Chelan County
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Nason Ridge Community Forest Management Plan

Prepared by

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BERK Consulting
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Acknowledgements

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Chelan-Douglas Land Trust

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Washington State Recreation and Conservation Office

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Executive Summary

The Nason Ridge Community Forest Management Plan is a direct result of the hard work and engagement of the local community. It was created in response to a mandate from the Washington State Legislature to illustrate how the Nason Ridge Community Forest can be managed as a working forest to provide the economic, social, and environmental benefits that will sustain both the land and the local community. In 2018, through thoughtful collaboration between Weyerhaeuser, the Western Rivers Conservancy, the Chelan-Douglas Land Trust, and contributions from over 400 individuals and businesses in the greater Lake Wenatchee area, the land was acquired with the intention of keeping it available for public use and managing it according to the values of the local community, the most prominently of which are active sustainable timber harvest, access to outdoor recreation, and preservation and enhancement of vital salmon habitat. This incredible effort over the past two years demonstrated a strong sense of community stewardship and laid the groundwork for the legislature to recognize this tract of land as the Nason Ridge Community Forest.

To guide the management of the Nason Ridge Community Forest and meet the legislative proviso for completion of a Forest Management Plan, an advisory committee comprised of local stakeholders worked closely with Chelan County, Chelan-Douglas Land Trust, Western Rivers Conservancy, and the Washington State Recreation and Conservation Office to develop this document. The Plan addresses the multiple values of this forest held by locals and visitors alike, and outlines a strategy for continued community involvement in its management. The Forest Management Chapter highlights the working forest component with a set of detailed recommendations for short- and long- term sustainable forest management actions. Other components, such as the Recreation & Public Use Chapter, lay the foundation for future detailed planning and implementation.

This Plan honors the extraordinary engagement and strong values of the community, structuring the effort around community-based objectives to provide management direction for the long-term stewards of the Nason Ridge Community Forest.

Introduction

The Nason Ridge Community Forest spreads across 3,714 acres in the Eastern Washington Cascades, where Nason Ridge dips down from alpine heights to meet Nason Creek, Lake Wenatchee, and the small rural communities nestled around these natural features. The land has a long legacy of timber harvest, but also holds immense value as a recreational, economic, and environmental resource to the surrounding communities. When the opportunity to secure this land in public ownership for perpetuity arose in 2017, the local community engaged with enthusiasm and contributed financially to the purchase and stewardship of the property. The Nason Ridge Community Forest Management Plan is the result of that momentum. By building the Plan around the values of the local community, the guidance and mechanisms for community involvement contained within will ensure the Nason Ridge Community Forest continues to provide social, economic, and environmental benefits to the local community.

Purpose

The purpose of this Plan is to guide the management and use of the Nason Ridge Community Forest based on the objectives for management and the desired benefits of the forest developed by the community. Through the recommended short- and long-term management guidelines outlined within this Plan, the property will be managed for forest health and timber production, recreation, and ecological sustainability to meet the needs of the community and the land alike. Adaptive management mechanisms and 10-year plan updates built into the implementation structure will allow for any necessary management guideline revisions to ensure community objectives continue to be met over time.

This Plan, and the establishment of Nason Ridge as a community forest, will prevent forest conversion on the Nason Ridge tract, which has attributes that make it desirable for large-scale residential or commercial developments. Nason Ridge lies on State Highway 2 which connects the Puget Sound metropolitan area to the eastern Cascades. It is located near several popular vacation destinations and is the largest developable property between Steven's Pass and Leavenworth. The majority of Nason Ridge is zoned as Commercial Forest Management, which allows home-building, and the remainder is in Rural Residential with a minimum lot size of 10 or 20 acres. At these densities, the potential exists for over 185 residential lots that would each qualify for a homesite. Development would prevent working forest management and degrade the exceptional fish and wildlife habitat and public recreational values for which this property is locally cherished. Establishment as a community forest will maintain Nason Ridge as a working forest that creates local employment and serves as a public resource. Managing for forest health, including through selective harvests and pre-commercial thinning, will also reduce the risk and severity of wildfire and increase the resilience of the ecological community.

This will safeguard nearby private property and mitigate the risks to human life as well as the costs associated with fire response and containment.

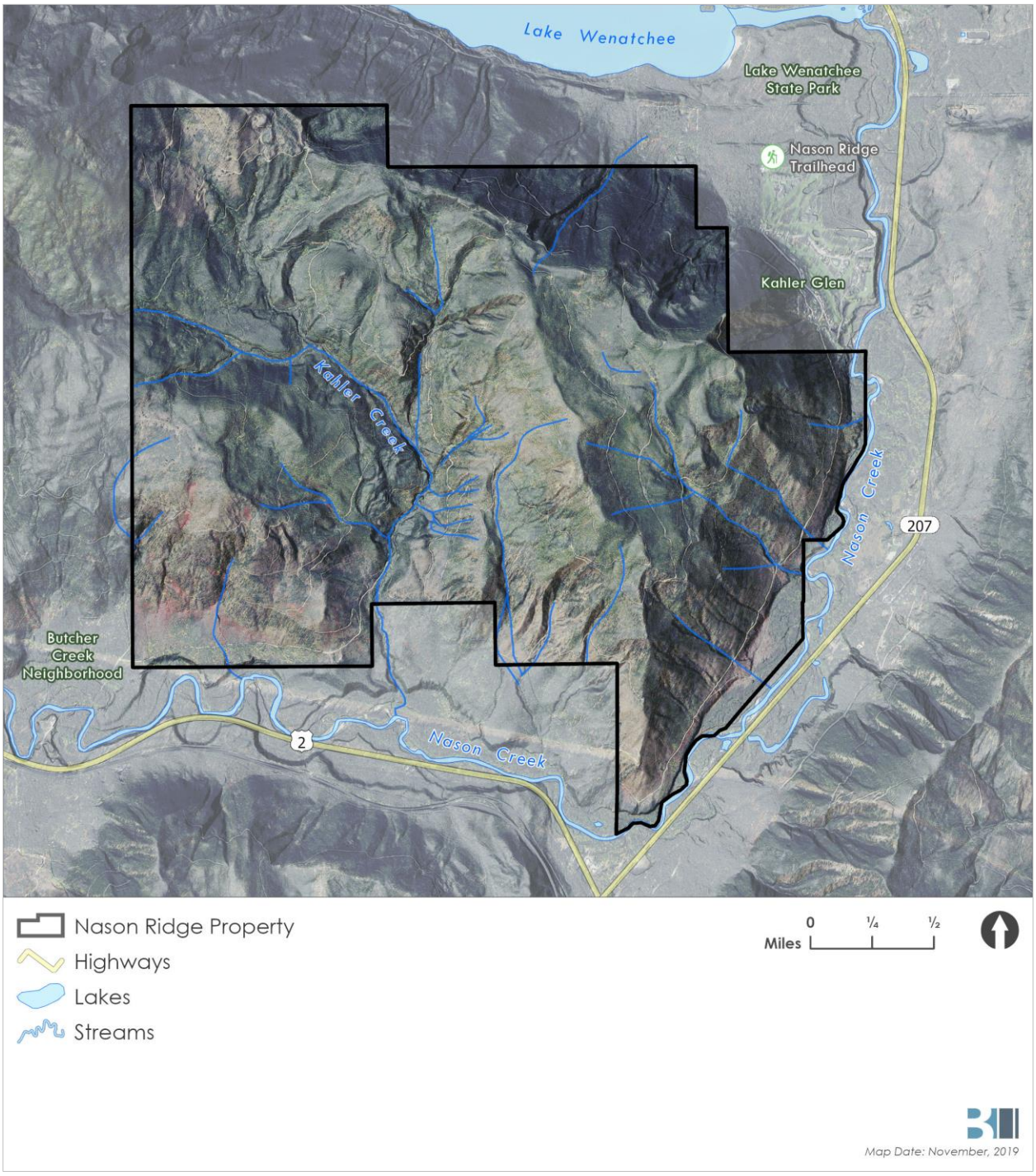
Exhibit 1 Photo of Nason Creek

Source: TaraFirma Designs, 2019.

Location & Physical Description of Property

The Nason Ridge Community Forest is set in a stunning location on the east slope of the Washington Cascades, about 80 miles east of Seattle and 45 miles west of Wenatchee. Occupying the east end of the Nason Ridge massif, the property lies between State Highway 2 and Lake Wenatchee and is bounded on the south and east by Nason Creek. The property is accessed on the west side from Highway 2 through the Butcher Creek neighborhood via a US Forest Service (USFS) Road, and on the northeast side by a road leading out of the Kahler Glen subdivision. The land is a large, single-ownership contiguous parcel of approximately 3,714 acres and is primarily used to grow and harvest timber while providing protection for wildlife and fisheries and opportunities for public recreation.

Exhibit 2 Nason Ridge Forest Property



Source: Chelan County, 2019; BERK, 2019.

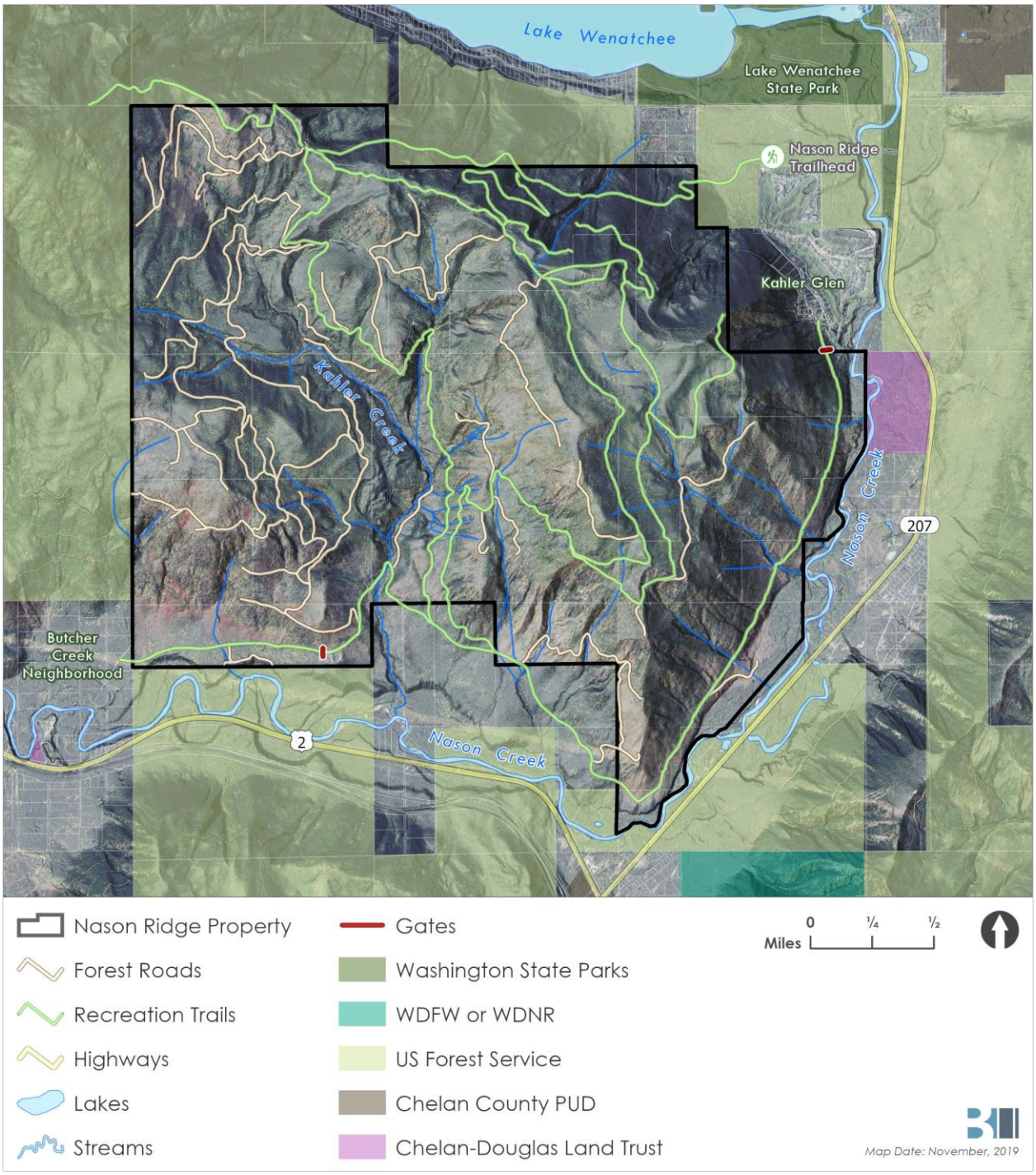
The Nason Ridge Community Forest is a river-to-ridgeline property with nearly 4 miles of stream frontage located near the highest concentration of private lands in the Nason Creek drainage. The topography ranges from moderate to steep slopes to flat on top of the ridge. This property is located just two hours from the Puget Sound metropolitan area and is near two popular ski areas. The property lies adjacent to the popular second-home and vacation area of Lake Wenatchee and the Kahler Glen golf course, and borders the residential neighborhood of Butcher Creek near the southwestern corner.

Exhibit 3 Looking South Across Lake Wenatchee at Nason Ridge

Photo: Erin McKay, 2019.

The property has been in forestland status for decades and is managed as a commercial forest with no structures other than logging roads. It was previously owned by Longview Fiber Company, then conveyed to Brookfield Asset Management who sold the timberlands to Weyerhaeuser Co. in 2013. The property is a mixture of Commercial Forest Management and Rural Residential Zoning, with housing densities limited to 10 or 20 acres. According to County Zoning Code, this zoning designation may be modified once for cluster subdivisions or planned development. No changes to current zoning are proposed under this plan. There are currently no structures other than roads on the property (with the exception of a BPA transmission line that passes through the south-eastern corner).

Exhibit 4 Nason Ridge Property, Roads, and Adjacent Ownership



Source: Chelan County, 2019; BERK, 2019.

The property contains an ample road network and the access necessary for forest management. Access to utilities is provided from the county road to the east. Where soil conditions permit, septic systems and wells are commonly used to develop rural land in the area.

History

For many generations, thanks to the natural bounty of salmon and wildlife, Native Americans used this area seasonally for fishing, hunting, and food gathering (Beverly 2009). Trappers and gold prospectors blazed new trails into the area in the mid-1800s, paving the way for settlement which soon followed. Unfortunately, several incidents of unrest and violence between the inhabitants and the new arrivals are thought to have occurred in the area with the appearance of settlers. Much of the early post-settlement historic activity in the area is associated with turn of the century sheep grazing, when huge herds of sheep were moved through on their way to graze the high alpine meadows (Marler 2004). The Wenatchee National Forest was established in 1908, with headquarters in Leavenworth, Washington. In that same year, nearly 150,000 sheep grazed the Forest (USFS 2019).

Stevens Pass was surveyed and selected as the route for the Great Northern Railway in 1890, which brought major changes to the Wenatchee River and Nason Creek valleys (Roe 1995). By 1900, trains were travelling from Seattle to Leavenworth, with passage through tunnels that were major engineering feats of the time. The railroad brought small depot towns and logging camps scattered through the Nason and Skykomish corridors. The Schmitten family was an early founder of the timber industry in the Nason Ridge area, and purchased much of the 3,700+ acre Nason Ridge property in 1917 from the Great Northern Lumber Company (pers. comm. Schmitten family). The Schmitten Lumber Company owned the property until 1973, when they sold it unlogged to the Pack River Company, which at the time owned sawmills throughout Chelan County. The land then passed through the hands of small logging outfits and was eventually sold to Longview Fiber (and subsequently Weyerhaeuser) in 1981.

Farther west along the higher reaches of Nason Ridge on US Forest Service property, there was a functioning fire lookout on Rock Mountain from 1933 to 1973, and the original Alpine Lookout constructed in 1936 still stands today (USFS 2009). The Nason Ridge Trail still connects these historic sites to the Nason Ridge Community Forest and to Lake Wenatchee State Park at the base of the ridge, providing one of the key recreational linkages on the property.

In more recent years, numerous public and private entities invested in Nason Creek. These include Bonneville Power Administration, the US Forest Service, Bureau of Reclamation, the Salmon Recovery Funding Board, the Upper Columbia Salmon Recovery Board, Ecotrust, the

Chelan-Douglas Land Trust, and PUD among others. The Yakama Nation has been working to re-establish the Coho run on Nason Creek since 2008.

Restoration has become a major focus in the Nason Creek watershed as its importance as spawning and rearing ground for Endangered Species Act (ESA) listed spring Chinook salmon and steelhead has been recognized. Since 2005, approximately $5.5 million was invested in Nason Creek in 17 separate restoration projects. Three of these were acquisition projects that protected 62 acres of floodplain, 89 acres of wetlands, and 2 miles of streambank. The establishment of the Nason Ridge Community Forest will safeguard an additional 2 stream miles from housing development, and protect ~200 acres of riparian, wetland, and floodplain areas.

The Nason Ridge area was identified in several recent County-scale planning processes. The Chelan County Comprehensive Plan details a vision for future development in the Lake Wenatchee area that places importance on compatibility with wildlife, natural areas, rural atmosphere, and public recreational values for which the area is known. This includes protecting "critical areas," which are defined as areas that are important for water quality protection and wildlife habitat. The Upper Wenatchee Community Lands Plan (2016) describes regional land use and conservation goals that include promoting sustainable forests that support biodiversity, working lands for a thriving economy, and public recreational access. Land acquisition is noted as a "priority action step," and Nason Ridge/Lake Wenatchee was identified as one of the three focal areas in the sub-basin. Finally, the Wenatchee Watershed Plan (2006) and the Upper Columbia Salmon Recovery Plan (2007) both identify this reach of Nason Creek as a high priority for protection and restoration. Establishment of this community forest directly addresses these county-wide planning efforts and secures the investments made in restoration for perpetuity.

Local Economy

The Nason Ridge area was primarily a timber-based economy in the early days of the railroad. Log drives moved massive amounts of timber down the Wenatchee River to the Lamb-Davis Mill in Leavenworth (Arksey 2010). After the Lamb-Davis Mill closed in 1926, smaller mills (such as the Winton Mill, Schmitten Lumber Co., and Longview Fibre Mill) continued to operate, keeping the timber economy of the region alive. Gradually, as supplies dwindled and profit margins narrowed, local mills closed and the timber economy slowed. Around the same time, the town of Leavenworth became a Bavarian-themed tourist attraction, and Lake Wenatchee outdoor recreation opportunities gained recognition. The economy of the Nason Ridge area is now solidly driven by tourism, with people visiting the area both summer and winter to enjoy the mountain setting and the plethora of recreation opportunity. Tourism revenue from recreational opportunities in Chelan County is a significant economic benefit estimated at ~$500 million per year. Visitors to Nason Ridge will contribute approximately 1/20 of 1% of the $500 million, equaling ~$250,000 in annual revenue or $2,500,000 over ten years (EcoNorthwest 2017).

This project will ensure the current network of approximately 22 miles of cross country skiing, hiking, and mountain biking trails will be maintained and enhanced and continue to provide access for hunters, anglers, foragers, and firewood cutters, all economically significant forest uses. The site has spectacular views of the Glacier Peak and Alpine Lakes wilderness areas as well as Lake Wenatchee. The scenic qualities of the Lake Wenatchee area are dependent upon intact natural areas like Nason Ridge, which is a prominent feature between Leavenworth and Steven's Pass.

While no longer the primary economic force in the area, timber harvest still plays a significant role in the local economy; with strategic planning, this role can continue to gain strength. For every 1,000 MBF harvested in Chelan County, roughly 21 jobs are created, with total wages of over $1M. It is estimated that thinning to maintain forest health and to reduce the risk of fire will translate to 43.5 jobs and $2.05M in wages (WRC 2018). This project will ensure that forestry will continue to play a strong role in the local economy. As recently as 2014, the forest sector generated over 362 jobs in the county, paying well over $20M in wages. Annual revenues in logging, manufacturing, transportation, and wholesale equaled $250M (WRC 2018).

Regional Landscape, Climate, Vegetation & Geology History

Located in the lee of the Cascade crest, the climate at the eastern end of Nason Ridge is strongly influenced by the orographic effects of the mountain range to the west. Strong winter storms drop heavy precipitation over the area, but the rain shadow effects are also illustrated by the mesic forest types and sharp precipitation gradient between the crest and Lake Wenatchee. The average annual precipitation is less than 40 inches per year, with the majority of that falling as snow in the winter months. The copious winter snowfall combined with the typically warm, dry summers contribute to the recreational appeal of this area.

Exhibit 5 Winter in the Round Mountain Burn

Photo: John Meriweather.

The land types associated with this general area are glacial troughs and scoured glacial troughs with a few cirque basins. Bedrock underlying the area is predominately Cretaceous banded gneiss, Chiwaukum schist, and granitic rocks of the Mt. Stuart batholith on the southwestern edge. Larger stream bottoms are filled with alluvium and reworked glacial outwash. Due to the proximity to Glacier Peak, some of the soils formed in volcanic ash and pumice, but the majority of soils in this area developed in granitic and glacial residuum (USFS 2009).

Grand fir, ponderosa pine, and Douglas-fir dominate low elevation stands. Mid-elevation forests are mainly Pacific silver fir, western hemlock, and western redcedar. Upper slope species include subalpine fir, whitebark pine, lodgepole pine, and Engelmann spruce. Avalanche paths containing willow, mountain ash, Douglas maple, and Sitka alder are common. Periodic avalanches also stimulate forbs and grasses important to mountain goats found in the area (USFS 2009). The property is a moderate site for Douglas-fir production and a moderate to good

site for ponderosa pine. Average precipitation of less than 40 inches, well drained soils, and elevations ranging from 2,000-3,000 feet make Nason Ridge well suited for extended harvest rotations and uneven-aged management. A 1996 USFS watershed analysis documented that the overall condition of the vegetation in the Nason Creek subwatershed is "stable and vigorous" (USFS 1996). A more recent report by the US Bureau of Reclamation found that Kahler Creek drainage is an area of concern due to recent clearcuts on the Nason Ridge tract (BOR 2008).

The area contains mesic, moist, and some cold forest types that include both mixed and high-severity fire regimes. Large fires were prevalent in the railroad construction years (ca.1880s) in the Nason Creek drainage. The eastern-most portion of this area was affected by the Round Mountain Fire in 1994. Annual fire occurrence is light to moderate with most started by lightning. The vegetation type is mostly moist forest types with Douglas-fir, western white pine, grand fir, and western hemlock transitioning to Pacific silver fir with Engelmann spruce, subalpine fir, and whitebark pine on ridgetops. South facing slopes from lower to mid elevations are Fire Regime III (mixed severity) with Condition Classes II and III. Upper slope and ridge tops are predominately Fire Regime V (+200 years, stand replacement type) and are in Condition Classes I and II. Whitebark pine stands and meadows adjacent to subalpine fir need fire to persist (USFS 2009).

The property contains two main streams, Kahler Creek which flows south/southeast out of the heart of this parcel and Nason Creek which forms the southern and eastern boundary of the site for approximately three miles. Nason Creek supports habitat for eight fish species: spring Chinook, summer steelhead, and bull trout (all ESA listed), as well as sockeye salmon, cutthroat trout, and mountain whitefish. Historically, Coho salmon inhabited Nason Creek, but were extirpated from the Upper Columbia Basin in the 1900's. The Yakama Nation has been reestablishing the Coho run since 2008, and Nason Creek provides excellent spawning and rearing habitat for these fish. Management of the Nason Ridge property will improve water quality and ensure healthier habitat for all these species.

The Nason Ridge property is within a Gray Wolf Recovery Area and the Grizzly Bear Northern Cascades Recovery Zone. Seven northern spotted owl pairs nest in the Nason Creek drainage. Nason Ridge is near a breeding area management buffer, and owls have been detected nesting, roosting, and foraging on the property. As such, forest conversion would negatively impact owl behavior and habitat availability (WDFW 2019). State-listed Priority Habitat and Species (PHS) have been observed on the property, including mule deer, northern goshawk, westslope cutthroat trout, rainbow trout, sockeye salmon, mountain whitefish, freshwater emergent wetlands, and freshwater forested/shrub wetlands (WDFW 2019). This project will secure habitat connectivity with adjacent National Forest and wilderness lands as these species' ranges expand, in turn protecting both State and Federally listed species.

1

Community Benefit

Objectives

Community forests provide many benefits to local residents and visitors alike. By allowing communities to help shape the future of their forest resources, those communities can ensure their objectives are met over time through short- and long-term management actions. This participation in management creates a sense of ownership in the land, in turn fostering an ethic of stewardship and a long-term commitment to the health and vitality of the forest.

A set of objectives developed by the Nason Ridge Advisory Committee were used to define management goals and provide the backbone of the Community Forest Management Plan. These objectives also translate into benefits to the local community, and promote the social, economic, and environmental interests of the Nason Ridge stakeholders.

Several themes emerged from this effort to define objectives and priorities for the Community Forest. The main themes centered around sustainable forestry, recreation access and opportunity, and preservation of the ecological functions and biodiversity of the land. The sustainable forestry theme strikes an important balance between harvesting to generate revenue for continued management and stewardship of the land, and managing for healthy forests and watersheds that are resilient to fires and sustainable in a long-term management sense. Recreation access and opportunity is a high priority in this forest, with significant existing recreation opportunity and great potential for expansion of recreation access and infrastructure. The property contains a wide range of habitats and ecosystem types, including ESA listed species inhabiting Nason Creek. An understanding of the connectivity between upland and aquatic systems and the value of protecting various habitat types engendered many of the objectives included in the plan.

The full suite of objectives developed, and the benefits that accompany the achievement of those objectives, are as follows.

Forest Management

- Active forest management to improve and maintain forest health.
- Active forest management to generate income and funding for continued stewardship.
- Implement silvicultural practices that promote structural diversity, enhance water quality, improve wildlife habitat, and improve resilience to climate change.
- Proactive fuels management to create defensible space and reduce potential for catastrophic fire.
- Continue noxious weed management.
- Serve as a model for future community forests by providing educational opportunities for community members, researchers, and policy makers.

Restoration & Conservation

- Protect fish and wildlife species, including ESA listed salmonids.
- Protect/restore aquatic resources and water quality.
- Protect natural resources through thoughtful planning and management.
- Provide a good example of land stewardship for younger generations.

Revenue & Economic Development

- Provide an economic driver for the local community by drawing business for tourism, local recreation, and forest management.
- Provide local jobs.
- Provide revenue from forest management that can be put back into the working forest.

Recreation & Public Use

- Provide access to enjoy open space and recreation opportunity.
- Continue to increase opportunities for non-motorized recreation such as hiking, skiing, biking, and snowshoeing.
- Increase opportunity for both summer and winter recreation.
- Provide recreation and education opportunity for children and underserved communities.
- Provide quality hunting opportunities.

Open Space

- Maintain quality open space in public ownership for perpetuity.
- Provide opportunity for education of natural history and land management; living classroom for all education levels.

Operations Plan

One objective of this Community Forest Management Plan is to demonstrate that the Nason Ridge Community Forest will generate sufficient revenue to meet management needs through a combination of philanthropic support and long-term management actives.

Management expenses are proportional to available revenue. As revenue is generated through sustainable timber harvests or other means, those funds will be reinvested into the property to complete necessary maintenance and achieve the management objectives identified by the community.

Nason Ridge does not have mandatory maintenance needs, but responsible management means roads need to be maintained, trails groomed and cleared of brush, hazardous fuels managed, and property use monitored and enforced.

In the near-term (20-years), Nason Ridge management needs will be addressed by creating a $500,000 Stewardship Endowment and developing Memorandums of Agreement (MOA) with neighbors with shared interests in the property. The $500,000 Stewardship Endowment will be created from the funds raised and pledged by local community members. MOAs will be formalized with adjacent landowners, like Washington State Parks, that have a vested interest in the property and have a history of collaborating on management needs. These mechanisms will be sufficient to meet all near-term management needs.

As the forest matures and a sustainable timber harvest program can be established, revenue from log sales will supplement the funds from the Stewardship Endowment and shared management activities covered by the MOAs. In time, the financial resources available to managers are expected to exceed baseline management expenses and there will be potential to expand on recreation and restoration activities.

The following chapters expand on the management objectives identified by the community, and illustrate how forest management approached at a local level can bestow the land's potential social, economic, and environmental benefits to the community.

2

Forest Management

Objectives

Nason Ridge, located in the heart of the Cascade Transition Zone, has been managed for timber production for more than a century. It is one of the most diverse and productive forested properties in Chelan County, ranging in elevation from 2,000–3,700 feet and receiving an average of just under 40 inches of precipitation annually.

By nature, a community forest has different management objectives than a commercially managed forest. Through a collaborative effort involving the Nason Ridge Advisory Committee, adjacent landowners, Chelan County Natural Resources Department, Washington State Parks, and Western Rivers Conservancy, the following forest management objectives were identified as priorities for Nason Ridge:

- Active forest management to improve and maintain forest health.
- Active forest management to generate income and funding for continued stewardship.
- Implement silvicultural practices that promote structural diversity, enhance water quality, improve wildlife habitat, and improve resilience to climate change.
- Proactive fuels management to create defensible space and reduce potential for catastrophic fire.
- Continue noxious weed management.
- Serve as a model for future community forests by providing educational opportunities for community members, researchers and policy makers.

These multiple objectives will result in notable changes on the ground as the property transitions from a commercial tree farm to a forest containing older stands with multiple age-classes and greater species diversity.

Ownership History

In 1862 the United States government, through the passage of Land Grant Legislation, gifted public land to railroad companies to entice them to complete the rail system to the West Coast. In Chelan County, every other section (640 acres) of land was granted to the Great Northern Railroad in the Icicle and Wenatchee River drainages. This was to specifically encourage the railroad to build across one of the mountain passes connecting to the West Coast (Seattle area).

In the early 1900's, the Lamb/Davis Lumber Company (LDLC), located in Leavenworth, WA, purchased 50,000 acres of land from the Great Northern Railroad. This land was located in the Leavenworth/Lake Wenatchee areas and was to support their mill in Leavenworth. In 1915, the LDLC went bankrupt and the Great Northern Lumber Company (GNLC),[1] acquired all the land and remaining timber.

In 1917, the GNLC sold their south shore of Lake Wenatchee Lake and Nason Ridge (Kahler Creek) lands and timber to F.W. Schmitten, owner of Schmitten Lumber Company in Cashmere, WA. Schmitten purchased the land with the intent to log the White River area and Nason Ridge when roads into the area developed. The land purchased is the vast majority of the current 3,700 +/- acres currently owned by the Western Rivers Conservancy.

In 1973, Schmitten sold the land unlogged to the Pack River Company. At the time, Pack River owned all the sawmills in Chelan County. Pack River was the first company to build roads into the property and start actively logging it with conventional tractor and short-line logging methods.

In 1979, Pack River reorganized under Chapter 11 and sold its lands and mills to the W.I. Timber Company (Washington/Idaho Timber Company). W.I. began an aggressive harvest approach of the land and entered into the export log business to optimize their profit.

The land was again sold in 1981 to Long View Fibre, which traded the approximate 500 acres of US Forest Service land in the area for other land they owned and "blocked" up the Nason Ridge (Kahler Creek) area. Long View Fibre initiated the first small clear-cuts on the area.

The Weyerhaeuser Company purchased the land in 2013 and, given the development of new logging equipment capable of logging steep land and the use of larger clear-cuts, intensively logged most of the remaining Nason Ridge land. Between 2013 and 2017, Weyerhaeuser made three separate unsuccessful attempts to sell or auction the land, including one package with a draft home resort development plan.

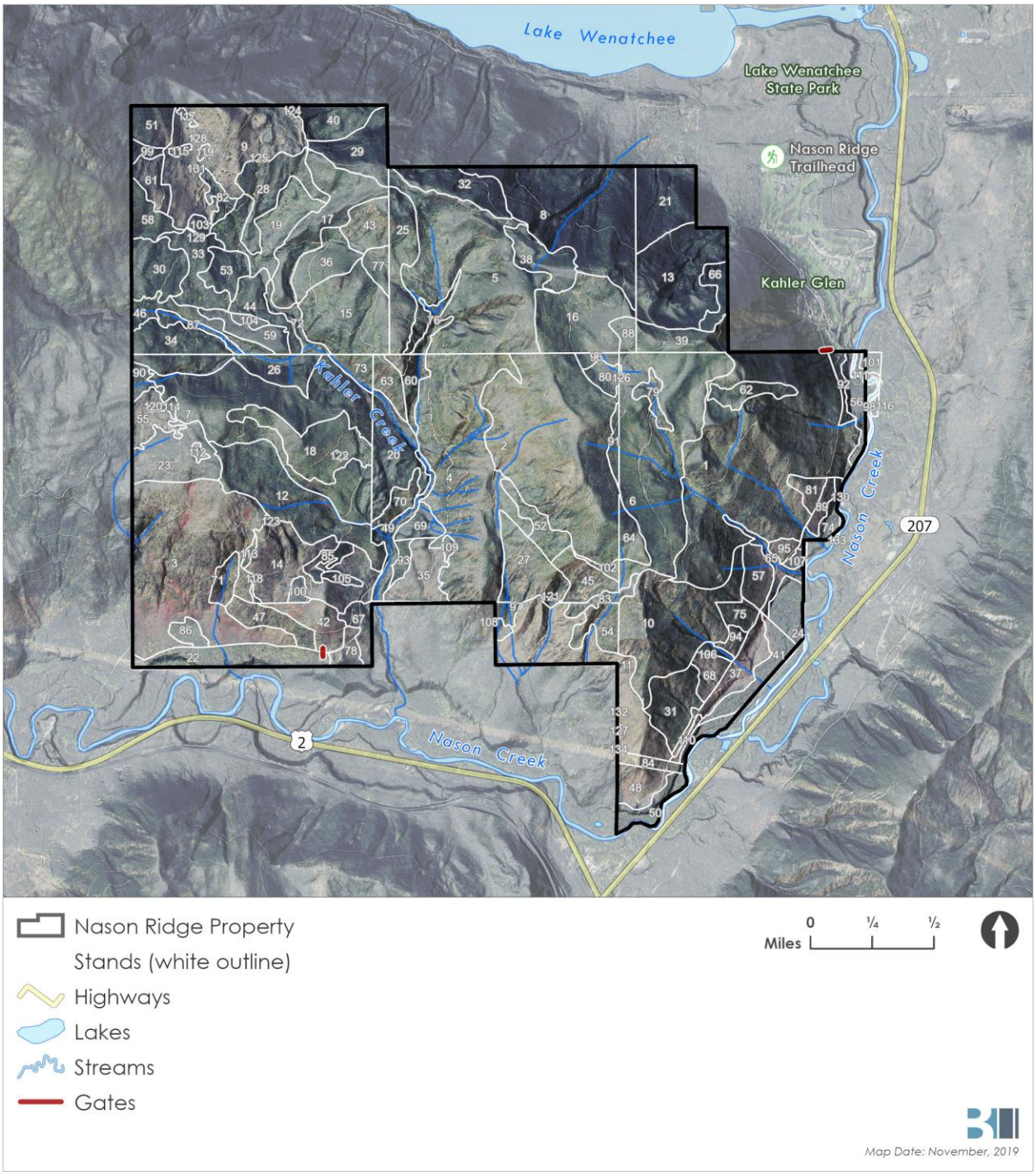
Finally, in 2018, after a controversy created by Weyerhaeuser proposing to clear cut approximately 200 acres on the north side of Nason Ridge (which is exposed to the residences of Lake Wenatchee and adjacent areas), all the Nason Ridge land was sold to Western Rivers Conservancy.

[1] No relation to the Great Northern Railroad.

Current Conditions

At 3,714 acres, Nason Ridge is a remarkably diverse property containing multiple tree species including Douglas-fir, grand fir, silver fir, ponderosa pine, western white pine, lodgepole pine, western redcedar, western hemlock, western larch, red alder, bigleaf maple, rocky mountain maple, and cottonwood. Nason Ridge currently contains conifer stands ranging in age from 4- to 120+ years old. Due to past management and disturbance, most stands on the property are less than 25 years old. The exceptions are approximately 220-acres of mature timber on the northern portion of the property, riparian buffers along Kahler and Nason creeks, and approximately 40 acres in Section 5 that sit on potentially unstable slopes. In addition to these stands, there are pockets of mature trees and individual trees that were either intentionally retained during past harvest, or did not burn during the 1994 Round Mountain Fire. See Exhibit 6 for a map of stand delineation at the time of acquisition in 2018.

Exhibit 6 Nason Stand Delineation at Time of 2018 Acquisition



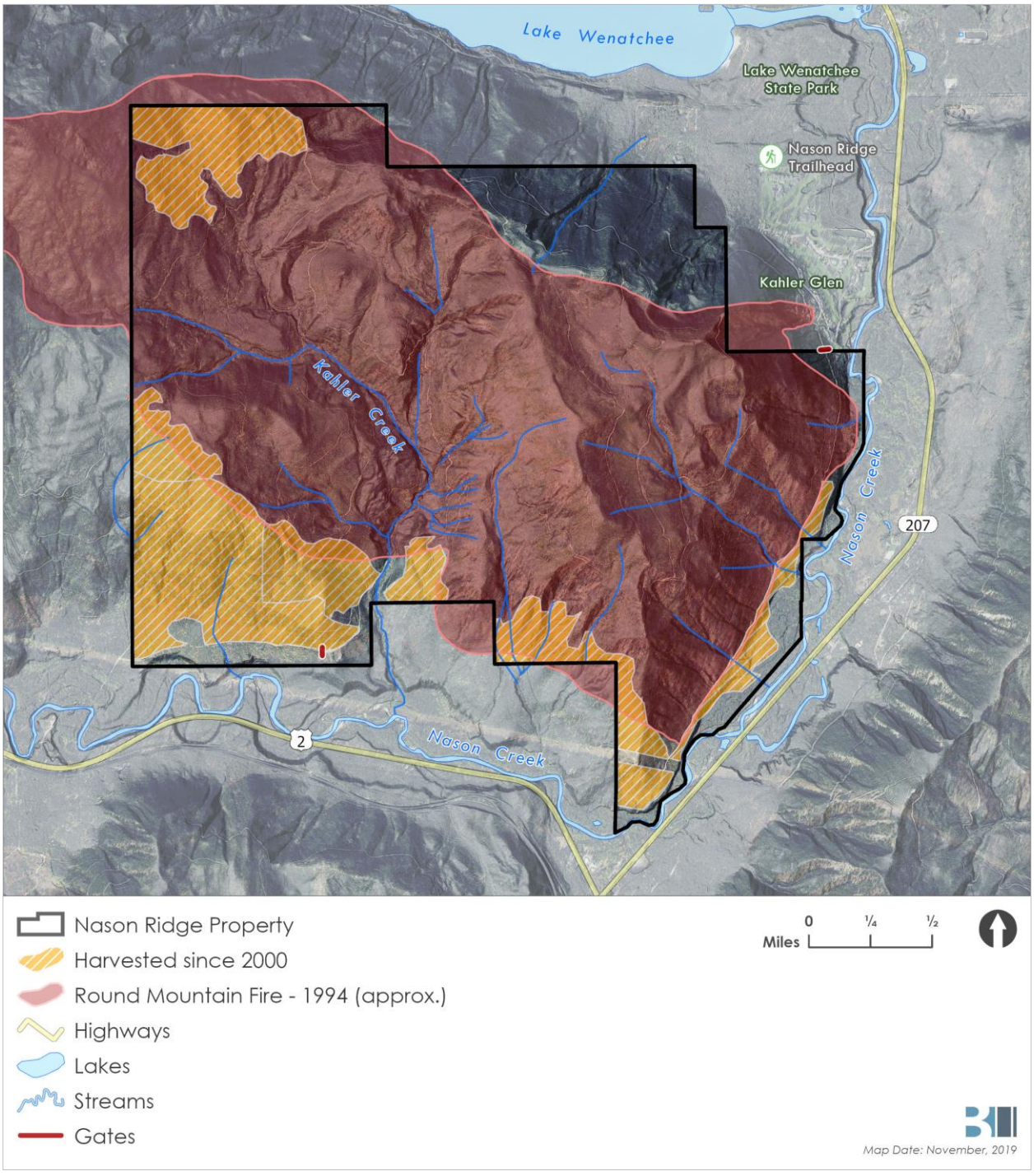
Source: Weyerhaeuser, 2018; Western Rivers Conservancy, 2019; BERK, 2019.

The 1994 Round Mountain Fire, which burned approximately 60% of the property, had the greatest influence on current forest conditions on Nason Ridge. Following the fire, the property was salvage logged and replanted with a mix of Douglas-fir and ponderosa pine. Due to site variability typical of a property located in the Cascade Transition Zone, regeneration success ranged significantly. Replanted stands located on the eastern and northern aspects of the property, which tend to be cooler and better able to retain winter precipitation, regenerated well and currently contain between 300–350 trees per acre. These trees are approximately 25-years old, between 7–9 inches diameter breast height, and approximately 40-feet in total height.

Replanted stands on western and southern aspects, which are hotter and drier, did not regenerate as quickly. While site conditions and competition with Ceanothsus has inhibited growth, these stands are stocked and, over time, conifers will dominate these areas. However, stocking levels vary and further inventory is necessary to determine average trees per acre, diameter distribution, and total height.

Several harvests occurred on the property in the 24 years between the 1994 Round Mountain Fire and June 2018 when Western Rivers Conservancy acquired the property (Exhibit 7). These harvests were primarily clearcuts and removed nearly all of the remaining merchantable timber on the property. However, these harvests were conducted in accordance with Washington Forest Practice Rules and harvested stands were replanted above required minimum stocking levels. While additional inventory work is necessary to determine exact stocking levels and species distribution, preliminary estimates are that these stands contain an average of 250–300 trees per acre. Most stands were replanted with Douglas-fir and ponderosa pine, and at higher elevations with a combination of Douglas-fir and western larch.

Exhibit 7 Natural & Mechanical Disturbance Since 1994



Source: Western Rivers Conservancy, 2019; USGS, 2019; BERK, 2019.

Approximately 220 acres on the northern aspect of Nason Ridge and riparian stands along Kahler and Nason creeks contain significant amounts of mature timber. The northern 220 acres, which was thinned in the early 2000s, contains approximately 1,850–2,000 MBF (abbrev. for thousand board feet) of Douglas-fir, grand fir, ponderosa pine, lodgepole pine, and western redcedar, including isolated old growth trees. Weyerhaeuser was preparing to harvest this area leading up to Western River Conservancy's (WRC) acquisition and this area should be considered an option for generating timber harvest revenue in the near-term.

Several smaller riparian stands adjacent to Kahler and Nason creeks contain another 250–350 MBF of Douglas-fir, grand fir, ponderosa pine, and western redcedar. However, these stands are within the expanded riparian management zones planned for the property so this timber should not be considered commercial available.

Exhibit 8 Current Forest Conditions

	Acres	Volume (MBF)
Mature timber	220	1,850 – 2,000
Pre-merchantable timber	440	
Recently planted (since 2000)	690	
Steep Slopes (>50%)	881	
Nason Creek Riparian Management Area	241	
Unknown	1,161	
Roads	72	N/A
Non-forested areas	9	N/A

Source: Western Rivers Conservancy, 2019; BERK, 2019.

Forest Health

Significant forest health issues do not appear present on the Nason Ridge tract based on initial inventory work.

In several stands, porcupines have peeled bark from young Douglas-fir trees, exposing the cambium layer in search of sugars and causing substantial damage. While most of these trees will survive and likely become excellent wildlife habitat trees, their commercial value is severely reduced or eliminated.

Mistletoe was observed in Douglas-fir, and also potentially exists in ponderosa pine and lodgepole pine. While this is impacting individual trees, the current level of infestation is not adversely affecting the overall forest. Limited occurrence of mistletoe can benefit wildlife by

creating nesting, roosting, resting, and feeding habitat for birds and tree-dwelling mammals (Edmonds *et al* 2011). Future managers should monitor presence of mistletoe and take appropriate action if the level of infestation increases beyond infrequent occurrence.

The road network is heavily infested with knapweed, which both increases erosion and fire risk from vehicle traffic. Managers should actively work to eliminate knapweed through repeated early season mowing prior to seed production.

Desired Future Conditions

Historically, the forest on Nason Ridge would have developed under a mixed severity fire (MSF) regime in the very long interval between stand replacement events. Large and very large Douglas-fir would have been present in the overstory prior to the commercial harvesting conducted over the past 100 years. The Round Mountain Fire and past management activities eliminated this structure and created a fairly homogeneous forest at Nason Ridge. The management objectives identified by the Nason Ridge Community Forest Advisory Committee and partners will be achieved by creating a more diverse, resilient forest similar to what existed in the past.

Over time, the property will transition to an uneven-aged forest by implementing single tree and group selection silviculture, and extending rotation lengths to an average of 80 years. To balance revenue generation with other management objectives, productive stands outside of riparian management areas and on slopes less than 50% will be targeted for timber production. Less productive stands on drier sites and stands on steeper slopes will be managed primarily for fuels reduction, wildlife habitat, and to enhance the aesthetic qualities of the property. Stands within the expanded riparian management areas will be managed for forest health, fuels reduction, and to improve aquatic habitat through enhanced filtration potential and increased canopy cover.

Selection Silviculture

During selection harvests, mature timber is removed either as single scattered trees or small groups of trees at periodic intervals to open growing space for regeneration. The purpose of selection silviculture is to establish or maintain uneven-aged structure and promote diversity within forest stands. Uneven-aged stands contain at least three distinct age classes, all occupying approximately the same area within the stand, and stands can be either uniform or irregular in structure (Smith *et al* 1997).

A primary reason for establishing and maintaining uneven-aged stands is to ensure the continual presence of some large trees. The continual presence of large trees meets several management objectives for Nason Ridge, including the ability to achieve sustained yield on the 3,714-acre property. Additionally, the juxtaposition of young and old trees supports wildlife habitat through increased diversity and complex forest structure.

During single tree selection harvests, mature trees will be removed on an individual basis. Single tree selection will open growing space for residual trees while also retaining canopy cover to inhibit brush growth. While single tree selection can create ideal sustained-yield conditions within a stand, it is difficult to naturally regenerate shade intolerant species, including Douglas-fir. Accordingly, single tree selection harvests will primarily be used to convert even-aged stands to uneven-aged stands on south and west facing aspects, where there will be fewer trees per acre, and in areas where the goal is to promote late seral forest structure.

Group selection harvests are a more efficient method for managing uneven-aged stands. During groups selection harvests, clumps of trees are removed in the same cutting cycle to create larger openings in the canopy cover. These openings generally range in size from 0.25–4 acres depending on tree height and the desired outcomes. At the stand level, group selection silviculture maintains the age-class and species diversity qualities associated with uneven-aged management, while also reducing harvest costs and damage to residual trees in the stand.

Determining size of group selection openings:

Opening Area = $((AvgTHT * 1.5)^2 * \pi)$ /43,560

Where AvgTHT = average total height of tallest trees in the stand

Considering Nason Ridge's size, stand composition, and site variability, future managers will need to apply a combination of group selection and single tree selection when planning future harvests in areas targeted for timber production. Important considerations will include variation in opening size (greater number of 0.25–0.5 acre openings over 3–4 acre openings) and how treatments evolve over time as the forest matures and site conditions change with increased temperatures and reduced precipitation. Implementing a forward thinking, adaptive management strategy will balance sustained-yield with natural regeneration needs, while also meeting the other management objectives at Nason Ridge.

Pre-commercial & Commercial Thinning

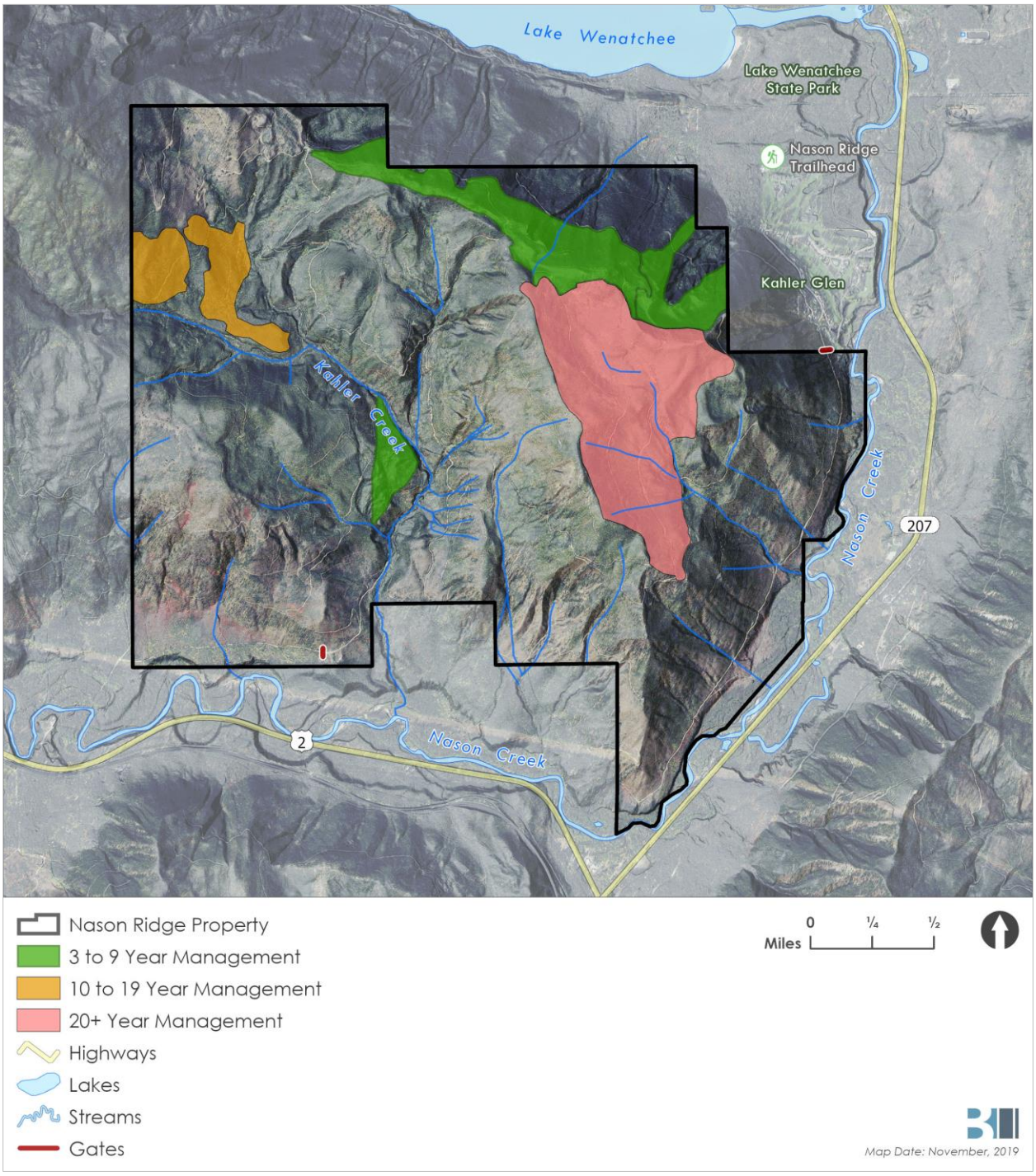
Pre-commercial and commercial thinning will also be important silvicultural tools for forest managers at Nason Ridge. As mentioned above, much of the property is in a single age-class because of the Round Mountain Fire. Additionally, the silviculture employed by previous owners created large, single-aged stands. Many of these stands were replanted at a stocking level of 300–350 trees per acre. As these stands mature, competition between trees will increase, and

growth rates will decrease. Pre-commercial and commercial thinning will reduce competition between trees and ensure growth is as robust as the various sites allow. Commercial thinning, or thinning from below, will also move stands towards uneven-aged structure more quickly by removing co-dominant and suppressed trees and retaining the tallest and most vigorous trees. This will prepare the stand for single tree and group selection on the next cutting cycle and the opportunity to regenerate the second cohort of trees in the stands.

Nason Ridge's location on the east side of the Cascades makes implementing pre-commercial thinning more economically challenging. The lack of local markets for small diameter logs and the long haul distance to west side mills that might purchase small diameter logs will make it difficult, if not impossible, for pre-commercial thinning to be revenue positive. Accordingly, implementing pre-commercial thinning will likely be dependent on grant funds, or possibly conducted in tandem with similar activities on adjacent Forest Service lands.

Commercial thinning is a more financially viable silvicultural tool, but will come with its own set of challenges at Nason Ridge. These treatments will both generate a modest amount of revenue and achieve the desired structural and age-class diversity desired in uneven-aged strands. However, due to the relatively young age of most stands at Nason Ridge, it will be approximately 10–15 years before commercial thinning is a management option for most of the property (the exception is the 220-acres of mature timber identified in Exhibit 9 as the 3–9 year management area). During that time, competition from brush and other trees will slow growth rates, which may push commercial thinning farther into the future. Finally, implementing commercial thinning will require balance between harvesting enough large logs to pay for the treatment while also retaining the largest, most vigorous trees for future use.

Exhibit 9 Timeframe for Forest Management



Source: Western Rivers Conservancy, 2019; BERK, 2019.

Clear Cutting

A range of age classes must be present in the future forest at Nason Ridge for long-term sustainable forestry to be practices. While clearcutting was a widely employed silvicultural system when Nason Ridge was part of a larger land base, it would be extremely difficult to continue this practice and achieve the desired age class diversity now that Nason Ridge is being managed as a single property. Accordingly, clearcutting and other even-aged silvicultural systems (e.g. seed tree harvests) will be applied only when justified by forest health concerns, such as pest or pathogen outbreak, or to achieve a desired forest structure outcome.

In all instances, when even-aged silvicultural systems are selected as the preferred treatment method, harvest units will be as small as possible to achieve the desired outcome, and timber harvest plans containing the ecological argument for implementing an even-aged treatment must be presented to the Nason Ridge Advisory Committee for review and public comment.

Annual Allowable Harvest

For many commercial forest owners, sustainable forest management is achieved when annual harvest levels are equal to annual growth rates across a property or other defined management area. Sustainable management at Nason Ridge is more complex and will require forest managers to take multiple management objectives into account when planning timber harvests.

Establishing an acceptable annual allowable harvest volume will aid in this process and be an important component of generating consistent revenue to support management needs, while also meeting additional management objectives at Nason Ridge. Recognizing that improved wildlife and riparian habitat are two primary objectives for the property, forest growth will exceed harvest over time. This is especially true for the near-term in order to increase the number of stands with trees in merchantable size classes and harvestable volumes. However, as commercial stands mature and volume per acre reaches desired levels, harvest can increase to a level where harvest and growth are more balanced.

Growth rates vary significantly by site at Nason Ridge, and some stands may have shorter rotation lengths and greater volumes removed on a per-acre basis. Annual allowable harvest should be measured on a property-wide basis to allow for greatest management flexibility. Maintaining a continuous forest inventory will be a critical component of establishing a property-wide annual allowable harvest level that balances revenue generation with other management objectives across different areas of the property.

Extended Rotation Lengths

Extending harvest rotation lengths is a critical component of meeting the management objectives identified by the Nason Ridge Advisory Committee. At a minimum, longer rotations result in older stands, which directly supports the creation of at least three distinct age-classes necessary for uneven-aged management. Extending harvest rotation lengths can increase mean tree size within a stand, resulting in potential increased carbon sequestration and storage in the forest.

While rotations will vary somewhat on a stand by stand basis, establishing an average rotation length of 80-years will help managers achieve the forest management objectives identified at the beginning of this chapter. On drier, pine dominated sites rotations will likely be longer than 80-years, and on wetter, fir and larch dominated sites rotation lengths may be slightly shorter than 80-years.

An 80-year average rotation length in an uneven-aged stand allows for a 25–30 year cutting cycle while maintaining three separate age-classes. As the standing volume of timber increases over time and stands develop the age-class and structural diversity associated with uneven-aged silviculture, annual growth and harvest will be balanced. Based on initial inventory work and field observations, the following table presents the estimated sustained yield harvest potential on more productive, intensively managed stands at Nason Ridge.

Exhibit 10 Anticipated Sustained Yield Harvest Schedule Over Time at 80-year Rotation Length

Productive acres	25–30 year cutting cycle	Annual growth	Avg. Harvest volume	Annual harvest
2,000	75 acre/year	250 BF/year	5 - 6.5 MBF/acre	350 - 500 MBF/year

Source: Western Rivers Conservancy, 2019.

Timber production will not be the primary management objective for stands in riparian management areas, on slopes greater than 50%, or on unstable landforms. While harvest will occasionally occur in these stands, the driving objectives will be forest health, fuels reduction, and climate resilience. Managers should focus on carrying forward and recruiting large Douglas-fir and ponderosa pine on these sites because of their thick bark and fire tolerance. Growth will exceed harvest in these stands and harvest rotations will likely extend beyond 80-years.

Species Composition

Nason Ridge hosts a diverse array of species, which is common for the Cascade Transition Zone but is unique for Chelan County and the east side of the Cascades (Exhibit 11). Enhancing this diversity will contribute to several management objectives, include forest health, wildlife habitat, and climate change resiliency.

Exhibit 11 Nason Ridge Observed Species

Conifer trees		Broad-leaved trees
Douglas-fir	Western hemlock	Bigleaf maple
Grand fir	Western larch	Rocky Mountain maple
Silver fir	Western redcedar	
Ponderosa pine		Red alder
Western white pine		Cottonwood
Lodgepole pine		

Source: Western Rivers Conservancy, 2019.

Past management activities largely favored the most commercially valuable species for the area, which has consistently been Douglas-fir. While Douglas-fir grows well on multiple sites within the property, there are extensive areas where ponderosa pine and western larch are better adapted species. Future forest management activities at Nason Ridge will seek to promote and regenerate species based on their suitability to specific sites rather than commercial value. This will primarily translate into regenerating a mix of Douglas-fir, western larch, and ponderosa pine on productive sites and favoring ponderosa pine on southern and western aspects.

Grand fir is one of the more common species found at Nason Ridge, especially in areas not impacted by the Round Mountain Fire. Grand fir is moderately drought tolerant and grows well in shady environments, which makes it well suited for conditions at Nason Ridge. Grand fir responded well to Longview Fiber's commercial thinning on the northeastern portion of the property in the mid-1990s, as well as areas where the Round Mountain Fire burned with lower intensity. In both of these locations, grand fir quickly occupied available growing space and became a dominant species. However, initial field work revealed a significant amount of mature grand fir in the northeastern portion of the property is dead or dying. Whether this stress was caused by competition from other trees or environmental factors, future managers should concentrate on reducing the presence of grand fir in the stands where it is abundant. Removing grand fir from these stands will both improve forest health and reduce the presence of a species not well adapted to fire.

Continuous Forest Inventory (CFI)

Developing a Continuous Forest Inventory (CFI) program and establishing permanent CFI plots will play an important role in helping forest managers develop and maintain reliable data about species composition, forest productivity, annual growth volumes, and how forest conditions change over time based on management activities. This data is critical for making informed management decisions. Establishing these plots in the near-term (i.e., within 5 years) will help managers understand growth rates at Nason Ridge and when commercial stands reach density, size classes, or volumes that warrant treatment or harvest.

CFI plots should be measured on a regular basis (every 7−10 years) in order to ensure the multiple management objectives at Nason Ridge are being met. Data gathered during re-measurement will help balance harvest levels with annual growth, both in commercial stands and across the property, and provide critical information about the structure and health of upland reserves and riparian areas.

Additional Consideration

Steep Slopes

The management objectives identified by the Nason Ridge Advisory Committee require future managers to adopt a broader management strategy and consider how various management activities impact other resources on the property. The Nason Ridge tract boarders 2.5 miles of Nason Creek, one of the most important aquatic resources in the Upper Wenatchee River Basin. Protecting and enhancing this resource is a fundamental goal of all future management at Nason Ridge. In certain instances, practices allowed by the Washington Forest Practice rules, which may be common among commercial forestland owners, will be prohibited at Nason Ridge.

Logging operations on steep slopes have greater potential to contribute fine sediment to adjacent stream and rivers through ground disturbance and road construction and failure. In order to protect the aquatic resources in Kahler and Nason creeks, no more than 10% of a commercial timber harvest unit shall occur on slopes that exceed 50% (Exhibit 12). In cases where harvest units contain areas where slopes exceed 50%, managers must employ best management practices to mitigate impacts to water quality.

Non-commercial management activities, such as forest health treatments or fuels management, may require operations on slopes that exceed 50%. Managers must communicate the need for these treatments and the best management practices in place to mitigate impacts to water quality to the Nason Ridge Advisory Committee prior to implementation.

Logging equipment has advanced significantly in recent years and technological advances will likely occur in the future. This steep slope harvest restriction should be revisited overtime to ensure relevance.

Riparian Management Areas

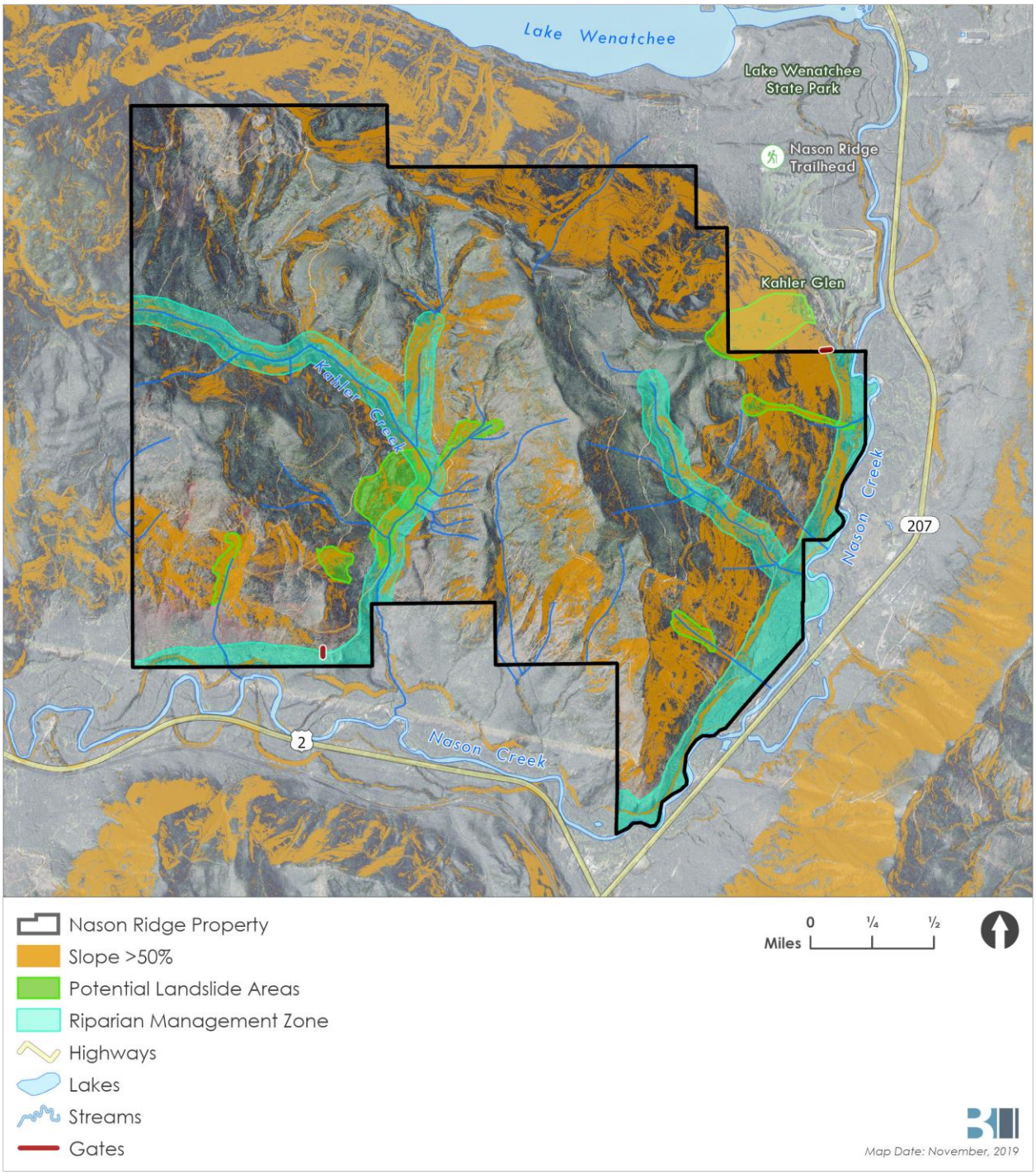
Forest management in riparian areas at Nason Ridge will also likely differ from the minimum requirements established by the Washington Forest Practice Rules. In order to protect and enhance water quality, reduce water temperature, and provide a mechanism for contributing large wood debris into streams, the riparian buffers on the property will likely be larger than required by Washington Forest Practice Rules, especially along Nason Creek.

Under the guidance of this management plan, the Riparian Management Area (RMA) for Nason Creek shall consist of all the area between the "Perimeter Road" and Nason Creek. While this creates an RMA with variable widths, the Perimeter Roads is a clear management boundary and is easily recognizable by managers on the ground.

In order achieve the water quality and habitat objectives described above, no commercial harvest units will be located within the Nason Creek RMA. Non-commercial management activities may be employed in the Nason Creek RMA to enhance forest structure, mitigate forest health concerns, improve wildlife habitat, or provide other ecological benefit. In these instances, managers will present the desired ecological outcomes, method(s) for achieving them, and best management practices to mitigate negative impacts to the Nason Ride Advisory Committee.

RMAs along Kahler Creek will likely follow Riparian Management Zone (RMZ) requirements established by Washington Forest Practice Rules. Exhibit 12 illustrates the areas that will likely be included in the RMA. Other streams and buffers not identified here may be included as future RMAs.

Exhibit 12 Steep Slopes >50%, Potential Landslide Areas, & Riparian Management Zone



Source: WA DNR, 2019; Chelan County, 2019; Western Rivers Conservancy, 2019; BERK, 2019.

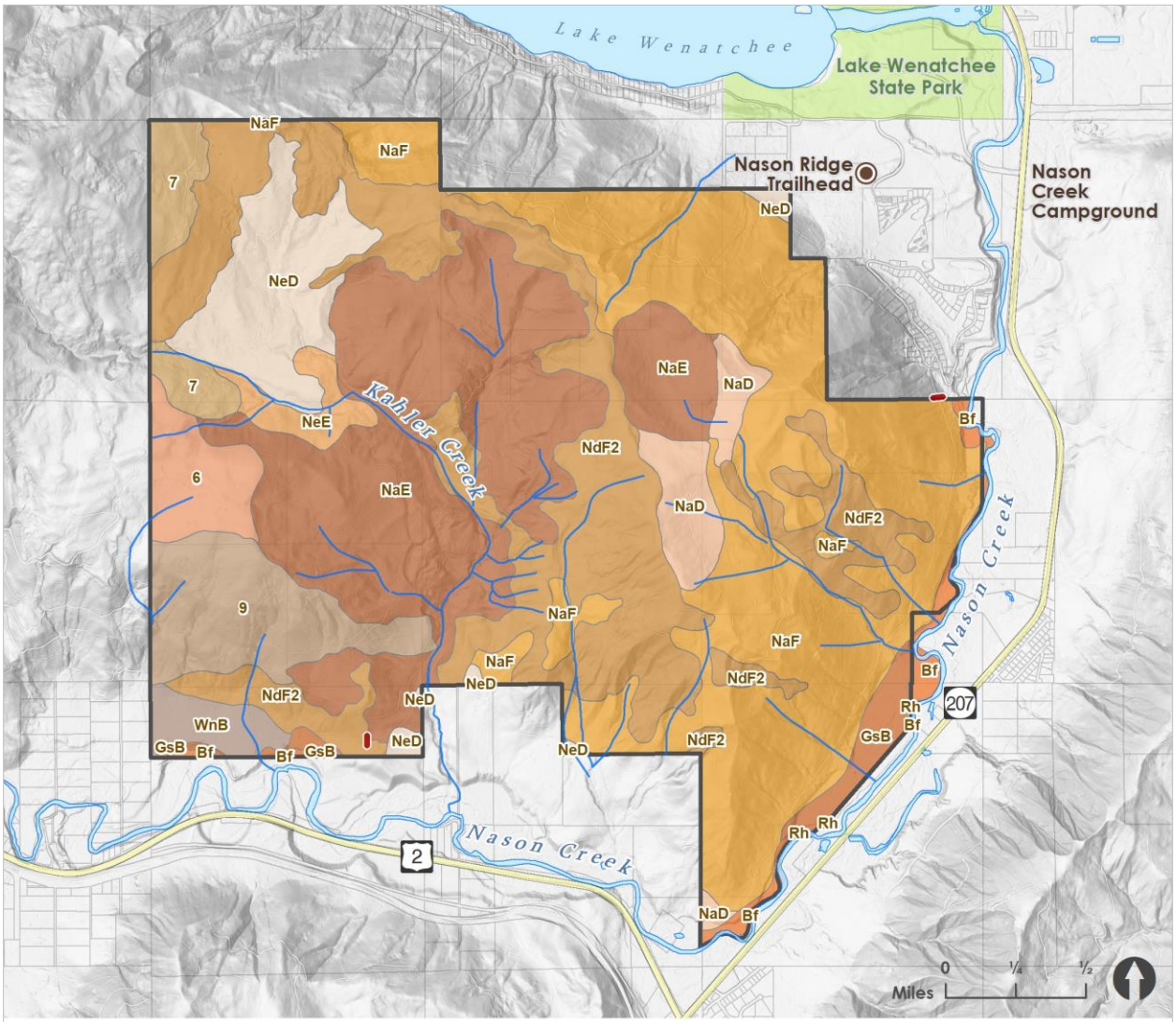
Soils

According to NRCS Web Soil Survey, 77.5 % of the soil on Nason Ridge is a silty loam or rock outcrop in the Nard Series (Exhibit 13Exhibit 12). The Nard Series consists of deep and very deep, moderately well drained soils formed in residuum and colluvium from sandstone and old alluvium with an influence of volcanic ash and loess in the surface. Nard soils are on foothills, dipslopes, and terraces, have slopes of 0−65%, and are fairly common on the eastside of the Cascades. Nard Series soils typically support timber production, livestock grazing, recreation, wildlife habitat, and watershed. Native vegetation is Douglas-fir, ponderosa pine, and grand fir with an understory of pinegrass, rose, spirea, pachystima, vetch, serviceberry, lupine, Oregon-grape, common snowberry, elk sedge, huckleberry, hazel, princes pine, and creambush oceanspray. The remaining soils are spread across several classifications of sandy or gravely loams (USDA NRCS).

Overall, soils on Nason Ridge are fairly productive for properties on the east side of the Cascades. Site class is generally a site III with some low site II along the watercourses and site V associated with rock outcroppings.

Due to composition of the soil at Nason Ridge there are a number of unstable areas on the property (Exhibit 12). These landslide areas occur naturally on steep slopes and where the movement of water has weakened soil stability, or where road construction and/or placement has affected soil stability. Some of these landslide areas have the potential to contribute sediment to Kahler and Nason Creeks. Additionally, unstable slopes on the northeastern portion of the property have the potential to impact residential development in the Kahler Glen subdivision.

Exhibit 13 Nason Ridge Property Soil Composition



Source: NRCS, 2019; BERK, 2019.

Fire & Fuels Management

Forests on the eastern side of the Cascades historically experienced frequent, low-severity fires roughly every eight years (Wright & Agree, 2004). However, beginning around 1900, the forests around Nason Ridge began being managed for commercial timber production and natural fire was excluded from the landscape. The impacts and consequences of fire suppression policy adopted in the early 20th century are well understood, and we are now in an era when large, highly destructive fires are common.

Nason Ridge is no exception. While ponderosa pine, Douglas-fir, and western larch develop thick bark and high crowns, grand fir (now a prolific species on the property) is highly susceptible to fire. Furthermore, the abundance of grand fir in the understory—a product of its relative shade tolerance and past management and disturbance as discussed earlier in this chapter—exacerbates the problem by acting as ladder fuel that transports ground fire into the canopy. Through this mechanism, what could be a beneficial low-severity fire becomes a catastrophic event with significant impacts to future forest composition, water quality, carbon emissions, and increasingly human property and life.

The Nason Ridge property is located adjacent to significant infrastructure that, if disrupted by a wildfire, would have widespread impacts across Washington: State Route 2 is a major east-west artery connecting the Seattle metro area to eastern Washington; high-voltage transmission lines crossing the property carry electricity from hydropower dams on the Columbia to consumers in the Seattle area; and Lake Wenatchee and Leavenworth are popular vacation destinations. Local impacts from wildfire would be significant as well, especially for people with homes in the Kahler Glen subdivision, residents on Butcher Creek Road, and homeowners along the southern edge of Lake Wenatchee.

Accordingly, fuels management is a critical component of forest management at Nason Ridge. In the near-term, constructing a fuel break along Nason Ridge will provide increased protection to residents on the northeastern boundary of the property. On a tactical level, a fuel break on the ridge will provide critical defensible space for firefighters attempting to contain a low-intensity fire, or a line of last resort for burnout operations in the event of a more intense fire. Constructing the fuel break can coincide with a commercial thinning on the northern portion of the property to help offset implementation costs and increase the footprint of the project area.

While widespread brush management is not likely financially feasible, conifers will shade out the ceanothus (lilac family) over time. As conditions allow, either through natural succession or mechanical treatment, managers will introduce prescribed fire as a fuels management tool. Ponderosa pine sites on southern and western aspects will be the primary locations for prescribed fire.

In 2016, the Washington State Legislature directed Washington Department of Natural Resources (DNR) to develop a forest health strategic plan to "treat areas of the state forestland that have

been identified by the department as being in poor health." The 20-Year Forest Health Strategic Plan is the high-level framework guiding the State's work and investments to improve forest health, help forests adapt to projected climatic changes, and achieve forest-related ecological, economic, and social benefits in Central and Eastern Washington (DNR 2018).

DNR identified planning areas based on priority watersheds. The Nason Ridge property is split between the Upper Wenatchee and Nason Creek Planning Areas. DNR completed the landscape evaluation for the Upper Wenatchee Planning Area in 2018 and will complete the evaluation for the Nason Creek Planning Area in 2020. Both planning areas are high priorities for implementing forest health treatments, ranking 2.5 and 3.0 respectively on a scale of 0−3. The DNR report identifies public and private land in these planning areas as candidates for treatment and will request funds from the legislature.

It appears there is a great deal of momentum behind this initiative and that DNR will receive substantial funds from the legislature to implement the program. Nason Ridge is a prime candidate for forest health and fuels management treatments and will actively participate in this program.

Fish & Wildlife & Species of Concern

Improving and protecting fish and wildlife habitat at Nason Ridge was a driving factor behind WRC's acquisition of the property and will be a key management objective moving forward. Nason Ridge's location in the eastern Cascades, varied topography, proximity to undeveloped National Forest land, and critical aquatic resources provide habitat to many species, including several listed as threatened or endangered.

The following species were identified on the Washington Department of Fish and Wildlife (WDFW) Priority Habitat and Species online mapping tool:

Exhibit 14 Priority Habitat Species Identified Fish & Wildlife Species at Nason Ridge

Common Name	Scientific Name	Priority Area
Bull Trout	Salvelinus malma	Breeding Area
Rainbow Trout	Oncorhynchus mykiss	Occurrence/Migration
Steelhead	Oncorhynchus mykiss	Occurrence
Summer Steelhead	Oncorhynchus mykiss	Breeding Area
Westslope Cutthroat	Oncorhynchus clarki lewisi	Occurrence/Migration
Chinook	Oncorhynchus tshawytscha	Occurrence
Spring Chinook	Oncorhynchus tshawytscha	Breeding Area
Northern Spotted Owl	Strix occidentalis	Occurrence, Breeding Area, Management Buffer

Common Name	Scientific Name	Priority Area
Mule Deer	Odocoileus hemionus	Migration, Breeding Area
Gray Wolf	Canis lupus	Occurrence
Yuma myotis	Myotis yumanensis	Breeding Area

Source: WDFW, 2019.

In addition to the species identified on the Priority Habitat and Species map, Nason Ridge also hosts the following birds and mammals:

Exhibit 15 Bird Sightings

Common		
Stellar Jay	Varied Thrush	American Robin
Gray Jay	American Goldfinch	Northern Flicker
Western Tanager	Ruffed Grouse	Belted Kingfisher
American Crow	Barred Owl	California Quail
Black-capped Chick-a-dee	Red Tailed Hawk	Wild Turkey
Red-breasted Nuthatch	House Wren	Raven
		Bald Eagle
		Osprey
Uncommon		
Blue Grouse	Northern Goshawk	Clarks Nuthatch
Mountain Bluebird	Pileated Woodpecker	Great Horned Owl
Northern Pygmy Owl		

Source: Western Rivers Conservancy, 2019; WDFW, 2019.

Exhibit 16 Mammal Sightings

Common		
Mule Deer	Black Bear	Racoon
Black Tailed Weasel	Pine Squirrel	Chipmunk
Coyote		
Uncommon		
Cougar	Bobcat	Elk
Moose		

Source: Western Rivers Conservancy, 2019; WDFW, 2019.

Forest management activities will be conducted in a manner that minimizes impact to fish and wildlife at Nason Ridge. At a minimum, Nason Ridge will be managed pursuant to state and federal guidelines for threatened and endangered species. Managers will conduct surveys following relevant, current protocols for those species prior to any planned ground-disturbing activities (e.g., habitat restoration, timber harvest, bridge or culvert replacement, road construction or maintenance). If species of concern are found to be present, the general results of species surveys shall be presented to the Nason Ridge Advisory Committee along with associated best management practices to minimize impacts.

The Nason Ridge Advisory Committee may identify additional priority species at Nason Ridge beyond state and federal regulations.

In addition to protecting existing populations of priority species, forest management will also seek to improve upland forest habitat and promote habitat diversity across the property. When marking stands for harvests, foresters will retain large snags and live trees with habitat like broken tops and nesting cavities. Foresters will also create "skips" by retaining areas with unique structure beneficial for wildlife. Overall forest management activities should seek to develop more complex forest structure and resilient habitat.

Short-term Management Activities (1-10 Years)

- Design and implement a forest inventory to gather data sufficient for management needs for 10 years.
- Consider establishing Continuous Forest Inventory plots.
- Identify and replant understocked areas with site appropriate species.
- Implement commercial thinning and construct shaded fuel break along Nason Ridge.
- Implement pre-commercial and commercial thinning in stands identified for timber production.
- Conduct brush management in stands identified for timber production where competition with brush is inhibiting growth.
- Conduct brush management on south and west aspects to reduce fuel loading and potential for severe wildfire.
- Monitor forest health and presence of invasive species.
- Continue to implement noxious weed control on roadways.

Long-term Management Activities (11-20 Years)

- Implement commercial thinning in appropriate stands.
- Implement pre-commercial thinning in appropriate stands.
- Implement single tree and group selection harvests in stands supporting such activities.
- Continue fuels management and creation of defensible space.
- Update inventory and/or remeasure Continuous Forest Inventory plots.
- Monitor forest health and invasive species.

3

Riparian Management / Aquatics

Objectives

The functions of a healthy riparian zone used to guide development of management objectives for this plan include:

1. Protect wildlife species, including ESA listed salmonids.
2. Protect and restore aquatic resources and water quality.
3. Create and maintain healthy forests that provide habitat for wildlife, a healthy and functioning watershed, and fire resiliency.

Riparian management objectives include:

1. Maintain existing high quality forested areas.
2. Enhance riparian vegetation as needed to facilitate sediment removal and erosion control, protection of water quality, moderation of shade and water temperature, and habitat structural diversity.
3. Retain vegetation on steep slopes and in riparian management zones to protect water quality, flow regime, habitat structure, food source, and access for salmonids.
4. Reduce the road density to restore the natural hydrologic cycle within Nason Creek and reduce fine sediment inputs to Nason Creek.
5. Provide opportunities for natural history and land management education by creating a living classroom for all education levels.

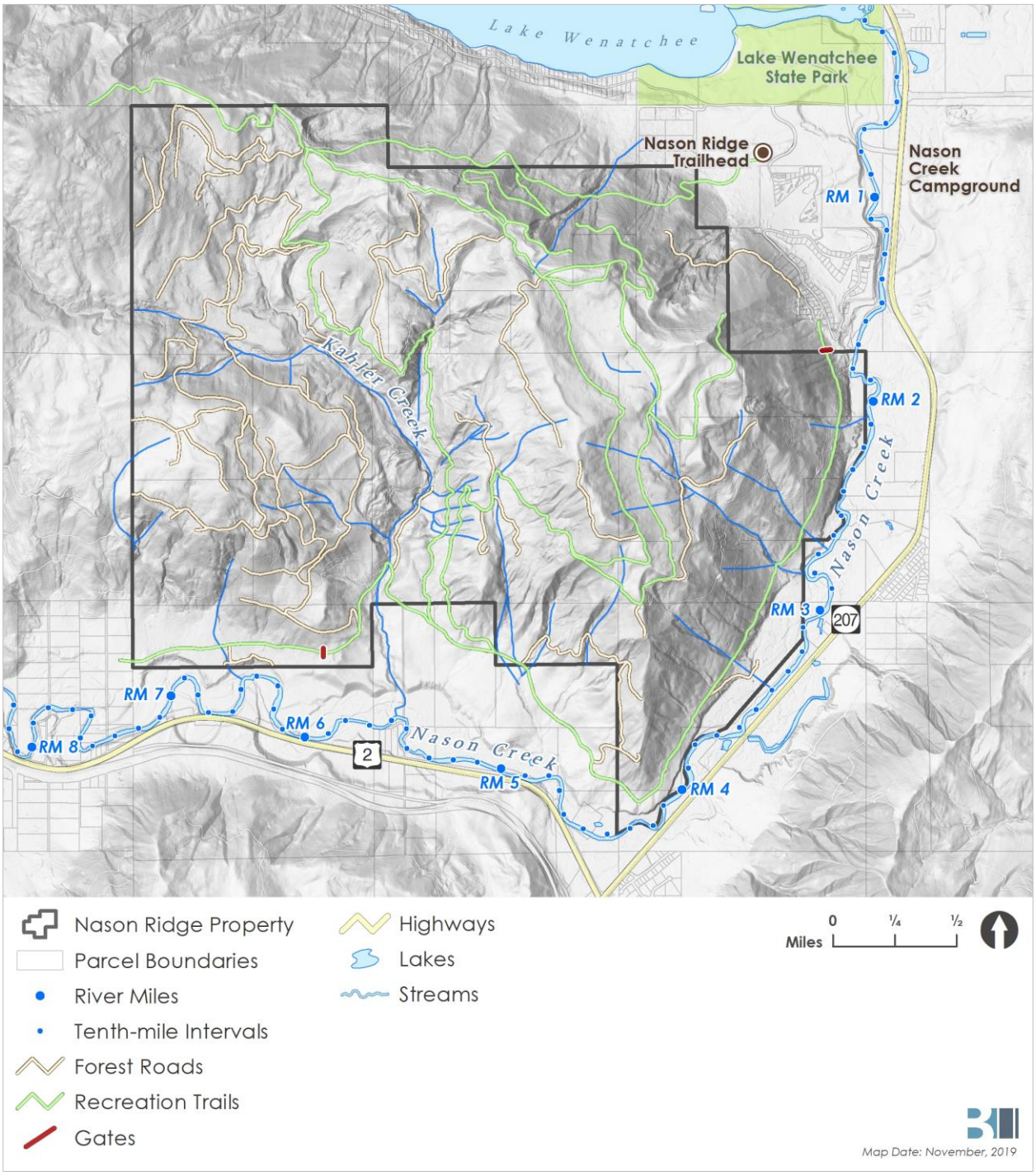
Current Conditions

Nason Creek

Nason Creek drains a 69,010 acre area and is a tributary to the Wenatchee River at Wenatchee river mile (RM) 53.6, contributing 18% of the Wenatchee Watershed's annual flow. Native salmonid species in the Nason Creek Sub-watershed are spring Chinook, steelhead, migratory and resident bull trout, and westlope cutthroat trout. Flows in Nason Creek range from an annual low flow of ~40 cubic feet per second (cfs) to annual high flow events of ~ 800−1,000 cfs.

Nason Creek flows north, forming the eastern site boundary from RM 4.7 to RM 2.5 (Exhibit 17). Nason Creek also flows east near the southern parcel boundary—however, there are some privately owned parcels located between Nason Creek and the Nason Ridge parcel along the southern boundary.

Exhibit 17 Nason Creek



Source: Chelan County, 2019; BERK, 2019.

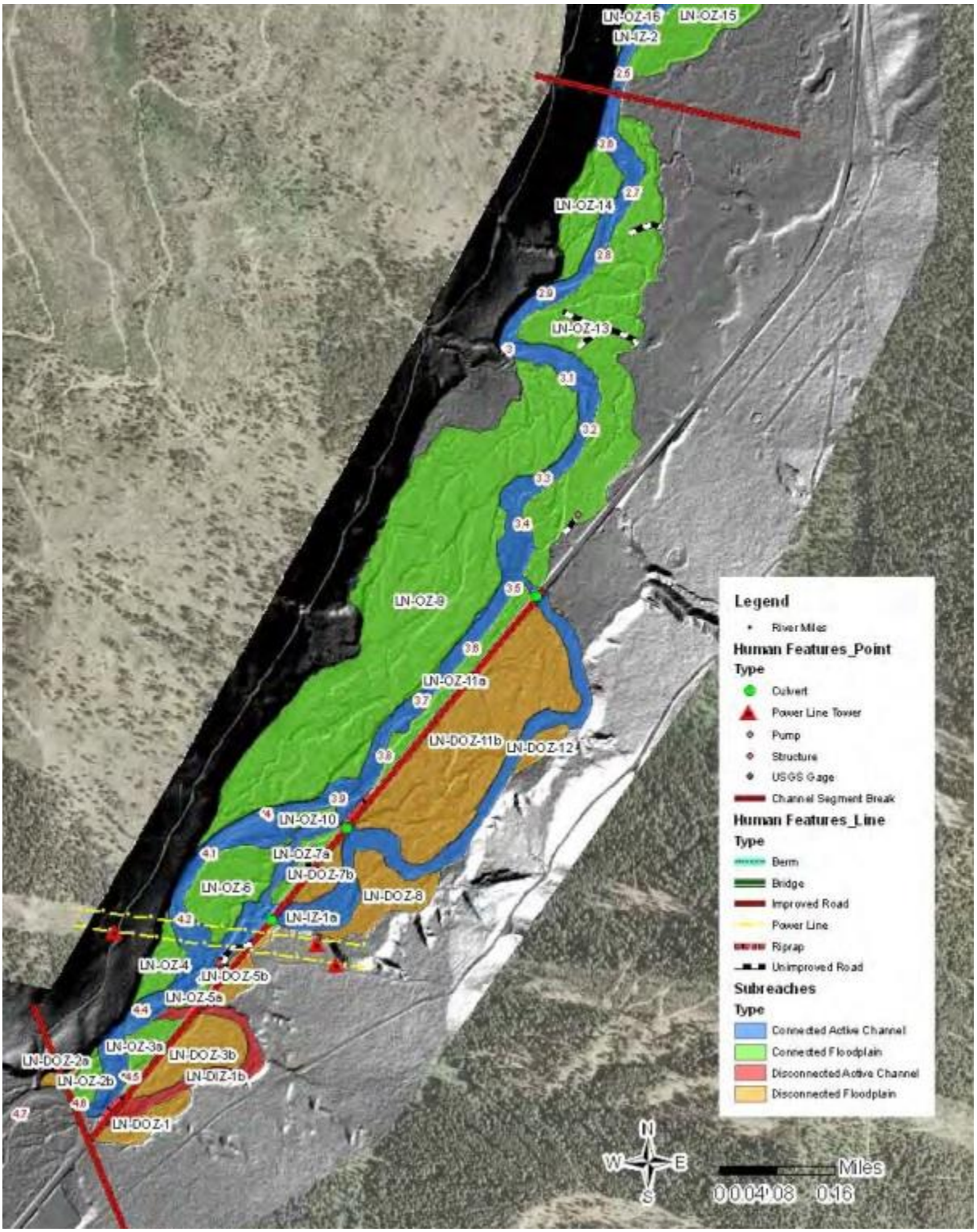
The lower 4.6 miles of Nason Creek is well-connected to floodplain habitat without any anthropogenic features present on the left river side of Nason Creek within the Nason Ridge parcel (Exhibit 19) (BOR, 2011). A video that documents existing conditions within the floodplain habitat adjacent to the project area is available online at: https://www.co.chelan.wa.us/natural-resources/pages/habitat-projects

Exhibit 18 Photo of Lower Nason Creek

Source: TaraFrima Designs, 2019.

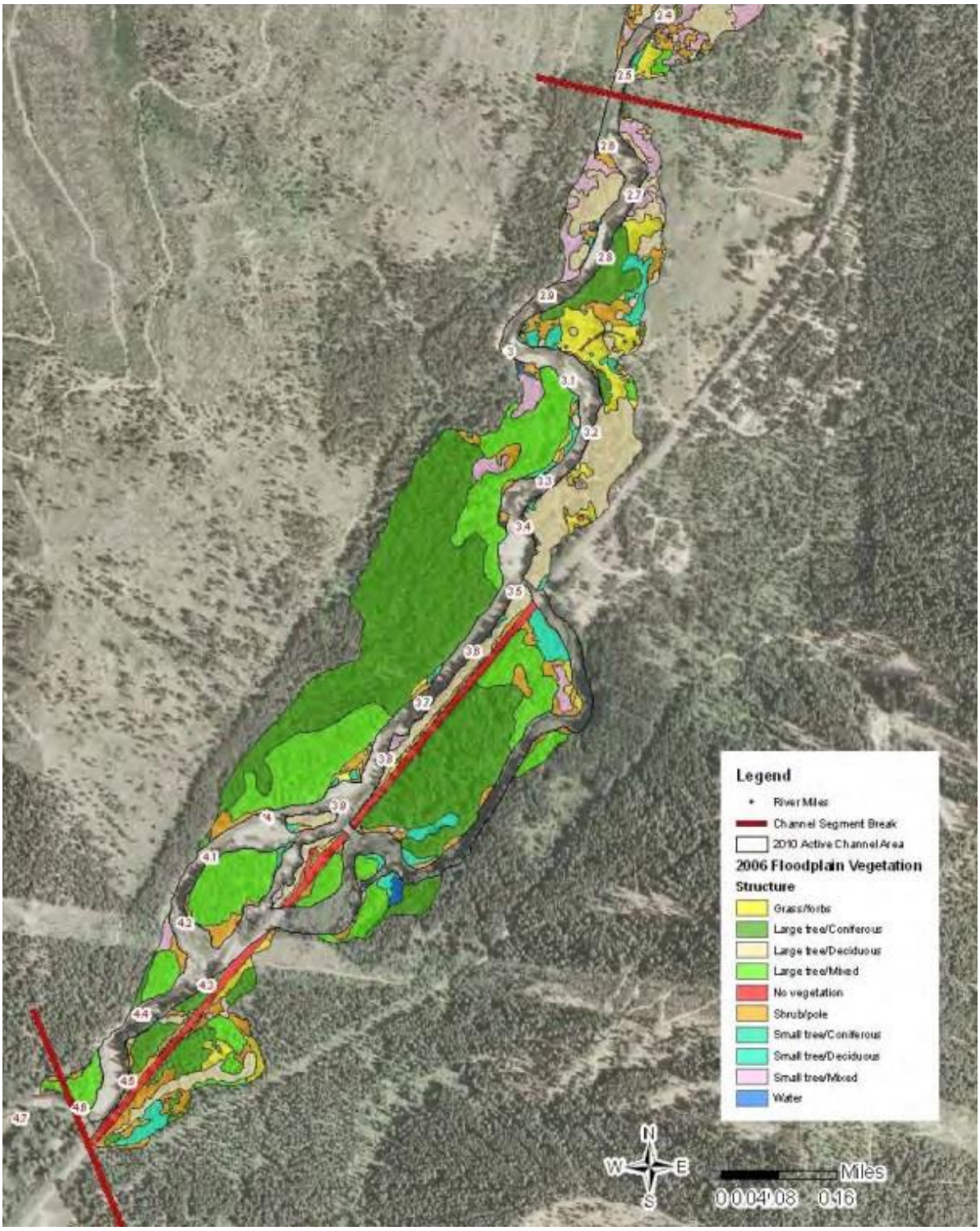
Floodplain vegetation in Nason Creek is recovering from turn-of-the century logging and is generally in good condition with the exception of the infrastructure corridors (USFS 2008). On the Nason Ridge parcel (from RM 2.5-4.6), riparian vegetation within the floodplain of Nason Creek is dominated by native shrubs and trees (both deciduous and coniferous) (Exhibit 20).

Exhibit 19 Floodplain Habitat



Source: BOR, 2011 (Figure 10).

Exhibit 20 Vegetation Structure Adjacent to the Active Channel & within the Floodplain



Source: BOR, 2011 (Figure 12).

Upstream of Coles corner, the Great Northern Railroad was routed up Nason Creek and across Stevens Pass in the 1890s. State Route 2 also traverses the sub-watershed. Both the highway and railroad follow the creek, have fragmented the habitat, and constrained channel movement above RM 5.

Periods of high water temperature are a concern for salmonid survival in Nason Creek; the Washington Department of Ecology lists Nason Creek waters as impaired (WDOE 2005). A Temperature Maximum Daily Load (TMDL) assessment was conducted on the Wenatchee River and tributaries in 2002−2003. Temperature probes placed throughout Nason Creek documented temperatures that exceed water quality criteria during the summer months in the middle and lower Nason Creek reaches (USFS 2008).

The causes of high temperatures are likely synergistic due to stream channel morphology, increased fine sediment inputs, and disconnection from floodplain areas. Nason Creek loses cold water inputs from valley wall springs, tributaries, hypoheic zones, and groundwater as a result of disconnected floodplain areas. Floodplain disconnection also channelizes flows, increases bed incision, increases stream channel mobility, and thus increases fine sediment deposition from bank erosion (USFS 2008).

The Nason Creek watershed contains highly erosive soils, exacerbated by steep slopes in the area. Fine sediment naturally originates from hillslopes, but lack of road maintenance, undersized culverts, and poor road location have also impacted stream conditions. Increased surface erosion and altered infiltration contribute to mass failures which increase the fine sediment deposition to stream systems and may ultimately contribute to changes in the timing and duration of stream flows (paragraph text adapted from USFS 2008).

Meeting water quality standards and protecting salmonid habitat are the primary riparian management objectives in the Nason Creek sub-watershed. Temperature, limited habitat diversity, channel instability, sedimentation, and obstructions could pose risks for salmonid populations in the sub-watershed.

Kahler Creek

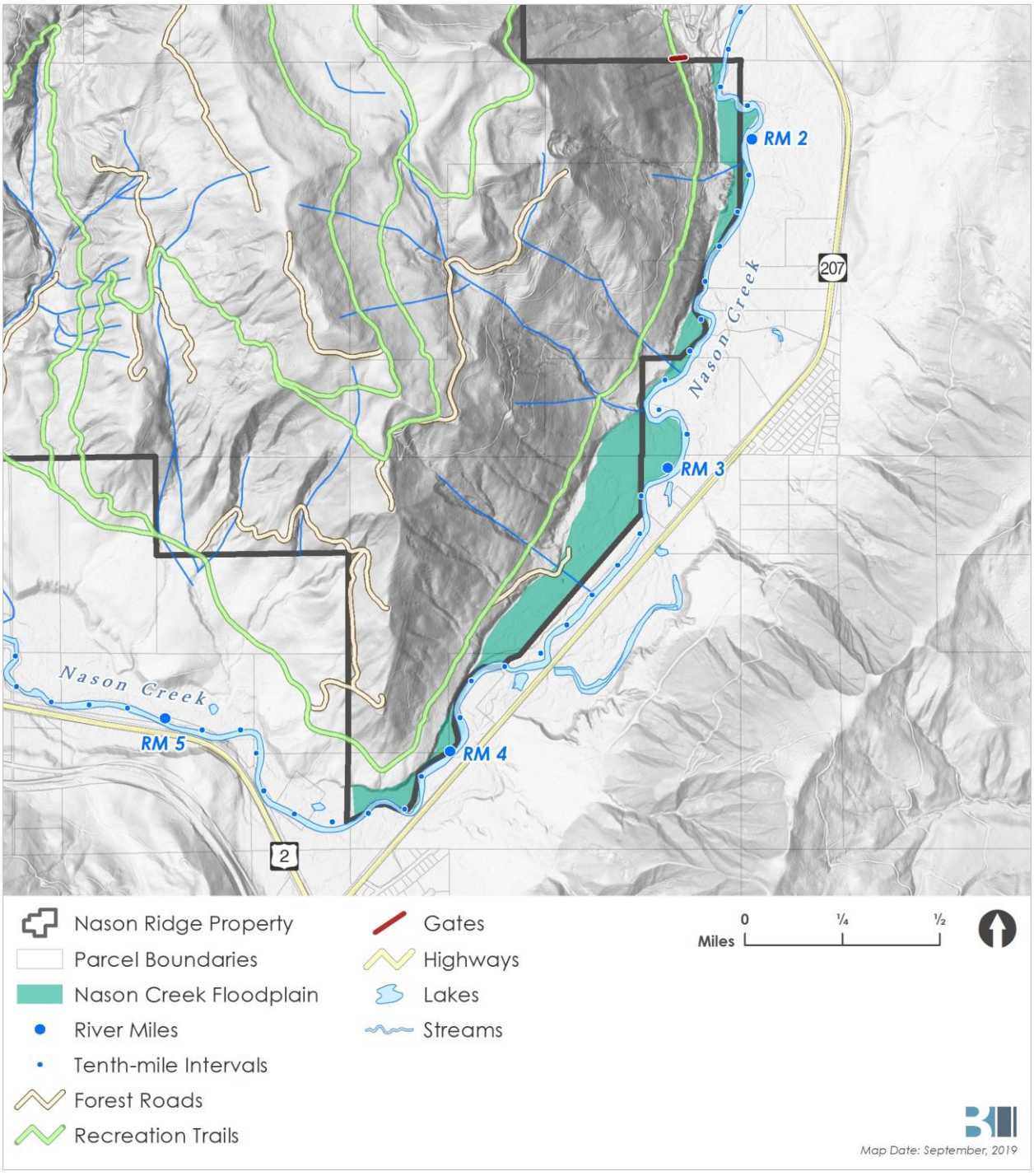
Kahler Creek is a perennial stream that originates in the northwestern corner of the Nason Ridge parcel. Kahler Creek flows southeast through the Nason Ridge parcel and is a tributary to Nason Creek near RM 6. Resident trout and steelhead utilize the lower portion of Kahler Creek (Streamnet). There are no known anthropogenic barriers to fish passage in Kahler Creek on the Nason Ridge parcel. The first road crossing is a bridge and the next pipe is in Section 31, the northwest portion of the parcel, which is upstream of documented fish use. Existing riparian conditions in Kahler Creek are not well documented, though the 1994 Round Mountain Fire, logging, and roads have previously impacted conditions.

Other Intermittent Streams & Wetlands

The DNR stream layer is based on the 10m digital elevation model, and maps several intermittent streams that may not exist on the Nason Ridge parcel. Road-stream crossings were mapped during a 2016 inventory and used to estimate the location of seasonal streams. There are at least six ephemeral tributaries to Nason Creek and several ephemeral tributaries to Kahler Creek on site.

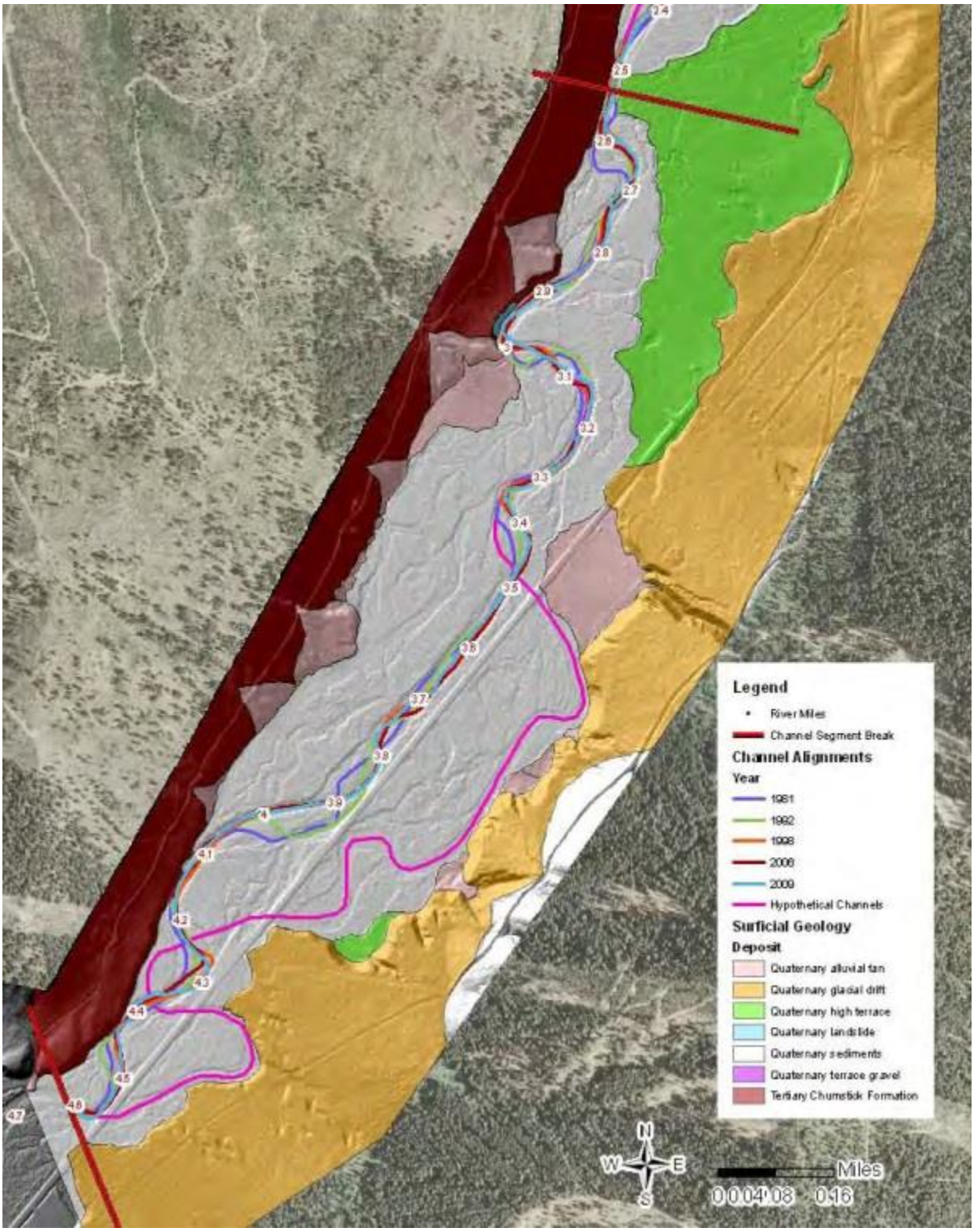
Approximately 100 acres of floodplain are adjacent to Nason Creek in the southern and eastern portion of the site (Exhibit 19). Some seep wetlands and seasonally wet areas are also distributed throughout the site. Most of these are small—however, some of the seep wetlands on steep slopes likely contribute to active and historic landslides visible in the geologic mapping and Light Detection and Ranging (LiDAR) imagery for the parcel (Exhibit 21) and surface geology (Exhibit 22).

Exhibit 21 Nason Creek Floodplain within Boundary & LiDAR Imagery



Source: Chelan County, 2019; BERK, 2019.

Exhibit 22 Alluvial Fans in Southeast Portion of Nason Ridge Property



Source: BOR, 2011 (Figure 9).

Aquatic Species & Aquatic Species of Concern

The Nason Creek sub-watershed supports important aquatic resources and is a stronghold for fish species listed as threatened and endangered under the Endangered Species Act. Nason Creek is a Major Spawning Area for spring Chinook salmon and steelhead (UCRTT 2013), a stronghold for Coho, and a feeding and migration corridor for bull trout (with limited bull trout spawning in the upper reaches). Nason Creek contains spawning habitat for spring Chinook and steelhead—the creek contains 22% of spring Chinook redds in the Wenatchee basin, second only to the Chiwawa basin (48%) (CPUD spawning data).

However, relative productivity (juvenile survival rate) is much lower in Nason Creek when compared to nearby streams such as the Chiwawa and Little Wenatchee. This is likely due to low egg to fry survival rates in Nason Creek, which WDFW is currently studying. Low egg to fry survival rates occur when there are high levels of stream bed scour and elevated fine sediment levels in the water column; scour disrupts the redds and fine sediment smothers the eggs. Elevated road density and floodplain constriction in Nason Creek alter the hydroperiod resulting in flashy flows that increase bed and bank scour. Elevated fine sediment is positively correlated with road density, roads in use, and the number of road-stream crossings.

Stream habitat improvement recommendations for Nason Creek include (UCRTT 2013):

1. Reconnect side channel and wetland habitat.
2. Improve channel bed structure and form.
3. Improve riparian condition.
4. Improve primary productivity (food).
5. Reduce fine sediment inputs.
6. Reduce competition from brook trout.

Nason Creek contains existing high quality habitat and important aquatic species with high levels of spawning. Native fish populations are at risk, however, because of limited habitat diversity, channel instability, and sedimentation. Thus, Nason Creek is the highest priority sub-watershed for implementation of stream habitat restoration actions within the Wenatchee basin (UCRTT, 2013).

Short-term Management Activities (1-10 Years)

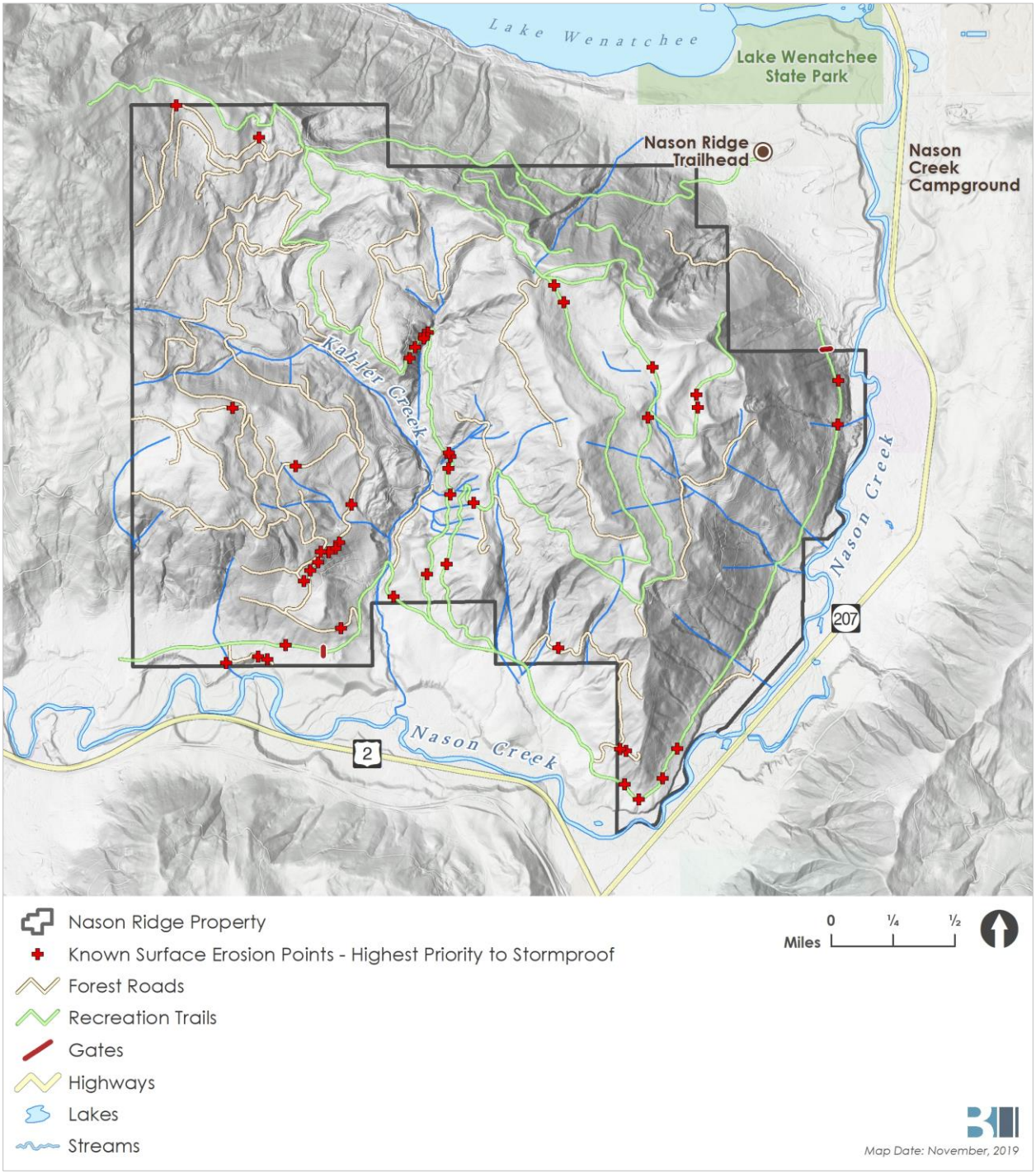
If acquisition funds are secured from the WA Recreation and Conservation Office (RCO), the Salmon Funding Recovery Board (SRFB) will require a deed of right over the riparian and floodplain areas. One short-term management action is to define activities allowed within riparian and floodplain areas. For example, uses not allowed in the deed of right areas include development, timber harvest for commercial purposes, intensive recreational use in sensitive natural resource areas (streams, wetlands, riparian areas, etc.), and grazing. Uses that RCO allows within the deed of right area include timber harvest for conservation purposes (tree stand and habitat diversity, disease protection, etc.) and passive recreation.

Vegetation management within riparian areas and reserves will be considered along with parcel wide management actions to transition the area to a more fire tolerant condition. Management actions within the riparian management zone (RMZ) would be consistent with but likely more strict than DNR; see Appendix A for a summary of the Washington State Forest Practices requirements for RMZs. In all RMZs, there would be no harvest on slopes greater than 50%. In addition, all harvest within RMZs would be cut to length harvesting, which means there would be no whole tree harvesting and no skidding in order to minimize impacts to soils.

Stream habitat improvement recommendations for Nason Creek applicable to this parcel include improving channel bed structure and form, improving riparian condition, and reducing fine sediment inputs.

- Improvements to channel bed structure and form are currently proposed for the Kahler reach RM 4.7–9; some of these actions may include work that extends onto the southern portion of the Nason Ridge parcel. In the short-term, improving riparian condition will be addressed by removing roads from riparian areas.
- Actions to improve aquatic habitat conditions on and adjacent to the Nason Ridge parcel primarily aim to reduce fine sediment inputs and restore hydrologic processes (such as infiltration) on site. This will be achieved by stormproofing roads, reducing overall road density, reducing the number of road-stream crossings, and removing roads from floodplain and landslide areas. These actions will reduce the level of fine sediment that accumulates in spawning beds in Lower Nason Creek and the Upper Wenatchee. This will improve egg to fry survival rates for steelhead and spring Chinook, thus increasing productivity. Restoring natural hydrologic processes may also reduce scour of eggs.
- Maintenance and upgrades should be made to roads in areas with visible surface erosion (which deliver sediment to streams) that will remain because they provide access for recreation, forest health management, and fire safety (Exhibit 23). Short-term management actions may include de-commissioning road segments that meet the following criteria: not currently drive-able, not used for existing recreation access, not needed for fire safety, not needed for short term forest health management, or contain a risk to aquatic habitat.

Exhibit 23 Areas of Surface Erosion & Sediment Delivery to Streams with Highest Priority to Stormproof



Source: Chelan County, 2019; BERK, 2019.

Long-term Management Activities (11-20 Years)

Long-term management actions to improve aquatic habitat will include an evaluation of the existing condition of riparian vegetation in tributaries to Nason Creek, as well as further evaluation of the road network to evaluate risk to aquatic habitat. Proposed actions to improve riparian habitat will be developed and implemented after existing conditions are characterized.

4

Road Management

Objectives

The road network on this parcel is important because it provides access for the following:

- Open space and recreation opportunities.
- Active forest management for forest health, revenue generation, and fuels management.
- Road management actions to protect natural resources and provide for diverse uses of forestland.
- Management of noxious weeds created by presence of roads.

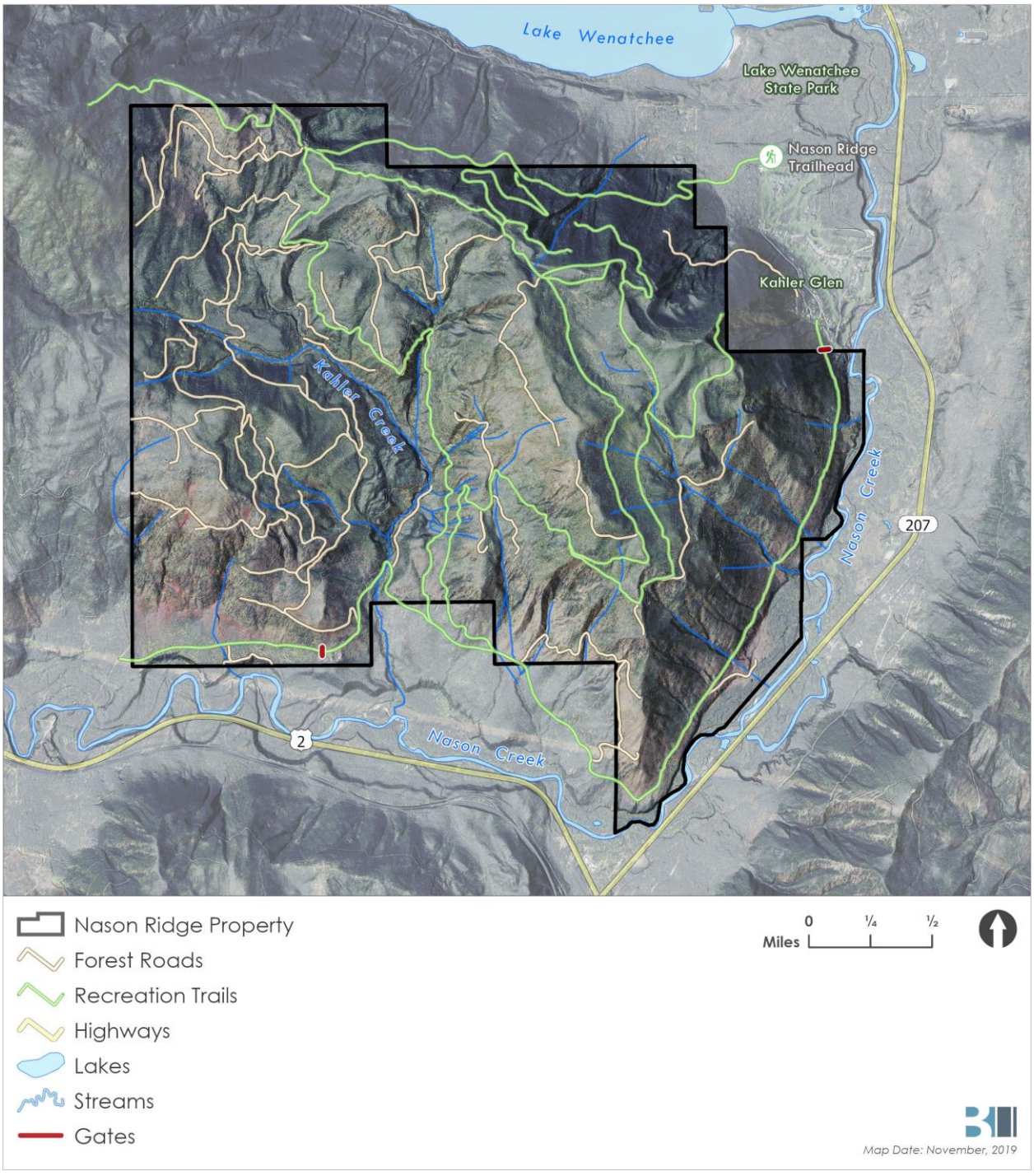
Thus, the road management objectives on this parcel are to reduce overall road density while maintaining access for forest health management, fire, and recreation.

Current Road Network

There are over 33 miles of road on the Nason Ridge parcel, a road density of 5.7 miles/square mile (Exhibit 24). The road surface consists of native material (not imported gravel). There are some relief culverts, waterbars, and roadside ditches, but features that facilitate drainage and infiltration are lacking in some areas. Maps of the road network were generated from maps provided by Weyerhaeuser and from a 2016 inventory of the entire road network in Nason Creek. The 2016 road inventory also mapped all road-stream crossings (with pipe size and condition), areas of surface erosion, and areas where the road network delivers sediment to streams (Exhibit 25). There are 44 road-stream crossings on this parcel. Roads in Sections 6 and 31 are most likely to deliver sediment to streams (Exhibit 25).

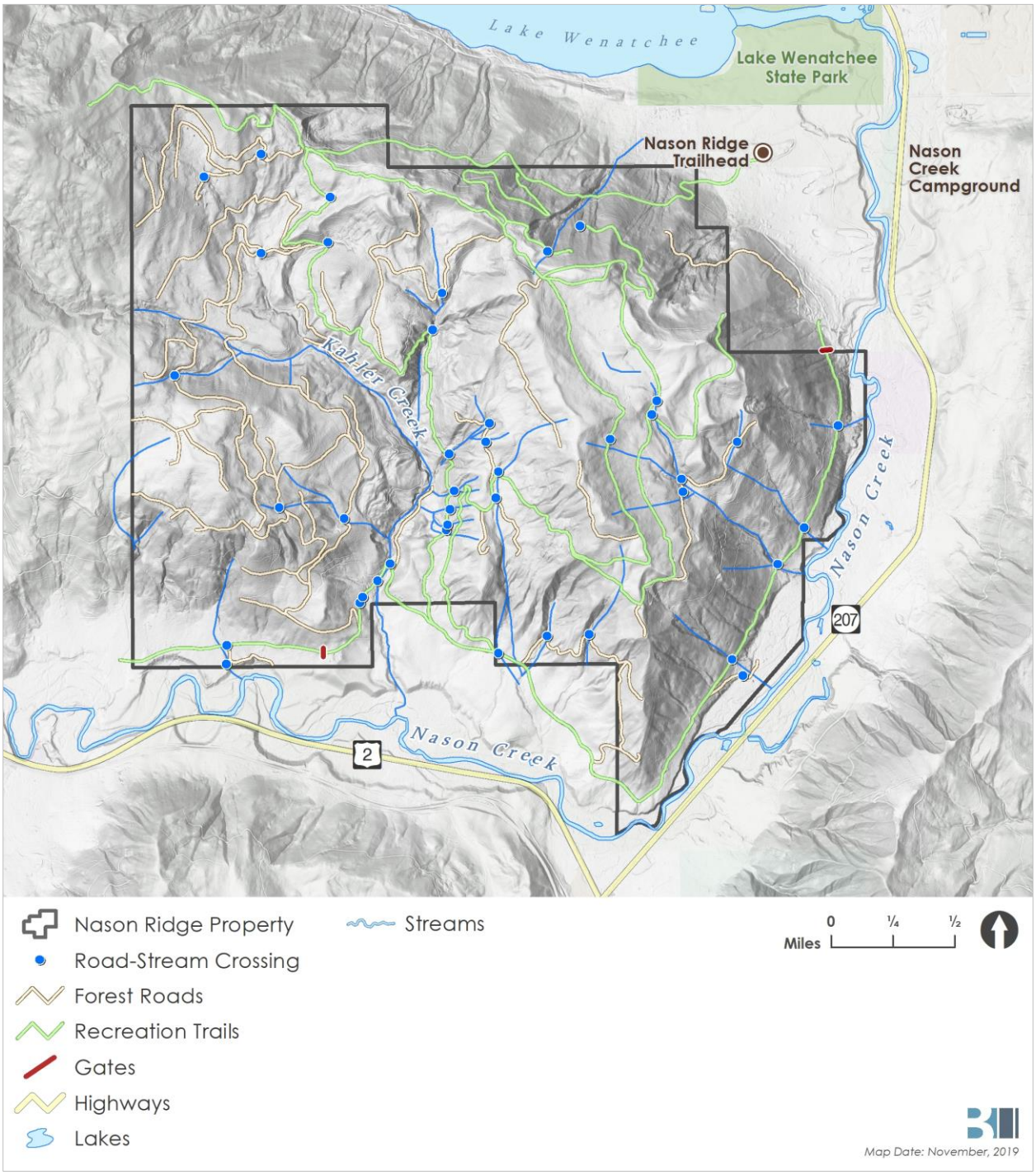
Weyerhaeuser conducted road maintenance on site and the private road network was in compliance with the Road Maintenance and Abandonment Plan (RMAP) requirements associated with the forestry permit from Department of Natural Resources. That said, there are 17.4 miles of US Forest Service roads on site that are maintained to a Maintenance Level 2 corresponding to high-clearance vehicles. A portion of these roads have cost share easements tied to the property. RMAP requirements do not apply to roads with cost share easements because the intent is that US Forest Service shares the cost of maintenance on those roads and federal funds for road maintenance are not sufficient to conduct adequate maintenance on the entire federal road network. Thus, there are some areas of existing surface erosion that should be repaired in the near future because the road has already failed or is at risk of failure due to fine sediment delivery to streams (Exhibit 26).

Exhibit 24 Existing Road Network



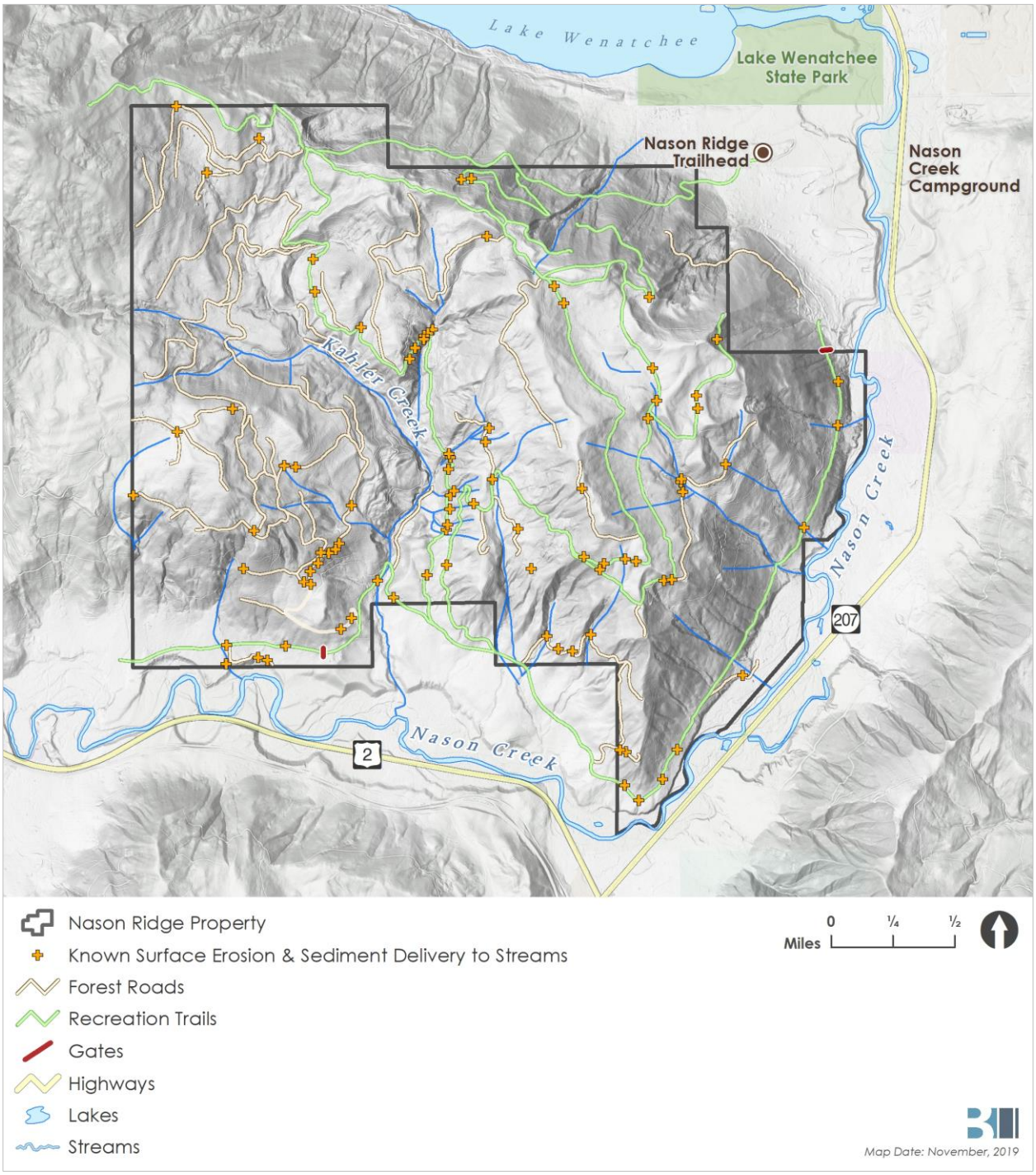
Source: Chelan County, 2019; BERK, 2019.

Exhibit 25 Nason Creek 2016 Road Inventory with Stream Crossings



Source: Chelan County, 2019; BERK, 2019.

Exhibit 26 Existing Road Surface Erosion



Source: Chelan County, 2019; BERK, 2019.

Road densities on this parcel are currently greater than 2 miles/square mile and thus impact aquatic habitat (NOAA, 1996). Roads influence a wide range of stream and watershed processes. For example, the compacted surface of roads can lower infiltration capacity, alter and concentrate overland flow, and increase erosion and delivery of sediment to the stream system, which can degrade fish habitat quality (Dunham & Rieman, 1999; Furniss, Roelofs, & Yee, 1991; Jones, Swanson, Wemple, & Snyder, 2000; Trumbulka & Frissell, 2000; Meredith, Roper, & Archer, 2014; Luce & Black, Sediment production from forest roads in western Oregon, 1999). Roads can also intercept subsurface flow and convert it to rapid surface runoff, extending channel networks and increasing watershed flow efficiency (Trumbulka & Frissell, 2000; Wondzell, 2001).

Future Considerations

Estimating the miles of roads on this parcel depends on the mapping source and the definition of a road. Some of the roads on this parcel are hydrologically closed (all pipes removed and hydrologically disconnected from streams) and are no longer drive-able due to installation of water bars, tank traps, and/or vegetation coverage in the road prism. In addition, recent LiDAR data depicts additional road prisms visible in the topography that may not be depicted in maps. In winter 2019, road prisms visible in LiDAR will be digitized and future field reconnaissance will further investigate these road prisms to evaluate their condition and whether there are any remaining pipes/culverts in them. Thus, a future task will be to refine road maps on this parcel to clearly depict those that are hydrologically closed and those that are open and maintained for travel. The overall management goal for roads on the property is to reduce the road density while still providing access for the needs listed above. Road decommissioning based on the data provided by LiDAR and field reconnaissance will be part of this management strategy.

Annual Maintenance

The purpose of annual road maintenance is to reduce the risk of road failure, reduce risk to aquatic habitat, and to reduce the risk of starting a fire during motorized use of the road network. Annual maintenance needs include:

- Mowing the road prism at least once/year.
- Brush cutting adjacent vegetation.
- Ditch and culvert maintenance, as needed.
- Survey for new evidence of water on the road, blocked culverts, and maintenance needs.

Short-term Management Activities (1-10 Years)

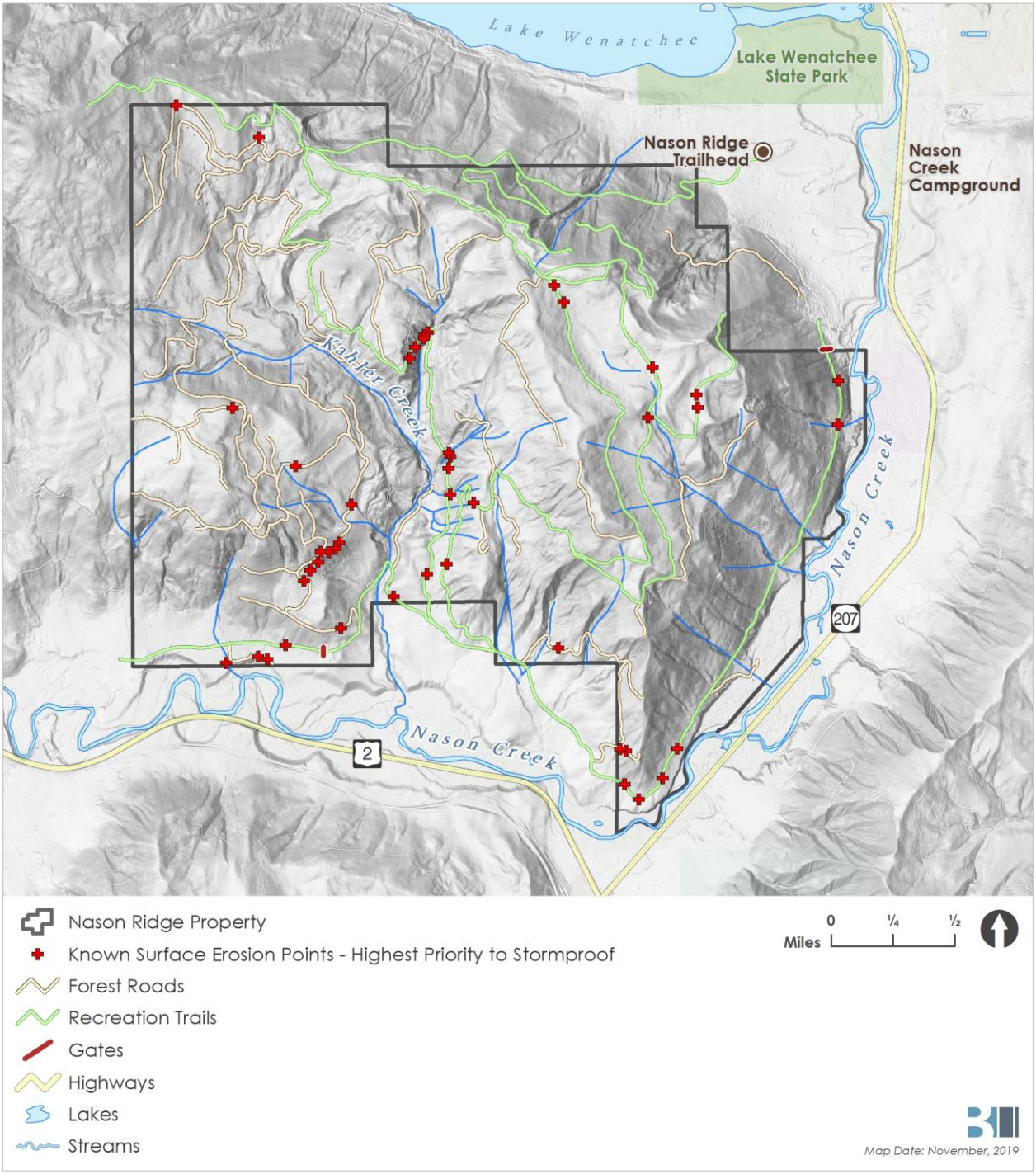
- Conduct annual maintenance as listed above.
- Conduct stormproofing (long-term solutions for water on roads) on roads that will remain open for vehicle travel (Exhibit 27).
- Update road mapping to define hydrologically closed roads and those open for vehicle travel.
- Decommission some roads to reduce the overall road density while maintaining access for fire, harvest management, and recreation.
- Collaborate with the USFS on watershed-wide Travel Analysis Process (TAP).

Long-term Management Activities (11-20 Years)

Long-term road management activities are difficult to identify given uncertain future ownership of the site. However, there are two general activities that will happen alongside the adaptive management strategies for roads on the Nason property:

- Improve aquatic habitat at road-stream crossings.
- Continue to update road mapping.

Exhibit 27 Areas of Surface Erosion & Sediment Delivery to Streams with Highest Priority to Stormproof



Source: Chelan County, 2019; BERK, 2019

5

Recreation & Public Use

Objectives

Recreation is a central benefit of the Nason Ridge Community Forest, provided not only to citizens of the Lake Wenatchee area, but to the entire Wenatchee Valley and beyond. Copious winter snowfall coupled with the Washington State Parks and Kahler Glen Association grooming program provides ample opportunity for quality cross-county skiing, which people travel from across the state to enjoy. In summer months, locals and visitors utilize the road and trail system for hiking, biking, and horseback riding. Birders and naturalists enjoy opportunities to view the abundant wildlife residing in the forest and in Nason Creek. The Community Forest provides a range of community benefits in terms of recreation and public use, and planning for existing and future recreation and access is a significant element of the overall management plan.

The Nason Ridge Community Forest Advisory Committee defined the following recreation and public use objectives:

- Provide access to enjoy open space and recreation opportunity.
- Continue to increase opportunities for non-motorized recreation such as hiking, skiing, biking, and snowshoeing.
- Increase opportunity for both summer and winter recreation.
- Provide recreation and education opportunity for children and underserved communities.
- Provide quality hunting opportunities.

The management goal for recreation is to work with community members, recreational interests, and neighboring landowners to address the recreation objectives in a manner that integrates with forest management and aquatic/ecosystem health.

Geographic Context & Adjacent Landowners

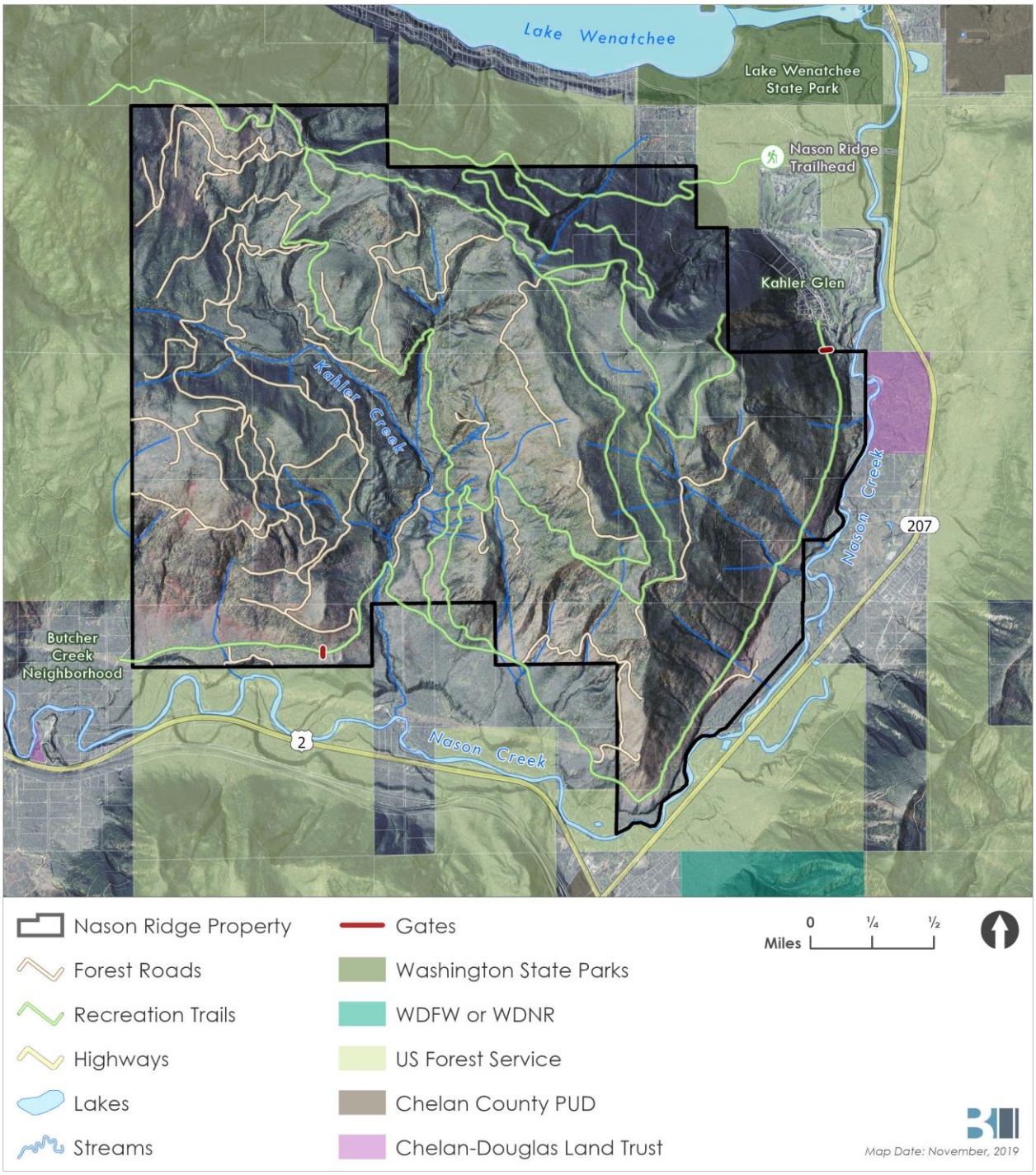
Nason Ridge is centrally located in a recreation destination area, and is equally distant from the recreation hubs of Stevens Pass Ski Area and the town of Leavenworth. Nason Ridge climbs between State Route 2 and Lake Wenatchee, a 5-mile long lake nestled in the rugged mountains of the Central Cascades. Nason Creek borders the Community Forest to the south and east, Lake Wenatchee to the north, and to the west the ridge climbs through USFS lands to the summits of Round Mountain and Rock, Howard, and Mastiff peaks. At the base of Nason Ridge, near Lake Wenatchee State Park, Nason Creek joins the Wenatchee River just below the outlet of Lake Wenatchee. The Cascade Range stretches away from Nason Ridge to the north,

south, and west in vast tracts of the Glacier Peak Wilderness, Alpine Lakes Wilderness, and Henry M. Jackson Wilderness.

This rugged geographic context lends itself to plentiful outdoor recreation opportunity in the Nason Ridge vicinity year round. Popular summer activities on the lands surrounding the Nason Ridge Community Forest include water activities on Lake Wenatchee and Nason and Wenatchee rivers, hiking, mountain biking, motorcycle riding, camping, horseback riding, fishing, hunting, and birding. Lake Wenatchee State Park and a variety of USFS trailheads provide access to the rivers, lakes, and mountains where these activities occur. The Nason Ridge Trail is a multi-use trail that begins on USFS property at the base of Nason Ridge and climbs through the property to join with the Round Mountain Trail and gain the heights of Nason Ridge. In addition to the Nason Ridge Trail, the property contains a network of logging roads of various quality used for hiking, mountain biking, and access for birdwatching and wildlife viewing.

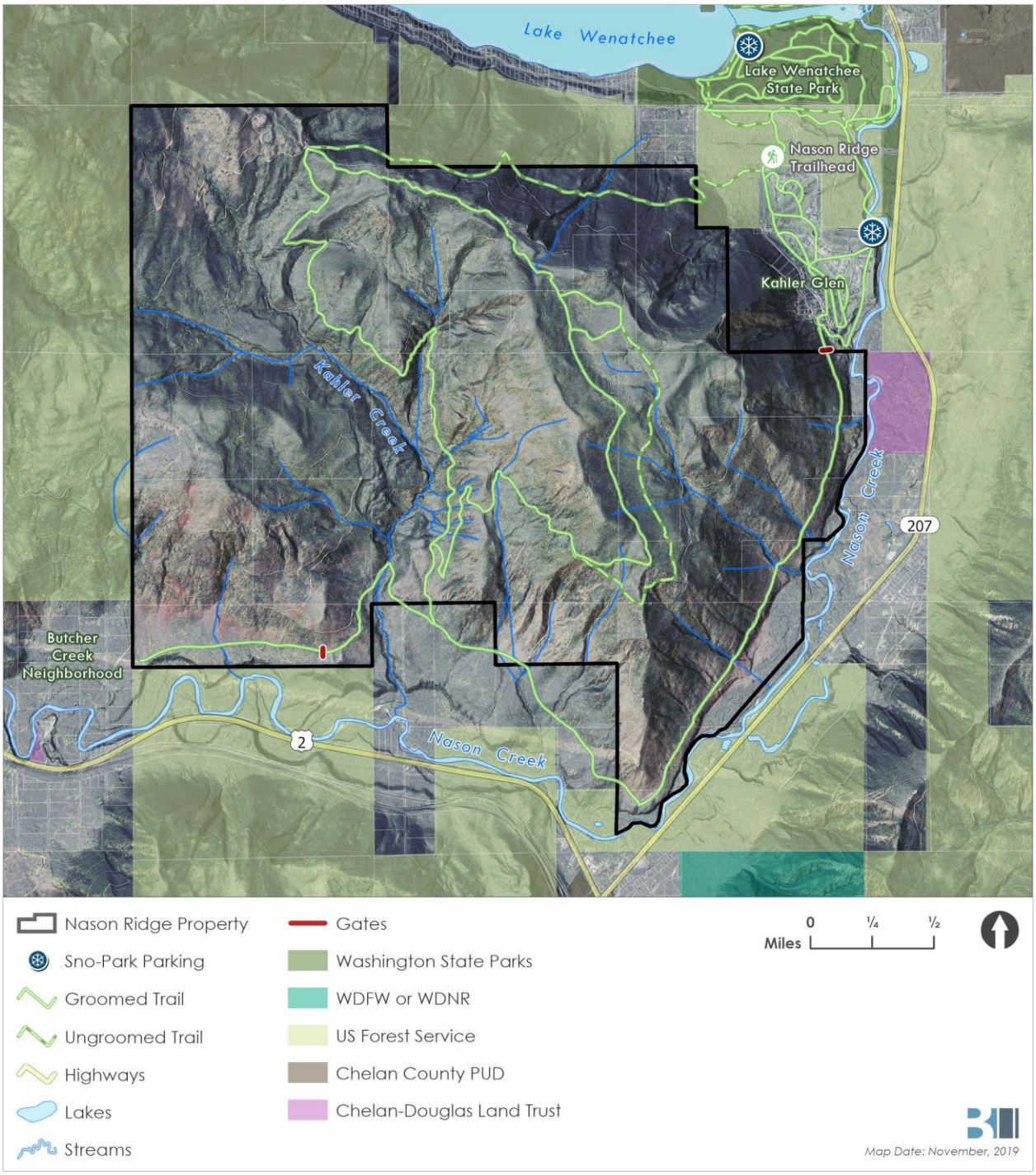
Winter recreation is equally popular in the Nason Ridge vicinity. The extensive groomed trail systems for cross-country skiing and snowmobiling in the Lake Wenatchee area are operated by the State Parks Winter Recreation Program, drawing visitors and locals alike when snow falls. A 20 kilometer groomed trail system in the Community Forest and Kahler Glen (maintained by Washington State Parks and the Kahler Glen Association) and another 17.3 kilometers of groomed trail within Lake Wenatchee State Park provide ample opportunity for cross-country skiing. The State Park also marks and maintains a very popular designated snowshoe trail which starts on the shore of Lake Wenatchee, joins with trails from Kahler Glen, and heads up the Nason Ridge hiking trail to a ridgetop junction with the groomed ski trails. Winter camping and sledding are also popular activities in Lake Wenatchee State Park.

Exhibit 28 Summer Recreation Map



Source: Chelan County, 2019; BERK, 2019.

Exhibit 29 Winter Recreation Map



Source: Chelan County, 2019; BERK, 2019.

Exhibit 30 Groomed Trail System on Nason Ridge for Cross-country Skiing

Source: Lake Wenatchee State Park, 2019.

The Nason Ridge Community Forest is bordered by a mix of state, federal, and private lands, with the western and northern edges bordered primarily by USFS lands. Many of the roads on the property as well as the Nason Ridge Trail extend from the Community Forest onto USFS lands. Near the southwest corner, the property borders the residential lots of the Butcher Creek neighborhood. Along the southern edge of the property, the Community Forest shares property lines with USFS, Chelan Douglas Land Trust, and several private landowners. The southeastern edge generally follows the path of Nason Creek, and meets a variety of ownerships including USFS, private landowners, and WSDOT right-of-way. The northeastern portion of the property borders Chelan Douglas Land Trust and Kahler Glen Community Association lands. The Kahler Glen Golf Course and housing community lie near the south edge of the property, and provide authorized access to the road system and groomed winter trails. Lake Wenatchee State Park is situated on the east end of Lake Wenatchee, at the foot of Nason Ridge, and is a recreational hub in the Nason Ridge vicinity.

When considering current recreational uses, it is important to remember the Nason Ridge vicinity was historically used by the Yakama, Chinook, and Wenatchi tribes, who are now represented by the Confederated Tribes and Bands of the Yakama Nation and the Confederated Tribes of the Colville Reservation. These tribes hunted, fished, and lived seasonally on the land, depending on the salmon returning from the Pacific each year for sustenance. While tribal fishing no longer

occurs in this area, cultural resources still exist and the area still holds importance in the collective tribal values. Any proposed ground disturbing activities for recreational development will be presented in writing to the Yakama Nation and Colville Tribes for review and input on possible impacts to cultural resources. The Community Forest will prioritize preservation of sacred and culturally important sites, and will rely on input from Tribal Archeologists to ensure protection of these resources.

The following outline of existing use provided by the members of the Advisory Committee illustrates the nature of largely undeveloped recreation occurring within and in proximity to the Community Forest.

Current Access & Use

Public access to the property is currently limited to parking at Lake Wenatchee State Park or at the Nason Ridge Trailhead (a USFS improved parking site with parking space limited to 6–8 cars) during the summer, and the Sno-parks at Lake Wenatchee State Park and near Kahler Glen during the winter. The groomed winter ski trail follows the road system and allows non-motorized public winter access on a challenging and spectacular route through the property. Sno-park passes from the State Parks Winter Recreation Program are required for parking and accessing the groomed winter trail system.

Vehicle access onto the property is allowed only for authorized users, and occurs through locked gates from the Kahler Glen or Butcher Creek neighborhoods. During the summer, these roads are commonly used for non-motorized recreation by residents and occasional visitors, but the gates are currently not set up as public access points (with parking, signage, etc). The Kahler Glen Community Association owns and maintains the roads used for access to the western end of the property during summer and winter, and will be instrumental in determining a suitable public access strategy to address increased recreational use. Butcher Creek could provide a suitable additional winter access point, but Butcher Creek residents will similarly need to weigh in on any access recommendations. An important early action of this plan will be to assess public access options for these two access points, and determine the suitability and potential impacts of access improvements, including increased pressure on existing infrastructure (water, septic systems, etc.). The following descriptions summarize the current access and use conditions of the property.

Access Points

- Kahler Glen gate: surrounded by private landowners, used mostly by locals in summer, more out-of-town visitation in winter for groomed ski trails, has minimal parking. Cross-country skiers park at the Sno-park adjacent to the driving range and pass through this gate on the groomed trail system.
- Butcher Creek gate: mostly local access via the Butcher Creek Road, adjacent to private landowners, very little parking in current location.
- Nason Ridge Trailhead: between Kahler Glen and State Park, on USFS land, mostly non-motorized use although motorcycles are allowed, also used by equestrian and snowshoers.
- Round Mountain Trail: access to top of property from USFS land.

Existing Uses

- Most recreation routes are road beds used as trails for hiking, biking, skiing, and equestrian; some motorcycle use.
- Extensive winter route groomed on existing road system for cross-country skiing.
- Nason Ridge trail is the only designated single track trail on the property and is part of the State Park designated winter snowshoe trail system.
- Parking is limited; the only significant parking is at Lake Wenatchee State Park and the USFS Nason Ridge Trailhead, which is accessed via a Kahler Glen Community Association road and has 6–8 parking spaces. The Kahler Glen driving range winter parking area and Lake Wenatchee State Park are designated Sno-Parks during winter months and require a Sno-park permit.
- Viewpoints/areas of interest include: Big Red, the 'avalanche overlook', expansive views from south side, landing above Nason Ridge Trail.

Priorities for Continuing Use

- Continue trends of existing use types.
- Improve access for children/educational opportunities.
- Improve existing access/parking.
- Implement signage for existing travel routes.
- Continue existing winter use structure (WA Parks Program, signage, etc.).

Future Considerations

Great potential exists for improving recreation opportunities within the Community Forest. The Advisory Committee identified a suite of priorities addressing recreation and access and a set of tangible recreation improvements that would provide the desired recreational benefits to the community.

Planning & Decision Making

- Identify and reach out to recreation partners (adjacent landowners, local recreation advocacy groups, recreation interest groups, and state and federal agencies).
- Undertake a detailed planning effort for improved access and recreational opportunity as a Recreation Element supplement to this plan.
- Recreation objectives and desired future conditions should guide recreation management decisions.
- Notify the public of any plans/processes regarding active management operations which may influence recreational areas.

Desired Future Opportunities

- Fat-tire biking trails, separate from groomed ski trails.
- Bird watching/wildlife viewing areas/opportunities.
- Interpretive signage for educational opportunity.
- Guided walks.
- Ski-in/bike-in/hike-in hut system for summer and winter use (ex: Rendezvous Hut System in Methow).
- Strategically increase parking at access points.
- Trail connections with USFS/WSDOT lands.
- River trail.
- More single track trail for linkages and making loops.
- Range of options (steep direct route to overlook, shorter easier routes for families).

Short-term Management Activities (1-10 Years)

- Implement a community planning effort to develop a Recreation Element of the Nason Ridge Community Forest Management Plan that defines pathways from existing conditions to desired future opportunities.
- Address parking and access issues at existing gates and trailheads. As two of the access points are near private residential properties (Kahler and Butcher Creek gates) sensitivity toward landowners and sustainability of access recommendations are paramount and will necessitate inclusion of these landowners in decision-making.
- Continue existing Winter Recreation Program trail grooming.

Long-term Management Activities (11-20 Years)

- Identify funding for implementation and maintenance of desired improvements in recreation access and opportunity.
- Maintain partnerships with adjacent landowners to continue/improve recreation connections across the landscape.
- Assess and adaptively manage impacts of recreation on adjacent landowners and wildlife/aquatic resources.

This chapter provides a high-level look at existing recreation use and desired future conditions, but additional planning is needed for development of site-specific recommendations that can be evaluated for environmental, economic, and social suitability as well as adherence to other management goals of the Community Forest. Increasing recreation opportunity is an objective expressed by the Advisory Committee, but increased use will require strategic planning to prevent unwanted impacts on the forest, fish and wildlife resources, and adjacent landowners. More detailed planning for these desired future opportunities will occur following completion of the overall Community Forest Management Plan.

6

Community Engagement & Decision Making

The underlying theme of community forests is the ability of local stakeholders to be involved in the leadership, investment, and stewardship of the forest resources. In the Nason Ridge area, this involvement began before the idea of the Nason Ridge Community Forest was even born. Starting with the Save Nason Ridge campaign, continuing with the Community Forest Management Plan Advisory Committee, and projected into the future with the Nason Ridge Stewardship Committee, public engagement has been and continues to be robust and unfaltering.

Objectives defined by the Advisory Committee for long-term stewardship of the Nason Ridge Community Forest are as follows:

- Protect natural resources through thoughtful planning and management.
- Support management decisions that provide income and funding for continued stewardship.
- Provide a good example of land stewardship for younger generations and a model for future community forests.
- Maintain quality open space in public ownership for perpetuity.
- Continue to increase recreation opportunity for all.

Continued stewardship by the community will be a key factor in achieving these objectives, and a framework for maintaining community engagement and approaching adaptive management decisions is an important element of the planning process. Past, present, and future community engagement and decision-making will all contribute to the success of the Nason Ridge Community Forest.

Previous Community Engagement

Upper Wenatchee Community Lands Plan

From 2014–2016, the Trust for Public Land, Chelan County, The Nature Conservancy, and the Chelan-Douglas Land Trust (CDLT) worked with a broad array of local stakeholders and community members to develop the Upper Wenatchee Community Lands Plan (Lands Plan). The Lands Plan is a community-driven conservation plan which reflects the preferences of the community to protect important resources such as local waters, open space, working lands, and trails. The vision articulated in the Lands Plan was designed to guide future investments by public and private property owners and potentially lead to land management that will benefit local communities.

The Lands Plan consists of three main sub-areas: Nason Ridge/Lake Wenatchee, Peshastin/Blewett Pass, and Chumstick Valley/ Leavenworth. Community outreach occurred in each area with a focus on identifying the values associated with each watershed. This led to the development of action plans which outline voluntary actions to help ensure these lands and the values attached to them serve the communities for generations to come.

To ensure community opinions were reflected, invitations to participate were sent to approximately 6,700 landowners within the three areas. In the Lake Wenatchee area, attendance was double that of the other two subareas. Attendees of the community meetings included agency and non-governmental staff, landowners, and business owners.

The plan overlaid conservation priorities with private land ownership. As a result of this process, Nason Ridge was identified as a potential project area offering the best opportunity to create more contiguous public lands that could benefit the communities' identified recreation needs, as well as provide sustainable and working forests and wildlife habitat.

Nason Ridge Campaign

In 2017, the Western Rivers Conservancy learned that Weyerhaeuser was interested in divesting over 3,700 acres on Nason Ridge, and began negotiating a potential willing buyer/willing seller purchase. Weyerhaeuser also discussed a potential sale of the property with the Trust for Public Land and The Nature Conservancy. As acquisition negotiations advanced, the Western Rivers Conservancy reached out to the CDLT to help raise private funds for the project. This was, in part, due to past success the CDLT had working with the Lake Wenatchee community and Longview Fibre 20 years earlier in developing a timber harvest on Nason Ridge. After completion of that harvest, community members stated, "We believe this is a great example, and perhaps a model, of how citizens and timber companies can work together to produce a positive outcome" (Partridge, M. (2001) 'Longview lauded for logging lightly'. *Wenatchee World*).

Eight of these same community members became the core team to work with the CDLT to raise funds to conserve the wildlife habitat and recreational opportunities and implement sustainable and fire-wise forest management at Nason Ridge. These local landowners and residents reached out to their neighbors to share these values that could be lost if the Ridge was subdivided and developed. This happened mainly through informal meetings and gatherings and face to face outreach. The campaign quickly acquired 14 prominent business owners, past government officials, and individuals as endorsers of the campaign. The goal to raise $1 million was achieved within a short four month period. By the end of the campaign, over 400 community members had donated over $1.3 million to the Nason Ridge Campaign.

The community was kept apprised of the status of the Nason Ridge project throughout the campaign and after. In addition to the meetings and gatherings initiated by community

members, the CDLT sent emails and newsletters, posted updates on social media, and placed flyers at local businesses. Letters were mailed to local residents and landowners describing the opportunity to conserve Nason Ridge and outlining different ways the community could help.

After the successful close of the campaign, the community was invited to join together in two separate gatherings where more than 150 people came together to celebrate the success of the Nason Ridge project.

Since then, the CDLT has continued to reach out to the community to keep them updated on potential ownership and management of the Ridge. CDLT staff have attended community events to speak to interested groups, met with local and statewide government officials, and maintained regular communications with local stakeholders. When the opportunity to form an advisory committee around development of a community forest plan arose, the response from the community was impressive. This willingness to stay involved in the process is indicative of the community's motivation to conserve the recreational opportunities, implement sustainable forest harvest and fire-wise management, and maintain the many wildlife habitat values of Nason Ridge in perpetuity.

Exhibit 31 Save Nason Ridge Campaign Meeting

Photo: Mary Gallagher, 2017.

Advisory Committee

This Plan was crafted with input from the Nason Ridge Community Forest Advisory Committee, who dedicated many evening hours to meetings addressing the various topics. The Advisory Committee was established through outreach to residents, business owners, and resource specialists in the Nason Ridge vicinity. Many members of the Advisory Committee were also active members of the Save Nason Ridge campaign, making a smooth transition from early community involvement to participation in plan development. This group brought a high level of institutional knowledge of the land and its historic and current uses. Committee members are listed below (in no particular order).

Exhibit 32 Advisory Committee Members

Name	Affiliation
Rick Halstead	WA State Parks (Lake Wenatchee)
Bill Miller	Kahler Glen
Tim Gallagher	Kahler Glen
Mary Gallagher	Kahler Glen
Rex Lund	Kahler Glen
Bob Jennings	Plain
John Christianson	Kahler Glen
Eric Prestbo	Stellerwood
George Wilson	Lake Wenatchee
Brandon Rogers	Yakama Nation Fisheries
Mick Lamar	Lake Wenatchee Fire District
Deb Watkins	Lake Wenatchee Fire District
Mike Stanford	Lake Wenatchee Fire District
Rollie Schmitten	Nason View
Ray Aspiri	Lake Wenatchee
Tom Shay	Standing Rock Ranch
Rob Shurtleff	Lake Wenatchee Info
Rob Whitten	Plain Valley Ski Trails
John Meriwether	Butcher Creek
David Walker	Butcher Creek
Tad Summersett	Plain
Paul Hessburg	Forest Ecologist
Patrick Haggerty	Cascadia Conservation District

Name	Affiliation
Mat Lyons	Wenatchee Valley TREAD
Joe Cannata	59-er Diner
Mik McKee	Forester, Western Rivers Conservancy
Everett White	Western Rivers Conservancy
Nelson Mathews	Western Rivers Conservancy
Curt Soper	Chelan Douglas Land Trust
Mike Kaputa	Chelan County Natural Resource Department
Katie Pruit	WA Recreation and Conservation Office

The Advisory Committee met monthly during development of the Community Forest Management Plan (July–November 2019), and helped supply materials and knowledge for the Plan and Legislative tour that took place on the property in September 2019. Meeting topics covered the subjects of Community Benefits, Aquatics, Forest Management, Roads, Recreation, Community Engagement, and Adaptive Management. Input gathered from these meetings was translated into the chapters of this plan, resulting in a direct link between the community and guidance document for the management of the property.

Exhibit 33 July 10th 2019 Advisory Committee Meeting at Lake Wenatchee Fire District

Photo: Chelan County, 2019.

Community Outreach

Several outreach mechanisms were employed during crafting of the Community Forest Management Plan following the robust community outreach effort of the Save Nason Ridge campaign. Aside from regular outreach and updates to the full Advisory Committee, community members were able to participate through a variety of avenues:

- In June 2019, as the Community Forest Management Plan was kicking off, Chelan County Natural Resource Department staff met with the Kahler Glen association at their annual meeting to inform them of the upcoming planning process.
- On September 23, 2019, a gathering of Legislators, Legislative Assistants, and community forest specialists at Lake Wenatchee State Park provided opportunity for community members to speak directly to Legislators about the importance of this forested landscape to the social, economic, and ecological well-being of the area and its inhabitants.
- At a Plain community meeting on October 11, 2019, County Commissioner Bob Bugert spoke to locals about the prospective of a community forest and the economic implications for the entity taking ownership of the forest.
- On November 16th, 2019, a public meeting was held to update the entire community on the planning process and gather input on the plan and strategy moving forward.
- The *Conservation Quarterly*, a publication of the Cascadia Conservation District included information about the project in their fall 2019 edition.

Exhibit 34 November 16th, 2019 Public Meeting

Photo: Chelan County, 2019.

Long-term Stewardship

Community involvement in the implementation of the Community Forest Management Plan will occur through a Nason Ridge Stewardship Committee. After examining several different models, the Advisory Committee decided on a Committee structure that follows an informal participation model, where the impetus is on stakeholders (such as adjacent residents, recreation interest groups, business owners, etc.) to ensure they have representative(s) at the table who are then communicating back to their groups. The Stewardship Committee will meet regularly and will make management recommendations directly to the property owner. The property owner, in consultation with neighboring agencies, will ultimately make management decisions, but will do so under consideration of the recommendations made by the Stewardship Committee. This model provides a flexible fit for local residents and stakeholders, while still ensuring that community values are incorporated into management of the Nason Ridge Community Forest.

A list of suggested Stewardship Committee members is included on the following page, but additional participation is welcome and this list can be expanded upon as needed. Additional specialists may also be brought in to provide key knowledge on specific issues and help inform recommendations provided by the Stewardship Committee.

Several elements of this plan will be expanded upon in the coming years, to fully explore issues and opportunities and provide recommendations for implementation of actions to remedy issues or realize potential for opportunities. For example, expansion of a Recreation Element emerged as a high priority for the Advisory Committee. The process for plan expansion, adaptive management, and plan updates is outlined in the next chapter.

Exhibit 35 Suggested Committee Members

Suggested Stewardship Committee Participation
WA State Parks (Lake Wenatchee)
Kahler Glen Residents
Butcher Creek Residents
Stellerwood Residents
Lake Wenatchee and Plain Residents
Yakama Nation Fisheries
Lake Wenatchee Fire District
Nason View Landowners
Local Business Owners
Professional Forester
Forest Ecologist
Wildlife Biologist
Economic Impact/Financial Specialist
Summer Recreation Interests
Winter Recreation Interests
WA Department of Natural Resources
US Forest Service
Confederated Tribes of the Colville and Yakama Nation
Cascadia Conservation District
Chelan Douglas Land Trust
Chelan County
Western Rivers Conservancy

7

Adaptive Management

What ultimately results in a successful community forest is community involvement in its long-term management. Mechanisms for engaging in adaptive management and plan updates to meet the long-term management goals of the Community Forest Plan are discussed in this chapter.

The Stewardship Committee will provide opportunity for the community to engage in adaptive management of the Community Forest. This group will identify the need for adaptive management based on the success or failure of the Plan to achieve the laid out objectives and management goals. The Plan is designed to be a living document that can be expanded or updated as needed.

To address specific issues or opportunities, or update the short- and long-term management actions, the Stewardship Committee will likely break into subgroups with specific skill sets or interests. These subgroups will likely fall into the following categories, but additional subgroups are also possible:

- Recreation,
- Aquatic,
- Roads management,
- Economic impact,
- Forest health/timber management, and
- Public safety.

Individual issues and opportunities may be addressed by subgroups or by the whole committee, but all adaptive management actions, plan expansions, and plan updates will be voted upon by the Stewardship Committee in person at a Stewardship Committee meeting with the specific item identified on the meeting agenda. The action, expansion, or update will receive consensus by the Committee prior to being recommended to the property owner. One Stewardship Committee meeting per year will serve as the annual update for the Chelan County Commissioners.

Adaptive management actions and expansions of certain Plan elements may occur as need is identified by the Stewardship Committee. However, updates to the short-term and long-term management actions should occur at least every ten years. The short-term time frame identified in this plan is 1-10 years, and the long-term time frame is 11-20 years. Nearing the end of the first 10 years, the short-term actions will need to be re-evaluated, as many of them should be completed within that time frame. A new set of short-term actions will need to be prioritized to keep the Plan a current and living document. This also provides a chance for the committee to evaluate the success of the Plan in achieving the desired objectives, and provides an opportunity to incorporate adaptive management to better achieve objectives if they are not being met. Similarly, the long-term actions will need to be re-evaluated after 10 years, as they may change according to the condition of the property and the completion of the short-term actions. This 10 year update should be a formal effort with data gathered to support decisions made during the evaluation.

8

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Appendices

Appendix A Washington State Forest Practices Management Zone Requirements

The table below summarizes the Washington State Forest Practices rules (Title 222 WAC) for riparian management zones (RMZ). The RMZ is measured for both sides of the stream starting at the limits of bankfull width. Management actions within riparian zones on this parcel would be consistent with and likely more restrictive than these guidelines:

Type of Stream	Total width of Riparian Management Zone	No Harvest Zone*	Equipment Limitation Zone (cannot disturb more than 10% of ground)*
Shoreline fish bearing	100-130' wide	30-100'	
Perennial fish bearing (bankfull >15' wide)	100-130' wide	30-100'	
Perennial fish bearing (bankfull <15' wide)	75-130' wide	30'	
Perennial non-fish bearing	50' wide		30'
Seasonal non-fish bearing	None required		30'

*Forest Practices Board regulations also specify minimum requirements for the number of trees and basal area that must remain within all riparian management zones.