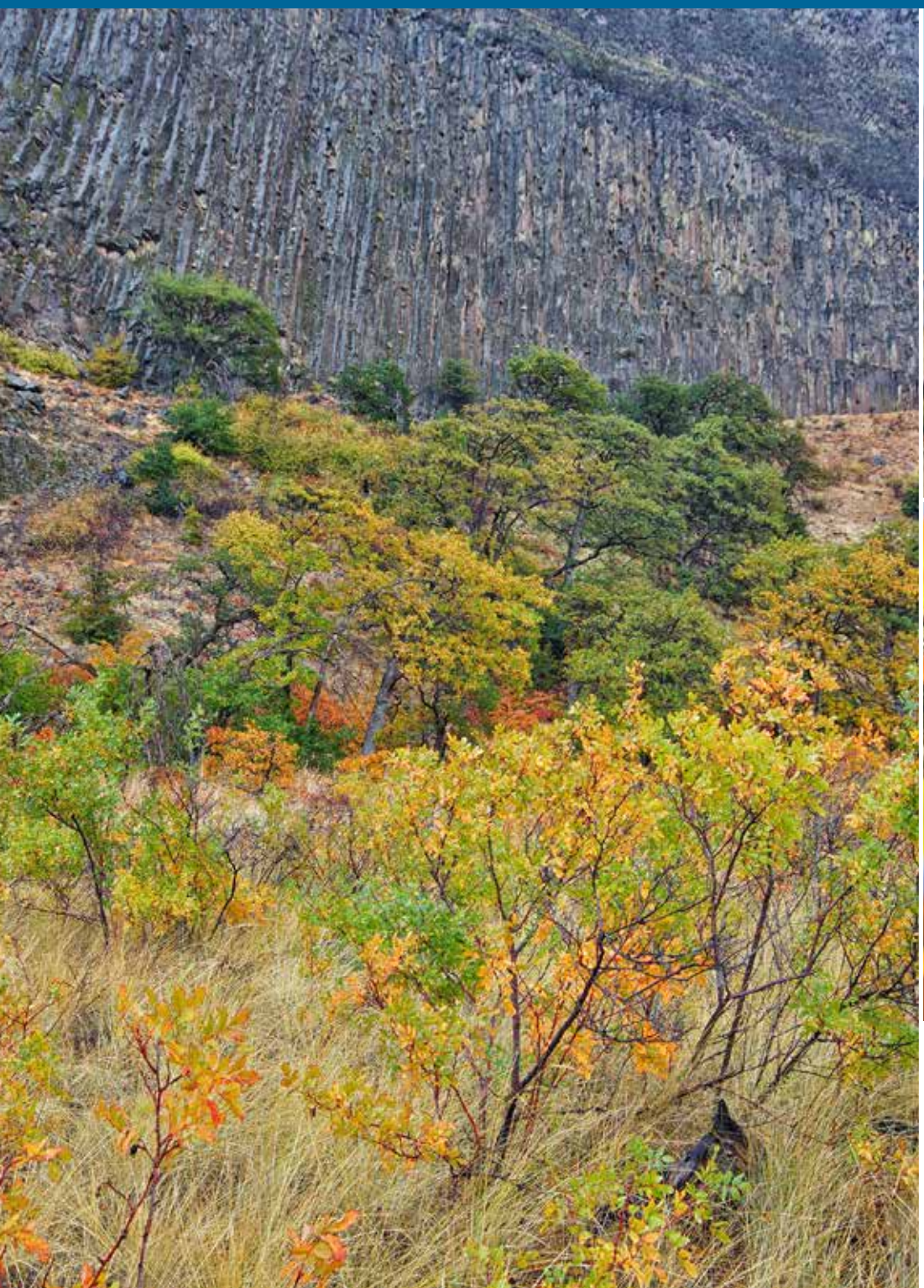
January 2018

Oak Creek Wildlife Area Management Plan



Washington Department of FISH and WILDLIFE

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January 2018

Table of Contents

Maps

Tables

List of Acronyms & Abbreviations

BLM	Bureau of Land Management
BPA	Bonneville Power Administration
CCC	Cowiche Canyon Conservancy
CWICC	Central Washington Interagency Communications Center
DAHP	Washington State Department of Archaeology & Historic Preservation
DNR	Washington State Department of Natural Resources
EIA	Ecological Integrity Assessment
EIM	Ecological Integrity Monitoring
ESA	Endangered Species Act
IPM	Integrated Pest Management
TNC	The Nature Conservancy
PHS	Priority Habitats and Species
RCW	Revised Code of Washington
RCO	Washington State Recreation and Conservation Office
RMEF	Rocky Mountain Elk Foundation
SEPA	State Environmental Policy Act
SGCN	Species of Greatest Conservation Need
SRFB	Salmon Recovery Funding Board
SWAP	State Wildlife Action Plan
USFWS	United States Fish and Wildlife Service
USFS	United States Forest Service
WAC	Washington Administrative Code
WAAC	Wildlife Area Advisory Committee
WDFW	Washington State Department of Fish and Wildlife
WLA	Wildlife Area
WHCWG	Washington Wildlife Habitat Connectivity Working Group
WWRP	Washington Wildlife and Recreation Program

North Fork Wenas Creek Canyon
Photo by John Marshall

Wildlife Area Management Planning Overview

Introduction

Under state law, the Washington State Department of Fish and Wildlife (WDFW) is charged with "preserving, protecting, and perpetuating" the state's fish and wildlife species, while also providing sustainable recreational opportunities that are compatible with fish and wildlife stewardship. Today, WDFW owns or manages nearly one million acres in 33 wildlife areas across Washington, whose diversity includes nearly all species and habitats present in the state. With the loss of natural habitat posing the single greatest threat to native fish and wildlife, these areas play a critical conservation role. The wildlife area management plan addresses all aspects of resource management, and aligns with statewide conservation goals.

The Oak Creek Wildlife Area Management Plan was developed by an interdisciplinary team of WDFW staff with significant public involvement. This included input from the local stakeholder-based Oak Creek Wildlife Area Advisory Committee (WAAC), input from other public agencies, and input from other interested citizens gathered from two public meetings.

Wildlife Area Management Planning Framework

Management of these areas is guided by WDFW's mission and strategic plan, as well as by state and federal laws. Each new plan is guided by the Wildlife Area Management Planning Framework (Framework), which summarizes the agency's mission, laws, policies and approaches to management of fish and wildlife, as well as public use and recreation. The framework summarizes priorities and guidance developed in each of the agency's programs – Fish, Wildlife, Habitat, and Enforcement. Readers are encouraged to review the framework in advance, or as a companion document to this wildlife area plan (http://wdfw.wa.gov/lands/wildlife_areas/management_plans/). The framework provides context for the organization and content of wildlife area plans across the state. The framework is a living document, and is updated periodically to reflect new agency initiatives, guidance or directives.

Purpose

The purpose of this management plan is to guide all management activities occurring on the Oak Creek Wildlife Area for the next 10 years. Management goals, objectives and performance measures are defined in the plan. These were developed to be consistent with WDFW's mission, strategic plan, and requirements associated with the funds used to purchase the wildlife areas. The plan is intended to provide a clear vision of how these lands are managed to a variety of audiences, including WDFW staff and the public.

Public Outreach and Stakeholder Involvement Process

The agency is committed to a transparent and inclusive public outreach process for all wildlife area management plans. Under the umbrella of the statewide goals listed below, a customized outreach strategy was developed for this area, tailored to local and regional stakeholders, as well as local and out of the area visitors and user groups. For this plan, the public process included three elements: 1) public and advisory committee meetings; 2) development and distribution of fact sheets, meeting announcements, and news releases; and 3) solicitation of public comments through phone, email, and the WDFW website. A complete summary of the public outreach activities is included in Appendix H, Public Response Summary, and on the WDFW website at http://wdfw.wa.gov/lands/wildlife_areas/management_plans/.

Statewide Planning Goals

A complete list of goals, objectives, and performance measures specific to this wildlife area can be found in Appendix A.

Wildlife Area Vision

The vision of the Oak Creek Wildlife Area is to protect and enhance the ecological integrity and species diversity for wildlife resources, maintain healthy populations of game and non-game species, protect and restore native plant communities, and provide diverse opportunities for the public to encounter, utilize, and appreciate wildlife and wild areas.

Statewide Wildlife Area Vision

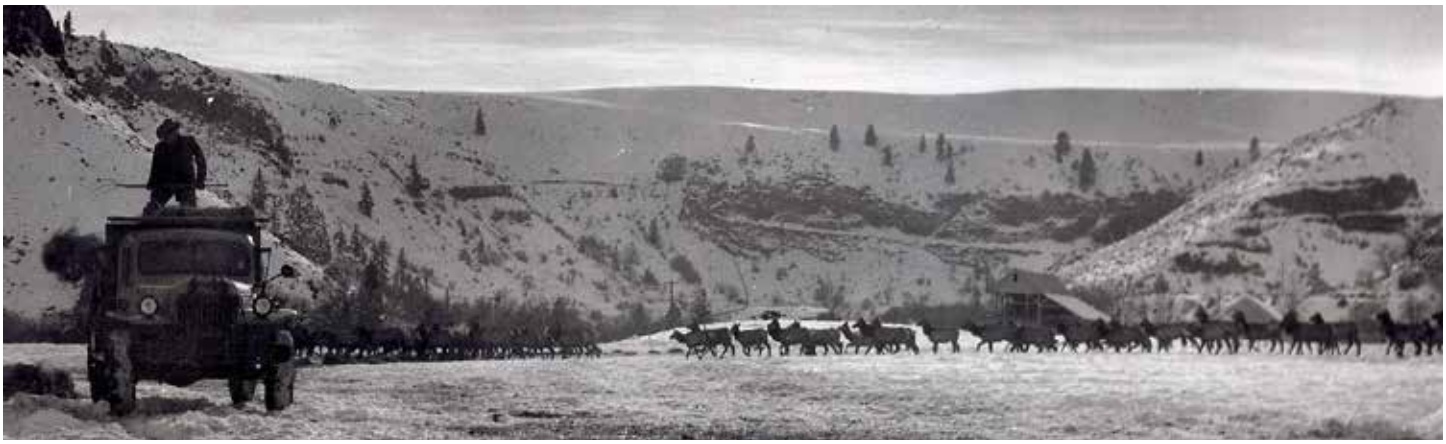
Wildlife areas showcase conservation, recreation, and restoration on public lands, and inspire and engage the citizens of Washington to care for our rich diversity of fish, wildlife and habitat. These lands:

- Support public values of open space, health and well-being, economic vitality and community character;
- Are managed collaboratively with interested parties; and
- Reflect each area's unique contribution to the vitality of Washington State.

Statewide Planning Goals

Goal 1	**Restore and protect the integrity of priority ecological systems and sites.** This goal originates from the WDFW Strategic Plan, Goal #1. "Conserve and protect native fish and wildlife". Ecological integrity monitoring on priority sites will be developed as part implementation of the management plan for each individual wildlife area plan discussed on page 66.
Goal 2	**Sustain individual species through habitat and population management actions, where consistent with site purpose and funding.** This goal relates to WDFW Strategic Plan, Goal #1. Each individual wildlife area plan will provide a summary of species associated with the wildlife area and will focus on target species for habitat management actions.
Goal 3	**Provide fishing, hunting, and wildlife-related recreational opportunities where consistent with Goals 1 and 2.** This goal is consistent with the WDFW Strategic Plan, Goal #2. Each plan will provide a summary of recreation activities associated with the wildlife area, aiming toward balancing recreational activities with species and habitat protection.
Goal 4	**Engage stakeholders in consistent, timely and transparent communication regarding wildlife area management activities.** This goal relates to Strategic Plan Goal #3, "Promote a healthy economy, protect community character, maintain an overall high quality of life, and deliver high-quality customer service". As described under the public outreach section of this document, public input and involvement is a key component in the development of the management plan through the advisory committee efforts and public meetings. After the plan is adopted, the management plan updates will be reviewed by the wildlife area advisory committee on a biannual basis.
Goal 5	**Maintain productive and positive working relationships with local community neighbors, lessee partners and permittees.** As part of day-to-day business, wildlife area staff strives to maintain positive working relationships with grazing and agricultural lessees and the local community.
Goal 6	**Hire, train, equip, and license, as necessary, wildlife area staff to meet the operation and management needs of wildlife areas.** This goal is consistent with Goal #4 of the Strategic Plan. Build an effective and efficient organization by supporting the workforce, improving business processes, and investing in technology. Specific activities on wildlife areas include attending training and hiring qualified staff.
Goal 7	**Maintain safe, highly functional, and cost-effective administration and operational facilities and equipment.** This goal is consistent with WDFW Strategic Plan Goal #4. Maintenance of facilities and equipment is a key activity on wildlife areas. Annual reporting is required by WDFW and agencies that provide operations and maintenance funding (e.g. U.S. Fish and Wildlife Service, Pittman Robertson).

Success Stories



Elk feeding program in the 1950's

Oak Creek Visitor's Center

Oak Creek Wildlife Education Program

Through partnerships with local volunteers and promotion with local tourism organizations, Oak Creek Wildlife Area has become one of the agency's most popular wildlife areas. The Oak Creek Wildlife Education Corps (WEC) provide education and outreach to thousands of visitors that come to the wildlife area visitor center every year. Since 1989, the WEC group has staffed the visitor center and provided information about the importance of state lands in managing species and their habitat. Since the wildlife area is located along US Highway 12, WDFW partners with White Pass and Chinook Pass Scenic Byways and Visit Rainier tourist organizations to promote the wildlife area and recreation opportunities. Oak Creek is the only one of the state's 33 wildlife areas that boasts a visitor center. The building was constructed in 1985, then expanded in the early 2000s, and contains wildlife displays, informational posters and other educational exhibits. The Oak Creek Wildlife Area Visitor Center provides education and outreach around many of the wildlife area activities including the popular elk feeding program, hunting, land management activities like forest restoration and recreation. The elk winter feeding program draws local, national, and international visitors and has become a major visitor destination. With expansion and growth of agriculture in the area, an annual supplemental winter-feeding program started in 1968 to prevent elk from damaging local crops. In its infancy, supplemental feeding was conducted only during severe winters. Then, in the 1950s, an eight-foot high elk fence was constructed along the south side of the Tieton River and across the Naches River and Cleman Mountain to the Wenas Valley, to help prevent the seasonal movement of elk into lower elevation agricultural lands during winter months. The fence and winter feeding program combined are the best option in this area for preventing agriculture damage by elk. Currently, winter feeding of elk occurs on four sites on or near the wildlife area. A fifth feeding site provides a viewing opportunity of California bighorn sheep, which are fed on Cleman Mountain each winter to allow for accurate herd counts, disease testing and trapping for relocation to supplement other herds in the state.

5th grade students from Naches Valley Middle School watching the elk feeding tour truck in the background
Photos by Justin Haug

Fish and Wildlife Habitat Conservation and Recreation

In 1940, the Oak Creek Wildlife Area was formed with the acquisition of 240 acres. The initial goal of the wildlife area was to reduce elk conflict on private lands. The wildlife area continued to expand into the 1970s, with the original focus of providing winter range for deer and the growing Yakima Elk Herd. In 2006, WDFW began to work with the Department of Natural Resources (DNR) on a land exchange. This land exchange would trade forested land to DNR in exchange for additional shrub-steppe habitat. In 2012, this trade was completed, with WDFW trading 11 sections of forested land in the Bethel Ridge Area to DNR for shrub-steppe habitat primarily on other wildlife areas. While working on the land exchange, WDFW acquired additional forest and shrub-steppe habitat in danger of being developed. From 2006-2014, 20,000 acres of forest land were acquired with help from the Rocky Mountain Elk Foundation, U.S. Fish and Wildlife Service (USFWS), Recreation and Conservation Office (RCO), and The Nature Conservancy. As a result, the 10,400-acre Rock Creek Unit was created and the Oak Creek Unit increased by 10,000 acres. In addition, over 5,000 acres of shrub-steppe, riparian, oak woodland transition habitat have been added to the wildlife area. The wildlife area provides habitat for a myriad of species, as well as access for hunting, fishing, and other outdoor recreation.

Lupine field
Photo by John Marshall

Oak Creek Forest Restoration Project

Following the acquisition of 10,000 acres from Plum Creek Timber Company in the Oak Creek watershed, the Tapash Sustainable Forest Collaborative (http://www.tapash.org/) was formed to coordinate across ownerships and restore forested lands managed by the U.S. Forest Service, Department of Natural Resources, The Nature Conservancy (TNC), Yakama Nation, and WDFW. The first project developed by Tapash was on the recently acquired lands in the Oak Creek watershed. WDFW worked with TNC and other Tapash members to implement a large scale forest restoration project. Historically, the area was influenced by frequent fire, but years of fire exclusion and past harvest practices altered forest structure and composition, increasing the occurence and severity of catastrophic fire, insect outbreaks, and forest diseases. These conditions disrupted many ecological processes, including those involving tree growth, mortality, and disturbance. In 2011, with a National Fire Plan grant, TNC and University of Washington completed the Teiton/Oak Creek Landscape Assessement and Treatment Prioritization. This analysis identified two desired future scenarios for forested areas: 1) large tree, open mosaic (non-regular forest openings with clumps of trees) conditions; and 2) large tree, multilayer conditions. In addition, units were identified for prescribed burn treatments. In 2012, WDFW was awarded a Recreation and Conservation Office (RCO) State Lands Restoration grant to complete the non-commercial thinning and prescribed burning. Funding was used to thin 750 acres and conduct pile burning. In 2015, commercial harvest occurred on 411 acres to improve forest health and restore a more characteristic forest structure. Prescribed burn units have been identified, with plans to complete burning in the spring and/or fall of 2017.

North Fork Cowiche Creek Acquisition and Grazing Easement

In 2014, WDFW, in partnership with Cowiche Canyon Conservancy (CCC), Rocky Mountain Elk Foundation, and the Department of Ecology, began a unique partnership when they signed a Memorandum of Understanding (MOU) for formerly privately owned lands to be acquired in the North Fork Cowiche Creek area. Under the MOU, mitigation funding from the Department of Ecology, Kennewick Irrigation District, and the Yakima Basin Integrated Plan would be used to acquire shrub-steppe habitat adjacent to the Oak Creek Wildlife Area. Through the MOU, CCC would oversee a perpetual grazing easement on the property, a key priority of the seller and local community. Future grazing will be managed thru a permit system consistent with ecological sound grazing plans, as required by WDFW.

Since the acquisition was completed in late 2014, two grazing seasons have successfully been completed. CCC completed utilization monitoring each year while coordinating with WDFW and the permittee. An important land management tool is being utilized with oversight from a local land conservancy. In addition, an important community value: "working lands" is continuing on state lands with a long history of responsible livestock grazing. The next step will be to develop a grazing management plan consistent with WDFW standards (See Appendix A, Goal 12, Objective B). This successful model may fit in other areas where local communities have concerns with working lands disappearing under state and/or federal ownership. The MOU, grazing easement, and state ownership and non-governmental organization collaborative management provide checks and balances to make sure grazing is properly managed to conserve wildlife habitat while supporting other values of the local community. This partnership also provides increased capacity for monitoring on WDFW lands.

Oak Creek Unit
Photo by Ross Huffman

Wildlife Areas Overview

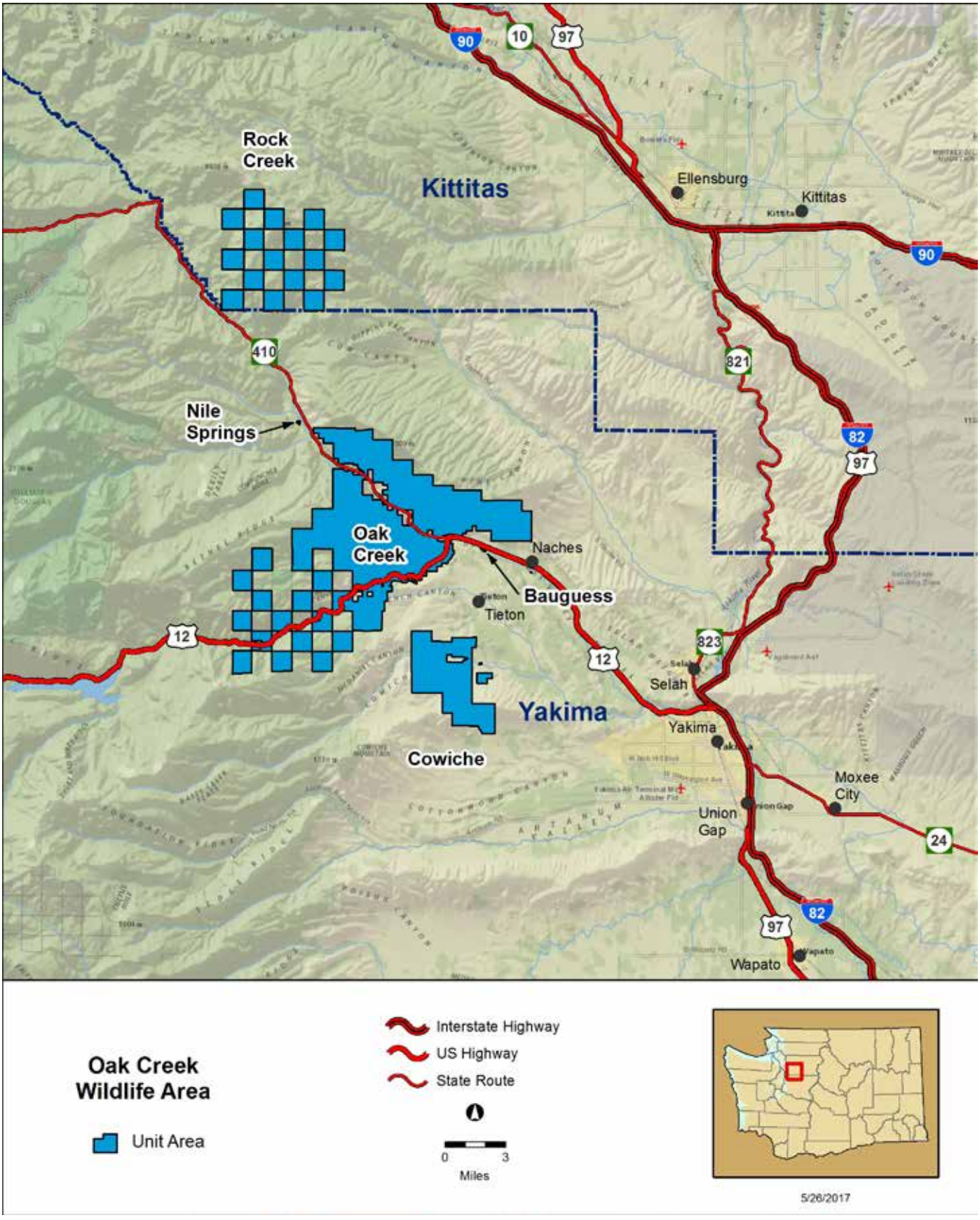
This section describes each of the five units of the Oak Creek Wildlife area including, Oak Creek, Cowiche, Rock Creek, Bauguess, and Nile Spring units. Information includes an overview of property locations and sizes, resource management, recreation and public use, and landownership and management.

Property Location and Size

The Oak Creek Wildlife Area is located in Yakima and Kittitas counties in south central Washington (see Map 1). The 67,100 acre wildlife area is located on the east slopes of the Cascades and is within the Naches and Tieton River Sub-basins of the Yakima River Watershed. The wildlife area ranges from low elevation shrub-steppe to subalpine forest. The three primary units are Oak Creek, Cowiche, and Rock Creek. The Oak Creek and Cowiche units are located in Yakima County, while the Rock Creek Unit is in southwestern Kittitas County. The wildlife area is adjacent to federal (U.S. Forest Service) and state (DNR) lands and is in mixed checkerboard ownership, with some private inholdings. It has two small units that require little management and have no recreational access. The nine-acre Nile Spring Unit is surrounded completely by private landowners in the Nile Valley and is bisected by the Nile Road. It was previously utilized as fish acclimation ponds by WDFW and now serves as wetland and nesting habitat for a variety of wildlife species. The 22-acre Bauguess Unit is bordered on the north by U.S. Highway 12 right-of-way, with the remainder entirely surrounded by private landowners. The unit is bisected by the Naches River and provides important riparian habitat and floodplain functionality. This parcel was acquired by private donation and serves as off-channel wetland and waterfowl nesting habitat along the river, particularly for wood ducks.

Oak Creek Wildlife Area
Photo by Justin Haug

Map 1. Oak Creek Wildlife Area Vicinity Map



The Oak Creek Unit

Tieton River, Oak Creek Wildlife Area
Photo by Justin Haug

GENERAL WILDLIFE AREA INFORMATION		
Size	-	48,990
Acquisition Date	-	1940 - 2014
Acquisition Funding	-	U.S. Fish and Wildlife Service, Pittman Robertson, Section 6; National Park Service, LWCF; Bonneville Power Administration; Washington state RCO, and WWRP; WDFW Wildlife funds; Washington State Department of Ecology, mitigation; Washington State Department of Natural Resources, Land Exchange
Location	-	T14 N R 15E, T14N R16E, T15N R15E, T15N R16 E
Elevation	-	1,700 – 5,900 ft
Recreational Opportunities	-	Winter elk viewing, hunting, fishing, hiking, rock climbing, rafting, wildlife viewing, mountain biking, wild flower viewing, horseback riding, camping, motorized recreation, shed antler hunting, target shooting
Access	-	Headquarters is located 7 miles west of Naches along US Highway 12

The Oak Creek Unit had its first purchase in 1940 (240 acres) and now covers 48,990 acres in a variety of habitats, including shrub-steppe, riparian, oak woodland, ponderosa pine forest, and mixed conifer forest. Originally acquired to provide winter range for the growing Yakima elk herd, the unit provides habitat for many species and numerous recreational experiences. The unit is bisected by the Naches and Tieton rivers, as well as U.S. Highway 12 and State Route 410 (see Map 2 & 3). While WDFW owns much of these lands in contiguous areas, majority of the wildlife area is in checkerboard ownership with DNR and USFS. WDFW leases 9,214 acres from DNR and this land is managed as part of the wildlife area.

The Naches and Tieton Rivers provide fishing for rainbow trout and whitefish. They are also important rivers for recovery of bull trout, Mid-Columbia steelhead, and Chinook salmon. The namesake of the wildlife area, Oak Creek, flows through the heart of the unit. Oak Creek, along with its tributaries, are the only creeks that flow year round on the unit. Other creeks and streams are seasonal and include: Bear Canyon, Cougar Canyon, North Fork Cowiche Creek, Waterworks Canyon, Meystre Canyon and Garrett Canyon. There are two manmade ponds that provide great fishing opportunities. Tim's Pond is located on U.S. Highway 12 and is stocked several times a year. Mud Lake, located on Cleman Mountain, is also stocked annually and provides a unique fishing opportunity in the area. Other major land features include Bethel Ridge, Cleman Mountain and the Tieton River Canyon. These areas provide beautiful landscapes and great recreational experiences. Rock climbing is popular at multiple sites along the Tieton River Canyon's cliffs, while the river itself provides white water rafting in the fall during the annual "flip flop," where water is spilled out of the Rimrock Reservoir. The Tieton River Nature Trail provides year round hiking, while the Bear Canyon Trail and Waterworks Canyon trails are great in the spring for wildflower and bird watching. Species that occur on this unit include steelhead, mule deer, elk, big horn sheep, golden eagle, sage thrasher, and Lewis' woodpecker.

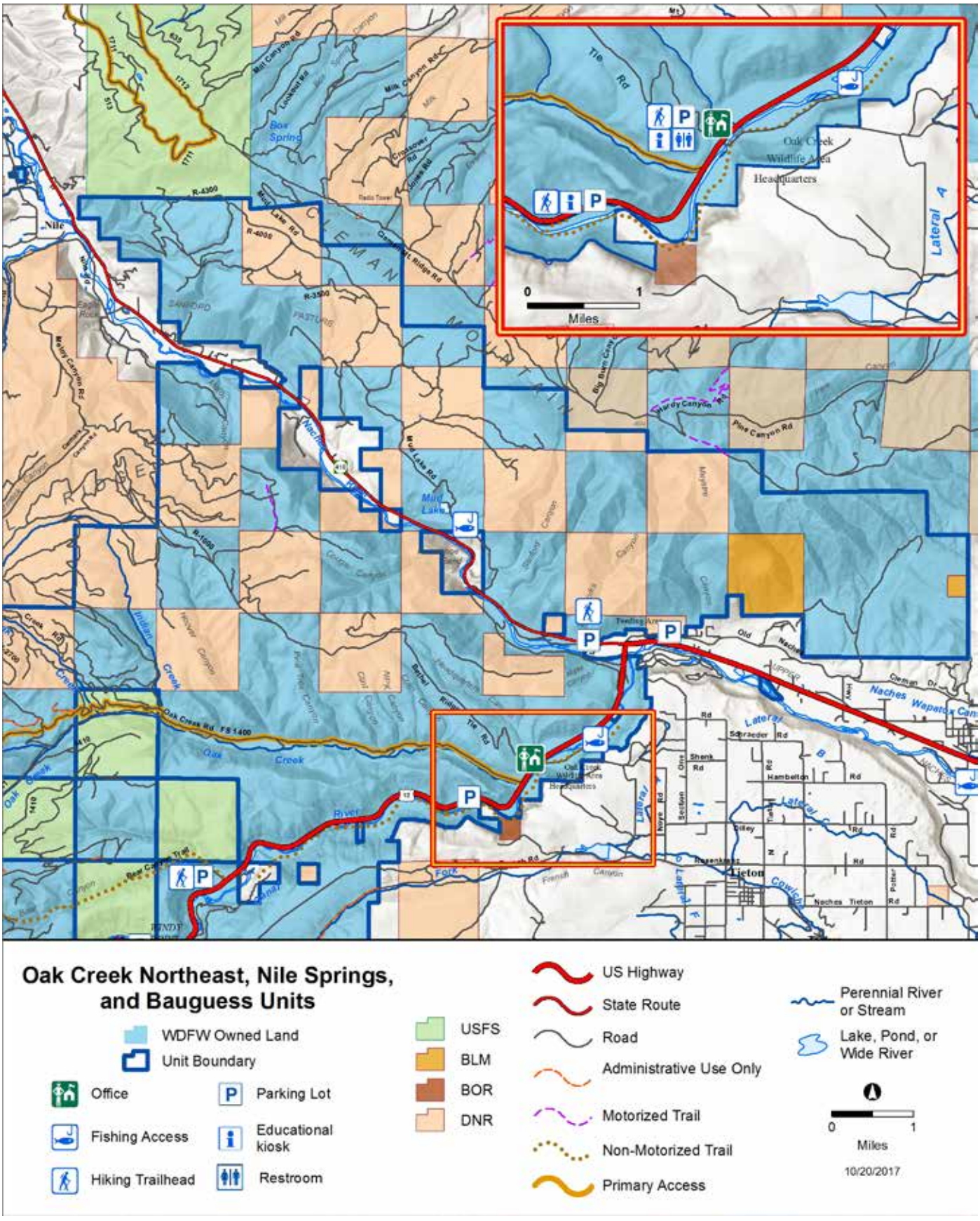
The Oak Creek Unit headquarters is located seven miles west of Naches along U.S. Highway 12 and contains the majority of developed facilities for the wildlife area. The Oak Creek Visitor's Center is open in the winter during elk feeding and provides a unique opportunity for people to see elk up close. There are a total of three feed sites on the unit, including two for elk and one for bighorn sheep. A large part of the winter range around the feed sites is closed in the spring to public entry to protect elk. Livestock grazing occurs in the North Fork Cowiche Creek area where the Cowiche Canyon Conservancy holds an easement for grazing rights.

Recreation across the unit is diverse, with hunting being the most popular activity. Elk, mule deer, and upland game birds provide the most opportunity. Each year thousands of hunters utilize the wildlife area including those who target shoot for practice. Anglers enjoy fishing for rainbow trout and whitefish on the Naches and Tieton rivers, which are open for fly fishing. Hiking is popular especially in the spring when wildflowers are in bloom. Shed antler gathering is popular in the spring, especially near the feed sites. Hundreds of people line up each year when the public entry closure ends to go look for shed antlers. The wildlife area has hundreds of dispersed campsites that are used throughout the year. Off-road vehicle (ORV) driving is popular on designated routes as the wildlife area provides access to adjacent DNR and USFS roads and motorized trails. The diverse landscapes and beautiful scenic areas offer great opportunities for a variety of recreation and outdoor experiences.

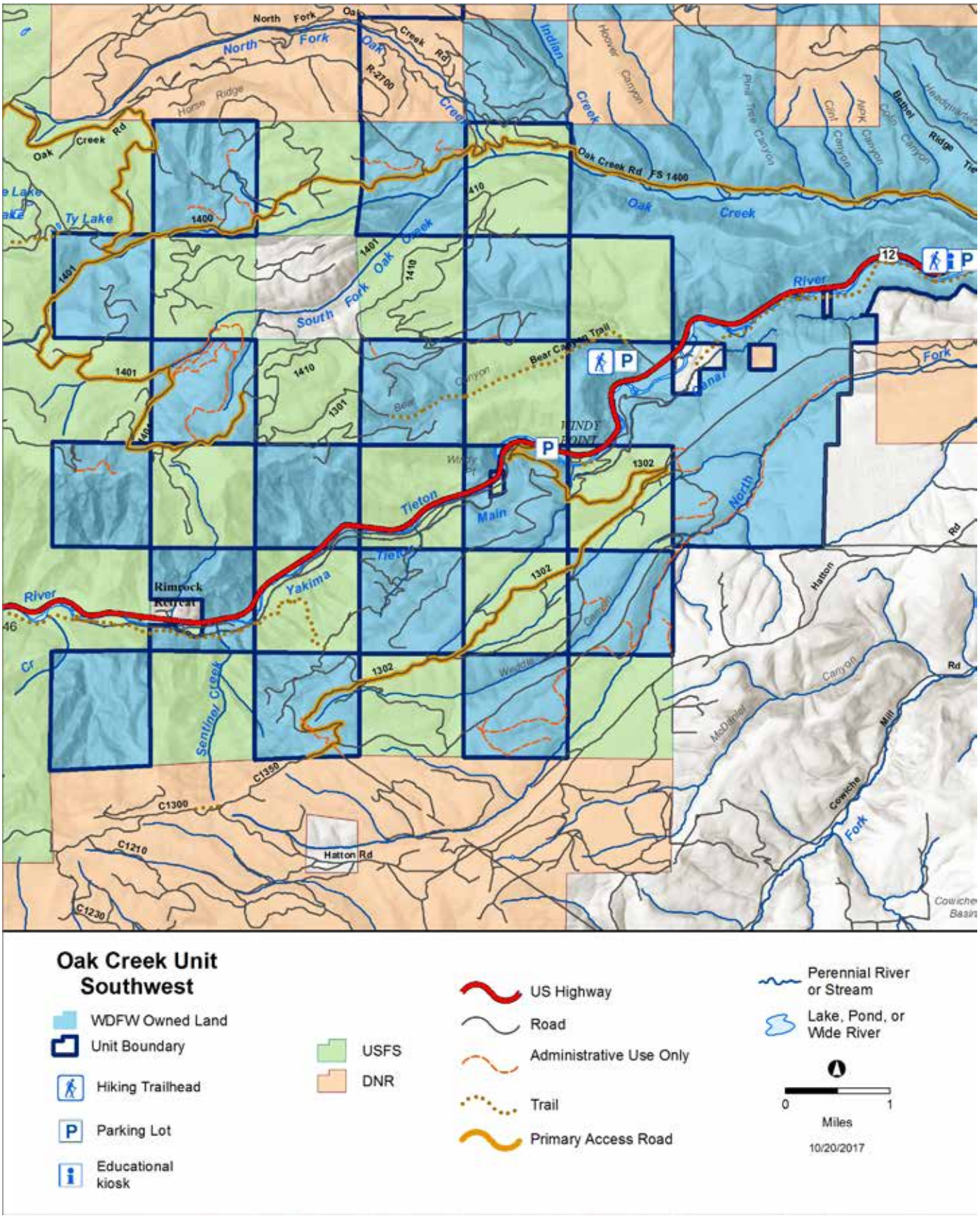
Primary management objectives for this unit include:

- By 2018, develop and implement a shrub-steppe post fire rehabilitation plan.
- Identify acquisition priorities for expansion of wintering habitat (migration corridors) for elk, mule deer, other fish and wildlife species; and coordinate with partners to increase hunting and fishing opportunities.
- Identify priority areas for forest treatments within the 10 year planning cycle.
- Implement seasonal road closures annually to limit disturbance to wildlife by vehicle traffic.
- Maintain winter feeding at three sites annually, including one for bighorn sheep.
- Maintain access to Tieton River rock climbing.
- Maintain annual fishing opportunities.
- Promote annual hunting and fishing opportunities for underrepresented groups (e.g. ADA access, Women in Outdoors, Youth Weekend).

Map 2. Oak Creek Wildlife Area Northeast



Map 3. Oak Creek Wildlife Area Southwest



The Cowiche Unit

Balsamroot and Oregon white oak, Cowiche Unit
Photo by David Hagen

GENERAL WILDLIFE AREA INFORMATION		
Size	-	7,683 acres
Acquisition Date	-	1975 - 2012
Acquisition Funding	-	National Park Service, LWCF; U.S. Fish and Wildlife Service, Pittman Robertson; Washington state RCO, WWRP, and SRFB; WDFW Wildlife Funds
Location	-	T14N R16E, T13N R16E, T13N R17E
Elevation	-	1,900 – 3,000 ft
Recreational Opportunities	-	Hunting, fishing, hiking, wildlife viewing, wild flower viewing, shed antler hunting, target shooting
Access	-	Located south of the Oak Creek Unit, 11 miles west of Yakima. The unit is bisected by Cowiche Mill Road which provides primary access (parking). The unit is walk in only.

The Cowiche Unit is located south of the Oak Creek Unit and is outside of the Cowiche community, 11 miles west of Yakima. The unit covers 7,683 acres of shrub-steppe, oak woodland, and riparian habitats. The first acquisition occurred in the 1970s to provide additional winter range for elk. The unit is bisected by Cowiche Mill Road, which provides the primary access point (parking lot) (see Map 4). The unit is walk-in only, with numerous primitive roads crossing the landscape. The South Fork Cowiche Creek flows through the middle of the unit and is important for recovery of Mid-Columbia steelhead. WDFW is working on projects to restore the creek to improve stream flows and habitat for fish. Wildlife species that occur on this unit include mule deer, elk, golden eagle, sage thrasher, and Lewis' woodpecker.

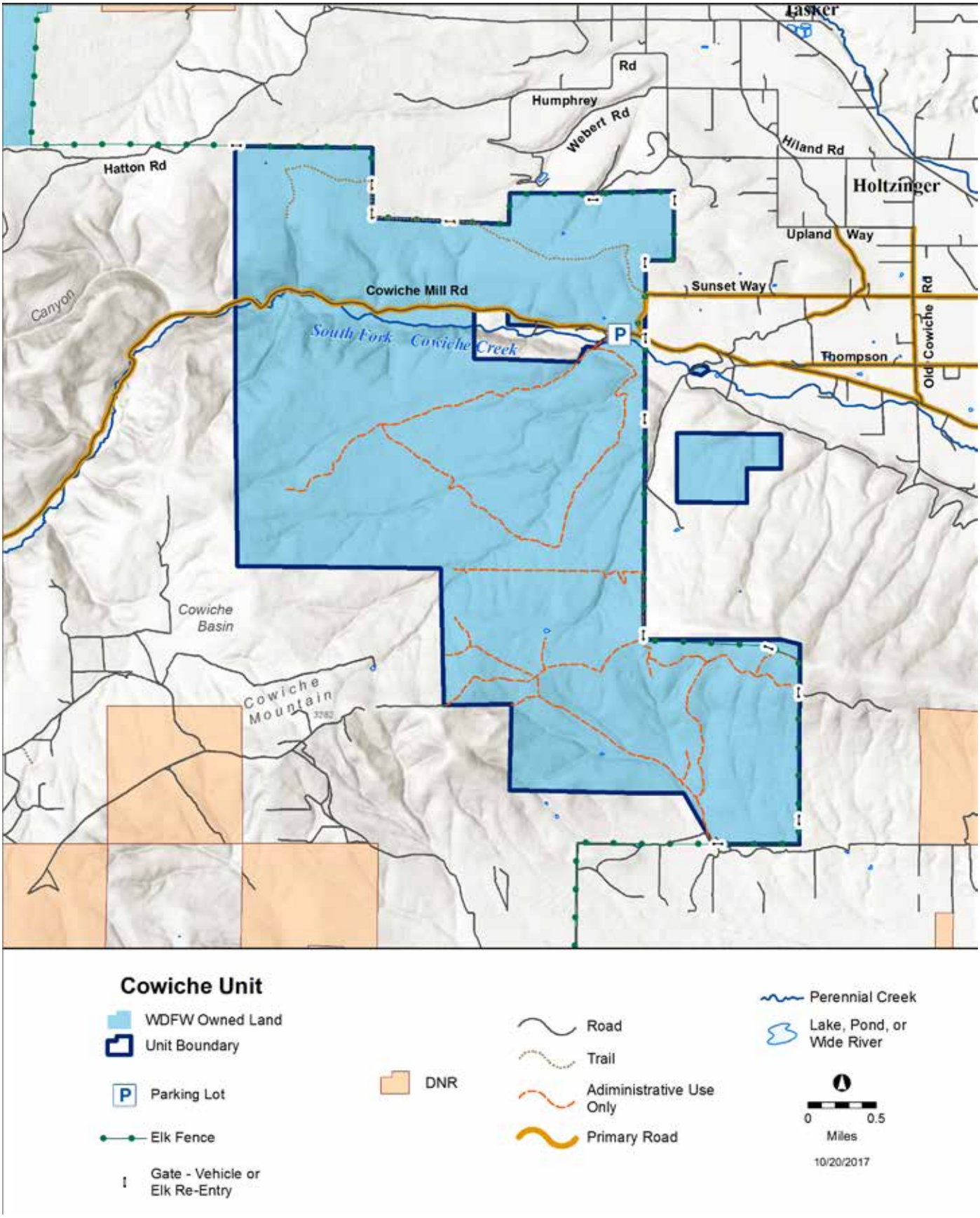
The unit is bordered on the northern, eastern, and southern sides by elk fence to reduce movement of elk onto agricultural lands. A winter elk feed site is located on the property, but public viewing opportunities are not available. A hay barn is located on the unit to support the winter feeding program. The area also has two livestock grazing permits. One permit is for eight acres and is associated with an inholding on the wildlife area. The other permit is for 2,300 acres, with the goal of maintaining the ecological integrity of the habitat for elk and mule deer. The unit is isolated from other public land and is primarily surrounded by agriculture and rural development.

In addition to hunting in the fall, the area is popular for spring wildflower viewing and bird watching. The Box Canyon Trail, developed in partnership with the Cowiche Canyon Conservancy, is the only developed trail on the unit. A large part of the unit south of Cowiche Mill Road is closed to all public entry during the spring to protect elk. When the closure ends on May 1, the area is heavily used by the public to collect shed antlers.

Primary management objectives for this unit include:

- By 2018, develop and implement a shrub-steppe post fire rehabilitation plan for the Oak Creek WLA and coordinate with Cowiche Canyon Conservancy.
- Identify acquisition priorities for expansion of wintering habitat (migration corridors) for elk, mule deer, other fish and wildlife species; and coordinate with partners to increase hunting and fishing opportunities.
- Explore volunteer opportunities for Townsend's ground squirrel surveys.
- Coordinate milk weed plantings on wildlife area with Cowiche Canyon Conservancy to support Monarch butterfly and other pollinators conservation.
- Explore volunteer opportunities for maintaining and enhancing shrub-steppe habitat.
- Protect big game by maintaining seasonal closures to reduce stress and mortality during critical periods and coordinate with enforcement.
- Promote annual hunting and fishing opportunities for underrepresented groups (e.g. ADA access, Women in Outdoors, Youth Weekend).

Map 4. Cowiche Unit



The Rock Creek Unit

Righthand Fork Creek Canyon
Photo by John Marshall

GENERAL WILDLIFE AREA INFORMATION		
Size	-	10,386 acres
Acquisition Date	-	2009 and 2011
Acquisition Funding	-	U.S. Fish and Wildlife Service, Section 6; Washington state RCO, WWRP
Location	-	T17 N R15 E
Elevation	-	2,800 – 6,000 ft
Recreational Opportunities	-	Hunting, fishing, hiking, motorized recreation, camping, target shooting, wildlife viewing
Access	-	Rock Creek Unit is located 20 miles northwest of Naches off State Route 410, and is accessed via several USFS roads.

The Rock Creek Unit covers 10,386 acres and is located about 20 miles northwest of Naches off of State Route 410. It is accessed via several USFS roads. Located in Kittitas County, the unit is in checkerboard ownership with USFS land on the Okanogan-Wenatchee National Forest, Naches Ranger District (see Map 5). The property was acquired with funding from RCO and USFWS for the priority habitats it contains and for recovery of spotted owls, bull trout, grizzly bears, and wolves. The unit has a high elevation and moisture gradient (the rate of change of the moisture content of soil and depth), which provides for a wide range of forested habitats. Lower elevations in the east are primarily dry pine and mixed conifer habitats while higher elevations to the west contain moist mixed conifer to subalpine. Species that occur on this unit include mule deer, elk, bighorn sheep, mountain goat, golden eagle, black backed woodpecker, vaux's swift, and cutthroat trout.

The unit is bisected by Milk Creek, Gold Creek, and Rock Creek, which all drain to the west into the Naches River. North Fork Wenas Creek and Dry Creek also bisect the unit and drain to the east, flowing into the Yakima River. Milk Lake is located on the unit and provides a beautiful destination that is accessible via motorized trail or by hiking. Cattle Camp Pond is also located on the unit. It was originally developed as a dip site for helicopters for use in fire suppression. The pond now provides a fishing opportunity.

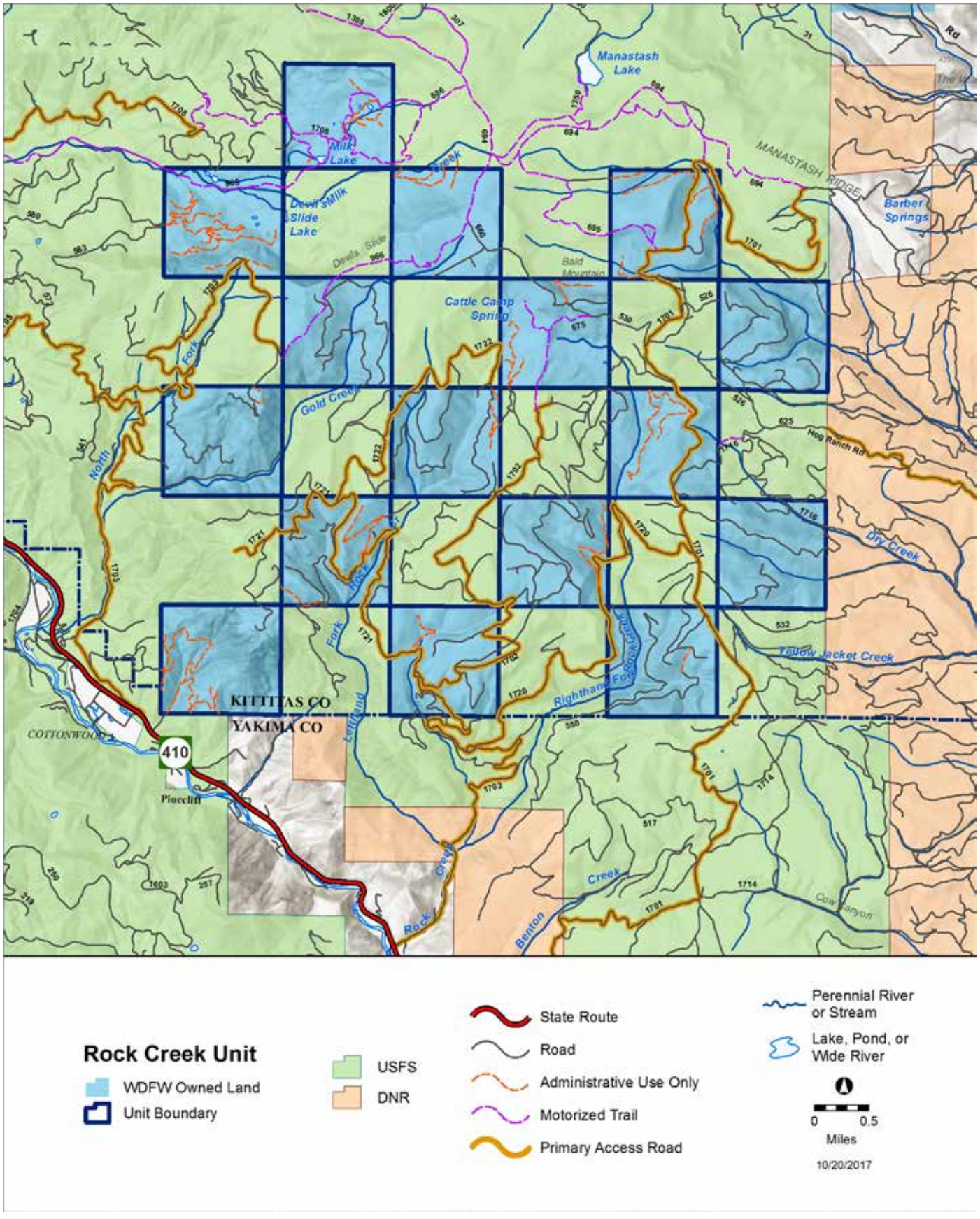
The area was formerly owned by a private timber company and has been heavily managed. Much of the forest has been harvested and is now in a young regeneration stage. It will require active management to return it to a more historic condition and improve its ecological integrity. Historically, the area was part of a sheep grazing allotment (grazing lease) that included the adjacent USFS lands. Sheep grazing no longer occurs on the unit in an effort to reduce interactions between domestic and bighorn sheep.

The area is a popular big game hunting area in the fall. The unit and adjacent USFS lands contain motorized trails that are part of the USFS system. While a majority of the trails are on USFS land, there are three dual track (ATV, Jeep) and two single track (motorcycle) trails that cross WDFW land. WDFW works with user groups and the USFS to maintain and improve these trails. This includes managing seasonal closures in the spring to reduce trail damage and erosion. Other popular activities include: recreational driving, wildlife viewing and camping. In the winter the area is part of a groomed snowmobile trail system managed by Washington State Parks.

Primary management objectives for this unit include:

- Identify priority areas for forest treatments within the 10 year planning cycle.
- Develop a DNR and USFS roads maintenance and monitoring agreement by 2021.
- Follow current northern spotted owl management guidelines for Critical Habitat for northern spotted owl.
- Manage motorized trail closures annually during critical times of the year to protect wildlife.
- Develop a plan to reduce dispersed camping impacts along riparian areas by 2018.
- Establish a disabled hunter road access site in the Rock Creek Unit by 2018.
- Promote annual hunting and fishing opportunities for underrepresented groups (e.g. ADA access, Women in Outdoors, Youth Weekend).

Map 5. Rock Creek Unit



Land Ownership and Management

Conserving key habitats is crucial to protecting Washington's natural heritage and hunting and fishing traditions. Many additions to the wildlife area have been made since the original purchase in 1940. Land acquisition proposals are evaluated as opportunities arise based on their importance for securing critical fish and wildlife habitat, recreational values, and proximity to existing public ownership. WDFW considers a variety of factors in prioritizing specific parcels for acquisition in order to use funds wisely and ensure that lands are appropriate to meet agency objectives. In addition, WDFW only purchases lands from willing landowners.

Acquisition History, funding and purpose

Acquisition funding from the following state and federal sources have been used to purchase properties on the wildlife area: Recreation Conservation Office, U.S. Fish and Wildlife Service (USFWS) Cooperative Endangered Species Conservation Fund (Section 6), State Wildlife Fund, Pittman Robertson, and Land and Water Conservation Fund.

The Oak Creek Wildlife Area is funded, in part, by The Federal Aid in Wildlife Restoration Act of 1938 (Pittman-Robertson Act [PR]). The first property purchased for the Oak Creek Wildlife Area used PR funds. Additionally, WDFW purchased and exchanged perpetual timber rights with Western Pacific Timber, LLC (formerly Cascade Lumber Company and Boise Cascade) between 1942 and 1951. These lands provided WDFW additional low elevation deer and elk winter range in exchange for the timber resources in perpetuity. In 1949, 10,989 acres of land were withdrawn from public lease and transferred from DNR to WDFW, including lands located along the Naches River to the Tieton River. Combined with the original acquisitions, over 30,000 acres of land are now set aside to manage as elk winter range under the name of the Oak Creek Wildlife Area.

More recent acquisitions occurred on the Oak Creek Wildlife Area with a combination of funding sources from RCO – Washington Wildlife and Recreation Program (WWRP) and USFWS Section 6 funding. In 2005, 3,307 acres of the Tieton River Canyon was purchased with RCO funding. Additionally, under the RCO grant, habitats protected under this grant include shrub-steppe, basalt cliffs, and ponderosa pine forests, riparian, and oak woodland. The second phase of the acquisiton (6,357 acres) was completed with funding provided by USFWS Section 6. Under the grant agreement with USFWS, the lands were purchased primarily for protection of northern spotted owl, bald eagle, wolf, grizzly bear, and bull trout.

The Cowiche Unit was developed with the purchase of 7,683 acres between 1975 and 2010. The property was primarily purchased for migration corridors for elk and deer; protection of raptors, bats, white-headed woodpecker, steelhead, bull trout, golden eagle, big horn sheep; and wildlife oriented recreation. Funding sources included Recreation Conservation Office (bonds and WWRP), National Park Service – Land and Water Conservation Fund, Pittman Robertson, and State Wildlife Fund. Under this wildlife area plan, future acquisition priorities will focus on the Cowiche Watershed, emphasizing connecting isolated units and inholdings to adjacent public lands for the benefit of elk, steelhead and shrub-steppe dependent species.

The Rock Creek Unit is the newest unit of the wildlife area and was purchased by a variety of funding sources between 2009 and 2012. The property was primarily purchased for the protection of key spotted owl habitat, bull trout, grizzly bear and gray wolf. The property also aids in the recovery of goshawk, steelhead, deer, and elk, and is used for recreation. Primary funding sources included USFWS Section 6 and RCO – WWRP.

In 2012, a statewide land exchange process between WDFW and DNR occurred, impacting the Oak Creek Wildlife Area. The Department of Natural Resources consolidated ownership of forested sections, and WDFW consolidated ownership of shrub-steppe habitat. Eleven sections in the Rattlesnake drainage were transferred to DNR (6,996 acres), and WDFW gained property in the Sanford Pasture, the Cowiche Unit, and a small parcel near the Tieton River (total 1,363 acres).

Encumbrances and Deed Restrictions

Easements

WDFW has numerous road easements both on agency land and across other private and public lands, primarily with the USFS. Easements generally provide public access, while some are for administrative use only. Other easements are for radio towers, a cell phone tower, and right-of-way for powerlines and Washington State Department of Transportation facilities. Easements are a right, held by an entity other than WDFW on wildlife areas, to cross or otherwise use a portion of the land for a specified purpose. WDFW also maintains about 40 miles of elk fence, some of which crosses private property, where agreements with landowners are in place for the purpose of accessing other parts of the wildlife area for operations and maintenance activities (e.g. fence maintenance). On Cleman Mountain, a small private orchard is located on the wildlife area under an agreement that provides administrative access to a remote section of the wildlife area.

Water rights

WDFW owns several water rights on the wildlife area that are utilized for irrigation, stock water, and domestic use. There are four water rights located at headquarters. The three primary water rights provide irrigation for the residence and surrounding area, and an additional well provides domestic water for the residence and other facilities. The Cowiche Unit has a water right from the South Fork Cowiche Creek placed in trust (not being actively used) to provide water for fish habitat. The trust expires in 2020, and at that time the water trust will either be renewed or placed into beneficial use. The Cowiche Unit also has water rights in place for livestock use.

Managing Lands on Behalf of Other Entities

The Oak Creek Wildlife Area includes land owned by other government entities such as Bureau of Land Management (BLM) and Washington State Department of Natural Resources (DNR). These lands are managed by WDFW.

WDFW leases land from DNR for conservation of wildlife habitat and public hunting. WDFW manages 760 acres of land owned by BLM located on Cleman Mountain under a memorandum of understanding (MOU). The MOU was approved in 1972 for the primary purpose of fish and game management. It requires WDFW to provide emergency winter game feeding and native browse and cover for deer and elk during the winter months. WDFW also leases 9,214 acres from DNR on the wildlife area and primarily performs weed control on these lands.

Other Entities operating on WDFW Lands

Grazing

WDFW uses livestock grazing as a tool for managing habitat and participates in landscape-level management that favors open space. Big game species such as elk and deer are often present on grazed lands, both public and private, demonstrating that carefully managed grazing can be compatible with maintenance of game populations. The agency's range ecologist provides technical expertise in evaluating the condition of range areas, and monitors range trends on grazing permit areas, while wildlife area staff members monitor compliance and annual utilization. There are two grazing permits on the Oak Creek Wildlife Area, including one on the Cowiche Unit for 2,300 acres and one for eight acres that was inherited from DNR in the land exchange. A new permit is being developed for an 80-acre parcel acquired from DNR in the land exchange. The old permit was terminated after the surrounding land was sold to WDFW. In 2014, WDFW acquired 2,588 acres where the grazing rights were separated in the deed and are held by the Cowiche Canyon Conservancy. An MOU was signed in 2014 between WDFW, Cowiche Canyon Conservancy, and the acquisition funding partners. The Cowiche Canyon Conservancy holds a permit with the livestock operator and will develop a grazing management plan to meet WDFW standards as required by the MOU. WDFW has no agriculture leases on the wildlife area.

Local Land Use Plans

The Oak Creek Wildlife Area falls under the jurisdiction

Table 1. Oak Creek Wildlife Area Units and Regulatory Designations

Wildlife Area Unit	Comprehensive Plan Land Use Designation and Zoning*	Shoreline Management Plan Designation
Oak Creek	Forest Resource, Rural-10/5, Remote Extremely Limited Development Potential, Forest Watershed, Rural Remote/Extremely Limited Development Potential	Rural, Conservancy
Cowiche	Remote/Extremely Limited Development Potential, Agricultural Resource	Rural, Conservancy
Nile Springs	Rural Self-Sufficient	Rural, Conservancy
Bauguess	Rural Remote/ Extremely Limited Development Potential	Rural, Conservancy
Rock Creek	Commercial Forest	Conservancy

*see http://yakimap.com/WebMaps/legend.html

of Yakima and Kittitas counties, and land use must be consistent with the counties' Comprehensive Plan, Natural Resource Ordinances, Critical Areas Ordinances, and Shoreline Management Plans. Table 1 describes the relationship of these land use regulations to the wildlife area land, which are consistent with the current uses on WDFW lands.

Administration and Staffing

Oak Creek Wildlife Area is located in WDFW's South Central Region (Region 3), which is headquartered in Yakima. While all of WDFW's wildlife areas are operated under the Lands Division, direct supervision is the responsibility of the regional lands operation manager. The Oak Creek Wildlife Area has three full-time staff members, including the wildlife area manager, wildlife area assistant manager, and wildlife area forester. The wildlife area has a three-month seasonal natural resource worker who works during the spring and summer. During the winter, three additional staff members are hired to assist with winter feeding operations.

Facilities and Maintenance

Wildlife area staff members are responsible for a range of duties, including managing public use and recreation on the units, managing habitat (including weed control), maintaining equipment, and repairing/improving facilities and other wildlife area infrastructure to support fish and wildlife management consistent with agency objectives. If needed, major improvements and new construction are completed by the Capital Asset Management Program and funded through capital funding requests.

The headquarters of the wildlife area is located on the Oak Creek Unit. Most of the developed facilities for wildlife area administration and maintenance are located at headquarters, including an office, residence, shop, visitor's center, hay barn, and storage barn. Other facilities include an Americans with Disabilities Act (ADA) elk viewing area, parking lot, three vault toilets, a fuel shed, quail pens, and grain silos. Tim's Pond Access Site (in development) will have two additional vault toilets, campsites, and parking. A storage building is located along U.S. Highway 12 near the headquarters. The Cowiche Unit has a hay barn, a parking lot, and a historic grain silo that was salvaged from a nearby field and is currently stored near the Cowiche hay barn. Outside the wildlife area, WDFW owns 20 acres in the West Valley near Yakima that used to be an elk feeding site. Wildlife area staff are responsible for maintenance of the hay barn on that property. WDFW also owns a cabin and three outbuildings on USFS land in the Windy Point Area.

The parcels in West Valley and the Windy Point cabin are proposed for surplus.

Fencing is an important asset on the wildlife area. Oak Creek has about 40 miles of elk fence that stretches from the west valley on the Cowiche Unit to Cleman Mountain and the boundary with the Wenas Wildlife Area. This fence is integral in reducing elk conflict during the winter and requires considerable maintenance. The wildlife area has about five miles of stock fence maintained to control livestock movements in permit areas, though much of the old stock fence has been removed over the years to reduce wildlife movement barriers.

On the Oak Creek Wildlife Area, there are several guzzlers (water holding tanks) that capture water and make it available to upland birds and other animals. The guzzlers were installed in the 1970s and 1980s. Functioning guzzlers are inspected occasionally and maintained as time allows. Catch basins on the Cowiche Unit serve the same function, they were originally constructed to collect runoff for livestock watering. These catch basins are inspected annually and maintained to provide water for wildlife and livestock in permit areas.

The wildlife area has dozens of kiosks and signs at entrance points and trailheads. These kiosks and signs are inspected regularly and maintained as needed to provide updated information for wildlife area users. There are three bridges on the wildlife area: two vehicle bridges located on the Oak Creek and Cowiche units, and a foot bridge on the Oak Creek Unit (Tieton Nature Trail). The bridges are maintained by WDFW's Capital Asset Management Program and inspected on a routine basis.

Fencing, Oak Creek Wildlife Area
Photo by Rocky Mountain Elk Foundation Volunteer

Geology and Soils

The Yakima River Sub-basin consists of two very different physiographic and geologic regions; the Cascade Mountains occupy roughly the western third of the sub-basin, while the Columbia Plateau extends from the Cascade foothills to the eastern border of the sub-basin. The mountains consist of continental formations of Eocene-age sandstone, shale, and some coal layers, and pre-Miocene volcanic, intrusive, and metamorphic formations. Tertiary and quaternary age andesite and dacitic lavas, tuff, and mudflows form a broad north-south arch along the western edge of the sub-basin (TCWRA 2003). The upper mainstem Yakima and Naches rivers and several tributaries occupy valleys excavated by glaciers. Lowlands typical of landforms associated with the Columbia Plateau are found along the lower half of the Yakima River (TCWRA 2003).

The principal rock of the Columbia Plateau is a series of basalt flows of Tertiary Age that cover older rock and reach the western edge of the Cascade Mountains. The majority of these basalt flows, interspersed with sedimentary layers are called the Columbia River Basalt Group. The thickness of the Columbia River Basalt Group within the lower and middle Yakima River basin ranges from 9,000 to 12,000 feet, increasing in thickness along a west to east gradient (TCWRA 2003). The basalt plateau of the eastern basin was subsequently folded and faulted into a series of west-east trending anticlinal ridges and synclinal valleys, called the Yakima Fold Belt, that extend from the Cascades to the broad plains of the Columbia River. The antecedent Yakima River incised canyons and water gaps through the ridges and deposited gravels, eroded from uplifting mountains and ridges in the valleys.

Outflow from glaciers along the Cascade crest into the Yakima and Naches valleys delivered large volumes of glacial outwash to the alluvial basins, resulting in partial filling of Cle Elum, Kittitas, and upper and lower Yakima valleys with sand, gravel, and silt. Glaciation created many lakes. Backwaters from the Ice-age Lake Missoula flood left thick silt deposits in the lower valley from Union Gap to Richland. Extensive portions of the eastern and southeastern sub-basin are mantled by loess, wind-deposited silt derived from outwash deposits (Yakima Basin Subbasin 2004).

The landscapes of the Oak Creek Wildlife Area comprise a variety of landforms, parent materials and biotic communities. Multiple soil types are associated with these entities, and fall under Major Land Resource Area 7 (Columbia Basin) or 8 (Cascade Mountains, East Slope). Mollisols, with considerable rock, cover many locations on the wildlife area. Other less common soils include inceptisols, aridisols, and andisols, but these are also often skeletal. Textures are typically loams or silt loams, with relatively uncommon sand or clay components present in some alluvial locations. Soils are most often well drained or excessively well drained. A range of soil depths occur on the wildlife area. Many soils are associated with very shallow ecological sites, and depth to a restrictive layer may be as little as 20 inches. Other locations support depths of 40 to more than 80 inches. Ecological sites on these soils are more likely to include loamy, cool loamy, or loamy bottom classifications. Soil temperature regimes are generally cryic, frigid, or mesic and soil moisture classes are generally xeric or aridic. Temperature and moisture regimes are associated with elevation. The majority of soils on the wildlife area are derived from some combination of residuum and colluviam (from basalt) along with varying amounts of loess and volcanic ash. The Jumpe, McDaniel, Rock Creek, and Sutkin soils are common series representative of this type. The Taneum series is an example of loess over residuum weathered from sandstone parent material, and the Wierman series is derived from alluvium. Areas of rock rubble and outcrops are also common.

Outcrops, Cowiche Unit
Photo by David Hagen

Hydrology and Watersheds

The Oak Creek Wildlife Area lies within the boundary of the Upper Yakima Watershed Resource Inventory Area (WRIA 39) and the Naches (WRIA 38). The Yakima River originates at the outlet of Lake Keechelus and runs for 214 miles in a southeasterly direction to its confluence with the Columbia River at Richland. With its tributaries, the Yakima River drains about 6,150 square miles or 4 million acres. The headwaters of the Yakima Sub-basin originate in the high Cascade Mountains, with numerous tributaries draining subalpine regions within the Snoqualmie National Forest and the Alpine Lakes, Norse Peak, and William O. Douglas Wilderness areas. Major tributaries include the Kachess, Cle Elum, and Teanaway rivers in the northern part of the sub-basin. The Swauk, Taneum, Umtanum, Manastash, and Wenas creeks drain into the upper and middle Yakima River. The Naches River in the west is formed by the confluence of the Bumping and Little Naches rivers at river mile 44.6. Tributaries of the Naches include the Tieton River and Rattlesnake and Cowiche creeks. Ahtanum, Toppenish and Satus creeks join the Yakima in the lower subbasin from the west (Yakima Basin Subbasin 2004). Stream flow data from the Bureau of Reclamation (Figure 1) shows the seasonal variation of stream flows for the Naches River.

Wenas Falls
Photo by John Marshall

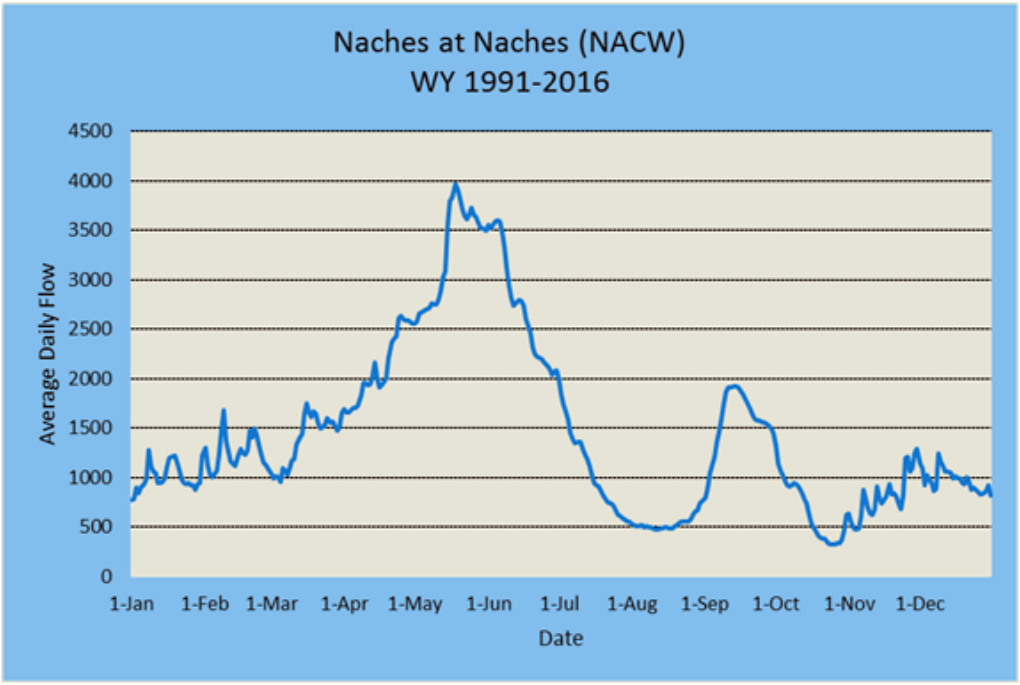


Figure 1. Average Daily Flow based on water year period 1991-2016 (Source: J. Hubble, BOR)

Current Climate

Climatic variation within Yakima County is extreme. The Rocky Mountains partly shield the region from strong arctic winds, so winters, while cold, are generally not too severe. In summer, Pacific Ocean winds are partially blocked by the Cascade Range. Thus the days are hot, but the nights are fairly cool. In winter the average temperatures at Yakima, Rimrock, and Sunnyside are 32, 29, and 35 degrees Fahrenheit, respectively. In summer the average temperature is 68 degrees at Yakima, 61 degrees at Rimrock, and 70 degrees at Sunnyside (USDA 1985).

In the summer, westerly winds from the Pacific are weak and the rain shadow effect is most pronounced. Conversely, in winter, the westerly winds are strongest, causing moisture to spill over the mountains (Ferguson 1999). Mountainous areas in the Upper Yakima and Naches basins receive most of their precipitation in the form of snow from November to March, and as rain during the rest of the year. Average annual precipitation ranges from 22-92 inches (~2,000 feet – 4,000 feet). Average winter snowfall is 75 - 400 inches (2,000 feet to summit). Average temperature ranges from 15 – 35 degrees Fahrenheit in January to 45-80 degrees Fahrenheit in July (WRCC, 2011).

Oaks in winter, Cowiche Unit
Photo by David Hagen

Ecological Values

Ecological Systems and Ecological Integrity

WDFW's strategic objectives include protecting and restoring the ecological integrity of critical habitats consistent with DNR's Natural Heritage Program's Ecological Integrity Monitoring (EIM). Our statewide goal is to restore and protect the integrity of priority ecological systems and sites. We use Ecological Integrity Assessments (EIA) and EIM to direct and measure achievements towards that goal. Ecological integrity is defined as the ability of a system to support and maintain a community of organisms that has species composition, diversity, and functional organization comparable to those of natural habitats. EIM is a tool to evaluate ecological integrity, and changes to integrity over time, within priority systems and sites on the wildlife areas. Similar to species classifications grouped according to level of threat and potential inability to support sustained populations, habitats are grouped by type, including those that are priorities for preservation and conservation. The complete classification system, including descriptions of all ecological systems, can be found online at http://file.dnr.wa.gov/publications/amp_nh_ecosystems_guide.pdf and summarized in the framework.

The planning process for Oak Creek Wildlife Area identified 10 National Ecological Systems of Concern to manage for ecological integrity. Table 2 summarizes the National Ecological Systems of Concern for the wildlife area, taken from DNR's Natural Heritage Program website, listed above.

Additionally, Appendix C contains the list of Species of Greatest Conservation Need (SGCN) believed to be present on the wildlife area and their relationships with ecological systems of concern. Actions associated with ecological integrity are included in the goals and objectives section (Appendix A), and include determining a baseline for ecological integrity for each of these systems and devising a monitoring plan to evaluate progress over time.

Blue Stickseed (*Hackelia micrantha*)
Photo by John Marshall

Table 2. Ecological Systems of Concern on the Oak Creek Wildlife Area

Ecological System of Concern	Units	Total Acreage	Description
Columbia Basin Foothill and Canyon Dry Grassland	Oak Creek, Cowiche	6,243 acres	Foothill herbaceous vegetation found on steep open slopes, in the canyons and valleys of the Columbia Basin, particularly along the Snake River canyon, the lower foothill slopes of the Blue Mountains, and along the main stem of the Columbia River. Settings are primarily long, steep slopes of 328 feet to well over 1,300 feet, and slope failure is a common process.
Columbia Basin Foothill Riparian Woodland and Shrubland	All	153 acres	Low-elevation riparian system found along the mainstem of the Columbia River and associated major tributaries on the periphery of the mountains surrounding the Columbia River Basin at and below lower tree line. Found in low-elevation canyons and draws, on floodplains, or in steep-sided canyons, in narrow V-shaped valleys with rocky substrates.
Columbia Plateau Low Sagebrush Steppe	Oak Creek	33 acres	Dwarf sagebrush shrub-steppe typically found on mountain ridges, flanks and broad terraces.
Columbia Plateau Steppe and Grassland	Oak Creek, Cowiche	2,127 acres	Extensive grasslands, not grass-dominated patches within sagebrush shrub-steppe ecological system, dominated by perennial bunch grasses and forbs, sometimes with a sparse shrub layer. Often forms a landscape mosaic with the Columbia Plateau Shrubland ecological system. Very little exposed bare ground due to mosses and lichens carpeting the area between plants, comprising a biological soil crust that is a very important characteristic in this ecological system.
East Cascades Oak-Ponderosa Pine Forest and Woodland	All	2,538 acres	Forests and woodlands dominated by a mix of *Quercus garryana* and *Pinus ponderosa* or *Pseudotsuga menziesii* at or near lower treeline in the foothills of the Eastern Cascades and eastern Columbia River Gorge. This narrowly restricted matrix ecological system appears at or near lower treeline in foothills of the eastern Cascades in Washington and Oregon within 65 km (40 miles) of the Columbia River Gorge.
Inter-Mountain Basins Big Sagebrush Steppe	All	16,624 acres	This system is grassland with shrubs. Shrubs are dominated by *Artemisia spp.*, and/or *Purshia tridentata* in an open to moderately dense shrub layer and with at least 25 percent total perennial herbaceous cover. The natural fire regime of this ecological system maintains a patchy distribution of shrubs, so the general aspect is that of grassland. *P. tridentata* is present almost always in association with tree cover, not out in the open.
North American Arid West Emergent Marsh	Oak Creek, Rock Creek	21 acres	Marshes occurring below lower treelines. Typically surrounded by savanna, shrub-steppe, steppe, or desert vegetation.
North Pacific Lowland Riparian Forest and Shrubland	Oak Creek	10 acres	Forests and tall shrublands that are linear in character, occurring on low-elevation, alluvial floodplains. Confined by valleys and inlets or lower terraces of rivers and streams.

Ecological System of Concern	Units	Total Acreage	Description
Northern Rocky Mountain Lower Montane Riparian Woodland and Shrubland	Oak Creek	50 acres	Riparian woodland and shrubland consists of deciduous, coniferous, and mixed conifer-deciduous forests that occur on streambanks and river floodplains of the lower montane and foothill zones.
Northern Rocky Mountain Ponderosa Pine Woodland and Savanna	All	6,500 acres	These woodlands and savannas are, or at least historically were, fire-maintained and occurring at the lower treeline/ecotone between grasslands or shrublands at lower elevations and more mesic coniferous forests at higher elevations. This is the predominant ponderosa pine system of eastern Washington.

Habitat Connectivity

The Oak Creek Wildlife Area is a biologically diverse location spanning a wide range of elevations and precipitation patterns. Differences in elevation and precipitation result in the formation of very different habitats across the wildlife area. Generally, dry shrub-steppe habitat occurs at the lower elevations. Shrub-steppe gives way to ponderosa pine in the mid-elevations and moist coniferous forest characterizes the upper elevations. Because the wildlife area covers this range of habitats, it supports a broad array of species.

Fish and wildlife survival depends in part on the ability to move through the environment to find food and reproduce. The degree to which land condition supports these necessary movements is called habitat connectivity. WDFW is a member of the Washington Wildlife Habitat Connectivity Working Group (WHCWG) (http://waconnected.org/). This group represents a science-based collaboration of land and resource management agencies, non-governmental organizations, universities and Washington Treaty Tribes.

Key wildlife habitat connectivity linkage networks at the statewide level were identified by the WHCWG (2010). The Statewide Analysis looked at 16 focal species. A second examination of wildlife habitat connectivity linkages within the Columbia Plateau occurred two years later, WHCWG (2013). These two connectivity efforts have some species in common. The Columbia Plateau Connectivity Analysis however, was performed at a finer scale since it was focusing on a subset of Washington State, not the entire state. We default to the Columbia Plateau Analysis when there is species overlap between the two studies.

The linkage networks, comprised of suitable habitats and the linkages connecting them, were derived from two modeling approaches: focal species and landscape integrity. The focal species approach identified important habitat areas specific to an individual species' needs and the landscape integrity approach was used to help define the best linkages between intact habitat areas on or near the Oak Creek Wildlife Area. See this link for the summary: (http://wdfw.wa.gov/lands/wildlife_areas/management_plans/oak_creek/).

Focal species were carefully selected to represent the connectivity needs of a broader assemblage of wildlife (WHCWG 2012). The best linkages provided the least resistance to movement between habitat areas for that animal in that area. This means that some of the linkages may not be comprised of ideal habitat, but provide opportunities for movement through a human-modified landscape. The landscape integrity approach identified core habitat areas that were relatively free from human

modification and the least human-modified linkages between them (WHCWG 2012).

Habitat connectivity information will be used to inform management decisions on the wildlife area. Habitat restoration and management projects will seek to maintain or improve linkages between habitat blocks on the wildlife area for: American marten, black bear, bighorn sheep, elk, mule deer, and western gray squirrel. Habitat concentration areas and linkages for these species can be found online (see link above). It is recognized that one feature on the wildlife area, the elk fence, acts as a movement barrier, but is required for species management. In some instances, the connectivity modeling identifies strong candidate locations for connectivity that are interrupted by the elk fence. The elk fence is not an absolute barrier to all species movement, but it is a significant impediment for some species. Mule deer, bighorn sheep, and elk movements are interrupted by the presence of an elk fence. It is unlikely that the situation which necessitated the building of the fence will change. The potential for large animals moving onto private/agricultural lands is an abiding issue, so the fence is likely a permanent fixture on the landscape. The public lands to the north and the northwest such as the Rock Creek Unit and Wenas Wildlife Area are examples of locations to emphasize connectivity for these species.

Elk herd in winter
Photo by Scott McCorquodale

Resource Management

WDFW's mission is to preserve, protect, and perpetuate fish, wildlife, and ecosystems while providing sustainable fish and wildlife recreational and commercial opportunities. The agency carries out this mission according to state and federal laws (including the Endangered Species Act or ESA) and funding requirements (from property acquisition and/or funds used for ongoing operations and maintenance), which direct many management activities on WDFW's wildlife areas. Other guidance comes from statewide plans for species and/or habitats, and other scientific approaches recommended by internal and external parties (e.g. The Washington State National Heritage Program's Ecological Integrity Assessments). Management actions may also be influenced by collaborative work undertaken with other conservation organizations, including tribal governments, land trusts and other land management organizations, academic research programs, and even the specific interests of volunteers if they fit within WDFW's mission, budget and wildlife area goals.

Species Management

Consistent with WDFW's mission, the agency manages species on wildlife areas for two primary purposes: 1) conservation and protection to manage sustainable populations; and 2) provision of recreational and commercial opportunities.

The Wildlife Area Management Planning Framework describes how species are classified – including species listed at the state or federal level as threatened or endangered, as well as other designations such as Species of Greatest Conservation Need (SGCN). SGCN species are summarized in the State Wildlife Action Plan and defined as species not yet listed but of conservation concern and that may need additional research attention. The framework also incorporates goals from WDFW's Game Management Plan, which includes protecting, sustaining, and managing hunted wildlife, providing stable, regulated recreational hunting to all citizens, protecting and enhancing wildlife habitat, and minimizing adverse impacts to residents, other wildlife, and the environment. The wildlife area plan integrates these plans and priorities, and, in the goal and objectives section (Appendix A), defines specific actions to achieve them.

The Oak Creek Wildlife Area supports a wide variety of game and nongame species, including elk, mule deer, bighorn sheep, chukar, white-headed woodpecker, golden eagle and Lewis' woodpecker (see Appendix C for a complete list of species). For example, the wildlife area has seven documented species of reptiles and two species of amphibians. Bull trout, steelhead, and northern spotted owl are federally threatened, while another six species, including bald eagle, burrowing owl, peregrine falcon, Pacific lamprey, river lamprey and western gray squirrel are federal species of concern. Five are state listed species, and 18 are state candidate species. All five units combined provide habitat for 35 Species of Greatest Conservation Need. There are also 40 Priority Habitat and Species (PHS). PHS are habitats and species determined by WDFW to be priorities for conservation and management (Table 3). Kittitas and Yakima counties Priority Habitat list is available in Appendix C.

Table 3. State and Federal Conservation Status, WDFW Priority Habitats and Species (PHS) and Species of Greatest Conservation Need (SGCN) Criteria and Priority Areas that May Occur on the Wildlife Area Units

Common Name	Scientific Name	Federal/State Status/SGCN	PHS Criteria	PHS Priority Area	Wildlife Area Unit
American badger	*Taxidea taxus*	SGCN			Oak Creek, Cowiche
American pika	*Ochotona princeps*	SGCN			Rock Creek, Oak Creek
Bald eagle	*Haliaeetus leucocephalus*	FSC/SGCN	1	Breeding, Regular Concentrations	Oak Creek, Bauguess, Rock Creek
Big brown bat	*Eptesicus fuscus*	--	2	Regular concentrations	Rock Creek

Common Name	Scientific Name	Federal/State Status/SGCN	PHS Criteria	PHS Priority Area	Wildlife Area Unit
Bighorn sheep	*Ovis canadensis*	SGCN	3	Regular concentrations	Oak Creek, Rock Creek
Black-backed woodpecker	*Picoides arcticus*	SC	1	Regular concentrations	Rock Creek, Oak Creek
Bull trout	*Salvelinus confluentus*	FT/SC/SGCN	1, 2, 3	Any occurrence	Bauguess, Oak Creek, Rock Creek
Burrowing owl	*Athene cunicularia*	FSC/SC/SGCN	1		Cowiche
California myotis	*Myotis californicus*	--	2	Regular Concentrations	Oak Creek, Rock Creek,
Chinook salmon	*Oncorhynchus tshawytscha*	--	1, 2, 3	Spawning	Bauguess, Oak Creek, Nile Springs
Coho salmon	*Oncorhynchus kisutch*	--	1, 2, 3	Occurrence	Bauguess, Nile Springs, Oak Creek, Cowiche
Columbia spotted frog	*Rana luteiventris*	SGCN			Oak Creek
Desert night snake	*Hypsiglena chlorophaea*	SGCN			Oak Creek
Fisher	*Pekania pennanti*	FC/SE/SGCN			Future
Flammulated owl	*Otus flammeolus*	SGCN/SC			Oak Creek, Rock Creek
Fringed myotis	*Myotis thysanodes*	--	2	Regular concentrations	Oak Creek, Rock Creek
Golden eagle	*Aquila chrysaetos*	SGCN/SC		Breeding areas	Oak Creek, Rock Creek, Cowiche
Gray wolf	*Canis lupus*	FE/SE/SGCN			Future
Greater sage grouse	*Centrocercus urophasianus*	FC/ST/SGCN	1, 3		Oak Creek, Cowiche
Grizzly bear	*Ursus arctos*	FT/SE			Historic
Harlequin duck	*Histrionicus histrionicus*	SGCN	2, 3	Breeding areas	Oak Creek
Hoary bat	*Lasiurus cinereus*	SGCN			Oak Creek
Leopard dace	*Rhinichthys falcatus*	SC/SGCN	1	Occurrence	No data available
Lewis' woodpecker	*Melanerpes lewis*	SC/SGCN	1	Breeding areas	Oak Creek, Cowiche
Little brown myotis	*Myotis lucifugus*	--	2	Regular concentrations	Oak Creek, Rock Creek
Loggerhead shrike	*Lanius ludovicianus*	SC			Cowiche, Oak Creek
Long-legged myotis	*Myotis volans*	--	2	Regular concentrations	Rock Creek
Monarch	*Danaus plexippus*	SGCN			Cowiche
Mountain goat	*Oreamnos americanus*	--	3	Regular concentration	Rock Creek
Mountain sucker	*Catostomus platyrhynchus*	SC/SGCN	1	Occurrence	No data available
Mule deer	*Odocoileus hemionus hemionus*	--	3	Regular occurrence	Cowiche, Oak Creek, Rock Creek
Northern goshawk	*Accipiter gentilis*	SC	1	Occurrence	Oak Creek, Rock Creek
Northern spotted owl	*Strix occidentalis caurina*	FT/SE/ SGCN	1		Oak Creek, Rock Creek
Pacific lamprey	*Entosphenus tridentatus*	FSC/SGCN	3	Occurrence	Cowiche, Bauguess, Oak Creek; historic and reintroduced
Peregrine falcon	*Falco peregrinus*	FSC	1	Breeding	Rock Creek

Common Name	Scientific Name	Federal/State Status/SGCN	PHS Criteria	PHS Priority Area	Wildlife Area Unit
Prairie falcon	*Falco mexicanus*	--	3	Breeding	Oak Creek, Rock Creek
Propertius duskywing	*Erynnis propertius*	SGCN			Oak Creek, Rock Creek, Cowiche
Pygmy horned lizard	*Phrynosoma douglasii*	SGCN			Oak Creek
Pygmy nuthatch	*Sitta pygmaea*	SGCN			Oak Creek, Rock Creek
Rainbow trout	*Oncorhynchus mykiss*	--	1, 3	Occurrence, migration	Cowiche, Bauguess, Nile Springs, Oak Creek, Rock Creek
Ring-necked snake	*Diadophis punctatus*	*SGCN*			Oak Creek, Cowiche
River lamprey	*Lampetra ayresii*	FSC/SC/SGCN	1	Occurrence	Cowiche, Bauguess, Oak Creek; historic?
Rocky Mountain elk	*Cervus elaphus*	--	3	Migration, breeding areas, regular concentration	Oak Creek, Rock Creek, Cowiche
Sage thrasher	*Oreoscoptes montanus*	SC	1	Breeding, regular concentration	Cowiche, Oak Creek
Silver haired bat	*Lasionycteris noctivagans*	SGCN			All units
Sooty grouse	*Dendragapus fuliginosus*		3	Regular concentrations	Oak Creek, Rock Creek
Steelhead	*Oncorhynchus mykiss*	*FT/SC/SGCN*	1, 3	Occurrence, spawning	Oak Creek, Cowiche, Nile Springs, Bauguess
Townsend's big-eared bat	*Corynorhinus townsendii*	SGCN/SC	1, 2	Any occurrence	Rock Creek
Townsend's ground squirrel	*Urocitellus townsendii*	SGCN/SC	1, 3	Occurrence	Cowiche
Umatilla dace	*Rhinichthys umatilla*	SC/SGCN	1	Occurrence	No data available
Vaux's swift	*Chaetura vauxi*	SC	1	Breeding, regular concentrations	Oak Creek, Rock Creek
Western gray squirrel	*Sciurus griseus*	FSC/ST/SGCN	1	Any occurrence	Oak Creek, Cowiche
Western long-eared bat	*Myotis evotis*	--			Oak Creek, Rock Creek
Western screech-owl	*Megascops kennicottii*	SGCN			Oak Creek
Western small-footed myotis	*Myotis ciliolabrum*	--	2	Regular concentrations	Oak Creek, Rock Creek
Westslope cutthroat trout	*Oncorhynchus clarki lewisi*	SGCN	3	Occurrence	Nile Springs, Oak Creek, Rock Creek
White-headed woodpecker	*Picoides albolarvatus*	SC/SGCN	1	Any occurrence	Oak Creek, Rock Creek
Wood duck	*Aix sponsa*	--	3	Breeding occurrence	Bauguess, Nile Springs, Oak Creek
Yuma myotis	*Myotis yumanensis*	--	2	Regular concentrations	Oak Creek

Abbreviations: State endangered (SE), State threatened (ST), State Sensitive (SS), State Candidate for listing (SC), Federal endangered (FE), Federal candidate (FC), Federal species of concern (FSC); Species of Greatest Conservation Need (SGCN)

Game Species

There are 16 game species on the Oak Creek Wildlife Area, and priority species include: bighorn sheep, harlequin duck, mountain goat, mule deer, elk, black bear, cougar, bobcat, pheasant, ruffed grouse, sooty grouse, and wood duck. Chukar, turkey, gray partridge and California quail are introduced species.

A summary of each species and the factors contributing to the emphasis on management actions is discussed below. The other game species present are managed incidentally, as management actions are focused on priority species on the wildlife area. Hunting season regulations and habitat management for priority species provide similar benefits to other game species.

Game Management

Game species on the wildlife area are generally managed in accordance with the species-specific management plans. For more information, see the WDFW Game Management Plan, available online at http://wdfw.wa.gov/publications/01676/. Game species that require specific management actions in this plan include deer, elk, bear, cougar, and pheasant. Management activities in this plan include conducting an annual feeding program for elk and bighorn sheep, maintaining water developments to benefit wildlife, and maintenance of sites associated with elk feeding.

Elk

Elk were possibly extirpated from the region by the late 1880s (McCorquodale 1985) and were reintroduced in 1913. Local sportsman paid to import 50 Rocky Mountain elk (*Cervus elaphus nelsoni*) from Gardiner, Montana and six elk from Manito Park in Spokane, Washington. Agriculture damage on private lands from wintering elk led to the start of the Oak Creek Wildlife Area in 1940. Evidence suggests local citizens probably fed elk after their reintroduction. The first official feeding sites were developed during the winter of 1942-43, but did not become an annual occurrence until 1967-68. Though the main objective of the program is to keep elk off of private lands (e.g. orchards and haystacks), the Oak Creek winter feeding program has become a very popular viewing opportunity for the public to see elk up close.

The elk are part of the Yakima Herd and most migrate to higher elevations in spring, returning to low elevation winter range in November. Human influence on the Yakima Herd is high. Legal hunting accounts for 75 percent of mortality, while 14 percent is due to poaching (WDFW, unpublished data). Open roads and human activity can greatly influence habitat use. During the fall, elk need adequate forage in order to maintain weight for the winter. Elk prefer to graze on a variety of grasses and forbs, but do browse on shrubs and trees. The best forage is produced in open meadows, burns, or cuts, but security cover is also needed near the foraging area. During winter and spring, elk prefer more open terrain as long as human use is low. Maintaining or increasing security through road and area closures is important for the health of the herd and to limit movements onto private lands. Managing forage production away from roads and near security cover will have the most benefit. To reduce elk conflict on agricultural lands, it is important to annually check and maintain elk fences.

The Yakima Elk Herd plan http://wdfw.wa.gov/publications/00777 has a goal of 9,500 elk in the winter and is regulated primarily through antlerless harvest. The objective for bulls is 12-20 bull per 100 cows. The hunting regulations allow for "spike-only" harvest, with branched antler bull by permit. The "spike-only" regulation was implemented in 1993 and has been successful for recruiting more bulls into the population, many of which are older, more mature branched antler bulls. Portions of the Oak Creek Wildlife Area are closed during the months of March and April to allow elk to rebuild energy reserves after winter. The bulls drop their antlers every spring. This attracts a rush of people every year when the shed hunting season opens May 1st.

Deer showing mule and black-tailed deer traits on the Oak Creek Wildlife Area
Photo by Jeff Bernatowicz

Deer

Mule deer are year-round residents on the wildlife area. The population expands during the winter when migratory deer are also present. Radio marking on winter range has found approximately 50 percent of the deer migratory (Bernatowicz pers comm). Deer on the Oak Creek Wildlife Area are considered mule deer and are part of the Naches Mule Deer Management Zone. Phenotypically (the appearance of an organism resulting from the interaction of the genotype and the environment), they range from black-tailed to mule deer (see photo). On the Oak Creek Wildlife Area, the primary goal is to provide year-round habitat to support a healthy deer population. Deer prefer browsing on trees and shrubs rather than grazing on grasses and forbs, and generally avoid large concentrations of elk. This makes managing for deer on Oak Creek somewhat difficult. The largest concentrations of deer occur in the northern portion of the Oak Creek Unit (Sanford Pasture/Cleman Mountain). Fires and logging in the area have resulted in excellent forage production that should last for over 10 years. The new Mule Deer Management Plan http://wdfw.wa.gov/conservation/mule_deer/ has more details on the Naches Mule Deer Management Zone.

Bighorn Sheep

Bighorn sheep, native to Washington, were extirpated from the state by the 1930s, probably due to disease associated with pathogens transmitted from domestic sheep and other factors (Johnson 1983). Two herds were re-introduced into the Oak Creek Wildlife Area: Cleman Herd in 1967 and Tieton Herd in 1998. In 2013, the herds were doing extremely well, forming a mega herd of over 400 animals, when the Tieton Herd contracted the bacteria *Mycoplasma ovipneumoniae*, most likely from domestic sheep (WDFW 2016). The result was an all age die-off from pneumonia. The remaining Tieton animals were lethally removed to prevent the spread of disease to the nearby Cleman Mountain Herd. The Cleman Mountain Herd remains strong (> 200 animals), but the population is at continued risk of disease from domestic animals. The Cleman Mountain Herd occupies both the Oak Creek and Rock Creek units.

Bighorn sheep require steep, open habitat. Fire can improve habitat in moist, forested zones, but has the potential to increase cheatgrass on drier sites. Habitat management is not currently needed for bighorn sheep on the Oak Creek Wildlife Area. The greatest threat to bighorn sheep is the bacteria *M. ovipneumoniae*. Both

domestic sheep and goats can carry the bacteria, which typically has minimal impact to the domestics. Keeping bighorn sheep separate from domestic animals is essential to maintaining bighorn sheep populations. After the initial pneumonia-related die-off from *M. ovipneumoniae*, lamb recruitment is often low for decades. Herds often slowly die-off or languish at low population levels after contacting the bacteria.

Currently, domestic sheep grazing allotments do not occur on the Oak Creek Wildlife Area. No domestic sheep grazing permits should be issued, nor should goats be used for weed management. Pack goats are of lesser concern. Small flocks are less likely to carry *M. ovipneumoniae* and pack goats are typically near owners. Pack goat owners are often educated on the disease threats to bighorn sheep. This does not eliminate the possibility of disease transmission from pack goats to bighorns, but does lessen the need for regulation.

Springtime hiking is a popular activity on the Waterworks Canyon Trail. Bighorn sheep lamb in the area April through early June, and ewes require security from disturbance. Anecdotal observations suggest the main lambing area has moved from Waterworks Canyon with increased recreational activity. In the meantime, lamb recruitment remains good as sheep have found other secure habitat to lamb. At this time there is no reason to limit use of Waterworks Canyon for hiking. In the future, if new trails are proposed they should be carefully planned to avoid conflict with bighorn sheep.

The Cleman Mountain Herd is fed in the winter to allow population monitoring (trapping and herd counts). The feed site is very popular for wildlife viewing and photography. The range of the extirpated Tieton Herd is temporarily re-occupied by wandering Cleman animals. The goal is to keep the herd from re-establishing as long as there is risk from the nearby USFS sheep grazing allotment. If domestic sheep are removed from that range, the Tieton Herd would be re-introduced with healthy sheep from other herds.

Bighorn sheep on the Oak Creek Wildlife Area
Photo by Dan Geyer

Diversity Species

The Oak Creek Wildlife Area has everything from shrub-steppe obligates to old-growth dependent diversity species (species that are not hunted). Species include SGCN, PHS, and federally and state listed species (see Table 3). It is not practical to identify specific management actions for each species. Instead, focal species representing various habitat types were selected, with the expectation that managing habitat to support those species will support other priority species as well. Fisher and gray wolf are not found on the wildlife area, but suitable habitat exists. As populations of both species expand, they may occupy the wildlife area in the future. Currently there are no plans to manage specifically for these species.

Western Gray Squirrel (State Threatened)

Western gray squirrel was once common in the area and is believed to have been decimated by mange before 1950 (Linders et al. 2007). Ten squirrels were reintroduced in Oak Creek 1970-71, and a small population persisted, but no active nest sites were ever found. This reintroduction was considered too small to establish a "population". Western gray squirrel was once thought to not exist on the wildlife area around 1989, but photos and hair samples have confirmed scattered animals on or near the Cowiche and Oak Creek units. At this time, it is not known if the animals are resident or dispersing.

Western gray squirrels favor conifer-dominated forests over mixed Oregon white oak-conifer and pure oak, and usually occur in areas with an open understory (Linders 2000, Linders et al. 2010). The general recommendation in the recovery plan (http://wdfw.wa.gov/publications/00119) is 145-277 trees per acre. A lower range may be preferable, and larger trees and low intensity frequent fire could be helpful in reducing ground cover. Habitat enhancement of oak communities may also be beneficial. Forest management projects in potential western gray squirrel habitat will be developed in coordination with biologists. In order to determine the status and limiting factors of western gray squirrel on the Oak Creek Wildlife Area, population surveys and habitat evaluations are needed. If sufficient habitat is determined to be present, then large scale re-introductions may be feasible.

Greater Sage Grouse (State Threatened)

Greater sage grouse are not currently known to exist on the Oak Creek Wildlife Area, but the Cowiche and east end of the Oak Creek units are listed as recovery habitat (http://wdfw.wa.gov/publications/00395/). Sage grouse are unlikely to occupy the area in the life of this plan, but the same habitat identified for sage grouse is important for most shrub-steppe obligates, and provides habitat connectivity for shrub-steppe dependent species.

Sage grouse inhabit shrub-steppe and meadow steppe and are closely associated with sagebrush. Diverse grass and forb understory is an important habitat need. Loss of shrub-steppe habitat to fire is a major threat to management of this species. Protection of the habitat from disturbance is the best management objective for sage grouse on the wildlife area. If shrub-steppe habitat is burned, restoration activities should use the best science and innovative techniques to try and restore all habitat components, which can take a long time to recover.

Western gray squirrel
Photo by Scott Fitkin

Golden Eagle
(State Candidate, Bald and Golden Eagle Protection Act)

There are eight occupied golden eagle territories that cover all three units of the Oak Creek Wildlife Area. Statewide, populations have declined with only about 60 of the 270 known historical breeding territories occupied (WDFW, 2013). While a declining prey base due to habitat loss is a threat to populations (WDFW, 2013), golden eagles on the wildlife area appear to be doing well, possibly due to abundant California ground squirrels and other prey (e.g., marmots, chukar, and snakes).

A primary management concern on the wildlife area is disturbance of nest sites due to human activity. Currently most nests are not near popular climbing areas and continuing to limit human activity near nests sites is important. Several years ago one pair of golden eagles nesting at the popular "Royal Columns" rock climbing area moved upriver away from concentrated human activity. Nest locations in the Tieton River Canyon need to be monitored annually and public entry closures implemented as needed to reduce human disturbance. Currently, a closure is implemented from February 15 to early summer annually near "The Bend" climbing area to reduce human disturbance to that nest location.

Another concern for golden eagle populations is lead poisoning (WDFW, 2013). Sixty-five percent of golden eagles sampled in Washington had elevated lead levels and 24 percent demonstrated chronic exposure (Watson and Davies, 2015). To reduce exposure, a key management need on the wildlife area is public education about non-toxic ammunition. In addition, WDFW staff should use non-toxic ammunition or remove animal parts that contain lead bullet fragments when euthanizing animals.

Northern Spotted Owl
(State Endangered, Federal Threatened)

Historically, northern spotted owl pairs occupied both the Oak Creek and Rock Creek units of the wildlife area. On the Oak Creek Unit, surveys for spotted owl have been conducted in the Tieton watershed since the early 1990s by the USFS. WDFW completed surveys associated with the Oak Creek Forest Restoration Project in 2011 and 2012, which failed to detect spotted owls (Hilaire, Herter pers comm). The Rock Creek Unit had a total of four breeding pairs in the vicinity, primarily on adjacent USFS land, with one nest active as recently as 2016. The nest site on WDFW land was active from 1993-1999 when the land was owned by a private timber company; it successfully produced young for several years. From 2003-2005 no spotted owls were observed. In 2005, a timber harvest occurred in the core area and surveys were discontinued. The two additional nest sites located in the area have not had observations since 1995 and 2001 (Hilaire, Herter pers comm).

USFWS funding was used to purchase some of the lands in the Oak Creek and Rock Creek units, partly for protection of northern spotted owl critical habitat. While nesting no longer occurs on WDFW managed lands, dispersal habitat may also be important to recovery of the species (Buchanan 2004). These areas also facilitate dispersal by maintaining linkages between federal Late Successional Reserves (old-growth habitat) and state lands managed for nesting, roosting, and foraging. Much of the former private timber company land has been heavily managed and currently is in an early seral stage. Where appropriate, stands should be managed for complex, multi-aged/size class stands with generally high canopy closure to maintain existing habitat. On areas that currently do not contain habitat, any actions should move dry forest systems on a path that will develop and retain resiliency in

Northern spotted owl

the ecosystem to adequately respond to whatever changes do occur. The key to developing that resiliency is to restore the inherent forest structure and composition, within the historic range of variability, and to reintegrate the relationship between forest vegetation and the disturbance regimes (USFWS 2011).

Gray Wolf
(Federally Endangered/State Endangered)

As of 2016, wolf packs are not known to occur on the Oak Creek Wildlife Area or within the southern Cascades, although dispersing wolves may have traveled through the area in recent years without being detected. The last reports of gray wolves in the wildlife area were in the early 1990s. The Washington State Wolf Conservation and Management Plan (http://wdfw.wa.gov/conservation/gray_wolf/mgmt_plan.html) states:

> "Gray wolves are habitat generalists and one of the most adaptable large predators in the world (USFWS 2009). They require only a sufficient year-round prey base, protection from excessive human-caused mortality… Restrictions on human development and other land use practices have not been necessary to achieve wolf recovery in Idaho, Montana, and Wyoming (USFWS 2009), and the U.S. Fish and Wildlife Service did not designate critical habitat for wolves in the western United States."

The Oak Creek Wildlife Area has abundant prey for wolves. The area is dependent on wolf dispersal from the north Cascades as there are currently no packs east, west, or south of the area (Becker at. al 2016). Once they become established in the area, wolves would also be expected to den on or near deer and elk winter range, which includes lower elevation and fairly open habitat. Approximately 4,500 elk and 3,000 mule deer concentrate on critical winter range in the Oak Creek Wildlife Area (WDFW 2006). Maintenance of ungulate prey populations is an essential component in the wolf recovery plan. The Cowiche Unit, much of the Oak Creek Unit and lower elevation southern aspects on the Rock Creek Unit contain critical winter range for ungulates. Higher elevations on the Oak Creek Unit and a majority of the Rock Creek Unit generally have too much snow to provide winter habitat for ungulates.

Grizzly Bear
(Federally Threatened/State Endangered)

Grizzly bears once occurred in most of Washington, but are now restricted to remote areas of the Selkirk Mountains, the North Cascades, and certain places near the northern border of Washington between these two ecosystems.

Grizzly bears require large areas of habitat that are remote and secluded from human activity. The current population in Washington is small (0 to 20 animals) and is likely dependent on populations in British Columbia and Idaho. There are proposals to re-introduce grizzly bears into North Cascades National Park. The Oak Creek Wildlife Area is located outside of the grizzly bear recovery area, however large areas of intact, suitable habitat remain and would be reoccupied if grizzly bears recover in the North Cascades Ecosystem and move south into the central Cascades. Maintenance of ungulate prey populations is an essential component in the grizzly bear recovery plan.

Grizzly Bears are opportunistic omnivores and are common only where food (e.g., salmon runs, caribou calving grounds) is abundant and concentrated. The majority of elk migrate to and disperse across more remote, higher elevations during critical periods for bears. By the time elk return to winter range, grizzly bears would be denning.

Lewis' and White-headed Woodpeckers
(State Candidates)

Lewis' woodpeckers prefer softer wood, advanced decay, or snags (e.g.cottonwood) for nesting. White-headed woodpeckers use both live and dead trees for foraging and nesting. Both species prefer a wide variety of insects, especially in spring and summer. Both species will utilize pine seeds in fall and early winter. Lewis' woodpeckers will feed on soft mast (small fruit and berries) and prefer riparian habitat. On the Oak Creek Wildlife Area, acorns

are likely utilized by Lewis' in the fall and winter. White-headed woodpecker diets are more heavily tilted toward pine seeds.

One commonality for both species is the need for snags. Historically, small fires have created pockets of good habitat, especially on the Oak and Rock Creek units. When thinning projects are conducted, creating snags by topping may be of value. Measuring the use and longevity of created snags is important to understanding management for cavity nesters. Post-fire logging should be minimal if the goal is to manage for Lewis' and white-headed woodpeckers.

Research on white-headed woodpeckers is currently ongoing in the Oak Creek Watershed by the USFS. Preliminary findings indicate the birds are more adaptable to heavily managed forests and smaller diameter snags than indicated in previous work (Lorenz, pers comm). New data is being gathered annually and will be integrated into forest management activities.

Lewis' woodpecker
Photo by Justin Haug

Fish Species

The Yakima River Basin currently supports anadromous (sea-going) steelhead (*Oncorhynchus mykiss*), Chinook salmon (*O. tshawytscha*), coho salmon (*O. kisutch*), sockeye salmon (*O. nerka*) and a variety of resident fish species, including bull trout (*Salvelinus confluentus*); see maps 6 and 7. The Naches River, a major tributary system of the Yakima and the primary drainage that flows through the Oak Creek Wildlife Area, supports two populations of spring Chinook, one summer steelhead population, and recently reintroduced coho (Table 4). Three populations of bull trout also utilize this area (Table 4). Naches summer steelhead are part of the Middle Columbia Distinct Population Segment (DPS), which is listed as threatened under the ESA. Bull trout, also ESA-listed as threatened, are included in the Yakima Core Area within the Mid-Columbia Recovery Unit. Coho were extirpated from the Yakima Basin and the Yakama Nation has been operating a reintroduction hatchery-based program since 1996. Naturally spawning coho are now present. Pacific lamprey (*Lampetra tridentata*) is another anadromous species of conservation concern in the Yakima Basin, including Naches River drainages, but their current abundance and distribution are relatively unknown. The Yakama Nation, in partnership with WDFW and others, is working to restore Pacific lamprey populations in the basin (http://yakamafish-nsn.gov/restore/projects/lamprey). River lamprey may also be present but data on specific distribution in Yakima Basin were not found.

Major factors that limit anadromous fish and resident bull trout production are the presence of various migration barriers (e.g., hydroelectric, water storage, and irrigation diversion dams; culverts and road crossings), degraded floodplain, riparian habitat and channel structure, degraded water quality and temperature, impaired stream flows, excessive sediment, harvest impacts, predator harassment of spawning fish, lack of marine-derived nutrients, and hatchery fish impacts (e.g., interbreeding or competition) on natural-origin populations (WDFW Salmon Conservation Reporting Engine (SCoRE) for Mid-Columbia Region, 2016; Yakima Subbasin Plan 2004; Yakima Bull Trout Action Plan 2012). Recovery plans have been developed for Yakima steelhead (2009) and bull trout (2015).

Resident fish in the Oak Creek Wildlife Area include bull trout, rainbow trout (*O. mykiss*), westslope cutthroat trout (*O. clarki lewisi*), mountain whitefish (*Prosopium williamsoni*), and small native stream fishes such as sculpin, dace, and suckers. Leopard dace (*Rhinichthys falcatus*), Umatilla dace (*R. umatilla)*, and mountain sucker (*Catostomus platyrhynchus*), which are SGCN species, may be present, but distribution throughout Yakima Basin is not well-documented. Non-native brook trout (*Salvelinus fontinalis*) are also present. The Tieton River, Naches River, and South Fork Cowiche Creek are designated as critical habitat by the USFWS for bull trout (USFWS 2005). Naturally reproducing populations of mountain whitefish, rainbow trout, and westslope cutthroat trout are widespread within the Naches Subbasin. Brook trout were introduced into Yakima and Naches drainages in the early to mid-1900s, and although they are no longer stocked, naturally reproducing populations are present in the Oak Creek Wildlife Area. Brook trout pose threats to native salmonid species, including predation, competition for food, and a genetic threat to bull trout due to the potential for hybridization (i.e., crossbreeding). Non-native brook trout easily breed with bull trout and interbreeding eliminates the reproductive potential of bull trout. Hybrid offspring pose further threats of competition, predation, and interbreeding.

Fish Management

Fish management in and around the streams of the Oak Creek Wildlife Area consists of protecting wild production, recovering ESA listed species, and permitting recreational sport fishing for trout with some limited harvest.

WDFW received funding from USFWS and RCO for purchase of the Rock Creek Unit to protect seven miles of bull trout rearing and migration habitat. Based on the grant agreement, WDFW is required to protect, restore, and maintain suitable watershed, riparian area, and stream channel habitats. A large part of the bull trout recovery strategy focuses on restoring habitats and connectivity.

South Fork Cowiche Creek
Photo by David Hagen

Table 4. Yakima River Watershed Salmon, Steelhead, and Bull Trout Stock Profiles (WDFW 1998, YBFWRB – YBTAP 2013, Salmon Conservation Reporting Engine 2016)

Population	Major Subbasin(s)	Endangered Species Act (ESA) Status	Population Origin & Current Management (4)
Naches Summer Steelhead (1)	Yakima, Naches & tributaries	Threatened	Native. Wild production only.
Bull Trout (2) (3)	Yakima, Naches & tributaries	Threatened	Native. Wild production only.
Spring Chinook	Yakima, Naches & tributaries	Not Warranted	Native. Wild production only.
Spring Chinook	Yakima, Naches, American R.	Not Warranted	Native. Wild production only.
Yakima Coho	Yakima, Naches & tributaries	Not Warranted	Reintroduced. Hatchery & wild production.

(1) Of the four steelhead populations in the Yakima Basin, Naches Summer steelhead is prevalent in the Oak Creek Wildlife Area.

(2) Of the fourteen bull trout populations in the Yakima Basin, three have Foraging, Migration & Overwintering (FMO) habitat in the vicinity of Oak Creek Wildlife Area (i.e., American R. bull trout, Crow Creek bull trout & Rattlesnake Creek bull trout).

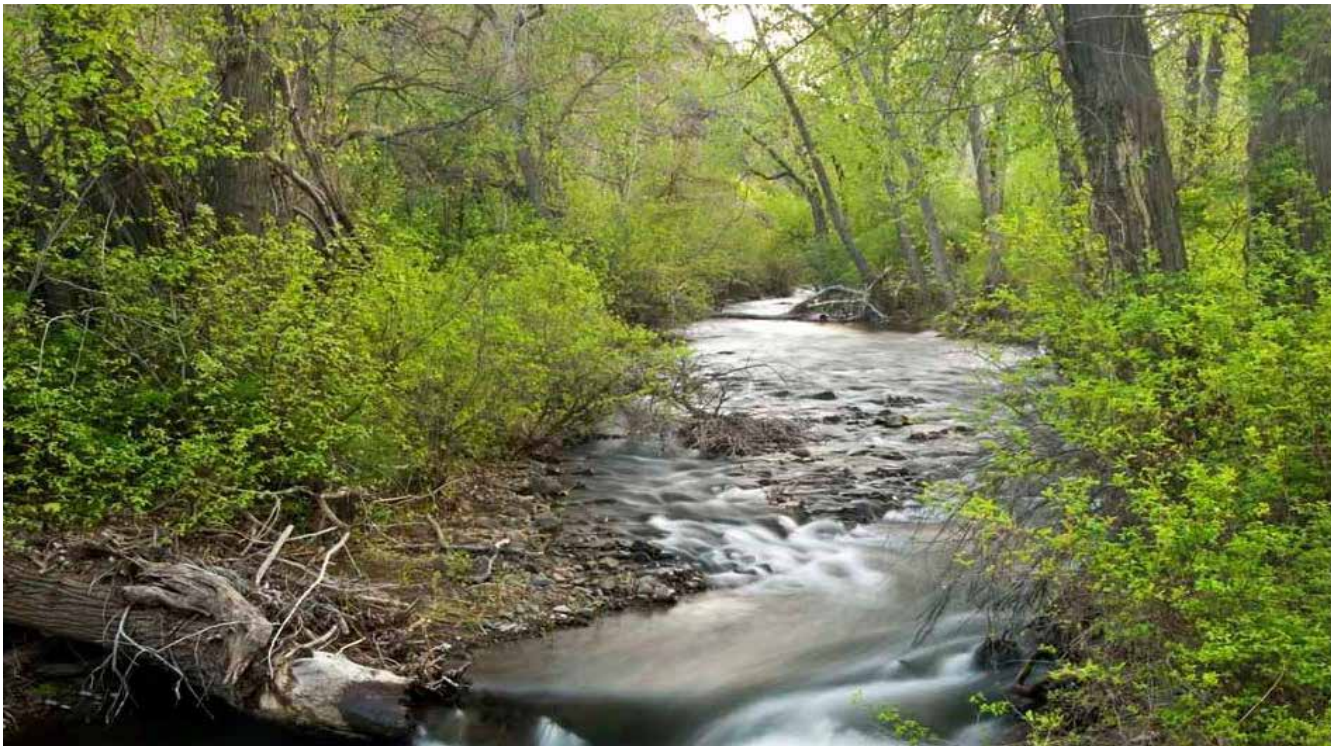
(3) The Yakima Bull Trout Action Plan (YBTAP) http://www.ybfwrb.org/recovery-planning/bull-trout-recovery-planning/bull-trout-action-plan/.

(4) The Salmon Conservation Reporting Engine (SCoRE), http://wdfw.wa.gov/score and Yakima Sub-basin Plan.

Fishing for or harvesting wild salmon, steelhead, or bull trout in the area is expressly prohibited. There is a limited sport fishery for harvesting hatchery Chinook salmon in the mainstem Yakima River downstream of the Oak Creek Wildlife Area. The primary recreational fishing opportunities surrounding Oak Creek center on trout fishing in the Naches and Tieton rivers, the small tributary streams, and a few small lakes in the area. For a complete list of fishing opportunities in the Oak Creek Wildlife Area, see the Recreation section on page 62.

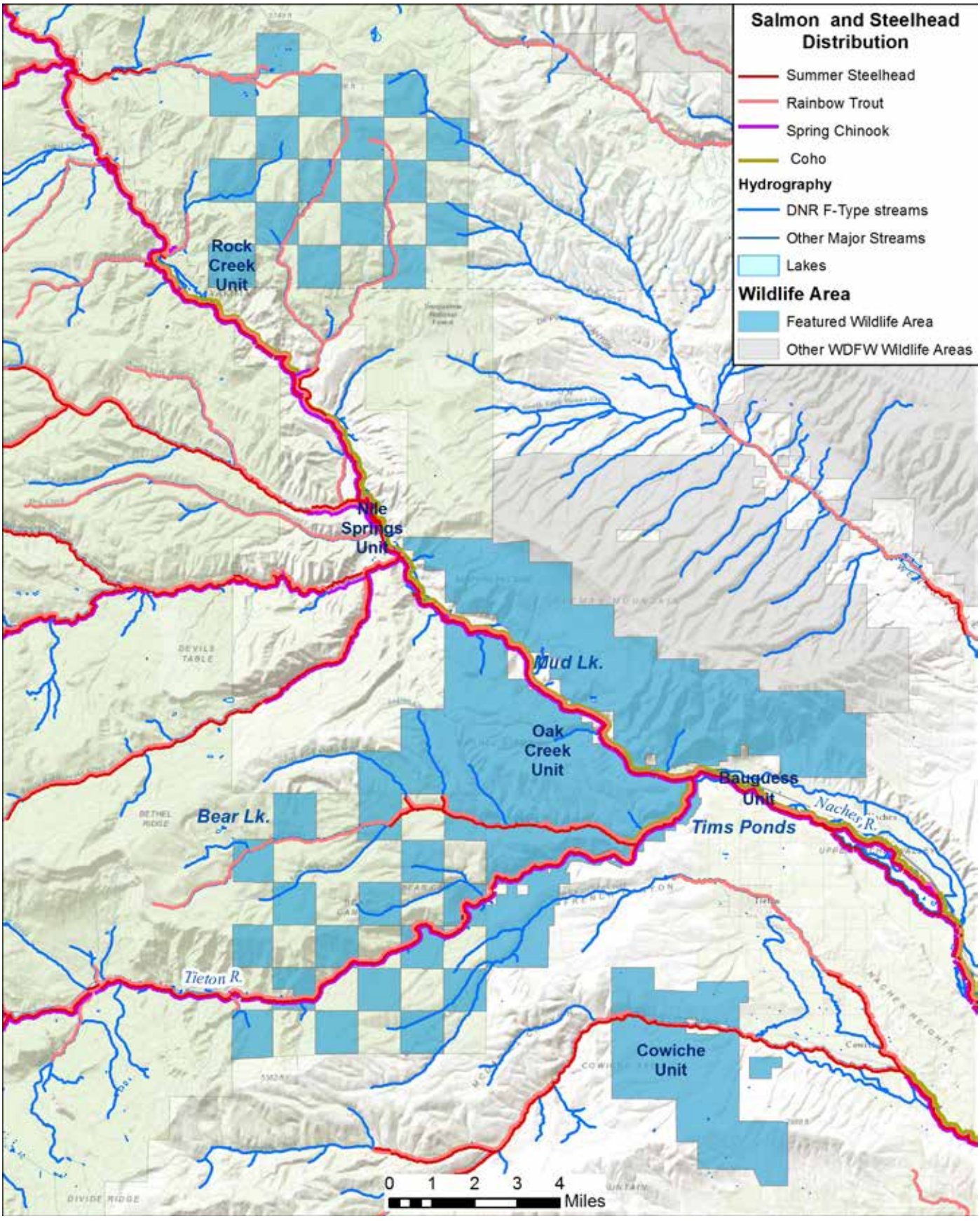
As noted previously, steelhead and bull trout are listed under the Endangered Species Act (ESA) because of low population abundance. State, federal, tribal, and county entities are working hard to restore these fish species in the Yakima basin through habitat restoration and protection activities (http://rco.wa.gov/salmon_recovery/regions/mid_columbia.shtml). Although there is no hatchery production of steelhead and bull trout in the basin, there is a steelhead kelt re-conditioning program operated by the Yakama Nation. Unlike Pacific salmon species that die after spawning, steelhead survive spawning and can repeat spawn similar to non-anadromous rainbow and cutthoat trout. Post spawning steelhead, known as kelts, go back out to the ocean to start the cycle over again. However, repeat-spawners typically are a low percentage of returning steelhead and most of them are females. Biologists at the Yakama Nation's salmon hatchery in Prosser, Washington intercept kelts after they have spawned and recondition them so they are healthier and stronger, in order to improve their chances for survival in downstream migration and at sea.

Hatchery production (supplementation) of salmon in the Yakima drainage is done to augment existing wild production and for recreational and tribal harvest. Focal species include salmon that were historically present in the basin: spring Chinook salmon, summer/fall Chinook salmon, and coho salmon. A sockeye salmon reintroduction program has also been established by capturing and trucking adult sockeye from the Columbia River at Priest Rapids Dam (includes Wenatchee & Osoyoos sockeye populations) and planting sockeye in Cle Elum Reservoir where they spawn in the upper Cle Elum River and in the reservoir. Through supplementation and reintroduction efforts, coho and sockeye are reproducing naturally in the Yakima Basin.

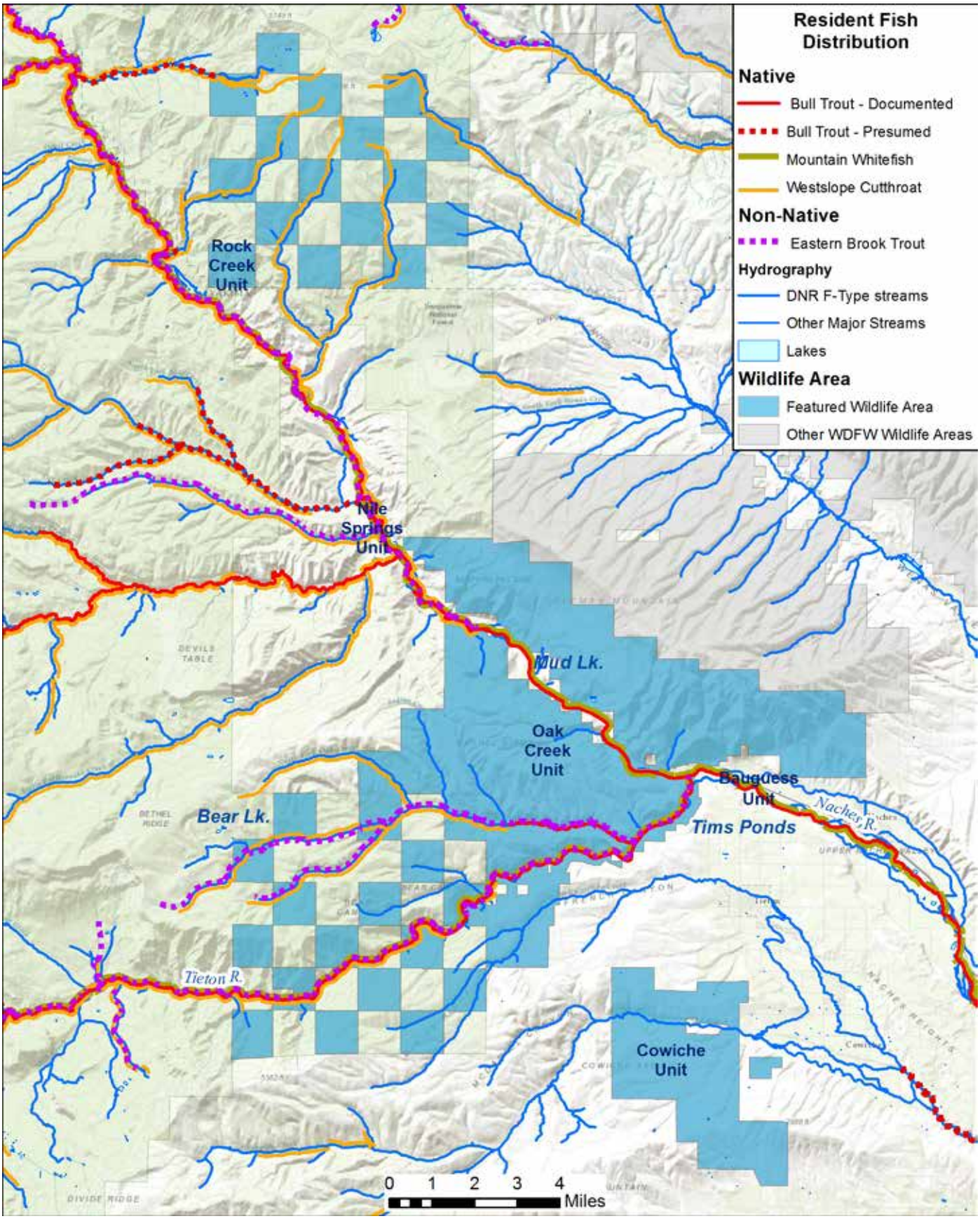


South Fork Cowiche Creek
Photo by David Hagen

Map 6. Salmon and Steelhead Distribution



Map 7. Resident Fish Distribution



Habitat Management

This section provides a description of habitat management activities that occur on the Oak Creek Wildlife Area, including forest management, weed management, fire management and history, habitat restoration, and climate change.

Forest Management

Forest Overview

The Oak Creek Wildlife Area forests contain a range of eleven ecological systems across more than 25,000 forested acres (see Table 5). Forest ecosystem distributions can be seen in Maps 8 and 9 (see Forest Management Plan Appendix B). The area is unique because of the wide range of ecosystems present. Lower elevations to the east transition from shrub-steppe communities and oak woodlands to high elevation sub-alpine forest communities to the west.

The majority of the forested areas are defined by the dry pine and dry mixed conifer systems common to the central Washington East Cascade lowlands that include the Northern Rocky Mountain Ponderosa Pine Woodland and Savanna and Northern Rocky Mountain Dry-Mesic Montane Mixed Conifer Forest.

Oak-pine forests are found only at the lower reaches of Oak Creek and lower slopes of the Tieton and Naches rivers. Aspen stands occur as very small patches or

Table 5. Forest Ecological Systems on the Oak Creek Wildlife Area

Ecological System	Percentage of Wildlife Area
Northern Rocky Mountain Ponderosa Pine Woodland	77 percent
Savanna and Northern Rocky Mountain Dry-Mesic / Montane Mixed Conifer Forest	
East Cascades Mesic Montane Mixed Conifer Forest and Woodland	11 percent
North Pacific Mountain Hemlock Forest	7 percent
Rocky Mountain Subalpine Dry-Mesic Spruce Fir Forest and Woodland	
Rocky Mountain Subalpine Mesic-Wet Spruce Fir Forest and Woodland	
Columbia Basin Foothill Riparian Woodland and Shrubland	3 percent
Rocky Mountain Subalpine-Montane Riparian Woodland	
North Pacific Montane Riparian Woodland and Shrubland	
East Cascades Oak-Ponderosa Pine Forest and Woodland	2 percent
Rocky Mountain Aspen Forest and Woodland	

stringers associated with rock screes, talus, or riparian areas within larger systems.

The harvest of large trees prior to acquisition and prolonged fire suppression have greatly altered forests on the wildlife area. Removal of large trees and the change from a fire-dependent landscape to a logging/fire suppression maintained landscape has degraded the ecological integrity of forests, making them susceptible to unnaturally intense insect outbreaks and severe wildfires.

Overharvesting and selective removal of mature trees is no longer a threat to the ecological integrity of forests on the wildlife area because WDFW owns the timber rights. Ongoing fire suppression, however, continues to be a threat to fire-dependent forests. Without frequent fire or some other disturbance, forests gradually progress towards densely overstocked, unhealthy stands. These stands are vulnerable to unnaturally large insect outbreaks and large, intense and uncontrollable wildfires similar to the 2014 and 2015 fires that burned WDFW lands in Okanogan County. Due to the currently degraded forest conditions, more large fires could further reduce ecological integrity.

These unnatural disturbance patterns further reduce ecological integrity by killing large trees that historically would have survived frequent, low intensity fires more typically associated with fire-dependent ecological systems.

Management Approach

WDFW will manage the forest landscape using an approach that balances concern about forest health, fire risk, and maintaining or recruiting habitat conditions that occur outside the historical range of variability for targeted species. Projects will be developed and implemented in coordination with the Tapash Sustainable Forest Collaborative (http://www.tapash.org/). Timber harvest, thinning, prescribed fire, tree planting, and other forestry practices will be used in suitable areas to enhance species composition, seral states, and spatial mosaics towards the historic ranges of habitat variability that are associated with high ecological integrity. WDFW will strive towards high ecological integrity scores for these metrics as defined in the Ecological Integrity Assessments developed by the DNR's Natural Heritage Program in those areas deemed suitable for this type of management. High ecological

Table 6. Planned Forest Treatment Projects Within the Next 5 Years

Goal	Objective	Treatment Unit	Performance Measure	Lead	Task
Habitat Enhancement/ Restoration	Reduce tree density and shift towards historic species composition	Rock Creek	1,000 acres thinned	Forester	Non-commercial thinning
Habitat Enhancement/ Restoration	Reduce tree density and shift towards historic species composition	Oak Creek	100 acres thinned	Forester	Non-commercial thinning
Habitat Enhancement/ Restoration	Restore ecological processes dependent on wildfire	Oak Creek	300 acres burned	Prescribed Burn Team Lead	Prescribed fire
Habitat Enhancement/ Restoration	Re-establish conifer species in areas of stand replacing fire to accelerate tree establishment	Rock Creek	40 acres planted	Forester	Planting

integrity is expected to result in improved habitat quality for priority species. Forest management projects are also intended to reduce the risk of uncharacteristically intense mega-fires that put WDFW lands and local communities at risk in favor or more controllable, ecologically beneficial fires.

Suitable Management Areas and Potential Projects

WDFW has identified 22,000 acres of suitable active management areas. The remaining areas will be passively managed because either they do not need treatment or cannot be treated due to a variety of constraints, such as the lack of road access, steep slopes, erodible soils, riparian protection concerns, and regulatory constraints.

To date, projects have been planned to treat a small subset of suitable management areas. These projects are identified in Table 6. In general, these projects will thin overstocked stands that are vulnerable to intense wildfires and other disturbances. These projects can also protect aspen and oak stands that may be becoming overshadowed by conifers and declining in health due to the absence of fire.

Project prescriptions will be customized to each site with the following goals:

- Restore the historic range of variability for tree species, size classes and spacing. If that is not immediately possible, projects will focus on putting forests on trajectories to more quickly acquire such characteristics.
- Improve habitat quality, especially for priority species.
- Reduce wildfire risks to the forests and surrounding communities.

Fire History

Historically, fire was an important, natural process in creating and maintaining the various plant communities on the Oak Creek Wildlife Area. In general, fires were common in most of the forests below 4,000 feet in elevation on the wildlife area, with fire return intervals typically ranging between 16-20 years. Frequent, low intensity fires were important for maintaining the open, late-seral stand structure and low fuel loads in upland forests. On the forests above 4,000 feet, most fires were less frequent, typically ranging between 50-100 years with stand replacement fires occurring between 150-500 years.

Fires generally burned in a mosaic pattern of low to mixed severity. Historic fire return intervals (frequency of fire per habitat type) were predominantly as follows (LANDFIRE 2010):

- Ponderosa pine forest, 16-20 years
- Grassland and shrub-steppe, 21-60 years
- Riparian, 61-70 years
- Cool mid-elevation forests, 71-80 years
- Sparsely vegetated areas, 201-300 years

River bottom forests are primarily maintained by flooding and channel migration and burned less often.

Fire regimes on the wildlife area and adjacent lands have been altered due to fire suppression, silvicultural practices, grazing, and agriculture. Lower elevation shrub-steppe and grasslands fires on the wildlife area are trending toward larger, increased intensity and frequency. As a result, vegetation is altered in favor of invasive annual grasses and weeds. The fires are generally human caused and threaten life and property in addition to degrading habitat quality. The forested, higher elevation fires are burning less often due to effective fire suppression. For example, fire exclusion has allowed historically open ponderosa pine forests to develop excessive accumulations of fuels, overstocking, insect outbreaks, and increased vulnerability to unnaturally large and intense crown fires. Table 7 shows a list of recent natural and human-caused fires on or near the wildlife area.

Fire Management

Wildland fires ignited in the area of Oak Creek Wildlife Area are initially responded to by county fire districts, DNR, and the U.S. Forest Service (USFS). Multiple fire districts cover portions of the wildlife area and respond

when fires are near structures or threaten structures within their district (see Appendix G). WDFW has an agreement with DNR to provide for fire suppression in shrub-steppe areas outside of Forest Protection. A majority of the wildlife area is in DNR Forest Protection, where DNR provides fire protection to protect forestlands. USFS fire crews also provide protection primarily in areas of checkerboard ownership. See map of Fire Districts, DNR agreement areas, and the Forest Protection Boundary (Appendix G). In addition, wildlife area staff maintains fire suppression qualifications and have equipment on site for controlling wildfire. Wildlife area staff coordinates with DNR and USFS as Resource Advisors and Landowner Representatives to minimize habitat loss, protect resources and meet fire suppression needs. WDFW is using prescribed fire as a tool to manage and improve habitat primarily in dry forests (see Forest Management Plan, Appendix B).

Weed Management

Managing weeds is a significant part of the Oak Creek Wildlife Area staff's workload to establish and maintain diverse native plant communities that support fish and wildlife populations. Invasive plants and noxious weeds can infest high quality native plant communities and convert them to low quality monocultures that reduce wildlife value. The weed management plan (Appendix D) identifies species, timing, and management practices to control weeds. The goal of weed control in this plan is to maintain or improve the habitat for fish and wildlife, meet legal obligations, and reduce spread to adjacent private lands. Grants from the Rocky Mountain Elk Foundation have been used to increase capacity to control weeds. The grants have been used to hire contractors to inventory and control diffuse knapweed and Dalmatian toadflax in multiple areas.

Table 7. Fire History on or Near Oak Creek Wildlife Area

Wildfire Name	Year	# of Acres Burned
Oak Creek Fire	2002	2,200
Cowiche Fire	2002	90
Mud Lake Road Fire	2002	4
Old Naches Fire	2003	1,500
Mud Lake Fire	2004	4,200
New Old Naches Fire	2005	20
Trout	2006	140
Hale Storm	2009	55
Oak Creek	2009	150
Cowiche Mill Fire	2010	6,000
Tim's Pond	2011	1
Sunset Fire	2012	30
Windy Point	2012	28
Wild Rose	2012	1,926
Cattle Springs	2012	3
Bear Canyon	2013	22
Windy Strike	2013	<1
Sanford Pasture	2015	128
Rock Creek Fire	2016	1,383

Habitat Restoration

Restoration efforts on the Oak Creek Wildlife Area have generally focused on forest restoration and post-fire shrub-steppe and grassland enhancement. Forest restoration activities are discussed in the Forest Management Section (page 52) and under Success Stories in the Overview section of this document.

Following the 2010 Cowiche Mill Fire, the Rocky Mountain Elk Foundation provided funding to re-establish native bunchgrass by seeding and stabilizing burned areas. Additional funding for fire recovery was used to treat the large expansion of Scotch thistle the following spring and additional areas were seeded. As a result, native bunch grasses, sagebrush, and bitterbrush have returned to the area. Favorable climatic conditions in 2011-12 greatly helped native plant re-establish and initiate rapid recoveries across the burn area. However annual grasses and weeds such as tumble mustard and Russian thistle are still dominant, and similar conditions exist in other areas of the wildlife area that have burned in the past 15 years.

Future shrub-steppe restoration efforts on the Oak Creek Wildlife Area focus on reducing annual plant cover and promoting establishment of native bunchgrasses and shrubs on Cowiche Mountain and Cleman Mountain. Implementation of this work is limited by staff capacity, equipment, and access to steep rocky slopes.

For the past three years, WDFW has partnered with the Yakama Nation on the Yakima Klickitat Fisheries Project, which drives stream restoration projects to restore stream function, reconnect floodplains, and improve habitat for ESA listed Mid-Columbia steelhead. Currently, projects are in progress on Oak Creek and the South Fork Cowiche Creek. In both areas, a lack of large wood and past land management activities has led to stream channelization and incision, which has disconnected the creeks from their historic floodplain. The Yakama Nation is using funding from various sources to thin forests on the wildlife area and place the trees instream. Additional partners include the Mid-Columbia Fisheries Enhancement Group, who has secured Salmon Recovery Funding Board grants to implement additional work. The goals of these projects are to enhance instream habitat complexity and groundwater storage, which will in turn contribute toward improved flows. This project will provide additional benefits to fish and wildlife by increasing minimum stream flows, restoring the density and species composition of riparian vegetation, increasing the availability of pool habitat and cool water refugia during periods of high temperature, and providing suitable habitat for beaver re-colonization.

Other aquatic restoration on the Oak Creek Wildlife Area has focused on removal of barriers (non-fish friendly stream diversions and culverts). In 2015, an abandoned concrete diversion structure was removed from the Tieton River. The unscreened structure had taken repeated flood damage and was non-operational, but it still affected the diversion of water and fish at certain flows. Fish were known to become stranded and perish as a result of it.

The Large Wood Replenishment Project, near Hoover Canyon along Oak Creek (Phase 1) was completed in 2015. Those actions re-established structure in the channel to impound flow and trap sediments. Such effects are valuable where channels have simplified and become deeper, thus causing the hydrology to reconnect. Lower in the watershed, phase 2 was completed in late 2016, and additional phases are planned as funding allows. Another project in partnership with the USFS, The Nature Conservancy, Mid-Columbia Fisheries Enhancement Group, and Yakama Nation is planned for 2017-18 to place wood in upper Oak Creek and further remove the old road prism on all three ownerships on old 1400 and 1401 road systems that were abandoned in 1997. A Salmon Recovery Funding Board grant is being used to fund this project.

Priority aquatic restoration projects are likely to be undertaken along segments of the Tieton River (see Appendix E). These will utilize wood "replenishment" techniques and may include scarification of disconnected floodplain (terraces) and the construction of pilot channels to allow re-entrainment of currently unavailable, stored bedload gravels. Efforts to increase the recruitment of bedload, and its retention, in the channel of this stream are a high priority.

The general prescription for all streams is to stabilize rapidly eroding stream banks and reverse channel-incision

and floodplain disconnection with structural woody matter. In those streams with high silt loads, projects should place forest slash of varying sizes within channels to sequester sediments. Restoration of the normative vegetation characteristics associated with all surface waters is a primary goal. Where current and former riparian areas may be overly degraded, actions should use bioengineering and the most-natural techniques possible.

Degraded wetlands and meadows may have altered hydrology in favor of conifers. Correcting any underlying alterations in hydrology should be the priority. The techniques for restoring floodplain hydrology mentioned above should usually apply. To maintain shallow water tables in these settings, drainage detention should be highly efficient. One method of restoring hydrology, involves removal of evergreen stands and/or the promotion or planting of hardwoods, this may be needed on site-by-site bases. All projects should consider 'priming' degraded sites with constructed backwaters (damming and/or excavating) and surrounding them with dense hardwood stands so as to accommodate beaver colonies, whenever sufficient hydrologic inputs exist.

Large quantities of forest product waste (e.g. slash) are very valuable to have on hand for all aquatic restoration projects. Appropriate WDFW or other Habitat Program-approved guidance documents (i.e. Integrated Streambank Protection Guidelines) and Stream Habitat Restoration Guidelines should be consulted for all aquatic restoration projects.

Cultural Resources

State and federal law requires the protection of cultural, geological, and other non-renewable resources. Such resources may not be removed unless determined to be beneficial to wildlife, habitat, or scientific or educational purposes. WDFW coordinates with appropriate agencies and tribes for the protection of such resources if any activity affects cultural, archaeological, or historic resources. This includes the removal of various rock formations, Native American artifacts, plants, seeds, and other items. A summary of cultural resources information for the Oak Creek Wildlife Area is located in Appendix F.

Climate Change Approach

This section describes the likely climate change impacts and potential management actions for the Oak Creek Wildlife Area. Tables 8 and 9 describe key impacts to forest, grassland, and shrubland, with potential management actions and information gaps.

The most direct impacts of climate change to this area will be in the form of warmer winters (3 to 6 degrees within 15 years) and drier summers (Climate Impacts Group 2013). Altered fire regimes influenced by climate change and other factors are expected to increase the incidence of forest fires in the state in the future (Little et al. 2010). Major fires have the capacity of damaging large areas of western gray squirrel habitat and directly killing squirrels in the North Cascades, as demonstrated by the large

Table 8. Key Impacts of Climate Change, Potential Management Actions and Information Gaps for Forest Habitats (Source: Glick and Moore NWF 2009).

Key Impacts	Potential Management Actions	Information Gaps
More frequent storm events	Engage the private sector	Vegetation community responses
Increased forest fires	Increase interagency collaboration	Phenology and species inter-relationships
Expansion of invasive species	Conduct vulnerability assessments and monitor species	
Loss of high elevation habitats	Acquire land for habitat conservation	
Carrying capacity, disease, and pine beetles	Change land management	
Increase interagency collaboration	Conduct vulnerability assessments and monitor species	

Carlton Complex fire that occurred in 2014. Additionally, warmer temperatures associated with climate change could increase the exposure of squirrels to disease (Steel et al. 2011). Despite these concerns, one recent modeling exercise suggests that western gray squirrels could significantly expand their range in eastern Washington as climate change alters forests over the next century (Johnson et al. 2012).

Table 10 describes vulnerability assessment information for Species of Greatest Conservation Need (SGCN).

Management activities on the wildlife area will help address future climate risks, such as restoration and weed management. Table 11 provides an overview of potential climate impacts, effects on habitat and species, and management actions for the plan. Most of these actions are built into the list of goals and objectives of the plan (see Appendix A).

Table 9. Key Impacts of Climate Change, Potential Management Actions and Information Gaps for Grassland and Shrubland Habitats (Source: Glick and Moore NWF 2009).

Key Impacts	Potential Management Actions	Information Gaps
Altered hydrology including floods and drought	Increase water use efficiency	Migration patterns
Increasing fires	Protect and restore habitat	Species interactions
Expansion of invasive species	Change agriculture practices to reduce the need for water	Post-fire ecosystem restoration
Changes in land use	Change land use management	
Loss of endemics and species diversity	Raise public awareness	

Wildflower, Schoolbus Point
Photo by David Hagen

Table 10. Vulnerability* Assessment Information for Key Species (WDFW 2015)

Species	Overall Vulnerability	Overall Confidence	Sensitivity Rank	Exposure Rank	Summary of Exposure
Western gray squirrel	Low to moderate	Moderate	Low to moderate	Moderate	> Increased temperatures > Changes in precipitation > Altered fire regimes > Increased disease outbreaks
Greater sage grouse	Moderate to high	Moderate	Moderate to high	Moderate	> Drought and/or moisture stress > Increased temperatures > Altered fire regimes
Golden eagle	Moderate	High	Moderate	Moderate	> Increased temperatures > Altered fire regimes
Northern spotted owl	Moderate to high	Moderate	Moderate to high	Moderate to high	> Increased temperatures > Altered fire regimes > Increased insect outbreaks
Lewis' woodpecker	Low to moderate	Moderate	Low to moderate	Moderate	> Increased temperatures > Altered fire regimes
White-headed woodpecker	Low to moderate	Moderate	Low to moderate	Moderate	> Increased temperatures > Altered fire regimes > Changes in precipitation
Steelhead	Moderate to high	High	Moderate to high	Moderate	> Altered spring runoff timing and amount/ magnitude > Increased water temperatures > Lower summer flows
Bull trout	Moderate to high	High	Moderate to high	Moderate	> Increased water temperatures > Altered runoff timing > Increased winter/spring flood events > Lower summer flows
Night snake	N/A	N/A	Unknown	Moderate	> Altered fire regimes > Increased invasive weeds
Columbia spotted frog	Moderate to high	Moderate	Moderate to high	Moderate	> Changes in precipitation (rain and snow) > Altered hydrology
Pygmy horned lizard	Moderate	Low	Moderate	Moderate	> Increased temperatures > Altered fire regimes > Increased invasive species
Ring necked snake	Low to moderate	Low	Low to moderate	Moderate	> Changes in precipitation (rain and snow) > Altered fire regimes

*Vulnerability to climate change is determined by an evaluation of sensitivity and exposure for each species or habitat, assessed confidence for each sensitivity and exposure evaluation, and scored overall vulnerability and confidence for a species or habitat.

Table 11. Potential Climate Impacts, Effect on Habitat and Management Actions

Potential Climate Impacts	Effect on Habitat & Species	Management Action	Activities
Lower stream flows	Drought conditions; changes to the seasonal timing of flow and temperature of streams; streams drying up, impacts to listed steelhead and bull trout.	Continue salmon recovery restoration efforts in the S.F. Cowiche, Oak Creek and Naches rivers. Reintroduction of beavers.	Determine climate change impacts to headwater streams. Determine historic wood recruitment rates.
Decreased precipitation	Increased grassland and noxious weeds.	Develop compatible restoration objectives.	Implement weed management plan. Utilize drought tolerant seed mix for restoration.
Increased risk of fire	Reduction in native wildlife, including western gray squirrel populations and spotted owl.	Continue forest restoration projects to increase resiliency. Forest thinning/fuel break maintenance. Increase interagency collaboration for landscape-level forest management planning.	Implement forest restoration actions. Develop and implement forest management plan. Continue coordinated forest management.
Changes in native plant distribution	Distribution of some plants will change, including an increase in invasive species.	Identify and monitor rare plant populations. Implement weed management plan.	Monitor rare plant populations. Implement weed control measures. Utilize drought tolerant seed mix for restoration.
Loss of shrub-steppe habitat	Changes in species composition and extent of shrub-steppe habitat.	Implement weed management plan. Prioritize and implement restoration projects.	Utilize drought tolerant seed mix for restoration. Conduct post fire restoration.
Loss of habitat connectivity	Loss of migration corridors. Changes in species distribution.	Implement weed management plan. Prioritize and implement restoration projects.	Seek new opportunities for increased habitat and open space protection.
Expansion of grassland	Loss of shrub component and species diversity. Increased cheatgrass will alter fire regime.	Implement weed management plan. Prioritize and implement restoration projects. Manage for grasslands in the future.	Implement weed control measures. Utilize drought tolerant seed mix for restoration. Ecological integrity monitoring will inform adaptive management process.

Research and Other Studies

Consistent with WDFW's mission to preserve, protect, and perpetuate fish, wildlife, and habitat, WDFW supports independent studies to achieve wildlife area objectives. Table 12 describes past studies which have occurred on the wildlife area, including studies for elk, white-headed woodpecker, fire recovery monitoring, water quality monitoring, butterfly research, and bat surveys.

Hiker at South Fork Cowiche Creek Valley
Photo by David Hagen

Table 12. Summary of Research Activities Conducted on Oak Creek Wildlife Area

Researcher	Date	Description
Scott McCorquodale	2003-07	Yakima Elk Study
Randall R. Hayman	1983	Elk Diet Study
Teresa Lorenz, USFS	2013	White-headed Woodpecker Space Use in Central Washington
Teresa Lorenz, et al	2015	The Role of Wood Hardness in Limiting Nest Site Selection in Avian Cavity Excavators
Douglas J. Shinneman and Susan K. McIlroy-USGS	2016	Identifying key climate and environmental factors affecting rates of post-fire big sagebrush (*Artemisia tridentata*) recovery in the northern Columbia Basin
Joel Riggle	1991	Cliff and Cave Inventory Survey for Bats
Joel Riggle	1991	Oak Creek Non-game Pilot Project
David G. James	2014	Beneficial Insects Attracted to Native Flowering Buckwheats in Central Washington
Buchanan et al.	2003	White-headed Woodpecker Nest Sites
Buchanan et al.	1993 & 1995	Spotted Owl Nest Trees
Buchanan and Irwin	1998	Variability in Spotted Owl habitat
Buchanan et al.	2004	Barred Owl Nests
Buchanan	2009	Dry Forest Birds
Anthony et al.	2006	Spotted Owl Demography
Franklin et al.	1999	Spotted Owl Demography
Kroll et al.	2010	Spotted Owl site Occupancy
Irwin et al.	2004	Spotted Owl Persistence
Baker and Lacki	2006-2007	Habitat Use by Bats
Lorenz et al.	2011	Clark's Nutcracker
Weaver	2008	Night Snake
Rexroad et al.	2007	Ungulate Grazing
Lacki et al.	2012	Roosts of Long-legged Myotis

Recreation and Public Use

WDFW wildlife areas provide fishing, hunting and wildlife-related recreation opportunities, consistent with the agency's mission, the statewide wildlife area planning goals, and with funding sources for each property. Public use on these wildlife areas is influenced by the character of the landscape, access, wildlife, and fish species present, as well as seasonal considerations and regional engagement from the local community. WDFW may place limitations on some activities in order to protect resources, preserve quality experiences and infrastructure, and address the safety of personnel and the public. The agency seeks to promote public enjoyment of fish and wildlife while managing and perpetuating them for future generations.

Washington State's population is growing, putting more pressure on wildlife areas across the state, including the Oak Creek Wildlife Area. With more people comes a greater diversity of recreation interests, which can lead to conflicts between users (e.g. hunters and hikers). User conflicts can be detrimental to natural resources and can result in fewer quality recreational experiences. WDFW is developing a Recreation Management Strategy to address these issues, which may lead to new laws, rules, and/or policies to balance recreation use and wildlife and habitat protection. The strategy is expected to be completed in 2018.

The Oak Creek Unit is the largest and one of the most accessible units on the Oak Creek Wildlife Area. It offers a wide variety of recreational opportunity as seen in Table 13. Besides hunting, the unit is best known for elk viewing during winter elk feeding. In the winter, WDFW feeds hundreds of elk each day at the Oak Creek Headquarters (see page 11 and 40, success stories and elk management). Visitors may watch elk along the viewing fence, take a guided truck tour of the feed site and view displays in the Oak Creek Visitor's Center. WDFW coordinates with the Oak Creek Wildlife Education Corp to operate the visitor's center, guide tours, and answer questions. On a busy weekend over a thousand visitors may stop by to see wild elk up close. Other winter wildlife viewing opportunities include golden eagles, bald eagles, and bighorn sheep. Areas surrounding the feed sites on the Oak Creek and Cowiche units are closed to public entry during winter through spring feeding to protect elk from disturbance. Another popular activity is shed antler gathering. When the elk public entry closure ends each year (May 1), hundreds of people line up and race to find elk sheds.

Throughout the spring, summer, and fall, a wide variety of recreation occurs on the Oak Creek Unit. The Tieton River Canyon has several rock climbing routes that have been developed over the years. There are multiple trails on the unit, including the Tieton Nature Trail and the Bear Canyon Trail which are part of the Great Washington State Birding Trail System. Tim's Pond fishing access site is stocked with catchable size trout several times a year and is heavily used. A Recreation Conservation Office grant has been awarded to develop the site and improve the recreation experience.

On the Cowiche Unit, recreation is limited to walk-in only. No roads are open to motorized use. There is one parking lot off Cowiche Mill Road that provides access. During the winter and early spring, much of the unit is closed to public entry to protect elk from disturbance. Outside of hunting seasons, the heaviest use is in the spring for shed antler gathering, bird watching, and wild flower viewing. The Box Canyon Trail was developed in coordination with the Cowiche Canyon Conservancy and provides the only developed trail on the unit.

The Rock Creek Unit is located in mixed ownership with the Forest Service. The primary use outside of hunting is motorized recreation on several trails that cross both ownerships. WDFW coordinates with the USFS to manage the trail system and implements seasonal closures to reduce trail damage and erosion in the spring. Other recreation activities on the unit include dispersed camping, bird watching, and snowmobiling.

Trout fishing occurs annually from the first Saturday in June to October 31, with special gear restrictions such as artificial lures with single barbless hooks and no bait. Catch limits in streams open to harvest of trout are limited to two trout with a minimum size of 10 inches in Naches River tributaries (12-inch minimum in the mainstem Naches below the Tieton River). In the mainstem Naches River above the confluence with the Tieton River and in Rattlesnake Creek, it is designated as catch and release trout fishing during the open season (see sport fishing rules, http://wdfw.wa.gov/fishing/regulations/). Trout fishing regulations in the area are designed to protect the wild trout resource, including rearing steelhead. The regulations allow widespread recreational fishing opportunities without incurring negative impacts to the fish populations. Mountain whitefish also provide a popular sport fishery in the Naches River, especially during the winter months, from December 31 - January 31.

Primary lake or pond fishing opportunities at the Oak Creek Wildlife Area include Tim's Pond next to US Highway 12 and Mud Lake near State Route 410. Both water bodies are open year round and are stocked with hatchery trout. Tim's Pond is stocked with catchable size rainbow trout in April and May. There is a five trout catch limit and bait is allowed. Mud Lake is stocked with rainbow trout fry and has a one trout catch limit, allowing single barbless hooks and no bait. There are numerous lowland and high lakes within a 30-minute drive of the Oak Creek Wildlife Area in Yakima County. These can be found on the WDFW website under the Fish Washington logo (http://wdfw.wa.gov/fishing/washington/).

Salmon hatchery production and supplementation have increased population abundance to allow for recreational sport fishing harvest of spring and summer/fall Chinook in the mainstem Yakima River. Harvest is only allowed seasonally on hatchery fish (as noted by an adipose fin clip), generally during May - June for spring Chinook and September - October for summer/fall Chinook. Abundance of coho and sockeye are not yet sufficient to allow for harvest fisheries.

Cowiche Unit - Hillside with wildflowers
Photo by David Hagen

Table 13. Recreation Use on Oak Creek Wildlife Area

Wildlife Area Unit	Primary Hunting and Fishing Opportunities	Other Recreational Activities	Restrictions	Education & Interpretation	Facilities
Oak Creek	Deer, elk, sheep, turkey, grouse Predator hunting (coyote) Trout-planted in ponds, native in Naches and Tieton rivers, and whitefish	Winter elk viewing, hiking, rock climbing, rafting, wildlife viewing, wild flower viewing, mt biking, horseback, camping, motorized recreation, riding, shed antler hunting, target shooting	Seasonal public entry closures. Rifle elk closure (small area)	Visitor's center; multiple kiosks across the wildlife area	Four parking lots (HQ, Sheep feedsite, Bear Canyon Trail, Waterworks Trail). Tim's Pond Access site, vault toilets (3), multiple hiking trails
Cowiche	Big game, deer and elk, upland birds Limited-occasional trout fishing	Hiking, wildlife viewing, wildflower viewing, shed antler, hunting, target shooting	Seasonal public entry closure Discovery Pass restrictions	1 kiosk and a map	Parking lot
Rock Creek	Big game, elk, deer, goat, sheep, grouse and turkey Limited-occasional trout fishing	Hiking, motorized recreaton, camping, target shooting, wildlife viewing, snowmobiling	Seasonal closures to motorized trails in coordination with USFS	Multiple kiosks	None

Recreation on Oak Creek Wildlife Areas. Page 62, two horsemen show off collected antlers (Photo: Ross Huffman). Above, rock climber on basalt cliff (Photo by WDFW staff) and day hiker (Photo by John Marshall)

Road Management

A network of state, federal, county, and WDFW roads provide access to the Oak Creek Wildlife Area. U.S. Highway 12 and State Route 410 bisect the wildlife area and provide the primary access points to the network of U.S. Forest Service (USFS), county, and WDFW roads. Each agency maintains their respective roads differently through annual, seasonal, or as needed maintenance. Most WDFW road maintenance is performed on an as needed basis. Routine maintenance items include inspecting culverts, checking for erosion, clearing trees, and grading. Culverts that were fish barriers have been replaced (abandoned or upgraded) and require annual inspection and maintenance. Large repairs and maintenance usually require capital funding and implementation is coordinated by the Capital Assets Management Program. Roads used for commercial timber hauling are part of the Oak Creek Road Maintenance and Abandonment Plan and are regulated by state law.

The Oak Creek Wildlife Area has a very large network of roads both open and closed to motorized vehicle use. There is a total of 326 miles of road and motorized trails across the wildlife area. Roads vary from gravel high use roads to two-track closed roads only used for administrative access. In 1985, WDFW implemented the Green Dot Road Management system in the region along with other state and private partners. The idea was to designate primary roads to access the wildlife area and adjacent public lands while protecting resource roads with issues like erosion. The system philosophy was that marking roads as open would reduce costs of installing gates and maintaining closure signs. Under this system, roads are marked as open with a white carsonite post with a green dot, all other roads are closed to motor vehicles. The green dot system is managed in partnership with other landowners. All entrances to the green dot area have reader boards and/or kiosks explaining the rules with maps posted. Maps are updated annually and made available to the public. Due to the land exchange with DNR and recent acquisitions of new property, only a portion of the wildlife area along Bethel Ridge and Cleman Mountain are within a designated green dot system area.

The Oak Creek and Rock Creek units are in checkerboard ownership with the USFS and private landowners. WDFW does not have management authority on USFS roads that provide primary access to WDFW lands. On non-Forest Service roads, WDFW has implemented some road closures with the primary objectives of closing spur roads, redundant roads, and roads with erosion issues to motorized vehicles. Since acquisition WDFW has closed 14 miles of roads and numerous miles of user-built ORV trails to motor vehicles. The goal was to reduce road density and fish and wildlife resource impacts while maintaining public access. Closed roads have gates installed or are posted as closed to motorized vehicles. Entrances to the wildlife area include kiosks and maps showing the road system. In addition, maps are available online. The Rock Creek Unit has several motorized trails that are part of the Forest Service Motorized Trail System. WDFW coordinates management of trails with USFS, including seasonal closures to reduce damage in the spring.

The Cowiche Unit is accessed via Cowiche Mill Road, which is a gravel county road that bisects the unit. All roads internal to the wildlife area are used for administrative access only. The road to the Cowiche hay barn also serves as a driveway for a private residence that is an inholding to the wildlife area.

Oak Creek Wildlife Area
Photo by Justin Haug

Management Direction and Approach

Management Goals, Objectives and Performance Measures

This plan sets management priorities for the Oak Creek Wildlife Area for the next 10 years. The goals, objectives and performance measures in this plan were developed by an interdisciplinary team of regional and headquarters staff, with input from the Oak Creek Wildlife Area Advisory Committee, the public, and other agency staff. They are consistent with WDFW's Mission and Strategic Plan. Goals, objectives, and performance measures for the Oak Creek Wildlife Area are located in Appendix A. The objectives listed in this plan may or may not be fully funded; in many cases successful outcomes will be dependent on additional funding.

Adaptive Management/Monitoring

Wildlife area objectives are to be measured annually based on the associated performance measures and through staff annual evaluations. On a biennial basis, the Oak Creek Wildlife Area manager will review, report, and revise, as appropriate, objectives and performance measures for the next two-year cycle. Staff will engage and develop recommendations for the two-year update with the wildlife area advisory committee and regional district team. Such reporting will allow the manager, the staff, and the regional office to modify tasks and timelines as necessary to meet the associated objective. Further, over the term of the plan (10 years), performance illustrates the adequacy or inadequacy of funding and capacity to successfully manage the wildlife area, potentially influencing goals and objectives in the next planning term.

Mountain goats
Photo by John Marshall

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Unnamed Creek, Bald Mountain Road
Photo by John Marshall

Appendix

A. Oak Creek Wildlife Area Goals, Objectives, Performance Measures and Tasks
B. Forest Management Plan
C. Species and Habitat Information
D. Weed Management Plan
E. Future Aquatic Restoration Projects
F. Cultural resources
G. Fire Response Summary
H. Public Response Summary

Appendix A. Goals, Objectives, Performance Measures

Table 14. Goals, Objectives, Performance Mesures

Goal	Objective	Unit	Performance Measure	Lead	Tasks
1 Maintain or improve the ecological integrity of priority sites.	A. Establish an ecological integrity baseline and associated goals for ecological systems of concern/priority systems by 2022.	All	1. Baseline established (y/n); 2. EI goals established (y/n).	Ecological integrity Monitoring Team	- Work with WLA manager to design monitoring plan to achieve objective A over 10-year planning term. - Conduct data collection to determine baseline within 10-year planning term. - Provide EI baseline report to WLA manager prior to start of subsequent 10-year planning term. - Work with WLA manager to establish EI goals.
	B. By 2018, develop and implement a shrub-steppe post fire rehabilitation plan for the Oak Creek WLA and coordinate with Cowiche Canyon Conservancy (Cowiche unit).	Cowiche/ Oak Creek	1. Plan developed and implemented (y/n); 2. # agreements with the Cowiche Canyon Conservancy.	WLA Manager	- Consult with internal and external partners, stakeholders and restoration specialists to develop priorities. - Draft plan for response post fire. - Implement plan as needed.
	C. Implement weed management plan annually.	All	1. # acres inspected; 2. # acres treated; 3. Produce annual weed control report.	WLA Manager	- Annually develop work plan in coordination with Assistant Manager. - Implement weed control plan. - Complete annual reporting requirements.
	D. Annually inspect 100 % of elk fencing and gates; repair and replace as needed and as funding allows.	All	1. # miles of fencing inspected and repaired; 2. # of gates inspected and repaired; 3. # miles fence replaced.	WLA Manager	- Inspect fence annually following hunting seasons. - Prioritize replacement of old fence. - Complete repairs as needed. - Submit Capital Funding requests to Headquarters for replacement of old fence.
	E. Identify acquisition priorities for expansion of wintering habitat (migration corridors) for elk, mule deer, and other fish and wildlife species; coordinate with partners (e.g. RMEF) and include public access to increase hunting and fishing opportunities.	Cowiche/ Oak Creek	1. # available properties (inholdings); 2. # grant applications completed. 3. Maintain vehicular access to the WLA (y/n). 4. Post-acquisition, make sure hunting Regulations and maps readily available (y/n).	WLA Manager/Real Estate Services	- Coordinate with partners, Regional Director and Regional Lands Agent to identify project areas. - Seek grant funding for acquisitions. - Assist with implementation of awarded grants. - Priorities include Cowiche Watershed (2016/2017) - Ensure hard copies of Hunting Regulations and maps are available at Headquarters. - Make maps available online. - Develop new maps for those areas outside of green dot management. - Priorities for acquisition of public access include the Cowiche Watershed and Mud Lake.

Goal	Objective	Unit	Performance Measure	Lead	Tasks
1. Maintain or improve the ecological integrity of priority sites.	F. Build and maintain a citizen science network to collect ecological integrity data.	All	1. % of photo points collected by citizen scientists annually; 2. % of vegetation plots collected by citizen science every 5 years; 3. # citizens engaged; 4. # of projects initiated.	Ecological Integrity Monitoring Team	- Recruit citizen scientists to meet monitoring need established in 1A.
	G. Develop a plan to conduct a rare plant survey on the wildlife area by 2022.	All	Plan completed (y/n)	WLA Manager	- Identify priority areas. - Coordinate with Rare Care (UW). - Survey for rare species prior to project implementation and as funding is available.
2. Improve ecological integrity of forests while maintaining and/or improving habitat for wildlife.	A. Identify planned areas for forest treatment for the next 5 years, consistent with Goal 1A.	Oak Creek/ Rock Creek	1. # acres non-commercial treatment completed; 2. # acres of prescribed broadcast burning completed; 3. # acres of reforestation.	Forester/WLA Manager/District Team	- Layout, permitting, implementation, and oversight of contract and WDFW crews for planned projects. - Draft and submit grant applications to fund projects. - Submit requests for other state funding as available to fund projects.
	B. Identify priority areas for forest treatments within the 10 year planning cycle, consistent with Goal 1A, and considers protection of wildlife.	Oak Creek/ Rock Creek	1. # of projects reviewed by District Team; 2. # of projects reviewed by USFWS 3. # acres of commercial thinning completed; 4. # acres of non-commercial thinning completed; 5. # acres of prescribed broadcast burning completed.	Forester/WLA Manager/District Team	- All projects will be reviewed by the district team and made known to district and habitat biologists very early in the planning process so they may assist in developing unit boundaries and prescriptions. - Projects purchased with USFWS Section 6 funding will be reviewed by USFWS Lacey Office . - Consultation with WAAC on areas to be treated and incorporate input into final project if a project is proposed. - Conduct cultural resource surveys for proposed activities and consult with DAHP and affected tribes. - Layout, permitting, implementation, and oversight of contract and WDFW crews for planned projects. - Draft and submit grant applications to fund projects. - Submit requests for other state funding as available to fund projects.
	C. Annually coordinate with Science and Diversity Divisions for the protection of western gray squirrel on the WLA.	Oak Creek/ Rock Creek	1. # projects consulted; 2. Management actions implemented (y/n).	Forester/Science Division/WL District Bio	- Consult with Science Division and USFS to develop priorities. - Implement management actions on all proposed activities.

Goal	Objective	Unit	Performance Measure	Lead	Tasks
2. Improve ecological integrity of forests while maintaining and/or improving habitat for wildlife.	D. Annually maintain and increase snags across the wildlife area	All	# snags created per project	Forester	- Creation of snags will be an objective to prescribed fire and commercial treatments - Staff will keep up to date on current science and incorporate new information into snag creation treatments if feasible
	E. Continue involvement in Tapash Forest landscape forestry partnership.	Oak Creek	1. # meetings attended annually; 2. # projects identified and implemented.	Forester/WLA Manager	- Attend Tapash meeting as needed. - Coordinate with Tapash partners on projects.
	F. Coordinate forest restoration with stream restoration activities (Yakama Nation, USFS etc).	Oak Creek/ Rock Creek	1. # projects; 2. # of liner feet of stream treated; 3. # of acres of floodplain treated.	WLA Manager/Fish Program	- Coordinate with partners to identify projects and secure funding.
	G. Follow PHS guidelines for aspen enhancement when implementing forest management	Oak Creek/ Rock Creek	1. # projects implemented; 2. # acres treated.	WLA Manager/ Forester	- Inventory aspen stands across the wildlife area. - Implement projects as funding allows.
3. Maintain and enhance the Oregon white oak woodlands.	A. Identify areas for oak habitat protection when implementing the forest plan.	Oak Creek/ Rock Creek	1. # of acres identified; 2. # projects implemented	Forester/WLA Manager	- Inventory oak woodlands outside of riparian corridors. - Develop a list of prioritized projects - Develop a protocol for protection - Implement protection
4. Manage roads to minimize unacceptable impacts to fish and wildlife.	A. Coordinate maintenance and monitoring of roads with WDNR and USFS by 2021.	Oak Creek/ Rock Creek	1. Annual RMAP report completed (y/n); 2. # miles roads inspected; 3. USFS maintenance agreement implemented (y/n).	WLA Manager	- Meet annually with DNR and USFS to plan for road maintenance needs. - Inspect roads annually while traversing during work. - Continue to work with USFS on implementing road maintenance agreement. - Complete routine maintenance as time and funding allow.
	B. Complete current RMAP work by 2020.	Oak Creek/ Rock Creek	RMAP work completed (y/n)	WLA Manager	- Coordinate with CAMP to secure Capital Funding for RMAP work - Coordinate with CAMP on work schedule. - Complete permits (FPA/HPA) as needed..

Goal	Objective	Unit	Performance Measure	Lead	Tasks
4. Manage roads to minimize unacceptable impacts to fish and wildlife.	C. Maintain roads on shrub-steppe annually.	Oak Creek/ Cowiche	1. # miles inspected; 2. # of repairs; 3. # miles maintained.	WLA Manager	- Inspect roads annually while traversing during work. - Prioritize repairs and maintenance to be completed by WLA staff.
	D. Implement seasonal road closures annually to limit disturbance to wildlife by vehicle traffic.	Oak Creek	Road closures implemented annually (y/n)	WLA Manager	- Implement annual road closure in Cleman Mt area. - Implement annual road closures of Oak Creek and Bethel Ridge Road.
	E. Develop a long-term plan to fund ongoing maintenance of forest roads by 2025.	Oak Creek/ Rock Creek	1. Plan completed (y/n); 2. funding secured (y/n).	WLA manager	- Coordinate with regional and HQ staff and CAMP to develop plan. - Work to secure funding. - Implement work as funding allows.
5. Achieve species diversity at levels consistent with healthy ecosystems	A. Conduct survey for Species of Greatest Conservation Need species (e.g. western gray squirrel, monarch butterfly) as directed by Diversity Division.	All	Species surveys completed every 5 years (y/n).	WL District Biologist	- Coordinate and collaborate with WLA Manager and Diversity Division on priorities annually. - If appropriate, based on review of survey protocols by citizen science coordinator, craft volunteer-specific qualifications, sampling methods, and training to engage citizen scientists to assist in survey delivery.
	B. Reduce human disturbance of golden eagle near active nest sites.	Oak Creek	1. # nest sites; 2. # of seasonal closures implemented around active nest sites.	WL District Biologist	- Monitor golden eagle habitat use along Tieton River to determine nest sites. - Implement closures around nests as needed to reduce human disturbance.
	C. Follow current northern spotted owl management guidelines for Critical Habitat for northern spotted owl.	Oak Creek Rock Creek	1. # surveys conducted per protocol; 2. # of project consultations.	Habitat Program/ WLA Manager	- Assess if proposed project* is within NSO designated Critical Habitat or if project site was acquired with Sec 6 funding for NSO recovery. - Ensure projects within critical habitat either maintain as current habitat or accelerate the timeline to providing NSO habitat. - * Projects include road construction, motorized recreation and wood cutting.
	D. Coordinate milk weed plantings on wildlife area with Cowiche Canyon Conservancy to support Monarch butterfly and other pollinators' conservation by 2020.	Cowiche	1. # of projects; 2. # of acres.	WLA Manager	- Continue to participate in CCC Stewardship Committee. - Develop locations and projects on WDFW lands. - Implement planting projects with volunteers and/or seek funding for projects. - Develop volunteer-supported monitoring strategy. - Monitor plantings, map successful plantings for future, and periodically monitor Monarch butterfly and pollinator use.

Goal	Objective	Unit	Performance Measure	Lead	Tasks
5. Achieve species diversity at levels consistent with healthy ecosystems	E. Develop survey protocol for Townsend's ground squirrel surveys by 2018.	Cowiche and Oak Creek	1. # projects developed and implemented; 2. % of suitable habitat surveyed.	WLA Manager/ Science Division/ Diversity Division (biologist and citizen science coordinator)	- Develop survey protocols/methods. - Review to determine if appropriate for citizen scientists. - If appropriate, draft volunteer qualifications and training to support ground squirrel surveys with citizen scientists. - Work with CCC and other groups to find qualified citizen participants for conducting surveys. - Implementation.
	F. Explore volunteer opportunities for maintaining and enhancing shrub-steppe habitat.	Cowiche and Oak Creek	# projects developed and implemented	WLA Manager	- Maintain partnership with Cowiche Canyon Conservancy. - Develop projects and implement as time and funding allow. - Apply for grant funding of projects through RCO as needed.
	G. Survey and protection of bat species.	All	1. Conduct surveys (y/n); 2. Map general and specific locations (y/n); 3. Install signs (y/n); 4. Conduct surveillance activities (y/n).	Science Division/ WLA Manager/ Diversity Division (Wildlife Health)	- Conduct protocol-defined surveys to identify the presence, distribution, and species of bats and their use of habitats. - Map general (e.g. forest areas with snags, large rock faces) and specific locations (e.g. buildings) of all known or likely (e.g. large snags, large rock faces) aggregation sites. - Develop signage with WDFW bat specialists to promote awareness of bats on the WLA (the locations of bat aggregations are considered sensitive data, so revealing locations should not be part of the messaging). - Conduct surveillance activities to evaluate presence of Pd and of bats exhibiting WNS; and follow all WDFW protocols regarding the detection, mapping, and response to detections. - If Pd and or WNS is detected, follow WDFW response protocols and consult with WDFW leads defined in that protocol to determine if access restrictions are required for human and bat health and safety. - As feasible, limit management activities in forests to the period of time outside the season when maternity colonies would be active. - Avoid using chemicals that would reduce insect populations used by bats, or that would otherwise be harmful to bats. - Maintain quality foraging areas (diverse forest areas; water bodies such as streams and ponds) for bats.
	H. Conduct Cowiche butterfly surveys annually.	Cowiche	# of surveys conducted	WLA Manager	- Continue to participate in Cowiche Canyon --- Conservancy Stewardship Committee. - Seek opportunities for WSU professor Dr. David James to survey WDFW lands. - Explore Citizen Science opportunities.

Goal		Objective	Unit	Performance Measure	Lead	Tasks
		I. Monitor reptiles/ amphibians on the WLA.	All	1. # of surveys completed; 2. # of signs installed.	Diversity Division/ WLA Manager	- Develop and install signs about rattlesnakes along the Tieton River by 2020. - Coordinate with Diversity Division on priorities annually. - Explore opportunities for surveys as staff and volunteer opportunities allow.
6.	Maintain and enhance upland bird habitat to provide hunting opportunities for the public.	A. Maintain water developments (e.g. guzzlers and ponds) to benefit all wildlife and enhance existing habitat.	Oak Creek/ Cowiche	1. # guzzlers maintained; 2. # of springs/seeps inspected.	WLA Manager	- Repair structures as soon as possible after damage or significant decay is discovered. - Inspect ponds for water retention at least once every 2 years.
		B. Increase dense roost site habitats for California quail nesting and brood rearing by 20% by 2020.	All	# of sites protected for nesting and brood rearing.	WLA Manager	- Survey for and protect (no burning or thinning) brood rearing sites. - Conduct assessment of results.
		C. Annually develop and maintain partnerships with conservation organizations to improve habitat delivery for wild turkeys.	All	1. funds leveraged from conservation organizations; 2. # volunteer hours; 3. # acres improved.	WLA Manager/ Game Division	- Provide volunteer opportunities for habitat improvement; - Seek matching funds from conservation organizations.
		D. Protect existing roost sites for wild turkeys.	Oak Creek/ Rock Creek	1. # roost sites identified; 2. # roost sites protected.	WLA Manager/ Game Division	- Evaluate existing roost sites. - Incorporate sites into forest management plan.
		E. Evaluate winter food resources to sustain wild turkey flocks by 2020.	All	# acres evaluated	WLA Manager/ Game Division	- Evaluate existing food resources. - Develop to enhance wild turkey winter habitat.
7.	Manage wolf-livestock conflicts to minimize livestock losses, while not impacting the recovery of a sustainable wolf population	A. Follow statewide guidelines for wolf management. Once a pack is established around the WLA, evaluate adaptive management as per statewide planning.	All	1. Document sightings (y/n); 2. Conduct follow-ups as needed; 3. Engaged proactive tools; 4. # of conflicts that occur	WL District Biologist / Conflict Biologist	- Work with Conflict Staff to document viable wolf sightings as per public and WDFW reports. - Set cameras as needed to verify individuals and wolf pack presence based on sightings/reports.
8.	Maintain big-game feeding program annually	A. Conduct annual weed management at elk feeding sites.	Oak Creek/ Cowiche	1. # acres of weed control; 2. # acres of seeding of annual cover crops.	WLA Manager	- Seed feed sites annually with cover crop. - Control weeds with herbicide and mowing. - Explore other options to control weeds.
		B. Maintain winter feeding at five sites annually. Coordinate with USFS on annual use permit.	Oak Creek/ Cowiche	1. # of feed sites maintained; 2. Permit issued (y/n).	WLA Manager	- Feed elk daily during winter as needed. - Use BMPs to limit delivery of pollution to surface waters. - Inspect runoff structures at HQ feed site annually and perform maintenance as needed. - Work with USFS to secure permit for Nile feed site.
		C. Conduct annual winter feeding for bighorn sheep.	Oak Creek	Winter feeding conducted (y/n)	WLA Manager	- Feed big horn sheep daily during winter as needed.

Goal		Objective	Unit	Performance Measure	Lead	Tasks
		D. Develop a plan to rehab old ag fields associated with elk feeding sites by 2020.	Oak Creek/ Cowiche	1. Plan developed (y/n); 2. # of acres restored; 3. # acres monitored.	WLA Manager	- Secure funding to implement restoration. - Complete restoration, monitor and continue maintenance.
9.	Maintain and enhance big game habitat	A. Pursue Tieton sheep reintroduction on the WLA.	Oak Creek	(On hold pending resolution of issues with domestic sheep).	WL District Bio/ Game Division	- Reintroduce bighorn sheep if the risk of contact with domestics is low.
		B. Annually monitor bighorn sheep including assisting with sheep trap monitoring, survey and re-location.	Oak Creek	Monitoring conducted (y/n)	WL District Biologist	- Count sheep at the feed site, translocate if appropriate.
10.	Maintain and restore riparian and instream habitat for steelhead, bull trout and other priority species along the Tieton, S.F. Cowiche, Oak Creek and Naches Rivers	A. Coordinate with Yakama Nation, Yakima Basin Salmon Recovery Board and Regional Fisheries Enhancement Group on restoration projects in the Tieton River and Oak Creek, including LWD placement, bedload improvement, side channel reconnection) projects in the Tieton River.	Oak Creek	1. Grant submitted (y/n); 2. # projects implemented; 3. # acres of floodplain treated.	Habitat Program/ WLA Manager/Fish Program	- Meet regularly with partners and District Team. - Develop projects, secure funding, and complete permitting. - Implement project. - Monitor results. - Prescribe adaptive management needs.
		B. Coordinate with Yakama Nation, Yakima Basin Salmon Recovery Board and Regional Fisheries Enhancement Group on improving flows and fish passage on the S.F. Cowiche Creek.	Cowiche	1. Grant submitted (y/n); 2. # projects implemented.	Habitat Program/ WLA Manager/Fish Program	- Meet regularly with partners and District Team. - Develop projects, secure funding, complete permitting. - Secure funding. - Implement projects. - Monitor results. - Prescribe adaptive management needs.
		C. Coordinate with Yakama Nation, Yakima Basin Salmon Recovery Board and Regional Fisheries Enhancement Group on restoration projects on the Naches River.	Oak Creek	1. Grant submitted (y/n); 2 . # projects implemented; 3. # acres of floodplain treated.	Habitat Program/ WLA Manager/Fish Program	- Meet regularly with partners and District Team. - Develop projects, secure funding, complete permitting. - Implement projects. - Monitor results.
		D. Coordinate the coho supplementation program with the Yakama Nation to reestablish natural spawning coho in S.F. Cowiche Creek.	Oak Creek/ Cowiche	# of projects implemented	WLA Manager/Fish Program	- Continue to provide a location for acclimation tanks and pumps on the Cowiche Unit. - Coordinate on timing of smolt releases with Yakama Nation coho manager.
		E. Promote fish resources information on the wildlife area including improving signage and kiosks; provide additional signage at Tim's Pond by 2018 and Mud Lake by 2022.	Oak Creek	1. # maps developed/ distributed; 2. # brochures developed; 3. # kiosks updated.	Fish Program/ Habitat Program	- Consider additional signage at the pullouts along Hwy 410. - Work with GIS Olympia staff for fish distribution map products as needed and as funds are provided. - Coordinate with Oak Creek WA Manager on signs needed for the WA.

Goal	Objective	Unit	Performance Measure	Lead	Tasks
10. Maintain and restore riparian and instream habitat for steelhead, bull trout and other priority species along the Tieton, S.F. Cowiche, Oak Creek and Naches Rivers	F. Coordinate annual bull trout, steelhead and coho monitoring with the Yakama Nation, NOAA and USFWS on Oak Creek/Cowiche Units.	Oak Creek/ Cowiche	# monitoring projects implemented	Fish Program	- Continue to conduct annual steelhead redd counts in the spring in Oak Creek / S.F. Cowiche Creeks as water levels allow. - Continue to coordinate redd counts with Yakama Nation & USFS staff. Summarize & share data with federal & tribal managers. - Implement eDNA research for bull trout distribution in Oak / Cowiche unit as funds become available. - Coordinate coho redd count data with Yakima Nation.
	G. Determine if the SF Cowiche Creek water right placed in trust should be renewed or placed into beneficial use by 2020.	Cowiche	Water right either put to beneficial use or placed in trust (y/n).	WLA Manager/ Water Rights Lead (RES)	- Coordinate with Habitat Program and Washington Water Trust. - Renew trust or develop infrastructure to put water to beneficial use.
11. Support and maintain appropriate recreation opportunities	A. Coordinate with WSDOT improved fishing access on the Naches River, Hwy 410 by 2020.	Oak Creek	# sites developed and implemented	WLA Manager	- Meet with WSDOT to discuss options for improving pull-offs along hwy. - Implement improvements as funding allows.
	B. Conduct annual monitoring and seasonal closures for core sheep (lambing) areas.	Oak Creek	1. Annual monitoring conducted (y/n); 2. Annual seasonal closures conducted (y/n).	WLA Manager/WL District Bio	- If new user built trails are developed and sheep are being displaced, consider seasonal closures.
	C. Annually maintain access Tieton River rock climbing.	Oak Creek	1. # miles of trails inspected annually; 2. REI grant implemented.	WLA Manager	- Coordinate with Washington Climbers Coalition to implement REI grant for trail maintenance in 2017. - Meet with user groups to develop trail maintenance projects. - Perform routine trail maintenance as needed.
	D. Improve elk feeding site parking lot features including exploring volunteer options by 2020.	Oak Creek	1. Electronic pay system installed (y/n); 2. # of volunteers.	WLA Manager	- Seek Capital Funding for improvements to viewing area and parking lot. - Install electronic Discover Pass pay station. - Continue coordination with WA State Parks for education.
	E. Annually coordinate with Wildlife Education Corp (WEC) volunteers to staff visitor's center during winter and other events.	Oak Creek	1. WEC operated visitor's center during winter feeding (y/n); 2. WEC assisted with shed antler hunting and hunter information events (y/n); 3. WEC completed annual liter pick up event (y/n).	WLA Manager	-Attend monthly WEC meeting and provide ongoing training and assistance to WEC volunteers. -Coordinate with WEC on events (shed antler, hunter information, clean-up days).
	F. Develop a plan to address fishing access at Mud Lake.	Oak Creek	Plan developed and implemented (y/n)	WLA Manager/Fish Program	- Currently there is no drive to access for Mud Lake. Continue to provide walk in trail access for the public from a parking area adjacent to Hwy 410.

Goal	Objective	Unit	Performance Measure	Lead	Tasks
11. Support and maintain appropriate recreation opportunities	G. Improve signs and kiosks at Discover Pass areas by 2020.	Oak Creek	1. # signs installed; 2. # kiosks improvements.	WLA Manager	- Construct kiosks and informational signs for all access points, trailheads and parking areas on the wildlife area. - Complete cultural resource review. - Install signs as staff time and funding allow.
	H. Maintain annual fishing opportunities at Oak Creek WLA.	Oak Creek	1. 1,100-1,200 catchable rainbow trout stocked per year at Tim's pond; 2. 250-300 fingerling rainbow trout stocked at Mud Lake every two years.	Fish Program	- Continue to provide recreational fishing opportunities in Mud lake by stocking rainbow trout fingerlings via back pack during the early spring. - Monitor fish growth to determine if numbers of fish stocked and frequency is adequate to meet recreational fishing needs.
	I. Manage motorized trail closures annually during critical times of the year to protect wildlife.	Rock Creek	Trail closures coordinated with USFS and implemented annually (y/n).	WLA Manager/ Enforcement	- Complete MOU with USFS on joint trail management. - Meet annually with USFS to coordinate management of motorized trails. - Implement closures as needed in coordination with USFS. - Develop signs and education materials to manage trails that meet legal standards.
	J. Develop a cooperative maintenance and seasonal road closure agreement for recreation trails with USFS by 2020.	Oak Creek/ Rock Creek	1. Agreement complete and implemented (y/n); 2. Complete implementation of RCO grant by 2018 (y/n).	WLA Manager	- Implement grant in coordination with USFS, CAMP and user groups. - Develop new projects and grants as needed. - Continue partnership with user groups on volunteer projects.
	K. Coordinate with State Parks annual snow grooming permits.	Rock Creek	Permit completed annually (y/n)	WLA Manager/ Lands Agent	- Coordinate with WA State Parks to issue grooming permits.
	L. Create recreation maps for kiosks at trailheads by 2018.	All	Map completed (y/n)	WLA Manager	- Inventory trails on WLA with GPS. - Develop maps in coordination with GIS Staff. - Order maps through vendor as funding allows. - Install maps on existing kiosks or install new kiosks after completing cultural resources review.
	M. Improve habitat and wildlife protection information at trail heads by 2018.	All	1. Install Audubon birding signs for Tieton (y/n); 2. # of Kiosks maintained; 3. # of signs updated; 4. signage at checkerboard ownership areas maintained (y/n).	WLA Manager	- Install Audubon signs. - Inspect kiosks and signs routinely throughout the year. - Perform maintenance and repair as needed. - Replace old, missing or damaged signs.

Goal	Objective	Unit	Performance Measure	Lead	Tasks
11. Support and maintain appropriate recreation opportunities	N. Coordinate with DNR and Real Estate on large recreation events.	All	# events per year	WLA Manager	- Review requests for events as they are received internally and with DNR. - Decide if event can be accommodated. - Issue permit in coordination with DNR that provides for resource protection.
	O. Develop a feasibility study for development of a low impact shooting range facility on the wildlife area by 2025.	All	Feasibility study completed and implemented (y/n).	WLA Manager	- Wait for process to be developed on Wenas Wildlife Area. - Follow public process developed for Wenas Shooting Range.
	P. Identify options to protect habitat and wildlife from target shooting by 2019.	Oak Creek/ Cowiche	# sites closed having significant safety issues	WLA Manager	- Meet with stakeholders and user groups about issues primarily along Cowiche Mill Rd. - Develop plan through public process. - Implement plan which may include closing some areas to target shooting.
	Q. Protect big game by maintaining annual seasonal closures and coordinate with enforcement.	Oak Creek/ Cowiche	1. # signs placed for closure boundary; 2. annual May 1st event coordinated (y/n).	WLA Manager/ Enforcement	- Implement proposed winter closures around feed sites, with public outreach. - Maintain signage around closure area and make sure signs are in compliance with legal standards. - Continue to work with Eyes in the Woods on education and monitoring of closure areas. - Coordinate with Enforcement and Wildlife Education Corp volunteers for the May 1 shed hunting event to ensure it is s safe, organized and a fun event.
	R. Coordinate annual trail maintenance with volunteer groups (e.g. Backcountry Horseman).	Oak Creek	1. # events annually; 2. # volunteer meetings	WLA Manager	- Continue to work with groups on trail maintenance and facilitate volunteer projects. - Develop relationships with other user groups for volunteer trail maintenance projects.
	S. Upgrade facilities on the wildlife area to meet current ADA and safety standards by 2021.	All	1. Upgrade visitors center (y/n); 2. Disabled hunter access road maintained (y/n).	WLA Manager	- Continue to support Capital funding request for Visitor's Center improvements. - Complete annual maintenance of ADA hunter access roads.
	T. Establish a Disabled Hunter Road Access Site in the Rock Creek Unit by 2018.	Rock Creek	Site designated (y/n)	WLA Manager	- Designate existing gated road to be included in the program. - Work with ADA Access Program to include new opportunity for 2018 hunting season.
	U. Promote annual hunting and fishing opportunities for underrepresented groups (e.g. ADA access, Women in the Outdoors, Youth Weekend).	All	1. # groups contacted annually; 2. ADA hunting access roads maintained at two sites(y/n).	WLA Manager	- Seek opportunities to work with groups to promote events.

Goal	Objective	Unit	Performance Measure	Lead	Tasks
	V. Develop a plan to manage ADA access for Tim's Pond by 2018.	Oak Creek	Plan completed (y/n);	WLA Manager	- Work with regional access program on management of Tim's Pond once development is complete. - Implement maintenance as determined.
	W. Coordinate with Enforcement recreation use on Tim's Pond.	Oak Creek	# signs posted	WLA Manager/ Enforcement	- Develop signs that meet legal requirement, post and maintain. - Coordinate with enforcement on camping use of new sites.
	X. Include climbing group representation on WAAC and partner on stewardship opportunities by 2018.	Oak Creek/ Rock Creek	1. Partner on stewardship efforts (REI grant) (y/n); 2. Include membership on WAAC (y/n).	WLA Manager	- Work with local users and Washington Climber Coalition to identify potential members.
	Y. Develop a plan to reduce dispersed camping impacts along riparian areas by 2018.	Oak Creek/ Rock Creek	Plan developed and implemented (y/n).	WLA Manager	- Identify impacted areas. - Implement closures through Public Access Management (PAM) process. - Implement closures and coordinate with Enforcement on education and enforcement.
	Z. Develop a plan to increase enforcement and education on the wildlife area in coordination with other law enforcement agencies by 2019.	All	1. Funding secured to increase enforcement on WLA (y/n); 2. Plan developed (y/n).	Enforcement /WLA Manager	- Gather information from Klickitat County on range deputy. - Work to secure funding to support additional staff time. - Develop and implement plan for increased emphasis on ORV damage and hunting violations.
12. Maintain productive and positive working relationships with neighbors, partners, and permittees	A. Maintain current grazing leases.	Oak Creek/ Cowiche	1. # of permits renewed; 2. # of permits monitored.	WLA Manager/ Range Ecologist	- Monitor existing permits for utilization and permit compliance. - Renew permits following Policy and Procedures. - Meet regularly with permitees.
	B. In cooperation with Cowiche Canyon Conservancy develop a grazing management plan by 2019.	Cowiche	Management plan completed (y/n)	WLA Manager/ Range Ecologist	- Coordinate with CCC on plan development.
	C. Renew DNR grazing leases and permits to WDFW standards when they expire in 2022.	Oak Creek	# permits renewed	WLA Manager	- Review permit areas and meet with permitees. - Develop permits and grazing plans following Policy and Procedures.
	D. In coordination with USFS develop grazing permit for Rock Creek Unit converting from sheep to cattle by 2017.	Rock Creek	1. Permit completed (y/n); 2. Monitoring coordinated (y/n); 3. 5 year permit developed (y/n).	WLA Manager/ Range Ecologist	- Develop 1 year permit for 2017 in coordination with USFS and permitee. - Monitor utilization and livestock movement's patterns in coordination with USFS and permittee. - Based on results develop 5 year grazing permit.

Goal		Objective	Unit	Performance Measure	Lead	Tasks
12.	Maintain productive and positive working relationships with neighbors, partners, and permittees	E. Monitor for trespass cattle annually.	All	# areas inspected and cattle removed	WLA Manager	- Monitor areas for trespass. - Document trespass cattle. - Contact owner of cattle and coordinate removal. - Work with DNR, and permittees on long term solution (fencing, etc).
		F. Develop a cooperative maintenance and seasonal road closure agreement for recreation trails with USFS by 2017.	Oak Creek/ Rock Creek	Agreement complete and implemented (y/n)	WLA Manager	Covered above in recreation.
		G. Coordinate removal of the Windy Point Cabin with USFS and Real Estate by 2018.	Oak Creek	Cabin removed (y/n)	WLA Manager	- Develop plan with USFS to complete cultural review. - Secure funding for removal and rehabilitation.
13.	Offer multiple and varied opportunities for stakeholder participation and engagement	A. Coordinate and maintain a Wildlife Area Advisory Committee.	--	# of meeting(s) per year	WLA Manager	- Setup meeting time and place based on group members' availability. - Draft agenda with attention to group interest and time constraints. - Hold meeting and collect group comments and recommendations for consideration relative to future management actions (proposed or ongoing). - Include meeting notes in wildlife area management plan updates and website.
		B. Coordinate communication with community groups about current wildlife area management activities.	--	# of group/constituents contacted	WLA Manager	- Provide Oak Creek WLA information to local organizations, through email, telephone calls, community group meeting attendance and presentations, and written notices and newsletters.

Appendix B. Forest Management Plan July 13, 2017

Introduction

The Management Strategy for the Washington State Department of Fish and Wildlife's Forests (http://wdfw.wa.gov/publications/01616/) is a statewide agency strategy that addresses agency mission, policies, & priorities for forest management common to all Washington Department of Fish and Wildlife (WDFW) Wildlife Areas. The statewide strategy includes descriptions of forest types, management issues, and protocol for identifying suitable management areas and potential projects. This document builds on the statewide plan to identify and address forest management needs specific to the Oak Creek Wildlife Area. It is intended to be used as a planning and implementation guide for land managers to improve and maintain the wildlife area forests. It is also an information source regarding forest conditions, risk management, and resiliency of the agency's forest lands on the Oak Creek Wildlife Area.

Part 1: Forest Description

Forest Types and Distribution

Oak Creek Wildlife Area forests contain a range of eleven ecological systems across more than 25,000 forested acres, based on aerial and ground interpretation. Forest ecosystem distributions can be seen in Maps 8 and 9 and detailed descriptions of all ecological systems can be found online at http://file.dnr.wa.gov/publications/amp_nh_ecosystems_guide.pdf. The area is unique because of the wide range of ecosystems present. Lower elevations to the east transition from shrub-steppe communities and oak woodlands to high elevation sub-alpine forest communities to the west. The range of forest types identified in Maps 8 and 9 are described in greater detail in the WDFW Statewide Forest Management Plan. The majority of the forested areas are defined by the dry pine and dry mixed conifer systems common to the Central Washington East Cascade lowlands that include the Northern Rocky Mountain Ponderosa Pine Woodland and Savanna and Northern Rocky Mountain Dry-Mesic Montane Mixed Conifer Forest. These two forest types cover approximately 77 percent of the wildlife area forested acreage and the ponderosa pine type is listed as priority habitat within WDFW's Priority Habitats and Species (PHS) program. The next most abundant at 11 percent is the East Cascades Mesic Montane Mixed Conifer Forest and Woodland. Topographic, soil, fire regime, and moisture variation contribute to the distribution of these dominant conifer forest systems. Ponderosa pine dominated systems are found on south-facing slopes, and in transition from forest to open shrub or grass dominated ecological systems on the wildlife area. Douglas-fir, western larch, and grand fir are more abundant on north-facing slopes, higher elevations, and relatively cooler and/or wetter sites. Tree species composition of the higher elevation forest types include subalpine fir, Engelmann spruce, lodgepole pine, western white pine, and mountain hemlock. High elevation forest types comprise approximately 7 percent of the wildlife area and include the North Pacific Mountain Hemlock Forest, Rocky Mountain Subalpine Dry-Mesic Spruce-Fir Forest and Woodland, and Rocky Mountain Subalpine Mesic-Wet Spruce-Fir Forest and Woodland.

In consistently moist sites such as riparian and near-riparian forests, the Oak Creek Wildlife Area has a mix of Columbia Basin Foothill Riparian Woodland and Shrubland, Rocky Mountain Subalpine-Montane Riparian Woodland, and North Pacific Montane Riparian Woodland and Shrubland which occur in a linear distribution along waterways from above tree line downslope to the sagebrush steppe systems. These systems occupy approximately 3 percent of the forested acres. The first two types are found in WDFW's PHS list as well as WDFW's State Wildlife Action Plan (SWAP). The latter type is listed only in the PHS list.

The final two ecological systems occurring on the wildlife area are the East Cascades Oak-Ponderosa Pine Forest and Woodland and the Rocky Mountain Aspen Forest and Woodland. Although these systems that occupy the lowest percentages of forested acres at about 2 percent and less than 1 percent respectively, they are listed as habitats of greatest conservation need in the SWAP and priority habitats within the PHS program. Oak-pine forests are found only at the lower reaches of Oak Creek and lower slopes of the Tieton and Naches rivers. Aspen stands occur as very small patches or stringers associated with rock screes, talus, or riparian areas within larger systems

Oak Creek Unit

The Oak Creek Unit consists of approximately 15,000

forested acres located 7 miles west of Naches. Topography is ridge and ravine with a dominant mixed conifer forest habitat. The forested property was purchased in 2003 and 2007 from a private industrial timber company. The property was acquired with funding from RCO and USFWS for the priority habitats it contains and for recovery of northern spotted owls, bald eagles, bull trout, gray wolves, and grizzly bears.

Rock Creek Unit
The Rock Creek Unit consists of approximately 10,000 forested acres located 20 miles west of Naches. Topography is steep ridge and ravine. The dominant habitat in the area is mixed coniferous forest. The property was purchased in 2009 and 2012 from a private industrial timber company. The property was also acquired with funding from RCO and USFWS for the priority habitats it contains and for recovery of northern spotted owls, bull trout, gray wolves, and grizzly bears.

Cowiche Unit
The Cowiche Unit consists of primarily non-forested dry grassland and sagebrush steppe. However, approximately 30 acres of Northern Rocky Mountain Ponderosa Pine Woodland and Savannah is scattered about in valley bottoms, and more moist microsites associated with north aspects. Additionally, riparian habitat classified as primarily Columbia Basin Riparian Woodland and Shrubland occupies approximately 50 acres along South Fork Cowiche Creek and its lower tributaries. Oregon white oak is present but is confined to the riparian corridors and is intermixed with the riparian habitat. No forest management is planned at this time because the existing forest is considered to have high ecological integrity. However, the unit will be monitored for invasive vegetation and control measures will be implemented as needed.

Nile Springs Unit and Bauguess Unit
The Nile Springs and Bauguess units consist of 13 acres and 22 acres respectively. Both are located along the Naches River and are comprised of primarily riparian habitat classified as Columbia Basin Riparian Woodland and Shrubland. No forest management is planned at this time because the existing riparian forest is considered to have high ecological integrity on both units. However, both units will be monitored for invasive vegetation and control measures will be implemented as needed.

Disturbance Processes

Historically, natural disturbances within the East Cascades ecosystems maintained forest health, structure, density, succession, and many other ecologic processes. However, habitat quality and resilience is reduced when disturbance occurs unnaturally or outside of a tolerable range of variability.

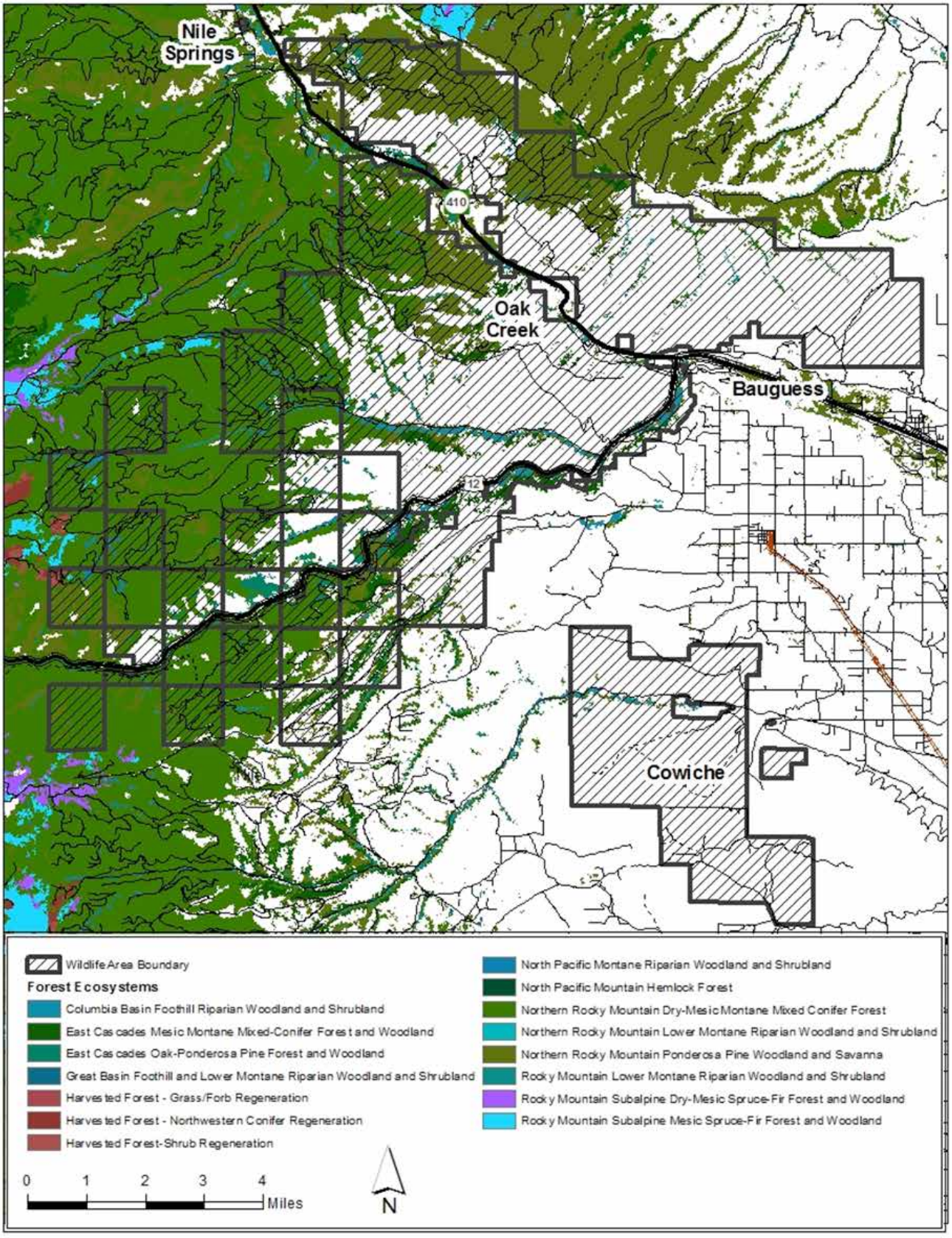
Fire, a key ecological process that sustains and regulates fire-dependent ecosystems, has been largely excluded by firefighting policies for nearly 100 years. Fire provides the effects needed to maintain a mosaic of plant communities, in various stages of succession across the landscape. This helps to meet the needs of the wildlife species that evolved with the historic frequent fire regime characteristic, particularly in dryer ecosystems and aspen stands.

Historically forests and associated shrub-steppe ecosystems like those on the Oak Creek Wildlife Area were subjected to frequent, low severity wildfire events. The advent of aggressive fire suppression policy and technology has been tremendously effective in excluding fire over the last 100 years. As a result, healthy and functional dry conifer forests are rare in Washington State.

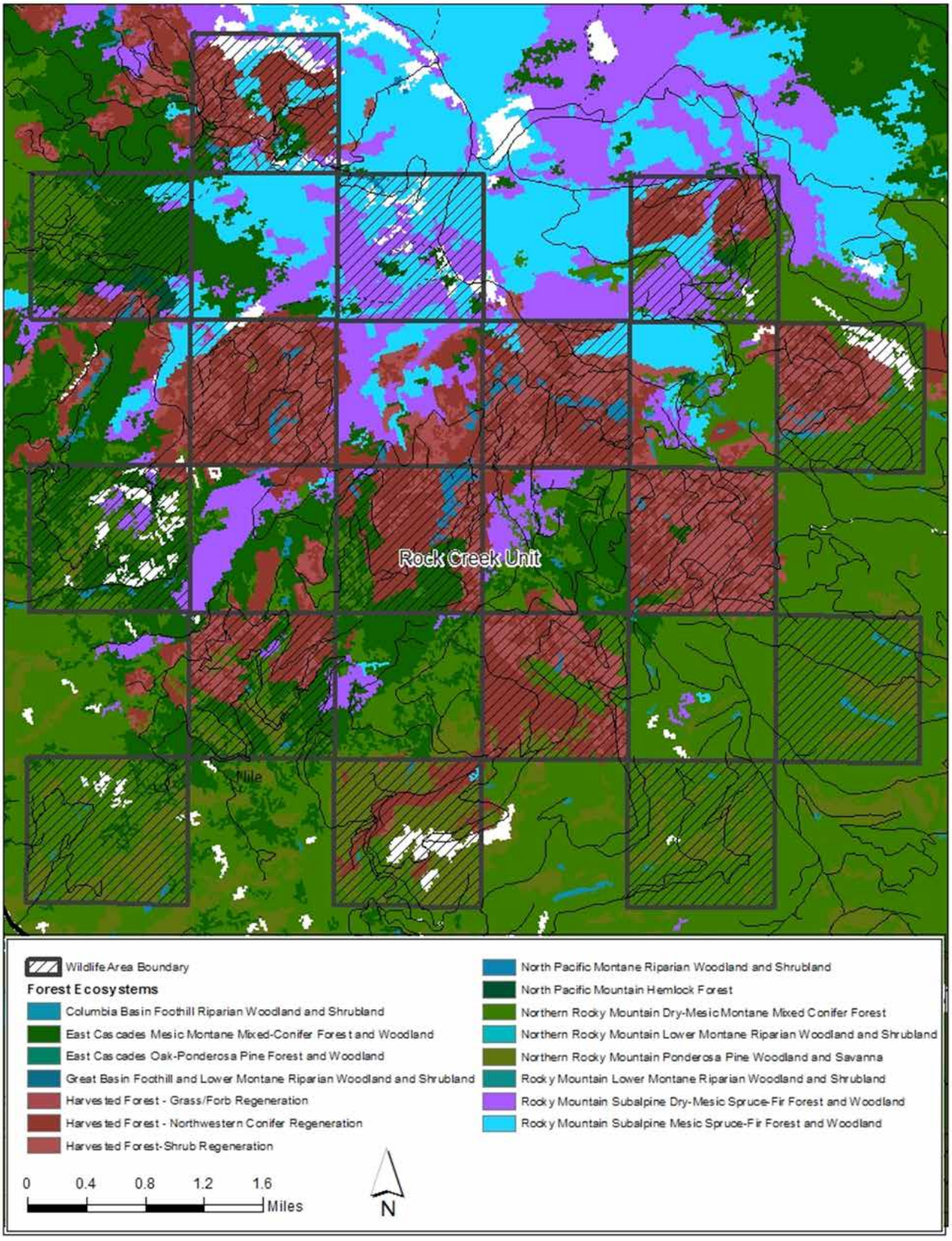
Insects and pathogens also play a historic role in maintaining forest density and structure. Pockets of mortality from these factors resulted in micro-patches (0.25-1 acre) of regeneration contributing to an overall spatially heterogeneous canopy structure. WDFW recognizes that insects and pathogens at natural levels are an essential part of a forested ecosystem, playing a role in forest succession and the food chain for wildlife species. Wildfire suppression, some of the past forest management activities, and insufficient forest treatment since acquisition have created overstocked, stressed stand conditions. These conditions are favorable to insect populations that are above the historic norm. As a result, insect and pathogen outbreaks are leading to unnatural forest structure loss.

Flooding and channel migration can change the dynamics and possible locations of riparian forests. River regulation made possible by storage reservoirs can drastically impact vegetative species assemblages and their distributions; often affecting natural seedling recruitment processes. Those effects are most pronounced along Tieton River. The Naches River is affected to a lesser extent.

Map 8. Forest Ecosystem map of the Oak Creek, Cowiche, Nile Springs, and Bauguess Units of the WLA



Map 9. **Forest Ecosystem map of the Rock Creek Unit of the WLA**



Current Conditions and Threat Assessment

Ecological Integrity

Ecological integrity monitoring will be an ongoing process on the wildlife area. Based on field observations it is clear that wildlife area forests have suffered a reduction in ecological integrity, health, and function because of how fire and the forests have been managed. Removal of fire from the fire-dependent forest ecosystems, logging of large fire-resistant trees prior to acquisition, and not treating the dense regeneration of smaller trees have had many negative effects by altering succession processes. Effects include reduced biodiversity, reduced habitat value, and increased risk of uncharacteristically large and intense wildfires.

Across the landscape, there is a need to identify, create, and monitor the presence and distribution of succession classes and species composition. By applying ecological integrity assessments and field reconnaissance by WDFW foresters, wildlife areas can prioritize active forest management strategies to meet landscape needs.

Priority Species and Habitats

WDFW maintains a list of priority habitats and species and has also published a series of management recommendations (http://wdfw.wa.gov/publications/search.php?Cat=Priority Habitats and Species). Focal species are outlined in the Resource Section of the Wildlife Area Management Plan. The strategies in this Forest Management Plan are consistent with these resources. Additionally, lands acquired with USFWS Section 6 grant funding shall be managed to aid the recovery of species specifically listed in each proposal. These species include northern spotted owls, bald eagles, bull trout, gray wolves, and grizzly bears.

Risk Management

Fire

According to the National Fire Protection Association (http://www.nfpa.org), one of the greatest threats to the quality of public and private forest lands in the local area is wildland fire. Also, the Rock Creek Unit experienced a 1,300 acre wildfire (600 acres WDFW lands) in 2016 that burned at a mixed severity, with patches of high and low mortality. The high mortality areas (approximately 60 acres) will be monitored for fire recovery that may include tree planting of early seral species such as ponderosa pine and western larch at low density (100-150 trees per acre). If planting is needed and appropriate, it will likely occur in the next 3 years depending on seedling availability and funding. Low intensity burn areas will continue to be monitored for additional reforestation needs. Funding through restoration grants or other programs for forest improvement projects will be sought if needed.

The wildlife area overlaps with the Highway 410 and Upper Wenas communities which have high and extreme wildfire risk ratings. The Highways 410 and 12 Community Wildfire Protection Plan (http://file.dnr.wa.gov/publications/rp_burn_cwpphwy41012.pdf) requests that WDFW reduce backlog slash, especially in dry forests. Likewise, the Tapash Sustainable Forest Collaborative (http://www.nature.org/ourinitiatives/regions/northamerica/unitedstates/washington/tapash-fact-sheet.pdf), of which WDFW is a member, is concerned about wildfire risk and is promoting coordinated treatments to reduce risks. While fire itself is an important component of the ecosystem, wildfires now have the potential to burn hotter, faster, and over larger areas. These stand replacement fires contribute to loss of mature forest, insect mortality, loss of shade trees in riparian forest, and reduction of seed sources to re-establish forests. While fire plays a role in succession, and historically contributes to maintaining grass or shrub ecosystems, the size and severity of modern wildland fire results in landscapes and entire watersheds converting to homogenous habitat, in contrast to the desired patchy, diverse habitat conditions at large and small scales.

Proactive forest management can reduce severe wildfire behavior on WDFW lands and ensure that fires are more likely to be controlled. Without treatment that reduces the effects or spread of wildland fire, Oak Creek Wildlife Area forests could likely experience fires and results similar to those recently experienced in other parts of the state.

Insects and Disease

Insect populations, while historically playing a role in forest succession, have the potential to become a serious issue on the wildlife area. Closed canopies and dense stands can contribute to unnatural spread. Additionally, stress from resource competition limits the forests ability to fight off pests and pathogens. Pine engraver beetle (*Ips pini*), western pine beetle (*Dendroctonus brevicomis*), mountain pine beetle (*Dendrochtonus ponderosae*), and

western spruce budworm (*Choristoneura occidentalis*) are some of the more common agents of insect mortality.

Laminated, Annosum, and Armillaria root rot most commonly affect trees in overstocked stands. As with other pathogens, ingrowth of less resilient tree species at higher densities affects the level and rate of spread of root rot. Since conifer diversity and open spacing have been lost in some stands, root rot does not have natural breaks in spread. As a result, root rot can expand uninterrupted across larger acreages. Douglas-fir dwarf mistletoe (*Arceuthobium douglasii Engelm.*), and western larch dwarf mistletoe (*Acrceuthobium laricis*) have also been increasing. While dwarf mistletoe by itself will not typically result in mortality, it will decrease tree vigor making the host tree more susceptible to other pathogens. Together, these different agents can cause increased tree mortality.

Social & Economic Conditions

Recreation

The wildlife area is used for hunting, fishing, camping, hiking, photography, horseback riding, and other recreational activities. There is often a legacy of usage within families who have utilized the public land for many generations. Quality recreation not only meets the WDFW mission, but brings revenue to the local economies. Forest health issues and wildland fire damage put these uses at risk. Well managed forests can continue to contribute to high value recreational opportunities, and resilient ecosystems can protect it for the long-term. Active forest management can also lead to additional services contracts, jobs, and timber products that contribute to the local economy. However, demand can be intermittent due to inconsistent markets and/or funding sources.

Wildland Urban Interface (WUI)

The wildlife areas are adjoined by private and public lands that are connected by an uninterrupted forest canopy. WDFW recognizes the high and extreme threat levels as reflected in National Fire Protection Association risk assessments for the Highway 410 and Upper Wenas communities. It also recognizes how it can help reduce risks in accordance with Highways 410 and 12 Community Wildfire Protection Plan (http://file.dnr.wa.gov/publications/rp_burn_cwpphwy41012.pdf) and strategies identified by the Tapash Sustainable Forest Collaborative (http://www.nature.org/ourinitiatives/regions/northamerica/unitedstates/washington/tapash-fact-sheet.pdf). This forest plan outlines the management approach and planned activities designed to improve forest health and put wildlife area forests on a trajectory towards high ecological integrity, improved forest health, and reduced risks of catastrophic wildfire. This can be accomplished by thinning, prescribed burning, planting, and other silvicultural management practices.

Part 2: Management Approach

The forest management approach on the wildlife area focuses on resiliency to disturbance (particularly fire), improvements of degraded stands, and habitat quality. Management decisions should consider both site –specific and landscape-wide, cross-ownership needs. In addition, while management outlined in this document is intended to rehabilitate forest ecosystems, unless fire can be applied to the landscape at a sufficient frequency to counteract the documented effects of fire suppression, periodic mechanical treatments will be necessary.

Desired Future Conditions

Wildlife area forests will be managed and maintained to meet the priorities and expectations of WDFW's mission to preserve, protect and perpetuate fish, wildlife and ecosystems while providing sustainable fish and wildlife recreational and commercial opportunities.

Desired future conditions will be aligned with WDFW's mission, and will likely change over time as a result of changing climatic, social, and environmental factors. Historic forest conditions pre-settlement can be considered when developing management prescriptions since these conditions were able to persist for thousands of years. A few small sample plots have re-created historic reference stands across many different precipitation and elevation gradients in the East Cascades. However, as the plots suggest, there was likely immense variation across these gradients and also within individual stands. This data is useful in prescription development by providing guidelines to how individual trees, clumps of trees, and openings were distributed within historic stands. It also provides useful information about size distributions and dominant tree species within historic forest stands. However, a stand level productivity index, such as Stand Density Index (SDI), should be used as well to develop site specific prescriptions regarding species preference and

tree density. In general, the dry forests were historically dominated by mature, fire tolerant trees; had low canopy cover and displayed a mosaic spatial pattern of individual trees, clumps, and openings. They have evolved to and can persist through frequent disturbances and climate fluctuation, and therefore can serve as a starting point for increasing resilience. As past management has greatly reduced the abundance of these forest conditions, returning these ecosystem elements is the primary focus of most treatments. However, it is expected and needed that natural disturbances will create different stand structures over time, and that treatments should not focus on creating a single type of forest structure. Also, some stands may be managed for other conditions, depending on overall landscape conditions and objectives.

Landscape conditions are affected greatly by differences in ownership. On the Oak Creek Wildlife Area these effects are exacerbated by checkerboard ownership with federal, other state, and private forest lands. In the recent past, collaborative multi-ownership efforts have been made to conduct landscape scale restoration such as in the Oak Creek Forest Restoration Project. Future efforts will continue, but different owners often have different management objectives. As a result, not all forest management on the wildlife area will be conducted on a landscape scale. However, landscape scale wildlife habitat needs will be considered when there is a level of certainty of how neighboring landowners will be managing their land in the near future.

Objectives will likely change over time as better science becomes available or social and economic conditions evolve. Most current forest management objectives are to set forests on a trajectory towards the default desired future condition, the historic condition. The reason for this is that we know that historic conditions allowed wildlife area forests to persist for thousands of years. By managing for long lasting forests on the landscape, we are providing future generations with better management options.

In short, it is not feasible to suggest that we are going to restore all forests at a landscape scale on the wildlife area to historic conditions. However, we can continue to evaluate conditions and conduct management as needed to improve future options for the protection of fish and wildlife ecosystems into perpetuity.

Ecological Integrity

The Oak Creek Wildlife Area forest management approach focuses on increasing ecological integrity to improve forest resiliency to disturbance and restore historic range of variability as directed in the Management Strategy for the Washington State Department of Fish and Wildlife's Forests (http://wdfw.wa.gov/publications/01616/). This will be accomplished while making allowances for the future range of variability caused by factors such as climate change. WDFW manages forests to promote a healthy, sustainable forest ecosystem that can maintain its structure and organization through time.

Where deemed appropriate and feasible, forest management will largely entail thinning forest stands to reduce density, select for resilient species, reduce resource competition of mature trees, stimulate understory development, and increase biodiversity. Prescribed fire will also be used where appropriate to re-introduce natural disturbance processes and reduce fuel loading.

Priority Species and Habitats

Priority Species and Habitats presence as outlined in the Wildlife Area Management Plan will be factored into management recommendations of the wildlife area's forests. As an example, aspen stands are currently a priority habitat in decline. Therefore, they are a focus for protection and release to encourage regeneration and expansion. Historically, installing aspen exclosure fences to allow for healthy regeneration in the absence of heavy browse has been successful. Opportunities for additional exclosures or expanding existing ones will be considered. Some burning, scarification of the ground, and removing apical dominance through felling or girdling of dominant aspen may also be used to stimulate the clones where needed. In general, balancing the needs of the landscape and ecological integrity, while also increasing the viability of at-risk species and habitats, will guide the management decisions and provisions. Details on how we will address priority species considerations at the project level will be developed in individual project designs with WDFW biologists, and individual species specialists as appropriate.

Risk Management

Fire

Restoring fuel density and structure is essential to restoring ecosystem resilience. Releasing overstory, dominant, and/or fire-resilient cohorts to open up the canopy will reduce potential crown fire spread and resource competition that will provide long-term, resilient mature forest habitat. Following up with prescribed burning, where feasible, will bring the fire regime, fuel loading and structure, and resilience to fire closer to the historic norm that this ecosystem had adapted to. Wildlife habitat is at risk of further degradation and loss without this intervention to stop the human-caused decline.

Insects and Pathogens

The goal is to keep insects and disease at levels that are compatible with desired future conditions and the agency mission across the landscape. While there is a desire and sometimes a regulatory need to promote healthy forests and resiliency, it is recognized that some level of insects and disease is a normal and necessary ecological process that can be beneficial to wildlife. Mistletoe brooms in large, decadent Douglas-fir can make great nesting and roosting habitat. Snags provide a food source and habitat for cavity nesters. Therefore, abundance and distribution of these habitat factors in the landscape will be taken in to consideration when developing treatment prescriptions.

Social/Economic Conditions

By treating for resilient forests, WDFW can ensure that social, economic, and environmental benefits to the public can be maintained and improved.

Wildland Urban Interface

In the Wildland Urban Interface (WUI), WDFW lands adjacent to both public and private land require additional assessment of stand conditions that could be a threat to adjacent land and vice versa. In areas close to homes, structures, and unmanaged forests, fire risk management concerns may lead to more aggressive fuels management techniques and prescriptions than would ordinarily be used to help restore ecological integrity. In those areas, treatments may result in fuel and density levels that reflect the low end of the historic range of variability.

Recreation

Although recreational opportunities may be limited or temporarily restricted during active treatments such as mechanical thinning or prescribed fire, recreational uses on the WLA will be enhanced by improved habitat, forest resiliency, and sustainability in the long-term.

Suitable Management Areas and Potential Projects

WDFW has begun preliminary assessment of forests to identify suitable active management areas. Assessments have been done using historic and current aerial photography, Forest Practices Application records, topographic maps, easement documents, LIS database, stream data, road inventory information, and local knowledge.

Those areas that are or will be identified as suitable for active management will have been degraded by past logging and/or fire suppression. The remaining areas will not be suitable for active management currently for a variety of reasons. Some may be currently in good condition with no need for active management. Others may benefit from treatment but can't reasonably be treated for a variety of reasons that may include lack of road access, steep slopes, riparian protection concerns, and/or regulatory constraints.

To date, many projects have already been completed including many aspects of the Oak Creek Forest Restoration Project that commercially thinned 411 acres and non-commercially thinned 689 acres from 2013 through 2015. Planned broadcast burning of approximately 300 acres associated with this project is expected to occur by the end of 2017. In addition to the Oak Creek work, 362 acres were thinned in 2016 in the Rock Creek unit, with much more planned as additional funding becomes available.

Planned projects to be completed in the next 5 years are identified in Table 15 and maps are provided in Maps 10 and 11. It is important to note that the pace of treatments is dependent on funding and should more funding becomes available than currently anticipated, treatments will be accelerated. In general, projects will commercially and non-commercially thin overstocked mixed conifer stands that have become vulnerable to intense wildfires and other disturbances. These thinning projects also protect aspen and other priority habitats that are becoming overshadowed by conifers and declining in the absence of the natural wildfire cycle. Whenever possible and feasible,

prescribed fire will be also be used to treat forests. It is unlikely that prescribed fire can be applied at a sufficient frequency to counteract the effects of fire suppression. Therefore, periodic mechanical intervention will be necessary. Planned projects were given priority over other potential treatment areas based upon previously conducted landscape level assessments (Oak Creek Forest Restoration Project), stand establishment date, and response to unplanned disturbances such as wildfire and insect outbreaks.

In addition to planned projects, priority areas for treatment within the next 10 years have been identified on the wildlife area and can be seen in Maps 12 and 13. These areas include treatment units that currently have lower priority than the planned units due to establishment date, uncertainty of access, and other unknown factors. Further information must be gathered to determine detailed prescriptions for treatment. Additionally, consultation with experts and regulatory agencies still needs to occur to further verify the need for treatment and how the potential treatments will affect wildlife. As a result, the area boundaries as shown may change. The intent is to continually assess need and viability of future projects to maintain continued success in the improvement and maintenance of ecological integrity of the wildlife area forests.

Within one year, the goal of the WDFW Oak Creek Forester will complete the assessment of all forested acres on the wildlife area and identify additional treatment areas with input from the Oak Creek WLA Manager and District Team. For potential projects WDFW may conduct more intensive field sampling to assess the following stand characteristics: ecological integrity (using ecological integrity assessment score sheets), forest health, fuel loading, and wildfire risk. WDFW biologists and species specialists will be consulted very early in the planning process so that they may assist foresters in developing preliminary prescriptions and rationale for each potential project. Potential projects will then be presented to the District Team and the Wildlife Area Advisory Committee (WAAC) for review and modified as necessary.

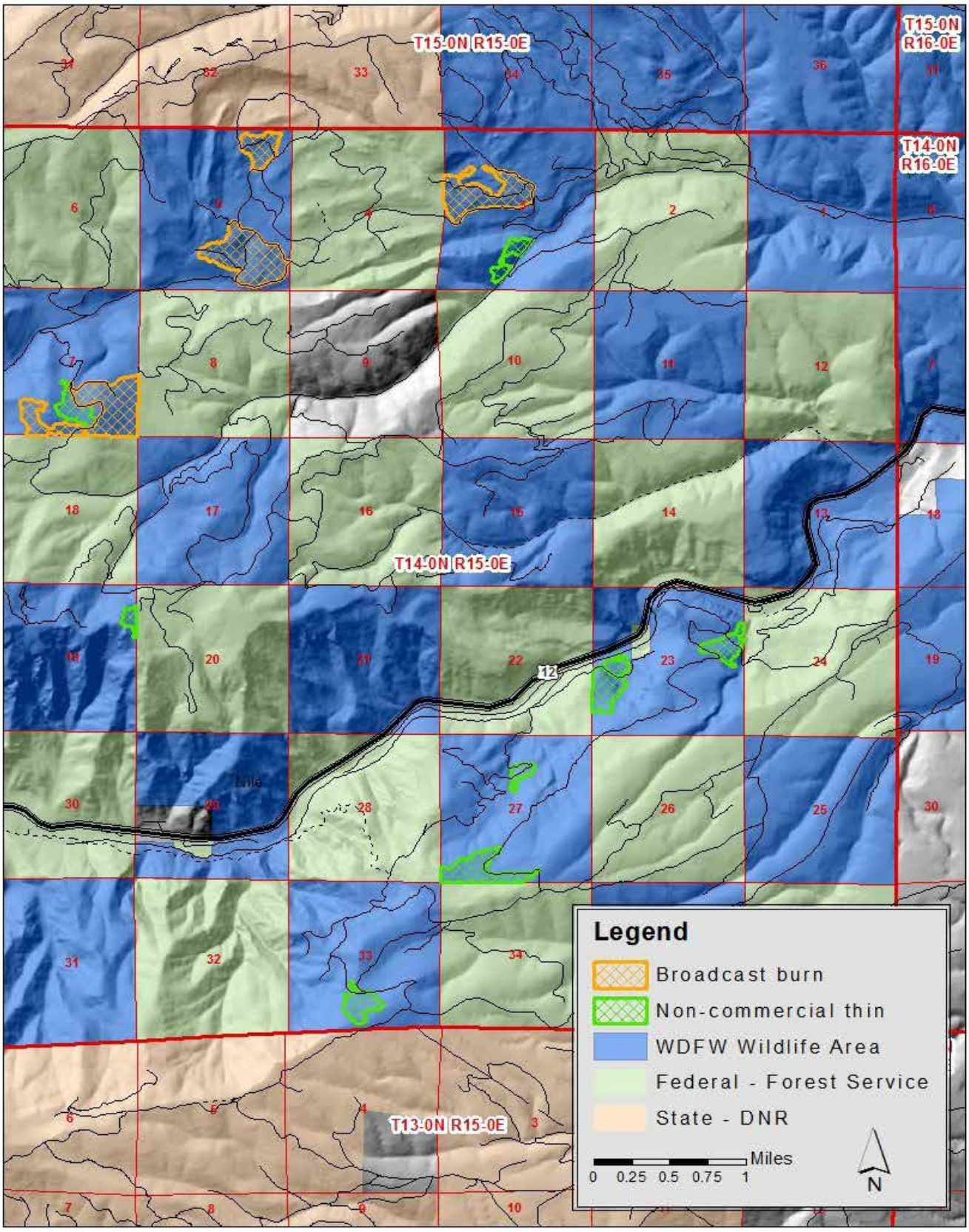
Project prescriptions will be customized to each site with the following goals,

- Restore the historic range of variability for tree species, size classes, and spacing. If that is not immediately possible, projects will focus on putting forests on trajectories to more quickly acquire such characteristics.
- Improve habitat quality, especially for priority species
- Reduce wildfire risks to the forests and surrounding communities.

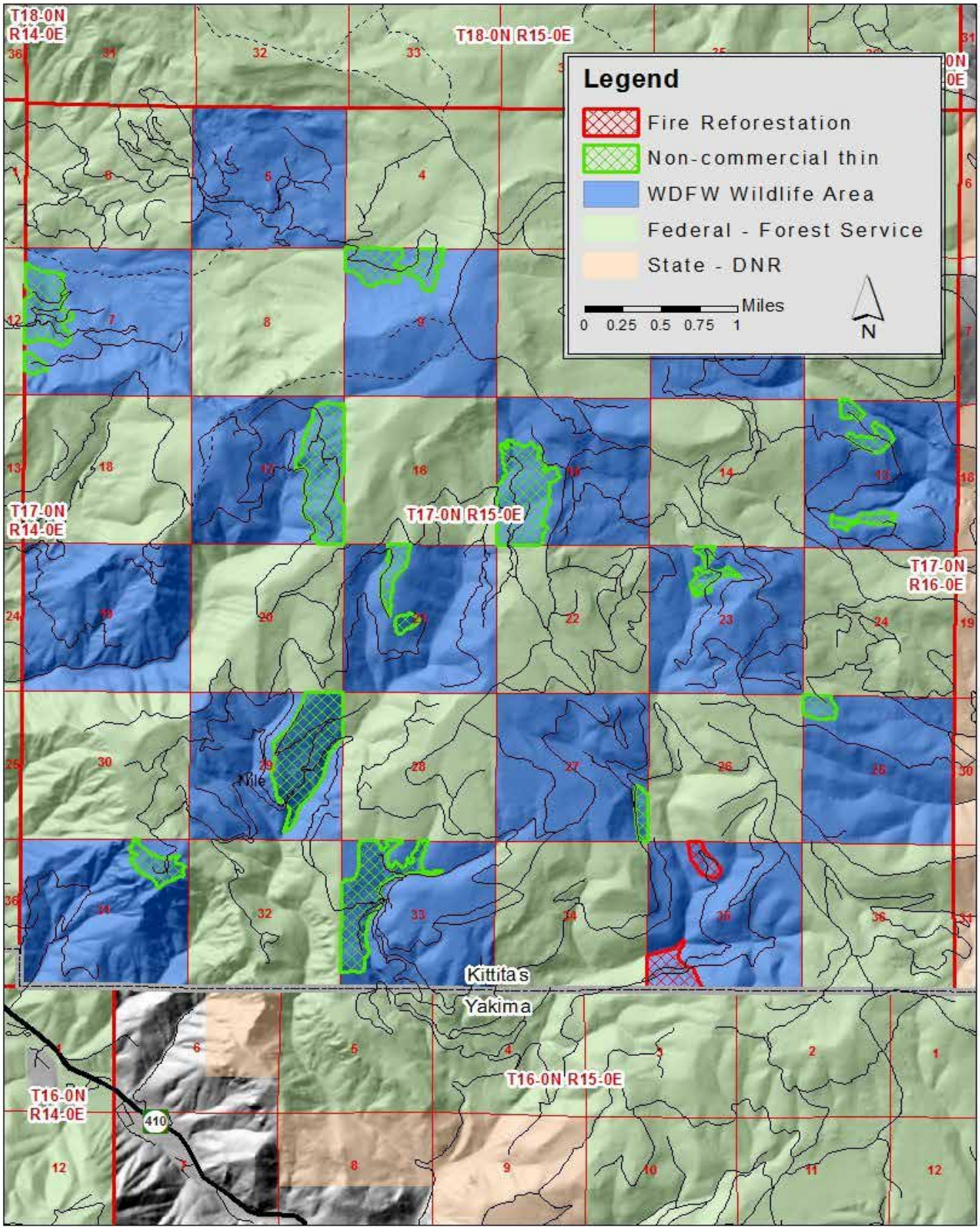
Table 15. Planned Forest Treatment Projects within the next 5 years

Goal	Objective	Treatment Unit	Performance Measure	Lead	Task
Habitat Enhancement/ Restoration	Reduce tree density and shift towards historic species composition	Rock Creek	1,000 acres thinned	Forester	Non-commercial thinning
Habitat Enhancement/ Restoration	Reduce tree density and shift towards historic species composition	Oak Creek	100 acres thinned	Forester	Non-commercial thinning
Habitat Enhancement/ Restoration	Restore ecological processes dependent on wildfire	Oak Creek	300 acres burned	Prescribed Burn Team Lead	Prescribed fire
Habitat Enhancement/ Restoration	Re-establish conifer species in areas of stand replacing fire to accelerate tree establishment	Rock Creek	40 acres planted	Forester	Planting

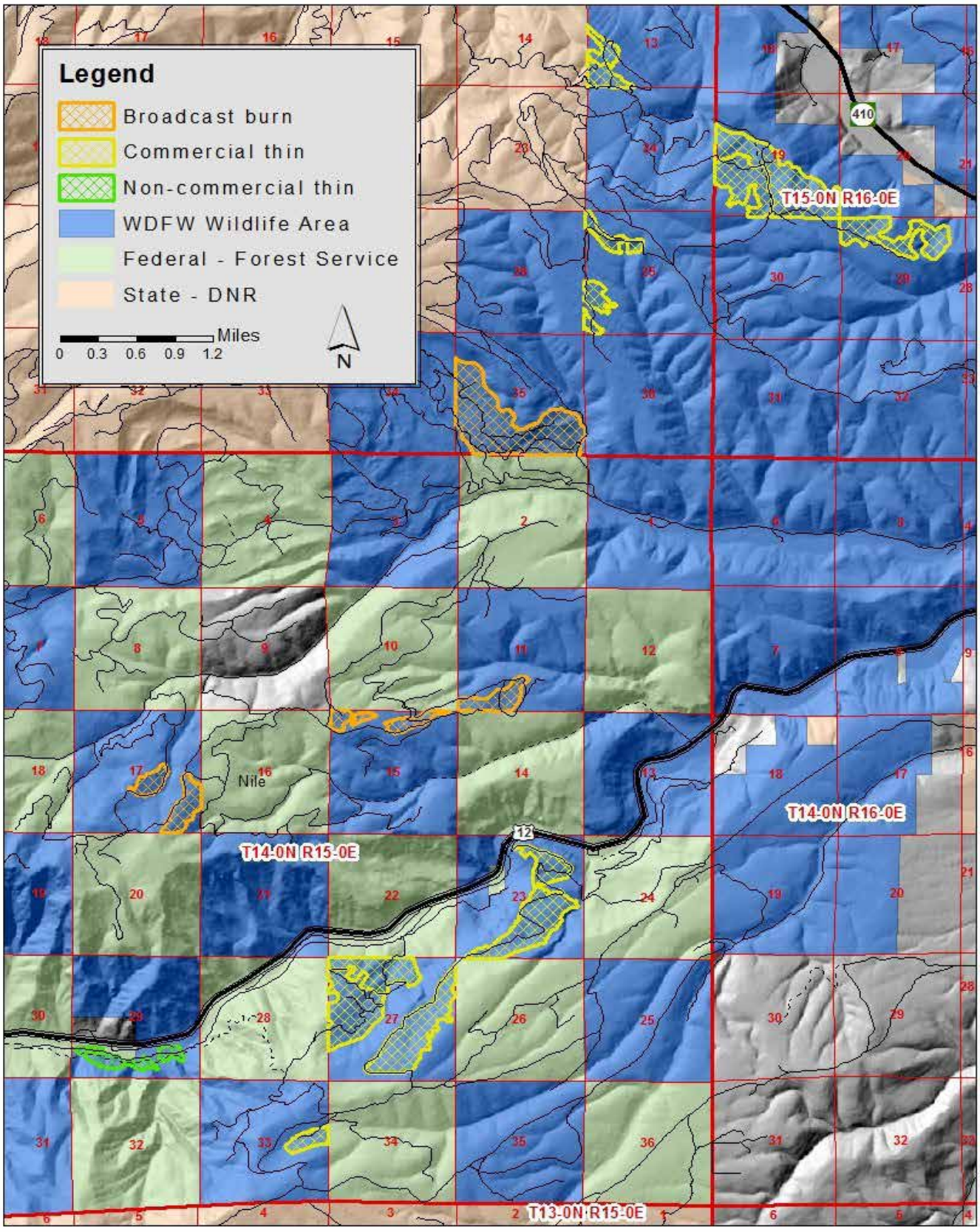
Map 10. Oak Creek Unit – Planned treatment areas within 5 years



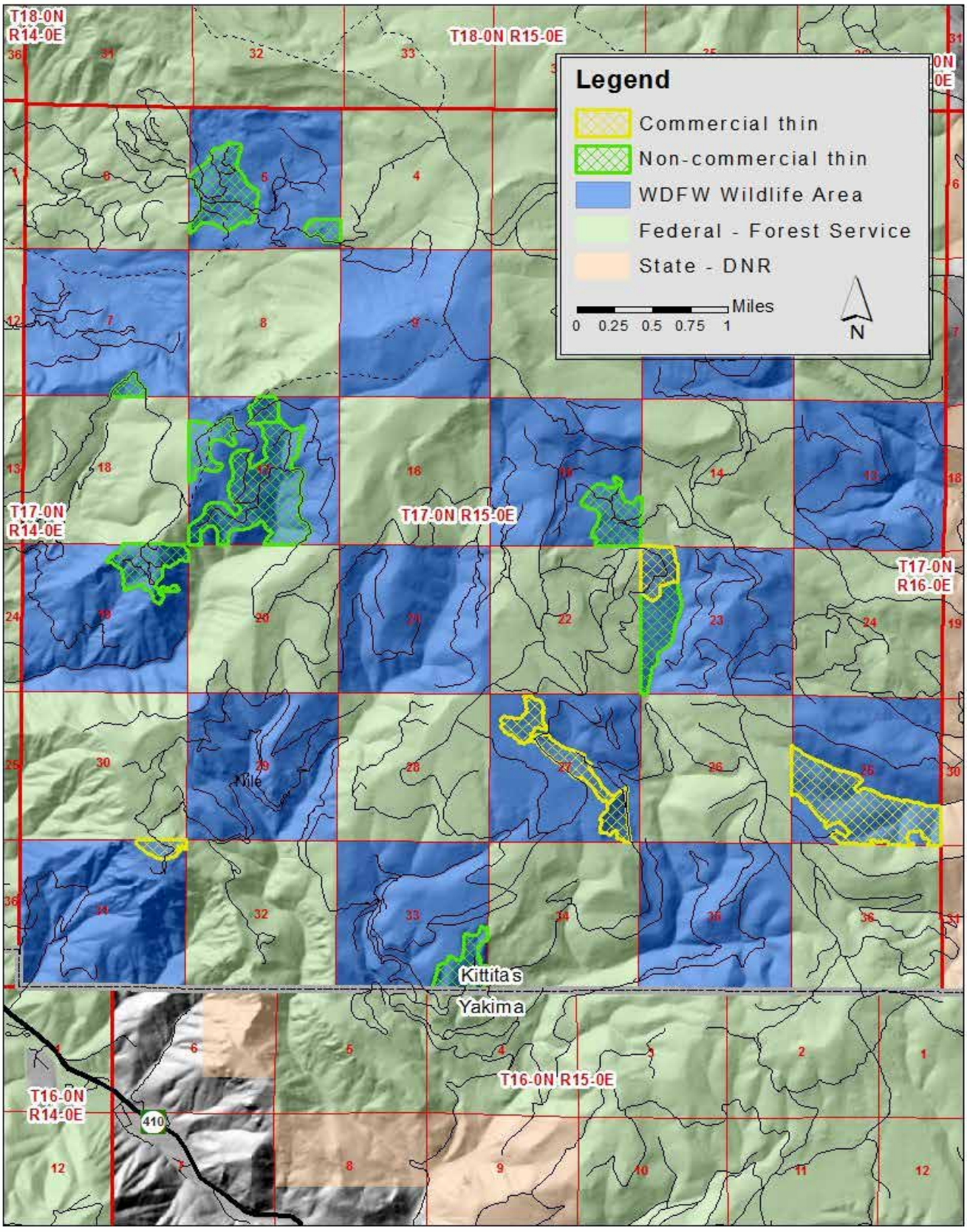
Map 11. Rock Creek Unit – Planned treatment areas within 5 years



Map 12. Oak Creek Unit – Priority treatment areas



Map 13. Rock Creek Unit – Priority treatment areas



Appendix C. Species and Habitat Information

For a list of species for Oak Creek Wildlife Area, see the website:
http://wdfw.wa.gov/lands/wildlife_areas/management_plans/oak_creek/

Table 16. Priority Habitats Yakima County

Habitats	
Aspen Stands	Freshwater Wetlands & Fresh Deepwater
Biodiversity Areas & Corridors	Instream
Inland Dunes	Caves
Old-Growth/Mature Forest	Cliffs
Oregon White Oak Woodlands	Snags and Logs
Shrub-Steppe	Talus
Riparian	

Oregon white oak, Cowiche Unit
Photo by David Hagen

Table 17. SGCN Relationships with Ecological Systems of Concern – Oak Creek Wildlife Area

Species of Greatest Conservation Need Relationship with Ecological Systems of Concern for the Oak Creek WLA	Columbia Basin Foothill and Canyon Dry Grassland	Columbia Basin Foothill Riparian Woodland and Shrubland	Columbia Plateau Low Sagebrush Steppe	Columbia Plateau Steppe and Grassland	East Cascades Oak-Ponderosa Pine Forest and Woodland	Inter-Mountain Basins Big Sagebrush Steppe	North American Arid West Emergent Marsh	North Pacific Lowland Riparian Forest and Shrubland	Northern Rocky Mountain Lower Montane Riparian Woodland and Shrubland	Northern Rocky Mountain Ponderosa Pine Woodland and Savanna
Bald eagle	x	x			x		x	x	x	x
Golden eagle	x	x	x	x	x	x			x	x
Harlequin duck									x	x
Lewis' woodpecker		x			x				x	x
Loggerhead shrike	x	x	x	x		x				
Greater sage grouse			x	x		x				
Sage thrasher				x		x				
Northern spotted owl										x
Flammulated owl									x	x
Burrowing owl	x		x	x		x				
White-headed woodpecker					x					x
Pygmy nuthatch		x			x					x
Hoary bat	x	x	x	x	x	x	x	x	x	x
Silver-haired bat	x	x	x	x	x	x	x	x	x	x
Townsend's western big-eared bat	x	x	x	x	x	x	x	x	x	x
Western gray squirrel					x			x	x	x
Fisher								x	x	
Townsend's ground squirrel				x		x				
Gray wolf					x			x	x	x
American badger	x		x	x	x	x				x
Columbia spotted frog	x	x		x			x		x	x
Pygmy horned lizard			x	x		x				x
Ringneck snake	x	x		x	x	x				x
Desert nightsnake	x			x		x				x

Species of Greatest Conservation Need Relationship with Ecological Systems of Concern for the Oak Creek WLA	Columbia Basin Foothill and Canyon Dry Grassland	Columbia Basin Foothill Riparian Woodland and Shrubland	Columbia Plateau Low Sagebrush Steppe	Columbia Plateau Steppe and Grassland	East Cascades Oak-Ponderosa Pine Forest and Woodland	Inter-Mountain Basins Big Sagebrush Steppe	North American Arid West Emergent Marsh	North Pacific Lowland Riparian Forest and Shrubland	Northern Rocky Mountain Lower Montane Riparian Woodland and Shrubland	Northern Rocky Mountain Ponderosa Pine Woodland and Savanna
Silver-boarered fritillary							x			
Middle Columbia Steelhead DPS	x	x		?	x	x		x		x
Bull trout - Mid-Columbia Recovery Unit	x	x			x	x		x		x
Westslope cutthroat trout		x			x	x			x	x
Pacific Lamprey*	x	x			x	x				x
River Lamprey**	x	x			x	x				x
Leopard Dace^		x			x	x				x
Umatilla Dace^		x			x	x				x
Mountain Sucker^		x			x	x				x

* current distribution not fully documented (reintroductions are occurring), but historic distribution assumed to be similar to steelhead distribution

** current distribution not well-documented but historic distribution (no passage barriers) assumed to be similar to steelhead distribution

^ documented as present in Yakima Basin, but extent of distribution not well-known; assumed distribution similar to steelhead and in cool water areas

Appendix D. Weed Management Plan

Weed Control Goals at Oak Creek Wildlife Area

The goal of weed control on WDFW lands at the Oak Creek Wildlife Area (OCWLA), which includes the Oak Creek, Rock Creek, Cowiche, Nile Springs and Bauguess units, is to maintain or improve the habitat for fish and wildlife, meet legal obligations and protect adjacent, private lands.

To these ends, WDFW uses integrated pest (i.e. weed) management (IPM), which is defined in RCW 17.15.010 as "a coordinated decision-making and action process that uses the most appropriate pest control methods and strategy in an environmentally and economically sound manner to meet agency programmatic pest management objectives."

At the OCWLA, WDFW's weed management objectives are prioritized based on coordination with Yakima County Noxious Weed Board, weeds that require mandatory control, and staffing limitations:

a) **Shrub- steppe and grasslands** - Scotch thistle is widely distributed across the Cowiche Unit in small isolated patches ranging from individual plants to ½ acre. The Oak Creek Unit also has several scattered patches. All known weed locations need to be visited annually for herbicide control. Current populations are stable or decreasing, the primary objective is to continue that trend. Dalmatian toadflax has been spreading along the Highway 410 and US Highway 12 corridors as well as the Sanford Pasture and Garret Canyon areas. Monitoring and control of new populations along US Highway 12 is a priority to prevent establishment. Annual releases of biocontrol *Mecinus janthinus* will continue annually with the goal of establishing a large enough population to limit the spread and reduce plant density. Currently, insect populations are present at almost every location; however weed populations continue to expand. Diffuse knapweed, whitetop and Russian thistle continue to be present across the shrub-steppe and are expanding their distribution, funding needs to be developed to increase capacity to control these weeds. The Cowiche Unit has an isolated five acre patch of medusahead. Annual control of the patch is reducing the density and should continue. The surrounding area should be inspected annually with the goal of preventing the spread to adjacent areas. Two former sites with yellow starthistle need to continue to be inspected annually.

b) **Forests** - Sites on the Oak Creek and Rock Creek units should be inspected annually to monitor the distribution of priority weeds. Diffuse knapweed and Dalmatian toadflax are the primary weeds. Other weeds of concern are Canada thistle and bull thistle. Disturbance from roads and forest management activities are the primary causes of weed infestation and expansion. Opportunities to work with the Forest Service and DNR for roadside control will be explored.

c) **Riparian zones and wetlands** - Check wetlands annually for control and maintenance needs. A few small patches of Japanese knotweed were discovered and removed several years ago from the watershed, but managers should be on alert for pioneering individuals. The Cowiche Unit has several stock ponds that were originally developed for livestock watering, as these sites dry up each summer cocklebur has begun to move in. These ponds need to be inspected and sprayed annually to reduce cocklebur density and spread to other locations. A patch of houndstounge is located near Mud Lake on Cleman's Mountain and needs to be inspected and controlled annually.

d) **Winter feed sites** - These sites have extensive ground disturbance from feeding operations and have numerous annual weeds such as Kochia, ragweed and lambsquarter. Currently some of these sites are mowed annually to reduce seed production. Efforts should be expanded as funding allows for mowing, spraying and seeding with an annual cover crop.

Weed Species of Concern on the OCWLA:

Weed species of concern on the OCWLA include but are not limited to: Dalmatian toadflax (*Linaria dalmatica ssp. Dalmatica*), Dyers woad (*Isatis tinctoria*), diffuse knapweed (*Centaurea diffusa*), yellow starthistle (*Centaurea solstitialis*), Canada thistle (*Cirsium arvense*), Kochia (*Kochia scoparia*), puncturevine (*Tribulus terrestris*), Scotch thistle (*Onopordum acanthium*), Russian thistle (*Salsola kali*), Japanese knotweed (*Polygonum cuspidatum*), musk

thistle (*Carduus nutans*), meadow knapweed (*Centaurea moncktonii*), tansy ragwort (*Senecio jacobaea*), whitetop (*Lepidium draba*), common mullein (*Verbascum thapsus*), Russian knapweed (*Acroptilon repens*) and other, general weeds.

Weeds occurring on the OCWLA and associated units are listed in Table 18. The table also describes the weed's classification, an estimate of the acreage affected by the weed, how many acres were treated, the relative density of infestation, the general trend the weed infestation has been exhibiting, the control objective and/or strategy for the weed and finally, which wildlife area units have the weed present.

Detailed descriptions and natural history information for each of the state-listed weed species can be found at the Washington State Noxious Weed Control Board web site http://www.nwcb.wa.gov/search.asp. Information on other species contained in the list can be found at the University of California's IPM Online web site: http://www.ipm.ucdavis.edu/PMG/weeds_intro.html.

Weed management information for individual weed species can be found at the PNW Weed Management Handbook link at: http://pnwhandbooks.org/weed/control-problem-weeds

Table 18. OCWLA Weed Table Including the Weed Class and Unit Location on the Wildlife Area

Weed Species	2016 State/ County Weed Class	2015 Estimated Affected Acres	2015 Treated Acres	Qualitative Density	Annual Trend	Control Objective/Strategy	Wildlife Area Unit Weed Distribution (2003-2015)
General weeds	n/a	100	2.05	Medium	Stable	Control around facilities and expand control around feed sites.	Oak Creek, Cowiche
Diffuse knapweed	B	500	12.98	Medium	Stable	Reduce & Contain/Treat high value areas, continue to use grant funding for control on elk winter range	Oak Creek, Cowiche, Rock Creek
Kochia	B	20	5	Medium	Stable	Control around facilities and feed sites	Oak Creek, Cowiche
Puncturevine	B	5.22	5.22	Low-Medium	Stable	Reduce & Contain all known locations	Oak Creek, Cowiche
Yellow starthistle	B-Designate	0.05	0.05	Low	Decreasing	Eradicate/Treat with herbicide	Oak Creek, Cowiche
Canada thistle	C	200	2.84	High	Stable	Monitor, control high value areas, reduce on Bald Mountain	Oak Creek, Cowiche, Rock Creek
Russian thistle	Not Listed	100	3.19	Medium	Increasing	Control around facilities, develop plan to control on disturbed sites where range is expanding	Cowiche, Oak Creek
Scotch thistle	B-Designate	25	1.55	Low-High	Varies	Reduce/Spot treat all known areas	Cowiche, Oak Creek
Dalmatian toadflax	B	500	56.69	Low-Medium	Increasing	Contain/Spot treat outliers and augment biocontrol populations	Oak Creek, Cowiche, Rock Creek
Houndstongue	B	0.5	0.5	Low	Decreasing	Eradicate/Treat with herbicide	Oak Creek
Dyer's weed	A	0	0	Low	Decreasing	Monitor location along US Hwy 12 annually in coordination with YCNWCB. Single plant located and pulled in 2013	Oak Creek
Medusahead	C	10	0	Low	Stable	Reduce & Contain known location with herbicide	Cowiche

B State Listed Weeds do not legally require management unless they are designated for the control in the county per WAC 16-750.

C listed weeds do not legally require management unless designated by the county per WAC 16-750.

Monitor weeds do not legally require management.

Appendix E. Future Aquatic Restoration Projects

Table 19. Future Aquatic Restoration Opportunities Include:

River System	Describe need	Potential Projects
Tieton River	The Tieton River channel is scoured and has a severe lack of bedload.	Reconnecting floodplains; replenishing down large wood or anchoring logs and logjams in channels; especially to spread out flows; are amongst the greatest needs. Complimentary actions could be to create new or deeper floodplain channels (pilot channels). Include safety and educational signage to improve public cooperation with restoration efforts. Establish cottonwood trees along the stream margins to accelerate future log recruitment, and develop edge habitat and stream shading. Regrade inactive floodplain surfaces to leverage revegetation efforts by increasing the effective water tables and channel cross-sections. Projects that excavate or erode terrace gravels and otherwise discharge clean rock into the main channel, in combination with other treatments mentioned here, will increase depleted spawning gravels and channel elevations, and accelerate achieving a functional and more self-sustaining river environment.
Naches River	Much of the habitat is intact and functioning well. Mass-wasting events, such as the 2009 Nile landslide, have ensured continuing supply of bedload gravels. Habitat downstream of Horseshoe Bend is adversely affected by road-stream interactions, owing to some channel encroachment by State Highway 410. A relict concrete diversion dam and a USGS gaging station may also impact habitat in the vicinity of Oak Flats. The channel adjacent to SR-410 and downstream is only sparsely stocked with wood.	Maintaining riparian and instream habitat is the primary need. Projects designed to capture and retain large logs and other flood debris along the channel at Oak Flats could be beneficial for creating edge habitat and improving floodplain connectivity. These projects should also consider safety and educational signage to reduce hazards and improve public cooperation.
Oak Creek	More projects that facilitate and protect off-channel habitat and wetlands are needed. Much progress has also been made in RMAP to improve fish passage, reduce sediment transport, and adverse road-stream interactions. An overall reduction of drainage networks throughout the Oak Creek drainage remains an ongoing need to reduce the mobilization and discharges of silt.	These projects would add large wood to the channel, rehabilitate impacted areas with cleared or compacted soils, and even move popular campsites, which substantially conflict with habitat-building processes, to newly-developed upland sites. Colonization by beaver in unconfined and partially confined reaches should be promoted and monitored. Work remains to upgrade stream crossings, connectivity and continuity between upstream and downstream habitats, where that is impaired. Such projects can also be key toward improving habitat connectivity for amphibians. Road and crossing designs should always consider at-grade solutions, reduced approach heights, and overflow dips. Mitigation work that helps sequester already mobilized fine sediments should also be integrated into drainage improvement projects. Forest slash and non-commercial forestry wastes should be utilized to achieve those objectives as actions of the highest priority.
S.F. Cowiche	Restoration work along S.F. Cowiche Creek should connect it with floodplains to promote off-channel habitats and wetlands.	The primary actions for projects will add large wood to the channel; regrade, roughen, and plant historic floodplain to increase the water table by slowing drainage, and otherwise reduce the potential for channel avulsions; particularly that posed by prior land uses. Relict infrastructure and bank hardening materials should be removed whenever possible. However, it is important to establish sustainable, at-grade, flood overflow channels around the bridge crossing at the Cowiche Mill feeding site.

Appendix F. Cultural Resources Summary

The management area is located in the recognized ancestral lands of the constituent tribes and bands of the Yakama Nation (Hunn and French 1998; Hunn 2003). Johnson Meninick, of the Yakama Nation, provides the following summary of local cultural history (Landreau 2016:5),

> Traditionally the Ichi-Skiin Sin-Wit (Meninick, personal communication, 2008) have been a part of this landscape since the inception of time. Through the Creator's Law the resources of water, land, air, natural resources and human resources have been advocated by the Ichi-Skiin Sin-Wit until a profound change was introduced in 1855. In this year the Ichi-Skiin Sin-Wit signed a Treaty with the United States Government and it was declared that "The Treaty is the law of the land in perpetuity as long as the sun shall rise, as long as the mountain shall stand and as long as the waters shall flow" (Meninick, personal communication, 2003). Since this time it has been common for scientists and ethnographers to refer to the Ichi-Skiin Sin-Wit as the Yakama that speak Sahaptian language dialects.
>
> Traditionally the land of the Ichi-Skiin Sin-Wit was utilized and cared for by a seasonal round. This seasonal round would require cyclical movement through the landscape to best make use of the natural resources, both plant and animal (Hunn 1990). Generally, the Native families would winter in large villages along major waterways and would move to higher elevations as the seasons warmed, utilizing the seasonal resources as they moved upslope.

Within this region, as others, resource management strategies are used to differentiate groups by identifying their mobility type, mobility frequency, consumption pattern and scheduling. As these dimensions are identified in regions and time periods, assumptions can be made to link similar groups together until new evidence is found showing a shift in one or more of these dimensions (Ames et al. 1998).

Prior to the wide-scale immigration of non-Native peoples, residents typically lived in multiple family villages along the river valleys. Houses were generally semi-subterranean. The seasonal round included visits to uplands area for plant resources such as berries, bitterroot, camas, as well as terrestrial mammals (e.g., deer elk, and sheep). Root processing sites might contain grinding stones or the remains of roasting pits, especially near springs in the hills or in meadows at lower elevations. Hunting blinds might be present near springs, along ancient game trails, or within draws. Winter resource gathering included bark stripping for cambium harvest (Turner 1997). The cambium is the sweet carbohydrate-rich inner lining of pine tree bark. Old growth stands of ponderosa pine, if any are present in the management areas, might bear evidence of this activity. Hunting was often communal, as was salmon fishing, though solitary or small group efforts were not unknown.

The immediate landscape surrounding the wildlife area was seasonally utilized by the Yakama and allied peoples for hunting, fishing and gathering berries. Specifically information relayed by the Yakama Nation that the nearby landscape "was known as Nahchish (meaning one body of water) and was one of Chief Kamiakin's villages or refuges during and after the Indian Wars of the late 1850s" (Holstine and Morgan 1995:3) speaks to the landscape holding a certain level of importance for the Yakama people.

While the first recorded non-Native expeditions into the area were led by Charles Wilkes (ca.1838-1842), there is no evidence the Wilkes Party explored the Tieton River Basin, that distinction appears to belong to James Longmire and William Packwood. Both men had mining interested and were concerned about the transportation difficulties presented by local terrain. They sought a lower route over the Cascades to connect eastern and western Washington commercially. This pass, the Naches Pass Trail, soon became the location of the first over-montane road. The Tieton River Valley was still considered well off the beaten path, until the roads over Cowlitz and White passes were constructed.

According to local Historian W.D. Lyman, Yakima County was among the later regions of the Northwest to be developed but followed similar development patterns as other inland regions in Washington. However, Yakima County is not a genuine pioneer community in the sense of the early ox-team pioneers of the decades that first

emigrated to the northwest between the 1840s to 1860s. The Yakima River area did not see a rapid influx of settlers after the region was opened to homesteading mainly due to the fact that the primary travel routes on the Columbia Plateau bypassed the Yakima (Meinig 1968). Most settlers at that time sought easy access to the Columbia River for transportation to markets. The pace of settlement in the Columbia Plateau increased in the middle 1800s with the passage of the Donation Land Act of 1850, the Transcontinental Railroad Act of 1862, and construction of the Northern Pacific Railroad. The town of Naches wasn't settled until the late 1880s.

Though numerous Indian horse trails crossed the Cascades north of the Columbia, the immigrants needed a road that could accommodate wagons. In the early 1850s, American settlers at Fort Steilacoom and Olympia petitioned for a military road over Naches Pass. Congress appropriated $20,000 for a military road from Fort Walla Walla to Fort Steilacoom in 1853.

A military surveying party of 243 men was dispatched to the new Washington Territory under the command led by U.S. Army Corps of Engineers Captain George B. McClellan (1826-1885). The party was ordered to arrange for construction of the road and explore possible routes for a transcontinental railroad across the Cascades (Lince 1984). The group moved westward, mapping and exploring a feasible rail route to connect the Atlantic Ocean with the Puget Sound Basin (Lince 1984). By September of 1853, McClellan's party entered future Yakima County.

Yakima tribes were intensely interested in why the soldiers were in the valley. Attempts to explain purpose of the survey focused on its profitability to local tribes (Lince 1984:12). McClellan was continually met with anxious tribal chief who did not believe nor trust that the soldiers did not desire their lands. No specific or unpleasant incident marred the survey party's passage through the valley. Still tensions were exacerbated by the first non-native immigrants into the region.

The party explored several railroad routes from the eastside. Chief Owhi, leader of several Yakima bands throughout the 1850s, allowed McClellan to establish his base camp alongside his farm fields, known later to settlers as Owhi's (or Ow-hi's) Gardens. The location in now northwest Yakima County was later noted by settlers for the thriving crop fields that the Yakamas have planted in the well-watered valley bottom using irrigation techniques recently learned from Catholic priests at their mission on Ahtanum Creek in the Yakima Valley (Lince 1984). The surveyors stayed in the Wenas and on August 1853, investigated the Naches and Stampede passes, but refusing to continue a short distance north to Snoqualmie Pass presumably due to its rugged and difficult terrain, seldom use, and lack of any discernable trail (Lince 1984).

Several weeks after the McClellan party, the landscape was again crossed by a wagon train of white emigrants. The Longmire-Byles Wagon Train was the first emigrant train to enter the valley in September 1853. Upon reaching Oregon Territory, the immigrants heard they could cross the Cascades on the military road that would, presumably, be passable by the time they reached it. Most of the party, more than 30 wagons, decided to follow that route (Ott 2014). This was far from the case. The train made camp in the Selah Valley at the site of Chief Owhi's Garden in the Wenas. Owhi traded 13 bushels of potatoes and other vegetables to the immigrants to replenish their stocks as they prepare to cross the Cascade Mountains to settle in the Puget Sound region (Ott 2014). Records do not reference any outward hostilities between the emigrants and natives (Lince 1984). The Yakamas and other Columbia Plateau tribes began to experience conflict with other settlers and the American government.

As more non-natives traveled through the Yakima region, tribal people became increasingly concerned. Survey overseer Isaac I. Stevens, who would later engineer the Yakima Treaty of 1855, was decidedly pro-settlement and like many of his contempories, Stevens believed that "extinguishing Indian title to the lands east of the Cascades" was an essential step in opening the territory to settlement (Scheuerman and Finley 2008: 24). Although McClellan and the Longmire-Byles parties were did not settle in Yakama territory, Chief Owhi and nephew Chief Kamiakin, did not trust the pioneers as they were fully aware of the conflict and dispossession of their Oregon keen (Lince 1984). While McClellan was clear about his intention to only pass through Yakama territories, he did insist that the newly appointed Governor had the authority to negotiate for lands. Rumors spread among the tribes about the import of this new position – would

Stevens offer to buy tribal land or would the Americans would simply seize the lands they desired? Chief Kamiakin convened a multi-tribal council comprised of regional tribes including the Palouse, Nez Perce, Walla Walla, Spokane, and other tribes spread over what is now Washington and Oregon. Held at the Grande Ronde River, the council discussed a united strategy. They agreed to meet with Stevens and hear what he had to say, but resolved to refuse to cede or sell any of their lands.

A small governmental envoy led by James Doty and Andrew Jackson Bolon arrived at the St. Joseph's Mission in 1855. The envoys made an offer to purchase all Yakama lands, preserving only a portion for permanent reservations (Kershner 2012). During the meeting, Chief Kamiakin made two statements, first to say that a treaty council should be held in Walla Walla Valley; second, he said he did not want any gifts presented by the envoy out of fear that acceptance would be seen as payment and/or agreement with the proposal. The envoys departed after securing a commitment from Kamiakin and the other chiefs to meet Stevens in the Walla Walla Valley in May 1855. Kamiakin and other chiefs were well aware of the difficulty in maintain treaties with the Americans as illustrated in the Oregon Territory. The rapid influx of miners and settlers exacerbated relations with Yakama bands. The unintentional introduction of disease introduced by the new settlers caused mistrust and, eventually, warfare (Hannum et al 2013). Increasing hostilities between Native Americans and white settlers, and a campaign to establish a land base for westward expansion by Governor Stevens at the direction of President Franklin Pierce led to the Walla Walla Treaty Council of 1855.

The Walla Walla Treaty Council convened in late May 1855 near Mill Creek - over a thousand Indians were in attendance. However, Cheif Kamiakin's original plan of a united front soon dissolved. The day before the council opened, Kamiakin asked all of the leaders to meet and plan a unified strategy. However, the Nez Perce refused to attend, choosing to pursue their own strategy (Kershner 2012). Envoy's such as Doty was aware of tensions between tribal groups and looked to use them to his advantage (Kershner 2012).

The treaty council lasted for days, with numerous treaties negotiated between the U.S. Government and Plateau groups. Many of the tribes represented already faced significant military and economic pressures designed to provoke agreements. On June 9, 1855, Chief Kamiakin informed Steven's that he was "tired of talking, tired of waiting," and was going home (Scheuerman and Finley 2008:40). Stevens protested, stating that Kamiakin and the other chiefs could not leave without a decision on a treaty. Accounts differ about what was said between the two. Reports of threats made by Steven's are widely reports, property stating the tribes would "… walk in blood knee deep" if they did not agree to terms (Pambrun 1978:95). The Yakama, Palouse, Pisquouse, Wenatchee, Klikitat, Klinquit, Kowwassayee, Liaywas, Skin, Wishram, Shyiks, Ochechotes, Kahmiltpah, and Seapcat eventually signed a treaty that relinquished 10,816,000 acres to the United States (Hannum et al 2013).The agreement ceded miles of traditional tribal land in exchange for a 2,000 square-mile reservation (Kershner 2012). Other reservations created in the council did not include crucial fishing areas and other vital hunting and communal spaces.

In exchange for the ceded lands, the Yakama negotiated and secured agreements for the 1,200,000-acre Simcoe Reservation; no Euroamericans could live on the reservation without express permission (Hannum et al 2013). As with other Indian treaties, the U.S. Government agreed to provide two schools, a hospital and physician, a sawmill, a flourmill, a farmer and craftsmen to teach trades, and to pay annuities to tribal members (Schuster 1998:343). The treaty reserved the rights of the Yakama to hunt, fish, access and use traditional cultural, traditional food and medicine gathering areas, graze lands, and access water in sufficient quantity and quality in all their usual and accustomed places in the ceded areas. Finally, the terms of the treaty provided a period of two years to allow the various bands and tribes to migrate to and resettle on their new reservations (Hannum et al 2013).

Between 1855 and 1858, The Yakima Reservation was established as the tribe's new home. However, the discovery of gold on the Colville and Fraser rivers exacerbated tensions as hordes of miners crossed the region enroute to the northern gold fields. Miners were heavily laden with supplies on mules and were known to steal the

Indians' horses and mistreat Indian women. The conflict helped set off the Yakama Indian War, which lasted until 1858. (Hannum et al 2013).

In late September 1855, Andrew J. Bolon, the Indian sub-agent at The Dalles was shot and killed while investigating these incidents. Major Granville O. Haller set out from The Dalles for the Yakima Valley. On the afternoon of October 5, 1855, gunfire erupts between Yakama Chief Kamiakin's 300 warriors and Haller's 84-soldiers (Becker 2003). Casualties in this first battle were low on both sides. By 1858, the Yakama had lost 90 percent of their traditional lands and were confined to a reservation. Their ability to gather in their traditional ways was all but destroyed (Becker 2003).

Shortly after signing the Yakima Treaty, gold was discovered east of the Cascades, instigated a mining rush in the region. Governor Stevens illegally opened the reserved native lands to allow miners passage and access to the newfound resources. Disputes arose over settlers and miners encroaching on tribal lands across the plateau. The Yakama were not required to relocate to reservations until one year after ratification. The Stevens treaties were not ratified until 1859, but tensions over territorial encroachments erupted into three years of intermittent armed conflict. The Yakama attempted to protect their reserved land and resources, resulting confrontations with the hoard of miners streaming into the area.

In 1858, the Cowlitz Pass Trail was marked out by Longmire and Packwood, the road was eventually used by railroad surveyors and early settlers. As tribal-nontribal relations settled into a low simmer, prospectors and miners flooded the country in search of gold, silver, and coal "Up the Tieton canyon to the summit of the Cascades, and from there down the tributaries of the Bumping ... every likely spot was prospected ..." (Gossett 1979:69).

The rich landscape brought stockmen from all over to establish their herds in the area. Sheep and cattle grazing dominated, "all available lands were under grazing permits" (Carter et al. 1987). The valley bottoms were filled with cattle and horses, while sheep and goats roamed the surrounding upland. By 1900, there were 260,000 sheep within the Rainier Forest Reserve alone.

Herdsmen would drive cattle into the valley in the winter and moved them each spring to the upper reaches of the valley and the Cascade foothills to graze in the cooler forest for the summers (Ott 2014). The land and was well-suited to livestock operations with its well-watered and protected lowlands and its access to summer range in the higher elevations (Ott 2014). Livestock drives and wagons utilized the link between the valley and both the Snoqualmie and Naches passes (Ott 2014). Valley ranchers herded the animals over the passes or toward the Umtanum Creek drainage to the Kittitas Valley. Cattle ranching declined after the major mining booms ended, and sheep companies competed successfully for rangeland. Overgrazing, severe winters, land speculation, and a growing population of new settlers led to a diminished livestock industry.

By the early 1890s, the conflict between resident sheep farmers and sheepherders who brought their flocks to the area from outside culminated in calls to end "foreign" sheepherders access to public rangelands (Ott 2014). Local farmers complained that there the interloping herdsmen ran too many sheep that polluted local water supplies and practices improper grazing patterns causing depletion of local vegetation. Herdsmen would habitually set fire to the land in order to encourage new plant growth; however, the burns often killed small trees further denude the valley hillsides (Ott 2014).

Exclusion of sheep herds from wildlands was called for by area locals, this sentiment echoed the hostility from farmers and conservationists throughout the western United States. As a result, some sheep-grazing allotments were reduced, but it would take changing market conditions to really reduce grazing on public lands. The Yakima Valley Husbandry Association was particularly active; in 1899 they petitioned the federal Department of the Interior to reduce grazing permits on the Rainier Reserve. The grazing allotments were reduced in 1902 and the issue faded from the local press.

During this same time period and extending into the early 1900s, mills were established in the Tieton River drainage, as they were in nearly all the surrounding river valleys. "Major logging in the upper Tieton Valley was concentrated in the area being cleared for the Rimrock Lake" (Carter et a. 1987:6). Among the state's citizens, there was concern that too much public land had been transferred to the private sector (Williams 1985).

Additionally, intense overgrazing and depleted timber stands in riparian areas alarmed those who recognized the ecological hazards. Among these was Justice William O. Douglas, longtime Supreme Court Justice and early environmentalist. Justice Douglas grew up in Yakima, and began hiking as a way to strengthen muscles weak from a childhood disease. A segment of the William O. Douglas trail runs through the Cowiche Unit, offering great views of shrub-steppe habitat and the Yakima Valley below. The trail honors Supreme Court Justice and Wilderness jurist and early environmental movement leader, William O. Douglas, of Yakima County (Oldham 2004) and has several points which commemorate special places Douglas visited through the years (Paolella 2006).

In the historic period much of the land in the present-day Oak Creek Wildlife Area was timber company holdings or owned by ranchers (Holstine and Morgan 1995:3).

By 1934 the Cascade Lumber Company (predecessor to the modem Boise Cascade Corporation) had acquired the land south of the Naches River on both sides of the Tieton River (Metsker 1934). Shortly thereafter Kurt Sinclair, Jr, a cattle rancher with extensive holdings of lands between the Naches River and Oak Creek, bought the property. In the late 1930s, a study by Washington State College (now University) recommended that lands be set aside for elk wintering in the area. As a result, the State of Washington purchased, with funds from hunting licenses, the Oak Creek Wildlife Area in the early 194Os. The State Game Department (now Fish and Wildlife Department) began feeding bay to wintering elk at the headquarters, approximately 2 miles up SR 12 from the SR 410 junction, at the Nile feeding station on Nile Creek, a tributary of the Naches River, and at the so-called "junction feeding station" west of SR 12 adjacent to the present project area (Schrindel 1996).

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Appendix G. Fire Response Summary

Contacts:

Agency	Contact number
Central Washington Interagency Communications Center (CWICC) Dispatch	(800) 826-3383
Naches Fire District #3	(509) 653-2380
Cowiche Fire District #1	(509) 678-4563
Nile/Cliffdell Fire District #14	(509) 658-2445
West Valley Fire District #12	(509) 966-3111
Department of Natural Resources, Southeast Region Fire District Manager	(509) 925-0937
US Forest Service, Naches Ranger District Fire Management Officer	(509) 653-1470

Department of Fish and Wildlife Contacts. Contact in order listed.

Contact	Radio Numbers	Phone Number
Greg Mackey, Wildlife Area Manager	Wildlife 876	Office: (509) 653-2390
Bruce Berry, Assistant Wildlife Area Manager	Wildlife 461	Office: (509) 653-2390
Wildlife Area Forester	Wildlife 881	Office: (509) 653-2390
Ross Huffman, Regional Lands Operations Manager		Office: (509) 457-9313
Scott McCorquodale, Regional Wildlife Program Manager		Office: (509) 457-9322

Fire District Information

Portions of Oak Creek Wildlife Area are covered by or adjacent to four Yakima County Fire Districts (See Map 14). When a wildland fire is reported the county fire districts are usually the first to respond, because most people call 911, and fire districts are the closest resource. If the fire is within the district, county resources will engage in suppression. If the fire is threatening the district, then the county resources will provide suppression efforts until DNR fire resources arrive. All districts around the wildlife area except West Valley are staffed by volunteers. Fire District personnel are trained in wildland fire suppression through DNR and have fire engines and equipment to suppress wildland fires. The Oak Creek Headquarters is located within the Naches Fire District and they provide structural protection to the facilities. Portions of the Cowiche Unit are in what is called "No Man's Land", meaning there are no fire protection coverages provided by the county or state.

Washington Department of Natural Resources

The Oak Creek Wildlife Area is located within DNR Southeast Region. The DNR has the primary protection responsibility for state and private forest lands and also provides resources to the Forest Service on federal lands if available. Much of the wildlife area is in forest protection, so DNR will take lead on any wildland fire suppression efforts. The DNR will also assist local fire districts with suppression efforts outside of forest protection if those fires are threatening adjacent forest protection lands. DNR resources are dispatched through CWICC and wildlife area staff work closely with the DNR crews and fire managers on suppression efforts.

WDFW currently has an interagency agreement with DNR to provide suppression efforts on the Cowiche Unit and part of the Oak Creek Unit in areas outside of forest protection; this includes lands in county fire districts and "No Man's Land". The contract spells out resources provided by DNR for suppression efforts and

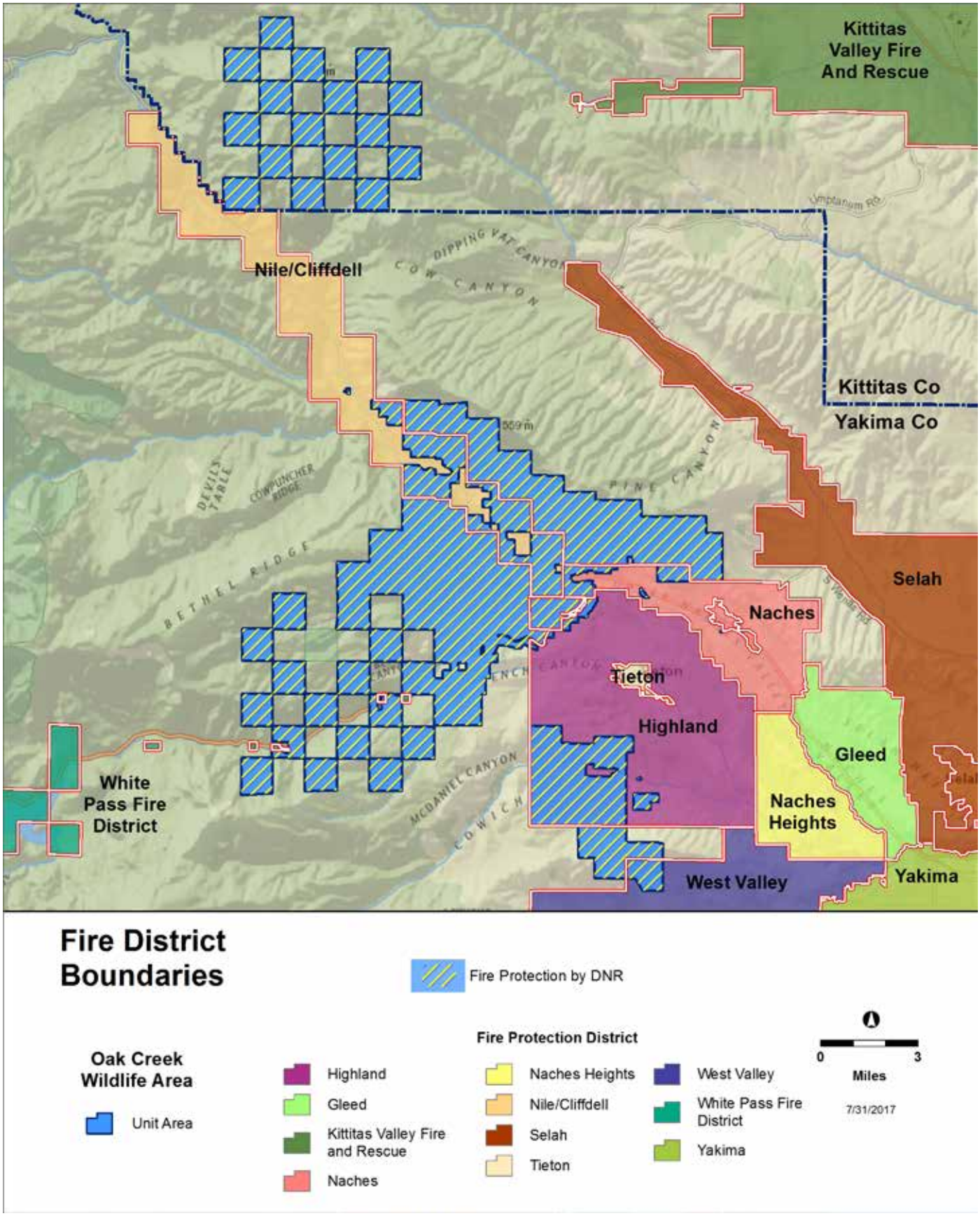
what WDFW will do to assist. Under the agreement WDFW will reimburse DNR for costs associated with suppression efforts. Recently acquired lands in the North Fork Cowiche Creek Area are not covered under Forest Protection of the interagency agreement (see map). These lands are a priority for WDFW to add to protection under the interagency agreement, short term. Since these lands are forested the long term solution would be for them to be covered under Forest Protection.

U.S. Forest Service

Much of the wildlife area is in checkboard ownership or adjacent to US Forest Service lands on the Okanogan-Wenatchee National Forest, Naches Ranger District. While the DNR is responsible for wildland fire protection on state land, the USFS is responsible for protection of the adjacent federal land. WDFW and DNR work closely with the USFS and the USFS may be the first to respond to a wildland fire on or adjacent to the wildlife area. USFS fire resources are based out of Naches and are dispatched through CWICC.

Bear Canyon fire, 2013
Photo by Ross Huffman

Map 14. Oak Creek Fire District Boundaries



Appendix H. Public Response Summary

Includes the following:

- SEPA comment response

Please see: http://wdfw.wa.gov/lands/wildlife_areas/management_plans/oak_creek/ for the complete appendix including comments received from the public and wildlife area advisory committee and public meeting materials.

WDFW Responses to Public Comments

Comments received during the public review of the Oak Creek Wildlife Area Management Plan draft under the State Environmental Policy Act (SEPA) from April 11, 2017 until May 11, 2017.

#	Comment	WDFW Response
1.	I read on one of the documents, that there was a plan (or to develop a plan) "to reduce dispersed camping along riparian areas" I am NOT in favor of this. I am a hunter. It is one of the enjoyable things about going hunting in the 1st place (to be able to camp in smaller individual camp sites). Most of the camp sites have been used for MANY YEARS. Camping in large campgrounds with nearby neighbors is not my idea of going hunting. The hunting in this state is not what it once was, so many people have quit doing it, and kids are not being exposed to it... making everyone herd into organized camp grounds will only make that trend happen faster! That said - doing a little more large rock/cable boundaries might be fine, so that these smaller camping areas don't become larger and larger over the years. This does not mean that you should take away the larger "group" sites that Elk hunters use, where they can fit several camp trailers near each other (their friends). Summary - getting out in nature, needs to feel like nature - not like we went from one urban jungle to another paved urban jungle, on a smaller scale. - Richard Worley	There are no plans to reduce dispersed camping in the plan. The plan does include a recommendation to incorporate barrier rock along banks of creeks in the implementation of future aquatic restoration projects. This will help prevent vehicles from driving right to the bank of the creek, protecting water quality and reducing other natural resource impacts.
2.	I find it appalling that we encounter "FEE AREAS" out in the wilderness, IE; I saw a sign like that at Raven's Roost, when I was up there for Elk season last year. We (the people of the state in general, and especially the hunter's/fisherman) have paid through taxes, licenses, and fees already! Quit trying to add a fee for every little thing or place people want to use! It's just not right... Richard Worley	The fee areas referenced in the comment are on National Forest land. Access to WDFW wildlife areas and water access sites require either a Vehicle Access Pass (VAP), which is complimentary with your hunting/ fishing license, or a Discover Pass. Recreationists who don't buy fishing or hunting licenses need the Discover Pass to use WDFW lands.
3.	I am concerned that WDFW's Oak Creek Management Plan provides no stated accommodation for the William O Douglas Heritage Trail which runs from Cowiche Mill Road westward toward Rimrock Lake. I urge you to revise the plan so that safe, muscle-powered, recreational access along this important trail is assured. (The trail through this area crosses Sections 25, 26, 27, 35, and 36 in T14N, R16 E.) - David Huycke	If the William O Douglas Trail Foundation (WOD) is interested in partnering with WDFW we would be happy to meet and talk about ideas. There has been no communication between the WOD Foundation and WDFW in recent years. The Box Canyon Trail was developed on the Cowiche Unit north of Cowiche Mill Road as a segment of the WOD. No trail has been approved south of Cowiche Mill Road as that area has the winter feed site and seasonal closures. Currently the WOD Trail website lists a section of trail on WDFW land following an old wagon road, WDFW asked that information to be removed from the website several years ago and reference to be changed to the Box Canyon Trail. The map showing the complete WOD Trail on the WOD website follows the correct route across the wildlife area.

#	Comment	WDFW Response
4.	The SEPA DNS for the Oak Creek Wildlife Area Management Plan, and the Management Plan itself, both failed to include any information about significant historic, recreational, and cultural resources existing in Range 16 East, Township 14 North, Sections 25, 26, 27, 35, and 36. The William O. Douglas Heritage Trail follows the route of the historic Cowiche Valley Wagon Road and the ancient Native American primary travel corridor across the Cowiche Wildlife Area in Range 16, Township 14, located NORTH of Cowiche Mill Road. These historic and cultural resources are documented by state and federal agencies, and the trail sections physically exist on the ground and can also be seen on Google Earth imagery. See also information on the historic Cowiche Valley Wagon Road at http://www.williamodouglastrail.org/wagonroad.htm, which is derived from General Land Office surveys done in the 1880s. Also, there is a trailhead off Sunset Road at the Southeast corner of Section 25 that has been in public use for years to access the William O. Douglas Heritage Trail. This existing trail segment heads west from Sunset Road and exits the Cowiche Unit approximately 3.5 miles later at the West boundary line of Section 27. WDFW has previously written letters of support for the William O. Douglas Trail and acknowledged the Heritage Trail in previous planning documents and funding requests. The SEPA DNS should be withdrawn and a SEPA Mitigated DNS should be issued instead with specific mitigation measures to disclose and protect the documented historic, recreational, and cultural resources located north of Cowiche Mill Road. The Oak Creek Management Plan should be revised accordingly. - William O. Douglas Trail Foundation	WDFW will not list specific cultural and historic sites in the WLA management plan, this information is provided in the WLA Cultural Resource Management Plans (under development) and will be released to the tribes and the Dept of Archaeology and Historic Preservation for review and comment. Additionally, specific project locations have not yet been developed, when these are developed, WDFW will conduct reviews to identify the impacts to cultural resources (if any) and consult with the tribes, DAHP and other interested parties as provided for under state and federal law and WDFW policy. If the William O Douglas Trail Foundation (WOD) is interested in partnering with WDFW we would be happy to meet and talk about ideas. There has been no communication between the WOD Foundation and WDFW in recent years. The current trail approved by WDFW as a segment of the WOD is the Box Canyon trail which starts at the main Cowiche Unit parking lot. WDFW asked several years ago that the trail following the old wagon route be removed from the WOD trail website and reference be changed to the Box Canyon Trail.

#	Comment	WDFW Response
5.	On behalf of the Washington Climbers Coalition (WCC) and the Access Fund, thank you for the opportunity to review and comment on the draft update of the Oak Creek Wildlife Area Management Plan. The WCC (www.washingtonclimbers.org) is a Washington non-profit organization whose mission is to make Washington a better place to climb through advocacy, stewardship, and education. The Access Fund (www.accessfund.org) is a national advocacy organization that keeps climbing areas open and conserves the climbing environment. As the draft plan identifies, there are a number of established and popular rock climbing areas within the Tieton River Canyon (Oak Creek Unit of the Wildlife Area). These include the Royal Columns, the Bend, Moon Rocks, the Chunkyard, the Oasis, and Rainbow Rocks, among other locations. Appendix A to the plan (Goals, Objectives, Performance Measures) addresses climbing twice under Goal 11, which is to "Support and maintain appropriate recreation opportunities." First, the plan identifies an objective to "Maintain access [to] Tieton River rock climbing" with three tasks: 1) coordinate with the WCC to implement a 2017 REI grant for trail maintenance; 2) meet with user groups to develop trail maintenance projects; and 3) perform trail maintenance as needed. Second, the plan identifies an objective to "Include climbing group representation on [Wildlife Area Advisory Committee] and partner on stewardship opportunities," with one task: "Work with local users and Washington Climbers Coalition to identify potential members." The WCC supports both of these objectives. As identified, the WCC has already secured grant funding for trail maintenance projects in 2017. This work is intended to mitigate erosion and concentrate climber impacts so that rock climbing remains a compatible use within the Wildlife Area. We also support adding a climbing representative to the Wildlife Area Advisory Committee. Climbers have been exploring the Tieton River area since at least the 1950s and are a major recreational user group within the Wildlife Area. We would appreciate adding our voice to the committee. Beyond the strictly climbing-related objectives, we also want to voice our support for the other principal goals of the plan, which focus primarily on maintaining, and ideally improving, the natural function of the area. For many climbers, the landscape and unique habitats of the Tieton River (including its Oregon white oak woodlands and ponderosa pine transition zones) are as much a draw to the area as the climbing. We want to continue enjoying a special place. Thank you again for the opportunity to comment on the draft Oak Creek Wildlife Area Management Plan. - Andy Fitz, Washington Climbers Coalition	Thanks!

#	Comment	WDFW Response
6.	I have read closely the non-project SEPA checklist and the attendant document "Oak Creek Wildlife Area Management Plan" (draft 2017), and I respectfully offer the following comments directed to SEPA Checklist Question 13 Historic and cultural preservation: Questions 13A and 13B asks simple presence/absence questions; to paraphrase: are there any significant archaeological or historical sites recorded in the geographic boundaries of the document, and what is the relevant literature. Neither question was answered and the SEPA checklist is incomplete until revised. A basic literature review should have been conducted for the planning area in order to answer Questions 13A & 13B. Presumably, the SEPA checklist is unanswered because the associated Oak Creek plan is silent regarding historic and cultural resources. The plan, however, is not totally silent about cultural resources albeit addressed elsewhere in the SEPA checklist Question 8c (Land and Shoreline Use) where a "hay barn and historic grain silo" is identified in the Cowiche Unit. Question 13C similarly remains unanswered, therefore SEPA No. 17015 is incomplete. Question 13C addresses a significant resource concern bearing on potential impacts to cultural resources. The Oak Creek Plan provides a framework for a range of on-the-ground actions, which, though individually small scale, nevertheless covers an implementation period of ten years where the potential to effect a sizable proportion of the planning area may be severe. Impacts must be identified as such in the plan, no matter how small-scale or insignificant they may appear to the analyst, and assessed as to effects or impacts to cultural resources. For example, the Yakima Herald Republic newspaper on May 1, 2017 featured the elk antler harvest where 150-200 people literally swarm the management area yearly seeking shed antlers. People hunting for shed antlers presents a concentrated risk to inadvertent damage to archaeological sites, especially artifacts and cultural features. Another example of unevaluated impacts to archaeological sites are the unnatural, concentrated herding of elk at and along supplemental feeding developments. Revising SEPA No. 17015 to address Question 13 should not involve a major investment of time and resources. There is a body of cultural resource studies bearing on the Oak Creek planning area undertaken over the past couple of decades by WDFW itself, among other neighbors such as the Forest Service, Nature Conservancy, WashDOT, Bureau of Reclamation and BPA, to name a few. Most notably, the Mid-Columbia Fisheries Enhancement Group prepared SEPA 17-018 for Oak Creek Habitat, an area otherwise covered by the planning document, which appears to competently address the SEPA checklist in a thorough manner, including a professionally prepared cultural resource report. The background information in that report, authored by Christopher Landreau, could well stand for much of the Oak Creek Plan SEPA 17-015. In summary, SEPA 17015 is incomplete because the associated Oak Creek Wildlife Area Management Plan does not provide the information needed to satisfy the SEPA process. - Mark DeLeon	SEPA Q13A and 13B refer to identification of specific resources "at or near the [project] site". At this time, the management plan does not identify any specific projects or project sites as it it a planning document. WDFW will not list specific cultural and historic sites in the WLA management plan, this information will be provided in the WLA Cultural Resource Management Plans (under development) and will be released to the tribes and the Dept of Archaeology and Historic Preservation for review and comment. Additionally, specific project locations have not yet been developed, when these are developed, WDFW will conduct reviews to identify the impacts to cultural resources (if any) and consult with the tribes, DAHP and other interested parties as provided for under state and federal law and WDFW policy.

#	Comment	WDFW Response
7.	The Yakima Valley Audubon Society (YVAS) disagrees with the Determination on Non-Significance (DNS17-015) issued in regards to the 10-year Oak Creek Wildlife Area Management Plan. We believe the SEPA is inadequate because of a lack of "carrying capacity" analysis and the impacts from concentrating many elk at small feeding sites on the Oak Creek and Cowiche Units of the wildlife area. Study by your own agencies biologists and those of the US Forest Service on adjacent lands reveals both agencies concern with the obvious and measurable detrimental impacts to the environment of elk in the Yakima River Basin. YVAS strongly suggests WDFW issue a mitigated DNS after your agency completes a study of the detrimental effects of elk in the Oak Creek and Cowiche units. YVAS awaits the suggested mitigation actions your agency proposes to restore the ever-increasing areal extent of damaged and degraded habitats WDFW is entrusted to preserving in the Oak Creek Wildlife Area. - Andy Stepniewski Yakima Valley Audubon Society Conservation Committee	Management of the Yakima Elk herd including herd size objectives are covered in the Yakima Elk Herd Plan (link). Winter feed sites are an important management tool for the Yakima elk herd and have been used for decades, and are not considered a new management action to evaluate. The OCWA Management plan includes objectives for habitat management of the feed sites including weed control. Carrying capacity is a complicated concept that is seasonally and annually dynamic across the landscape. Generally, small-scale seasonal concentrations of wildlife do not fit a carrying capacity model. We presume the reference to "study by your own agencies biologists" refers to the Yakima Elk Study (2003-2006). Data collected in that study showed pregnancy rates, body condition, and survival of elk in the Yakima herd to be indicative of a population that is not above carrying capacity. The USFS work referenced presumably includes the recent Northwest Science article that was largely a floristics study of non-wilderness habitats within the Naches Ranger District. Utilization rates were also measured in that work and were pretty consistent with data collected elsewhere in the west. These utilization rates were also the collective utilization of all herbivores at the sampled sites, not just elk. Other USFS work in the area published as a USFS Technical report by Beebe at el. using herbivory exclosures suggested negative impacts to soil from combined grazing by elk and cattle, but positive impacts where elk grazed, but cattle were excluded. The suggestion that elk in the Yakima basin have broad negative impacts to the environment are poorly supported by data.
8.	Excellent document - In the plan you mention commercial opportunities what is that, logging? When adding acreage, how does that impact staffing? Under staffed law enforcement, why is there no added enforcement as acreage is added? - Signage and kiosk – why are public rules for conduct not also posted? - Mapping – would it not make sense to add location where people may encounter shooting – to enable them to stay safe? Reduce – eliminate conflicts. - Jim Lydigsen, National Rifle Association	Relative to commercial opportunities noted in the Forest Management section of the plan, commercial opportunities would be the harvest of merchantable timber. When WDFW acquires new lands that are added to the wildlife area, it is usually absorbed into the current budget and staffing. As budgets are developed each biennium staffing needs are reviewed and adjusted based on priorities and available funding. Enforcement follows a similar pattern of reviewing staffing needs and available funding. Wildlife area staff maintain signs and information across the wildlife area and post signs as needed including rules of conduct (litter, campfires, etc). Maintaining signs and other public information is a key priority and cost to operate and maintain recreation opportunities for the public. Unless posted otherwise, target shooting and hunting is not restricted across the wildlife area. WDFW supports a robust hunter education program, and expects those using firearms to be well trained and educated about safe practices, including being aware of their surroundings and hunting seasons.
9.	- Add solar panels on the center, this should reduce the cost of electricity. - If possible add a camera, weather station, so the public can view the elk and get weather conditions. This would bring us into the 21st century and promote the area. - LED lighting inside - ADA upgrades - Work with Washington State Department of Transportation (WSDOT) for signage, "wildlife area ahead". Perhaps slow to 40 MPH at entrance and river trail parking area. Important!! - Jim Andrews, Oak Creek Center volunteer	A capital project request was submitted in 2014 for upgrades to the Visitor's Center, this included ADA and safety upgrades. Cameras and weather station could be added using grant funding. WDFW has been in communication with WSDOT about signs and safety near the wildlife area entrance. It has been several years since the last conversation. Touching base with them again would be a good idea.

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10.	- Utilize timber value to help pay for non-commercial and prescribed burning treatments. - Explore expanding turkey population as an opportunity to provide more hunting. Turkey hunting is an excellent introductory experience for new hunters. Winter habitat forage will be important to achieve this goal. - Oregon white oaks goals and tasks seem more focused on protection than enhancement. How can you improve oak habitat? What treatments will enhance oak vigor, acorn production? Oak science day? Bring in experts to look at oak stands if you have knowledge gaps. - Utilize harvested timber as fish logs? Leave opportunity open in plan to push over whole trees - Mikal Moore, National Wild Turkey Federation	It is indeed the goal of any commercial timber harvest to utilize revenue to treat other areas that need restoration treatment but have no commercial value. Supplemental turkey releases are listed as an option in the current plan, and are included in the statewide Turkey Management Plan. The new wildlife area management plan incorporates management recommendations from other WDFW planning efforts (e.g. game management, etc.). Recently, Oak Creek Wildlife Area staff and other WDFW staff have been invited to participate in the newly created East Cascades Oak Partnership that consists of many agencies and private land managers to facilitate collaboration on restoring and enhancing oak habitats. It is the intent of the Oak Creek WLA to participate in this partnership to learn about best available science and seek grant funding for oak restoration work. The Oak Creek Wildlife Area has already been utilizing timber from restoration projects to do stream restoration work. This will continue where opportunities arise.
11.	- The 1400 Road is an amazing location for mountain biking trails. What Yakima lacks, is a decent shaded biking trail system. The terrain and vegetation are ideal for trails catering to all skill levels. It would also double as great hiking trails. There are great opportunities for scenic view "loops". - The 1400 road grants easy access to build and maintain these types of recreational opportunities. These trails are typically low on environmental impact due to the use being human powered, and not motorized. These would create great wildlife viewing. - Andy Mahre, local landowner	Oak Creek Wildlife Area has begun collaborative discussions with the mountain bike community and the USFS, and are open to working with this user group to potentially identify and develop a trail. A viable proposal will have strong support by users and include a volunteer component for development and maintenance, and be consistent with agency dual mission of conservation and recreation.
12.	If this unit was purchased in 1942, Section 6 funds could not have been used as the ESA had not been established. Also, after an admittedly brief search, I could find no records for Oak Creek in the RO's Section 6 files. (Page 16, general wildlife area information, acquisition date). - David Leonard, USFWS	Additional acquisition dates will be added to this section. The Tieton Township was acquired using Section 6 funds and added to the existing Oak Creek Unit.
13.	These are activities that are generally prohibited on land purchased with Section 6 funds (Page 23-24, general wildlife area information, recreational). - David Leonard, USFWS	Wording changed to motorized recreation.
14.	Wouldn't it be straightforward to simply state here that these lands were purchased to benefit listed species and that is the primary goal of the land (as opposed to human recreation)? (Page 23-24, general wildlife area information, access.) - David Leonard, USFWS	WDFW manages lands for multiple uses compatible with providing habitat for and management of listed species.

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15.	See above. It appears that there is more human use of this Unit than the others. I understand that the checker-board nature of the parcel is likely a reason (in a perfect world WDFW and USFS could exchange sections to block up land to facilitate management). Never-the-less, ATV, Jeep, Motorcyle, and snowmobile use is inappropriate on this land given the understood objectives of the original project proposal. There is a growing body of literature that indicates that even passive recreation affects the behavior and demography of wildlife. The only mentions of human use from the original proposals is "The area supports Northern Spotted Owl, prime big game range, and substantial public recreational benefits." So this level of use comes as a surprise. Camping and vehicle traffic increases the risk of wildfire, which is specifically mentioned in the proposal – "This project accomplishes both threat reduction strategies [for NSO]. . ...reducing the incidence of human-caused ignitions,". (Page 24, first paragraph.) - David Leonard, USFWS	Language updated in the plan. The unit and adjacent USFS lands contain motorized trails that are part of the USFS system. While a majority of the trails are on USFS land. In addition, the motorized trails have seasonal closures in the spring to reduce trail damage and erosion. In the winter the area is part of a groomed snowmobile trail system managed by WA State Parks. Additionally, as part of a public process, WDFW closed and abandoned 14 miles of roads in this unit and many miles of user built motorized trails after acquisition.
16.	Proposal states that the project would "enable agencies to better control road density". (Page 45, last paragraph). - David Leonard, USFWS	Text has been updated. Since acquisition WDFW has implemented a road management plan on the Rock Creek Unit, where 14 miles of road and numerous miles of user built motorized trails were closed and abandoned.
17.	Compatible with snow mobiles? - David Leonard, USFWS	Text updated. Important winter range for this species occurs on south facing slopes, mostly at elevations lower than on the Rock Creek unit.
18.	Perhaps they can shift (over time) the motorized (ATV, motorcycle, snowmobile) use of the area to mountain bike in the summer and cross country skiing in the winter. Still provides that public access, but in a less impactful way to the local wildlife. (Page 62 first paragraph). - Sarah Hall, USFWS	WDFW manages lands for multiple uses compatible with providing habitat for and management of listed species.

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19.	Thank you for the opportunity to comment on the proposed draft for the Oak Creek and Cowiche Units. I would like to make my comments in regards to recreation, specifically mountain biking. As a founding member of Single Track Alliance of Yakima, I have invested countless hours of my time in advocating for trail access. We have been fortunate enough to establish a trail head at Rocky Top, on the north side of Cowiche Mountain. Mostly we build and maintain mountain bike trails. We have come to learn that our mountain bike trails are loved by hikers and trail runners also. Our trails improve with use and require little maintenance. Because they are laid out sensibly they erode minimally. We've found that trails which erode or damage the landscape significantly have nothing to do with the user and has everything to do with the layout. Since mountain bikes do not destroy trails and erode terrain, the only reason I can see for restricting access to mountain bikers in the Cowiche Unit is for wildlife movement. I would argue for seasonal closures over blanket restrictions. Seasonal closures seem like the community minded and sensible path to take over restricting access. It is not hard to look at other areas around the west where mountain bikes and conservation co-exist. Seasonal closures are a realistic and inclusive approach. The Cowiche Unit is essential to the idea of connecting the Cowiche Canyon trail, Rocky Top, and Snow Mountain Ranch with the Oak Creek Unit and also the Ahtanum State Forest, not to mention the National Forest. A trail system of this caliber would not be a spiderweb of trails in tight proximity. It would be in essence an isolated, well traveled animal trail which humans used occasionally. Please consider an inclusive approach which takes into consideration the community of mountain bikers who feel at home in nature and don't leave a trace on the landscape. Thanks, Will Hollingbery Single Track Alliance of Yakima	There are currently no restrictions to mountain bike use on established roads within the Cowiche Unit except for a seasonal closure to protect wintering wildlife. However, the construction of new trails would require agency approval to ensure that they harmonize with the agency mission, policy, and procedures. Unauthorized trail construction is prohibited. Furthermore, to gain proper authorization, organized user groups should demonstrate their ability to conduct trail maintenance activities.