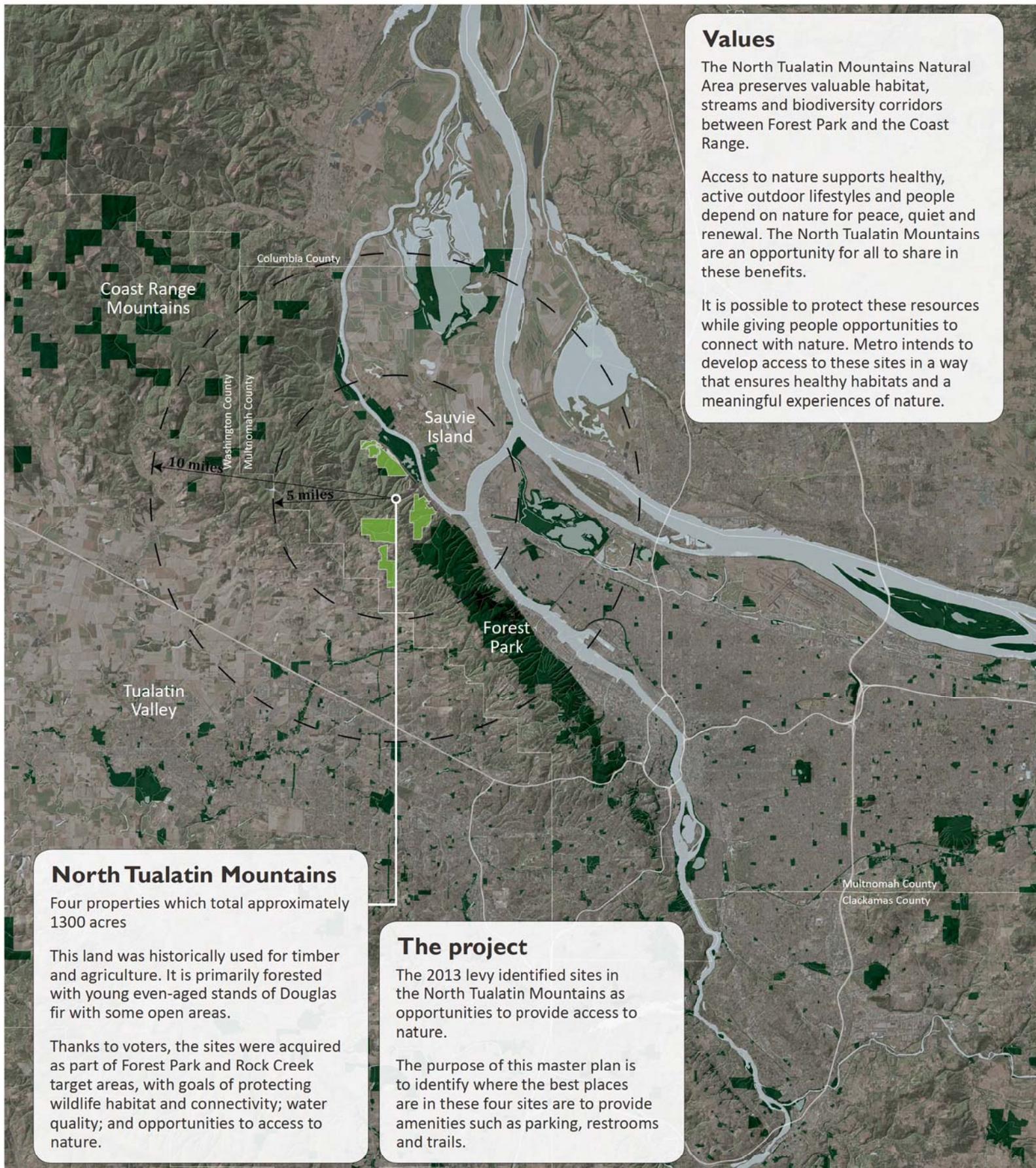


NORTH TUALATIN MOUNTAINS PROJECT OVERVIEW



Values

The North Tualatin Mountains Natural Area preserves valuable habitat, streams and biodiversity corridors between Forest Park and the Coast Range.

Access to nature supports healthy, active outdoor lifestyles and people depend on nature for peace, quiet and renewal. The North Tualatin Mountains are an opportunity for all to share in these benefits.

It is possible to protect these resources while giving people opportunities to connect with nature. Metro intends to develop access to these sites in a way that ensures healthy habitats and a meaningful experiences of nature.

North Tualatin Mountains

Four properties which total approximately 1300 acres

This land was historically used for timber and agriculture. It is primarily forested with young even-aged stands of Douglas fir with some open areas.

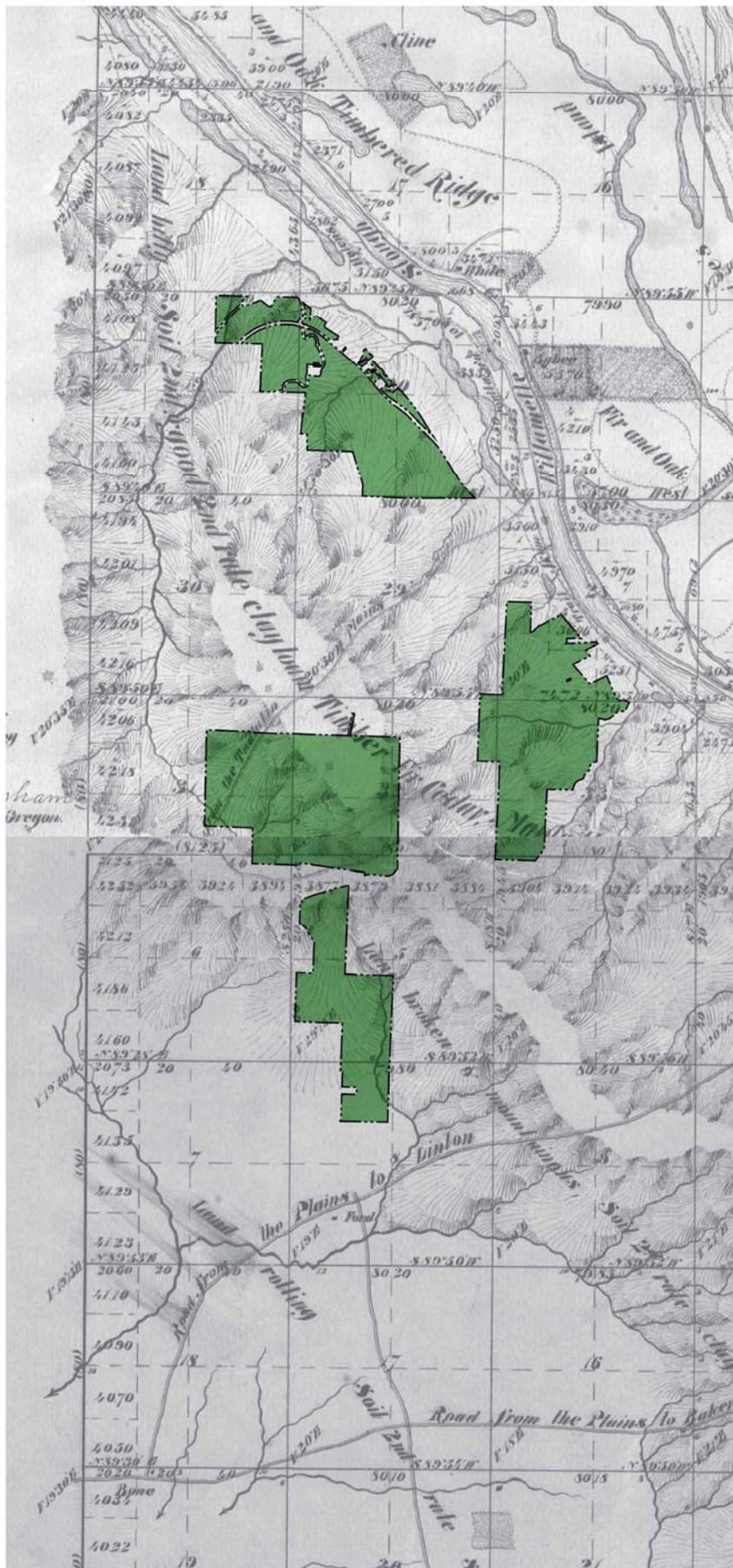
Thanks to voters, the sites were acquired as part of Forest Park and Rock Creek target areas, with goals of protecting wildlife habitat and connectivity; water quality; and opportunities to access to nature.

The project

The 2013 levy identified sites in the North Tualatin Mountains as opportunities to provide access to nature.

The purpose of this master plan is to identify where the best places are in these four sites are to provide amenities such as parking, restrooms and trails.

NORTH TUALATIN MOUNTAINS HISTORY



Before European settlement, Atfalati (also called Tualatin) tribe of the Kalapuya inhabited villages on the Tualatin Plains and the hills around Forest Grove

1883 Newberry Road established as county road.

late 1800 - 1900's The trees that originally covered Skyline hills were felled, then sent on a flume from the ridge along the route of Cornelius Pass and then OVER Highway 30 to one of the seven sawmills in Linnton.

1900's A small railroad spur led to what was likely a water powered mill on the north side of McCarthy Creek on the western edge of the site.

The school trail ran down one hill to McCarthy Creek (now spelled and called "McCarthy") and up the next hill to the school. In the creek bottom were the remnants of the old Kaiels Sawmill (From The School on the Hill from the Twenties by Margaret Pauly Tate).

1909 Ruth Trust company files plat for the town of Burlington.

~1911 United Railway Company constructs rail line between Portland and Wilkesboro and provides electric passenger service between Burlington and Linton.

1915 When Ella Thomas was 2, her parents Reinhold and Rosalie Bieberdorf bought property and established a dairy on Newberry Road. (now Wealth Underground CSA) They tended about 40 cows as well as pear, walnut, plum, cherry, filbert and apple trees. Goats helped clear the land.

1920's There were about 45 students in Brooks School and everyone walked to school. Ramona Huserik recalls the Pauly kids walking to school across the canyon from Pauly Road off McNamee.

1936 Mallory George Lewis (Jim) Brooks purchase (original one room schoolhouse. It was moved to its current location where it became Brooks residence.

1941 BPA Built St John's-St Helens no1 transmission line.

1950 Ella moves back to family farm with husband Delbert Thomas and operate the Thomas Dairy from the 1940s to 1969.

1939 New Skyline School built.

1940 Skyline Grange established

1948 Forest Park formally dedicated by the City of Portland.

1950 A Ferry operated between Holbrook and Sauvie Island (at current day Cornelius Pass Road) until 1950 when the Sauvie Island bridge was built.

1974 Grange hall fire

local stories from Skyline Ridge Neighbors website
<http://www.srmpdx.org/history-skyline-ridge>

NORTH TUALATIN MOUNTAINS HABITAT TYPES

Riparian Forest

Riparian forests protect water quality and provide important habitat near the headwaters of Burlington, Ennis, and McCarthy Creeks, which flow into the Multnomah Channel, and North Abbey Creek, a tributary of the Tualatin River

Tributary creeks and confluence areas provide clean and cold water, nutrients and refuge areas for important fish species.



Upland Forest

Upland forest is composed primarily of native trees and shrubs such as Douglas fir, big-leaf maple, Oregon grape, salal and sword fern.

Especially important to migrating and nesting songbirds, woodpeckers, mammals such as Douglas squirrel and deer, and seasonal habitat for salamanders, frogs and turtles.

Urbanization has fragmented and reduced the amount of upland forest habitat.

Upland Early Successional Shrub

Shrub dominated communities provide food and cover for neotropical migrant songbirds and create habitat for a variety of pollinator species.

Small scale agricultural sites, recently logged areas, and utility clearings are opportunities to manage for early successional upland forest shrubs.



Oak Savanna

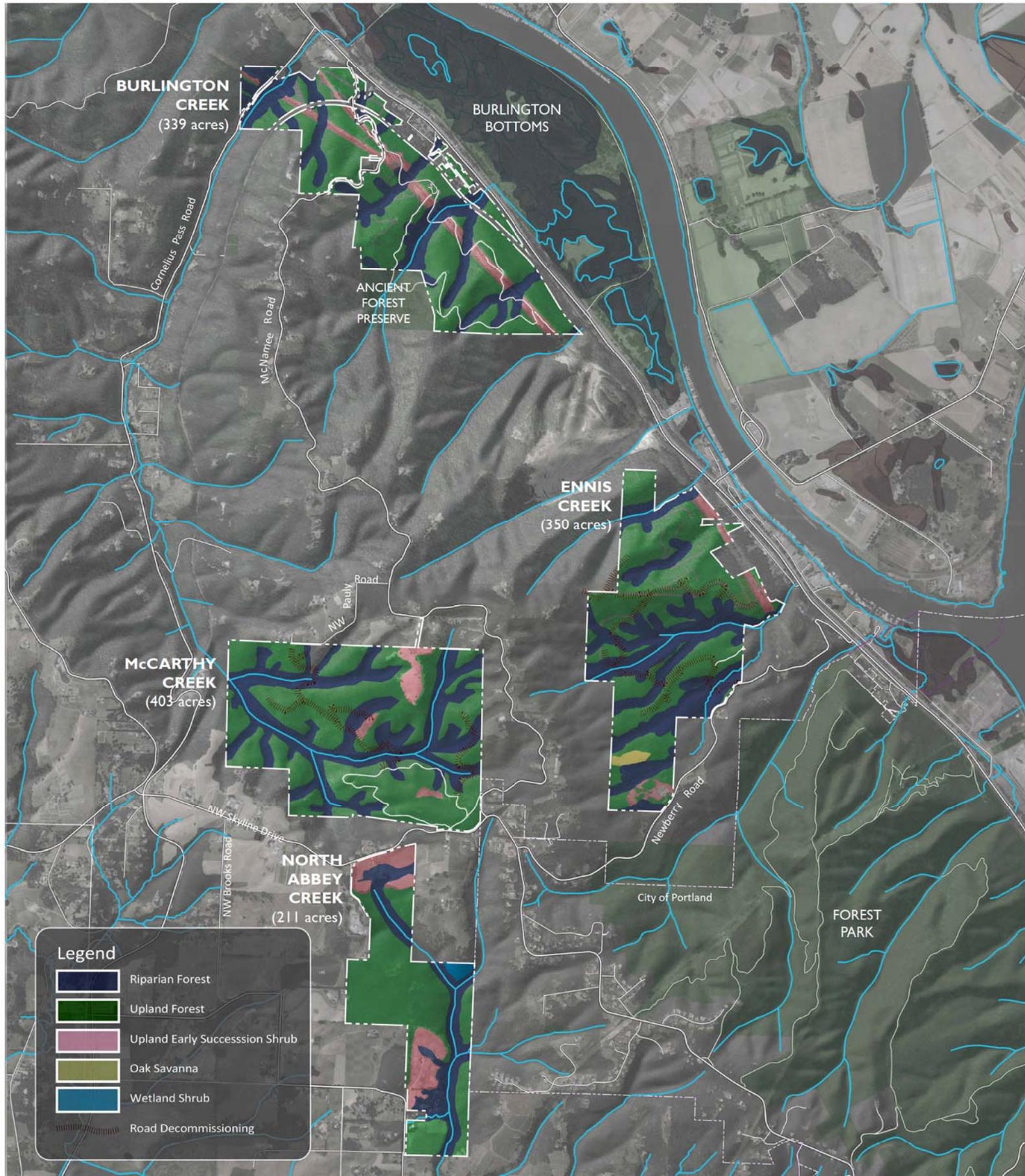
Oak savanna harbors many unique plant and animal species. Once common, it is now rare in our region.

Shrub Wetland

Shrub wetlands are important to many at-risk species and provide invertebrate food for songbirds and other animals.



NORTH TUALATIN MOUNTAINS CONSERVATION



NORTH TUALATIN MOUNTAINS RESTORATION WORK

Forest Thinning



The North Tualatin Mountains natural areas have hundreds of acres of former commercial tree farms dominated by young stands of Douglas fir. Reducing the number of conifers per acre helps keep trees healthy and preserves hardwoods and native shrubs. Large diameter trees are lacking in the North Tualatin Mountains natural areas and are valuable for wildlife and water quality. Thinning accelerates tree growth and makes forests more resilient to disease and wildfire. Many of the trees removed during thinning stay on site and provide habitat as down wood.

Thinning has begun at North Abbey and McCarthy Creek. Forests. Burlington and Ennis will be thinned over the next year.

Create Snags and Down Dead Wood

Standing dead trees (snags) and down wood have been removed by previous property owners through clearcut harvesting or other land uses. Adding them back into the forests by topping trees and dropping and leaving logs on the ground provides wildlife habitat and nutrient storage.

At Burlington, Ennis, McCarthy and North Abbey, Metro is developing key wildlife habitat like snags and down dead wood.



Native Plantings



Hardwoods and shrubs provide valuable food and shelter for many bird species but are often shaded out by fast growing conifers in young forests. Planting after thinning will help jump start the establishment of native shrubs and the creation of a diverse understory.

At all four sites, forest thinning will help to retain hardwood trees, create "breathing room" for native shrubs to grow, provide more diverse habitat, and make forests more resilient to disease and wildfire..



Stream Restoration



Large conifers and down wood have been removed from many of the North Tualatin riparian areas, resulting in incised (eroded) stream channels and slumping stream banks. Growing big conifers quickly and adding large wood into streams helps improve stream conditions and water quality.

Metro is actively working on stream restoration at North Abbey Creek. We recently placed 16 downed wood logjams along the creek to help curb stream erosion.

Decommission Roads and Remove / Replace Culverts



Metro will decommissioning unneeded roads and remove or replace undersized and failing culverts.

Old logging roads are a significant source of sediment in streams, which harms water quality and degrades fish habitat. Regrading and revegetating old roads reduce the risk of soil erosion and sediment in streams.

Many culverts in the North Tualatin Mountains natural areas are old and under-sized, blocking wildlife movement and increasing the risk of failure and the amount of sediment into streams, resulting in decreased water quality. Removing or replacing culverts improves water quality and provides better wildlife connectivity.

NORTH TUALATIN MOUNTAINS

WHAT WE'VE HEARD

Through three public open houses,
online and mail-in questionnaires, and
phone calls, letters, and meetings,

we have heard...



Protect open space

- You value that there are large areas of protected open space so close to the city
- Balance conservation with recreation, accommodate ecological function and human use
- Protect wildlife habitat and water quality
- Protect elk habitat

Access to nature close to home

- Opportunities to access close-in "wilderness"
- Ride to ride opportunities

Protect wildlife and water quality

- You value elk, red-legged frogs, and other wildlife in the North Tualatin Mountains
- Concern that activities will impact wildlife habitat
- We should be thoughtful about where and how much access we provide
- Please use best practices to build trails that don't impact water quality
- Avoid wetlands and frog habitat



Type and amount of access is important

- We've heard concern that activities will impact wildlife habitat
- Consider carrying capacities
- We have heard from some that only very limited access should be provided to the sites
- We've heard from some who don't think off-road cycling is appropriate here

Excitement for opportunities to be in nature

- Without having to drive too far outside of the city
- Desire to experience the sites by hiking, off-road cycling, or horseback riding
- Desire to be in nature
- Interest in wildlife viewing, scenic viewing, and opportunities to learn about nature, and volunteer



Trail design

- Preference for trails that are separate for different types of uses, or a mix of shared and separated trails.
- We heard that Loop trails are preferred to out and back trails
- Use existing road networks for access, where possible
- Use best practices in trail design like cross-slope and rolling grades to move water off the trail

Trail management

- We have heard concern about conflicts between different trail uses, and that trails need to be designed specifically for their specific uses

Other amenities

- Provide designated parking areas
- Garbage cans and restrooms

NORTH TUALATIN MOUNTAINS CONSERVATION PRINCIPLES



At a regional scale, the sites that Metro manages have been identified as either opportunities for nature parks, natural areas or nature preserves, depending on the sensitivity of the sites. The most fragile habitats preclude all but the lightest use by people.

North Tualatin Mountains have been identified as an opportunity for access. While the sites contribute greatly to conservation at a regional scale, the area's contribution to regional conservation is not necessarily compromised by access via hiking or off-road cycling.

The master planning process, which identifies access locations and broad trail corridors, relies on species habitat needs, landscape ecology principles, the expertise and experience of local wildlife biologists and landscape scale design strategies to determine where the most appropriate opportunities are for public access and connection to nature.

Maintain regional connectivity

- Acquire lands to connect regional significant focal areas and connect our region to surrounding public lands
- Restore habitat to improve natural area value to wildlife and water quality

North Tualatin Mountains acquisitions increase connectivity between Forest Park and the Coast Range. Restoration at all four North Tualatin Mountains sites is improving wildlife habitat and water quality.

Protect large areas of habitat

- Protect large blocks of forest
- Maximize unfragmented core habitat areas of 30 acres or greater
- Maintain some sites in a low or no use state

The recommended alternative identifies Ennis Creek and North Abbey Creek Forests for protection as large blocks of core habitat. The western half of McCarthy Creek Forest is also identified as core habitat.

The plan maximizes protection of undisturbed habitat areas of 30 acres or greater and regional habitat connectivity.

Protect wetlands and streams

- Minimize stream crossings, and when necessary cross streams at a perpendicular angle and use bridges instead of culverts where possible.
- Avoid trails running adjacent to and parallel to streams

The recommended alternative uses existing stream crossings when possible, avoids stream corridors.

Reduce fragmentation

- Decommission roads that are not needed for maintenance
- Locate access in areas that have existing use and in places that are fragmented by existing roads or trails
- Use old road networks for trails when possible

The recommended alternative identifies 3.5 miles of old road in McCarthy Creek and Ennis Creek Forests to be decommissioned. The recommended alternative focuses most access in Burlington Creek Forest, which is the site that is currently most heavily used.

Manage for habitat protection

- Minimize presence of dogs
- Restrict access at times when wildlife is more sensitive to human disturbance such as during breeding (nesting, elk calving, amphibian migration)
- Rely on local subject area experts for guidance on important species, including elk, amphibians and birds

Metro employs several staff biologists, has worked with local wildlife experts and enforces a no-dogs policy.

Improve habitat via restoration

- Restoration activities such as thinning, road decommissioning creating standing and down dead wood, and planting natives improve conditions for wildlife and create a forest that is more resilient to disease and wildfire

Metro is actively restoring forests and stream, habitat on all four sites. (see restoration boards for details)



NORTH TUALATIN MOUNTAINS DESIGN STRATEGIES



In the design and engineering phase, we will refine trail locations and design. During this process, we look more closely to make sure specific trail routes avoid sensitive areas, and use best practices in trail design to build trails that are durable, and do not cause erosion.

Habitat protection

- Locate new trails where habitat is already fragmented
- Avoid habitat for sensitive and listed species; provide appropriate setbacks from streams, corridors and sensitive areas
- Use bridges and boardwalks, instead of culverts, where appropriate
- Avoid constructing new trails in areas of high natural resource value

Water quality

- Decommission roads that are failing
- Minimize stream crossings where other routes are possible
- Align trails parallel rather than perpendicular to contours
- Maintain appropriate setbacks from wetlands and seasonally wet areas
- Be aware of seasonal moisture at toes of slope, north slopes and intermittent drainages
- Use best management practices such as cross-slope, rolling grades, and drainage dips to move water off trail and avoid erosion

Meaningful experience of nature

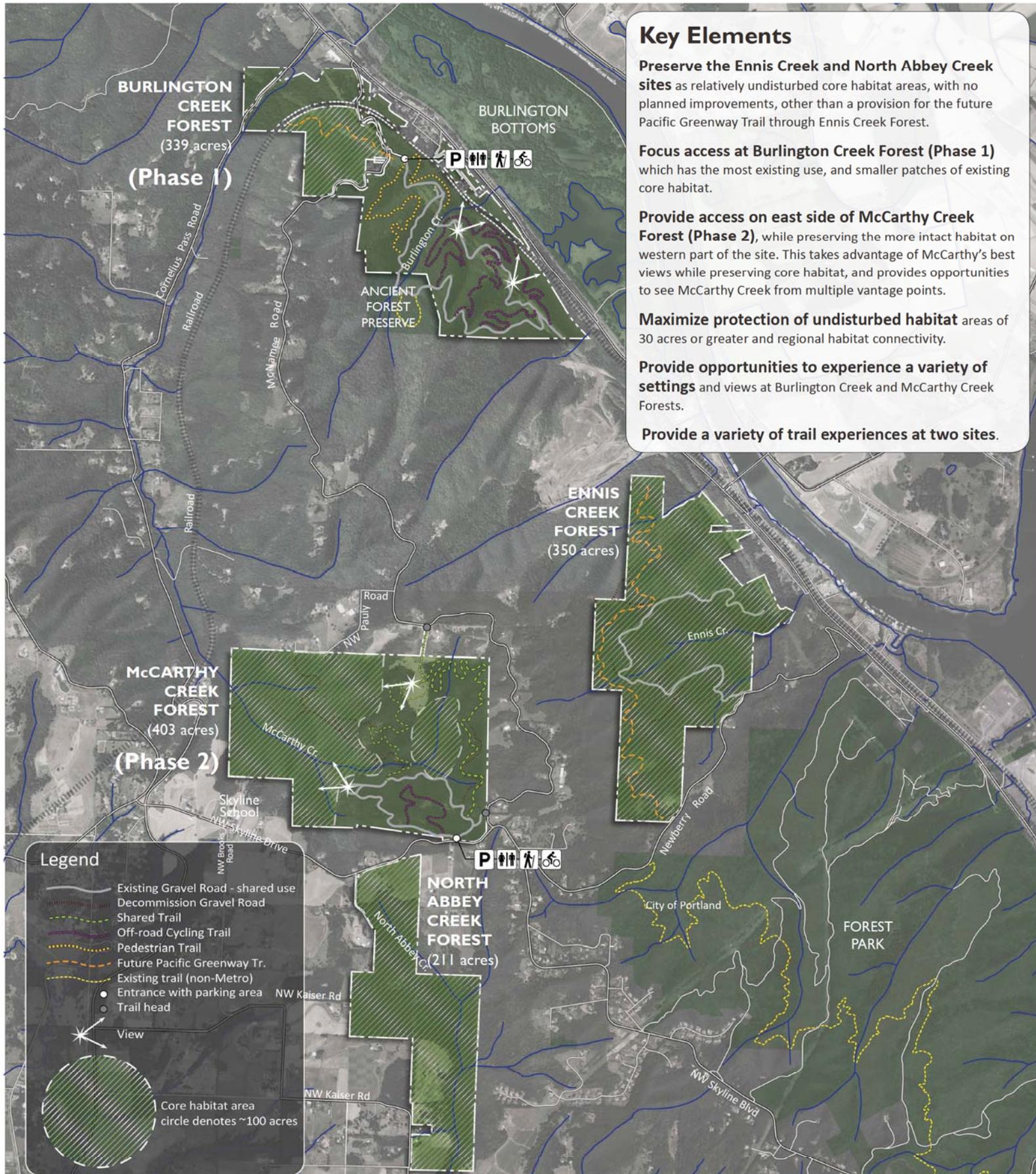
- Provide welcoming entries and clear way-finding signs
- Provide a variety of trail experience (various width, length, loops, challenge level) and trails designed appropriately for anticipated use to encourage proper trail use
- Provide access to viewpoints, and appropriate routes to key features
- Provide information about accessibility and challenge level
- Provide opportunities to learn about local habitat, site history, restoration and regional context
- Increase visitors' awareness of natural resources on site
- Provide opportunities for discovery

Safety, management & durability

- Involve visitors in maintenance and site stewardship to promote a more intimate awareness of habitat and water quality
- Promote stewardship through volunteer trail patrol
- Develop partnerships with volunteer organizations
- Simple and clear way-finding signs, use durable vandal resistant materials
- Design trails that are safe and challenging
- Safety and security measures include gated entries to control access at night, daily ranger patrols, and employment of security patrols as needed



NORTH TUALATIN MOUNTAINS RECOMMENDED ALTERNATIVE



Key Elements

- Preserve the Ennis Creek and North Abbey Creek sites** as relatively undisturbed core habitat areas, with no planned improvements, other than a provision for the future Pacific Greenway Trail through Ennis Creek Forest.
- Focus access at Burlington Creek Forest (Phase 1)** which has the most existing use, and smaller patches of existing core habitat.
- Provide access on east side of McCarthy Creek Forest (Phase 2)**, while preserving the more intact habitat on western part of the site. This takes advantage of McCarthy's best views while preserving core habitat, and provides opportunities to see McCarthy Creek from multiple vantage points.
- Maximize protection of undisturbed habitat** areas of 30 acres or greater and regional habitat connectivity.
- Provide opportunities to experience a variety of settings** and views at Burlington Creek and McCarthy Creek Forests.
- Provide a variety of trail experiences at two sites.**

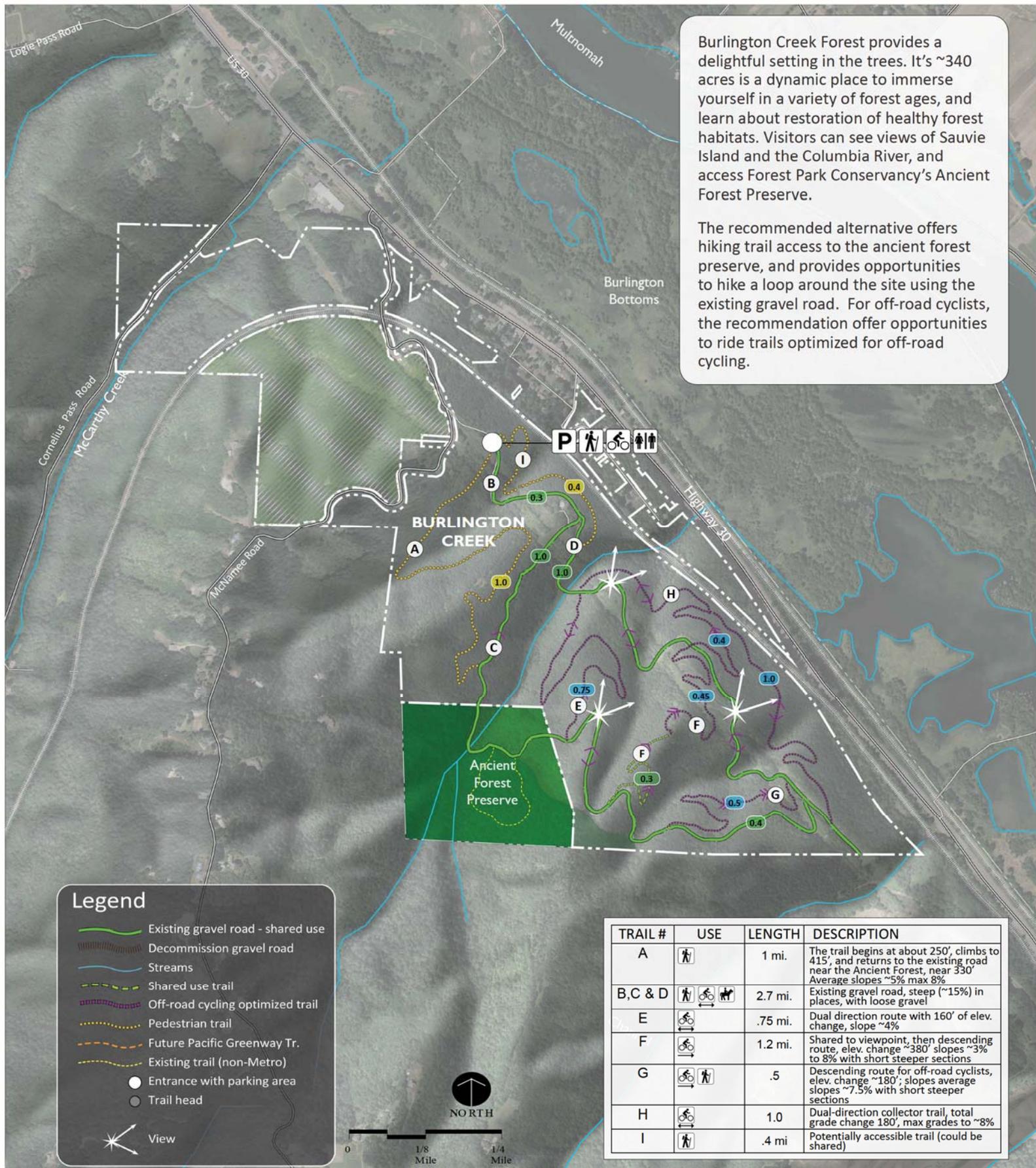
Legend

- Existing Gravel Road - shared use
- Decommission Gravel Road
- Shared Trail
- Off-road Cycling Trail
- Pedestrian Trail
- Future Pacific Greenway Tr.
- Existing trail (non-Metro)
- Entrance with parking area
- Trail head
- View
- Core habitat area circle denotes ~100 acres

NORTH TUALATIN MOUNTAINS BURLINGTON CREEK

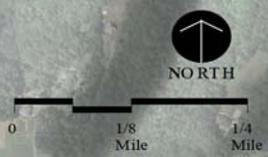
Burlington Creek Forest provides a delightful setting in the trees. It's ~340 acres is a dynamic place to immerse yourself in a variety of forest ages, and learn about restoration of healthy forest habitats. Visitors can see views of Sauvie Island and the Columbia River, and access Forest Park Conservancy's Ancient Forest Preserve.

The recommended alternative offers hiking trail access to the ancient forest preserve, and provides opportunities to hike a loop around the site using the existing gravel road. For off-road cyclists, the recommendation offer opportunities to ride trails optimized for off-road cycling.



Legend

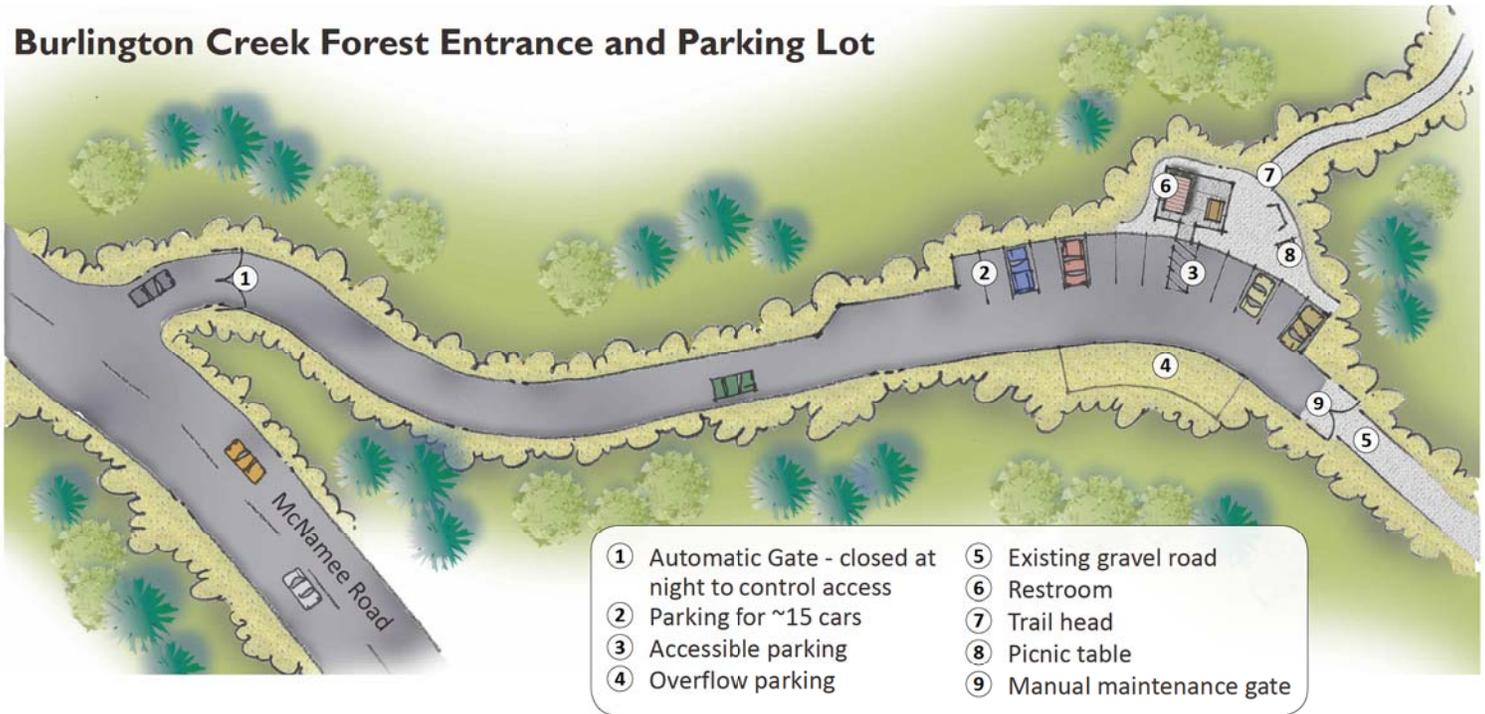
- Existing gravel road - shared use
- Decommission gravel road
- Streams
- Shared use trail
- Off-road cycling optimized trail
- Pedestrian trail
- Future Pacific Greenway Tr.
- Existing trail (non-Metro)
- Entrance with parking area
- Trail head
- View



TRAIL #	USE	LENGTH	DESCRIPTION
A		1 mi.	The trail begins at about 250', climbs to 415', and returns to the existing road near the Ancient Forest, near 330'. Average slopes ~5% max 8%
B, C & D		2.7 mi.	Existing gravel road, steep (~15%) in places, with loose gravel
E		.75 mi.	Dual direction route with 160' of elev. change, slope ~4%
F		1.2 mi.	Shared to viewpoint, then descending route, elev. change ~380' slopes ~3% to 8% with short steeper sections
G		.5	Descending route for off-road cyclists, elev. change ~180'; slopes average slopes ~7.5% with short steeper sections
H		1.0	Dual-direction collector trail, total grade change 180', max grades to ~8%
I		.4 mi	Potentially accessible trail (could be shared)

BURLINGTON ENTRY

Burlington Creek Forest Entrance and Parking Lot

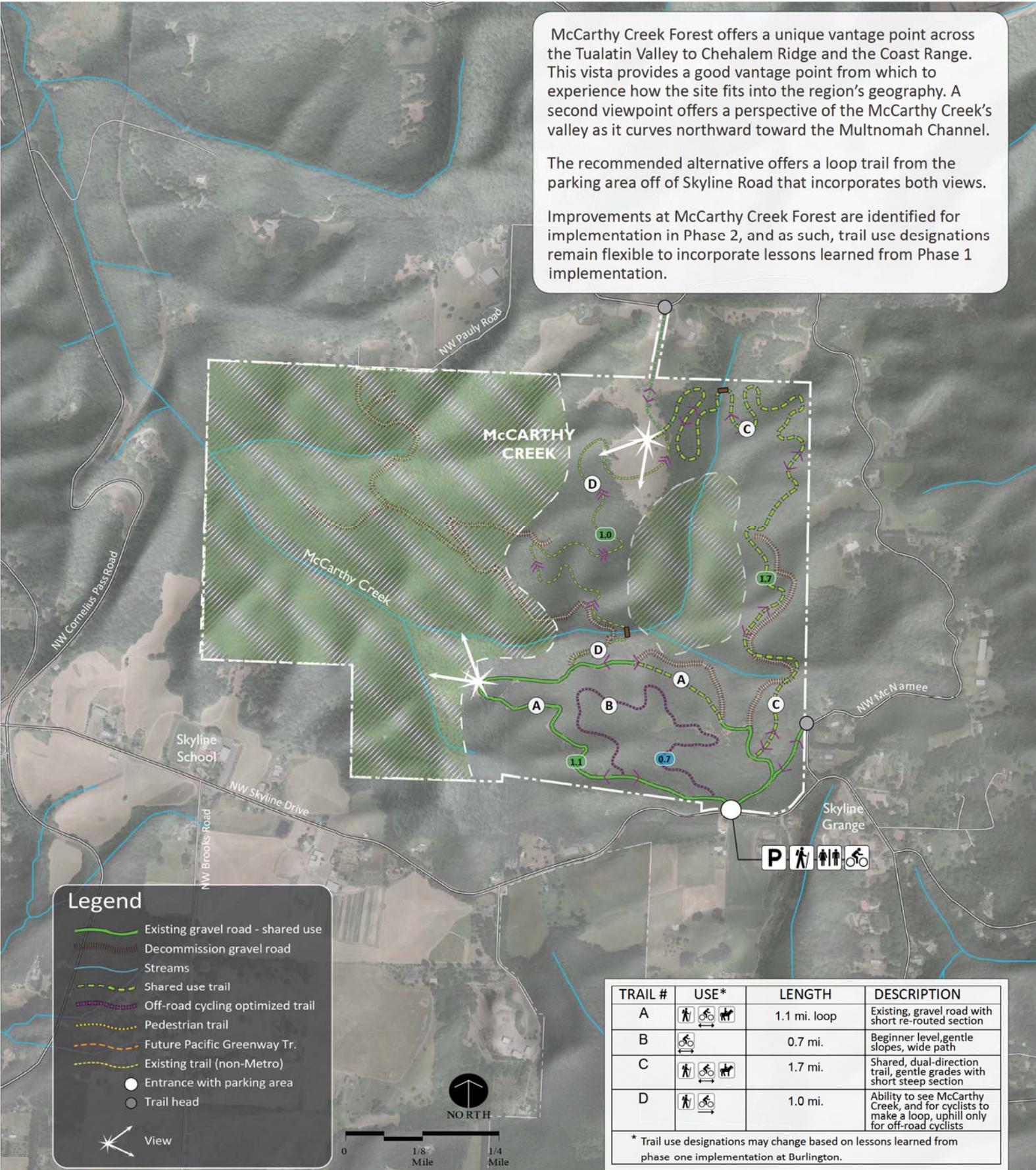


NORTH TUALATIN MOUNTAINS McCARTHY CREEK

McCarthy Creek Forest offers a unique vantage point across the Tualatin Valley to Chehalem Ridge and the Coast Range. This vista provides a good vantage point from which to experience how the site fits into the region's geography. A second viewpoint offers a perspective of the McCarthy Creek's valley as it curves northward toward the Multnomah Channel.

The recommended alternative offers a loop trail from the parking area off of Skyline Road that incorporates both views.

Improvements at McCarthy Creek Forest are identified for implementation in Phase 2, and as such, trail use designations remain flexible to incorporate lessons learned from Phase 1 implementation.



Legend

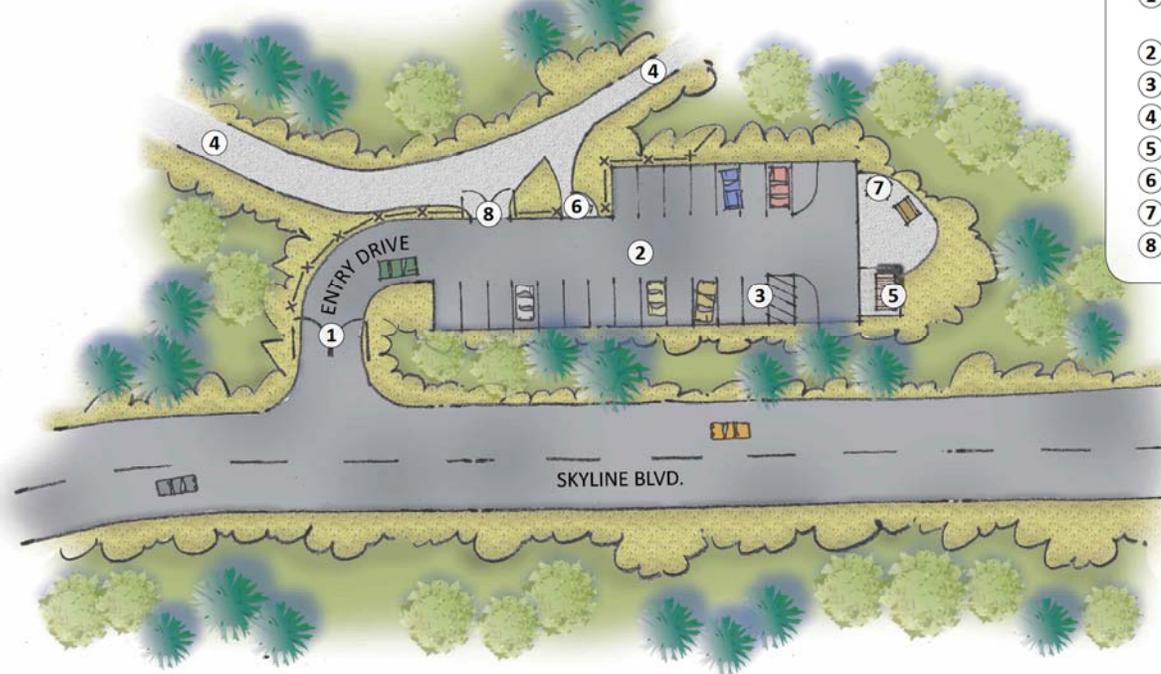
- Existing gravel road - shared use
- Decommission gravel road
- Streams
- Shared use trail
- Off-road cycling optimized trail
- Pedestrian trail
- Future Pacific Greenway Tr.
- Existing trail (non-Metro)
- Entrance with parking area
- Trail head
- View

TRAIL #	USE*	LENGTH	DESCRIPTION
A		1.1 mi. loop	Existing gravel road with short re-routed section
B		0.7 mi.	Beginner level, gentle slopes, wide path
C		1.7 mi.	Shared, dual-direction trail, gentle grades with short steep section
D		1.0 mi.	Ability to see McCarthy Creek, and for cyclists to make a loop, uphill only for off-road cyclists

* Trail use designations may change based on lessons learned from phase one implementation at Burlington.

NORTH TUALATIN MOUNTAINS McCARTHY ENTRY

McCarthy Creek Forest Entrance and Parking Lot



- ① Automatic Gate - closed at night to control access
- ② Parking for ~15-20 cars
- ③ Accessible parking
- ④ Existing gravel road
- ⑤ Restroom
- ⑥ Trail head
- ⑦ Picnic table
- ⑧ Manual maintenance gate

Trailhead



Viewpoints



Picnic Area



Parking Lot



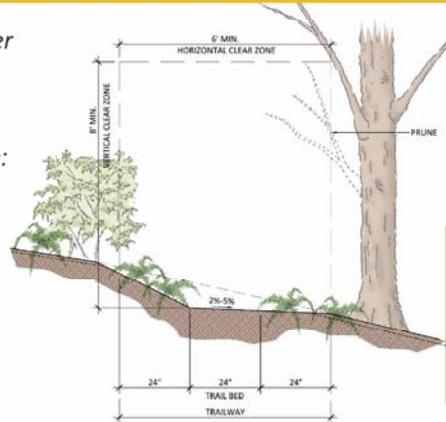
NORTH TUALATIN MOUNTAINS TRAIL DESIGN

Hiking trails



The trails at Burlington and McCarthy Creek forests will meander up and down steep forested topography. Hiking experience will generally be of moderate to high challenge level. Over the years, hikers can see younger forests take on characteristics of mature forests. Design strategies specific to hiking trails include:

- Provide resting points and passing opportunities
- Identify opportunities for loop trails where possible, or trail segments that access a destination, like views or the Ancient Forest
- Locate trails so that the visitors see views, vegetation, and wildlife, rather than one another



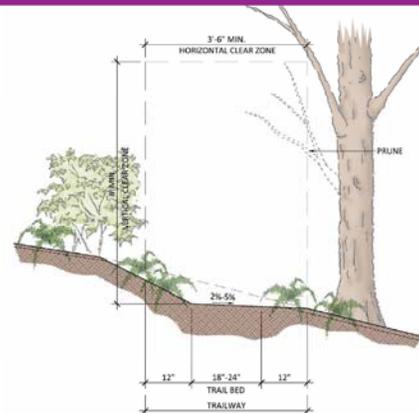
Width: 18"-30"
Surface: Soil
Trail grade (moderate challenge): to 8% (short segments may be steeper); **(high challenge):** to 15% (short segments steeper than 15%)

Off-road cycling trails



Burlington and McCarthy Creek Forests offer opportunities to ride trails optimized for off-road cycling. Trails will be designed to provide a variety of challenge levels, and opportunities to create loops. The following design strategies help make a fun and safe experience for all.

- Control speed through trail design
- Avoid long sustained grades, stacking switchbacks and incorporate climbing turns
- Limit overall average longitudinal slope of each trail segment to 10%
- Use curves to create interest, manage runoff, control speed, and have fun
- Provide clear visibility and long sight distances at curves and intersections
- Provide resting points and passing opportunities



Beginner



Width: 18" (one way singletrack) to 4' (add width & super-elevation at curves as needed)
Surface: varies, typically mineral soils firm and stable
Trail grade: Avg. 5% or less with short sections up to 15%
Natural obstacles/Trail features: Limited obstacles 2" or less
Sight Distance: 10'-100' depending on speed/flow

Beginner trails will be designed with wider trail bed and gentler grades. These are appropriate for inexperienced riders, helping develop skills and build confidence.

- Shorter trails, closer to parking area
- Trails that are wider, with average grades <5%
- Trail surface generally firm and stable
- May include flowing single track style sections
- Trail may include small obstacles of roots or rock
- Limited challenging features

Intermediate



Width: 18" (one way singletrack) to 4' (add width & super-elevation at curves as needed)
Surface: Mineral soils, mostly stable with some variability
Trail grade: Avg. 10% or less with short sections up to 15% or greater
Natural obstacles/Trail features: Unavoidable obstacles 8" tall or less
Sight Distance: 10'-100' depending on speed/flow

Intermediate level trails will be designed with more narrow trails and steeper grades for more confident riders and offer a variety of moderate level challenges.

- Trails that are farther from entry will be designed to be more challenging
- Trail surface may be loose or uneven
- Moderate grades, but may include short steep sections
- Designed with tuns, obstacles and uphill sections to moderate speeds and naturally slow riders

NORTH TUALATIN MOUNTAINS TRAIL DESIGN

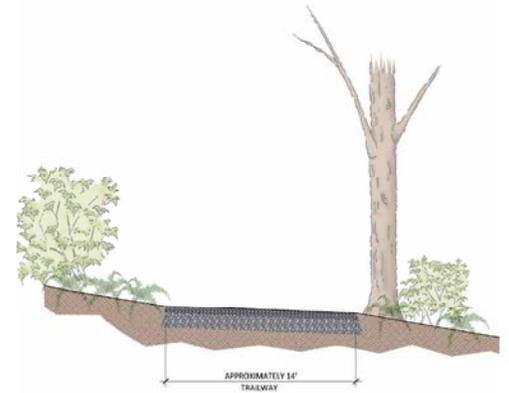
Shared Trails

Existing gravel road



Existing gravel roads will remain where they are needed for maintenance. They are currently used by hikers, off-road cyclists, and horseback riders, and will continue to provide opportunities to experience the sites.

- Provide dual direction for off-road cyclists hikers, and equestrians
- Typically about 14 feet wide, and steep in places.
- Surface is steep and may be loose or uneven
- Maintenance vehicles will use the roads at times to access the site and powerline corridor

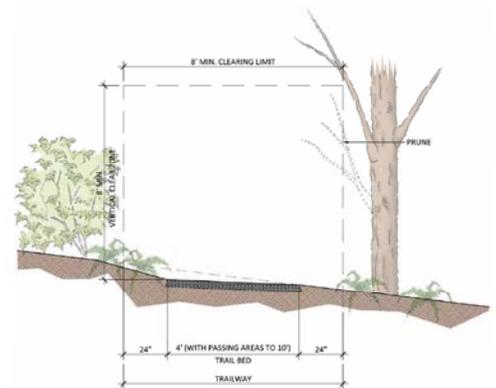


Dual Direction



In some places where topography is more gentle, shared trails will accommodate multiple uses in two directions. Trail grades will be gentle, though some sections may still exceed guidelines for accessibility.

- Where grades are within guidelines for accessibility a smooth crushed rock trail surface will be constructed
- Sight Distance: 40'-100' depending on speed/flow of uses
- Trail grade: 0-5% (to 12% if needed)
- Trail design will control cyclists speed with short uphill sections
- Shared with off road cyclists, hikers, and equestrians
- Moderate grades, may include short steep sections greater than 8%

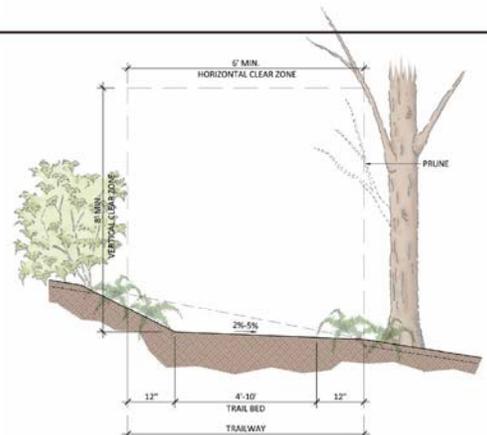


Uphill for off-road cyclists

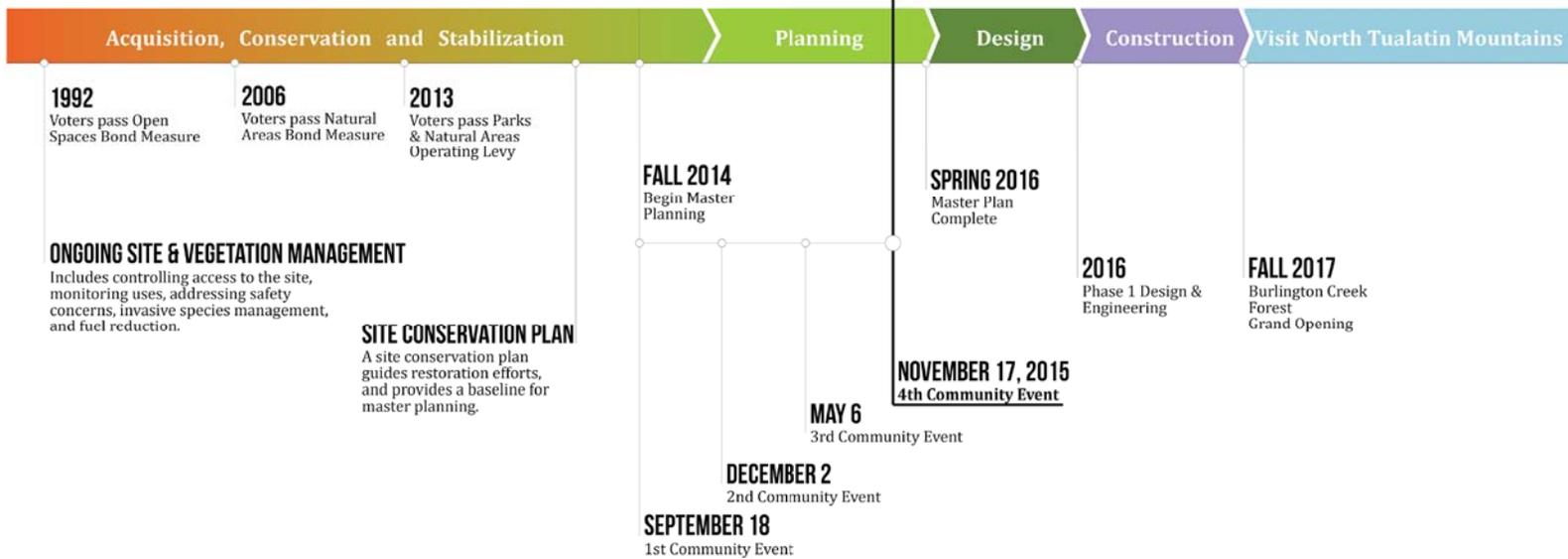


In some places, where topography is steeper, shared trails will include off-road cyclists in the uphill direction, with separate single use trails in the descending direction for cyclists.

- One-way (uphill) for off road cycling
- Dual direction for hiking
- Sight Distance: 40'-100' depending on speed
- Moderate grades, may include short steep sections
- Provide resting points and places to pass



TIMELINE



NEXT STEPS

Final Recommendation

- We will incorporate comments on the recommended alternative into an access master plan for the North Tualatin Mountains

Master Plan

- We will write a Master Plan document. Once the Stakeholder Advisory Committee's feedback has been incorporated, the final draft of the Master Plan will be posted online for public comments.

Metro Council Adoption

- After the public review period, staff will present the North Tualatin Mountain Master plan for adoption by Metro Council.

Phase I Implementation

- Design and Engineering for Burlington Creek Forest access will begin once the Master Plan is adopted by council.

