygen must be present in water for aquatic life to survive and can be reduced by temperature, turbidity, and sedimentation.

### 4.2.4 Wetlands

Executive Order (EO) 11990, Protection of Wetlands, requires Federal agencies, in planning their actions, to consider alternatives to wetland sites and to limit potential damage if an activity affecting a wetland cannot be avoided.

According to the National Wetlands Inventory (USFWS 2014a), wetland complexes vary widely in the project area and occur primarily along streams (see Figures 2 through 11). The wetlands and associated streams in the project area are as follows:

- **Black Butte Ranch.** Approximately 78.4 acres of freshwater emergent wetlands, 7.7 acres of freshwater forested/shrub wetlands, and 17.9 acres of freshwater ponds. These areas are associated primarily with Indian Ford and Captain Jack Creek.
- **COID Brookwood.** Approximately 0.3 acre of freshwater forested/shrub wetlands, 0.9 acre of lakes, and 2.5 acres of riverine wetlands. These areas are associated primarily with Deschutes River.
- **DBLT Whychus Creek/Squaw Creek Estates.** Approximately 0.4 acre of riverine wetlands. These areas are associated primarily with Whychus Creek.
- **Deschutes River Woods.** Approximately 0.8 acre of freshwater forested/shrub wetlands, 5.7 acres of freshwater ponds, and 11.9 acres of riverine wetlands. These areas are associated primarily with Deschutes River.
- **DRRH6.** Approximately 33.7 acres of freshwater emergent wetlands, 168.4 acres of freshwater forested/shrub wetlands, 0.3 acre of freshwater ponds, and 32.3 acres of riverine wetlands. These areas are associated primarily with Deschutes River.
- **Lane Knolls.** Contains no wetland complexes.
- **Panoramic Estates.** Contains no wetland complexes.
- **Skyliners.** Contains no wetland complexes.
- **TNC Stevens Canyon.** Contains no wetland complexes.
- **Tollgate.** Contains no wetland complexes.

### 4.2.5 Floodplains

EO 11988, Floodplain Management, requires Federal agencies to avoid, to the extent possible, the long- and short-term adverse impacts associated with the occupancy and

modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative.

The Flood Insurance Rate Maps for the project area, Panels 41017C0025C, 41017C0030C, 41017C0040C, 41017C0045C, 41017C0200C, 41017C0215C, 41017C0225C, 41017C0325C, 41017C0350C, and 41017C0465C (FEMA 1996), show floodplains associated with Deschutes River and Whychus Creek that are designated Zone A, which is subject to inundation by the 1-percent-annual-chance flood event (100-year floodplain). Portions of the floodplains in the COID Brookwood, DBLT Whychus Creek/Squaw Creek Estates, Deschutes River Woods, and DRRH6 project area communities are developed with residential structures. The hillsides surrounding the streams are characterized by relatively flat to steep slopes, resulting in narrow to wide floodplains that are between 200 and 1,800 feet wide.

River flooding has not historically been a serious problem in Deschutes County. According to the *Deschutes County Natural Hazards Mitigation Plan*, regular flooding events have occurred near the headwaters of the Tumalo Creek and along Whychus Creek. The only significant recent flood event on these creeks occurred in December 2005 (Deschutes County 2010).

### 4.2.6 Consequences of Alternatives

#### ***No Action Alternative***

Under the No Action Alternative, FEMA would not provide funding to reduce vegetation around residences; however, some wildfire mitigation activities would be expected to continue as initiated by property owners, through existing local programs and requirements, or as required by homeowners insurance providers. Thus, existing conditions and risks to water resources would not change. Properties with maintained defensible space would be expected to be less vulnerable to catastrophic wildfires and, thus, less likely to contribute to post-burn erosion and sedimentation of surface waters, to the Wild and Scenic River reach of the Deschutes River, and to wetlands. In the event of a wildfire, impacts to the water quality, including sedimentation, of surface water, the Deschutes Wild and Scenic River, and wetlands would be minor to moderate, depending on the size and intensity of the fire and subsequent erosion due to the loss of vegetation. A significant loss of mature vegetation along steep slopes can increase the risk of landslides into surface waters, wetlands, and floodplains and change local hydrologic and hydraulic conditions.

#### ***Proposed Action***

Local, short-term minor impacts to surface water from sedimentation during vegetation removal could occur. To minimize impacts, vegetation management activities would be restricted within riparian management areas between 10 to 100 feet from a stream's OHWM (ODF 2014, OAR 629-635). Riparian management area restrictions would

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include retaining understory vegetation within 10 feet of the OHWM, trees within 20 feet of the OHWM, all trees leaning over a channel, and all downed wood and snags (ODF 2014, OAR 629–640). These restrictions would minimize the release of sediments by limiting ground-disturbing activities near streams. Project area–specific stream buffers would be established during the initial site assessment for property owner participants.

Long-term minor adverse impacts to water quality, including dissolved oxygen and temperature, could occur but would be minimized by adhering to the stream buffers described above. As noted in Section 4.2.3, ODEQ consider Black Butte Ranch, COID Brookwood, DBLT Whychus Creek/Squaw Creek Estates, Deschutes River Woods, DRRH6, and Skyliners to be below water quality standards for temperature near the project area. However, project activities are not anticipated to further degrade water quality.

Although the exact location of properties to be treated within the DRRH6 and Deschutes River Woods communities is unknown at this time, adverse impacts to the scenic qualities that the Deschutes River is designated as Wild and Scenic for are not anticipated because of adherence to the above discussed stream buffers and limited scale of vegetation removal. Treatment of properties along the designated reach may benefit the river by reducing the risk of wildfire damage thus helping to protect its scenic qualities.

Most riparian wetlands would be avoided by restricting work within riparian management areas. If these work-restriction buffers are not followed, there would be the potential for localized minor to moderate adverse impacts, depending on the intensity of fuels reduction activities.

Impacts on floodplains are not anticipated. The stream buffers described above would be required. The Proposed Action would not increase flood elevations or velocities because modifications to banks would not occur and land in the floodplain would not be built up. If work is not restricted in the stream buffers, there would be potential for localized minor to moderate adverse impacts, depending on the intensity of fuels reduction activities. Vegetation removal in the WUI would not promote floodplain occupancy.

In the long term, the mitigated properties that maintain defensible space would be expected to be less vulnerable to catastrophic wildfires and, thus, less likely to contribute to post-burn erosion and sedimentation of water resources. Thus, depending on the scale of participation and how contiguous the mitigated properties are, the Proposed Action is expected to have a minor positive effect on water resources from the reduced wildfire vulnerabilities in treated locations.

### 4.3 BIOLOGICAL RESOURCES

#### 4.3.1 Vegetation

Vegetation in the County varies from forested, mountainous terrain to the west along the Cascade Crest to broad lava plains in the high desert prairie to the east and south. The Deschutes River Valley drains in the central part of the County originating in the Cascades. Oregon vegetation data from the Northwest Habitat Institute were used to assess vegetation communities in the County and project area (NWHI 2000).

Predominant forest species in mountainous areas include ponderosa pine, true fir (*Abies* Spp.), Douglas fir, hemlock montane forest, and mixed conifer forest. Western juniper, shrubland, and sagebrush steppe are common in the eastern portion of the County in the broad lava plains. Agriculture is common along the Deschutes River Valley and crops include forage land and wheat (USDA 2012). The project area is generally in the Eastern Cascades and high desert prairie and largely composed of ponderosa pine forest and woodland and western juniper woodland. Invasive non-native plants are also present in the project area, especially along streams and roads.

The vegetation in each community is as follows:

- **Black Butte Ranch.** Predominantly ponderosa pine forest and woodland, Douglas fir dominant-mixed conifer forest, and grass-shrub-sapling or regenerating young forest. Wetlands and riparian areas are also common along Indian Ford and its tributaries.
- **COID Brookwood.** Predominantly ponderosa pine forest and woodland and western juniper woodland.
- **DBLT Whychus Creek/Squaw Creek Estates.** Predominantly ponderosa pine forest and woodland and western juniper woodland. Sagebrush steppe occurs adjacent to Whychus Creek.
- **Deschutes River Woods.** Predominantly ponderosa pine forest and woodland, grass-shrub-sapling or regenerating young forest, and lodgepole pine forest and woodland.
- **DRRH6.** Predominantly ponderosa-lodgepole pine forest and grass-shrub-sapling or regenerating young forest. Wetlands and riparian areas are also common along Deschutes River and its tributaries.
- **Lane Knolls.** Predominantly western juniper woodland and sagebrush steppe.
- **Panoramic Estates.** Predominantly ponderosa pine forest and woodland and western juniper woodland.
- **Skyliners.** Predominantly ponderosa pine forest and woodland and Douglas fir dominant-mixed conifer forest.

- **TNC Stevens Canyon.** Predominantly ponderosa pine forest and woodland and western juniper woodland.
- **Tollgate.** Predominantly ponderosa pine forest and woodland and lodgepole pine forest and woodland.

The overgrowth of trees, forest floor fuels, and an abundance of dead or dying vegetation in the project area contribute to a substantially elevated risk of wildland fires that is difficult to control.

### 4.3.2 Wildlife and Fish

The U.S. Fish and Wildlife Service (USFWS) Office of Migratory Bird Management maintains a list of migratory birds (50 CFR § 10.13). The Migratory Bird Treaty Act of 1918 (MBTA), as amended (16 U.S.C. §§ 703–711), provides Federal protections for migratory birds and their nests, eggs, and body parts from harm, sale, or other injurious actions. The act includes a “no take” provision.

Common MBTA bird species of the mixed conifer forest of this region include green-tailed towhee (*Pipilo chlorurus*), orange-crowned warbler (*Vermivora celata*), pygmy nuthatch (*Sitta pygmaea*), and white-headed woodpecker (*Picoides albolarvatus*). A list of the MBTA species common in Deschutes County is provided in Appendix D. Eastern Oregon is part of the Pacific Flyway and is considered a stopover location for avian species during migration. Ducks, geese, herons, egrets, grebes, and other water-loving birds congregate in the lakes, rivers, and wetlands of Deschutes County. The nesting season for migratory birds is generally from April 15 through July 31, depending on species and location (City of Portland 2010).

Resident mammals include such species as coyote (*Canis latrans*), mule deer (*Odocoileus hemionus*), bobcat (*Lynx rufus*), raccoon (*Procyon lotor*), porcupine (*Erethizon dorsatum*), deer mouse (*Peromyscus maniculatus*), bushy-tailed woodrat (*Neotoma cinerea*), voles (*Microtus* spp.), yellow-pine chipmunk (*Tamias amoenus*), and Douglas squirrel (*Tamiasciurus douglasii*) (Eder 2002).

Typical reptiles in the project area may include such species as western fence lizard (*Sceloporus occidentalis*), western skink (*Eumeces skiltonianus*), gopher snake (*Pituophis catenifer*), and garter snake (*Thamnophis* sp.). Amphibians may include bullfrog (*Rana catesbeiana*), Pacific treefrog (*Pseudacris regilla*), and Great Basin spadefoot (*Spea intermontana*).

Common fish species found in the Deschutes River and its tributaries include brook trout (*Salvelinus fontinalis*), brown trout (*Salmo trutta*), largemouth bass (*Micropterus salmoides*), smallmouth bass (*Micropterus dolomieu*), mountain whitefish (*Prosopium williamsoni*), rainbow trout (*Oncorhynchus mykiss*), redband trout (*Oncorhynchus mykiss*), sockeye (*Oncorhynchus nerka*), dace species (*Rhinichthys* sp.), northern

pikeminnow (*Ptchocheilus oregonensis*), and black crappie (*Pomoxis nigromaculatus*) (ODFW 2014).

### 4.3.3 Threatened and Endangered Species and Critical Habitat

The Endangered Species Act of 1973 (ESA), as amended (16 U.S.C. §§ 1531–1544), was established to conserve, protect, and restore Threatened and Endangered species and their habitats. Section 7 of the ESA (16 U.S.C. § 1536) requires Federal agencies to ensure that their actions do not jeopardize the continued existence of listed species and do not result in adverse modification to designated critical habitat.

The USFWS database identified six Threatened or Endangered species with potential to occur in the project area (USFWS 2014b). There are no National Marine Fisheries Service–listed species with potential to occur in the project area. Three of the six Threatened and Endangered species are known to occur within the project area. They are Oregon spotted frog (*Rana pretiosa*), bull trout (*Salvelinus confluentus*), and northern spotted owl (*Strix occidentalis caurina*). The three species are discussed in more detail below.

The other three Threatened or Endangered species are Canada lynx (*Lynx canadensis*), gray wolf (*Canis lupus*), and yellow-billed cuckoo (*Coccyzus americanus*). Canada lynx occurs in forests with large woody debris, denning sites, and security and thermal cover for kittens; typically this includes forests older than 200 years (USFWS 2014b). The project areas do not provide this habitat. There is no designated critical habitat in Oregon for Canada lynx. Gray wolves are generalists that use a broad spectrum of elevations and habitats. They typically avoid areas with greater than 1 mile of road per square mile, primarily because of the increased human presence in those areas. Although gray wolf occur over a wide area, and are expanding their range in Oregon, none are known to occur in Deschutes County at this time (ODFW 2014). Yellow-billed cuckoo are considered likely to be extirpated from Oregon, although there is one record of a breeding female from 1990 along the Deschutes River (not in the project area). Canada lynx, gray wolf, and yellow-billed cuckoo are not discussed further in this EA.

Proposed critical habitat for Oregon spotted frog is present in the following project area communities: COID Brookwood, Deschutes River Woods, and DRRH6. Critical habitat for northern spotted owl occurs just north of Black Butte Ranch community. Critical habitat for bull trout occurs in Oregon, but not in or near project area communities.

#### ***Oregon Spotted Frog***

Oregon spotted frog was listed as threatened on August 29, 2014 (79 F.R. 51658–51710). Critical habitat was proposed on August 29, 2013, but it is not yet final (78 F.R. 53537–53579). This species occupies emergent wetland habitats in forested landscapes, though it is not typically found under forest canopy. Oregon spotted frog is

completely dependent on perennial bodies of water (e.g., a spring, pond, lake, sluggish stream, irrigation canal, roadside ditch). It does not have a terrestrial life stage as many other species of frog do. They are known to occur in sites as small as 2.5 acres and as large as 4,915 acres. Oregon spotted frog is known to occur in the Deschutes River and Little Deschutes River and associated wetlands. COID Brookwood, Deschutes River Woods, and DRRH6 are immediately adjacent to or surrounding these rivers.

Proposed critical habitat for Oregon spotted frog occurs at COID Brookwood, Deschutes River Woods, and DRRH6. Some critical habitat appears to occur in the terrestrial portion of these three project area communities. According to USFWS biologists, Oregon spotted frog would not be present in terrestrial habitats, even if they were mapped as critical habitat (USFWS 2014c).

### ***Bull Trout***

The USFWS issued a final rule listing for the bull trout in the coterminous United States as a threatened species on November 1, 1999 (USFWS 1999). A revised draft recovery plan for the species was released in 2014 (USFWS 2014d). On September 30, 2010, the USFWS designated critical habitat for bull trout throughout its U.S. range (USFWS 2010).

Bull trout have stringent requirements for cold water and clean gravel to rear and reproduce, and spawning usually occurs in mountain streams fed by snow-melt or springs fed by snow fields (Goetz et al. 2004). The habitat components required by bull trout are often summed up by the “Four C’s”: cold, clean, complex, and connected. Bull trout exhibit patchy distributions because even under pristine conditions, the required habitat components are not ubiquitous throughout river basins.

Bull trout in Deschutes County occur in the lower Deschutes River watershed. This area is part of the Coastal Recovery Unit. The Deschutes River supports a resident population of bull trout, and is currently considered a population stronghold (USFWS 2014d). The Deschutes River occurs adjacent to COID Brookwood, Deschutes River Woods, and the lower portion of DRRH6.

### ***Northern Spotted Owl***

The northern spotted owl is a Federal- and State-listed species. The northern spotted owl was listed as threatened on June 26, 1990 (55 F.R. 26114–26194). A draft recovery plan was published in 1992 (USFWS 1992).

The northern spotted owl is a forest bird that inhabits old-growth coniferous and mixed conifer-hardwood forests from British Columbia through northern California. Suitable habitats for spotted owls provide elements necessary for nesting, roosting, foraging, and dispersal. Characteristics of nesting and roosting on the east slope of the Cascade Mountains in Oregon generally include a narrow forested band below the high-elevation subalpine forests and above the low-elevation lodgepole pine/ponderosa pine forests.

## Affected Environment and Potential Impacts

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Habitat in the Deschutes National Forest includes stands of mixed conifer, ponderosa pine with white fir (*Abies grandis*) understory, and mountain hemlock with subalpine fir. Suitable habitat is naturally fragmented by intrusions of lava and other forest types, as well as by recent harvest or wildfires. Suitable habitat is not found in large patches but usually occurs as inclusions within a larger stand. In addition, trees with various structural deformities (cavities, broken tops, mistletoe infections) and large snags are also characteristic of northern spotted owl habitat, as well as accumulated fallen trees and debris on the forest floor (USFWS 1992). Most nest and roost sites are within forest stands with heavy canopy habitat and semi-open understory. In the Deschutes National Forest, nest trees are predominantly large Douglas fir trees. Foraging and dispersal habitats may be in younger, more open and fragmented forests than those associated with nesting and roosting (USFWS 1992).

Northern spotted owl habitat is mapped as present within the project area for northern spotted owl (USFS 2014b). Spotted owl habitat is often subdivided into the following categories (USFWS 1992; 2011):

- Nesting/roosting habitat – Forested areas used for nesting, roosting, foraging, and dispersal by spotted owls that usually have more late-seral forest characteristics than “foraging” or “dispersal” habitats.
- Foraging habitat – Forested areas used largely for foraging, dispersal, and other nocturnal activities but not nesting or roosting.
- Dispersal habitat – Forested areas used predominantly for dispersal but not nesting, roosting, or foraging.

There are no known northern spotted owl site centers or nesting areas within the project area (USFS 2014a). The Skyliners and Black Butte Ranch communities are surrounded by Deschutes National Forest land. Suitable nesting, roosting, and foraging habitat for northern spotted owl within Deschutes National Forest has been identified by the USFS. However, no USFS mapped suitable habitat is located within either project area (USFS 2014b). Northern spotted owls were detected adjacent to Skyliners during the 2008 breeding season and then on multiple occasions in 2011, but no nest have been found (USFS 2014a).

There is no designated critical habitat for northern spotted owl within the project area. There is critical habitat immediately to the north and east of the Black Butte Ranch community (USFWS 2014e).

The Skyliners and Black Butte Ranch communities were visited by a URS biologist on October 6 and 7, 2014. Tree species suitable as habitat for northern spotted owl in both communities include lodgepole pines, grand fir or white fir (*Abies grandis*), incense cedar (*Calocedrus decurrens*), juniper, and Engelmann spruce (*Picea engelmannii*). These tree species are more prevalent in Black Butte Ranch. In some places a

multilayer canopy exists with snags, large woody debris and other characteristics of suitable northern spotted owl habitat. Both communities are considered suitable habitat.

### 4.3.4 Other Special-Status Species

Two species are listed in Deschutes County as Candidate Species under the ESA: greater sage-grouse (*Centrocercus urophasianus*) and whitebark pine (*Pinus albicaulis*). Candidate Species are those that have been petitioned and are actively being considered for listing as Endangered or Threatened under the ESA. Candidate Species are afforded no protection under the ESA. Greater sage-grouse is not known to occur in forested habitat. Whitebark pine occurs in high-elevation alpine forests, which do not occur in the project area.

Data from the Oregon Biodiversity Information Center (ORBIC) were queried for other known special-status species in and near the project area (ORBIC 2014). The resulting data show that Oregon State Critical and Federal Species of Concern species white-headed woodpecker (*Picoides albolarvatus*) are found in the vicinity of Black Butte Ranch (200 feet north of the community) and Lewis' woodpecker (*Melanerpes lewis*) have occurred historically in the COID Brookwood community.

The Federal Bald and Golden Eagle Protection Act prohibits the taking of either species, including their parts, nests, or eggs. ORBIC records did not indicate any bald eagle (*Haliaeetus leucocephalus*) nests in the Deschutes County area, although habitat along the Deschutes River may support this species. In general, bald eagle nest locations have not been monitored since 2005 to 2006, when this species was ESA delisted. None are presently known within 660 feet of the project area (ORBIC 2014).

Golden eagle (*Aquila chrysaetos*) records exist for Deschutes County (ORBIC 2014), in the vicinity of Panoramic Estates and COID Brookwood. However, no known nests occur within 0.5 mile of the project area (USFWS 2014f).

### 4.3.5 Consequences of Alternatives

#### **No Action Alternative**

Under the No Action Alternative, vegetation management activities would not be funded; however, some wildfire mitigation activities would be expected to continue as initiated by property owners, through existing local programs and requirements, or as required by homeowners insurance providers. The existing high risk of vegetation loss from catastrophic wildfires would continue, as would vulnerabilities to biological resources (e.g., wildlife and fish).

Vegetation management activities could cause minor localized and temporary disturbance to wildlife, including ESA-listed species. There would be human activity or noise associated with chainsaws, chippers, brush mowers, and masticators. Future uncontrolled wildfires, especially catastrophic fires, could affect wildlife through the loss

of habitat or the mortality of individuals. These impacts to biological resources could be minor to moderate, depending on the severity and location of the wildfires.

### ***Proposed Action***

#### Vegetation

As defensible spaces are established and maintained as part of the Proposed Action, various disturbances from work crews, removal of individual small trees and brush, and hand pruning or limbing may result in local, indirect, and minor adverse effects on native plant communities. Examples of the types of vegetation to be treated are ponderosa pines, Douglas firs, lodgepole pines, junipers, sagebrush, bitterbrush, and invasive species. However, many of the properties have non-native ornamental or weedy species in the potential treatment areas. Trimming or removing these plants would not negatively affect native plant communities. Because these activities involve negligible ground-disturbance and would be done mostly by hand, the potential is low that new invasive plant species populations would become established or that existing populations would expand as a result of the Proposed Action.

#### Wildlife, Fish, and Threatened and Endangered Species

Wildfire fuel-reduction activities to establish the defensible spaces could have minor, localized, and scattered impacts on wildlife through habitat modification. Various factors, including changes in food sources, shelter, population density, and dispersal effort, would determine the severity of impacts to non-listed wildlife. Adverse effects from maintenance of defensible spaces would be negligible.

No permanent conversion of forested habitat to other types of habitat is anticipated as part of the Proposed Action. The project area would remain as upland forest habitat, and wildlife habitat would in general remain intact. The Proposed Action would focus only on limited thinning of existing forest and removing biomass near structures.

Temporary disturbance to wildlife could occur from the physical presence of workers and by noise generated from the equipment used (e.g., chainsaws, chippers, brush mowers, masticators). The disturbance is anticipated to be of short duration (no more than a few days) on each property during the first year. The disturbance could result in temporary avoidance of the area by wildlife. Additional disturbance may occur once a year for the 5-year maintenance period. Impacts on wildlife from the temporary disturbance are considered minor because of the short duration of work on any given parcel. Impacts are also considered minor because the most intense treatment would occur within a limited radius of existing homes and structures where localized human activity already occurs.

Work that occurs during the summer bird breeding season (generally mid-April through late-July) may have minor impacts on nesting birds and birds protected under the

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MBTA. The disturbance could result in abandonment of nesting efforts or displacement from preferred foraging areas, which would affect ground-nesting and shrub-nesting birds to a greater extent than birds that nest in the upper canopy of trees. Cavity-nesting birds such as woodpeckers and nuthatches may be disproportionately affected because of the emphasis on removal of dead or dying trees (snags). To minimize the potential for migratory bird effects, initial treatment activities will be precluded during the nesting season, unless a project site survey determines there would be no migratory birds affected by treatment activities. Small mammals and reptiles may lose some habitat as a result of the removal of downed wood.

The Proposed Action would benefit wildlife habitat and species in the long term by reducing the risk of catastrophic loss from future wildfires, in terms of habitat degradation and mortality.

There would be no impact to ESA-listed aquatic species (e.g., bull trout, Oregon spotted frog) because work would be prohibited within 100 feet of the OHWM of the Deschutes River at DRRH6, COID Brookwood, and Deschutes River Woods. Vegetation management activities would be restricted within riparian management areas between 10 to 100 feet from a stream's OHWM (ODF 2014, OAR 629-635). Riparian management area restrictions would include retaining understory vegetation within 10 feet of the OHWM, trees within 20 feet of the OHWM, all trees leaning over a channel, and all downed wood and snags (ODF 2014, OAR 629-640). Project area-specific stream buffers would be established during the initial site assessment for property owner participants. Most riparian wetlands would be avoided by restricting work within the above buffers.

Impacts on the northern spotted owl are considered minor. No known nests occur within the project areas. Degradation of northern spotted owl habitat within Skyliners and Black Butte Ranch may occur. Live shrubs, tree limbs, dead tree limbs, large and small woody debris, and snags would be removed within suitable nesting/roosting habitat for northern spotted owl. Most removal activities would occur within about 100 feet of existing structures (mostly homes). Although the focus of defensible space activities will be around residential structures, work may also occur in common areas within the target neighborhoods using the same vegetation removal methodology. Removal of this live and dead vegetation is considered degradation of northern spotted owl habitat. Because the project has a 5-year maintenance period beyond the initial year of work, the effect is considered long term.

Northern spotted owls may be susceptible to noise disturbance from project actions if owls are present. As mentioned previously, there have been northern spotted owl detections near but not in Skyliners as recently as 2011. Due to the nearby presence of owls, it is presumed that individuals could occur there, and a timing restriction will be implemented to avoid the nesting season. Black Butte Ranch does not have any recent detections on National Forest land in the vicinity therefore no individuals are anticipated

to occur. To avoid potential noise-related disturbance to northern spotted owls, project activities would be prohibited between March 1 and July 31 within the entire Skyliners project area.

A Biological Assessment has been prepared and informal consultation initiated with the USFWS on December 4, 2014; with a 'may affect not likely to adversely affect' finding for northern spotted owls and 'no effect' finding to its critical habitat.

There would be no impact to Canada lynx, gray wolf, or other special-status species.

### 4.4 CULTURAL RESOURCES

Cultural resources consist of locations of human activity, occupation, or use identified through field inventory, historical documentation, or oral evidence. The term encompasses historic properties as defined by the National Register of Historic Places (NRHP), including archaeological and architectural properties as well as sites or places of traditional cultural or religious importance to Native American Tribes or other social or cultural groups.

Section 106 of the National Historic Preservation Act of 1966 (NHPA), as amended (16 U.S.C. § 470f), requires that activities needing Federal permits or using Federal funds undergo a review process to consider historic properties that are listed in or may be eligible for listing in the NRHP. The State Historic Preservation Officer (SHPO) is the Federal agency's primary Section 106 partner. Because Section 106 is a process by which the Federal Government assesses the effects of its undertakings on historic properties, it is the primary regulatory framework used in the NEPA process to determine impacts on cultural resources.

In accordance with Section 106, FEMA has delineated the Area of Potential Effects (APE) for the project area, which consists of a total of approximately 6,834 acres and about 4,242 lots in the ten communities (Black Butte Ranch, COID Brookwood, DBLT Whychus Creek/Squaw Creek Estates, Deschutes River Woods, DRRH6, Lane Knolls, Panoramic Estates, Skyliners, TNC Stevens Canyon, and Tollgate). See Appendix A, Figures 1 through 11 and Table 1-1.

#### 4.4.1 Ethnographic and Historical Context

##### *Ethnographic Period*

During the ethnographic period, the upper Deschutes River basin was used by several native groups. The project area was within the territory used primarily by the Western Columbia River Sahaptins (also referred to as the Tenino or the Warm Springs) and the Northern Paiute (Fowler and Liljeblad 1986; Stewart 1939; Suphan 1974; Zenk and Rigsby 1998). As a Western Columbia River Sahaptin group, the Tenino's principal settlements were along the lower Deschutes River and John Day River and the banks of the Columbia River, and the upper Deschutes River would have been used during

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summer for fishing, hunting, and gathering excursions. The Tenino also occupied areas as far south as the Metolius River, Black Butte, and Three Sisters (Hunn and French 1998; Suphan 1974).

The Numic-speaking Northern Paiute occupied much of the Great Basin in southeastern Oregon and northwestern Nevada. Specifically, the Hunipuitōka (root eaters or Walapi) or Walapapi (Hunipui) band inhabited portions of central Oregon along the Deschutes, Crooked, and John Day Rivers. The territories of the Paiute bands were in considerable flux during the mid- to late-19th century. Other Paiute bands, such as the Wadatōka (Juniper-Deer Eaters), may have also moved into the project area during this period (Blyth 1938; Fowler and Liljeblad 1986; Stewart 1939).

The project area was also used by other Native American groups, particularly for seasonal use, trade, and travel. The Molala Tribe used the greater part of the Deschutes River region and the eastern and western slopes of the Cascades (Zenk and Rigsby 1998). Ethnographic accounts indicated the presence of Cayuse and Nez Perce between Bend and the mouth of the Little Deschutes River, although such use was likely infrequent (Suphan 1974). The Klamath traveled through the Deschutes River region to trade at The Dalles and maintain social ties with members of the Warm Springs (Layton 1981).

The Northern Paiute practiced a seasonal subsistence and settlement system, allowing the bands to move to the resources as they became available. They hunted large and small game, fished, and gathered about 150 different species of seeds, roots, berries, and other plant resources. In early spring, households left their winter villages and gathered at root grounds and salmon streams, and also dispersed to the uplands to hunt game. In mid-July, families congregated to gather crickets, and then dispersed for the remaining summer to hunt and gather seeds and berries. In early fall, families assembled to harvest waada seeds and for cooperative antelope and rabbit drives. By early November, families collected their stored foods and settled into their winter villages. Winter villages and temporary seasonal camps were primarily composed of conical lodges constructed of willow frames overlaid with tule mats or grass coverings. These structures usually accommodated a single nuclear family. Other temporary structures were composed of juniper trees and used as wind breaks and shelters (Lebow et al. 1990).

The Tenino also practiced a seasonal subsistence round. In late March, groups dismantled winter lodges and moved to summer fishing village sites. In early April, the village divided into groups, with half remaining at the fishing village and the remainder moving to uplands to hunt and gather roots. In July, the groups reassembled for the First Fruits ceremony, which involved berries and venison. Then, the groups separated again with some remaining at the village to fish and trade with other native groups at The Dalles, and others hunted and collected nuts in the mountains (Murdock 1958). In September, groups left the village after the last salmon run to ascend the John Day and

Deschutes Rivers into the mountains for hunting and collecting of late roots and berries. In October, the Tenino left the summer villages and returned to the winter village from November to March (Murdock 1958).

Euro-American explorers from the Hudson's Bay Company reached the Deschutes River and Crooked River in 1825. In 1845, emigrants of the Meek Party likely traveled down the Crooked River to the Deschutes River (Tasa et al. 2008). The arrival of Euro-American emigrants and the introduction of cattle and other stock adversely affected the resources used by the native groups. In the 1860s and 1870s, the establishment of ranching led to hostilities between various Northern Paiute bands and the U.S. Army. Some of these bands also raided the Warm Springs Reservation, where the Wasco and Tenino groups had been resettled as a result of the 1855 Treaty. Following these hostilities, Northern Paiute bands were placed in the southern portion of the Warm Springs Reservation (Fowler and Liljeblad 1986; French et al. 1998). The project area lies within the ceded lands of the Confederated Tribes of the Warm Springs under terms of the 1855 Treaty with the Tribes of Middle Oregon (Kappler 1904).

### ***Historical Period***

Deschutes County is located in Central Oregon, in the high desert west of the Cascade Mountains. Deschutes County was formed in 1916 from the southwestern portion of Crook County. A large portion of the county is in Federal ownership, primarily by the USFS and the BLM. Major towns in the county are Bend, Redmond, and Sisters.

#### 1813–1876 Exploration and Contact

As with many parts of Oregon, the first Euro-Americans to visit what is now Deschutes County were fur trappers from the Hudson's Bay Company led by Peter Skene Ogden in 1825. These trappers passed through the area and trapped along the way, but did not establish any permanent settlements. Euro-American settlement in Oregon occurred in two waves. The first wave of immigrants followed the Oregon Trail west and settled in the rich agricultural lands of the Willamette Valley. Once most of the prime farmland was settled, cattle and sheep ranchers started looking to the east side of the Cascade Range where grazing land was abundant (DCHS 1985).

#### 1877–1910 Pioneer Period

The first recorded permanent settlers to what is now Deschutes County were Cort Allen and William Staats, who arrived in 1877 (Houser 1997). They set up adjoining homesteads on the Deschutes River and eventually developed an extensive cattle ranching operation. Settlement in what would become Deschutes County was slow during the late 19th century, with only 21 people recorded in the 1900 census for the Deschutes precinct (Houser 1997).

A major impediment to settlement was the harsh, arid climate; many families who initially came to settle did not remain for any length of time because of this challenge. The Carey Desert Land Act of 1894, in which the Federal Government ceded land to western States if those States caused the land to be irrigated, helped the settlement of Deschutes County (Hall 1994). The State of Oregon adopted provisions of the Carey Act in 1901, creating the State Land Board to administer the act. Prior to the adoption of the Carey Act, most irrigation in the area was the result of small-scale cooperative efforts to build ditches that served adjacent tracts of land. After the Carey Act, between 1901 and 1906, seven fairly large projects in the Deschutes River Basin were approved, covering nearly 200,000 acres of land (Hall 1994). Although there were numerous failed irrigation projects and bankrupted irrigation companies during the early 20th century, there were also plenty of successful ventures that resulted in hundreds of miles of canals, flumes, pipes, and laterals. These irrigation successes created newly irrigated lands that were available for agricultural uses.

A second impediment to settlement was the lack of transportation facilities. Although many segments of the Deschutes River are navigable, the river is located in a deep, steep-walled valley for much of its length. The valley made access to and from the river very difficult and also created a barrier for east to west travelers. The Cascade Mountains were another barrier to settlement until routes over the passes were improved and made suitable for wagons. The Santiam Wagon Road over Santiam Pass opened in 1866 and provided the first good link between the Willamette Valley and the Deschutes River Basin (Ferguson 2009). Farther south, the McKenzie Salt Springs and Deschutes Wagon Road, a predecessor to the McKenzie River Highway, was opened in 1872 (Chapman 2011). Nevertheless, the wagon roads were rough and steep and not suitable for shipping goods. The real transportation improvement came in 1911, when the railroad reached the town of Bend.

### 1911–1924 Railroads, Industry, and Growth

When the railroad reached Bend in 1911, investment and economic development quickly followed. Walter Scott, Arthur Horn, and R.C. Colver bought out the Bend Brick Yard, a small brickmaking company, and renamed it the Bend Brick and Lumber Company in 1911. The first train to leave Bend carried a million-dollar order of lumber from the company, and they quickly expanded operations, using new brick-making machines that arrived by rail. Real estate companies heavily promoted Bend and Redmond as ideal places to live, and those towns grew steadily (Houser 1997).

In 1915, the Shevlin-Hixon Company and the Brooks-Scanlon Company both announced that they were about to open very large sawmills in Bend. Each sawmill was expected to employ 500 men, so when the mills both opened in 1916, there was a massive increase in Bend's population. Both companies had spent years amassing their timber holdings; Brooks-Scanlon announced at its mill's opening that the company had enough timber to last them at least 30 years (Houser 1997). By the early 1920s, so

many people were moving to Bend and Redmond that there was a housing shortage; this resulted in increased investment in real estate and expansion of both towns.

While Bend was experiencing its massive growth and expansion due to the railroad and sawmills, many people sought to have the county seat moved from Prineville, a town that was bypassed by the railroad, to Bend. When that attempt failed, Bend supporters put an initiative on the November 1916 ballot to create a separate county instead. The northwestern portion of Crook County had already been carved out to create Jefferson County in 1914, so separatists hoped to take the southwestern portion of Crook County to create Deschutes County. The ballot measure passed easily, and Deschutes County officially came into existence in late 1916 (Houser 1997).

### 1925–1940 Motor Age

The McKenzie River Highway was dedicated as a State Highway in 1925. It used roughly the same route as the 1872 wagon road, but its geometry was carefully engineered for the new automobile and represented a significant improvement over the old road (Chapman 2010). By 1928, the Dalles-California Highway, McKenzie River Highway, Central Oregon Highway, and Bend Lakeview Highway all passed directly through Bend. These highways were used for both commerce and recreation because they provided a direct connection to other populated places.

The timber industry continued to be a major economic force in Deschutes County during this period, but agriculture was also important to the county's economy. Sheep and cattle ranching were important, and potatoes and alfalfa were major crops. Sheep and cattle raising have a long history in Oregon's high desert. During the settlement period, ranchers grazed their cattle on open ranges and shepherders moved through the lands with their flocks. As the high desert became more heavily populated and livestock numbers increased, overgrazing became a problem. In the late 1890s, tensions rose between sheep and cattle ranchers (Hodgson 1913). The Federal government recognized the need for management and oversight on the grazing lands, and used the newly-formed Forest Service to withdraw most of the Blue Mountain grazing land and establish those lands as Forest Reserve in the early 1900s. The Deschutes National Forest was established in 1908 on part of those lands. The Forest Service then took control of grazing by issuing permits and collecting fees for grazing rights (Atwood 2005).

The Deschutes National Forest was created in part to settle grazing disputes, but a large part of the current forest is the result of some land exchanges. Both the Shevlin-Hixon Company and the Brooks-Scanlon Company arranged land exchanges with the Forest Service in the 1930s, which resulted in the Forest Service acquiring hundreds of thousands of acres of cut-over lands. Other land exchanges occurred in the 1930s and 1940s between the Forest Service and individuals and smaller companies as well (DCHS 1985).

During the 1930s, there were several Civilian Conservation Corps camps in Deschutes County, including one just south of Redmond (Houser 1997). Workers built trails, campgrounds, and numerous buildings and helped fight forest fires and remove dead timber. They also started work on the North Unit Canal but stopped work on it in 1941 when the United States entered World War II. The canal was later completed by the U.S. Reclamation Service (Houser 1997).

### 1941–1965 World War II and Post War Era

During the war, both the Shevlin-Hixon Company and the Brooks-Scanlon Company produced substantial quantities of lumber for the war effort. After the war, demand for lumber decreased. The Brooks-Scanlon Company bought out the Shevlin-Hixon Company in 1950 and closed its mill; the Brooks-Scanlon mill closed in 1983. The Old Mill District in Bend is located on the site of those two mills (Houser 1997).

Agriculture remained an important part of the economy, with major crops including alfalfa, wheat, potatoes, and clover seed. Dairying and sheep raising were also popular, as was turkey farming.

As early as the 1920s, when motor cars became popular, Deschutes County was a vacation destination. The Forest Service issued a number of permits for lakeside resorts, including resorts at Elk Lake and Paulina Lake. The Forest Service also permitted some summer homes at Elk Lake, and other recreational uses, such as the Skyliners development, which was a clubhouse and ski jump near Bend for a mountaineering group (DCHS 1985). After the war, outdoor recreation became increasingly popular. The Mt. Bachelor ski resort was developed in the late 1950s and early 1960s and has expanded since its inception (Houser 1997).

## 4.4.2 Identification of Historic Properties

The identification of historic properties was completed by URS Group, Inc. (URS) archaeologists Anisa Becker, M.A., and Stephanie Butler, M.A., and URS architectural historian Martha Richards, M.A., who meet the Secretary of the Interior's Professional Qualification Standards for their disciplines. Analysis was based on the review of information from digital photographs, readily available materials collected during a desktop review, and a confidential search of the Oregon SHPO Archaeological Database and the Oregon Historic Sites Database. The records search was conducted in August and September 2014 to determine the presence or absence of previously recorded properties and the extent of survey coverage in and near the APE.

### ***Aboveground Historical Resources***

The Oregon SHPO database includes 1,449 resources in Deschutes County, of which just under half (639) are considered eligible for NRHP listing. Eligibility status is undetermined for 452 resources, and the remaining 328 are either not eligible or were

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not 50 years old at the time of their survey. The USFS has also documented resources in the Deschutes National Forest at various times. U.S. Geological Survey topographic maps and aerial photographs show that there are not many buildings in most of the project APE. Given the lack of comprehensive surveys, a field survey of the project area would likely reveal additional historic resources that were not previously recorded.

- **Black Butte Ranch.** No previously documented above-ground historic resources are present within the Black Butte Ranch community; however, there may be structures associated with the original ranch that could be considered historic.
- **COID Brookwood.** There is one previously recorded historic property within the COID Brookwood community. The property is the ca. 1904 Columbia Southern Irrigation Canal, which is considered eligible/contributing for listing in the NRHP.
- **Deschutes River Woods.** No previously documented above-ground historic resources are present within the Deschutes River Woods community. One historic property, the Lava Land Island Rockshelter (35DS86), is located approximately 0.10 mile west of the community. The precontact resource is considered eligible/contributing for listing in the NRHP.
- **DRRH6.** One previously documented historic property, the Margaret Mulligan Homestead Cabin, is within the DRRH6 community. The property is located in the La Pine Recreation Area at the junction of the Deschutes and Fall Rivers. The cabin is considered unevaluated and is potentially eligible for listing in the NRHP.
- **Panoramic Estates.** No previously documented above-ground historic resources are present within the Panoramic Estates community. One historic property, the 1903 William Wilson Homestead, located at 70300 Camp Polk Road, is immediately adjacent to the current project APE. The historic property is individually listed on the NRHP.
- **Skyliners.** No previously documented above-ground historic resources are present within the Skyliners community. One historic property, the ca. 1936 Bend Skyliners Lodge, located at Road 1828, is approximately 0.50 mile southwest of the project area. The lodge is individually listed on the NRHP.
- **Tollgate.** No previously documented above-ground historic resources are present within the Tollgate community; the development is not yet 50 years old. One historic property, the Sisters Historic Sign, is approximately 0.50 mile to the southeast of the APE along Highway 20. The ca. 1930 historical monument is eligible for listing in the NRHP.
- **DBLT Whychus Creek/Squaw Creek Estates, Lane Knolls, and TNC Stevens Canyon.** No previously documented above-ground historic resources are present within these communities.

### *Archaeological Resources*

Documented archaeological resources in the project area are as follows:

- **Black Butte Ranch.** Seven archaeological resources have been documented within the Black Butte Ranch community. Sites 35DS419, 35DS1206 and 61500270 are situated in the northeastern portion of the Black Butte Ranch community along Indian Ford. Site SRD-H-12 consists of the remnants of the Brooks Mainline Railroad and segments of the logging railroad extend northwest to southeast through the project area. Two isolated finds, 0601050390IF and SRD-P-237, are situated in the eastern portion of the project area. One archaeological resource, site H564, is also found in the southern portion of the community.
- **COID Brookwood.** Two archaeological resources have been documented within the COID Brookwood community. Site 35DS1737 is located to the north of Deschutes River in the central portion of the project area. A human burial is located in the southern portion of the project area on the south side of Deschutes River.
- **DBLT Whychus Creek/Squaw Creek Estates.** Eleven archaeological resources have been documented within the DBLT Whychus Creek/Squaw Creek Estates community. Site 35DS2284 is on the south side of Squaw Creek in the northeast portion of the community. Ten isolated finds are situated along a ridge to the south of Squaw Creek along the southern portion of the community.
- **DRRH6.** Three archaeological resources are within the DRRH6 community. Sites 35DS523 and 35DS714 are on the eastern side of the project area and Deschutes River. One isolated find, LPSP-ISO-2, is located to the west of Deschutes River in the southwest portion of the project area.
- **Deschutes River Woods, Lane Knolls, Panoramic Estates, Skyliners, TNC Stevens Canyon, and Tollgate.** No archaeological resources have been documented within these communities.

#### 4.4.3 Summary of Documented Cultural Resources

Cultural resources found within the project area communities are listed in Table 4-2. Twenty-three archaeological resources, consisting of three historic-period sites (including a historic debris scatter, remnants of a railroad, and a ranger station), five precontact sites (lithic scatters), one burial, one unknown site, 11 precontact isolates, and two multiple component isolates are found in the APE. All archaeological sites are considered potentially eligible for listing in the NRHP, and isolated finds are considered ineligible for the listing in the NRHP. In addition, two above-ground historic resources, the Margaret Mulligan Homestead Cabin and the ca. 1904 Columbia Southern Irrigation Canal, are also present in the APE. The cabin is recommended as unevaluated and is

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potentially eligible for listing in the NRHP; the irrigation canal is eligible for listing in the NRHP.

Previously documented cultural resources are rare, primarily because the lands within the project area are largely privately held or Federal or County owned, and have not been inventoried. Areas that have been surveyed have a variety of precontact and historic-period cultural resources. Because the areas that have been inventoried have identified historic and precontact archaeological sites, similar resources would be expected to occur within areas that have never been inventoried for cultural resources. Each of the 10 project area communities are likely to have evidence for precontact use given the large areal extent of the project and the variety of sensitive landforms present, such as streams, rock outcrops, ridges, and terraces. In addition, above-ground historic resources that were not previously recorded may be present within the project area communities' direct or indirect APE.

**Table 4-2: Previously Documented Cultural Resources within the Project Area**

Site/Isolate No.	Description	Eligibility	Community
35DS419	Lithic scatter with two concentrations. Area 1 contains several dozen obsidian flakes and one obsidian projectile point. Area 2 contains a light obsidian scatter. The site measures 100 x 60 meters.	Unevaluated	Black Butte Ranch
35DS523	Lithic scatter of obsidian and basalt flakes, tools, and FCR. The site measures 150 x 90 meters.	Unevaluated	DRRH6
35DS714	Lithic scatter consisting of 75 to 100 obsidian flakes. The site area measures 80 x 50 meters.	Unevaluated	DRRH6
35DS1206	Lithic scatter of 47 obsidian flakes found to a depth of 40 centimeters below surface. The site area is 1015 square meters.	Unevaluated	Black Butte Ranch
35DS1737	Historic can scatter consisting of 16 cans. Site area measures 5 x 5 meters.	Unevaluated	COID Brookwood
35DS2284	Lithic scatter consisting of 40 to 50 obsidian and rhyolite flakes, one biface fragment, and one projectile point fragment. The site measures 100 x 75 meters.	Unevaluated	DBLT Whychus Creek
"Burial"	A human burial located within basalt boulders was likely exposed following vandalism when rocks and boulders were removed. The exposed site consists of a skull, femur, and long bone.	Unevaluated	COID Brookwood
61500270 Black Butte Ranger Station	This site was previously recorded in the Forest Overview from historic records. Recent surveys have found no physical evidence of the Ranger Station.	Unevaluated	Black Butte Ranch

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**Table 4-2: Previously Documented Cultural Resources within the Project Area**

Site/Isolate No.	Description	Eligibility	Community
SRD-H-12 Brooks Mainline Railroad Bed	The site consists of the remains of the Brooks Mainline Railroad logging road system. The following railroad grade sections are within the Project APE: Sections 5, 6, 8, 9, and 17.	Unevaluated	Black Butte Ranch, Tollgate
ISO-1	Eight obsidian flakes found in a 10- x 10-meter area.	Not Eligible	DBLT Whychus Creek
ISO-2	One basalt flake and one obsidian flake.	Not Eligible	DBLT Whychus Creek
ISO-3	One large obsidian flake.	Not Eligible	DBLT Whychus Creek
ISO-5	Two obsidian flakes in a 5-meter area.	Not Eligible	DBLT Whychus Creek
ISO-6	Three obsidian flakes and one obsidian biface fragment found in a 10- x 10-meter area.	Not Eligible	DBLT Whychus Creek
ISO-7	Five obsidian flakes and a CCS end scraper found in a 10- x 10-meter area.	Not Eligible	DBLT Whychus Creek
ISO-10	One obsidian bifacial thinning flake.	Not Eligible	DBLT Whychus Creek
ISO-14	One obsidian biface fragment.	Not Eligible	DBLT Whychus Creek
ISO-15	Multicomponent isolated find consisting of one metal kettle and one large, fine-grained chunk of basalt.	Not Eligible	DBLT Whychus Creek
ISO-16	Multicomponent isolate find consisting of one hole-in-cap can and one obsidian flake fragment.	Not Eligible	DBLT Whychus Creek
LPSP-ISO-2	One obsidian flake.	Not Eligible	DRRH6
0601050390IF	Five obsidian flakes, one obsidian shatter, and one obsidian biface fragment.	Not Eligible	Black Butte Ranch
SRD-P-237	Five obsidian flakes.	Not Eligible	Black Butte Ranch
Le's Map: "H564"	No description provided. The site in the SHPO GIS is approximately 0.5 miles long and 0.25 miles wide. SHPO states the site needs to be field verified.	Unevaluated	Black Butte Ranch
Margaret Mulligan Homestead Cabin	Single-story log cabin.	Unevaluated	DRRH6
Columbia Southern Irrigation Canal	ca. 1904 irrigation canal.	Eligible/ contributing	COID Brookwood

CCS = cryptocrystalline silicate

SHPO = State Historic Preservation Officer

GIS = Geographic Information System

### 4.4.4 Consequences of Alternatives

#### ***No Action Alternative***

Under the No Action Alternative, FEMA would not provide funding to reduce fuels in selected areas of Deschutes County; however, some wildfire mitigation activities would be expected to continue as initiated by property owners through existing local programs or requirements or as required by homeowners insurance providers. Ground-disturbing activities associated with these activities would be limited. Thus, the potential to impact cultural resources is also expected to be limited. The archaeological sites and historic properties in the project area and others not yet identified would continue to be at risk to damage from wildfires.

#### ***Proposed Action***

The Proposed Action would reduce fuels around residences and other structures in the 10 project area communities in Deschutes County. Under the Proposed Action, fuels and other biomass would be removed by means of chainsaws, chippers, brush mowers, and masticators. Areas targeted for vegetation removal include at least a 30-foot radius around main residential structures. Landowners and contractors would conduct vegetation-removal activities by hand, including thinning and trimming. Vegetative debris would be chipped and spread onsite or piled, with some limited burning of piles, or disposed of at one of the Deschutes County transfer station and recycling centers. Ground-disturbing activities with the potential to affect cultural resources associated with the project are therefore expected to be limited.

#### Aboveground Resources

According to the Oregon Historic Sites Database, two historic resources, a homestead cabin at DRRH6 and a segment of the Columbia Southern Irrigation Canal at COID Brookwood, are within the project APE. The historic cabin, the Margaret Mulligan Homestead Cabin, is potentially eligible for listing in the NRHP. The irrigation canal is recommended as eligible for listing in the NRHP. Because no work is proposed on structures, the potential to affect these and unidentified aboveground historic properties is negligible. The Proposed Action could benefit historic buildings or features, such as the Margaret Mulligan Homestead Cabin, by reducing their vulnerability to wildfires.

#### Archaeological Resources

The Proposed Action would be implemented in areas generally considered to be archaeologically sensitive, where surface or deeply buried cultural resources could be present, as evidenced by 23 previously recorded archaeological resources within private and public lands in the project area. Because portions of the project area have not been previously surveyed, additional sites are likely present that have not yet been

documented. These sites have not been evaluated for the NRHP and would be treated as potentially eligible.

Although direct impacts to previously documented archaeological sites are not anticipated, Deschutes County would be required to avoid these resources as a precaution to prevent even minor potential disturbances, such as pedestrian traffic or vegetation removal across a site. In addition to avoiding known sites, to reduce the potential for impacts to cultural resources, work would be conditioned to maximize all machinery vehicles to stay within existing roads on both public and private lands. Tree limbs would be cut and hauled manually to the machinery staged on the roads. The proposed vegetation thinning and trimming around residential structures would have little potential to affect archaeological resources because of the proposed low-impact methods within a disturbed context. FEMA has determined that no additional identification or evaluation efforts are necessary and that the Proposed Action would have no effects on archaeological resources.

FEMA requires that all of its funded ground-disturbing projects protect cultural resources during site work. In the event of an unanticipated discovery—and in compliance with State and Federal laws protecting cultural resources, including Section 106—all work would be required to cease in the immediate vicinity of the find until the appropriate parties (including the SHPO) are consulted and an appropriate resolution plan is established.

FEMA provided these Section 106 findings and determinations in a formal letter to the SHPO, dated December 1, 2014. In addition, Section 106 consultation letters, dated December 1, 2014, were provided to the Confederated Tribes of Warm Springs.

## **4.5 SOCIOECONOMIC RESOURCES**

### **4.5.1 Public Safety**

Residential development in the WUI places communities at risk of a catastrophic wildfire and threatens public safety. Fire alerts, warnings, and evacuations are designed to prepare communities to be proactive in preventing wildfires and to respond immediately if an evacuation is declared. Wildfires can put homes directly at risk and also result in transportation and utility failures, flash flooding and mudslides, and air pollution concerns. Emergency responders typically coordinate with communities as wildfires approach and educate homeowners on how to protect their homes and evacuate safely. It is important for the public to stay informed about the current risk of wildfire in their community and discuss an evacuation plan with families and neighbors. Many local and State media resources (e.g., television, radio, newspaper, Internet), telephone numbers, local emergency response offices, and word-of-mouth inform the public on wildfire risk in their area.

### 4.5.2 Environmental Justice

EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, directs Federal agencies to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects on minority and low-income populations resulting from Federal programs, policies, and activities. Socioeconomic and demographic data for residents in the project vicinity were studied to determine whether the Proposed Action would have disproportionate impacts on minority or low-income persons.

Data from the 2012 Census American Community Survey 5-year estimates for Deschutes County were used to identify the minority<sup>1</sup> and low-income<sup>2</sup> compositions of the project areas, which are in Census Tracts 2, 3, 4.01, 5, 6, 19.01, and 21. In the project area, the minority population was approximately 5 percent and the poverty rate was approximately 12 percent (U.S. Census Bureau 2012). Because these levels are lower than in Deschutes County as a whole, minority and low-income populations are not considered to be present in the project area.

### 4.5.3 Consequences of Alternatives

#### *No Action Alternative*

Under the No Action Alternative, FEMA would not provide funding to reduce fuels; however, some wildfire mitigation activities would be expected to continue as initiated by property owners, through existing local programs and requirements, or as required by homeowners insurance providers. In the event of a wildfire, there would be an increased risk to public safety and emergency responders in these communities. Because the project area communities have high hazards (e.g., weather, topography, fuel) and moderate protection capabilities, an evacuation and emergency response in these communities could be challenging. There are no minority or low-income populations in the project area; therefore, no disproportionately high and adverse effect would occur.

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<sup>1</sup> A minority is “a person who is: (1) Black (a person having origins in any of the black racial groups of Africa); (2) Hispanic (a person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race); (3) Asian American (a person having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands); or (4) American Indian and Alaskan Native (a person having origins in any of the original people of North America and who maintains cultural identification through Tribal affiliation or community recognition)” (U.S. Census Bureau 2014).

<sup>2</sup> A person with low income is identified as “one whose median household income is at or below the Department of Health and Human Services poverty guidelines” (USHHS 2013). Income data based on Department of Health and Human Services guidelines are difficult to gather, so U.S. Census Bureau data are often used for environmental justice analyses.

### *Proposed Action*

Properties with maintained defensible space would be expected to be less vulnerable to catastrophic wildfires. Reducing the risk or severity of wildfires would generally have a positive effect on public safety and emergency responders because of the consequent reduction in risk to structures, roads, utilities, and air pollution. The project area was chosen as a high priority for mitigation based solely on the need to protect residences from wildfires; demographics were not a factor in the decision. Furthermore, there are no minority or low-income populations in the project area.

## 4.6 RECREATION

Deschutes County is home to many recreational activities (e.g., fishing, hiking, horseback riding, kayaking, boating, biking, birding, hunting, golf). The following recreational areas are adjacent to or near the project area communities:

- **Deschutes National Forest.** This National Forest contains the Indian Ford Campground and a horse camp east of Black Butte Ranch, a boat launch and picnic area adjacent to the Deschutes River Woods community, the Big River Campground north of the DRRH6 community on the Deschutes River, and the Skyliners Lodge and Meissner Sno-park southwest of the Skyliners community (USFS 2014a).
- **BLM Prineville District.** The Whychus Canyon Trailhead begins south of the DBLT Whychus Creek/Squaw Creek Estates community (BLM 2014).
- **LaPine State Park.** This State park abuts the southwest end of the DRRH6 community along the Deschutes River. The park contains 125 full-hookup and electrical campsites and provides hiking, fishing, and boating opportunities (OPRD 2014).
- **River Canyon Park.** This small natural area abuts the COID Brookwood community to the southeast. The 0.5-acre natural area contains picnic tables, wildlife viewing, and hiking trails (City of Bend 2014).
- **Farewell Bend Park.** This park area abuts the COID Brookwood community to the northwest. The park features a canoe launch, playground, picnic tables, fishing, wildlife viewing, and hiking trails (City of Bend 2014).
- **Eastgate Natural Area.** This small natural area abuts the Lane Knolls community to the east and is operated by Bend Parks & Recreation. The natural area contains some hiking trails but no other public amenities (City of Bend 2014).
- **Deschutes River Trail.** The South Canyon Reach of the trail extends through the northern portion of the community along the Deschutes River (City of Bend 2014).

- **Aspen Lakes Golf Course.** The public 18-hole golf course abuts Panoramic Estates to the south (Aspen Lakes 2014).
- **Black Butte Ranch.** The Black Butte Ranch community has many recreation opportunities, including a golf course, biking/walking trails, outdoor courts, canoeing, horseback riding, and fishing (Black Butte Ranch 2014).

### 4.6.1 Consequences of Alternatives

#### *No Action Alternative*

Under the No Action Alternative, FEMA would not provide funding to reduce fuels; however, some wildfire mitigation activities would be expected to continue as initiated by property owners, through existing local programs and requirements, or as required by homeowners insurance providers. In the event of a wildfire, ingress and egress to recreational areas could be disrupted. Depending on the size and severity of the wildfire, portions of nearby forests or parks could be damaged or destroyed. Adverse impacts would range from minor to major.

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Project activities would directly avoid recreational areas because private property is targeted in residential areas, but they would occur just outside the boundaries of the Deschutes National Forest near the Black Butte Ranch, DRRH, Deschutes River Woods, Skyliners, TNC Stevens Canyon, and Tollgate communities. Vegetation removal activities would be coordinated with managing agencies, as required. Thinning and limbing of trees and shrubs is not anticipated to adversely affect recreational activities or viewpoints. Depending on the location and size of treated properties, the Proposed Action could provide some minor benefits to recreational areas by complementing wildfire mitigation that occur within them and help reduce the spread of wildfires.

## 4.7 CUMULATIVE IMPACTS

CEQ regulations for implementing NEPA require an assessment of cumulative effects during the decision-making process for Federal projects. Cumulative effects are defined as:

... the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions (40 CFR § 1508.7).

Cumulative effects were determined by combining the effects of these alternatives with other past, present, and reasonably foreseeable future actions.

Ongoing wildfire mitigation activities on neighboring tracts of land, as initiated by residential landowners and private, local, State, or Federal entities that are similar in scale to those of the Proposed Action, would further reduce the possibility of intense and widespread wildfires in the project areas, and Deschutes County has wildfire mitigation codes and ordinances and an active wildfire mitigation program which provides additional guidance through programs such as Project Wildfire, FireFree Program, and Firewise Communities . Moreover, the community Wildfire Protection Plans recommend the defensible space checklist for residents shown in Appendix B.

Project Wildfire has recently secured over \$8.5 million in grant funding to reduce hazardous fuels on private lands and estimates that residents participating in the program are treating 10,000 acres each year (Project Wildfire 2013). According to Wildfire Protection Plans in the project area communities, the following agencies and communities are engaged in fuels treatment:

- *Greater Bend Community Wildfire Protection Plan* (Project Wildfire 2011). The USFS completed treatment of 3,113 acres through thinning, 5,829 acres through mowing, and 994 acres through burning as of January 2011; the ODF treated 1,071 acres through cost-share programs on large private lands primarily west and south of Bend in the WUI between 2006 and 2011; the USFS planned to treat acreage within the 130,000 acres delineated through the Deschutes Collaborative Forest Project, which includes the west side of the Greater Bend WUI; and six Greater Bend communities are recognized as Firewise Communities, including Deschutes River Woods.
- *Greater Sisters Community Wildfire Protection Plan* (Project Wildfire 2014). The USFS completed treatment of 7,778 acres through thinning and 11,042 acres through mastication between 2006 and 2013 and has future plans to treat an additional 100,000 acres between 2015 and 2019; the ODF treated thousands of acres through cost-share programs in the WUI between 2005 and 2013; Deschutes County treated 1,440 acres within the WUI between 2010 and 2013; and six Greater Sisters communities are recognized as Firewise Communities, including Tollgate.
- *Upper Deschutes River Coalition Community Wildfire Protection Plan* (Project Wildfire 2013). The BLM has completed or planned treatment for 3,284 acres since 2008; the USFS completed treatment of 7,572 acres through thinning, 5,962 acres through mowing, and 4,091 acres through burning between 2003 and 2010, and five new projects are planned; the ODF treated 86 acres through cost-share programs on five private lands in the WUI between 2008 and 2013; and seven Upper Deschutes River Coalition communities are recognized as Firewise Communities.

## **Affected Environment and Potential Impacts**

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Given the small scale and scattered distribution of acreage proposed for treatment by the Proposed Action, when combined with other activities that are planned by the County, State, and Federal entities, the Proposed Action is not expected to have adverse cumulative impacts on geology or soils; air quality; climate; water resources, wetlands, or floodplains; wildlife or fish (including ESA-listed species and habitat); historic or archaeological resources; socioeconomic resources or environmental justice; or recreation because no project impacts are anticipated. Cumulative impacts to wildfire adapted vegetation communities are possible as a result the treatment methodology (limited thinning, removing brush and lower limbs) altering understory characteristics. However, the impacts are expected to be minor, because this methodology may mimic some of the vegetation management effects of periodic low intensity natural wildfires. Furthermore, the cumulative effect of treating contiguous properties reduces the risk of a catastrophic wildfire and consequent widespread loss of vegetative cover. The Proposed Action when combined with other wildfire mitigation activities will reduce overall wildfire risk and benefit public safety

### SECTION FIVE AGENCY COORDINATION AND PUBLIC INVOLVEMENT

During project development, Deschutes County coordinated with surrounding jurisdictions, local agencies, homeowners, and landowners in the project area. During preparation of this EA, the SHPO and the Confederated Tribes of Warm Springs were also contacted for comment.

FEMA initiated the NEPA scoping process by sending out a scoping notice on July 18, 2014, to agencies and interested parties. The purpose of the scoping process was to inform agencies and stakeholders about the Proposed Action and allow the public, organizations, agencies, and Tribes to provide comments regarding the scope of the project, the proposed alternatives, and any environmental and historic preservation issues of concern that should be considered in the draft EA. The 30-day period for scoping comments ended on August 18, 2014. No substantive comments were received.

A public notice is required for the draft EA; a copy of this notice is provided as Appendix E. The public, Tribes, and agencies will have the opportunity to comment on the EA for 30 days after publication of the notice. The notice identifies the action, the location of the proposed target communities, the participants, and the location of the draft EA, and indicates how to submit comments. FEMA will review all substantive written comments for issues that need to be addressed with the County and will incorporate any resolutions into the final EA, as appropriate.

The following documents are relevant to public involvement efforts supporting this draft EA: *State of Oregon Natural Hazards Mitigation Plan* (Oregon Partnership for Disaster Resilience 2012), *Deschutes County Natural Hazards Mitigation Plan* (Deschutes County 2010), *Greater Bend Community Wildfire Protection Plan* (Project Wildfire 2011), *Greater Sisters Community Wildfire Protection Plan* (Project Wildfire 2014), and *Upper Deschutes River Coalition Community Wildfire Protection Plan* (Project Wildfire 2013). These documents are described in the following subsections.

#### 5.1 STATE OF OREGON NATURAL HAZARDS MITIGATION PLAN

The *State of Oregon Natural Hazards Mitigation Plan* (Oregon Partnership for Disaster Resilience 2012) includes a risk assessment to identify natural hazards, strategies, programs, and goals for each hazard and proposes mitigation strategies. Preparation of the plan included coordination with State and local stakeholders. The Oregon Partnership for Disaster Resilience facilitated the plan process, and the Interagency Hazard Mitigation Team (IHMT) for the State served as the plan's coordinating body. The IHMT consists of approximately 20 State agencies and organizations. The *State of Oregon Natural Hazards Mitigation Plan* is intended to be used as a resource for the development and/or update of local natural hazard mitigation plans.

The 11 primary natural hazards that are covered in the plan are coastal erosion, drought, dust storm, earthquake, fire, flood, landslide, tsunami, volcano, windstorm, and winter storm. Wildfire is a common and widespread natural hazard in Oregon, and 22 Oregon communities that border Federal lands are at risk of damage from wildfire. Several hundred additional communities that are in the WUI are also at risk from wildfire.

### **5.2 DESCHUTES COUNTY NATURAL HAZARDS MITIGATION PLAN**

The *Deschutes County Community Wildfire Protection Plan* (Deschutes County 2010) was updated in 2010. The plan identifies and summarizes hazards and proposes mitigation initiatives. The Mitigation Committee was co-chaired by the Deschutes County Emergency Manager and the County Forester and comprises Federal, State, and local officials and organizations. The five primary natural hazards identified were earthquakes, floods, volcano eruptions, severe winter storms, and wildland fires. Wildland fire ranks as the number one priority of the plan. The wildfire mitigation initiatives include annual training, non-traditional response resources, public information/education initiatives, building and land use codes, and fuels reduction projects on private lands utilizing FireFree and other programs (Deschutes County 2010).

### **5.3 GREATER BEND COMMUNITY WILDFIRE PROTECTION PLAN**

The *Greater Bend Community Wildfire Protection Plan* (Project Wildfire 2011) was updated in 2011 and outlines priorities, strategies, and action plans for fuels reduction treatments in the greater Bend WUI. The Steering Committee collaborated with Federal, State, and local agencies and obtained public input during the planning process. The plan develops a community risk assessment, establishes community hazard reduction priorities, and develops an action plan and assessment strategy. Eight communities at risk, including the high-priority project areas in the Southeast, Southwest, West, and West Urban Growth Reserve, were assessed. Goals in the plan include reducing fuels on public/private lands, reducing structural vulnerability, increasing education and awareness, and identifying and protecting critical transportation routes.

### **5.4 GREATER SISTERS COMMUNITY WILDFIRE PROTECTION PLAN**

The *Greater Sisters Community Wildfire Protection Plan* (Project Wildfire 2014) outlines updated priorities, strategies, and action plans for fuels reduction treatments in the Greater Sisters Country WUI. The Steering Committee collaborated with Federal, State, and local agencies and obtained public input during the planning process. The plan identifies seven communities at risk within the Greater Sisters Country planning area and the risk assessment includes ratings for risks, hazards, protection capabilities, values protected, and structural vulnerability. The plan includes priorities and goals, recommendations to reduce structural vulnerability, and strategies for evaluation and monitoring.

### **5.5 UPPER DESCHUTES RIVER COALITION COMMUNITY WILDFIRE PROTECTION PLAN**

The *Upper Deschutes River Coalition Community Wildfire Protection Plan* (Project Wildfire 2013) was adopted by the Upper Deschutes River Coalition in 2013. The plan outlines updated priorities, strategies, and action plans for hazardous fuels reduction treatments in the planning area. The Steering Committee collaborated with Federal, State, and local agencies and obtained public input during the planning process. The plan identifies eight communities at risk within the Upper Deschutes River Coalition planning area, and the risk assessment includes ratings for likelihood of fires occurring, hazards, protection capabilities, human and economic values, and structural vulnerability. The plan includes priorities and goals, recommendations to reduce structural vulnerability, and strategies for evaluation and monitoring.

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## Permitting, Project Conditions, and Mitigation Measures

### SECTION SIX PERMITTING, PROJECT CONDITIONS, AND MITIGATION MEASURES

No permits are anticipated for the Proposed Action. Activities in the project area would comply with the project's scope of work methodology, described in Section 3.

Deschutes County would comply with the following project conditions and mitigation measures:

- The County is responsible for selecting, implementing, monitoring, and maintaining Best Management Practices to control erosion and sedimentation, reduce spills and pollution, and provide wetland and habitat protection.
- The County is responsible for securing all applicable local, State, and Federal permitting before site work and for complying with any conditions therein.
- In the event that cultural resources are discovered during project activities—and in compliance with State and Federal laws protecting cultural resources, including Section 106 of the NHPA—work in the immediate vicinity would cease, the area would be secured, and SHPO and FEMA would be notified.
- The County would be required to avoid identified archaeological sites as a precaution to prevent minor potential disturbances, such as pedestrian traffic or vegetation removal across a site. Work is also conditioned to maximize all machinery vehicles to stay within existing roads on both public and private lands.
- Any change to the approved scope of work would require re-evaluation for compliance with NEPA and other laws and EOs before implementation.
- Work would be prohibited within 100 feet of the OHWM of Deschutes River near the communities of COID Brookwood, Deschutes River Woods, and DRRH6. The purpose of this condition is to avoid impacts on ESA-listed aquatic species.
- Work would be restricted within riparian management areas per the ODF water protection rules. Project area specific stream buffers would be established during the initial site assessment for property owner participants.
- Project activities would be prohibited between March 1 and July 31 annually in the Skyliners project area, to avoid potential disturbance of northern spotted owl nesting activity.

## **Permitting, Project Conditions, and Mitigation Measures**

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- To minimize potential impacts to migratory nesting birds, vegetation removal should occur from late summer to mid-winter, outside of the typical migratory bird-nesting season (April 15 to July 31). If removal activities must take place during the nesting season, the County shall ensure that a qualified professional conducts a breeding bird survey before removal activities begin in order to avoid disturbance or “take” as defined by the MBTA. Surveys should be coordinated with the USFWS to determine if a permit under MBTA is required or if other measures can be taken to address impacts to migratory birds or active nests. This information must be documented on the project site assessment and treatment plan (Appendix C).

### SECTION SEVEN CONCLUSION

The draft EA evaluates environmental and historic resources that could be affected by the Proposed Action. The evaluation does not identify any significant adverse impacts associated with the resources of geology or soils; air quality; climate; water resources, wetlands, or floodplains; vegetation; wildlife or fish (including ESA-listed species and habitat); historic or archaeological cultural resources; socioeconomic resources or environmental justice; or recreation. Implementing the Proposed Action, which is relatively small scale because of the widely scattered nature of properties expected to be treated, along with any conditions outlined in the initial site assessment (Appendix C), associated with permits or approvals, is expected to avoid or minimize adverse effects associated with the action.

Following public involvement, FEMA will determine whether to issue a FONSI for the Proposed Action.

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**Appendix A**  
**Figures**

**Appendix B**  
**Defensible Space Checklist**

<input checked="" type="checkbox"/>	<b><u>What can I do to help prevent losses to my property and my neighborhood?</u></b>
<input type="checkbox"/>	If you are interested in a free home assessment – call your local Fire Agency
<input type="checkbox"/>	Post easy-to-read address signs so emergency crews can find your home.
<input type="checkbox"/>	Reduce the density of nearby trees.
<input type="checkbox"/>	Clear wood piles and building materials at least 30 feet away from your home.
<input type="checkbox"/>	Remove low tree branches and shrubs. Trim up juniper and other trees at least 4 feet from the ground. Remove “ladder fuels” among trees.
<input type="checkbox"/>	Keep grass and weeds cut low.
<input type="checkbox"/>	Remove all branches and limbs that overhang roofs.
<input type="checkbox"/>	Remove leaves & needles from gutters, roofs and decks.
<input type="checkbox"/>	Remove dead plants and brush.
<input type="checkbox"/>	Maintain 30-100 feet of defensible space around your home.
<input type="checkbox"/>	Screen vents and areas under decks with 1/8” metal mesh or fire resistant siding.
<input type="checkbox"/>	Keep decks free of flammable lawn furniture, toys, doormats, etc.
<input type="checkbox"/>	Choose fire-resistant roofing materials like metal, tile or composition shingles.
<input type="checkbox"/>	Trim vegetation along driveways a minimum distance of 14’ wide x 14’ high for fire trucks.
<input type="checkbox"/>	Choose fire resistive plants. Visit <a href="http://www.extension.oregonstate.edu/deschutes">www.extension.oregonstate.edu/deschutes</a> to view Fire-Resistant Plants for the Home Landscape.
<input type="checkbox"/>	Use alternatives to burning debris like composting or chipping.
<input type="checkbox"/>	If burning debris outside city limits – call the Burn Line at your local Fire District to see if burning is allowed. Do not burn building materials.

Source: Project Wildfire (2014)

**Site Information**

Landowner Name (print):  
 Mailing Address:  
 Mailing City/State/Zip:  
 Property Address (or taxlot):  
 Phone:

Size (acres):  
 Email:

**Pre-Mitigation Assessment**

Number of acres proposed for treatment:  
 Provided photos of pre-mitigation conditions.

<b>Type of Work Proposed</b>	<b>Site Characteristics Requiring Additional Protection</b>
<input type="checkbox"/> Create defensible space: distance around structures (ft.): number of structures: <input type="checkbox"/> Clear roof and gutters <input type="checkbox"/> Reduce fuels along driveway <input type="checkbox"/> Ladder fuel reduction <input type="checkbox"/> Other site work (explain below):	<input type="checkbox"/> Stream <input type="checkbox"/> Lake <input type="checkbox"/> Wetland <input type="checkbox"/> Sensitive bird site <input type="checkbox"/> T&E species <input type="checkbox"/> Other: <input type="checkbox"/> No Issues

**Additional Details**

**Specific Site Characteristics:** Provide a description of the existing site conditions in terms of fuels/vegetation, structures/improvements, and topography.

**Protected Natural Resources:** Use the area below to describe sensitive resources on or next to the property that requires protection. Include water bodies, wetlands, wildlife sites, etc. by name or other identifier.

**Tree and Vegetation Retention/Vegetative Buffers:** Describe the vegetative buffers and other trees/vegetation that will be retained during and after operations to prevent damage to any protected natural resources.

**Practices**

Describe the specific fuels treatment practices that will be utilized to protect the identified sensitive resources.

I certify that the above information provided in the Pre-Mitigation Assessment is true and correct:

Landowner Signature:

Date:

Subgrantee Rep.:

Signature:

Date:

**Post-Mitigation Verification**

- There were changes to the work proposed and/or site conditions and resource protections presented in the Pre-Mitigation Assessment. A description of these changes is attached or described below.
- Provided photos of post-mitigation site conditions.
- Entered into GIS database.

**Match Valuation**

Work Intensity	Value / Acre		# of		Total Value
Low (thin and pile slash)	\$240	X		=	
Medium (thin and pile slash)	\$360	X		=	
Medium/Heavy (thin and pile slash)	\$460	X		=	
Heavy (thin and pile slash)	\$580	X		=	
Very Heavy (thin and pile slash)	\$680	X		=	
Load and Haul	\$300	X		=	
Burn - piles	\$220	X		=	
Other site work		X		=	

I certify that the above information provided in the Post-Mitigation Verification is true and correct and that non-Federal resources were used in performing the work described in the match valuation above:

Landowner Signature:

Date:

Subgrantee Rep.:

Signature:

Date:

Source: FEMA (2014)

**Appendix D**  
**Migratory Bird Species in Deschutes County**

The following migratory bird species are common to the region that includes Deschutes County.

<b>Common Name</b>	<b>Scientific Name</b>	<b>Common Name</b>	<b>Scientific Name</b>
American coot	<i>Fulica americana</i>	Mallard	<i>Anas platyrhynchos</i>
American robin	<i>Turdus migratorius</i>	Mountain chickadee	<i>Poecile gambeli</i>
Ash-throated flycatcher	<i>Myiarchus cinerascens</i>	Northern goshawk	<i>Accipiter gentilis</i>
Bald eagle	<i>Haliaeetus leucocephalus</i>	Orange-crowned warbler	<i>Vermivora celata</i>
Black-headed grosbeak	<i>Pheucticus melanocephalus</i>	Osprey	<i>Pandion haliaetus</i>
Calliope hummingbird	<i>Stellula calliope</i>	Pied-billed grebe	<i>Podilymbus podiceps</i>
Cassin's finch	<i>Carpodacus cassinii</i>	Pinyon jay	<i>Gymnorhinus cyanocephalus</i>
Canyon wren	<i>Catherpes mexicanus</i>	Pygmy nuthatch	<i>Sitta pygmaea</i>
Cinnamon teal	<i>Anas cyanoptera</i>	Pygmy owl	<i>Glaucidium gnoma</i>
Cliff swallow	<i>Petrochelidon pyrrhonota</i>	Redhead	<i>Aythya americana</i>
Common nighthawk	<i>Chordeiles minor</i>	Red crossbill	<i>Loxia curvirostra</i>
Common raven	<i>Corvus corax</i>	Rock wren	<i>Salpinctes obsoletus</i>
Common yellowthroat	<i>Geothlypis trichas</i>	Rufous hummingbird	<i>Selasphorus rufus</i>
Dusky flycatcher	<i>Empidonax oberholseri</i>	Sage thrasher	<i>Oreoscoptes montanus</i>
Eared grebe	<i>Podiceps nigricollis</i>	Say's phoebe	<i>Sayornis saya</i>
Gray flycatcher	<i>Empidonax wrightii</i>	Vesper sparrow	<i>Poocetes gramineus</i>
Great horned owl	<i>Bubo virginianus</i>	Violet-green swallow	<i>Tachycineta thalassina</i>
Green-tailed towhee	<i>Pipilo chlorurus</i>	Western screech owl	<i>Megascops kennicottii</i>
House wren	<i>Troglodytes aedon</i>	White-breasted nuthatch	<i>Sitta carolinensis</i>
Lark sparrow	<i>Chondestes grammacus</i>	White-headed woodpecker	<i>Picoides albolarvatus</i>
Lazuli bunting	<i>Lazuli bunting</i>	Williamson's sapsucker	<i>Sphyrapicus thyroideus</i>
Loggerhead shrike	<i>Loggerhead shrike</i>	Willow flycatcher	<i>Empidonas traillii</i>

Source: USFWS (2014b)

**Appendix E**  
**Public Notice**

**PUBLIC NOTICE**  
**Federal Emergency Management Agency**  
**Draft Environmental Assessment**  
**Central Oregon Wildfire Mitigation Project in Deschutes County**

The U.S. Department of Homeland Security's Federal Emergency Management Agency (FEMA) proposes to provide funding to Deschutes County for a fuels reduction project in Deschutes County, OR. Funding would be provided as authorized by Section 203 of the Robert T. Stafford Disaster Assistance and Emergency Relief Act.

FEMA has prepared a draft Environmental Assessment (EA) for the proposed project pursuant to the National Environmental Policy Act of 1969 and FEMA's implementing regulations at Title 44 of the Code of Federal Regulations Part 10. The draft EA evaluates alternatives for compliance with applicable environmental laws, including Executive Orders 11990 (Protection of Wetlands), 11988 (Floodplain Management), and 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations). The alternatives that are evaluated in the draft EA are (1) No Action and (2) fuels reduction in the communities of Black Butte Ranch, COID Brookwood, DBLT Whychus Creek/Squaw Creek Estates, Deschutes River Woods, DRRH6, Lane Knolls, Panoramic Estates, Skyliners, TNC Stevens Canyon, and Tollgate (Proposed Action).

The draft EA is available to the public on FEMA's website at <http://www.fema.gov/environmental-historic-preservation-documents> and will be available on December 19, 2014, at the Deschutes County Forester office, 61150 SE 27th Street, Bend, OR 97702.

If no significant issues are identified during the comment period on the draft EA, FEMA will finalize the draft EA, issue a Finding of No Significant Impact (FONSI), and fund the project. The FONSI will be available to the public at <http://www.fema.gov/environmental-historic-preservation-documents>. Unless substantive comments on the draft EA are received, FEMA will not publish another notice for this project.

The deadline for submitting written comments on the draft EA is January 26, 2015, at 5 p.m. Comments should be mailed to Science Kilner, Deputy Regional Environmental Officer, FEMA Region X, 130 228th Street SW, Bothell, WA 98021; emailed to [science.kilner@fema.dhs.gov](mailto:science.kilner@fema.dhs.gov); or faxed to 425-487-4613.