



Burlington Creek Forest Nature Park

Conditional Use/Community Service
Design Review
SEC Permit
Hillside Development Permit
PAM Permit
Lot of Record Determination
Forest Development Standards Review
Exception to Secondary Fire Safety Zone

Narrative and Exhibits

Submitted by:
METRO

JANUARY 2018 submission (to replace September 2017 submission)

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Section I: Application Summary

Proposal:	Metro seeks land use approval for a public nature park project, which will include formalizing, improving, and expanding existing visitor access improvements; hiking, and natural multi-use trails on the property known as Burlington Creek Forest.
Site Location:	Burlington Creek Forest is in the North Tualatin Mountains, north of Forest Park, south of Cornelius Pass Road, and west of U.S. Highway 30, in unincorporated Multnomah County.
Subject Parcels:	<p>Upon which the access drive, parking area, trail head, and trails will be located:</p> <p>2N1W20B-00100; 2N1W20B-00300; 2N1W20B-00400; 2N1W20B-00500; 2N1W20B-00600; 2N1W20BC-00800; 2N1W20BC-00900; 2N1W20BC-01000; 2N1W20BC-01200; 2N1W20C-00100; 2N1W20C-00200; 2N1W20C-00300; 2N1W20C-00400; 2N1W20C-00500; 2N1W20C-00600; 2N1W20C-00700; 2N1W20BD-03700; 2N1W20-00400.</p> <p>Upon which visual clearance grading activities will take place (off-site from use activities):</p> <p>2N1W20BC-01400; 2N1W20BC-01500; 2N1W20BC-01600; 2N1W20BC-01700.</p>
Permit Approval:	Conditional Use/Community Service, Design Review, Significant Environmental Concern, Hillside Development, Protected Aggregate Mineral, Lot of Record Determination, Forest Development Standards Review, and Secondary Fire Safety Zone Exception
Application Type:	Types I, II, III – all being processed in conjunction with applicant’s Type IV Comprehensive Plan Amendment (text)
Comprehensive Plan Map Designation:	West Hills Rural
Zoning:	CFU-1 (Commercial Forest Use – 1)
Property Owner and Applicant:	Metro 600 NE Grand Avenue Portland, Oregon 97232

**Applicant's
Representatives:**

Gary Shepherd (primary contact)
gary.shepherd@oregonmetro.gov
Office of Metro Attorney
600 NE Grand Avenue
Portland, OR 97232

Karen Vitkay, PLA
Metro Parks and Nature
Senior Regional Parks Planner

Project Team:

Planning and Legal
Metro

Site Conservation/Mitigation Planning
Metro

Civil Engineering/Surveying
AKS Engineering and Forestry

Biological/Habitat
Siskiyou BioSurvey
Metro

Geotechnical Engineering
Carlson Geotechnical

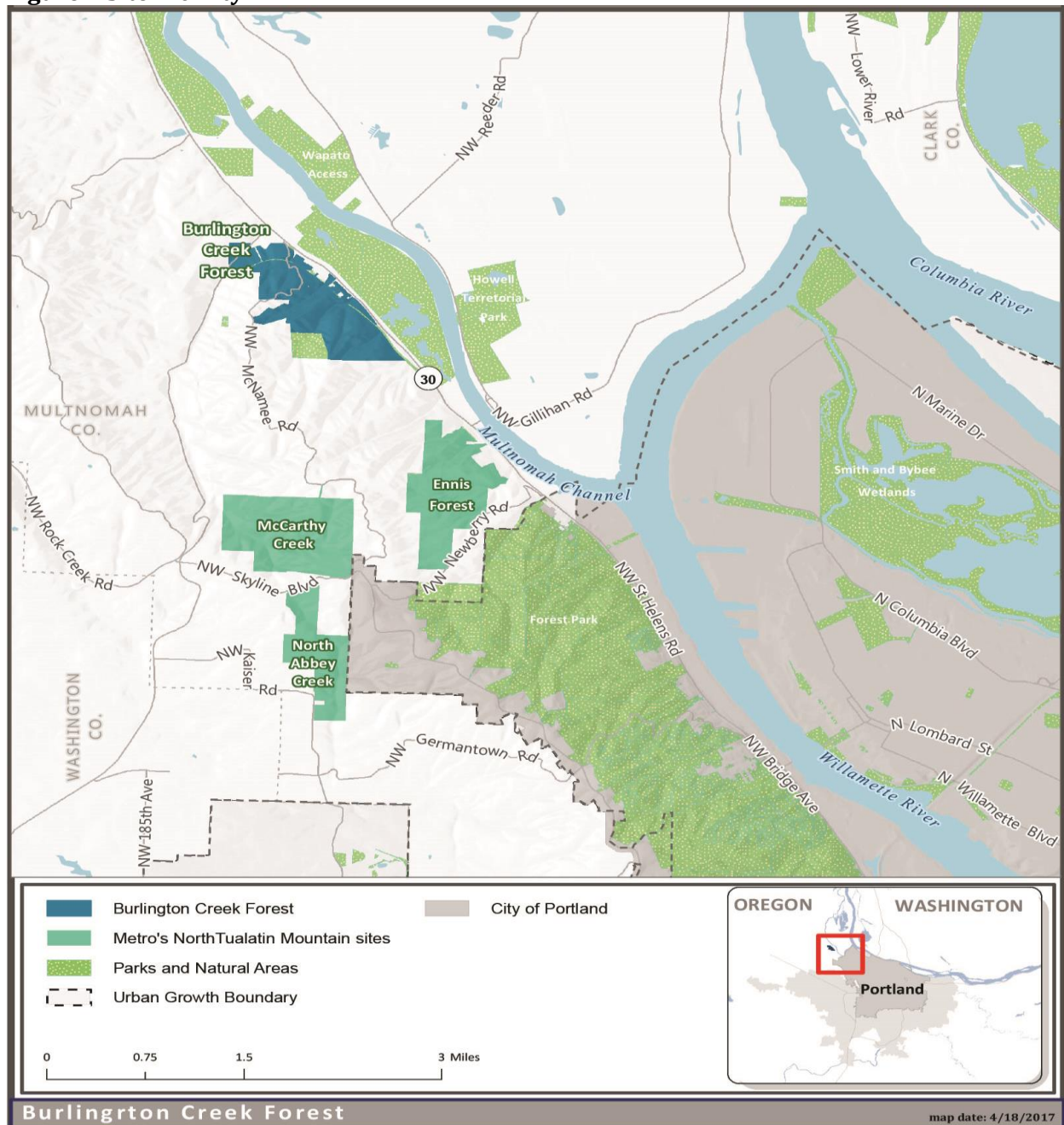
Traffic Engineering
KPFF
Nemariam Engineers & Assoc., LLC

Trail Specialist
Sentieros Consulting

Section II: Introduction

The Tualatin Mountains extend into the greater Portland area along the Columbia River, dividing the lowlands of the Willamette and Columbia rivers from the Tualatin Valley. Burlington Creek Forest, McCarthy Creek Forest, Ennis Creek Forest, and North Abbey Creek Forest are four discontinuous sites owned by Metro, totaling 1,300 acres that form the North Tualatin Mountains. Collectively, the sites preserve large blocks of upland forest, streams and habitat connectivity northwest of Forest Park and southeast of NW Cornelius Pass Road. Metro desires to improve access to Burlington Creek Forest in a way that ensures healthy habitats and meaningful experiences in nature.

Figure 1 Site Vicinity

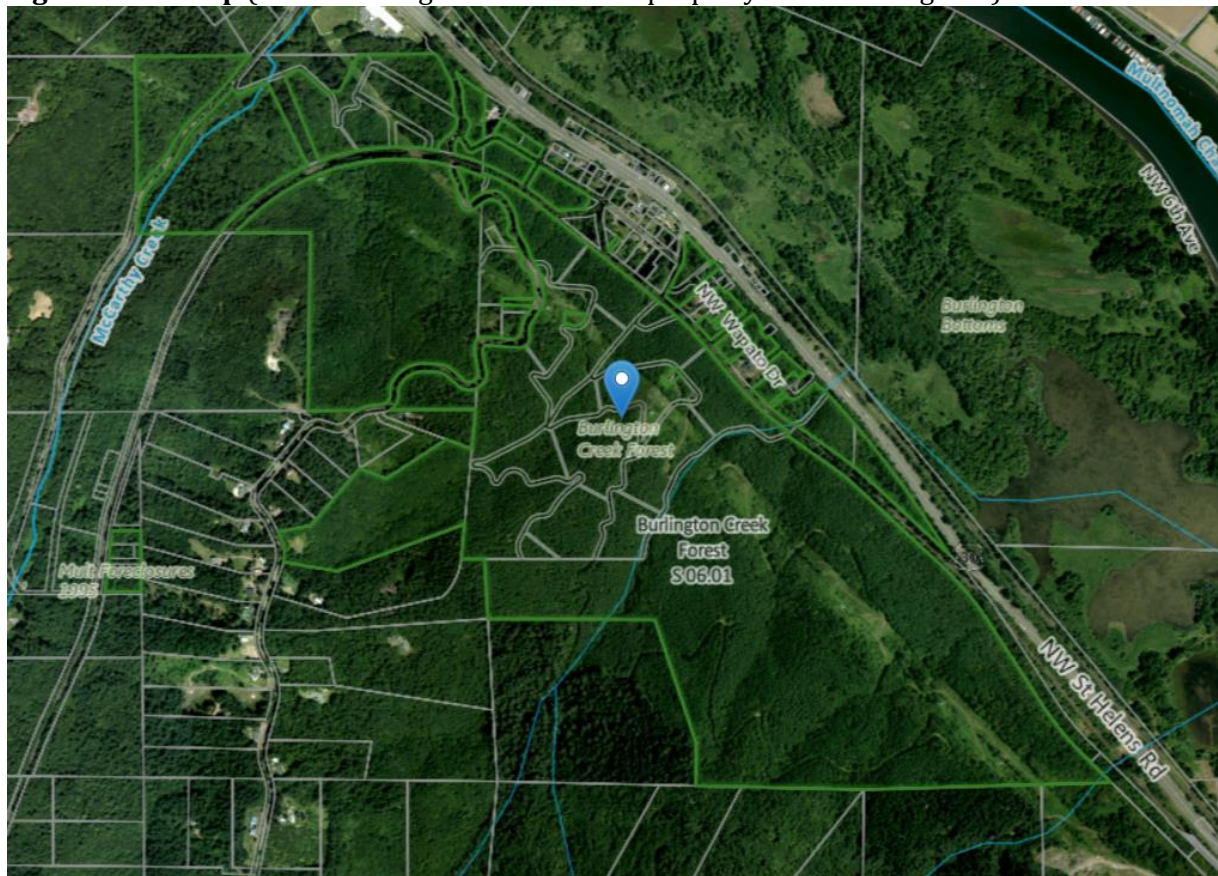


Metro's Burlington Creek Forest site is located on the east-facing slopes of the mountain ridge and is similar in character to Forest Park, with forested hillside and fairly steep topography typical of the area. The site is located outside of the Urban Growth Boundary in unincorporated Multnomah County.

Burlington Creek Forest is approximately 350 acres zoned CFU. The area surrounding Burlington Creek Forest contains a mixture of land uses including residential, timber harvest, gravel extraction, ancient forest preserve, and wetland. Surrounding land uses of note include the following:

- *Quarry:* An operational quarry, located along U.S. Highway 30 southeast of Burlington Creek Forest. There is a trail easement held by the Forest Park Conservancy on the property to establish a trail connection between Ennis Creek and Burlington Creek forests.
- *Rural Residential:* Residential areas composed primarily of rural residential parcels typically one acre or more, and with many 20 acres or greater in size.
- *Ancient Forest Preserve:* The Ancient Forest, owned and managed by the Forest Park Conservancy, protects nearly 40 acres of old growth forest adjacent to the Burlington Creek Forest site. The conservancy welcomes visitors to the Ancient Forest and has recently extended the trail system.
- *Burlington Bottoms:* The roughly 400-acre Burlington Bottoms wetlands, owned by Bonneville Power Administration (BPA) and managed by Oregon Department of Fish and Wildlife (ODFW), lie northeast of Burlington Creek Forest.

Figure 2 Site Map (Metro Burlington Creek Forest property bordered in green)



In recent history, this forest was managed primarily for commercial timber harvest. Much of the area was logged in the early 1990s. Hundreds of acres are dominated by single species, densely planted young stands of Douglas fir. When acquired by Metro, little to no snags or downed wood was present.

The property is currently used for recreational purposes. People walk and ride bikes on existing logging roads and access the site via the existing access drive from NW McNamee Road as well as an unsanctioned trail. Metro is also managing the forest to reduce the number of Douglas fir trees per acre, to promote healthy trees, preserve hardwoods and native shrubs, and increase diversity.

McNamee Road, Cornelius Pass Road and the railroad all cross through the Burlington Creek Forest. Additional infrastructure include power line corridors running the length of the site, logging roads, and a Burlington Water District water tank that serves the neighborhood below.

The Burlington forest was platted for residential subdivision development in 1909. As was common at the time, the plat was done without consideration of topographical, riparian, and other geographical site limitations. As a result, only a very small portion of the platted property, specifically that east of the railroad line and adjacent to Highway 30, have developed to support residential uses. The remainder of the platted property, west of the railroad line, remained in commercial forest production. The Burlington Plat resulted in a lengthy right of way system being dedicated to the County. Those platted public right of ways remain undeveloped. Today, only forest practice roadways exist. Those forest roads, for the most part, do not align with the public right of way and were never intended as public roads. The forest practice road intersects with NW McNamee Road south of the dedicated Bonito Drive right of way. As such, applicant does not consider its forest practices road a part of the County platted road system. Attached is an aerial map that depicts the platted right of way and existing forest roads. Exhibit 25. Also seen on Exhibit 25 is NW McNamee Road to the west, the railroad lines, and the residential development adjacent to US Highway 30. Applicant acknowledges the existence of the platted right of ways within the subject property. Applicant acknowledges County authority to regulate activities within platted rights of way. Applicant understands that proposed improvements within sections of the right of way will require either encroachment permits or a right of way vacation approved through the County Transportation Department. An application requesting either a vacation or encroachment permit would be separate from the subject application and is not currently under consideration. However, the need to obtain an encroachment permit or right of way vacation should be made a condition of approval. Metro manages the property for forest uses. There is no expected residential development that would be served by the road system. The existing public right of way is not maintained or developed and serves no county road purpose. The CFU zoning, environmental overlays, and topographical limitations cannot support residential development and would prevent a roadway from being developed in its platted area.

Connectivity between Burlington Creek Forest and Burlington Bottoms Wetlands and Multnomah Channel located east of the forest is impeded by US Highway 30, local roads, residential development, and the railroad line.

Burlington Creek and several unnamed tributaries flow eastward through steep valleys to the base of the ridge.

Visitors to Burlington Creek Forest will access the site from an existing access drive off of NW McNamee Road. Proposed improvements include limited, essential day-use amenities and signs designed to orient visitors and highlight the site's unique habitat, wildlife, and geological features; a gated parking lot for approximately 25 cars, including one ADA parking space; a prefabricated vault

restroom with a non-flammable, concrete wall and roof structure; and a trailhead and shared use trails, designed specifically for hiking and off-road cycling. Visitors to Burlington Creek Forest will be able to continue walking and riding bikes and horses on the nearly three miles of existing logging roads on the site with the addition of nearly six miles of new natural surface multi-use trails.

Recreational objectives include: Providing a formal system of trails that serve appropriate and multiple uses and abilities, including hiking, off-road cycling, and wildlife viewing; providing scenic viewpoints; providing safe pedestrian and vehicle access to the area; providing necessary site amenities and infrastructure to serve visitors; providing a family-friendly environment with opportunities for people of all ages and abilities to enjoy the site; and following “sustainable trails” guidelines for all trail development.

Impacts to the surrounding neighborhoods from expanded site development and public use will be minimal. The site is isolated from adjacent property and uses given its sheer size. Uses are promoted in the interior of the forest. Additional Metro objectives include: Providing controlled access and on-site parking scaled to the site’s capacity, assuring the privacy of neighbors by controlling access, providing setbacks and buffers, and monitoring the use.

All rules and regulations at the nature park will be consistent with Metro’s Title 10, which outlines regulations governing the use of Metro owned and operated regional parks and natural areas in order to protect wildlife, plants, and property, as well as promotes the safety and enjoyment of those visiting these facilities. For public security and safety, hours of operation and regulatory signs will be installed at the access point. Regulatory signs will include public use restrictions, such as no fires, camping, hunting, or motorized vehicles, and other uses outlined in Metro’s Title 10. Vehicle access will be controlled with automatic gates to prevent after hours use. Gates will be locked daily at park closure times. Boundary markers will be installed along the perimeter of the natural area to clearly delineate the public/private edge. Regular maintenance of the park will include toilet cleaning, litter pick-up and general monitoring. Routine seasonal maintenance of the natural area, including trails, will also occur. Metro Park Rangers, land managers, volunteer coordinators, nature educators and scientists will ensure successful operation, maintenance, and continued use of the site.

Generally, site rehabilitation and management will be pursuant to a Site Conservation/Restoration Plan, produced by Metro, which continues restoration aimed to protect and enhance the forest’s natural and scenic resources and to create a place for wildlife to thrive. Exhibit 1. Metro’s Site Conservation Plan identifies desired future conditions for the forest and riparian areas. The desired conditions will promote native trees and shrubs; provide habitat for migrating and nesting birds, mammals and amphibians; and protect water quality and riparian habitat while promoting cooler temperatures. The Site Conservation Plan is a document that guides Metro’s stewardship and restoration work; serving as a tool for protecting and enhancing the unique characteristics of the site while also allowing for access by the public. The SCP was developed in collaboration with Metro scientists, land managers, and planning staff. This document defines the key ecological attributes, conservation targets, and recreation and access objectives for the site. That work is implemented as funding is allocated and pursuant to priorities identified by Metro.

With respect to the subject use application, the SCP is not intended or offered as specific mitigation for potential SEC impacts. Rather, reference is made to the SCP to detail Metro’s land management and site conservation approach for the property generally.

Planning and Design Effort:

The Burlington Creek Forest was one of four forested sites that were the subject of the North Tualatin Mountains Access Master Plan. That Master Plan is being considered by the County under a separate application for a County Comprehensive Plan text amendment. The Master Plan was approved by Metro Council in 2016.

The Master Plan is designed to provide a long-term vision and implementation strategy to guide land management and public use of the North Tualatin Mountains. The plan was developed by land and property managers, landscape architects, independent consultants, scientists, planners, naturalists, project stakeholders, and community participants.

Metro employs a science-based approach to site management and conservation. During the master planning process, Metro scientists provide baseline information about current conditions, conservation targets and habitat restoration goals, guided by conservation biology, site knowledge, research and external experts to evaluate possible impacts of potential access opportunities. Metro scientists then work with Metro's planning team to develop access opportunities that are compatible with habitat, wildlife, and water quality goals for the natural area. The process objective is to identify suitable locations and activities for recreation while seeking to stabilize and restore diversity and the ecological health of the site.

The final product and public improvements contemplated are the result of over two years of significant public outreach effort, including community meetings, public open houses, surveys, and outreach. The project stakeholders were Laurel Erhardt, Skyline Ridge Neighbors; Brad Graff, Skyline Ridge Neighbors; Jerry Grossnickle, Forest Park Neighborhood Association; Andy Jansky, Northwest Trail Alliance; Shawn Looney, West Multnomah Soil and Water Conservation District; Renee Myers, Forest Park Conservancy; Travis Neumeyer, Trackers Earth; Jinnet Powell, Skyline School; Emily Roth, Portland Parks & Recreation; Jim Thayer, Oregon Recreation Trails Advisory Committee; Roger Warren, Oregon Department of Forestry; and, Susan Watt, Skyline Ridge Neighbors.

The plan's goals include: Protecting fish and wildlife habitat and water quality while providing opportunities for meaningful experiences of nature in a safe, controlled, and sustainable manner.

The visitor access and land management activities proposed for Burlington Creek Forest represent that balanced approach.

The design presented for land use approval:

- Protects and enhances natural and scenic resources by protecting large blocks of forest and core habitat;
- Integrates community and partner suggestions;
- Identifies and accesses the best location for day use and trail heads;
- Utilizes existing roads and locates new trails to avoid and minimize impacts to sensitive natural resource areas.
- Employs sustainable trail construction techniques;
- Provides safe ingress and egress and internal movement of vehicles and pedestrians; and
- Is designed consistent with the surrounding landscape and uses and in a scale and character that the community supports.

The plan and design under consideration is the product of nearly three years of work by Metro, partnering agencies, the community, and stakeholders.

Project plans will be implemented as funding is available. Applicant is not seeking a phased approval or proposing a phased development. An approval decision will be implemented according to the County's administrative rules.

Section III: Applicable Criteria

Below are the applicable review criteria from Multnomah County Code (MCC).

MCC Chapter 33:

<i>33.2000-33.2020</i>	<i>Zoning: Commercial Forest Use – 1</i>
<i>33.2030-33.6350</i>	<i>Permitted Use; Community Service Use; Conditional Use & Forest Development Standards Review</i>
<i>33.7000-33.7055</i>	<i>Design Review</i>
<i>33.4100-33.4215</i>	<i>Off-Street Parking</i>
<i>33.4500-4530</i>	<i>Significant Environmental Concern</i>
<i>33.4565</i>	<i>SEC-v Permit</i>
<i>33.4567-33.4570</i>	<i>SEC-h Permit</i>
<i>33.4575</i>	<i>SEC-s Permit</i>
<i>33.5500-33.5520</i>	<i>Hillside Development Permit</i>
<i>33.5700-33.5745</i>	<i>Protected Aggregate and Mineral Sites</i>
<i>33.7400-33.7490</i>	<i>Signs</i>
<i>33.2075</i>	<i>Lot of Record Determination</i>

MCC Chapter 37:

<i>37.0570</i>	<i>Administration and Procedures</i>
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Section IV: Compliance with Applicable Review Criteria

A. Zoning

Commercial Forest Use CFU-1

§ 33.2000 Purposes.

The purposes of the Commercial Forest Use District are to conserve and protect designated lands for continued commercial growing and harvesting of timber and the production of wood fiber and other forest uses; to conserve and protect watersheds, wildlife habitats and other forest associated uses; to protect scenic values; to provide for agricultural uses; to provide for recreational opportunities and other uses which are compatible with forest use; implement Comprehensive Framework Plan Policy 11, Commercial Forest Land; the Commercial Forest Use policies of the West Hills Rural Area Plan; and to minimize potential hazards or damage from fire, pollution, erosion or urban development.

Finding: Applicant proposes a public nature park with new visitor access improvements and a natural surface, multi-use trail system on a portion of Metro's Burlington Creek Forest area. The improvements protect water quality and fish and wildlife habitat, while creating opportunities for the community to enjoy nature.

§ 33.2005 Area Affected.

MCC 33.2000 through 33.2110 shall apply to those lands designated CFU- 1 on the Multnomah County Zoning Map.

Finding: Applicant is proposing a public nature park, including visitor access improvements, over properties zoned CFU-1.

Metro is proposing an improved access drive, parking area, trail head, and additional trails over portions of the following properties:

2N1W20B-00100; 2N1W20B-00300; 2N1W20B-00400; 2N1W20B-00500;
2N1W20B-00600; 2N1W20BC-00800; 2N1W20BC-00900;
2N1W20BC-01000; 2N1W20BC-01200; 2N1W20C-00100;
2N1W20C-00200; 2N1W20C-00300; 2N1W20C-00400; 2N1W20C-00500;
2N1W20C-00600; 2N1W20C-00700; 2N1W20BD-03700; 2N1W20-00400.

Metro is proposing visual clearance grading activities (off-site from use activities) for a portion of the following properties:

2N1W20BC-01400; 2N1W20BC-01500; 2N1W20BC-01600;
2N1W20BC-01700.

§ 33.2015 Uses.

No building, structure or land shall be used and no building or structure shall be hereafter erected, altered or enlarged in this district except for the uses listed in MCC 33.2020 through 33.2035 when found to comply with MCC 33.2045 through 33.2110.

Finding: Applicant is requesting permission to formalize, improve, and construct visitor access improvements to serve the public natural area. The proposed uses are allowed uses as demonstrated below. Applicant demonstrates compliance with MCC 33.2045 through 33.2110 below.

§ 33.2020 Allowed Uses.

(A) The following uses pursuant to the Forest Practices Act and Statewide Planning Goal 4:

(1) Forest operations or forest practices including, but not limited to, reforestation of forest land, road construction and maintenance, harvesting of a forest tree species, application of chemicals, and disposal of slash;

...

(3) Physical alterations to the land auxiliary to forest practices including, but not limited to, those for purposes of exploration, mining, commercial gravel extraction and processing, landfills, dams, reservoirs, road construction or recreational facilities.

Finding: Applicant is proposing to physically alter the land auxiliary to the land management and forestry practices engaged in on site for the purposes of supporting access and recreational

facilities. The uses proposed are permitted/allowed uses pursuant to Goal 4 and in the CFU-1 district. This standard is met.

B. Permitted/Conditional-Community Service Use & Forest Development Standards Review

§ 33.2030 Conditional Uses.

The following uses may be permitted when found by the approval authority to satisfy the applicable standards of this Chapter:

(A) The following Community Service Uses pursuant to all applicable approval criteria, including but not limited to the provisions of MCC 33.2045, 33.2050, 33.2056, 33.2061, 33.6000 through 33.6010, and 33.6100 through 33.6230:

...

(9) State and Local Parks.

(b) Uses allowed in a Local Park are those specified in OAR 660-034-0040. A Local Park is a public area intended for open space and outdoor recreation use that is owned and managed by a city, county, regional government, or park district and that is designated as a public park in the applicable comprehensive plan and zoning ordinance [OAR 660-034-0010(8)].

Finding: Applicant is proposing a public nature park with visitor access improvements and multi-use trail system on a portion of Metro's Burlington Creek Forest area. Metro is proposing to formalize, improve, and expand the existing recreational opportunities on site.

Most of what Metro is planning on the forestry resource land (restoration and land management activities, access roads, and recreational trails) are outright permitted uses under Goal 4 and MCC 33.2020.¹ The starting point for determining permissible uses and facilities on forestry resource land is Goal 4. One primary objective of Goal 4 is "to provide for recreational opportunities" on forest lands. As such, Goal 4 provides that recreational opportunities, and necessarily their accessory/support elements (e.g., parking area, shelter, restroom, informational signs/maps, etc.), that are appropriate in a forest environment, are allowed on forest lands.

However, County staff is of the opinion that because Metro is proposing an improved parking lot and related amenities, the proposed use rises above the uses permitted outright by Goal 4 and MCC 33.2020, and now becomes a public "local park" use regulated by OAR 660-034-0035 and 0040.

Uses expressly permitted in local parks by OAR 660-034-0035/0040 include day use areas, recreational trails (for walking, hiking, biking, and horses), staging areas, and support facilities such as parking areas, restrooms, signs, etc.

¹ If a use is not permitted by Goal 4, state law - OAR 660-034-0035/0040 - provides two alternative avenues to permit recreational development on resource land under the category of a state or local park and which do not require an exception to Goal 4. For less intensive facility development, such as a parking area, the uses are allowed through a traditional development application (for example: design review). For more intensive facility development, such as a tennis court, pool, or music venue, a park provider can pursue a master planning process, rather than the exception process.

The proposed visitor access improvements and related amenities are permitted under Goal 4 and/or state administrative rules and County code. This standard is satisfied. Applicant demonstrates compliance with additional applicable standards below.

§ 33.2045 Use Compatibility Standards.

Specified uses of MCC 33.2025 (D) and (E) and MCC 33.2030 (A), (B) and (C) may be allowed upon a finding that:

(A) The use will:

(1) Not force a significant change in, or significantly increase the cost of, accepted forestry or farming practices on surrounding forest or agricultural lands;

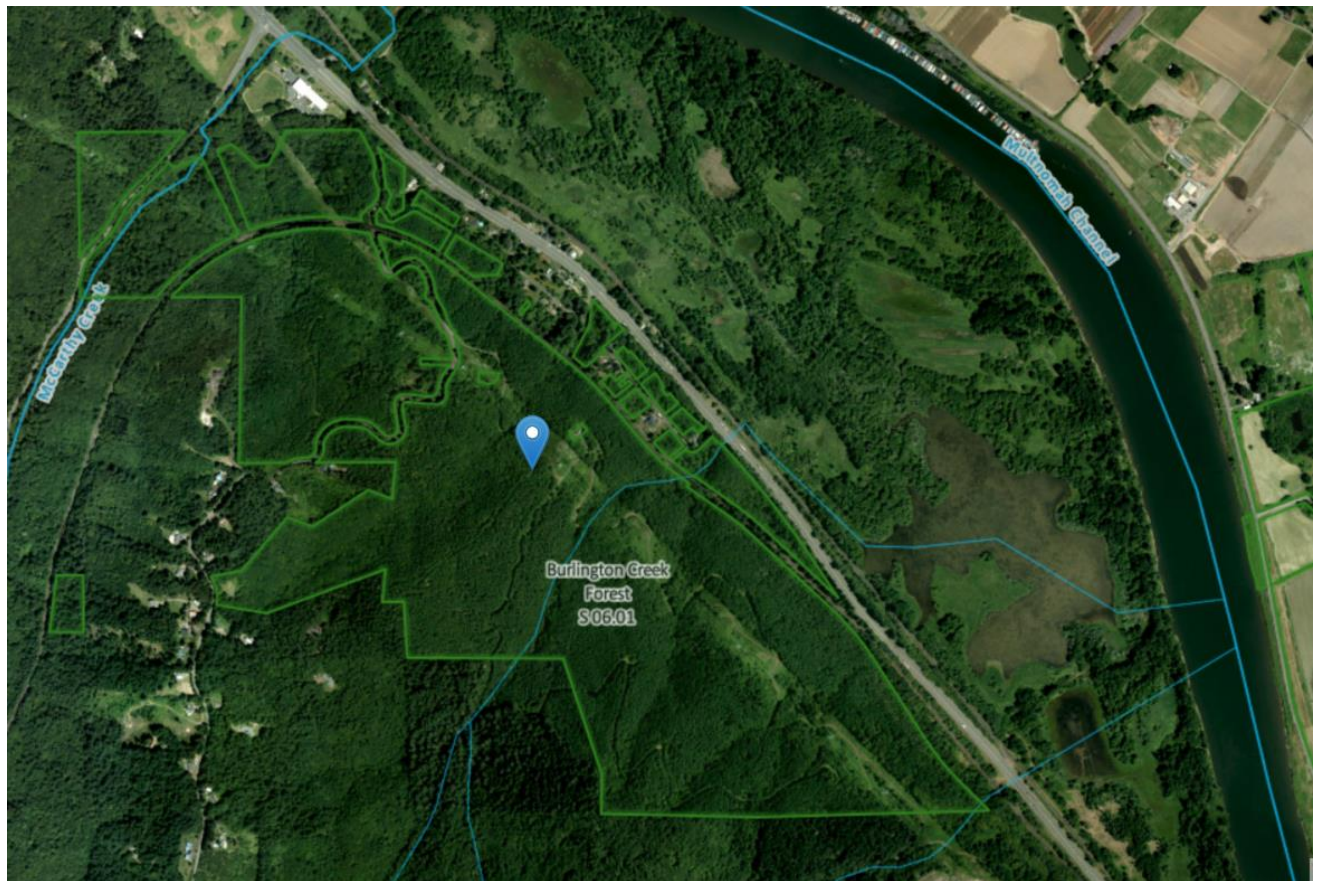
Finding: This standard seeks to protect the ability of surrounding forest lands to be put to Goal 3 and 4 uses. The standard seeks to prevent or mitigate for new uses that will force a “*significant change in*” or “*significantly increase the cost of*” farm and forest practices. The standard does not prohibit uses that result in any impact, rather it only seeks to avoid or otherwise mitigate for those uses that represent a *significant* impact or change from existing conditions *on surrounding resource uses*.

The term “accepted farming practice” is defined by statute as “a mode of operation that is common to farms of a similar nature, necessary for the operation of such farms to obtain a profit in money, and customarily utilized in conjunction with farm use.” ORS 215.203(2)(c). Accordingly, not all activities related to a farm use amount to an “accepted farming practice.” Only those farming activities that are intended to make a profit (as compared to hobby farms) are accepted farming practices for the purposes of determining whether this criterion is satisfied. Accepted farm practices include planting and harvesting of crops and nursery stock, plowing fields, use of accessory farm structures, application of fertilizers and pesticides, and the movement of farm vehicles and trade vehicles. Nursery and berry crops, as well as any vegetable crops, require irrigation in summer months. Factors that could increase farming costs are water contamination, weed contamination in crops, changes in farming patterns, land value influences, lack of irrigation water, overspray, and interfering with the movement of farm vehicles.

Likewise, “accepted forest practice” is a mode of operation common to forest lands of a similar nature, necessary for the timber land to obtain a profit in money, and customarily used in conjunction with timber production. Accepted forestry practices include timber harvesting, reforestation (tree stocking after harvest), slash treatments (including burning), chemical application (fertilizers and pesticides), road construction and maintenance, wildlife and water resource protection. Factors that could increase forestry harvest costs include weed contamination, a change in forestry patterns, precluding access to timber land, interfering with the movement of log trucks, and locating non-forestry dependent uses in close proximity to forestry uses.

For purposes of this standard, the analysis area are those lands adjacent to the Burlington Creek Forest Natural Area.

Figure 3 Site Aerial



As depicted in the boundary lines above, Metro's Burlington Creek Forest site is located on the east-facing slopes of the mountain ridge and is similar in character to Forest Park, with forested hillside and fairly steep topography typical of the area. The site is located outside of the Urban Growth Boundary in unincorporated Multnomah County.

Burlington Creek Forest is comprised of numerous parcels zoned Commercial Forest Use covering approximately 350 acres. The area surrounding Burlington Creek Forest contains a mixture of land uses including residential, timber harvest, gravel extraction, ancient forest preserve, and wetland. However, given its location on the eastern slope with the railroad lines and State Highway 30 to the east, the property is rather isolated from surrounding uses. McNamee Road, Cornelius Pass Road and the railroad all cross through the Burlington Creek Forest. Additional infrastructure includes power line corridors running the length of the site, logging roads, and a Burlington Water District water tank that serves the neighborhood below. Exhibit 13. Connectivity between Burlington Creek Forest and Burlington Bottoms Wetlands and Multnomah Channel located east of the forest is impeded by Highway 30, local roads, residential development, and the railroad line.

Figure 4 Site Aerial



Surrounding land uses of note include the following:

- *Quarry:* An operational quarry, located along U.S. Highway 30 southeast of Burlington Creek Forest.
- *Rural Residential:* Residential areas composed primarily of rural residential parcels typically one acre or more, and with many 20 acres or greater in size. Residential areas are located along NW McNamee, west of the forest, and also adjacent to Highway 30, below the forest. The residential uses adjacent to Highway 30 are typically solely residential in nature. While many rural residences along McNamee have forest resources associated with them. The closest homesite along McNamee is $\frac{1}{4}$ of a mile away from the proposed access improvements, and several hundred feet higher in elevation, with mature trees located in between.
- *Ancient Forest Preserve:* The Ancient Forest, owned and managed by the Forest Park Conservancy, protects nearly 40 acres of old growth forest adjacent to the southwest corner Burlington Creek Forest site. The conservancy welcomes visitors to the Ancient Forest and has recently extended the trail system.
- *Burlington Bottoms:* The roughly 400-acre Burlington Bottoms wetlands, owned by Bonneville Power Administration (BPA) and managed by Oregon Department of Fish and Wildlife (ODFW), lie northeast of Burlington Creek Forest.

The railroad lines are located west of the homesites along Highway 30, with Burlington Creek Forest, uphill from the rail lines.

Figure 5 Site Aerial (northern portion)

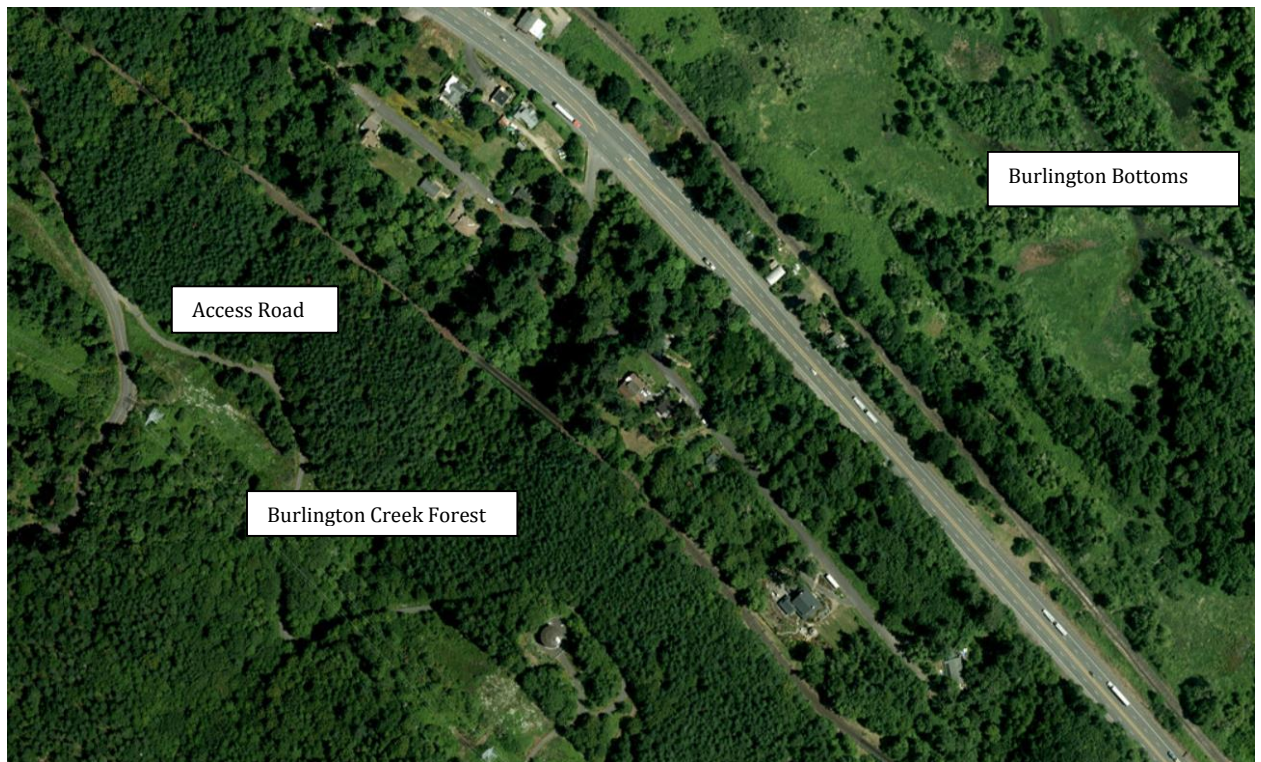
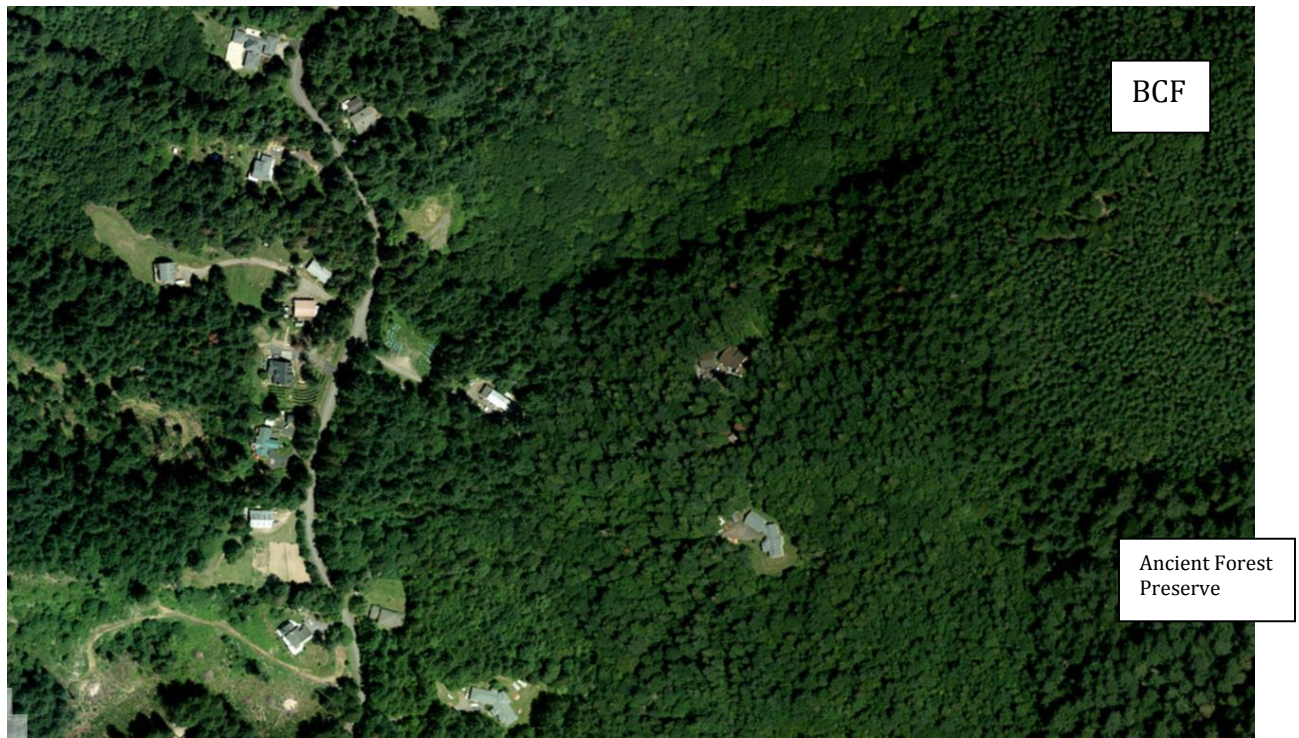


Figure 6 Site Aerial (northwest/west of access road and forest)



Figure 7 Site Aerial (west of forest)



There are no commercial farming activities occurring on lands adjacent to the property. Therefore, no activities proposed will result in significant impacts to or significantly alter farm uses.

The timber/forestry related activities that may occur on the properties adjacent to McNamee and the subject property, if the owners were to engage in harvesting activities, include: Timber harvesting, reforestation (tree stocking after harvest), slash treatments (including burning), chemical application (fertilizers and pesticides), and road construction and maintenance. The forestry operations are located a substantial distance from the proposed access improvements. Therefore, no activities proposed will result in significant impacts to or significantly alter those forest uses.

Proposing and confining the access improvements to the interior of the site and buffering those uses with additional Metro land holdings further isolates the use and thereby minimizes impacts, if any.

Currently, the subject forested site is used for recreational activities in an informal and largely unsupervised manner. Visitors access the site via the existing access drive, park vehicles adjacent to the existing gate and adjacent to NW McNamee Drive, and recreate on the property in a variety of ways, including hiking and bicycling. Activities occurring on site currently do not impede any forestry operations in the general vicinity. Metro is proposing to formalize and improve visitor access improvements to promote the safe and directed use of the site, rather than the unregulated and undirected recreational use currently occurring.

Additional impacts to the surrounding neighborhoods from proposed limited site improvements and formalized public use will be minimal. The site is isolated from adjacent property and uses given its sheer size. Uses are promoted in the interior of the forest. Additional Metro objectives

include: Providing controlled access and on-site parking scaled to the site's capacity, assuring the privacy of neighbors by controlling access, providing setbacks and buffers, and monitoring the use.

All rules and regulations at the nature park will be consistent with Metro's Title 10, which outlines regulations governing the use of Metro owned and operated regional parks and natural areas in order to protect wildlife, plants, and property, as well as promotes the safety and enjoyment of those visiting these facilities. For public security and safety, hours of operation and regulatory signs will be installed at the access point. Regulatory signs will include public use restrictions, such as no fires, camping, hunting, or motorized vehicles, and other uses outlined in Metro's Title 10. Vehicle access will be controlled with automatic gates to prevent after hours use. Gates will be locked daily at park closure times. Boundary markers will be installed along the perimeter of the natural area to clearly delineate the public/private edge. Regular maintenance of the park will include toilet cleaning, litter pick-up and general monitoring. Routine seasonal maintenance of the natural area, including trails, will also occur. Metro Park Rangers, land managers, volunteer coordinators, nature educators and scientists will ensure successful operation, maintenance, and continued use of the site.

The uses currently occurring and proposed to be formalized are recreational and passive in nature. Other site activities will preserve and rehabilitate upland forest, riparian habitat, and forest health. The only use that may emanate any negative impact is additional recreational use – such as noise or traffic. However, recreational uses are substantially buffered from any farm and forestry operation by distance, topography, the location of the use on the property, minimal forested uses, adjacent rural residences, and large lots being managed for parks or natural areas that surround the park.

There are no level of service issues. The assigned functional classifications reflect the roadways' intended purpose, the anticipated speed and volume, and the adjacent land uses. The primary roads upon which the adjacent properties rely on for local access will continue to carry volumes of traffic that the roads are designed to accommodate. Exhibit 3.

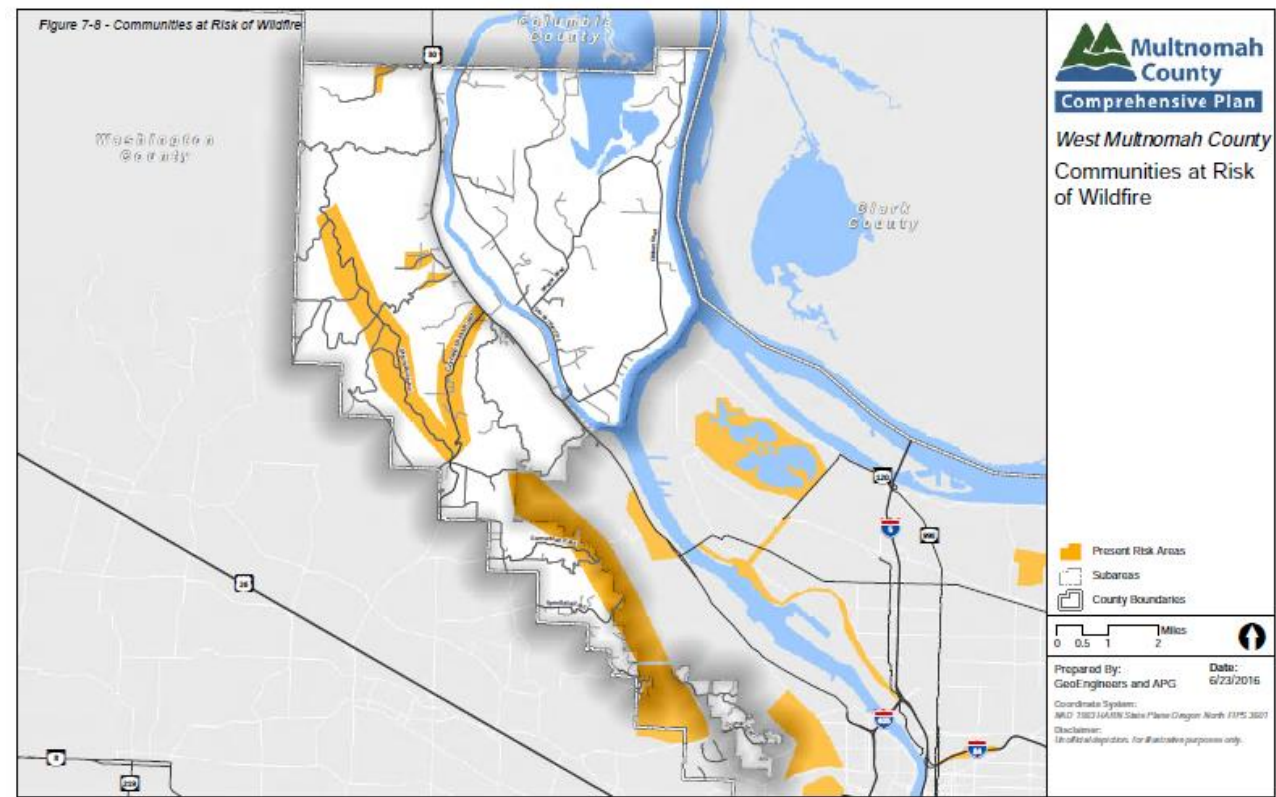
Given the distance of potential resource related activities from the subject park, as well as the location of the use activities made within the park, together with topographical protections, the potential for conflicts is minimal to none. The prohibited significant impact standard is not approached. This standard is met.

(1) Not significantly increase fire hazard, or significantly increase fire suppression costs, or significantly increase risks to fire suppression personnel; and

Finding: The standard seeks to prevent or mitigate for new uses that will “significantly increase” the risk or cost of fire suppression. The standard does not prohibit uses that result in any impact, rather it only seeks to avoid or otherwise mitigate for those uses that represent *significant* impacts.

The property which is the subject of this application, including the immediate neighbors, are outside of the area identified on the communities at risk of wildfire map. The closest “community at risk” is located northwest of the site along Cornelius Pass Road. However, the West Hills community would likely be impacted by any wildfire on public or private land within the mountain range.

Figure 8 Communities at Risk of Wildfire



The subject property (and specifically the area of the proposed parking lot/access improvement) are within the jurisdiction of the Oregon Department of Forestry rural lands fire and emergency services. Attached as Exhibit 15 are the comments from the fire department to date. Metro pays annual fees to ODF for fire protection services. Thus, costs to suppress potential fires are not significantly increased.

Previously, Metro inquired with both Portland Fire and Rescue and Tualatin Valley Fire and Rescue concerning their jurisdiction. Exhibit 16. Those agencies responded that while outside their delineated jurisdiction, those agencies would respond to the property in the event of an emergency pursuant to multi-agency coordination agreements, also known as Mutual Aid Agreements. Metro involved Portland Fire in reviewing (at the early stage of site planning development) the proposed access plan. Fire agency staff indicated that they would be able to access the property in response to an emergency with the proposed access improvements.

Metro acknowledges that public access in a forest may represent a level of increased risk of wildfire. The additional fire risks associated with recreational use in forest lands are contemplated by Goal 4. The risks are considered an acceptable derivative of the very nature of permitted use, similar to the risks of wildfire posed by forest dwellings and forest management activities such as slash burns and operating chain saws in a forest setting, all of which represent a greater risk of fire than recreational use.

Given that the public is currently accessing and utilizing the site for recreation and other uses, there is a base line level of existing fire risk emanating from site conditions and use. Base line risks are

also present because of potential unauthorized uses, including camping. As the site is currently managed as a natural area with informal access, site conditions are not frequently monitored by Metro staff.

By formalizing access and use, together with preventative operational and land management actions and proactive efforts, additional fire risks can be minimized as contemplated by the standard. Metro is of the opinion that with continued forest management and monitoring, fire risks will not approach the “significantly increase” standard beyond base line levels currently experienced. It is Metro’s opinion that an increase in the number of site visitors does not result in a substantial increase of fire risks or fire suppression costs. Having managed Metro parks and natural areas for over 30 years, Metro has not seen any correlation between visitor numbers and resulting intentional or unintentional fires occurring on its property. To date, Metro has only experienced one small wild land fire started by an illegal camper at Canemah Bluff in Oregon City. Additionally, Metro staff are trained in wild land firefighting to assist responding fire departments.

With an increase in public visits and regular, frequent Metro staff visits, more eyes will be on the forest. Metro opines that more eyes on the forest will increase incident response ability compared with current conditions.

Applicant also intends on improvements and land management activities that will decrease the fire hazard, decrease fire suppression costs, decrease risks to fire suppression personnel, improve onsite movement of emergency vehicles, and decrease risks to site users and adjacent properties.

Metro’s restoration work and long term management strategy for the subject property includes identifying and reducing fire risks where possible, including thinning, fuels reductions, native plantings, riparian restoration, monitoring, and access road maintenance. Fuels mitigation is proactive, while fire suppression is reactive. Thinning practices also facilitate wild land firefighting efforts for monitoring and controlling future fire incidents.²

Proactively, an Incident Action Plan is developed for the property that includes information to assist Metro and cooperating agencies responding to a fire on Metro property. An Incident Action Plan has been developed for Burlington. Exhibit 26. It establishes, among other things, protocols and access locations for a coordinated and efficient response.

Metro follows the Oregon Department of Forestry Industrial Fire Precaution Levels and restrictions. If very high fire conditions are present, Metro would prevent certain activities and may temporarily close areas. In this effort, Metro will work with local fire prevention and suppression agencies. However, the activities promoted and allowed on Metro property are not activities that are prone to start fires. Camping, fires, smoking, fireworks, and discharging fire arms are prohibited. These prohibited activities will be continue to be posted at the park entrance to clarify Metro’s rules to visitors. Only passive recreational activities are allowed and they are controlled and directed in defined areas.

High profile local fires, such as the Eagle Creek Fire in the Columbia River Gorge, lead to greater public and agency awareness of risks on forest land during periods of high fire danger. It is worthwhile to point out some differences between the Burlington forest and the forests impacted by the Eagle Creek fire. Burlington Creek Forest, given its past history as an industrial tree farm,

² Article - *Forest Harvest Can Increase Subsequent Forest Fire Severity*; Proceedings of the Second International Symposium on Fire Economics, Planning, and Policy: A Global View; Stone, Hudak, and Morgan,

contains very young stands of trees with a much lower amount of leaf litter and dead and downed wood than found in unmanaged mature forests. Thinning has been undertaken at the property to reduce tree densities and create gaps between tree crowns. The property also contains a large component of hardwood trees. Hardwood stands are not as prone to fire as pure conifer stands and much of this hardwood component are located in the drainages, which are topographic features that can act as funnels for fire.³ Though all areas in the Portland area are affected by east wind events (one driver of large fires in Western Oregon), the east wind effects in the Columbia River Gorge are particularly pronounced and concentrated. Finally, unlike the areas impacted by the Eagle Creek fire, the Burlington property has an extensive forest road system, allowing efficient and effective vehicular access to most of the property in response to an event.

While fire is always a risk on a forested landscape, Metro undertakes preventative measures to mitigate this risk. In addition to thinning and fuel reduction efforts, Metro's Natural Areas Land Management (NALM) staff undergoes a yearly fire refresher training. Metro's NALM staff also carries fire tools and gear in their vehicles and their vehicles are equipped with portable pumps and water tanks during fire season. This is not to replace the expertise of local and State fire responders but to enhance Metro's ability to analyze and respond to fires and assist professional fire fighters when they arrive on scene.

Access to the property will be improved for emergency responders. The resurfaced access drive will provide direct access to the existing forest road system and trail network. The proposed access drive will be of an all-weather surface capable of supporting not less than 12,500 pounds point load and 75,000 pounds live load. The access drive as well as the existing forest management road network that will be maintained, represent a nearly 25-foot fire break. Exhibit 20.

The proposed structures do not represent a fire risk. The only small structures proposed are a nonflammable concrete vault toilet and information sign. As confirmed by the fire department, given their location and material composition, they represent no increase in the risk or cost of fire suppression. Exhibit 15. The structures do not pose of risk of being the source of ignition of adjacent forest land because they include non-flammable materials (including concrete, steel, and metal), contain no combustible materials, and are not occupied. Exhibit 11. No chimneys are proposed. The structures are located on a flat site that has little or no ground fuels, and will be surrounded by gravel. Also, the non-combustible nature of the materials reduces the likelihood that fire suppression effort during a fire would be diverted to protect the structure at the expense of adjacent forest land.

Also, ground fuels can be effectively managed. Applicant proposes to remove downed fuel vegetation and dead organic material around the parking area and toilet where it may exist to form an additional fire break. Small trees and brush growing underneath large trees will be controlled and removed around and near the toilet to prevent the spread of fire up into the crowns of larger trees. Within 30 feet of the two structures and generally around the parking area, applicant proposes to remove any small trees that may be located beneath a larger tree and which represents a fire risk to the large tree. The area around the parking lot will also be thinned as a forest management practice to lessen fire risks.

Additionally, a 400,000 gallon capacity water tower with an associated fire hydrant is located in the middle of the property. Exhibit 13.

³ Publication – Bennett, M., *Reducing Fire Risk on Your Forest Property*, a Pacific Northwest Extension Publication, October 2010.

Access is via NW McNamee Road, a county public roadway. The access drive has an unobstructed driving surface of not less than 20 feet and unobstructed vertical clearance of not less than 13 feet 6 inches. Exhibit 20. While the access road will be gated at night, they will include strobe sensors that will automatically open when approached by an emergency vehicle. This standard is met.

(B) A statement has been recorded with the Division of Records that the owner and the successors in interest acknowledge the rights of owners of nearby property to conduct forest operations consistent with the Forest Practices Act and Rules, and to conduct accepted farming practices.

Finding: This standard can be made and satisfied as a condition of approval. Applicant will record a statement that the owner and successors in interest acknowledge the rights of owners of nearby properties to conduct forest operations consistent with the Oregon Forest Practices Act and Rules and to conduct accepted farming practices.

§ 33.2050 Building Height Requirements.

(A) Maximum structure height – 35 feet.

(B) Structures such as barns, silos, windmills, antennae, chimneys, or similar structures may exceed the height requirements.

Finding: Applicant is proposing a public nature park with visitor access improvements including a prefabricated restroom with non-flammable, concrete wall and roof structure. The height of the vault restroom is approximately 11 feet, with its vent extending to 15 feet. Exhibit 11. No chimneys are proposed. This standard is met.

§ 33.2056 Forest Practices Setbacks and Fire Safety Zones.

The Forest Practice Setbacks and applicability of the Fire Safety Zones is based upon existing conditions, deviations are allowed through the exception process and the nature and location of the proposed use. The following requirements apply to all structures as specified: ...

Use:	Forest Practice Setbacks:			Fire Safety Zones:
	Nonconforming Setbacks	Front Property Line Adjacent to County Maintained Road (feet)	All other Setbacks (feet)	
<i>Other Structures</i>	<i>N/A</i>	<i>30</i>	<i>130</i>	Primary & Secondary required

Finding: The standard largely regulates forest dwellings. However, “other structures” - which may include the proposed nonflammable vault toilet - are also encouraged to promote fire safe practices, while recognizing the nature and unique location of the use.

The property fronts on NW McNamee Road, the only county maintained public road implicated by the standard. The vault toilet and information sign are proposed north of the existing gravel access drive, in the interior of the site, thereby exceeding the 30 foot front setback standard.

The side and rear yards from the proposed structures exceed the 130 foot minimum setback standard for adjacent properties east, west, north and south of the site. The closest property line is south of the vault toilet and sign location: Portland General Electric’s small inholding of

unimproved land underneath its transmission towers. The PGE property is completely surrounded by Metro property. As demonstrated below, the PGE property is over 130 feet from the proposed vault toilet and sign location.

Figure 9 PGE property boundary



This standard is met.

(A) Reductions to a Forest Practices Setback dimension shall only be allowed pursuant to approval of an adjustment or variance.

Finding: No adjustment of the forest practices setback is required or requested. This standard is not applicable.

(B) Exception to the Secondary Fire Safety Zone shall be pursuant to MCC 33.2110 only. No reduction is permitted for a required Primary Fire Safety Zone through a nonconforming, adjustment or variance process.

Finding: Applicant is seeking an exception to the secondary fire safety zone around the non-flammable vault toilet and information sign recognizing the nature of the structures, their use, and unique location. Compliance with the exception to the secondary fire safety zone criteria in MCC 33.2100 is demonstrated below.

(C) The minimum forest practices setback requirement shall be increased where the setback abuts a street having insufficient right-of-way width to serve the area. The county Road Official shall determine the necessary right-of-way widths based upon the county "Design and Construction Manual" and the Planning Director shall determine any additional setback requirements in consultation with the Road Official.

Finding: The information sign and prefabricated restroom with non-flammable, concrete wall and roof structure will be located over 300 feet from NW McNamee Road. It is not necessary to increase the minimum forest practices setback for right-of-way widths. This standard is satisfied or otherwise not applicable.

(D) Fire Safety Zones on the Subject Tract

(1) Primary Fire Safety Zone

(a) A primary fire safety zone is a fire break extending a minimum of 30 feet in all directions around a dwelling or structure. Trees within this safety zone shall be spaced with greater than 15 feet between the crowns. The trees shall also be pruned to remove low branches within 8 feet of the ground as the maturity of the tree and accepted silviculture practices may allow. All other vegetation should be kept less than 2 feet in height.

(b) On lands with 10 percent or greater slope the primary fire safety zone shall be extended down the slope from a dwelling or structure as follows:

Percent Slope	Distance In Feet
<i>Less than 10</i>	<i>No additional required</i>
<i>Less than 20</i>	<i>50 additional</i>
<i>Less than 25</i>	<i>75 additional</i>
<i>Less than 40</i>	<i>100 additional</i>

(c) The building site must have a slope less than 40 percent.

Finding: Applicant demonstrates that the primary safety zone around the proposed vault toilet and sign extending a minimum of 30 feet is or otherwise can be met. Exhibit 21a. Within the primary safety zone, the trees are or will be spaced with greater than 15 feet between the crowns. Within the primary area, applicant proposes paved and gravel surfaces, and concrete pads and walkways, in addition to maintaining and improving natural conditions. Small trees will also be pruned to remove low branches within eight feet of the ground. The primary fire break standard, encourages, but does not require, that all other vegetation in the primary fire safety zone should be maintained 2 feet in height or less. Applicant intends on managing the primary fire safety zone to reduce fire risks. This standard is met.

Although the property includes land with slopes greater than 10 percent, the toilet and sign are proposed on lands that are less than 10 percent slopes. Exhibit 22. As depicted, the area directly under and around the toilet and sign will be graded to a level condition. Requiring an extension of the primary fire safety zone just because 10 percent slopes exist elsewhere on site would serve no positive purpose, as the structures do not represent no fire risk. Additionally, extending the primary fire break would negatively impact the forest, land management, and restoration activities by requiring the unnecessary removal of trees and would be contrary to the recreational use request as well as SEC requirements that seek to minimize disturbances. Recreational uses are permitted and encouraged in the forest environment by Goal 4 and County code.

Alternatively, applicant provides a fire break map that includes additional down slope distance as provided in subsection (b) above. Exhibit 21b. Applicant demonstrates that the primary safety zone around the proposed vault toilet and sign extending a minimum of 80 feet downslope (30 + 50) is or otherwise can be met. Within the primary area, applicant proposes paved and gravel surfaces, and concrete pads and walkways, in addition to maintaining and improving natural conditions. Small trees will also be pruned to remove low branches within eight feet of the ground. The primary fire break standard, encourages, but does not require, that all other vegetation in the

primary fire safety zone should be maintained two feet in height or less. Applicant intends on managing the primary fire safety zone to reduce fire risks. This standard is or otherwise can be met through a condition of approval, regardless of which primary fire break standard applies. However, applicant is of the opinion that the 30 foot standard should apply.

(2) Secondary Fire Safety Zone

A secondary fire safety zone is a fire break extending a minimum of 100 feet in all directions around the primary safety zone. The goal of this safety zone is to reduce fuels so that the overall intensity of any wildfire is lessened. Vegetation should be pruned and spaced so that fire will not spread between crowns of trees. Small trees and brush growing underneath larger trees should be removed to prevent the spread of fire up into the crowns of the larger trees. Assistance with planning forestry practices which meet these objectives may be obtained from the State of Oregon Department of Forestry or the local Rural Fire Protection District. The secondary fire safety zone required for any dwelling or structure may be reduced under the provisions of 33.2110.

Finding: The fire break drawings attached as Exhibit 21 depict the secondary fire safety break area around the toilet and sign. Rather than unnecessarily removing trees, vegetation and understory between 30 and 100 feet in all directions from the primary fire break (associated with the toilet and sign) applicant is requesting an **exception to the secondary fire break standard**. The secondary fire safety zone required for any structure may be reduced under the provisions of 33.2110. Applicant demonstrates compliance with MCC 33.2110 below. Of note, whether or not the exception is granted, applicant intends on managing the property to reduce fire risks as stated herein.

(3) No requirement in (1) or (2) above may restrict or contradict a forest management plan approved by the State of Oregon Department of Forestry pursuant to the State Forest Practice Rules; and

Finding: Applicant has demonstrated that it can comply with the primary fire break standard in requirement (1) above. Exhibit 21. Applicant is requesting an exception to the secondary fire break standard in requirement (2) above. Extension of the primary fire break or strictly imposing the maximum secondary fire break would negatively impact the forest, land management, and restoration activities by requiring the unnecessary removal of trees and would be contrary to the recreational use request and SEC overlay goals. Recreational uses are permitted and encouraged in the forest environment by Goal 4 and County code.

(4) Required Primary and Secondary Fire Safety Zones shall be established within the subject tract as required by Table 1 above.

Finding: Applicant has demonstrated that it can comply with the primary fire break standard on land owned by Metro (the subject tract). Exhibit 21. No portion of the primary fire break is on land owned by another. Although applicant is requesting an exception to the secondary fire break standard in requirement (2) above, applicant has demonstrated that it can comply with the secondary fire break standard on land owned by Metro (the subject tract). Exhibit 21. No portion of the secondary fire break is on land owned by another.

(5) Required Primary and Secondary Fire Safety Zones shall be maintained by the property owner in compliance with the above criteria listed under (1) and (2).

Finding: Applicant is seeking an exception to the secondary fire safety zone around the non-flammable vault toilet and sign recognizing the nature of the structures, their use and unique location. Compliance with the exception to the secondary fire safety zone criteria (MCC 33.2110) is demonstrated below. Otherwise, the requirement of subsection (5) above is an ongoing maintenance requirement within the Fire Safety Zone. Compliance with subsection (5)'s maintenance requirement can be ensured through a condition of approval.

§ 33.2110 Exceptions to Secondary Fire Safety Zone.

(A) The secondary fire safety zone for dwellings and structures may be reduced pursuant to the provisions of 33.2110 (B) when:

(2) The dwelling or structure is proposed to be located within 130 feet of the centerline of a public or private road serving two or more properties;

Finding: The access drive and forest practices road serving the visitor access improvements serves more than two properties, including those owned by Metro, PGE and Burlington Water District. Exhibit 18 (tax maps); Figure 2 above. As such, the secondary fire safety zone for structures may be reduced under subsection (B) below.

The new vault toilet and sign are within 130 feet of the centerline of the access road serving the property. The structures will be adjacent to a two lane road that will provide adequate and safe access for fire and emergency vehicles. Exhibits 15 and 20.

(B) Exceptions to secondary fire safety zones shall only be granted upon satisfaction of the following standards:

(1) If the proposed secondary fire safety zone is between 50 and 100 feet, the dwelling or structure shall be constructed in accordance with the International Fire Code Institute Urban-Wildland Interface Code Section 505 Class 2 Ignition Resistant Construction as adopted August, 1996, or as later amended, or

(2) If the proposed secondary fire safety zone is less than fifty feet, the dwelling or structure shall be constructed in accordance with the International Fire Code Institute Urban-Wildland Interface Code Section 504 Class 1 Ignition Resistant Construction as adopted August, 1996, or as later amended, and

Finding: Through an exception, Metro requests that the secondary fire safety zone be reduced to zero (0) feet. Where the secondary zone is proposed be less than fifty (50) feet, the structure must be constructed using the "Class 1" standard. The pre-fabricated concrete vault toilet is non-flammable, non-combustible, and not a fire risk, as confirmed by the fire departments. Exhibit 15. Metro demonstrates compliance with the "Class 1" standards below.

The County's secondary fire break standards include recommendations rather than commands, with intent to minimize fire risks. Strict compliance with the secondary fire safety zone may unnecessarily require the removal of a significant number of trees and native understory, a valuable resource for local wildlife. The goal of the secondary fire safety zone is to reduce fuels so that the overall intensity of any wildfire is lessened – in other words – to minimize the risk of wildfire. Also, the CFU fire break standards were primarily intended for the siting of homes and their accessory structures (which are flammable) in forest zones.

Here, the risk associated with wildfire will be minimized due to the nature of the structures and the site. Applicant is proposing structures that effectively mitigate fire risks through materials and active management. Exhibit 11. Applicant proposes improvements and land management that will

decrease the fire hazard, decrease fire suppression costs, decrease risks to fire suppression personnel, improve onsite movement of emergency vehicles, and decrease risks to site users.

Metro's restoration work and long term management strategy for the subject property includes identifying and reducing fire risks where possible, including thinning, fuels reductions, native plantings, riparian restoration, and monitoring. The land management activities are designed with a goal of retaining moisture and promoting dispersed green growth. Fuels mitigation is proactive, while fire suppression is reactive. Thinning practices also facilitate wild land firefighting efforts for monitoring and controlling future fire incidents.⁴

Proactively, an Incident Action Plan is developed for the property that includes information to assist Metro and cooperating agencies responding to a fire on Metro property. An Incident Action Plan has been developed for Burlington. Exhibit 26. It establishes, among other things, protocols and access locations for a coordinated and efficient response.

Metro follows the Oregon Department of Forestry Industrial Fire Precaution Levels and restrictions. If very high fire conditions are present, Metro would prevent certain activities and may temporarily close areas. In this effort, Metro will work with local fire prevention and suppression agencies. However, the activities promoted and allowed on Metro property are not activities that are prone to start fires. Camping, fires, smoking, fireworks, and discharging fire arms are prohibited. These prohibited activities will be continue to be posted at the park entrance to clarify Metro's rules to visitors. Only passive recreational activities are allowed and they are controlled and directed in defined areas.

Access to the property will be improved for emergency responders. The resurfaced access drive will provide direct access to the existing forest road system and trail network. The proposed access drive will be of an all-weather surface capable of supporting not less than 12,500 pounds point load and 75,000 pounds live load. The access drive as well as the existing forest management road network that will be maintained, represent a nearly 25 foot fire break. Exhibit 20.

The proposed structures do not represent a fire risk. The only small structures proposed are a nonflammable concrete vault toilet and informational sign. As confirmed by the fire department, given their location and material composition, represent no increase in the risk or cost of fire suppression. Exhibit 15. The structures do not pose of risk of being the source of ignition of adjacent forest land because they include non-flammable materials (including concrete, steel, and metal), contain no combustible materials, and are not occupied. Exhibit 11. No chimneys are proposed. The structures are located on a flat site that has little or no ground fuels, and will be surrounded by gravel. Also, the non-combustible nature of the materials reduces the likelihood that fire suppression effort during a fire would be diverted to protect the structure at the expense of adjacent forest land.

Also, ground fuels can be effectively managed. Applicant proposes to remove downed fuel vegetation and dead organic material around the parking area and toilet where it may exist to form an additional fire break. Small trees and brush growing underneath large trees will be controlled and removed around and near the toilet to prevent the spread of fire up into the crowns of larger trees. Within 30 feet of the two structures and generally around the parking area, applicant proposes to remove any small trees that may be located beneath a larger tree and which represents

⁴ Article - *Forest Harvest Can Increase Subsequent Forest Fire Severity*; Proceedings of the Second International Symposium on Fire Economics, Planning, and Policy: A Global View; Stone, Hudak, and Morgan,

a fire risk to the large tree. The area around the parking lot will also be thinned as a forest management practice to lessen fire risks.

Additionally, a 400,000 gallon water tower with an associated fire hydrant is located in the middle of the property. Exhibit 13.

Applicant demonstrates compliance with the *International Fire Code Institute Urban-Wildland Interface Code Section 504 Class 1 Ignition Resistant Construction* standards below.

SECTION 504 CLASS 1 IGNITION-RESISTANT CONSTRUCTION

504.1 General.

Class 1 ignition-resistant construction shall be in accordance with Sections 504.2 through 504.11.

504.2 Roof covering.

Roofs shall have a Class A roof assembly. For roof coverings where the profile allows a space between the roof covering and roof decking, the space at the eave ends shall be firestopped to preclude entry of flames or embers, or have one layer of 72-pound (32.4 kg) mineral-surfaced, nonperforated cap sheet complying with ASTM D 3909 installed over the combustible decking.

Finding: The vault toilet roof is non-combustible, 4.5 inch thick steel reinforced concrete. There is no space between the roof covering and decking. Exhibit 11. The sign includes a standing seam metal roof. This standard is met.

504.3 Protection of eaves.

Eaves and soffits shall be protected on the exposed underside by ignition-resistant materials or by materials approved for a minimum of 1-hour fire-resistance-rated construction, 2-inch (51 mm) nominal dimension lumber, or 1-inch (25.4 mm) nominal fire-retardant-treated lumber or ³/₄-inch (19 mm) nominal fire-retardant-treated plywood, identified for exterior use and meeting the requirements of Section 2303.2 of the International Building Code. Fascias are required and shall be protected on the backside by ignition-resistant materials or by materials approved for a minimum of 1-hour fire-resistance-rated construction or 2-inch (51 mm) nominal dimension lumber.

Finding: The toilet's walls are made of non-combustible 4 inch thick steel reinforced concrete. No combustible eaves, fascia or soffit exist. Exhibit 11. This standard is met.

504.4 Gutters and downspouts.

Gutters and downspouts shall be constructed of noncombustible material. Gutters shall be provided with an approved means to prevent the accumulation of leaves and debris in the gutter.

Finding: There are no gutters or downspouts. Exhibit 11. This standard is met.

504.5 Exterior walls.

Exterior walls of buildings or structures shall be constructed with one of the following methods:

1. Materials approved for a minimum of 1-hour fire-resistance-rated construction on the exterior side.

2. *Approved noncombustible materials.*
3. *Heavy timber or log wall construction.*
4. *Fire-retardant-treated wood on the exterior side. The fire-retardant-treated wood shall be labeled for exterior use and meet the requirements of Section 2303.2 of the International Building Code.*
5. *Ignition-resistant materials on the exterior side.*

Such material shall extend from the top of the foundation to the underside of the roof sheathing.

Finding: The toilets walls are made of non-combustible 4 inch thick steel reinforced concrete. The material extends from the top of the concrete slab floor to the underside of the 4.5 inch thick steel reinforced roof. Exhibit 11. This standard is met.

504.6 Unenclosed underfloor protection.

Buildings or structures shall have all underfloor areas enclosed to the ground with exterior walls in accordance with Section 504.5.

Finding: The toilet is a slab on grade structure. The walls are made of non-combustible 4 inch thick steel reinforced concrete. The material extends from the top of the concrete slab floor to the underside of the 4.5 inch thick steel reinforced roof. The floor is 5 inch thick reinforced steel concrete. All elements of the building are enclosed. Exhibit 11. This standard is met.

504.7 Appendages and projections.

Unenclosed accessory structures attached to buildings with habitable spaces and projections, such as decks, shall be a minimum of 1-hour fire resistance-rated construction, heavy timber construction or constructed of one of the following:

1. *Approved noncombustible materials;*
2. *Fire-retardant-treated wood identified for exterior use and meeting the requirements of Section 2303.2 of the International Building Code; or*
3. *Ignition-resistant building materials in accordance with Section 503.2.*

Finding: There are no unenclosed accessory structures proposed to attach to the toilet or sign. The vault toilet is not attached to any structure. It is free standing. Exhibit 11. This standard is not applicable.

504.8 Exterior glazing.

Exterior windows, window walls and glazed doors, windows within exterior doors, and skylights shall be tempered glass, multilayered glazed panels, glass block or have a fire protection rating of not less than 20 minutes.

Finding: There are no doors with glass proposed. The toilet's door is solid steel and non-combustible. Window glazing is 3/16' thick solid sheet Lexan – a fire resistant product. Exhibit 11. As a thermoplastic, Lexan solid sheet will melt under intense heat of fire, however it will not contribute to the growth of a fire through flame spread. Any droplets of molten Lexan sheet will solidify and self-extinguish. Therefore, no propagation of fire takes place. This standard is met.

504.9 Exterior doors.

Exterior doors shall be approved noncombustible construction, solid core wood not less than 1³/₄ inches thick (45 mm), or have a fire protection rating of not less than 20

minutes. Windows within doors and glazed doors shall be in accordance with Section 504.8.

Finding: The exterior door is 1-3/4" thick, minimum 16 gauge galvanized steel and is non-combustible. Exhibit 11. This standard is met.

504.10 Vents.

Attic ventilation openings, foundation or underfloor vents, or other ventilation openings in vertical exterior walls and vents through roofs shall not exceed 144 square inches (0.0929 m²) each. Such vents shall be covered with noncombustible corrosion-resistant mesh with openings not to exceed 1/4 inch (6.4 mm), or shall be designed and approved to prevent flame or ember penetration into the structure.

504.10.1 Vent locations.

Attic ventilation openings shall not be located in soffits, in eave overhangs, between rafters at eaves, or in other overhang areas. Gable end and dormer vents shall be located at least 10 feet (3048 mm) from lot lines. Underfloor ventilation openings shall be located as close to grade as practical.

Finding: There are no attic or foundation vents. The wall vents are cast into the concrete wall and framed with steel. Exhibit 11. This standard is not applicable.

504.11 Detached accessory structures.

Detached accessory structures located less than 50 feet (15 240 mm) from a building containing habitable space shall have exterior walls constructed with materials approved for a minimum of 1-hour fire-resistance-rated construction, heavy timber, log wall construction, or constructed with approved noncombustible materials or fire-retardant-treated wood on the exterior side. The fire-retardant-treated wood shall be labeled for exterior use and meet the requirements of Section 2303.2 of the International Building Code.

Finding: There are no detached accessory structures proposed with respect to the vault toilet or sign. This standard is not applicable.

(3) There shall be no combustible fences within 12 feet of the exterior surface of the dwelling or structure; and

Finding: There is no fence within 12 feet of the exterior surface of the structure.

(4) A dwelling shall have a central station monitored alarm system if the secondary fire safety zone equivalents of MCC 33.2110 (B) (1) are utilized, or

Finding: This standard applies to dwellings and is not applicable. Applicant is not proposing a dwelling.

(5) A dwelling shall have a central station monitored 13D sprinkler system if the secondary fire safety zone equivalents of MCC 33.2110 (B) (2) are utilized.

Finding: This standard applies to dwellings and is not applicable. Applicant is not proposing a dwelling.

(6) All accessory structures within the fire safety zone setbacks required by MCC 36.2056, and all accessory structures within 50 feet of a dwelling, shall have a central monitored alarm system.

Finding: This standard applies to accessory structures – which are by definition subordinate to the main building. Pursuant to the CFU standards, this is intended to regulate accessory structures to a primary dwelling on a lot. Applicant is not proposing a building or dwelling subordinate to the vault toilet. This standard is not applicable or otherwise satisfied.

(7) All accessory structures within 50 feet of a building shall have exterior walls constructed with materials approved for a minimum of one-hour-rated fire-resistive construction, heavy timber, log wall construction or constructed with noncombustible materials on the exterior side.

Finding: This standard applies to accessory structures – which are by definition subordinate to the main building. Pursuant to the CFU standards, this is intended to regulate accessory structures to a primary dwelling on a lot. Applicant is not proposing a building or dwelling subordinate to the vault toilet. This standard is not applicable or otherwise satisfied.

(8) When a detached accessory structure is proposed to be located so that the structure or any portion thereof projects over a descending slope surface greater than 10 percent, the area below the structure shall have all underfloor areas enclosed to within 6 inches of the ground, with exterior wall construction in accordance with Section 504.5 of the International Fire Code Institute Urban-Wildland Interface Code Class 1 Ignition Resistant Construction as adopted August, 1996, or as later amended, or underfloor protection in accordance with Section 504.6 of that same publication.

Finding: This standard applies to accessory structures – which are by definition subordinate to the main building. Pursuant to the CFU standards, this is intended to regulate accessory structures to a primary dwelling on a lot. Applicant is not proposing a building or dwelling subordinate to the vault toilet. All slopes upon which the toilet is placed are less than 10 percent. Exhibit 20. This standard is not applicable or otherwise satisfied.

§ 33.2061 *Development Standards for Dwellings and Structures.*

All dwellings and structures shall comply with the approval criteria in (B) through (D) below except as provided in (A). All exterior lighting shall comply with MCC 33.0570.

(A) For the uses listed in this subsection, the applicable development standards are limited as follows:

(1) Expansion of existing dwelling.

(2) Replacement or restoration of a dwelling.

(3) Accessory buildings.

(a) Accessory buildings within 100 feet of the existing dwelling: Shall meet the development standards of MCC 35.2061(C);

(b) Accessory buildings located farther than 100 feet from the existing dwelling: Shall meet the development standards of MCC 35.2061(B)&(C);

(4) Temporary dwellings.

Finding: This standard is not applicable. Applicant is not proposing a dwelling or a structure accessory to a dwelling. This standard regulates existing, replaced, and expanded forest dwellings

(template dwellings, lot of record dwellings, etc.) which are a use specifically and expressly regulated by MCC. Applicant is proposing a recreational use and community service use in the form of a park and permitted development associated with it, as permitted by Goal 4, OAR 660-04-0035, and County code.

(B) New dwellings shall meet the following standards in (1) and (3) or (2) and (3); restored or replacement dwellings greater than 100-feet from an existing dwelling, and accessory buildings (or similar structures) greater than 100-feet from the existing dwelling shall meet the following standards in (1) and (3) or (2) and (3):

Finding: This standard is not applicable. This standard regulates new dwellings, restored or replacement dwellings greater than 100 feet from an existing dwelling and accessory buildings associated with the existing dwelling. Applicant is proposing a recreational use and community service use in the form of a park and permitted development associated with it, as permitted by Goal 4, OAR 660-04-0035, and County code.

(C) The dwelling or structure shall:

- (1) Comply with the standards of the applicable building code or as prescribed in ORS 446.002 through 446.200 relating to mobile homes;*
- (2) If a mobile home, have a minimum floor area of 600 square feet and be attached to a foundation for which a building permit has been obtained;*
- (3) Have a fire retardant roof; and*
- (4) Have a spark arrester on each chimney.*

Finding: This standard is met or otherwise not applicable. This standard relates to the dwellings or accessory structures regulated by subsections A or B above and specifically mobile homes, which are not applicable to the subject application. Applicant is proposing a recreational use and community service use in the form of a park and permitted development associated with it, as permitted by Goal 4, OAR 660-04-0035, and County code.

(D) The applicant shall provide evidence that the domestic water supply is from a source authorized in accordance with the Department of Water Resources Oregon Administrative Rules for the appropriation of ground water (OAR 690, Division 10) or surface water (OAR 690, Division 20) and not from a Class 1 stream as defined in the Forest Practices Rules. ...

Finding: This standard is not applicable. This standard regulates domestic water supplies for residential uses. Applicant is not proposing a dwelling. Applicant is proposing a recreational use and community service use in the form of a park and permitted development associated with it, as permitted by Goal 4, OAR 660-04-0035, and County code.

§ 33.2073 Access.

All lots and parcels in this district shall abut a public street or shall have other access deemed by the approval authority to be safe and convenient for pedestrians and for passenger and emergency vehicles. This access requirement does not apply to a pre-existing lot and parcel that constitutes a Lot of Record described in MCC 33.2075(C).

Finding: The planned visitor access improvements are proposed on lots/parcels that have direct access from NW McNamee Road, a county public road. The access, as confirmed by applicant's transportation study and the fire department, will be safe and convenient for users and emergency vehicles. However this standard does not apply (as provided above), as the subject property is comprised of pre-existing lots of record. Exhibit 18.

Standards for Community Services; Conditional Uses

§ 33.6000 Purpose.

MCC 33.6010 through 33.6230 provides for the review and approval of the location and development of special uses which, by reason of their public convenience, necessity, unusual character or effect on the neighborhood, may be appropriate as specified in each district.

Finding: The purpose statement is itself not an applicable approval criterion. However, applicant demonstrates compliance with the applicable community service standards below, which ensure that the request is appropriate and consistent with this purpose statement.

§ 33.6005 General Provisions.

- (A) Community Service approval shall be for the specific use or uses approved together with the limitations or conditions as determined by the approval authority.*
- (B) Uses authorized pursuant to this section shall be subject to Design Review approval under MCC 33.7000 through 33.7065.*
- (C) A Community Service approval shall not be construed as an amendment of the Zoning Map, although the same may be depicted thereon by appropriate color designation, symbol or short title identification.*

Finding: Applicant is seeking approval of a public nature park with visitor access improvements and multi-use trail system, an allowed use as specified below. The Design Review standards are addressed in this application narrative below.

§ 33.6010 Approval Criteria.

In approving a Community Service use, the approval authority shall find that the proposal meets the following approval criteria, except for radio and television transmission towers, which shall meet the approval criteria of MCC 33.6100 through 33.6125, wireless communications facilities which shall meet the approval criteria of MCC 33.6175 through 33.6188; and except for regional sanitary landfills which shall comply with MCC 33.6200 through 33.6230.

- (A) Is consistent with the character of the area;*

Finding: The Tualatin Mountains extend into the greater Portland area along the Columbia River, dividing the lowlands of the Willamette and Columbia rivers from the Tualatin Valley. Burlington Creek Forest, McCarthy Creek Forest, Ennis Creek Forest, and North Abbey Creek Forest are four discontinuous sites owned by Metro, totaling 1,300 acres that form the North Tualatin Mountains. Collectively, the sites preserve in perpetuity large blocks of upland forest, streams and habitat connectivity northwest of Forest Park and southeast of NW Cornelius Pass Road. Metro desires to improve access to Burlington Creek Forest in a way that ensures healthy habitats and meaningful experiences in nature.

Metro's Burlington Creek Forest site is located on the east-facing slopes of the mountain ridge and is similar in character to Forest Park, with forested hillside and fairly steep topography typical of the area. The site is located outside of the Urban Growth Boundary in unincorporated Multnomah County.

Burlington Creek Forest is comprised of numerous parcels zoned for Commercial Forest Use covering approximately 350 acres. The area surrounding Burlington Creek Forest contains a mixture of land uses including residential, timber harvest, gravel extraction, ancient forest preserve, and wetland.

Surrounding land uses of note include the following:

- *Quarry:* An operational quarry, located along U.S. Highway 30 southeast of Burlington Creek Forest.
- *Rural Residential:* Residential areas composed primarily of rural residential parcels typically one acre or more, and with many 20 acres or greater in size. Residential areas are located along NW McNamee, west of the forest, and also adjacent to Highway 30, below the forest. The residential uses adjacent to Highway 30 are typically solely residential in nature. While many rural residences along McNamee have forest resources associated with them. The closest homesite along McNamee is $\frac{1}{4}$ of a mile away from the proposed access improvements, and several hundred feet higher in elevation, with mature trees located in between.
- *Ancient Forest Preserve:* The Ancient Forest, owned and managed by the Forest Park Conservancy, protects nearly 40 acres of old growth forest adjacent to the southwest corner Burlington Creek Forest site. The conservancy welcomes visitors to the Ancient Forest and has recently extended the trail system.
- *Burlington Bottoms:* The roughly 400-acre Burlington Bottoms wetlands, owned by Bonneville Power Administration (BPA) and managed by Oregon Department of Fish and Wildlife (ODFW), lie northeast of Burlington Creek Forest.

The railroad lines are located west of the homesites along Highway 30, with Burlington Creek Forest, uphill from the rail lines.

In recent history, this forest has been managed primarily for commercial timber harvest. Much of the area was logged in the early 1990s. Hundreds of acres are dominated by single species, densely planted young stands of Douglas fir. When acquired by Metro, little to no snags and downed wood were present.

The property is currently used for recreational purposes. People walk and ride bikes on existing logging roads and access the site via the existing access drive from NW McNamee Road and an unsanctioned neighborhood access point and trail. Metro is also managing the forest to reduce the number of Douglas fir trees per acre, to promote healthy trees, preserve hardwoods and native shrubs, and increase diversity.

McNamee Road, Cornelius Pass Road and the railroad all cross through the Burlington Creek Forest. Additional infrastructure include power line corridors running the length of the site, logging roads, and a Burlington Water District water tank that serves the neighborhood below.

Connectivity between Burlington Creek Forest and Burlington Bottoms Wetlands and Multnomah Channel located east of the forest is impeded by US Highway 30, local roads, residential development, and the railroad line.

Burlington Creek and several unnamed tributaries flow eastward through steep valleys to the base of the ridge.

Visitors to Burlington Creek Forest will access the site from an existing access drive off of NW McNamee Road. Proposed improvements include limited, essential day-use amenities and signs designed to orient visitors and highlight the site's unique habitat, wildlife, and geological features; a

gated parking lot for approximately 25 cars, including one ADA parking space; a prefabricated vault restroom with a non-flammable, concrete wall and roof structure; and a trailhead and shared use trails, designed specifically for hiking and off-road cycling. Visitors to Burlington Creek Forest will be able to continue walking and riding bikes and horses on the nearly three miles of existing logging roads on the site with the addition of approximately six miles of new natural surface multi-use trails.

Recreational objectives include: Providing a formal system of trails that serve appropriate and multiple uses and abilities, including hiking, off-road cycling, and wildlife viewing; providing scenic viewpoints; providing safe pedestrian and vehicle access to the area; providing necessary site amenities and infrastructure to serve visitors; providing a family-friendly environment with opportunities for people of all ages and abilities to enjoy the site; and following “sustainable trails” guidelines for all trail development.

Impacts to the surrounding neighborhoods from expanded site development and public use will be minimal. The site is isolated from adjacent property and uses given its sheer size. Uses are promoted in the interior of the forest. Additional Metro objectives include: Providing controlled access and on-site parking scaled to the site’s capacity, assuring the privacy of neighbors by controlling access, providing setbacks and buffers, and monitoring the use.

All rules and regulations at the nature park will be consistent with Metro’s Title 10, which outlines regulations governing the use of Metro owned and operated regional parks and natural areas in order to protect wildlife, plants, and property, as well as promotes the safety and enjoyment of those visiting these facilities. For public security and safety, hours of operation and regulatory signs will be installed at the access point. Regulatory signs will include public use restrictions, such as no fires, camping, hunting, fireworks, or motorized vehicles, and other uses outlined in Metro’s Title 10. Vehicle access will be controlled with automatic gates to prevent after hours use. Gates will be locked daily at park closure times. Boundary markers will be installed along the perimeter of the natural area to clearly delineate the public/private edge. Regular maintenance of the park will include toilet cleaning, litter pick-up and general monitoring. Routine seasonal maintenance of the natural area, including trails, will also occur. Metro Park Rangers, land managers, volunteer coordinators, nature educators and scientists will ensure successful operation, maintenance, and continued use of the site.

Generally, site rehabilitation and management will be pursuant to a Site Conservation/Restoration Plan, produced by Metro, which continues restoration aimed to protect and enhance the forest’s natural and scenic resources and to create a place for wildlife to thrive. Exhibit 1. Metro’s Site Conservation Plan identifies desired future conditions for the forest and riparian areas. The desired conditions will promote native trees and shrubs; provide habitat for migrating and nesting birds, mammals and amphibians; and protect water quality and riparian habitat while promoting cooler temperatures. The Site Conservation Plan is a document that guides Metro’s stewardship and restoration work; serving as a tool for protecting and enhancing the unique characteristics of the site while also allowing for access by the public. The SCP was developed in collaboration with Metro scientists, land managers, and planning staff. This document defines the key ecological attributes, conservation targets, and recreation and access objectives for the site. That work is implemented as funding is allocated and pursuant to priorities identified by Metro.

Planning and Design Effort:

The Burlington Creek Forest was one of four forested sites that were the subject of the North Tualatin Mountains Access Master Plan. That Master Plan is being considered by the County under

a separate application for a County Comprehensive Plan text amendment. The Master Plan was approved by Metro Council in 2016.

The Master Plan is designed to provide a long-term vision and implementation strategy to guide land management and public use of the North Tualatin Mountains. The plan was developed by land and property managers, landscape architects, independent consultants, scientists, planners, naturalists, project stakeholders, and community participants.

Metro employs a science-based approach to site management and conservation. During the master planning process, Metro scientists provide baseline information about current conditions, conservation targets and habitat restoration goals, guided by conservation biology, site knowledge, research and external experts to evaluate possible impacts of potential access opportunities. Metro scientists then work with Metro's planning team to develop access opportunities that are compatible with habitat, wildlife, and water quality goals for the natural area. The process objective is to identify suitable locations and activities for recreation while seeking to stabilize and restore diversity and the ecological health of the site.

The final product and public improvements contemplated are the result of over two years of significant public outreach effort, including community meetings, public open houses, surveys, and outreach. The project stakeholders were Laurel Erhardt, Skyline Ridge Neighbors; Brad Graff, Skyline Ridge Neighbors; Jerry Grossnickle, Forest Park Neighborhood Association; Andy Jansky, Northwest Trail Alliance; Shawn Looney, West Multnomah Soil and Water Conservation District; Renee Myers, Forest Park Conservancy; Travis Neumeyer, Trackers Earth; Jinnet Powell, Skyline School; Emily Roth, Portland Parks & Recreation; Jim Thayer, Oregon Recreation Trails Advisory Committee; Roger Warren, Oregon Department of Forestry; and, Susan Watt, Skyline Ridge Neighbors.

The plan's goals include: Protecting fish and wildlife habitat and water quality while providing opportunities for meaningful experiences of nature in a safe, controlled, and sustainable manner.

The visitor access and land management activities proposed for Burlington Creek Forest represent that balanced approach.

The design presented for land use approval:

- Protects and enhances natural and scenic resources by protecting large blocks of forest and core habitat;
- Integrates community and partner suggestions;
- Identifies and accesses the best location for day use and trail heads;
- Utilizes existing roads and locates new trails to avoid and minimize impacts to sensitive natural resource areas.
- Employs sustainable trail construction techniques;
- Provides safe ingress and egress and internal movement of vehicles and pedestrians; and
- Is designed consistent with the surrounding landscape and uses and in a scale and character that the community supports.

The plan and design under consideration is the product of nearly three years of work by Metro, partnering agencies, the community, and stakeholders.

(B) Will not adversely affect natural resources;

Finding: The Burlington Creek Forest is one of four forested sites that are the subject of the North Tualatin Mountains Access Master Plan. That Master Plan is being considered by the County under a separate application for a County Comprehensive Plan text amendment.

The Master Plan is designed to provide a long-term vision and implementation strategy to guide land management and public use of the North Tualatin Mountains. The plan was developed by land and property managers, landscape architects, independent consultants, scientists, planners, naturalists, project stakeholders, and community participants.

Metro employs a science based approach to site management and conservation. During the master planning process, Metro scientists provided baseline information about current conditions, conservation targets and habitat restoration goals, guided by conservation biology, site knowledge, research, and by using external experts to evaluate possible impacts of potential access opportunities. Metro scientists then worked with Metro's planning team to develop access opportunities that are compatible with habitat, wildlife, and water quality goals for the natural area. The process identified suitable locations and activities for recreation while seeking to stabilize and restore diversity and the ecological health of the site.

The final product and public improvements contemplated are the result of over two years of significant public outreach effort – including community meetings, public open houses, surveys, and outreach. The project stakeholders were Laurel Erhardt, Skyline Ridge Neighbors; Brad Graff, Skyline Ridge Neighbors; Jerry Grossnickle, Forest Park Neighborhood Association; Andy Jansky, Northwest Trail Alliance; Shawn Looney, West Multnomah Soil and Water Conservation District; Renee Myers, Forest Park Conservancy; Travis Neumeyer, Trackers Earth; Jinnet Powell, Skyline School; Emily Roth, Portland Parks & Recreation; Jim Thayer, Oregon Recreation Trails Advisory Committee; Roger Warren, Oregon Department of Forestry; and, Susan Watt, Skyline Ridge Neighbors.

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- Employs sustainable trail construction techniques;
- Provides safe ingress and egress and internal movement of vehicles and pedestrians; and
- Is designed consistent with the surrounding landscape and uses and in a scale and character that the community supports.

The plan and design under consideration is the product of nearly three years of work by Metro, partnering agencies, the community, and stakeholders.

Generally, site rehabilitation and management of the subject property will be pursuant to a Site Conservation/Restoration Plan, produced by Metro, which continues restoration aimed to protect and enhance the forest's natural and scenic resources and to create a place for wildlife to thrive and water quality to be protected. Exhibit 1. Metro's Site Conservation Plan identifies desired future conditions for riparian areas and the forest. See also Exhibits 5 and 10 for current cover maps and conservation targets.

C. Design Review

§ 33.7000 Purposes.

MCC 33.7000 through 33.7065 provides for the review and administrative approval of the design of certain developments and improvements in order to promote functional, safe, innovative and attractive site development compatible with the natural and man-made environment.

Finding: Design Review is the process by which specific site development and improvements are reviewed to ensure functional, safe, innovative and attractive site development compatible with the natural and man-made environment. Design review involves buildings, grading, parking, storage, landscaping, erosion control, and other elements associated with implementing the approved use.

Applicant's site plan and design furthers the purposes of this code chapter by balancing public access with water quality and habitat considerations, as well as appropriately locating the access improvements within the site and in relation to adjacent properties. The property is and can be safely, efficiently, and effectively served. As proposed, the use and management of the site represents an asset to the County's natural beauty and presents unique recreational opportunities for its citizens.

§ 33.7005 Elements of Design Review Plan.

The elements of a Design Review Plan are: The layout and design of all existing and proposed improvements, including but not limited to, buildings, structures, parking and circulation areas, outdoor storage areas, landscape areas, service and delivery areas, outdoor recreation areas, retaining walls, signs and graphics, cut and fill actions, accessways, pedestrian walkways, buffering and screening measures.

Finding: Applicant provides all of the applicable elements of a design review plan in Exhibit 20. This standard is met.

§ 33.7010 *Design Review Plan Approval Required.*

No building, grading, parking, land use, sign or other required permit shall be issued for a use subject to this section, nor shall such a use be commenced, enlarged, altered or changed until a final design review plan is approved by the Planning Director, under this ordinance.

Finding: Applicant understands. This standard can be made a condition of approval to ensure compliance.

§ 33.7015 *Exceptions.*

The provisions of MCC 33.7000 through 33.7065 shall not be applied to the following:

- (A) Single family residences.*
- (B) Type C Home Occupations unless located in the BRC district.*
- (C) Type C Home Occupations located in the BRC district that require the addition of less than 400 square feet of ground coverage.*
- (D) Commercial photovoltaic solar power generation facility.*

Finding: The proposed development does not fall into any of the exception categories above.

§ 33.7020 *Application of Regulations.*

- (A) Except those exempted by MCC 33.7015, the provisions of MCC 33.7000 through 33.7060 shall apply to all conditional and community service uses, and to be specified, in any district.*
- (B) Uses subject to Design Review that require the creation of fewer than four new parking spaces pursuant to MCC 33.4205 shall only be subject to the following Design Review approval criteria: MCC 33.7050(A)(1)(a) and (1)(c), (4) and (7), except when located in the BRC general district.*
- (C) All other uses are subject to all of the Design Review Approval Criteria listed in MCC 33.7050 and 33.7055.*
- (D) Alteration or modification of the physical development previously reviewed through the Design Review process shall be subject to the Design Review Approval Criteria listed in MCC 33.7050 and 33.7055.*

Finding: The conditional use/community service aspect of the proposed development is subject to the Design Review Approval Criteria listed in MCC 33.7050 and 33.7055, which is addressed below.

§ 33.7030 *Design Review Plan Contents.*

- (A) The design review application shall be filed on forms provided by the Planning Director and shall be accompanied by a site plan, floor plan, architectural elevations and landscape plan, as appropriate, showing the proposed development.*
- (B) Plans shall include the following drawn to scale:*
 - (1) Access to site from adjacent rights-of-way, streets, and arterials;*
 - (2) Parking and circulation areas;*
 - (3) Location design, materials and colors of buildings and signs;*
 - (4) Orientation of windows and doors;*
 - (5) Entrances and exits;*
 - (6) Existing topography and natural drainage;*
 - (7) Pedestrian circulation;*
 - (8) Boundaries of areas designated Significant Environmental Concern, Hillside Development and Areas of Special Flood Hazards;*

- (9) Service areas for uses such as mail delivery, trash disposal, above-ground utilities, loading and delivery;
- (10) Areas to be landscaped;
- (11) Exterior lighting location and design;
- (12) Special provisions for handicapped persons;
- (13) Surface and storm drainage and on-site waste disposal systems;
- (14) The size, species, and approximate locations of plant materials to be retained or placed on the site; and
- (15) Proposed ground disturbance, grading filling and site contouring.

Finding: Maps, plans, and drawings depicting applicable above required information are included with the application as Exhibits 1, 2, 4, 11, 19, 20, 22 and 23. Additionally, future plans submitted for final review and approval will include the required information. This standard can be made a condition of approval to ensure compliance. This standard is met.

§ 33.7040 Final Design Review Plan.

Prior to land use approval for building permit review or commencement of physical development where no additional permits are necessary, the applicant shall revise the plans to show compliance with the land use approvals granted, all conditions of approval and required modifications. Final design review plan shall contain the following, drawn to scale:

- (A) Site Development and Landscape Plans, indicating the locations and specifications of the items described in MCC 33.7030, as appropriate;
- (B) Architectural drawings, indicating floor plans, sections, and elevations; and
- (C) Approved minor exceptions from yard, parking, and sign requirements.

Finding: Applicant understands that prior to land use approval for commencement of physical development, revised plans must be submitted showing compliance with the land use approvals granted, all conditions of approval, and required modifications. This standard can be made a condition of approval to ensure compliance.

§ 33.7045 Delay in the Construction of a Required Feature.

When the Planning Director determines that immediate execution of any feature of an approved final design review plan is impractical due to climatic conditions, unavailability of materials or other temporary condition, the Director shall, as a precondition to the issuance of a required permit under MCC 33.7010 and 33.7020, require the posting of a performance bond, cash deposit, or other surety, to secure execution of the feature at a time certain.

Finding: Applicant understands.

§ 33.7050 Design Review Criteria.

(A) Approval of a final design review plan shall be based on the following criteria:

- (1) Relation of Design Review Plan Elements to Environment
 - (a) The elements of the design review plan shall relate harmoniously to the natural environment and existing buildings and structures having a visual relationship with the site.
 - (b) The elements of the design review plan should promote energy conservation and provide protection from adverse climatic conditions, noise, and air pollution.

(c) Each element of the design review plan shall effectively, efficiently, and attractively serve its function. The elements shall be on a human scale, interrelated, and shall provide spatial variety and order.

Finding: The visitor access and parking area improvements are designed to blend with the forest environment. The parking area represents a compact, efficient and effective use of land, providing adequate parking and amenities to serve the use, while limiting impacts on the surrounding landscape. They are simple and functional. The proposed access improvements and alterations will utilize existing cleared areas. Only 0.05 acres is proposed to be cleared for parking area improvements. The only structures are a small vault toilet and information sign, whose materials and colors are both natural looking and fire resistant. The toilet facility is well equipped to withstand both the typical weather and atypical storms of the region. The building meets or exceeds the effects of a seismic design category E earthquake, a 150-mph wind load, and a 350-pound per square foot snow load. With steel reinforced 5,000 psi concrete construction, the building and vaults will not rot, rust, or burn. Exhibit 11.

The landscaping and mitigation planting around the parking area will be native and consistent with the native environs. Temporary disturbance areas will incorporate native planting and restoration seeding. Applicant has also requested an exception to the secondary fire break standards to reduce the number of trees and undergrowth that Metro would be required to remove otherwise. The request seeks to recognize the passive recreational use in a forest environment and better blend the new improvements into that environment more appropriately as well as retain habitat for wildlife species.

Each element of the plan effectively, efficiently, and attractively serves its function.

This standard is met.

(2) Safety and Privacy – The design review plan shall be designed to provide a safe environment, while offering appropriate opportunities for privacy and transitions from public to private spaces.

Finding: The parking lot and visitor access improvements are intended to formalize and improve the safety and function of current recreational access occurring on site. The vault toilet affords opportunities for privacy and personal needs. The layout puts the parking area in the interior of the site, moving it away from its current informal location adjacent to NW McNamee, and is buffered by trees and topography, thereby preventing impacts to the privacy of adjacent properties located a substantial distance away. The area is generally level, and as proposed, does not represent a landslide hazard. Exhibit 20.

All rules and regulations at the nature park will be consistent with Metro's Title 10, which outlines regulations governing the use of Metro owned and operated regional parks and natural areas in order to protect wildlife, plants, and property, as well as promotes the safety and enjoyment of those visiting these facilities.

For public security and safety, hours of operation and regulatory signs will be installed at the access point. Regulatory signs will include public use restrictions, such as no fires, camping, hunting, fireworks, or motorized vehicles, and other uses outline in Metro's Title 10. Vehicle access will be controlled with automatic gates to prevent after hours use. Gates will be locked daily at park closure times. Boundary markers will be installed along the perimeter of the natural area to clearly delineate the public/private edge. During the summer months, daily maintenance of the park will include toilet cleaning, litter pick-up and general monitoring. Routine seasonal maintenance of the

natural area features, including trails, will also occur. Metro Park Rangers, land managers, volunteer coordinators, and scientists will ensure successful operation, maintenance, and continued use of the site.

This standard is met.

(3) Special Needs of Handicapped – Where appropriate, the design review plan shall provide for the special needs of handicapped persons, such as ramps for wheelchairs and braille signs.

Finding: The needs of handicapped are reflected in the parking design and materials, pedestrian access/pathway design and materials to the extent feasible. An ADA compliant restroom with an accessible route from the parking lot is proposed. Exhibits 11 and 20. The existing access drive will be resurfaced and the parking lot paved to provide a safe and functional travel surface. Exhibit 20.

(4) Preservation of Natural Landscape – The landscape and existing grade shall be preserved to the maximum practical degree, considering development constraints and suitability of the landscape or grade to serve their functions. Preserved trees and shrubs shall be protected during construction.

Finding: Metro employs a science based approach to site management and conservation. During the master planning process, Metro scientists provided baseline information about current conditions, conservation targets and habitat restoration goals, guided by conservation biology, site knowledge, research, and by using external experts to evaluate possible impacts of potential access opportunities. Metro scientists then worked with Metro's planning team to develop access opportunities that are compatible with habitat, wildlife, and water quality goals for the natural area. The process objective identified suitable locations and activities for recreation while seeking to stabilize and restore diversity and the ecological health of the site.

The final product and public improvements contemplated are the result of over two years of significant public outreach effort – including community meetings, public open houses, surveys, and outreach. The project stakeholders were Laurel Erhardt, Skyline Ridge Neighbors; Brad Graff, Skyline Ridge Neighbors; Jerry Grossnickle, Forest Park Neighborhood Association; Andy Jansky, Northwest Trail Alliance; Shawn Looney, West Multnomah Soil and Water Conservation District; Renee Myers, Forest Park Conservancy; Travis Neumeyer, Trackers Earth; Jinnet Powell, Skyline School; Emily Roth, Portland Parks & Recreation; Jim Thayer, Oregon Recreation Trails Advisory Committee; Roger Warren, Oregon Department of Forestry; and, Susan Watt, Skyline Ridge Neighbors.

The plan's goals include: Protecting fish and wildlife habitat and water quality while providing opportunities for meaningful experiences of nature in a safe, controlled, and sustainable manner.

The visitor access and parking area improvements are designed to blend with the forest environment. The parking area represents a compact, efficient and effective use of land, providing ample parking and sufficient amenities to serve the use, while limiting impacts on the surrounding landscape. They are simple and functional. The proposed access improvements and alterations will utilize existing cleared areas with only 0.05 acres proposed to be cleared for the parking area. A small vault toilet, whose materials and colors are both natural looking and fire resistant, is also proposed.

The landscaping will be native and consistent with the native environs. Exhibits 1, 10 and 23. Temporary disturbance areas will incorporate native planting and restoration seeding.

Each element of the plan effectively, efficiently, and attractively serves its function.

Overall the proposed access road, toilet facility, and parking area will have a minor impact on the natural grade and landscaping of the area. The grade, which is generally flat, will be slightly altered to accommodate the use of a retaining wall to lessen fills. The parking area is in an area that is not identified as a landslide hazard. The existing access drive will be resurfaced to prevent dust and provide a safe travel surface. Exhibit 20. New planned trails will rest gently on the landscape, avoiding impacts to sensitive natural resource areas. New trails will be aligned to go around existing trees, best practices will be employed to minimize erosion potential and structures will be used to avoid impacts to existing drainages at the site.

As described above, the proposed access improvements have been carefully studied, considered, and planned by scientists, landscape architects, stakeholders, and members of the public, to name just a few. Exhibits 1, 2, 3, 4, and 19. They are carefully sited to minimize the impact to the natural resources and existing upland forest.

Tree removal is proposed notwithstanding the great care that was taken to site these improvements. The area to be cleared to support the access driveway and parking improvements is only approximately .05 acres. In this area, 12 trees with DBH ranging from 10-15 inches would be removed. Exhibit 20. Along NW McNamee Road, additional trees and shrubs would be pruned to meet sight distance/vision clearance standards. Exhibit 20.

The interests considered during the siting process were 1) preservation of natural resources and habitat areas; 2) user considerations (convenience, privacy, safety, aesthetics, etc.); 3) operational issues (efficiency and costs); and 4) site feasibility considerations (grade). Exhibits 1, 2, 3, 4, 19, 20 and 22.

The desired future condition is to have visitors feel like they are recreating in the wilderness.

The design presented for land use approval:

- Protects and enhances natural and scenic resources by protecting large blocks of forest and core habitat;
- Integrates community and partner suggestions;
- Identifies and accesses the best location for day use and trail heads;
- Utilizes existing roads and locates new trails to avoid and minimize impacts to sensitive natural resource areas;
- Employs sustainable trail design and construction techniques;
- Provides safe ingress and egress and internal movement of vehicles and pedestrians; and
- Is designed consistent with the surrounding landscape and uses and in a scale and character that the community supports.

This standard is met.

(5) Pedestrian and Vehicular circulation and Parking – The location and number of points of access to the site, the interior circulation patterns, the separations between pedestrians and moving and parked vehicles, and the arrangement of parking areas in relation to buildings and structures, shall be designed to maximize safety and convenience and shall be harmonious with proposed and neighboring buildings and structures.

Finding: Site visitors currently park along or adjacent to the access drive and NW McNamee Road in an uncontrolled setting when recreating on site. Metro proposes to formalize the access to safely get vehicles and pedestrians to the trailhead and off of NW McNamee Road. A paved access drive and small parking lot, including an accessible parking stall, is proposed to serve users. The access provides for two-way traffic with a vehicle turnaround. Exhibit 20. This standard is met.

(6) Drainage – Surface drainage systems shall be designed so as not to adversely affect neighboring properties or streets.

Finding: The parking area and trail system is designed so as to not adversely affect the landscape and will not affect adjacent properties or streets. All surface flow will be collected and/or dispersed on site as directed by the geotechnical and civil engineers to mitigate the additional flow created by the paved surface. Exhibits 2 and 4. A drainage system, with manholes is depicted on the plans. Exhibit 20. This standard is met.

(7) Buffering and Screening – Areas, structures and facilities for storage, machinery and equipment, services (mail, refuse, utility wires, and the like), loading and parking, and similar accessory areas and structures shall be designed, located, buffered or screened to minimize adverse impacts on the site and neighboring properties.

Finding: The area surrounding Burlington Creek Forest contains a mixture of land uses including residential, timber harvest, gravel extraction, ancient forest preserve, and wetland.

Surrounding land uses of note include the following:

- *Quarry:* An operational quarry, located along U.S. Highway 30 southeast of Burlington Creek Forest.
- *Rural Residential:* Residential areas composed primarily of rural residential parcels typically one acre or more, and with many 20 acres or greater in size. Residential areas are located along NW McNamee, west of the forest, and also adjacent to Highway 30, below the forest. The residential uses adjacent to Highway 30 are typically solely residential in nature. While many rural residences along McNamee have forest resources associated with them. The closest homesite along McNamee is ¼ of a mile away from the proposed access improvements, and several hundred feet higher in elevation, with mature trees located in between.
- *Ancient Forest Preserve:* The Ancient Forest, owned and managed by the Forest Park Conservancy, protects nearly 40 acres of old growth forest adjacent to the southwest corner Burlington Creek Forest site. The conservancy welcomes visitors to the Ancient Forest and has recently extended the trail system.
- *Burlington Bottoms:* The roughly 400-acre Burlington Bottoms wetlands, owned by Bonneville Power Administration (BPA) and managed by Oregon Department of Fish and Wildlife (ODFW), lie northeast of Burlington Creek Forest.

The railroad lines are located west of the homesites along Highway 30, with Burlington Creek Forest, uphill from the rail lines.

McNamee Road, Cornelius Pass Road and the railroad all cross through the Burlington Creek Forest. Additional infrastructure includes the power line corridors running the length of the site, logging roads, and a Burlington Water District water tank that serves the neighborhood below.

Connectivity between Burlington Creek Forest and Burlington Bottoms Wetlands and Multnomah Channel located east of the forest is impeded by US Highway 30, local roads, residential development, and the railroad line.

Impacts to the surrounding neighborhoods from site improvements and additional public use will be minimal. The site is isolated from adjacent property and uses given its sheer size. Uses are promoted in the interior of the forest. Additional Metro objectives include: Providing controlled access and on-site parking scaled to the site's capacity, assuring the privacy of neighbors by controlling access, providing setbacks and buffers, and monitoring the use.

All rules and regulations at the nature park will be consistent with Metro's Title 10, which outlines regulations governing the use of Metro owned and operated regional parks and natural areas in order to protect wildlife, plants, and property, as well as promotes the safety and enjoyment of those visiting these facilities. For public security and safety, hours of operation and regulatory signs will be installed at the access point. Regulatory signs will include public use restrictions, such as no fires, camping, hunting, or motorized vehicles, and other uses outlined in Metro's Title 10. Vehicle access will be controlled with automatic gates to prevent after hours use. Gates will be locked daily at park closure times. Boundary markers will be installed along the perimeter of the natural area to clearly delineate the public/private edge. Regular maintenance of the park will include toilet cleaning, litter pick-up and general monitoring. Routine seasonal maintenance of the natural area, including trails, will also occur. Metro Park Rangers, land managers, volunteer coordinators, nature educators and scientists will ensure successful operation, maintenance, and continued use of the site.

Site rehabilitation and management will be pursuant to a Site Conservation/Restoration Plan, produced by Metro, which continues restoration aimed to protect and enhance the forest's natural and scenic resources and to create a place for wildlife to thrive. Exhibit 1. The desired conditions will promote native trees and shrubs; provide habitat for migrating and nesting birds, mammals and amphibians; and protect water quality and riparian habitat while promoting cooler temperatures. Exhibit 10. As the forest matures, it will further screen and buffer the use, which is currently screened and buffered by the existing forest.

(8) Utilities – All utility installations above ground shall be located so as to minimize adverse impacts on the site and neighboring properties.

Finding: At this time, no utilities are proposed; however, this standard can be made a condition of approval to ensure compliance.

(9) Signs and Graphics – The location, texture, lighting, movement, and materials of all exterior signs, graphics or other informational or directional features shall be compatible with the other elements of the design review plan and surrounding properties.

Finding: The only signs associated with the proposed use are entry signs (identifying the location of the parking area), parking regulation signs (ADA, no parking), and directional and interpretative signs associated with the trail system and area. No lighted or moving signs are proposed. All signage will be consistent with the woodland setting. This standard is met.

§ 33.7055 Required Minimum Standards.

(A) Private and Shared Outdoor Recreation Areas in Residential Developments:

- (1) Private Areas – Each ground level living unit in a residential development subject to design review plan approval shall have an accessible outdoor private space of not less than 48 square feet in area. The area shall be enclosed, screened or otherwise designed to provide privacy for unit residents and their guests.*
- (2) Shared Areas – Usable outdoor recreation space shall be provided for the shared use of residents and their guests in any apartment residential development, as follows:*
 - (a) One or two bedroom units: 200 square feet per unit.*
 - (b) Three or more bedroom units: 300 square feet per unit.*

Finding: This criterion applies to residential developments only; therefore, it is not applicable.

(B) Storage

Residential Developments – Convenient areas shall be provided in residential developments for the storage of articles such as bicycles, barbecues, luggage, outdoor furniture, etc. These areas shall be entirely enclosed.

Finding: This criterion applies to residential developments only; therefore, it is not applicable.

(C) Required Landscape Areas

The following landscape requirements are established for developments subject to design review plan approval:

- (1) A minimum of 15% of the development area shall be landscaped; provided, however, that computation of this minimum may include areas landscaped under subpart 3 of this subsection.*

Finding: The development area is heavily forested and natural vegetation covers all adjacent areas not currently cleared for the existing access road. This standard is met.

- (2) All areas subject to the final design review plan and not otherwise improved shall be landscaped.*

Finding: The development area is heavily forested and natural vegetation covers all adjacent areas not currently cleared for the existing access road. Only 0.05 acres are proposed to be cleared to support the parking area improvement. Areas that are temporarily impacted by construction will be planted and reseeded with native vegetation. This standard is met.

- (3) The following landscape requirements shall apply to parking and loading areas:*

- (a) A parking or loading area providing ten or more spaces shall be improved with defined landscaped areas totaling no less than 25 square feet per parking space.*

Finding: There are 25 parking stalls proposed which translates to 625 sq. ft. of required landscaping. Around the parking lot and vault toilet, applicant proposes a landscape transition that complies with the forest practices primary fire break standard and transition into a mature forest setting. Exhibit 23. The property is managed pursuant to an approved forest management plan. No defined landscaping space in the “urban” or “rural” sense is warranted. This is resource land and will remain and be managed as resource land with the goal of promoting a mature forest setting. This standard is met.

(b) A parking or loading area shall be separated from any lot line adjacent to a street by a landscaped strip at least 10 feet in width, and any other lot line by a landscaped strip at least 5 feet in width.

Finding: There is no lot line adjacent to a street or any other lot line near the project area. This standard is not applicable or otherwise met.

(c) A landscaped strip separating a parking or loading area from a street shall contain:

- 1. Street trees spaces as appropriate to the species, not to exceed 50 feet apart, on the average;*
- 2. Low shrubs, not to reach a height greater than 3'0", spaced no more than 5 feet apart, on the average; and*
- 3. Vegetative ground cover.*

Finding: There is no required landscaped strip separating the project area from a street. This standard is not applicable or otherwise met.

(d) Landscaping in a parking or loading area shall be located in defined landscaped areas which are uniformly distributed throughout the parking or loading area.

(e) A parking landscape area shall have a width of not less than 5 feet.

Finding: Around the parking lot and vault toilet, applicant proposes a landscape transition that complies with the forest practices primary fire break standard and transition into a mature forest setting. No defined landscaping space in the “urban” or “rural” sense is warranted. This is resource land and will remain and be managed as resource land with the goal of promoting an “old growth” setting. Forested areas meeting the landscaping minimum thresholds surround the parking area. Aerial photographs in the figures above, together with the plans confirm that all non-improved areas will remain in vegetation and that the proposed landscaping elements around the parking areas will exceed this standard. Only 0.05 acres is proposed to be cleared to support the parking area improvement. This standard is met.

(4) Provision shall be made for watering planting areas where such care is required.

Finding: Areas that are revegetated as part of these improvements will be hand watered and maintained as needed to ensure successful establishment. Metro only uses native plants that are well adapted to local conditions. This standard can be made a condition of approval.

(5) Required landscaping shall be continuously maintained.

Finding: Areas that are revegetated as part of these improvements will be maintained by park staff to ensure successful establishment. Metro only uses native plants that are well adapted to local conditions to ensure long term survivorship. As a standard practice, Metro initially overplants in anticipation of some mortality, to ensure natural densities and prevent weed establishment. This standard can be made a condition of approval to ensure compliance.

(6) Maximum height of tree species shall be considered when planting under overhead powerlines.

Finding: Metro understands. This standard can be made a condition of approval to ensure compliance.

- (7) *Landscaped means the improvement of land by means such as contouring, planting, and the location of outdoor structures, furniture, walkways and similar features.*

Finding: Metro understands.

§ 33.7060 Minor Exceptions: Yard, Parking, Sign, and Landscape Requirements.

(A) *In conjunction with final design review plan approval, the Planning Director may grant minor exceptions from the following requirements:*

- (1) *Dimensional standards for yards as required in the primary district;*
- (2) *Dimensional standards for off-street parking as required under MCC 33.4170 to 33.4175;*
- (3) *Standards for minimum number of off-street parking spaces as required in the primary district; and*
- (4) *Dimensional standards for signs as required in the primary district;*
- (5) *In the case of a proposed alteration, standards for landscaped areas under MCC 33.7055 (C).*

(B) *Except under subsection (A) (5) above, no minor exception shall be greater than 25% of the requirement from which the exception is granted.*

(C) *Approval of a minor exception shall be based on written findings, as required in this subpart.*

(1) *In the case of a minor yard exception, the Planning Director shall find that approval will result in:*

- (a) *More efficient use of the site;*
- (b) *Preservation of natural features, where appropriate;*
- (c) *Adequate provision of light, air, and privacy to adjoining properties; and*
- (d) *Adequate emergency accesses.*

(2) *In the case of a minor exception to the dimensional standards for off-street parking spaces or the minimum required number of off-street parking spaces, the Planning Director shall find that approval will provide adequate off-street parking in relation to user demands. The following factors may be considered in granting such an exception:*

- (a) *Special characteristics of users which indicate low demand for off-street parking (e.g., low income, elderly);*
- (b) *Opportunities for joint use of nearby off-street parking facilities;*
- (c) *Availability of public transit;*
- (d) *Natural features of the site (topography, vegetation, and drainage) which would be adversely affected by application of required parking standards.*

(3) *In the case of a minor exception to the dimensional standards for signs, the Planning Director shall find that approval is necessary for adequate identification of the use on the property and will be compatible with the elements of the design review plan and with the character of the surrounding area.*

(4) *In the case of a minor exception to the standards for landscaped areas, the Planning Director shall find that approval is consistent with MCC 33.7000, considering the extent and type of proposed alteration and the degree of its impact on the site and surrounding areas.*

Finding: This standard applies at the time of final plan sign off and is not applicable at this time.

D. Off Street Parking

§ 33.4100 Purpose.

The purposes of this subdistrict and these off-street parking and loading regulations are to reduce traffic congestion associated with residential, commercial, manufacturing, and other land uses; to protect the character of neighborhoods; to protect the public's investment in streets and arterials and to provide standards for the development and maintenance of off-street parking and loading areas.

§ 33.4105 General Provisions.

In the event of the erection of a new building or an addition to an existing building, or any change in the use of an existing building, structure or land which results in an intensified use by customers, occupants, employees or other persons, off-street parking and loading shall be provided according to the requirements of this Section. For nonconforming uses, the objectives of this section shall be evaluated under the criteria for the Alteration, Modification, and Expansion of Nonconforming Uses.

Finding: As provided in § 33.4105, the required § 33.4100 et al. parking standards are triggered by the change in use of land which will likely intensify use. As such, applicant must demonstrate that required parking is provided. Applicant demonstrates compliance with applicable criteria below.

§ 33.4120 Plan Required.

A plot plan showing the dimensions, legal description, access and circulation layout for vehicles and pedestrians, space markings, the grades, drainage, setbacks, landscaping and abutting land uses in respect to the off-street parking area and such other information as shall be required, shall be submitted in duplicate to the Planning Director with each application for approval of a building or other required permit, or for a change of classification to O-P.

Finding: Exhibit 20 – the Burlington Parking Site Plan - depicts the proposed parking area. The new vault toilet is also served by one ADA compliant space. This standard is met.

§ 33.4125 Use of Space.

- (A) Required parking spaces shall be available for the parking of vehicles of customers, occupants, and employees without charge or other consideration.*
- (B) No parking of trucks, equipment, materials, structures or signs or the conducting of any business activity shall be permitted on any required parking space.*
- (C) A required loading space shall be available for the loading and unloading of vehicles concerned with the transportation of goods or services for the use associated with the loading space.*
- (D) Except for residential and local commercial districts, loading areas shall not be used for any purpose other than loading or unloading.*
- (E) In any district, it shall be unlawful to store or accumulate equipment, material or goods in a loading space in a manner which would render such loading space temporarily or permanently incapable of immediate use for loading operations.*

Finding: The proposed parking spaces are intended for use by park visitors and Metro employees for maintenance purposes. This standard is met.

§ 33.4130 Location of Parking and Loading Spaces.

(A) Parking spaces required by this Section shall be provided on the lot of the use served by such spaces.

Finding: All of the parking will be provided on the lot of the use served by the spaces. This standard is met.

§ 33.4135 *Improvements Required*

(A) Required parking and loading areas shall be improved and placed in condition for use before the grant of a Certificate of Occupancy under MCC 33.0525, or a Performance Bond in favor of Multnomah County equivalent to the cost of completing such improvements shall be filed with the Planning Director.

(B) Any such bond shall include the condition that if the improvement has not been completed within one year after issuance of the Certificate of Occupancy, the bond shall be forfeited. Any bond filed hereunder shall be subject to the approval of the Planning Director and the County Attorney.

Finding: Improvements to the parking areas will be made before use of site improvements commences. This standard is met and can be made a condition of approval to ensure compliance.

§ 33.4140 *Change of Use*

(A) Any alteration of the use

Finding: No change of use is proposed; therefore, these standards are not applicable.

§ 33.4145 *Joint Parking Or Loading Facilities.*

(A) In the event different uses occupy the same lot or structure....

Finding: No joint parking or loading areas are proposed; therefore, these standards are not applicable.

§ 33.4150 *Existing Spaces.*

Off-street parking or loading spaces existing prior to July 26, 1979 may be included in calculating the number of spaces necessary to meet these requirements in the event of subsequent enlargement of the structure or change of use to which such spaces are accessory. Such spaces shall meet the design and improvement standards of this Section.

Finding: No existing spaces need to be included in the calculations to meet the required parking space standards.

§ 33.4160 *Standards of Measurement.*

(A) Square feet means square feet of floor or land area devoted to the functioning of the particular use and excluding space devoted to off-street parking and loading.

(B) When a unit or measurement determining the number of required off-street parking or off-street loading spaces results in a requirement of a fractional space, any fraction up to and including one-half shall be disregarded, and any fraction over one-half shall require one off-street parking or off-street loading space.

Finding: The applicant understands the standards of measurement applicable to the calculation of parking.

§ 33.4165 *Design Standards: Scope.*

- (A) *The design standards of this section shall apply to all parking, loading, and maneuvering areas except those serving a single family dwelling on an individual lot. Any non-residential use approved on a parcel containing a single family dwelling shall meet the design standards of MCC 33.4170 through 33.4200.*
- (B) *All parking and loading areas shall provide for the turning, maneuvering and parking of all vehicles on the lot. After July 26, 1979 it shall be unlawful to locate or construct any parking or loading space so that use of the space requires a vehicle to back into the right-of-way of a public street.*

Finding: All parking areas provide for the turning, maneuvering and parking of vehicles on the property. None of the proposed parking areas require a vehicle to back into the right-of-way of a public street. Exhibit 20. This standard is met.

§ 33.4170 *Access.*

- (A) *Where a parking or loading area does not abut directly on a public street or private street approved under MCC 33.7700 et seq., the Land Division Chapter, there shall be provided an unobstructed paved drive not less than 20 feet in width for two-way traffic, leading to a public street or approved private street. Traffic directions therefore shall be plainly marked.*
- (B) *Parking or loading space in a public street shall not be counted in fulfilling the parking and loading requirements of this section. Required spaces may be located in a private street when authorized in the approval of such private street.*

Finding: The parking area is served by and takes access to and from NW McNamee Road, an improved public street. The proposed access drive is not less than 20 feet in width and allows for two way traffic. Exhibit 20. Applicant is not proposing parking in a public street to satisfy required parking requirements. This standard is met.

§ 33.4175 *Dimensional Standards.*

- (A) *Parking spaces shall meet the following requirements:*
- (1) *At least 70% of the required off-street parking spaces shall have a minimum width of nine feet, a minimum length of 18 feet, and a minimum vertical clearance of six feet, six inches.*
 - (2) *Up to 30% of the required off-street parking spaces may have a minimum width of eight-and-one-half feet, a minimum length of 16 feet, and a vertical clearance of six feet if such spaces are clearly marked for compact car use.*
 - (3) *For parallel parking, the length of the parking space shall be 23 feet.*
 - (4) *Space dimensions shall be exclusive of access drives, aisles, ramps or columns.*
- (B) *Aisle width shall be not less than:*
- (1) *25 feet for 90 degree parking,*
 - (2) *20 feet for less than 90 degree parking, and*
 - (3) *12 feet for parallel parking.*
 - (4) *Angle measurements shall be between the center line of the parking space and the center line of the aisle.*

Finding: This standard regulates the dimensions of parking spaces required by § 33.4105 and in numbers required by § 33.4205. Of note, MCC 33.4205 does not regulate the minimum number parking spaces for the proposed recreational use. Metro is proposing 25 spaces, which is sufficient to serve anticipated users and can reasonably be supported by the topography. Exhibits 3 and 20.

Eighteen regular spaces (18 x 9), six compact spaces (16 x 8.5) and one ADA compliant space are proposed. The width of the access drive/aisle between the parking stalls is 25 feet. Exhibit 20.

This standard is met or otherwise can be met through a condition of approval.

§ 33.4180 Improvements.

(A) Surfacing

- (1) Except as otherwise provided in this section, all areas used for parking, loading or maneuvering of vehicles, including the driveway, shall be surfaced with at least two inches of blacktop on a four inch crushed rock base or at least six inches of Portland cement, unless a design providing additional load capacity is required by the fire service provider.*

Finding: The proposed driveway is proposed to be paved. Exhibit 20. This standard is met and compliance can be ensured through a condition of approval.

- (2) The Approval Authority may permit and authorize a deviation from the surfacing standard in paragraph (A)(1) of this section and thereby authorize, alternate surfacing systems that provide a durable dustless surface, including gravel. A deviation under this paragraph may be permitted and authorized only upon finding that each parking area supporting the existing and the proposed development meets the following standards in subparagraphs (a) and (b) and, for parking areas of four or more required parking spaces, also meets the following standards in subparagraphs (c) and (d):*

- (a) The authorized provider of structural fire protection services verifies that the proposed deviation complies with such provider's fire apparatus access standards, or, if there is no such service provider, the building official verifies that the proposed deviation complies with the Oregon Fire Code;*
- (b) The County Engineer verifies that the proposed deviation complies with the County Road Rules and the County Design and Construction Manual Standards. Alternative surfacing can be considered for all areas used for parking, loading and maneuvering, including the driveway; however, approaches to paved public right-of-way shall be paved for a minimum of 21 feet from the fog line, or for a greater distance when required by the County Engineer;*
- (c) Authorization of the proposed deviation would not:*
- 1. be materially detrimental to the public welfare;*
 - 2. be injurious to property in the vicinity or zoning district in which the property is located; or*
 - 3. adversely affect the appropriate development of adjoining properties; and*
- (d) Any impacts resulting from the proposed resurfacing are mitigated to the extent practical. Mitigation may include, but is not limited to, such considerations as provision for pervious drainage capability, drainage runoff control and dust control. A dust control plan is required when a dwelling, excluding any dwelling served by the driveway, is located within 200-feet of any portion of the driveway for which gravel or other similar surfacing materials is proposed. Common dust control measures include, but are not limited to, reduced travel speeds, gravel maintenance planning, establishment of windbreaks and use of binder agents.*

Finding: This standard allows the approval authority to permit and authorize a deviation from the asphalt surfacing standard for required parking spaces. Specifically, the standard permits the use of gravel. At this time, applicant is not requested deviation approval for gravel. However, applicant

requests a condition of approval that would permit applicant to seek permission for gravel pursuant to the standards and permission required in subsection (2) above.

- (3) Notwithstanding paragraph (A)(1) of this section, parking fields for intermittent uses such as special events associated with farm stands and public parks, sporting events, and the like may be surfaced with gravel, grass or both and spaces may be unmarked if the parking of vehicles is supervised. Grass fields used for parking shall be maintained so that grass is kept short and watered to minimize fire risk and reduce dust.*

Finding: Applicant is not requesting to use parking fields for intermittent uses. This standard is not applicable.

(B) Curbs and Bumper Rails

- (1) All areas used for parking, loading, and maneuvering of vehicles shall be physically separated from public streets or adjoining property by required landscaped strips or yards or in those cases where no landscaped area is required, by curbs, bumper rails or other permanent barrier against unchanneled motor vehicle access or egress.*
- (2) The outer boundary of a parking or loading area shall be provided with a bumper rail or curbing at least four inches in height and at least three feet from the lot line or any required fence except as provided in (3) below.*
- (3) Except for development within the PH-RC, OR, OCI and CFU zones, the outer boundary of a parking or loading area with fewer than four required parking spaces may use a five foot wide landscape strip or yard planted with a near-continuous number of shrubs and/or trees. If the outer boundary of the parking area is within 50 feet of a dwelling on an adjacent parcel, the plant materials shall create a continuous screen of at least four feet in height except at vision clearance areas where it shall be maintained at three feet in height.*

Finding: All areas for parking and maneuvering of vehicles are physically separated from public streets. There is no adjoining property that abuts a parking area. There is no lot line, dwelling, or any required fence associated with a parking area. Parking areas include wheel stops to delineate parking spaces and ensure that vehicles remain in parking spaces and prevent intrusion into the natural areas. Exhibit 20. This standard is generally inapplicable or otherwise met.

- (C) Marking - All areas for the parking and maneuvering of vehicles shall be marked in accordance with the approved plan required under MCC 36.4120, and such marking shall be continually maintained. Except for development within the PH-RC, OR, or OCI zones, a graveled parking area with fewer than four required parking spaces is exempt from this requirement.*

Finding: Parking spaces are delineated with a curb stop in front of each parking space to demark the individual stall. Compact parking spaces will be clearly marked. The accessible parking space will be clearly marked with a standard accessible parking sign and ADA symbol pavement marking. Exhibit 20. This standard is met.

- (D) Drainage - All areas for the parking and maneuvering of vehicles shall be graded and drained to provide for the disposal of all surface water on the lot.*

Finding: As demonstrated with Exhibits 4 and 20, the parking area will be graded and drained into on-site detention facilities, with an outfall into an existing drainage ditch and thereafter will be absorbed into the natural on-site forest landscape. This standard is met.

§ 33.4185 *Lighting.*

Any artificial lighting which may be provided shall be shielded or deflected so as to not shine into ad-joining dwellings or other types of living units, and so as not to create a hazard to the traveling public on any street.

Finding: Any lighting will be shielded or deflected so as to not shine on adjoining dwellings or to create a hazard to the traveling public. Applicant intends to install a low voltage, solar powered security light in the parking area as well as a light on the vault toilet. The lights will be shielded or deflected to shine downward. There are no adjoining dwellings in the area. Given the location of the parking area in relation to NW McNamee and area residents, no light can or will shine onto other properties and no light will create a hazard on NW McNamee. This standard is met and compliance can be ensured by a condition of approval.

§ 33.4190 *Signs.*

Signs, pursuant to the provisions of MCC 36.7465.

Finding: New signs proposed include a monument/entry sign, directional signs, parking lot signage, and informational signs associated with the natural area and trails. Exhibits 20 and 22. All signage is consistent with the woodland setting of the park. Applicant demonstrates compliance with § 36.7465 below. This standard is met.

§ 33.4195 *Design Standards: Setbacks.*

(A) Any required yard which abuts upon a street lot line shall not be used for a parking or loading space, vehicle maneuvering area or access drive other than a drive connecting directly to a street perpendicularly.

(C) A required yard which abuts a street lot line shall not be paved, except for walkways which do not exceed 12 feet in total width and not more than two driveways which do not exceed the width of their curb cuts for each 150 feet of street frontage of the lot.

Finding: Applicant is not proposing to use any required front yard for parking. This standard is not applicable or otherwise met.

§ 33.4200 *Landscape and Screening Requirements.*

(A) The landscaped areas requirements of MCC 33.7055 (C) (3) to (7) shall apply to all parking, loading or maneuvering areas which are within the scope of design standards stated in MCC 33.4165 (A).

Finding: Natural vegetation provides separation and screening from all lot lines adjacent to a street or neighboring property in excess of the width and planting requirements for parking lot landscaping. See aerial photos in Figure 2, 3, and 4 above. Minimal clearing will occur. Existing vegetation adjacent to parking areas will be protected during construction to ensure its long term viability. The landscape requirements of MCC 33.7055(C)(3) to (7) are addressed under the design review criteria section. This standard is met.

§ 33.4205 *Minimum Required Off-Street Parking Spaces.*

Finding: MCC 33.4205 does not specify a minimum number of required parking spaces for the proposed recreational use. Metro operates a number of regional parks and natural areas. Visitor information and traffic counts are kept. That information, together with information from other area parks (operated by other agencies), was used to determine parking needs. Metro and its project transportation engineer have projected the number and anticipated times of visitor use

which correlated into a specified number of parking spaces needed to serve the users. The analysis is included in the traffic impact statement attached as Exhibit 3. Metro is proposing 25 spaces, which is sufficient to serve anticipated users and can reasonably be supported by the topography. Exhibit 2. The site is topographically constrained by steep slopes, with limited level space available in which to construct the parking area.

To assist in assessing transportation impacts and parking needs, County staff requested that Metro analyze and compare Powell Butte Nature Park, managed by the City of Portland, to the park improvements proposed at Burlington Creek Forest. Metro acknowledges the concerns that a few citizens have raised concerning off-road bicycling, including its resulting parking demand. Respectfully, Metro is of the opinion that comments to date have mischaracterized what Metro is proposing, the users it intends to and will serve, and the parking demands that will result.

Metro reviewed several potentially comparable nature parks in order to estimate future parking needs at Burlington Creek Forest (findings below). While it is impossible to precisely predict future parking needs, factors including variety and extent of activities offered, parking capacity, and area population are common ways of determining parking demand. A review of comparable park sites found 25 vehicle parking spaces to be an adequate number of spaces for the expected use. While the City of Portland's Powell Butte Nature Park was also considered, it contrasts significantly with BCF in terms of proximity to population (over three times as many people live within a 20 minute drive and ten times within a 15 minute drive) and intensity of activities offered. See attached Exhibit 24.

This standard is met.

§ 33.4210 *Minimum Required Off-Street Loading Spaces.*

Finding: No loading areas are needed to serve the proposed use. This standard is not applicable.

§ 33.4215 *Exceptions from Required Off-Street Parking or Loading Spaces.*

(A) The Planning Director may grant an exception with or without conditions for up to 30% of the required number of off-street parking or loading spaces, upon a finding by the Director that there is substantial evidence that the number of spaces required is inappropriate or un-needed for the particular use, based upon:

Finding: No exceptions to the number of required parking spaces are requested as a part of this application.

E. *Significant Environmental Concern*

§ 33.4500 *Purpose.*

The purposes of the Significant Environmental Concern subdistrict are to protect, conserve, enhance, restore, and maintain significant natural and manmade features which are of public value, including among other things, river corridors, streams, lakes and islands, domestic water supply watersheds, flood water storage areas, natural shorelines and unique vegetation, wetlands, wildlife and fish habitats, significant geological features, tourist attractions, archaeological features and sites, and scenic views and vistas, and to establish criteria, standards, and procedures for the development, change of use, or alteration of such features or of the lands adjacent thereto.

Finding: Applicant proposes visitor access improvements to serve an extended multi-use trail system on a portion of Metro's Burlington Creek Forest area. Exhibits 20 and 22. The improvements protect water quality and fish and wildlife habitat, while creating opportunities for the community to enjoy nature.

§ 33.4505 Area Affected.

Except as otherwise provided in MCC 33.4510 or MCC 33.4515, this subsection shall apply to those lands designated SEC on the Multnomah County Zoning Map.

Finding: The area of the proposed development is designated SEC on the Multnomah County Zoning Map.

§ 33.4510 Uses; Sec Permit Required.

(A) All uses permitted under the provisions of the underlying district are permitted on lands designated SEC; provided, however, that the location and design of any use, or change or alteration of a use, except as provided in MCC 33.4515, shall be subject to an SEC permit.

Finding: Applicant is requesting that an SEC permit be issued for the use approval sought. This standard is met.

(B) Any excavation or any removal of materials of archaeological, historical, prehistorical or anthropological nature shall be conducted under the conditions of an SEC permit, regardless of the zoning designation of the site.

Finding: This standard is not applicable.

(C) Activities proposed for lands designated as scenic waterways under the Oregon Scenic Waterways System shall be subject to an SEC permit in addition to approval from the Oregon Parks and Recreation Department.

Finding: This standard is not applicable. The site does not include a scenic waterway under the Oregon Scenic Waterways System.

§ 33.4515 Exceptions.

(A) Except as specified in (B) below, a SEC permit shall not be required for the following: ...

(5) Activities to protect, conserve, enhance, and maintain public recreational, scenic, historical, and natural uses on public lands;

Finding: Metro is proposing improvements to enhance and maintain public recreational and trail uses in the natural area. The proposal to develop a formal parking area and new trail sections are both activities to protect, conserve, enhance, and maintain public recreational and natural uses on public lands. The activities are expressly exempt from SEC permit requirements.

At a minimum, the proposed new trail sections must be exempt from SEC permit standards, based on the express language above.

Please note: Although the activities proposed are exempt from SEC permit standards, and so as to address any concern over the impact of the proposal on the SEC -h, SEC-v, and SEC- s overlays, alternatively applicant demonstrates compliance with the SEC and Wildlife Conservation Plan criteria below.

§ 33.4520 Application for SEC Permit.

An application for an SEC permit for a use or for the change or alteration of an existing use on land designated SEC, shall address the applicable criteria for approval, under MCC 33.4560 through 33.4575.

(A) An application for an SEC permit shall include the following:

- (1) *A written description of the proposed development and how it complies with the applicable approval criteria of MCC 33.4560 through 33.4575.*
- (2) *A map of the property showing:*
 - (a) *Boundaries, dimensions, and size of the subject parcel;*
 - (b) *Location and size of existing and proposed structures;*
 - (c) *Contour lines and topographic features such as ravines or ridges;*
 - (d) *Proposed fill, grading, site contouring or other landform changes;*
 - (e) *Location and predominant species of existing vegetation on the parcel, areas where vegetation will be removed, and location and species of vegetation to be planted, including landscaped areas;*
 - (f) *Location and width of existing and proposed roads, driveways, and service corridors.*

Finding: Applicant has provided findings of consistency with the purposes of the applicable SEC districts and the applicable approval criteria supported by substantial evidence. Applicant has addressed the approval criteria for all of the designated resources on the property where they are impacted by proposed development. The application includes all required and applicable information. Exhibits 2, 4 and 19. This standard is met.

§ 33.4525 *Applicable Approval Criteria.*

- (A) *The approval criteria that apply to uses in areas designated SEC-w, SEC-v, SEC-h and SECs on Multnomah County zoning maps shall be based on the type of protected resources on the property, as indicated by the subscript letter in the zoning designation, as follows: Zoning Designation Approval Criteria (MCC#) SEC-w (wetlands) 33.4560; SEC-v (scenic views) 33.4565; SEC-h (wildlife habitat) Type I Permit – 33.4567 Type II Permit – 33.4570; SEC-s (streams) 33.4575.*
- (B) *The zoning maps used to designate the Stream Conservation Areas (SEC-s zoning subdistricts) were created digitally by interpreting various data sources including the hand drawn maps contained in the Goal 5 ESEE report and Metro’s riparian and wildlife habitat inventories. Care was taken in the creation of the maps, but in some instances mapping inaccuracies have occurred during the process. In the event of a mapping inconsistency, the SEC-s zoning subdistrict shall be interpreted to be the defined Stream Conservation Area.*

Finding: The subject property contains areas designated SEC-h (wildlife habitat), SEC-v (scenic views), and SEC-s (streams). Although the use is exempt from SEC permitting, applicant alternatively demonstrates compliance with standards below.

- (C) *An application for a use on a property containing more than one protected resource shall address the approval criteria for all of the designated resources on the property. In the case of conflicting criteria, approval shall be based on the ability of the proposed development to comply as nearly as possible with the criteria for all designated resources that would be affected.*

Finding: Applicant addressed and demonstrates compliance with the criteria for SEC-h (wildlife habitat), SEC-v (scenic views), and SEC-s (streams) below. This standard is met.

- (D) *For protected stream resources, the approval criteria shall be used to determine the most appropriate location, size and scope of the proposed development, in order to make the development compatible with the purposes of this section, but shall not be used to prohibit a use or be used to require removal or relocation of existing physical improvements to the property.*

Finding: Applicant addressed and demonstrates compliance with the approval criteria for SEC-s (streams) below. The location of the streams and potential impacts from planned trails were considered and analyzed to ensure that any alteration is compatible and supported by the natural environment and does not adversely impact any stream resources. This standard is met.

§ 33.4530 SEC Permit – Required Findings.

A decision on an application for an SEC permit shall be based upon findings of consistency with the purposes of the SEC district and with the applicable criteria for approval specified in MCC 33.4560 through 33.4575.

Finding: Applicant addressed and demonstrates compliance with the criteria for SEC-h (wildlife habitat), SEC-v (scenic views), and SEC-s (streams) below. Applicant's findings of compliance are supported by substantial evidence. This standard is met.

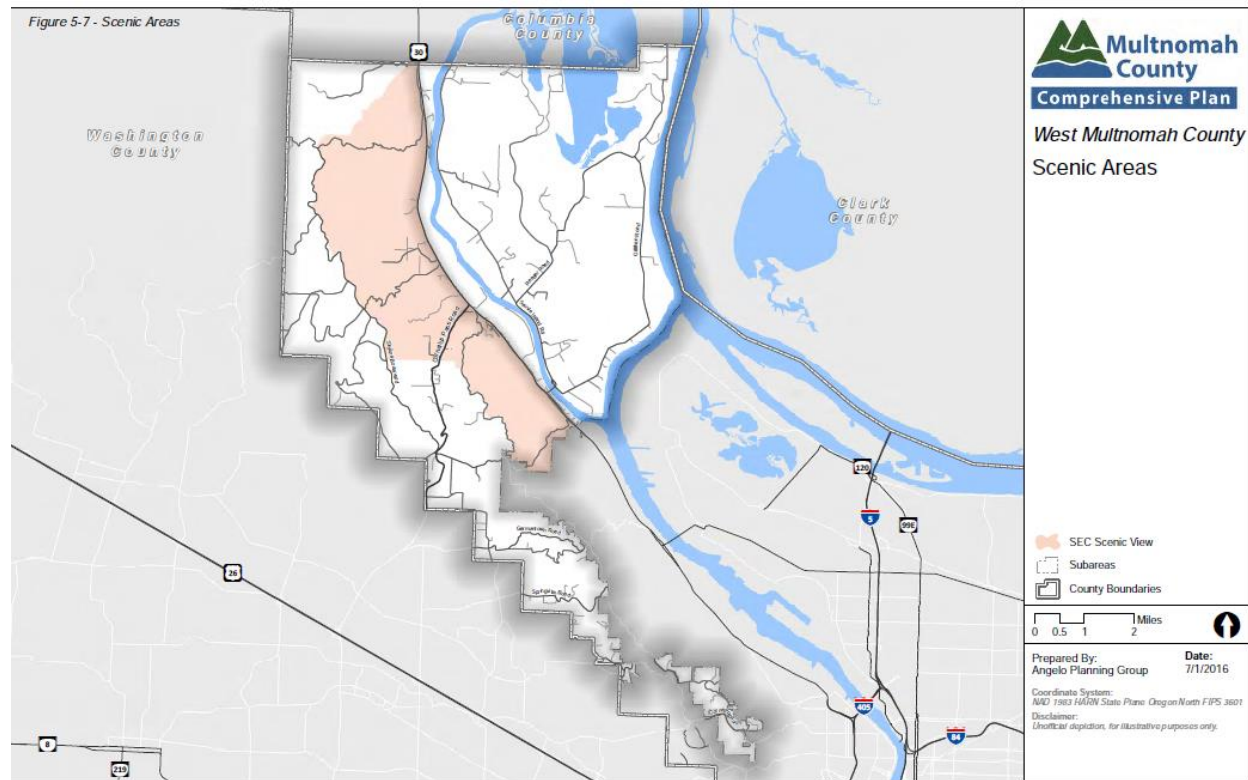
SEC-v Permit

§ 33.4565 Criteria for Approval of SEC-V Permit – Significant Scenic Views.

(A) Definitions: (1) Significant scenic resources consist of those areas designated SEC-v on Multnomah County sectional zoning maps. (2) Identified Viewing Areas are public areas that provide important views of a significant scenic resource, and include both sites and linear corridors. ...

Finding: The views of the North Tualatin Mountain range from Sauvie Island and the river basin below is deemed a significant resource. The subject property is identified as SEC-v on the County's sectional zoning map. Although the use is exempt from SEC permitting, applicant demonstrates compliance with SEC-v standards below.

Figure 10 Scenic Views Map



(B) In addition to the information required by MCC 33.4520, an application for development in an area designated SEC-v shall include:

(1) Details on the height, shape, colors, outdoor lighting, and exterior building materials of any proposed structure;

Finding: The only structures are a small vault toilet and sign, whose materials and colors are both natural looking (natural tones of tans, browns, greens, and greys) and fire resistant. Applicant is also proposing a small section of retaining wall to minimize grading and grounds disturbances. The retain wall will be natural tones of grey or gabion baskets filled with rocks. The wall will have a maximum exposed height of 8 feet, and face downhill. The below image is similar in appearance to the toilet proposed. The toilet facility is well equipped to withstand both the typical weather and atypical storms of the region. The building meets or exceeds the effects of a seismic design category E earthquake, a 150-mph wind load, and a 350-pound per square foot snow load. With steel reinforced 5,000 psi concrete construction, the building and vaults will not rot, rust, or burn. Toilet specifications are included in Exhibit 11.

Figure 11 Vault Toilet



(2) Elevation drawings showing the appearance of proposed structures when built and surrounding final ground grades;

Finding: Attached as Exhibit 20 is the site plan which depicts the location, elevation, and surrounding grades of the proposed toilet, sign and retaining wall. Exhibit 22 includes additional information sign plans. The toilet and sign can be described as being located in a hollow – as it is downhill from the entrance grade on NW McNamee. Nothing is visible in the protected view shed. This standard is met.

(3) A list of identified viewing areas from which the proposed use would be visible; and,

Finding: Identified viewing areas (areas from which one can see the Burlington Creek Forest) include those on Sauvie Island; Highway 30; the Multnomah Channel; the Willamette River; and

public roads on Sauvie Island. The proposed use is not visible from protected viewing areas due to topography and landscape.

(4) A written description and drawings demonstrating how the proposed development will be visually subordinate as required by (C) below, including information on the type, height and location of any vegetation or other materials which will be used to screen the development from the view of identified viewing areas.

Finding: Visually subordinate means development does not noticeably contrast with the surrounding landscape, as viewed from an identified viewing area. Development that is visually subordinate may be visible, but is not visually dominant in relation to its surroundings.

Attached as Exhibits 20 and 22 are the site plans which depict the location, elevation, and surrounding grades of the proposed improvements.

The access road entrance from NW McNamee is at the highest point, with the drive dropping in elevation as it winds through the forest to the parking lot location some 300 feet away. From there, trails disperse into the woods in a controlled fashion.

Figure 12 Elevations



The toilet and information sign can be described as being located in a hollow – as they are downhill from the entrance grade on NW McNamee. Nothing proposed is visible from the protected view shed.

The small structures are natural colors (tans, browns, greens, and greys) and are typical of a forested park setting, as they blend into the surroundings. The toilet roof line is at 11.5 feet high, with the vent extending to 15 feet. All other uses are at ground level.

The developed parking area is surrounded by forest. This is resource land and will remain and be managed as resource land with the goal of promoting an “old growth” setting, further buffering the surroundings. This standard is met.

(C) Any portion of a proposed development (including access roads, cleared areas and structures) that will be visible from an identified viewing area shall be visually subordinate. Guidelines which may be used to attain visual subordination, and which shall be considered in making the determination of visual subordination include:

Finding: Visually subordinate means development does not noticeably contrast with the surrounding landscape, as viewed from an identified viewing area. Development that is visually subordinate may be visible, but is not visually dominant in relation to its surroundings. Attached as Exhibits 20 and 22 are the site plans which depict the location, elevation, and surrounding grades of the proposed improvements.

The access road entrance from NW McNamee is at the highest point, with the drive dropping in elevation as it winds through the forest to the parking lot location some 300 feet away. From there, trails disperse into the woods in a controlled fashion.

The toilet can be described as being located in a hollow – as it is downhill from the entrance grade on NW McNamee. It is not visible in the protected view shed.

The toilet is natural color and its type is typical of a forested park setting, as it blends into the surroundings. The roof line is at 11.5 feet high, with the vent extending to 15 feet. All other uses are at ground level.

The developed parking area is surrounded by forest. This is resource land and will remain and be managed as resource land with the goal of promoting an “old growth” setting, further buffering the surroundings.

This standard is met.

(1) Siting on portions of the property where topography and existing vegetation will screen the development from the view of identified viewing areas.

Finding: As demonstrated by this narrative, figures, maps, and plans, applicant has sited the parking area where the topography permits, which is also a location where topography and existing vegetation screens the toilet and ground level uses from the identified viewing areas. Exhibits 2, 5, 10, 20 and 22. This standard is met.

(2) Use of nonreflective or low reflective building materials and dark natural or earthtone colors.

Finding: Proposed materials and colors are both natural looking, non-reflective, and natural colors of browns, tans, and greys. The toilet and building materials depicted in Figure 12 are similar to the toilet proposed. Exhibit 11. This standard is met.

(3) No exterior lighting, or lighting that is directed downward and sited, hooded and shielded so that it is not highly visible from identified viewing areas. Shielding and hooding materials should be composed of nonreflective, opaque materials.

Finding: Installed lighting will be directed downward, and sited, hooded, and shielded. Even if installed, lighting will not be visible from the identified viewing areas as the parking area site is

shielded by a coniferous forest that will provide year round screening. The requirement to shield or otherwise direct light downward can be made a condition of approval to ensure compliance.

(4) Use of screening vegetation or earth berms to block and/or disrupt views of the development. Priority should be given to retaining existing vegetation over other screening methods. Trees planted for screening purposes should be coniferous to provide winter screening. The applicant is responsible for the proper maintenance and survival of any vegetation used for screening.

Finding: Attached at Exhibit 20 is the site plan which depicts the location, elevation, and surrounding grades of the proposed improvements.

The access road entrance from NW McNamee is at the highest point, with the drive dropping in elevation as it winds through the forest to the parking lot location some 300 feet away. From there, trails disperse into the woods in a controlled fashion.

The toilet can be described as being located in a hollow – as it is downhill from the entrance grade on NW McNamee. It is not visible in the protected view shed.

The toilet is natural color and its type is typical of a forested park setting, as it blends into the surroundings. The roof line is at 11.5 feet high, with the vent extending to 15 feet. All other uses are at ground level.

The developed parking area is surrounded by coniferous forest and will visually buffer the toilet structure year round. This is resource land and will remain and be managed as resource land with the goal of promoting an “old growth” setting, further buffering the surroundings.

This standard is met.

(5) Proposed developments or land use shall be aligned, designed and sited to fit the natural topography and to take advantage of vegetation and land form screening, and to minimize visible grading or other modifications of landforms, vegetation cover, and natural characteristics.

Finding: Metro employs a science based approach to site management and conservation. During the master planning process, Metro scientists provided baseline information about current conditions, conservation targets and habitat restoration goals, guided by conservation biology, site knowledge, research, and by using external experts to evaluate possible impacts of potential access opportunities. Metro scientists then work with Metro’s planning team to develop access opportunities that are compatible with habitat, wildlife, and water quality goals for the natural area. The process identified suitable locations and activities for recreation while seeking to stabilize and restore diversity and the ecological health of the site.

The plan’s goals include: Protecting fish and wildlife habitat and water quality while providing opportunities for meaningful experiences of nature in a safe, controlled, and sustainable manner.

The visitor access and parking area improvements are designed to blend with the forest environment. The parking area represents a compact, efficient and effective use of land, providing adequate parking and sufficient amenities to serve the use, while limiting impacts on the surround landscape. They are simple and functional. The proposed access improvements and alterations will utilize existing cleared areas. A vault toilet, information sign, and small retaining wall is proposed, whose materials and colors are both natural looking and fire resistant.

The landscaping will be native and consistent with the native environs. Temporary disturbance areas will incorporate native planting and restoration seeding.

Each element of the plan effectively, efficiently, and attractively serves its function.

Overall the proposed access road, toilet facility, and parking area will have a minor impact on the natural grade and landscaping of the area. The grade, which is generally flat where disturbed, will be slightly altered to accommodate the use of a retaining wall proposed to lessen fill. The parking area is in an area that is not identified as a landslide hazard. The existing access drive will be resurfaced to prevent dust and provide a safe travel surface.

As described above, the proposed access improvements have been carefully studied, considered, and planned by scientists, landscape architects, independent consultants, stakeholders, and members of the public, to name just a few. They are carefully sited to minimize the impact to the natural resources and existing upland forest.

Tree removal is proposed notwithstanding the great care that was taken to site these improvements. The area to be cleared to support the parking area improvements is only approximately .05 acres. In this area, 12 trees with DBH ranging from 10-15 inches would be removed. Additional trees will be pruned or cut to ensure sight distance/vision clearance standards are met at the access point. Exhibit 20.

The interests considered during the siting process were 1) preservation of natural resources and habitat areas; 2) user considerations (convenience, privacy, safety, aesthetics, etc.); 3) operational issues (efficiency and costs); and 4) site feasibility considerations (grade).

The desired future condition is to have visitors feel like they are recreating in the wilderness.

The design presented for land use approval:

- Protects and enhances natural and scenic resources by protecting large blocks of forest and core habitat;
- Integrates community and partner suggestions;
- Identifies and accesses the best location for day use and trail heads;
- Utilizes existing roads and locates new trails to avoid and minimize impacts to sensitive natural resource areas;
- Employs sustainable trail design and construction techniques;
- Provides safe ingress and egress and internal movement of vehicles and pedestrians; and
- Is designed consistent with the surrounding landscape and uses and in a scale and character that the community supports.

This standard is met.

(6) Limiting structure height to remain below the surrounding forest canopy level.

Finding: The proposed toilet's roof line is at 11.5 feet high, with the vent extending to 15 feet. All other uses are at ground level. Every use is below the surrounding forest canopy. Exhibits 11, 19 and 20.

(7) Siting and/or design so that the silhouette of buildings and other structures remains below the skyline of bluffs or ridges as seen from identified viewing areas. This may require

modifying the building or structure height and design as well as location on the property, except:

Finding: Attached at Exhibit 20 is the site plan which depicts the location, elevation, and surrounding grades of the proposed improvements.

The access road entrance from NW McNamee is at the highest point, with the drive dropping in elevation as it winds through the forest to the parking lot location some 300 feet away. From there, trails disperse into the woods in a controlled fashion.

The toilet can be described as being located in a hollow – as it is downhill from the entrance grade on NW McNamee. It is not located on a bluff or ridge, nor is it visible in the protected view shed.

The toilet is natural color and its type is typical of a forested park setting, as it blends into the surroundings. The roof line is at 11.5 feet high, with the vent extending to 15 feet. All other uses are at ground level.

The development area is surrounded by forest. This is resource land and will remain and be managed as resource land with the goal of promoting an “old growth” setting, further buffering the surroundings.

This standard is met.

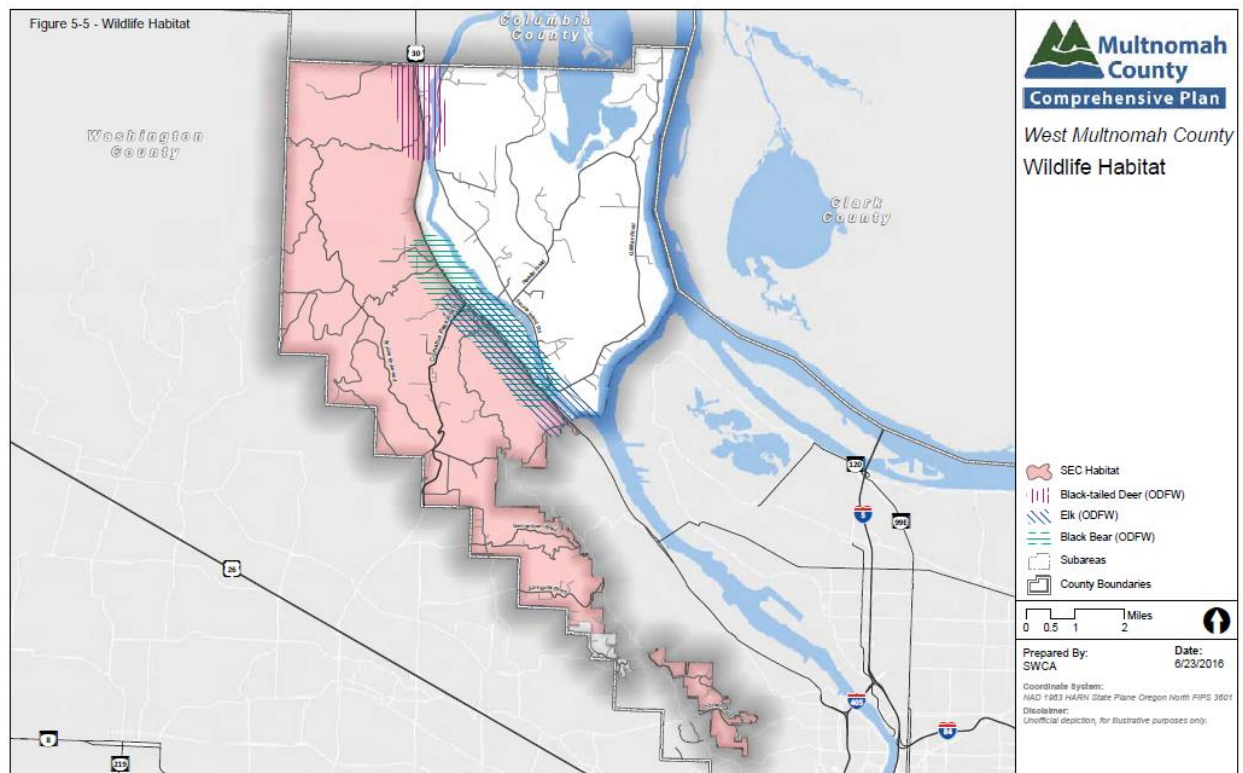
SEC-h Permit

§ 33.4567 SEC-h Clear and Objective Standards.

At the time of submittal, the applicant shall provide the application materials listed in MCC 33.4520(A) and 33.4570(A). The application shall be reviewed through the Type I procedure and may not be authorized unless the standards in 33.4570(B)(1) through (4)(a)-(c) and (B)(5) through (7) are met. For development that fails to meet all of the criteria listed above, a separate land use application pursuant to MCC 33.4570 may be submitted.

Finding: The subject application includes all the materials listed in MCC 33.4520(A) through .4570(A). Although the recreational improvements are exempt from SEC permitting, in the alternative Metro demonstrates compliance with the SEC-h permit standards of MCC 33.4570 below.

Figure 13 SEC-h Map



§ 33.4570 Criteria for Approval of SEC-h Permit – Wildlife Habitat.

(A) In addition to the information required by MCC 33.4520 (A), an application for development in an area designated SEC-h shall include an area map showing all properties which are adjacent to or entirely or partially within 200 feet of the proposed development, with the following information, when such information can be gathered without trespass.

Finding: The application maps, narrative figures, drawings and aerial photos include all the required information. This standard is met.

(B) Development standards:

(1) Where a parcel contains any non-forested "cleared" areas, development shall only occur in these areas, except as necessary to provide access and to meet minimum clearance standards for fire safety.

Finding: Applicant has directed the access drive and parking area to the existing forest practices road and existing cleared area adjacent to the existing road. That area is the only topographically viable location for the parking area. Applicant is only proposing to clear 0.05 acres as necessary for access, fire safety, and to support the use. This standard is met. However, to avoid any issue concerning the satisfaction of this standard and to further demonstrate that the proposal does not adversely impact wildlife habitat, Metro has prepared a Wildlife Conservation Plan pursuant to the SEC-h permit standards below.

(2) Development shall occur within 200 feet of a public road capable of providing reasonable practical access to the developable portion of the site.

Finding: The proposed parking lot is further than 200 feet from McNamee, a county road. However, the parking lot is taking access off an access way, owned and controlled by Metro, a public entity. Therefore, technically the road is a public road (although not dedicated to Multnomah County) as compared to a private road (which is not owned by a governmental entity). Of note, this interpretation of “public road” was adopted by the County in case file T3-2015-3903 – meaning roads owned and operated by Metro – such as that at Oxbow Park for example – are public roads within the meaning of this standard. However, to avoid any issue concerning the satisfaction of this standard and to further demonstrate that the proposal does not adversely impact wildlife habitat, Metro has prepared a Wildlife Conservation Plan pursuant to the SEC-h permit standards below.

(3) The access road/driveway and service corridor serving the development shall not exceed 500 feet in length.

Finding: The access road serving the parking lot is approximately 350 feet in length and less than the 500 foot standard. Exhibit 20. This standard is met.

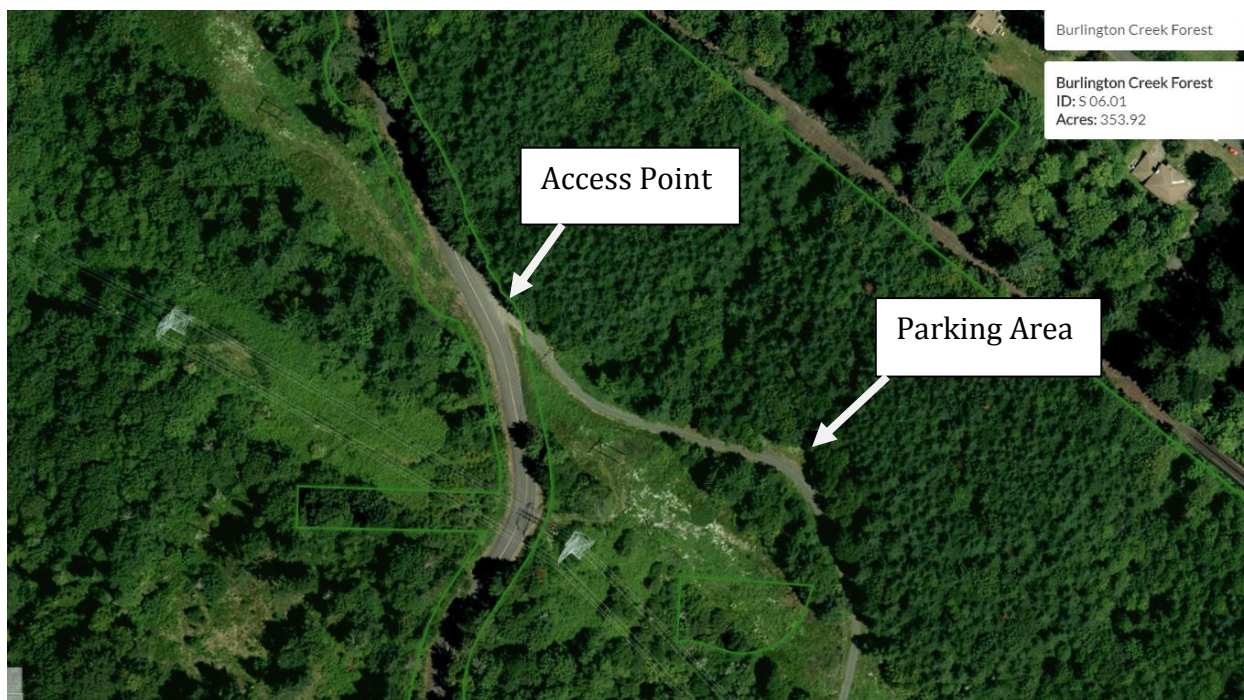
(4) For the purpose of clustering access road/driveway approaches near one another, one of the following two standards shall be met:

- (a) The access road/driveway approach onto a public road shall be located within 100 feet of a side property line if adjacent property on the same side of the road has an existing access road or driveway approach within 200 feet of that side property line; or*
- (b) The access road/driveway approach onto a public road shall be located within 50 feet of either side of an existing access road/driveway on the opposite side of the road.*
- (c) Diagram showing the standards in (a) and (b) above. For illustrative purposes only.*
- (d) The standards in this subsection (4) may be modified upon a determination by the County Road Official that the new access road/driveway approach would result in an unsafe traffic situation using the standards in the Multnomah County “Design and Construction Manual,” adopted June 20, 2000, (or all updated versions of the manual).*

...

Finding: Applicant is proposing to access the site using an existing developed access road that has historically served the site and its uses, including resource and recreational. Exhibit 20. The standard seeks to cluster approaches together. As demonstrated by the aeriels in figures 3-7 above and below in Figure 14, there are no other access drives in the vicinity to which to cluster the subject road.

Figure 14 Access Aerial



This standard is not applicable or otherwise satisfied.

(5) The development shall be within 300 feet of a side property line if adjacent property has structures and developed areas within 200 feet of that common side property line.

Finding: This standard cannot be applied to a recreational use in a forested environment. There are aspects of the use that are within 300 feet of the side property line of adjacent property to the east.

However, to avoid any issue concerning the satisfaction of this standard and to further demonstrate that the proposal does not adversely impact wildlife habitat, Metro has prepared a Wildlife Conservation Plan pursuant to the subsection (C) SEC-h permit standards below.

(6) Fencing within a required setback from a public road shall meet the following criteria:

Finding: Applicant is not proposing fencing in a required setback from a public road. This standard is not applicable or otherwise met.

(7) The following nuisance plants shall not be planted on the subject property and shall be removed and kept removed from cleared areas of the subject property:

Finding: Applicant is not proposing nuisance plants. Applicant is and will continue to remove nuisance plants from the forest as a land management and restoration exercise. This standard is not applicable or otherwise met.

(C) Wildlife Conservation Plan. An applicant shall propose a wildlife conservation plan if one of two situations exist.

- (1) The applicant cannot meet the development standards of Section (B) because of physical characteristics unique to the property. The applicant must show that the wildlife conservation plan results in the minimum departure from the standards required in order to allow the use; or*
- (2) The applicant can meet the development standards of Section (B), but demonstrates that the alternative conservation measures exceed the standards of Section (B) and will result in the proposed development having a less detrimental impact on forested wildlife habitat than the standards in Section (B).*
- (3) Unless the wildlife conservation plan demonstrates satisfaction of the criteria in subsection (C)(5), the wildlife conservation plan must demonstrate the following: (a) That measures are included in order to reduce impacts to forested areas to the minimum necessary to serve the proposed development by restricting the amount of clearance and length/width of cleared areas and disturbing the least amount of forest canopy cover. (b) That any newly cleared area associated with the development is not greater than one acre, excluding from this total the area of the minimum necessary accessway required for fire safety purposes. (c) That no fencing will be built and existing fencing will be removed outside of areas cleared for the site development except for existing cleared areas used for agricultural purposes. (d) That revegetation of existing cleared areas on the property at a 2:1 ratio with newly cleared areas occurs if such cleared areas exist on the property. (e) That revegetation and enhancement of disturbed stream riparian areas occurs along drainages and streams located on the property.*

Finding: Although the recreational improvements are exempt from the SEC permit and mitigation standards, applicant demonstrates compliance with SEC-h permit subsections (C)(1) and (3) to confirm that the proposal does not adversely impact wildlife habitat.

The SEC-h worksheets were prepared by Siskiyou BioSurvey biologists and respond to each of the § 33.4570 (C)(1) and (3) criteria. Exhibit 19. The worksheets include a wildlife conservation plan that demonstrates the above standards are met. Also attached is a SEC mitigation planting plan depicting over 2,803 square feet of planting to mitigate for the 0.05 acre parking area disturbance. Exhibit 23.

This standard is met.

- (4) For a property meeting (C)(1) above, the applicant may utilize the following mitigation measures for additions instead of providing a separate wildlife conservation plan: ...*

Finding: This standard is not applicable. Applicant is not proposing an “addition.”

- (5) Unless the wildlife conservation plan demonstrates satisfaction of the criteria in subsection (C)(3) of this section, the wildlife conservation plan must demonstrate the following: ...*

Finding: Applicant has demonstrated that the recreational improvements are exempt from the SEC permit and mitigation standards. In the alternative, applicant has also demonstrated compliance with SEC-h permit subsection (C)(3) above. This subsection (5) standard is not applicable.

SEC-s Permit

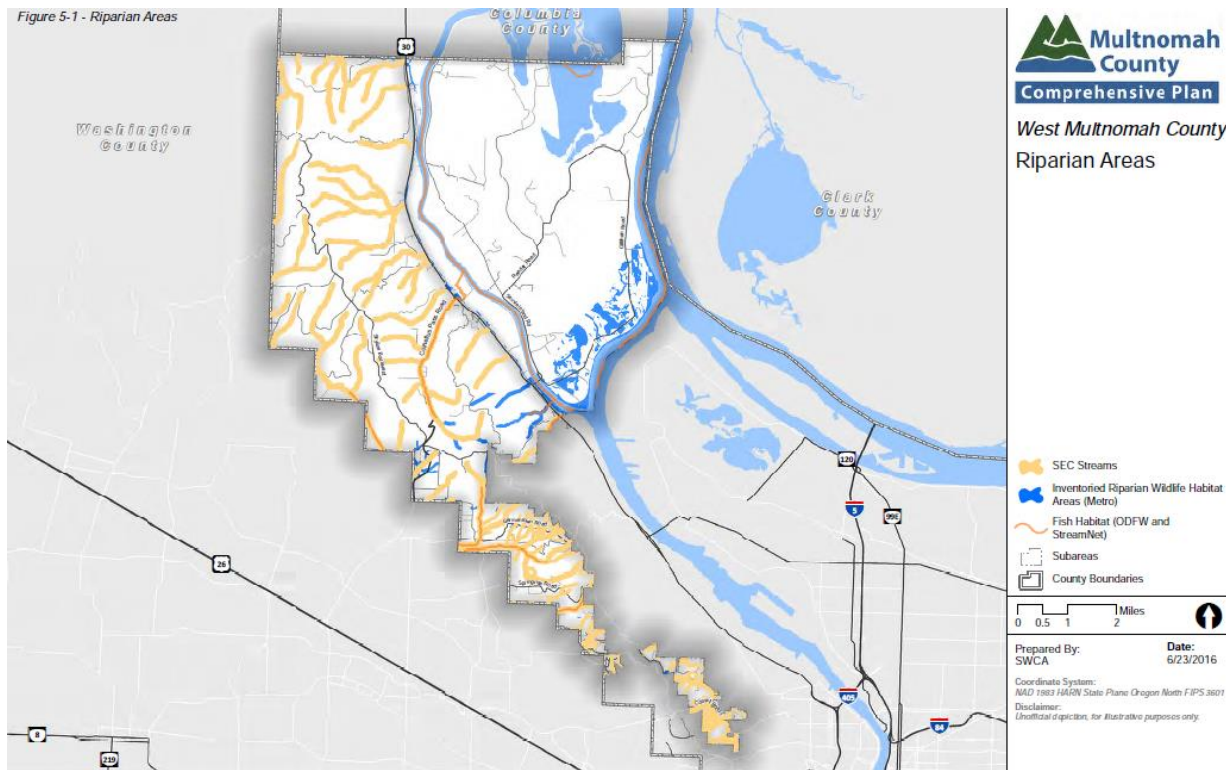
§ 33.4575 *Criteria for Approval of SEC-s Permit – Streams.*

(A) Definitions:

- (1) Protected Streams. Those streams which have been found through a Goal 5 ESEE analysis and protected by Ordinance 830 and those streams and wetlands mapped by Metro's Title 13 as Habitat Conservation Areas as modified through the planning process are designated SEC-s on the Multnomah County Zoning Maps.*

Finding: The subject property includes one SEC stream – Burlington Creek. See figure below.

Figure 15 Streams and Riparian Area



- (2) Development – Any act requiring a permit stipulated by Multnomah County Ordinances as a prerequisite to the use or improvement of any land, including a building, land use, occupancy, sewer connection or other similar permit, and any associated grading or vegetative modifications.*

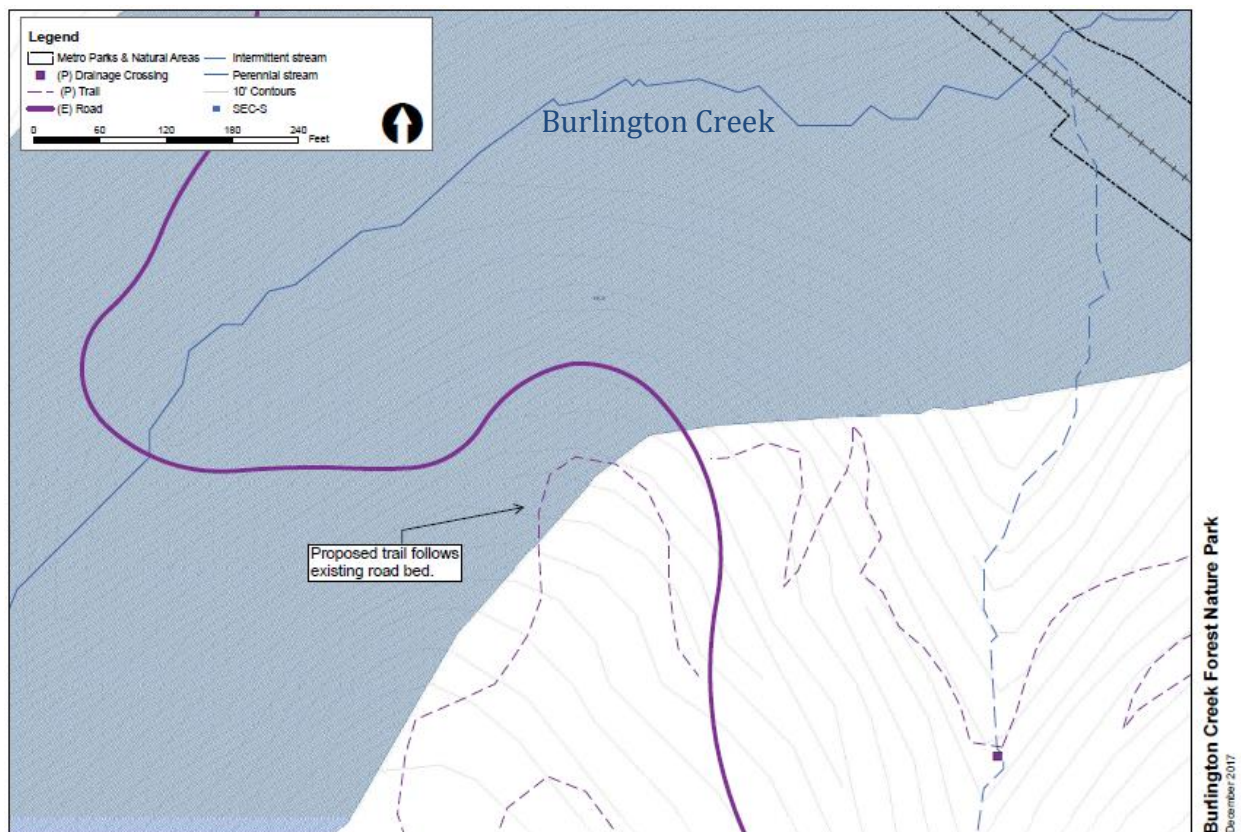
Finding: Although the proposed recreational activities are exempt from SEC permit criteria and therefore not “development” pursuant to this standard, Metro demonstrates compliance with the SEC-s permit standards, and specifically that the SEC stream resource is not adversely impacted by the project. There is only one identified SEC stream on the Burlington property (Burlington Creek). No new bridges or trails are proposed to cross over Burlington Creek. Visitors will only be allowed to cross it via the existing logging/forest management road that is currently used for recreational purposes. Exhibit 22.

The SEC-s area includes a 300' buffer from Burlington Creek. One short segment of new trail located on the ridge over 100 feet in elevation above the creek minimally intrudes into the outer portion of the buffer as it follows the alignment of a historical logging road. There is no impact to the SEC resource.

(3) Stream Conservation Area – For the protected streams originally designated by Ordinance 830 (West Hills Rural Area Plan), the Stream Conservation Area designated on the zoning maps as SEC-s is an area which extends 300 feet from the centerline on both sides of the protected stream. Within Metro's jurisdictional boundaries, the Stream Conservation Area protected by Ordinance 1152, adopted January 7, 2010, varies and shall be as depicted on the Multnomah County Zoning Maps and is from the centerline on both sides of the protected stream for the width of the mapped overlay.

Finding: Metro acknowledges the stream conservation area on site. The area is mapped on the figure above and depicted in the figure below. The SEC-s area includes a 300' buffer from Burlington Creek. One short segment of new trail located on the ridge over 100 feet in elevation above the creek minimally intrudes into the outer portion of the buffer as it follows the alignment of a historical logging road. There is no impact to the SEC resource.

Figure 16 SECs buffer and trail section



(4) Nuisance or Invasive Non-Native Plants: ...

Finding: Metro understands the definition of nuisance/invasive plants.

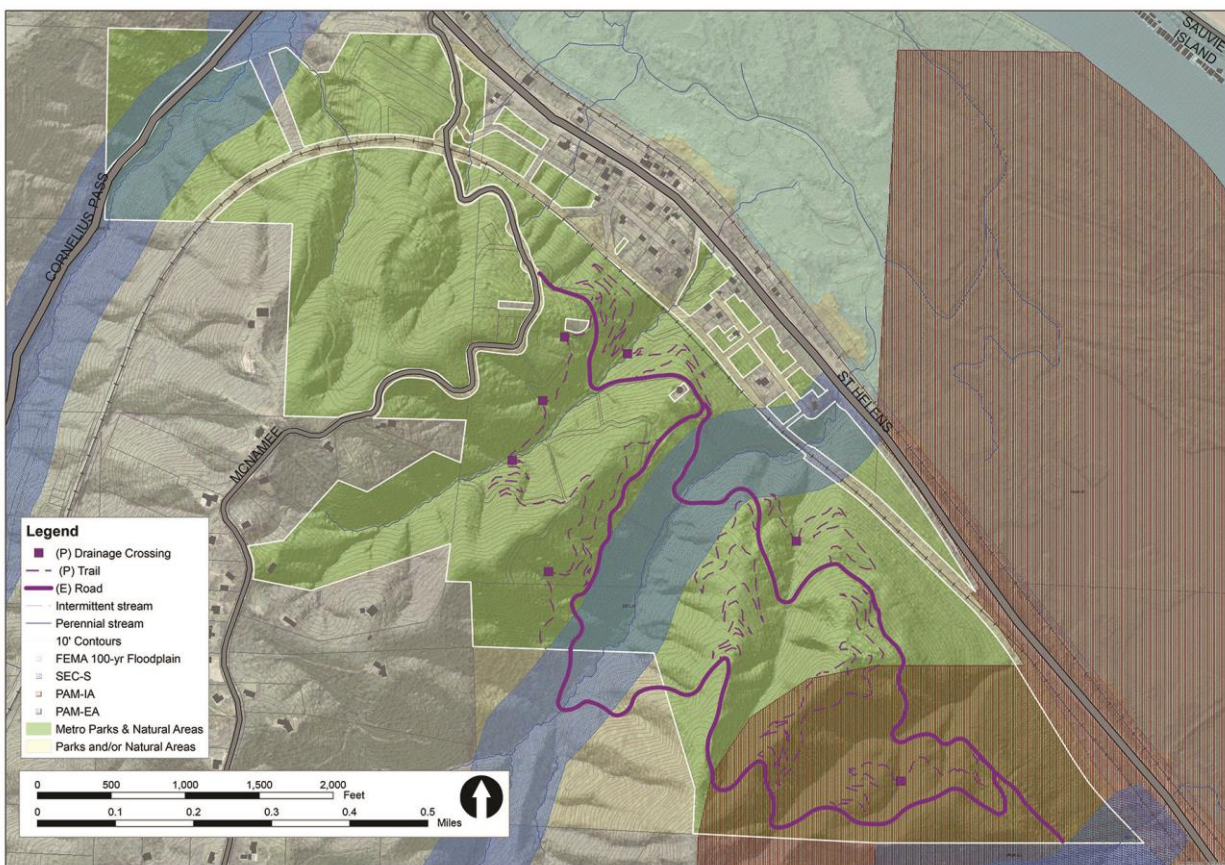
(B) Except for the exempt uses listed in MCC 33.4515, no development shall be allowed within a Stream Conservation Area unless approved by the Approval Authority pursuant to the provisions of MCC 33.4575 (C) through (F).

Finding: Only a short section of a recreational passive use trail is proposed in the Stream Conservation Area, following an existing road bed. Recreational trails are an exempt use listed in MCC 33.4515. In the alternative, applicant requests approval through the provisions of MCC 33.4575(C) through (F).

Attached as Exhibit 22 are site plans depicting the SEC Stream Conservation Area boundary in relation to the SEC stream and proposed trail section. The plans include all the required information and details. Applicant's geotechnical report and SEC report specifically analyzed impacts to SEC resources and other hazards, and confirmed the locations and improvements proposed are appropriate and consistent with SEC standards.

There is only one identified SEC stream on the subject property (Burlington Creek). No new bridges or trails are proposed to cross over Burlington Creek. Visitors will only be allowed to cross it via the existing logging/forest management road. The SEC-s area includes a 300' buffer from Burlington Creek. One short segment of new trail located on the ridge over 100 feet in elevation above the creek minimally intrudes into the outer portion of the buffer as it follows the alignment of a historical logging road. There is no impact to the SEC resource. This standard is met or otherwise not applicable.

Figure 17 SECs Map



F. Hillside Development Permit

§ 33.5500 Purposes.

The purposes of the Hillside Development and Erosion Control subdistrict are to promote the public health, safety and general welfare, and minimize public and private losses due to earth movement hazards in specified areas and minimize erosion and related environmental damage in unincorporated Multnomah County, all in accordance with ORS 215, LCDRC Statewide Planning Goal No. 7 and OAR 340- 41- 455 for the Tualatin River Basin, and the Multnomah County Comprehensive Framework Plan Policy No. 14. This subdistrict is intended to:

- (A) Protect human life;*
- (B) Protect property and structures;*
- (C) Minimize expenditures for rescue and relief efforts associated with earth movement failures;*
- (D) Control erosion, production and transport of sediment; and*
- (E) Regulate land development actions including excavation and fills, drainage controls and protect exposed soil surfaces from erosive forces; and*
- (F) Control storm water discharges and protect streams, ponds, and wetlands within the Tualatin River and Balch Creek Drainage Basins.*

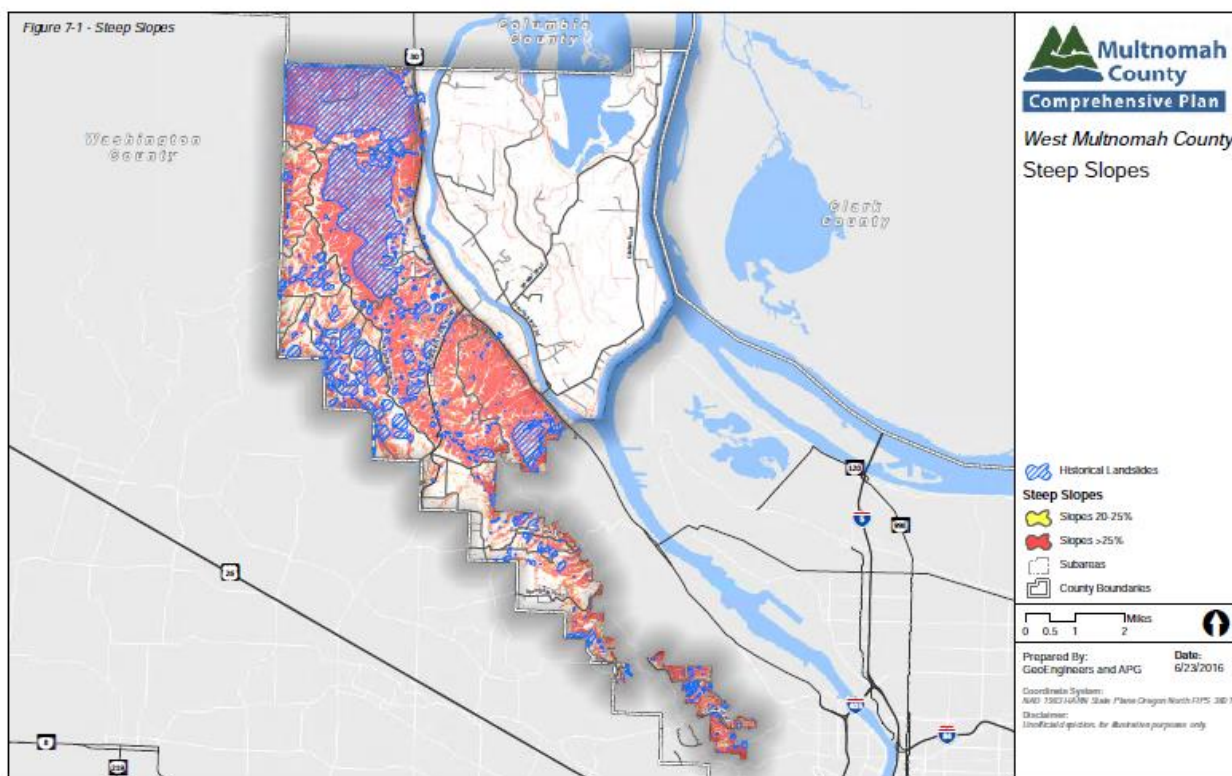
Finding: Metro understands the purposes of the Hillside Development overlay. As confirmed by the geotechnical analysis, the purposes of the standard are upheld with the proposed design. Exhibit 2.

§ 33.5505 Permits Required.

Hillside Development Permit: All persons proposing development, construction, or site clearing (including tree removal) on property located in hazard areas as identified on the "Slope Hazard Map", or on lands with average slopes of 25 percent or more shall obtain a Hillside Development Permit as prescribed by this subdistrict, unless specifically exempted by MCC 33.5510.

Finding: The property includes hazard areas as identified on the Slope Hazard Map. Applicant requests a Hillside Development Permit. This standard is met.

Figure 18 Steep Slopes Map



§ 33.5515 Application Information Required.

An application for development subject to the requirements of this subdistrict shall include the following:

- (A) *A map showing the property line locations, roads and driveways, existing structures, trees with 8-inch or greater caliper or an outline of wooded areas, watercourses and include the location of the proposed development(s) and trees proposed for removal.*

Finding: Maps and site plans include the above required information. Exhibits 20 and 22. Twelve trees are proposed for removal to accommodate the parking area improvement. Additional trees are proposed to be removed or pruned to ensure sight distance/vision clearance standards are met. Exhibit 20. This standard is met.

(B) An estimate of depths and the extent and location of all proposed cuts and fills.

Finding: There are four areas that will require fills or grading. A 6 x 20 foot area will be graded near the beginning of the access road, this will be south of the access drive. This grading activity will be to smooth out a slope and to construct a ditch along the road. Three additional grading areas are associated with the parking lot; an area of 25 x 30 foot area to the northwest of the toilet; an area of 20 x 50 at the northeast corner of the parking lot; and an area of approximately 20 x 175 feet along the southern edge of the parking area. The final area to be graded is 30 x 200 feet, located along McNamee Road for site distance improvements. Exhibit 20.

The trail system will be natural surface trails designated for uses such as shared hiking/off-road cycling, or hiking only. Eight stream crossings (not SEC resources) will be constructed along various trails, including several bridge structures and possibly one boardwalk. Exhibit 22. The footprint for these structures is as follows: the bridge structure is 90 square feet, and there are two crossings of 120 square feet, one at 80 square feet, one at 160 square feet, one at 150 square feet, one at 180 square feet, and one crossing at 60 square feet. Most bridges are designed to be six feet wide. Two bridges are planned to be four feet wide and are associated with the narrower hiking only trail or the most remote trail. None of these crossings will alter a watercourse.

The majority of this development will take place in already cleared areas, such as in the power line right of way and a cleared area near the existing roads. Trail construction including bridges and other crossings in forested areas will not result in conversion from "forested areas" to "cleared areas" as defined by MCC Section 33.4570. Forested areas traversed by the proposed natural surface trails will maintain at least 75% crown closure and/or at least 80 square feet of basal area per acre of trees of 11 inch DBH or larger. Exhibit 19.

Total land clearance within currently forested areas associated with the parking area will be approximately .05 acres. Exhibit 20.

(C) The location of planned and existing sanitary drainfields and drywells.

Finding: There are no existing or planned sanitary drainfields. Applicant is proposing to accommodate stormwater generated from the parking facility. The attached stormwater report analyzes the effects that the proposed improvements will have on the site's existing storm drainage and documents the criteria, methodology, and information resources used to design the proposed storm drainage system. Exhibit 4. Also included are the results of the preliminary hydraulic analysis. Exhibit 4. Applicant proposes an underground detention system with flow control manholes with controlled outfall to an existing ditch that conveys the water on-site. Exhibits 4 and 20. Waste material associated with the toilet will be collected in an underground vault and will be disposed of off-site as needed.

*(D) Narrative, map or plan information necessary to demonstrate compliance with MCC 33.5520
(A). The application shall provide applicable supplemental reports, certifications, or plans relative to: engineering, soil characteristics, stormwater drainage, stream protection, erosion control, and/or replanting.*

Finding: Included in Exhibit 20 is the preliminary grading and erosion control plan. Also enclosed is a storm water report (Exhibit 4), geotechnical report (Exhibit 2), and mitigation planting plan (Exhibit 23), all of which include the required information. This standard is met.

(E) A Hillside Development permit may be approved by the Director only after the applicant provides:

- (1) Additional topographic information showing that the proposed development to be on land with average slopes less than 25 percent, and located more than 200 feet from a known landslide, and that no cuts or fills in excess of 6 feet in depth are planned. High groundwater conditions shall be assumed unless documentation is available, demonstrating otherwise; or*
- (2) A geological report prepared by a Certified Engineering Geologist or Geotechnical Engineer certifying that the site is suitable for the proposed development; or,*

Finding: The required geological report prepared by a geotechnical engineer certifying that the site is suitable for the proposed development is included as Exhibit 2. This standard is met.

- (3) An HDP Form-1 completed, signed and certified by a Certified Engineering Geologist or Geotechnical Engineer with his/her stamp and signature affixed indicating that the site is suitable for the proposed development.*
- (a) If the HDP Form- 1 indicates a need for further investigation, or if the Director requires further study based upon information contained in the HDP Form- 1, a geotechnical report as specified by the Director shall be prepared and submitted.*

Finding: The required completed HDP Form-1 is included in Exhibit 2 at page 69. This standard is met.

(F) Geotechnical Report Requirements

- (1) A geotechnical investigation in preparation of a Report required by MCC 33.5515 (E) (3) (a) shall be conducted at the applicant's expense by a Certified Engineering Geologist or Geotechnical Engineer. The Report shall include specific investigations required by the Director and recommendations for any further work or changes in proposed work which may be necessary to ensure reasonable safety from earth movement hazards.*

Finding: As stated in the report, the geotechnical engineer conducted a geotechnical investigation in preparation of the geological report. Exhibit 2. This standard is met.

- (2) Any development related manipulation of the site prior to issuance of a permit shall be subject to corrections as recommended by the Geotechnical Report to ensure safety of the proposed development.*

Finding: There has been no manipulation of the site prior to applying for the geotechnical permit. This standard is not applicable.

- (3) Observation of work required by an approved Geotechnical Report shall be conducted by a Certified Engineering Geologist or Geotechnical Engineer at the applicant's expense; the geologist's or engineer's name shall be submitted to the Director prior to issuance of the Permit.*

Finding: Applicant understands the requirement. This standard can be made a condition of approval to ensure compliance.

- (G) Development plans shall be subject to and consistent with the Design Standards for Grading and Erosion Control in MCC 33.5520 (A) through (D). Conditions of approval may be imposed to assure the design meets those standards.*

Finding: Exhibit 20 includes the preliminary grading and erosion control plans depicting information required in MCC 33.5220 (A) through (D). Applicant is not requesting a grading and erosion control permit at this time. As such, pursuant to MCC 33.5520, applicant requests conditions of approval be imposed to ensure that a grading and erosion control permit is obtained and the design meets the applicable standards prior to ground disturbing activities.

§ 33.5520 *Grading and Erosion Control Standards.*

Approval of development plans on sites subject to a Hillside Development Permit shall be based on findings that the proposal adequately addresses the following standards. Conditions of approval may be imposed to assure the design meets the standards:

(A) Design Standards for Grading and Erosion Control

(1) Grading Standards

- (a) Fill materials, compaction methods and density specifications shall be indicated. Fill areas intended to support structures shall be identified on the plan. The Director or delegate may require additional studies or information or work regarding fill materials and compaction;*
- (b) Cut and fill slopes shall not be steeper than 3:1 unless a geological and/or engineering analysis certifies that steep slopes are safe and erosion control measures are specified;*
- (c) Cuts and fills shall not endanger or disturb adjoining property;*
- (d) The proposed drainage system shall have adequate capacity to bypass through the development the existing upstream flow from a storm of 10-year design frequency;*
- (e) Fills shall not encroach on natural watercourses or constructed channels unless measures are approved which will adequately handle the displaced stream-flow for a storm of 10-year design frequency;*

Finding: Applicant is not requesting a grading and erosion control permit at this time. As such, pursuant to MCC 33.5520, applicant requests conditions of approval be imposed to ensure that a grading and erosion control permit is obtained and the design meets the above standards prior to ground disturbing activities.

The proposed limited cuts and retention are not adjacent to adjoining property, occurring in the interior of Metro's property. The work will not endanger or disturb adjacent property. As demonstrated by the storm water report attached as Exhibit 4, the proposed drainage system will have adequate capacity to handle the planned event. No fills are proposed to encroach on natural watercourses/channels. Exhibit 20. This standard can be met by a condition of approval that will ensure compliance.

(2) Erosion Control Standards

- (a) On sites within the Tualatin River Drainage Basin, erosion and stormwater control plans shall satisfy the requirements of OAR 340. Erosion and storm water control plans shall be designed to perform as prescribed by the currently adopted edition of the "Erosion Prevention & Sediment Control Plans Technical Guidance Handbook (1994)" and the "City of Portland Stormwater Quality Facilities, A Design Guidance Manual (1995)". Land disturbing activities within the Tualatin Basin shall provide a 100-foot undisturbed buffer from the top of the bank of a stream, or the ordinary high*

watermark (line of vegetation) of a water body, or within 100-feet of a wetland; unless a mitigation plan consistent with OAR 340 is approved for alterations within the buffer area.

Finding: This standard is not applicable. The site is not within the Tualatin River Drainage Basin.

(b) Stripping of vegetation, grading, or other soil disturbance shall be done in a manner which will minimize soil erosion, stabilize the soil as quickly as practicable, and expose the smallest practical area at any one time during construction;

Finding: Stripping of existing vegetation will be limited to the construction limits and will total 0.05 acres around the access and parking improvements. Exhibits 19 and 20. The intent and plans maintain as much of the native vegetation as possible to enhance the forest experience, thereby exposing the smallest practical area. Disturbed soil is proposed to be stabilized as quickly as practicable. This standard is met and can be made a condition of approval to ensure compliance.

(c) Development Plans shall minimize cut or fill operations and ensure conformity with topography so as to create the least erosion potential and adequately accommodate the volume and velocity of surface runoff;

Finding: The development plans utilize existing clear and generally level areas and proposes limited cut and fill to accommodate the proposed access improvements in a manner that has the least site disturbance. Exhibits 19 and 20. This standard is met.

(d) Temporary vegetation and/or mulching shall be used to protect exposed critical areas during development;

Finding: Disturbed areas that will be left exposed for longer than 7 days will be mulched to provide temporary erosion protection. This standard is met and can be made a condition of approval to ensure compliance.

(e) Whenever feasible, natural vegetation shall be retained, protected, and supplemented;

- 1. A 100-foot undisturbed buffer of natural vegetation shall be retained from the top of the bank of a stream, or from the ordinary high watermark (line of vegetation) of a water body, or within 100-feet of a wetland;*
- 2. The buffer required in 1. may only be disturbed upon the approval of a mitigation plan which utilizes erosion and stormwater control features designed to perform as effectively as those prescribed in the currently adopted edition of the "Erosion Prevention & Sediment Control Plans Technical Guidance Handbook (1994)" and the "City of Portland Stormwater Quality Facilities, A Design Guidance Manual (1995)" and which is consistent with attaining equivalent surface water quality standards as those established for the Tualatin River Drainage Basin in OAR 340;*

Finding: No top of bank is within 100 feet of the proposed access/parking area. Exhibits 2 and 20. Stripping of existing vegetation will be limited to the construction limits and will total only 0.05 acres. Exhibit 19. The intent and plans maintain as much of the native vegetation as possible to enhance the forest experience, thereby exposing the smallest practical area. Disturbed soil is proposed to be stabilized as quickly as practicable. This standard is met and can be made a condition of approval to ensure compliance.

(f) Permanent plantings and any required structural erosion control and drainage measures shall be installed as soon as practical;

Finding: Permanent plantings will be planted as soon as practical to ensure high plant survival rates and help protect against erosion. This standard is met and can be made a condition of approval to ensure compliance.

(g) Provisions shall be made to effectively accommodate increased runoff caused by altered soil and surface conditions during and after development. The rate of surface water runoff shall be structurally retarded where necessary;

Finding: The project proposes both asphalt and pervious gravel surfaces. For the asphalt surfaces, applicant proposes stormwater collection facilities to collect and treat surface runoff. Exhibits 4 and 20. Elsewhere, the surrounding landscape controls surface flows in the forest environment. This standard is met.

(h) Sediment in the runoff water shall be trapped by use of debris basins, silt traps, or other measures until the disturbed area is stabilized;

Finding: Should sediment laden runoff be present during construction, measures will be taken to trap the runoff and stabilize the area contributing the sediment laden runoff. This standard is met and can be made a condition of approval to ensure compliance.

(i) Provisions shall be made to prevent surface water from damaging the cut face of excavations or the sloping surface of fills by installation of temporary or permanent drainage across or above such areas, or by other suitable stabilization measures such as mulching or seeding;

Finding: The proposed plans make all necessary accommodations to ensure surface water does not damage the project improvement or damage the property. Exhibits 2, 20, and 22.

(j) All drainage provisions shall be designed to adequately carry existing and potential surface runoff to suitable drainageways such as storm drains, natural watercourses, drainage swales, or an approved drywell system;

Finding: The project proposes both asphalt and pervious gravel surfaces. For the asphalt surfaces, applicant proposes stormwater collection facilities to collect and treat surface runoff, and eventually connect to a drainage ditch. Elsewhere, the surrounding landscape controls surface flows in the forest environment. This standard is met.

(k) Where drainage swales are used to divert surface waters, they shall be vegetated or protected as required to minimize potential erosion;

Finding: Applicant incorporates an existing drainage ditch to divert surface waters after treatment. Exhibits 4 and 20. The drainage ditch is adjacent to and follows the roadway in the forest environment. Applicant is not proposing to vegetate the ditch as that would decrease its capacity and function, however, the condition of the ditch is monitored to ensure no adverse erosion events occur. This standard is met and can be made a condition of approval to ensure compliance.

(l) Erosion and sediment control devices shall be required where necessary to prevent polluting discharges from occurring. Control devices and measures which may be required include, but are not limited to:

- 1. Energy absorbing devices to reduce runoff water velocity;*
- 2. Sedimentation controls such as sediment or debris basins. Any trapped materials shall be removed to an approved disposal site on an approved schedule;*
- 3. Dispersal of water runoff from developed areas over large undisturbed areas.*

Finding: Sediment fence and/or other measures are proposed to act as an erosion and sediment control device. This standard is met and can be made a condition of approval to ensure compliance.

(m) Disposed spoil material or stockpiled topsoil shall be prevented from eroding into streams or drainageways by applying mulch or other protective covering; or by location at a sufficient distance from streams or drainageways; or by other sediment reduction measures;

Finding: The plans demonstrate that no material/soil will erode into streams or drainageways. Construction activity is occurring away from said natural features. Also, any stockpiled material will be covered as necessary to prevent erosion. This standard is met and can be made a condition of approval to ensure compliance.

(n) Such non-erosion pollution associated with construction such as pesticides, fertilizers, petrochemicals, solid wastes, construction chemicals, or wastewaters shall be prevented from leaving the construction site through proper handling, disposal, continuous site monitoring and clean-up activities.

Finding: All potential pollutants and construction related materials will be properly managed and maintained during all phases of construction to ensure the site is kept clean and free from contamination. This standard is met and can be made a condition of approval to ensure compliance.

(B) Responsibility

- (1) Whenever sedimentation is caused by stripping vegetation, regrading or other development, it shall be the responsibility of the person, corporation or other entity causing such sedimentation to remove it from all adjoining surfaces and drainage systems prior to issuance of occupancy or final approvals for the project;*
- (2) It is the responsibility of any person, corporation or other entity doing any act on or across a communal stream watercourse or swale, or upon the floodplain or right-of-way thereof, to maintain as nearly as possible in its present state the stream, watercourse, swale, floodplain, or right-of-way during such activity, and to return it to its original or equal condition.*

Finding: The responsibility of appropriately managing sedimentation is acknowledged by Metro.

(C) Implementation

- (1) Performance Bond – A performance bond may be required to assure the full cost of any required erosion and sediment control measures. The bond may be used to provide for the installation of the measures if not completed by the contractor. The bond shall be released upon determination the control measures have or can be expected to per-form*

satisfactorily. The bond may be waived if the Director determines the scale and duration of the project and the potential problems arising therefrom will be minor.

- (2) *Inspection and Enforcement. The requirements of this subdistrict shall be enforced by the Planning Director. If inspection by County staff reveals erosive conditions which exceed those prescribed by the Hillside Development, work may be stopped until appropriate correction measures are completed.*

Finding: Metro will adhere to the implementation and final approval requirements set forth by the County. This standard is met and can be made a condition of approval to ensure compliance.

G. Protected Aggregate and Mineral Sites

§ 33.5700 Purposes.

The purposes of the Protected Aggregate and Mineral Resources Overlay Subdistrict are: (A) To provide a mechanism to identify and, where appropriate, protect significant aggregate and mineral resource sites; (B) To allow surface mining subject to uniform operating standards; and (C) To regulate conflicts with surface mining activities.

§ 33.5705 Area Affected.

This subsection shall apply to those lands designated PAM on the Multnomah County Zoning Map. On the Zoning Map shall also be a reference to the relevant site-specific Comprehensive Plan documents. Exemption activities as described in MCC 33.5710 (A) and (B) are allowed in all districts, not only those designated PAM.

Finding: A small section located in the south-eastern corner of the property include lands designated PAM – Impact Area on the County’s zoning map.

§ 33.5710 Exemptions.

- (A) *The following activities are exempt from the requirements of MCC 33.5700 through 33.5745 and 33.6500 through 33.6535. Operators or land owners have the burden of qualifying for any exemption.*

(1) *Mining on forest lands auxiliary to forestry operations occurring in compliance with the Forest Practices Act as administered by the Oregon Department of Forestry.*

(2) *Lawful mining operating under a DOGAMI "Grant of Total Exemption" on December 3, 1994 on property owned or controlled by the operator. Abandonment, restoration, or alteration of this use shall be in compliance with the non-conforming use provisions of MCC 33.7200 through 33.7214.*

- (B) *Mining less than 1,000 cubic yards of material in conjunction with mining an area of less than one acre is exempt from the requirements of MCC 33.5700 through 33.5745 and 33.6500 through 33.6535, but shall require the approval of a Hillside and Erosion Control Permit and any other permits as may be required in any overlay subdistrict.*

- (C) *Mining a quantity in excess of (B), but mining less than 5,000 cubic yards of material or disturbing less than one acre of land within a period of 12 consecutive months until mining affects five or more acres is exempt from the requirement in MCC 33.6520 and 33.6525 to obtain a DOGAMI operating permit. However, mining at this level of activity shall:*

(1) *Be on a "protected site" as determined by, and subject to restrictions warranted by, the Goal 5 process;*

(2) *Be approved as a mining conditional use pursuant to the provisions and requirements of MCC 33.6500 through 33.6535; and*

(3) Obtain approval of a Hillside and Erosion Control Permit in conjunction with the mining conditional use approval. The Hillside and Erosion Control permit shall be required in place of all references in the plan and MCC Chapter 33 to obtaining a DOGAMI operating permit in recognition that this level of mining activity is exempted by DOGAMI rules for such a permit.

Finding: The PAM overlay only includes exemptions for certain mining activities. Applicant is not proposing a mining activity and therefore is not proposing an exempt activity.

§ 33.5720 PAM Overlay Special Subdistricts

The Protected Aggregate and Mineral Resource Subdistrict (PAM) comprises two areas, the Extraction Area (PAM-EA) and the Impact Area (PAM-IA). (A) The Extraction Area shall be applied to the portion of protected sites where mining and associated processing is to occur. The Extraction Area may consist of one or more parcels or portions of parcels, and may be applied to contiguous properties under different ownership. The Extraction Area boundary may be modified through the Goal 5 process to reduce conflicts with conflicting uses existing when the overlay is applied. The Extraction Area shall be shown on the zoning map with the designation PAM-EA. (B) The Impact Area shall be applied to parcels or portions of parcels adjacent to the Extraction Area and within the Impact Area deemed appropriate through the Goal 5 process. The Impact Area shall be shown on the zoning map with the designation PAM-IA.

Finding: A small section located in the south-eastern corner of the property include lands designated PAM – Impact Area on the County’s zoning map.

§ 33.5735 Impact Area (PAM-IA) – Allowed Uses

Notwithstanding the use provisions of the underlying district, the following use provisions shall apply in the PAM-IA Subdistrict. Primary Uses, Uses Permitted Outright, Uses Permitted Under Prescribed Conditions, and Conditional Uses allowed in the underlying district may be permitted subject to the underlying district provisions and criteria of approval, except as follows:

(A) Uses identified through the Goal 5 process to be prohibited within the Impact Area shall not be permitted;

Finding: Applicant is not proposing a use identified through the Goal 5 process to be prohibited within the Impact Area. This standard is satisfied.

(B) Noise or dust sensitive uses not prohibited in (A) may be permitted under the conditional use procedural provisions of MCC 33.6300 through 33.6350 when found by the Hearing Authority to satisfy the approval criteria of MCC 33.5740 and the approval criteria of the underlying district; and

Finding: Applicant is not proposing a noise or dust sensitive use.

§ 33.5715(B) defines “Dust Sensitive Use” as “a conflicting use which is primarily used for habitation. Residential structures, churches, hospitals, schools, public libraries, and campgrounds are considered dust sensitive uses during their period of use. Forest uses and farm uses are not dust sensitive uses unless determined through the Goal 5 process.” Applicant is not proposing a habitable use. Applicant is proposing a forest use, which by definition is not a dust sensitive use.

§ 33.5717(H) defines “Noise Sensitive Use” as “a conflicting use which is primarily used for habitation. Residential structures, churches, hospitals, schools, public libraries, and campgrounds are considered noise sensitive uses during their period of use. Forest uses and farm uses are not

noise sensitive uses unless determined through the Goal 5 process. Applicant is not proposing a habitable use. Applicant is proposing a forest use, which by definition is not a noise sensitive use.

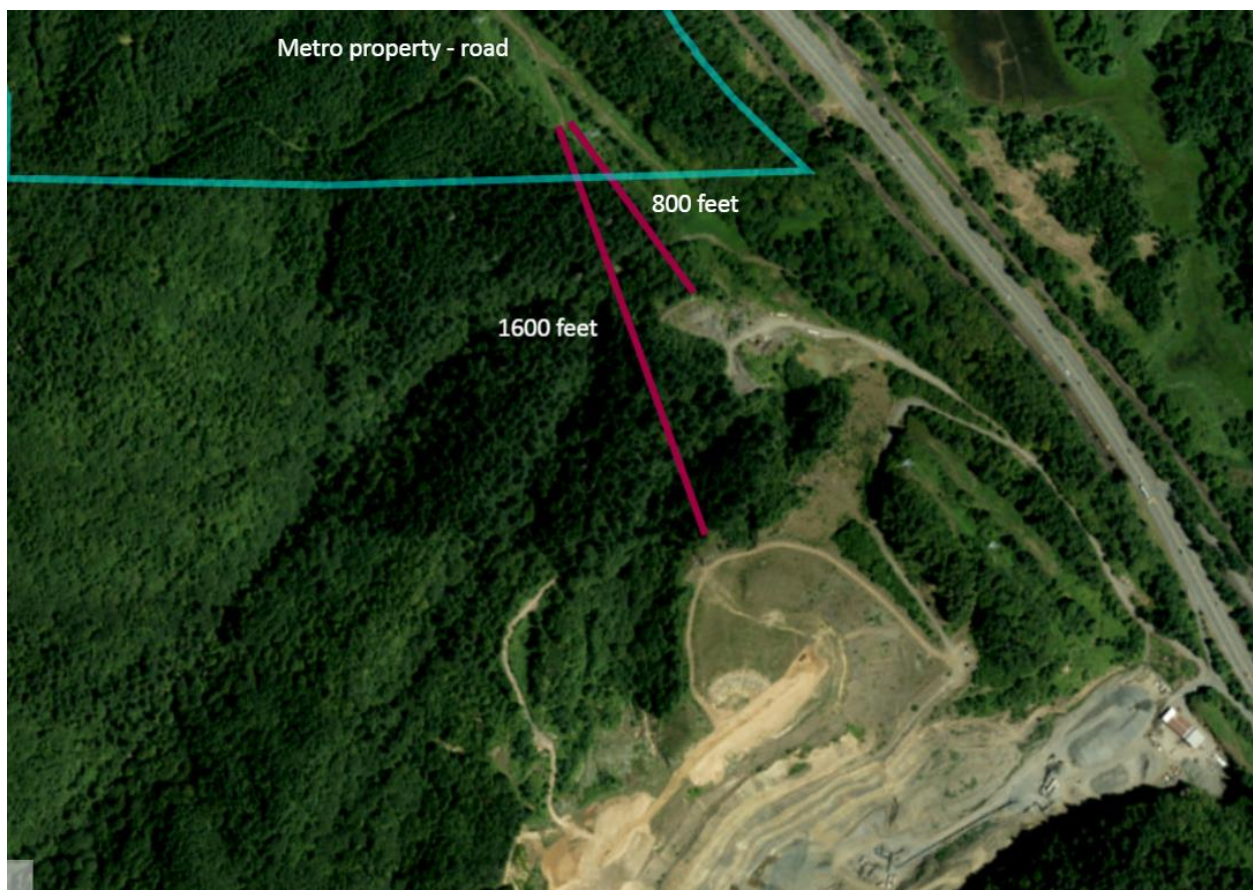
This standard is met.

(C) Conflicting uses required by the Goal 5 process to be conditionally approved may be permitted under the procedural provisions of MCC 33.6300 through 33.6350 when found by the Hearing Authority to satisfy the approval criteria of MCC 33.5740 and the approval criteria of the underlying district.

Finding: Applicant is not proposing a conflicting use required by the Goal 5 process to be conditionally approved. § 33.5715(A) defines “Conflicting Use” as “a use authorized in the underlying zone which, if allowed, could adversely affect operations at a protected aggregate and mineral resource site. As used in this subsection, a conflicting use is also another inventoried significant Goal 5 resource located on or adjacent to a protected aggregate or mineral site if that resource could force a change in mining or processing at the site.”

The nearest use activities adjacent to the existing quarry is the forest practices road, upon which recreational uses are currently made and will continue so. Trail use is not a conflicting use, but rather a Goal 4 protected and encouraged use on resource land. Trail use is passive, localized, and has no off-site impacts to a quarry operation. Also, the mining operation further to the south does not impact the trail use. The location of the trail is separated from the quarry operation by mature timber lands, a substantial distance, and significant elevation gains and losses.

Figure 19 PAM use



All new trail alignments are within the boundaries of the current forest road and no closer to the existing quarry operation. The quarry operation will not be impacted or adversely altered in any manner by the trail system.

§ 33.5740 Use Approval Criteria

(A) In acting to approve a Conditional Use subject to these provisions, the Hearing Authority shall find that:

(1) The proposed use will not interfere with or cause an adverse impact on lawfully established and lawfully operating mining operations;

Finding: These use approval standards assume that either a noise sensitive, dust sensitive, or conflicting use is proposed. As demonstrated above, applicant is not proposing a noise sensitive, dust sensitive, or conflicting use. Even so, the nearest use activities adjacent to the existing quarry is the forest practices road, upon which recreational uses are currently made and will continue so. Trail use is passive, localized, and has no off-site impacts to a quarry operation. Trail use will also not be impacted by quarry operations. The location of the trail is separated from the quarry operation by mature timber lands, a substantial distance, and significant elevation gains and losses. All new trail alignments are within the boundaries of the current forest road and no closer to the existing quarry operation. The quarry operation will not be impacted or adversely altered in any manner by the trail system. This standard is met.

(2) The proposed use will not cause or threaten to cause the mining operation to violate any applicable standards of this chapter, or the terms of a state agency permit. The applicant for a new noise sensitive use shall submit an analysis prepared by an engineer or other qualified person, showing that applicable DEQ noise control standards are met or can be met by a specified date by the nearby mining operation; and

Finding: As demonstrated above, applicant is not proposing a noise sensitive or conflicting use. The nearest use activities adjacent to the existing quarry is the forest practices road, upon which recreational uses are currently made and will continue so. Trail use is passive, localized, and has no off-site impacts to a quarry operation. Trail use will also not be impacted by quarry operations. The location of the trail is separated from the quarry operation by mature timber lands, a substantial distance, and significant elevation gains and losses. All new trail alignments are within the boundaries of the current forest road and no closer to the existing quarry operation. The quarry operation will not be impacted or adversely altered in any manner by the trail system. This standard is met.

(3) Any setbacks or other requirements imposed through the Goal 5 process have been met, or can be met by a specified date.

Finding: There are no additional setbacks or other requirements imposed through a Goal 5 process that are violated. This standard is met.

(B) Approval Conditions.

(1) Compliance with the use approval criteria may be satisfied through the imposition of clear and objective conditions of approval.

(2) Approval of any conflicting use in the extraction area or impact area shall be conditioned upon execution of a restrictive covenant in favor of the mining operator. The restrictive covenant shall incorporate all approval conditions, and an agreement not to object to the conduct of lawful operations conducted at the nearby surface mine.

Finding: Applicant is not proposing a conflicting use and no conditions of approval are necessary or required with respect to the quarry operation occurring on property to the south.

H. Signs

§ 33.7400 Purpose

(A) This Chapter regulates signs which are visible from the right-of-way and from beyond the property where erected. These regulations balance the need to protect the public safety and welfare, the need for a well maintained and attractive community, and the need for identification, communication and advertising for all land uses. The regulations for signs have the following specific objectives:

- (1) To ensure that signs are designed, constructed, installed and maintained so that public safety and traffic safety are not compromised;*
- (2) To allow and promote positive conditions for meeting sign users' needs while at the same time avoiding nuisances to nearby properties;*
- (3) To reflect and support the desired character and development patterns of the various zones; and,*
- (4) To ensure that the constitutionally guaranteed right of free speech is protected.*

§ 33.7405 Applicability And Scope.

This Chapter regulates the number, size, placement and physical characteristics of signs. The regulations are not intended to, and do not restrict, limit or control the content or message of signs. The regulations of this Chapter apply to all zones. The regulations of this Chapter are in addition to all other regulations in the Multnomah County Code and State Building Code applicable to signs.

§ 33.7410 Conformance.

No sign may be erected unless it conforms with the regulations of this Chapter. Sign permits must be approved prior to erection of the sign.

Finding: As expressly provided, regulated signs are those which are visible from the public right of way or beyond the property where erected. The proposed entry/monument sign is a regulated sign. The requirement to obtain a sign permit prior to erecting a regulated sign can be made a condition of approval to ensure compliance.

§ 35.7420/36.7420 Exempt Signs.

The following signs are exempt from the provisions of this Chapter, but may be subject to other portions of the County Code:

- (A) Signs not oriented or intended to be legible from a right of-way, private road or other private property;*
- (B) Signs inside a building, except for strobe lights visible from a right-of-way, private road or other private property;*
- (C) Signs legally erected in the right-of-way in accordance with MCC 29.500 through 29.583, the Rules For Street Standards adopted there under, and Administrative Rules and Regulations pursuant to MCC 15.225 through 15.236;*
- (D) Building numbers required by the applicable street naming and property numbering provisions in Multnomah County Code;*
- (E) Signs carved into or part of materials which are an integral part of the building;*
- (F) Flags on permanent flag poles which are designed to allow raising and lowering of the flags;*

(G) Banners on permanent poles which are designed and intended as a decorative or ornamental feature;

(H) Painted wall decorations and painted wall highlights;

(I) Bench advertising signs which have been lawfully erected.

Finding: Metro is proposing visitor orientation, information, and regulatory signs in and around the parking lot and trail head. These signs are not intended to be visible from NW McNamee and are exempt. Exhibit 22.

§ 33.7425 Prohibited Signs.

The following signs are prohibited and shall be removed:

(A) Strobe lights and signs containing strobe lights which are visible beyond the property lines;

(B) Signs placed on or painted on a motor vehicle or trailer and parked with the primary purpose of providing a sign not otherwise allowed for by this Code;

(C) Abandoned signs;

(D) Balloon signs; and

(E) Signs in the right-of-way in whole or in part, except signs legally erected for informational purposes by or on behalf of a government agency.

Finding: Applicant is not proposing to erect a prohibited sign.

§ 33.7445 Base Zone Sign Regulations.

Signs are allowed in unincorporated Multnomah County depending on the zoning district in which a property is situated as described in MCC 36.7450. Signs are allowed on properties that are zoned OP, PD, and LF or have CS designations to the extent that signs are allowed in the underlying zoning district except as provided herein. Signs are allowed in the SPA subdistricts to the extent provided for in the regulations for each such subdistrict.

Finding: The sign regulations apply to signs erected along NW McNamee. The subject property is zoned CFU-1. Signs are allowed in the CFU-1 zone as provided below.

§ 33.7450 Signs Generally in the EFU, CFU-1 ... Zone.

For all uses and sites in the above listed zones, the following types, numbers, sizes and features of signs are allowed. All allowed signs must also be in conformance with the sign development regulations of MCC 36.7460 through 36.7500.

(A) Free Standing Signs:

(1) Allowable Area - Free standing signs are allowed .25 square feet of sign face area per linear foot of site frontage, up to a maximum of 40 square feet.

(2) Number - One free standing sign is allowed per site frontage.

(3) Height - The maximum height of a free standing sign is 16 feet.

(4) Extension into the Right-Of-Way - Free standing signs may not extend into the right-of-way.

(C) Sign Features

Permanent signs may have the following features:

(1) Signs may be indirectly or internally illuminated.

(2) Electronic message centers are not allowed.

(3) Flashing signs are not allowed.

(4) Rotating signs are not allowed.

(5) Moving parts are not allowed.

Finding: Applicant intends on erecting a free standing sign that identifies the park and that is visible from the right of way. Exhibit 20. There is no electronic message, flashing, rotating or moving parts. Compliance with the sign dimensional standards in section (A)(1-3) above can be ensured through a condition of approval. Exhibit 22.

(D) Additional Signs Allowed - In addition to the sign amounts allowed based on the site and building frontages, the following signs are allowed in all zoning districts for all usages:

(1) Directional signs pursuant to MCC 36.7490.

Finding: In conjunction with the visitor access improvements, applicant may install directional signs (signs which depict the site entrance). Directional sign criteria can be made a condition of approval.

§ 33.7460 *Applicability.*

All signs allowed under the base zone provisions must comply with the development regulations of the following Sections.

§ 33.7465 *Sign Placement.*

(A) Placement

All signs and sign structures shall be erected and attached totally within the site except when allowed to extend into the right-of-way.

Finding: All signs and sign structures will be erected within the site, except if allowed to extend into the right of way (if permission were sought and granted by the County Transportation Department). Exhibit 22. This standard is met.

(B) Frontages

Signs allowed based on the length of one site frontage may not be placed on another site frontage. Signs allowed based on a primary building frontage may be placed on a secondary building frontage.

Finding: No signs are proposed to be placed on another site frontage. This standard is met.

(C) Vision Clearance Areas

(1) No sign may be located within a vision clearance area as defined in subsection (C) (2) below. No support structure(s) for a sign may be located in a vision clearance area unless the combined total width is 12 inches or less and the combined total depth is 12 inches or less.

(2) Location of vision clearance Areas - Vision clearance areas are triangular shaped areas located at the intersection of any combination of rights-of-way, private roads, al-leys or driveways. The sides of the triangle extend 45 feet from the intersection of the vehicle travel area (See MCC 36.7505 Figure 2). The height of the vision clearance area is from three feet above grade to ten feet above grade.

Finding: No signs are proposed to be placed in a restricted vision clearance area. This standard is met.

(D) Vehicle Area Clearances

When a sign extends over a private area where vehicles travel or are parked, the bottom of the sign structure shall be at least 14 feet above the ground. Vehicle areas include driveways, alleys, parking lots, and loading and maneuvering areas.

Finding: No signs are proposed to be placed in a restricted vehicle clearance area. This standard is met.

(E) Pedestrian Area Clearances

When a sign extends over private sidewalks, walkways or other spaces accessible to pedestrians, the bottom of the sign structure shall be at least 8-1/2 feet above the ground.

Finding: No signs are proposed to be placed in a restricted pedestrian clearance area. This standard is met.

(F) Required Yards and Setbacks

Signs may be erected in required yards and setbacks.

Finding: This standard is permissive, not restrictive. This standard is met or otherwise not applicable.

(G) Parking Areas

(1) Unless otherwise provided by law, accessory signs shall be permitted on parking areas in accordance with the provisions specified in each district, and signs designating entrances, exits or conditions of use may be maintained on a parking or loading area.

(2) Any such sign shall not exceed four square feet in area, one side. There shall not be more than one such sign for each entrance or exit to a parking or loading area.

Finding: Applicant may erect parking area/entrance/and exit signs in association with the entry/access improvements. These signs will not exceed four square feet in area, and there will not be more than one such sign for each entrance of exit. This standard is met and can be made a condition of approval to ensure compliance.

§ 33.7470 Fascia Signs.

(A) Height

Fascia signs may not extend more than six inches above the roof line.

(B) Extensions

No point on the face of a fascia sign may extend more than 18 inches from the wall to which it is attached. Fascia signs may not extend beyond the corner of buildings.

Finding: No fascia signs are proposed. This standard is not applicable.

§ 33.7475 Projecting Signs.

(A) Height

The face of projecting signs may not extend more than six inches above the roof line.

(B) Placement

Projecting signs are not allowed on roof tops or on pitched roofs.

(C) Support Structures

Support structures shall be designed so that there is the minimum visible support structure above the sign face. There shall be no more than one foot of support structure between the building wall and the sign.

Finding: No projecting signs are proposed. This standard is not applicable.

§ 33.7480 Flush Pitched Roof Signs.

(A) Height

The face of flush pitched roof signs may not extend more than six inches above the roof line.

(B) Placement

Flush pitched roof signs shall be parallel to the building face. They may not extend beyond the building wall.

(C) Visual Backing

When viewed straight on, flush pitched roof signs shall have a visual backing formed by the roof.

(D) Support Structures

Support structures shall be designed so that there is no visible support structure above the sign.

Finding: No flush pitched roof signs are proposed. This standard is not applicable.

§ 33.7485 Marquees and Awnings.

Signs may be placed on or incorporated into marquees and awnings provided they do not extend above the upper surfaces of the structure. Signs may be hung below marquees and awnings if the sign clears the sidewalk by at least 8-1/2 feet.

Finding: No marquees or awning sign is proposed. This standard is not applicable.

§ 33.7490 Directional Signs.

Finding: In conjunction with entry and access improvements, applicant may install directional signs (signs which depict entrance and exits to direct traffic). Applicant is not proposing any sign that includes flashing lights, electronic messages, or moving parts. This standard is met and can be made a condition of approval to ensure compliance with dimensional standards.

I. Lot of Record Determination

§ 33.2075 Lot of Record.

(A) In addition to the Lot of Record definition standards in MCC 33.0005, for the purposes of this district a Lot of Record is either:

(1) A parcel or lot which was not contiguous to any other parcel or lot under the same ownership on February 20, 1990, or

(2) A group of contiguous parcels or lots:

(a) Which were held under the same ownership on February 20, 1990; and

(b) Which, individually or when considered in combination, shall be aggregated to comply with a minimum lot size of 19 acres, without creating any new lot line.

1. Each Lot of Record proposed to be segregated from the contiguous group of parcels or lots shall be an existing legally created lot lines and shall not result in any remainder individual parcel or lot, or remainder of contiguous combination of

parcels or lots, with less than 19 acres in area. See Examples 1 and 2 in this subsection.

- 2. There shall be an exception to the 19 acre minimum lot size requirement when the entire same ownership grouping of parcels or lots was less than 19 acres in area on February 20, 1990, and then the entire grouping shall be one Lot of Record. See Example 3 in this subsection.*
- 3. Three examples of how parcels and lots shall be aggregated are shown below with the solid thick line outlining individual Lots of Record: ...*
- 4. The requirement to aggregate contiguous parcels or lots shall not apply to lots or parcels within exception or urban zones (e.g. MUA-20, RR, BRC, R-10), but shall apply to contiguous parcels and lots within all farm and forest resource zones (i.e. EFU and CFU), or*

(3) A parcel or lot lawfully created by a partition or a subdivision plat after February 20, 1990.

(4) Exceptions to the standards of (A)(2) above:

- (a) Where two contiguous parcels or lots are each developed with a lawfully established habitable dwelling, the parcels or lots shall be Lots of Record that remain separately transferable, even if they were held in the same ownership on February 20, 1990.*
- (b) Where approval for a "Lot of Exception" or a parcel smaller than 19 acres under the "Lot Size for Conditional Uses" provisions has been given by the Hearing Authority and the parcel was subsequently lawfully created, then the parcel shall be a Lot of Record that remains separately transferable, even if the parcel was contiguous to another parcel held in the same ownership on February 20, 1990.*

(B) In this district, significant dates and ordinances applicable for verifying zoning compliance may include, but are not limited to, the following:

- (1) July 10, 1958, F-2 zone applied;*
- (2) December 9, 1975, F-2 minimum lot size increased, Ord. 115 & 116;*
- (3) October 6, 1977, MUF-20 and CFU-38 zones applied, Ord. 148 & 149;*
- (4) August 14, 1980, MUF-19 & 38 and CFU-80 zones applied, Ord. 236 & 238;*
- (5) February 20, 1990, lot of record definition amended, Ord. 643;*
- (6) January 7, 1993, MUF-19 & 38 zones changed to CFU-80, Ord. 743 & 745;*
- (7) August 8, 1998, CFU-1 zone applied, Ord. 916 (reenacted by Ord. 997);*
- (8) May 15, 2002, Lot of Record section amended, Ord. 982 & reenacted by Ord. 997;*

(C) A Lot of Record which has less than the minimum lot size for new parcels, less than the front lot line minimums required, or which does not meet the access requirements of MCC 33.2073, may be occupied by any allowed use, review use or conditional use when in compliance with the other requirements of this district.

(D) The following shall not be deemed a Lot of Record:

- (1) An area of land described as a tax lot solely for assessment and taxation purposes;*
- (2) An area of land created by the foreclosure of a security interest;*
- (3) A Mortgage Lot;*
- (4) An area of land created by court decree.*

Finding: A Lot of Record is defined as a parcel, lot, or group thereof that when created or reconfigured conformed to all zoning and land division laws, or otherwise complies with the criteria for creating a new lot or parcel. MCC § 33.005. Lot of Record determinations for each lot upon which visitor access improvements, existing roads, or new trails are proposed and findings of

compliance together with substantial evidence are attached as Exhibit 18. Each property which is the subject of this application is a legal lot of record individually or in association with other properties. This standard is met.

J. Administration and Procedures

§ 37.0570 Pre-application Conference Meeting.

(A) Prior to submitting an application for a Type II, Type III or Type IV application, the applicant shall schedule and attend a pre-application conference with County staff to discuss the proposal.

Finding: A pre-application conference was held on March 30, 2017 at the Multnomah County Building. Exhibit 12. This standard is met.

(D) A pre-application conference shall be valid for a period of 6 months from the date it is held. If no application is filed within 6 months of the conference or meeting, the applicant must schedule and attend another conference before the County will accept a permit application. The Planning Director may waive the pre-application requirements if, in the Director's opinion, the development does not warrant these steps.

Finding: The six month deadline is September 30, 2017. Exhibit 12. This application was submitted within six months of the pre-application conference. This standard is met.

Section V. Conclusion

Applicant has demonstrated with findings supported by substantial evidence that application approval is warranted. Applicant respectfully requests that the visitor access and recreational improvements at Burlington Creek Forest be permitted and the conditional use/special use; design review; hillside development; SEC; forest development review; secondary exception; and lot of record determination applications be approved.

Respectfully Submitted,



Gary Shepherd

SITE CONSERVATION PLANS

North Tualatin Mountain Forests



Burlington Creek Forest Natural Area | July 2014

Ennis Creek Forest Natural Area | July 2014

McCarthy Creek Forest Natural Area | Oct. 2015

Updated June 2016



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Bob Stacey, District 6

Auditor
Brian Evans

MAKING A GREAT PLACE



Metro

North Tualatin Mountains – Burlington and Ennis

Approvals for Site Conservation Plan

Date first routed: 07-21-2014

Please return to Lori Hennings (Primary author: Curt Zonick)

Jonathan Soll

Signature



Date

8/26/14

Dan Moeller

Signature



Date

8/28/14

Mark Davison

Signature

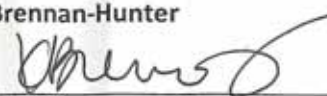


Date

8/29/14

Kathleen Brennan-Hunter

Signature



Date

9/2/14

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NORTH TUALATIN MOUNTAIN FORESTS NATURAL AREA

The North Tualatin Mountain Forests Natural Area describes a collection of three Metro natural area sites located in the northern portion of the Tualatin Mountains, just north of Forest Park. Collectively, the three sites – Burlington Creek Forest, Ennis Creek Forest and McCarthy Creek Forest – protect almost 1,000 acres of natural areas in the north Tualatin Mountains. This site conservation plan integrates the three sites into one guiding document, with separate chapters dedicated to each site.

CHAPTER 1 | BURLINGTON CREEK FOREST NATURAL AREA

INTRODUCTION

The 350-acre Burlington Creek Forest site is part of the Metro Forest Park target area, located on the eastern face of the northern Tualatin Mountains, north of Forest Park and west of Highway 30 in west Multnomah County.

The area surrounding Burlington Creek Forest contains a mixture of land uses including residential, timber harvest, gravel extraction and golf course. The City of Portland's Forest Park lies south of the site. The ~400-acre BPA-owned and ODFW-managed Burlington Bottoms wetlands lies east and downslope of the site, across Highway 30.

The site is drained by Burlington Creek and several small unnamed seasonal streams.

PLANNING AREA

Although Burlington Creek Forest's planning area is defined by the site's boundaries, i.e., Metro ownership, there are large expanses of privately- and publicly-owned properties nearby that share habitat features with the forest, and influence its potential ecological viability and larger landscape value. These properties are important to the development of effective conservation strategies for Burlington Creek Forest, but detailed evaluations of their stewardship classification, targets, etc. are beyond the scope of this plan.

Key staff

Curt Zonick, natural resources scientist
Adam Stellmacher, lead natural resources specialist
Jeff Merrill, natural resources scientist
Nathaniel Marquiss, natural resources technician
Katy Weil, wildlife monitoring coordinator
Robert Spurlock, parks and natural areas planner
Laurie Wulf, property management specialist
Barbara Edwardson, real estate negotiator

Key private landowners

Brian Lightfoot
Michael Baker
Forest Park Conservancy
Skyline Ridge Neighbors

EXISTING PLANNING DOCUMENTS

1. *Forest Stand Management Recommendations; Metro's Agency Creek and Ennis Creek Tracts*, a forest stand assessment conducted by Trout Mountain Forestry in 2012. The document is located at: <M:\PN\Regional Properties\Forest Park Connections TA\Stewardship-Property Management\Stand Mgt.>
2. An assessment of pre-commercial thinning options for the site, including recommendations, was conducted by Trout Mountain Forestry in 2013/2014. A final report is pending.
3. *Greater Forest Park Conservation Initiative*, a 2013 document prepared by the Forest Park Conservancy in cooperation with the City of Portland, Metro and others. The document is located at: <M:\PN\Regional Properties\Forest Park Connections TA\Stewardship-Property Management\Forest Park\GFPCI Report.>
4. *Forest Park Ecological Prescriptions*, a 2011 Forest Park management plan developed by the City of Portland, with input from Metro, Audubon, the Forest Park Conservancy and others. The document is located at: <M:\PN\Regional Properties\Forest Park Connections TA\Stewardship-Property Management\Forest Park\City of Portland, Forest Park Ecological Prescriptions.>

SITE DESCRIPTION

The primary access points for the Burlington Creek Forest are along McNamee Road. The site is dominated by hardwood, Douglas-fir and mixed hardwood/conifer forest. Most of the forest at the site is just over 20 years old, following logging and reforestation of approximately 250 acres of the site in the early 1990s. Logging roads remain, providing good access. Because the site lies along the eastern side of the Tualatin Mountains, slopes are steep (30-60 percent) over much of the site. The lower/eastern edge is encumbered by railroad and utility uses, and these areas are among the most challenged by non-native weed populations.

Soils present at Burlington Creek Forest

MAP SOIL SYMBOL	MAP UNIT NAME	DESCRIPTION
17 D, E	Goble silt loam	Moderately well-drained soils on rolling ridgetops and convex side slopes of ridgetops.
37 B, C	Quatama loam	Moderately well-drained soil on low terraces, elevation 75-400 feet.
55	Wapato silt loam	Poorly drained floodplain soil. Present along lower Burlington Creek Forest in the site's northern extent.

Historic habitats at Burlington Creek Forest

~ % COVER	HABITAT TYPE	HISTORIC HABITAT DESCRIPTION BY GLO SURVEYOR NOTES
100%	Closed forest; upland	Northern half of site: Mesic mixed conifer forest with mostly deciduous understory. May include Douglas fir, western hemlock, red cedar, grand fir, bigleaf maple, yew, dogwood, white oak, red alder. Southern half of site: FFHC, but burned, often with scattered trees surviving fire.

RECENT MANAGEMENT HISTORY

The site has been managed with road maintenance and forest edge weed abatement priorities over the past 10-15 years. Periodic mowing along the access roads, and culvert cleaning/replacement actions have been implemented as needed. Actions to suppress English ivy infestations, primarily in

the site's northeast extent, began in 2013 and are expected to continue through 2015. Forest stand assessment and complementary pre-commercial thinning assessments were conducted in 2012 and 2013, and are expected to lead to selective thinning in 2015 to enhance forest structure, preserve maturing tree canopy, and understory native herb and shrub diversity.

ACCESS AND RECREATION

The Parks and Natural Areas Planning group is developing a new visitor experience overview that will be added to this site conservation plan as an appendix at a later date. Metro will also develop a comprehensive plan for the site in late 2014 and early 2015.

Metro staff conducted an internal process to consider an appropriate level of access for each of its natural areas. The access designation is offered as a starting point, with the understanding that judgment will always be needed on a case-by-case basis, and indicates that some part of that site could accept people at the stated level. It does not suggest that the entire site should have that level of access.

The designated access level at Burlington Creek Forest is *Natural Area – High*. Access at this type of sites is allowed and may be promoted on a site-by-site basis. Parking areas may or may not be developed at these sites to facilitate access if necessary; restrooms may be installed on a site-by-site basis; basic rules and site identification signage are standard; soft surface, mineral soil or gravel trails are formalized and wayfinding signage may be posted to channel access and protect sensitive habitat. These sites are visited weekly or bi-weekly by Metro staff to inspect for unauthorized use and to conduct maintenance. These sites could move to a Nature Park designation in the future.

At present, hikers, joggers, mountain bikers and equestrians occasionally use the old logging roads on the site.

NATURAL RESOURCES OF SPECIAL INTEREST

With the exception of areas of heavy weed infestation along the access roads and the utility easements, the site is becoming well-represented by native cover. This site contributes to a larger block of protected forest land, including greater Forest Park and other Metro sites in this target area.

Maturing canopy-producing trees have begun to shade-suppress the extensive non-native blackberry infestations that dominated cover at the site following logging in the early 1990s. Isolated Oregon oak clusters occur at the site, primarily along the railroad and interface with residential properties at the low elevation side of the site.

A thorough ecological inventory and assessment has not been done for the site. Listed and rare species, such as Chinook salmon (juvenile Chinook salmon were detected during fish surveys on Burlington Creek Forest in 2012), northern red-legged frog and others almost certainly occur in Burlington Creek Forest. Coho and winter steelhead are present in lower Burlington Creek Forest.

Rare species known to occur at Burlington Creek Forest

	ORBIC LIST	FEDERAL STATUS	URBANIZING FLORA (2009)
<i>No documented occurrences of rare species, though species like red-legged frogs, Chinook salmon, steelhead, etc. seem likely.</i>	N/A	N/A	N/A

CONSERVATION TARGETS

There are three conservation targets for Burlington Creek Forest:

1. Upland forest
2. Riparian forest
3. Upland shrub

CURRENT AND DESIRED FUTURE CONDITION OF CONSERVATION TARGETS

Non-technical status and desired future condition of targets at Burlington Creek Forest

TARGET	CURRENT CONDITION	DESIRED FUTURE CONDITION
Upland closed forest	Generally good habitat structure, with increasing sparse but present understory of native shrubs and herbs. Canopy closure is reducing understory blackberry cover. Ivy is a concern needing vigilance, especially east and north of the railroad. Edges are ongoing weed maintenance areas, especially for blackberry and broadleaf herbaceous weeds like knapweed and thistles.	Accelerating forest stand maturation accompanied by increase in forest floor wood accumulations, native understory diversity and cover, and increased snag and wildlife trees. A reduction in edge weed cover, and eradication or near total control of ivy and other shade-tolerant system modifying weeds.
Riparian forest	Generally good, although areas of erosion and weed establishment are a problem. Better assessment of this habitat at the site is needed.	Opportunities to enhance stream canopy cover/shading, % native vegetation cover, and improve instream structure are likely present. Further investigation and planning are necessary before associated project can be implemented.
Upland shrub	These units are generally associated with the utility corridors. Condition varies throughout the site, with some areas in good to very good condition with well-established native cover and limited non-native infestations, to areas with heavy blackberry and Scots broom needing intensive management.	Desired conditions are for native shrubs and herbs to dominate cover with a limited presence of non-native plant species that are not displacing natives, and can be controlled with occasional weed abatement every 3-5 years.

Key ecological attributes for upland forest at Burlington Creek Forest

CATEGORY	KEA	INDICATOR	----- INDICATOR RATING -----		
			POOR	FAIR	GOOD
Condition	Native tree and shrub richness	Number of native tree and shrub species per acre	<5 species per 0.4 ha (1 ac)	5-8 species 0.4 ha (1 ac)	8-12 species per 0.4 ha (1 ac)
Condition	Vegetative structure: native tree and shrub layer	% native tree and shrub canopy cover (combined)	<25% cover	25-50% cover	50-75% cover
Condition	Mature trees	Number and size (dbh) of species such as Douglas fir, western red cedar, western hemlock and grand fir	Mature trees lacking	<3 per ac with dbh >24 in	3-5 per ac with dbh >24 in
Condition	Standing and downed dead trees	Average # snags and large wood (> 50 cm, or 20 in, DBH) per acre	< 5 snags and <5% down wood	5-11 snags and 5-10% down wood	12-18 snags and 10-20% down wood with moderate variety of size and age classes
Landscape context	Edge condition	% of edge bordered by natural habitats and/or managed for conservation	Patch surrounded by non-natural habitats (0-25% natural habitat)	25%+ of patch bordered by natural habitats	50-75% of patch bordered by natural habitats or managed for conservation

*Desired future condition

Key ecological attributes for riparian forest (streams or rivers) at Burlington Creek Forest

CATEGORY	KEA	INDICATOR	----- INDICATOR RATING -----		
			POOR	FAIR	GOOD
Condition	Vegetative structure: tree layer	% native tree canopy cover	<20% cover	20-30% cover	30-40% cover
Condition**	Riparian habitat continuity	Gaps in woody vegetation	>2 gaps >50 m (55 yards) OR >3 or more 25-50 m (27-55 yards) gaps	1 or 2 gaps >50 m (54 yards) OR 2 or more gaps between 15-25 m (16-27 yards)	1, 25-50 m (27-55 y) gap OR 2 or more gaps between 15-25 m (16-27 yards)

*Desired future condition

** This KEA may not be appropriate where native turtles are present, because nesting turtles require some open habitat. Patches of bare ground may be present.

Key ecological attributes for upland shrub habitat at Burlington Creek Forest

CATEGORY	KEA	INDICATOR	----- INDICATOR RATING -----		
			POOR	FAIR	GOOD
Condition	Vegetative structure: shrub layer	% native shrub canopy cover	<10% cover	10-25% cover	25-50%
Condition	Native shrub richness	# native shrub species per acre	<2 species per 0.4 ha (1 acre)	2-5 species per 0.4 ha (1 acre)	6-9 species per 0.4 ha (1 acre)

*Desired future condition

THREATS TO CONSERVATION TARGETS AT BURLINGTON CREEK FOREST

Burlington Creek Forest is primarily threatened by factors that limit forest stand health (overstocking, disease, non-native species), which occur along property edges, along the more open, logging/access roads and public roads, and under and adjacent to timber harvest areas. A comprehensive plan, scheduled for 2016, will address future following a comprehensive plan, scheduled for 2016. Resulting public access increases and associative infrastructure, including trails, will be developed to enhance vegetation and wildlife.

Threats at conservation targets at Burlington Creek Forest

CONSERVATION TARGET	STRESS (DEGRADED KEA)	SEVERITY	SCOPE	OVERALL STRESS RANK	SOURCE (THREATS)
Upland forest	Forest stand structure – mature trees	High	High	High	Overstocking competition
Upland shrub habitat	Vegetative structure: shrub layer	Very High	High	Very High	Non-native shrub species (e.g. blackberry)
Riparian vegetation	Canopy cover and continuity	Moderate	Moderate	Moderate	Fragmentation, previous logging, non-native shrub cover

Climate change considerations

Climate change is anticipated to affect summer temperatures and availability of water in summer. Other indirect effects of climate change may include range shifts of plants and animals, some native to North America and some not, and increased competition by these species. It is possible that climate change may touch every key ecological attribute, though effects on some KEAs may be more important than others.

Direct effects that may occur

- Increased summer temperatures
- Increased severity of winter rain events
- Decreased water availability in summer

Indirect effects that may occur

- Increased risk of wildfire in hotter, dryer summers
- Range shifts by undesirable plants increasing competition
- Disease introductions and/or increased vulnerability to disease
- Loss of synchronicity of plant reproduction and pollinators
- Loss of synchronicity of resident and migratory animals and food sources (e.g., insect hatches)
- Increased erosion in streams caused by the flashier winter rain events
- In upland forests, plant growth and survival may be affected by increased summer temperatures and reduced water availability in summer.

STRATEGIC ACTIONS

Enhancement and management strategies recommended for the site target improvements to forest structure, vegetation diversity and non-native species suppression. Priority actions are described below.

List of proposed strategies at Burlington Creek Forest

STRATEGY	SOURCES OF STRESS IT ADDRESSES	FOCAL CONSERVATION TARGETS/KEAS AFFECTED	WHY IS IT IMPORTANT AND ANY TIMING ISSUES	MEASURE(S) OF SUCCESS	RANK
Treat exotics, especially <i>Rubus armeniacus</i> and <i>Hedera helix</i> Survey and treat EDRR species and system-changing invasives	Competition from exotic plants	Upland forest: % native tree and shrub canopy cover (combined) Upland shrub: % native shrub canopy cover	Periodic treatments of certain exotics are essential to avoid losing native plants	Establish and maintain KEA rating of Good	Medium
Selectively thin upland forest patches that are accessible to machine harvest or affordable chainsaw thinning during the next 2-3 years	Reduces overstocking that is causing a loss of living tree canopy and understory native vegetation diversity	Upland forest: Number of native tree and shrub species per acre	Strategy will implement a pre-commercial thinning action recommended by the 2012 Forest Stand Management plan	Visual assessment/ KEA	High

STRATEGY	SOURCES OF STRESS IT ADDRESSES	FOCAL CONSERVATION TARGETS/KEAS AFFECTED	WHY IS IT IMPORTANT AND ANY TIMING ISSUES	MEASURE(S) OF SUCCESS	RANK
Increase forest understory diversity of upland forests	Habitat simplicity; resiliency to climate change	% native tree and shrub canopy cover	Enhances resiliency to climate change while providing better wildlife habitat, forest soil benefits, weed suppression	Visual assessment/ KEA	Medium
Reduce non-native cover in upland shrublands	Non-native species competition	% native canopy cover		Visual assessment/ KEA	Medium

Strategy ranking:

High: must do within 5 years to protect target viability

Medium: target will persist without it but will degrade over 5-10 years or require additional future management

Low: addresses a non-critical threat or one that is unlikely to threaten target viability within 10 years

SPECIFIC ACTIONS AND FUNDING REQUIREMENTS

Enhancement and management strategies, as they pertain to the site's conservation targets, are described below.

Specific actions to implement strategies tied to conservation targets at Burlington Creek Forest

STRATEGY	TARGET	PRIORITY (HOW SOON)	SPECIFIC TASKS	ESTIMATED COST
Develop response as knowledge develops	Riparian forest	Low – 10 years out or more	Monitor spread of ash borer and work with USDA and/or ODA on treatment options	Nominal; part of routine work
Treat exotics, especially <i>Rubus armeniacus</i> ; <i>Hedera helix</i>	Upland forest	High – ASAP	Sweep upland forest habitat to treat exotics	\$15,000 every 5 years? (about 5 crew days)
Interplant to increase understory diversity	Upland forest	Moderate – next 5 years	Develop a plant list of desired understory species (woody and herbaceous) and interplant to introduce sustainable cover of those species, if needed.	\$35,000
Selectively thin upland forest patches that are accessible to machine harvest in the next 2-3 years (~65 acres)	Upland forest	High – next 3 years	Implement a combination of machine and chainsaw thinning to selectively open overstocked forests to increase forests stand structure, diversity and resiliency to climate change.	\$20,000; costs could be offset by commercial thinning revenue, or increased if commercial logging offset is limited and chainsaw thinning is required
Treat exotics, especially <i>Rubus armeniacus</i> ; <i>Cytisus scoparius</i>	Upland shrub and forest understory post-thinning	High – next 10 years	Targeted herbicide applications	\$30-50,000
Interplant to increase understory diversity	Upland shrub	Moderate	Revegetation	\$20,000
Treat exotics, especially <i>Rubus armeniacus</i>	Riparian forest	Moderate	Targeted herbicide applications	\$15,000
Interplant to increase understory diversity	Riparian forest	Moderate	Revegetation	\$10,000
Boost snags and downed wood	Upland forest	Moderate	Selective topping and girding/ tree-falling, create wildlife piles	\$15,000
Increase instream complexity	Riparian forest	Moderate	Instream LWD placement	\$30,000
Increase riparian canopy and stream shading	Riparian forest	High	Interplanting with canopy tree species	\$10,000

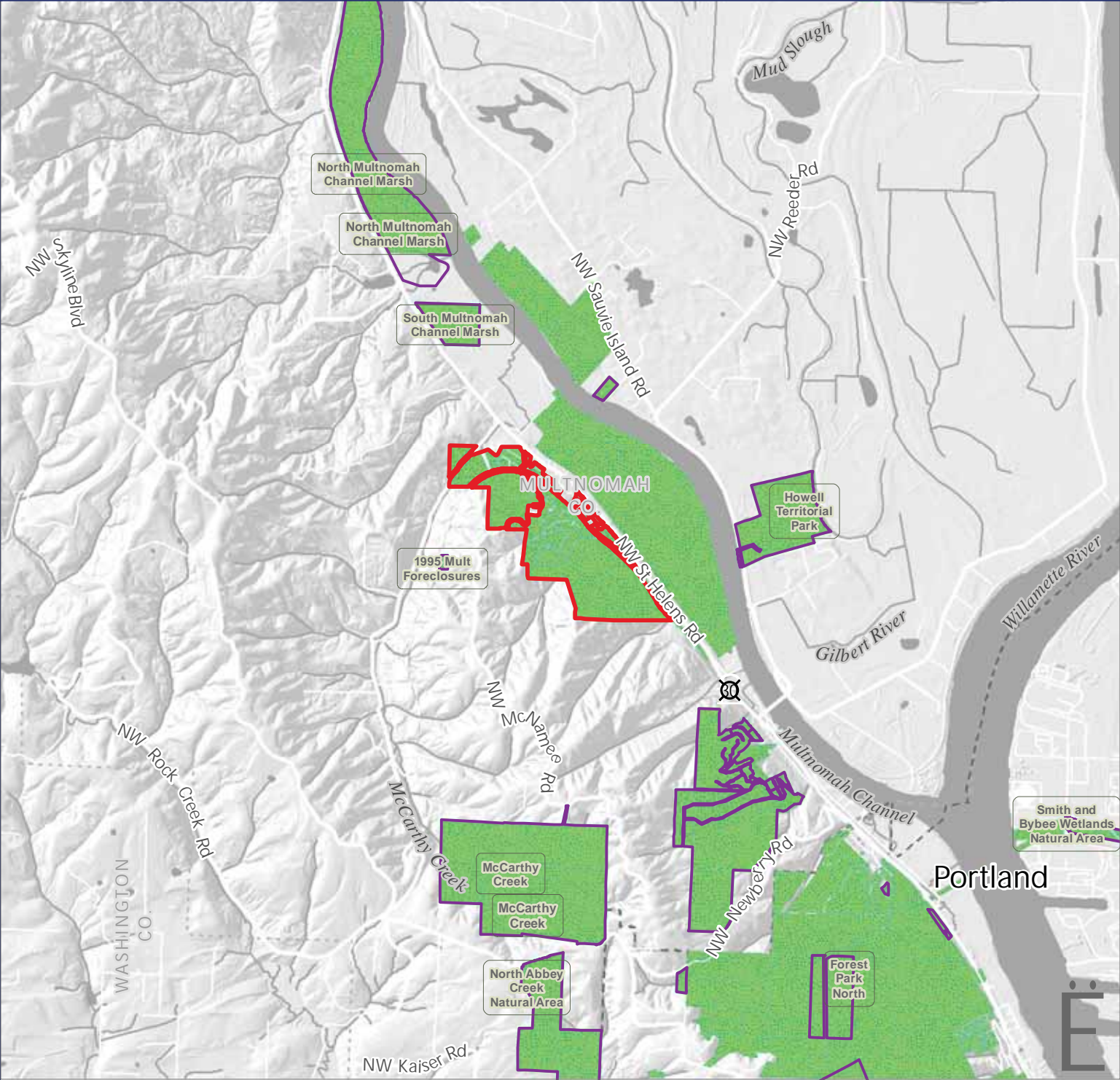
MONITORING PLAN




Monitoring for key ecological attributes associated with the site's conservation targets will largely be done via periodic visual assessment. In addition, periodic wildlife monitoring would be appropriate for the North Tualatin Mountains sites, focusing on long-term tracking of the avian community and periodic assessment of the terrestrial salamander population as it relates to increasing understory and large woody material improvements over time.

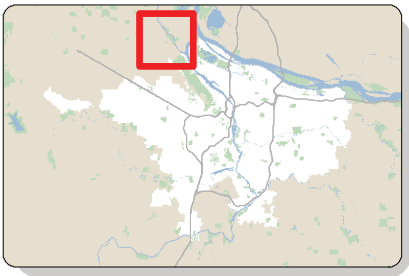
CURRENT PARTNERS, PARTNER PROJECTS AND POTENTIAL PARTNERS

- West Multnomah Soil and Water Conservation District
- City of Portland
- Forest Park Conservancy
- Trout Mountain Forestry
- The National Audubon Society

Vicinity Map



-  Burlington Creek Forest site
-  Other Metro sites
-  Park and/or natural area



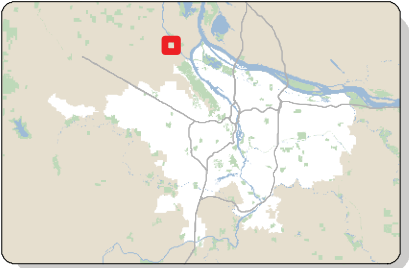
Site Map



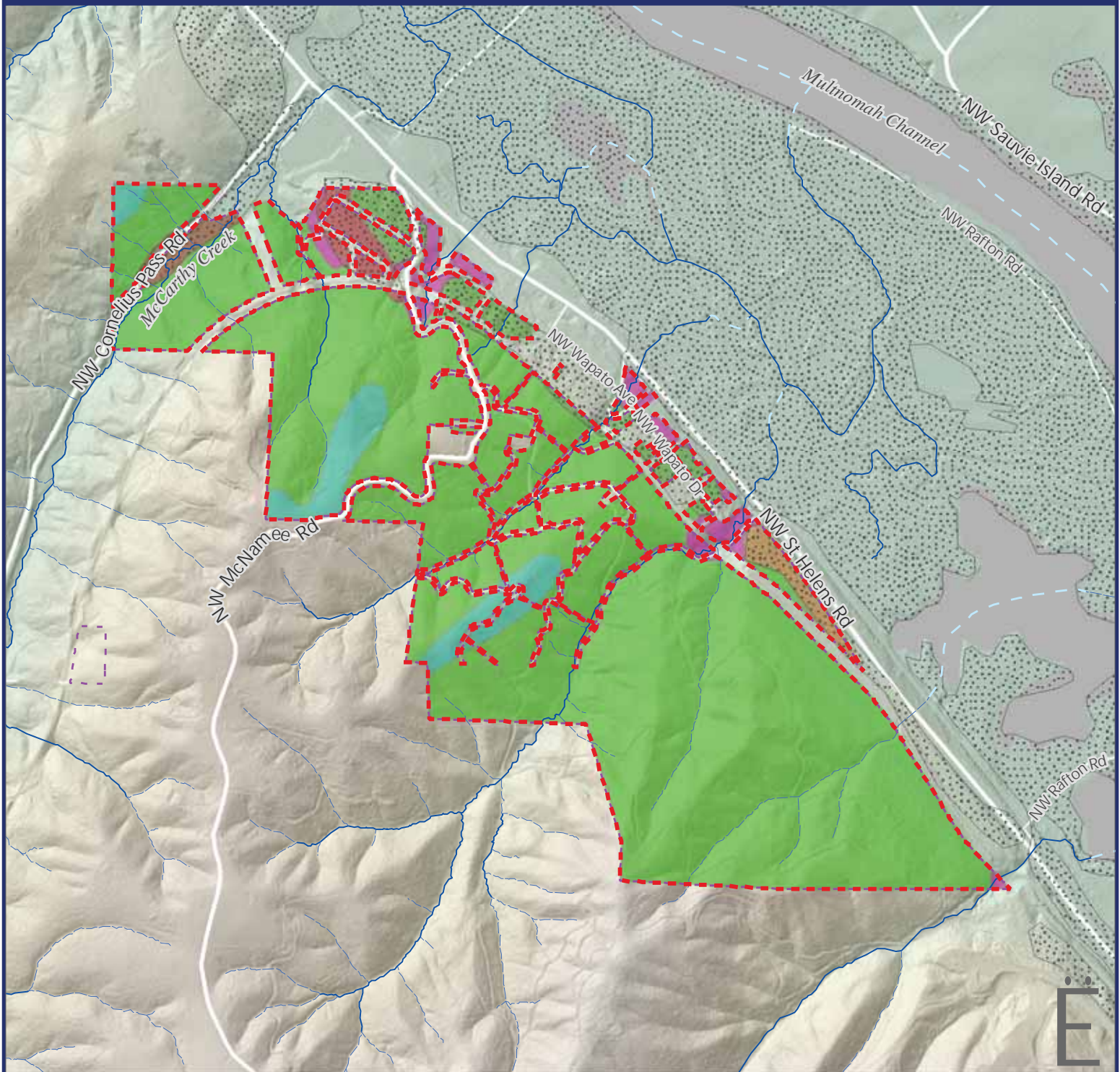
- Burlington Creek Forest site
- Other Metro sites













- Bond Measure**
- 1995 Bond Measure
 - 2006 Bond Measure

- NHD Flowlines**
- Intermittent stream
 - Perennial stream



Soils

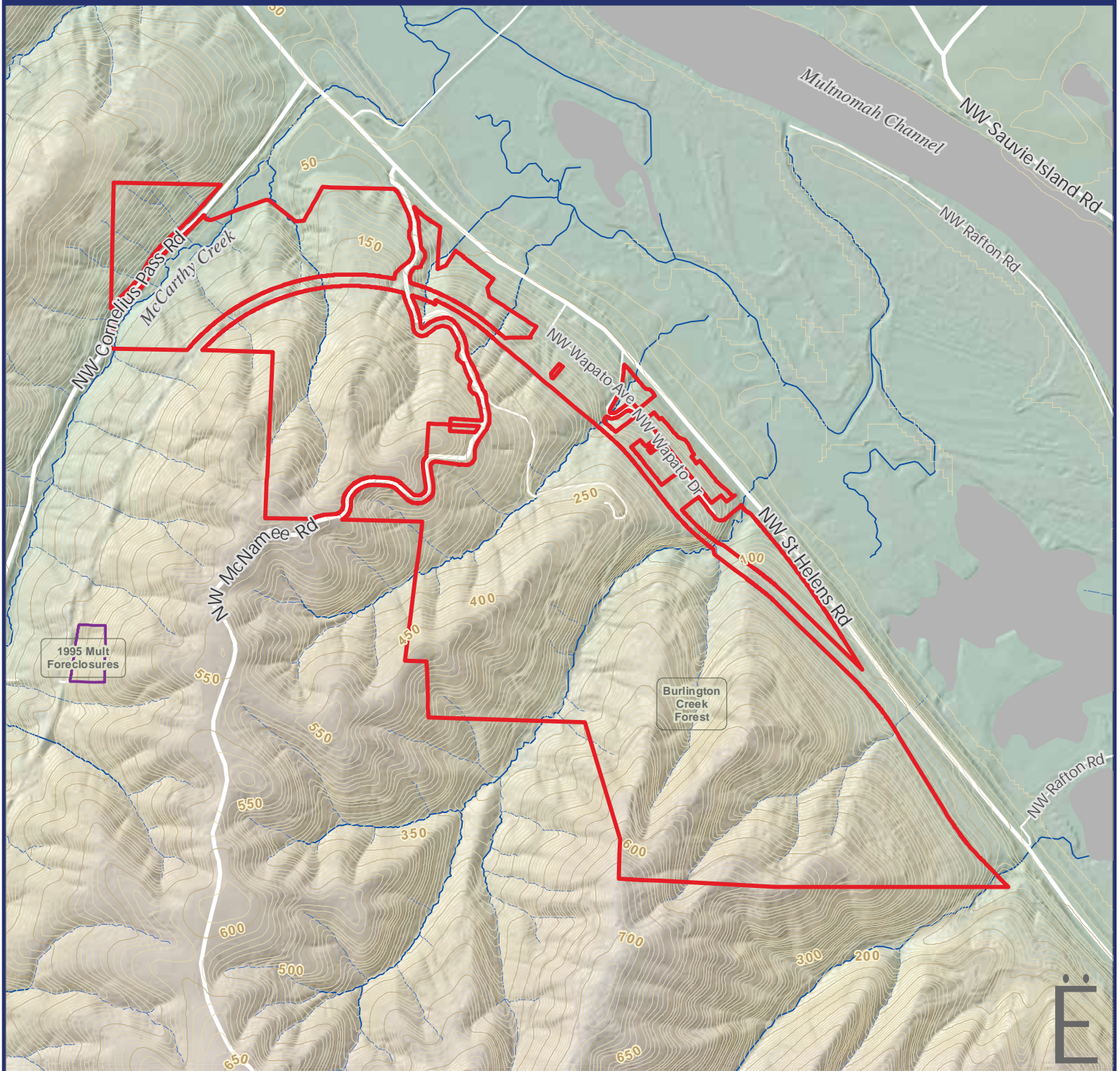


- | | | |
|---|---|---|
|  Burlington Creek Forest site | NRCS soils |  Quatama loam, 15 to 30 percent slopes |
|  Other Metro sites |  Burlington fine sandy loam, 0 to 8 percent slopes |  Quatama loam, 3 to 8 percent slopes |
|  Hydric soils |  Goble silt loam, 15 to 30 percent slopes |  Quatama loam, 8 to 15 percent slopes |
| |  Goble silt loam, 30 to 60 percent slopes |  Sauvie silt loam |
| |  Haploxerolls, steep |  Wapato silt loam |

0 1,500 3,000 Feet



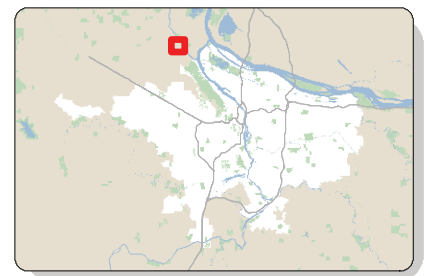
Topography



- Burlington Creek Forest site
- Other Metro sites

NHD Flowlines

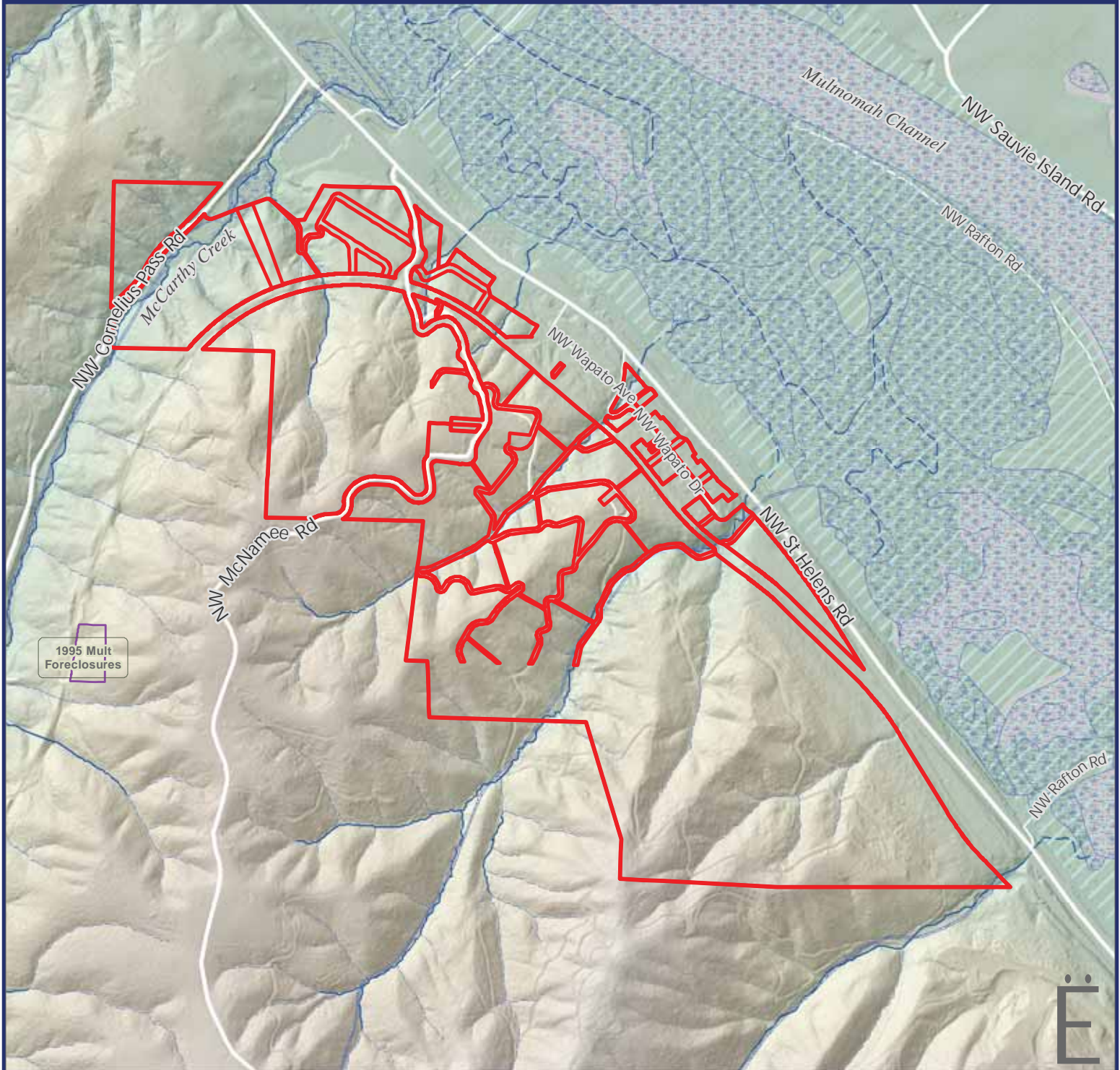
- Intermittent stream
- Perennial stream



0 1,500 3,000 Feet



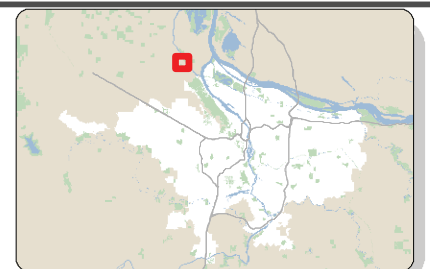
Hydrology



- Burlington Creek Forest site
- Other Metro sites
- Wetlands
- 100 year floodplain

NHD Flowlines

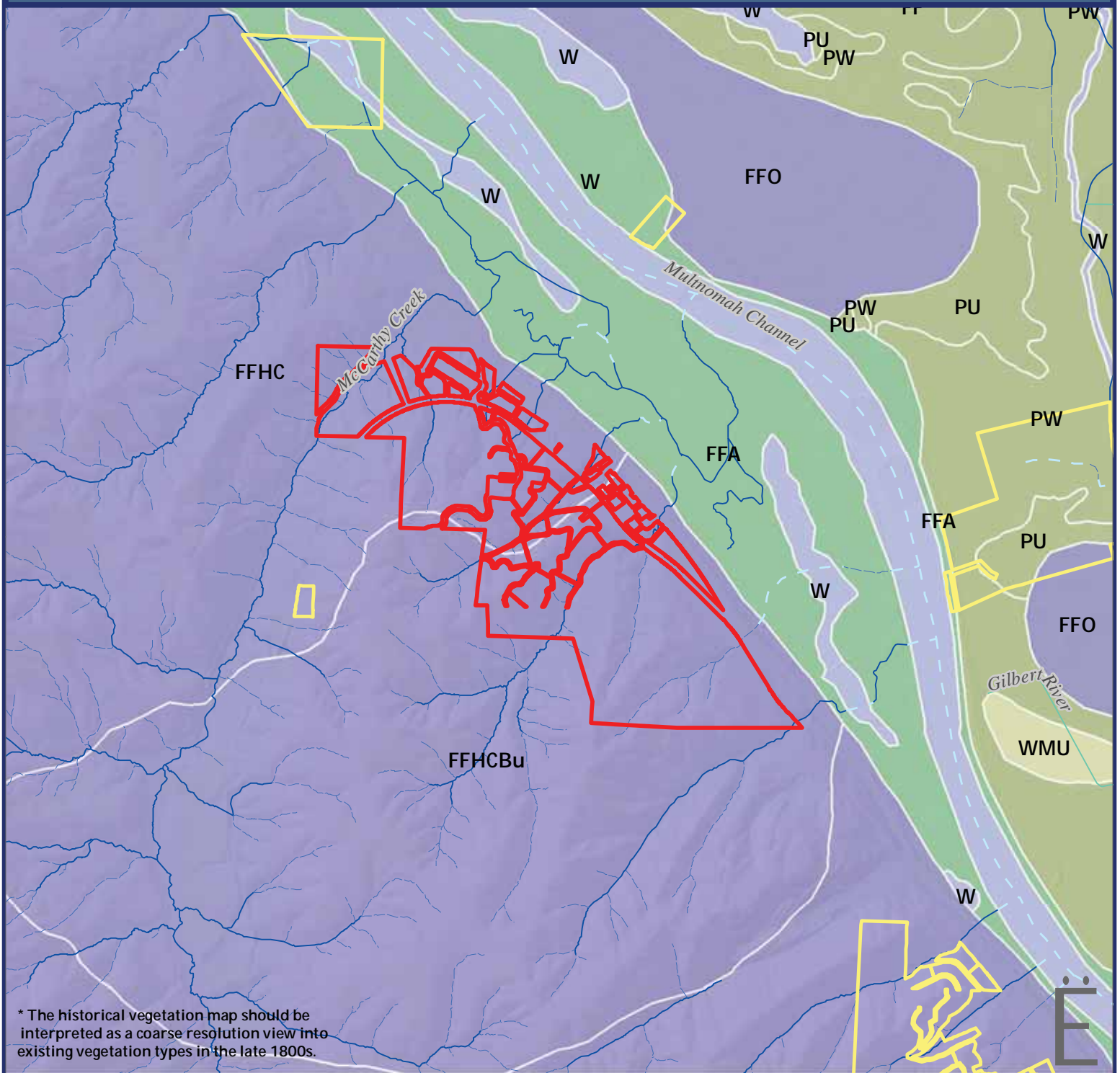
- Intermittent stream
- Perennial stream



0 1,500 3,000 Feet



Historical Vegetation (1851-1910)



- Burlington Creek Forest site
- Other Metro sites

Historical vegetation

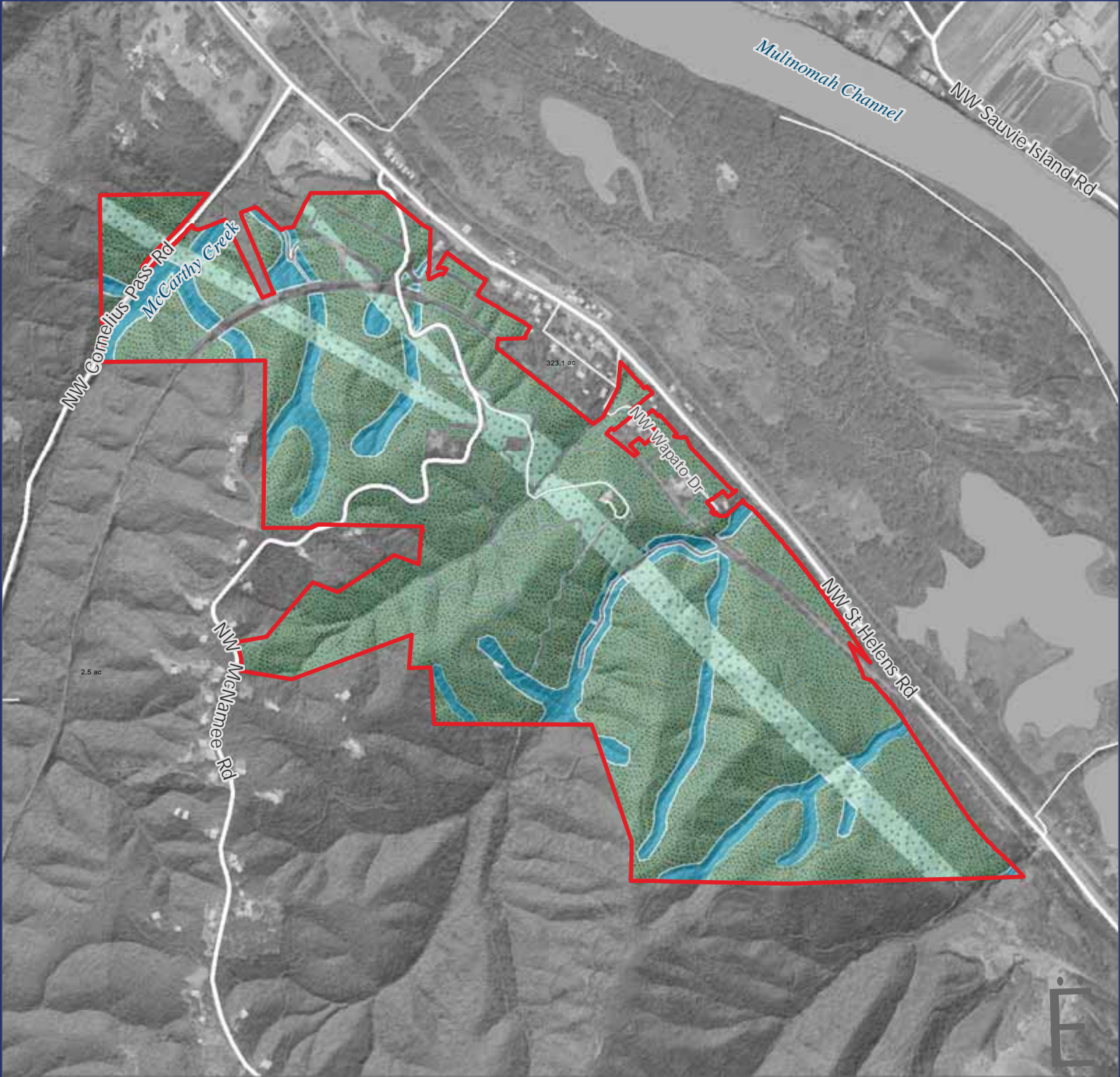
- Closed forest; Riparian & Wetland
- Closed forest; Upland
- Emergent wetlands
- Prairie
- Water

* Labels refer to vegetation subclasses. Detailed descriptions can be found in T:\OBMO\GIS\DATA_V\vegetation\Historical

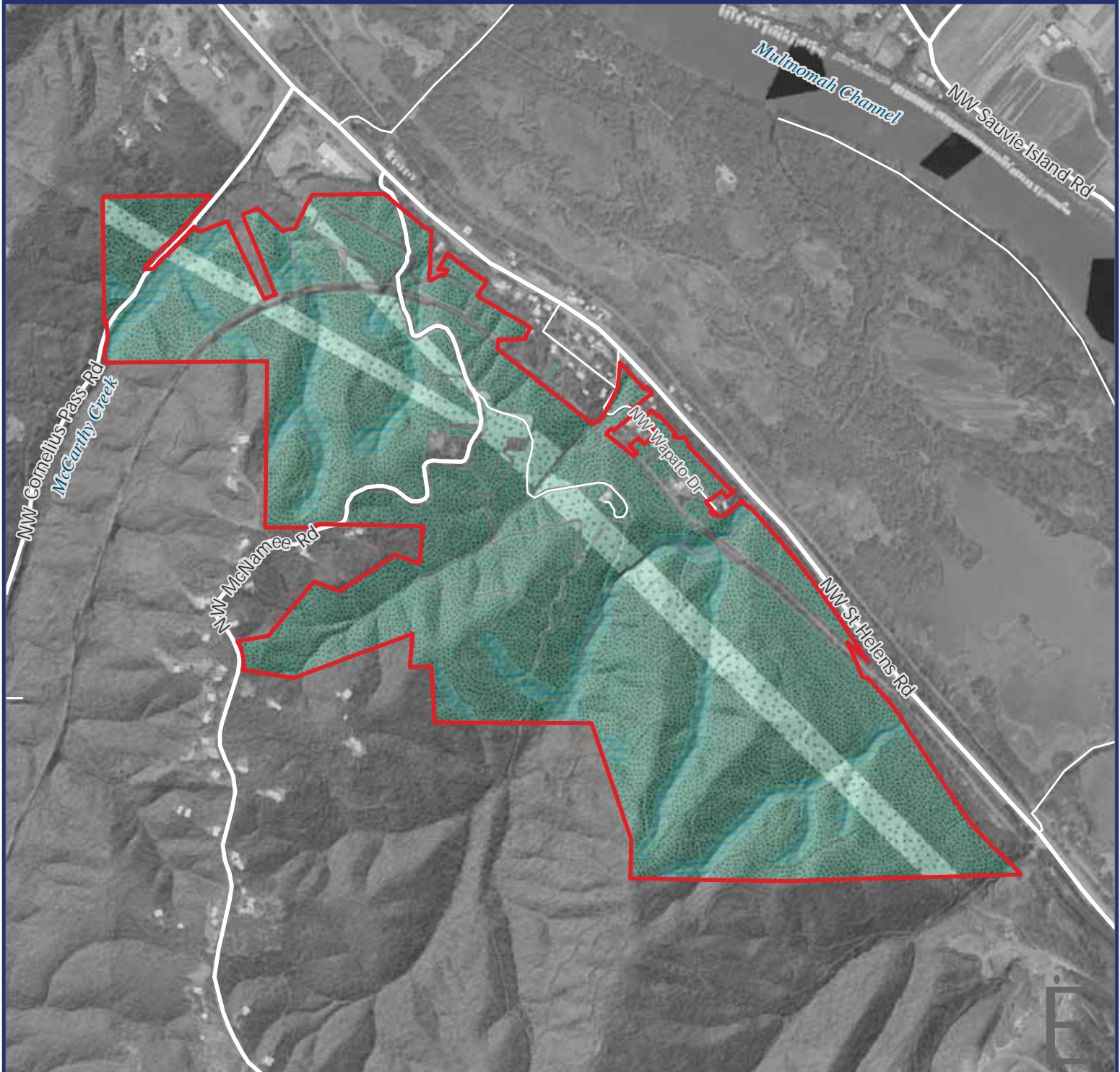
0 2,000 4,000 Feet



CURRENT COVER

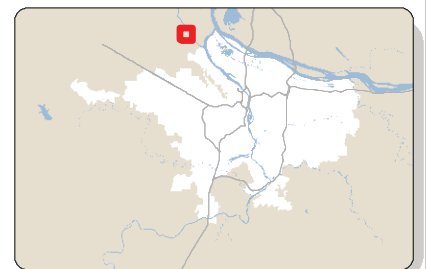


CONSERVATION TARGETS

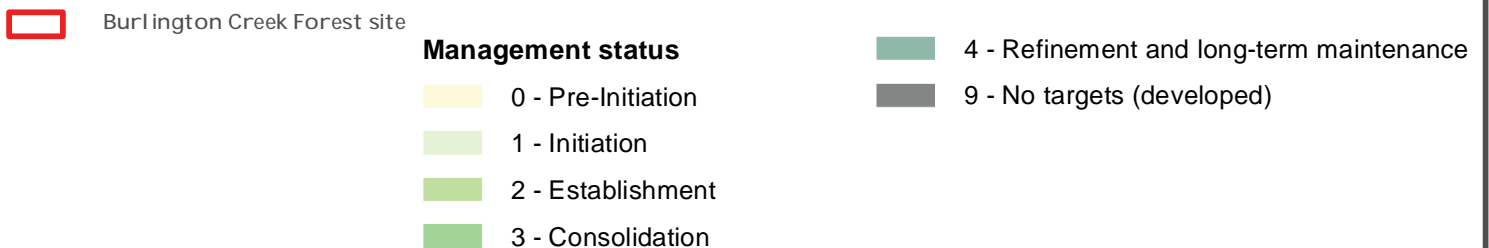
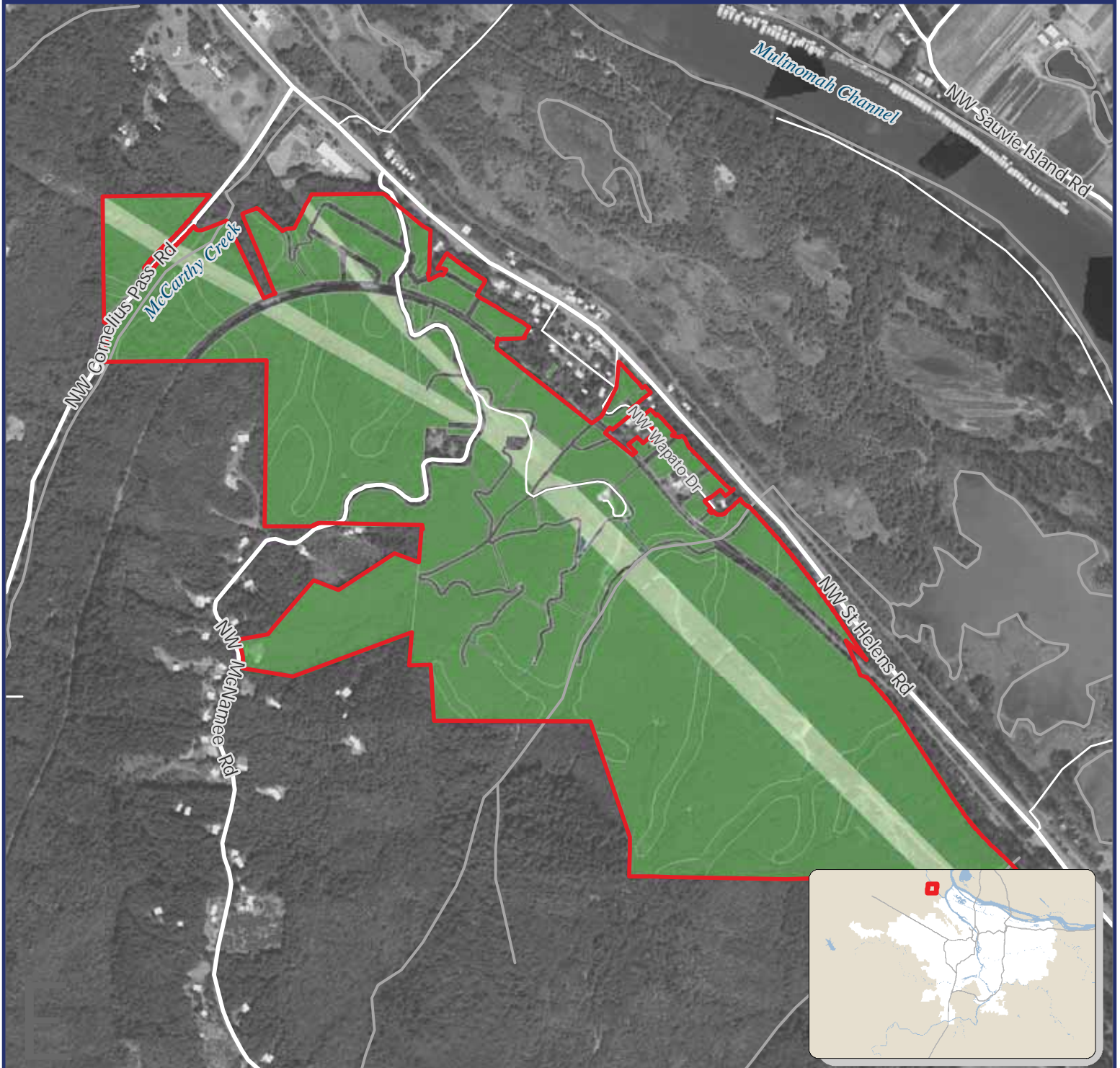


-  Burlington Creek Forest site
-  Riparian forest
-  Upland forest
-  Upland forest - shrub (early successional)

0 1,300 2,600 Feet



MANAGEMENT STATUS



0 1,300 2,600 Feet



CHAPTER 2 | ENNIS CREEK FOREST

INTRODUCTION

The 320-acre Ennis Creek Forest site is part of the Forest Park target area, located on the eastern face of the northern Tualatin Mountains, north of Forest Park and west of Highway 30 in west Multnomah County. In total, the Forest Park target area contains almost 1,000 acres of natural areas in the north Tualatin Mountains.

The area surrounding Ennis Creek Forest contains a mixture of land uses including residential, timber harvest, gravel extraction and golf course. The City of Portland's Forest Park lies south of the site. The ~400-acre BPA-owned and ODFW-managed Ennis Bottoms wetlands lies northeast of the site, and the town of Burlington lies east and across Highway 30 from the site.

The site is drained by Ennis Creek and several small unnamed seasonal streams.

PLANNING AREA

Although Ennis Creek Forest's planning area is defined by the site's boundaries, (i.e., Metro ownership) there are large expanses of privately and publicly owned properties nearby that share habitat features with the forest, and influence its potential ecological viability and larger landscape value. These properties are important to the development of effective conservation strategies for Ennis Creek Forest, but detailed evaluations of their stewardship classification, targets, etc. are beyond the scope of this plan.

Key staff

Curt Zonick, natural resources scientist
Adam Stellmacher, lead natural resources specialist
Jeff Merrill, natural resources scientist
Nathaniel Marquiss, natural resources technician
Katy Weil, wildlife monitoring coordinator
Robert Spurlock, parks and natural areas planner
Laurie Wulf, property management specialist
Barbara Edwardson, real estate negotiator

Key private landowners

Brian Lightfoot
Michael Baker
Forest Park Conservancy
Skyline Ridge Neighbors

EXISTING PLANNING DOCUMENTS

1. *Forest Stand Management Recommendations; Metro's Agency Creek and Ennis Creek Tracts*, a forest stand assessment conducted by Trout Mountain Forestry in 2012. The document is located at: <M:\PN\Regional Properties\Forest Park Connections TA\Stewardship-Property Management\Stand Mgt.>

2. An assessment of pre-commercial thinning options for the site, including recommendations, was conducted by Trout Mountain Forestry in 2013/2014. A final report is pending.
3. *Greater Forest Park Conservation Initiative*, a 2013 document prepared by the Forest Park Conservancy in cooperation with the City of Portland, Metro and others. The document is located at: M:\PN\Regional Properties\Forest Park Connections TA\Stewardship-Property Management\Forest Park\GFPCI_Report.
4. *Forest Park Ecological Prescriptions*, a 2011 Forest Park management plan developed by the City of Portland, with input from Metro, Audubon, the Forest Park Conservancy and others. The document is located at: <M:\PN\Regional Properties\Forest Park Connections TA\Stewardship-Property Management\Forest Park\City of Portland, Forest Park Ecological Prescriptions>.

SITE DESCRIPTION

The primary access points for Ennis Creek Forest are along McNamee Road. The site is dominated by hardwood, Douglas-fir and mixed hardwood/conifer forest. Most of the forest at the site is just over 20 years old, following logging and reforestation of approximately 250 acres of the site in the early 1990s. Logging roads remain, providing good access to large areas of the site. Because the site lies along the eastern side of the Tualatin Mountains, slopes are steep (30-60 percent) over much of the site. The lower/eastern edge is encumbered by railroad and utility uses, and these areas are among the most challenged by non-native weed populations.

Soils present at Ennis Creek Forest

MAP SOIL SYMBOL	MAP UNIT NAME	DESCRIPTION
17 D, E	Goble silt loam	Moderately well-drained soils on rolling ridgetops and convex side slopes of ridgetops.
37 B, C	Quatama loam	Moderately well-drained soil on low terraces, elevation 75-400 feet.
55	Wapato silt loam	Poorly drained floodplain soil. Present along lower Burlington Creek Forest in the site's northern extent.

Historic habitats at Ennis Creek Forest

~ % COVER	HABITAT TYPE	HISTORIC HABITAT DESCRIPTION BY GLO SURVEYOR NOTES
100%	Closed forest; upland	Mesic mixed conifer forest with mostly deciduous understory. May include Douglas fir, western hemlock, red cedar, grand fir, bigleaf maple, yew, dogwood, white oak, red alder.

RECENT MANAGEMENT HISTORY

The site has been managed with road maintenance and forest edge weed abatement priorities over the past 10-15 years. Periodic mowing along the access roads, and culvert cleaning/replacement actions as needed have been implemented. Actions to suppress English ivy infestations, primarily in the site's northeast extent, began in 2013 and are expected to continue through 2015. Forest stand assessment and complimentary pre-commercial thinning assessments were conducted in 2012 and 2013, and are expected to lead to selective thinning in 2015 to enhance forest structure, preserve maturing tree canopy, and understory native herb and shrub diversity.

ACCESS AND RECREATION

The Parks and Natural Areas Planning group is developing a new visitor experience overview that will be added to this site conservation plan as an appendix at a later date. Metro will also develop a comprehensive plan for the site in late 2014 and early 2015.

Metro staff conducted an internal process to consider an appropriate level of access for each of its natural areas. The access designation is offered as a starting point, with the understanding that judgment will always be needed on a case-by-case basis, and indicates that some part of that site could accept people at the stated level. It does not suggest that the entire site should have that level of access.

The designated access level at Ennis Creek Forest is *Natural Area – High*. Access at this type of site is allowed and may be promoted on a site-by-site basis. Parking areas may or may not be developed at these sites to facilitate access if necessary; restrooms may be installed on a site-by-site basis; basic rules and site identification signage are standard; soft surface, mineral soil or gravel trails are formalized and wayfinding signage may be posted to channel access and protect sensitive habitat. These sites are visited weekly or bi-weekly by Metro staff to inspect for unauthorized use and to conduct maintenance. These sites could move to a Nature Park designation in the future.

At present, hikers, joggers, mountain bikers and equestrians occasionally use the old logging roads on the site.

NATURAL RESOURCES OF SPECIAL INTEREST

With the exception of areas of heavy weed infestation along the access roads and the utility easements, the site is becoming well-represented by native cover. This site contributes to a larger block of protected forest land, including Forest Park and other Metro sites in this target area.

Maturing canopy-producing trees have begun to shade-suppress the extensive non-native blackberry infestations that dominated cover at the site following logging in the early 1990s. Isolated Oregon oak clusters occur at the site, primarily along the railroad and interface with lower residential properties.

A thorough ecological inventory and assessment has not been done for the site. Listed and rare species, such as northern red-legged frog and others almost certainly occur at the site.

Rare species known to occur at Ennis Creek Forest

	ORBIC LIST	FEDERAL STATUS	URBANIZING FLORA (2009)
<i>No documented occurrences of rare species, though species like red-legged frogs, Chinook salmon, steelhead, etc. seem likely.</i>	N/A	N/A	N/A

CONSERVATION TARGETS

There are three conservation targets for Ennis Creek Forest:

1. Upland forest
2. Riparian forest
3. Upland shrub

CURRENT AND DESIRED FUTURE CONDITION OF CONSERVATION TARGETS

Non-technical status and desired future condition of targets at Ennis Creek Forest

TARGET	CURRENT CONDITION	DESIRED FUTURE CONDITION
Upland closed forest	Generally good habitat structure, with increasingly sparse but present understory of native shrubs and herbs. Canopy closure reducing understory blackberry cover. Ivy is concern needing vigilance, but Ennis Creek Forest carries a greatly reduced ivy infestation compared to Burlington Creek Forest. Edges are ongoing weed maintenance areas, especially for blackberry and broadleaf herbaceous weeds like knapweed and thistles.	Accelerating forest stand maturation accompanied by increase in forest floor wood accumulations, native understory diversity and cover, and increased snag and wildlife trees. A reduction in edge weed cover, and eradication or near total control of ivy and other shade-tolerant system modifying weeds.
Riparian forest	Generally good, although areas of erosion and weed establishment are a problem. Better assessment of this habitat at the site is needed.	Opportunities to enhance stream canopy cover/shading, % native vegetation cover, and improve instream structure are likely present. Further investigation and planning necessary before associated project can be implemented.
Upland shrub	<p>These units are generally associated with the utility corridors. Condition varies throughout the site, with some areas in good to very good condition with well-established native cover and limited non-native infestations, to areas with heavy blackberry and Scots broom needing intensive management.</p> <p>This habitat also includes the open fields near the rental house and the small 4-acre elk meadow on the southwest portion of the site. The unit is currently dominated by non-native herbs and grasses, and fringed with lingering blackberry.</p>	<p>Desired conditions are for native shrubs and herbs to dominate cover with a limited presence of non-native plant species that are not displacing natives, and can be controlled with occasional weed abatement every 3-5 years.</p> <p>Desired condition for the open fields is one representing greater native grass and forb cover to provide open grazing areas for elk. Occasional maintenance mowing and spot spraying should be the only management needed, every 3-5 years to control blackberry and broadleaf weeds. Long term natural recruitment of trees and shrubs may move this conservation target towards upland closed forest.</p>

Key ecological attributes for upland forest at Ennis Creek Forest

CATEGORY	KEA	INDICATOR	----- INDICATOR RATING -----		
			POOR	FAIR	GOOD
Condition	Native tree and shrub richness	Number of native tree and shrub species per acre	<5 species per 0.4 ha (1 ac)	5-8 species 0.4 ha (1 ac)	8-12 species per 0.4 ha (1 ac)
Condition	Vegetative structure: native tree and shrub layer	% native tree and shrub canopy cover (combined)	<25% cover	25-50% cover	50-75% cover
Condition	Mature trees	Number and size (dbh) of species such as Douglas fir, western red cedar, western hemlock and grand fir	Mature trees lacking	<3 per ac with dbh >24 in	3-5 per ac with dbh >24 in
Condition	Standing and downed dead trees	Average # snags and large wood (> 50 cm, or 20 in, DBH) per acre	< 5 snags and <5% down wood	5-11 snags and 5-10% down wood	12-18 snags and 10-20% down wood with moderate variety of size and age classes
Landscape context	Edge condition	% of edge bordered by natural habitats and/or managed for conservation	Patch surrounded by non-natural habitats (0-25% natural habitat)	25%+ of patch bordered by natural habitats	50-75% of patch bordered by natural habitats or managed for conservation

*Desired future condition

Key ecological attributes for riparian forest (streams or rivers) at Ennis Creek Forest

CATEGORY	KEA	INDICATOR	----- INDICATOR RATING -----		
			POOR	FAIR	GOOD
Condition	Vegetative structure: tree layer	% native tree canopy cover	<20% cover	20-30% cover	30-40% cover
Condition**	Riparian habitat continuity	Gaps in woody vegetation	>2 gaps >50 m (55 yards) OR >3 or more 25-50 m (27-55 yards) gaps	1 or 2 gaps >50 m (54 yards) OR 2 or more gaps between 15-25 m (16-27 yards)	1, 25-50 m (27-55 y) gap OR 2 or more gaps between 15-25 m (16-27 yards)

*Desired future condition

** This KEA may not be appropriate where native turtles are present, because nesting turtles require some open habitat. Patches of bare ground may

Key ecological attributes for upland shrub habitat at Ennis Creek Forest

CATEGORY	KEA	INDICATOR	----- INDICATOR RATING -----		
			POOR	FAIR	GOOD
Condition	Vegetative structure: shrub layer	% native shrub canopy cover	<10% cover	10-25% cover	25-50%
Condition	Native shrub richness	# native shrub species per acre	<2 species per 0.4 ha (1 acre)	2-5 species per 0.4 ha (1 acre)	6-9 species per 0.4 ha (1 acre)

*Desired future condition

THREATS TO CONSERVATION TARGETS AT ENNIS CREEK FOREST

Ennis Creek Forest is primarily threatened by factors that limit forest stand health (overstocking, disease, non-native along property edges, along the more open, logging/access roads and public roads, and under and adjacent to the utility comprehensive plan, scheduled for 2016. Resulting public access increases and associative infrastructure, if they occur

Threats to conservation targets at Ennis Creek Forest

CONSERVATION TARGET	STRESS (DEGRADED KEA)	SEVERITY	SCOPE	OVERALL STRESS RANK	SOURCE (THREAT)
Upland forest	Forest stand structure – mature trees	High	High	High	Overstocking competition
Upland shrub habitat	Vegetative structure: shrub layer	Very High	High	Very High	Non-native shrub species (e.g. blackberry)
Riparian vegetation	Canopy cover and continuity	Moderate	Moderate	Moderate	Fragmentation, previous logging, loss of native shrub cover

Climate change considerations

Climate change is anticipated to affect summer temperatures and availability of water in summer. Other indirect effects of climate change may include range shifts of plants and animals, some native to North America and some not, and increased competition by these species. It is possible that climate change may touch every key ecological attribute, though effects on some KEAs may be more important than others.

Direct effects that may occur

- Increased summer temperatures
- Increased severity of winter rain events
- Decreased water availability in summer

Indirect effects that may occur

- Increased risk of wildfire in hotter, dryer summers
- Range shifts by undesirable plants increasing competition
- Disease introductions and/or increased vulnerability to disease
- Loss of synchronicity of plant reproduction and pollinators
- Loss of synchronicity of resident and migratory animals and food sources (e.g., insect hatches)
- Increased erosion in streams caused by the flashier winter rain events
- In upland forests, plant growth and survival may be affected by increased summer temperatures and reduced water availability in summer.

STRATEGIC ACTIONS

Enhancement and management strategies recommended for the site target improvements to forest structure, vegetation diversity, and non-native species suppression. Priority actions are described below.

List of proposed strategies at Ennis Creek Forest

STRATEGY	SOURCES OF STRESS IT ADDRESSES	FOCAL CONSERVATION TARGETS/KEAS AFFECTED	WHY IS IT IMPORTANT AND ANY TIMING ISSUES	MEASURE(S) OF SUCCESS	RANK
Treat exotics, especially <i>Rubus armeniacus</i> and <i>Hedera helix</i>	Competition from exotic plants	Upland forest: % native tree and shrub canopy cover (combined) Upland shrub: % native shrub canopy cover	Periodic treatments of certain exotics are essential to avoid losing native plants	Establish and maintain KEA rating of Good	Medium
Selectively thin upland forest patches accessible to machine harvest or affordable chainsaw thinning during next 2-3 years	Reduces over-stocking that is causing loss of living tree canopy and understory native vegetation diversity	Upland forest: Number of native tree and shrub species per acre	This strategy will implement a pre-commercial thinning action recommended by the 2012 Forest Stand Management plan	Visual assessment/ KEA	High
Increase forest understory diversity of upland forests	Habitat simplicity; resiliency to climate change	% native tree and shrub canopy cover	Enhances resiliency to climate change while providing better wildlife habitat, forest soil benefits, weed suppression	Visual assessment/ KEA	Medium

STRATEGY	SOURCES OF STRESS IT ADDRESSES	FOCAL CONSERVATION TARGETS/KEAS AFFECTED	WHY IS IT IMPORTANT AND ANY TIMING ISSUES	MEASURE(S) OF SUCCESS	RANK
Reduce non-native cover in upland shrublands	Non-native species competition	% native canopy cover		Visual assessment/ KEA	Medium

Strategy ranking:

High: must do within 5 years to protect target viability

Medium: target will persist without it but will degrade over 5-10 years or require additional future management

Low: addresses a non-critical threat or one that is unlikely to threaten target viability within 10 years

SPECIFIC ACTIONS AND FUNDING REQUIREMENTS

Enhancement and management strategies, as they pertain to the site's conservation targets, are described below.

Specific actions to implement strategies tied to conservation targets at Ennis Creek Forest

STRATEGY	TARGET	PRIORITY (HOW SOON)	SPECIFIC TASKS	ESTIMATED COST
Monitor spread of ash borer and work with USDA and/or ODA on treatment options	Riparian forest	Low – 10 years out or more	Develop response as knowledge develops	Nominal; part of routine work
Treat exotics, especially <i>Rubus armeniacus</i> ; <i>Hedera helix</i>	Upland forest	High – ASAP	Sweep upland forest habitat to treat exotics	\$15,000 every 5 years? (about 5 crew days)
Interplant to increase understory diversity	Upland forest	Moderate – next 5 years	Develop a plant list of desired understory species (woody and herbaceous) and interplant to introduce sustainable cover of those species	\$25,000
Selectively thin upland forest patches that are accessible to machine harvest in the next 2-3 years (~ 100 acres)	Upland forest	High – next 3 years	Implement a combination of machine and chainsaw thinning to selectively open overstocked forests to increase forests stand structure, diversity and resiliency to climate change	\$20,000, though these costs could be offset by commercial thinning revenue, or increased if commercial logging offset is limited and chainsaw thinning is required
Treat exotics, especially <i>Rubus armeniacus</i> ; <i>Cytisus scoparius</i>	Upland shrub and forest understory post-thinning	High – next 10 years	Targeted herbicide applications	\$30-40,000
Interplant to increase understory diversity	Upland shrub	Moderate	Revegetation	\$15,000
Treat exotics, especially <i>Rubus armeniacus</i>	Riparian forest	Moderate	Targeted herbicide applications	\$15,000
Interplant to increase understory diversity	Riparian forest	Moderate	Revegetation	\$10,000
Boost snags and downed wood	Upland forest	Moderate	Selective topping and girding/tree-falling	\$15,000
Increase instream complexity	Riparian forest	Moderate	Instream LWD placement	\$20,000
Increase riparian canopy and stream shading	Riparian forest	High	Interplanting with canopy tree species	\$10,000

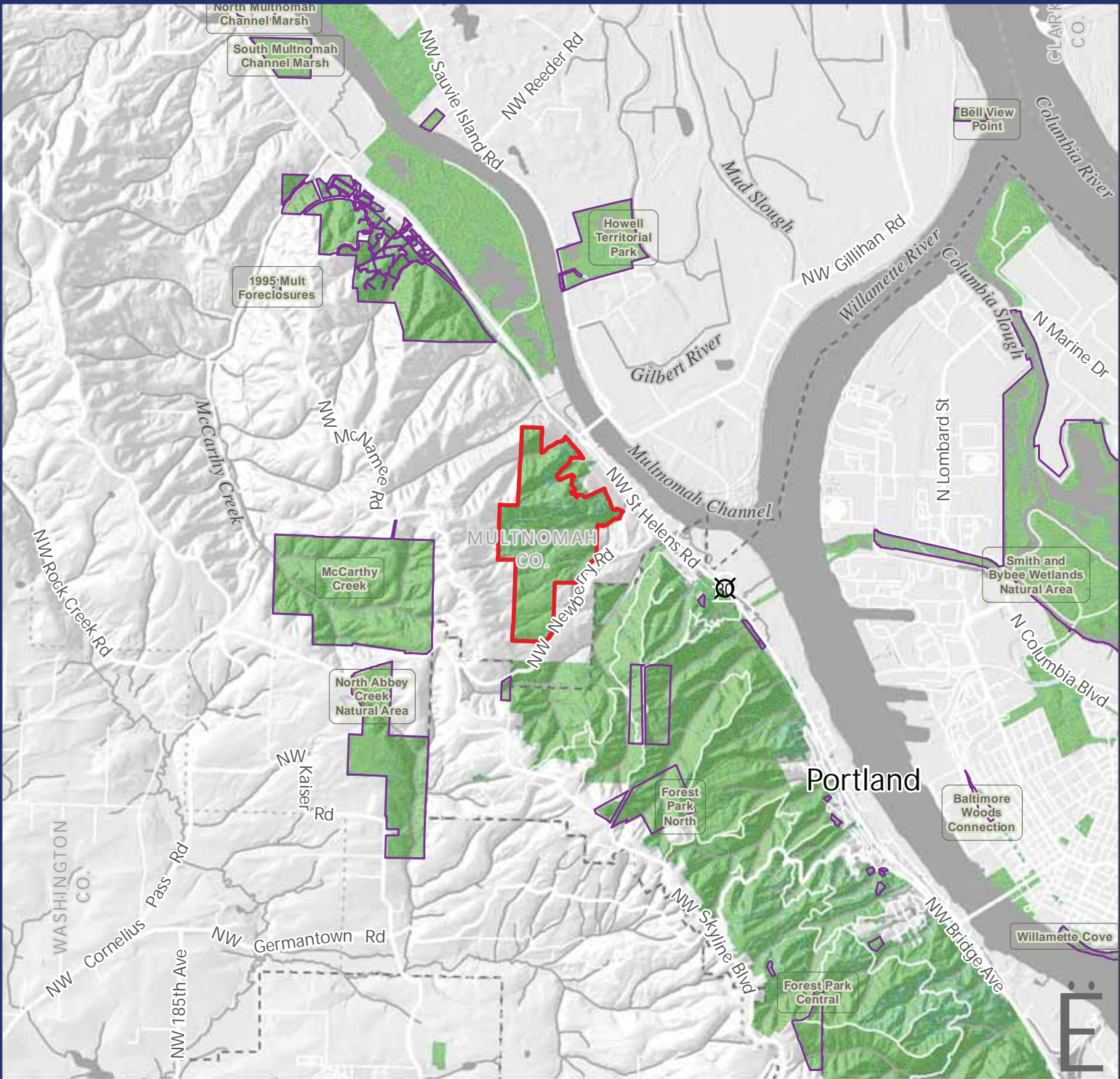
MONITORING PLAN

Monitoring for key ecological attributes associated with the site's conservation targets will largely be done via periodic visual assessment. In addition, periodic wildlife monitoring would be appropriate for the North Tualatin Mountains sites, focusing on long-term tracking of the avian community and periodic assessment of the terrestrial salamander population as it relates to increasing understory and large woody material improvements over time.

CURRENT PARTNERS, PARTNER PROJECTS AND POTENTIAL PARTNERS

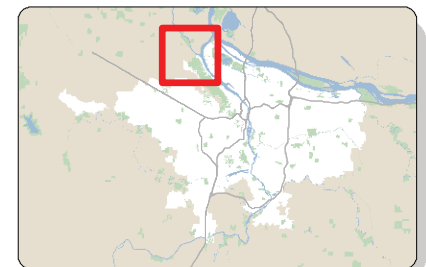
- West Multnomah Soil and Water Conservation District
- City of Portland
- Forest Park Conservancy
- Trout Mountain Forestry
- The National Audubon Society

Vicinity Map

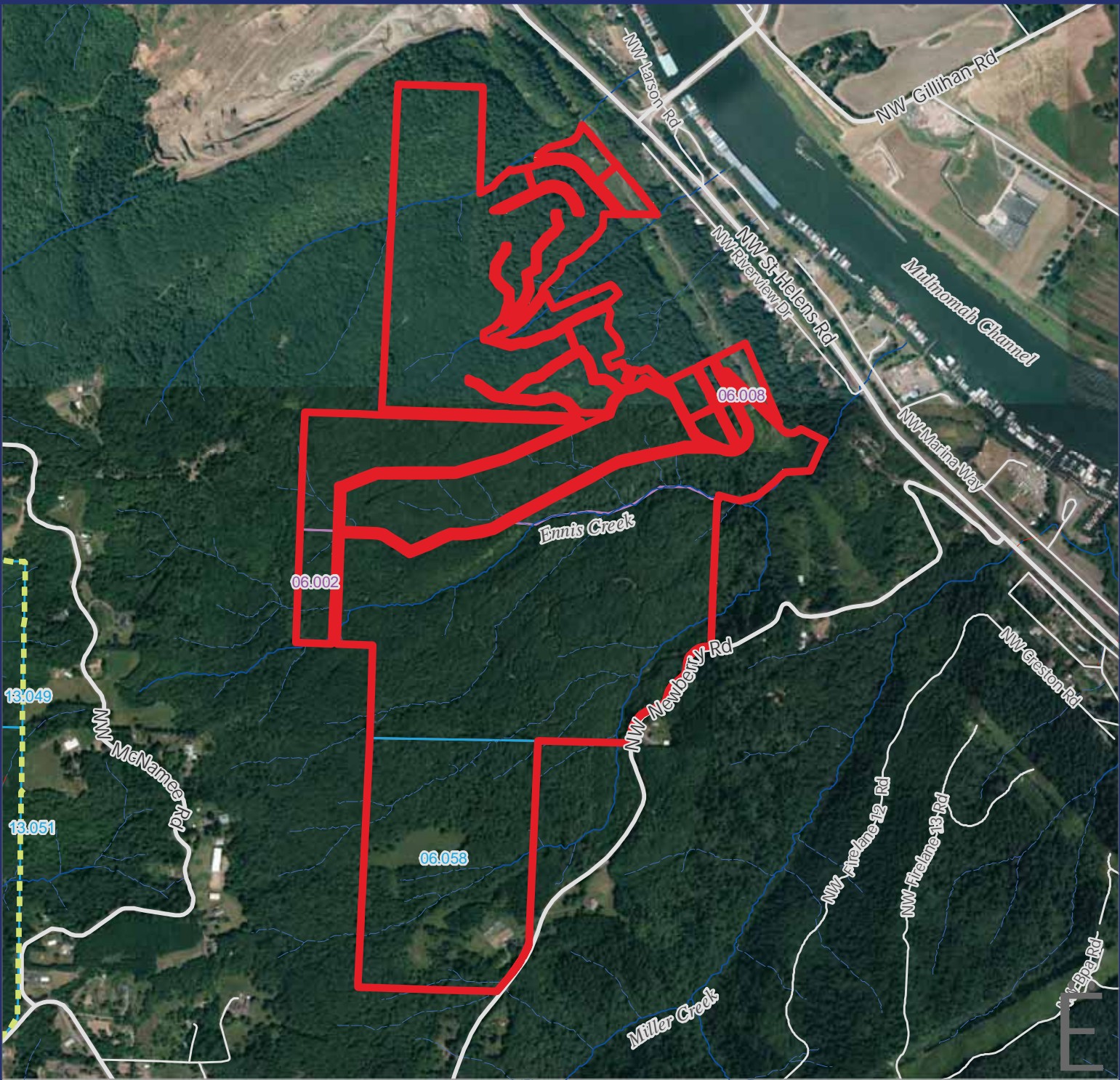



- Ennis Creek Forest site
- Other Metro sites
- Park and/or natural area


0 1 2 Miles




Site Map




 Ennis Creek Forest site


 Other Metro sites


Bond Measure

 1995 Bond Measure

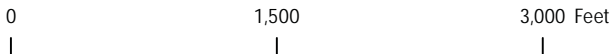
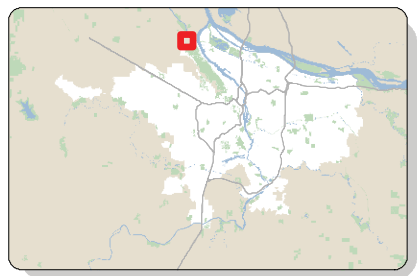
 2006 Bond Measure

NHD Flowlines

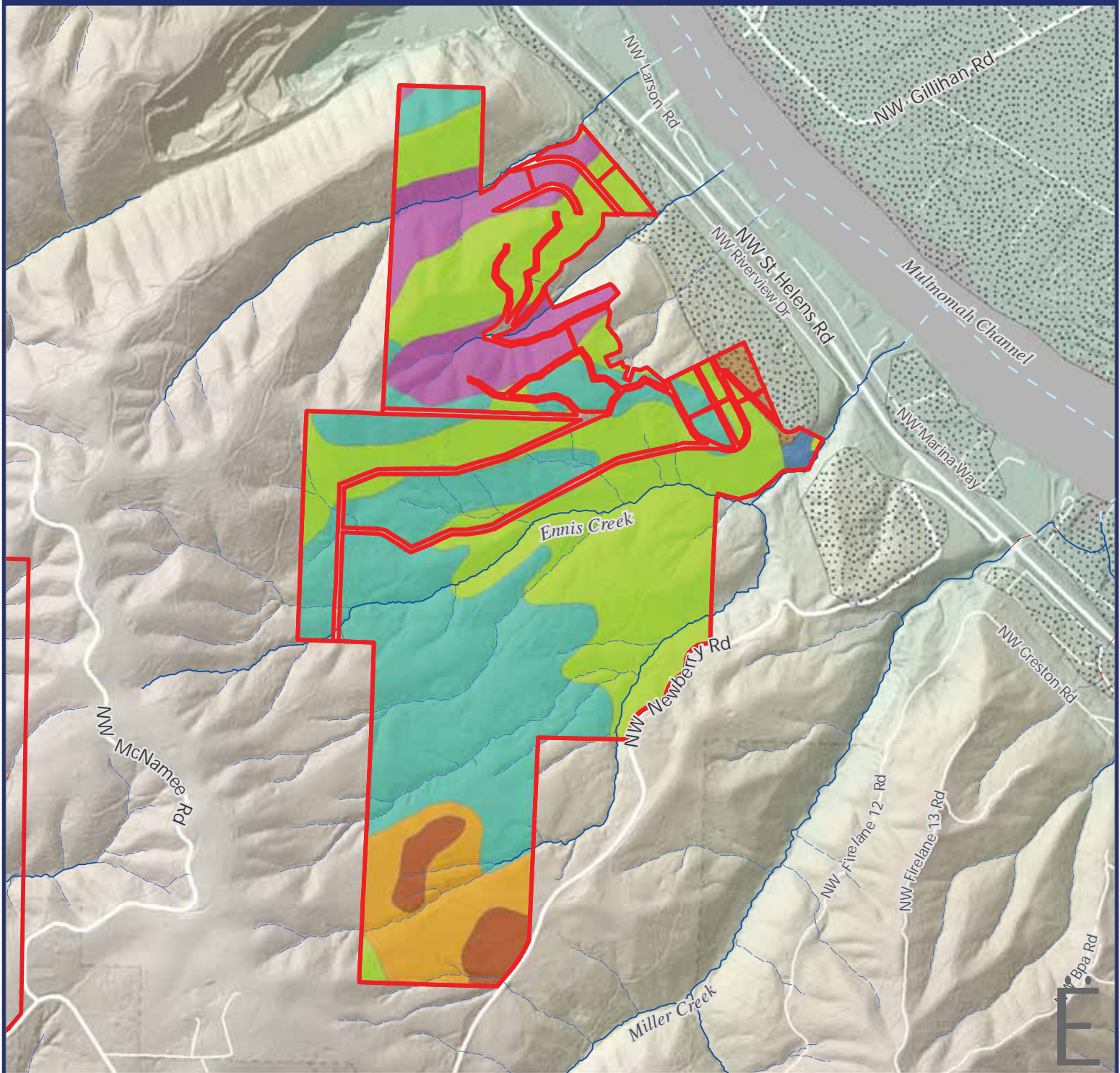
 Intermittent stream

 Perennial stream

 Pipeline



Soils

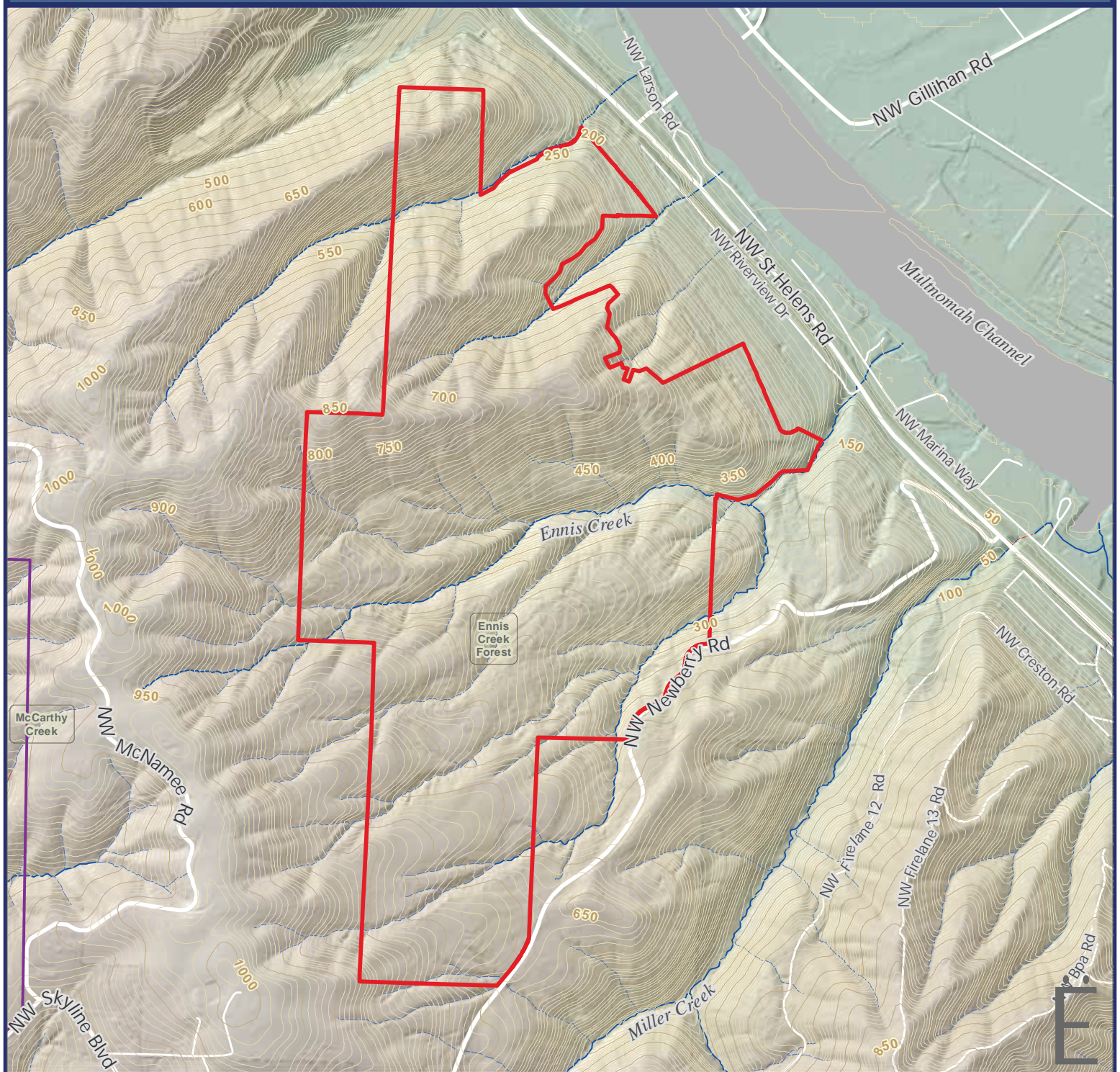


- | | | |
|-------------------------|--|--|
| Ennis Creek Forest site | NRCS soils | Haplumbrepts, moderately steep |
| Other Metro sites | Cascade silt loam, 15 to 30 percent slopes | Haplumbrepts, very steep |
| Hydric soils | Cascade silt loam, 8 to 15 percent slopes | Quatama loam, 15 to 30 percent slopes |
| | Goble silt loam, 15 to 30 percent slopes | Urban land-Quatama complex, 8 to 15 percent slopes |
| | Goble silt loam, 30 to 60 percent slopes | Would very gravelly loam, 30 to 70 percent slopes |

0 1,500 3,000 Feet



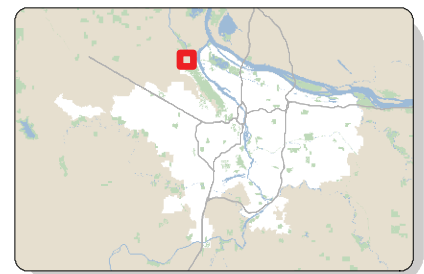
Topography



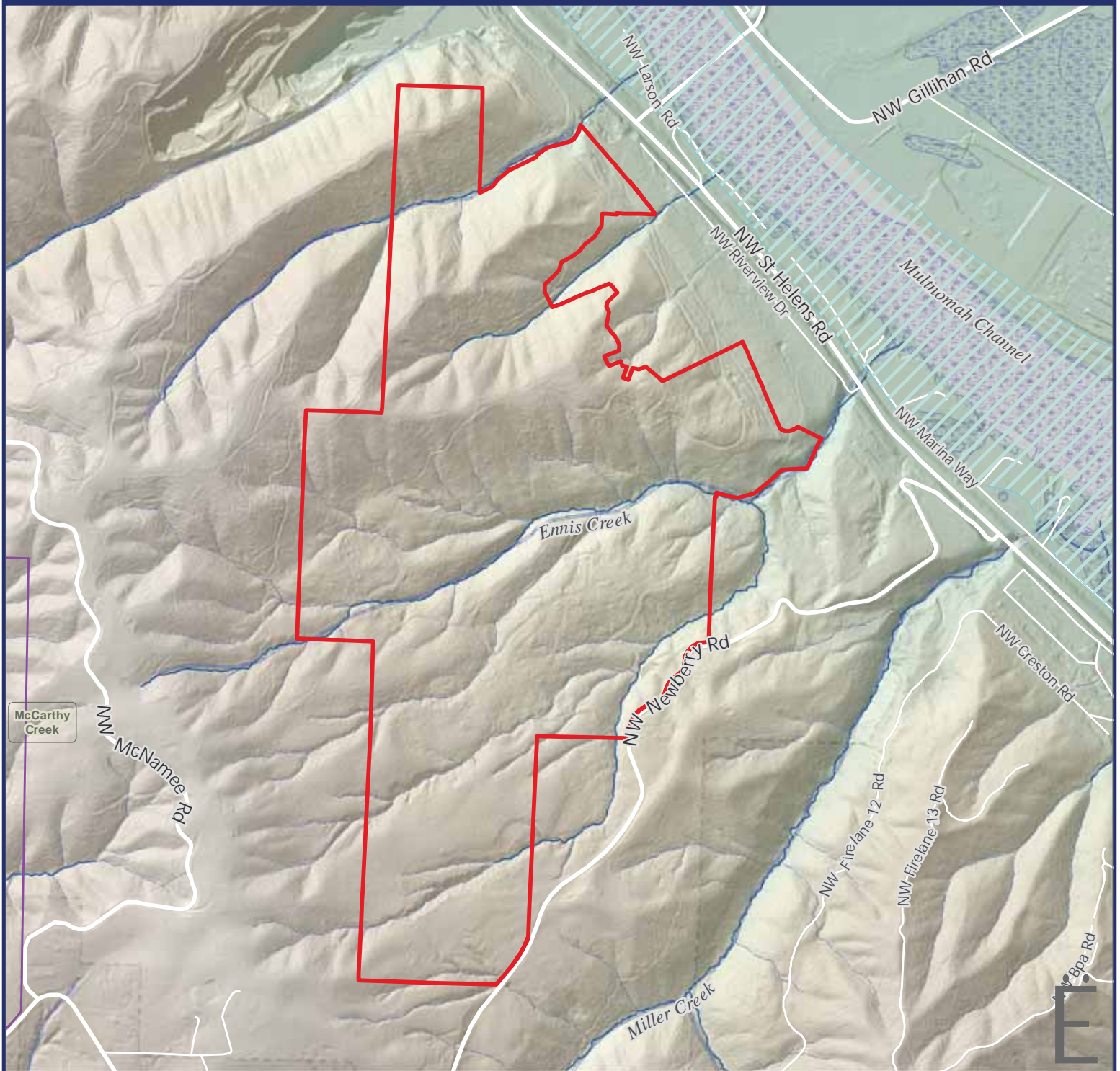
- Ennis Creek Forest site
- Other Metro sites

NHD Flowlines

- Intermittent stream
- Perennial stream
- Pipeline



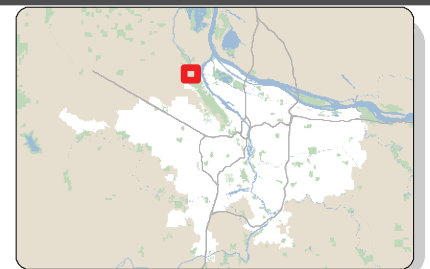
Hydrology



- Ennis Creek Forest site
- Other Metro sites
- 100 year floodplain
- Wetlands

NHD Flowlines

- Intermittent stream
- Perennial stream
- Pipeline

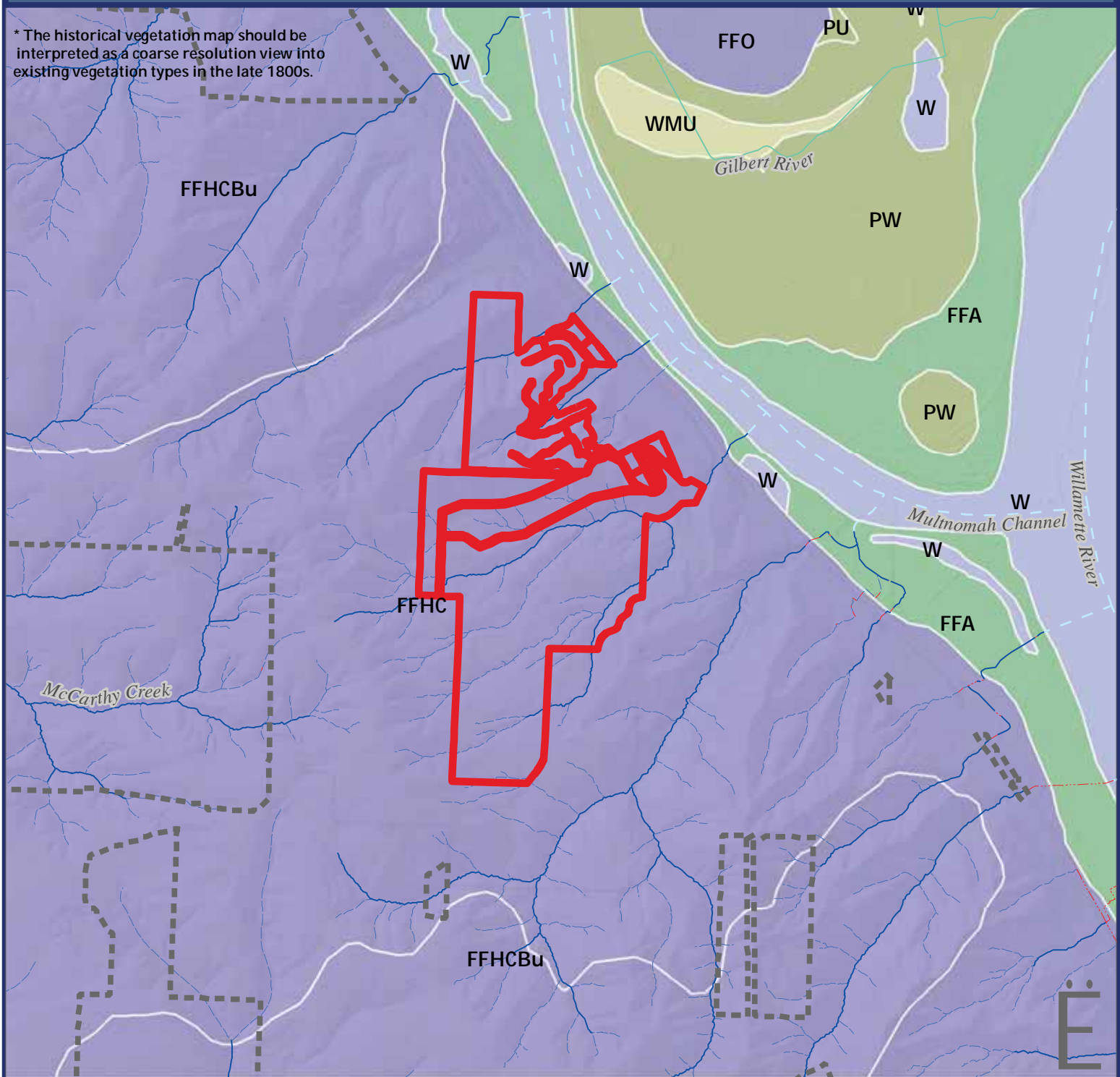


0 1,500 3,000 Feet



Historical Vegetation (1851-1910)

* The historical vegetation map should be interpreted as a coarse resolution view into existing vegetation types in the late 1800s.



- Ennis Creek Forest site
- Other Metro sites

Historical vegetation

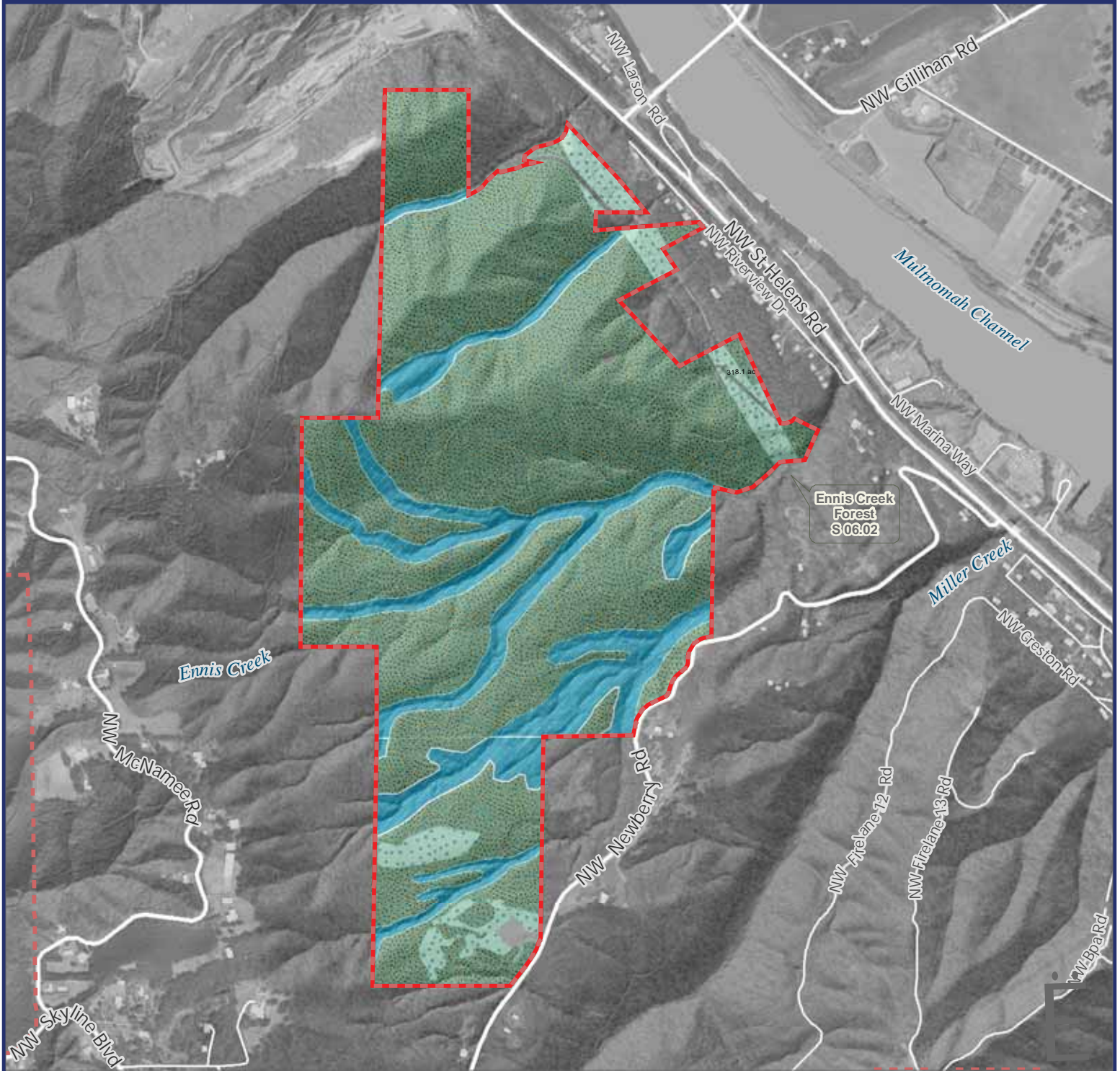
- Closed forest; Riparian & Wetland
- Closed forest; Upland
- Emergent wetlands
- Prairie
- Water

* Labels refer to vegetation subclasses.
Detailed descriptions can be found in
T:\OBMO\GIS\DATA_V\vegetation\Historical

0 2,000 4,000 Feet

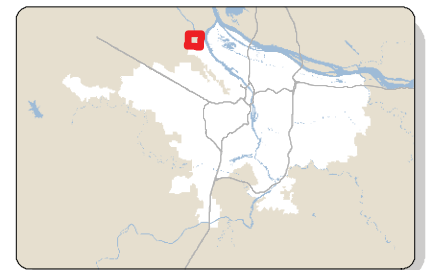


CURRENT COVER

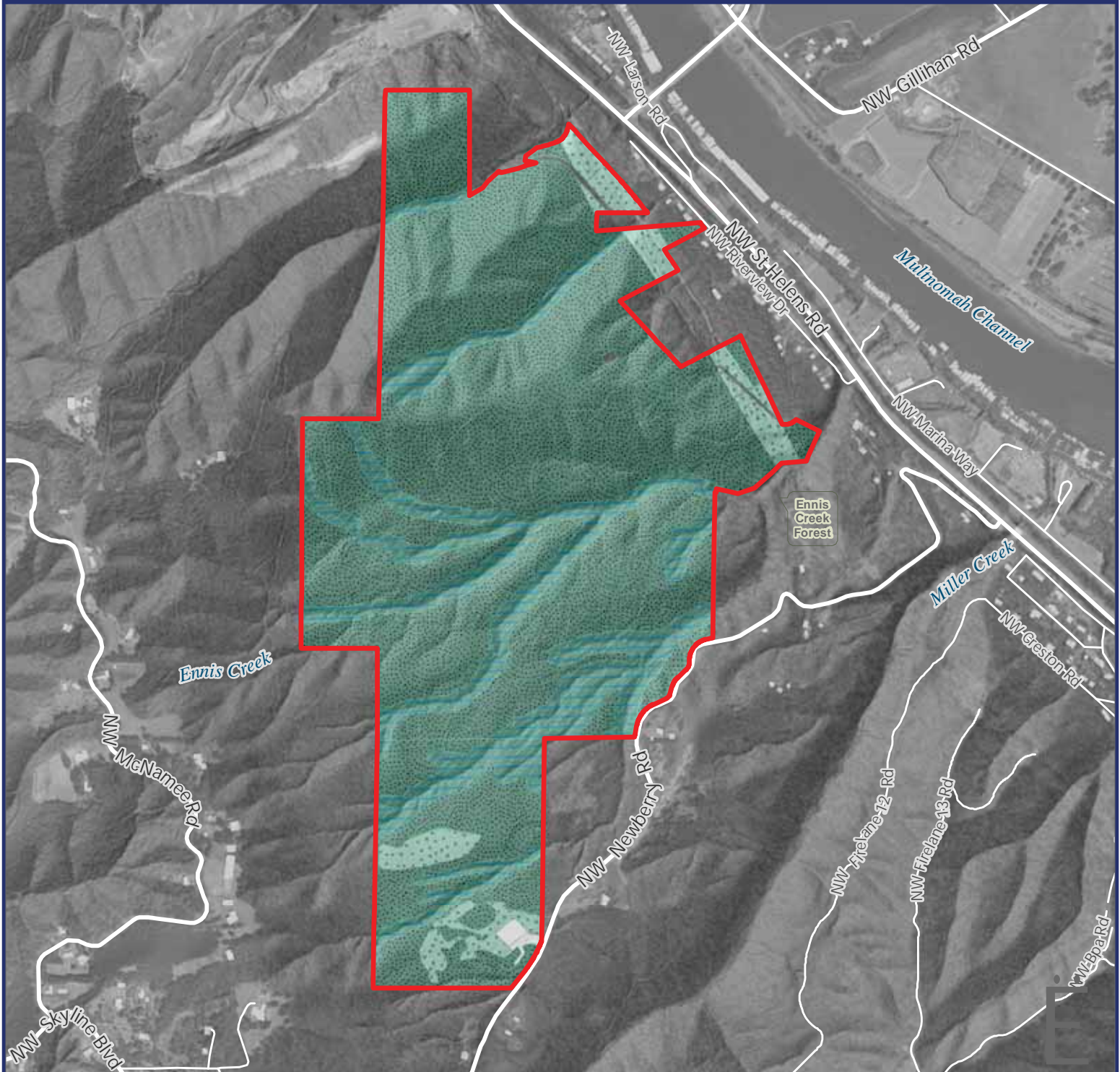


- | | | | |
|--|-------------------------|--|-------------------------------|
| | Ennis Creek Forest site | | Developed - (impervious) |
| | Other Metro sites | | Riparian forest |
| | | | Upland forest - mixed |
| | | | Upland forest - shrub (stage) |

0 1,300 2,600 Feet

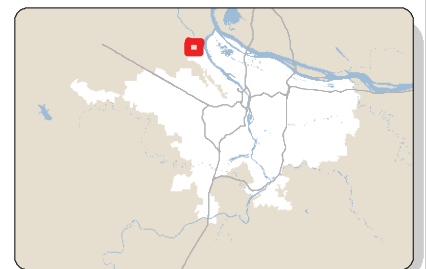


CONSERVATION TARGETS

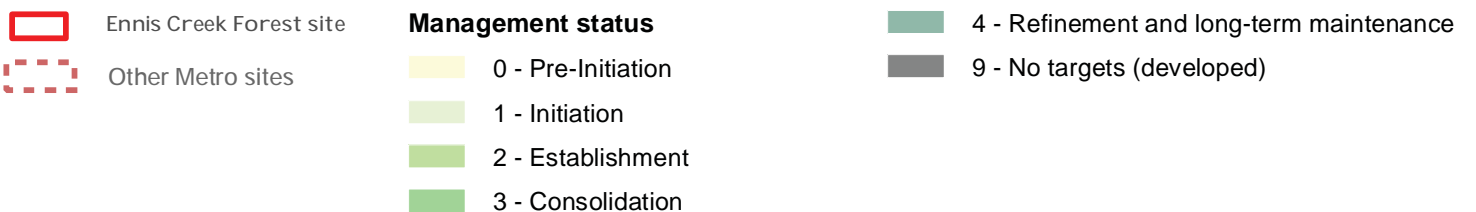
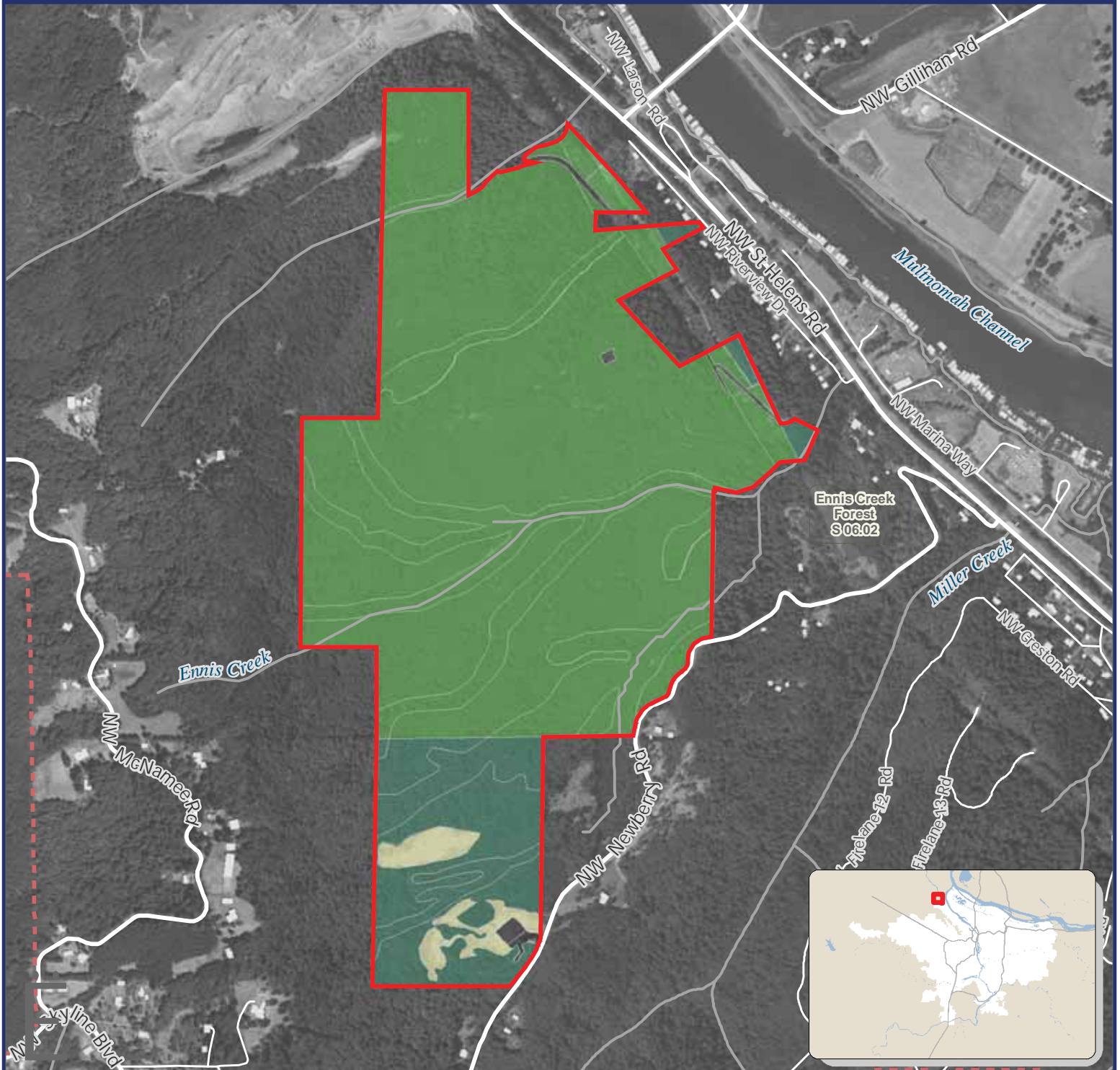


- | | | | |
|---|--|---|---------------|
|  | Ennis Creek Forest site |  | No targets |
|  | Riparian forest |  | Upland forest |
|  | Upland forest - shrub (early successional) | | |

0 1,300 2,600 Feet



MANAGEMENT STATUS



0 1,300 2,600 Feet



CHAPTER 3 | McCARTHY CREEK NATURAL AREA

INTRODUCTION

The 400-acre McCarthy Creek Natural Area is part of the North Tualatin Mountains focal area and is located on the eastern face of the northern Tualatin Mountains, north of Forest Park and north of Skyline Road in west Multnomah County.

The area surrounding the McCarthy Creek Natural Area contains a mixture of land uses including residential, schools, agriculture and timber harvest. Metro's Burlington Creek Forest Natural Area (including a portion of the lower McCarthy Creek watershed) to the northeast, Ennis Creek Natural Area to the southeast, and North Abbey Creek Natural Area to the south are all in close proximity to the site. The city of Portland's Forest Park lies south of the site (see vicinity map).

PLANNING AREA

Although McCarthy Creek's planning area is defined by the site's boundaries, i.e., Metro ownership, there are large expanses of privately and publicly owned properties nearby that share habitat features with the forest and influence its potential ecological viability and larger landscape value. These properties are important to the development of effective conservation strategies for McCarthy Creek, but detailed evaluations of their stewardship classification, targets, etc. are beyond the scope of this plan.

Key staff

Kate Holleran, natural resources scientist
Jeff Merrill, natural resources scientist
Ryan Jones, natural resources specialist
Jonathan Soll, conservation science manager
Katy Weil, wildlife monitoring coordinator
Olena Turula, parks and natural areas planner
Robert Spurlock, parks and natural areas planner
Laurie Wulf, property management specialist
Bonnie Lyn Shoffner, restoration volunteer coordinator

Key private landowners

Brian Lightfoot
Michael Baker
Forest Park Conservancy
Skyline Ridge Neighbors

EXISTING PLANNING DOCUMENTS

All documents are available from Metro on request:

McCarthy Creek Stabilization Plan (2012) documents the activities that will be implemented as part of the new acquisition stabilization process.

McCarthy Creek Road Management Plan (2012) documents road management options and recommendations for the natural area.

Greater Forest Park Conservation Initiative, a 2013 document prepared by the Forest Park Conservancy in cooperation with the City of Portland, Metro and others.

Forest Park Ecological Prescriptions, a 2011 Forest Park management plan developed by the City of Portland, with input from Metro, Audubon Society, Forest Park Conservancy and others.

SITE DESCRIPTION

The entire site sits within the upper McCarthy Creek watershed. Most of the forests at the site are less than 30 years old, following logging and reforestation of approximately 350 acres in the early 1990s. Slightly older forest structure exists in the narrow riparian zones protected from logging. Logging roads exist, providing access to the southeastern corner. The north-south road crosses numerous small drainages and is in a degraded condition, with multiple slumps and failing culverts. Current plans call for decommissioning roads north of the loop road. Slopes are steep (30-60 percent) over much of the site.

The primary access points for the McCarthy Creek Natural Area are along Skyline Road. Secondary access points are on McNamee Road and Pauley Road. The site is dominated by hardwood, Douglas fir and mixed conifer/hardwood forests.

Soils present at McCarthy Creek

MAP SOIL SYMBOL	MAP UNIT NAME	DESCRIPTION
17 C, E	Goble silt loam	Moderately well-drained soils on low terraces, rolling ridgetops and convex side slopes of ridgetops.
7 C, D, E	Cascade silt loam	Varying slopes, highly erodible.

Historic habitats at McCarthy Creek

~ % COVER	HABITAT TYPE	HISTORIC HABITAT DESCRIPTION BY GLO SURVEYOR NOTES
100%	Closed forest; upland	Mesic mixed conifer forest with mostly deciduous understory. May include Douglas fir, western hemlock, red cedar, grand fir, bigleaf maple, yew, dogwood, white oak, red alder.

RECENT MANAGEMENT HISTORY

Recent site management has focused on implementation of the stabilization plan with an emphasis on weed control, forest stand assessments and road management. Road decommissioning is tentatively scheduled for 2016. The forest stand assessment currently being conducted is expected to lead to selective thinning in 2015-2017 to enhance forest structure, preserve maturing tree canopy and understory native herb and shrub diversity.

Management summary 2012-2014

YEAR	TREATMENT
2012	Road ROW mowing Field mowing Blackberry treatment Scotch broom treatment Road assessment

YEAR	TREATMENT
2013	Road ROW mowing Blackberry and other broadleaf treatments Boundary survey Early seral habitat enhancement
2014	Road ROW mowing Bare root planting Seedling release circle spray Forest stand assessment (ongoing)

ACCESS AND RECREATION

Current use

The loop road just north of Skyline Road is listed in a local hiking guide. Though no formal use surveys have been conducted, the loop road appears to receive low use by hikers, dog walkers and to a lesser degree off-road cyclists (mountain bikers). Parking is limited to 2-3 cars at the entrance gate. Some unauthorized equestrian use and off-road vehicle use has been observed.

Comprehensive plan

The Parks and Natural Areas Planning group, in collaboration with the Conservation, Communications, Education and Visitor Services teams, is currently leading the development of a comprehensive plan for the four North Tualatin Mountains sites, which is expected to be completed in fall 2015. The plan will identify access and visitor experience opportunities at the four sites and provide a recommendation for how to balance access improvements across the sites while protecting habitat and water quality. McCarthy Creek Natural Area provides opportunity to support activities such as hiking, off-road cycling, bird watching, being in nature, scenic viewing and others. Two access points are being considered. If planned, a day use area at one of these will likely include a parking area, picnic shelter, restrooms, kiosk and trailheads; a secondary access could include a small ADA parking lot.

NATURAL RESOURCES OF SPECIAL INTEREST

A young Douglas fir forest is not a regionally rare habitat type. However, the size of this natural area (400 acres) and its proximity to other large blocks of forested habitat make it a regionally important site. Within the 400-acre site there are over 250 acres of interior forest habitat. Interior forest habitats have relatively stable habitat and low disturbance conditions and provide critical habitat for species sensitive to edge conditions such as predation and parasitism.

Additionally, the natural area protects approximately 15 percent of the McCarthy Creek watershed and many of the upper watershed headwater streams. A 20-acre patch of forest dominated by Douglas fir, Western red cedar and big leaf maple in the northwest corner of the natural area and remnant older trees in the narrow riparian zones provide some structural diversity. Legacy logging roads and failing culverts exist throughout the upper watershed and are a priority for decommissioning to reduce risks of failures delivering sediment to the streams. Isolated Oregon oak clusters occur at the site, as well as small groups of black cottonwood.

A thorough ecological inventory and assessment has not been done for the site. Listed and rare species, such as Chinook salmon (juvenile Chinook salmon were detected during fish surveys on

McCarthy Creek in 2012), northern red-legged frog and others almost certainly occur in McCarthy Creek and in more mature forests. Coho and winter steelhead are present in lower McCarthy Creek.

Rare species known to occur at McCarthy Creek

	ORBIC LIST	FEDERAL STATUS	URBANIZING FLORA (2009)
<i>No documented occurrences of rare species occur at McCarthy Creek; more investigation is needed.</i>	N/A	N/A	N/A

CURRENT AND DESIRED FUTURE CONDITION OF CONSERVATION TARGETS

Non-technical status and desired future condition of targets at McCarthy Creek

TARGET	CURRENT CONDITION	DESIRED FUTURE CONDITION
Upland closed forest	Simplified habitat structure due to previous management as a tree farm. The site lacks large trees, snags and down wood, and retains a mosaic of native understory and sparse understory due to shade and/or blackberry competition. Current forest stand assessment process should provide a better understanding of understory conditions. Canopy closure is reducing understory blackberry cover as well as native understory diversity. Holly and ivy are present and should be treated as part of any habitat restoration project. Edges will be ongoing weed maintenance areas.	Late successional forest habitat within forest floor wood accumulations, native understory diversity and cover, and increased snag and wildlife trees. Reduced edge weed cover and control of ivy and other shade-tolerant system modifying weeds.
Riparian forest	Generally in fair condition though lacks large trees and dead wood. Riparian forests are composed of narrow buffers of older forest along streams bordered by young, mixed forests.	Late successional forest habitat with increases in forest floor wood accumulations, native understory diversity and cover, and increased snag and wildlife trees. Opportunities to improve instream structure are likely present. Further investigation and planning are necessary before associated projects can be implemented.
Upland shrub	These patches are a minor component of the site and include a 15-acre abandoned pasture that was recently planted to shrubs with a minor component of Oregon white oak, and two areas of failed conifer regeneration that have been enhanced with additional conifer removal.	Desired conditions are for native shrubs and herbs to dominate cover with a limited presence of non-native plant species that are not displacing natives, and can be controlled with occasional weed abatement every 3-5 years.

Key ecological attributes for upland forest at McCarthy Creek Natural Area

CATEGORY	KEA	INDICATOR	----- INDICATOR RATING -----		
			POOR	FAIR	GOOD
Size	Forested habitat patch size	Patch size (includes native shrub patches or natural clearings)	<12 ha (30 ac)	12-40 ha (30-100 ac)	40-61 ha (100-150 ac)
Condition	Native tree and shrub richness	Number of native tree and shrub species per acre	<5 species per 0.4 ha (1 ac)	5-8 species 0.4 ha (1 ac)	8-12 species per 0.4 ha (1 ac)
Condition	Mature trees	Number and size (dbh) of species such as Douglas fir, western red cedar, western hemlock and grand fir	Mature trees lacking	<3 per ac with dbh >24 in	3-5 per ac with dbh >24 in
Condition	Standing and downed dead trees	Average # snags and large wood (> 50 cm, or 20 in, DBH) per acre	< 5 snags and <5% down wood	5-11 snags and 5-10% down wood	12-18 snags and 10-20% down wood with moderate variety of size and age classes

*Desired future condition

Key ecological attributes for riparian forest (streams or rivers) at McCarthy Creek Natural Area

CATEGORY	KEA	INDICATOR	----- INDICATOR RATING -----		
			POOR	FAIR	GOOD
Condition	Vegetative structure: shrub layer	% native shrub cover	<10% cover	10-25% cover	25-50% cover
Condition	Native herbaceous layer richness	# native species of grasses, herbs, forbs and ferns, at least half of which are riparian-associated, per 0.4 ha (1 ac)	<5 species	6-12 species	12-18 species

*Desired future condition

Key ecological attributes for upland shrub habitat at McCarthy Creek Natural Area

CATEGORY	KEA	INDICATOR	----- INDICATOR RATING -----		
			POOR	FAIR	GOOD
Condition	Vegetative structure: shrub layer	% native shrub canopy cover	<10% cover	10-25% cover	25-50%
Condition	Native shrub richness	# native shrub species per acre	<2 species per 0.4 ha (1 acre)	2-5 species per 0.4 ha (1 acre)	6-9 species per 0.4 ha (1 acre)

*Desired future condition

THREATS TO CONSERVATION TARGETS AT McCARTHY CREEK NATURAL AREA

McCarthy Creek Natural Area is primarily threatened by factors that limit forest stand health (overstocking, disease, issues occur along property edges. The site also has modest, unplanned public use, which may increase in the future. Infrastructure, if they occur, would also likely result in increases in weed and human disturbance threats to native vegetation.

Threats at conservation targets at McCarthy Creek Natural Area

CONSERVATION TARGET	STRESS (DEGRADED KEA)	SEVERITY	SCOPE	OVERALL STRESS RANK	SOURCE (THREATS)
Upland forest	Forest stand structure – mature trees	High	High	High	Overstocking competition
Upland shrub habitat	Vegetative structure: shrub layer	Very High	High	Very High	Overstocking competition, non-native species (e.g., Scotch broom, blackberry)
Riparian vegetation	Native herbaceous layer richness	Moderate	Moderate	Moderate	Previous land management activities, tree farm

Climate change considerations

Climate change is anticipated to affect summer temperatures and availability of water in summer. Other indirect effects of climate change may include range shifts of plants and animals, some native to North America and some not, and increased competition by these species. It is possible that climate change may touch every key ecological attribute, though effects on some KEAs may be more important than others.

Direct effects that may occur

- Increased summer temperatures
- Increased severity of winter rain events
- Decreased water availability in summer

Indirect effects that may occur

- Increased risk of wildfire in hotter, dryer summers
- Range shifts by undesirable plants increasing competition
- Disease introductions and/or increased vulnerability to disease
- Loss of synchronicity of plant reproduction and pollinators
- Loss of synchronicity of resident and migratory animals and food sources (e.g., insect hatches)
- Increased erosion in streams caused by the flashier winter rain events
- In upland forests, plant growth and survival may be affected by increased summer temperatures and reduced water availability in summer.

STRATEGIC ACTIONS

Enhancement and management strategies recommended for the site target improvements to forest structure, vegetation diversity and non-native species suppression. Priority actions are described below.

List of proposed strategies at McCarthy Creek Natural Area

STRATEGY	SOURCES OF STRESS IT ADDRESSES	FOCAL CONSERVATION TARGETS/KEAS AFFECTED	WHY IT IS IMPORTANT AND ANY TIMING ISSUES	MEASURE(S) OF SUCCESS	RANK
Treat exotics, especially <i>Rubus armeniacus</i> and <i>Hedera helix</i> . Survey and treat EDRR species and system-changing invasives.	Competition from exotic plants.	Riparian forest: % native shrub and herbaceous cover (combined). Upland shrub: % native shrub canopy cover.	Periodic treatments of certain exotics are essential to avoid losing native plants.	Establish and maintain KEA rating of Good	Medium
Selectively thin upland forest patches that are accessible to machine harvest or affordable chainsaw thinning during the next 2-3 years.	Reduces overstocking that is causing a loss of living tree canopy and understory native vegetation diversity.	Upland forest: number and size of native tree and shrub species per acre.	This strategy will implement a pre-commercial thinning action recommended by the 2012 Forest Stand Management plan.	Visual assessment/ KEA	High

STRATEGY	SOURCES OF STRESS IT ADDRESSES	FOCAL CONSERVATION TARGETS/KEAS AFFECTED	WHY IT IS IMPORTANT AND ANY TIMING ISSUES	MEASURE(S) OF SUCCESS	RANK
Decommission legacy logging roads not needed for site management.	Delivery of sediment to streams, barriers to wildlife movement.	Native fish.	Legacy roads and failing culverts are a source of sediment to McCarthy Creek.	Miles of road decommissioned and number of culverts removed or improved	High
Increase forest understory diversity of upland forests	Habitat simplicity; resiliency to climate change.	% native tree and shrub richness.	Enhances resiliency to climate change while providing better wildlife habitat, forest soil benefits, weed suppression.	Visual assessment/ KEA	Medium
Reduce non-native cover in upland shrublands	Non-native species competition.	% native canopy cover.		Visual assessment /KEA	Medium

Strategy ranking:

High: must do within 5 years to protect target viability

Medium: target will persist without it but will degrade over 5-10 years or require additional future management

Low: addresses a non-critical threat or one that is unlikely to threaten target viability within 10 years

SPECIFIC ACTIONS AND FUNDING REQUIREMENTS

Enhancement and management strategies, as they pertain to the conservation targets, are described below.

Specific actions to implement strategies tied to conservation targets at McCarthy Creek Natural Area

STRATEGY	TARGET	PRIORITY (HOW SOON)	SPECIFIC TASKS	ESTIMATED COST
Selectively thin forest stands to promote late successional structure and improve function	Upland and riparian forest	High – next 3 years	Implement a combination of machine and chainsaw thinning to selectively open overstocked forests to increase forest stand structure, diversity and resiliency to climate change.	\$40,000-65,000
Decommission legacy roads, repair or replace any remaining culverts	Native fish and water quality*	High	Implement road management recommendations developed by AKS Engineering.	\$100,000-150,000
Treat exotics, especially the non-native ivies, clematis and holly	All	Moderate	Forest stand assessment currently in progress may provide more information about scope ivy and holly presence. Sweep upland forest habitat to treat exotics.	\$30,000 for the first five years
Interplant to increase understory diversity	Upland forest	Low	Develop plant list of desired understory species (woody and herbaceous) and interplant to introduce sustainable cover of those species in thinned areas.	\$35,000
Interplant to increase understory diversity	Upland shrub	High	Re-vegetation.	\$20,000
Boost snags and downed wood	Upland forest	Moderate	Selective topping and girding/ tree-falling, create wildlife piles as part of thinning.	\$15,000
Increase instream complexity	Riparian forest	Low	Instream LWD placement as part of thinning	\$30,000

MONITORING PLAN

Monitoring for key ecological attributes associated with the site's conservation targets will largely be done via periodic visual assessment. In addition, periodic wildlife monitoring would be appropriate for the North Tualatin Mountains sites, focusing on long-term tracking of the avian community and periodic assessment of the terrestrial salamander population as it relates to increasing understory and large woody material improvements over time.

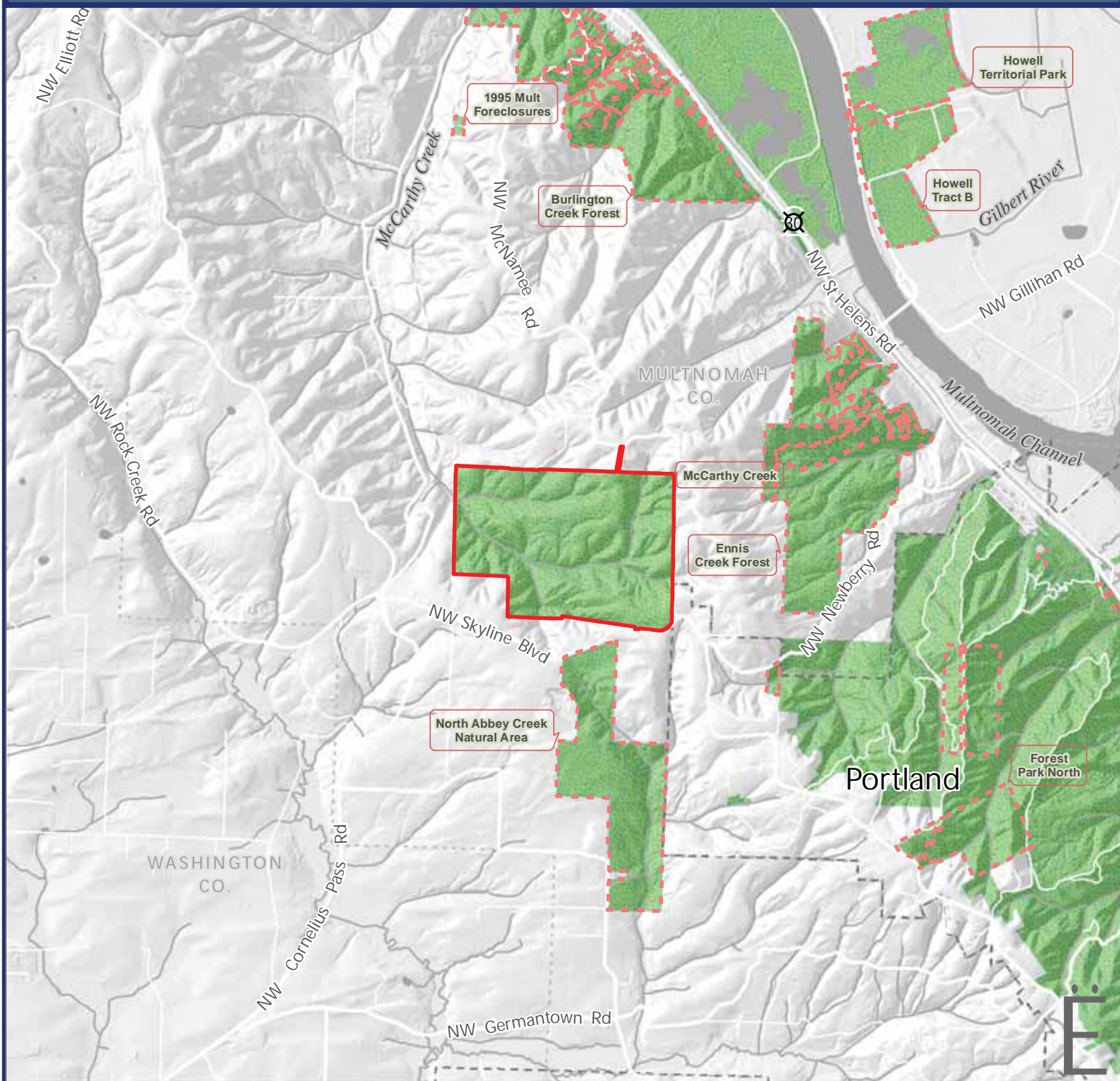
KEY STAKEHOLDERS

- West Multnomah Soil and Water Conservation District: Michael Ahr, michael@wmswcd.org
- City of Portland: Kendra Peterson-Morgan, kendra.peterson-morgan@portlandoregon.gov
- Forest Park Conservancy: Renee Meyers, renee@forestparkconservancy.org
- Trout Mountain Forestry: Mike Messier, mike@troutmountain.com

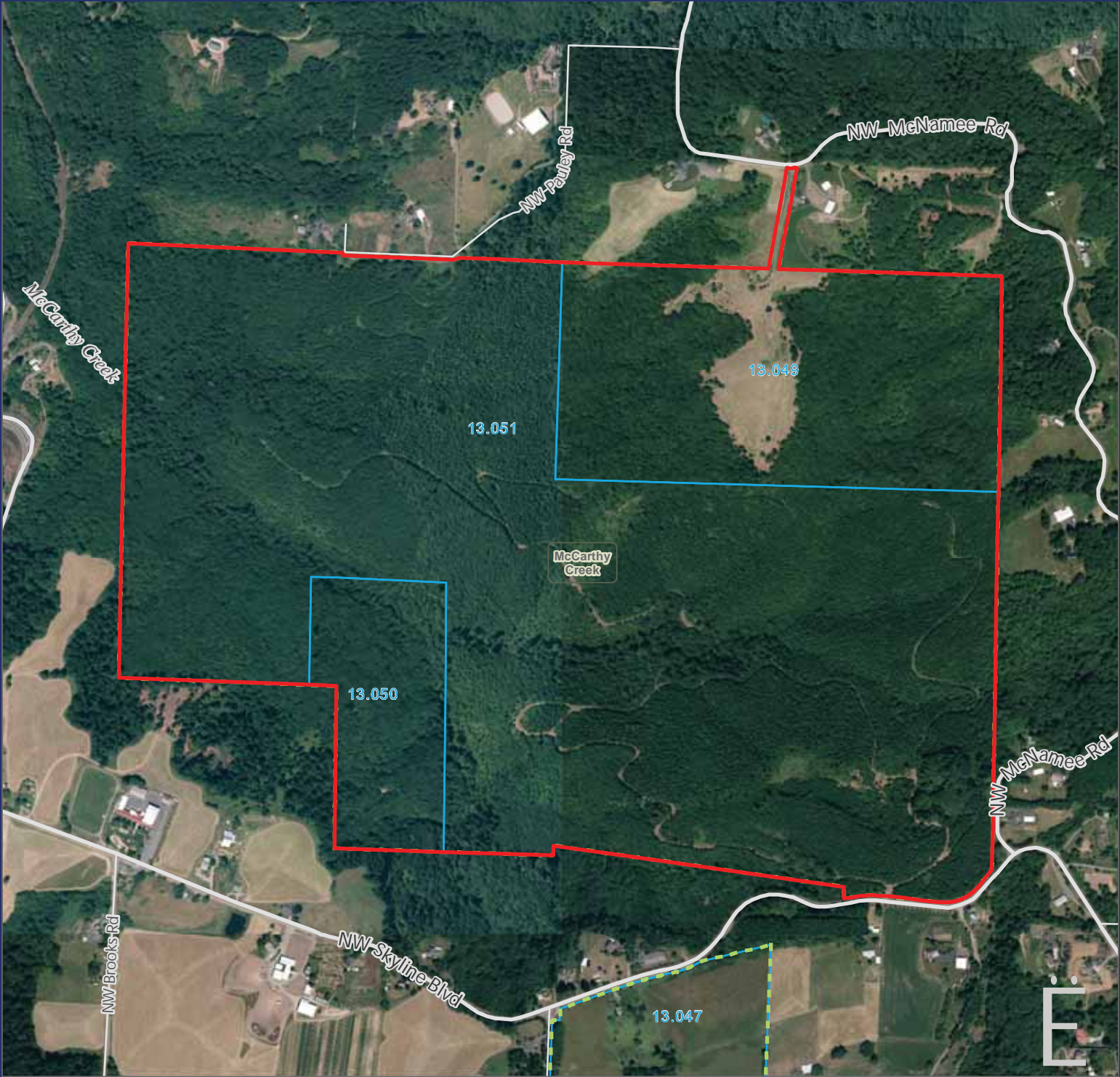
PUBLIC INVOLVEMENT AND OUTREACH




The access off of Skyline Blvd., though parking is limited, and the loop road provide relatively easy access for small public events. McCarthy Creek Natural Area has been utilized by conservation and outdoor education groups such as TrackersNW. Skyline Elementary School has expressed an interest in exploring environmental education opportunities at the site. Self Enhancement, Inc. has utilized the nearby North Abbey Natural Area.

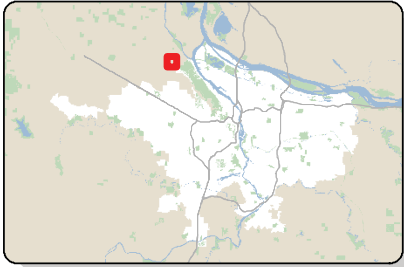
VICINITY MAP



SITE MAP



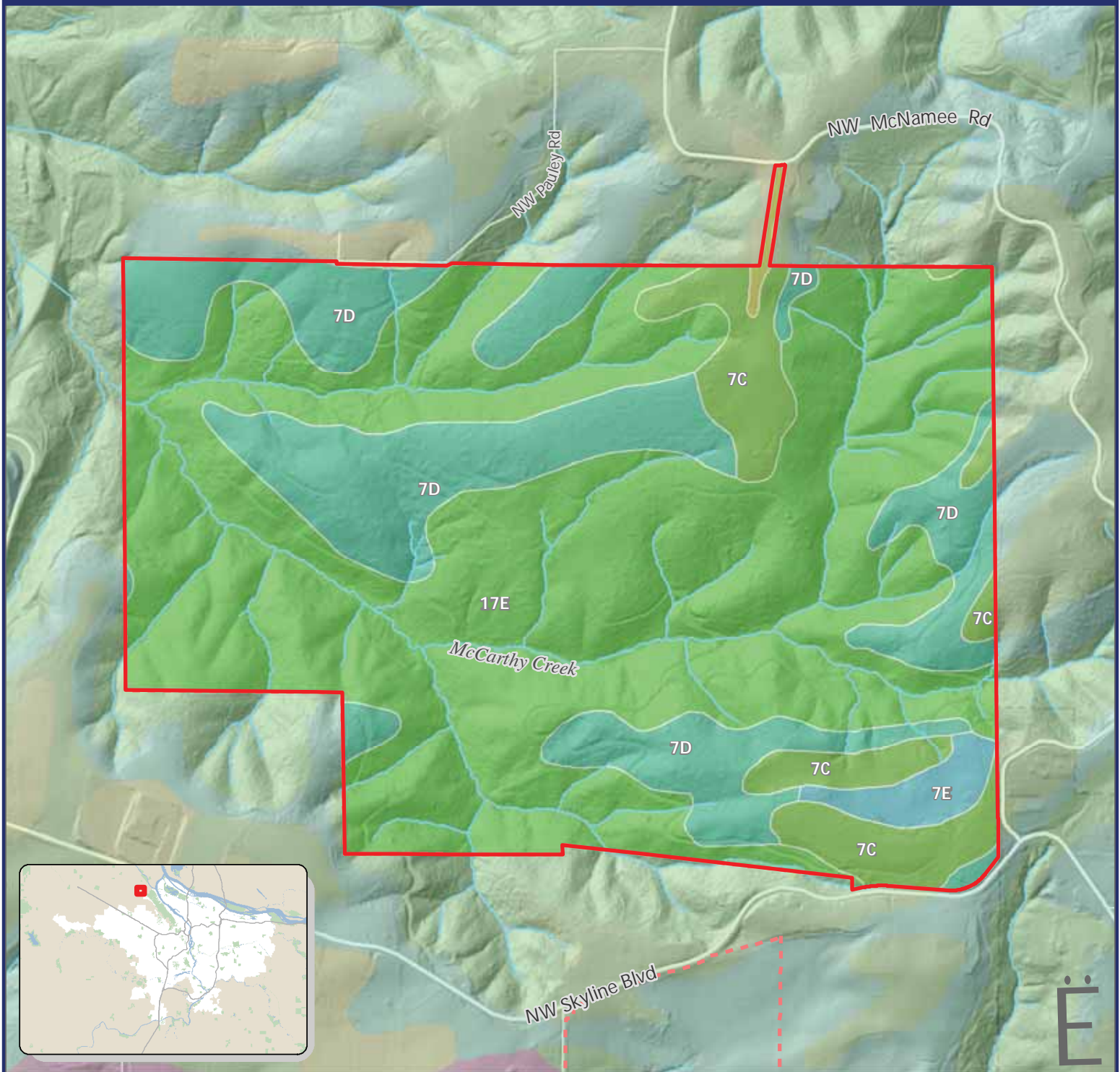
-  McCarthy Creek site
-  Other Metro sites
- Bond Measure**
-  2006 Bond Measure



0 1,100 2,200 Feet



SOILS



McCarthy Creek



Other Metro sites



Hydric soils

NRCS soils on Site



Cascade silt loam, 15 to 30 percent slopes



Cascade silt loam, 3 to 8 percent slopes



Cascade silt loam, 30 to 60 percent slopes



Cascade silt loam, 8 to 15 percent slopes



Goble silt loam, 30 to 60 percent slopes

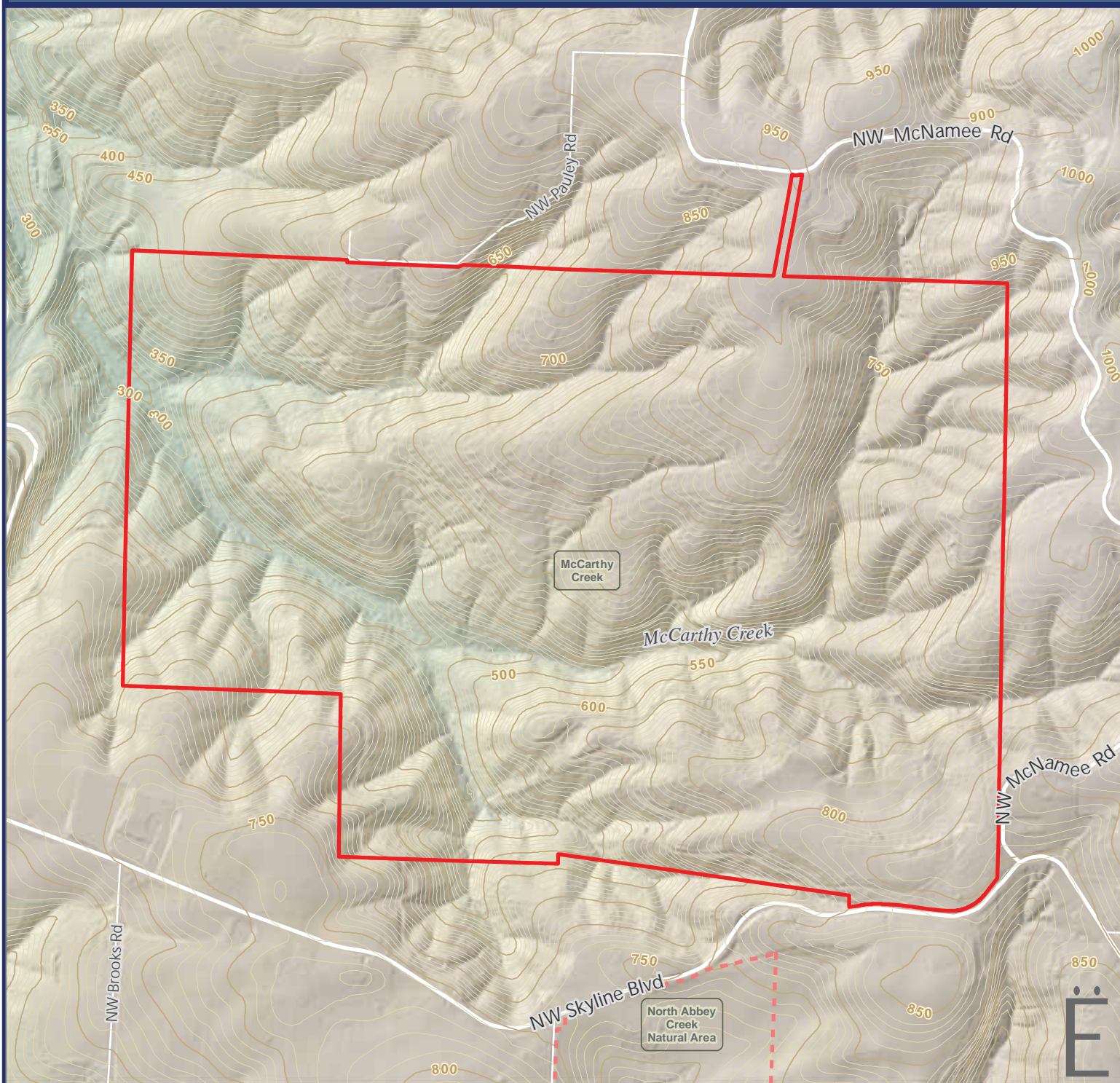
0



1,000

2,000 Feet

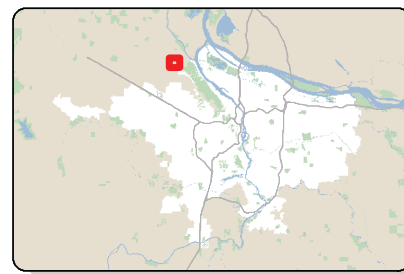


TOPOGRAPHY

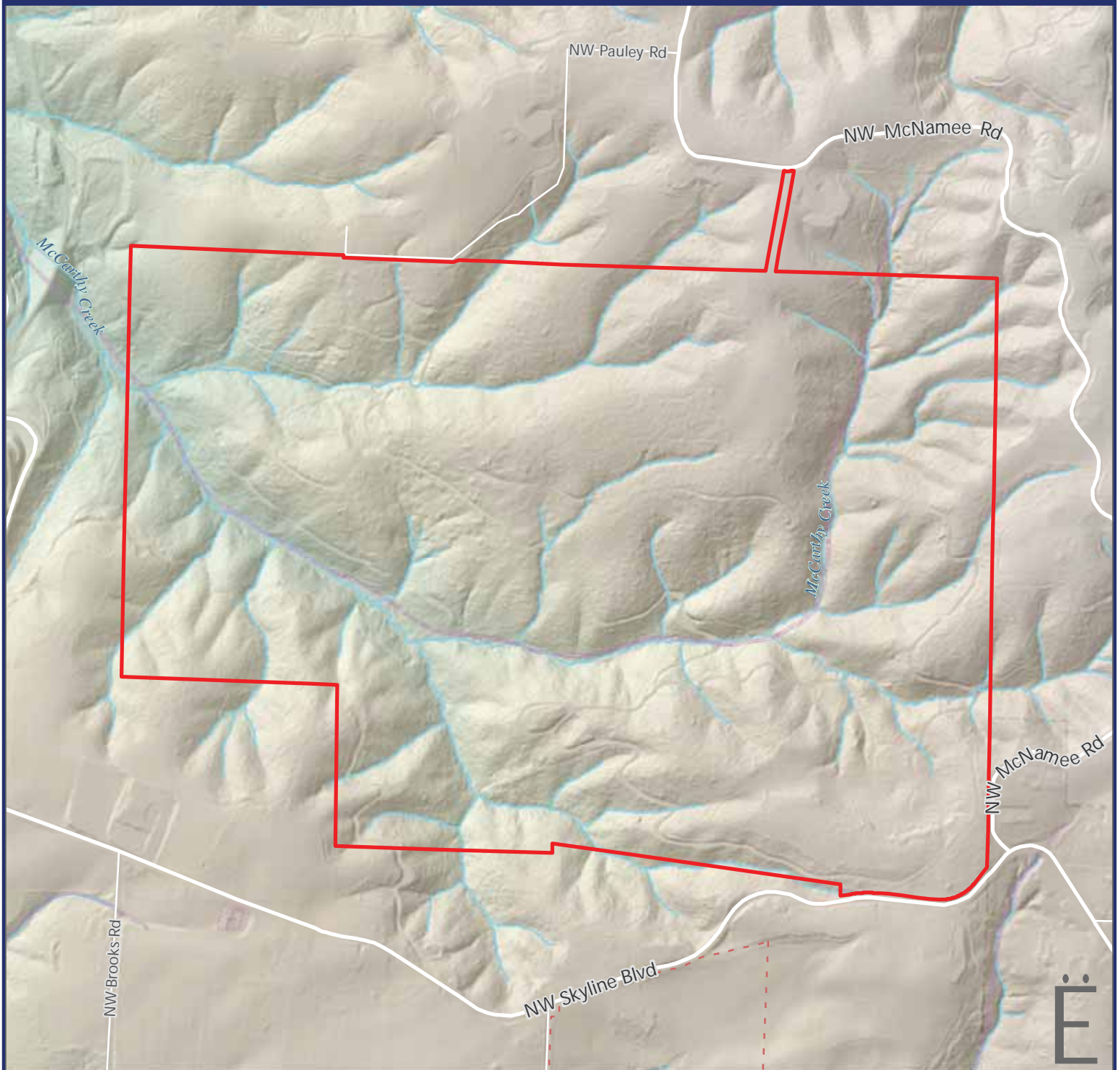





-  McCarthy Creek site
-  Other Metro sites

0 1,100 2,200 Feet

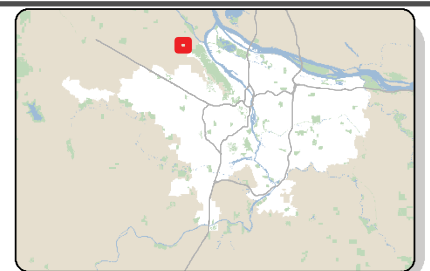


HYDROLOGY



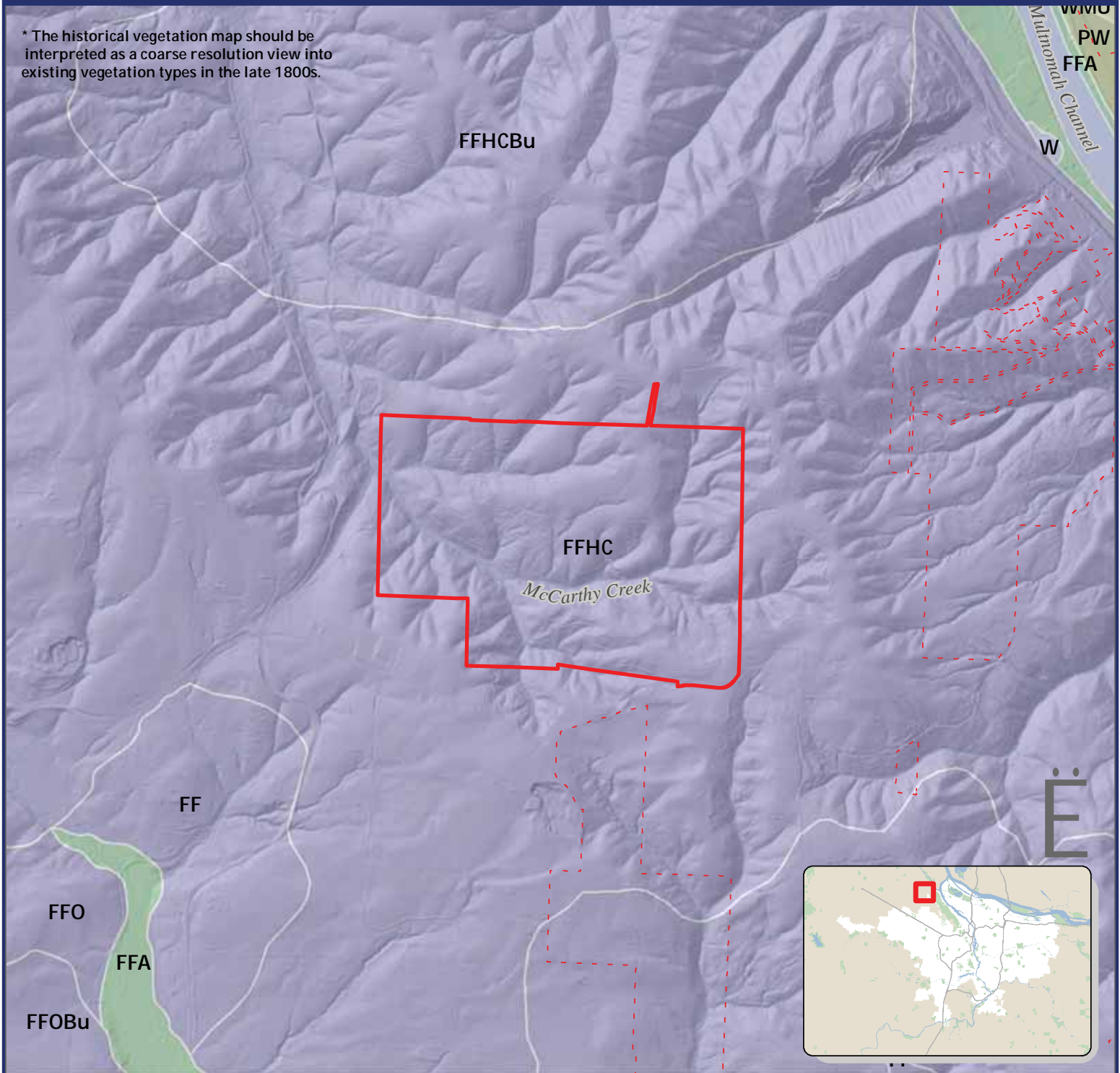
-  McCarthy Creek site
-  Other Metro sites
-  100 year floodplain
-  Wetlands (Wetlands Conservancy data)

0 1,100 2,200 Feet



HISTORICAL VEGETATION (1851-1910)

* The historical vegetation map should be interpreted as a coarse resolution view into existing vegetation types in the late 1800s.



- McCarthy Creek site
- Other Metro sites

Historical vegetation

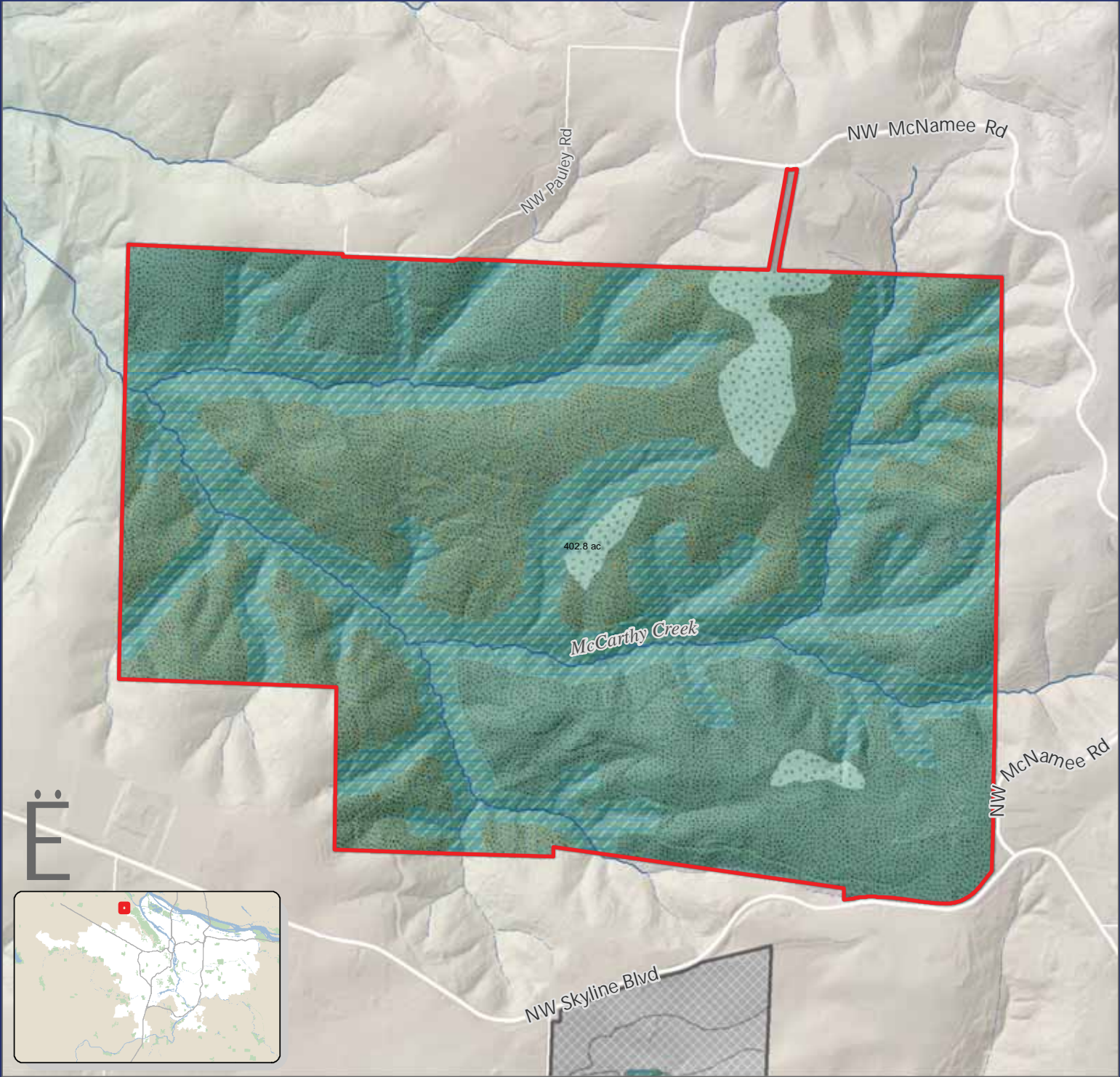
- Closed forest; Riparian & Wetland
- Closed forest; Upland
- Emergent wetlands
- Prairie
- Water
- Streams

* Labels refer to vegetation subclasses.
Detailed descriptions can be found in
T:\OBMO\GIS\DATA_V\vegetation\Historical

0 2,000 4,000 Feet



CURRENT COVER



- McCarthy Creek site
- Other Metro sites

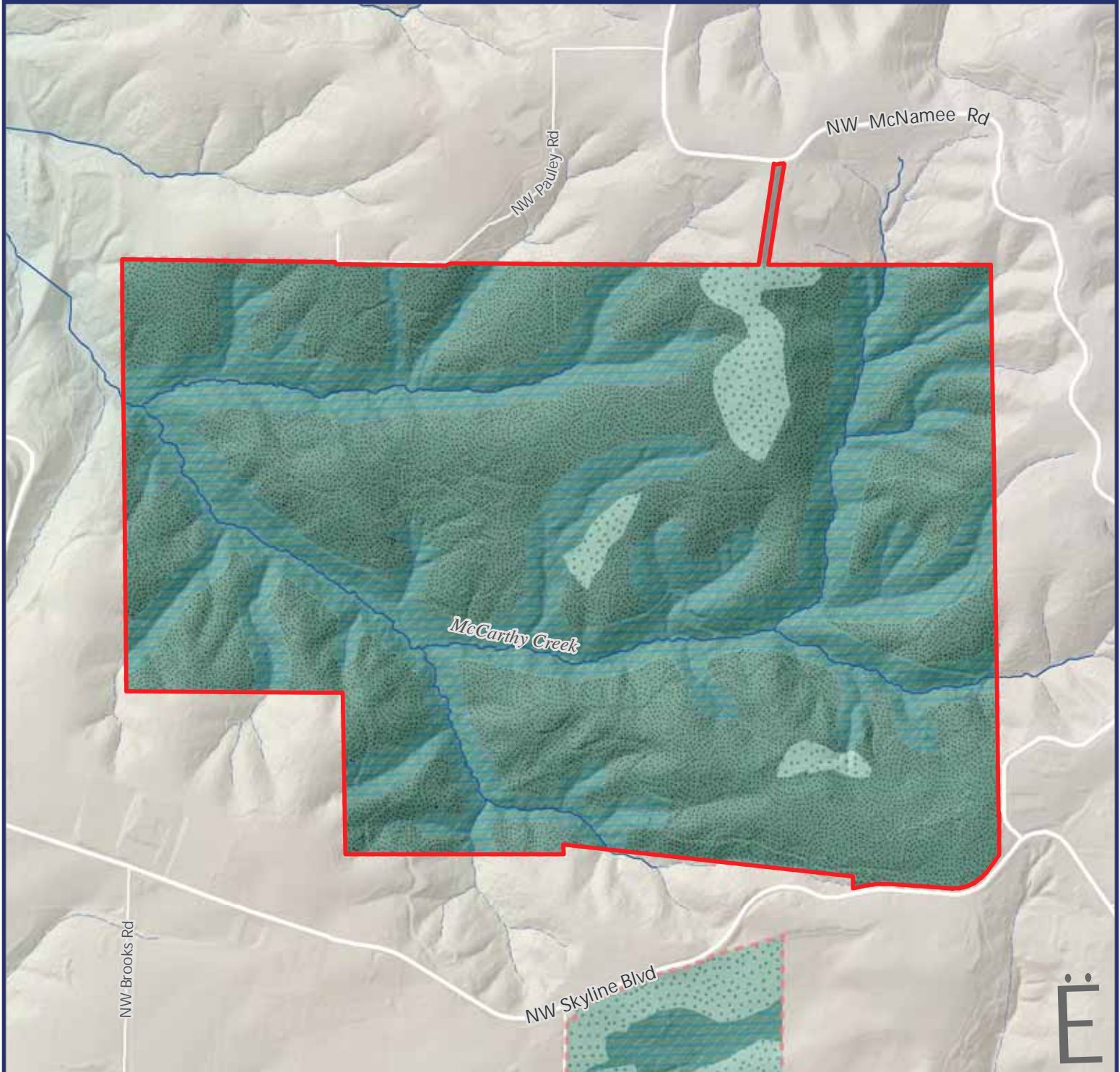
- Current cover**
- Developed - (impervious)
 - Developed - (pervious/non ag)
 - Riparian forest

- Upland forest - coniferous
- Upland forest - mixed
- Upland forest - shrub (stage)

0 1,000 2,000 Feet



CONSERVATION TARGETS

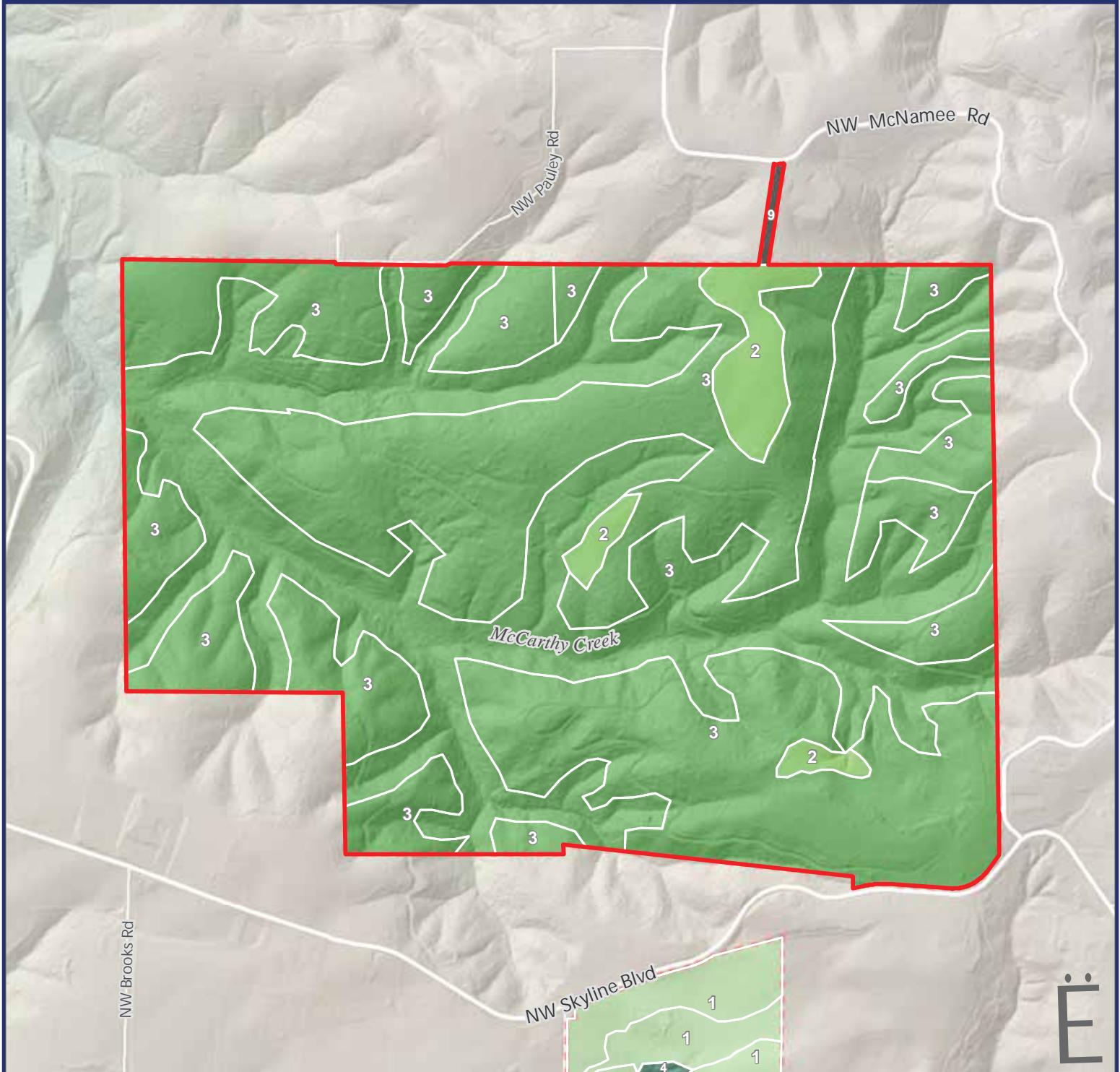


- | | | |
|----------------------|-----------------------------|--|
| site | Conservation targets | Upland forest |
| Other Metro sites | No Targets | Upland forest - shrub (early successional) |
| NHD Flowlines | Riparian forest | |
| Intermittent stream | | |
| Perennial stream | | |
| Pipeline | | |

0 1,000 2,000 Feet



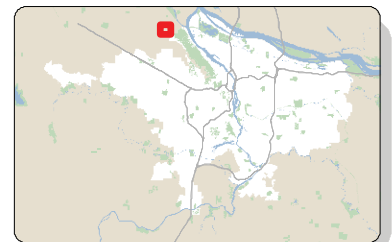
CONSERVATION TARGET STATUS



- site
- Other Metro sites

Management status

- 1 - Initiation
- 2 - Establishment
- 3 - Consolidation
- 4 - Refinement and long-term maintenance
- 9 - No targets (developed)



0 1,000 2,000 Feet



Carlson Geotechnical

A Division of Carlson Testing, Inc.

Phone: (503) 601-8250

Fax: (503) 601-8254

Bend Office (541) 330-9155
Eugene Office (541) 345-0289
Salem Office (503) 589-1252
Tigard Office (503) 684-3460



EXHIBIT 2

**Report of
Geotechnical Investigation and Geologic Hazard Reconnaissance
Burlington Creek Forest Nature Park
NW McNamee Road
Multnomah County, Oregon**

CGT Project Number G1704662

Prepared for

Ms. Karen Vitkay
Metro
600 NE Grand Avenue
Portland, Oregon 97232-2736

September 13, 2017

Carlson Geotechnical

A Division of Carlson Testing, Inc.

Phone: (503) 601-8250

Fax: (503) 601-8254

Bend Office
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(541) 330-9155
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September 13, 2017

Ms. Karen Vitkay
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600 NE Grand Avenue
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**Report of
Geotechnical Investigation and Geologic Hazard Reconnaissance
Burlington Creek Forest Nature Park
NW McNamee Road
Multnomah County, Oregon**

CGT Project No. G1704662

Dear Ms. Vitkay:

Carlson Geotechnical (CGT), a division of Carlson Testing, Inc. (CTI), is pleased to submit this report summarizing our geotechnical investigation and geologic hazard reconnaissance for the proposed Burlington Creek Forest Nature Park project. The site is located within the Burlington Creek Forest along NW McNamee Road in Multnomah County, Oregon. We performed our work in general accordance with CGT Proposal GP7579R2, dated July 10, 2017. Written authorization for our services was provided on July 31, 2017, in the form of Metro Contract No. 734785. A previous version of this report was issued on August 31, 2017. This report has been revised to reflect the current (September 5, 2017) design drawings.

We appreciate the opportunity to work with you on this project. Please contact us at 503.601.8250 if you have any questions regarding this report.

Respectfully Submitted,
CARLSON GEOTECHNICAL



Ryan T. Houser, CEG
Senior Engineering Geologist
rhouser@carlsontesting.com



EXPIRES: 12/31/2018

Jeffrey P. Quinn, P.E.
Project Geotechnical Engineer
jquinn@carlsontesting.com

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Trailhead Site Plan	Figure 3
Fill Slope Detail	Figure 4
Retaining Walls	Figure 5
Field Investigation	Appendix A
Geologic Hazard Reconnaissance	Appendix B
Hillside Development Permit (HDP) Form 1	Appendix C

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1.0 INTRODUCTION

Carlson Geotechnical (CGT), a division of Carlson Testing, Inc. (CTI), is pleased to submit this report summarizing our geotechnical investigation and geologic hazard reconnaissance for the proposed Burlington Creek Forest Nature Park project. The site is located within the Burlington Creek Forest along NW McNamee Road in Multnomah County, Oregon, as shown on the attached Site Location, Figure 1.

1.1 Project Description

CGT developed an understanding of the proposed project based on our correspondence with you and design drawings dated September 2017. Based on our review, we understand the project will include:

- New trailhead development, including:
 - Construction of a new parking lot for up to 25 passenger cars.
 - Prefabricated restroom structure.
 - Information kiosk.
 - A retaining wall up to about 8 feet in retained height will be required to reach finished grades along the north (downslope) portion of the access drive.
- New hiking-only and shared hiking-cycling trails that will be 24 to 48 inches wide, with minimal cuts and fills to level the trail cross sections. We anticipate trail surfaces will consist of native soils, and that trails will be constructed using standard trail construction considerations presented in the United States Forest Service Trail Construction and Maintenance Notebook¹ and IMBA's Trail Solutions Design Guide². Trail gradients will be typically less than 5%, with maximum gradients of up to about 10%. Proposed trails currently include:
 - Trail A, a 0.9-mile hiking/cycling trail, with three stream crossings consisting of wood or fiberglass bridge structures measuring 5-feet-wide by 15-feet-long (Crossing 1), 5-feet-wide by 18-feet-long (Crossing 2), and 5-feet-wide by 20-feet-long (Crossing 3).
 - Trail AA, a 0.7-mile hiking/cycling trail, with one stream crossing consisting of a 5-foot-wide by 20-foot-long fiberglass bridge structure (Crossing 5).
 - Trail B, a 0.4-mile hiking/cycling trail.
 - Trail C, a 0.1-mile hiking/ cycling trail on an existing road bed.
 - Trail D, a 0.1-mile hiking trail with one stream crossing consisting of a 4-foot-wide by 15-foot-long bridge structure (Crossing 4). Bridge construction materials are to be determined.
 - Trail E, a 0.8-mile hiking/cycling trail.
 - Trail F, a 0.3-mile hiking/cycling trail.
 - Trail G, a 1.2-mile hiking/cycling trail.
 - Trail H, a 0.6-mile hiking/cycling trail, with one stream crossing consisting of a 4-foot-wide by 15-foot-long bridge structure (Crossing 6). Bridge construction materials are to be determined.
- Existing gravel roadways will be maintained for mixed hiking/mountain biking/equestrian use.

¹ USDA Forest Service, 2007. Trail Construction and Maintenance Notebook. United States Department of Agriculture, Publication No. 0723-2806-MTDC.

² International Mountain Bicycling Association, 2004. Trail Solutions. IMBA, 272p.

1.2 Scope of Work

1.2.1 Geotechnical Investigation

The purpose of our geotechnical investigation was to explore shallow subsurface conditions at the site in order to provide geotechnical recommendations for design and construction of the proposed trailhead and stream crossings. Our scope of work included the following:

- Contact the Oregon Utilities Notification Center to mark the locations of public utilities within a 20-foot radius of our explorations.
- Explore shallow subsurface conditions at the site by advancing 19 hand auger borings, 15 Wildcat Dynamic Cone Penetrometer (WDCP) tests and 3 Dynamic Cone Penetrometer (DCP) tests to depths of up to about 8 feet below ground surface (bgs). Details of the subsurface investigation are presented in Appendix A.
- Classify the materials encountered in the explorations in accordance with American Society for Testing and Materials (ASTM) Soil Classification Method D2488 (visual-manual procedure).
- Collect representative soil samples from within the hand auger borings in order to perform laboratory testing and to confirm our field classifications.
- Perform laboratory testing on selected samples collected during our subsurface exploration.
- Provide a technical narrative describing surface and subsurface deposits, and local geology of the site, based on the results of our explorations and published geologic mapping.
- Provide a site vicinity map and a site plan showing the locations of the explorations relative to existing site features.
- Provide logs of the explorations, including results of laboratory testing on selected soil samples.
- Provide geotechnical recommendations for site preparation and earthwork.
- Provide geotechnical engineering recommendations for design and construction of shallow spread foundations, retaining walls, floor slabs, and flexible pavements.
- Provide recommendations for the Seismic Site Class, mapped maximum considered earthquake spectral response accelerations, and site seismic coefficients.
- Provide a qualitative evaluation of seismic hazards at the site, including liquefaction potential, earthquake-induced settlement and landsliding, and surface rupture due to faulting or lateral spread.
- Provide this written report summarizing the results of our geotechnical investigation and recommendations for the project.

1.2.2 Geologic Hazard Reconnaissance

The purpose of our reconnaissance was to identify geologic hazards that may affect the proposed project and provide background for the Geotechnical Reconnaissance and Stability Preliminary Study needed as part of the Hillside Development Permit application. The findings of our geologic hazard reconnaissance are presented in Appendix B.

2.0 SITE DESCRIPTION

2.1 Site Geology

In general, the site is underlain by Tertiary Columbia River Basalt that is overlain by wind-blown silt (loess) deposits and alluvium related to the on-site creeks. Site geology is presented in detail in Appendix B, Section B.3.2.

2.2 Site Surface Conditions

The trailhead will be located on the east side of NW McNamee Road along an existing gravel-surfaced access road. The inboard (south) side of existing access road is cut into the north-facing slope, at gradients up to about 1 horizontal to 1 vertical (1H:1V), while the outboard (north) side descended below the access road at gradients up to about 2H:1V. The cut slopes are generally vegetated with underbrush (blackberry bushes, ferns, etc) and the outboard slopes were densely vegetated with coniferous trees and underbrush.

The proposed trails will generally be located along northeast-trending ridgelines generally between NW McNamee Road to the west and Highway 30 to the northeast. The area was densely vegetated with deciduous and coniferous trees, and underbrush. Gradients varied greatly throughout the project area, but were typically less than about 2H:1V.

Site surface conditions are described in greater detail in Appendix B, Section B.4.0.

2.3 Subsurface Conditions

2.3.1 Subsurface Investigation & Laboratory Testing

Our subsurface investigation consisted of nineteen hand auger borings, fifteen Wildcat Dynamic Cone Penetrometer (WDCP) tests and three Dynamic Cone Penetrometer (DCP) tests to depths of up to about 8 feet below ground surface (bgs). The approximate exploration locations are shown on the Overall Site Plan and Trailhead Site Plan, attached as Figures 2 and 3, respectively. Details regarding the subsurface investigation, logs of the explorations, and results of laboratory testing are presented in Appendix A. Subsurface conditions encountered during our investigation are summarized below.

2.3.2 Subsurface Materials

Logs of the explorations are presented in Appendix A. The following describes each of the subsurface materials encountered at the site.

Forest Duff

Forest duff consisting of a thin layer of leaves, branches, pine needles, and other organic material was encountered at the surface of the majority of the explorations. The forest duff was up to about 6 inches thick.

Undocumented Gravelly Silt Fill (ML Fill)

Undocumented gravelly silt fill was encountered at the surface of HA TH-5 adjacent to the existing access roadway. Undocumented fill refers to materials placed without (available) records of subgrade conditions or evaluation of compaction. The gravelly silt fill was typically tan, damp, exhibited low plasticity, contained angular gravel up to about 2 inches in diameter, and extended to a depth of about 1/3-foot bgs.

Silt (ML) - Loess

Encountered at the surface of the site or underlying the forest duff in the majority of the borings (except C-3/NW, C-3/SE, C-5/W, and TH-5) was native silt (ML). This soil was typically light brown, dry to moist, non-plastic to low-plasticity, and varied in consistency from very soft to very stiff. This silt is consistent with descriptions by others of loess (wind-blown sediment) mapped in the vicinity of the site. This soil extended to a depth of about 2½ feet bgs in HA C-2/NE, 1¾ foot bgs in HA C-6/E, and to the total depths explored, from about 4 to 8 feet bgs, in borings HA C-1/N, C-1/S, C-2/SW, C-4/NE, C-4/SW, C-5/E, C-6/W, TH-1 through TH-4, TH-6, and TH-7.

Silt (ML) - Alluvium

Native alluvial silt (ML) was encountered at the surface of HA C-3/NW and C-5/W, and underlying the forest duff in C-3/SE. This soil was typically soft to very stiff, light brown, dry, exhibited low plasticity, and extended to depths of about 1½ feet in HA C-3/NW, 3 feet in C-3/SE, and to the total depth explored, 1 foot bgs, in C-5/W.

Silty Gravel (GM) - Alluvium

Underlying the silt alluvium HA C-3/NW was silty gravel alluvium. The silty gravel was typically medium dense, gray and tan, damp, subangular, and up to 2 inches in diameter. Practical refusal of the hand auger was encountered at a depth of about 1¾ feet bgs in C-3/NW.

Lean Clay to Gravelly Lean Clay (CL) – Residual Soil

Underlying the silt loess in C-2/NE, underlying the silt alluvium in C-3/SE, and underlying the gravelly silt fill in TH-5 was lean clay. The lean clay was typically medium stiff to very stiff, light brown with tan and orange mottling, moist, exhibited medium plasticity, and contained trace angular basalt fragments. The lean clay in HA C-3/SE was gravelly, with about 55 percent passing the US No. 200 Sieve. The lean clay was consistent with residual soil forming from the in-place weathering of the Columbia River Basalt. Practical refusal of the hand auger was met in the lean clay at depths of about 3 to 3¾ feet bgs.

Predominantly Weathered Basalt (RX)

Underlying the silt loess in HA C-6/E was predominantly weathered basalt. The predominantly weathered basalt was typically very soft (R1), tan to gray, vesicular, and contained fragments of moderately weathered basalt. Practical refusal of the hand exploration equipment was encountered at a depth of about 2½ feet bgs in the predominantly weathered basalt.

2.3.3 Groundwater

We did not encounter groundwater within the depths explored at the site conducted during August 2017. To determine approximate regional groundwater levels in the area, we researched well logs available on the Oregon Water Resources Department (OWRD)³ website for wells located within Section 20, Township 2 North, Range 1 West, Willamette Meridian. Our review indicated that groundwater levels in the area varied with surface elevations and generally ranged from about 20 to 75 feet bgs. It should be noted groundwater levels vary with local topography. In addition, the groundwater levels reported on the OWRD logs often reflect the purpose of the well, so water well logs may only report deeper, confined groundwater, while geotechnical or environmental borings will often report any groundwater encountered, including shallow, unconfined groundwater. Therefore, the levels reported on the OWRD well logs referenced above are considered generally indicative of local water levels and may not reflect actual groundwater levels at the project site. We anticipate that groundwater levels will fluctuate due to seasonal and annual variations in precipitation, changes in site utilization, or other factors. Additionally, the on-site, native silt, lean clay, and basalt bedrock are conducive to formation of perched groundwater. Seasonal groundwater levels in the area of the proposed stream crossings are tied to the water level in the stream channels and should be anticipated to be near-surface during the winter months.

³ Oregon Water Resources Department, 2017. Well Log Records, accessed August 2017, from OWRD web site: http://apps.wrd.state.or.us/apps/gw/well_log/.

3.0 SEISMIC CONSIDERATIONS

3.1 Seismic Design

Section 1613.3.2 of the 2014 Oregon Structural Specialty Code (2014 OSSC) requires that the determination of the seismic site class be based on subsurface data in accordance with Chapter 20 of the American Society of Civil Engineers Minimum Design Loads for Buildings and Other Structures (ASCE 7). Based on the results of the explorations and review of geologic mapping, we have assigned the site as Site Class D for the subsurface conditions encountered. Earthquake ground motion parameters for the site were obtained based on the United States Geological Survey (USGS) Seismic Design Values for Buildings - Ground Motion Parameter Web Application⁴. Latitude 45.644865 ° North and Longitude 122.845679° West were input as the site location (trailhead location). The following table shows the recommended seismic design parameters for the site.

Table 1 Seismic Ground Motion Values

Parameter		Value
Mapped Acceleration Parameters	Spectral Acceleration, 0.2 second (S_s)	1.014g
	Spectral Acceleration, 1.0 second (S_1)	0.449g
Coefficients (Site Class D)	Site Coefficient, 0.2 sec. (F_A)	1.095
	Site Coefficient, 1.0 sec. (F_v)	1.551
Adjusted MCE Spectral Response Parameters	MCE Spectral Acceleration, 0.2 sec. (S_{MS})	1.110g
	MCE Spectral Acceleration, 1.0 sec. (S_{M1})	0.696g
Design Spectral Response Accelerations	Design Spectral Acceleration, 0.2 seconds (S_{DS})	0.740g
	Design Spectral Acceleration, 1.0 second (S_{D1})	0.464g

3.2 Seismic Hazards

3.2.1 Liquefaction

In general, liquefaction occurs when deposits of loose/soft, saturated, cohesionless soils, generally sands and silts, are subjected to strong earthquake shaking. If these deposits cannot drain quickly enough, pore water pressures can increase, approaching the value of the overburden pressure. The shear strength of a cohesionless soil is directly proportional to the effective stress, which is equal to the difference between the overburden pressure and the pore water pressure. When the pore water pressure increases to the value of the overburden pressure, the shear strength of the soil approaches zero, and the soil can liquefy. The liquefied soils can undergo rapid consolidation or, if unconfined, can flow as a liquid. Structures supported by the liquefied soils can experience rapid, excessive settlement, shearing, or even catastrophic failure.

For fine-grained soils, susceptibility to liquefaction is evaluated based on penetration resistance and plasticity, among other characteristics. Criteria for identifying non-liquefiable, fine-grained soils are constantly evolving. Current practice⁵ to identify non-liquefiable, fine-grained soils is based on plasticity characteristics of the soils, as follows: (1) liquid limit greater than 47 percent, (2) plasticity index greater than 20 percent, and (3) moisture content less than 85 percent of the liquid limit. Soils identified as susceptible to liquefaction are analyzed using the industry standard “simplified procedure”, originally published by Seed and

⁴ United States Geological Survey, 2017. Seismic Design Parameters determined using: “U.S. Seismic Design Maps Web Application - Version 3.1.0,” from the USGS website <http://geohazards.usgs.gov/designmaps/us/application.php>.

⁵ Seed, R.B. et al., 2003. Recent Advances in Soil Liquefaction Engineering: A Unified and Consistent Framework. Earthquake Engineering Research Center Report No. EERC 2003-06.

Idriss⁶ in 1971 and updated continually since that time. The susceptibility of sands, gravels, and sand-gravel mixtures to liquefaction is typically assessed based on penetration resistance, as measured using SPTs, CPTs, or Becker Hammer Penetration tests (BPTs).

Based on the lack of saturated conditions and anticipated generally shallow depth to bedrock, the soils encountered at the site are considered non-liquefiable within the depths explored. This judgment is supported by the liquefaction hazard map⁷ for the area, which indicates a “No Hazard” potential of liquefaction at this site. The mapping indicates the Columbia River floodplain generally north of Highway 30 has a high potential for liquefaction.

3.2.2 Slope Instability

The site is located within the Tualatin Mountains and the slopes are characterized as having a high susceptibility to landslides⁸. Based on the steep slopes and landslide-prone surficial materials (loess), seismically induced slope instability is commensurate with the overall landslide hazard mapping (high hazard). Landslide hazards are discussed in more detail in Appendix B.

3.2.3 Surface Rupture

3.2.3.1 Faulting

The site is mapped on or very near the mapped fault trace for the Portland Hills fault. Studies have conclude this fault⁹ is active, based on contemporary seismicity in the vicinity of the fault, and seismic reflection and other data suggesting that the fault cuts late Pleistocene layered strata. These include sand and silt deposited by Pleistocene floods approximately 12,800 to 15,000 years ago¹⁰. Should significant movement of the Portland Hills fault occur the risk of surface rupture at the site is relatively high, but difficult to characterize further due to the uncertainty regarding the precise location of the fault trace relative to the footprint of the site.

3.2.3.2 Lateral Spread

Surface rupture due to lateral spread can occur on sites underlain by liquefiable soils that are located on or immediately adjacent to slopes steeper than about 3 degrees (20H:1V), and/or adjacent to a free face, such as a stream bank or the shore of an open body of water. During lateral spread, the materials overlying the liquefied soils are subject to lateral movement downslope or toward the free face. Given the lack of liquefiable soils at the site, the risk of surface rupture due to lateral spread is considered negligible.

4.0 CONCLUSIONS

Based on the results of our field explorations and analyses, the site may be developed as described in Section 1.1, provided the recommendations presented in this report are incorporated into the design and development.

⁶ Seed, H.B., and Idriss, I.M., 1971, Simplified Procedure for Evaluating Soil Liquefaction Potential, Journal of Geotechnical Engineering Division, ASCE, 97(9), 1249-1273.

⁷ Oregon Department of Geology and Mineral Industries, 2017. Oregon Statewide Geohazards Viewer, accessed August 2017, from DOGAMI web site: <http://www.oregongeology.org/sub/hazvu/index.htm>.

⁸ Oregon Department of Geology and Mineral Industries, 2017. Oregon Statewide Geohazards Viewer, accessed August 2017, from DOGAMI web site: <http://www.oregongeology.org/sub/hazvu/index.htm>.

⁹ Wong et al., 2001. The Portland Hills Fault: An Earthquake Generator or Just Another Old Fault?, Oregon Geology, V63, number 2.

¹⁰ Madin and Hemphill-Haley, 2001. The Portland Hills Fault at Rowe Middle School, Oregon Geology V63 p47.

4.1 Geologic Hazards

As noted above and discussed in Appendix B, the site may potentially be affected by multiple geologic hazards, including landslides and surface rupture due to faulting. The development proposed at the site does not include construction of habitable structures and the potential for loss of life due to any of these hazards is relatively low. It is our opinion that the proposed development will not have any significant impact on the existing hazards and, as such, does not pose an increase in risk for neighboring properties. This assumes that the recommendations contained in this report are incorporated into the final design of the project. Minor adjustments to final trail locations will take place during construction. Provided the trails are developed in the general vicinity as currently understood, the finalized trails will similarly not have any significant impact on the existing hazards.

4.2 Geotechnical Considerations

4.2.1 Trailhead Development

Satisfactory subgrade support for new pavements, foundations, retaining walls and structural fills can be provided by the native, medium stiff or better loess (ML) or residual soil (CL) encountered near the surface of the site.

4.2.2 Trail Construction

The proposed trails will include minimal cutting to achieve finished grades. CGT recommends trail sideslopes be constructed at gradients of 2H:1V or less to reduce the potential for erosion and localized instability.

4.2.3 Stream Crossings

Satisfactory subgrade support for new bridge abutments along the proposed trails can be provided by the native, medium stiff or better loess (ML), alluvium (ML, GM), residual soil (CL), or predominantly weathered basalt (RX) encountered near the surface of the site.

Specific recommendations for design and construction of the project are presented in the following sections.

5.0 RECOMMENDATIONS

The recommendations presented in this report are based on the information provided to us, results of our field investigation and analyses, laboratory data, and professional judgment. CGT has observed only a small portion of the pertinent subsurface conditions. The recommendations are based on the assumptions that the subsurface conditions do not deviate appreciably from those found during the field investigation. CGT should be consulted for further recommendations if the design of the proposed development changes and/or variations or undesirable geotechnical conditions are encountered during site development.

5.1 Site Preparation

5.1.1 Stripping

Existing vegetation, forest duff, topsoil, rooted soils, and undocumented gravelly silt fill (ML Fill) should be removed from within, and for a minimum 5-foot margin around, proposed fill, building, pavement, and bridge abutment areas. Based on the results of our field explorations, stripping depths are anticipated to be less than 1-foot bgs. These materials may be deeper or shallower away from our explorations. Accordingly, the geotechnical engineer or their representative should provide recommendations for actual stripping depths based on observations during site stripping. Vegetation and rooted soils should be transported off-site for

disposal, or stockpiled for later use in landscaped areas. Excavated soils (ML, CL) in the trailhead area may be reused as structural fill if properly moisture conditioned as described in Section 5.4.1.1 below.

5.1.2 Existing Utilities & Below-Grade Structures

All existing utilities at the site should be identified prior to excavation. Abandoned utility lines beneath new structures, pavements, and hardscaping features should be completely removed or grouted full. Soft, loose, or otherwise unsuitable soils encountered in utility trench excavations should be removed and replaced with structural fill in conformance with Section 5.4 this report. While not anticipated, buried structures (i.e. footings, foundation walls, retaining walls, slabs-on-grade, tanks, etc.), if encountered during site development, should be completely removed and replaced with structural fill in conformance with Section 5.4.

5.1.3 Erosion Control

Erosion and sedimentation control measures should be employed in accordance with applicable County and State regulations.

5.2 **Temporary Excavations**

5.2.1 Overview

Conventional earthmoving equipment in proper working condition should be capable of making necessary excavations for the anticipated site cuts as described earlier in this report. All excavations should be in accordance with applicable OSHA and state regulations. It is the contractor's responsibility to select the excavation methods, to monitor site excavations for safety, and to provide any shoring required to protect personnel and adjacent improvements. A "competent person", as defined by OR-OSHA, should be on-site during construction in accordance with regulations presented by OR-OSHA. CGT's current role on the project does not include review or oversight of excavation safety.

5.2.2 OSHA Soil Type

For use in the planning and construction of temporary excavations up to 10 feet in depth, an OSHA soil type "B" can be used for the fine-grained soils (ML, CL) encountered near the surface of the site.

5.2.3 Utility Trenches

Temporary trench cuts should stand near vertical to depths of approximately 4 feet in the native alluvium (ML, GM), loess (ML), residual soil (CL), and basalt bedrock encountered at the site. Some instability may develop if seepage occurs. If seepage undermines the stability of the trench, or if sidewall caving is observed during excavation, the sidewalls should be flattened or shored. Depending on the time of year trench excavations occur, trench dewatering may be required in order to maintain dry working conditions, particularly if the invert elevations of the proposed utilities are below the groundwater level. If groundwater is present at the base of utility excavations, we recommend placing trench stabilization material at the base of the excavations. Trench stabilization material should be in conformance with Section 5.4.4.

5.2.4 Excavations Near Foundations

Excavations near footings should not extend within a 1½H:1V (horizontal:vertical) plane projected out and down from the outside, bottom edge of the footings. In the event excavation needs to extend below the referenced plane, temporary shoring of the excavation and/or underpinning of the subject footing may be required. The geotechnical engineer should be consulted to review proposed excavation plans for this design case to provide specific recommendations.

5.3 Wet Weather Considerations

For planning purposes, the wet season should be considered to extend from late September to late June. It is our experience that dry weather working conditions should prevail between early July and mid-September. Notwithstanding the above, soil conditions should be evaluated in the field by the geotechnical engineer or their representative at the initial stage of site preparation to determine whether the recommendations within this section should be incorporated into construction.

5.3.1 Overview

Due to the fines content, the native silt alluvium and loess (ML), and residual soil (CL) are susceptible to disturbance during wet weather. Trafficability of these soils may be difficult, and significant damage to subgrade soils could occur, if earthwork is undertaken without proper precautions at times when the exposed soils are more than a few percentage points above optimum moisture content. For wet weather construction, site preparation activities may need to be accomplished using track-mounted equipment, loading removed material onto trucks supported on granular haul roads, or other methods to limit soil disturbance. The geotechnical engineer or their representative should evaluate the subgrade during excavation by probing rather than proof rolling. Soils that have been disturbed during site preparation activities, or soft or loose areas identified during probing, should be over-excavated to firm, stable subgrade, and replaced with imported granular structural fill in conformance with Section 5.4.2.

5.3.2 Geotextile Separation Fabric

We recommend a geotextile separation fabric be placed to serve as a barrier between the prepared subgrade and granular fill/base rock in areas of repeated or heavy construction traffic. The geotextile fabric should meet the requirements presented in the current Oregon Department of Transportation (ODOT) Standard Specification for Construction, Section 02320.

5.3.3 Granular Working Surfaces (Haul Roads & Staging Areas)

Haul roads subjected to repeated heavy, tire-mounted, construction traffic (e.g. dump trucks, concrete trucks, etc.) will require a minimum of 18 inches of imported granular material. For light staging areas, 12 inches of imported granular material should be sufficient. Additional granular material or geo-grid reinforcement may be recommended based on site conditions and/or loading at the time of construction. The imported granular material should be in conformance with Section 5.4.2 and have less than 5 percent material passing the U.S. Standard No. 200 Sieve. The prepared subgrade should be covered with geotextile fabric (Section 5.3.2) prior to placement of the imported granular material. The imported granular material should be placed in a single lift (up to 24 inches deep) and compacted using a smooth-drum, non-vibratory roller until well-keyed.

5.3.4 Footing Subgrade Protection

A minimum of 3 inches of imported granular material is recommended to protect fine-grained, footing subgrades from foot traffic during inclement weather. The imported granular material should be in conformance with Section 5.4.2. The maximum particle size should be limited to 1 inch. The imported granular material should be placed in one lift over the prepared, undisturbed subgrade, and compacted using non-vibratory equipment until well keyed.

5.4 Structural Fill

The geotechnical engineer should be provided the opportunity to review all materials considered for use as structural fill (prior to placement). Samples of the proposed fill materials should be submitted to the

geotechnical engineer a minimum of 5 business days prior their use on site¹¹. The geotechnical engineer or their representative should be contacted to evaluate compaction of structural fill as the material is being placed. Evaluation of compaction may take the form of in-place density tests and/or proof roll tests with suitable equipment. Structural fill should be evaluated at intervals not exceeding every 2 vertical feet as the fill is being placed.

5.4.1 On-Site Soils – General Use

5.4.1.1 Native Alluvium (ML), Loess (ML), and Residual Soil (CL)

Re-use of these soils as structural fill may be difficult because these soils are sensitive to small changes in moisture content and are difficult, if not impossible, to adequately compact during wet weather. We anticipate the moisture content of these soils will be higher than the optimum moisture content for satisfactory compaction. Therefore, moisture conditioning (drying) should be expected in order to achieve adequate compaction. If used as structural fill, these soils should be free of organic matter, debris, and particles larger than 4 inches. When used as structural fill, these soils should be placed in lifts with a maximum pre-compaction thickness of about 8 inches at moisture contents within –1 and +3 percent of optimum, and compacted to not less than 92 percent of the material's maximum dry density, as determined in general accordance with ASTM D1557 (Modified Proctor).

5.4.1.2 Gravelly Silt Fill (ML Fill), Silty Gravel Alluvium (GM), Predominantly Weathered Basalt (RX)

Due to their limited aerial extent at the site, we anticipate these materials will not be produced in sufficient quantities to be reused as structural fill.

If the on-site materials cannot be properly moisture-conditioned and/or processed, we recommend using imported granular material for structural fill.

5.4.2 Imported Granular Structural Fill – General Use

Imported granular structural fill should consist of angular pit or quarry run rock, crushed rock, or crushed gravel that is fairly well graded between coarse and fine particle sizes. The granular fill should contain no organic matter, debris, or particles larger than 4 inches, and have less than 5 percent material passing the U.S. Standard No. 200 Sieve. For fine-grading purposes, the maximum particle size should be limited to 1½ inches. The percentage of fines can be increased to 12 percent of the material passing the U.S. Standard No. 200 Sieve if placed during dry weather, and provided the fill material is moisture-conditioned, as necessary, for proper compaction. Imported granular fill material should be compacted to not less than 95 percent of the material's maximum dry density, as determined in general accordance with ASTM D1557 (Modified Proctor). Proper moisture conditioning and the use of vibratory equipment will facilitate compaction of these materials.

Granular fill materials with high percentages of particle sizes in excess of 1½ inches are considered non-moisture-density testable materials. As an alternative to conventional density testing, compaction of these materials should be evaluated by proof roll test observation (deflection tests), where accepted by the geotechnical engineer.

5.4.3 Floor Slab Base Rock

Floor slab base rock should consist of well-graded granular material (crushed rock) containing no organic matter or debris, have a maximum particle size of ¾ inch, and have less than 5 percent material passing the

¹¹ Laboratory testing for moisture density relationship (Proctor) is required. Tests for gradation may be required.

U.S. Standard No. 200 Sieve. Floor slab base rock should be placed in one lift and compacted to not less than 95 percent of the material's maximum dry density as determined in general accordance with ASTM D1557 (Modified Proctor). We recommend "choking" the surface of the base rock with sand just prior to concrete placement. Choking means the voids between the largest aggregate particles are filled with sand, but does not provide a layer of sand above the base rock. Choking the base rock surface reduces the lateral restraint on the bottom of the concrete during curing.

5.4.4 Trench Base Stabilization Material

If groundwater is present at the base of utility excavations, trench base stabilization material should be placed. Trench base stabilization material should consist of a minimum of 1 foot of well-graded granular material with a maximum particle size of 4 inches and less than 5 percent material passing the U.S. Standard No. 4 Sieve. The material should be free of organic matter and other deleterious material, placed in one lift (up to 24 inches thick), and compacted until well-keyed.

5.4.5 Trench Backfill Material

Trench backfill for the utility pipe base and pipe zone should consist of granular material as recommended by the utility pipe manufacturer. Trench backfill above the pipe zone should consist of well-graded granular material containing no organic matter or debris, have a maximum particle size of $\frac{3}{4}$ inch, and have less than 8 percent material passing the U.S. Standard No. 200 Sieve. As a guideline, trench backfill should be placed in maximum 12-inch-thick lifts. The earthwork contractor may elect to use alternative lift thicknesses based on their experience with specific equipment and fill material conditions during construction in order to achieve the required compaction. The following table presents recommended relative compaction percentages for utility trench backfill.

Table 1 Utility Trench Backfill Compaction Recommendations		
Backfill Zone	Recommended <u>Minimum</u> Relative Compaction	
	Structural Areas¹	Landscaping Areas
Pipe Base and Within Pipe Zone	90% ASTM D1557 or pipe manufacturer's recommendation	88% ASTM D1557 or pipe manufacturer's recommendation
Above Pipe Zone	92% ASTM D1557	90% ASTM D1557
Within 3 Feet of Design Subgrade	95% ASTM D1557	90% ASTM D1557
¹ Includes proposed building, pavement areas, structural fill areas, exterior hardscaping, etc.		

5.5 **Permanent Slopes**

5.5.1 Overview

Permanent cut or fill slopes constructed at the site, if any, should be graded at 2H:1V or flatter. Constructed slopes should be overbuilt by a few feet depending on their size and gradient so that they can be properly compacted prior to being cut to final grade. The surface of all slopes should be protected from erosion by seeding, sodding, or other acceptable means. Adjacent on-site and off-site structures should be located at least 5 feet from the top of slopes.

5.5.2 Placement of Fill on Slopes

New fill should be placed and compacted against horizontal surfaces. Where slopes exceed 5H:1V (horizontal to vertical), the slopes should be keyed and benched prior to structural fill placement in general

accordance with the attached Fill Slope Detail, Figure 4. If subdrains are needed on benches, subject to the review of the CGT geotechnical representative, they should be placed as shown on the attached Fill Slope Detail. In order to achieve well-compacted slope faces, slopes should be overbuilt by a few feet and then trimmed back to proposed final grades. A representative from CGT should observe the benches, keyways, and associated subdrains, if needed, prior to placement of structural fill.

5.6 Shallow Foundations – Restroom Facility

5.6.1 Subgrade Preparation

Satisfactory subgrade support for shallow foundations associated with the proposed retaining walls, restroom, and kiosk can be obtained from the native, medium stiff to better loess (ML), native, medium stiff to better residual soil (CL) or new structural fill that is properly placed and compacted on these materials during construction. These materials first encountered at depths of about 0 to ½-foot bgs within our explorations at the trailhead. The geotechnical engineer or their representative should be contacted to observe subgrade conditions prior to placement of forms, reinforcement steel, or granular backfill (if required). If soft, loose, or otherwise unsuitable soils are encountered, they should be over-excavated as recommended by the geotechnical representative at the time of construction. The resulting over-excavation should be brought back to grade with imported granular structural fill in conformance with Section 5.4.2. The maximum particle size of over-excavation backfill should be limited to 1½ inches. All granular pads for footings should be constructed a minimum of 6 inches wider on each side of the footing for every vertical foot of over-excavation.

5.6.2 Minimum Footing Width & Embedment

Minimum footing widths should be in conformance with the current OSSC. As a guideline, CGT recommends individual spread footings have a minimum width of 24 inches. We recommend continuous wall footings have a minimum width of 18 inches. All footings should be founded at least 18 inches below the lowest, permanent adjacent grade to develop lateral capacity and for frost protection.

5.6.3 Bearing Pressure & Settlement

Footings founded as recommended above should be proportioned for a maximum allowable soil bearing pressure of 2,000 pounds per square foot (psf). This bearing pressure is a net bearing pressure, applies to the total of dead and long-term live loads, and may be increased by one-third when considering seismic or wind loads. For foundations founded as recommended above, total settlement of foundations is anticipated to be less than 1 inch. Differential settlements between adjacent columns and/or bearing walls should not exceed ½-inch. If an increased allowable soil bearing pressure is desired, the geotechnical engineer should be consulted.

5.6.4 Lateral Capacity

A maximum passive (equivalent fluid) earth pressure of 150 pounds per cubic foot (pcf) is recommended for design of footings cast neat into excavations in suitable native soil or confined by the recommended imported granular structural fill that is properly placed and compacted during construction. The recommended earth pressure was computed using a factor of safety of 1½, which is appropriate due to the amount of movement required to develop full passive resistance. In order to develop the above capacity, the following should be understood:

1. Concrete must be poured neat in excavations or the foundations must be backfilled with imported granular structural fill,

2. The adjacent grade must be level,
3. The static ground water level must remain below the base of the footings throughout the year.
4. Adjacent floor slabs, pavements, or the upper 12-inch-depth of adjacent, unpaved areas should not be considered when calculating passive resistance.

We recommend the following frictional coefficients for foundation support of the proposed restroom facility:

- An ultimate coefficient of friction equal to 0.35 may be used when calculating resistance to sliding for concrete footings founded on the native soils described above.
- An ultimate coefficient of friction equal to 0.45 may be used when calculating resistance to sliding for concrete footings founded on a minimum of 6 inches of imported granular structural fill (crushed rock) that is properly placed and compacted during construction.

5.6.5 Subsurface Drainage

Recognizing the fine-grained soils encountered at this site, placement of foundation drains is recommended at the outside base elevations of perimeter continuous wall footings. Foundation drains should consist of a minimum 4-inch diameter, perforated, PVC drainpipe wrapped with a non-woven geotextile filter fabric. The drains should be backfilled with a minimum of 2 cubic feet of open graded drain rock per lineal foot of pipe. The drain rock should also be encased in a geotextile fabric in order to provide separation from the surrounding fine-grained soils. Foundation drains should be positively sloped and should outlet to a suitable discharge point. The geotechnical engineer or their representative should observe the drains prior to backfilling. Roof drains should not be tied into foundation drains.

5.7 **Rigid Retaining Walls**

5.7.1 Footings

Retaining wall footings should be designed and constructed in conformance with the recommendations presented in Section 5.5, as applicable.

5.7.2 Wall Drains

We recommend placing a retaining wall drain at the base elevation of the heel of the retaining wall footing. Retaining wall drains should consist of a minimum 4-inch-diameter, perforated, HDPE (High Density Polyethylene) drainpipe wrapped with a non-woven geotextile filter fabric. The drains should be backfilled with a minimum of 2 cubic feet of open graded drain rock per lineal foot of pipe. The drain rock should be encased in a geotextile fabric in order to provide separation from the surrounding soils. Retaining wall drains should be positively sloped and should outlet to a suitable discharge point. The geotechnical engineer or their representative should be contacted to observe the drains prior to backfilling. Roof or area drains should not be tied into retaining wall drains.

5.7.3 Wall Backfill

Retaining walls should be backfilled with imported granular structural fill in conformance with Section 5.4.2 and contain less than 5 percent passing the U.S. Standard No. 200 Sieve. The backfill should be compacted to a minimum of 90 percent of the material's maximum dry density as determined in general accordance with ASTM D1557 (Modified Proctor). When placing fill behind walls, care must be taken to minimize undue lateral loads on the walls. Heavy compaction equipment should be kept at least "H" feet from the back of the walls, where "H" is the height of the wall. Light mechanical or hand tamping equipment should be used for compaction of backfill materials within "H" feet of the back of the walls.

5.7.4 Design Parameters & Limitations

For rigid retaining walls founded, backfilled, and drained as recommended above, the following table presents parameters recommended for design.

Table 2 Design Parameters for Rigid Retaining Walls

Retaining Wall Condition	Modeled Backfill Condition	Static Equivalent Fluid Pressure (S _A)	Seismic Equivalent Fluid Pressure (S _{AE})
Not Restrained from Rotation	Level (i = 0)	32 pcf	44 pcf
Restrained from Rotation	Level (i = 0)	54 pcf	62 pcf
<u>Note 1:</u> Refer to the attached Figure 5 for a graphical representation of static and seismic loading conditions. Seismic component of active thrust acts at 0.6H above the base of the wall.			
<u>Note 2:</u> Seismic (dynamic) lateral loads were computed using the Mononobe-Okabe Equation as presented in the 1997 Federal Highway Administration (FHWA) design manual.			

The above design recommendations are based on the assumptions that:

- (1) The walls consist of concrete cantilevered retaining walls ($\beta = 0$ and $\delta = 24$ degrees, see Figure 5).
- (2) The walls are 10 feet or less in height.
- (3) The backfill is drained and consists of imported granular structural fill ($\phi = 38$ degrees).
- (4) No line load or point load surcharges are imposed behind the walls.
- (5) The grade behind the wall is level, or sloping down and away from the wall, for a distance of 10 feet or more from the wall.
- (6) The grade in front of the walls is level or sloping up for a distance of at least 5 feet from the wall.

Re-evaluation of our recommendations will be required if the retaining wall design criteria for the project vary from these assumptions.

5.8 **Floor Slabs**

5.8.1 Subgrade Preparation

Satisfactory subgrade support for slabs constructed on grade, supporting up to 100 psf area loading, can be obtained from the medium stiff to better loess (ML), or new structural fill that is properly placed and compacted on these materials during construction. The geotechnical engineer or their representative should observe floor slab subgrade soils to evaluate surface consistencies. If soft, loose, or otherwise unsuitable soils are encountered, they should be over-excavated as recommended by the CGT geotechnical representative at the time of construction. The resulting over-excavation should be brought back to grade with imported granular structural fill as described in Section 5.4.2.

5.8.2 Crushed Rock Base

Concrete floor slabs should be supported on a minimum 6-inch-thick layer of crushed rock (base rock) in conformance with Section 5.4.3. For design cases where a vapor barrier or retarder is not placed below the slab, the surface of the base rock should be choked with sand just prior to concrete placement. Choking means the voids between the largest aggregate particles are filled with sand, but does not provide a layer of sand above the base rock. Choking the base rock surface reduces the lateral restraint on the bottom of the concrete during curing.

5.8.3 Design Considerations

For floor slabs constructed as recommended, a modulus of subgrade reaction of 125 pounds per cubic inch (pci) is recommended for the design of the floor slab. Floor slabs constructed as recommended will likely settle less than ½-inch. For general floor slab construction, slabs should be jointed around columns and walls to permit slabs and foundations to settle differentially.

5.8.4 Subgrade Moisture Considerations

Liquid moisture and moisture vapor should be expected at the subgrade surface. The recommended crushed rock base is anticipated to provide protection against liquid moisture. Where moisture vapor emission through the slab must be minimized, e.g. impervious floor coverings, storage of moisture sensitive materials directly on the slab surface, etc., a vapor retarding membrane or vapor barrier below the slab should be considered. Factors such as cost, special considerations for construction, floor coverings, and end use suggest that the decision regarding a vapor retarding membrane or vapor barrier be made by the architect and owner.

If a vapor retarder or vapor barrier is placed below the slab, its location should be based on current American Concrete Institute (ACI) guidelines, ACI 302 Guide for Concrete Floor and Slab Construction. In some cases, this indicates placement of concrete directly on the vapor retarder or barrier. Please note that the placement of concrete directly on impervious membranes increases the risk of plastic shrinkage cracking and slab curling in the concrete. Construction practices to reduce or eliminate such risk, as described in ACI 302, should be employed during concrete placement.

5.9 **Flexible Pavements**

5.9.1 Subgrade Preparation

Subgrade preparation of pavements should be in conformance with Section 5.6.1 of this report. Pavement subgrade surfaces should be crowned (or sloped) for proper drainage in accordance with specifications provided by the project civil engineer.

5.9.2 Input Parameters

Design of the flexible pavement sections presented below was based on the parameters presented in the following table and design approaches from:

- The American Association of State Highway and Transportation Officials (AASHTO) 1993 “Design of Pavement Structures” manual,
- The Asphalt Pavement Association of Oregon (APAO) 2003 “Asphalt Pavement Design Guide”, and
- The Oregon Department of Transportation (ODOT) 2011 “Pavement Design Guide”.

Table 3

Input Parameters Assigned for Pavement Design

Input Parameter	Design Value ¹	Input Parameter	Design Value ¹
Pavement Design Life	20 years	Resilient Modulus	Subgrade: Lean (CL) or Silt (ML) 6,000 psi
Annual Percent Growth	0 percent		Crushed Aggregate Base ⁴ 22,500 psi
Serviceability	4.2 initial 2.5 terminal	Structural Coefficient ²	Crushed Aggregate Base ⁵ 0.10
Reliability ²	75 percent		Asphalt 0.42
Standard Deviation ²	0.49		APAO Level II "Light" 50,000 ESALs
		Vehicle Traffic ⁶	Parking Stalls for Passenger Vehicles APAO Level III "Low Moderate" 100,000 ESALs
Drainage Factor ³	1.0		Drive Lanes (Assumes about 10 trucks/day over 20-year design life)

¹ If any of the above parameters are incorrect, please contact us so that we may revise our recommendations, if warranted.

² Value based on guidelines presented in Section 5.3 of the 2011 ODOT Pavement Design Guide for flexible pavements.

³ Assumes good drainage away from pavement, base, and subgrade is achieved by proper crowning of subgrades.

⁴ Values based on experience with similar base aggregate materials and prepared as recommended in this report.

⁵ Values based on DCP test results in borings HA TH-5, HA TH-6, and HA TH-7 and published correlations presented in Section 5.2 of the 2011 ODOT Pavement Design Guide for flexible pavements.

⁶ ESAL = Total 18-Kip equivalent single axle load. Traffic levels taken from Table 3.1 of APAO manual. If an increased traffic load is estimated, please contact us so that we may refine the traffic loading and revise our recommendations, if warranted.

5.9.3 Recommended Minimum Pavement Sections

The following table presents the minimum flexible pavement sections for the traffic levels indicated in the preceding table, based on the referenced design procedures.

Table 4 Recommended Minimum Pavement Sections

Material	Minimum Thickness (inches)	
	APAO Level II (Passenger Car Traffic Only)	APAO Level III (Entrance/Service Drive Lanes)
Asphalt Pavement (inches)	3	4
Crushed Aggregate Base (inches) ^a	9	9
Subgrade Soils	Prepared in accordance with Section 5.6.1.	

^a Thickness shown assumes dry weather construction. A granular sub-base section and/or a geotextile separation fabric may be required in wet conditions in order to support construction traffic and protect the subgrade. Refer to Section 5.3 for additional discussion.

5.9.4 Asphalt & Base Course Materials

Asphalt pavement and base course material should conform to the most recent State of Oregon Standard Specifications for Highway Construction. Place aggregate base in one lift, and compact to not less than 95 percent of the material's maximum dry density, as determined in general accordance with ASTM D1557 (Modified Proctor). Asphalt pavement should be compacted to at least 91 percent of the material's theoretical maximum density, as determined in general accordance with ASTM D2041 (Rice Specific Gravity).

5.10 Bridge Abutments – Gabion Baskets

Based on a constructability and economic standpoint, we are of the opinion that Gabion basket abutment foundations will be a suitable foundation type for the proposed bridge crossing structures. Gabion basket

bridge abutments consist of rectangular rock-filled wire baskets ("gabions") founded on native soils. All gabion wall materials should be in general conformance with Section 02340 of the ODOT 2015 Oregon Standard Specifications for Construction.

5.10.1 Subgrade Preparation for Abutment Foundations

Satisfactory subgrade support for the proposed gabion basket abutments can be obtained by placing a minimum, 6-inch-thick layer of imported granular structural fill in conformance with Section 5.4.2 over the native, medium stiff or better loess (ML), medium stiff/dense or better alluvium (ML, GM), medium stiff or better residual soil (CL), or predominately weathered basalt (RX) encountered near the surface of the site in hand auger borings advanced near the anticipated abutment locations. The following table indicates the anticipated bearing soil for each bridge abutment:

Bridge Abutment	Anticipated Bearing Soils	Geologic Interpretation	Associated Exploration
Crossing 1 – North Abutment	Medium stiff to better silt (ML)	Loess	HA C-1/N
Crossing 1 – South Abutment	Medium stiff to better silt (ML)	Loess	HA C-1/S
Crossing 2 – Northeast Abutment	Medium stiff to better silt (ML)	Loess	HA C-2/NE
Crossing 2 – Southwest Abutment	Medium stiff to better silt (ML)	Loess	HA C-2/SW
Crossing 3 – Northwest Abutment	Medium dense to better silty gravel (GM)	Alluvium	HA C-3/NW
Crossing 3 – Southeast Abutment	Medium stiff to better gravelly lean clay (CL)	Residual Soil	HA C-3/SE
Crossing 4 – Northeast Abutment	Medium stiff to better silt (ML)	Loess	HA C-4/NE
Crossing 4 – Southwest Abutment	Medium stiff to better silt (ML)	Loess	HA C-4/SW
Crossing 5 – East Abutment	Medium stiff to better silt (ML)	Loess	HA C-5/E
Crossing 5 – West Abutment	Medium stiff to better silt (ML)	Alluvium	HA C-5/W
Crossing 6 – East Abutment	Predominantly decomposed basalt (RX)	Columbia River Basalt	HA C-6/E
Crossing 6 – West Abutment	Medium stiff to better silt (ML)	Loess	HA C-6/W

After site preparation as recommended above, and prior to construction of the gabion basket abutments, the geotechnical engineer or his representative should observe the exposed foundation subgrade soils to confirm conditions consistent with those observed during our field investigation and to identify potential areas of excessive yielding. The geotechnical engineer or his representative should evaluate the subgrade during excavation by probing, since proof rolling (typically done with heavy construction equipment) will not be possible due to the isolated site location. If areas of soft soil or excessive yielding are identified, the affected material should be over-excavated to firm, stable subgrade, and replaced with imported granular structural fill in conformance with Section 5.4.2 of this report.

5.10.2 Bearing Pressure & Coefficient of Friction

Gabion basket abutments founded as recommended above should be proportioned for a maximum allowable soil bearing pressure of 2,000 pounds per square foot (psf). This bearing pressure is a net bearing pressure, applies to the total of dead and long-term live loads, and may be increased by one-third when considering seismic or wind loads.

An ultimate coefficient of friction equal to 0.45 may be used when calculating resistance to sliding for gabion basket abutments founded on the recommended minimum of 6 inches of imported granular structural fill (crushed rock) that is properly placed and compacted during construction.

5.10.3 Gabion Rock Fill

Acceptable rock fill should be hard, durable, angular, and uniformly-graded. Typical rock sizes range between not be less than 4 inches in any given dimension and no larger than 8 inches in any given dimension. However, the rock fill size will depend on the opening size of the gabion baskets and is usually dependent on the manufacturer's recommendations.

5.10.4 Horizontal Setback from Descending Slopes

In order to minimize the effects of stream scour and undercutting of the stream banks, we recommend that gabion foundations constructed within or near descending slopes (i.e., stream banks) should be setback a minimum of 10 feet from the slope surface. This distance should be measured between the face of the slope and the bottom, outside edge of the respective foundation. Organic topsoil and loose surface soils (if present) should not be included when determining this distance. The geotechnical engineer or his representative should be contacted to observe foundation subgrade conditions and confirm this recommended minimum setback is achieved. Any additional setback distances determined from either a design high water level or a hydraulic scour analysis should be considered. Hydraulic analyses were beyond the scope of our assignment.

5.11 **Trail Construction Considerations**

CGT recommends trail design and construction take into account the following considerations:

- CGT recommends trails be graded by cutting (in lieu of filling) wherever possible to minimize the potential for improper loading of a slope and/or abrupt gradient changes. Cut slopes should have a maximum gradient of 2H:1V, as recommended in Section 5.5 above.
- Trails should be graded to allow sheetflow runoff across the trail wherever possible to avoid collection of stormwater runoff. This may be accomplished by minimizing grade changes across the trail, allowing a slight downslope gradient of the trail bed (outsloped tread), and through grade reversals along running slopes of the trails.
- If stormwater runoff collection is unavoidable, water should not be discharged in a concentrated manner, which may result in erosion. Level spreaders or erosion control structures (e.g. gravel at the discharge point) may be utilized to minimize erosion potential.

5.12 **Additional Considerations**

5.12.1 Trailhead Drainage

Subsurface drains should be connected to the nearest storm drain, on-site infiltration system (to be designed by others) or other suitable discharge point. Paved surfaces and grading near or adjacent to buildings should be sloped to drain away from the building. Surface water from paved surfaces and open spaces should be collected and routed to a suitable discharge point. Surface water should not be directed into foundation drains.

5.12.2 Expansive Potential

The near surface native soils consist of low plasticity silt (ML) and lean clay (CL). These soils are not considered to be susceptible to appreciable movements from changes in moisture content. Accordingly, no special considerations are required to mitigate expansive potential of the near surface soils at the site.

6.0 RECOMMENDED ADDITIONAL SERVICES

6.1 Design Review

Geotechnical design review is of paramount importance. We recommend the geotechnical design review take place prior to releasing bid packets to contractors.

6.2 Observation of Construction

Satisfactory earthwork, foundation, floor slab, and pavement performance depends to a large degree on the quality of construction. Sufficient observation of the contractor's activities is a key part of determining that the work is completed in accordance with the construction drawings and specifications. Subsurface conditions observed during construction should be compared with those encountered during subsurface explorations, and recognition of changed conditions often requires experience. We recommend that qualified personnel visit the site with sufficient frequency to detect whether subsurface conditions change significantly from those observed to date and anticipated in this report. We recommend the geotechnical engineer or their representative attend a pre-construction meeting coordinated by the contractor and/or developer. The project geotechnical engineer or their representative should provide observations and/or testing of at least the following earthwork elements during construction:

- Site Stripping and Demolition
- Subgrade Preparation for Shallow Foundations, Retaining Walls, Bridge Abutments, Structural Fills, Floor Slabs, and Pavements
- Compaction of Structural Fill and Utility Trench Backfill
- Compaction of Base Rock for Floor Slabs and Pavements
- Compaction of HMA for Pavements

It is imperative that the owner and/or contractor request earthwork observations and testing at a frequency sufficient to allow the geotechnical engineer to provide a final letter of compliance for the earthwork activities.

7.0 LIMITATIONS

We have prepared this report for use by the owner/developer and other members of the design and construction team for the proposed development. The opinions and recommendations contained within this report are not intended to be, nor should they be construed as a warranty of subsurface conditions, but are forwarded to assist in the planning and design process.

We have made observations based on our explorations that indicate the soil conditions at only those specific locations and only to the depths penetrated. These observations do not necessarily reflect soil types, strata thickness, or water level variations that may exist between or away from our explorations. If subsurface conditions vary from those encountered in our site explorations, CGT should be alerted to the change in conditions so that we may provide additional geotechnical recommendations, if necessary. Observation by experienced geotechnical personnel should be considered an integral part of the construction process.

The owner/developer is responsible for ensuring that the project designers and contractors implement our recommendations. When the design has been finalized, prior to releasing bid packets to contractors, we recommend that the design drawings and specifications be reviewed by our firm to see that our recommendations have been interpreted and implemented as intended. If design changes are made, we request that we be retained to review our conclusions and recommendations and to provide a written

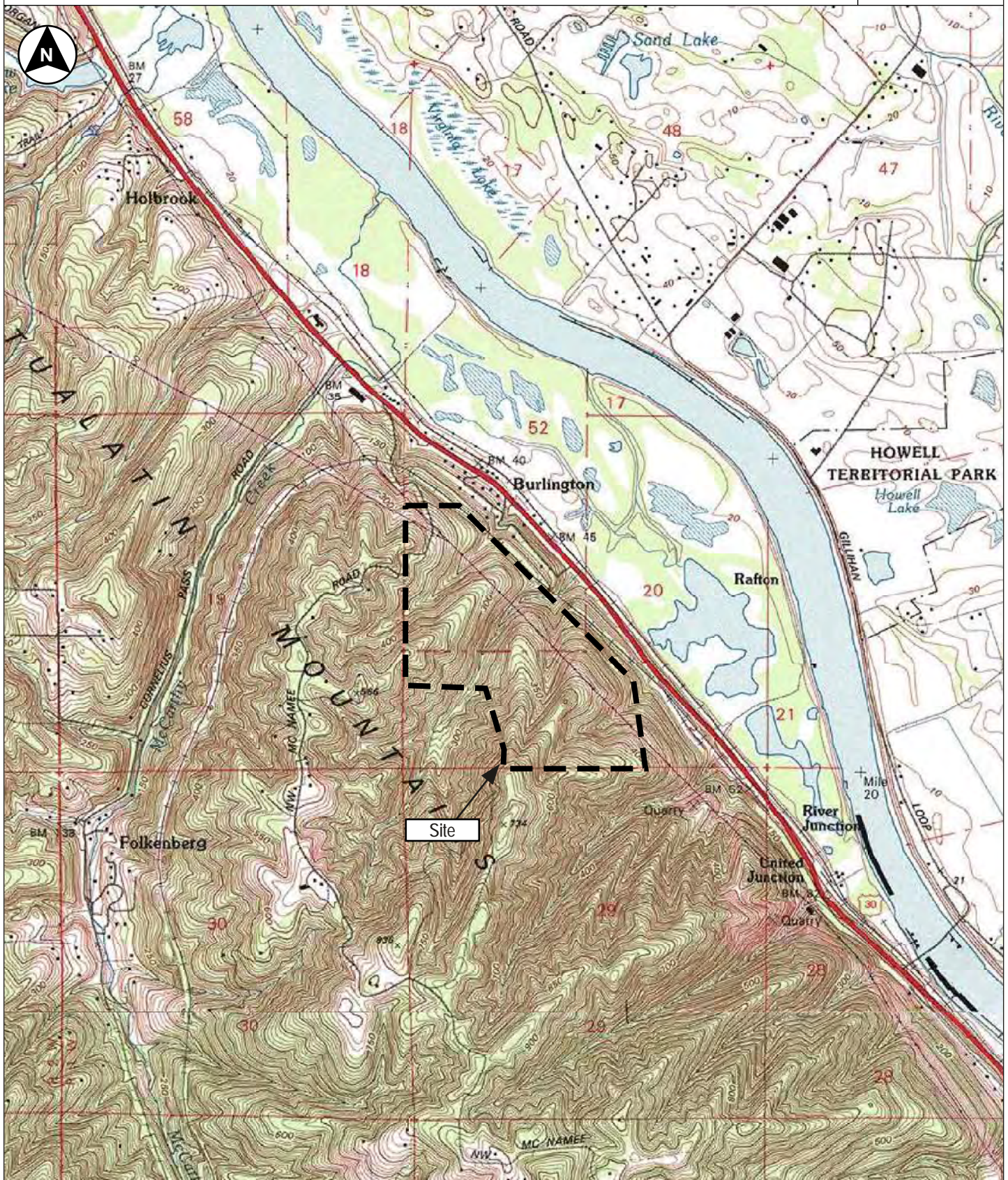
modification or verification. Design review and construction phase testing and observation services are beyond the scope of our current assignment, but will be provided for an additional fee.

The scope of our services does not include services related to construction safety precautions, and our recommendations are not intended to direct the contractor's methods, techniques, sequences, or procedures, except as specifically described in our report for consideration in design.

Geotechnical engineering and the geologic sciences are characterized by a degree of uncertainty. Professional judgments presented in this report are based on our understanding of the proposed construction, familiarity with similar projects in the area, and on general experience. Within the limitations of scope, schedule, and budget, our services have been executed in accordance with the generally accepted practices in this area at the time this report was prepared; no warranty, expressed or implied, is made. This report is subject to review and should not be relied upon after a period of three years

BURLINGTON CREEK FOREST NATURE PARK - MULTNOMAH COUNTY, OREGON
Project Number G1704662

FIGURE 1
Site Location



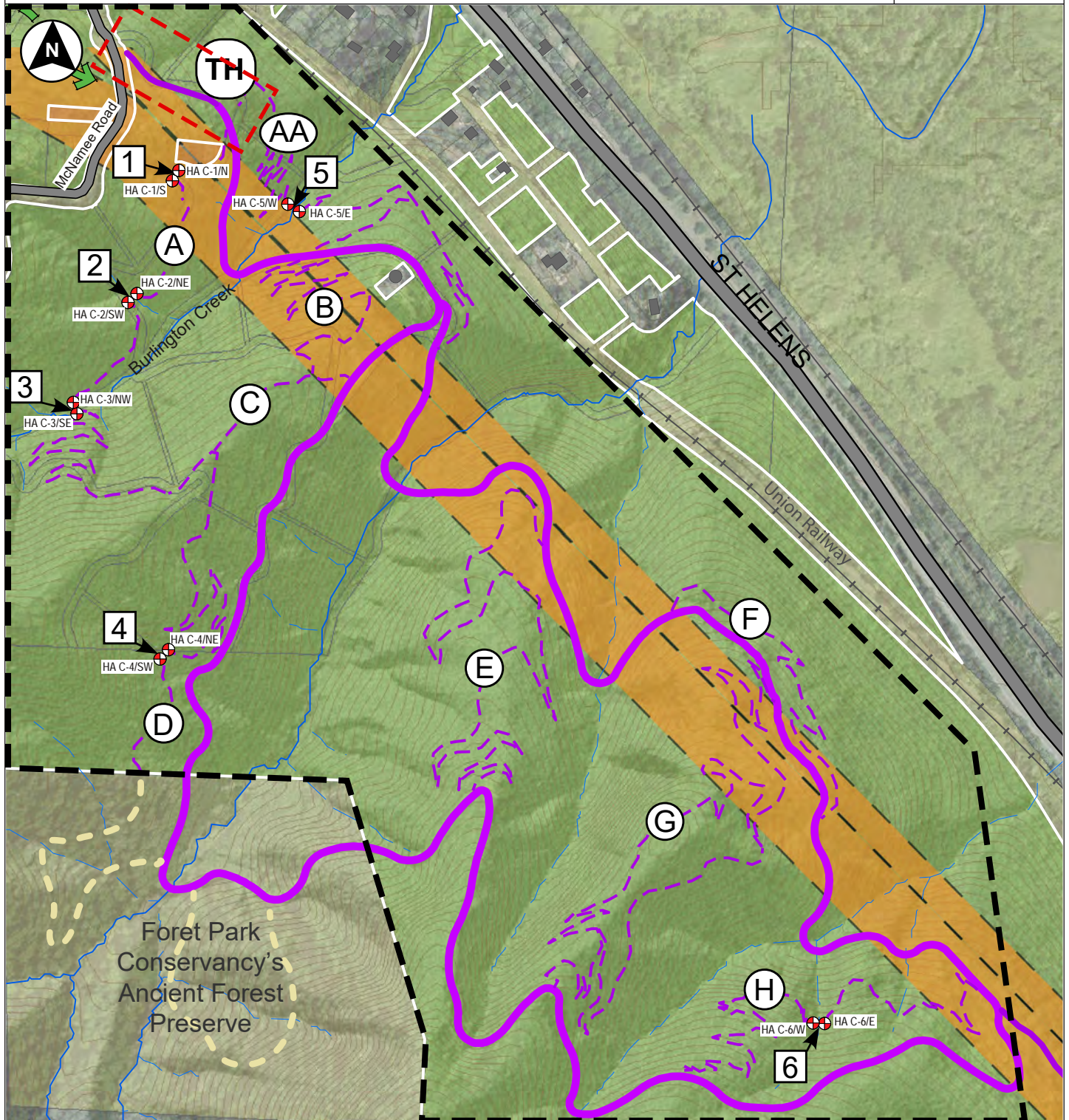
Drafted by: RTH

Map created with TOPO!™, © 2006 National Geographic Holdings
 USGS 7.5 Minute Topographic Map Series, Sauvie Island, Oregon
 Quadrangle, 1990.
 Township 2 North, Range 1 West, Section 20 Willamette Meridian

Latitude: 45.644865° North
 Longitude: 122.845679° West

1 Inch = 2,000 feet



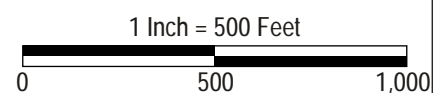


LEGEND

- | | | | |
|---------|--------------------------------|-----|-----------------------------------|
| HA TH-7 | Hand auger boring | (H) | Proposed Trail (from Metro) |
| | Trailhead Site Plan (Figure 3) | 1 | Drainage Crossing (from Metro) |
| | Approximate Site Boundary | | Existing Access Road (from Metro) |

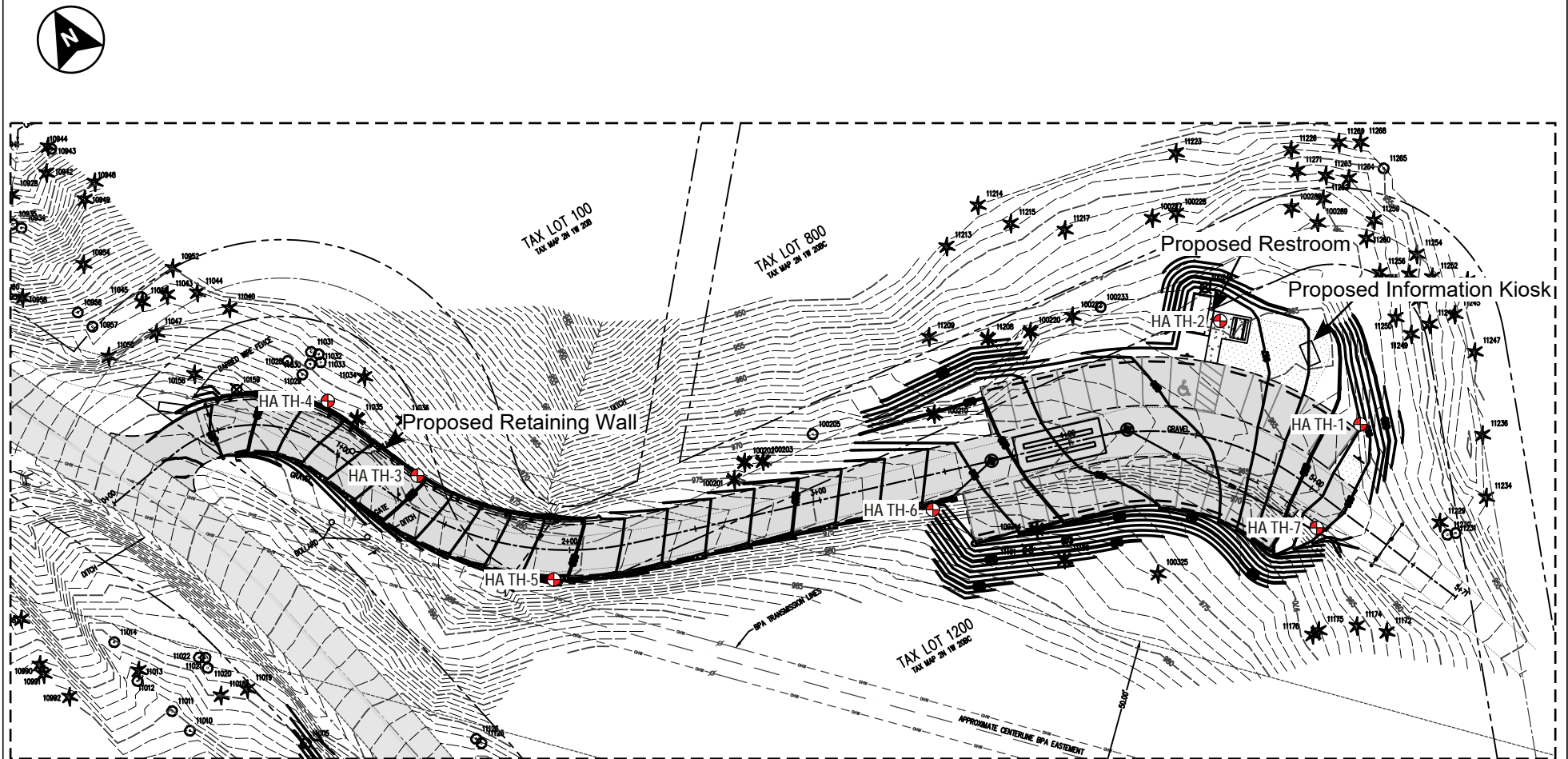


NOTES: Drawing based on Burlington Creek Forest Nature Park, September 2017, prepared by Metro, and observations made while on site. All exploration locations should be considered approximate.



BURLINGTON CREEK FOREST NATURE PARK - MULTNOMAH COUNTY, OREGON
Project Number G1704662

FIGURE 3
Trailhead Site Plan



Approximate figure location shown on Figure 2.

LEGEND

HA TH-7 Hand auger boring

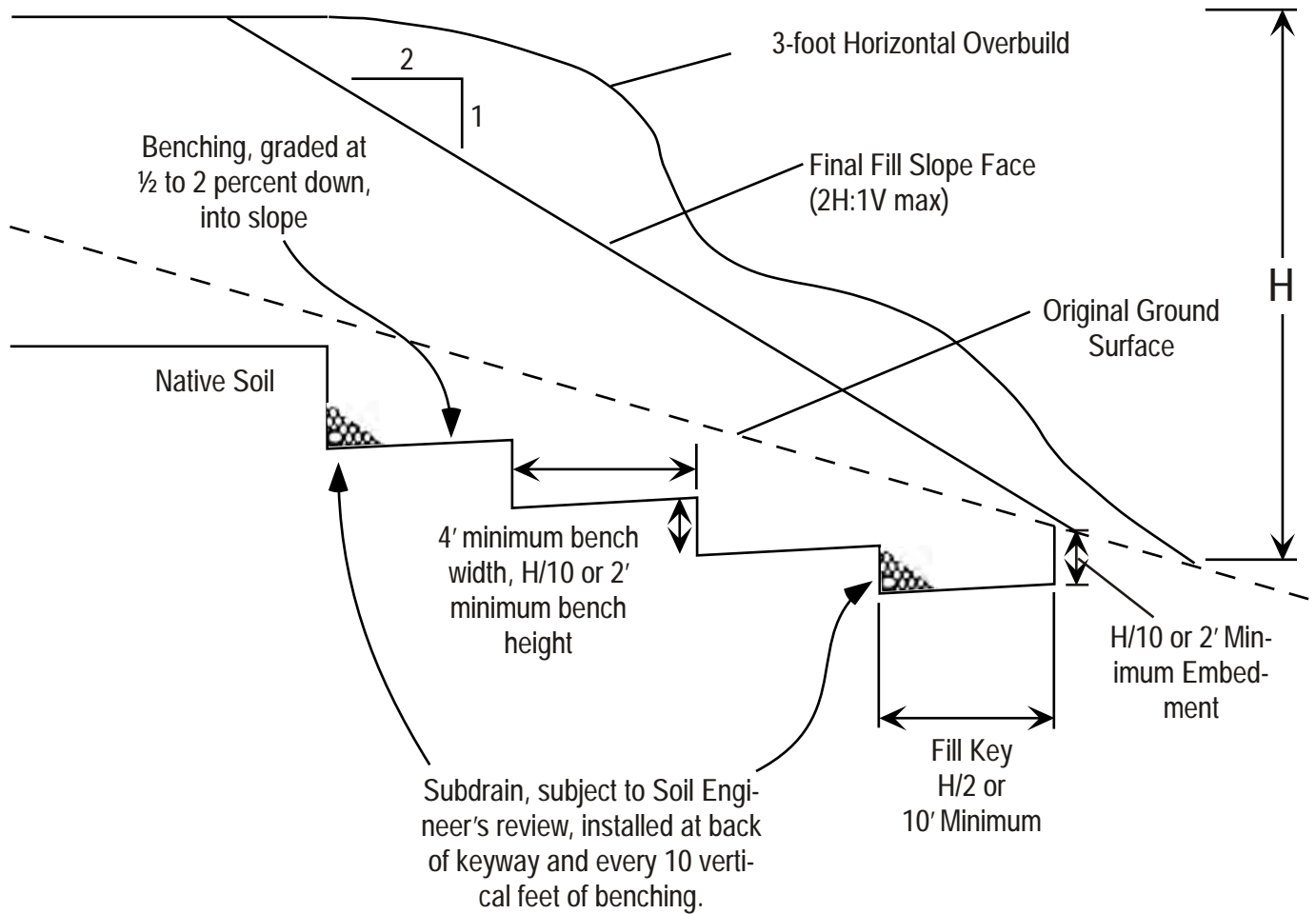
1 Inch = 60 Feet



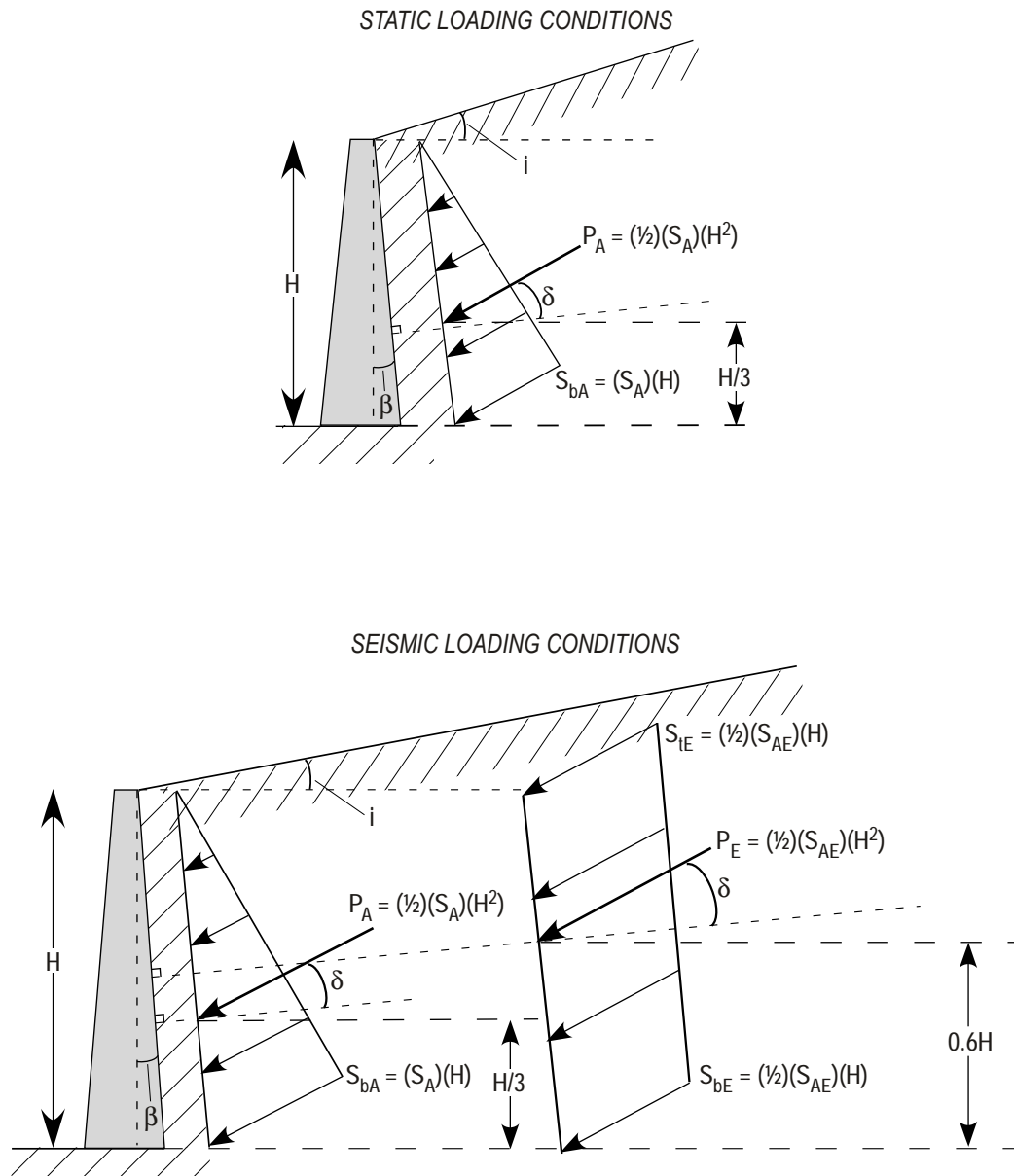
NOTES: Drawing based on observations made while on site and Burlington Parking Site Plan prepared by AKS Engineering, dated 9/5/17. All exploration locations should be considered approximate.



Drafted by: RTH



ACTIVE LATERAL PRESSURE DISTRIBUTION



LEGEND

P_A = Static active thrust force acting at a triangular distribution on wall (lb/ft³)

P_E = Dynamic component of active thrust force acting at a uniform distribution on wall (lb/ft)

i = Slope of backfill (degrees)**

S_A = Active (static) component of equivalent fluid pressure (lb/ft³)*

S_{tE} = Active earth pressure (dynamic) at the top of the wall (lb/ft³)

S_{bA} = Active earth pressure (static) at the bottom of the wall (lb/ft³)

ϕ = Internal angle of friction for backfill (degrees)**

δ = Angle from normal of back of wall (degrees). Based on friction developing between wall and backfill**

β = Slope of back of wall (degrees)**

S_{AE} = Dynamic component of equivalent fluid pressure (lb/ft³)*

S_{bE} = Active earth pressure (dynamic) at bottom of the wall (lb/ft³)*

*Refer to report text for calculated values **Refer to report text for modeled/assumed values



Notes

1. Uniform pressure distribution of seismic loading is based on empirical evaluations [Sherif et al, 1982 and Whitman, 1990].
2. Placement of seismic resultant force at 0.6H is based on wall behavior and model test results [Whitman, 1990].

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A Division of Carlson Testing, Inc.
Phone: (503) 601-8250
Fax: (503) 601-8254

Bend Office (541) 330-9155
Eugene Office (541) 345-0289
Salem Office (503) 589-1252
Tigard Office (503) 684-3460



Appendix A: Subsurface Investigation and Laboratory Testing

**Burlington Creek Forest Nature Park
NW McNamee Road
Multnomah County, Oregon**

CGT Project Number G1704662

September 13, 2017

Prepared For:

Ms. Karen Vitkay
Metro
600 NE Grand Avenue
Portland, Oregon 97232-2736

Prepared by
Carlson Geotechnical

Exploration Key.....	Figure A1
Soil Classification.....	Figure A2
ODOT Rock Classification	Figure A3
Boring Logs.....	Figures A4 – A22

A.1.0 SUBSURFACE INVESTIGATION

Our field investigation consisted of nineteen hand auger borings completed in August 2017. The approximate exploration locations are shown on the Overall Site Plan and Trailhead Site Plan, attached to the geotechnical report as Figures 2 and 3, respectively. The exploration locations shown therein were estimated based on measurements taken with hand-held GPS units and should be considered approximate. Surface elevations indicated on the logs were estimated from the topographic maps (Figures 2 and 3), and should be considered approximate. Elevations assigned to the stream crossing explorations were based on Figure 2, which has a 10-foot contour interval. Therefore, the elevations should be considered to be within ± 5 feet. Elevations assigned to the trailhead explorations were based on Figure 3, which has a 1-foot contour interval and should be considered to be within ± 1 foot.

A.1.1 Hand Auger Borings

CGT advanced two hand auger borings near each of the proposed bridge abutments for crossings 1 through 6 to depths of up to 5 feet bgs. Hand augers were named based on the crossing number and direction relative to the proposed bridge (e.g. HA C3-NW for the hand auger on the northwest side of crossing 3). Seven additional hand auger borings (HA TH-1 through TH-7) were advanced in the area of the proposed trailhead facility to depths of up to 8 feet bgs.

Many of the hand augers were terminated due to practical refusal. Practical refusal occurs when the auger cannot be advanced further, often due to coarse gravel particles in the soil. The hand auger borings were loosely backfilled with the excavated materials upon completion.

A.1.2 In-Situ Testing - Wildcat Dynamic Cone Penetrometer (WDCP) Tests

We performed fifteen dynamic cone penetrometer tests in conjunction with selected hand auger borings (near the proposed bridge abutments and retaining walls) to depths of up to about 5½ feet bgs. The WDCP tests were performed using a Wildcat Dynamic Cone Penetrometer (WDCP) provided and operated by CGT. The WDCP test is described on the attached Exploration Key, Figure A1.

A.1.3 In-Situ Testing - Dynamic Cone Penetrometer (DCP) Tests

We performed three dynamic cone penetrometer tests in conjunction with selected hand auger borings (in areas of proposed pavements) to depths of up to about 3 feet bgs. The DCP tests were performed using a Salem Tools Dynamic Cone Penetrometer (DCP) provided and operated by CGT. The DCP test is described on the attached Exploration Key, Figure A1.

A.1.4 Material Classification & Sampling

Representative grab samples were obtained at select intervals from cuttings collected from the hand auger borings. A qualified member of CGT's staff collected the samples and logged the soils in general accordance with the Visual-Manual Procedure (ASTM 2488) and ODOT Rock Classification Criteria. An explanation of these classification systems are attached as Figures A2 and A3. The grab samples were stored in sealable plastic bags and transported to our soils laboratory for further examination and testing. Our geotechnical staff visually examined all samples in order to refine the initial field classifications.

A.1.5 Subsurface Conditions

Subsurface conditions are summarized in Section 2.3 of the geotechnical report. Detailed logs of the explorations are presented on the attached exploration logs, Figures A4 through A22.

A.2.0 LABORATORY TESTING

Laboratory testing was performed on samples collected in the field to refine our initial field classifications and determine in-situ parameters. Laboratory testing included the following:

- Seventeen moisture content determinations (ASTM D2216).
- Three Atterberg limits (plasticity) tests (ASTM D4318).
- Four percentage passing the U.S. Standard No. 200 Sieve tests (ASTM D1140).

Results of the laboratory tests are shown on the exploration logs.

BURLINGTON CREEK FOREST NATURE PARK - MULTNOMAH COUNTY, OREGON
Project Number G1704662

FIGURE A1
Exploration Key

GEOTECHNICAL LABORATORY TESTING



Atterberg limits (plasticity) test results (ASTM D4318): PL = Plastic Limit, LL = Liquid Limit, and MC= Moisture Content (ASTM D2216)

□ FINES CONTENT (%) Percentage passing the U.S. Standard No. 200 Sieve (ASTM D1140)

SAMPLING



GRAB

Grab sample



SPT

Standard Penetration Test (SPT) consists of driving a 2-inch, outside-diameter, split-spoon sampler into the undisturbed formation with repeated blows of a 140-pound, hammer falling a vertical distance of 30 inches (ASTM D1586). The number of blows (N-value) required to drive the sampler the last 12 inches of an 18-inch sample interval is used to characterize the soil consistency or relative density. The drill rig was equipped with an cat-head or automatic hammer to conduct the SPTs. The observed N-values, hammer efficiency, and N_{60} are noted on the boring logs.



MC

Modified California sampling consists of 3-inch, outside-diameter, split-spoon sampler (ASTM G3550) driven similarly to the SPT sampling method described above. A sampler diameter correction factor of 0.44 is applied to calculate the equivalent SPT N_{60} value per Lacroix and Horn, 1973.



CORE

Rock Coring interval



SH

Shelby Tube is a 3-inch, inner-diameter, thin-walled, steel tube push sampler (ASTM D1587) used to collect relatively undisturbed samples of fine-grained soils.

WDCP

Wildcat Dynamic Cone Penetrometer (WDCP) test consists of driving 1.1-inch diameter, steel rods with a 1.4-inch diameter, cone tip into the ground using a 35-pound drop hammer with a 15-inch free-fall height. The number of blows required to drive the steel rods is recorded for each 10 centimeters (3.94 inches) of penetration. The blow count for each interval is then converted to the corresponding SPT N_{60} values.

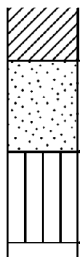
DCP

Dynamic Cone Penetrometer (DCP) test consists of driving a 20-millimeter diameter, hardened steel cone on 16-millimeter diameter steel rods into the ground using a 10-kilogram drop hammer with a 460-millimeter free-fall height. The depth of penetration in millimeters is recorded for each drop of the hammer.

POCKET
PEN. (tsf)

Pocket Penetrometer test is a hand-held instrument that provides an approximation of the unconfined compressive strength in tons per square foot (tsf) of cohesive, fine-grained soils.

CONTACTS



Observed (measured) contact between soil or rock units.

Inferred (approximate) contact between soil or rock units.

Transitional (gradational) contact between soil or rock units.

ADDITIONAL NOTATIONS

Italics

Notes drilling action or digging effort

{ Braces }

Interpretation of material origin/geologic formation (e.g. { Base Rock } or { Columbia River Basalt })

BURLINGTON CREEK FOREST NATURE PARK - MULTNOMAH COUNTY, OREGON
Project Number G1704662

FIGURE A2
Soil Classification

Classification of Terms and Content				USCS Grain Size		
NAME: Group Name and Symbol Relative Density or Consistency Color Moisture Content Plasticity Other Constituents Other: Grain Shape, Approximate Gradation Organics, Cement, Structure, Odor, etc. Geologic Name or Formation	Fines		<#200 (0.075 mm)			
	Sand	Fine	#200 - #40 (0.425 mm)			
		Medium	#40 - #10 (2 mm)			
	Gravel	Coarse	#10 - #4 (4.75)			
		Fine	#4 - 0.75 inch			
Cobbles	Coarse	0.75 inch - 3 inches				
			3 to 12 inches; scattered <15% estimated numerous >15% estimated			
Boulders		> 12 inches				
Relative Density or Consistency						
Granular Material		Fine-Grained (cohesive) Materials				
SPT N-Value	Density	SPT N-Value	Torvane tsf Shear Strength	Pocket Pen tsf Unconfined	Consistency	Manual Penetration Test
		<2	<0.13	<0.25	Very Soft	Thumb penetrates more than 1 inch
0 - 4	Very Loose	2 - 4	0.13 - 0.25	0.25 - 0.50	Soft	Thumb penetrates about 1 inch
4 - 10	Loose	4 - 8	0.25 - 0.50	0.50 - 1.00	Medium Stiff	Thumb penetrates about ¼ inch
10 - 30	Medium Dense	8 - 15	0.50 - 1.00	1.00 - 2.00	Stiff	Thumb penetrates less than ¼ inch
30 - 50	Dense	15 - 30	1.00 - 2.00	2.00 - 4.00	Very Stiff	Readily indented by thumbnail
>50	Very Dense	>30	>2.00	>4.00	Hard	Difficult to indent by thumbnail
Moisture Content				Structure		
Dry: Absence of moisture, dusty, dry to the touch Damp: Some moisture but leaves no moisture on hand Moist: Leaves moisture on hand Wet: Visible free water, likely from below water table				Stratified: Alternating layers of material or color >6 mm thick Laminated: Alternating layers < 6 mm thick Fissured: Breaks along definite fracture planes Slickensided: Striated, polished, or glossy fracture planes		
	Plasticity	Dry Strength	Dilatancy	Toughness	Blocky: Cohesive soil that can be broken down into small angular lumps which resist further breakdown Lenses: Has small pockets of different soils, note thickness Homogeneous: Same color and appearance throughout	
ML CL MH CH	Non to Low Low to Medium Medium to High Medium to High	Non to Low Medium to High Low to Medium High to Very High	Slow to Rapid None to Slow None to Slow None	Low, can't roll Medium Low to Medium High		
Visual-Manual Classification						
Major Divisions			Group Symbols	Typical Names		
Coarse Grained Soils: More than 50% retained on No. 200 sieve	Gravels: 50% or more <i>retained</i> on the No. 4 sieve	Clean Gravels	GW	Well-graded gravels and gravel/sand mixtures, little or no fines		
			GP	Poorly-graded gravels and gravel/sand mixtures, little or no fines		
		Gravels with Fines	GM	Silty gravels, gravel/sand/silt mixtures		
			GC	Clayey gravels, gravel/sand/clay mixtures		
	Sands: More than 50% <i>passing</i> the No. 4 sieve	Clean Sands	SW	Well-graded sands and gravelly sands, little or no fines		
			SP	Poorly-graded sands and gravelly sands, little or no fines		
		Sands with Fines	SM	Silty sands, sand/silt mixtures		
			SC	Clayey sands, sand/clay mixtures		
Fine-Grained Soils: 50% or more Passes No. 200 Sieve	Silt and Clays Low Plasticity Fines		ML	Inorganic silts, rock flour, clayey silts		
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, lean clays		
			OL	Organic silt and organic silty clays of low plasticity		
	Silt and Clays High Plasticity Fines		MH	Inorganic silts, clayey silts		
			CH	Inorganic clays of high plasticity, fat clays		
Highly Organic Soils			OH	Organic clays of medium to high plasticity		
			PT	Peat, muck, and other highly organic soils		



ASTM D2488 Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)

Table 22: Scale of Relative Rock Weathering

Designation	Field Identification
Fresh	Crystals are bright. Discontinuities may show some minor surface staining. No discoloration in rock fabric.
Slightly Weathered	Rock mass is generally fresh. Discontinuities are stained and may contain clay. Some discoloration in rock fabric. Decomposition extends up to 1-inch into rock.
Moderately Weathered	Rock mass is decomposed 50% or less. Significant portions of rock show discoloration and weathering effects. Crystals are dull and show visible chemical alteration. Discontinuities are stained and may contain secondary mineral deposits.
Predominantly Weathered	Rock mass is more than 50% decomposed. Rock can be excavated with geologist's pick. All discontinuities exhibit secondary mineralization. Complete discoloration of rock fabric. Surface of core is friable and usually pitted due to washing out of highly altered minerals by drilling water.
Decomposed	Rock mass is completely decomposed. Original rock fabric may be evident. May be reduced to soil with hand pressure.

Table 23: Scale of Relative Rock Hardness

Term	Hardness Designation	Field Identification	Approximate Unconfined Compressive Strength
Extremely Soft	R0	Can be indented with difficulty by thumbnail. May be moldable or friable with finger pressure.	<100 psi
Very Soft	R1	Crumbles under firm blows with point of geology pick. Can be peeled by pocket knife. Scratched with finger nail.	100-1000 psi
Soft	R2	Can be peeled by pocket knife with difficulty. Cannot be scratched with finger nail. Shallow indentation made by firm blow of geology pick.	1000-4000 psi
Medium Hard	R3	Can be scratched by knife or pick. specimen can be fractured with a single firm blow of hammer/geology pick.	4000-8000 psi
Hard	R4	Can be scratched with knife or pick only with difficulty. Several hard blows required to fracture specimen.	8000-16000 psi
Very Hard	R5	Cannot be scratched by knife or sharp pick. Specimen requires many blows of hammer to fracture or chip. Hammer rebounds after impact.	>16000 psi

Table 24: Stratification Terms

Term	Characteristics
Laminations	Thin beds (<1cm)
Fissile	Tendency to break along laminations
Parting	Tendency to break parallel to bedding, any scale
Foliation	Non-depositional, e.g., segregation and layering of minerals in metamorphic rock



Tables adapted from the 1987 Soil and Rock Classification Manual, Oregon Department of Transportation.



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FIGURE A4

Boring HA TH-1

PAGE 1 OF 1

CLIENT	Metro	PROJECT NAME	Burlington Creek Forest Nature Park
PROJECT NUMBER	G1704662	PROJECT LOCATION	Burlington, OR
DATE STARTED	8/10/17	GROUND ELEVATION	962 ft
WEATHER	Sunny ~70F	ELEVATION DATUM	Figures 2 and 3
SURFACE	Grass	LOGGED BY	DE
DRILLING CONTRACTOR	CGT	REVIEWED BY	RTH
EQUIPMENT		SEEPAGE	---
DRILLING METHOD	3-Inch Hand Auger & WDCP	GROUNDWATER AT END	---
		GROUNDWATER AFTER DRILLING	---

ELEVATION (ft)	GRAPHIC LOG	GROUP SYMBOL	MATERIAL DESCRIPTION	GROUNDWATER	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	WDCP N ₆₀ VALUE	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ WDCP N ₆₀ VALUE ▲	
											PL	LL
											MC	
											□ FINES CONTENT (%) □	
											0	100
			SILT: Hard, light brown, dry, medium plasticity, roots up to ¼ inch in diameter in upper 1 foot. { Loess }					25				
			Moist below ~1 foot bgs.					25				
960					2	GRAB 1						
			Trace fine sand below ~3 feet bgs.		4							
958		ML										
			Dark brown below ~5 feet bgs.			GRAB 2						
956					6							
954					8							
			<ul style="list-style-type: none">• Boring terminated at ~8 feet bgs.• Groundwater and caving not observed.• Boring loosely backfilled with cuttings.									
952												

CGT EXPLORATION WITH WDCP G1704662.GPJ 9/13/17 DRAFTED BY: DE



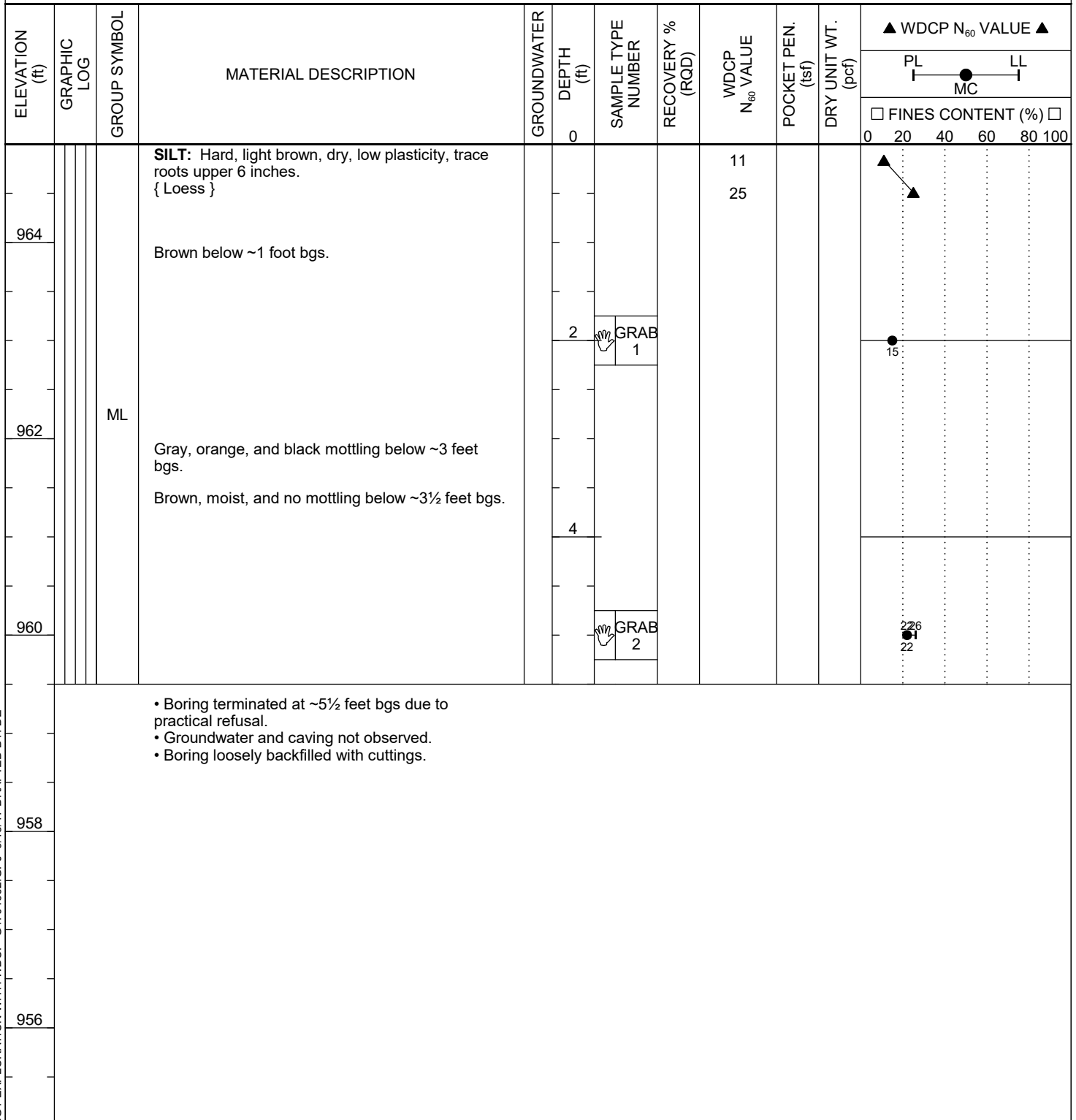
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FIGURE A5

Boring HA TH-2

PAGE 1 OF 1

CLIENT	Metro	PROJECT NAME	Burlington Creek Forest Nature Park
PROJECT NUMBER	G1704662	PROJECT LOCATION	Burlington, OR
DATE STARTED	8/10/17	GROUND ELEVATION	965 ft
WEATHER	Sunny ~75F	ELEVATION DATUM	Figures 2 and 3
SURFACE	Scattered Vegetation	LOGGED BY	DE
DRILLING CONTRACTOR	CGT	REVIEWED BY	RTH
EQUIPMENT		SEEPAGE	---
DRILLING METHOD	3-Inch Hand Auger & WDCP	GROUNDWATER AT END	---
		GROUNDWATER AFTER DRILLING	---



CGT EXPLORATION WITH WDCP G1704662.GPJ 9/13/17 DRAFTED BY: DE



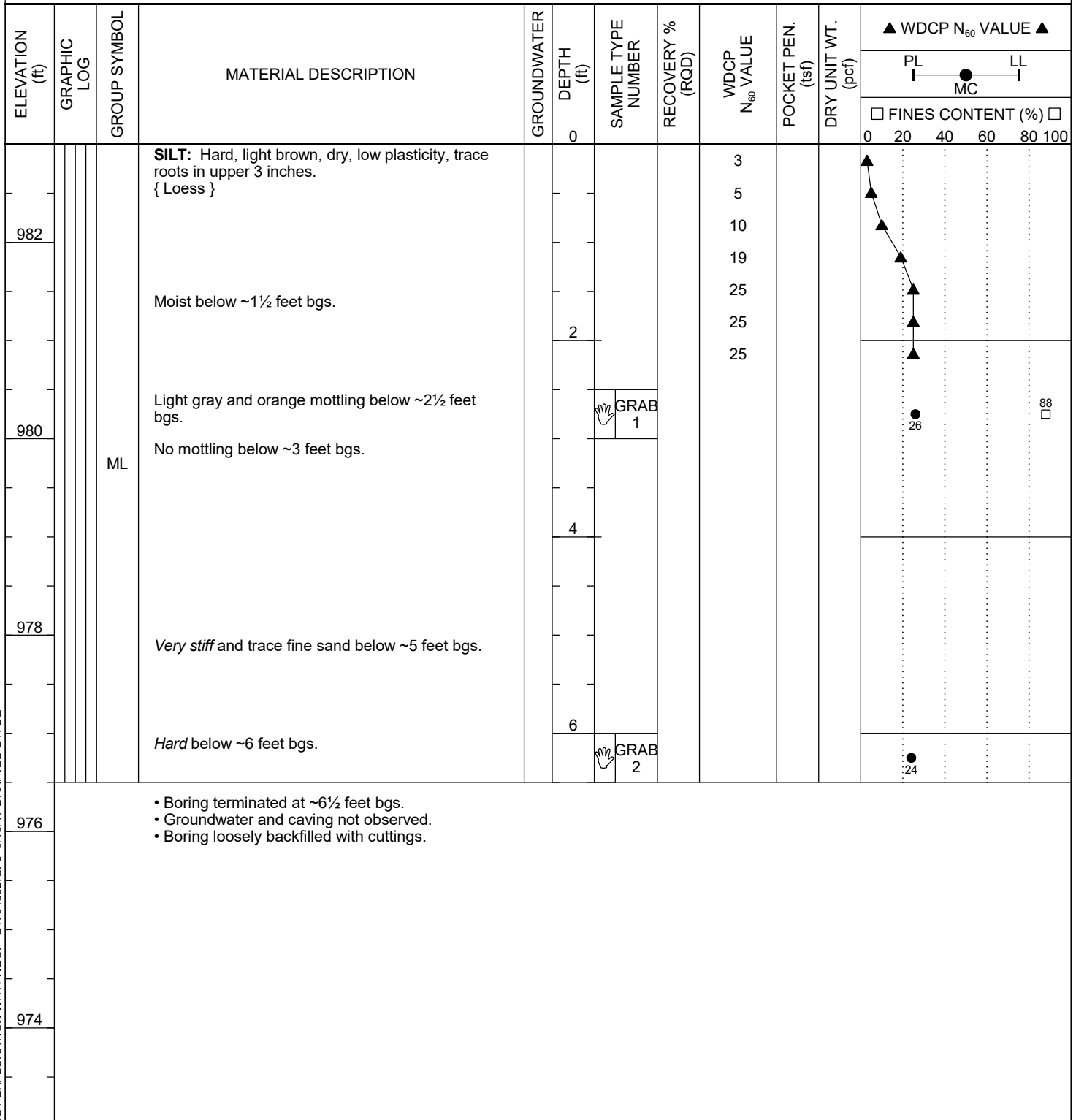
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FIGURE A6

Boring HA TH-3

PAGE 1 OF 1

CLIENT	Metro	PROJECT NAME	Burlington Creek Forest Nature Park
PROJECT NUMBER	G1704662	PROJECT LOCATION	Burlington, OR
DATE STARTED	8/10/17	GROUND ELEVATION	983 ft
WEATHER	Sunny ~80F	ELEVATION DATUM	Figures 2 and 3
SURFACE	Scattered Vegetation	LOGGED BY	DE
DRILLING CONTRACTOR	CGT	REVIEWED BY	RTH
EQUIPMENT		SEEPAGE	---
DRILLING METHOD	3-Inch Hand Auger & WDCP	GROUNDWATER AT END	---
		GROUNDWATER AFTER DRILLING	---



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FIGURE A7

Boring HA TH-4

PAGE 1 OF 1

CLIENT	Metro	PROJECT NAME	Burlington Creek Forest Nature Park
PROJECT NUMBER	G1704662	PROJECT LOCATION	Burlington, OR
DATE STARTED	8/10/17	GROUND ELEVATION	982 ft
WEATHER	Sunny ~80F	ELEVATION DATUM	Figures 2 and 3
SURFACE	Scattered Vegetation	LOGGED BY	DE
DRILLING CONTRACTOR	CGT	REVIEWED BY	RTH
EQUIPMENT		SEEPAGE	---
DRILLING METHOD	3-Inch Hand Auger & WDCP	GROUNDWATER AT END	---
		GROUNDWATER AFTER DRILLING	---

ELEVATION (ft)	GRAPHIC LOG	GROUP SYMBOL	MATERIAL DESCRIPTION	GROUNDWATER	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	WDCP N ₆₀ VALUE	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ WDCP N ₆₀ VALUE ▲	
											PL	LL
					0							
			SILT: Medium stiff to stiff, light brown, dry, low plasticity, trace roots in upper 6 inches. { Loess }					6				
								24				
								22				
								24				
								25				
								25				
980			Brown and moist below ~1 foot bgs.		2			25				
						GRAB 1		25				
								25				

- Boring terminated at ~2½ feet bgs due to practical refusal.
- Groundwater and caving not observed.
- Boring loosely backfilled with cuttings.



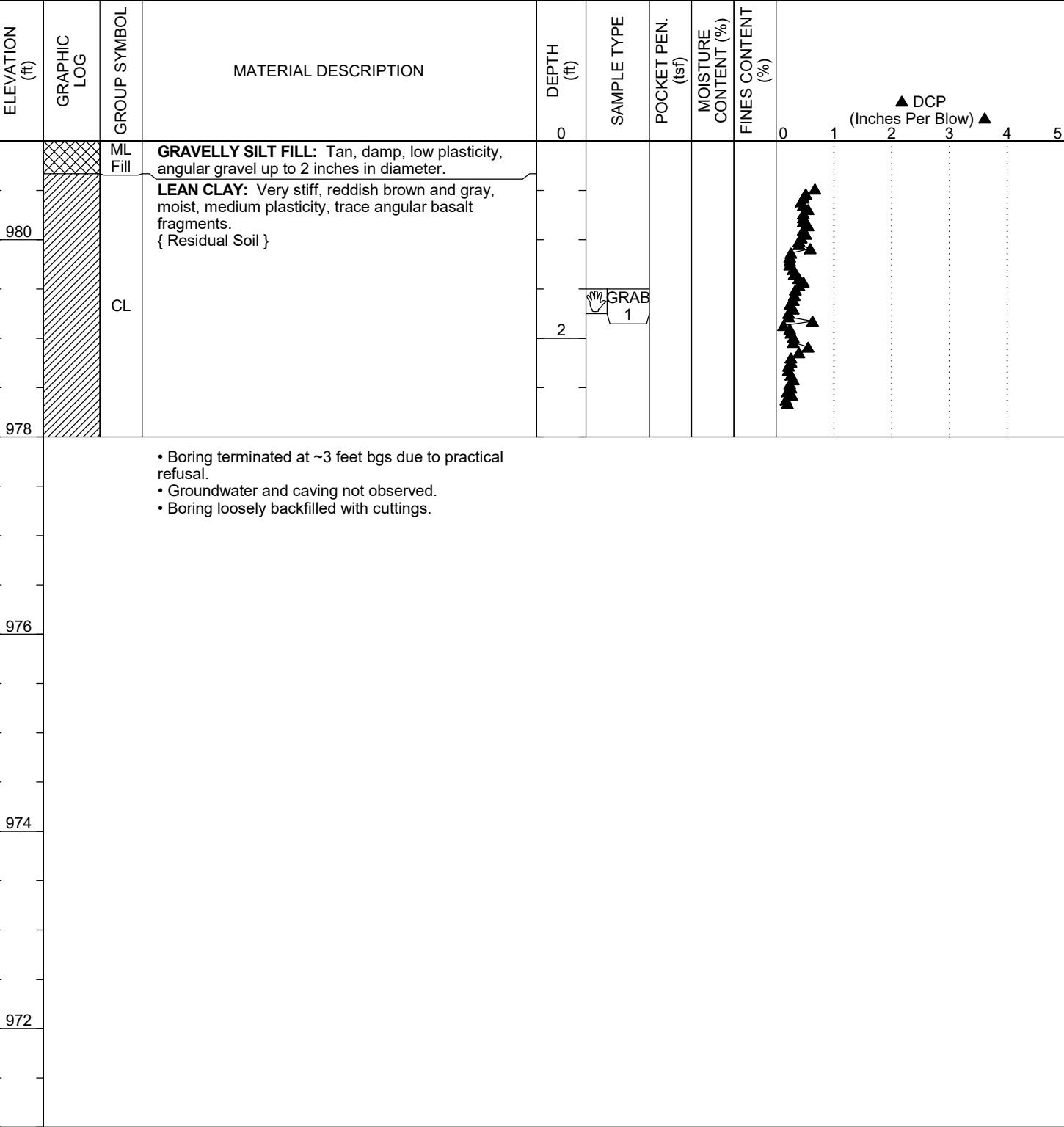
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FIGURE A8

Boring HA TH-5

PAGE 1 OF 1

CLIENT	Metro	PROJECT NAME	Burlington Creek Forest Nature Park
PROJECT NUMBER	G1704662	PROJECT LOCATION	Burlington, OR
DATE STARTED	8/23/17	GROUND ELEVATION	981 ft
WEATHER	Sunny ~70F	ELEVATION DATUM	Figures 2 and 3
SURFACE	Roadside	LOGGED BY	RTH
DRILLING CONTRACTOR	CGT	REVIEWED BY	JPQ
EQUIPMENT		SEEPAGE	---
DRILLING METHOD	3-Inch Hand Auger & WDCP	GROUNDWATER AT END	---
		GROUNDWATER AFTER DRILLING	---



CGT EXPLORATION WITH DCP G1704662.GPJ 9/13/17 DRAFTED BY: RTH



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FIGURE A9

Boring HA TH-6

PAGE 1 OF 1

CLIENT Metro

PROJECT NAME Burlington Creek Forest Nature Park

PROJECT NUMBER G1704662

PROJECT LOCATION Burlington, OR

DATE STARTED 8/23/17 GROUND ELEVATION 972 ft

ELEVATION DATUM Figures 2 and 3

WEATHER Sunny ~70F SURFACE Forest duff

LOGGED BY RTH REVIEWED BY JPQ

DRILLING CONTRACTOR CGT

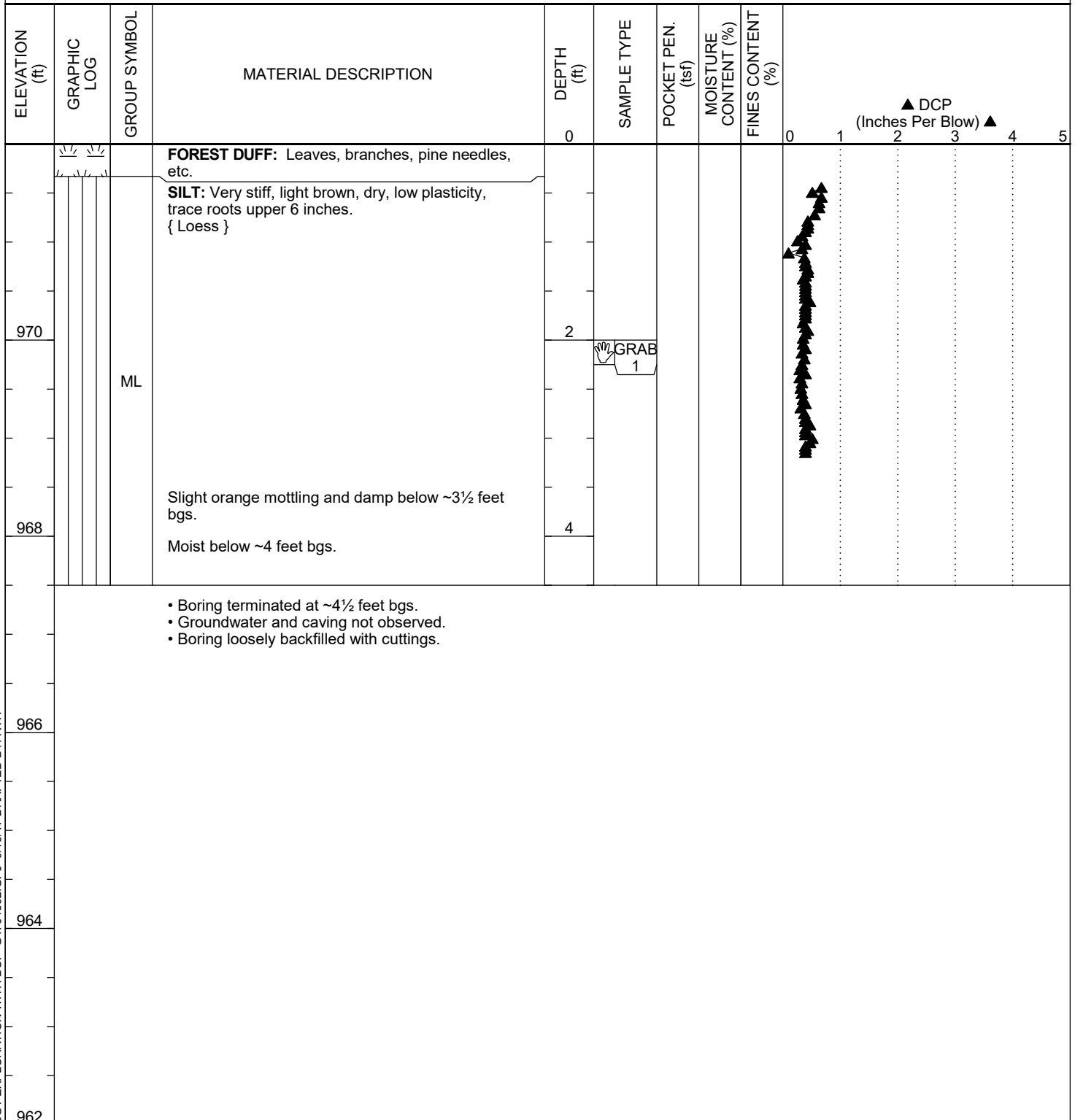
SEEPAGE ---

EQUIPMENT ---

GROUNDWATER AT END ---

DRILLING METHOD 3-Inch Hand Auger & WDCP

GROUNDWATER AFTER DRILLING ---





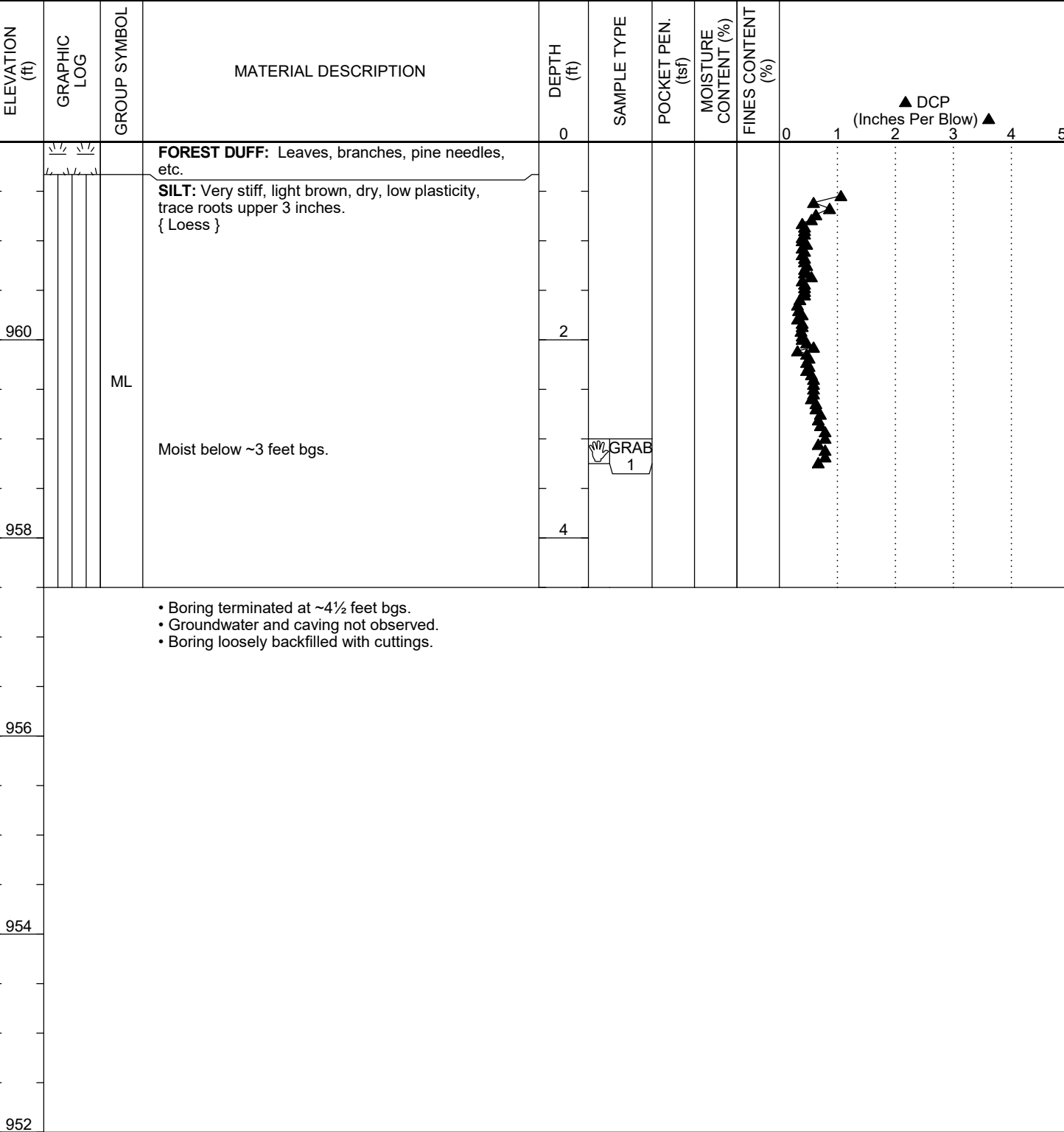
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FIGURE A10

Boring HA TH-7

PAGE 1 OF 1

CLIENT	Metro	PROJECT NAME	Burlington Creek Forest Nature Park
PROJECT NUMBER	G1704662	PROJECT LOCATION	Burlington, OR
DATE STARTED	8/23/17	GROUND ELEVATION	962 ft
WEATHER	Sunny ~70F	SURFACE	Forest duff
DRILLING CONTRACTOR	CGT	LOGGED BY	RTH
EQUIPMENT		REVIEWED BY	JPQ
DRILLING METHOD	3-Inch Hand Auger & WDCP	SEEPAGE	---
		GROUNDWATER AT END	---
		GROUNDWATER AFTER DRILLING	---



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FIGURE A11

Boring HA C-1/N

PAGE 1 OF 1

CLIENT Metro

PROJECT NAME Burlington Creek Forest Nature Park

PROJECT NUMBER G1704662

PROJECT LOCATION Burlington, OR

DATE STARTED 8/9/17 GROUND ELEVATION 265 ft

ELEVATION DATUM Figures 2 and 3

WEATHER Sunny ~75F SURFACE Forest duff

LOGGED BY RTH REVIEWED BY JPQ

DRILLING CONTRACTOR CGT

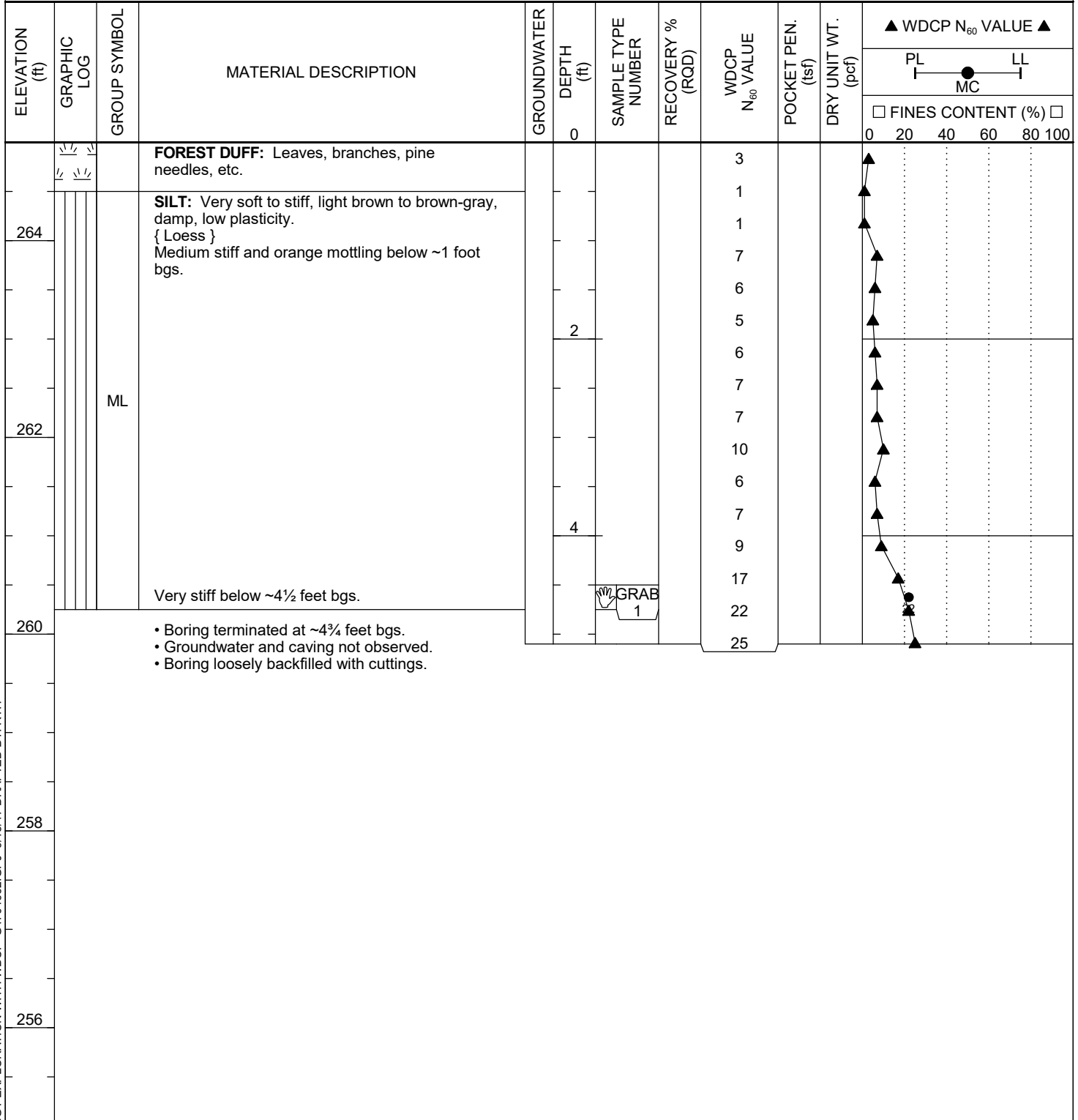
SEEPAGE ---

EQUIPMENT

GROUNDWATER AT END ---

DRILLING METHOD 3-Inch Hand Auger & WDCP

GROUNDWATER AFTER DRILLING ---



CGT EXPLORATION WITH WDCP G1704662.GPJ 9/13/17 DRAFTED BY: RTH



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FIGURE A12

Boring HA C-1/S

PAGE 1 OF 1

CLIENT Metro

PROJECT NAME Burlington Creek Forest Nature Park

PROJECT NUMBER G1704662

PROJECT LOCATION Burlington, OR

DATE STARTED 8/9/17

GROUND ELEVATION 265 ft

ELEVATION DATUM Figures 2 and 3

WEATHER Sunny ~75F

SURFACE Forest duff

LOGGED BY RTH

REVIEWED BY JPQ

DRILLING CONTRACTOR CGT

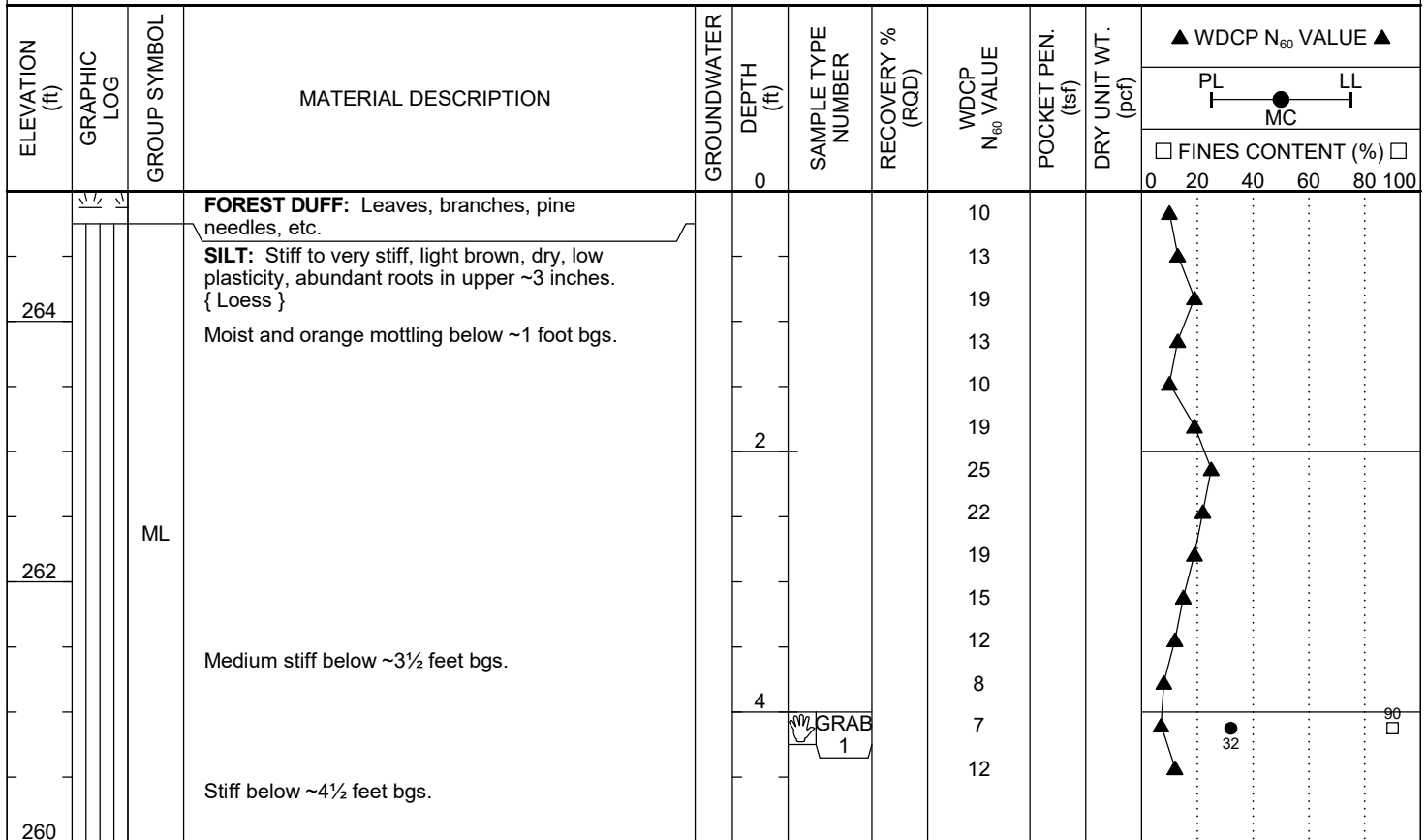
SEEPAGE ---

EQUIPMENT

GROUNDWATER AT END ---

DRILLING METHOD 3-Inch Hand Auger & WDCP

GROUNDWATER AFTER DRILLING ---



- Boring terminated at ~5 feet bgs.
- Groundwater and caving not observed.
- Boring loosely backfilled with cuttings.

CLIENT Metro

PROJECT NAME Burlington Creek Forest Nature Park

PROJECT NUMBER G1704662

PROJECT LOCATION Burlington, OR

DATE STARTED 8/16/17

GROUND ELEVATION 255 ft

ELEVATION DATUM Figures 2 and 3

WEATHER Sunny ~75F

SURFACE Forest duff

LOGGED BY RTH

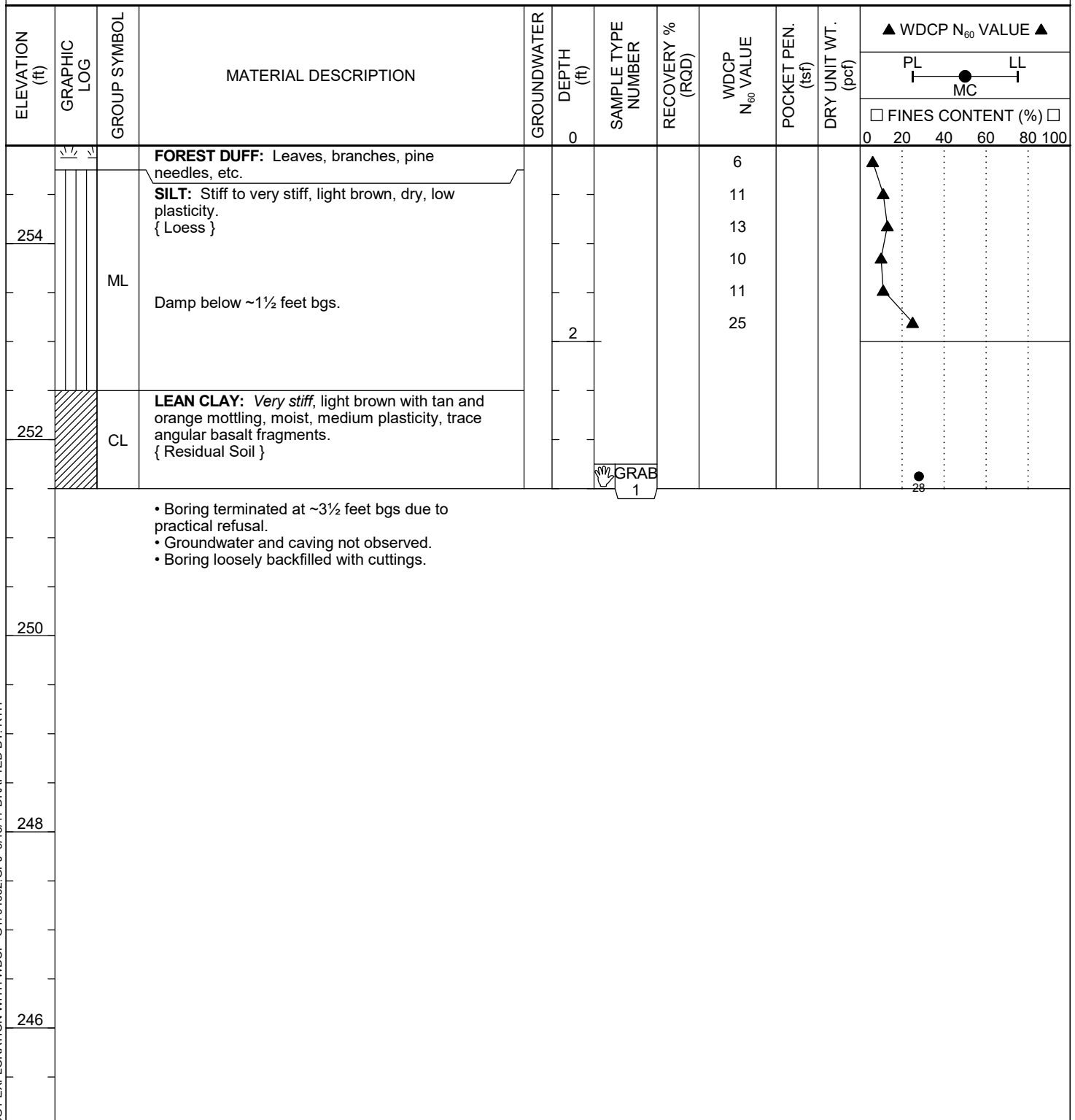
REVIEWED BY JPQDRILLING CONTRACTOR CGTSEEPAGE ---

EQUIPMENT

GROUNDWATER AT END ---

DRILLING METHOD 3-Inch Hand Auger & WDCP

GROUNDWATER AFTER DRILLING ---



CGT EXPLORATION WITH WDCP G1704662.GPJ 9/13/17 DRAFTED BY: RTH

CLIENT Metro

PROJECT NAME Burlington Creek Forest Nature Park

PROJECT NUMBER G1704662

PROJECT LOCATION Burlington, OR

DATE STARTED 8/16/17

GROUND ELEVATION 255 ft

ELEVATION DATUM Figures 2 and 3

WEATHER Sunny ~75F

SURFACE Forest duff

LOGGED BY RTH

REVIEWED BY JPQ

DRILLING CONTRACTOR CGT

SEEPAGE ---

EQUIPMENT

GROUNDWATER AT END ---

DRILLING METHOD 3-Inch Hand Auger & WDCP

GROUNDWATER AFTER DRILLING ---

[illegible]



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FIGURE A15

Boring HA C-3/NW

PAGE 1 OF 1

CLIENT Metro

PROJECT NAME Burlington Creek Forest Nature Park

PROJECT NUMBER G1704662

PROJECT LOCATION Burlington, OR

DATE STARTED 8/16/17

GROUND ELEVATION 275 ft

ELEVATION DATUM Figures 2 and 3

WEATHER Sunny ~75F

SURFACE Forest duff

LOGGED BY RTH

REVIEWED BY JPQ

DRILLING CONTRACTOR CGT

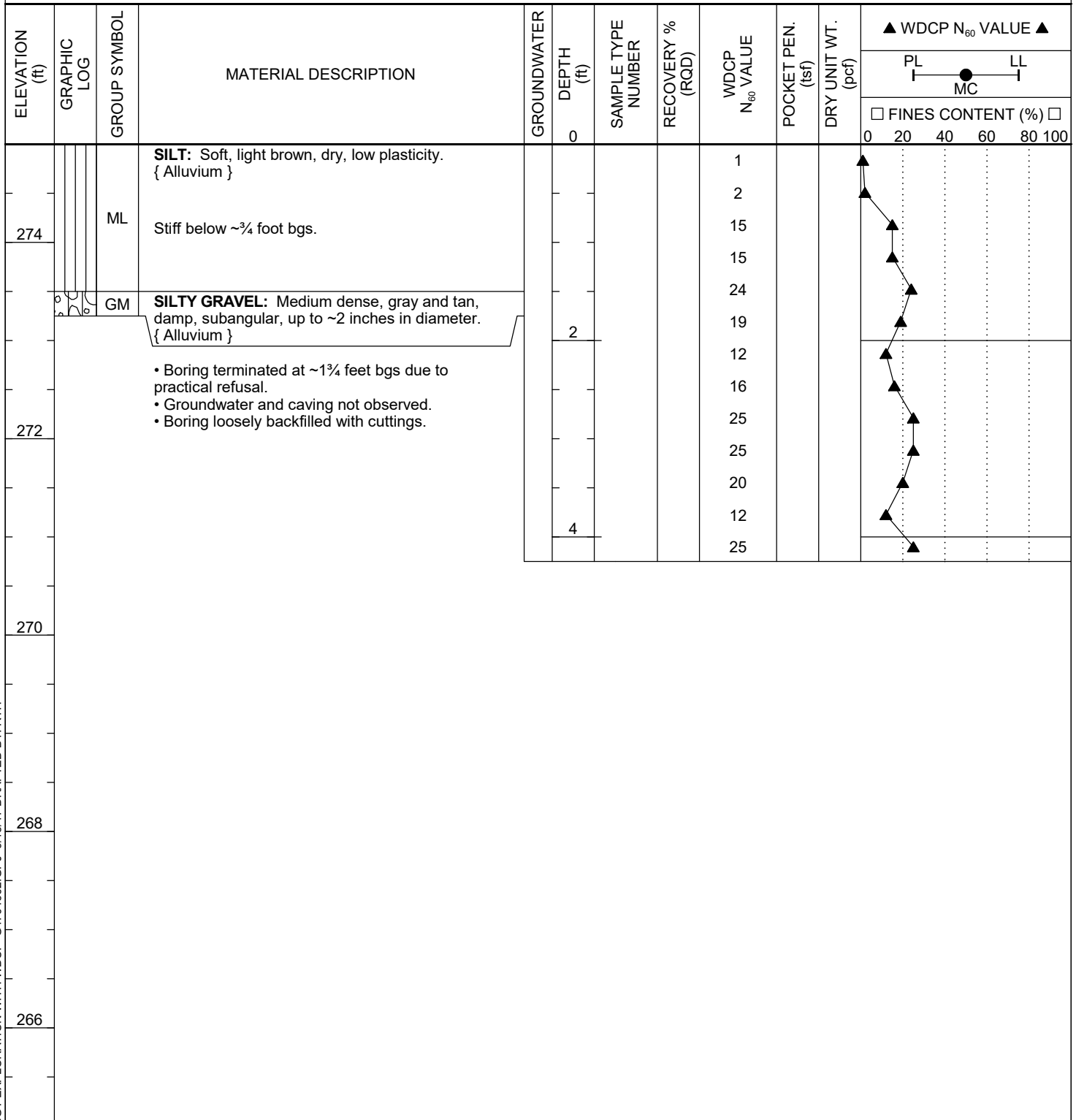
SEEPAGE ---

EQUIPMENT

GROUNDWATER AT END ---

DRILLING METHOD 3-Inch Hand Auger & WDCP

GROUNDWATER AFTER DRILLING ---



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FIGURE A16

Boring HA C-3/SE

PAGE 1 OF 1

CLIENT Metro

PROJECT NAME Burlington Creek Forest Nature Park

PROJECT NUMBER G1704662

PROJECT LOCATION Burlington, OR

DATE STARTED 8/16/17 GROUND ELEVATION 275 ft

ELEVATION DATUM Figures 2 and 3

WEATHER Sunny ~75F SURFACE Forest duff

LOGGED BY RTH REVIEWED BY JPQ

DRILLING CONTRACTOR CGT

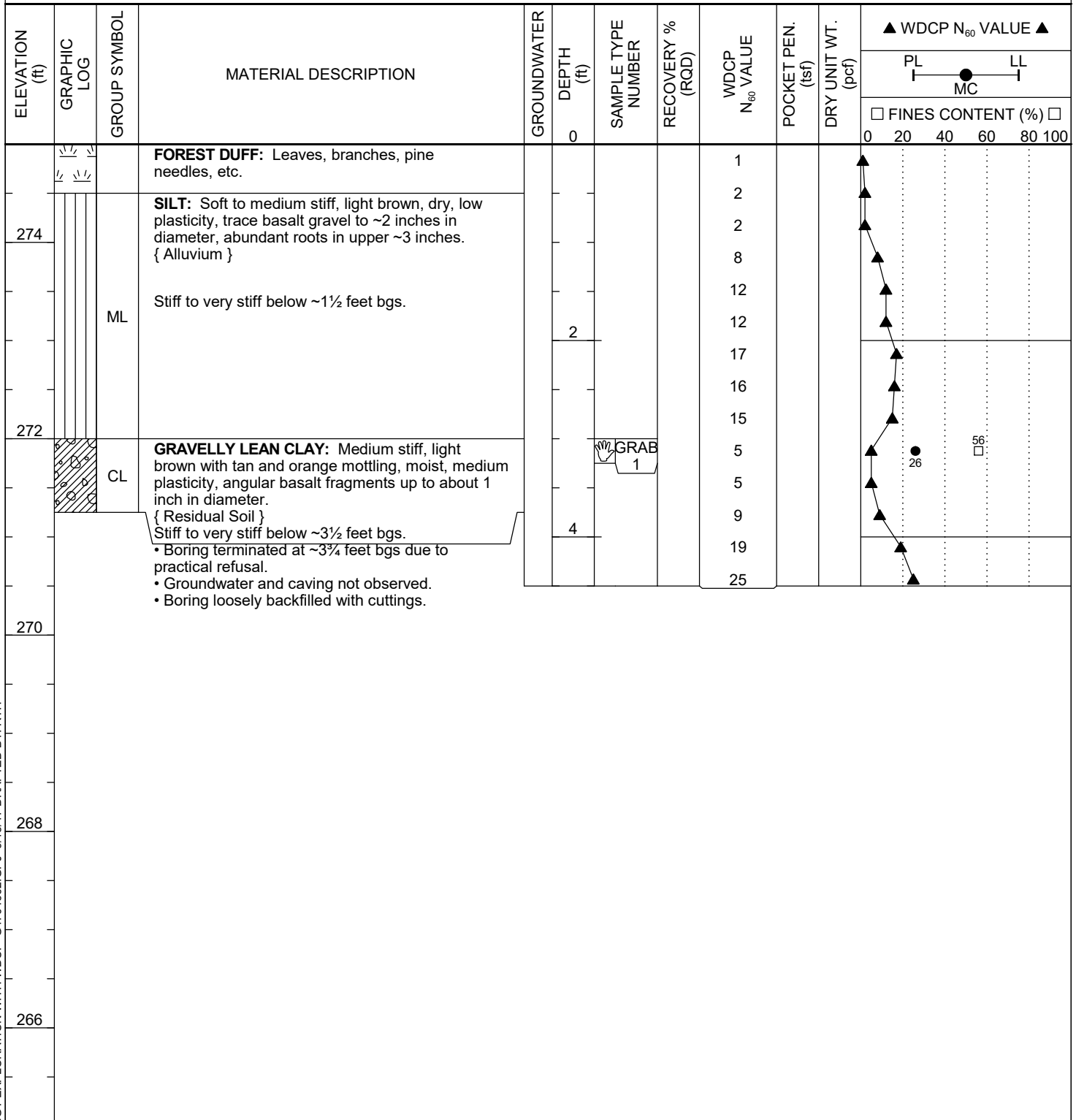
SEEPAGE ---

EQUIPMENT ---

GROUNDWATER AT END ---

DRILLING METHOD 3-Inch Hand Auger & WDCP

GROUNDWATER AFTER DRILLING ---



CGT EXPLORATION WITH WDCP G1704662.GPJ 9/13/17 DRAFTED BY: RTH

CLIENT Metro

PROJECT NAME Burlington Creek Forest Nature Park

PROJECT NUMBER G1704662

PROJECT LOCATION Burlington, OR

DATE STARTED 8/8/17 **GROUND ELEVATION** 320 ft

ELEVATION DATUM Figures 2 and 3

WEATHER Sunny ~75F **SURFACE** Forest duff

LOGGED BY RTH REVIEWED BY JPQ

DRILLING CONTRACTOR CGT

SEEPAGE ---

EQUIPMENT

GROUNDWATER AT END ---

DRILLING METHOD 3-Inch Hand Auger & WDCP

GROUNDWATER AFTER DRILLING ---

[illegible]



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FIGURE A18

Boring HA C-4/SW

PAGE 1 OF 1

CLIENT Metro

PROJECT NAME Burlington Creek Forest Nature Park

PROJECT NUMBER G1704662

PROJECT LOCATION Burlington, OR

DATE STARTED 8/8/17

GROUND ELEVATION 320 ft

ELEVATION DATUM Figures 2 and 3

WEATHER Sunny ~75F

SURFACE Forest duff

LOGGED BY RTH

REVIEWED BY JPQ

DRILLING CONTRACTOR CGT

SEEPAGE ---

EQUIPMENT

GROUNDWATER AT END ---

DRILLING METHOD 3-Inch Hand Auger & WDCP

GROUNDWATER AFTER DRILLING ---

ELEVATION (ft)	GRAPHIC LOG	GROUP SYMBOL	MATERIAL DESCRIPTION	GROUNDWATER	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	WDCP N ₆₀ VALUE	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ WDCP N ₆₀ VALUE ▲	
											PL	LL
					0							
			SILT: Medium stiff, light brown, dry, low plasticity, abundant roots in upper ~8 inches. { Loess }					5				
			Damp below ~½ foot bgs.					13				
								19				
			Stiff to very stiff below ~1 foot bgs.					17				
								15				
			Brown-gray and moist below ~1½ feet bgs.					16				
318					2			12				
								15				
								19				
								19				
								13				
								14				
316					4			13				
								14				
								14				
								14				

- Boring terminated at ~5 feet bgs.
- Groundwater and caving not observed.
- Boring loosely backfilled with cuttings.

CGT EXPLORATION WITH WDCP G1704662.GPJ 9/13/17 DRAFTED BY: RTH

314

312

310



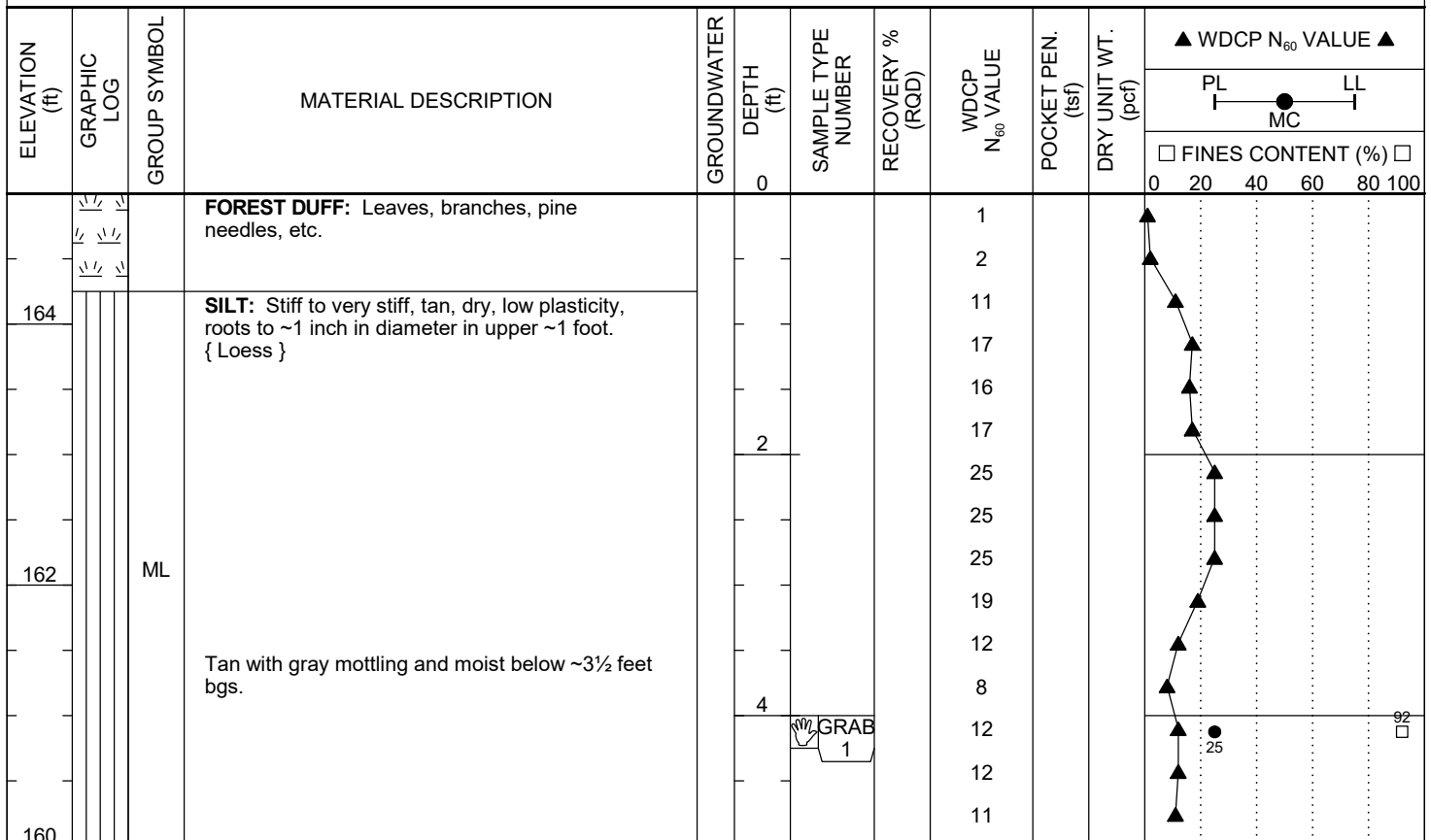
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FIGURE A19

Boring HA C-5/E

PAGE 1 OF 1

CLIENT	Metro	PROJECT NAME	Burlington Creek Forest Nature Park
PROJECT NUMBER	G1704662	PROJECT LOCATION	Burlington, OR
DATE STARTED	8/9/17	GROUND ELEVATION	165 ft
WEATHER	Sunny ~75F	SURFACE	Forest duff
DRILLING CONTRACTOR	CGT	ELEVATION DATUM	Figures 2 and 3
EQUIPMENT		LOGGED BY	RTH
DRILLING METHOD	3-Inch Hand Auger & WDCP	REVIEWED BY	JPQ
		SEEPAGE	---
		GROUNDWATER AT END	---
		GROUNDWATER AFTER DRILLING	---



- Boring terminated at ~5 feet bgs.
- Groundwater and caving not observed.
- Boring loosely backfilled with cuttings.

CGT EXPLORATION WITH WDCP G1704662.GPJ 9/13/17 DRAFTED BY: RTH



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FIGURE A20

Boring HA C-5/W

PAGE 1 OF 1

CLIENT	Metro	PROJECT NAME	Burlington Creek Forest Nature Park
PROJECT NUMBER	G1704662	PROJECT LOCATION	Burlington, OR
DATE STARTED	8/9/17	GROUND ELEVATION	165 ft
WEATHER	Sunny ~75F	SURFACE	Forest duff
DRILLING CONTRACTOR	CGT	ELEVATION DATUM	Figures 2 and 3
EQUIPMENT		LOGGED BY	RTH
DRILLING METHOD	3-Inch Hand Auger & WDCP	REVIEWED BY	JPQ
		SEEPAGE	---
		GROUNDWATER AT END	---
		GROUNDWATER AFTER DRILLING	---

ELEVATION (ft)	GRAPHIC LOG	GROUP SYMBOL	MATERIAL DESCRIPTION	GROUNDWATER	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	WDCP N ₆₀ VALUE	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ WDCP N ₆₀ VALUE ▲				
											PL —●— LL MC				
164		ML	SILT: <i>Soft to medium stiff</i> , light brown, dry, low plasticity, trace basalt gravel to ~2 inches in diameter, abundant roots in upper ~3 inches. { Alluvium }		0										

- Boring terminated at ~1 foot bgs due to practical refusal on a cobble.
- Groundwater and caving not observed.
- Boring loosely backfilled with cuttings.

CGT EXPLORATION WITH WDCP G1704662.GPJ 9/13/17 DRAFTED BY: RTH

CLIENT Metro

PROJECT NAME Burlington Creek Forest Nature Park

PROJECT NUMBER G1704662

PROJECT LOCATION Burlington, OR

DATE STARTED 8/8/17 **GROUND ELEVATION** 360 ft

ELEVATION DATUM Figures 2 and 3

WEATHER Sunny ~75F **SURFACE** Forest duff

LOGGED BY RTH REVIEWED BY JPQ

DRILLING CONTRACTOR CGT

SEEPAGE ---

EQUIPMENT

GROUNDWATER AT END ---

DRILLING METHOD 3-Inch Hand Auger & WDCP

GROUNDWATER AFTER DRILLING ---

ELEVATION (ft)	GRAPHIC LOG	GROUP SYMBOL	MATERIAL DESCRIPTION	GROUNDWATER	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	WDGP N ₆₀ VALUE	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ WDGP N ₆₀ VALUE ▲																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
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358			FOREST DUFF: Leaves, branches, pine needles, etc.		0																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
		ML	SILT: Soft to medium stiff, light brown, moist, low plasticity. { Loess }					1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
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		RX	PREDOMINANTLY WEATHERED BASALT: Very soft (R1), tan to gray, vesicular, fragments of moderately weathered basalt. { Columbia River Basalt }					7																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
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- Boring terminated at ~2½ feet bgs due to practical refusal.
- Groundwater and caving not observed.
- Boring loosely backfilled with cuttings.



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FIGURE A22

Boring HA C-6/W

PAGE 1 OF 1

CLIENT Metro

PROJECT NAME Burlington Creek Forest Nature Park

PROJECT NUMBER G1704662

PROJECT LOCATION Burlington, OR

DATE STARTED 8/8/17 GROUND ELEVATION 360 ft

ELEVATION DATUM Figures 2 and 3

WEATHER Sunny ~75F SURFACE Forest duff

LOGGED BY RTH REVIEWED BY JPQ

DRILLING CONTRACTOR CGT

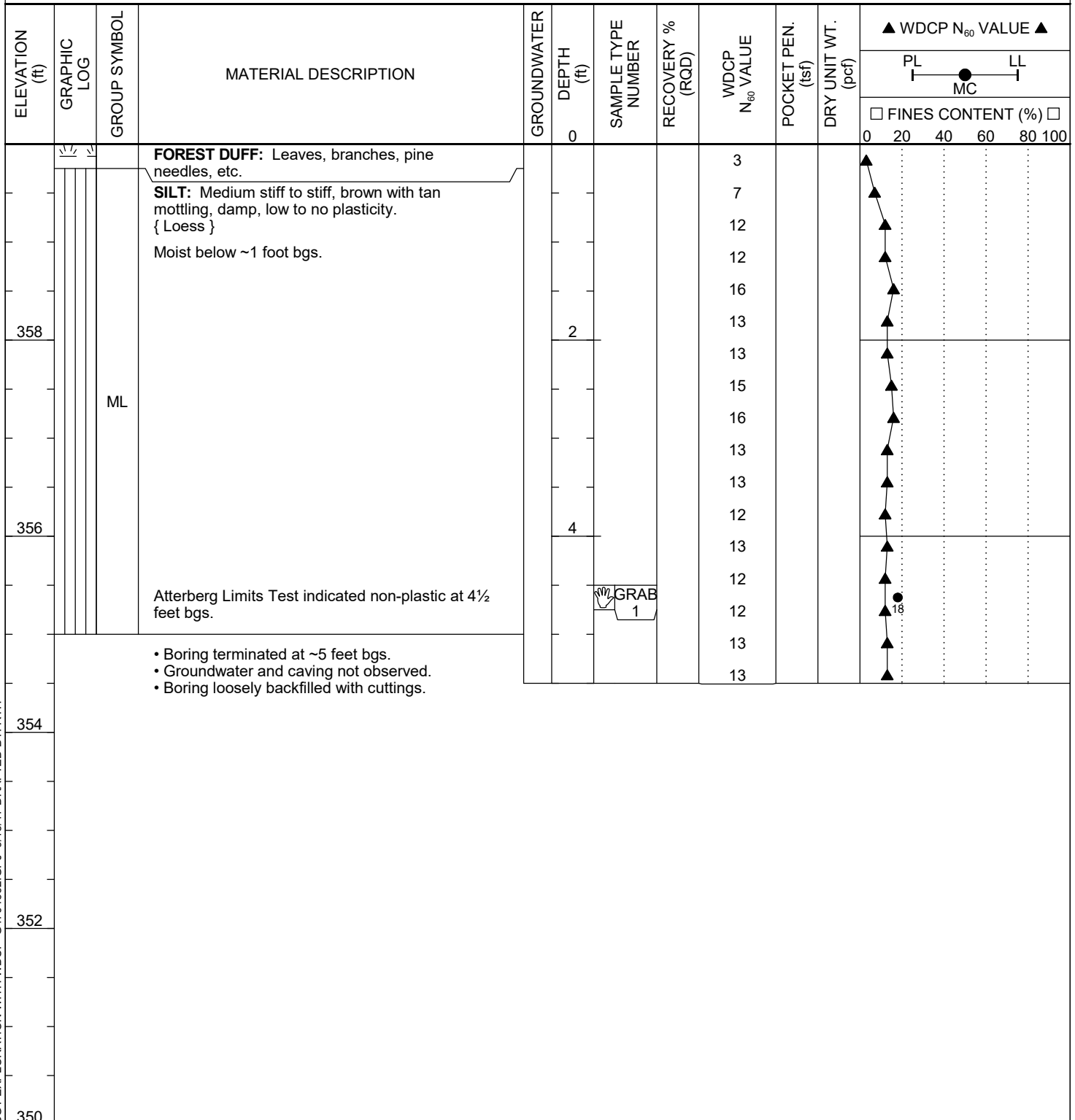
SEEPAGE ---

EQUIPMENT

GROUNDWATER AT END ---

DRILLING METHOD 3-Inch Hand Auger & WDCP

GROUNDWATER AFTER DRILLING ---



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Appendix B: Geologic Hazards Reconnaissance

**Burlington Creek Forest Nature Park
NW McNamee Road
Multnomah County, Oregon**

CGT Project Number G1704662

September 13, 2017

Prepared For:

Ms. Karen Vitkay
Metro
600 NE Grand Avenue
Portland, Oregon 97232-2736

Prepared by
Carlson Geotechnical

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ATTACHMENTS

Slope Hazard Overlay	Figure B1
Geologic Map	Figure B2
Landslide Inventory.....	Figure B3

Doc ID: G:\GEOTECH\PROJECTS\2017 Projects\G1704662 - Burlington Creek Forest Nature Park\GEO - G1704662\008 - Deliverables\Appendix B Hazard Assessment\Appendix B.docx

B.1.0 INTRODUCTION

B.1.1 Background

We understand that portions of the proposed trail network will fall within the Multnomah County Slope Hazard Overlay, and therefore a Hillside Development Permit Application needs to be completed for the proposed project. A portion of the Slope Hazard overlay is shown on the attached Figure B1, which also shows the approximate location of the proposed trail network. The proposed trailhead development lies outside of the Slope Hazard Overlay.

B.1.2 Purpose and Scope of Work

The purpose of our geologic hazards assessment was to address the requirements of Multnomah County Code (MCC) Section 33.5515(E) for Hillside Development Permits (HDPs), which is attached as Appendix C. Our assessment included the following:

- Review available literature for landslide hazards in the vicinity of the site.
- Review readily available historical aerial photographs of the site.
- Review available topographic, geologic, and geologic hazard maps for the area.
- Perform a surface reconnaissance of the site. The reconnaissance was performed by a Certified Engineering Geologist (CEG) licensed by the State of Oregon.
- Review subsurface explorations performed as part of the geotechnical investigation.
- Provide **qualitative** conclusions regarding the existing landslide hazard, as well as the potential impacts of the proposed development on the hazard, and vice versa.
- Provide an opinion regarding whether the site is suitable for the proposed development from a geologic standpoint.
- Provide this written report summarizing the results of our engineering geologic reconnaissance in general accordance with the MCC guidelines and complete the Multnomah County HDP Form-1 (attached).

B.2.0 LITERATURE & MAP REVIEW

B.2.1 Topographic Maps

Topography in the vicinity of the site is shown on the USGS 7.5 minute topographic map for the Sauvie Island quadrangle, shown on Figure 1. We also reviewed topographic data available at DOGAMI's lidar data viewer website¹ and the topographic information provided by Metro (Figures 2 and 3). The site is located within Tualatin Mountains northwest of Portland, Oregon. The site includes a series of northeast-plunging ridges separated by Burlington Creek and several unnamed drainages that discharge onto the Columbia River floodplain. Slope morphology in the vicinity of the site is generally characterized by rounded, convex slopes with incised, dendritic drainages. Slope gradients across the site generally range from about 10H:1V (horizontal to vertical) along the ridge tops to about 2H:1V on the steeper ridge side slopes. Slope gradients observed during the site reconnaissance are described in detail in Section B.3.0 below.

¹ Oregon Department of Geology and Mineral Industries, 2017. 2007 Aerial Lidar Survey Data, accessed August 2017, from National Oceanic and Atmospheric Administration (NOAA) Data Access Viewer, <https://coast.noaa.gov/dataviewer/#/>.

B.2.2 Geologic Maps

Available geological mapping² of the area indicates that the site is located on the northeast limb of the Portland Hills Anticline and is underlain by the Winter Water and Sentinel Bluffs Members of the Miocene Columbia River Basalt Group. The basalt in the area is mantled in most places with a layer of Pleistocene loess (wind-blown silt) and/or colluvium (a mix of loess, clay, and basalt fragments) that can be up to tens of feet thick and is prone to landslides.

The geologic map does not show any mapped landslide deposits within the project area. A small portion of the southeastern corner of the site is mapped as landslide deposits. This mapped landslide is described further in the following section. A portion of the geologic map is included as Figure B2.

B.2.3 Landslide Mapping

Landsliding is a common hazard in the Pacific Northwest that can be initiated on marginally stable slopes by human disturbances such as grading and deforestation, and by natural processes including earthquake shaking, volcanism, heavy rainfalls, and rapid snow melt. Common causes for slope failures include intense rainfall, human activities, and seismic activity. Human activities that can contribute to slope failures include loading slopes through construction of new buildings or fill embankments, excavating or over-steepening slopes, and the infiltration or diversion of storm water runoff. For example, excavation into the base of marginally stable slopes or adding fill and/or a structure to the top or mid portion of a slope can create a condition where driving forces exceed resisting forces, resulting in slope failure. Redirecting water onto or into slopes may exploit existing planes of weakness within those slopes, causing failures.

Review of the Statewide Landslide Information Database for Oregon (SLIDO)³ and Landslide Inventory Maps of the Sauvie Island Quadrangle⁴ show numerous small earthflow slides at the base of the drainage west of proposed Trail E. A portion of the landslide inventory map is attached as Figure B3. Mapping indicates the northern earthflow that crosses the access road is greater than 150 years old, while the smaller slides upstream (south) have taken place within the last 150 years. The proposed trails do not cross any of the mapped landslides. A portion of Trail E comes within about 75 feet of the headscarp of one of the landslides.

The Oregon Statewide Geohazards Viewer⁵ (HazVu) indicates the site has a high landslide hazard, as indicated on Figure B1. The mapping is based primarily on slope gradient.

² Evarts, R.C., O'Connor, J.E., and Cannon, C.M., 2016, Geologic map of the Sauvie Island quadrangle, Multnomah and Columbia Counties, Oregon, and Clark County, Washington: U.S. Geological Survey, Scientific Investigations Map SIM-3349, scale 1:24,000.

³ Oregon Department of Geology and Mineral Industries, 2017. Statewide Landslide Information Database for Oregon (SLIDO), accessed August 2017, from DOGAMI web site: <http://www.oregongeology.org/sub/slido/index.htm>.

⁴ Burns, William J., Duplantis, Serin, and Mickelson, Katherine A., 2010. Landslide Inventory Maps of the Sauvie Island Quadrangle, Columbia and Multnomah Counties, Oregon, and Clark County, Washington, Oregon Department of Geology and Mineral Industries IMS-40.

⁵ Oregon Department of Geology and Mineral Industries, 2017. Oregon Statewide Geohazards Viewer, accessed August 2017, from DOGAMI web site: <http://www.oregongeology.org/sub/hazvu/index.htm>.

B.3.0 SITE RECONNAISSANCE

CGT Engineering Ryan Houser, RG, CEG, performed a reconnaissance of the site and immediate vicinity during August 2017. The following sections summarize observations made by Mr. Houser during his reconnaissance. The site layout, topography, and surface conditions described below are shown on Figures 2, 3, and B3.

B.3.1 Site Surface Conditions

The proposed project consists of development of trailhead facilities and nine trails, as summarized in Section 1.1 of the geotechnical report. The site is located within the Burlington Creek Forest, and is cut by Burlington Creek and three other unnamed, ephemeral, northeast-trending creeks. Topography observed at the site is consistent with that depicted on Figures 2 and 3 of the main report. For ease in discussion of the site, our reconnaissance is split up by project area in the following sections:

B.3.1.1 Trailhead Area

The Trailhead area was located along the existing access road on a north-facing slope. In general, the access road was cut into the hillslope and the excavated material was placed on the downslope side of the road to create the relatively level road bed. Runoff was controlled by a shallow ditch on the cut (south) side of the road that conducted water to a culvert (indicated on Figure 3). Vegetation in the area of proposed development consisted mainly of blackberry bushes and grasses, with trees along the northern end in the area of the proposed retaining wall.

Existing cut slopes along the western end of the access road were up to about 10 feet in height and had gradients of up to about 1H:1V. These slopes showed areas of localized minor erosion along portions of the roadside ditch. Native slopes on the north side of this portion of the road generally descended to the north at gradients less than 2H:1V.

Slope gradients in the area of the proposed parking lot and restroom facility were less than those observed in the western portion of the access road, with native slopes generally less than about 4H:1V. Localized cut and fill slopes in this area had gradients up to about 2H:1V.

Proposed grading within the trailhead area will consist of cutting into the south slope and placement of fill to the north to create a relatively level parking area. Grading along the access road will be aided by the construction of a retaining wall up to about 8 feet in height. Minor grading and widening at the west end of the access road will also be performed. Fills in this area will be less than about 4 feet in maximum depth. According to the provided grading plan (Figure 3), the maximum slope gradient for new cut slopes will be 2H:1V.

I did not observe any indication of previous or current slope instability within the proposed Trailhead development area.

B.3.1.2 Trail AA

Trail AA will start at the Trailhead and will cross a creek valley between two of the ridges, and will be approximately 0.7 miles in length. The northwestern and southeastern portions of the trail will generally

parallel the existing gravel road. Gradients along these portions of the trail were generally less than about 5H:1V, and vegetation consisted primarily of coniferous and deciduous trees with little understory vegetation.

The southeast- and northwest-facing valley sideslopes generally had gradients up to about 3H:1V. Vegetation consisted of dense blackberry, coniferous and deciduous trees, and ferns. The toe of the southeast-facing slope near the northeast-trending creek at Crossing 5 was nearly vertical for about 8 feet, with fractured basalt bedrock exposed along the face. This vertical face appeared to be the result of past streambank erosion. The proposed trail alignment will traverse the southeast-facing valley sideslope by utilizing a series of switchbacks to lessen the overall gradient.

Other than the eroded slope bank observed near Crossing 5, no areas of particular concern were observed along Trail AA during our reconnaissance.

Construction of the northwestern and southeastern portions of the trail will require minor clearing of vegetation and minimal grading. The central portion of the trail, where traversing the creek valley, will require clearing of the dense underbrush and minor grading associated with the switchbacks. Crossing 5 will consist of a 20-foot long bridge. Based on the length of the proposed bridge, we anticipate at least one of the bridge abutments will be constructed near the level of the creek and the other will be on the sideslope of the creek valley.

B.3.1.3 Trail A

Trail A will extend south from the trailhead and will cross two secondary ridges before dropping into a creek valley. From there, Trail A will cross a primary ridge before terminating at the gravel access road near the southwest corner of the site. The Trail A alignment will be about 0.9 miles in length.

Between the Trailhead and Crossing 1, the proposed Trail A alignment roughly “follows the contour” (minimal elevation change along the trail) across a slope with gradients on the order of 4H:1V. This portion of the trail alignment was located in the PGE/BPA powerline easement, which was densely vegetated with blackberry bushes. The creek at Crossing 1 was dry, with sideslope gradients on the order of 2H:1V.

Between Crossing 1 and Crossing 2, the trail alignment roughly followed the contour across an east-southeast-facing slope with gradients up to about 3H:1V. Vegetation transitioned to oak, cedar, and fir trees with ferns in the understory once south of the PGE/BPA easement. I observed small groups of trees with “pistol butt” morphology near the trail alignment on some of the steeper portions of the slope. This morphology is typically indicative of localized shallow slope instability or slope creep.

The trail alignment paralleled the northeast-trending stream between Crossing 2 and Crossing 3 along an east-southeast-facing slope with gradients up to about 3H:1V. Vegetation consisted primarily of coniferous trees. Numerous cut and felled trees were present along this section of the trail. I observed small groups of trees with “pistol butt” morphology near the trail alignment on some of the steeper portions of the slope.

South of Crossing 3, the trail alignment ascended to the top of the ridge. This slope had localized gradients up to about 2H:1V. The trail alignment will consist of a number of switchbacks to minimize the gradient. This portion of the trail was vegetated with coniferous trees, and a significant number of trees had been cut and felled. The trail alignment descended the ridge to the south to rejoin the gravel access road at the intersection with Trail D. I did not see any indication of slope instability along this portion of the trail alignment.

Construction of Trail A will consist of minor grading to create the 36-48 inch wide trail. Clearing of downed trees and occasional areas of dense vegetation will be necessary along the trail alignment. Development of Trail A will include construction of three creek crossings:

- Crossing 1 will consist of a 15-foot long bridge, and we anticipate the bridge abutments will both be constructed on the sideslopes of the narrow creek valley.
- Crossing 2 will consist of an 18-foot long bridge, and we anticipate the bridge abutments will both be constructed on the sideslopes of the narrow creek valley.
- Crossing 3 will consist of a 20-foot long bridge. Based on the length of the proposed bridge, we anticipate at least one of the bridge abutments will be constructed near the level of the creek and the other will be on the sideslope of the creek valley.

B.3.1.4 Trail B

Trail B will consist of a series of switchbacks crossing a ridge between two sections of the gravel access road, and will be approximately 0.4 miles in length. Trail B will be developed entirely within the BPA and PGE powerline easements. These easements have been cleared routinely to keep trees from growing into the power lines. As a result, the primary vegetation in this area consisted of dense blackberry bushes and scotch broom with some smaller trees and shrubs.

Slope gradients along the north-northeast-facing portion of Trail B were on the order of 2½H:1V. The proposed trail will have gradients less than 10H:1V, which will be accomplished by constructing a series of switchbacks. Once the proposed trail alignment reaches the top of the ridge, it will turn southwest to intersect with Trail C. Gradients along this portion of the trail were generally less than about 5H:1V.

Minor erosion was noted along the base of the existing cut slope near the existing access roadway at the north end of Trail B. No other areas of particular concern were observed along Trail B during our reconnaissance.

Construction of Trail B will consist of minor grading and clearing to create the 30-inch wide trail. Portions of the trail will follow existing powerline access roadways, where grading will be minimal.

B.3.1.5 Trail C

Trail C will be constructed along about 0.1 miles of an existing roadbed on the top of a northeast-trending ridge. Slope gradients along the existing roadbed were less than about 12H:1V, and vegetation consisted of mature coniferous trees, deciduous trees, grasses, and occasional blackberry bushes. I did not observe any indication of slope instability along the proposed Trail C alignment. Based on our observations, we anticipate only minimal clearing of brush and minimal grading will be required to complete this trail.

B.3.1.6 Trail D

Trail D will provide access from the new trail network to trails within the Forest Park Conservancy's Ancient Forest Preserve located southwest of the site, and will be about 0.1 miles in length. The proposed trail will generally parallel the existing gravel road along the east-facing sideslope of the ridge. Slopes along the proposed trail alignment generally descended to the east at gradients of about 3H:1V. Trail D will cross a seasonal southeast-trending drainage at Crossing 4. Slopes in the vicinity of Crossing 4 were locally up to about 1½H:1V. Vegetation along Trail D generally consisted of coniferous trees, ferns, and blackberry bushes along the drainage. A significant number of trees had been cut and felled along the proposed trail alignment.

I observed a small slump measuring about 10 feet in height and about 15 feet in width in the vicinity of proposed Crossing 4. A rotten tree stump remaining after the tree was felled was located near the center of the slump, and the base of the slump was located within the creek bed. This suggests that the slump was caused by erosion of the base of the slope and loss of root cohesion from the decay of the wood.

Construction of Trail D will consist of minor grading to create the 24-inch wide trail. Clearing of downed trees and dense vegetation will be necessary along portions of the trail alignment.

B.3.1.7 Trail E

Trail E will generally meander along a north-plunging ridgeline in the approximate center of the site, and will be about 0.8 miles in length. Slope gradients ranged from about 6H:1V to 10H:1V along the ridge, with gradients increasing on the east and west faces to about 4H:1V. Vegetation generally consisted of cedar and fir trees with fern and blackberry underbrush. A significant number of trees had been cut and felled along the southern and central portions of the proposed trail alignment. The northern portion of the proposed trail crossed the PGE/BPA powerline easement, which was densely vegetated with blackberry bushes.

As shown on Figure B3, a portion of Trail E passes about 75 feet above (to the southeast) a mapped landslide headscarp. No indication of soil movement was noted at the trail location above the mapped landslide during the site reconnaissance. This portion of the trail will be constructed along an existing skid road, so grading will be minimal.

Construction of Trail E will consist of minor grading to create the 30-inch wide trail. Clearing of downed trees and dense vegetation will be necessary along the majority of the trail alignment.

B.3.1.8 Trail F

Trail F will create a gently-sloping loop paralleling the gravel access road near the east end of the site, and will be approximately 0.3 miles in length. The trail will generally follow the contour across a northeast-facing slope with gradients up to about 5H:1V. Vegetation consisted primarily of coniferous and deciduous trees with little understory vegetation. A portion of the trail followed a 'skid road' likely constructed during previous logging activities. I did not observe any indication of slope instability along the proposed Trail F.

We anticipate only minor clearing of brush and minimal grading will be required to complete this trail.

B.3.1.9 Trail G

Trail G will generally meander along a north-northeast-plunging ridgeline, and will be about 1.2 miles in length. Trail G will consist of two trails that split near the gravel access road at the south end of the trail, and rejoin near the PGE/BPA powerline easement near the north end of the trail.

The west branch of the trail alignment will generally follow the top of the ridge, which was typically gently sloping to the northeast with gradients on the order of 10H:1V or flatter. The west branch of the trail crossed slopes with gradients up to about 3H:1V where it extended west of the ridge top. A portion of the west branch followed a 'skid road' which was likely constructed during previous logging activities. Vegetation along the west branch generally consisted of cedar and fir trees with fern and blackberry underbrush. A significant number of trees had been cut and felled along the southern and central portions of the proposed trail alignment. The northern portion of the proposed west branch of the proposed trail alignment was within the PGE/BPA powerline easement, which was densely vegetated with blackberry bushes.

The east branch of the trail alignment traversed the east face of the ridge, and crossed slopes with gradients up to about 2½H:1V. Vegetation along the west branch generally consisted of cedar and fir trees with fern and blackberry underbrush and a significant number of downed trees.

The east and west branches of Trail G will rejoin adjacent to the PGE/BPA powerline easement, which was densely vegetated with blackberry bushes. Slope gradients in this portion of the trail alignment were typically about 5H:1V. At its northernmost end, the trail will descend a 10-foot-tall cut slope with gradients up to about 1H:1V to the gravel access road. I observed localized erosion along the base of this cut slope. Otherwise, no areas of concern were noted during the reconnaissance of Trail G.

Construction of Trail G will consist of minor grading to create the 30-inch wide trail. Clearing of downed trees and occasional areas of dense vegetation will be necessary along the trail alignment. Portions of the trail following the ridge and existing skid road will require minimal grading and clearing.

B.3.1.10 Trail H

Trail H will be located within the southeastern portion of the development area, and will be approximately 0.6 miles in length. From the gravel access road at the south end of the proposed alignment to Crossing 6, Trail H will traverse a northeast-plunging ridge with slope gradients up to about 3H:1V. Vegetation consisted of coniferous trees with a fern understory. Numerous cut and felled trees were located along the trail alignment. The ridge surface topography was hummocky, which is often indicative of past landsliding. The hummocky features were typically expressed as 10- to 15-foot wide, 6- to 8-foot deep depressions that ran down the slope for 50 to 100 feet. The sideslopes were as steep as 1H:1V. Most of these depressions were filled with debris (tree trunks and branches). Further discussion and interpretation of the hummocky surface are provided in Section B.4.0 below.

Crossing 6 will be located in a narrow creek valley with steep side slopes. Localized gradients are up to about 1½H:1V near the creek. We understand switchbacks will be used to minimize the trail gradient on either side of the crossing. Abundant downed trees were present in this portion of the trail alignment.

East of Crossing 6, the trail alignment crossed two small ridges before rejoining with the gravel access road. This portion of the trail alignment crossed slopes with gradients up to about 2H:1V, and was vegetated with coniferous trees and ferns. The eastern portion of the trail crossed into the PGE/BPA powerline easement, which was densely vegetated with blackberry bushes. At its east end, the trail will descend a 10-foot-tall cut slope with gradients up to about 1H:1V to the gravel access road. I observed localized erosion along the base of this cut slope.

Construction of Trail H will generally consist of minor grading to create the 24 inch wide trail. Additional grading may need to be conducted at the eastern end of the trail along the gravel access road, where the existing steep roadcut may impact the proposed plan. Clearing of downed trees and occasional areas of dense vegetation will be necessary along the trail alignment. Development of Trail H will include construction of one creek crossing (Crossing 6), which will consist of a 15-foot long bridge. We anticipate the bridge abutments will be constructed on the sideslopes of the narrow creek valley.

B.3.2 Site Subsurface Conditions

We advanced hand auger borings as part of the geotechnical investigation, in which we confirmed that the site is underlain by Columbia River Basalt, and mantled by loess (windblown silt) and alluvium. A residual soil resulting from the in-place weathering / decomposition of the basalt was present in several locations. Descriptions of the soils are provided in Section 2.3.2 of the geotechnical report and logs of the borings are presented in Appendix A.

B.4.0 FINDINGS AND OPINIONS

Based on the results of our site reconnaissance and review of the referenced mapping and literature, it is our opinion that the site is geologically suitable for the proposed development. The majority of the proposed development will consist of narrow hiking/mountain biking trails requiring minimal ground disturbance and clearing of vegetation. We observed isolated areas showing indicators of localized shallow instability (soil creep, slumps, etc.). However, we did not observe evidence of large-scale, deep-seated landsliding, and mapping does not indicate the area has a history of such slides. The proposed development does not include construction of habitable structures and is, in our opinion, compatible with the existing landslide hazards at the site. With the use of generally-accepted construction techniques and best management practices, it is our opinion the site can be developed as proposed, without significantly increasing the risk of slope instability that might impact the proposed development or adjacent properties. Specific recommendations for grading and development of the proposed project are provided in Section 5.0 of the geotechnical report. If development plans change from those understood and described in this report, we recommend CGT be contacted to review the proposed development and provide revised commentary, if warranted.

Several specific areas of potential concern for the proposed trail alignments were identified during the reconnaissance, as follows:

- On Trail AA, the toe of the southeast-facing slope near the northeast-trending creek at Crossing 5 was nearly vertical for about 8 feet. The basalt bedrock exposed on the face of this slope appears stable. However, grading of the proposed trail may be difficult to accomplish. This portion of the trail may need to be rerouted to avoid the vertical face.
- The proposed Trail A alignment passed close to several groups of trees exhibiting the 'pistol butt' morphology. CGT recommends proposed trails be rerouted around these areas where possible. If unavoidable, CGT recommends grading through these areas be minimized to the extent possible.
- A slump apparently related to decay of tree roots and creek erosion was identified at Crossing 4. CGT recommends the proposed trail be relocated approximately 30 feet upstream (northwest) of the current location indicated on the plans.
- Steep cut slopes were observed in several areas where the proposed trails will intersect the existing gravel access road. CGT recommends rerouting trails around these steep slopes or reducing the gradient of the existing cut slopes in these areas to 2H:1V or flatter wherever possible.
- Hummocky topography was observed in the southern portion of Trail H. The cause of the hummocky topography was not clear, but may be related to past logging activities. Areas of the hummocky topography had localized slopes with gradients up to about 1H:1V. CGT recommends the trail alignment be adjusted during construction, as needed, to avoid cutting through the noted depressions or being placed immediately at the top of one of the steep slopes.

Notwithstanding the above, construction within hillside areas and known landslide deposits inherently bears greater risk of slope instability. This risk increases in seismically active areas, including the Pacific Northwest. Slopes on and in the immediate vicinity of the site may be susceptible to instability resulting from extraordinary events such as a major earthquake, high rainfall, or human activities, which could occur beyond the site boundaries. The owner must recognize and accept the risk of potential slope instability from causes beyond their control or as yet unrecognized.

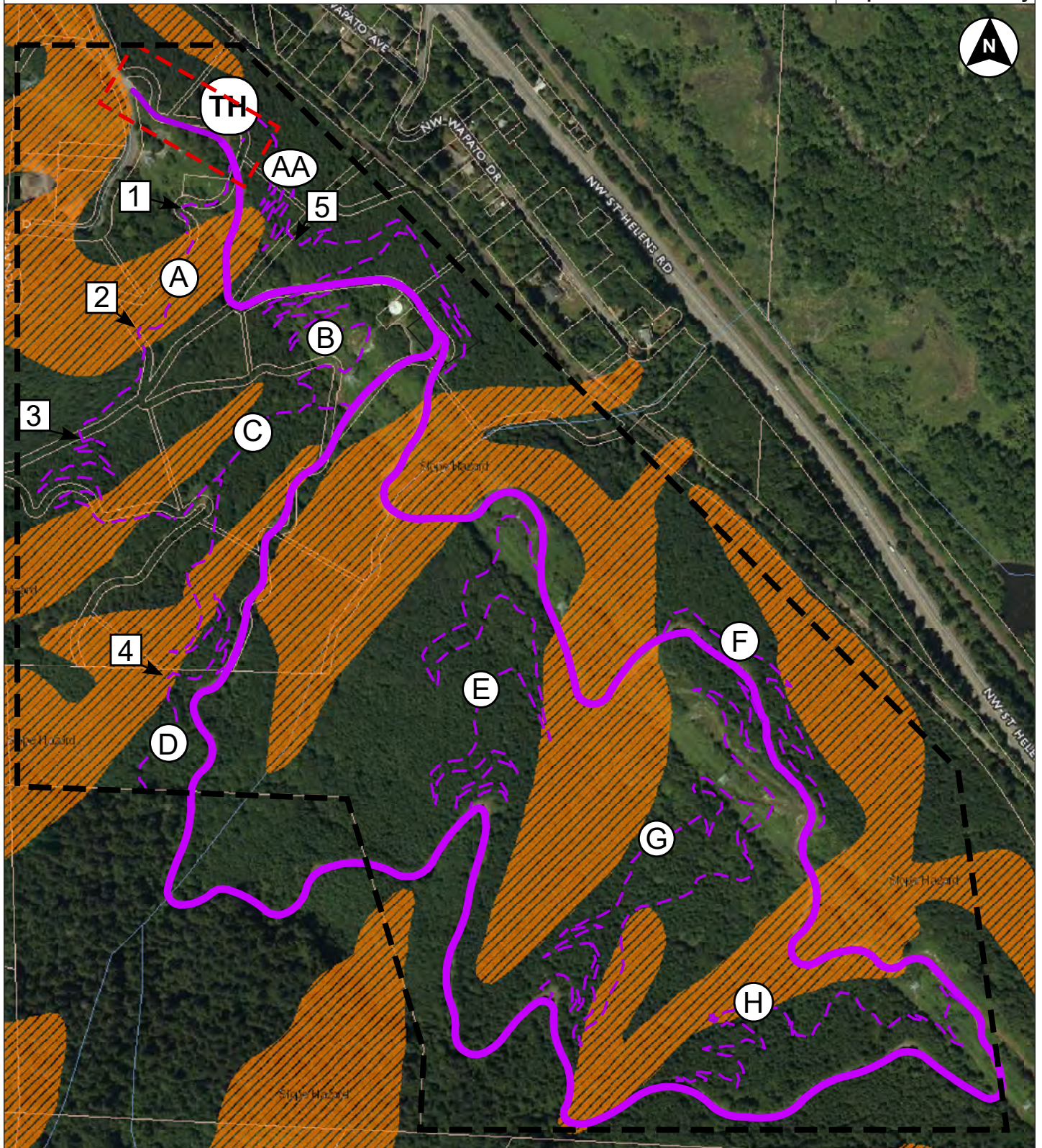
It should be noted that a significant number of trees had been cut throughout the project area. The proposed stream crossings will be developed near the existing stream elevations. Debris could pile up on stream crossings, resulting in a debris dam that could threaten the structures during extreme storm events or if debris flows are triggered upslope from the stream crossings.

B.5.0 LIMITATIONS

The scope of this assignment was limited to identification and discussion of landslide hazards. Other geologic hazards were not specifically researched or discussed as part of this assignment. Our recommendations are not intended to indicate that all geologic hazards can be mitigated by proper engineering. They are provided to assist the owner/developer and project engineer in evaluating site conditions based on geologic research and preliminary, site specific, surface and subsurface exploration.

This assignment consisted of review of our geotechnical shallow subsurface exploration, visual examination of the site and surrounding properties, and review of readily available geologic resources judged pertinent to the evaluation. Portions of the slopes on the site could not be readily observed, due to the presence of dense vegetation. Accordingly, the limitations of this evaluation must be recognized. An exploration of subsurface conditions at depth was not conducted for this evaluation. An investigation to explore subsurface conditions at depth using deeper soil borings or excavations could be conducted at

additional cost to the owner to further define the risk of unforeseen, adverse geological issues on this site. However, based on our observations and the information available, the risk of unforeseen adverse geological issues on this site appear to be small and could, in our opinion, be assumed by the owner.



LEGEND

Slope Hazard Overlay

Existing Access Road (from Metro)
 Trailhead Site Plan (Figure 3)

Proposed Trail (from Metro)
 Drainage Crossing (from Metro)

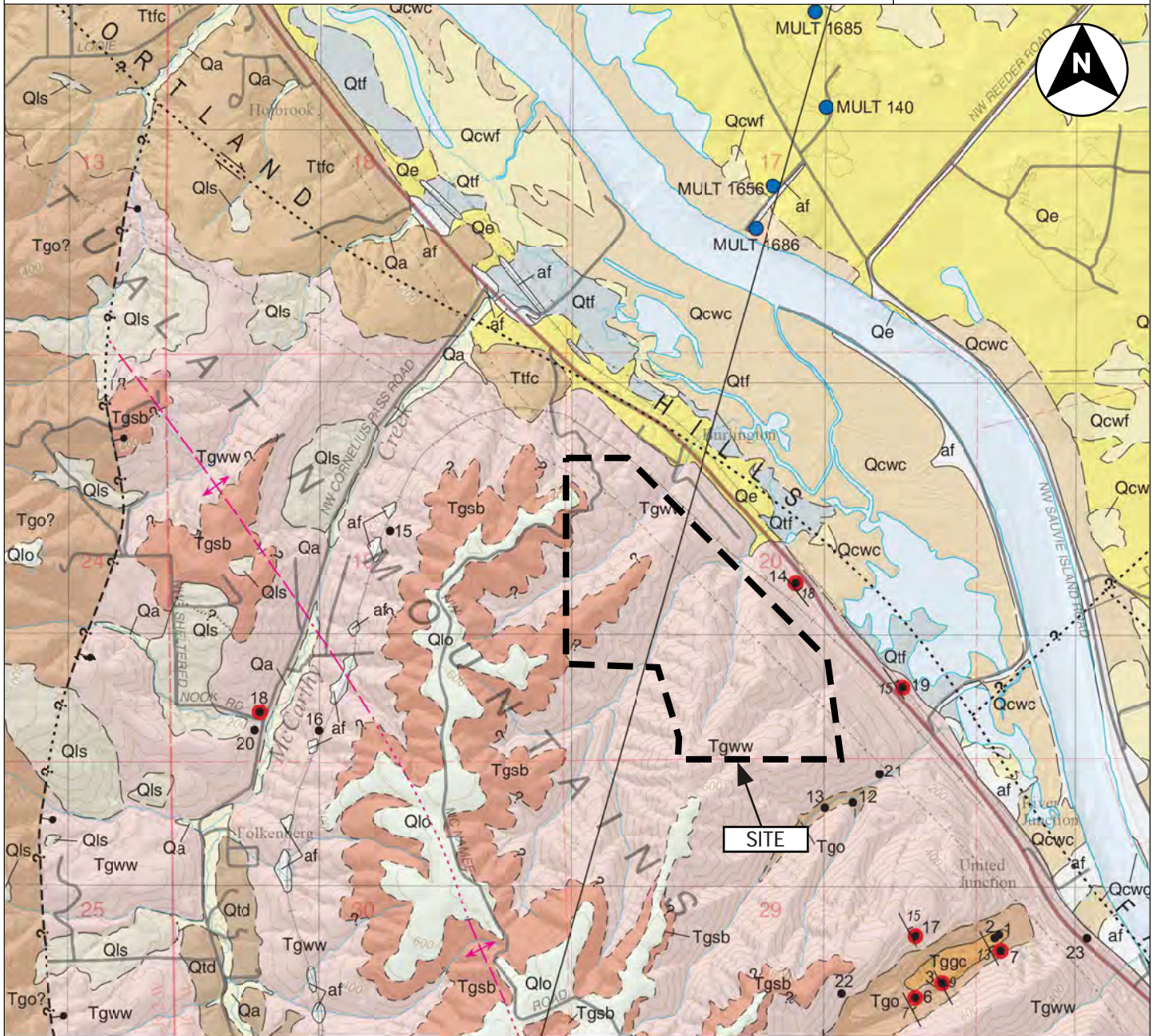


NOTES: 2010 aerial photograph and slope hazard overlay obtained from Multnomah County Land Use Planning Interactive Zoning Map online application accessed August 2017, from Multnomah County website: <http://www4.multco.us/lup/>. All locations should be considered approximate.

1 Inch = 500 Feet

BURLINGTON CREEK FOREST NATURE PARK - MULTNOMAH COUNTY, OREGON
Project Number G1704662

FIGURE B2
Geologic Map



Surficial Deposits

- af Artificial Fill (Holocene)
- Qtf Fan Deposits from Tributaries (Holocene and Pleistocene)
- Qa Alluvium of Tributary Floodplains (Holocene and Pleistocene)
- Qe Eolian Deposits (Holocene)

Basin Fill Deposits

- Qtc Unnamed Conglomerate (Pleistocene and Pliocene?)
- Ttfc Troutdale Formation, Conglomerate Member (Pliocene and/or Miocene?)
- Tsr Sandy River Mudstone (Pliocene and/or Miocene)

Columbia River and Willamette River Floodplain Deposits

- Qcwf Silt and Clay Facies
- Qcwc Sand Facies
- Qls Landslide Deposits (Holocene and Pleistocene)
- Qld Terrace Deposits (Holocene and Pleistocene)
- Qlo Loess (Holocene?& Pleistocene)
- Qls Cataclysmic-flood Deposits, Sand and Silt Facies (Pleistocene)

Paleogene Sedimentary Rock Deposits

- Tsf Scappoose Formation (Oligocene)

**Columbia River Basalt Group
Grand Ronde Formation**

- Tsgc Sentinel Bluffs Member
- Tggw Winter Water Member
- Tgo Ortle Member
- Tgoc Grouse Creek Member



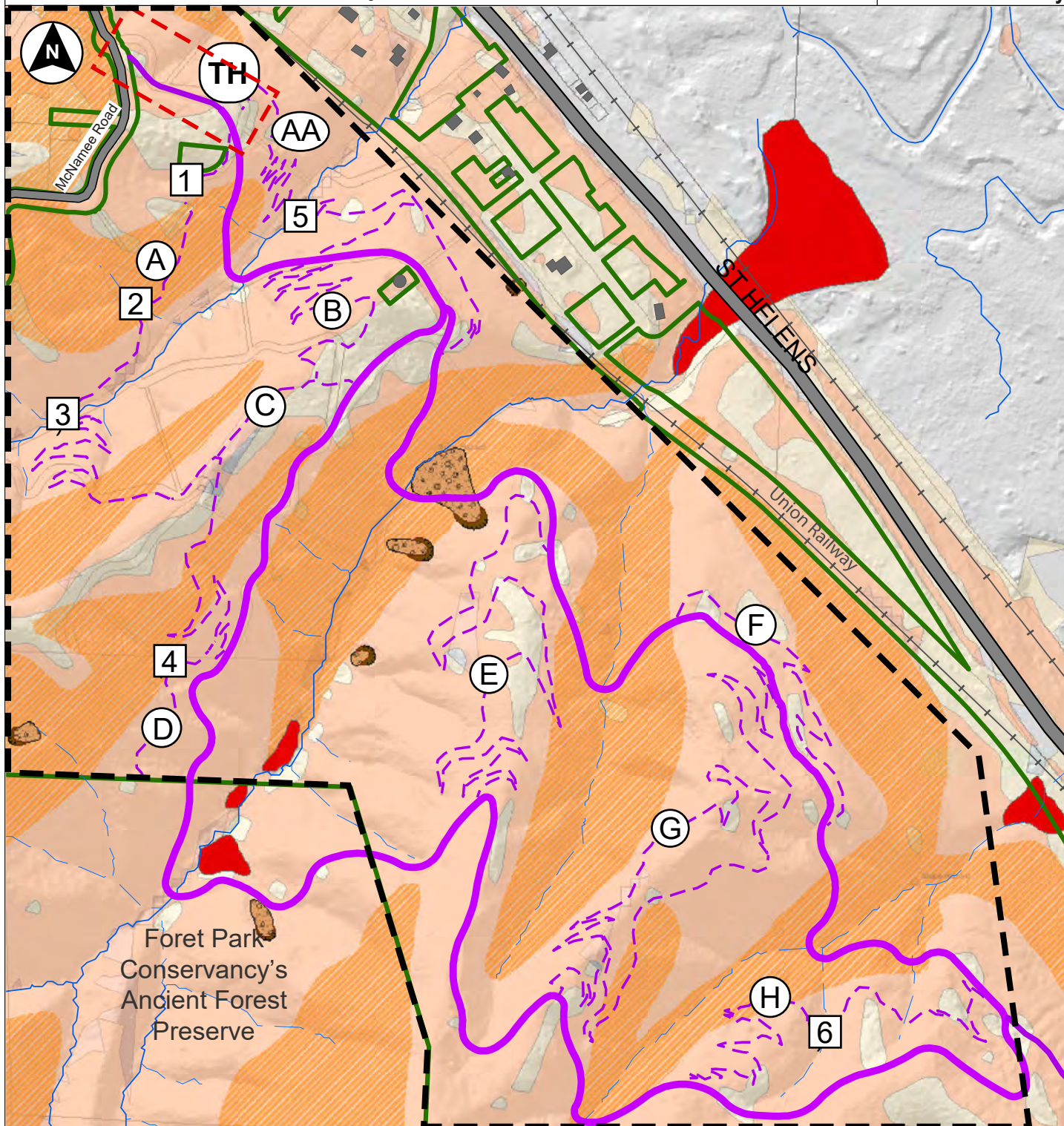
Map adapted from Evarts, O'Connor, and Cannon, 2016. Geologic Map of the Sauvie Island Quadrangle, Multnomah and Columbia Counties, Oregon and Clark County Washington.

Township 2 North, Range 1 West, Section 20 Willamette Meridian

Latitude: 45.644865° North
 Longitude: 122.845679° West

1 Inch = 2,000 Feet





LEGEND

- Trailhead Site Plan (Figure 3)
- Approximate Site Boundary

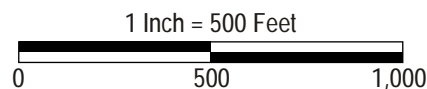
- Proposed Trail (from Metro)
- Drainage Crossing (from Metro)
- Existing Access Road (from Metro)

SLIDO Mapping

- Landslide
- Head Scarp
- Fan Deposits



NOTES: Drawing based on Burlington Creek Forest Nature Park, September 2017, prepared by Metro, and data from Oregon Department of Geology and Mineral Industries, Statewide Landslide Information Layer for Oregon. <http://www.oregongeology.org/slido/index.html>.



Carlson Geotechnical

A division of Carlson Testing, Inc.
Phone: (503) 601-8250
Fax: (503) 601-8254

Bend Office (541) 330-9155
Eugene Office (541) 345-0289
Salem Office (503) 589-1252
Tigard Office (503) 684-3460



Appendix C: Hillside Development Permit (HDP) Form 1

**Burlington Creek Forest Nature Park
NW McNamee Road
Multnomah County, Oregon**

CGT Project Number G1704662

September 13, 2017

Prepared For:

Ms. Karen Vitkay
Metro
600 NE Grand Avenue
Portland, Oregon 97232-2736

Prepared by
Carlson Geotechnical



MULTNOMAH COUNTY
LAND USE & TRANSPORTATION PROGRAM
1600 SE 190th AVE, SUITE 116
PORTLAND, OREGON 97233-5910
503-988-3043 Fax: 503-988-3389
www.co.multnomah.or.us/landuse

**HILLSIDE DEVELOPMENT PERMIT APPLICATION:
GEOTECHNICAL RECONNAISSANCE AND STABILITY
PRELIMINARY STUDY
[HDP Form 1]**

Note: Response to each question below must be completed or verified by a Certified Engineering Geologist or Geotechnical Engineer, including a State of Oregon Registration Stamp and Number in the space provided on page four. The HDP form 1 addresses Multnomah County Code Section .5515(A)(3), Hillside Development Permits.

Site Address: Burlington Creek Forest, NW McNamee Road

Legal Description: 2N1W20 - 00400
2N1W20B - 00300, 00500, 00600
2N1W20BC - 00800, 01000, 01200
2N1W20BD - 03700
2N1W20C - 00100, 00300, 00400, 00500

Property Owner's Name: Metro

Firm Preparing Report: Carlson Geotechnical

Address: 7185 SW Sandburg Street, Suite 110

Tigard, OR 97223

Preparer's Name: Ryan Houser, CEG

Phone Number: 503-601-8250

GENERAL PROPERTY INFORMATION

1. a. Maximum Slope on Property: 1H:1V Area in which it is located: Road cuts
Average Slope of Property: 4H:1V
- b. Are there any wetlands or streambeds on the property? **(Please Circle)** Yes No
If yes, please show on topographical survey or sketch.
See Figure 2 attached to geotechnical report.
- c. Volume of soil or earth material disturbed, stored, disposed of or used as fill: See Figure 3

Were building plans considered when completing this form? **(Please Circle)** Yes No
If yes, please note the author and date the plans were prepared.

Design drawings dated September 2017, prepared by Metro (Figures 2 and 3 attached to geotechnical report)

2. What is the general topography of the property? Please attach a topographic survey or sketch with pertinent notes.

Generally slopes down to the northeast, with multiple drainages cutting the site. Topography shown on Figures 2 and 3 attached to geotechnical report and described in Sections B.2.1 and B.3.1 of Appendix B.

3. Are there any visible signs of instability or other potentially adverse site features (Landslides, slumps, mud flow, creep, ravines, fills, cuts, seeps, springs, ponds, etc.) within the surrounding area for a minimum distance of 100 feet beyond the subject property boundaries? Describe and indicate on attached topographic survey or sketch.

Localized areas of creep (leaning trees), possible old slump near Crossing 4, and erosion along stream and existing site roadway cuts. These features were not observed in Trailhead area. Trails will cross multiple streams and near areas of previous landsliding and erosion. See report for discussion and recommendations.

4. Is any earthwork proposed in connection with site development?

(Please Circle) ☒ Yes No

If yes, indicate depth and extent of cuts/fills; describe fill types.

Cuts up to about 8 feet and fills up to about 6 feet are planned in conjunction with the Trailhead development. Cuts along trails will be limited to about 2 feet in depth. Creek crossings may involve temporary cuts up to about 5 feet in depth for installation of bridge abutments. Recommendations for grading and fill placement provided in geotechnical report.

5. In your opinion, will the proposed earthwork cause potential stability problems for the subject and/or adjacent properties?

(Please Circle) Yes ☒ No

If yes, express probability.

(Please Circle) Very Probable Possibly Possible, but remote

If Very Probable or Possibly, explain.

See report text for additional details.

6. In your opinion, will the proposed development (structures, foundations, parking area, streets, etc.) create potential stability problems for the subject and/or adjacent properties?

(Please Circle)

Yes

☒ No

If yes, express probability.

(Please Circle)

Very Probable

Possibly

Possible, but remote

If Very Probable or Possibly, explain.

With the use of generally accepted construction techniques, it is our opinion the site can be developed as proposed, without significantly increasing the risk of slope instability that might impact the proposed development or adjacent properties. Recommendations for earthwork provided in Section 5.0 of the geotechnical report.

7. In your opinion would the subsurface disposal of sewage effluent on the site (i.e., drain fields) have an adverse affect on stability of the site or adjacent area?

(Please Circle)

Yes

☒ No

If yes, express probability.

(Please Circle)

Very Probable

Possibly

Possible, but remote

If Very Probable or Possibly, explain.

Not applicable

8. If answer is Very Probable or Possibly to questions 4 or 5, is it your opinion, on the basis of a visual evaluation, that adequate stability might be achieved by preferred siting of the development, alternative foundation support, earthwork, drainage, etc.?

(Please Circle) Very Probable Possibly Possible, but remote

If yes, explain.

Trail locations are preliminary; final locations will be determined during construction. See report text for specific recommendations.

9. Do you recommend additional geotechnical studies (i.e., mapping, testing pits or borings, stability analysis, etc.) prior to site development?

(Please Circle) Very Probable Possibly Possible, but remote

If yes, explain.

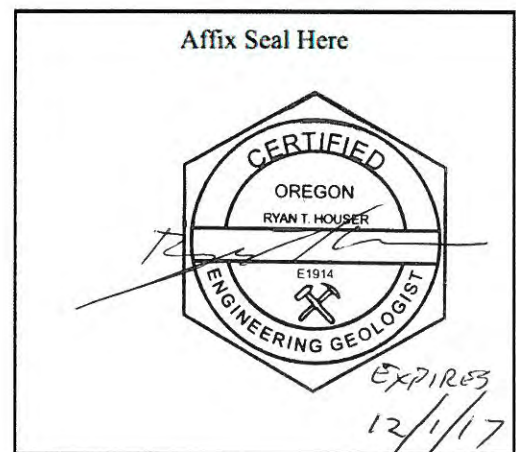
Geotechnical investigation performed as part of current scope of work. No additional studies recommended based on existing plan.

By signing and affixing the required stamp below, the Certifying Engineering Geologist or Geotechnical Engineer certifies that the site is suitable for the proposed development.

Signature

Date

[Handwritten Signature]
9/13/17



Burlington Creek Forest Area Transportation Analysis Letter



Submitted by: Nemariam Engineers & Associates, LLC

July 26th, 2017

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Exhibit C:	Estimated Trips Calculation
Exhibit D:	Transportation Volume Table 30 th Highest Hour
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Exhibit F:	Level of Service Description
Exhibit G:	Traffic Counts/Roadway Classification
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Exhibits

Table 1:	Crash Data 2013- 2015
Table 2:	Roadway Characteristics

Section I: Introduction

This Transportation Analysis Letter addresses transportation impacts of the proposed park related to parking, amenities, restrooms, roadway safety improvements and trails improvements to be constructed at the Burlington Creek Forest Area in Multnomah County, Oregon. Primary access to the site is located on NW McNamee Road approximately half a mile south of the US 30/NW McNamee Road. Information regarding expected trip generation, site plan, access spacing compliance, access sight distance, and safety have been investigated and the results are reported herein.

Section II: Background

Burlington Creek Forest Nature Park encompasses 354 acres of land in Multnomah County, along the north-eastern border of the Urban Growth Boundary (UGB) just outside of Portland city limits. It is approximately 16 miles north from downtown Portland. The total acreage is located outside the UGB. The local zoning for the park property is shown as commercial forest use (CFU) in the Multnomah County Zoning Map. *See Exhibit A for Zoning Map.* McNamee Road, Cornelius Pass Road and the railroad along the northeast site boundary all cross through Burlington Creek Forest.

The proposed development includes primary access from NW McNamee Road. *See Exhibit B for the proposed Site Plan.* Proposed improvements at Burlington Creek Forest include a trailhead, shared use trails, designed specifically for hiking and off-road cycling.

The NW McNamee Road entrance is proposed as the main entrance with an automatic gate that will be closed and locked in the evenings. The parking area will provide parking for 25 parking spaces as shown in Exhibit B. Overflow parking on McNamee Road will not be allowed.

The NW McNamee Road entrance will provide access to access drive, vehicle parking area, vault toilet, two picnic tables, trail systems and an information sign. Approximately five miles of new unpaved trails will be provided to allow visitors to explore Burlington Creek Forest by foot or by off-road bicycle. Over two miles of existing gravel road will also be open to park visitors, including equestrians. The proposed development is intended to protect water quality, fish and wildlife habitat while creating opportunities for the community to recreate and enjoy nature.

Section III: Applicable Criteria and Findings

Below is a discussion of the applicable criteria listed in *italicized*, followed by **findings** of compliance. The criteria evaluated are identified in the County's March 28th, 2017, EP-2017-6780 North Tualatin Mountains Park Master Plan - Comprehensive Plan Amendment, Site Development at Burlington Creek Forest memorandum.

Given the proximity to the proposed entrance, the following intersections were evaluated in this report.

1. US30/NW McNamee Road
2. NW McNamee Road/Project Site Access
3. NW McNamee Road/NW Skyline Boulevard
4. NW Skyline Boulevard/NW Cornelius Pass Road
5. US 30/NW Cornelius Pass Road

Section 3 of *Multnomah County Road Rules* specifies a transportation impact as:

Any new construction or alteration which increases the number of trips generated by a site by more than 20 percent, by more than 100 trips per day or by more than 10 trips in the peak hour. A minimum increase of 10 new trips per day is required to find a transportation impact.

Findings: Per the trip estimate for Burlington Creek Forest Park discussion below, the proposed use constitutes a "transportation impact" under Multnomah County Road Rules. The calculation for the estimated trips is included in Exhibit C.

Typically, trips generated by proposed developments are estimated using trip rates from *ITE Trip Generation Manual*, however, the *ITE Trip Generation Manual* does not provide trip rates for nature parks of the type proposed. The manual does provide trip rate information for County and Regional parks. However, trip rates for these County and Regional parks are developed based on small sample sizes. In addition, according to the *ITE Trip Generation Manual* the parks surveyed in developing the trip rates widely varied in locations, types and number of facilities. Considering the facts noted above, it is reasonable to assume the *ITE* trip rates are not likely to be representatives of the trip rates generated by the proposed nature park.

Therefore, the site generated trips for the proposed development was estimated based on the weighted average trip data obtained from traffic counts at Mt. Talbert Nature Park and Graham Oaks Nature Park. Trip data from Mt. Talbert Nature Park and Graham Oaks Nature Park were used to estimate trip rates for the proposed development because these parks have the most similar park operations to the currently proposed development. The Nature Parks & Natural Areas data reviewed and trip rate calculations for the proposed

improvements are included in Exhibit C for reference.

- Mt. Talbert Nature Park is a 254 acres nature park in Clackamas County. This nature park offers 4.2 miles of hiking trails. It has 20 existing parking stalls. Mt. Talbert Nature Park generates an average of 4 vehicle trips per hour (0.02 average hourly trips per acre) and 95 daily trips (0.37 daily trips per acre).
- Graham Oaks Nature Park is a 230 acres nature park in Wilsonville. This nature park offers 3.5 miles of hiking trails. It has 25 existing standard parking stalls and 2 ADA parking stalls. On average, Graham Oaks Nature Park generates 3.1 vehicle trips per hour (0.01 average hourly trips per acre) and 74.2 daily vehicle trips on average day (0.32 daily trips per acre).

Based on the hourly and daily trips for Mt. Talbert Nature Park and Graham Oaks Nature Park, the weighted hourly and daily average trips per acre of land for the project site were calculated. The results of the weighted hourly and daily trips per acre of land are 0.02 and 0.35, respectively. Using the results of the weighted average trip rates per acre, the total average hourly and daily trips generated by the project site are approximately 5 and 124 trips, respectively.

Trips generated by the project site during the peak traffic hour can be estimated using the ratio of the 30th highest peak hour and average daily traffic volume (ADT). The ratio of the 30th highest hour (design hour) and the ADT is known as the K factor. The K factor for US 30 near the project site ranges 11.3% - 12% of ADT as shown in the *2015 Transportation Volume Table* excerpt in Exhibit D. Assuming (on average) 11.7% of the daily trips generated by the site occur during the design hour which usually coincides with peak traffic hour, 14 trips are estimated to be generated by the project site during the peak traffic hour.

In addition, review of the 2017 Oregon/Washington population data revealed that the population within a 30-minute drive time of Burlington Creek Forest Park, Mt. Talbert Nature Park and Graham Oaks Nature Park is 756,870, 1,384,710 and 786,888, respectively. Compared to Mt. Talbert Nature Park and Graham Oaks Nature Park, Burlington Creek Forest Park has fewer people living within a 30-minute drive. For this reason, Burlington Creek Forest Park is likely to generate fewer trips per acre compared to similar parks. Therefore, based on the data analyzed above, the proposed small increase in traffic is not likely to have a significant adverse impact on the surrounding transportation infrastructure.

Section 8.100 of Multnomah County Road Rules states that:

To protect the public from the detrimental effects of a proposed development, County policy requires Off-site improvements as a condition of a site development permit to:

1. Satisfy safety requirements.

Finding: To identify safety-related concerns at intersections near the proposed development, crash data outlined in the *Multnomah County TSP* was evaluated for the following locations. The crash data evaluated in the *County's TSP* is obtained from the *Oregon Department of Transportation (ODOT) Crash Analysis and Reporting Unit Records* for the period of 2007 to 2013.

- **US 30/NW McNamee Road:** Review of the *County's TSP* shows no crash patterns at this location for the period of 2007 through 2013. In addition, review of the most recent ODOT Crash Data for the period of 2013-2015 showed one non-fatal crash. This crash did not involve pedestrians and/or bicyclists.
- **NW McNamee Road/Project Site Access:** Review of the *County TSP* shows that there were no crash patterns at this location for the period of 2007 through 2013. In addition, review of the most recent ODOT Crash Data for the period of 2013-2015 showed no crashes at this location.
- **NW McNamee Road/NW Skyline Boulevard:** Review of the *County's TSP* shows no crash patterns at this location for the period of 2007 and 2013. While NW Skyline Boulevard is one of the areas with a pattern of crashes, there is no pattern of crashes on NW Skyline Boulevard within approximately 500 feet of its intersection with NW McNamee Road. Review of the most recent ODOT Crash Data for the period of 2013-2015 showed no crash at this intersection.
- **NW Skyline Boulevard/NW Cornelius Pass Road:** Review of the *County's TSP* revealed that this intersection is one of the locations with a pattern of crashes. Review of the most recent ODOT Crash Data for the period of 2013-2015 showed 6 non-fatal crashes at this intersection. Of the 6 crashes, 3 crashes are angle, 2 crashes are turning-movement, 1 crash is a sideswipe and 1 crash involved a fixed object. The crashes did not involve pedestrian and/or bicyclist.
- **US 30/NW Cornelius Pass Road:** Review of the *County's TSP* shows no crash patterns at this location for the period of 2007 and 2013. While this intersection is not identified as one of the intersections with crash patterns, NW Cornelius Pass Road and US 30 are identified as areas with crash patterns. In addition, review of the most recent ODOT Crash Data for the period 2013-2015 shows 14 non-fatal crashes.

Of the 14 crashes 8 were rear-end, 3 were turning movement, 2 involved fixed objects and 1 involved sideswipe (overtaking) crashes. There were no crashes involving pedestrians and bicyclists.

Table 1: Crash Data 2013- 2015

Intersection	Fatal Crashes	Injury/property damage crashes	Total crashes
US 30/NW McNamee Rd	0	0	0
NW McNamee Rd/ Project Site Access	0	0	0
NW Skyline Bl. /NW McNamee Rd	0	0	0
NW Cornelius Pass Rd/ NW Skyline Bl	0	6	6
US 30/ NW Cornelius Pass Rd	0	14	14

The crash data for the period of 2013-2015 is summarized in Table 1 below. The Crash Reports by Type Map excerpt from the County's TSP and the ODOT most recent Crash Data for the period of 2013-2015 are in Exhibit F for reference.

Review of the crash history at the intersections nearest to the project site did not reveal any apparent safety deficiencies. Although two of the study intersections have a history of crashes, considering the availability of alternate routes, the crash frequency at these intersections is not likely to be exacerbated by small increase in trips at the project site. In addition, the county has planned projects to improve safety at these intersections. The projects are listed in the *County's Comprehensive Plan Updated for 2016 "Planned Project List"*. Additional information is provided under *"Planned Improvements"* later in this report."

2. Development created capacity needs.

Multnomah County Design Standards require that: *"All new and improved arterial and major collector roadways in urban areas shall be designed to accommodate a level of service "D" or better during the design hour. In rural areas, such facilities shall be designed to accommodate level of service "C" or better during the design hour. On neighborhood collectors in urban areas, the design level of service shall also be "C" or better."* See Exhibit F for description of the Level of Service Concept.

Findings: Multnomah County's TSP, does not provide volume to capacity ratios or levels of service for any intersections in the vicinity of the project site. The capacity analysis described below is based on traffic data obtained from the County's TSP, Multnomah

County Comprehensive Plan Update, 2016, KPFF's 2014 Intersection Sight Distance Memorandum and the *Oregon Department of Transportation 2015 Transportation Volume Table*. See Exhibit G for traffic count excerpts from these publications. The ADT and roadway characteristics for NW McNamee Road, NW Skyline Boulevard, NW Cornelius Pass Road and US 30 are summarized in Table 2 below.

Table 2: Roadway Characteristics

Roadway	¹ Functional Classification	¹ Year 2006 - 2014 Average Daily Traffic Map	Travel Lanes	Speed Limit	Comments
NW McNamee Rd	Rural Local	< 1,500 (245 ADT near project site) (134 near NB Skyline Boulevard)	2	38 mph (NB); 35 mph (SB) ² (85 th percentile speed)	No designated pedestrian/bicyclist facilities and no shoulders on both sides of the street.
US 30	Rural Principal Arterial	(17,600 ADT 2015 Counts from ODOT Transportation Volume Table). (24,200 ADT in 2033Multnomah County Comprehensive Plan Update for 2016)	4	50 mph Posted speed	There are wide shoulders near its intersection with NW McNamee Rd and its intersection with NW Cornelius Pass Rd. There are no designated bicycle/pedestrian facilities.
NW Skyline Bl.	Rural Collector Street	North of Cornelius pass Road <1,500; South of Cornelius Pass Road 1,500-3,000 (2103 ADT both directions west of McNamee Rd)	2	44 mph ² (85 th percentile speed)	There are wide shoulders near its intersection with NW Cornelius Pass Rd. There are no shoulders near its intersection with NW McNamee Rd There are no designated bicycle/pedestrian facilities.
Cornelius Pass Rd	Rural Arterial Road	5,000 – 10,000 near US 30; >10,000 near NW Skyline Boulevard	2	45 mph Posted speed	There are wide shoulders near its intersection with US 30 and its intersection with NW Skyline Bl. There are no designated bicycle/pedestrian facilities.

1=Exhibit G; 2=Exhibit H

Below is an assessment of the study locations' capacity based on the data summarized in Table 2 above.

- **US 30/NW McNamee Road:** This location is a T-intersection with a stop sign on NW McNamee Road. NW McNamee Road has one lane in each direction with double yellow center line pavement marking. US 30 has two-lanes for each approach with two-way left turn-lane in the center and wide shoulders with curbs on both approaches.

The *Multnomah County Comprehensive Plan Update* for 2016 provides estimated increase in daily motor vehicle trips on US 30 near its intersection with NW McNamee Road and NW Cornelius Pass Road for the period of 2013-2033. The vehicle trip on US 30 is projected to increase to 24,000 daily trips in 2033 from the 17,600 daily trips in 2015 (2.03% annual growth rate). See Exhibit G for growth rate information. Traffic counts obtained from the May 5th, 2014 Intersection Sight Distance Memorandum show that the average daily traffic volume (ADT) on NW McNamee Road near the project site is 245 daily traffic for both directions. See Exhibit G. None of the documents noted above provide growth rate information for NW McNamee Road. Assuming the growth rate for trips on NW McNamee Road are the same as the growth rate on US 30, the projected daily trips for NW McNamee Road in 2033 would be 340 trips. Assuming the total number of traffic entering the intersection is equal to 11.7% of the ADT, the peak traffic hour entering/exiting the intersection from NW McNamee Road and US 30 are estimated be 40 and 2,810 vehicle trips, respectively.

Site review of this intersection's operation revealed that the traffic approaching the NW McNamee Road from the north is metered by the traffic signal at NW Cornelius Pass Road/US 30. Field observation of the intersection's operation also revealed that the controlled delay at this intersection is approximately less than 15 seconds. The LOS for a stop-controlled approach with less than 15 seconds delay is "B". Based on the projected total traffic volume entering the intersection in 2033 and site review of the intersection, it is reasonable to assume that this intersection will operate at a LOS "C" or better.

NW McNamee Road/Project Site Access: This location is a T- intersection without any traffic control devices. NW McNamee Road has one lane for each approach with double yellow center line pavement marking. The project site access is a gated gravel driveway. NW McNamee Road is a narrow roadway with no shoulders and no sidewalk.

As noted above the evening peak hour traffic volume on NW McNamee Road is estimated to be 40 vehicles per hour in 2033 and the traffic served by the proposed development during the peak traffic hour is expected to be 14 vehicles per hour.

With the traffic volume entering this intersection less than 60 vehicles per hour, it is reasonable to anticipate that this intersection will operate at a LOS A.

- **NW McNamee Road/NW Skyline Boulevard:** This location is a T- intersection with a stop sign control on NW McNamee Road. NW McNamee Road has one lane for each approach with double yellow center line pavement marking. The NW Skyline Boulevard has one lane for each approach with a double yellow center line pavement marking. NW Skyline Boulevard and NW McNamee Road are both narrow roadways without shoulders and sidewalks.

Traffic counts obtained from the *May 5th, 2014 Intersection Sight Distance Memorandum* show that the 2014 ADT for both approaches of NW McNamee Road and NW Skyline Boulevard near this intersection are 134 and 2103 trips, respectively. The 2014 ADT for NW McNamee Road and NW Skyline Boulevard are presented in Exhibit G. Assuming the annual growth rate for trips on these roadways are the same as the growth rate on US 30, the projected daily trips for NW McNamee Road and NW Skyline Boulevard would be 190 and 2,960 trips, respectively. Assuming the total number of traffic entering the intersection is equal to 11.7% of the ADT, the peak traffic hour traffic entering the intersection from NW McNamee Road and NW Skyline Boulevard are estimated to be 20 and 350 vehicle trips, respectively.

In addition, site review of this intersection revealed that the controlled delay for the stop-controlled approach is less than 10 second. The LOS for a stop-controlled approach with less than 10 seconds delay is "A". Based on the estimated ADT and the site review at this intersection, it is reasonable to assume that this intersection will operate at LOS C or better.

- **NW Skyline Boulevard/NW Cornelius Pass Road:** This location is a four-legged intersection with stop sign on NW Skyline Boulevard. NW Skyline Boulevard has one lane with double yellow center line pavement marking. NW Cornelius Pass Road has one through lane and a left turn-lane each approach and wide shoulders on both approaches.

As shown in Table 2 above, the ADT on NW Cornelius Pass Road near NW Skyline Boulevard is estimated to exceed 10,000 trips. North of Cornelius Pass Road, the ADT on NW Skyline Boulevard is estimated to be less than 1,500 trips; and south of Cornelius pass Road, the ADT on NW Skyline Boulevard is estimated to be between 1,500 to 3,000 ADT in 2014. See Exhibit G. Assuming the traffic growth at this intersection will be the same as the annual growth rate for US 30, the estimated trips on NW Cornelius Pass Road near NW Skyline Boulevard will be more than 13,250 trips in 2033. The estimated year 2033 trips on NW Skyline Boulevard north of NW Cornelius Pass Road will be 1,990 trips; and, south of NW Cornelius Pass the estimated ADT on NW Skyline Boulevard will be between 1,990 and 3, 980 trips.

Assuming the total number of trips entering the intersection during the evening peak hour traffic is equal to 11.7% of the ADT, the estimated evening peak hour trips on NW Cornelius Pass Road near NW Skyline Boulevard will exceed 1,550 vehicle trips per hour. The estimated evening peak hour trips on NW Skyline Boulevard north of NW Cornelius Pass Road will be 230 trips; and, south of NW Cornelius Pass Road the evening peak hour trips on NW Skyline Boulevard will be between 230 and 470 trips per hour.

Site review of this intersection's operation revealed more than 35 seconds delay for the stop-controlled approaches on NW Skyline Boulevard at its intersection with NW Cornelius Pass Road. The LOS for a stop-controlled approach with more than 35 seconds delay is "E". Based on the estimated ADT and the site review at this intersection it is reasonable to anticipate that this intersection will continue to operate at an unacceptable LOS. However, given other access routes and projected trips, the proposed use is not anticipated to adversely impact the intersections LOS.

- **US 30/NW Cornelius Pass Road:** This location is a traffic signal controlled T-intersection with marked pedestrian crossings on the south and west legs. There are no additional pedestrian or bicycle facilities. US 30 at this intersection has two lanes for each approach with a left turn-lane for the northbound approach. NW Cornelius Pass Road has a left turn-lane and a right turn-lane with a pork-chop island. Wide shoulders on all approaches are provided.

As shown in Table 2, the vehicle trip on US 30 is projected to increase from the 17,600 daily trips in 2015 to 24,000 daily trips in 2033 See Exhibit G for growth rate information. The County's TSP estimates ADT on NW Cornelius Pass Road to be 5,000 – 10,000 ADT in 2014. See Exhibit G. None of the documents noted above provide growth rate information for NW Cornelius Pass Road. Assuming the growth rate for trips on NW Cornelius Pass Road are the same as the growth rate on US 30, the projected daily trips for NW Cornelius Pass Road would be 6,620 - 13,250 trips. Assuming the total number of traffic entering the intersection is equal to 11.7% of the ADT, the peak traffic hour entering the intersection from NW Cornelius Pass Road and US 30 are estimated be 770-1,550 and 2,810 vehicle trips respectively.

Site review of this intersection's operation revealed that all vehicles that enter the intersection cleared within one cycle and delays were moderate. Based on the ADT and site review information, it is reasonable to assume this intersection will operate at LOS C.

Access Evaluation:

Section 4.000 of *Multnomah County Road Rules* requires that:

“An applicant for access to County roads must either demonstrate that a sight distance requirement is currently met, propose mitigation measures that will meet this standard, or propose alternate measures acceptable to the County Transportation Division to mitigate sub-standard sight distance.”

In addition, the County’s Road Rules require that the minimum spacing standard for driveways on local streets be 50 feet.

Findings: KPFF evaluated intersection sight distance for five access points located in the Tualatin Mountains in 2014. The sight distance evaluation included the project site access on NW McNamee Road. The results of the sight distance evaluation for the project site is documented in the *2014 KPFF Intersection Sight Distance Evaluation Memorandum* and summarize below.

The results of the sight distance evaluation showed that the sight distance at the project site access does not meet both Multnomah County’s and AASHTO’s minimum corner sight distance and stopping sight distance standards. The sight distance is limited due to trees, vegetation, a horizontal curve and a hillside on the roadway.

The memorandum recommends removal of the sight distance obstructions and recording restrictive sight distance easements over a portion of the nearby properties. See excerpt of the *2014 KPFF Intersection Sight Distance Evaluation Memorandum* in Exhibit H. With the recommended obstruction removal, the KPFF report indicates that safe and adequate sight distance can be provided.

In addition, review of the proposed access locations showed that there are no accesses within 50 feet of the proposed driveway. The County’s access spacing standard for driveways on local streets is a minimum of 50 feet. Therefore, the proposed access spacing follows the County’s access spacing standard.

Planned Improvements: The *Comprehensive Plan Update* for 2016 “*Planned Projects List*” in Exhibit I includes transportation improvements in the project site vicinity. The improvements include the following.

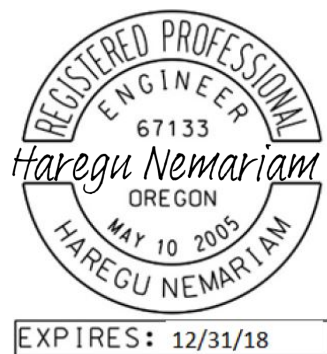
- NW Skyline Boulevard/NW Cornelius Pass Road intersection improvements: The improvements include installation of a traffic signal, providing westbound left-turn lane and through/right lane on Skyline Boulevard.
- NW Skyline Boulevard: Add to shoulder from UGB to Cornelius Pass Road and from Cornelius Pass Road to Rocky Point Road.
- Cornelius Pass Road/US 30 Intersection Improvements: The improvements included a northbound turn lane and shared northbound left-turn/right-turn lane.
- Cornelius Pass Road Improvements: Install photo radar for speed enforcement;

install reflectors, delineators, and traffic striping; conduct speed zone study; and, study the need for climbing lanes, guardrail, drainage and additional shoulder.

The planned projects would focus on improving the surrounding transportation system shortcomings to accommodate projected background traffic demand.

Section IV: Conclusion

With the sight distance improvements at the project site access in place, the projected trips anticipated by the proposed development use can safely and adequately be served by the existing transportation system.







09/17/2017

EXHIBIT A

EXHIBIT A

Burlington Creek Forest: Zoning

-  Metro Parks and Natural Areas
-  Exclusive Farm or Forest Use
-  Rural Commercial
-  Rural Residential or Future Urban

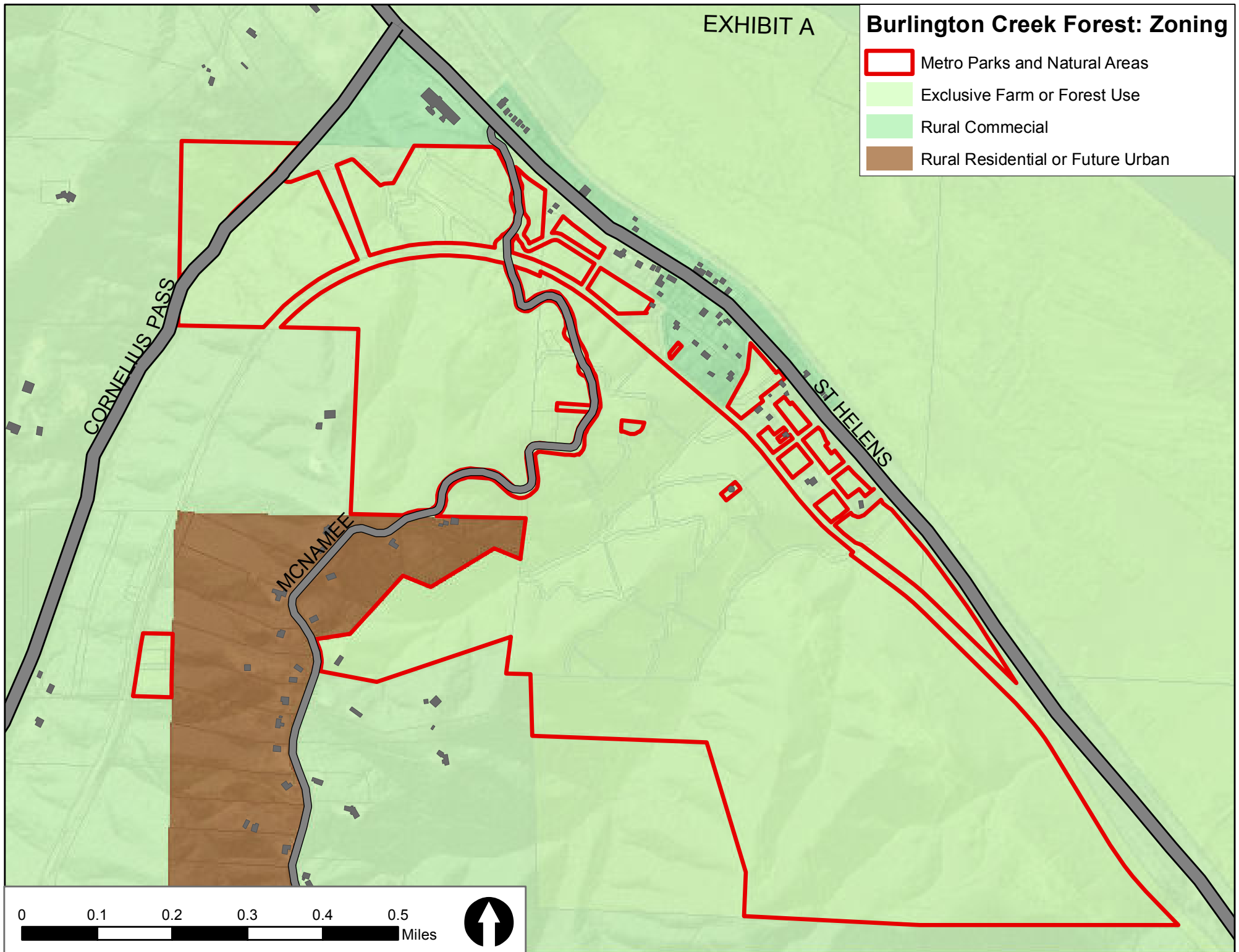
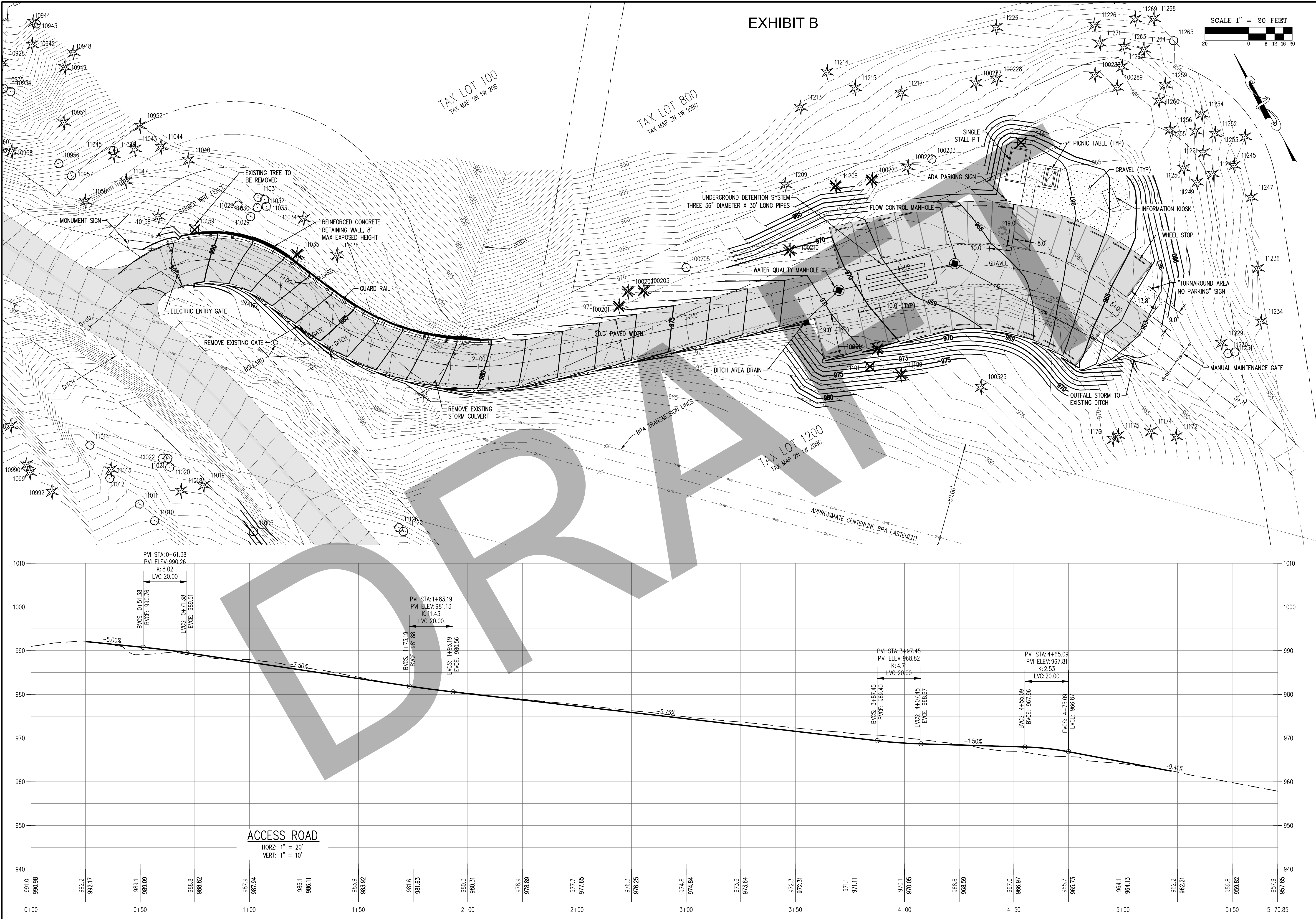


EXHIBIT B

AKS DRAWING FILE: 4781 SITE PLANNING | LAYOUT: LAYOUT1



AKS
AKS ENGINEERING & FORESTRY, LLC
12065 SW HERMAN RD. SUITE 100
TUALATIN, OR 97062
P: 503.563.6151
F: 503.563.6152
aks-eng.com

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BURLINGTON CREEK
PARKING METRO
MULTNOMAH COUNTY OREGON

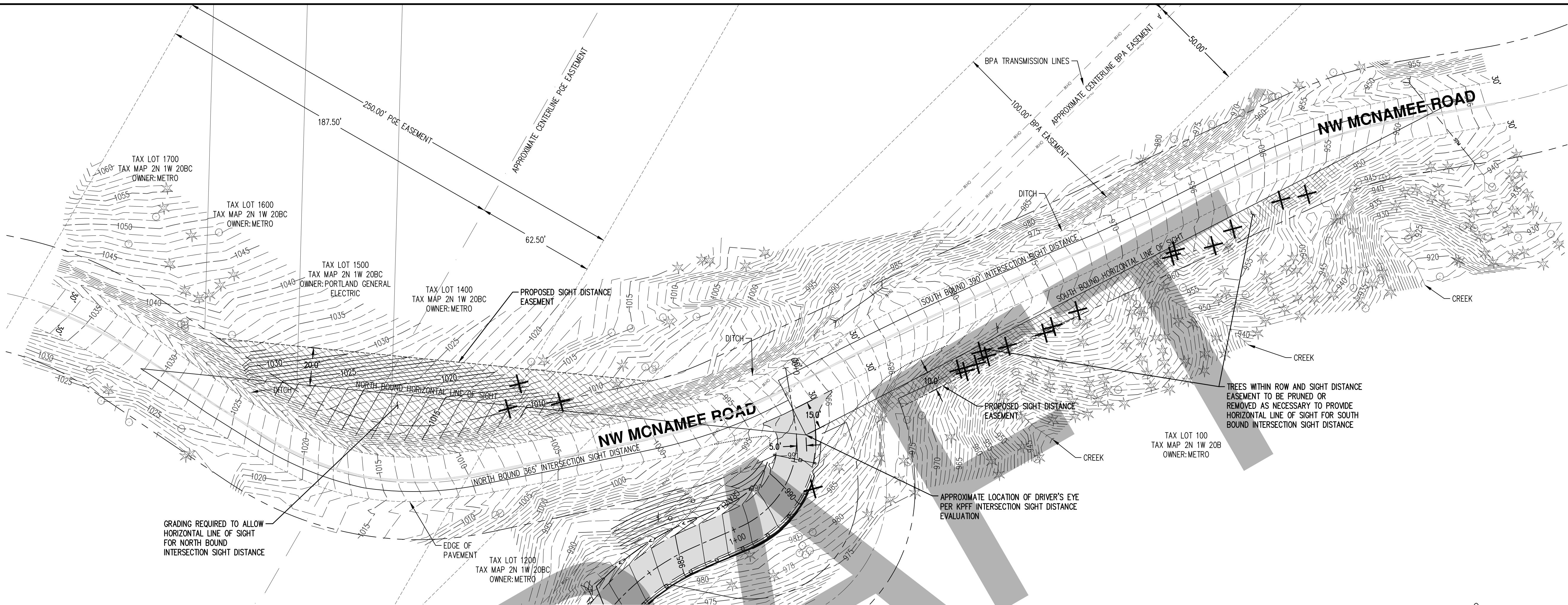
BURLINGTON PARKING
SITE PLAN

DESIGNED BY:	BRB
DRAWN BY:	AZV
CHECKED BY:	AHH
SCALE:	AS NOTED
DATE:	09/05/2017

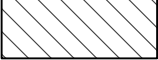

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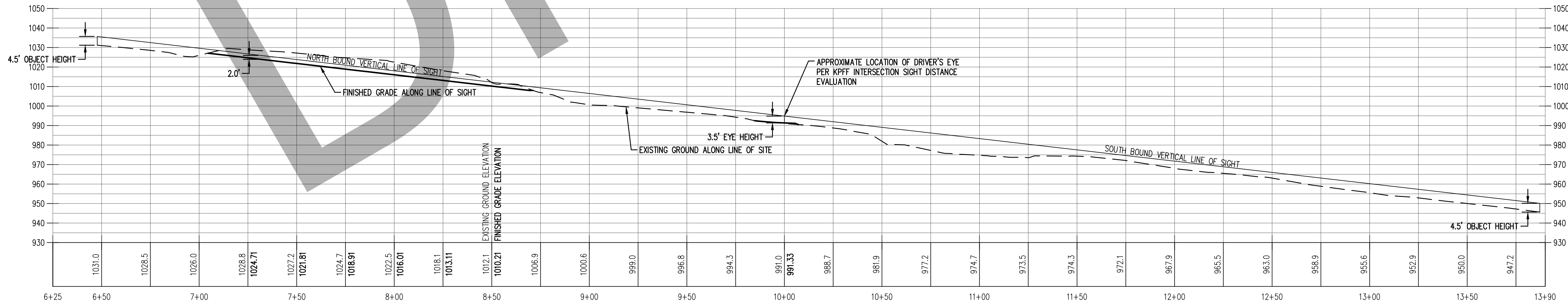
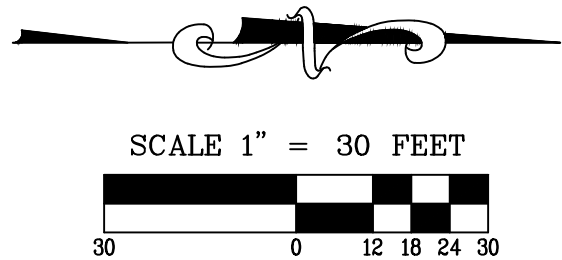
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LEGEND:

- SIGHT DISTANCE CLEARING AREA 
- TREE REMOVAL/PRUNING 



SITE DISTANCE

Hor. Scale: 1" = 30'
Vert. Scale: 1" = 30'

BURLINGTON CREEK
PARKING METRO
MULTNOMAH COUNTY OREGON

NW MCNAMEE ROAD SIGHT
DISTANCE

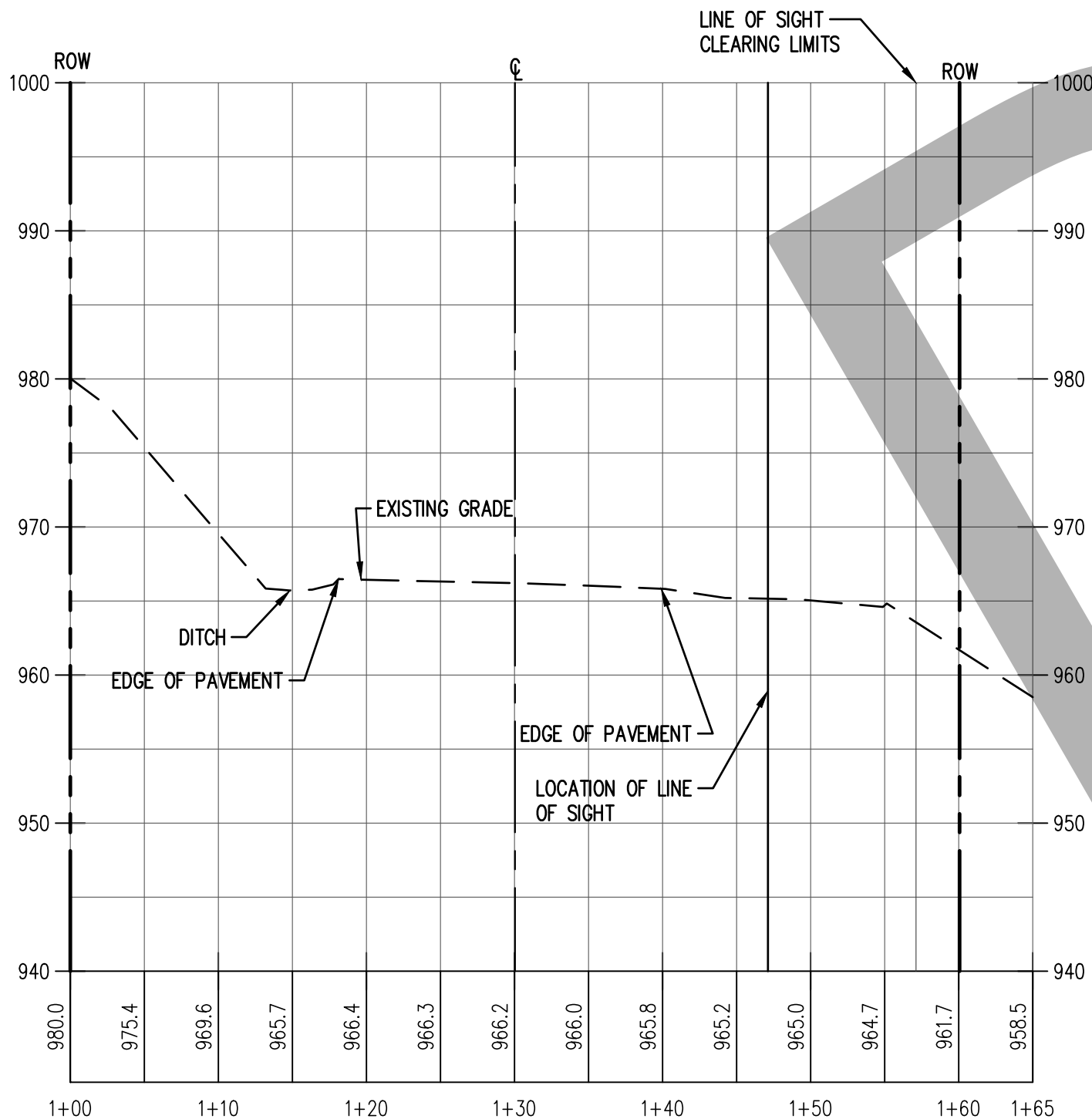
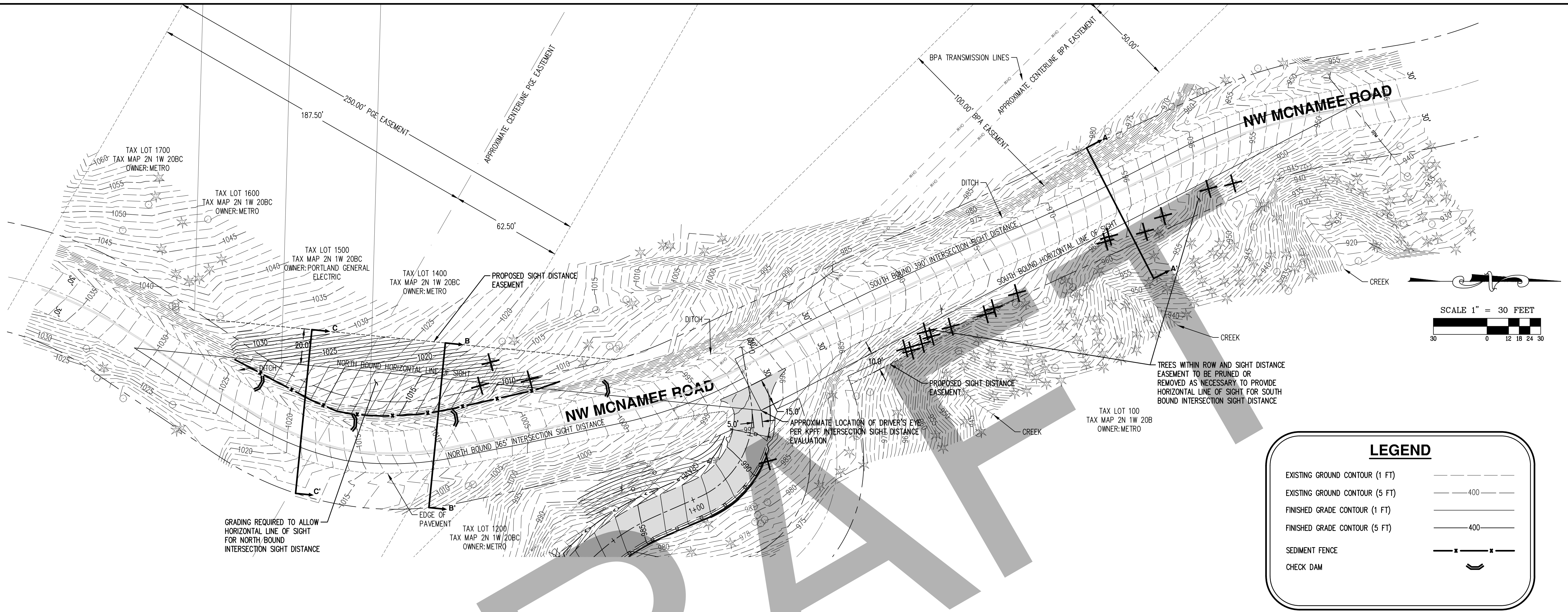
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CHECKED BY: AHH
SCALE: AS NOTED
DATE: 07/14/2017

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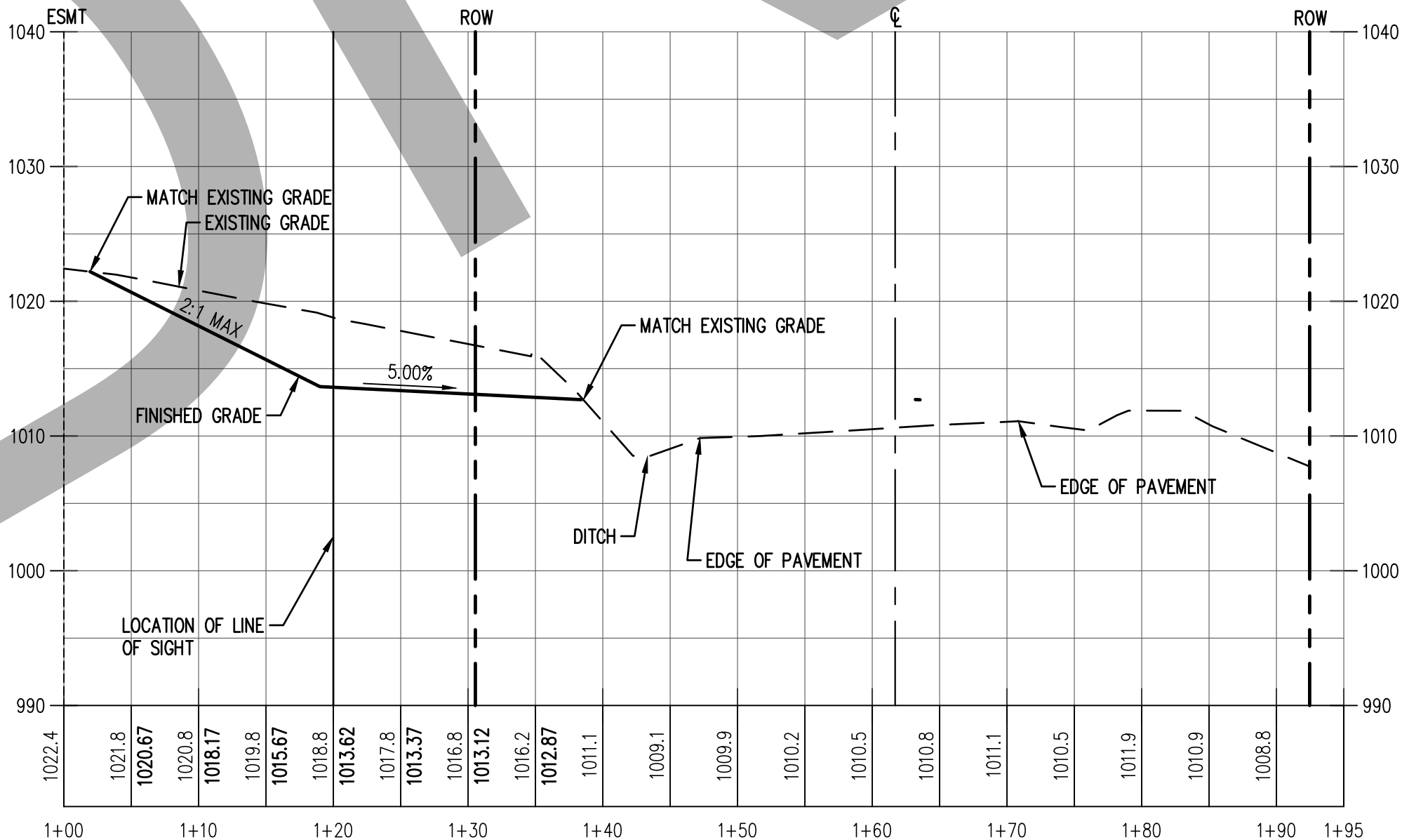
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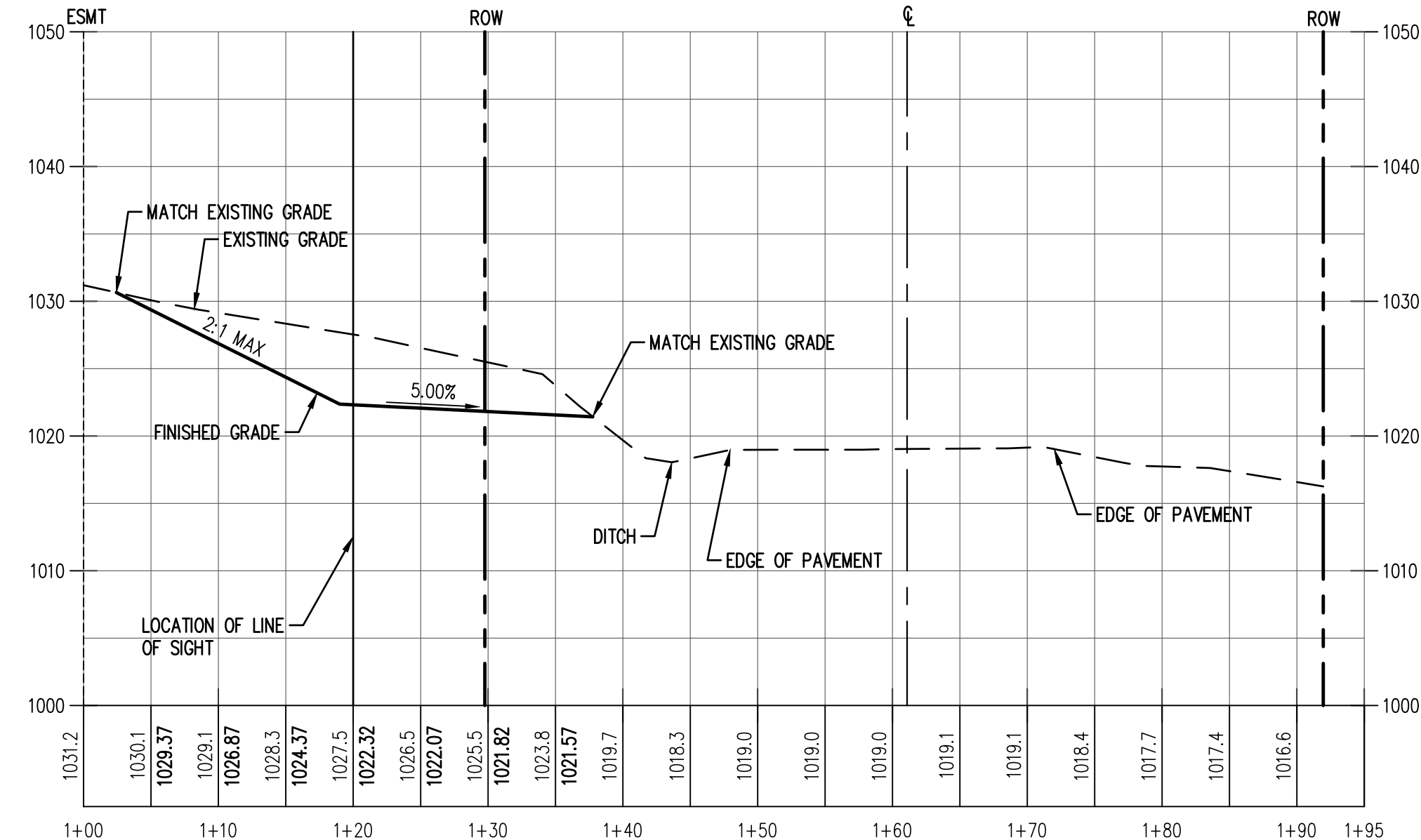
AKS DRAWING FILE: 4781 MCNAMEE SIGHT DISTANCE GRADING.DWG | LAYOUT: LAYOUT1



A-A'
Hor. Scale: 1" = 10'
Vert. Scale: 1" = 10'



B-B'
Hor. Scale: 1" = 10'
Vert. Scale: 1" = 10'



C-C'
Hor. Scale: 1" = 10'
Vert. Scale: 1" = 10'

AKS

AKS ENGINEERING & FORESTRY, LLC
12065 SW HERMAN RD. STE 100
TUALATIN, OR 97062
P: 503.563.6151
F: 503.563.6152
aks-eng.com

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BURLINGTON CREEK
PARKING METRO
MULTNOMAH COUNTY OREGON

NW MCNAMEE ROAD
GRADING PLAN

DESIGNED BY: BRB
DRAWN BY: AZV
CHECKED BY: AHH
SCALE: AS NOTED
DATE: 07/14/2017

REVISIONS

JOB NUMBER
4781

SHEET
2 OF 2

EXHIBIT C

EXHIBIT C

Estimated Trip Calucations

Hourly Trip Rates Per Acre		
Acres	Mt. Talbert Nature Park	Graham Oaks Nature Park
Hourly Trips	4	3.1
Number of Units	254	230
Hourly Trips/Acre	0.016	0.013

Weighted Average Hourly Trips Per Acre =	0.015
Site Generate Average Hourly Trips=	354X0.015=5.31

Daily Trip Rates Per Acre		
Acres	Mt. Talbert Nature Park	Graham Oaks Nature Park
Daily Trips	95	74.2
Acres	254	230
Hourly Trips/Acre	0.374	0.323

Weighted Average Hourly Trips Per Acre =	0.350
Site Generate Average Daily Trips=	354x0.350=124

EXHIBIT D

Excerpts of Newell Creek Natural Area Trip Analysis

Finding: The proposed development is not adjacent to roadways and intersections that are high accident locations, areas that contain an identified safety concern, or high concentration of pedestrians or bicyclists such as school zones. See the response to subsection (6) standard below.

Therefore, the proposed development does not require a Transportation Impact Study. This letter will address Oregon City's requirements for a Transportation Analysis Letter as stated in section 5 of the *Guidelines for Transportation Impact Analyses*. Section 5 of Oregon City's *Guidelines for Transportation Impact Analyses* provides that a Transportation Analysis Letter shall include the following:

1. *The expected trip generation of the proposed development including the AM peak hour, the PM peak hour, daily traffic, and other germane periods as may be appropriate, together with appropriate documentation and references.*

Findings: Typically, trip ratios for new facilities are determined by using the ITE Trip Generation Manual, however, for this development type, the ITE Trip Generation Manual does not provide an identical or even similar use. The ITE Trip Generation Manual does include trip uses for certain types of parks, including county and regional parks, as shown in Table B.

Table B: Trip Generation Rates²

Land Use	ITE Code	Units	Peak Hour						Daily
			Morning			Evening			
			Inbound	Outbound	Total	Inbound	Outbound	Total	
County Park	412	AC	0.01	0.01	0.02	0.05	0.04	0.09	2.28
Regional Park	417	AC	0.09	0.06	0.15	0.09	0.11	0.20	4.57

However, there are some important distinctions that make the above trip generation rates incompatible with, or otherwise higher than those of the proposed nature park development. Regional Parks tend to be much larger than nature parks and natural areas. For example, Oxbow Regional Park is 1,000 acres whereas the proposed natural area will be 233 acres, of which only a fraction will be accessed through trails. In addition, Oxbow Regional Park offers a wider array of recreational activities as well as a world class water destination. Activities, including camping, fishing, boating, swimming, and equestrian trails, available at Oxbow will draw more visitors.

To obtain accurate trip generation rates for the proposed nature park, Metro, with the assistance of other units of local government, has attempted to quantify and thereafter estimate usage for its currently operating and/or recently developed parks. Exhibit F

² Institute of Transportation Engineers, Trip Generation Manual, 9th Edition, 2012.

represents data associated with nature parks and natural areas around the region and further south, including their parking facilities, amenities, and whether or not existing parking is sufficient to serve the use.

Additionally, Metro placed vehicle counters at its nature parks and natural areas around the region. The most similar park operation to the currently proposed development is Mt. Talbert Nature Park in Clackamas. Mt. Talbert Nature Park is 254 acres and offers 4.2 miles of hiking trails. It has twenty parking stalls. By car, Mt. Talbert Nature Park generates an average of 4 trips per hour, 95 daily trips, 666.2 weekly trips, and 2,896.6 monthly trips, with the highest number of trips seen in July and August. No parking management issues have been experienced. *See Exhibit G for Trip Data.*

Another park similar to the proposed development is Graham Oaks Nature Park in Wilsonville. Graham Oaks Nature Park is 230 acres and offers 3.5 miles of hiking trails. It has 25 standard and 2 ADA parking stalls. By car, Graham Oaks Nature Park generates an average of 3.1 trips per hour, 74.2 daily trips, 519 weekly trips, and 2,258.3 monthly trips, with the highest number of trips seen in July and August. Parking management issues have been rare. *See Exhibit G for Trip Data.*

Trip counts at Newell Creek Canyon Natural Area are anticipated to be similar to those at Mt. Talbert and Graham Oaks Nature Parks. Applicant estimates the proposed development will generate approximately 60 to 100 daily weekday trips during the summer peak season, with an estimated 4 to 7 trips per hour in the AM peak period and 5 to 9 trips per hour in the PM peak period, with remaining users scattered throughout the day, with intensity peaking around midday. Although traffic counts for similarly situated Metro parks show daily usage relatively consistent from day to day, applicant estimates that user trips at the proposed park will increase on the weekends, where 100 to 150 trips are anticipated during the peak summer season, with use spread throughout the day. Use will drop off significantly in the winter months when weather conditions are less hospitable.

It is presumed that the majority of users who will enjoy this system will likely live within a 30-minute drive of the primary access point. It is expected that many users will be local, visiting the trails from neighborhoods and schools within a 10-minute walking or bicycling distance.³

A volume traffic survey was conducted in Oregon City in 2014. *See Exhibit H for survey results.* As measured west of Molalla Avenue on Warner Milne Road, daily traffic counts were 6,487, distributed nearly equally eastbound and westbound. As measured on Molalla Avenue north of Warner Milne Road, daily traffic counts were 14, 919, more heavily

³ The International Mountain Bicycling Association, Trail Solutions Program, Newell Creek Canyon Trail Feasibility Assessment, May 2014.

weighted northbound. As measured on Molalla Avenue south of Warner Milne Road, daily traffic counts were 20,284, distributed nearly equally northbound and southbound.

A small increase in automobile traffic should be anticipated over current levels in order for people to access the trails. In addition, given the existing limited availability of trails for beginning mountain bicycling in the Metro area, this facility is predicted to have some regional draw. The primary access point is appropriately located for vehicle access because of its proximity to Molalla Avenue, South Beaver Creek Road, and Highway 213. Also, many users will commute to and from the trails by foot or bicycle and never utilize a car.⁴

2. *Site plan showing the location of all access driveways or private streets where they intersect with public streets plus driveways of abutting properties and driveways on the opposite side of the street from the proposed development.*

Findings: The proposed site plan showing the location of all access driveways or private streets where they intersect with public streets plus driveways abutting properties and driveways on the opposite side of the street from the proposed development is provided as Exhibit B. Also see Table C Roadway Characteristics.

Table C: Roadway Characteristics⁵

Roadway	Functional Classification	Street type	Travel Lanes	Speed limit	Comments
Molalla Avenue	Major Arterial Roadway	Commercial	2-4	30-40 mph	Sidewalks on both sides; no bike lanes
Warner Milne Road	Minor Arterial Roadway	Mixed-use	2	30 mph	Sidewalks on both sides; no bike lanes
Hilltop Avenue	Local Roadway	Mixed-use/Residential	2	25 mph	Single sidewalk
Fox Lane	Local Roadway	Mixed-use/Residential	2	25 mph	Single sidewalk
Gales Lane	Local Roadway	Residential	2	25 mph	Sidewalks on both sides
Otter Lane	Local Roadway	Residential	2	25 mph	No sidewalks
Beaver Lane	Local Roadway	Residential	2	25 mph	No sidewalks

Primary access to the site is planned at the eastern terminus of Warner Milne Road, one block east of Molalla Avenue. Warner Milne Road is a two-lane road that primarily provides access to adjacent businesses and residences. Molalla Avenue is classified as a major arterial roadway and Warner Milne Road is classified as a minor arterial roadway by Oregon City's TSP. The intersection of Molalla Avenue and Warner Milne Road is a 4-way stop intersection controlled by a tri-colored traffic signal and contains designated turn lanes. See Exhibit I for Oregon City's Functional Classification.

⁴ *Id.*

⁵ 2013 Oregon City TSP, Volume 2, Section C.

According to a 2014 Speed Traffic Survey, on Warner Milne Road at Molalla Avenue, the measured 85th percentile speed was measured at 33 mph for eastbound traffic and 33 mph for westbound traffic. This is just over the speed limit of 30 mph on Warner Milne Road. North of Warner Milne Road on Molalla Avenue, the measured 85th percentile speed was measured at 34 mph for northbound traffic and 34 mph for southbound traffic. This is just under the posted speed limit of 35 mph. South of Warner Milne Road on Molalla Avenue, the measured 85th percentile speed was measured at 32 mph for northbound traffic and 31 mph for southbound traffic. This is under the posted speed limit of 35 mph. *See Exhibit H for Speed Traffic Surveys.*

Warner Milne Road intersects with Fox Lane, a local roadway, which provides residential access. Currently, there is no stop control at the intersection of Warner Milne Road and Fox Lane. The proposed accessway may require a stop control on Fox Lane.

The Gales Lane accessway will be used for emergency and maintenance access only. Gales Lane is a local roadway that intersects with Molalla Avenue. It is an unsignalized T-intersection with a stop control on Gales Lane and a center turn lane on Molalla Avenue.

Hilltop Avenue, south of Warner Milne Road, intersects with Molalla Avenue. It is an unsignalized T-intersection with a stop control on Hilltop Avenue. It provides residential access to Fox, Otter, and Beaver Lanes. Hilltop Avenue might be used to access Newell Creek Canyon Natural Area via Fox Lane. The ends of Beaver and Otter Lanes will remain barricaded and will serve as secondary local access to the trailhead and day-use area from the neighborhood to the south. Signs will direct traffic to the ample parking lot to dissuade visitors from parking on local public streets.

With the exception Otter and Beaver Lanes, every roadway in the vicinity of the proposed development has a sidewalk on at least one side of the road. *See Exhibit J for Map of Existing Sidewalks.* Additionally, the intersection of Molalla Avenue and Warner Milne Road is equipped with signalized pedestrian crosswalks. *See Table C: Roadway Characteristics.*

With regard to bike lanes, there is a bike lane on northbound Molalla Avenue that ends at or near Colton Place.⁶ A sign signifying its end is posted and is followed by a “share the road” sign. The bike lane resumes northbound at or near Gales Lane. There is a bike lane on southbound Molalla Avenue that ends at or near Gales Lane. A sign signifying its end is

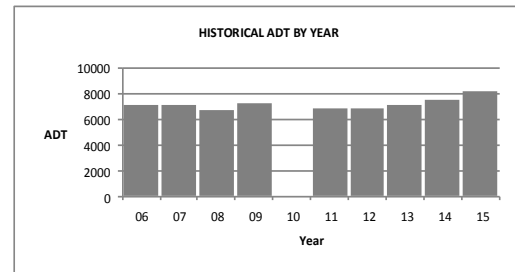
⁶ Roadways periodically dropping bike lanes, as occurs on Molalla Avenue between Warner Milne Road and Beaver Creek Road, were identified as a key transportation gap for bicyclists in the Biking Needs section of 2013 Oregon City TSP, Volume 2, p. 14. Molalla Avenue Streetscape Improvement, including widening sidewalks, sidewalk infill, ADA accessibility, bike lanes, reconfiguration of travel lanes, and addition of bus stop amenities, from Holmes Lane/Hilda Street to Warner Milne Road, was listed as a “Likely to be Funded Transportation” project with medium-term priority. 2013 Oregon City TSP, Volume 2, Section G, p. 11.

EXHIBIT E

Location:	US101; MP 3.79; OREGON COAST HIGHWAY NO. 9; 0.01 mile north of Lower Columbia River Highway No. 92 (US30)	Site Name:	Astoria Bridge (04-004)
		Installed:	September, 1995

HISTORICAL TRAFFIC DATA

Year	ADT	Percent of ADT				
		Max Day	Max Hour	10TH Hour	20TH Hour	30TH Hour
2006	7141	164	16.6	15.0	14.6	14.4
2007	7127	165	16.3	15.0	14.6	14.1
2008	6761	175	17.3	15.8	15.0	14.3
2009	7207	191	17.2	15.9	15.0	14.6
2010	***	***	***	***	***	***
2011	6912	174	18.9	16.0	15.5	15.0
2012	6878	168	16.8	15.2	14.7	14.5
2013	7171	180	16.7	15.4	14.4	14.1
2014	7488	169	17.3	14.9	14.5	14.0
2015	8158	178	24.0	15.3	14.5	13.9



2015 TRAFFIC DATA

	Average Weekday Traffic	Percent of ADT	Average Daily Traffic	Percent of ADT
January	6404	78	6395	78
February	6950	85	7231	89
March	7178	88	7444	91
April	7640	94	8029	98
May	7806	96	8211	101
June	8654	106	9018	111
July	10025	123	10520	129
August	10490	129	10890	133
September	8729	107	9363	115
October	7545	92	7674	94
November	6834	84	6801	83
December	6809	83	6324	78

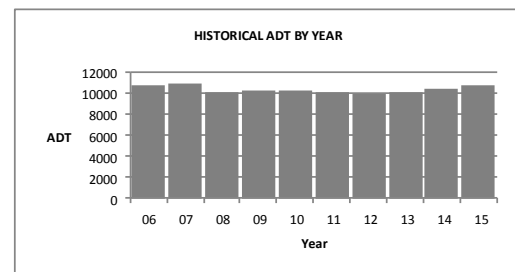
For Vehicle Classification data near this ATR, please go to the following web page:

<https://gis.odot.state.or.us/TransGIS/>

Location:	US30; MP 53.33; LOWER COLUMBIA RIVER HIGHWAY NO. 92; 1.03 miles west of Rainier Road	Site Name:	Rainier (05-006)
		Installed:	September, 1954

HISTORICAL TRAFFIC DATA

Year	ADT	Percent of ADT				
		Max Day	Max Hour	10TH Hour	20TH Hour	30TH Hour
2006	10717	146	12.7	11.8	11.5	11.4
2007	10986	151	12.9	12.2	11.6	11.3
2008	10143	148	12.6	12.1	11.7	11.6
2009	10282	156	14.3	12.7	12.4	12.0
2010	10195	149	13.8	12.4	12.2	11.9
2011	9997	150	13.5	12.4	12.1	11.9
2012	9905	157	13.4	12.6	12.1	11.8
2013	10029	149	12.8	12.3	11.9	11.7
2014	10372	152	13.3	12.6	12.3	11.9
2015	10792	161	13.4	12.2	11.6	11.4



2015 TRAFFIC DATA

	Average Weekday Traffic	Percent of ADT	Average Daily Traffic	Percent of ADT
January	8925	83	8940	83
February	9510	88	9860	91
March	9940	92	10180	94
April	10482	97	10796	100
May	10615	98	10932	101
June	11064	103	11798	109
July	12363	115	12886	119
August	12985	120	13472	125
September	11315	105	11874	110
October	10324	96	10320	96
November	9724	90	9537	88
December	9330	86	8908	83

For Vehicle Classification data near this ATR, please go to the following web page:

<https://gis.odot.state.or.us/TransGIS/>

EXHIBIT F



Figure 5A

Crash Reports by Type
(Jan 2009 to March 2014)

Crash Type

- ▲ Animal
- ▲ Bicycle
- ▲ Pedestrian
- ▲ Fixed Object
- ▲ Head-On
- ▲ Angle
- ▲ Rear-End
- ▲ Run Off The Road
- ▲ Sideswipe
- ▲ Turning
- Other

Plan Areas

County Boundaries

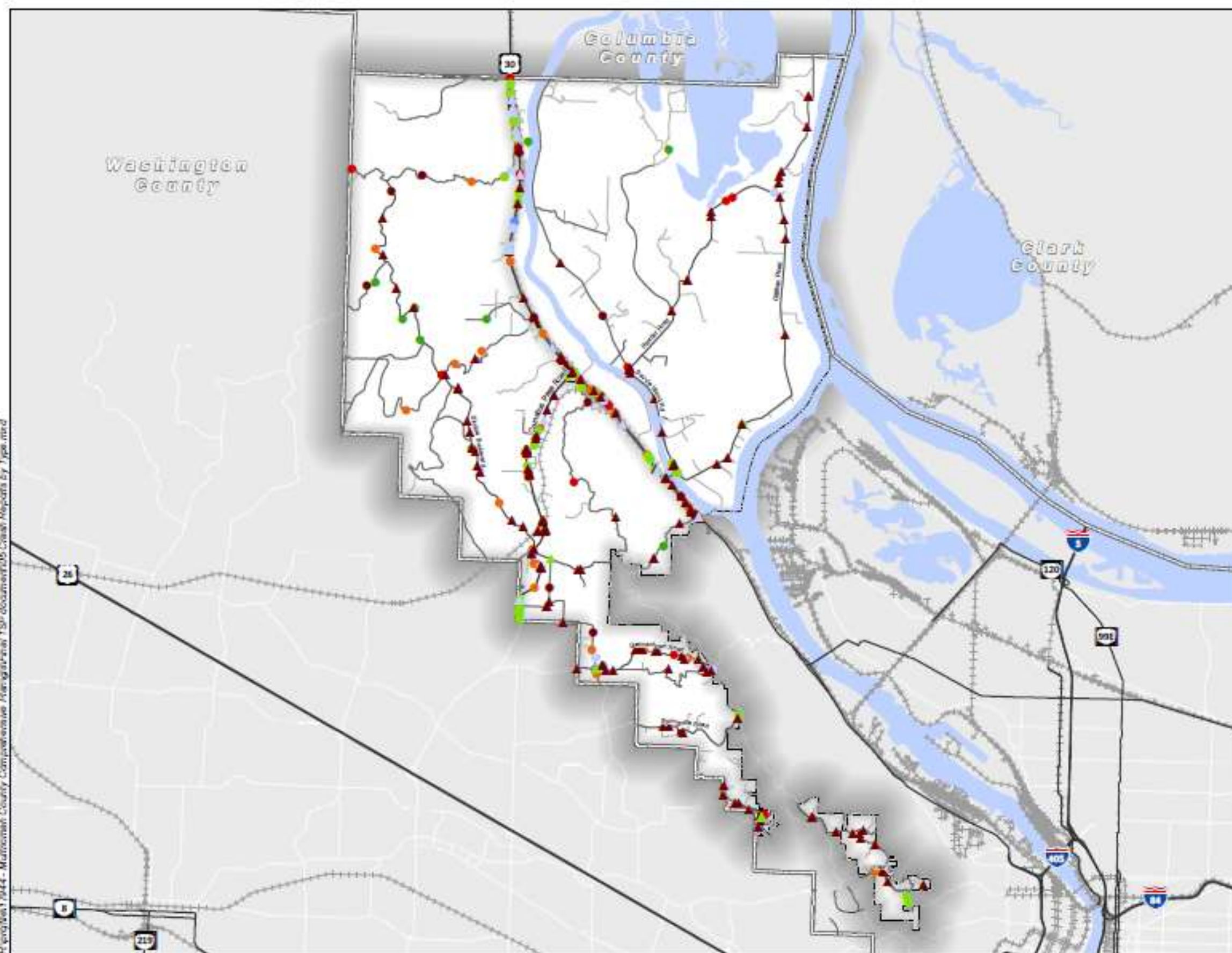
0 0.5 1 2 Miles



Prepared By: Kittelson & Associates, Inc. Date: 8/29/2016

Coordinate System:
NAD 1983 HARN State Plane Oregon North FIPS 3601

Disclaimer:
This map is intended for informational purposes only. While this map represents the best data available at the time of publication, Multnomah County makes no claims, representations, or warranties as to its accuracy or completeness. Metadata available upon request.



OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

US 30 Lower Columbia River Hwy (092) & NW McNamee Rd plus 200 feet
January 1, 2013 through December 31, 2015

COLLISION TYPE	FATAL CRASHES	NON- FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER- SECTION	INTER- SECTION RELATED	OFF- ROAD
YEAR: 2013														
FIXED / OTHER OBJECT	0	0	1	1	0	0	0	0	1	0	1	0	0	0
2013 TOTAL	0	0	1	1	0	0	0	0	1	0	1	0	0	0
FINAL TOTAL	0	0	1	1	0	0	0	0	1	0	1	0	0	0

Disclaimer: A higher number of crashes may be reported as of 2011 compared to prior years. This does not reflect an increase in annual crashes. The higher numbers result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics.

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
 TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
 CRASH SUMMARIES BY YEAR BY COLLISION TYPE
 NW McNamee Rd South of US 30 Lower Columbia River Hwy
 January 1, 2013 through December 31, 2015

COLLISION TYPE	FATAL CRASHES	NON- FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER- SECTION	INTER- SECTION RELATED	OFF- ROAD
YEAR: 2013														
NON-COLLISION	0	1	0	1	0	1	0	1	0	1	0	0	0	0
2013 TOTAL	0	1	0	1	0	1	0	1	0	1	0	0	0	0
FINAL TOTAL	0	1	0	1	0	1	0	1	0	1	0	0	0	0

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OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

NW McNamee Rd & NW Skyline Blvd plus 200 feet
January 1, 2013 through December 31, 2015

COLLISION TYPE	FATAL CRASHES	NON- FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER- SECTION	INTER- SECTION RELATED	OFF- ROAD
YEAR: 2014														
HEAD-ON	0	1	0	1	0	2	0	1	0	1	0	0	0	0
2014 TOTAL	0	1	0	1	0	2	0	1	0	1	0	0	0	0
FINAL TOTAL	0	1	0	1	0	2	0	1	0	1	0	0	0	0

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OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE
NW Skyline Blvd & NW Cornelius Pass Rd plus 200 feet
January 1, 2013 through December 31, 2015

COLLISION TYPE	FATAL CRASHES	NON- FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER- SECTION	INTER- SECTION RELATED	OFF- ROAD
YEAR: 2015														
ANGLE	0	0	1	1	0	0	0	1	0	1	0	1	0	0
TURNING MOVEMENTS	0	0	1	1	0	0	1	1	0	1	0	1	0	0
2015 TOTAL	0	0	2	2	0	0	1	2	0	2	0	2	0	0
YEAR: 2014														
ANGLE	0	0	1	1	0	0	0	1	0	1	0	1	0	0
FIXED / OTHER OBJECT	0	1	0	1	0	2	0	1	0	0	1	0	0	1
2014 TOTAL	0	1	1	2	0	2	0	2	0	1	1	1	0	1
YEAR: 2013														
ANGLE	0	1	0	1	0	3	0	1	0	1	0	1	0	0
SIDESWIPE - MEETING	0	0	1	1	0	0	0	0	1	1	0	1	0	0
TURNING MOVEMENTS	0	0	1	1	0	0	0	1	0	1	0	1	0	0
2013 TOTAL	0	1	2	3	0	3	0	2	1	3	0	3	0	0
FINAL TOTAL	0	2	5	7	0	5	1	6	1	6	1	6	0	1

Disclaimer: A higher number of crashes may be reported as of 2011 compared to prior years. This does not reflect an increase in annual crashes. The higher numbers result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics.

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

US 30 Lower Columbia River Hwy (092 & NW Cornelius Pass Rd plus 200 feet
January 1, 2013 through December 31, 2015

COLLISION TYPE	FATAL CRASHES	NON- FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER- SECTION	INTER- SECTION RELATED	OFF- ROAD
YEAR: 2015														
FIXED / OTHER OBJECT	0	1	0	1	0	2	0	1	0	1	0	1	0	1
REAR-END	0	1	1	2	0	2	0	1	1	0	2	2	0	0
TURNING MOVEMENTS	0	0	1	1	0	0	0	0	1	1	0	1	0	0
2015 TOTAL	0	2	2	4	0	4	0	2	2	2	2	4	0	1
YEAR: 2014														
REAR-END	0	2	2	4	0	2	0	2	2	3	1	3	0	0
SIDESWIPE - OVERTAKING	0	0	1	1	0	0	0	1	0	1	0	1	0	0
TURNING MOVEMENTS	0	0	2	2	0	0	0	1	1	1	1	2	0	0
2014 TOTAL	0	2	5	7	0	2	0	4	3	5	2	6	0	0
YEAR: 2013														
FIXED / OTHER OBJECT	0	1	0	1	0	1	0	1	0	0	1	1	0	1
REAR-END	0	1	4	5	0	1	2	3	2	4	1	3	0	0
2013 TOTAL	0	2	4	6	0	2	2	4	2	4	2	4	0	1
FINAL TOTAL	0	6	11	17	0	8	2	10	7	11	6	14	0	2

Disclaimer: A higher number of crashes may be reported as of 2011 compared to prior years. This does not reflect an increase in annual crashes. The higher numbers result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics.

EXHIBIT G

Appendix A

Level of Service Concept

Levels of Service - The concept of levels of service uses qualitative measures that characterize operational conditions within a traffic stream and their perception by motorists and passengers. The descriptions of individual levels of service characterize these conditions in terms of such factors as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience.

Six levels of service are defined for each type of facility for which analysis procedures are available. They are given letter designations, from A to F, with LOS A representing the best operating conditions and LOS F the worst. Each level of service represents a range of operating conditions.

The volume of traffic that can be served under the stop-and-go conditions of LOS F is generally accepted as being lower than that possible at LOS E; consequently, service flow rate E is the value that corresponds to the maximum flow rate, or capacity, on the facility. For most design or planning purposes, however, service flow rates D or C are usually used because they ensure a more acceptable quality of service to facility users.

Levels of service for uninterrupted and interrupted flow facilities vary widely in terms of both the user's perception of service quality and the operational variables used to describe them.

Measures of Effectiveness - For each type of facility, levels of service are defined on the basis of one or more operational parameters that best describe the operating quality for the facility type. Although the concept of level of service attempts to address a wide range of operating conditions, limitations on data collection and availability make it impractical to treat the full range of operational parameters for every type of facility. The parameters selected to define levels of service for each facility type are called measures of effectiveness and represent available measures that best describe the quality of operation on the subject facility type. Table B1 presents the primary measures of effectiveness used to define levels of service for each facility type. Each level of service represents a range of conditions, as defined by a range in the parameter(s) presented in the table.

TABLE B1 Primary Measures of Effectiveness for LOS Definition

Type of Facility	Measure of Effectiveness
Freeways	
Basic freeway segments	Density (pc/mi/ln)
Weaving areas	Density (pc/mi/ln)
Ramp junctions	Flow rates (pcph)
Multilane highways	Density (pc/mi/ln)
Two-lane highways	Free-flow speed (mph)
Signalized intersections	Time delay (percent)
Unsignalized intersections	Average control delay (sec/veh)
Arterials	Average control delay (sec/veh)
Transit	Average travel speed (mph)
	Load factor (pers/seat, veh/hr, people/hr)
Pedestrians	Space (sq ft/ped)

Level of Service for Signalized Intersections - Level of service for signalized intersections is defined in terms of delay, which is a measure of driver discomfort, frustration, fuel consumption,

and lost travel time. The delay experienced by a motorist is made up of a number of factors that relate to control, geometrics, traffic, and incidentals. Total delay is the difference between the travel time actually experienced and the reference travel time that would result during ideal conditions: in the absence of traffic control, in the absence of geometric delay, in the absence of any incidents, and when there are no other vehicles on the road. This delay is called control delay. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. In contrast, in previous versions of the HCM (1994 and earlier), delay included only stopped delay.

TABLE B2 Level-of-Service Criteria for Signalized Intersections

Level of Service	Control Delay Per Vehicle (Sec)
A	?10
B	?10 and ?20
C	?20 and ?35
D	?35 and ?55
E	?55 and ?80
F	?80

Specifically, LOS criteria for traffic signals are stated in terms of the average control delay per vehicle, typically for a 15-min analysis period. The criteria are given in Table B2. Delay may be measured in the field or estimated using procedures presented in the HCM. Delay is a complex measure and is dependent on a number of variables, including the quality of progression, the cycle length, the green ratio, and the v/c ratio for the lane group in question.

LOS A describes operations with very low control delay, up to 10 sec per vehicle. This level of service occurs when progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.

LOS B describes operations with control delay greater than 10 and up to 20 sec per vehicle. This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop than with Los A, causing higher levels of average delay.

LOS C describes operations with control delay greater than 20 and up to 35 sec per vehicle. These higher delays may result from fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, though many still pass through the intersection without stopping.

LOS D describes operations with control greater than 35 and up to 55 sec per vehicle. At level D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high v/c ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.

LOS E describes operations with control delay greater than 55 and up to 80 sec per vehicle. This level is considered by many agencies to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent occurrences.

LOS F describes operations with control delay in excess of 80 sec per vehicle. This level, considered to be unacceptable to most drivers, often occurs with oversaturation, that is, when arrival flow rates exceed the capacity of the intersection. It may also occur at high v/c ratios below 1.0 with

many individual cycle failures. Poor progression and long cycle lengths may also be major contributing factors to such delay levels.

Relating Capacity and Level of Service - Because delay is a complex measure, its relationship to capacity is also complex. The levels of service in Table B2 were established on the basis of the acceptability of various amounts of delay to drivers. Although local standards may vary, LOS C may be regarded as a desirable design objective. It is important to note that this concept is not related to capacity in a simple one-to-one fashion.

Previously the lower bound of LOS E was defined to be capacity; that is, the v/c ratio is by definition 1.0. However, it is possible, for example, to have delays in the range of LOS F (unacceptable) while the v/c ratio is below 1.0, perhaps as low as 0.75 to 0.85. Very long delays can occur at such v/c ratios when some combination of the following conditions exists: (a) the cycle length is long, (b) the lane group in question is disadvantaged by the signal timing (has a long red time), and (c) the signal progression for the subject movements is poor.

The reverse is also possible: a saturated lane group (i.e., v/c ratio greater than 1.0) may have short delays if (a) the cycle length is short or (b) the signal progression is favorable for the subject lane group, or both.

Thus, the designation LOS F does not automatically imply that the intersection, approach, or lane group is over capacity, nor does a level of service better than E automatically imply that unused capacity is available.

The procedures and methods in this chapter require the analysis of both capacity and LOS conditions to fully evaluate the operation of a signalized intersection. It is imperative that the analyst recognize the unique relationship of these two concepts as they apply to signalized intersections.

Level-of-Service Criteria for Unsignalized Intersections - The level of service for a TWSC intersection is determined by the computed or measured control delay and is defined for each minor movement. Level of service is not defined for the intersection as a whole. LOS criteria are given in Table B3.

Average control delay less than 10 sec/veh is defined as LOS A. Follow-up times of less than 5 sec/veh have been measured when there is no conflicting traffic for a minor-street movement, so control delays of less than 10 sec/veh are appropriate for low flow conditions.

The proposed LOS criteria for TWSC intersections are somewhat different than the criteria used for signalized intersections. The primary reason for this difference is that drivers expect different levels of performance from different kinds of transportation facilities. The expectation is that a signalized intersection would be designed to carry higher traffic volumes than an unsignalized intersection. In addition, a number of driver behavior considerations combine to make delays at signalized intersections less onerous than delays at unsignalized intersections. For example, drivers at signalized intersections are able to relax during the red interval, whereas drivers on the minor approaches to unsignalized intersections must remain attentive to the task of identifying acceptable gaps and vehicle conflicts. Also, there is often much more variability in the amount of delay experienced by individual drivers at an unsignalized intersection versus that at signalized intersections. For these reasons, it is considered that the control delay threshold for any given level

of service would be less for an unsignalized intersection than it would be for a signalized intersection.

TABLE B3 Level-of-Service Criteria

Level of Service	Delay Range
A	? 10
B	? 10 and ? 15
C	? 15 and ? 25
D	? 25 and ? 35
E	? 35 and ? 50
F	? 50

Arterial Level of Service - Arterial level of service is based on average through-vehicle travel speed for the segment, section, or entire arterial under consideration. This parameter is the basic measure of effectiveness arterial LOS. The average travel speed is computed from the running time on the arterial segment or segments and the control delay for through movements at all intersections. To ensure that the arterial is of sufficient length so that average travel speed is a reasonable measure of effectiveness, the arterial's length generally should be at least 1 mi in downtown areas and at least 2 mi in other areas.

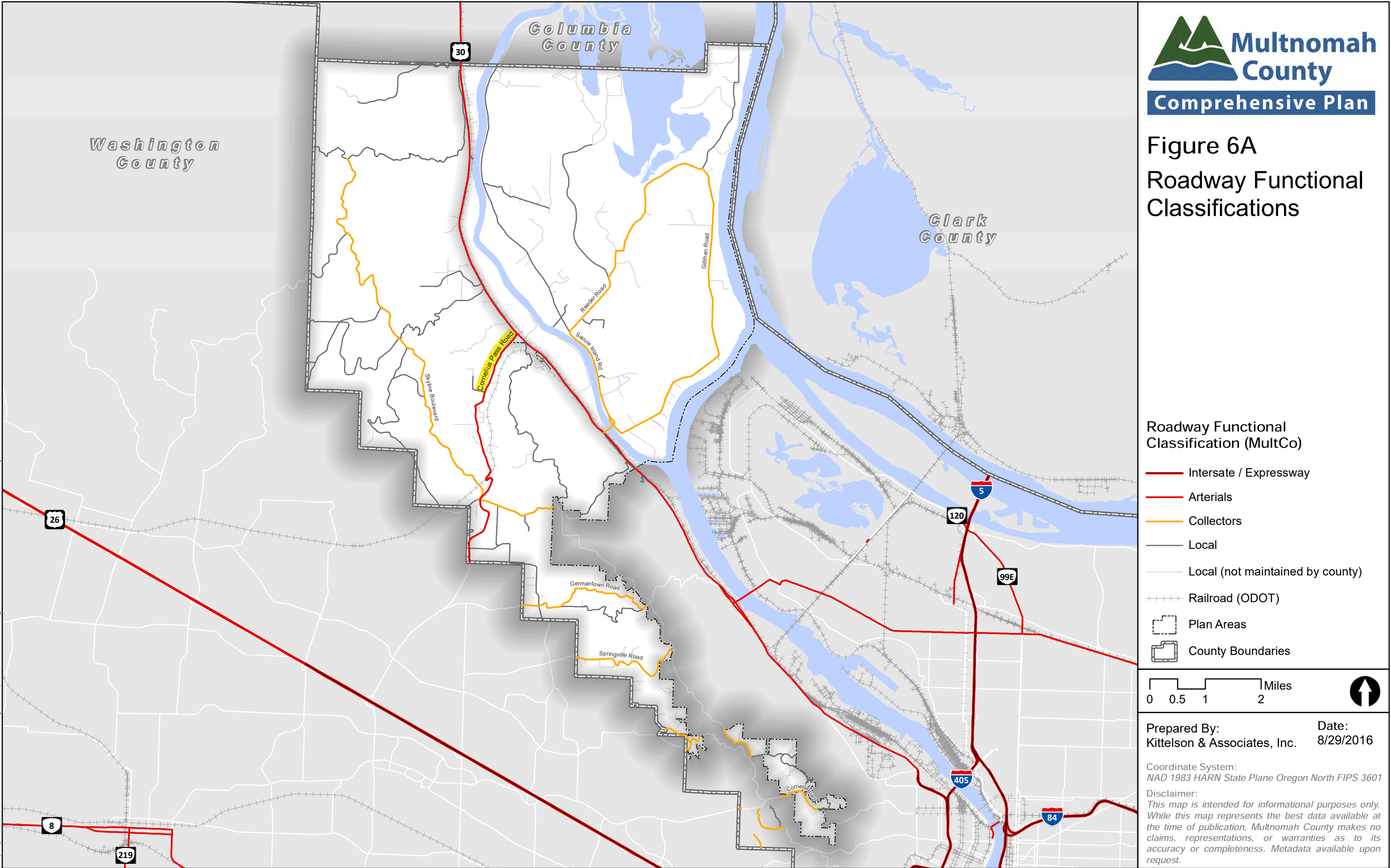
Arterial level of service is defined in terms of average travel speed of all through vehicles on the arterial. It is strongly influenced by the number of signals per mile and the average intersection control delay. On a given facility, such factors as inappropriate signal timing, poor progression, and increasing traffic flow can substantially degrade arterial level of service. Arterials with medium to high signal densities (more than two signalized intersections per mile) are even more susceptible to these factors, and poor arterial level of service will probably be observed even before substantial intersection problems occur.

The following general statements may be made regarding arterial level of service:

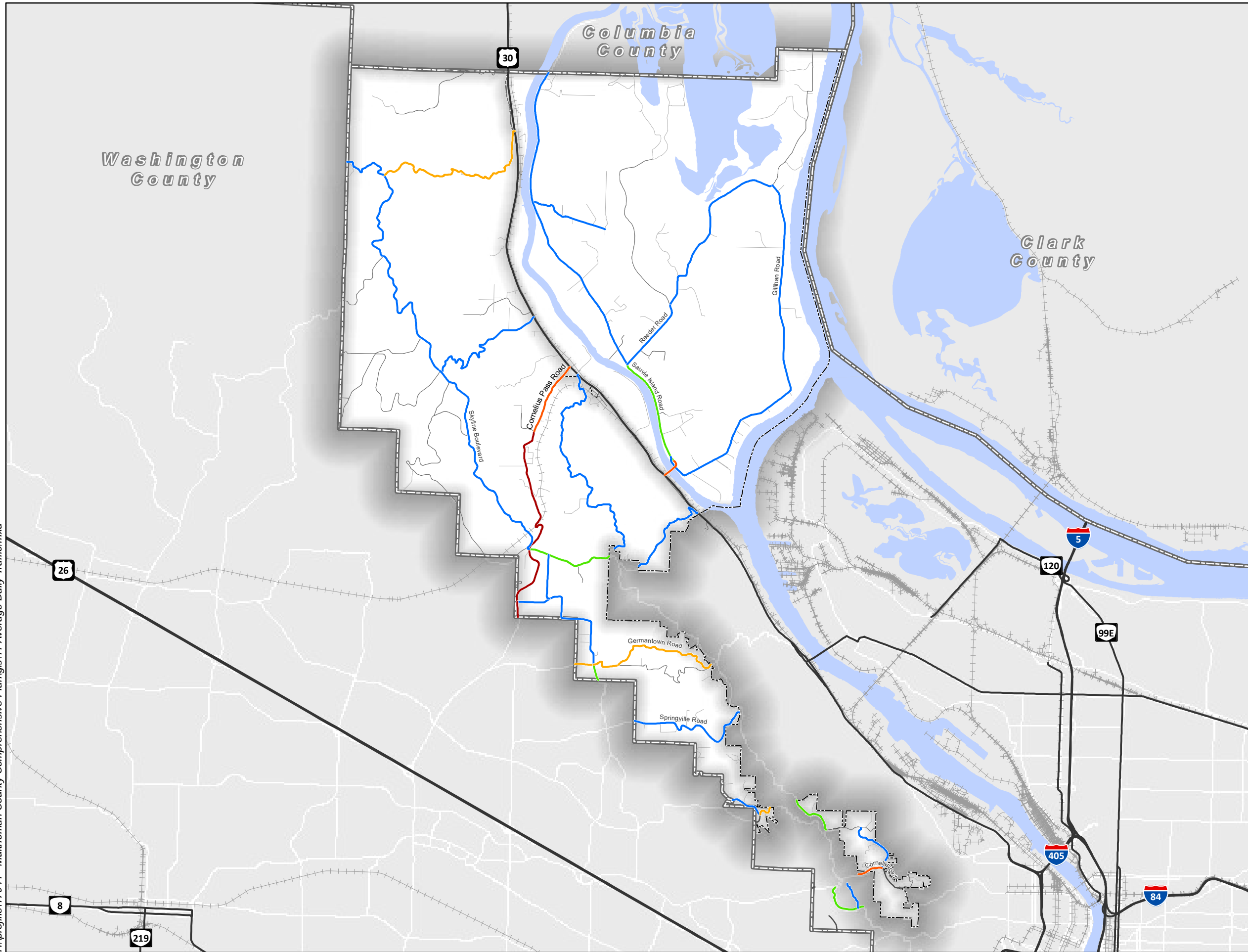
1. LOS A describes primarily free-flow operations at average travel speeds, usually about 90 percent of the free-flow speed for the arterial classification. Vehicles are seldom impeded in their ability to maneuver in the traffic stream. Delay at signalized intersections is minimal.
2. LOS B represents reasonably unimpeded operations at average travel speeds, usually about 70 percent of the free-flow speed for the arterial classification. The ability to maneuver in the traffic stream is only slightly restricted and delays are not bothersome.
3. LOS C represents stable operations; however, ability to maneuver and change lanes in midblock locations may be more restricted than in LOS B, and longer queues, adverse signal coordination, or both may contribute to lower average travel speeds of about 50 percent of the average free-flow speed for the arterial classification.
4. LOS D borders on a range in which small increases in flow may cause substantial increases in approach delay and hence decreases in arterial speed. LOS D may be due to adverse signal progression, inappropriate signal timing, high volumes, or some combination of these. Average travel speeds are about 40 percent of free-flow speed.
5. LOS E is characterized by significant delays and average travel speeds of one-third the free flow speed or less. Such operations are caused by some combination of adverse progression, high signal density, high volumes, extensive delays at critical intersections, and inappropriate signal timing.

EXHIBIT H

H:\profile17944 - Multnomah County Comprehensive Plan\gis\Final TSP document\06 Roadway Functional Classifications.mxd



H:\profile\17944 - Multnomah County Comprehensive Plan\gis\11 Average Daily Traffic.mxd



Comprehensive Plan

Figure 11A
Average Daily Traffic

Average Daily Traffic
(records from 2006 to 2014)

- <1,500
- 1,500 - 3,000
- 3,001 - 5,000
- 5,001 - 10,000
- >10,000

- Plan Areas
- County Boundaries

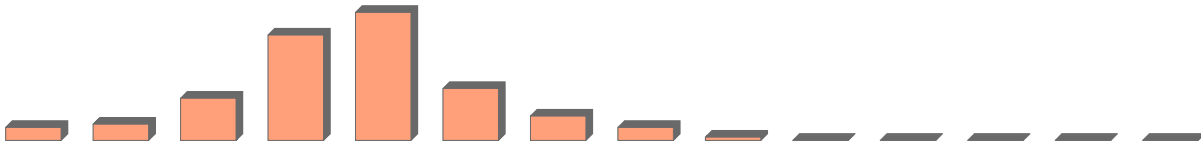
0 0.5 1 2 Miles



Prepared By: Kittelson & Associates, Inc. Date: 6/8/2015

Coordinate System:
NAD 1983 HARN State Plane Oregon North FIPS 3601

Disclaimer:
This map is intended for informational purposes only. While this map represents the best data available at the time of publication, Multnomah County makes no claims, representations, or warranties as to its accuracy or completeness. Metadata available upon request.

LOCATION: NW McNamee Rd south of NW Wapato Ave															QC JOB #: 12456909			
SPECIFIC LOCATION: 0 ft from															DIRECTION: NB/SB			
CITY/STATE: Portland, OR															DATE: Apr 10 2014			
Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace	
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0	
1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0	
2:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0	
3:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0	
4:00 AM	0	0	1	1	1	1	1	0	0	0	0	0	0	0	5	36-45	2	
5:00 AM	0	1	0	2	2	3	0	0	0	0	0	0	0	0	8	33-42	4	
6:00 AM	0	1	5	3	5	3	1	1	0	0	0	0	0	0	19	25-34	8	
7:00 AM	0	2	1	3	5	2	1	0	0	0	0	0	0	0	14	26-35	8	
8:00 AM	1	2	2	2	5	4	0	0	0	0	0	0	0	0	16	31-40	9	
9:00 AM	0	0	0	5	4	1	1	0	0	0	0	0	0	0	11	26-35	9	
10:00 AM	0	2	0	5	7	4	0	0	0	0	0	0	0	0	18	31-40	11	
11:00 AM	1	0	0	3	3	2	1	0	0	0	0	0	0	0	10	31-40	5	
12:00 PM	0	0	5	4	3	3	1	0	0	0	0	0	0	0	16	21-30	9	
1:00 PM	1	0	3	6	3	2	2	0	0	0	0	0	0	0	17	22-31	9	
2:00 PM	2	0	3	6	4	0	0	0	0	0	0	0	0	0	15	26-35	10	
3:00 PM	1	1	1	5	7	3	2	2	0	0	0	0	0	0	22	28-37	11	
4:00 PM	1	0	1	6	11	0	0	1	0	0	0	0	0	0	20	26-35	17	
5:00 PM	0	0	1	5	5	0	2	1	0	0	0	0	0	0	14	26-35	10	
6:00 PM	1	0	2	3	1	3	3	3	1	0	0	0	0	0	17	43-52	5	
7:00 PM	0	0	0	3	5	0	0	0	0	0	0	0	0	0	8	26-35	8	
8:00 PM	0	0	1	0	3	1	0	0	0	0	0	0	0	0	5	31-40	4	
9:00 PM	0	1	0	1	1	0	0	0	1	0	0	0	0	0	4	26-35	2	
10:00 PM	0	0	0	0	4	0	0	0	0	0	0	0	0	0	4	26-35	4	
11:00 PM	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2	21-30	2	
Day Total	8	10	26	65	79	32	15	8	2	0	0	0	0	0	245	26-35	144	
Percent	3.3%	4.1%	10.6%	26.5%	32.2%	13.1%	6.1%	3.3%	0.8%	0.0%	0.0%	0.0%	0.0%	0.0%				
ADT 245																		
AM Peak Volume	8:00 AM 1	7:00 AM 2	6:00 AM 5	9:00 AM 5	10:00 AM 7	8:00 AM 4	4:00 AM 1	6:00 AM 1							6:00 AM 19			
PM Peak Volume	2:00 PM 2	3:00 PM 1	12:00 PM 5	1:00 PM 6	4:00 PM 11	12:00 PM 3	6:00 PM 3	6:00 PM 3	6:00 PM 1							3:00 PM 22		
Comments:																		

LOCATION: NW McNamee Rd south of NW Pauly Rd															QC JOB #: 12456907		
SPECIFIC LOCATION: 0 ft from															DIRECTION: EB/WB		
CITY/STATE: Portland, OR															DATE: Apr 02 2014		
Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
2:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
3:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
4:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
5:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
6:00 AM	0	1	0	2	1	0	0	0	0	0	0	0	0	0	4	26-35	3
7:00 AM	0	1	1	1	3	1	0	0	0	0	0	0	0	0	7	26-35	4
8:00 AM	0	1	2	6	5	1	0	0	0	0	0	0	0	0	15	26-35	11
9:00 AM	0	0	0	0	5	1	0	0	0	0	0	0	0	0	6	31-40	5
10:00 AM	0	0	2	2	2	0	0	0	0	0	0	0	0	0	6	26-35	4
11:00 AM	0	0	0	2	3	3	0	0	0	0	0	0	0	0	8	32-41	5
12:00 PM	0	1	0	2	4	1	1	0	0	0	0	0	0	0	9	26-35	6
1:00 PM	1	0	0	2	5	0	0	0	1	0	0	0	0	0	9	26-35	7
2:00 PM	1	0	0	2	2	1	0	0	1	0	1	0	0	0	8	26-35	4
3:00 PM	0	1	2	1	4	1	0	0	0	0	0	0	0	0	9	26-35	5
4:00 PM	0	1	1	2	6	4	0	0	0	0	0	0	0	0	14	31-40	10
5:00 PM	0	0	0	4	3	1	1	0	0	0	0	0	0	0	9	27-36	6
6:00 PM	0	0	3	3	4	3	0	0	0	0	0	0	0	0	13	28-37	7
7:00 PM	0	0	0	3	1	2	0	0	1	0	0	0	0	0	7	26-35	4
8:00 PM	0	0	1	4	2	0	0	0	0	0	0	0	0	0	7	26-35	6
9:00 PM	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2	21-30	2
10:00 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	26-35	1
11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
Day Total	2	6	12	38	51	19	2	0	3	0	1	0	0	0	134	26-35	88
Percent	1.5%	4.5%	9.0%	28.4%	38.1%	14.2%	1.5%	0.0%	2.2%	0.0%	0.7%	0.0%	0.0%	0.0%			
ADT 134																	
AM Peak Volume	6:00 AM 8:00 AM 8:00 AM 8:00 AM 11:00 AM 1 2 6 5 3														8:00 AM 15		
PM Peak Volume	1:00 PM 12:00 PM 6:00 PM 5:00 PM 4:00 PM 4:00 PM 12:00 PM 1:00 PM 2:00 PM 1 1 3 4 6 4 1 1 1														4:00 PM 14		
Comments:																	

2015 TRAFFIC VOLUMES ON STATE HIGHWAYS

Milepoint	2015 AADT All Vehicles	ATR AVC	Location Description
			LOWER COLUMBIA RIVER HIGHWAY NO. 92
			<i>Milepoint indicates distance from Stadium Freeway (I-405), at West Fremont Bridge Interchange in Portland</i>
1.45	80200		West end of ramp structure
			On N.W. Yeon Street
1.87	47600		0.10 mile south of N.W. Nicolai Street
2.38	32100		0.05 mile southeast of N.W. 26th Avenue
2.63	30600		0.05 mile southeast of N.W. 29th Avenue
3.07	28000		0.05 mile southeast of N.W. 35th Avenue
3.76	26300		0.05 mile southeast of N.W. 44th Avenue
3.97	26000		0.05 mile northwest of Kittridge Avenue
			Equation: MP 4.13 BK = MP 4.52 AH
6.31	27700		0.10 mile southeast of south approach to St. Johns Bridge, Northeast Portland Highway (US30 Bypass)
7.42	26900		0.10 mile northwest of north approach to St. Johns Bridge, Northeast Portland Highway (US30 Bypass)
			West city limits of Portland
10.75	20300		0.08 mile south of Sauvie Island Road
10.95	17900		0.12 mile north of Sauvie Island Road
13.12	17600		0.10 mile south of Cornelius Pass Road
17.34	24600		0.05 mile south of Rocky Point Road
			Columbia - Multnomah County Line, MP 18.37
19.35	24100		0.30 mile north of Johnsons Landing Road
20.58	28200		0.05 mile north of S.W. E.M. Watts Road
21.24	29000		0.03 mile south of Scappoose-Vernonia Road
21.32	24700		0.05 mile north of Scappoose-Vernonia Road
23.30	25100		0.05 mile south of Fullerton Road
23.40	24500		0.05 mile north of Fullerton Road
24.86	24400		0.05 mile south of Berg Road
25.53	23800		0.05 mile north of Church Road
27.01	21300		0.05 mile north of Millard Road
27.54	22200		0.05 mile south of Firlock Park Boulevard
27.64	21700		0.05 mile south of Gable Road
27.74	17900		0.05 mile north of Gable Road
28.58	17300		0.02 mile north of Columbia Boulevard
			North city limits of St. Helens
29.47	13700		0.05 mile north of Deer Island Road
30.46	13000		0.07 mile south of "L" Street
30.58	11900		0.05 mile north of "L" Street
30.97	12800		0.05 mile south of "E" Street
32.00	9800		0.39 mile north of Pacific Street
33.77	8800		0.20 mile south of Deer Island Frontage Road
36.58	7900		0.05 mile north of Tide Creek Road (Shiloh Basin)
40.56	7900		0.09 mile north of Nicolai Road (Moorage Road)
43.07	7900		0.05 mile south of Graham Road
45.88	7200		0.49 mile north of Spring Lane
			On B Street
46.89	8100		0.02 mile east of 2nd Street

Table 13 Projected Future State Highway Traffic Volumes

Primary Road	HWY	MP	Description	Future Year		Annual Growth Rate (from 2013 to 2033)
				2033	Source	
Columbia River Highway (US 30)	002	18.12	0.30 mile east of Jordan Interchange	31,900	Historic Growth	1.09
	002	22.40	0.30 mile east of Corbett Interchange	30,200	Historic Growth	1.24
	002	25.19	0.20 mile east of Rooster Rock State Park Interchange	30,400	Historic Growth	1.36
	002	28.16	0.30 mile east of Bridal Veil connection	28,400	Historic Growth	1.40
	002	31.89	0.50 mile east of Multnomah Falls Interchange	27,400	Historic Growth	1.37
	002	35.73	0.10 mile east of Historic Columbia Highway (US30)	27,500	Historic Growth	1.40
Mt. Hood Highway (US 26)	026	14.80	0.05 mile south of S.E. Palmquist Road	32,500	Model	0.89
	026	18.30	0.05 mile northwest of S.E. Haley Road	33,300	Model	1.82
Lower Columbia River (US 30)	092	10.75	0.08 mile south of Sauvie Island Road	23,300	Model	1.93
	092	10.95	0.12 mile north of Sauvie Island Road	23,800	Model	2.04
	092	13.12	0.10 mile south of Cornelius Pass Road	24,200	Model	2.03
	092	17.34	0.05 mile south of Rocky Point Road	30,300	Model	1.64

PLANNED PROJECTS

Multnomah County has several different plans that identify transportation improvements in the County's rural unincorporated areas. These projects will be evaluated in the Alternatives Analysis phase of this project to determine if they are still warranted, how they should be prioritized, and if there are additional needs that require additional projects, programs, or policies to address them. Table 14 provides a summary of the currently planned projects by area in the County's Capital Improvement Plan (CIP) and in each of the Rural Area Plans and TSPs (if applicable). The multimodal project locations are shown in Figures 20A, 20B, 21A and 21B.

LOCATION: NW Skyline Blvd west of NW McNamee Rd															QC JOB #: 12456906		
SPECIFIC LOCATION: 0 ft from															DIRECTION: NB/SB		
CITY/STATE: Portland, OR															DATE: Apr 16 2014		
Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
12:00 AM	0	0	0	0	1	2	2	0	0	0	0	0	0	0	5	36-45	4
1:00 AM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2	36-45	2
2:00 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2	31-40	2
3:00 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	36-45	1
4:00 AM	0	0	0	0	1	3	1	1	0	0	0	0	0	0	6	31-40	4
5:00 AM	0	0	0	0	1	11	12	2	3	0	0	0	0	0	29	36-45	22
6:00 AM	0	0	0	1	8	29	23	7	3	0	0	0	0	0	71	36-45	51
7:00 AM	3	0	2	5	20	53	60	17	1	0	0	0	0	0	161	36-45	113
8:00 AM	2	1	0	0	14	58	34	10	1	0	0	0	0	0	120	36-45	92
9:00 AM	0	2	0	4	14	36	15	7	2	0	0	0	0	0	80	36-45	51
10:00 AM	3	0	0	4	23	40	26	7	1	0	0	0	0	0	104	36-45	66
11:00 AM	1	0	1	0	5	33	27	2	0	0	0	0	0	0	69	36-45	60
12:00 PM	1	0	0	2	9	29	15	7	1	0	1	0	0	0	65	36-45	44
1:00 PM	1	0	0	3	11	24	18	7	0	0	0	0	0	0	64	36-45	41
2:00 PM	2	0	1	6	17	43	37	12	5	2	0	0	0	0	125	36-45	80
3:00 PM	4	5	2	1	17	74	63	19	4	0	0	0	0	0	189	36-45	137
4:00 PM	7	0	1	2	18	108	161	55	5	3	0	0	0	0	360	36-45	269
5:00 PM	4	0	1	1	33	113	150	37	4	0	0	0	0	0	343	36-45	263
6:00 PM	7	2	2	0	20	57	53	15	3	0	0	0	0	0	159	36-45	109
7:00 PM	0	0	0	2	8	21	13	7	1	0	0	0	0	0	52	36-45	34
8:00 PM	0	0	0	1	11	17	11	4	0	0	0	0	0	0	44	36-45	28
9:00 PM	0	0	0	1	2	14	8	0	0	0	0	0	0	0	25	36-45	22
10:00 PM	0	0	0	0	4	6	5	0	0	0	0	0	0	0	15	36-45	11
11:00 PM	0	2	0	1	1	7	1	0	0	0	0	0	0	0	12	31-40	8
Day Total	35	12	10	34	238	780	738	216	34	5	1	0	0	0	2103	36-45	1517
Percent	1.7%	0.6%	0.5%	1.6%	11.3%	37.1%	35.1%	10.3%	1.6%	0.2%	0.0%	0.0%	0.0%	0.0%			
ADT 2103																	
AM Peak Volume	7:00 AM 3	9:00 AM 2	7:00 AM 2	7:00 AM 5	10:00 AM 23	8:00 AM 58	7:00 AM 60	7:00 AM 17	5:00 AM 3						7:00 AM 161		
PM Peak Volume	4:00 PM 7	3:00 PM 5	3:00 PM 2	2:00 PM 6	5:00 PM 33	5:00 PM 113	4:00 PM 161	4:00 PM 55	2:00 PM 5	4:00 PM 3	12:00 PM 1				4:00 PM 360		
Comments:																	

EXHIBIT I



DATE: May 5, 2014

PROJECT: 312064.50-Metro North Tualatin
Mountain Access

SUBJECT: Intersection Sight Distance Evaluation

TO: Robert Spurlock
Metro

FROM: Curt Vanderzanden, PE, Principal
KPFF Consulting Engineers

PHONE: (503)813-7560

PHONE: 503-542-3808

EMAIL: Robert.Spurlock@oregonmetro.gov

EMAIL: curt.vanderzanden@kpffcivil.com

Introduction

At the request of Metro, KPFF has completed an intersection site distance evaluation for five existing access points located in the Tualatin Mountains; two along NW McNamee Road, one on NW Newberry Road, and two along Skyline Boulevard. The purpose of this evaluation is to determine if existing conditions provide adequate sight distance to meet Multnomah County standards and to identify what improvements would be necessary to meet those standards.

Field Work

On April 3, 2014, KPFF staff performed a site visit, documenting, through photos and field measurements, the available sight distance. At each location, and in each travel direction, measurements of the available sight distance were taken, from a point 15 feet from the edge of pavement, and a height of eye of 3.5 feet, to the center of each approaching travel lane, with a height of object of 4.25 feet. To assist in the sight distance evaluation, Kittelson and Associates performed a speed study to determine the 85th percentile speeds in each direction of travel at each access point. The speed study was completed on April 18, 2014, and is included as Appendix A. A summary of the results of the field work and speed study can be found in Table 1 below.

Measured Sight Distances and Standards

Per Multnomah County Design Standards, intersection sight distance shall be in accordance with the procedures stated in current AASHTO Standards. The following Table 1 summarizes the five sites' measured and required intersection sight distance per AASHTO *Table 9-6 Design Intersection Sight Distance – Case B1, Left Turn from Stop* and *Table 9-8 Design Intersection Sight Distance – Case B2, Right Turn from Stop, and Case B3, Crossing Maneuver*.

Table 1: Intersection Sight Distances

Location	Direction	85 th Percentile Speed	Intersection Sight Distance (ISD)			
			Measured	AASHTO Requirement	Adequate? (Yes/No)	Reasoning
Site #1 Burlington Creek Forest (NW McNamee Rd)	NB	38 mph	290 ft	365 ft (right turn)	No	Hillside, Horizontal Curve
	SB	35 mph	330 ft	390 ft (left turn)	No	Trees/Vegetation



Table 1: Intersection Sight Distances (continued)

Location	Direction	85 th Percentile Speed	Intersection Sight Distance (ISD)			
			Measured	AASHTO Requirement	Adequate? (Yes/No)	Reasoning
Site #2 Ennis Creek Forest (NW Newberry Rd)	NB	46 mph	95 ft	510 ft (left turn)	No	Hillside
	SB	45 mph	70 ft	430 ft (right turn)	No	Hillside, Vertical Curve
Site #3 McCarthy Creek (NW McNamee Rd)	EB	36 mph	635 ft	345 ft (right turn)	Yes	None
	WB	37 mph	375 ft	410 ft (left turn)	No	Trees
Site #4 McCarthy Creek (NW Skyline Blvd)	EB	51 mph	470 ft	565 ft (left turn)	No	Vegetation
	WB	49 mph	260 ft	470 ft (right turn)	No	Hillside/Vegetation, Vertical Curve
Site #5 North Abbey Creek (NW Skyline Blvd)	EB	44 mph	20 ft	425 ft (right turn)	No	Minor vegetation
	WB	44 mph	80 ft	490 ft (left turn)	No	Minor vegetation

The Multnomah County Design Standards and AASHTO Standards state that when minimum intersection sight distance cannot be met, the minimum sight distance should be no less than the stopping sight distance on the major street. The required stopping sight distances were calculated for the five sites and are summarized below in Table 2.

Table 2: Stopping Sight Distances

Location	Direction	85 th Percentile Speed	Measured Sight Distance	Stopping Sight Distance (SSD)		
				Measured Average Slope	AASHTO Recommendation	Adequate? (Yes/No)
Site #1 Burlington Creek Forest (NW McNamee Rd)	NB	38 mph	290 ft	-12.5%	360 ft	No
	SB	35 mph	330 ft	12.8%	215 ft	Yes
Site #2 Ennis Creek Forest (NW Newberry Rd)	NB	46 mph	95 ft	-5.5%	410 ft	No
	SB	45 mph	70 ft	-1.2%	370 ft	No
Site #3 McCarthy Creek (NW McNamee Rd)	EB	36 mph	635 ft	1.5%	255 ft	Yes
	WB	37 mph	375 ft	3.7%	255 ft	Yes
Site #4 McCarthy Creek (NW Skyline Blvd)	EB	51 mph	470 ft	5.5%	405 ft	Yes
	WB	49 mph	260 ft	-1.7%	425 ft	No
Site #5 North Abbey Creek (NW Skyline Blvd)	EB	44 mph	20 ft	3.6%	330 ft	No
	WB	44 mph	80 ft	-2.8%	365 ft	No

Access Evaluation

As discussed previously, five existing driveway access points have been evaluated to determine what improvements are necessary to meet Multnomah County access standards. Maps for each site are provided in Appendix B. Conceptual cost estimates are provided in Appendix C. The estimated costs at each site include costs for addressing sight distance issues as well as upgrades to the existing access points which may include grading, paving and culvert installations where needed.

Site #1: Burlington Creek Forest (NW McNamee Road)

- A. Sight distance (measured at 15 feet from the eastern pavement edge of NW McNamee Road) is currently restricted to the south at approximately 290 feet due to a horizontal curve in the road and a hillside on the west side of the roadway. Sight distance is currently restricted to the north at approximately 330 feet due to roadside trees and vegetation on the east side of the roadway.



Site #1 Access looking south



Site #1 Access looking north

- B. Cutting the easterly hillside down, and recording a restrictive sight distance easement over a portion of what appears to be private property, leased or owned by the power line company, will improve available sight distance somewhat to the south.
- C. Removing the roadside trees and vegetation, and recording a restrictive sight distance easement over a portion of what appears to be Metro-owned property, will improve available sight distance somewhat to the north.
- D. By making these modifications, it is likely that the required intersection sight distance can be attained in either direction. See Table 3 for a summary of the measured and required sight distances.

Table 3: Sight Distance (SD) Summary – Site #1

Traffic Direction	Measured SD	Required ISD	Required SSD	SD with Improvements	Meets ISD? (Yes/No)
NB	290 ft	365 ft	360 ft	>365 ft	Yes
SB	330 ft	390 ft	215 ft	>390 ft	Yes

- E. The estimated construction costs to achieve the required intersection sight distance, in both directions, is approximately **\$87,000**. This cost includes clearing and grubbing, grading, aggregate base, asphalt paving and other miscellaneous items required to meet Multnomah County standards. This does not include costs associated with the acquisition of required easements. If Multnomah County allows, this cost can be reduced by approximately **\$5,000** if stopping sight distance is used to the north of the access.

Site #2: Ennis Creek Forest (NW Newberry Road)

- A. Sight distance (measured at 15 feet from the western pavement edge of NW Newberry Road) is currently restricted to the south at approximately 95 feet due to roadside vegetation and an embankment. Sight distance is currently restricted to the north at approximately 70 feet due to roadside vegetation, an embankment and the vertical curvature of the roadway.



Site #2 Access looking south

EXHIBIT J

Table 14 Planned Projects

Document	Project Number	Project Name	Project Description
Sauvie Island/Multnomah Channel			
Westside Rural TSP	1	Sauvie Island Road	Safety improvement – Add to shoulders (4 ft) and add guardrail from Gillihan Road to Reeder Road. Replace culverts. \$3,675,000
	2	US 30	Commuter rail study – Conduct study to determine feasibility of commuter rail from Portland to Astoria. \$100,000
	3	Gillihan Road	Safety improvement – Add to shoulders (4 ft). \$2,055,000
	4	Reeder Road	Safety improvement – Add to shoulders (4 ft). \$5,925,000
	5	US 30	Ride share parking – Provide parking for 100 spaces next to truck scale near county line. \$325,000
	6	US 30	Speed zone study – Conduct speed zone study to determine safe speed zone from Linnton north. \$5,000
	7	US 30/Cornelius Pass Road	Public transportation – Provide commuter transit service from Columbia County over Cornelius Pass Road to Washington County. \$78,000/year
	8	Reeder Road	Improve parking and intersection safety with Sauvie Island Road. \$250,000
	9	US 30	RAZ service expansion – Expand assuming 20 hours of additional service per work day for one bus. \$78,000/year
	10	Sauvie Island Wildlife Refuge	Recreational bike path – Conduct study to determine feasibility of a bike path north of Reeder Road for recreational purposes only, followed by implementation of the findings. \$1,060,000
	11	Sauvie Island Road	Improve park and ride – Delineate parking and traffic circulation. \$300,000
	12	US 30	Exclusive car pool lane study – Conduct study to determine feasibility and cost of adding a reversible exclusive car pool lane on US 30. \$100,000
	13	US 30	Harborton sign installation – Provide signing for Harborton. \$ 1,000
	14	US 30	Scenic viewing opportunities – Access provided across railroad tracks adjacent to Burlington Bottoms using existing road approaches (per location). Exact locations to be determined. Providing pull outs of widening along US 30 will not be acceptable on the basis of safety. \$350,000
Multnomah County CIPP	15	Sauvie Island Road: Bridge to Reeder Road (PN 159)	Reconstruct road to rural collector standards with 2 travel lanes. Requires working on dike. \$8,275,636
	16	Sauvie Island Road: Gillihan Road to Reeder Road	Bike path. \$2,114,214
	17	Sauvie Island: Reeder to Ferry Road	Shoulder bikeway. \$535,851
Sauvie Island/Multnomah Channel Rural Area Plan	18	Multnomah Channel/U.S. 30	<i>Ride share parking</i> – Provide parking for 100 spaces next to truck scale near county line. Project to be coordinated with ODOT, Multnomah, and Columbia Counties.
	19	U.S. 30/Cornelius Pass Road	<i>Public transportation</i> – Provide commuter van pool or transit service from Columbia County over Cornelius Pass

			Road to Washington County.
	21	U.S. 30	<i>Scenic viewing opportunities</i> – Access provided across railroad tracks adjacent to Burlington Bottoms using existing road approaches (per location). Exact locations to be determined. Providing linear pull outs or widening adjacent to U.S. 30 will not be acceptable on the basis of safety and access management standards.
	21	Cornelius Pass Road	<i>U.S. 30 intersection improvements</i> – Include a northbound turn lane and shared northbound left-turn/right-turn lane.
	22	Gillihan Loop Road	<i>Safety improvement</i> – Add to 6.13 miles of shoulders (4 ft).
	23	Reeder Road	<i>Safety improvement</i> – Add to 4.33 miles of shoulders (4 ft).
	24	Reeder Road	<i>Safety improvements</i> – Improve intersection sight distance with Sauvie Island Road.
	25	Sauvie Island Road	<i>Safety improvement</i> – Add to 2.15 miles of shoulders (4 ft) and add guardrail from Gillihan Road to Reeder Road. Replace culverts.
	26	Sauvie Island Road	<i>Create park and ride</i> – Delineate parking and traffic circulation. (Completed since 1998 TSP)
West Hills			
Westside Rural TSP	27	Cornelius Pass Road	Safety improvement – Find ways to enforce posted speed limits and safe travel speeds. Install photo radar. \$20,000
	28	Cornelius Pass Road	Safety improvement – Install reflectors, delineators, and traffic striping. \$200,000
	29	Newberry Road	Safety spot improvement – Install guardrail ¼ mile south of US 30 and install speed hump 1.2 miles from US 30. \$450,000
	30	Cornelius Pass Road	Speed Zone Study – Conduct speed zone study to determine average running speed, safe operating speed, and needs for enforcement. \$5,000
	31	Germantown Road	Safety improvement – Add to 2.22 miles of shoulders (4 ft). \$6,744,000
	32	Skyline Boulevard	Safety improvement – Add to shoulders from UGB to Cornelius Pass Road (1.49 miles). \$ 2,039,000
	33	Skyline Boulevard	Safety improvement – Add to shoulders from Cornelius Pass Road to Rocky Point Road (4 ft). \$ 11,153,000
	34	Skyline Boulevard	Cornelius Pass Road intersection improvements – install signal, provide westbound left-turn lane and through/right lane on Skyline Boulevard. \$695,000
	35	Cornelius Pass Road	Safety and capacity needs – Study to look at climbing lanes, guardrail, drainage, addition of shoulders, and alternate routes. \$180,000
	36	Germantown Road	Safety spot improvements – Widen lanes on curves only, install center skip like reflective markers, and install mirror at intersection with Old Germantown Road. \$750,000
	37	Cornelius Pass Road	Safety Improvement – contract with the City of Portland for speed enforcement. Assume 0.25 staff per year including equipment and overhead. \$50,000/year

	38	Skyline Boulevard	Speed zone study – Conduct speed study to determine appropriate speed limit for Skyline Boulevard from Cornelius Pass Road east to city limits of Portland. \$5,000
	39	Springville Road	Safety improvement – Add to shoulders (4 ft). \$3,160,000
	40	Laidlaw Road	Safety improvement – Add to shoulders (4 ft). \$643,000
	41	Thompson Road	Safety improvement – Add to shoulders (4 ft). \$100,000
	42	Cornelius Pass Road	Realignment – Reduce curvature and eliminate switchback while minimizing grade increase of 1,500-foot section (assume average cut of 60 feet). \$2,020,000
	43	Skyline Boulevard	Safety improvement – Install traffic calming devices such as speed humps to reduce speeds from UGB to Cornelius Pass Road. \$485,000
	44	Skyline Boulevard	Scenic viewing opportunities – Acquire property through fee or donation for development of parking area adjacent to roadway. \$350,000
	45	Cornelius Pass Road	Safety improvement – Construct pullouts at a number of locations for the purposes of speed enforcement. \$750,000
	46	Germantown Road	Safety improvement – Install traffic calming devices such as speed humps to reduce speeds. \$887,000
Multnomah County CIPP	47	Cornelius Pass Road: MP 3.0 to MP 3.5 (PN 103a)	Realign and widen Cornelius Pass Road to provide southbound passing lane. \$35,135,976
	48	Cornelius Pass Road: MUS 30 to MP 2 (PN 389)	Reconstruct Cornelius Pass Road including passing lane, safety, shoulder and drainage improvements. \$54,159,714
	49	Cornelius Pass Road: MP 2 to MP 3 (PN 103)	Widen Cornelius Pass Road, including new box culvert and passing lane. \$21,893,536
	50	Germantown Road/Old Germantown Road (PN 726)	Widen Germantown Road to create left turn pocket and improve sight distance. \$780,835
	51	Skyline Boulevard: McNamee to Cornelius Pass	Shoulder bikeway. \$2,629,164
	52	Skyline Boulevard: Cornelius Pass to Rocky Point	Shoulder bikeway. \$15,153,851
	53	Springville Road: Skyline Boulevard to County Line	Shoulder bikeway. \$4,254,950
	54	Cornelius Pass Road: (old) St. Helens Road to MP 2	Shoulder bikeway. \$3,684,602
East of Sandy River			
Multnomah County CIPP	55	Ogden Road: Mershon to Woodard	Shoulder bikeway. \$463,789
	56	Larch Mt. Road: HCRH to End of Road	Shoulder bikeway. \$26,341,706
	57	Knieriem Road: Littlepage Road to HCRH	Shoulder bikeway. \$3,122,720
	58	Hurlburt Road: HCRH to Littlepage Road	Shoulder bikeway. \$4,344,240
	59	Evan Road: Hurlburt Road to HCRH	Shoulder bikeway. \$4,463,908
	60	Woodard Road: HCRH to Ogden Road	Shoulder bikeway. \$2,338,065

	61	Mershon Road: Ogden to HCRH	Shoulder bikeway. \$4,009,646
East of Sandy River Rural Area Plan			
No major capital improvement improvements are proposed within the study area			
West of Sandy River			
West of Sandy River Rural Area Plan	62	Orient Road/Dodge Park Boulevard Realignment	Realign the intersection to create a more perpendicular angle. Driveway modifications would be required to serve the autobody shop in the northwest quadrant of the intersection.
	63	Division Drive/Troutdale Road Realignment	Eliminate the northeast leg of the intersection between SE Division Drive and SE Troutdale Road to create one intersection. Realign each end of the segment proposed for closure. While projected 2020 PM peak hour traffic volumes satisfy signal warrants, signalization is not recommended until additional warrants are satisfied. All-way stop control would provide LOS D with projected 2020 PM peak hour traffic volumes, while adding an eastbound right turn lane would provide LOS C.
	64	302 nd Avenue/Orient Drive/Bluff Road Realignment	Potential options include realigning SE Orient Drive to intersect SE Bluff at a more perpendicular angle or creating a left turn lane for eastbound traffic on SE Orient Drive. Either option may require realignment of SE Teton Drive. Further engineering analysis will be necessary to determine a preferred alignment. Signalize realigned intersection when warranted.
	65	Oxbow Drive/327 th Avenue Realignment	Channelizing the broad paved area on SE 327 th Avenue at the approach to SE Oxbow Drive to create a more perpendicular intersection is recommended to improve sight distance and reduce the potential for conflict between westbound left turns and northbound left turns.
	66	Lusted Road/302 nd Avenue/Pipeline Road Realignment/Intersection Consolidation	Further engineering analysis is recommended to determine if intersection consolidation is feasible given the surrounding vertical grades and the location of a sewage holding tank in the center of the intersection. Recent parking restrictions enacted by the County may be adequate for the near term.
	67	Lusted Road/Powell Valley Road/282 nd Avenue Consolidation	Realignment to connect SE Lusted Road directly with SE Powell Valley Road is included in the County's Capital Improvement Plan and Program. The project would require further engineering analysis and coordination with the City of Gresham to develop a recommend alignment. A traffic signal is warranted based on projected 2020 PM peak hour volumes, and would provide LOS B operations.
	68	282 nd Avenue/Stone Road Turn Lanes	The addition of turn lanes in the northbound and southbound direction on 282 nd would reduce the high incidence of rear end crashes at this location. Some roadway widening would be necessary.
	69	Shoulder Widening to Meet Updated Standards	Prioritization for shoulder improvements within the West of Sandy River rural area should be given to roadways connecting to school sites, especially Barlow High School. Proposed shoulder widening should be evaluated based on potential impacts on drainage and adjacent productive lands. For shoulders wider than 1.8 meters, the adopted County standards require paved width of 1.5 meters. The remaining 0.3 meters may be unpaved. Shoulder widening should be incorporated into routine roadway maintenance wherever possible.
Multnomah County CIPP	70	Cochran Drive: Troutdale Road to westerly 2175' (PN 145)	Reconstruct to major collector standards: 2 travel lanes, center lane/median, sidewalks, bike lanes, and culvert replacement. \$7,442,765

	71	Troutdale Road: Stark St to Division Drive (PN TBD)	Reconstruct with 2 travel lanes; construct center turn lane/median, sidewalks, bicycle lanes between Stark and Strebin. Reconstruct Troutdale Road/Division Drive intersection including new fish culverts. \$8,297,000
	72	Sweetbriar Road: Troutdale Road to E City Limit (PN 149)	Widen to neighborhood collector standards with 2 travel lanes, sidewalk and bike lanes. \$2,740,748
	73	Orient Drive/Bluff Road (PN 706)	Widen Orient Drive to create eastbound left turn lane to Bluff Road, realign Bluff and Teton to create perpendicular intersection. \$685,247
	74	Orient Drive/Dodge Park Boulevard (PN 703)	Widen Orient Drive to create eastbound left turn lane. \$373,616
	75	Oxbow Drive/Altman Road (PN 707)	Widen Oxbow Drive to create westbound left turn lane to Altman Road, realign intersection to a 5 perpendicular intersection. \$ 790,693
	76	302 nd Avenue/Lusted Road (PN 704)	Realign Lusted Road and Pipeline Road to create perpendicular intersection at 302 nd , add left turn lane to each leg of intersection. \$5,613,717
	77	Division Drive/Troutdale Road (Included in Collector project above) (PN 186)	Realign intersection, eliminating NE leg, producing a 4-way intersection. Replace 3 existing culverts identified as fish barriers. \$ -
	78	Dodge Park Boulevard: 302 nd to County Line	Shoulder bikeway. \$7,592,686
	79	302 nd Avenue: Division to Bluff	Shoulder bikeway. \$3,878,852
	80	Orient Drive: Welch Road to Dodge Park Boulevard	Shoulder bikeway. \$1,523,441
	81	Oxbow Park Road: Oxbow Drive to Road End	Shoulder bikeway. \$1,834,695
	82	Oxbow Drive: Division Drive to Hosner Road	Shoulder bikeway. \$5,393,681
	83	Oxbow Drive: Hosner Terrace to Oxbow Park Road SE	Shoulder bikeway. \$1,259,838
	84	SE Division Drive: UGB to Troutdale Road	Bike lanes. \$945,518
	85	Troutdale Road: Strebin Road to 282 Avenue	Bike lanes. \$3,292,979
	86	SE Division Drive: Troutdale to Oxbow Parkway	Bike lanes. \$3,371,407
Pedestrian Master Plan	87	Stark St: Eavans Ave to 35th St	Add sidewalk to south side
Columbia River Gorge National Scenic Area			
Multnomah County CIPP	88	Historic Columbia River Highway RR Overcrossing: Half miles east of 244 th Avenue (PN 199)	Reconstruct railroad bridge to accommodate wider travel lanes, sidewalks, and bike lanes. \$9,314,500
	89	Corbett Hill Road/Historic Columbia River Highway (PN 147)	Improve intersection alignment by making stops at right angle. \$3,770,920
Other Plans and Projects			

East Metro Connections Plan	90	Sandy River to Springwater multi-modal connection	Projects to provide multi-modal connections from Downtown Troutdale to Mt. Hood Community College and the Springwater Corridor Trail. CATALYST PROJECTS: Master plan for new multi-modal corridor.
	91	Pleasant Valley	Projects develop the necessary public infrastructure for development of Pleasant Valley Community Plan. CATALYST PROJECTS: Improvements to 174 th and Foster.
	92	Catalyst for Springwater District	Projects help develop the necessary public infrastructure for private investment and jobs in this regionally significant employment area. Projects include a new interchange on US 26 and an extension of Rugg Road to connect US 26 and Hogan, as well as collector street improvements to provide needed access for future jobs and employment. CATALYST PROJECTS: New interchange on US 26 and arterial connections.
Pedestrian Master Plan	93	Interlachen Lane: Marine Dr to Blue Lake Rd	Add sidewalks to both sides

FUTURE CONDITIONS SUMMARY

The following highlights key information that can be used as part of future alternatives analyses tasks.

- Population and employment in the rural areas is expected to grow at approximately 3 – 3.5 percent per year. Although not projected to result in traffic congestion in the rural areas, this growth will continue to have impacts on safety and conflicts between different modes.
- Multnomah County has several different plans that identify transportation improvements in the County’s rural unincorporated areas. These projects will be evaluated in the Alternatives Analysis phase of this project to determine if they are still warranted, how they should be prioritized, and if there are additional needs that require additional projects, programs, or policies to address them.

NEXT STEPS

The information in this memorandum will be reviewed by County staff and shared with the Transportation Subcommittee of the County’s Comprehensive Plan Update Project Advisory Committee. Input will be requested on the existing and future conditions and currently planned project list to provide direction for the alternatives analysis.

REFERENCES

1. ODOT Analysis Procedures Manual
2. Highway Safety Manual
3. NCHRP Report 641 *Guidance for the Design and Application of Shoulder and Centerline Rumble Strips*

Burlington Creek Parking Multnomah County, Oregon

Preliminary Stormwater Report

Date: September 19, 2017

Client: Metro Regional Services
600 NE Grand Avenue
Portland, OR 97232

Engineering Contact: Alex Hurley, PE, PLS
alex@aks-eng.com

Engineering Firm: AKS Engineering & Forestry, LLC

AKS Job Number: 4781



12965 SW Herman Road, Suite 100
Tualatin, OR 97062
P: (503) 563-6151
www.aks-eng.com



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Appendices

APPENDIX A:	MULTNOMAH COUNTY STORMWATER CERTIFICATION
APPENDIX B:	EXISTING AND POST-DEVELOPED SITE 10-YEAR STORM EVENT ANALYSIS
APPENDIX C:	USDA-NRCS SOIL RESOURCE REPORT
APPENDIX D:	TR55 RUNOFF CURVE NUMBERS

Preliminary Stormwater Report

BURLINGTON CREEK PARKING MULTNOMAH COUNTY, OREGON

1.0 Purpose of Report

The purpose of this report is to analyze the effects the proposed improvements will have on the site's existing storm drainage; document the criteria, methodology, and informational sources used to design the proposed storm drainage system; and present the results of the preliminary hydraulic analysis.

2.0 Project Location/Description

The proposed improvements will be located south of the intersection of NW McNamee Road and Highway 30 on NW McNamee Road in Multnomah Oregon (Tax Lot 1200, Tax Map 2N 1W 20BC).

The proposed project will consist of site improvements for recreational use including the construction of a 25-space parking lot, vault toilet, storm drainage system, other amenities, and improvements to the existing access road.

3.0 Regulatory Design Criteria

3.1 STORMWATER QUANTITY

Per Multnomah County Code: *General Ordinances Chapter 29: Building Regulations Section 333 (C)* Water Quantity Control Requirements, on-site detention is required when any of the following conditions exist:

Persons creating new impervious surfaces exceeding 500 square feet shall install a stormwater drainage system. The system shall be designed to ensure that the rate of runoff for the 10-year 24 hour storm event is no greater than that which existed prior to development at the property line or point of discharge into a watercourse.

New impervious surface exceeds 500 square feet. Therefore, the proposed project will require water quantity control.

4.0 Design Methodology

The Santa Barbara Urban Hydrograph (SBUH) Method was used to analyze stormwater runoff from the site. This method utilizes the SCS Type 1A 24-hour design storm. HydroCAD 8.5 computer software aided in the analysis. Representative CN numbers were obtained from the *Technical Release 55* and are included in Appendix D.

5.0 Design Parameters

5.1 DESIGN STORMS

Per Multnomah County requirements, the stormwater analysis utilized the 24-hour storm for the evaluation and design of the existing and proposed stormwater facilities. The following 24-hour rainfall intensity was utilized as the design storm for the recurrence interval:

Table 5-1: Rainfall Intensities	
Recurrence Interval (Years)	Total Precipitation Depth (Inches)
10	3.40

5.2 PRE-DEVELOPED SITE CONDITIONS

5.2.1 Site Topography

Existing on-site grades generally vary from $\pm 5\%$ to $\pm 100\%$, with the site generally sloped towards the north.

5.2.2 Land Use

The existing site consists of an existing gravel road and forest areas.

5.3 SOIL TYPE

The soil beneath the project site and associated drainage basins is classified as Goble Silt Loam, according to the USDA Soil Survey for Multnomah County. The following table outlines the Hydrologic Soil Group rating for the soil type:

Table 5-2: Hydrologic Soil Group Ratings		
NRCS Map Unit Identification	NRCS Soil Classification	Hydrologic Soil Group Rating
17	Goble silt loam	C

Further information on this soil type is included in the NRCS Soil Resource Report located in Appendix C of this report.

5.4 POST-DEVELOPED SITE CONDITIONS

5.4.1 Site Topography

The on-site slopes will be modified with cuts and fills to accommodate the construction of the parking area and access road improvements.

5.4.2 Land Use

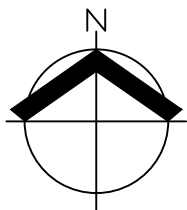
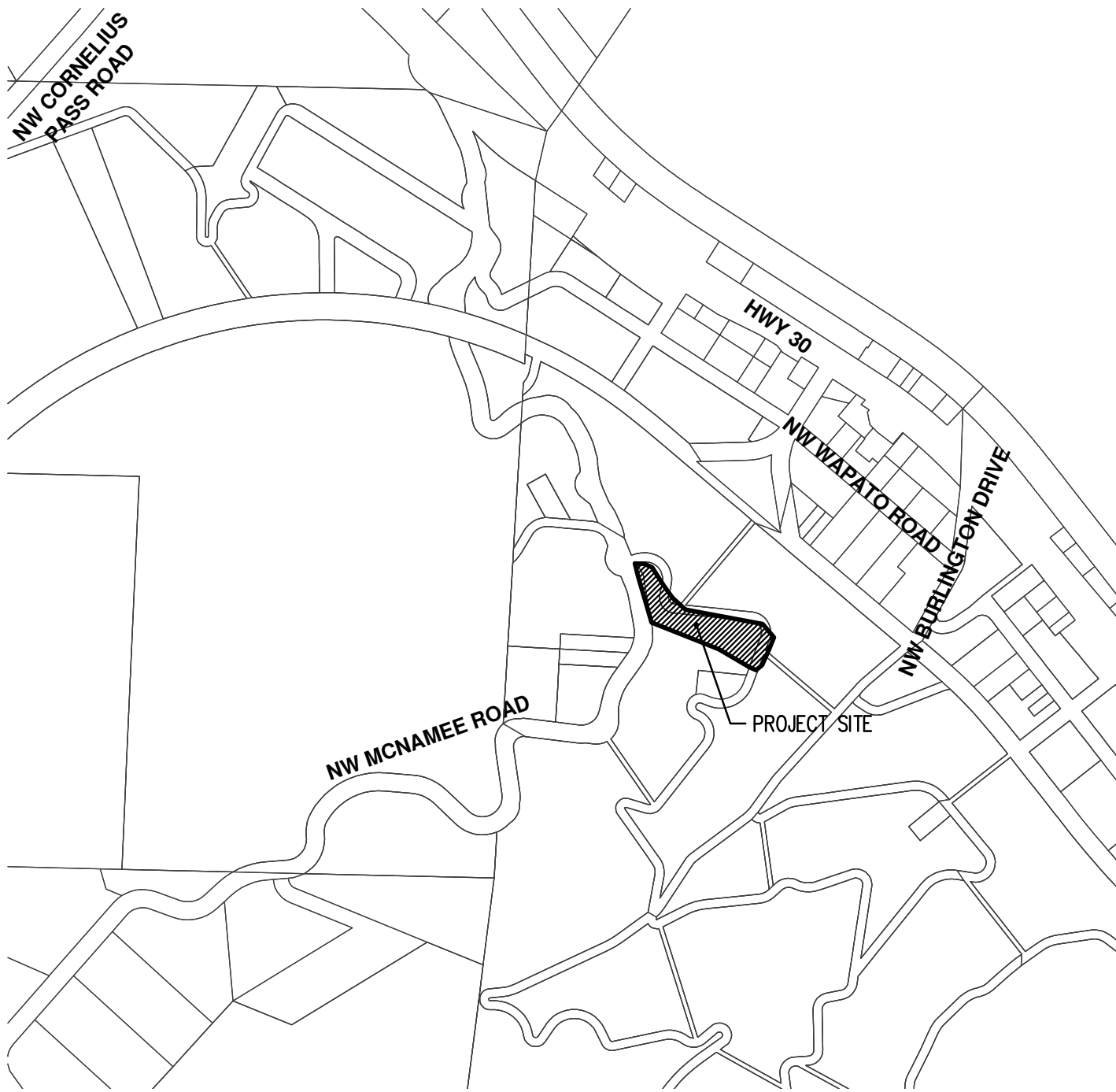
The post-developed site land use will consist of a 25-space parking lot, with associated access road, vault toilet, and other amenities for a natural area trailhead.

5.4.3 Post-Developed Input Parameters

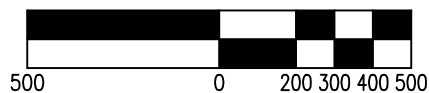
See HydroCAD Analysis in the attached appendices.

5.4.4 Description of Off-Site Contributing Basins

A small portion of NW McNamee Road directs stormwater runoff toward the subject site.



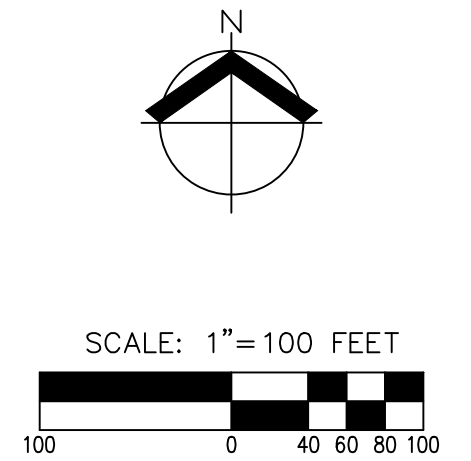
SCALE: 1" = 500 FEET



DATE: 9-19-2017

VICINITY MAP		FIGURE 1
AKS ENGINEERING & FORESTRY, LLC 12965 SW HERMAN RD, STE 100 TUALATIN, OR 97062 P: 503.563.6151 F: 503.563.6152 aks-eng.com		DRWN: AZV CHKD: BRB
		AKS JOB: 4781

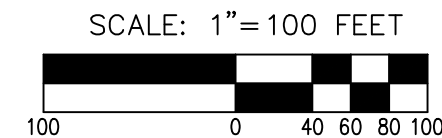
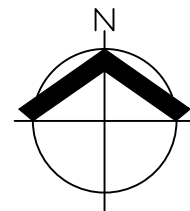




NOTE:
CONTOUR INFORMATION SHOWN IS BASED ON
METRO GIS INFORMATION AND IS APPROXIMATE.
CONTOUR ELEVATIONS HAVE BEEN ADJUSTED
TO APPROXIMATELY MATCH THE ASSUMED
VERTICAL DATUM OF THE ONSITE SURVEY.

DATE: 9-19-2017	
EXISTING BASIN DELINEATION	FIGURE
BURLINGTON CREEK PARKING	2
AKS ENGINEERING & FORESTRY, LLC 12965 SW HERMAN RD, STE 100 TUALATIN, OR 97062 P: 503.563.6151 F: 503.563.6152 aks-eng.com	DRWN: AZV CHKD: BRB AKS JOB: 4781



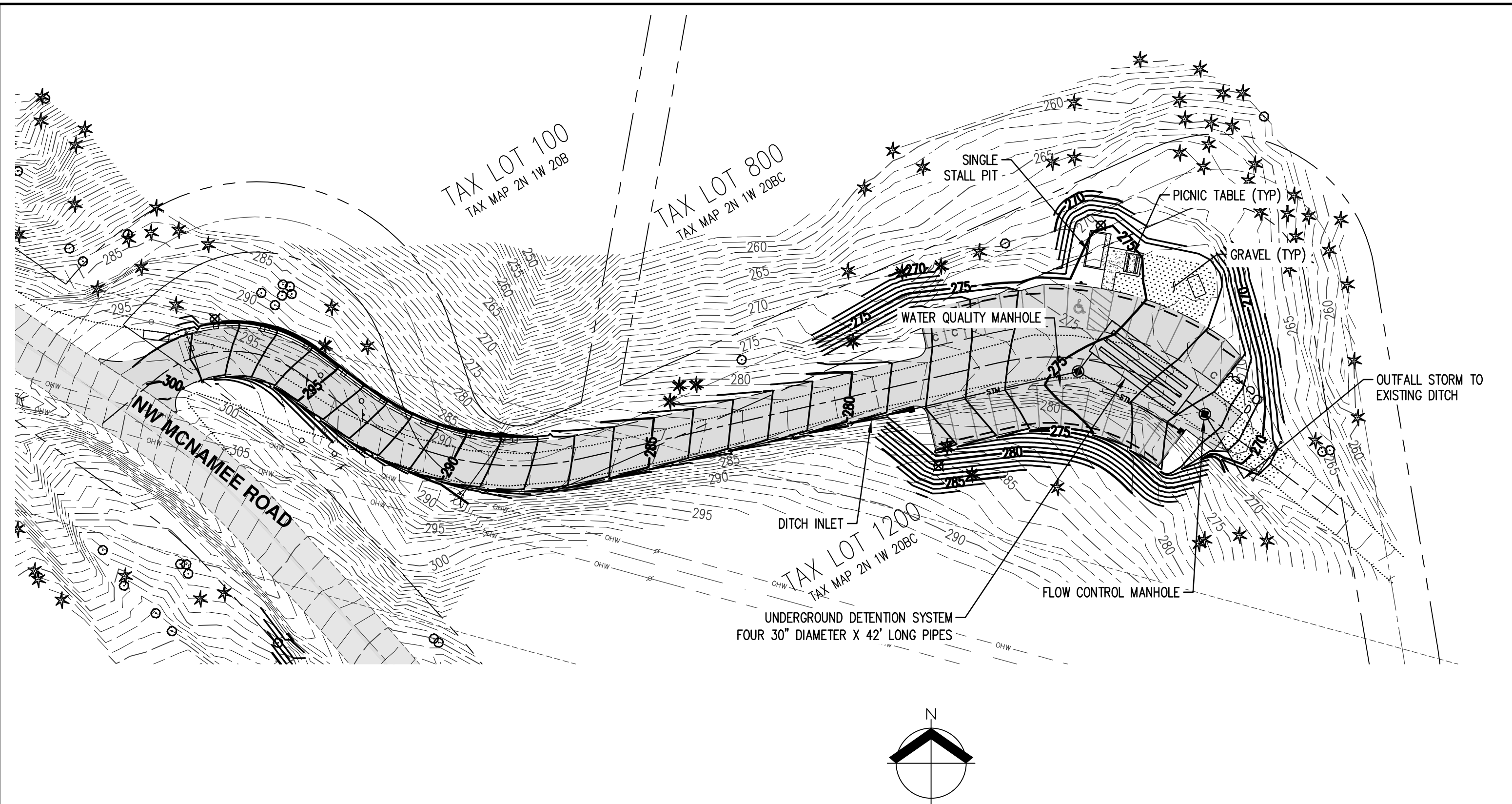


NOTE:
CONTOUR INFORMATION SHOWN IS BASED ON
METRO GIS INFORMATION AND IS APPROXIMATE.
CONTOUR ELEVATIONS HAVE BEEN ADJUSTED
TO APPROXIMATELY MATCH THE ASSUMED
VERTICAL DATUM OF THE ONSITE SURVEY.

DATE: 9-19-2017

POST-DEVELOPED BASIN DELINEATION		FIGURE
BURLINGTON CREEK PARKING		3
AKS ENGINEERING & FORESTRY, LLC 12965 SW HERMAN RD, STE 100 TUALATIN, OR 97062 P: 503.563.6151 F: 503.563.6152 aks-eng.com		DRWN: AZV CHKD: BRB AKS JOB: 4781





DATE: 9-19-2017

PRELIMINARY SITE PLAN		FIGURE
BURLINGTON CREEK PARKING		4
AKS ENGINEERING & FORESTRY, LLC 12965 SW HERMAN RD, STE 100 TUALATIN, OR 97062 P: 503.563.6151 F: 503.563.6152 aks-eng.com		DRWN: AZV CHKD: BRB AKS JOB: 4781



APPENDIX A
MULTNOMAH COUNTY
STORMWATER CERTIFICATION



Land Use Planning Division
1600 SE 190th Ave, Ste 116
Portland OR 97233
Ph: 503-988-3043 Fax: 503-988-3389
www.multco.us/landuse

STORM WATER CERTIFICATE

(Required when >500 Square Feet of Impervious Surface Created)


Applicant, please have an Oregon Licensed Professional Engineer fill out the property and project description (all new or reviewed structures and impervious areas), check one of the boxes below and provide the storm water calculations. Please note that replacement of existing structures does not provide a credit to the square footage threshold.

Property Address or Legal Description: Tax Lot 1200, Tax Map 2N 1W 20BC

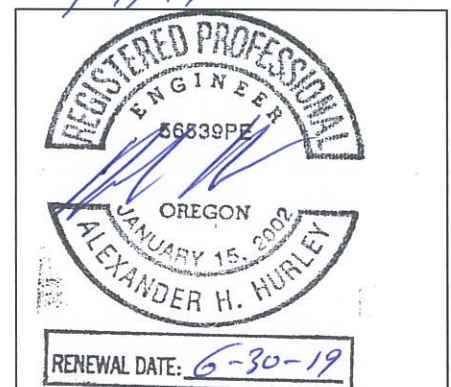
Description of Project: Parking lot for natural area trail head.

- ☐ Construction of an on-site storm water drainage control system **is not required**. The rate of storm water runoff attributed to the new/reviewed development (during the 10-year/24-hour storm) will be no greater than that which existed prior to the development as measured from the property line or from the point of discharge into a watercourse [MCC 29.333(C), or MCC 29.353(C)]. **I certify the attached site plan and calculations will meet the requirements listed above.**
- ☒ Construction of an on-site storm water drainage control system **is required**. After installation of the drainage control system, the rate of storm water runoff attributed to the development (during the 10-year/24-hour storm) will be no greater than that which existed prior to development as measured from the property line or from the point of discharge into a watercourse [MCC 29.333(C), or MCC 29.353(C)]. **I certify the attached site plan and on-site storm water control design dated 9/19/2017 will meet the requirements listed above. Attach associated plans, designs and calculations with this storm water certificate.**

NOTE to Engineer: Multnomah County does not use the City of Portland's Stormwater Ordinance. As part of your review, you must consider all new and existing structures and impervious areas and determine that the generated stormwater is in compliance with Oregon law for a 10 year/24 hour storm event. As part of the completion of this form, a site plan showing all new and existing impervious surfaces considered must be attached, including location of the stormwater system if required. Also, provide the storm water calculations completed to support your finding below.

Signature 
Print Name Alex Hurley
Address 12965 SW Herman Rd, #100 Tualatin OR
Phone 503-563-6151
Date 9-19-17

Engineer's Stamp Below:



APPENDIX B

EXISTING AND POST-DEVELOPED SITE 10-YEAR STORM EVENT ANALYSIS



Pre-Developed Flow
North



Post-Developed Flow
North



Pre-Developed Flow
East



Post-Developed
Detained Area



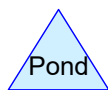
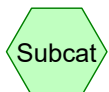
Post-Developed
Undetained Area



Underground Detention



Combined
Post-Developed Flow
East



Routing Diagram for 4781 HydroCAD

Prepared by AKS Engineering & Forestry, LLC, Printed 9/19/2017
HydroCAD® 10.00-18 s/n 01338 © 2016 HydroCAD Software Solutions LLC

4781 HydroCAD*Type IA 24-hr 10-YEAR Rainfall=3.40"*

Prepared by AKS Engineering & Forestry, LLC

Printed 9/19/2017

HydroCAD® 10.00-18 s/n 01338 © 2016 HydroCAD Software Solutions LLC

Page 2

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points

Runoff by SBUH method, Split Pervious/Imperv.

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1P: Post-DevelopedFlow	Runoff Area=7,131 sf 4.92% Impervious Runoff Depth>1.21" Tc=5.0 min CN=73/98 Runoff=0.039 cfs 719 cf
Subcatchment2P: Post-Developed	Runoff Area=3,192 sf 70.33% Impervious Runoff Depth>3.10" Tc=5.0 min CN=96/98 Runoff=0.057 cfs 824 cf
Subcatchment3P: Post-Developed	Runoff Area=37,296 sf 41.17% Impervious Runoff Depth>1.95" Tc=5.0 min CN=73/98 Runoff=0.381 cfs 6,074 cf
Subcatchment100: Pre-DevelopedFlow	Runoff Area=21,720 sf 8.36% Impervious Runoff Depth>1.56" Tc=5.0 min CN=78/98 Runoff=0.173 cfs 2,830 cf
Subcatchment200: Pre-DevelopedFlow	Runoff Area=25,899 sf 1.86% Impervious Runoff Depth>1.32" Tc=5.0 min CN=76/98 Runoff=0.166 cfs 2,858 cf
Pond 4P: Underground Detention	Peak Elev=270.72' Storage=782 cf Inflow=0.381 cfs 6,074 cf Outflow=0.129 cfs 6,072 cf
Link 2L: Combined Post-DevelopedFlow East	Inflow=0.166 cfs 6,896 cf Primary=0.166 cfs 6,896 cf

Total Runoff Area = 95,238 sf Runoff Volume = 13,305 cf Average Runoff Depth = 1.68"
78.74% Pervious = 74,987 sf 21.26% Impervious = 20,251 sf

Summary for Subcatchment 1P: Post-Developed Flow North

Runoff = 0.039 cfs @ 8.00 hrs, Volume= 719 cf, Depth> 1.21"

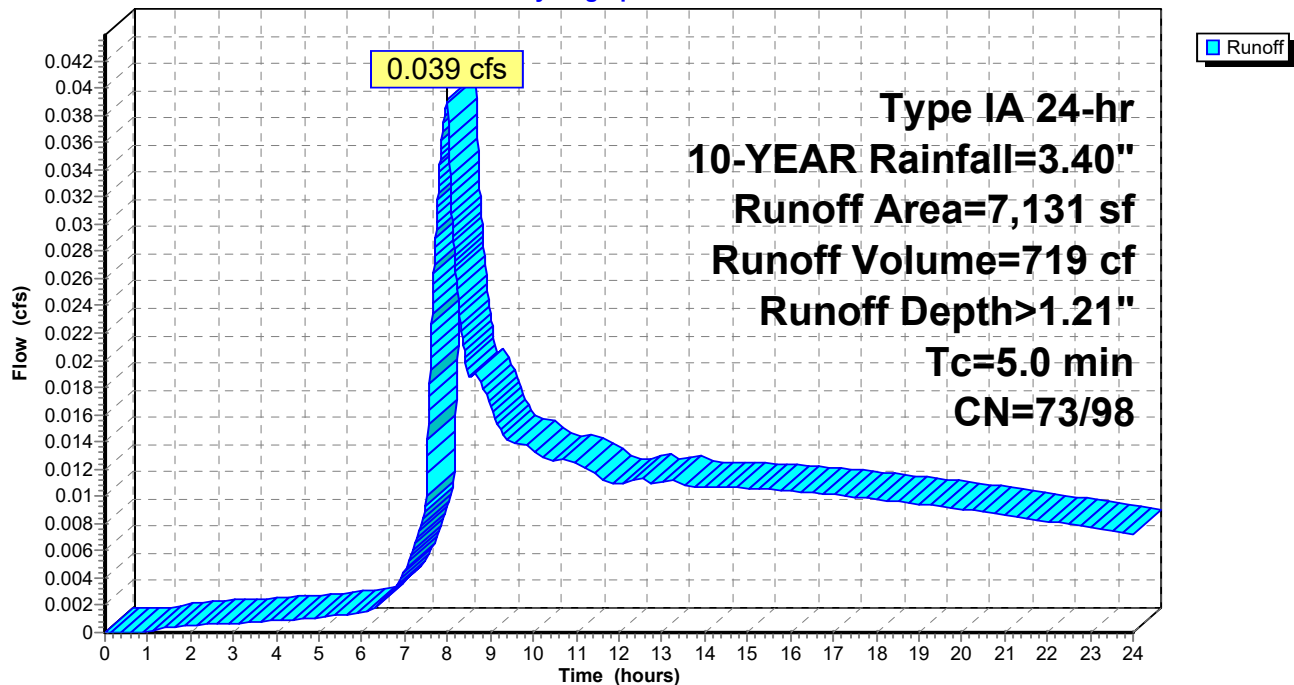
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type IA 24-hr 10-YEAR Rainfall=3.40"

Area (sf)	CN	Description
* 351	98	Paved
6,780	73	Woods, Fair, HSG C
7,131	74	Weighted Average
6,780		95.08% Pervious Area
351		4.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 1P: Post-Developed Flow North

Hydrograph



Summary for Subcatchment 2P: Post-Developed Undetained Area

Runoff = 0.057 cfs @ 7.88 hrs, Volume= 824 cf, Depth> 3.10"

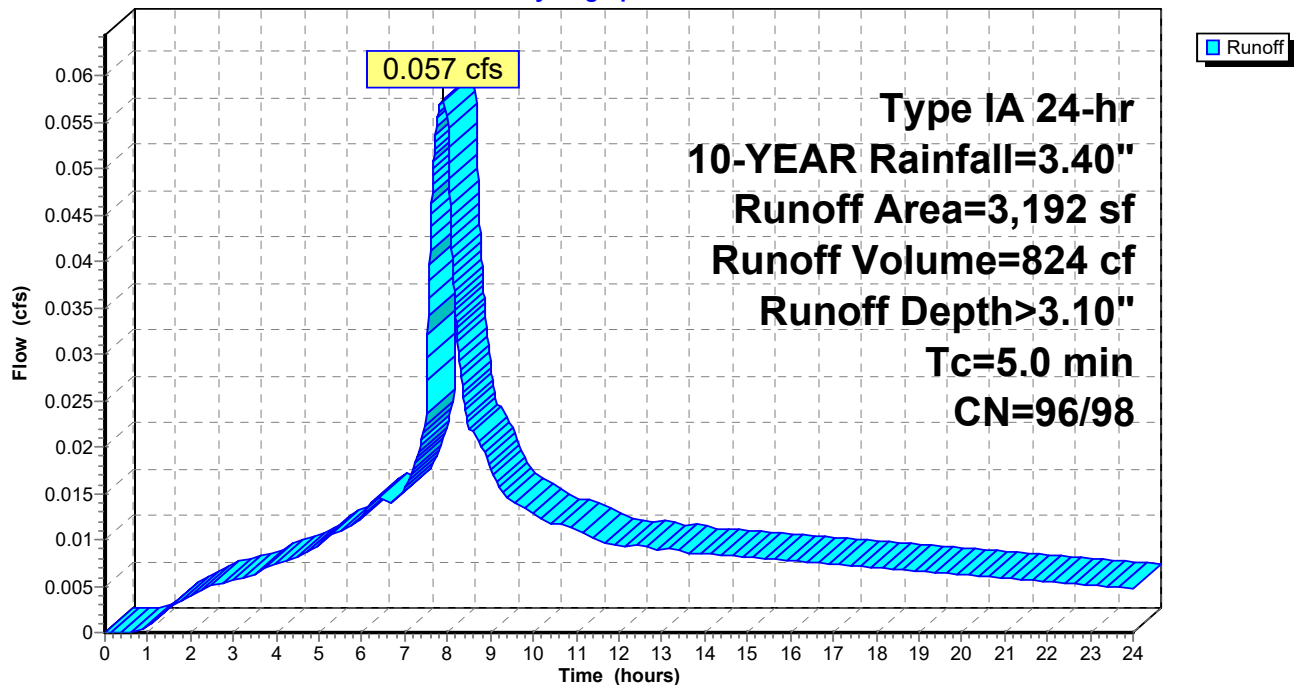
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type IA 24-hr 10-YEAR Rainfall=3.40"

Area (sf)	CN	Description
947	96	Gravel surface, HSG C
2,245	98	Paved parking, HSG C
3,192	97	Weighted Average
947		29.67% Pervious Area
2,245		70.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 2P: Post-Developed Undetained Area

Hydrograph



Summary for Subcatchment 3P: Post-Developed Detained Area

Runoff = 0.381 cfs @ 7.93 hrs, Volume= 6,074 cf, Depth> 1.95"

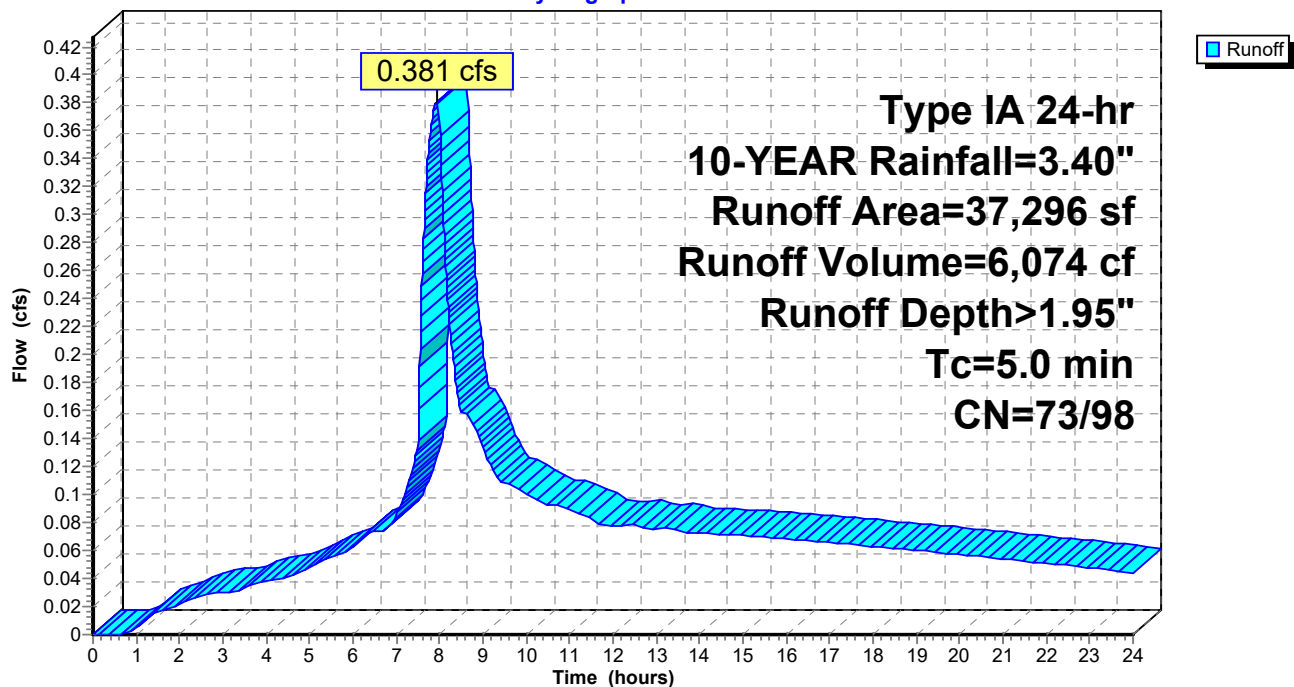
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type IA 24-hr 10-YEAR Rainfall=3.40"

Area (sf)	CN	Description
186	96	Gravel surface, HSG C
* 2,287	98	McNamee
21,754	73	Woods, Fair, HSG C
13,069	98	Paved parking, HSG C
37,296	83	Weighted Average
21,940		58.83% Pervious Area
15,356		41.17% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 3P: Post-Developed Detained Area

Hydrograph



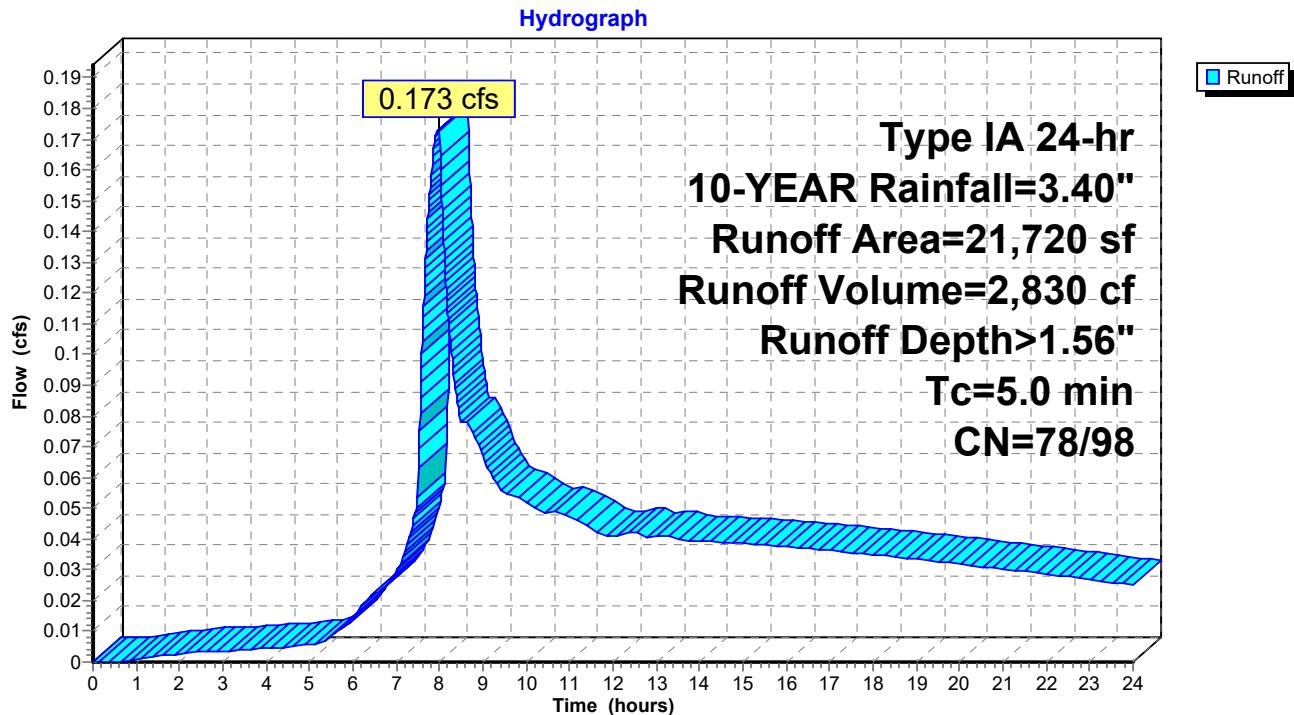
Summary for Subcatchment 100: Pre-Developed Flow North

Runoff = 0.173 cfs @ 7.98 hrs, Volume= 2,830 cf, Depth> 1.56"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type IA 24-hr 10-YEAR Rainfall=3.40"

Area (sf)	CN	Description
15,400	73	Woods, Fair, HSG C
4,504	96	Gravel surface, HSG C
* 1,816	98	McNamee
21,720	80	Weighted Average
19,904		91.64% Pervious Area
1,816		8.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 100: Pre-Developed Flow North

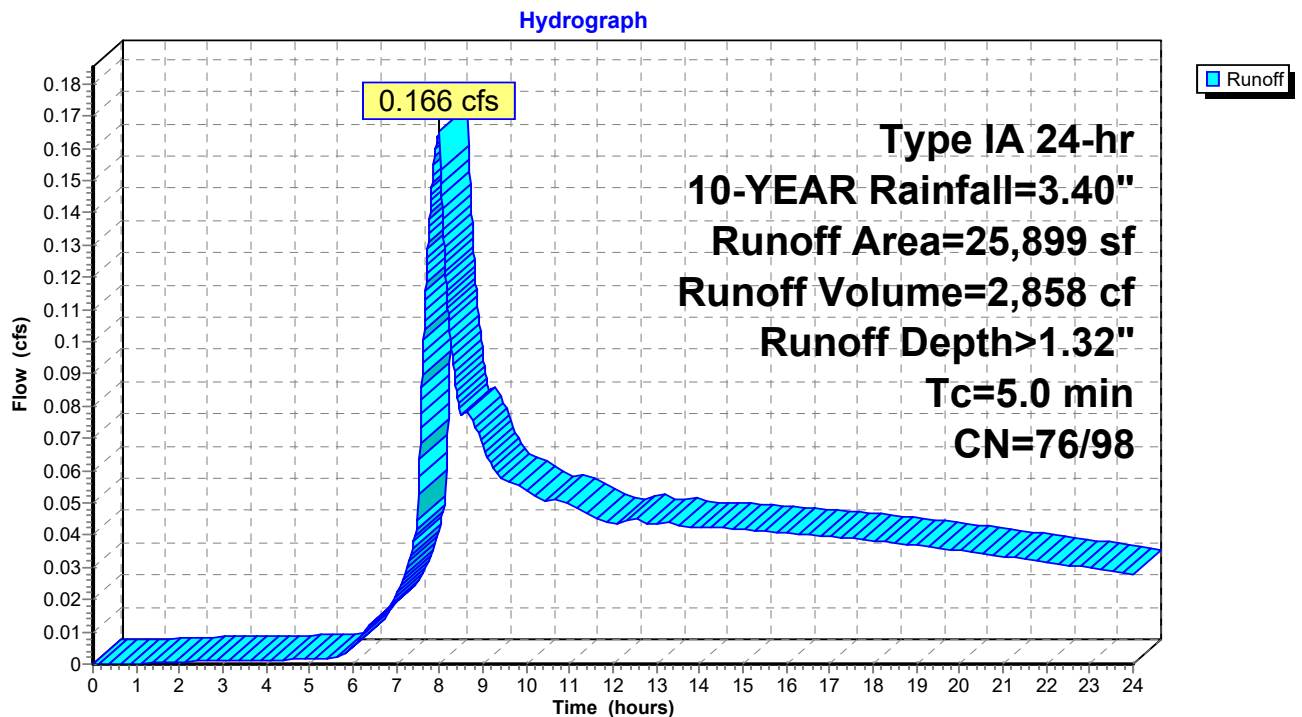
Summary for Subcatchment 200: Pre-Developed Flow East

Runoff = 0.166 cfs @ 8.00 hrs, Volume= 2,858 cf, Depth> 1.32"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type IA 24-hr 10-YEAR Rainfall=3.40"

Area (sf)	CN	Description
21,943	73	Woods, Fair, HSG C
3,473	96	Gravel surface, HSG C
* 483	98	McNamee
25,899	77	Weighted Average
25,416		98.14% Pervious Area
483		1.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 200: Pre-Developed Flow East

Summary for Pond 4P: Underground Detention

Inflow Area = 37,296 sf, 41.17% Impervious, Inflow Depth > 1.95" for 10-YEAR event
 Inflow = 0.381 cfs @ 7.93 hrs, Volume= 6,074 cf
 Outflow = 0.129 cfs @ 9.05 hrs, Volume= 6,072 cf, Atten= 66%, Lag= 67.3 min
 Primary = 0.129 cfs @ 9.05 hrs, Volume= 6,072 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Peak Elev= 270.72' @ 9.05 hrs Surf.Area= 248 sf Storage= 782 cf

Plug-Flow detention time= 48.5 min calculated for 6,072 cf (100% of inflow)
 Center-of-Mass det. time= 48.4 min (776.7 - 728.3)

Volume	Invert	Avail.Storage	Storage Description
#1	268.36'	825 cf	30.00" Round Pipe Storage x 4 L= 42.0' S= 0.0050 ' '

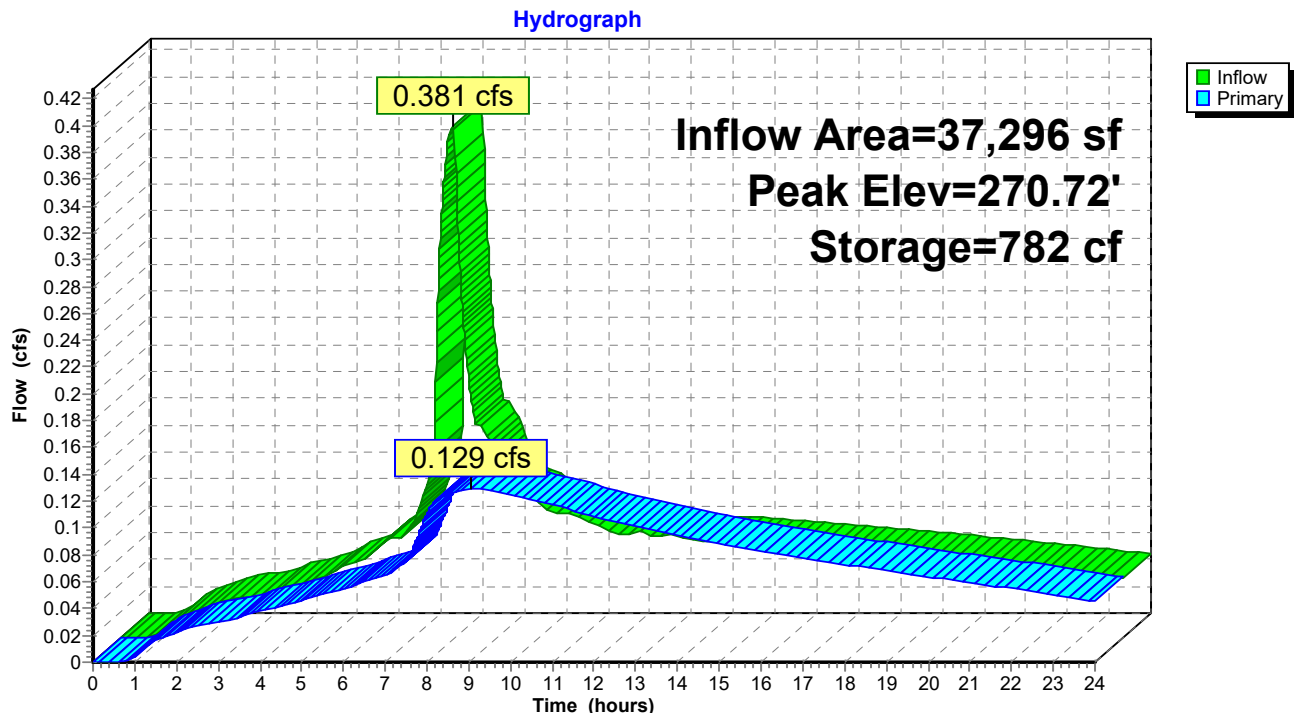
Device	Routing	Invert	Outlet Devices
#1	Primary	268.06'	1.75" Vert. Orifice/Grate C= 0.600
#2	Primary	270.75'	12.00" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.129 cfs @ 9.05 hrs HW=270.72' TW=0.00' (Dynamic Tailwater)

1=Orifice/Grate (Orifice Controls 0.129 cfs @ 7.74 fps)

2=Orifice/Grate (Controls 0.000 cfs)

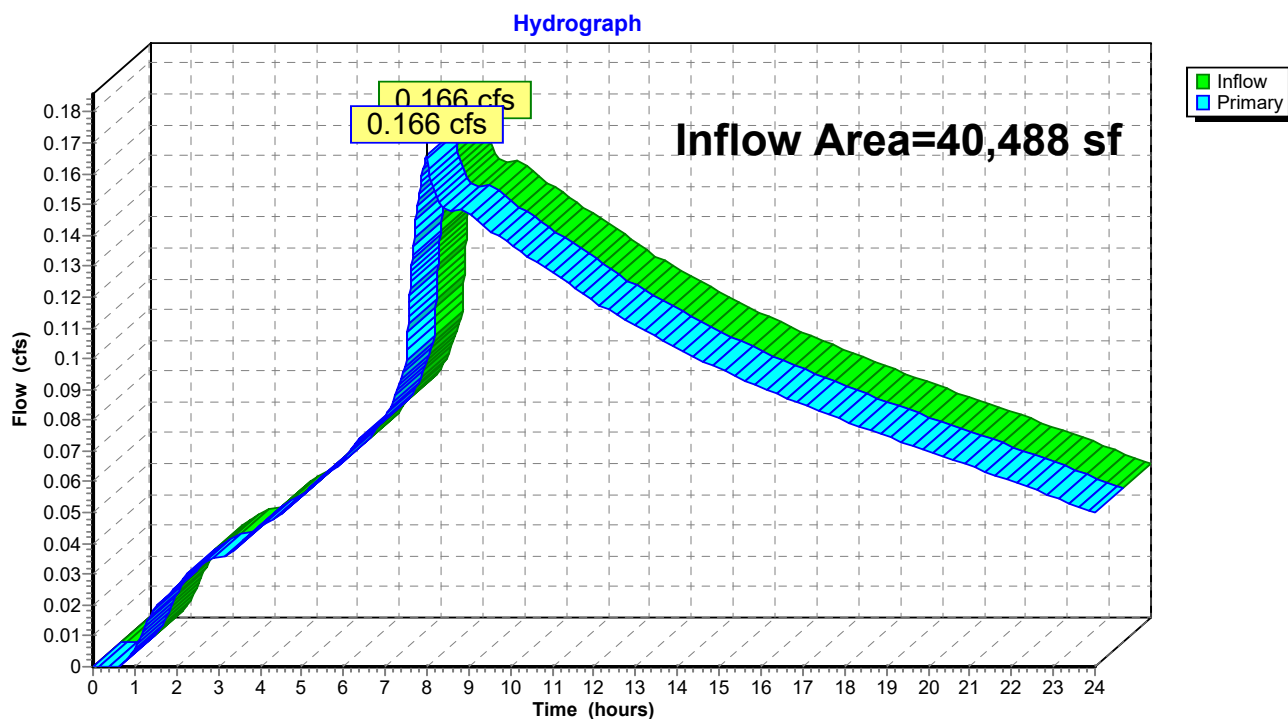
Pond 4P: Underground Detention



Summary for Link 2L: Combined Post-Developed Flow East

Inflow Area = 40,488 sf, 43.47% Impervious, Inflow Depth > 2.04" for 10-YEAR event
Inflow = 0.166 cfs @ 8.00 hrs, Volume= 6,896 cf
Primary = 0.166 cfs @ 8.00 hrs, Volume= 6,896 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 2L: Combined Post-Developed Flow East

APPENDIX C

USDA-NRCS SOIL RESOURCE REPORT



United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for **Multnomah County Area, Oregon**



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

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Legend.....	7
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Map Unit Descriptions.....	8
Multnomah County Area, Oregon.....	10
17E—Goble silt loam, 30 to 60 percent slopes.....	10
References	11

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.


Custom Soil Resource Report Soil Map



Custom Soil Resource Report


MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils


 Soil Map Unit Polygons


 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features

 Blowout

 Borrow Pit


 Clay Spot

 Closed Depression

 Gravel Pit

 Gravelly Spot


 Landfill

 Lava Flow

 Marsh or swamp

 Mine or Quarry

 Miscellaneous Water


 Perennial Water

 Rock Outcrop

 Saline Spot

 Sandy Spot

 Severely Eroded Spot


 Sinkhole


 Slide or Slip

 Sodic Spot


 Spoil Area

 Stony Spot


 Very Stony Spot

 Wet Spot

 Other

 Special Line Features

Water Features

 Streams and Canals

Transportation

 Rails


 Interstate Highways

 US Routes

 Major Roads

 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Multnomah County Area, Oregon
Survey Area Data: Version 14, Sep 16, 2016

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Sep 29, 2015—Sep 13, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Multnomah County Area, Oregon (OR051)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
17E	Goble silt loam, 30 to 60 percent slopes	3.9	100.0%
Totals for Area of Interest		3.9	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however,

onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Multnomah County Area, Oregon

17E—Goble silt loam, 30 to 60 percent slopes

Map Unit Setting

National map unit symbol: 228r
Elevation: 200 to 1,600 feet
Mean annual precipitation: 60 to 70 inches
Mean annual air temperature: 46 to 50 degrees F
Frost-free period: 120 to 165 days
Farmland classification: Not prime farmland

Map Unit Composition

Goble and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Goble

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Silty materials

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
H1 - 1 to 15 inches: silt loam
H2 - 15 to 38 inches: silt loam
H3 - 38 to 61 inches: silty clay loam

Properties and qualities

Slope: 30 to 60 percent
Depth to restrictive feature: 30 to 48 inches to fragipan
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 25 to 39 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 7.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Hydric soil rating: No

References

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Custom Soil Resource Report

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APPENDIX D

TR55 RUNOFF CURVE NUMBERS

Table 2-2a Runoff curve numbers for urban areas ^{1/}

Cover description		Curve numbers for hydrologic soil group			
Cover type and hydrologic condition	Average percent impervious area ^{2/}	A	B	C	D
Open space (lawns, parks, golf courses, cemeteries, etc.) ^{3/} :					
Poor condition (grass cover < 50%)		68	79	86	89
Fair condition (grass cover 50% to 75%)		49	69	79	84
Good condition (grass cover > 75%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98
Streets and roads:					
Paved; curbs and storm sewers (excluding right-of-way)		98	98	98	98
Paved; open ditches (including right-of-way)		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way)		72	82	87	89
Western desert urban areas:					
Natural desert landscaping (pervious areas only) ^{4/}		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders)		96	96	96	96
Urban districts:					
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential districts by average lot size:					
1/8 acre or less (town houses)	65	77	85	90	92
1/4 acre	38	61	75	83	87
1/3 acre	30	57	72	81	86
1/2 acre	25	54	70	80	85
1 acre	20	51	68	79	84
2 acres	12	46	65	77	82
Newly graded areas (pervious areas only, no vegetation) ^{5/}		77	86	91	94
Idle lands (CN's are determined using cover types similar to those in table 2-2c).					

¹ Average runoff condition, and $I_a = 0.2S$.² The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas are directly connected to the drainage system, impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using figure 2-3 or 2-4.³ CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.⁴ Composite CN's for natural desert landscaping should be computed using figures 2-3 or 2-4 based on the impervious area percentage (CN = 98) and the pervious area CN. The pervious area CN's are assumed equivalent to desert shrub in poor hydrologic condition.⁵ Composite CN's to use for the design of temporary measures during grading and construction should be computed using figure 2-3 or 2-4 based on the degree of development (impervious area percentage) and the CN's for the newly graded pervious areas.

Table 2-2b Runoff curve numbers for cultivated agricultural lands ^{1/}

Cover description			Curve numbers for hydrologic soil group			
Cover type	Treatment ^{2/}	Hydrologic condition ^{3/}	A	B	C	D
Fallow	Bare soil	—	77	86	91	94
	Crop residue cover (CR)	Poor	76	85	90	93
		Good	74	83	88	90
Row crops	Straight row (SR)	Poor	72	81	88	91
		Good	67	78	85	89
	SR + CR	Poor	71	80	87	90
		Good	64	75	82	85
	Contoured (C)	Poor	70	79	84	88
		Good	65	75	82	86
	C + CR	Poor	69	78	83	87
		Good	64	74	81	85
	Contoured & terraced (C&T)	Poor	66	74	80	82
		Good	62	71	78	81
Small grain	SR	Poor	65	76	84	88
		Good	63	75	83	87
	SR + CR	Poor	64	75	83	86
		Good	60	72	80	84
	C	Poor	63	74	82	85
		Good	61	73	81	84
	C + CR	Poor	62	73	81	84
		Good	60	72	80	83
	C&T	Poor	61	72	79	82
		Good	59	70	78	81
Close-seeded or broadcast legumes or rotation meadow	C&T+ CR	Poor	60	71	78	81
		Good	58	69	77	80
	SR	Poor	66	77	85	89
		Good	58	72	81	85
	C	Poor	64	75	83	85
		Good	55	69	78	83
	C&T	Poor	63	73	80	83
		Good	51	67	76	80

¹ Average runoff condition, and $I_a=0.2S$ ² Crop residue cover applies only if residue is on at least 5% of the surface throughout the year.³ Hydraulic condition is based on combination factors that affect infiltration and runoff, including (a) density and canopy of vegetative areas, (b) amount of year-round cover, (c) amount of grass or close-seeded legumes, (d) percent of residue cover on the land surface (good $\geq 20\%$), and (e) degree of surface roughness.

Poor: Factors impair infiltration and tend to increase runoff.

Good: Factors encourage average and better than average infiltration and tend to decrease runoff.

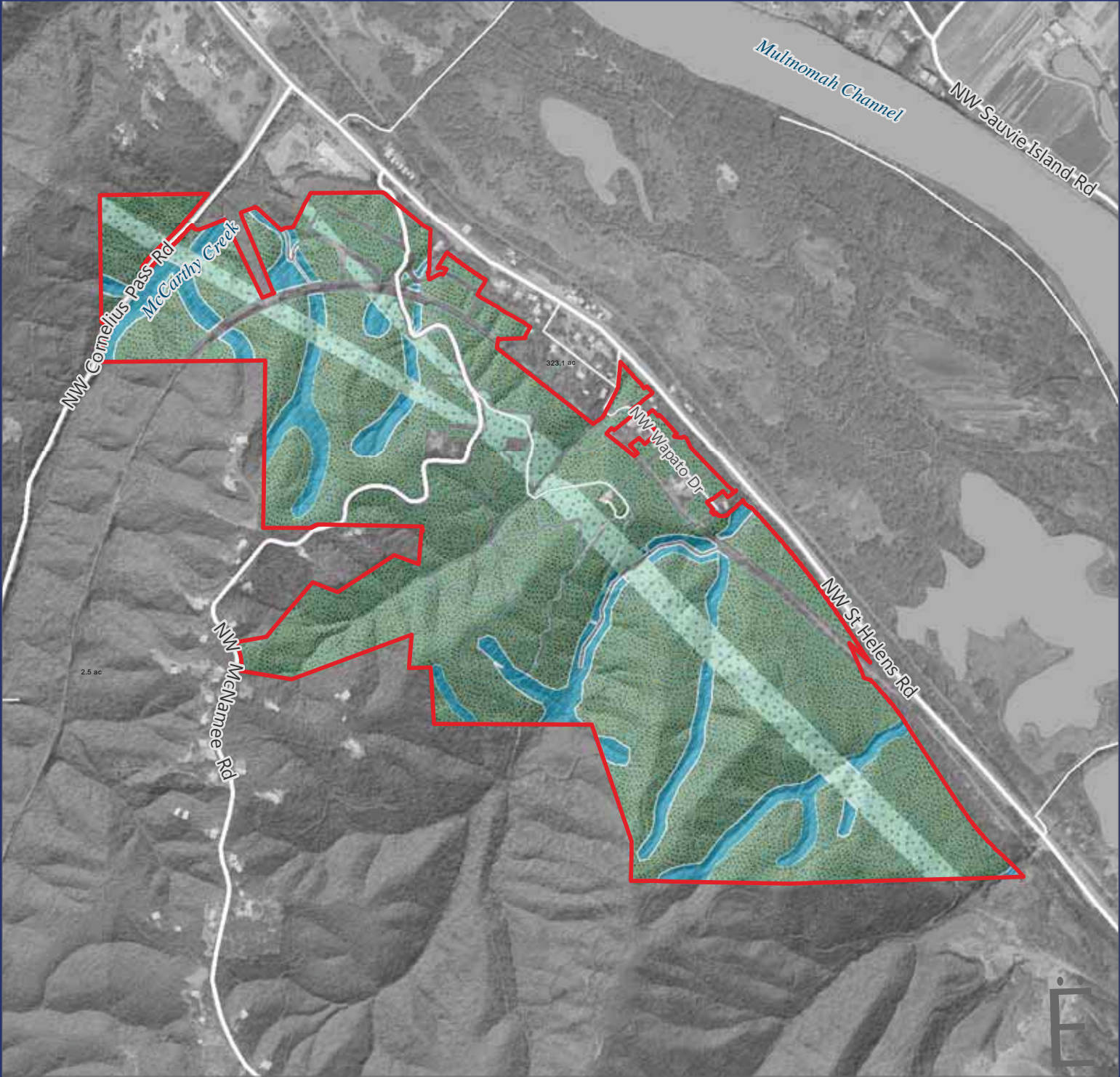
Table 2-2c Runoff curve numbers for other agricultural lands ^{1/}

Cover description		Curve numbers for hydrologic soil group			
Cover type	Hydrologic condition	A	B	C	D
Pasture, grassland, or range—continuous forage for grazing. ^{2/}	Poor	68	79	86	89
	Fair	49	69	79	84
	Good	39	61	74	80
Meadow—continuous grass, protected from grazing and generally mowed for hay.	—	30	58	71	78
Brush—brush-weed-grass mixture with brush the major element. ^{3/}	Poor	48	67	77	83
	Fair	35	56	70	77
	Good	30 ^{4/}	48	65	73
Woods—grass combination (orchard or tree farm). ^{5/}	Poor	57	73	82	86
	Fair	43	65	76	82
	Good	32	58	72	79
Woods. ^{6/}	Poor	45	66	77	83
	Fair	36	60	73	79
	Good	30 ^{4/}	55	70	77
Farmsteads—buildings, lanes, driveways, and surrounding lots.	—	59	74	82	86

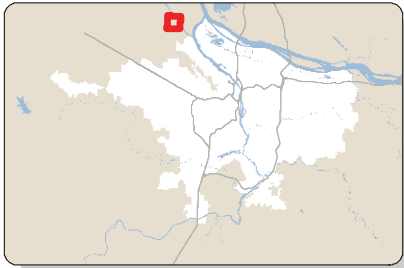
¹ Average runoff condition, and $I_a = 0.2S$.² <50% ground cover or heavily grazed with no mulch.
50 to 75% ground cover and not heavily grazed.
> 75% ground cover and lightly or only occasionally grazed.³ : <50% ground cover.
50 to 75% ground cover.
>75% ground cover.⁴ Actual curve number is less than 30; use CN = 30 for runoff computations.⁵ CN's shown were computed for areas with 50% woods and 50% grass (pasture) cover. Other combinations of conditions may be computed from the CN's for woods and pasture.⁶ Forest litter, small trees, and brush are destroyed by heavy grazing or regular burning.
Woods are grazed but not burned, and some forest litter covers the soil.
Woods are protected from grazing, and litter and brush adequately cover the soil.

CURRENT COVER

EXHIBIT 5



-  Burlington Creek Forest site
-  Riparian forest
-  Upland forest - mixed
-  Upland forest - shrub (stage)

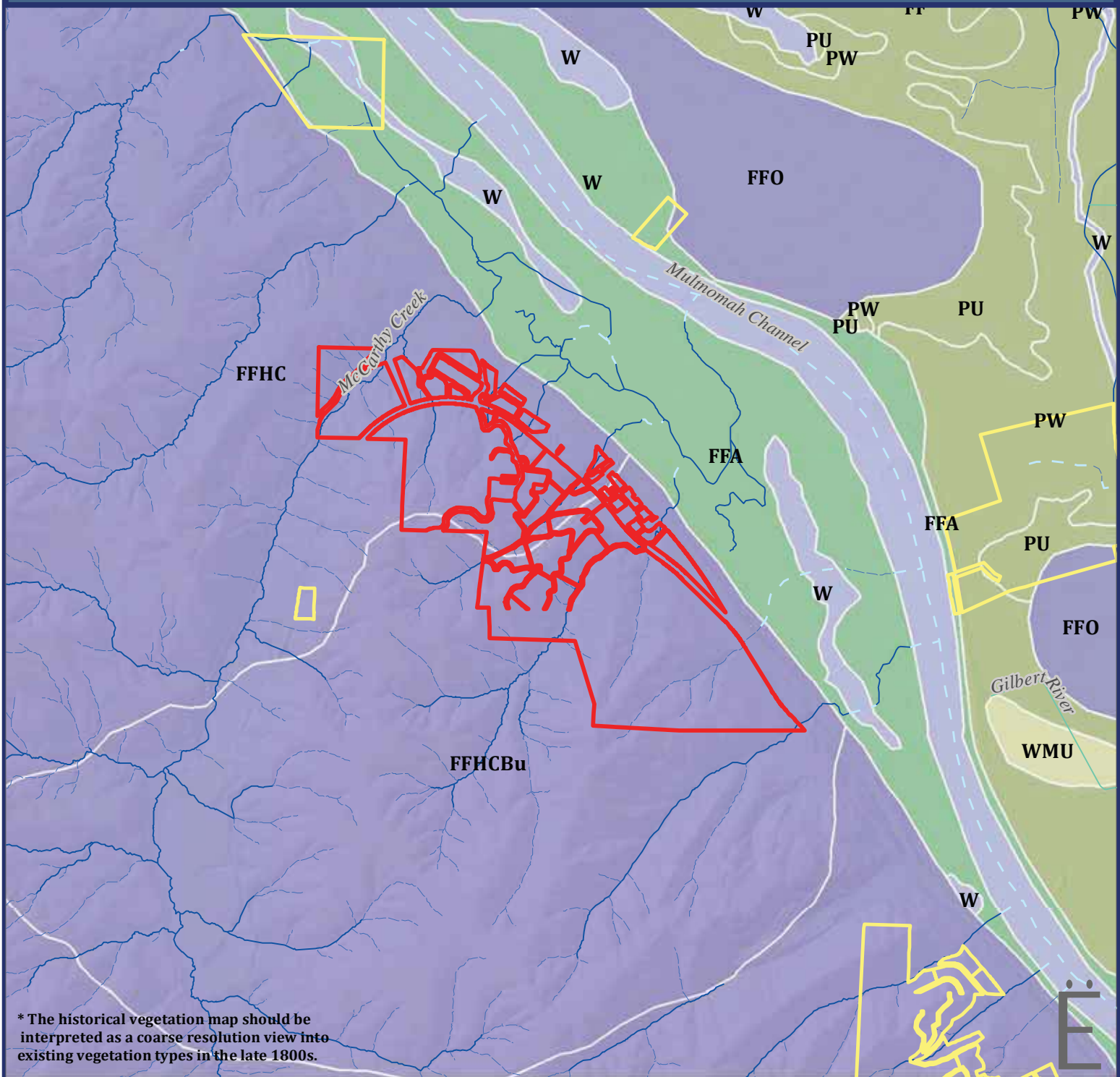


0 1,300 2,600 Feet



Historical Vegetation (1851-1910)

EXHIBIT 6



- Burlington Creek Forest site
- Other Metro sites

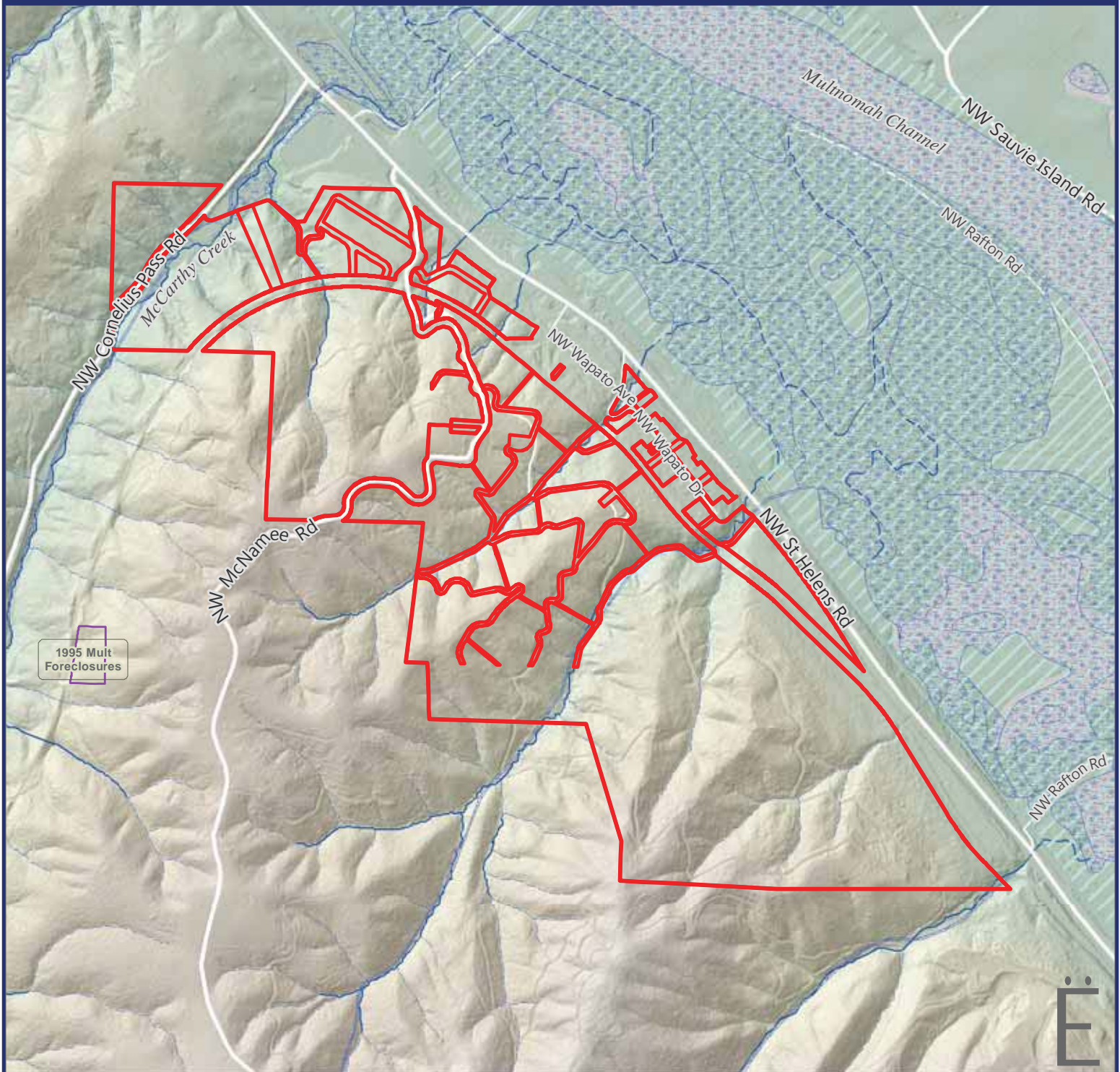
Historical vegetation

- Closed forest; Riparian & Wetland
- Closed forest; Upland
- Emergent wetlands
- Prairie
- Water

* Labels refer to vegetation subclasses.
Detailed descriptions can be found in
T:\OBMO\GIS\DATA_V\vegetation\Historical

0 2,000 4,000 Feet

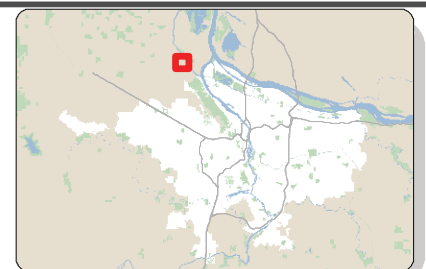




- Burlington Creek Forest site
- Other Metro sites
- Wetlands
- 100 year floodplain

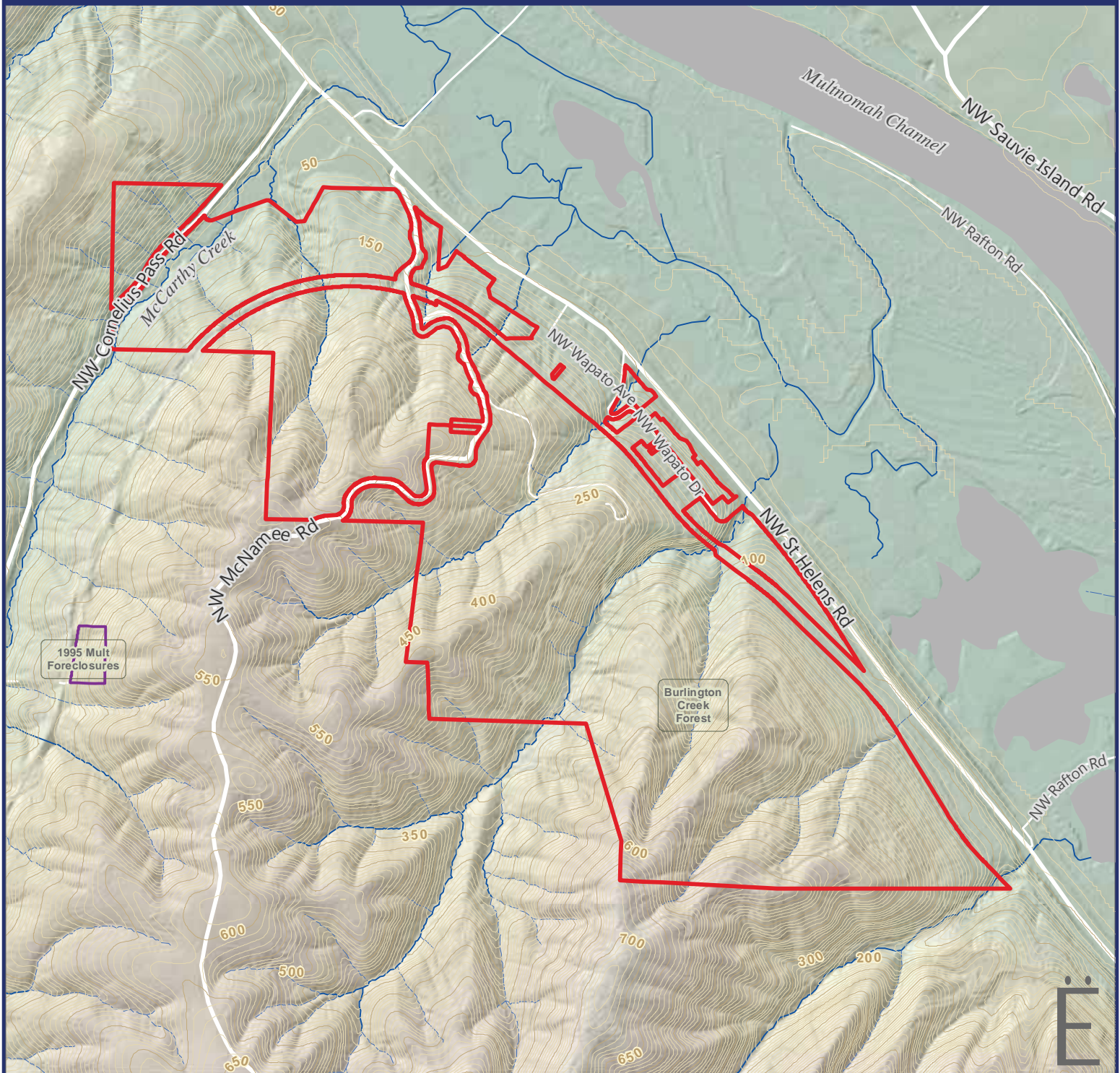
NHD Flowlines

- Intermittent stream
- Perennial stream



0 1,500 3,000 Feet

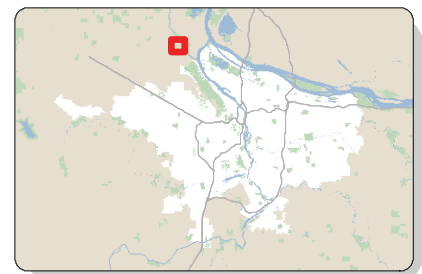




- Burlington Creek Forest site
- Other Metro sites

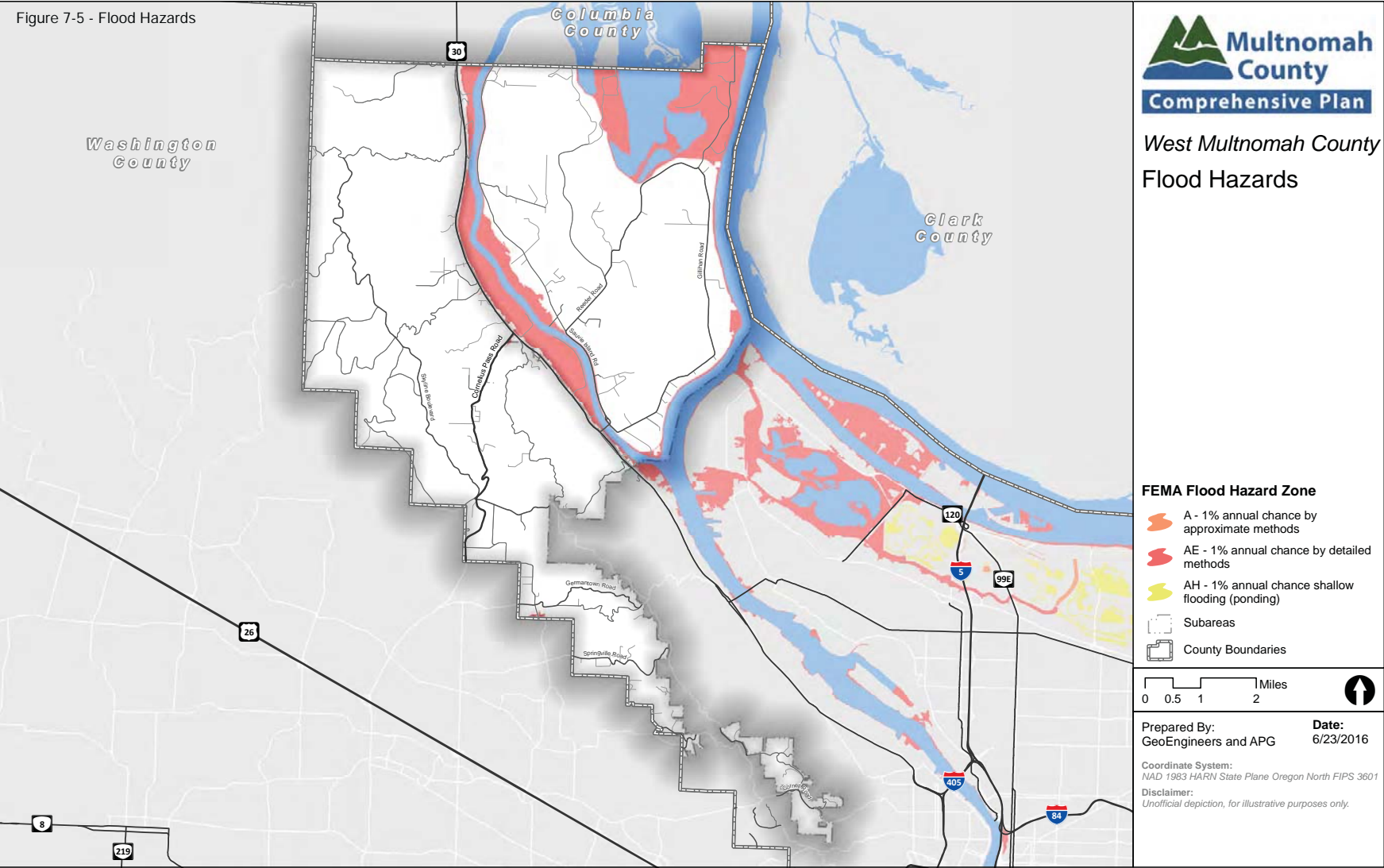
NHD Flowlines

- Intermittent stream
- Perennial stream



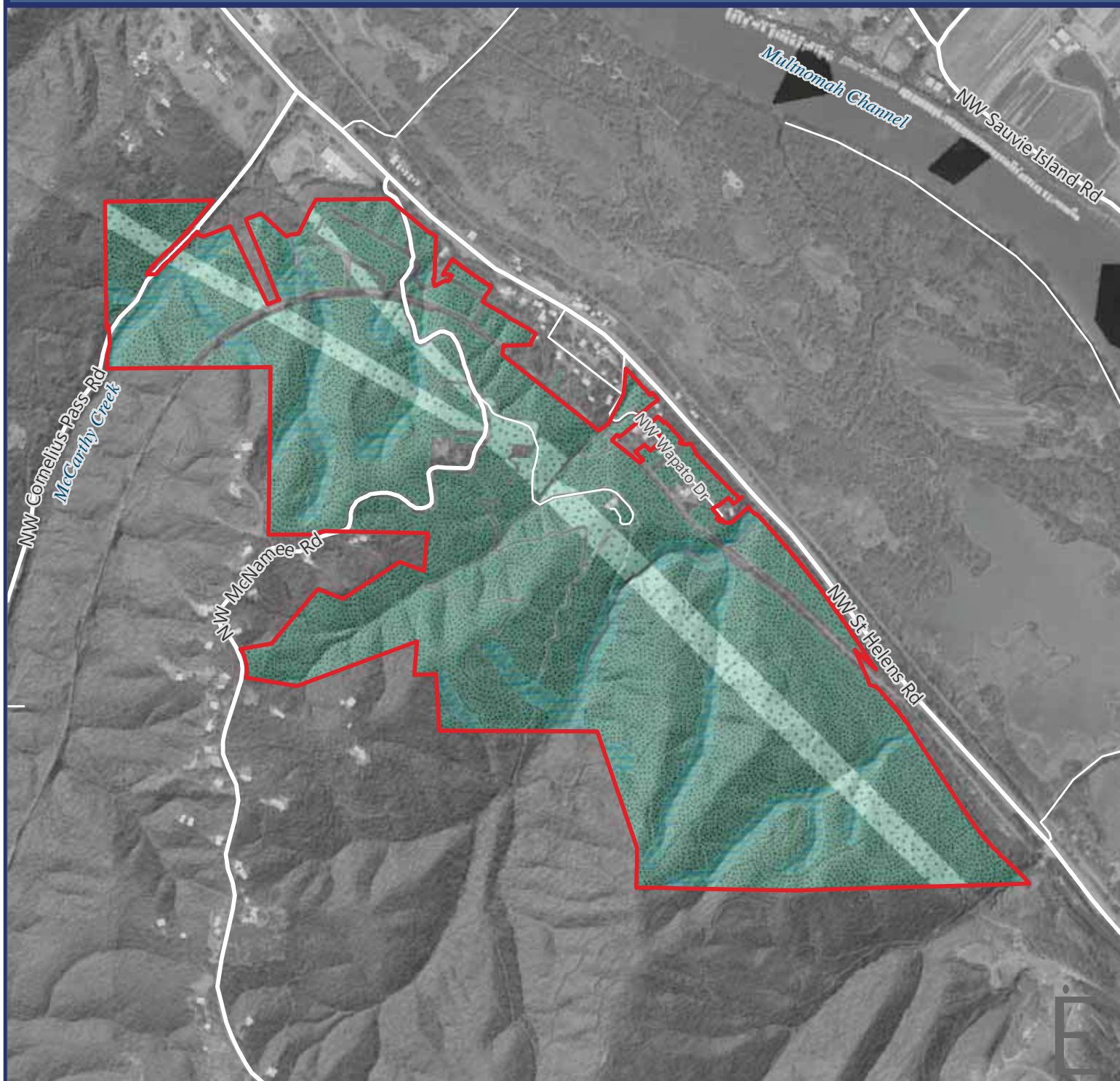
0 1,500 3,000 Feet




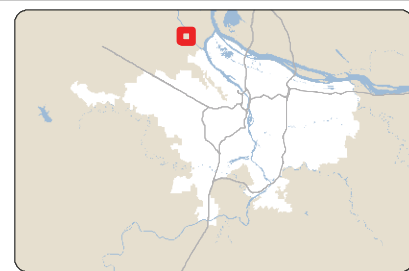


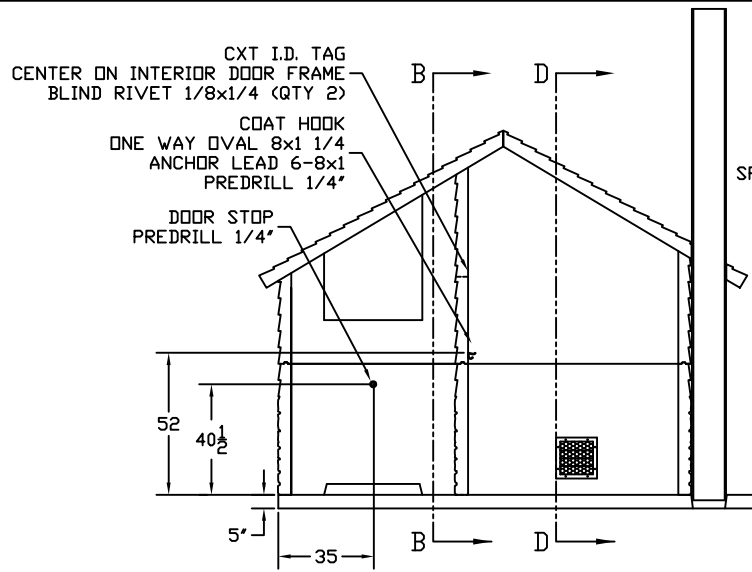
CONSERVATION TARGETS

EXHIBIT 10

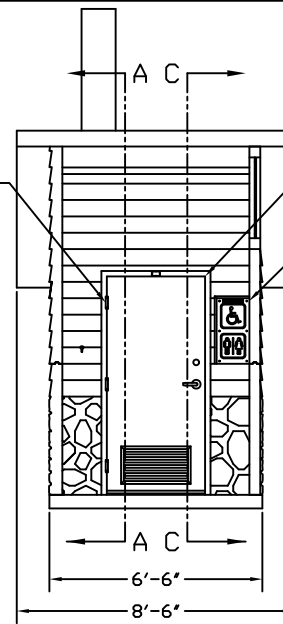


-  Burlington Creek Forest site
-  Riparian forest
-  Upland forest
-  Upland forest - shrub (early successional)

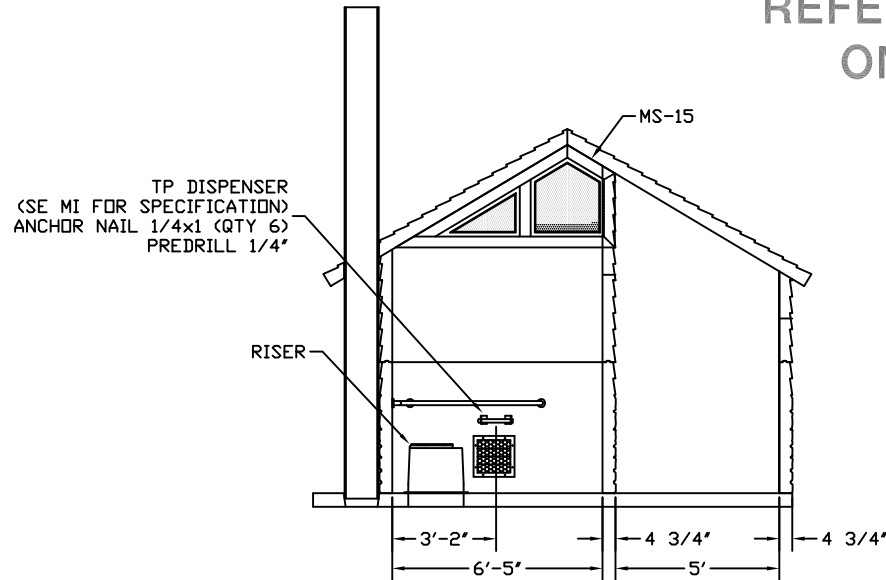




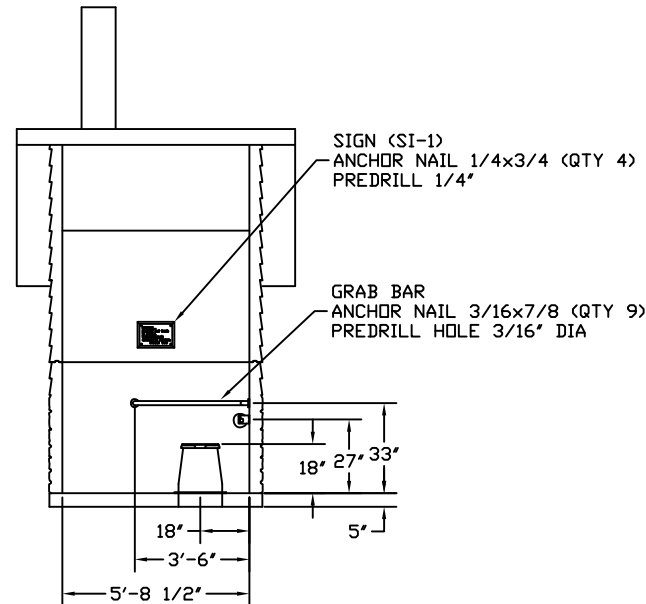
SECTION A - A



SECTION B - B



SECTION C - C



SECTION D - D

FOR
REFERENCE
ONLY

EMBEDDED MATERIALS			
ITEM	QTY	ITEM	QTY
RISER	1	ONE WAY OVAL 8x1 1/4	2
GRAB BAR	1	ANCHOR LEAD 6-8x1	2
TP DISPENSER	1	BLIND RIVET 1/8x1/4	2
TOILET PAPER ROLL	2-3	3068 DOOR ASSEMBLY	1
COAT HOOK	1	SPRING HINGE 4.5x4.5	3
DOOR STOP	1		
SI-1	1		
SI-2	1		
CXT I.D. TAG	1		
ANCHOR NAIL 1/4x1	6		
ANCHOR NAIL 1/4x3/4	10		
ANCHOR NAIL 3/16x7/8	9		
CU. FT. CONC.		SQ. FT. W.W.F.	
		APPROXIMATE WEIGHT	



PROJECT TITLE
ROCKY MTN LEFT HAND
CXT STANDARD BUILDING

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CXT Incorporated

REV.	DESCRIPTION	APPROVAL	DATE
SCALE	1/4"=1'-0"	DATE	03-28-05
DRAWN	FILE NO.	PD-RM03	
CHECKED	PLOT	48	

INTERIOR ELEVATIONS

DWG NO.	SHEET	REV.
RM-03		



FOR
REFERENCE
ONLY

SEE MI FOR
EXTERIOR TEXTURE

**BUILDING-TO-VAULT CONNECTION:
BUTYL TAPE ADHESIVE SEALANT-
SEE ATTACHED CUT SHEET.**

VAULT 2
(SEE DWG #V2-1)

[illegible]

Precast Products

PROJECT TITLE
ROCKY MTN LEFT HAND
CXT STANDARD BUILDING

NOTICE

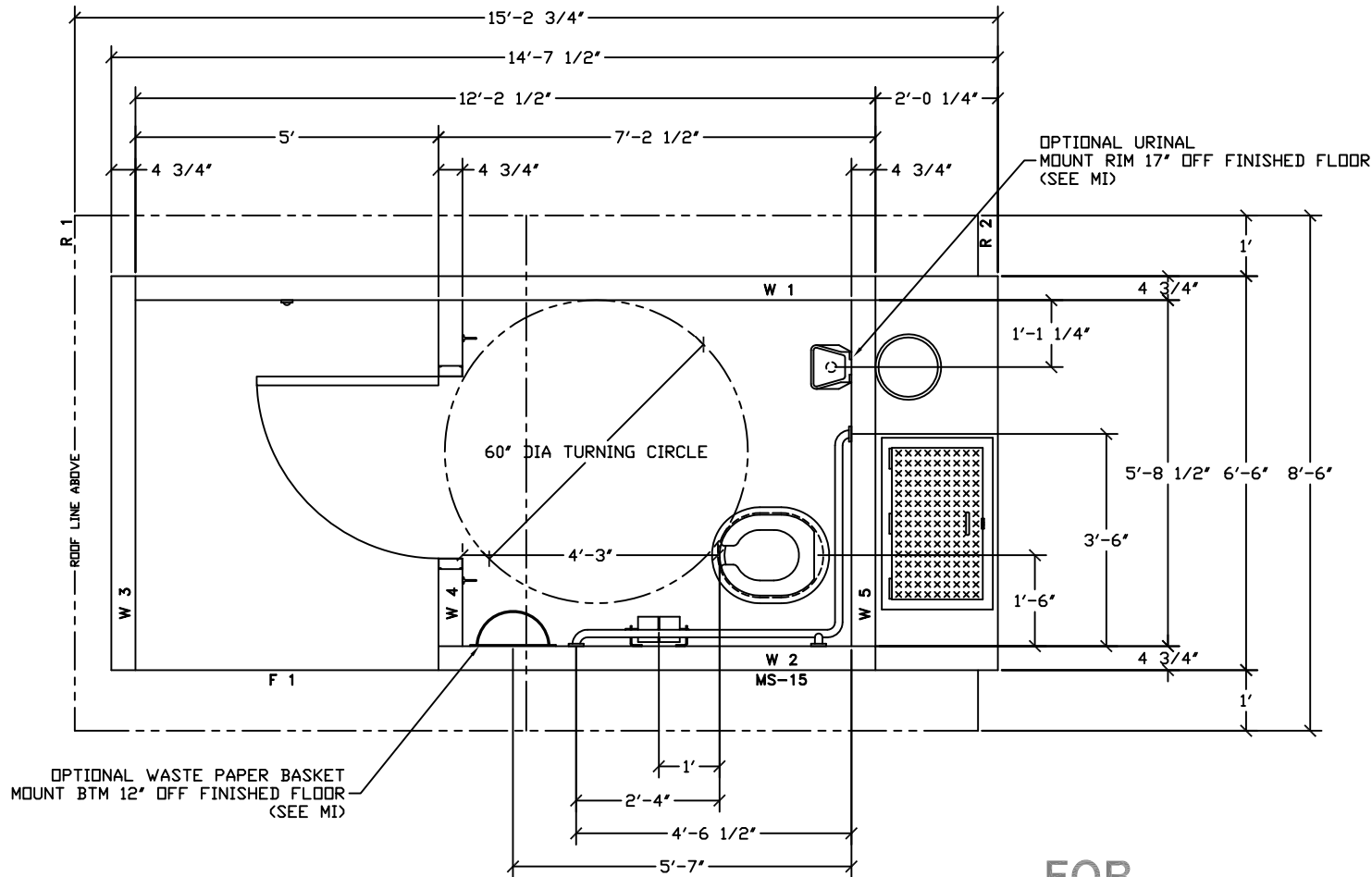
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CXT Incorporated

REV.	DESCRIPTION	APPROVAL	DATE
SCALE	1/4"=1'-0"	DATE	03-28-0
DRAWN		FILE NO.	PD-RM02
CHECKED		PLOT	48

BUILDING ELEVATIONS

DWG NO.	SHEET	REV.
RM-02		



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REV.	DESCRIPTION	APPROVAL	DATE
SCALE	1/2"=1'-0"	DATE	03-28-05
DRAWN	FILE NO.	PD-RM04	
CHECKED	PLOT	24	

FLOOR PLAN

DWG NO.	SHEET	REV.
RM-04		

PERIMETER WALL PACK NRG®300 SERIES	Cat.#		 HUBBELL Outdoor Lighting
	Job	Type	
	Approvals		

INTENDED USES

- Entry or perimeter security lighting applications for commercial buildings, shopping centers, schools, and apartment complexes

CONSTRUCTION

- Full polycarbonate front provides vandal resistance and efficient spread. Lateral coverage on HID units is 5 times the typical mounting height up to 10 feet
- Internally painted bronze finish for lasting appearance (except white CFL models)
- LED unit is an excellent upgrade from HID systems featuring a 20w LED system with a 1500+ lumen output, 4000K or 5000K CCT, 80 CRI - 60,500 hr rated life at L94
- Rugged cast aluminum back housing for rigid mounting; Bottom 1/2" conduit knockout for surface conduit wiring (except on 'MS' unit). Back hub allows access to recessed wiring boxes; Two point mounting; Additional center-pin torx screws provided for tamper-resistant applications
- Motion controlled unit has 180° detection range-saves energy by providing illumination only when needed, 42w CFL version only

ELECTRICAL

- CFL and HID with PC are 120V only
- Lamp Included with CFL and HID versions: Vertical medium base HID socket or universal 4-pin CFL
- Motion sensor unit senses presence and provides light and auto cutoff after 1, 5 or 10 minutes, CFL version only

LED

- Single driver 50/60 Hz, 120-277V
- NRG-356L is 17.7w, 1464/1524 lumens, 4000K/5000K, 82/86 LPW, CRI 80, 1 driver at 100mA
- PC version 120V-277V

LISTINGS

- Listed to UL 1598 for use in wet locations
- Some LED models meet DesignLights Consortium (DLC) qualifications, consult DLC website for more details: <http://www.designlights.org/QL>

WARRANTY

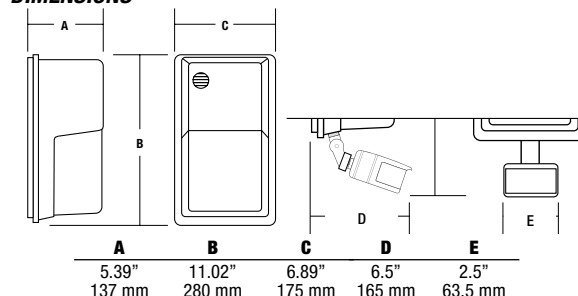
For more information visit:
<http://www.hubbelllighting.com/resources/warranty/>

PRODUCT IMAGE(S)



NRG-304B-MS NRG-356LU-5K-BZ

DIMENSIONS



SHIPPING INFORMATION

Catalog Number	G.W(kg)/CTN	Carton Dimensions			Carton Qty. per Master Pack
		Length Inch (cm)	Width Inch (cm)	Height Inch (cm)	
NRG356LU5KBZ	5.33 (2.42)	11.8 (30)	7.4 (19)	6.1 (15.5)	1
NRG356LU5KBZPC	5.40 (2.45)	11.8 (30)	7.4 (19)	6.1 (15.5)	1

CERTIFICATIONS/LISTINGS



ORDERING INFORMATION

Catalog Number ¹		Wattage	Voltage	Max Input Amps	Color	Weight lbs. (kg)
Without Photocontrol	With Photocontrol					
High Pressure Sodium						
–	NRG-301B-PC ^{2,3}	50w	120V	1.2	Bronze	5 (2.3)
NRG-307B	NRG-307B-PC ^{2,3}	70w	120V	1.6	Bronze	5 (2.3)
Pulse Start Metal Halide						
–	NRG-350B-PC ^{2,3}	50w	120V	1.1	Bronze	6.5 (2.9)
Electronic Fluorescent ⁴						
–	NRG-306B-PC ²	26w	120-277V (-PC120)	.2	Bronze	4.2 (1.9)
NRG-304B	NRG-304B-PC ²	42w	120-277V (-PC120)	.3	Bronze	4.2 (1.9)
Motion Controlled Electronic Fluorescent ⁴						
–	NRG-304B-MS ⁵	42w	120V	.3	Bronze	6 (2.7)
56 LED – 1513/1532 lumens – 4000K/5000K – 80 CRI						
NRG-356L-4K-U ⁶	NRG-356L-4K-U-PC ⁶	17.7w	120-277V	.15	Bronze	6 (2.7)
NRG-356L-5K-U ⁶	NRG-356L-5K-U-PC ⁶	17.7w	120-277V	.15	Bronze	6 (2.7)

¹ Lamp included

² 120V only when ordered with photocontrol

³ 120V NPF ballast for HID

⁴ CFL lamps are 4-Pin, 3500K, GX24q-4

⁵ Motion sensor has 180° detection range, adjustable time-on and sensitivity settings

⁶ LED units feature five year limited warranty

ACCESSORIES - ORDER SEPARATELY

Catalog Number	Description
PBT-1	Button photocontrol, 120V
PBT-234	Button photocontrol, 208, 240, 277V

REPLACEMENT PART - ORDER SEPARATELY

Catalog Number	Description
SM352-COVER	Polycarbonate front cover, Bronze



Hubbell Outdoor Lighting • 701 Millennium Boulevard • Greenville, SC 29607 • Phone: 864-678-1000

Due to our continued efforts to improve our products, product specifications are subject to change without notice.

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NRG300X-SPEC 6/16



SPECIFICATIONS

ROCKY MOUNTAIN BUILDING STYLE

1.0 SCOPE

This specification covers the construction and placing of precast Rocky Mountain toilet buildings as produced by CXT Incorporated.

2.0 SPECIFICATIONS

ASTM C33	Concrete Aggregates
ASTM C39	Method of Test for Compressive Strength of Cylindrical Concrete Specimens
ASTM C94	Standard Specification for Ready-Mixed Concrete
ASTM C143	Method of Test for Slump of Concrete
ASTM C150	Standard Specification for Portland Cement
ASTM C172	Standard Practice for Sampling Freshly Mixed Concrete
ASTM A185	Standard Specification for Steel Welded Wire Reinforcement, Plain, or Concrete
ASTM C192	Method of Making and Curing Test Specimens in the Laboratory
ASTM C231	Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method
ASTM C309	Standard Specifications for Liquid Membrane-Forming Compounds for Curing Concrete
ASTM C494	Standard Specification for Chemical Admixtures for Concrete
ASTM A615	Standard Specification for Deformed and Plain Carbon-Steel bars for Concrete Reinforcement
ASTM C618	Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete
ASTM C979	Standard Specification for Pigments for Integrally Colored Concrete
ASTM D1557	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort
ACI 211.1	Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete
ACI 306	Cold Weather Concreting
ACI 318	Building Code Requirements Structural Concrete and Commentary (includes Errata)
PCI MNL 116	Quality Control for Plants and Production of Precast Prestressed Concrete Products

3.0 MANUFACTURER CRITERIA

The manufacturer supplying the requested precast concrete vault facility must meet the following:

- A. Manufacturer must be ISO 9001 certified at the time of bid.
- B. Manufacturing plant must be PCI certified at the time of bid.
- C. Manufacturer must not have defaulted on any contract within the last five (5) years.
- D. Manufacturer must provide stamped, engineered drawings prior to acceptance.
- E. Manufacturer must be pre-approved prior to bidding.

- F. Manufacturer must show four (4) examples of Sweet Smelling Technology designed precast concrete vault toilet facilities produced, installed, and in use as an example of their ability to perform on this contract.
- G. Manufacture shall provide a twenty (20) year warranty.
- H. UL 752 Bullet Resistance on 4" thick concrete samples.

Manufacturer meeting these criteria is:

CXT, Incorporated
Spokane Industrial Park
3808 North Sullivan Road, Building 7
Spokane, WA 99216
Phone 800-696-5766

4.0 DESIGN CRITERIA

Vault buildings have been designed to individually meet the following criteria. Calculations and engineer's stamped drawings are available, for standard buildings, upon request by the customer and are for their sole and specific use only. The design criteria are to ensure that they not only will withstand the forces of nature listed below but will provide protection from vandalism and other unforeseen hazards. Building will be manufactured using precast concrete including the roof. Building's structural and foundation design will be relevant to the region and properties associated with its final placement. Design will also meet all applicable accessibility and building code requirements. Vault buildings also to meet various structural loads such as below, but not limited to/or restricted by them.

- A. Roof Snow Load
 - 1. Vault buildings are designed to withstand a 350 pounds per square foot snow load.
- B. Floor Load
 - 1. Vault buildings are designed to withstand 400 pounds per square foot floor load.
- C. Wind Load
 - 1. Vault buildings will withstand the effects of 150 miles per hour (3-second gust) wind exposure C.
- D. Earthquake
 - 1. Vault buildings will withstand the effects of a seismic design category E earthquake.
- E. Additional Design Standards
 - 1. Vault buildings incorporate all design aspects of Sweet Smelling Technology as outlined by Briar Cook for the U.S. Forest Service.
 - 2. Single vault buildings are an all concrete design with a minimum 7/12 roof pitch.
 - 3. Vault buildings shall have a minimum 4" wall, 4½" roof, and 5" floor thickness.
 - 4. All wall to floor interior surface seams shall have a minimum 1" radius coving made of high strength grout.
 - 5. Vault buildings have a one-piece floor unit to prevent panels that migrate in different directions during periods of freeze/thaw stress.
 - 6. Vault buildings have a one-piece full length and width vault unit to support the building, screen area, and snow loads evenly.

5.0 MATERIALS

A. Concrete – General

1. The concrete mix design is designed to ACI 211.1 to produce concrete of good workability.
2. Concrete will contain a minimum of 675 pounds of cementitious material per yard. Cement is a low alkali type I/II or III conforming to ASTM C-150.
3. Coarse aggregates used in the concrete mix design will conform to ASTM C33 with the designated size of coarse aggregate #67.
4. Maximum water/cement ratio will not exceed .45.
5. Air-entraining admixtures will conform to ASTM C260. Water reducing admixtures will conform to ASTM C494, Type A.
6. If Self Compacting Concrete (SCC) is used, it must conform to ASTM C1611.

B. Concrete – Colored

1. Color additives will conform to ASTM C979. A 12" x 12" x 1" color sample is available for customer approval.
2. The following will contain colored concrete:
 - a. Toilet building roof panels.
 - b. Building walls.
 - c. Screen panels.
3. The same brand and type of color additive are used throughout the manufacturing process.
4. All ingredients are weighed and the mixing operation are adequate to ensure uniform dispersion of the color.

C. Concrete – Cold Weather

1. Cold weather concrete placement is in accordance with ACI 306.
2. Concrete will not be placed if ambient temperature is expected to be below 35°F during the curing period unless heat is readily available to maintain the temperature of the concrete at least 50°F.
3. Materials containing frost or lumps of frozen materials will not be used.

D. Concrete – Hot Weather

1. The temperature of the concrete will not exceed 90°F at the time of placement. When the ambient reaches 90°F the concrete is protected with moist covering.

E. Concrete Reinforcement

1. All reinforcing steel will conform to ASTM A615. All welded wire fabric will conform to ASTM A185.
2. All reinforcement is new, free of dirt, oil, paint, grease, loose mill scale and loose or thick rust when placed.
3. Details not shown on drawings or specified are to ACI318.
4. Steel reinforcement is centered in the cross-sectional area of the walls and will have at least 1¼" of cover on the under surface of the floor.
5. The maximum allowable variation for center-center spacing of reinforcing steel is ½".

6. Full lengths of reinforcing steel are used when possible. When splices are necessary on long runs, splices are alternated from opposite sides of the components for adjacent steel bars.
 - a. Lap bars under #4 a minimum of 12" bar diameters.
 - b. Lap bars larger than #4 a minimum of 24" bar diameters.
 7. Reinforcing bars are bent cold. No bars partially embedded in concrete are field bent unless approved by the customer.
- F. Caulking, Grout, Adhesive and Sealer
1. Caulking service temperatures from -40°F to +194°F.
 2. Interior and exterior joints are caulked with a paintable polyurethane sealant.
 3. Grout is a non-shrink type and are painted to match the color of surrounding concrete as nearly as possible.
 4. Cement base coating is formulated with a very fine aggregate system and is a built-in bonding agent.
- G. Dead Bolt
1. Certified ANSI/BHMA A156.5-2001 Grade 1.
 2. Heavy duty tamper resistant.
 3. 2¾" backset.
 4. U.S. 26D finish.
- H. Doors – Steel
1. Doors are flush panel type 1¾" thick, minimum 16-gauge galvanized steel, top painted with DTM ALKYD.
 2. Door frames are knockdown or welded type, single rabbet, minimum 16-gauge prime coated steel top painted with DTM ALKYD, width to suit wall thickness.
 3. Three (3) rubber door silencers are provided on latch side of frame.
- I. Door Hinges
1. Three (3) per door with dull chrome plating 4½" x 4½", adjustable tension, and automatic closing for each door.
- J. Doorstop
1. Dome style stop meeting ANSI 156.16.
- K. Door Sweep
1. Provided at the bottom of door with an adjustable brush.
- L. Double Coat Hook
1. 16-gauge (1.5mm), type 304 stainless steel.
 2. Formed construction with a satin finish and have ¾" x 7/8" nail in anchor.
 3. Upper hook extends at least 2½" from the wall.
 4. Lower hook will extend at least 1¼" from the wall.

M. Grab Bars

1. 18-gauge, type 304 stainless steel with 1½" clearance.
2. Able to withstand 300-pound top loading.

N. Lockset

1. Meets ANSI A156.2 Series 4000, Grade 1 cylindrical lockset for exterior door.
2. Lever handle both inside and out.
3. Either handle operates latch unless outside handle is locked by inside push-button.
4. Push-button will automatically release when inside lever handle is turned or door is closed.
5. Emergency slot on exterior so door can be unlocked from the outside with a coin, screwdriver, etc.
6. Inside lever always active.
7. U.S. 26D finish.

O. Paint

1. All paints and materials will conform to all federal specifications or be similar "top-of-the-line-components."
2. Paints will not contain more than .06% by weight of lead.
3. Type of paints for toilets.
 - a. Inside concrete surfaces.
 - i. Interior floors – chemical resistant urethane. The color is gray.
 - ii. Interior walls and ceilings – modified acrylic, water repellent penetrating stain. The color is white followed by a clear acrylic anti-graffiti sealer.
 - b. Exterior concrete surfaces.
 - i. Exterior slab – clear sealer.
 - ii. Exterior walls and roof – water repellent penetrating stain in the same color as the walls or roof followed by a clear acrylic anti-graffiti sealer.
 - c. Metal surfaces (both inside and out).
 - i. DTM ALKYD.

P. Riser

1. Meets ADA standards.
2. Molded one-piece HDPE polyethylene.
3. Smooth surface and have high impact resistance at extremely cold temperatures.

Q. Sealers and Curing Compounds

1. Curing compounds, if used, are colorless, complying with ASTM C309, type I or 1-D.
2. Weatherproofing sealer for exterior of building are a clear water repellent penetrating sealer.

R. Signs

1. Signs to have raised pictograms, letters, and braille to meet ADA.
2. Interior to have "No Trash in Vault" sign.

3. All signs inset a minimum of $\frac{3}{4}$ " into wall with 45-degree bevel.
 4. All signs to be anchored into concrete with $\frac{1}{4}$ " x $\frac{3}{4}$ " concrete anchor nails.
- S. Toilet Paper Dispenser
1. Constructed of $\frac{1}{4}$ " thick, type 304 stainless steel.
 2. Holds three (3) standard rolls of toilet paper.
 3. Fastening system able to withstand 300-pound top loading.
- T. Vault Liner
1. Made of a Roto molded 8460 polyethylene.
 2. Holds up to 1,000 gallons of waste or 15,000 uses per vault.
 3. Minimum thickness .100.
 4. Molded dovetail embeds to attach the liner to concrete walls of the vault.
 5. Welded (2) C-channels to attach the liner to the bottom of the vault.
- U. Vent Stack
1. Minimum 12" in diameter and a minimum 3' higher than the roof peak.
- V. Wall Vent
1. Vent cover is 14-gauge, type 304 stainless steel painted with DTM and anchored into the concrete wall with high strength anti-rust tap con fasteners.
 2. Vent louver frame and louvers are non-vision, .1" extruded, aluminum jet coat finish.
 3. Vent comes with insect screen.
 4. Cover to be recessed a minimum $\frac{3}{4}$ " on exterior walls with a 45-degree bevel. Interior to be flush mounted. Wall vent will not protrude from the wall.
- W. Windows and Vault Cleanout Cover
1. Windows and cleanout cover frames are constructed from steel.
 2. Window glazing is $\frac{3}{16}$ " thick translucent pebble finished mar-resistant Lexan.
 3. Plate for vault cleanout cover is $\frac{1}{4}$ " thick diamond plate steel.
 4. Lid is hinged and configured so that it can be locked with a padlock. A gasket is provided around the entire perimeter of the lid to provide an airtight seal.
 5. Windows to have $\frac{3}{4}$ " recess with 45-degree bevel.
 6. Windows frames to have vandal resistant fasteners.
 7. Window to be constructed of a minimum 4 x4 x $\frac{1}{4}$ square tube.
- X. Optional Roof Insulation
1. Ceiling anchored $\frac{1}{2}$ " plywood + fiberglass laminate + 2" polyurethane foam. Approximately R-19.

6.0 MANUFACTURE

- A. Mixing and Delivery of Concrete
1. Mixing and delivery of concrete are in accordance with ASTM C94, section 12.6 through 12.9.

- B. Placing and consolidating concrete.
 - 1. Except for SCC, concrete is consolidated by the use of mechanical vibrators. Vibration are sufficient to accomplish compaction but not to the point that segregation occurs.
- C. Finishing Concrete
 - 1. Interior floor and exterior slabs are floated and troweled.
 - 2. All exterior building walls and exterior screen walls are any one of the available textures.
 - 3. All exterior surfaces of the roof panels are cast to simulate any one of the available textures. The underside of the overhang will have a smooth finish.
- D. Cracks and Patching
 - 1. Cracks in concrete components which are judged to affect the structural integrity of the building are rejected.
 - 2. Small holes, depressions, and air voids are patched with a suitable material. The patch will match the finish and texture of the surrounding surface.
 - 3. Patching will not be allowed on defective areas if the structural integrity of the building is affected.
- E. Curing and Hardening Concrete
 - 1. Concrete surfaces will not be allowed to dry out from exposure to hot, dry weather during initial curing period.

7.0 FINISHING AND FABRICATION

- A. Structural Joints
 - 1. Wall components are joined together with two (2) welded plate pairs at each joint.
 - 2. Each weld plate is 6" long and located one (1) pair in the top quarter and one (1) pair in the bottom quarter of the seam.
 - 3. Weld plates are anchored into the concrete panel and welded together with a continuous weld.
 - 4. Inside seams are a paintable caulk.
 - 5. Outside seams will use a caulk in a coordinating building color or clear.
 - 6. Walls and roof are joined with weld plates, 3" x 6" at each building corner.
 - 7. The joint between the floor slab and walls are joined with a grout mixture on the inside, a matching colored caulk on the outside and two (2) weld plates 6" long per wall.
- B. Painting/Staining
 - 1. An appropriate curing time is allowed before paint is applied to concrete.
 - 2. Some applications may require acid etching. A 30% solution of hydrochloric acid are used, flushed with water, and allowed to thoroughly air dry.
 - 3. Painting will not be done outside in cold, frosty, or damp weather.
 - 4. Painting will not be done outside in winter unless the temperature is 50°F or higher.
 - 5. Painting will not be done in dusty areas.
 - 6. All surface voids are filled prior to painting

7. Schedule of finishes.
 - a. Inside concrete surfaces.
 - i. Inside floors – one (1) coat of 1-part water based chemical resistant urethane.
 - ii. Interior walls and ceilings – two (2) coats of a modified acrylic, water repellent penetrating stain, followed by one (1) coat of clear sealer.
 - b. Exterior concrete surfaces.
 - i. Exterior walls – two (2) coats of water repellent penetrating stain in the same color as the walls or roof followed by one (1) coat of clear acrylic anti-graffiti sealer.
 - c. Metal surfaces (both inside and out).
 - i. Two (2) coats of DTM ALKYD.

8.0 TESTING

- A. Testing will only be performed by qualified individuals who have been certified ACI Technician Grade 1.
- B. Sampling is in accordance with ASTM C172.
- C. The following tests are performed on concrete used in the manufacture of toilets. All testing is performed in the CXT (PCI certified) laboratories.
 1. Air content – checked per ASTM C231 on the first batch of concrete. The air content is in the range of 5.0% +/- 1.5%.
 2. Compressive strength of the cylinders – tested to ASTM C39.
 - a. Two (2) are tested at release (minimum strength of 2500 psi).
 - b. One (1) is tested at seven (7) days (minimum strength of 4500 psi).
 - c. Two (2) are tested at 28 days (minimum strength of 5000 psi).
- D. A copy of all test reports are available to the customer as soon as 28-day test results are available.

9.0 INSTALLATION

- A. Scope of Work
 1. Work specified under this section includes excavation, backfill and placement of precast concrete vault toilet.
- B. Materials
 1. Bedding material to be sand or 3/8" minus crushed or screened aggregate.
 2. Caulking between vault and toilet floor to be 1" x 1" Butyl tape designed specifically to bond precast concrete to precast concrete.
- C. Location – It is the responsibility of the customer to:
 1. Provide exact location by stakes or other approved method.
 2. Provide clear and level site free of overhead and/or underground obstructions.
 3. Provide access to the site for truck delivery and sufficient area for the crane to install and the equipment to perform the contract requirements.

D. Access to Site

1. Delivery to site made on normal highway trucks and trailers.
2. If, at the time of delivery, conditions of access are hazardous or unsuitable for truck and equipment due to weather, physical constraints, roadway width or grade, CXT may require an alternate site with better access provided to ensure a safe and quality installation.

E. Excavation and Elevation

1. Comply with all applicable OSHA standards for excavation.
2. Excavate for the installation of the toilet vault to a depth that will allow the structure site to be free draining after installation is completed. Allow for a 2" leveling course beneath the toilet vault. Stockpile topsoil in a separate pile at sites.
3. Finish floor elevation is 4-6" above natural grade measured at the front (entrance) of the exterior slab unless otherwise approved by the customer. Ideally, the back of the building should be slightly higher to allow water to freely drain out of the toilet rooms. The customer may specify a finish floor elevation for buildings at some sites. The contractor will install buildings at these sites with the floor elevation within a plus or minus 0.05' of the specified floor elevation.
4. No excavation is to be left open more than seven (7) days unless otherwise approved by the customer.
5. All excavations left open overnight are fenced with wire mesh or plastic mesh fence secured to steel posts all around the excavation.
 - a. The bottom of the fence will generally follow the contour of the ground.
 - b. Maximum spacing of the steel posts is 10'.
 - c. Minimum height of the fence is 36".

F. Backfill and Compaction

1. Compact the natural ground at the bottom of the vault excavation with a minimum of three (3) passes with a whacker-type mechanical compactor or equivalent approved by the customer.
2. Install sand or aggregate bedding material for leveling course if needed. Compact leveling course with one (1) pass with a whacker-type mechanical tamper or equivalent approved by the customer. Grade leveling course so there are no high spots in the middle of the vault bottom. Compact with a second pass with a whacker or approved equivalent tamper.
3. Set vault in place and check for level or appropriate scope. Backfill around structure. Use excavated material for backfill except those rocks larger than 6" in maximum dimension shall not be placed within 6" of the exterior vault walls.
4. Fill, adjacent to the building entry, will have excavated material placed in 8" loose lifts and compacted with a minimum of two (2) passes with a whacker-type mechanical compactor or equivalent approved by the customer.

G. Finish Grading

1. Spread excess excavated material from the vault around structure. Intended final grade is flush with the top of the front slab. Allow for placement of topsoil to reach that grade. Grade backfill away from structure at maximum slope of 5% unless otherwise approved by the customer.

2. Spread stockpiled topsoil as final layer after rough grading is completed. Areas disturbed by excavation, backfilling and stockpiling of excavated materials are hand raked to remove exposed rocks over 1" in maximum dimension.
3. Oversized rocks removed from the surface shall be disposed of in a designated area within 200' of the site.

H. Exhaust Pipe Installation

1. After exhaust pipe is installed, seal around pipe at top and underside of roof with polyurethane caulk. Seal around pipe at top of slab are accomplished by using polyurethane caulk.

10.0 WARRANTY—PRECAST DIVISION

CXT provides a warranty against defects in material or workmanship for a period of twenty (20) years on all concrete components. The warranty is valid only when concrete is used within the specified loadings. Furthermore, said warranty includes only the related material necessary for the construction and fabrication of said concrete components. All other non-concrete components will carry a one (1) year warranty. CXT warrants that all goods sold pursuant hereto will, when delivered, conform to specifications set forth above. Goods shall be deemed accepted and meeting specifications unless notice identifying the nature of any non-conformity is provided to CXT in writing within the specified warranty. CXT, at its option, will repair or replace the goods or issue credit for the customer provided CXT is first given the opportunity to inspect such goods. It is specifically understood that CXT's obligation hereunder is for credit, repair, or replacement only, F.O.B. CXT's manufacturing plants, and does not include shipping, handling, installation or other incidental or consequential costs unless otherwise agreed to in writing by CXT.

This warranty shall not apply to:

1. Any goods which have been repaired or altered without CXT's express written consent, in such a way as in the reasonable judgment of CXT, to adversely affect the stability or reliability thereof;
2. To any goods which have been subject to misuse, negligence, acts of God or accidents; or
3. To any goods which have not been installed to manufacturer's specifications and guidelines, improperly maintained, or used outside of the specifications for which such goods were designed.

11.0 DISCLAIMER OF OTHER WARRANTIES

The warranty set forth above is in lieu of all other warranties, express or implied. All other warranties are hereby disclaimed. CXT makes no other warranty, express or implied, including, without limitation, no warranty of merchantability of fitness for a particular purpose or use.

12.0 LIMITATION OF REMEDIES

In the event of any breach of any obligation hereunder, breach of any warranty regarding the goods or any negligent act or omission or any party, the parties shall otherwise have all rights and remedies available at law; however, IN NO EVENT SHALL CXT BE SUBJECT TO OR LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES.

1600 SE 190th Avenue, Portland OR 97233-5910 • PH. (503) 988-3043 • Fax (503) 988-3389

PRE-APPLICATION CONFERENCE NOTES

This is not a public hearing, it is an informational meeting.

Case File No.: PA-2017-7041 / EP-2017-6780

MEETING TIME AND PLACE

March 30, 2017 at 2 p.m.

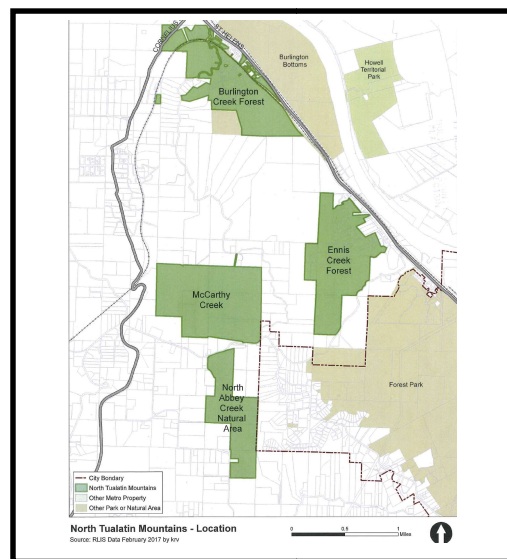
Board Room 100, 501 SE Hawthorne Blvd., Portland, OR

PROPOSAL: A Pre-Application meeting is to be held on the date above to discuss the applicable Multnomah County Land Use Code and County Transportation requirements and application for a Quasi-Judicial Revision to the Comprehensive Plan to adopt Metro's North Tualatin Mountains Access Master Plan – And for some or all of the following permits to develop park related parking, trails, restrooms and related amenities: Conditional Use, Community Service Use, Design Review, Significant Environmental Concern, Hillside Development, Protected Aggregate and Mineral Sites, and Grading & Erosion Control, Flood Development Permit, Lot of Record, Address Assignment, and Forest Development Standards.

LOCATION: North Tualatin Mountains, west of Forest Park, east of Cornelius Pass, south of U.S. Hwy 30 and north of Washington County. A complete list of the properties is included in this notice.

APPLICANT: Metro Parks and Nature
600 NE Grand Avenue
Portland, OR 97232

BASE ZONE: Commercial Forest Use – 1 (CFU-1),
Commercial Forest Use – 2 (CFU-2),
and Exclusive Farm Use.



CONTACT: The applicable County Code provisions, Comprehensive Plan Policies and County Transportation requirements will be discussed at the Pre-Application Meeting. For further information regarding the meeting, contact Kevin Cook, Senior Planner at Multnomah County's Land Use Planning Division at (503)-988-0188 or email: kevin.c.cook@multco.us
The notes from this meeting can be obtained by attending the meeting or by contacting Multnomah County after March 30, 2017.

The following is for informational purposes only. No approvals or conclusions have been drawn about this project. Until such time as the necessary Applications are submitted and reviewed, no decisions will be or have been made regarding the project's compliance with the land use regulations of Multnomah County.

Outline of the Pre-Application Meeting's Purpose and Process

I. Meeting Purpose:

- (A) The Pre-Application meeting is to provide information to an applicant for a land use action or plan amendment that will assist them in completing the application.
- (B) The objectives of the meeting are to clarify the proposal, inform the applicant of the applicable procedures and approval criteria, and to identify all known issues.
- (C) A Pre-Application meeting is a standard requirement for all applications that require a public hearing.

II. Meeting Structure:

- (A) This is not a public hearing and no decisions will be made. The meeting is meant to be informal in nature.
- (B) The Multnomah County planning staff will be responsible for conducting the meeting. Staff will begin the meeting by asking for introductions of those in attendance.
- (C) The applicant will be responsible for explaining their proposal. This explanation is especially helpful to the public who have not seen the application materials and is an opportunity to share relevant information with their neighbors.
- (D) Planning staff will be responsible for reviewing the applicable procedures and approval criteria and to identify all known issues.
- (E) Members of the public and other agency representatives will be provided the opportunity to ask questions about the proposal and will be asked to identify any relevant issues.

III. Other Opportunities for Review:

- (A) If you are interested in the proposal and are unable to attend the Pre-Application meeting, you may review the Pre-Application case file at the offices of Multnomah County Land Use Planning, located at 1600 SE 190th Avenue, Portland, between 8:00 a.m. and 4:00 p.m., Tuesday through Friday, except holidays.
- (B) After the Pre-Application meeting, and after the application has been deemed “complete” by responding to each approval criteria, a notice announcing the date,

time, and place of the public notice will be sent. Failure to participate at the Pre-Application meeting will not preclude your involvement at the first scheduled hearing on the completed application.

MEETING PURPOSE

This Pre-Application meeting and the following notes are provided to assist the applicant in preparing a land use application. Our objectives for the meeting are to clarify the proposal, to inform you of the applicable procedures and approval criteria, and to identify all known issues.

Notwithstanding any representations by County staff at a Pre-Application meeting, staff is not authorized to waive any requirements of Multnomah County Code (MCC). Any omission or failure by staff to recite to an applicant all relevant applicable land use requirements shall not constitute a waiver by the County of any standard or requirement. [MCC 37.0570(C)]

After the meeting, if you have any questions regarding the criteria, the process or the next steps, please contact the case planner, Kevin Cook at 503.988.0188.

PERMITS

Note 1: Certain components of future development may be exempt from one or more of the following permits.

Note 2: Additional permits may be required.

Permit	Description
Comprehensive Plan Amendment Type IV	A Comprehensive Plan Amendment and/or zone change application involves specific parcels or tracts. These applications involve substantial discretion and evaluation of subjective approval criteria district. The Planning Commission shall render the initial decision on all Type IV permit applications. If the Planning Commission recommends approval of the application, that recommendation is forwarded to the Board of County Commissioners. The Board's decision is the county's final decision on a Type IV application and is appealable to the Oregon Land Use Board of Appeals (LUBA).
Permit	Description
Community Service & Conditional Use	The purpose of the Community Service and Conditional Use provides for the review and approval of the location and development of special uses which, by reason of their public convenience, necessity, unusual character, or effect on the neighborhood, may be appropriate as specified in each district.
Permit	Description
Design Review	The purpose of a Design Review is to ensure site development occurs in a manner that is functional, safe, innovative, attractive and compatible with the natural and man-made environment. When evaluating Design Review applications, the County considers such things as vehicle circulation, needs of the handicapped, preservation of natural vegetation, drainage, buffering and screening of storage areas, utilities, and signage. You will need to provide a detailed site plan and building elevations with this type of application, along with narrative explaining how the criteria have been met.

Permit	Description
Significant Environmental Concern for Wildlife Habitat	The purpose of the Significant Environmental Concern for Wildlife Habitat overlay is to preserve corridors for wildlife movement and to protect natural areas in the greater Forest Park area. This is achieved through the application of fixed standards that seek to cluster development, direct it to cleared areas, and require it occur close to public roads. Certain types of fencing that obstruct wildlife movement are prohibited along road rights-of-way, and specific “nuisance plants” cannot be planted and must be removed from cleared areas. A Wildlife Conservation Plan can be submitted as an alternative to the fixed standards for properties that cannot meet them or in circumstances where the owner can demonstrate that alternative measures will better protect the resource. You will need to satisfy one of these approaches.

Permit	Description
Significant Environmental Concern for Streams	The purposes of the Significant Environmental Concern for Stream Permit is to protect, conserve, enhance, restore, and maintain streams which are of public value and to establish conditions and standards for the development to achieve these goals. Significant stream corridors are mapped. If you develop within the corridor you will need to prepare a mitigation plan and will be subject to design standards that restrict crossings to bridges or arched culverts, limit lighting and stormwater discharges, and require the replanting of trees that are removed.

Permit	Description
Significant Environmental Concern for Scenic Views (SEC-v)	The purpose of the Significant Environmental Concern Overlay for Scenic Views is to maintain a natural vista along the east side of the Tualatin Mountains as seen from Highway 30, Sauvie Island, Multnomah Channel, and the Willamette River. Detailed site plan and building elevations are required for this type of application, and the County will be looking at specific design details such as the location, orientation, color and materials of structures to ensure that they blend with the surrounding natural landscape.

Permit	Description
Hillside Development Permit	The purpose of Hillside Development Permit is to assure the building site is safe and stable, minimize grading (excavation) to the amount necessary for the proposed development, prevent erosion, control stormwater discharges and prevent damage to properties and streams from earth movements, erosion or stormwater runoff. At a minimum, you will need to hire a Certified Engineering Geologist or Geotechnical engineer to evaluate the property and confirm that the building site will be safe and stable. A site plan and narrative is needed explaining how the approval criteria have been met and, if adding more than 500 square feet of impervious surfaces, you will need to hire an engineer to evaluate how the stormwater will be managed.

Permit	Description
Protected Aggregate And Mineral Sites - PAM	<p>The purposes of the Protected Aggregate and Mineral Resources Overlay Subdistrict are:</p> <p>(A) To provide a mechanism to identify and, where appropriate, protect significant aggregate and mineral resource sites;</p> <p>(B) To allow surface mining subject to uniform operating standards; and</p> <p>(C) To regulate conflicts with surface mining activities.</p>

Permit	Description
Grading and Erosion Control	<p>The purpose of the Grading and Erosion Control Permit is to minimize grading (excavation/fill) to the amount necessary for the proposed development, prevent erosion, control stormwater discharges and prevent damage to properties and streams from erosion or stormwater runoff. You will need to provide a site plan showing where erosion control measures will be placed and, if adding more than 500 square feet of impervious surfaces, you will need to hire an engineer to evaluate how the stormwater will be managed.</p>

Permit	Description
Floodplain Development Permit	<p>The purpose of the flood hazard overlay is to minimize public and private losses due to flood conditions in specific areas and to allow property owners to participate in the National Flood Insurance Program. You will need to provide a completed FEMA floodproofing or elevation certificate, as appropriate to the project. An engineer or architect can complete the floodproofing certificate. You will need to hire a surveyor to complete an elevation certificate. A site plan and building plans are also required, and there are specific construction standards for building in the floodplain. A \$1000 fee deposit for an as-built survey is required for elevation certificates that are based on construction drawings. If you do not believe that your property is within the floodplain you have the option of submitting a survey to establish that is the case.</p>

Permit	Description
Forest Development Standards Review	<p>The purpose of the Forest Development Standards Review is to ensure that the Forest Practice Act Setbacks are satisfied as well as the primary and secondary fire safety zones required of the CFU zoning district. Additionally, staff must review development in the CFU zones for compliance with the development standards found in each CFU zone. The review ensures that the minimum amount of forest land is used for a new structure or dwelling and that the access corridor is minimized. The standards will pull development towards an existing dwelling on the property or closer to the public road. You will need to provide a detailed site plan with this type of application along with narrative explaining how the criteria and/or standards have been met.</p>

Permit	Description
Lot of Record	A Lot of Record is a piece of property that conformed to all zoning and land division laws when placed into its current configuration. The Multnomah County zoning code requires a property to be a Lot of Record in order for building or land use permits to be issued or approved (MCC 37.0560). You will need to provide deeds or sales contracts that were either recorded or in recordable form, dating back to when the property was created. The County will then compare those documents to the rules in effect at that time to confirm if the property is a Lot of Record and thus eligible for development.

GENERAL PROCESS

Note 3: Some permits may be reviewed separately, some permits may be reviewed concurrently, and some permits may be contingent on approval of a higher order permit.

- A. **Type IV** Comprehensive Plan Amendment. To incorporate the Metro Parks Master Plan in to County Comprehensive Plan requires a hearing by the Planning Commission followed by a hearing by the Board of County Commissioners.
- B. **Type III** Conditional Use and Community Service Use Permits. Review of certain park related uses requires a land use hearing by a County Hearings Officer.
- C. **Type II** permits, including Design Review, Significant Environmental Concern permits, Hillside Development, and Lot of Record may be included as part of the Conditional Use and Community Service reviews or may be reviewed separately depending on the scope of the particular review. Type II reviews that are reviewed concurrently with a Conditional Use or Community Service are considered at a hearing by a County Hearings Officer. Type II permits that are reviewed independently of a Conditional Use or Community Service are reviewed by the Planning Director.
- D. **Type I** permits are technical reviews for permits such as Grading and Erosion Control or Flood Development. Type I permits are issued by the Planning Director and are subject to allowed or approved uses on property.

SUMMARY OF APPLICABLE PERMITS, CODES, POLICIES & FEES

These Multnomah County Code (MCC) sections (provided at meeting) can be found under the link titled *West Hills Rural Plan Area* on our webpage at: web.multco.us/landuse

Permits	Code Sections	Fees
<i>Type IV</i>		
Comprehensive Plan Amendment	37.0705 [approval criteria]. Applicable Comprehensive Plan Policies including those applicable policies found in Chapters 1, 3, 4, 5, and 8. Relevant State Goals, Statutes and Rules including Goals 1, 3, 4, 5, and 8.	\$3,204 Deposit
<i>Type III</i>		
Conditional Use	33.2030(A)(9)(b) [Conditional Uses in CFU-1],	\$2,601

	33.2230(A)(9)(b) [Conditional Uses in CFU-2], 33.2630(C) [Conditional Uses in EFU], 33.6300 – 33.6350 [Conditional Uses criteria].	
Community Service	33.6000 – 33.6020 [Standards for Community Services].	\$2,601
<i>Type II</i>		
Design Review	33.7000 – 33.7060	\$1,238
Forest Development Standards	33.2000 – 33.2110 [CFU-1], 33.2200 – 33.2310 [CFU-2].	\$379
Significant Environmental Concern	33.4500 – 33.4575	\$1,240
Hillside Development	33.5500 – 33.5525	\$969
Protected Aggregate and Mineral Sites	33.5700 – 33.5745	\$1,457 or \$2,601 (processed as either an administrative decision by the Planning Director or as a Type III review).
Lot of Record	33.0005 [Definitions], 33.2075 [Lot of Record – CFU-1], 33.2275 [Lot of Record – CFU-2], 33.2675 [Lot of Record – EFU].	\$1,088 and/or \$144 per hour research fee
<i>Type I</i>		
Flood Development	29.600 – 29.611	\$409
Grading and Erosion Control	29.330 – 29.348	\$392
Address Assignment	37.1500 – 37.1575	\$219
<i>Other Code Standards and Procedures</i>		
	33.2600 – 33.2690 [Exclusive Farm Use], MCC Chapter 37 [Administration and Procedures].	

APPLICATION SUBMITTAL

Multnomah County Land Use Planning Office will not accept an application that is lacking fundamental components. The planner on counter duty will briefly review materials submitted using the checklist below to determine if the fundamental components have been submitted. This cursory review is not a completeness review, which will be conducted within 30-days of application submittal. Applications must comply with both the general submittal requirements of Chapter 37, and the specific submittal requires indicated for each type of permit review. **Please**

note the following information will also be helpful in determining compliance with the approval criteria:

1. The application materials include all details about the phases of development. For instance – whether phase I will include bathrooms and parking, and whether later phases will include trail development – This will be useful in considering the overall master plan.
2. It will be useful if your application will show generally, which areas are generally considered conservation / restoration areas versus those areas that may see future trails, parking and related facilities.
3. Some of the future trails are intended to connect with regional trail systems. Staff recognizes there is uncertainty regarding specific alignments of offsite portions of future trail systems; however, it will be useful to understand how trail systems will function in the larger context of regional trail systems.

Application Checklist		Required	Included
1.	Completed Application Form: signed by the all property owners and the applicant along with the required fee(s).	X	
2.	Narrative: Written narrative providing a clear and complete description of your proposal and specifically addressing each applicable code section. List the code reference you are responding to in your narrative and your response to that criterion. Applicable criteria you must address in your narrative are previously listed in these notes. Reference in your narrative any supporting documents you are attaching (including required site map) to demonstrate how your proposal meets a particular code criterion. <input type="checkbox"/> Significant Environmental Concern for Wildlife Habitat Worksheet <input type="checkbox"/> Significant Environmental Concern for Scenic View Worksheet <input type="checkbox"/> Hillside Development Worksheet (may include HDP Form 1) <input type="checkbox"/> Commercial Forest Use Type I Worksheet	X	
3.	Scaled Site Plans: see Site Plan Checklist for items needed on the site plan	X	
4.	Certification of On-Site Sewage Disposal Form and site plan signed by the Sanitarian (green form).	X	
5.	Fire District Review Form	X	
6.	Certification of Water Service form	X	
7.	Sheriff's Office Review	X	
8.	School District Review Form		
9.	Storm Water Disposal Form: completed by a Oregon Registered Professional Engineer	X	
10	Lot of Record status: Submit copy of current deed for the properties & first deed that described the subject property in its current configuration.	X	
11.	Habitable Dwelling: Please provide recent photographs of the existing dwelling showing exterior walls and roof, indoor plumbing consisting of a kitchen sink, toilet and bathing facilities, septic tank lid, interior lights (turned on), and heating system.		
12.	Grading and Erosion Control Permit	X	
11.	Flood Development Permit – <input type="checkbox"/> One & Two Family Dwelling <input type="checkbox"/> other uses	X	
14.	Traffic Study	X	
15.	Transportation Certification Form. Please contact Jessica Berry at 503.988.3897	X	

APPLICATION COMPLETENESS

Once an application is submitted, it will be assigned to a planner. The planner has 30 days, by state law, to determine whether the application is complete. If an application is incomplete, the applicant has 180 days by state law to submit the requested additional information to make the application complete. If your application is found to be incomplete, we request that you submit the required additional information in one packet.

ADDITIONAL ASSISTANCE

Please contact Kevin Cook, Senior Planner at (503) 988-0188 with any questions. Scheduling an appointment is necessary to see your case planner. In the event your case planner is unavailable, the planner on duty can also help answer questions at 503.988.3043. Hours for the planner on duty are Tuesday – Friday, 8:00 AM – 4:00 PM, except holidays. Please note that a building permit plan check fee and erosion control inspection fee may be required at building plan signoff after the conclusion of the land use review process. These fees do not need to be paid at the time of land use application submittal.

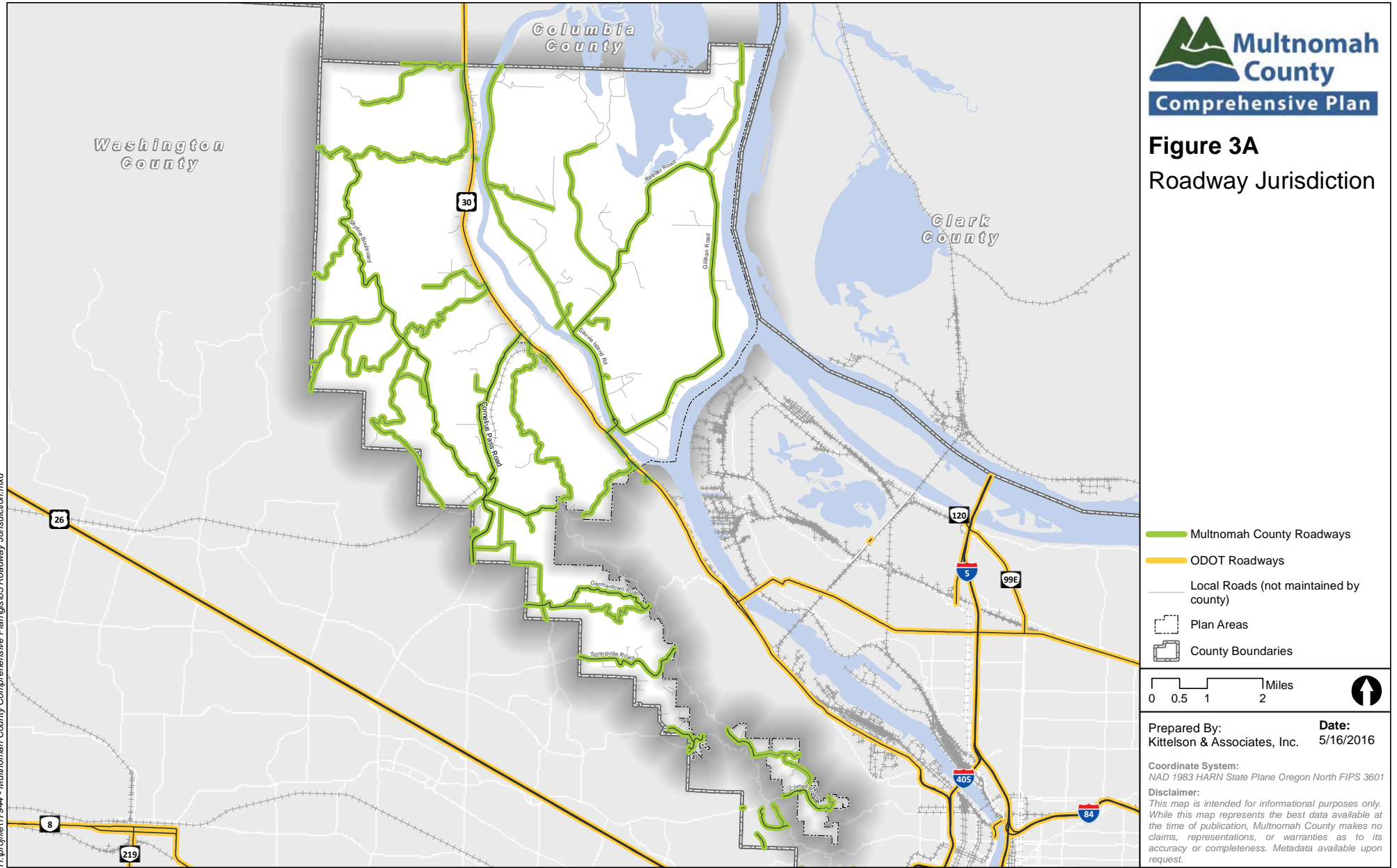
Issues Discussed at Pre-Application Meeting 3/30/2017

The following summarizes issues raised at the Pre-application meeting and are not meant to be a detailed summary or transcript:

- There is a concern that wildlife travel and migration corridors have not been fully investigated. Some believe there need to be more detailed environmental study prior to finalizing both the extent and location of proposed trails. Many local residents are eager to share their own observations and knowledge of local wildlife.
- Concerns about erosion potential associated with building, using, and maintaining trails.
- Similar to the above concern over water quality and silt (turbidity). Climate change may further contribute to run-off and turbidity concerns.
- Concerns about impacts to the local road system including more cars and bikes.
- Concerns about red-legged frog migrating through the Burlington forest unit. Is there enough area set aside to accommodate frog migration?
- Concerns that about unlawful camping.
- Concerns that parking may be undersized for the demand and may lead to unlawful overflow parking onto the right of way.
- What is the anticipated number of visitors throughout the year? What about long-term projections?

- Differing opinions regarding the number of trails as well as whether there would be conflicts between types of trail users – pedestrian, bike, equestrian etc.
- Comments about the mountain bike facilities both pro and con with respect to overall availability near the Portland metro region and concerns about conflicts among trail users.
- Concerns regarding existing unimproved rights of way that may have different impacts in the future.
- Comments that some trails could provide connectivity to regional trail systems.







Land Use Planning Division
 1600 SE 190th Ave, Ste 116
 Portland OR 97233
 Ph: 503-988-3043 Fax: 503-988-3389
 multco.us/landuse

FIRE SERVICE AGENCY REVIEW

TO THE APPLICANT: Take this form to the Structural Fire Service Provider* that serves your property along with the following:

- ☐ A site plan drawn to scale showing the subject property, its improvements, location of fire hydrants and driveway information; See Exhibit B
- ☐ A floor plan of the proposed development; and
- ☐ A fire flow report from your water purveyor (if applicable) [Not applicable for Properties served by MCRFD#14 customers]
- ☐ After the fire official signs this form, include it with your application material. See Fire Code Application Guide for fire-related access standards and fire flow information.

*If your property is not served by a structural fire service provider, your project is to be reviewed by the appropriate building official serving your property.

Address of Site Burlington Creek Forest, North Tualatin Mountains - no site address

Map & Tax Lot: See attached 'R' number R119904580

Description of Proposed Use: Trailhead with parking, vault toilet and multi-use trails

Total Square Footage of Building (including roof projections, eaves & attached structures):

Applicant Name: Metro - Gary Shepherd Phone: 503.797.1600

Mailing Address: 600 NE Grand Avenue

City: Portland State: OR Zip Code: 97232 Email: gary.shepherd@oregonmetro.gov

STRUCTURAL FIRE SERVICE AGENCY REVIEW

Fire Agency completing this form: Oregon Dept. of Forestry Date of Review 12/07/2017

- ☒ The subject property is located within our service boundaries or is under contract.
- ☐ The subject property is outside of our service boundaries and will not be providing fire protection services via contract. (Additional review is not needed.)

** Access Review by Structural Fire Service Agency Providing Service **

- ☒ The proposed development is in compliance with the fire apparatus access standards of the Oregon Fire Code standards as implemented by our agency.
- ☐ The following access improvements must be completed prior to issuance of the building permit and be re-inspected by our agency before flammable materials are placed on the property.

If the structure is built and maintained as designed, it meets all of our protection requirements. The access road and parking area are adequately sized to accomodate our firefighting apparatus.

- ☐ The proposed development is **not** in compliance with the adopted Fire Service Agency's access standards. The proposed building/structure is required to have a fire sprinkler system installed in compliance with Section 903.1.3 (NFPA 13D) of the Oregon Fire Code.

Fire Official: Please sign or stamp the presented site plan & floor plan and attach it to this form.

Eric Perkins, Protection Unit Forester

Signature & Title of Fire Official

See Other Side

STRUCTURAL FIRE SERVICE AGENCY REVIEW, cont.

** Fire Flow by Structural Fire Service Agency Providing Service **

The structure, building or addition is exempt from the fire flow standards of the OFC B-105.2.

- ☐ The proposed non-commercial structure **is less than 3,600 sq. ft.** (including the horizontal projections of the roof) and there **is** 1,000 gallons per minute of fire-flow available at 20 psi from public water lines. No mitigation measures are necessary.
- ☐ The proposed non-commercial structure **is more than 3,600 sq. ft.** (including the horizontal projections of the roof) and the fire-flow & flow duration at 20 psi is available from public water lines or private well and is in compliance with minimums specified in Appendix B, Table B105.1 of the Oregon Fire Code. No mitigation measures are necessary.
- ☐ The existing fire-flow & flow duration available from public water lines or private well is not adequate to serve the proposed non-commercial structure in compliance with Appendix B of the Oregon Fire Code. The following mitigation measures are necessary* and must be installed prior to occupancy or use of the structure.
 - ☐ A monitored fire alarm must be installed.
 - ☐ Class A or non-combustible roof materials must be installed.
 - ☐ Defensible space of 30 feet around the structure/building/addition.
 - ☐ A defensible space of 100 feet around the structure/building/addition due to slopes greater than 20 %.
 - ☐ A fire sprinkler system meeting Section 903.1.3 (NFPA 13D) of the Oregon Fire Code shall be installed.
 - ☐ Other _____

* The above required structural features are required by the Oregon Fire Code and shall be shown clearly on all building plans.

Commercial/Industrial Buildings & Uses.

- ☐ The minimum fire flow and flow duration is available from public water lines or private well as specified in Appendix B, Table B105.1. No mitigation measures are required.
- ☐ The minimum fire flow & flow duration is not available from public water lines or private well as specified in Appendix B, Table B105.1. The following mitigation measures are required:

Not applicable for design structure.

Eric Perkins, Protection Unit Forester

Signature & Title of Fire Official

To the Fire Official:

- ☐ Land Use Planning has determined that the proposed building will qualify as an Exempt Farm Structure and the property owner has indicated that the building will be used solely for farm purposes and they intend on using the provision under ORS 455.315 and will not be obtaining a building permit for its construction.

Multnomah County Land Use Planning



Land Use Planning Division
1600 SE 190th Ave, Ste 116
Portland OR 97233
Ph: 503-988-3043 Fax: 503-988-3389
multco.us/landuse

**POLICE / SHERIFF
SERVICES REVIEW**

**Take this form to the
Police/Sheriff Services that
serve the property.**

Address of Site: Burlington Creek Forest , North Tualatin Mountains -- no site address

Tax Roll Description of Property: See attached

Description of Proposed Use: Nature park with parking lot, vault toilet, and trailhead and multi-use trail system

If Residential Use, Total Number of Dwelling Units: N/A

-TO THE APPLICANT-

Approval of most land uses involving a new or expanded use, or involving the creation of a new parcel requires verification from the local police / sheriff services provider that there will be adequate police protection. Complete the applicable sections of this form and take it to the police or sheriff department serving the property. Include the completed form with your application.

Applicant Name: Metro -- Gary Shepherd Phone: 503-797-1600

Mailing Address: 600 NE Grand Avenue

City: Portland State: OR Zip Code: 97232

E:mail: gary.shepherd@oregonmetro.gov

- TO BE COMPLETED BY A LOCAL POLICE / SHERIFF OFFICIAL -

☒ The level of police/sheriff service available to serve the proposed project is ADEQUATE.

Comment (Optional): _____

☐ The level of police/sheriff service available to serve the proposed project is NOT ADEQUATE.

Please indicate why: _____

Date: 8/8/17

Multnomah County Sheriff's Office
Name of Police/Sheriff Services Provider

Jason Leates
Name of Official

LE Division Chief Deputy
Office Held by Official

RETURN THIS FORM TO THE APPLICANT



Metro

Gary Shepherd, Senior Assistant Attorney

600 NE Grand Ave.
Portland, OR 97232-2736
oregonmetro.gov

503-797-1600
Fax: 503-797-1792
gary.shepherd@oregonmetro.gov

August 4, 2017

Multnomah County Sheriff's Office
Sheriff Michael Reese
501 SE Hawthorne Blvd., Suite 350
Portland, OR 97214

Dear Sheriff Reese:

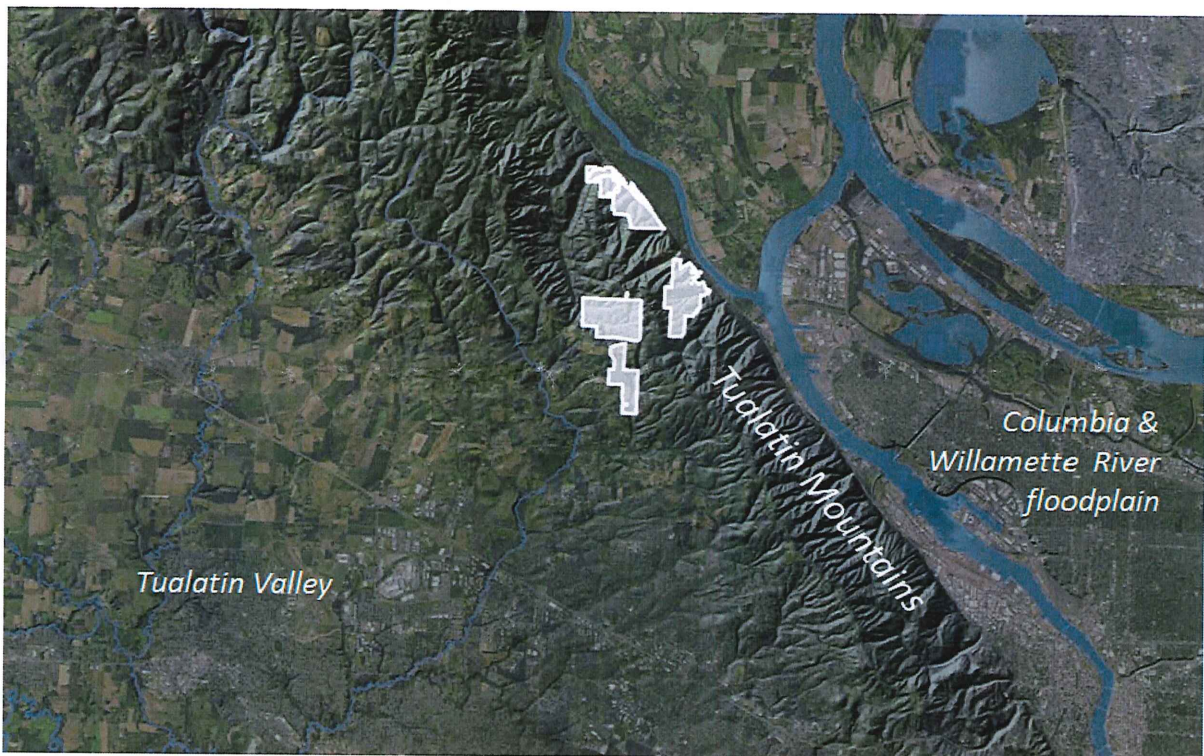
Thank you for taking the time to assist on this project. We are preparing to submit a land use application to Multnomah County for planned access to nature improvements at Burlington Creek Forest in the North Tualatin Mountains. For this application, the County requires service provider forms (POLICE/SHERIFF SERVICES REVIEW) to be completed. I have enclosed the required form for your use. In aid of your review and comments, I prepared the following project background, description, and exhibits.

PROJECT BACKGROUND

Metro's Access Master Plan for the North Tualatin Mountains was adopted by the Metro Council. It is the result of a two year process involving public and private entities, stakeholders, and community members. Metro is proposing that Multnomah County amend its comprehensive plan to adopt the North Tualatin Mountain's Access Master Plan as an appendix and to issue a use permit to implement the first phase identified in the master plan, which focuses on the Burlington Creek Forest site.

SITE LOCATION

The Tualatin Mountains extend into the greater Portland area along the Columbia River, dividing the lowlands of the Willamette and Columbia rivers from the Tualatin Valley.

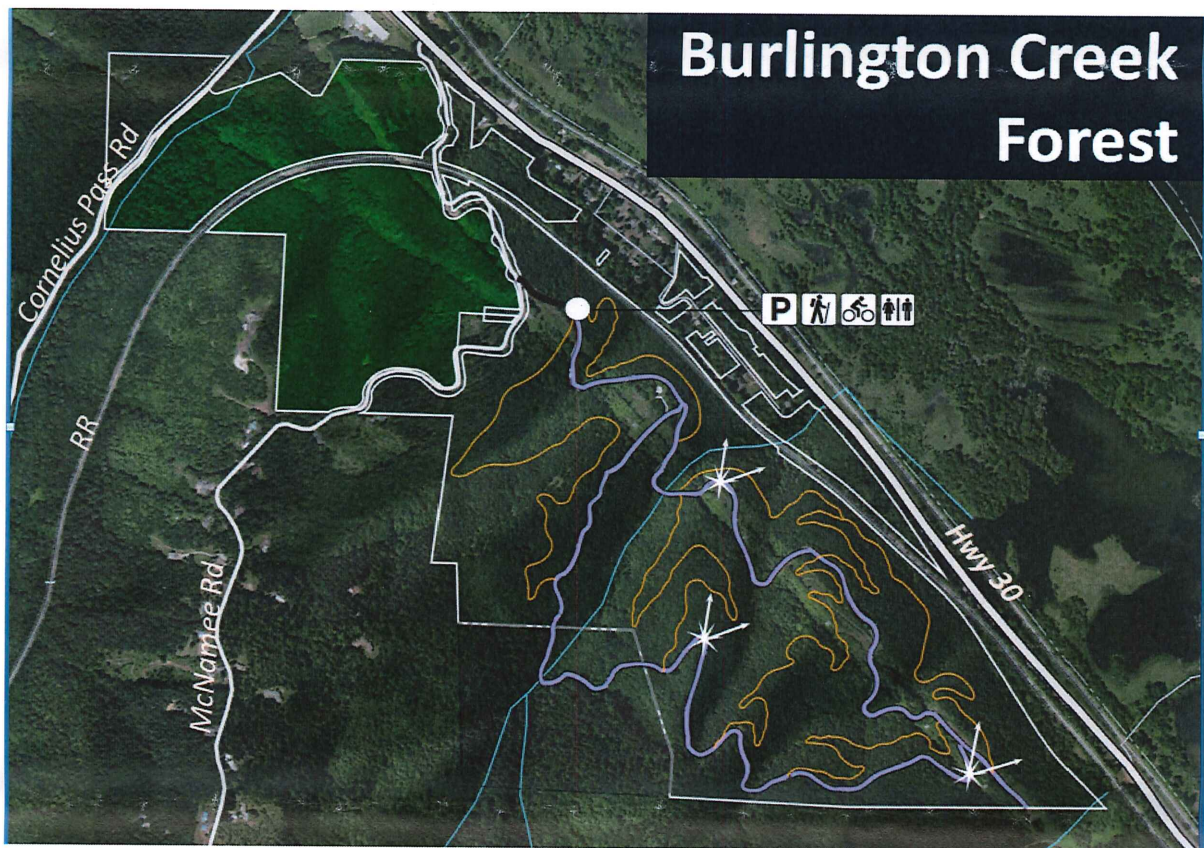


The use application is focused on the Burlington Creek Forest, which is located on the east-facing slopes of the mountain ridge and is similar in character to Forest Park. The site is located outside of the Urban Growth Boundary. Burlington Creek Forest totals approximately 340 acres and is currently used for recreational opportunities. People walk and ride bikes and horses on existing logging roads and access the site primarily via NW McNamee Road. NW McNamee Road, Cornelius Pass Road and the railroad along the northeast site boundary all cross through Burlington Creek Forest. Additional infrastructure includes logging roads and the Portland General Electric and Bonnaville Power Administration power line corridor running the length of the site on the northeast side. The area surrounding Burlington Creek Forest contains a mixture of land uses including residential, timber harvest, and gravel extraction.

PROJECT DESCRIPTION

Access to the Burlington Creek Forest site will be from a preexisting access road off of NW McNamee Road. See Exhibit A: Map. The access driveway will be paved and/or compacted gravel. Portland Fire & Rescue determined that due to topographical constraints and the fact that adequate access improvements are proposed, a firetruck turnaround will not be required. See Exhibit B: Feasibility Site Plan.

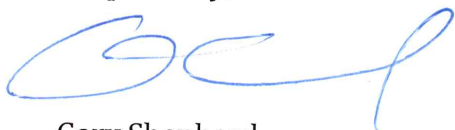
Proposed improvements to the site include the following: parking for approximately 20 cars, including one ADA parking space; a prefabricated restroom with non-flammable, concrete wall and roof structure; and, a trailhead and shared-use trails, designed specifically for hiking and off-road cycling. "No Parking" signs will be posted along the access driveway. The entrance will be gated and access limited to open park hours (typically dawn to one hour after dark).



CONCLUSION

Metro thanks you for taking the time to assist with and provide input on this project. If you would like additional information or clarification that may aid in your review, please contact me. Please return the completed POLICE/SHERIFF SERVICES REVIEW form addressed to Gary Shepherd, Office of Metro Attorney, 600 NE Grand Ave, Portland, OR 97232 or gary.shepherd@oregonmetro.gov.

Respectfully,

A handwritten signature in blue ink, appearing to read 'G Shepherd', with a stylized, flowing script.

Gary Shepherd
Office of Metro Attorney

Enclosures

Burlington Creek Forest Tax Lot ID	Burlington Creek Forest Tax Lot ID
2N1W20BC -01400	2N1W20B -00100
2N1W20BC -01200	2N1W20BD -02100
2N1W19 -00500	2N1W19AA -00300
2N1W19AA -00500	2N1W20B -00400
2N1W20BD -01300	2N1W20BD -02500
2N1W20B -00700	2N1W20BD -03200
2N1W19 -00200	2N1W19AA -00700
2N1W20BD -03600	2N1W20BC -00800
2N1W20B -00500	2N1W20BB -01500
2N1W20BD -00800	2N1W20C -00300
2N1W20BD -01700	2N1W20B -00300
2N1W20BB -03900	2N1W20BC -00900
2N1W20BB -01400	
2N1W20BD -00900	
2N1W19AA -00200	
2N1W20BD -02400	
2N1W20C -00500	
2N1W20BD -03700	
2N1W20BC -01000	
2N1W20C -00400	
2N1W20C -00100	
2N1W20C -00200	
2N1W20B -00600	
2N1W19AA -00100	
2N1W20BB -04000	
2N1W19AA -00800	
2N1W20BD -02700	
2N1W20B -00200	
2N1W20C -00600	
2N1W19 -00300	
2N1W20BC -01600	
2N1W19AA -00400	
2N1W20 -00400	
2N1W20C -00700	
2N1W19AA -00600	

Exhibit A



NW McNamee Road

Access road



600 NE Grand Ave.
Portland, OR 97232-2736
oregonmetro.gov

December 5, 2017

Oregon Department of Forestry
Eric Perkins, Protection Unit Forester
Forest Grove District Office
801 Gales Creek Road
Forest Grove, OR 97116

Dear Mr. Perkins:

Thank you for taking the time to assist on this project. As you are aware, Metro is submitting a land use application to Multnomah County for planned access to nature improvements at Burlington Creek Forest in the North Tualatin Mountains. For this application, the County requires service provider forms (FIRE SERVICE AGENCY REVIEW) to be completed. I have enclosed the required form for your use. In aid of your review and comments, we have prepared the following project background, description, and exhibits.

PROJECT BACKGROUND

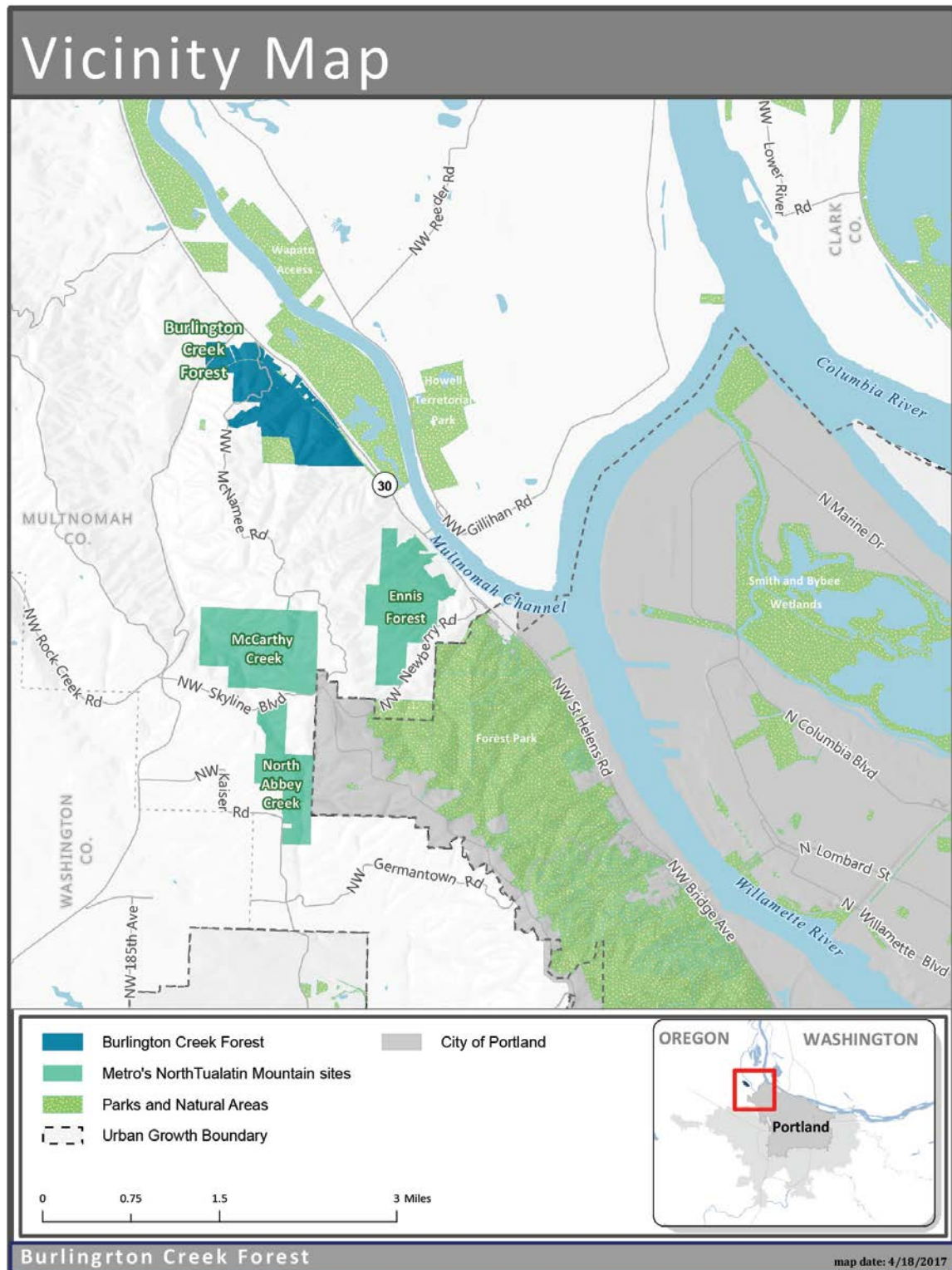
Metro's Access Master Plan for the North Tualatin Mountains was adopted by the Metro Council. It is the result of a two year process involving public and private entities, stakeholders, and community members. Metro is proposing that Multnomah County amend its comprehensive plan to adopt the North Tualatin Mountain's Access Master Plan as an appendix and to issue a use permit to implement the first phase identified in the master plan, which focuses on the Burlington Creek Forest site.

SITE LOCATION

The Tualatin Mountains extend into the greater Portland area along the Columbia River, dividing the lowlands of the Willamette and Columbia rivers from the Tualatin Valley. The use application is focused on the Burlington Creek Forest, which is located on the east-facing slopes of the mountain ridge and is similar in character to Forest Park. The site is located outside of the Urban Growth Boundary.

Burlington Creek Forest totals approximately 340 acres and is currently used for recreational opportunities. People walk and ride bikes and horses on existing logging roads and access the site primarily via NW McNamee Road. NW McNamee Road, Cornelius Pass Road and the railroad along the northeast site boundary all cross through Burlington Creek Forest. Additional infrastructure includes logging roads and

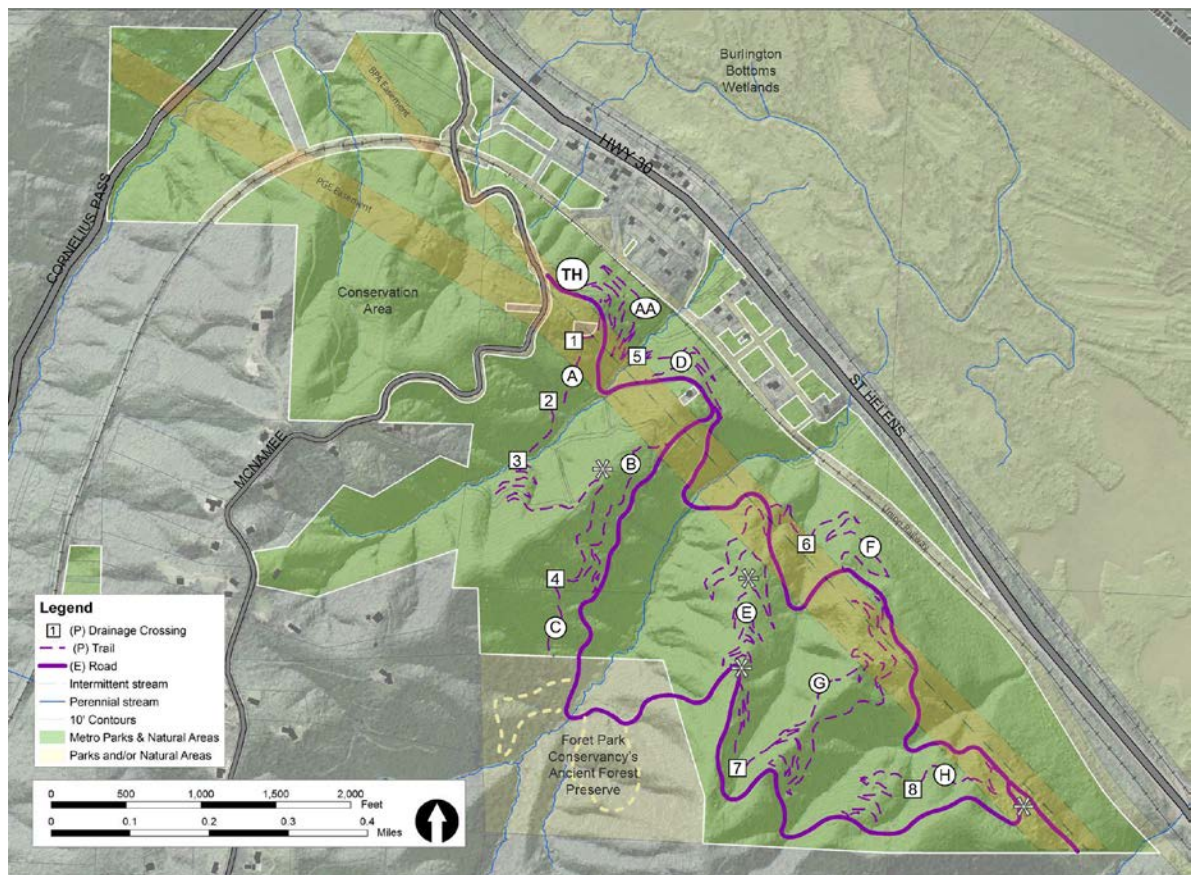
the Portland General Electric and Bonneville Power Administration power line corridor running the length of the site on the northeast side. The area surrounding Burlington Creek Forest contains a mixture of land uses including residential, timber harvest, and gravel extraction.



PROJECT DESCRIPTION

Access to the Burlington Creek Forest site will be from a preexisting access road off of NW McNamee Road. The access driveway will be 20' wide with paved and/or compacted gravel surface. See attached exhibit.

Proposed improvements to the site include the following: parking for approximately 25 cars, including one ADA parking space; a prefabricated restroom with non-flammable, concrete wall and roof structure; and, a trailhead and shared-use trails, designed specifically for hiking and off-road cycling. "No Parking" signs will be posted along the access driveway. The entrance will be gated and access limited to open park hours (typically dawn to one hour after dark). An existing gravel loop road will be retained within the site.



Metro's restoration work and long term management strategy includes identifying and reducing fire risks where possible. Prior to implementing formal public access, an Incident Action Plan will be developed to assist Metro and cooperating agencies when responding to a fire on Metro property. Metro follows the Oregon Department of Forestry Industrial Fire Precaution Levels and restrictions, including potentially closing areas in very high fire conditions, prohibiting fires and smoking, and working with local fire prevention and suppression agencies.

Burlington Creek Water District is an adjacent land owner. The water district has a 400,000 gallon water tank and fire hydrant approximately 0.25 mile from the proposed trailhead.

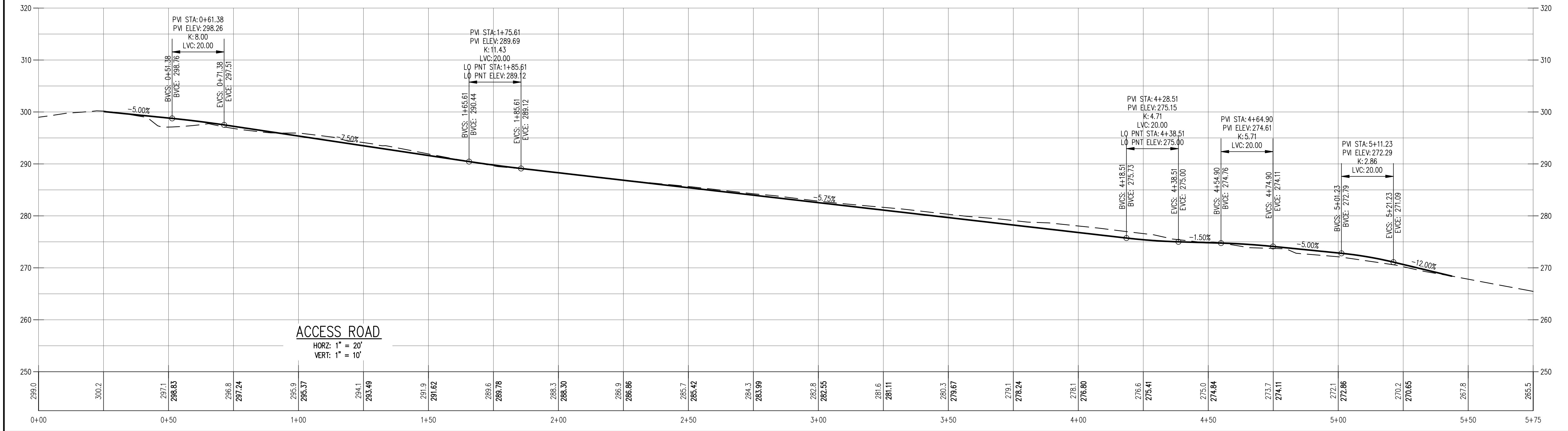
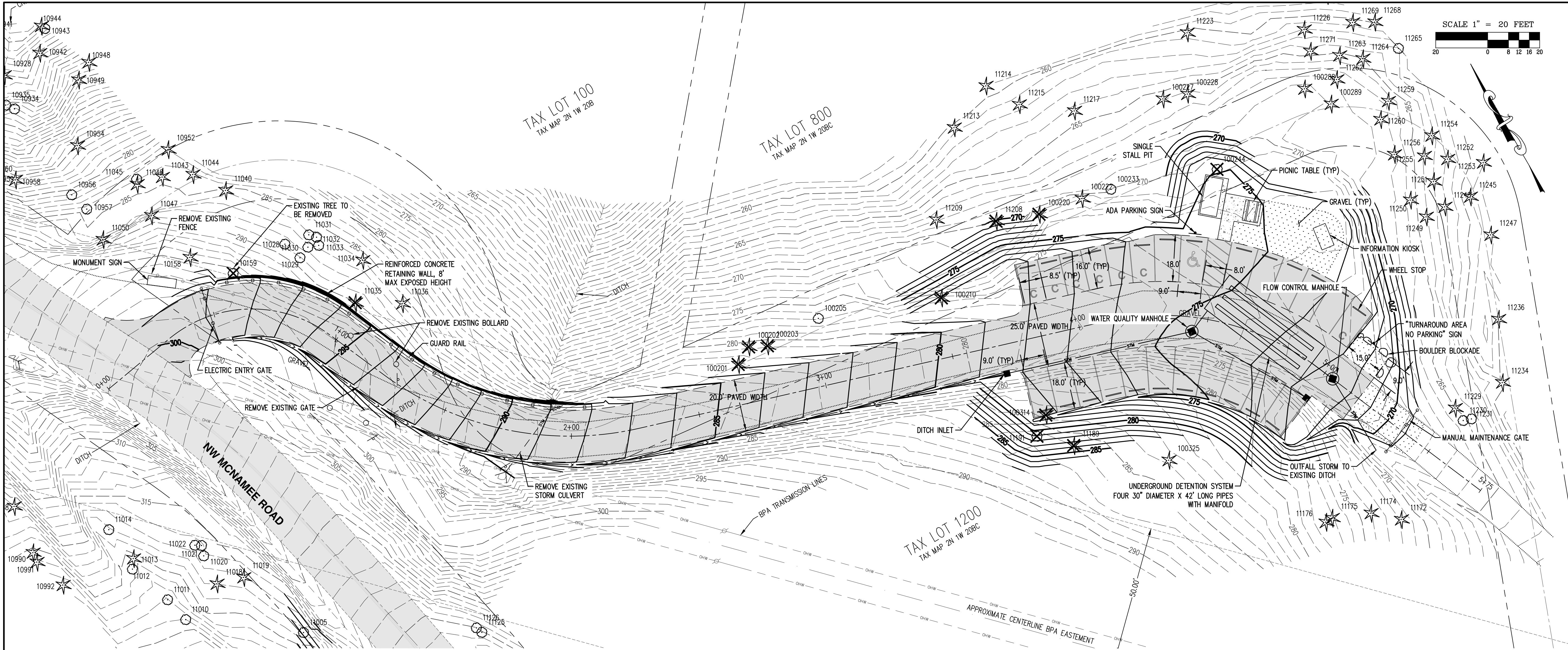
CONCLUSION

Metro thanks you for taking the time to assist with and provide input on this project. If you would like additional information or clarification that may aid in your review, please contact me. Please return the completed FIRE SERVICE AGENCY REVIEW form addressed to Karen Vitkay, Metro Parks and Nature, 600 NE Grand Ave, Portland, OR 97232 or karen.vitkay@oregonmetro.gov.

Respectfully,

Karen Vitkay, PLA
Senior Regional Planner

AKS DRAWING FILE: 4781 SITE PLANDWG | LAYOUT: LAYOUT1



AKS

AKS ENGINEERING & FORESTRY, LLC
12065 SW HERMAN RD. SITE 100
TUALATIN, OR 97062
P: 503.563.6151
F: 503.563.6152
aks-eng.com

ENGINEERING · SURVEYING · NATURAL RESOURCES
FORESTRY · PLANNING · LANDSCAPE ARCHITECTURE

BURLINGTON CREEK
PARKING METRO
MULTNOMAH COUNTY OREGON
TAX MAP 2N 1W 20B

BURLINGTON PARKING
PRELIMINARY SITE PLAN
TAX LOT 1200

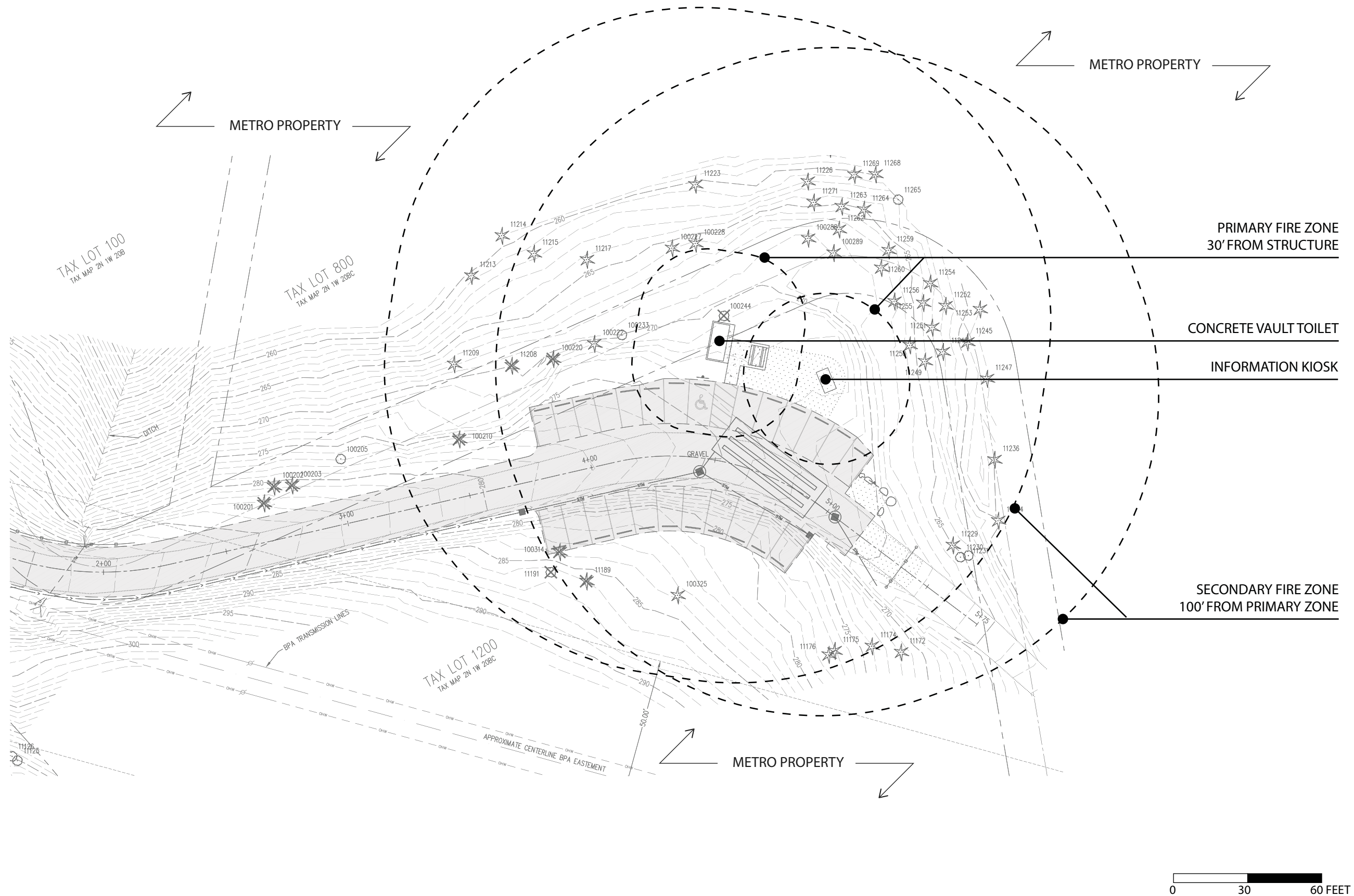
DESIGNED BY: BRB
DRAWN BY: AZV
CHECKED BY: AHH
SCALE: AS NOTED
DATE: 09/19/2017

REGISTERED PROFESSIONAL ENGINEER
PRELIMINARY DESIGN
NOT FOR CONSTRUCTION
CANDLER H. HURLEY
RENEWAL DATE: 6/30/19

REVISIONS

JOB NUMBER
4781

SHEET
4 OF 5



Burlington Creek Forest
Nature Park
FIRE SAFETY ZONE

SUBMITTAL:
30% REVIEW SET

North Tualatin Mountains
Multnomah County

DATE:
30 NOV 2017



Land Use Planning Division
1600 SE 190th Ave, Ste 116
Portland OR 97233
Ph: 503-988-3043 Fax: 503-988-3389
multco.us/landuse

FIRE SERVICE AGENCY REVIEW

TO THE APPLICANT: Take this form to the Structural Fire Service Provider* that serves your property along with the following:

- ☐ A site plan drawn to scale showing the subject property, its improvements, location of fire hydrants and driveway information; See Exhibit B
- ☐ A floor plan of the proposed development; and
- ☐ A fire flow report from your water purveyor (if applicable) [Not applicable for Properties served by MCRFD#14 customers]
- ☐ After the fire official signs this form, include it with your application material. See Fire Code Application Guide for fire-related access standards and fire flow information.

*If your property is not served by a structural fire service provider, your project is to be reviewed by the appropriate building official serving your property.

Address of Site Burlington Creek Forest, North Tualatin Mountains - no site address
Map & Tax Lot: See attached 'R' number R119904580
Description of Proposed Use: Trailhead with parking, vault toilet and multi-use trails
Total Square Footage of Building (including roof projections, eaves & attached structures): _____
Applicant Name: Metro - Gary Shepherd Phone: 503.797.1600
Mailing Address: 600 NE Grand Avenue
City: Portland State: OR Zip Code: 97232 Email: gary.shepherd@oregonmetro.gov

STRUCTURAL FIRE SERVICE AGENCY REVIEW

Fire Agency completing this form: _____ Date of Review _____

- ☐ The subject property is located within our service boundaries or is under contract.
- ☐ The subject property is outside of our service boundaries and will not be providing fire protection services via contract. (Additional review is not needed.)

**** Access Review by Structural Fire Service Agency Providing Service ****

- ☐ The proposed development is in compliance with the fire apparatus access standards of the Oregon Fire Code standards as implemented by our agency.
- ☐ The following access improvements must be completed prior to issuance of the building permit and be re-inspected by our agency before flammable materials are placed on the property.

- ☐ The proposed development is **not** in compliance with the adopted Fire Service Agency's access standards. The proposed building/structure is required to have a fire sprinkler system installed in compliance with Section 903.1.3 (NFPA 13D) of the Oregon Fire Code.

Fire Official: Please sign or stamp the presented site plan & floor plan and attach it to this form.

Signature & Title of Fire Official

See Other Side

STRUCTURAL FIRE SERVICE AGENCY REVIEW, cont.

** Fire Flow by Structural Fire Service Agency Providing Service **

The structure, building or addition is exempt from the fire flow standards of the OFC B-105.2.

- ☐ The proposed non-commercial structure **is less than 3,600 sq. ft.** (including the horizontal projections of the roof) and there **is** 1,000 gallons per minute of fire-flow available at 20 psi from public water lines. No mitigation measures are necessary.
- ☐ The proposed non-commercial structure **is more than 3,600 sq. ft.** (including the horizontal projections of the roof) and the fire-flow & flow duration at 20 psi is available from public water lines or private well and is in compliance with minimums specified in Appendix B, Table B105.1 of the Oregon Fire Code. No mitigation measures are necessary.
- ☐ The existing fire-flow & flow duration available from public water lines or private well is not adequate to serve the proposed non-commercial structure in compliance with Appendix B of the Oregon Fire Code. The following mitigation measures are necessary* and must be installed prior to occupancy or use of the structure.
 - ☐ A monitored fire alarm must be installed.
 - ☐ Class A or non-combustible roof materials must be installed.
 - ☐ Defensible space of 30 feet around the structure/building/addition.
 - ☐ A defensible space of 100 feet around the structure/building/addition due to slopes greater than 20 %.
 - ☐ A fire sprinkler system meeting Section 903.1.3 (NFPA 13D) of the Oregon Fire Code shall be installed.
 - ☐ Other _____

* The above required structural features are required by the Oregon Fire Code and shall be shown clearly on all building plans.

Commercial/Industrial Buildings & Uses.

- ☐ The minimum fire flow and flow duration is available from public water lines or private well as specified in Appendix B, Table B105.1. No mitigation measures are required.
- ☐ The minimum fire flow & flow duration is not available from public water lines or private well as specified in Appendix B, Table B105.1. The following mitigation measures are required:

Signature & Title of Fire Official

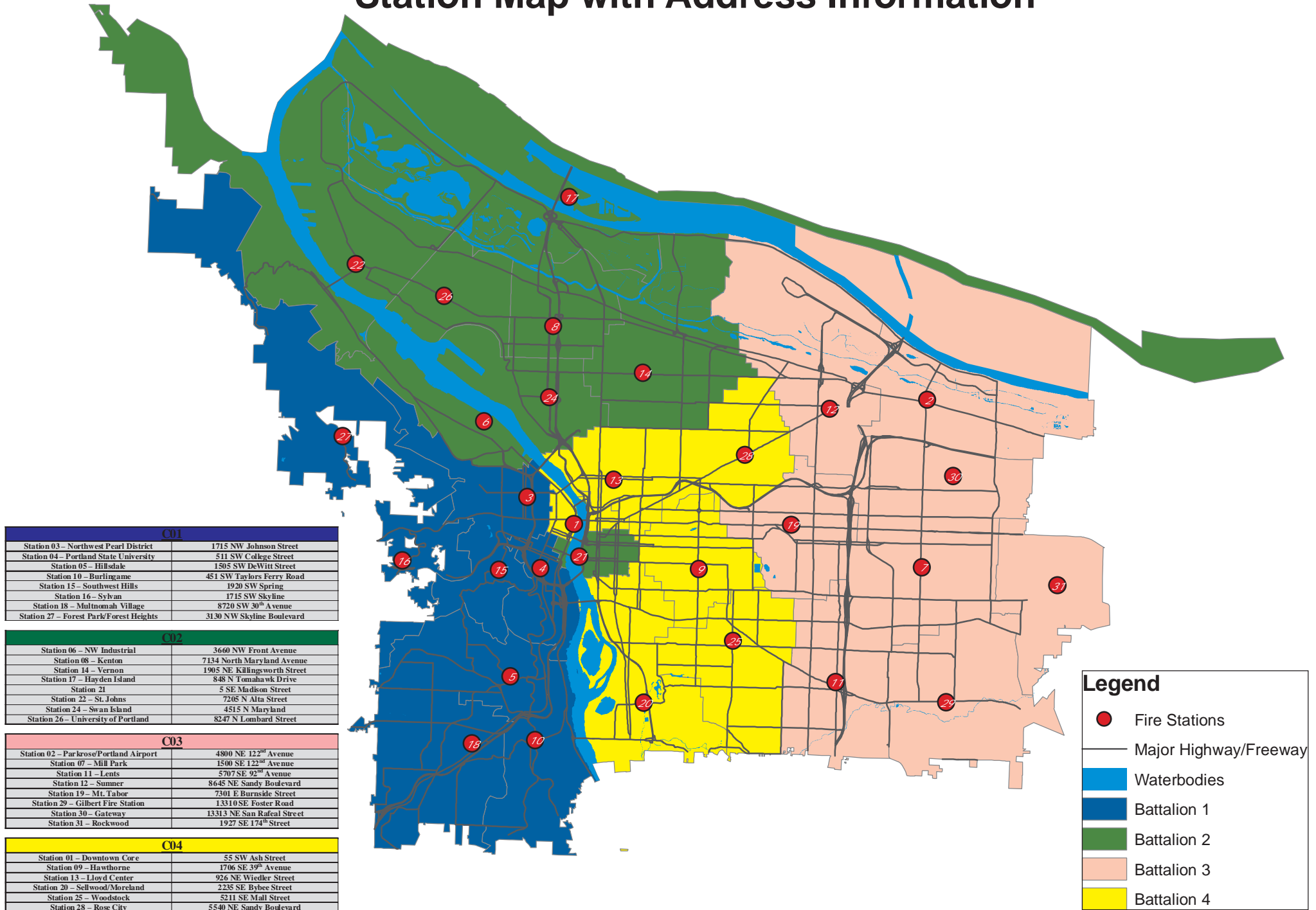
To the Fire Official:

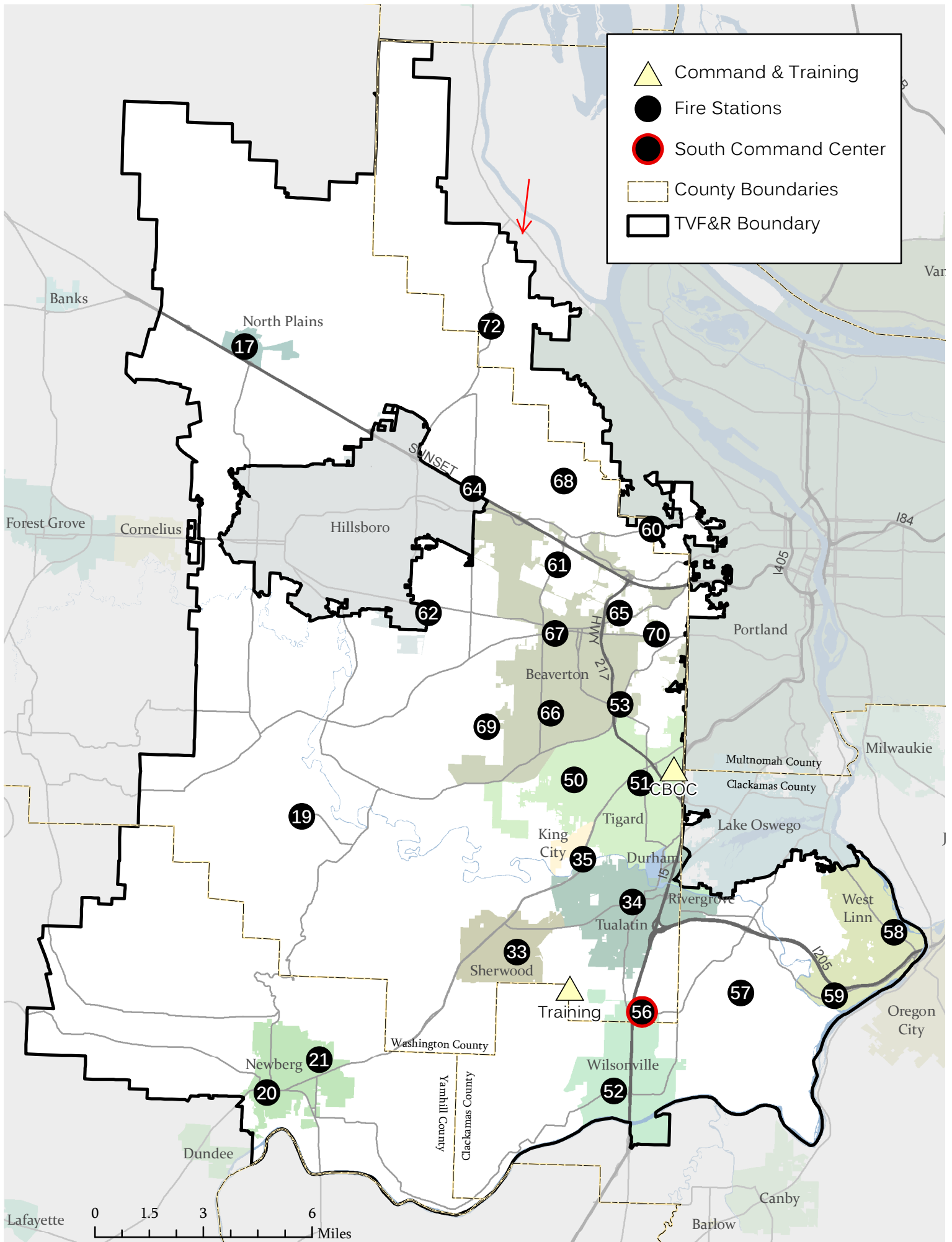
- ☐ Land Use Planning has determined that the proposed building will qualify as an Exempt Farm Structure and the property owner has indicated that the building will be used solely for farm purposes and they intend on using the provision under ORS 455.315 and will not be obtaining a building permit for its construction.

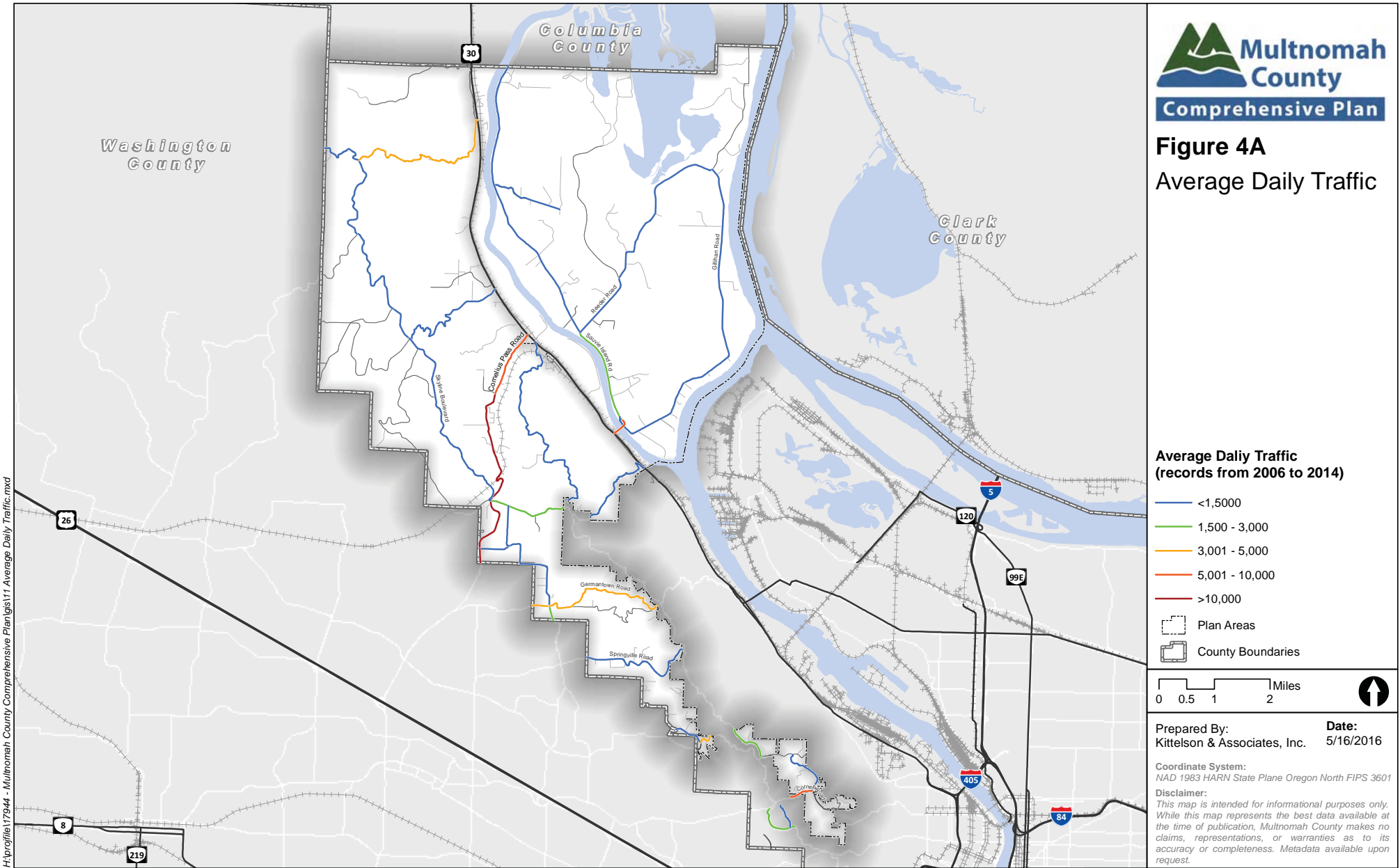
Multnomah County Land Use Planning

Portland Fire & Rescue Station Map with Address Information

EXHIBIT 16







MCC Section 33.0005 provides the following definition of a Lot of Record:

Lot of record – Subject to additional provisions within each Zoning District, a Lot of Record is a parcel, lot, or a group thereof that, when created or reconfigured, (a) satisfied all applicable zoning laws and (b) satisfied all applicable land division laws, or (c) complies with the criteria for the creation of new lots or parcels described in MCC 36.7785. Those laws shall include all required zoning and land division review procedures, decisions, and conditions of approval.

- (a) *"Satisfied all applicable zoning laws" shall mean: the parcel, lot, or group thereof was created and, if applicable, reconfigured in full compliance with all zoning minimum lot size, dimensional standards, and access requirements.*
- (b) *"Satisfied all applicable land division laws" shall mean the parcel or lot was created:*
 - 1. *By a subdivision plat under the applicable subdivision requirements in effect at the time; or*
 - 2. *By a deed, or a sales contract dated and signed by the parties to the transaction, that was recorded with the Recording Section of the public office responsible for public records prior to October 19, 1978; or*
 - 3. *By a deed, or a sales contract dated and signed by the parties to the transaction, that was in recordable form prior to October 19, 1978; or*
 - 4. *By partitioning land under the applicable land partitioning requirements in effect on or after October 19, 1978; and*
 - 5. *"Satisfied all applicable land division laws" shall also mean that any subsequent boundary reconfiguration completed on or after December 28, 1993 was approved under the property line adjustment provisions of the land division code. (See Date of Creation and Existence for the effect of property line adjustments on qualifying a Lot of Record for the siting of a dwelling in the EFU and CFU districts.)*

In addition to the lot of record definition standards provided in MCC § 33.0005, each zoning district has its own standards.

When determining the legal status of a unit of land, the starting point for that analysis is the time when the parcel/lot was originally created. Historically, the division of land was accomplished by the act of recording a plat, sale or deed transfer. The tax assessor, having notice by plat, contract or deed recording, would then inscribe the lines reflecting the platted, sold or deeded portion of the property. There was no requirement that the division be further reviewed by additional local government processes.

In 1955, Multnomah County adopted zoning districts. The F-2 District was one such district created by the first Multnomah County Zoning Ordinance. The ordinance defined the type of property that would be zoned F-2, but it did not create any partitioning standards or procedures for the creation of lots in the F-2 District. Thus, for lots located in the F-2 District and separated from their parent parcel between 1955 and 1975, there were no applicable legal requirements, mandatory minimum lot standards, or procedures to lawfully partition the land. There was no County process or body to review the land division. There was no process to confirm or otherwise finalize the lawfulness of creating a parcel. Stated otherwise, no express directions or directives were given to property owners. Divisions were accomplished simply by plat, deed or contract recording. Of note, there was no "lot of record" language in the County code.

Zone	Min. Lot Size
F-2	2 acres (1955 until 12/1975)
F-2	2 - 38 acres from 12/1975 to 10/5/1977
MUF-20	20 acres
MUF-19	19 acres
CFU	80 acres

The first mandatory minimum lot size requirement for lots in the F-2 District appeared in 1975 with the passage of Ordinance 115. Ordinance 115 amended the code to require that lots in the F-2 District with single-family dwellings “shall be” a certain size, “dependent on location, services, soil type, and use capability factors.” Ordinance 115, Section 3 and Section 4 (amending MCC 3.1240).

All lots/parcels that are part of this application were either created before Multnomah County’s first zoning ordinance or first land partitioning laws, or they were created in compliance with all applicable zoning laws at the time.

North Tualatin Mountains Nature Park Application – Burlington Creek Forest (Agency Creek) Lot of Record Determination for tax lot: 2N1W20B-00100

Lot: 2N1W20B-00100

Size: 4.32 acres

Location: See Exhibit A

Legal Description: Block 20, Burlington, County of Multnomah, State of Oregon.

Deed Information: Agency Creek Management Co. took title of parcels I, II, and III by statutory special warranty deed recorded in Multnomah County Book 2296, Page 2833, in April 1990.

Agency Creek Management Co. conveyed parcels I, II, and III to Metro by special warranty deed in January of 2000, Multnomah County recording no. 2000-007612.

Current Zoning: West Hills Rural Plan Area – CFU-1

Lot of Record Determination:

MCC § 33.0005 DEFINITIONS

Lot of Record – Subject to additional provisions within each Zoning District, a Lot of Record is a parcel, lot, or a group thereof that, when created or reconfigured, (a) satisfied all applicable zoning laws and (b) satisfied all applicable land division laws, or (c) complies with the criteria for the creation of new lots or parcels described in MCC 36.7785. Those laws shall include all required zoning and land division review procedures, decisions, and conditions of approval.

- (a) *"Satisfied all applicable zoning laws" shall mean: the parcel, lot, or group thereof was created and, if applicable, reconfigured in full compliance with all zoning minimum lot size, dimensional standards, and access requirements.*

Finding: Block 20, Burlington, was created by the subdivision plat of Burlington in 1909. In 1909, there were no minimum lot sizes, dimensional standards, or access requirements. Multnomah County did not apply zoning laws to this area until its first zoning ordinance in July 10, 1958.

- (b) *"Satisfied all applicable land division laws" shall mean the parcel or lot was created:*
1. *By a subdivision plat under the applicable subdivision requirements in effect at the time; or...*

Finding: Block 20, Burlington, was created by the subdivision plat of Burlington in 1909. This standard is met.

MCC § 33.2275 CFU-1 Lot of Record

- (A) *In addition to the Lot of Record definition standards in MCC 33.0005, for the purposes of this district a Lot of Record is either:*
- (1) *A parcel or lot which was not contiguous to any other parcel or lot under the same ownership on February 20, 1990, or*
- (2) *A group of contiguous parcels or lots:*
- (a) *Which were held under the same ownership on February 20, 1990; and*
- (b) *Which, individually or when considered in combination, shall be aggregated to comply with a minimum lot size of 19 acres, without creating any new lot line.*
1. *Each Lot of Record proposed to be segregated from the contiguous group of parcels or lots shall be an existing legally created lot lines and shall not result in any remainder individual parcel or lot, or remainder of contiguous combination of parcels or lots, with less than 19 acres in area. See Examples 1 and 2 in this subsection.*
2. *There shall be an exception to the 19 acre minimum lot size requirement when the entire same ownership grouping of parcels or lots was less than 19 acres in area on February 20, 1990, and then the entire grouping shall be one Lot of Record. See Example 3 in this subsection.*

Finding: Block 20, Burlington (tax lot 2N1W20B -00100), totals 4.32 acres. United States National Bank of Oregon, et al., conveyed the subject lots by statutory special warranty deed to Agency Creek Management Co. in April of 1990, recorded in Multnomah County Book 2296, Pages 2833-2836. This standard is met.

North Tualatin Mountains Nature Park Application – Burlington Creek Forest (Agency Creek)
Lot of Record Determination for tax lot: 2N1W20BC-00800

Lot: 2N1W20BC-00800

Size: 3.99 acres

Location: See Exhibit A

Legal Description: Lots 1 through 16, inclusive, Block 21, Burlington, County of Multnomah, State of Oregon.

Deed Information: Agency Creek Management Co. took title of parcels I, II, and III by statutory special warranty deed recorded in Multnomah County Book 2296, Page 2833, in April 1990. Agency Creek Management Co. conveyed parcels I, II, and III to Metro by special warranty deed in January of 2000, Multnomah County recording no. 2000-007612.

Current Zoning: West Hills Rural Plan Area – CFU-1

Lot of Record Determination:

MCC § 33.0005 DEFINITIONS

Lot of Record – Subject to additional provisions within each Zoning District, a Lot of Record is a parcel, lot, or a group thereof that, when created or reconfigured, (a) satisfied all applicable zoning laws and (b) satisfied all applicable land division laws, or (c) complies with the criteria for the creation of new lots or parcels described in MCC 36.7785. Those laws shall include all required zoning and land division review procedures, decisions, and conditions of approval.

(a) "Satisfied all applicable zoning laws" shall mean: the parcel, lot, or group thereof was created and, if applicable, reconfigured in full compliance with all zoning minimum lot size, dimensional standards, and access requirements.

Finding: Lots 1 through 16, inclusive, Block 21, Burlington, were created by the subdivision plat of Burlington in 1909. In 1909, there were no minimum lot sizes, dimensional standards, or access requirements. Multnomah County did not apply zoning laws to this area until its first zoning ordinance in July 10, 1958.

(b) "Satisfied all applicable land division laws" shall mean the parcel or lot was created:
1. By a subdivision plat under the applicable subdivision requirements in effect at the time; or...

Finding: Lots 1 through 16, inclusive, Block 21, Burlington, were created by the subdivision plat of Burlington in 1909. This standard is met.

MCC § 33.2275 CFU-1 Lot of Record

(A) In addition to the Lot of Record definition standards in MCC 33.0005, for the purposes of this district a Lot of Record is either:

(1) A parcel or lot which was not contiguous to any other parcel or lot under the same ownership on February 20, 1990, or

(2) A group of contiguous parcels or lots:

- (a) Which were held under the same ownership on February 20, 1990; and
- (b) Which, individually or when considered in combination, shall be aggregated to comply with a minimum lot size of 19 acres, without creating any new lot line.
 - 1. Each Lot of Record proposed to be segregated from the contiguous group of parcels or lots shall be an existing legally created lot lines and shall not result in any remainder individual parcel or lot, or remainder of contiguous combination of parcels or lots, with less than 19 acres in area. See Examples 1 and 2 in this subsection.
 - 2. There shall be an exception to the 19 acre minimum lot size requirement when the entire same ownership grouping of parcels or lots was less than 19 acres in area on February 20, 1990, and then the entire grouping shall be one Lot of Record. See Example 3 in this subsection.

Finding: Lots 1 through 16, inclusive, Block 21, Burlington (tax lot 2N1W20BC -00800), total 3.99 acres. United States National Bank of Oregon, et al., conveyed the subject lots by statutory special warranty deed to Agency Creek Management Co. in April of 1990, recorded in Multnomah County Book 2296, Pages 2833-2836. This standard is met.

**North Tualatin Mountains Nature Park Application – Burlington Creek Forest (Agency Creek)
Lot of Record Determination for tax lot: 2N1W20BC-01000**

Lot: 2N1W20BC-01000

Size: 4.03 acres

Location: See Exhibit A

Legal Description: Lots 1 through 10, inclusive, Block 22, Burlington, County of Multnomah, State of Oregon.

Deed Information: Agency Creek Management Co. took title of parcels I, II, and III by statutory special warranty deed recorded in Multnomah County Book 2296, Page 2833, in April 1990. Agency Creek Management Co. conveyed parcels I, II, and III to Metro by special warranty deed in January of 2000, Multnomah County recording no. 2000-007612.

Current Zoning: West Hills Rural Plan Area – CFU-1

Lot of Record Determination:

MCC § 33.0005 DEFINITIONS

Lot of Record – Subject to additional provisions within each Zoning District, a Lot of Record is a parcel, lot, or a group thereof that, when created or reconfigured, (a) satisfied all applicable zoning laws and (b) satisfied all applicable land division laws, or (c) complies with the criteria for the creation of new lots or parcels described in MCC 36.7785. Those laws shall include all required zoning and land division review procedures, decisions, and conditions of approval.

- (a) *"Satisfied all applicable zoning laws" shall mean: the parcel, lot, or group thereof was created and, if applicable, reconfigured in full compliance with all zoning minimum lot size, dimensional standards, and access requirements.*

Finding: Lots 1 through 10, inclusive, Block 22, Burlington, were created by the subdivision plat of Burlington in 1909. In 1909, there were no minimum lot sizes, dimensional standards, or access requirements. Multnomah County did not apply zoning laws to this area until its first zoning ordinance in July 10, 1958.

- (b) *"Satisfied all applicable land division laws" shall mean the parcel or lot was created:*
1. *By a subdivision plat under the applicable subdivision requirements in effect at the time; or...*

Finding: Lots 1 through 10, inclusive, Block 22, Burlington, were created by the subdivision plat of Burlington in 1909. This standard is met.

MCC § 33.2275 CFU-1 Lot of Record

- (A) *In addition to the Lot of Record definition standards in MCC 33.0005, for the purposes of this district a Lot of Record is either:*
- (1) *A parcel or lot which was not contiguous to any other parcel or lot under the same ownership on February 20, 1990, or*
- (2) *A group of contiguous parcels or lots:*
- (a) *Which were held under the same ownership on February 20, 1990; and*
- (b) *Which, individually or when considered in combination, shall be aggregated to comply with a minimum lot size of 19 acres, without creating any new lot line.*
1. *Each Lot of Record proposed to be segregated from the contiguous group of parcels or lots shall be an existing legally created lot lines and shall not result in any remainder individual parcel or lot, or remainder of contiguous combination of parcels or lots, with less than 19 acres in area. See Examples 1 and 2 in this subsection.*
2. *There shall be an exception to the 19 acre minimum lot size requirement when the entire same ownership grouping of parcels or lots was less than 19 acres in area on February 20, 1990, and then the entire grouping shall be one Lot of Record. See Example 3 in this subsection.*

Finding: Lots 1 through 10, inclusive, Block 22, Burlington (tax lot 2N1W20BC -01000), total 4.03 acres. United States National Bank of Oregon, et al., conveyed the subject lots by statutory special warranty deed to Agency Creek Management Co. in April of 1990, recorded in Multnomah County Book 2296, Pages 2833-2836. This standard is met.

North Tualatin Mountains Nature Park Application – Burlington Creek Forest (Agency Creek)
Lot of Record Determination for tax lot: 2N1W20BC-01200

Lot: 2N1W20BC-01200

Size: 3.70 acres

Location: See Exhibit A

Legal Description: Lots 1 through 5, inclusive, and lots 7 through 13, Block 23, Burlington, County of Multnomah, State of Oregon.

Deed Information: Agency Creek Management Co. took title of parcels I, II, and III by statutory special warranty deed recorded in Multnomah County Book 2296, Page 2833, in April 1990. Agency Creek Management Co. conveyed parcels I, II, and III to Metro by special warranty deed in January of 2000, Multnomah County recording no. 2000-007612.

Current Zoning: West Hills Rural Plan Area – CFU-1

Lot of Record Determination:

MCC § 33.0005 DEFINITIONS

Lot of Record – Subject to additional provisions within each Zoning District, a Lot of Record is a parcel, lot, or a group thereof that, when created or reconfigured, (a) satisfied all applicable zoning laws and (b) satisfied all applicable land division laws, or (c) complies with the criteria for the creation of new lots or parcels described in MCC 36.7785. Those laws shall include all required zoning and land division review procedures, decisions, and conditions of approval.

(a) "Satisfied all applicable zoning laws" shall mean: the parcel, lot, or group thereof was created and, if applicable, reconfigured in full compliance with all zoning minimum lot size, dimensional standards, and access requirements.

Finding: Lots 1 through 5, inclusive, and lots 7 through 13, Block 23, Burlington, were created by the subdivision plat of Burlington in 1909. In 1909, there were no minimum lot sizes, dimensional standards, or access requirements. Multnomah County did not apply zoning laws to this area until its first zoning ordinance in July 10, 1958.

(b) "Satisfied all applicable land division laws" shall mean the parcel or lot was created:
1. By a subdivision plat under the applicable subdivision requirements in effect at the time; or...

Finding: Lots 1 through 5, inclusive, and lots 7 through 13, Block 23, Burlington, were created by the subdivision plat of Burlington in 1909. This standard is met.

MCC § 33.2275 CFU-1 Lot of Record

(A) In addition to the Lot of Record definition standards in MCC 33.0005, for the purposes of this district a Lot of Record is either:

(1) A parcel or lot which was not contiguous to any other parcel or lot under the same ownership on February 20, 1990, or

(2) A group of contiguous parcels or lots:

- (a) Which were held under the same ownership on February 20, 1990; and
- (b) Which, individually or when considered in combination, shall be aggregated to comply with a minimum lot size of 19 acres, without creating any new lot line.
 - 1. Each Lot of Record proposed to be segregated from the contiguous group of parcels or lots shall be an existing legally created lot lines and shall not result in any remainder individual parcel or lot, or remainder of contiguous combination of parcels or lots, with less than 19 acres in area. See Examples 1 and 2 in this subsection.
 - 2. There shall be an exception to the 19 acre minimum lot size requirement when the entire same ownership grouping of parcels or lots was less than 19 acres in area on February 20, 1990, and then the entire grouping shall be one Lot of Record. See Example 3 in this subsection.

Finding: Lots 1 through 5, inclusive, and lots 7 through 13, Block 23, Burlington (tax lot 2N1W20BC-01200), total 3.70 acres. United States National Bank of Oregon, et al., conveyed the subject lots by statutory special warranty deed to Agency Creek Management Co. in April of 1990, recorded in Multnomah County Book 2296, Pages 2833-2836. This standard is met.

**North Tualatin Mountains Nature Park Application – Burlington Creek Forest (Agency Creek)
Lot of Record Determination for tax lot: 2N1W20B-00300**

Lot: 2N1W20B-00300

Size: 7.49 acres

Location: See Exhibit A

Legal Description: Block 26, Burlington, County of Multnomah, State of Oregon.

Deed Information: Agency Creek Management Co. took title of parcels I, II, and III by statutory special warranty deed recorded in Multnomah County Book 2296, Page 2833, in April 1990.

Agency Creek Management Co. conveyed parcels I, II, and III to Metro by special warranty deed in January of 2000, Multnomah County recording no. 2000-007612.

Current Zoning: West Hills Rural Plan Area – CFU-1

Lot of Record Determination:

MCC § 33.0005 DEFINITIONS

Lot of Record – Subject to additional provisions within each Zoning District, a Lot of Record is a parcel, lot, or a group thereof that, when created or reconfigured, (a) satisfied all applicable zoning laws and (b) satisfied all applicable land division laws, or (c) complies with the criteria for the creation of new lots or parcels described in MCC 36.7785. Those laws shall include all required zoning and land division review procedures, decisions, and conditions of approval.

- (a) *"Satisfied all applicable zoning laws" shall mean: the parcel, lot, or group thereof was created and, if applicable, reconfigured in full compliance with all zoning minimum lot size, dimensional standards, and access requirements.*

Finding: Block 26, Burlington, was created by the subdivision plat of Burlington in 1909. In 1909, there were no minimum lot sizes, dimensional standards, or access requirements. Multnomah County did not apply zoning laws to this area until its first zoning ordinance in July 10, 1958.

- (b) *"Satisfied all applicable land division laws" shall mean the parcel or lot was created:*
1. *By a subdivision plat under the applicable subdivision requirements in effect at the time; or...*

Finding: Block 26, Burlington, was created by the subdivision plat of Burlington in 1909. This standard is met.

MCC § 33.2275 CFU-1 Lot of Record

- (A) *In addition to the Lot of Record definition standards in MCC 33.0005, for the purposes of this district a Lot of Record is either:*
- (1) *A parcel or lot which was not contiguous to any other parcel or lot under the same ownership on February 20, 1990, or*
- (2) *A group of contiguous parcels or lots:*
- (a) *Which were held under the same ownership on February 20, 1990; and*
- (b) *Which, individually or when considered in combination, shall be aggregated to comply with a minimum lot size of 19 acres, without creating any new lot line.*
1. *Each Lot of Record proposed to be segregated from the contiguous group of parcels or lots shall be an existing legally created lot lines and shall not result in any remainder individual parcel or lot, or remainder of contiguous combination of parcels or lots, with less than 19 acres in area. See Examples 1 and 2 in this subsection.*
2. *There shall be an exception to the 19 acre minimum lot size requirement when the entire same ownership grouping of parcels or lots was less than 19 acres in area on February 20, 1990, and then the entire grouping shall be one Lot of Record. See Example 3 in this subsection.*

Finding: Block 26, Burlington (tax lot 2N1W20B -00300), totals 7.49 acres. United States National Bank of Oregon, et al., conveyed the subject lots by statutory special warranty deed to Agency Creek Management Co. in April of 1990, recorded in Multnomah County Book 2296, Pages 2833-2836. This standard is met.

North Tualatin Mountains Nature Park Application – Burlington Creek Forest (Agency Creek)
Lot of Record Determination for tax lot: 2N1W20BC-00900

Lot: 2N1W20BC-00900

Size: 0.54 acres

Location: See Exhibit A

Legal Description: Lots 1 and 2, Block 27, Burlington, County of Multnomah, State of Oregon.

Deed Information: Agency Creek Management Co. took title of parcels I, II, and III by statutory special warranty deed recorded in Multnomah County Book 2296, Page 2833, in April 1990. Agency Creek Management Co. conveyed parcels I, II, and III to Metro by special warranty deed in January of 2000, Multnomah County recording no. 2000-007612.

Current Zoning: West Hills Rural Plan Area – CFU-1

Lot of Record Determination:

MCC § 33.0005 DEFINITIONS

Lot of Record – Subject to additional provisions within each Zoning District, a Lot of Record is a parcel, lot, or a group thereof that, when created or reconfigured, (a) satisfied all applicable zoning laws and (b) satisfied all applicable land division laws, or (c) complies with the criteria for the creation of new lots or parcels described in MCC 36.7785. Those laws shall include all required zoning and land division review procedures, decisions, and conditions of approval.

(a) "Satisfied all applicable zoning laws" shall mean: the parcel, lot, or group thereof was created and, if applicable, reconfigured in full compliance with all zoning minimum lot size, dimensional standards, and access requirements.

Finding: Lots 1 and 2, Block 27, Burlington, were created by the subdivision plat of Burlington in 1909. In 1909, there were no minimum lot sizes, dimensional standards, or access requirements. Multnomah County did not apply zoning laws to this area until its first zoning ordinance in July 10, 1958.

(b) "Satisfied all applicable land division laws" shall mean the parcel or lot was created:
1. By a subdivision plat under the applicable subdivision requirements in effect at the time; or...

Finding: Lots 1 and 2, Block 27, Burlington, were created by the subdivision plat of Burlington in 1909. This standard is met.

MCC § 33.2275 CFU-1 Lot of Record

(A) In addition to the Lot of Record definition standards in MCC 33.0005, for the purposes of this district a Lot of Record is either:

(1) A parcel or lot which was not contiguous to any other parcel or lot under the same ownership on February 20, 1990, or

(2) A group of contiguous parcels or lots:

- (a) Which were held under the same ownership on February 20, 1990; and
- (b) Which, individually or when considered in combination, shall be aggregated to comply with a minimum lot size of 19 acres, without creating any new lot line.
 - 1. Each Lot of Record proposed to be segregated from the contiguous group of parcels or lots shall be an existing legally created lot lines and shall not result in any remainder individual parcel or lot, or remainder of contiguous combination of parcels or lots, with less than 19 acres in area. See Examples 1 and 2 in this subsection.
 - 2. There shall be an exception to the 19 acre minimum lot size requirement when the entire same ownership grouping of parcels or lots was less than 19 acres in area on February 20, 1990, and then the entire grouping shall be one Lot of Record. See Example 3 in this subsection.

Finding: Lots 1 and 2, Block 27, Burlington (tax lot 2N1W20BC -00900), total 0.54 acres. United States National Bank of Oregon, et al., conveyed the subject lots by statutory special warranty deed to Agency Creek Management Co. in April of 1990, recorded in Multnomah County Book 2296, Pages 2833-2836. This standard is met.

**North Tualatin Mountains Nature Park Application – Burlington Creek Forest (Agency Creek)
Lot of Record Determination for tax lot: 2N1W20B-00500**

Lot: 2N1W20B-00500

Size: 3.83 acres

Location: See Exhibit A

Legal Description: Lots 1 through 14, inclusive, Block 28, Burlington, County of Multnomah, State of Oregon.

Deed Information: Agency Creek Management Co. took title of parcels I, II, and III by statutory special warranty deed recorded in Multnomah County Book 2296, Page 2833, in April 1990. Agency Creek Management Co. conveyed parcels I, II, and III to Metro by special warranty deed in January of 2000, Multnomah County recording no. 2000-007612.

Current Zoning: West Hills Rural Plan Area – CFU-1

Lot of Record Determination:

MCC § 33.0005 DEFINITIONS

Lot of Record – Subject to additional provisions within each Zoning District, a Lot of Record is a parcel, lot, or a group thereof that, when created or reconfigured, (a) satisfied all applicable zoning laws and (b) satisfied all applicable land division laws, or (c) complies with the criteria for the creation of new lots or parcels described in MCC 36.7785. Those laws shall include all required zoning and land division review procedures, decisions, and conditions of approval.

- (a) *"Satisfied all applicable zoning laws" shall mean: the parcel, lot, or group thereof was created and, if applicable, reconfigured in full compliance with all zoning minimum lot size, dimensional standards, and access requirements.*

Finding: Lots 1 through 14, inclusive, Block 28, Burlington, were created by the subdivision plat of Burlington in 1909. In 1909, there were no minimum lot sizes, dimensional standards, or access requirements. Multnomah County did not apply zoning laws to this area until its first zoning ordinance in July 10, 1958.

- (b) *"Satisfied all applicable land division laws" shall mean the parcel or lot was created:*
1. *By a subdivision plat under the applicable subdivision requirements in effect at the time; or...*

Finding: Lots 1 through 14, inclusive, Block 28, Burlington, were created by the subdivision plat of Burlington in 1909. This standard is met.

MCC § 33.2275 CFU-1 Lot of Record

- (A) *In addition to the Lot of Record definition standards in MCC 33.0005, for the purposes of this district a Lot of Record is either:*
- (1) *A parcel or lot which was not contiguous to any other parcel or lot under the same ownership on February 20, 1990, or*
- (2) *A group of contiguous parcels or lots:*
- (a) *Which were held under the same ownership on February 20, 1990; and*
- (b) *Which, individually or when considered in combination, shall be aggregated to comply with a minimum lot size of 19 acres, without creating any new lot line.*
1. *Each Lot of Record proposed to be segregated from the contiguous group of parcels or lots shall be an existing legally created lot lines and shall not result in any remainder individual parcel or lot, or remainder of contiguous combination of parcels or lots, with less than 19 acres in area. See Examples 1 and 2 in this subsection.*
2. *There shall be an exception to the 19 acre minimum lot size requirement when the entire same ownership grouping of parcels or lots was less than 19 acres in area on February 20, 1990, and then the entire grouping shall be one Lot of Record. See Example 3 in this subsection.*

Finding: Lots 1 through 14, inclusive, Block 28, Burlington (tax lot 2N1W20B -00500), total 3.83 acres. United States National Bank of Oregon, et al., conveyed the subject lots by statutory special warranty deed to Agency Creek Management Co. in April of 1990, recorded in Multnomah County Book 2296, Pages 2833-2836. This standard is met.

North Tualatin Mountains Nature Park Application – Burlington Creek Forest (Agency Creek)
Lot of Record Determination for tax lot: 2N1W20BD-03700

Lot: 2N1W20BD-03700

Size: 4.80

Location: See Exhibit A

Legal Description: Lots 1 through 17, inclusive, Block 29, Burlington, County of Multnomah, State of Oregon.

Deed Information: Agency Creek Management Co. took title of parcels I, II, and III by statutory special warranty deed recorded in Multnomah County Book 2296, Page 2833, in April 1990. Agency Creek Management Co. conveyed parcels I, II, and III to Metro by special warranty deed in January of 2000, Multnomah County recording no. 2000-007612.

Current Zoning: West Hills Rural Plan Area – CFU-1

Lot of Record Determination:

MCC § 33.0005 DEFINITIONS

Lot of Record – Subject to additional provisions within each Zoning District, a Lot of Record is a parcel, lot, or a group thereof that, when created or reconfigured, (a) satisfied all applicable zoning laws and (b) satisfied all applicable land division laws, or (c) complies with the criteria for the creation of new lots or parcels described in MCC 36.7785. Those laws shall include all required zoning and land division review procedures, decisions, and conditions of approval.

(a) "Satisfied all applicable zoning laws" shall mean: the parcel, lot, or group thereof was created and, if applicable, reconfigured in full compliance with all zoning minimum lot size, dimensional standards, and access requirements.

Finding: Lots 1 through 17, inclusive, Block 29, Burlington, were created by the subdivision plat of Burlington in 1909. In 1909, there were no minimum lot sizes, dimensional standards, or access requirements. Multnomah County did not apply zoning laws to this area until its first zoning ordinance in July 10, 1958.

(b) "Satisfied all applicable land division laws" shall mean the parcel or lot was created:
1. By a subdivision plat under the applicable subdivision requirements in effect at the time; or...

Finding: Lots 1 through 17, inclusive, Block 29, Burlington, were created by the subdivision plat of Burlington in 1909. This standard is met.

MCC § 33.2275 CFU-1 Lot of Record

(A) In addition to the Lot of Record definition standards in MCC 33.0005, for the purposes of this district a Lot of Record is either:

(1) A parcel or lot which was not contiguous to any other parcel or lot under the same ownership on February 20, 1990, or

(2) A group of contiguous parcels or lots:

- (a) Which were held under the same ownership on February 20, 1990; and
- (b) Which, individually or when considered in combination, shall be aggregated to comply with a minimum lot size of 19 acres, without creating any new lot line.
 - 1. Each Lot of Record proposed to be segregated from the contiguous group of parcels or lots shall be an existing legally created lot lines and shall not result in any remainder individual parcel or lot, or remainder of contiguous combination of parcels or lots, with less than 19 acres in area. See Examples 1 and 2 in this subsection.
 - 2. There shall be an exception to the 19 acre minimum lot size requirement when the entire same ownership grouping of parcels or lots was less than 19 acres in area on February 20, 1990, and then the entire grouping shall be one Lot of Record. See Example 3 in this subsection.

Finding: Lots 1 through 17, inclusive, Block 29, Burlington (tax lot 2N1W20BD-03700), total 4.80 acres. United States National Bank of Oregon, et al., conveyed the subject lots by statutory special warranty deed to Agency Creek Management Co. in April of 1990, recorded in Multnomah County Book 2296, Pages 2833-2836. This standard is met.

**North Tualatin Mountains Nature Park Application – Burlington Creek Forest (Agency Creek)
Lot of Record Determination for tax lot: 2N1W20C-00100**

Lot: 2N1W20C -00100

Size: 5.58 acres

Location: See Exhibit A

Legal Description: Lots 1 through 14, inclusive, Block 36, Burlington, County of Multnomah, State of Oregon.

Deed Information: Agency Creek Management Co. took title of parcels I, II, and III by statutory special warranty deed recorded in Multnomah County Book 2296, Page 2833, in April 1990. Agency Creek Management Co. conveyed parcels I, II, and III to Metro by special warranty deed in January of 2000, Multnomah County recording no. 2000-007612.

Current Zoning: West Hills Rural Plan Area – CFU-1

Lot of Record Determination:

MCC § 33.0005 DEFINITIONS

Lot of Record – Subject to additional provisions within each Zoning District, a Lot of Record is a parcel, lot, or a group thereof that, when created or reconfigured, (a) satisfied all applicable zoning laws and (b) satisfied all applicable land division laws, or (c) complies with the criteria for the creation of new lots or parcels described in MCC 36.7785. Those laws shall include all required zoning and land division review procedures, decisions, and conditions of approval.

- (a) *"Satisfied all applicable zoning laws" shall mean: the parcel, lot, or group thereof was created and, if applicable, reconfigured in full compliance with all zoning minimum lot size, dimensional standards, and access requirements.*

Finding: Lots 1 through 14, inclusive, Block 36, Burlington, were created by the subdivision plat of Burlington in 1909. In 1909, there were no minimum lot sizes, dimensional standards, or access requirements. Multnomah County did not apply zoning laws to this area until its first zoning ordinance in July 10, 1958.

- (b) *"Satisfied all applicable land division laws" shall mean the parcel or lot was created:*
1. *By a subdivision plat under the applicable subdivision requirements in effect at the time; or...*

Finding: Lots 1 through 14, inclusive, Block 36, Burlington, were created by the subdivision plat of Burlington in 1909. This standard is met.

MCC § 33.2275 CFU-1 Lot of Record

- (A) *In addition to the Lot of Record definition standards in MCC 33.0005, for the purposes of this district a Lot of Record is either:*
- (1) *A parcel or lot which was not contiguous to any other parcel or lot under the same ownership on February 20, 1990, or*
- (2) *A group of contiguous parcels or lots:*
- (a) *Which were held under the same ownership on February 20, 1990; and*
- (b) *Which, individually or when considered in combination, shall be aggregated to comply with a minimum lot size of 19 acres, without creating any new lot line.*
1. *Each Lot of Record proposed to be segregated from the contiguous group of parcels or lots shall be an existing legally created lot lines and shall not result in any remainder individual parcel or lot, or remainder of contiguous combination of parcels or lots, with less than 19 acres in area. See Examples 1 and 2 in this subsection.*
2. *There shall be an exception to the 19 acre minimum lot size requirement when the entire same ownership grouping of parcels or lots was less than 19 acres in area on February 20, 1990, and then the entire grouping shall be one Lot of Record. See Example 3 in this subsection.*

Finding: Lots 1 through 14, inclusive, Block 36, Burlington (tax lot 2N1W20C-00100), total 5.58 acres. United States National Bank of Oregon, et al., conveyed the subject lots by statutory special warranty deed to Agency Creek Management Co. in April of 1990, recorded in Multnomah County Book 2296, Pages 2833-2836. This standard is met.

North Tualatin Mountains Nature Park Application – Burlington Creek Forest (Agency Creek)
Lot of Record Determination for tax lot: 2N1W20C-00200

Lot: 2N1W20C-00200

Size: 3.07 acres

Location: See Exhibit A

Legal Description: Lots 1 through 7, inclusive, Block 37, Burlington, County of Multnomah, State of Oregon.

Deed Information: Agency Creek Management Co. took title of parcels I, II, and III by statutory special warranty deed recorded in Multnomah County Book 2296, Page 2833, in April 1990. Agency Creek Management Co. conveyed parcels I, II, and III to Metro by special warranty deed in January of 2000, Multnomah County recording no. 2000-007612.

Current Zoning: West Hills Rural Plan Area – CFU-1

Lot of Record Determination:

MCC § 33.0005 DEFINITIONS

Lot of Record – Subject to additional provisions within each Zoning District, a Lot of Record is a parcel, lot, or a group thereof that, when created or reconfigured, (a) satisfied all applicable zoning laws and (b) satisfied all applicable land division laws, or (c) complies with the criteria for the creation of new lots or parcels described in MCC 36.7785. Those laws shall include all required zoning and land division review procedures, decisions, and conditions of approval.

(a) "Satisfied all applicable zoning laws" shall mean: the parcel, lot, or group thereof was created and, if applicable, reconfigured in full compliance with all zoning minimum lot size, dimensional standards, and access requirements.

Finding: Lots 1 through 7, inclusive, Block 37, Burlington, were created by the subdivision plat of Burlington in 1909. In 1909, there were no minimum lot sizes, dimensional standards, or access requirements. Multnomah County did not apply zoning laws to this area until its first zoning ordinance in July 10, 1958.

(b) "Satisfied all applicable land division laws" shall mean the parcel or lot was created:
1. By a subdivision plat under the applicable subdivision requirements in effect at the time; or...

Finding: Lots 1 through 7, inclusive, Block 37, Burlington, were created by the subdivision plat of Burlington in 1909. This standard is met.

MCC § 33.2275 CFU-1 Lot of Record

(A) In addition to the Lot of Record definition standards in MCC 33.0005, for the purposes of this district a Lot of Record is either:

(1) A parcel or lot which was not contiguous to any other parcel or lot under the same ownership on February 20, 1990, or

(2) A group of contiguous parcels or lots:

- (a) Which were held under the same ownership on February 20, 1990; and
- (b) Which, individually or when considered in combination, shall be aggregated to comply with a minimum lot size of 19 acres, without creating any new lot line.
 - 1. Each Lot of Record proposed to be segregated from the contiguous group of parcels or lots shall be an existing legally created lot lines and shall not result in any remainder individual parcel or lot, or remainder of contiguous combination of parcels or lots, with less than 19 acres in area. See Examples 1 and 2 in this subsection.
 - 2. There shall be an exception to the 19 acre minimum lot size requirement when the entire same ownership grouping of parcels or lots was less than 19 acres in area on February 20, 1990, and then the entire grouping shall be one Lot of Record. See Example 3 in this subsection.

Finding: Lots 1 through 7, inclusive, Block 37, Burlington (tax lot 2N1W20C-00200), total 3.07 acres. United States National Bank of Oregon, et al., conveyed the subject lots by statutory special warranty deed to Agency Creek Management Co. in April of 1990, recorded in Multnomah County Book 2296, Pages 2833-2836. This standard is met.

**North Tualatin Mountains Nature Park Application – Burlington Creek Forest (Agency Creek)
Lot of Record Determination for tax lot: 2N1W20C-00300**

Lot: 2N1W20C-00300

Size: 4.62 acres

Location: See Exhibit A

Legal Description: Lots 1 through 5, inclusive, Block 38, Burlington, County of Multnomah, State of Oregon.

Deed Information: Agency Creek Management Co. took title of parcels I, II, and III by statutory special warranty deed recorded in Multnomah County Book 2296, Page 2833, in April 1990. Agency Creek Management Co. conveyed parcels I, II, and III to Metro by special warranty deed in January of 2000, Multnomah County recording no. 2000-007612.

Current Zoning: West Hills Rural Plan Area – CFU-1

Lot of Record Determination:

MCC § 33.0005 DEFINITIONS

Lot of Record – Subject to additional provisions within each Zoning District, a Lot of Record is a parcel, lot, or a group thereof that, when created or reconfigured, (a) satisfied all applicable zoning laws and (b) satisfied all applicable land division laws, or (c) complies with the criteria for the creation of new lots or parcels described in MCC 36.7785. Those laws shall include all required zoning and land division review procedures, decisions, and conditions of approval.

- (a) *"Satisfied all applicable zoning laws" shall mean: the parcel, lot, or group thereof was created and, if applicable, reconfigured in full compliance with all zoning minimum lot size, dimensional standards, and access requirements.*

Finding: Lots 1 through 5, inclusive, Block 38, Burlington, were created by the subdivision plat of Burlington in 1909. In 1909, there were no minimum lot sizes, dimensional standards, or access requirements. Multnomah County did not apply zoning laws to this area until its first zoning ordinance in July 10, 1958.

- (b) *"Satisfied all applicable land division laws" shall mean the parcel or lot was created:*
1. *By a subdivision plat under the applicable subdivision requirements in effect at the time; or...*

Finding: Lots 1 through 5, inclusive, Block 38, Burlington, were created by the subdivision plat of Burlington in 1909. This standard is met.

MCC § 33.2275 CFU-1 Lot of Record

- (A) *In addition to the Lot of Record definition standards in MCC 33.0005, for the purposes of this district a Lot of Record is either:*
- (1) *A parcel or lot which was not contiguous to any other parcel or lot under the same ownership on February 20, 1990, or*
- (2) *A group of contiguous parcels or lots:*
- (a) *Which were held under the same ownership on February 20, 1990; and*
- (b) *Which, individually or when considered in combination, shall be aggregated to comply with a minimum lot size of 19 acres, without creating any new lot line.*
1. *Each Lot of Record proposed to be segregated from the contiguous group of parcels or lots shall be an existing legally created lot lines and shall not result in any remainder individual parcel or lot, or remainder of contiguous combination of parcels or lots, with less than 19 acres in area. See Examples 1 and 2 in this subsection.*
2. *There shall be an exception to the 19 acre minimum lot size requirement when the entire same ownership grouping of parcels or lots was less than 19 acres in area on February 20, 1990, and then the entire grouping shall be one Lot of Record. See Example 3 in this subsection.*

Finding: Lots 1 through 5, inclusive, Block 38, Burlington (tax lot 2N1W20C-00300), total 4.62 acres. United States National Bank of Oregon, et al., conveyed the subject lots by statutory special warranty deed to Agency Creek Management Co. in April of 1990, recorded in Multnomah County Book 2296, Pages 2833-2836. This standard is met.

North Tualatin Mountains Nature Park Application – Burlington Creek Forest (Agency Creek)
Lot of Record Determination for tax lot: 2N1W20C-00400

Lot: 2N1W20C-00400

Size: 6.17 acres

Location: See Exhibit A

Legal Description: Lots 1 through 13, inclusive, Block 39, Burlington, County of Multnomah, State of Oregon.

Deed Information: Agency Creek Management Co. took title of parcels I, II, and III by statutory special warranty deed recorded in Multnomah County Book 2296, Page 2833, in April 1990. Agency Creek Management Co. conveyed parcels I, II, and III to Metro by special warranty deed in January of 2000, Multnomah County recording no. 2000-007612.

Current Zoning: West Hills Rural Plan Area – CFU-1

Lot of Record Determination:

MCC § 33.0005 DEFINITIONS

Lot of Record – Subject to additional provisions within each Zoning District, a Lot of Record is a parcel, lot, or a group thereof that, when created or reconfigured, (a) satisfied all applicable zoning laws and (b) satisfied all applicable land division laws, or (c) complies with the criteria for the creation of new lots or parcels described in MCC 36.7785. Those laws shall include all required zoning and land division review procedures, decisions, and conditions of approval.

(a) "Satisfied all applicable zoning laws" shall mean: the parcel, lot, or group thereof was created and, if applicable, reconfigured in full compliance with all zoning minimum lot size, dimensional standards, and access requirements.

Finding: Lots 1 through 13, inclusive, Block 39, Burlington, were created by the subdivision plat of Burlington in 1909. In 1909, there were no minimum lot sizes, dimensional standards, or access requirements. Multnomah County did not apply zoning laws to this area until its first zoning ordinance in July 10, 1958.

(b) "Satisfied all applicable land division laws" shall mean the parcel or lot was created:
1. By a subdivision plat under the applicable subdivision requirements in effect at the time; or...

Finding: Lots 1 through 13, inclusive, Block 39, Burlington, were created by the subdivision plat of Burlington in 1909. This standard is met.

MCC § 33.2275 CFU-1 Lot of Record

(A) In addition to the Lot of Record definition standards in MCC 33.0005, for the purposes of this district a Lot of Record is either:

(1) A parcel or lot which was not contiguous to any other parcel or lot under the same ownership on February 20, 1990, or

(2) A group of contiguous parcels or lots:

- (a) Which were held under the same ownership on February 20, 1990; and
- (b) Which, individually or when considered in combination, shall be aggregated to comply with a minimum lot size of 19 acres, without creating any new lot line.
 - 1. Each Lot of Record proposed to be segregated from the contiguous group of parcels or lots shall be an existing legally created lot lines and shall not result in any remainder individual parcel or lot, or remainder of contiguous combination of parcels or lots, with less than 19 acres in area. See Examples 1 and 2 in this subsection.
 - 2. There shall be an exception to the 19 acre minimum lot size requirement when the entire same ownership grouping of parcels or lots was less than 19 acres in area on February 20, 1990, and then the entire grouping shall be one Lot of Record. See Example 3 in this subsection.

Finding: Lots 1 through 13, inclusive, Block 39, Burlington (tax lot 2N1W20C -00400), total 6.17 acres. United States National Bank of Oregon, et al., conveyed the subject lots by statutory special warranty deed to Agency Creek Management Co. in April of 1990, recorded in Multnomah County Book 2296, Pages 2833-2836. This standard is met.

**North Tualatin Mountains Nature Park Application – Burlington Creek Forest (Agency Creek)
Lot of Record Determination for tax lot: 2N1W20B-00600**

Lot: 2N1W20B-00600

Size: 4.16 acres

Location: See Exhibit A

Legal Description: Lots 1 through 15, inclusive, and Lots 17 through 19, inclusive, Block 40, Burlington, County of Multnomah, State of Oregon.

Deed Information: Agency Creek Management Co. took title of parcels I, II, and III by statutory special warranty deed recorded in Multnomah County Book 2296, Page 2833, in April 1990. Agency Creek Management Co. conveyed parcels I, II, and III to Metro by special warranty deed in January of 2000, Multnomah County recording no. 2000-007612.

Current Zoning: West Hills Rural Plan Area – CFU-1

Lot of Record Determination:

MCC § 33.0005 DEFINITIONS

Lot of Record – Subject to additional provisions within each Zoning District, a Lot of Record is a parcel, lot, or a group thereof that, when created or reconfigured, (a) satisfied all applicable zoning laws and (b) satisfied all applicable land division laws, or (c) complies with the criteria for the creation of new lots or parcels described in MCC 36.7785. Those laws shall include all required zoning and land division review procedures, decisions, and conditions of approval.

- (a) *"Satisfied all applicable zoning laws" shall mean: the parcel, lot, or group thereof was created and, if applicable, reconfigured in full compliance with all zoning minimum lot size, dimensional standards, and access requirements.*

Finding: Lots 1 through 15, inclusive, and Lots 17 through 19, inclusive, Block 40, Burlington, were created by the subdivision plat of Burlington in 1909. In 1909, there were no minimum lot sizes, dimensional standards, or access requirements. Multnomah County did not apply zoning laws to this area until its first zoning ordinance in July 10, 1958.

- (b) *"Satisfied all applicable land division laws" shall mean the parcel or lot was created:*
1. *By a subdivision plat under the applicable subdivision requirements in effect at the time; or...*

Finding: Lots 1 through 15, inclusive, and Lots 17 through 19, inclusive, Block 40, Burlington, were created by the subdivision plat of Burlington in 1909. This standard is met.

MCC § 33.2275 CFU-1 Lot of Record

- (A) *In addition to the Lot of Record definition standards in MCC 33.0005, for the purposes of this district a Lot of Record is either:*
- (1) *A parcel or lot which was not contiguous to any other parcel or lot under the same ownership on February 20, 1990, or*
- (2) *A group of contiguous parcels or lots:*
- (a) *Which were held under the same ownership on February 20, 1990; and*
- (b) *Which, individually or when considered in combination, shall be aggregated to comply with a minimum lot size of 19 acres, without creating any new lot line.*
1. *Each Lot of Record proposed to be segregated from the contiguous group of parcels or lots shall be an existing legally created lot lines and shall not result in any remainder individual parcel or lot, or remainder of contiguous combination of parcels or lots, with less than 19 acres in area. See Examples 1 and 2 in this subsection.*
2. *There shall be an exception to the 19 acre minimum lot size requirement when the entire same ownership grouping of parcels or lots was less than 19 acres in area on February 20, 1990, and then the entire grouping shall be one Lot of Record. See Example 3 in this subsection.*

Finding: Lots 1 through 15, inclusive, and Lots 17 through 19, inclusive, Block 40, Burlington (tax lot 2N1W20B-00600), total 4.16 acres. United States National Bank of Oregon, et al., conveyed the subject lots by statutory special warranty deed to Agency Creek Management Co. in April of 1990, recorded in Multnomah County Book 2296, Pages 2833-2836. This standard is met.

North Tualatin Mountains Nature Park Application – Burlington Creek Forest (Agency Creek)
Lot of Record Determination for tax lot: 2N1W20B-00400

Lot: 2N1W20B-00400

Size: 1.24 acres

Location: See Exhibit A

Legal Description: Lots 1 through 5, inclusive, Block 41, Burlington, County of Multnomah, State of Oregon.

Deed Information: Agency Creek Management Co. took title of parcels I, II, and III by statutory special warranty deed recorded in Multnomah County Book 2296, Page 2833, in April 1990. Agency Creek Management Co. conveyed parcels I, II, and III to Metro by special warranty deed in January of 2000, Multnomah County recording no. 2000-007612.

Current Zoning: West Hills Rural Plan Area – CFU-1

Lot of Record Determination:

MCC § 33.0005 DEFINITIONS

Lot of Record – Subject to additional provisions within each Zoning District, a Lot of Record is a parcel, lot, or a group thereof that, when created or reconfigured, (a) satisfied all applicable zoning laws and (b) satisfied all applicable land division laws, or (c) complies with the criteria for the creation of new lots or parcels described in MCC 36.7785. Those laws shall include all required zoning and land division review procedures, decisions, and conditions of approval.

(a) "Satisfied all applicable zoning laws" shall mean: the parcel, lot, or group thereof was created and, if applicable, reconfigured in full compliance with all zoning minimum lot size, dimensional standards, and access requirements.

Finding: Lots 1 through 5, inclusive, Block 41, Burlington, were created by the subdivision plat of Burlington in 1909. In 1909, there were no minimum lot sizes, dimensional standards, or access requirements. Multnomah County did not apply zoning laws to this area until its first zoning ordinance in July 10, 1958.

(b) "Satisfied all applicable land division laws" shall mean the parcel or lot was created:
1. By a subdivision plat under the applicable subdivision requirements in effect at the time; or...

Finding: Lots 1 through 5, inclusive, Block 41, Burlington, were created by the subdivision plat of Burlington in 1909. This standard is met.

MCC § 33.2275 CFU-1 Lot of Record

(A) In addition to the Lot of Record definition standards in MCC 33.0005, for the purposes of this district a Lot of Record is either:

(1) A parcel or lot which was not contiguous to any other parcel or lot under the same ownership on February 20, 1990, or

(2) A group of contiguous parcels or lots:

- (a) Which were held under the same ownership on February 20, 1990; and
- (b) Which, individually or when considered in combination, shall be aggregated to comply with a minimum lot size of 19 acres, without creating any new lot line.
 - 1. Each Lot of Record proposed to be segregated from the contiguous group of parcels or lots shall be an existing legally created lot lines and shall not result in any remainder individual parcel or lot, or remainder of contiguous combination of parcels or lots, with less than 19 acres in area. See Examples 1 and 2 in this subsection.
 - 2. There shall be an exception to the 19 acre minimum lot size requirement when the entire same ownership grouping of parcels or lots was less than 19 acres in area on February 20, 1990, and then the entire grouping shall be one Lot of Record. See Example 3 in this subsection.

Finding: Lots 1 through 5, inclusive, Block 41, Burlington (tax lot 2N1W20B-00400), total 1.24 acres. United States National Bank of Oregon, et al., conveyed the subject lots by statutory special warranty deed to Agency Creek Management Co. in April of 1990, recorded in Multnomah County Book 2296, Pages 2833-2836. This standard is met.

**North Tualatin Mountains Nature Park Application – Burlington Creek Forest (Agency Creek)
Lot of Record Determination for tax lot: 2N1W20C-00500**

Lot: 2N1W20C-00500

Size: 2.83 acres

Location: See Exhibit A

Legal Description: Lots 1, 2, and 3, Block 42, Burlington, County of Multnomah, State of Oregon.

Deed Information: Agency Creek Management Co. took title of parcels I, II, and III by statutory special warranty deed recorded in Multnomah County Book 2296, Page 2833, in April 1990.

Agency Creek Management Co. conveyed parcels I, II, and III to Metro by special warranty deed in January of 2000, Multnomah County recording no. 2000-007612.

Current Zoning: West Hills Rural Plan Area – CFU-1

Lot of Record Determination:

MCC § 33.0005 DEFINITIONS

Lot of Record – Subject to additional provisions within each Zoning District, a Lot of Record is a parcel, lot, or a group thereof that, when created or reconfigured, (a) satisfied all applicable zoning laws and (b) satisfied all applicable land division laws, or (c) complies with the criteria for the creation of new lots or parcels described in MCC 36.7785. Those laws shall include all required zoning and land division review procedures, decisions, and conditions of approval.

- (a) *"Satisfied all applicable zoning laws" shall mean: the parcel, lot, or group thereof was created and, if applicable, reconfigured in full compliance with all zoning minimum lot size, dimensional standards, and access requirements.*

Finding: Lots 1, 2, and 3, Block 42, Burlington, were created by the subdivision plat of Burlington in 1909. In 1909, there were no minimum lot sizes, dimensional standards, or access requirements. Multnomah County did not apply zoning laws to this area until its first zoning ordinance in July 10, 1958.

- (b) *"Satisfied all applicable land division laws" shall mean the parcel or lot was created:*
1. *By a subdivision plat under the applicable subdivision requirements in effect at the time; or...*

Finding: Lots 1, 2, and 3, Block 42, Burlington, were created by the subdivision plat of Burlington in 1909. This standard is met.

MCC § 33.2275 CFU-1 Lot of Record

- (A) *In addition to the Lot of Record definition standards in MCC 33.0005, for the purposes of this district a Lot of Record is either:*
- (1) *A parcel or lot which was not contiguous to any other parcel or lot under the same ownership on February 20, 1990, or*
- (2) *A group of contiguous parcels or lots:*
- (a) *Which were held under the same ownership on February 20, 1990; and*
- (b) *Which, individually or when considered in combination, shall be aggregated to comply with a minimum lot size of 19 acres, without creating any new lot line.*
1. *Each Lot of Record proposed to be segregated from the contiguous group of parcels or lots shall be an existing legally created lot lines and shall not result in any remainder individual parcel or lot, or remainder of contiguous combination of parcels or lots, with less than 19 acres in area. See Examples 1 and 2 in this subsection.*
2. *There shall be an exception to the 19 acre minimum lot size requirement when the entire same ownership grouping of parcels or lots was less than 19 acres in area on February 20, 1990, and then the entire grouping shall be one Lot of Record. See Example 3 in this subsection.*

Finding: Lots 1, 2, and 3, Block 42, Burlington (tax lot 2N1W20C-00500), total 2.83 acres. United States National Bank of Oregon, et al., conveyed the subject lots by statutory special warranty deed to Agency Creek Management Co. in April of 1990, recorded in Multnomah County Book 2296, Pages 2833-2836. This standard is met.

North Tualatin Mountains Nature Park Application – Burlington Creek Forest (Agency Creek)
Lot of Record Determination for tax lot: 2N1W20C-00600

Lot: 2N1W20C-00600

Size: 7.30 acres

Location: See Exhibit A

Legal Description: Lots 1 through 8, inclusive, Block 43, Burlington, County of Multnomah, State of Oregon.

Deed Information: Agency Creek Management Co. took title of parcels I, II, and III by statutory special warranty deed recorded in Multnomah County Book 2296, Page 2833, in April 1990. Agency Creek Management Co. conveyed parcels I, II, and III to Metro by special warranty deed in January of 2000, Multnomah County recording no. 2000-007612.

Current Zoning: West Hills Rural Plan Area – CFU-1

Lot of Record Determination:

MCC § 33.0005 DEFINITIONS

Lot of Record – Subject to additional provisions within each Zoning District, a Lot of Record is a parcel, lot, or a group thereof that, when created or reconfigured, (a) satisfied all applicable zoning laws and (b) satisfied all applicable land division laws, or (c) complies with the criteria for the creation of new lots or parcels described in MCC 36.7785. Those laws shall include all required zoning and land division review procedures, decisions, and conditions of approval.

(a) "Satisfied all applicable zoning laws" shall mean: the parcel, lot, or group thereof was created and, if applicable, reconfigured in full compliance with all zoning minimum lot size, dimensional standards, and access requirements.

Finding: Lots 1 through 8, inclusive, Block 43, Burlington, were created by the subdivision plat of Burlington in 1909. In 1909, there were no minimum lot sizes, dimensional standards, or access requirements. Multnomah County did not apply zoning laws to this area until its first zoning ordinance in July 10, 1958.

(b) "Satisfied all applicable land division laws" shall mean the parcel or lot was created:
1. By a subdivision plat under the applicable subdivision requirements in effect at the time; or...

Finding: Lots 1 through 8, inclusive, Block 43, Burlington, were created by the subdivision plat of Burlington in 1909. This standard is met.

MCC § 33.2275 CFU-1 Lot of Record

(A) In addition to the Lot of Record definition standards in MCC 33.0005, for the purposes of this district a Lot of Record is either:

(1) A parcel or lot which was not contiguous to any other parcel or lot under the same ownership on February 20, 1990, or

(2) A group of contiguous parcels or lots:

- (a) Which were held under the same ownership on February 20, 1990; and
- (b) Which, individually or when considered in combination, shall be aggregated to comply with a minimum lot size of 19 acres, without creating any new lot line.
 - 1. Each Lot of Record proposed to be segregated from the contiguous group of parcels or lots shall be an existing legally created lot lines and shall not result in any remainder individual parcel or lot, or remainder of contiguous combination of parcels or lots, with less than 19 acres in area. See Examples 1 and 2 in this subsection.
 - 2. There shall be an exception to the 19 acre minimum lot size requirement when the entire same ownership grouping of parcels or lots was less than 19 acres in area on February 20, 1990, and then the entire grouping shall be one Lot of Record. See Example 3 in this subsection.

Finding: Lots 1 through 8, inclusive, Block 43, Burlington (tax lot 2N1W20C -00600), total 7.30 acres. United States National Bank of Oregon, et al., conveyed the subject lots by statutory special warranty deed to Agency Creek Management Co. in April of 1990, recorded in Multnomah County Book 2296, Pages 2833-2836. This standard is met.

**North Tualatin Mountains Nature Park Application – Burlington Creek Forest (Agency Creek)
Lot of Record Determination for tax lot: 2N1W20C-00700**

Lot: 2N1W20C-00700

Size: 0.63 acres

Location: See Exhibit A

Legal Description: Lots 1 and 2, Block 44, Burlington, County of Multnomah, State of Oregon.

Deed Information: Agency Creek Management Co. took title of parcels I, II, and III by statutory special warranty deed recorded in Multnomah County Book 2296, Page 2833, in April 1990. Agency Creek Management Co. conveyed parcels I, II, and III to Metro by special warranty deed in January of 2000, Multnomah County recording no. 2000-007612.

Current Zoning: West Hills Rural Plan Area – CFU-1

Lot of Record Determination:

MCC § 33.0005 DEFINITIONS

Lot of Record – Subject to additional provisions within each Zoning District, a Lot of Record is a parcel, lot, or a group thereof that, when created or reconfigured, (a) satisfied all applicable zoning laws and (b) satisfied all applicable land division laws, or (c) complies with the criteria for the creation of new lots or parcels described in MCC 36.7785. Those laws shall include all required zoning and land division review procedures, decisions, and conditions of approval.

- (a) "Satisfied all applicable zoning laws" shall mean: the parcel, lot, or group thereof was created and, if applicable, reconfigured in full compliance with all zoning minimum lot size, dimensional standards, and access requirements.

Finding: Lots 1 and 2, Block 44, Burlington, were created by the subdivision plat of Burlington in 1909. In 1909, there were no minimum lot sizes, dimensional standards, or access requirements. Multnomah County did not apply zoning laws to this area until its first zoning ordinance in July 10, 1958.

- (b) *"Satisfied all applicable land division laws" shall mean the parcel or lot was created:*
1. *By a subdivision plat under the applicable subdivision requirements in effect at the time; or...*

Finding: Lots 1 and 2, Block 44, Burlington, were created by the subdivision plat of Burlington in 1909. This standard is met.

MCC § 33.2275 CFU-1 Lot of Record

- (A) *In addition to the Lot of Record definition standards in MCC 33.0005, for the purposes of this district a Lot of Record is either:*
- (1) *A parcel or lot which was not contiguous to any other parcel or lot under the same ownership on February 20, 1990, or*
 - (2) *A group of contiguous parcels or lots:*
 - (a) *Which were held under the same ownership on February 20, 1990; and*
 - (b) *Which, individually or when considered in combination, shall be aggregated to comply with a minimum lot size of 19 acres, without creating any new lot line.*
 1. *Each Lot of Record proposed to be segregated from the contiguous group of parcels or lots shall be an existing legally created lot lines and shall not result in any remainder individual parcel or lot, or remainder of contiguous combination of parcels or lots, with less than 19 acres in area. See Examples 1 and 2 in this subsection.*
 2. *There shall be an exception to the 19 acre minimum lot size requirement when the entire same ownership grouping of parcels or lots was less than 19 acres in area on February 20, 1990, and then the entire grouping shall be one Lot of Record. See Example 3 in this subsection.*

Finding: Lots 1 and 2, Block 44, Burlington (tax lot 2N1W20C-00700), total 0.63 acres. United States National Bank of Oregon, et al., conveyed the subject lots by statutory special warranty deed to Agency Creek Management Co. in April of 1990, recorded in Multnomah County Book 2296, Pages 2833-2836. This standard is met.

North Tualatin Mountains Nature Park Application – Burlington Creek Forest (Agency Creek)
Lot of Record Determination for tax lot: 2N1W20-00400

Lot: 2N1W20-00400

Size: 139.77 acres

Location: See Exhibit A

Legal Description: Metes and bounds -- Parcel III.

Deed Information: The Home Highway Company conveyed parcel III to H.F. Schritsmier on February 6, 1946, document no. 12528, Book 1328, Pages 246-251. Agency Creek Management Co. took title of parcels I, II, and III by statutory special warranty deed recorded in Multnomah County Book 2296, Page 2833, in April 1990. Agency Creek Management Co. conveyed parcels I, II, and III to Metro by special warranty deed in January of 2000, Multnomah County recording no. 2000-007612.

Current Zoning: West Hills Rural Plan Area – CFU-1

Lot of Record Determination:

MCC § 33.0005 DEFINITIONS

Lot of Record – Subject to additional provisions within each Zoning District, a Lot of Record is a parcel, lot, or a group thereof that, when created or reconfigured, (a) satisfied all applicable zoning laws and (b) satisfied all applicable land division laws, or (c) complies with the criteria for the creation of new lots or parcels described in MCC 36.7785. Those laws shall include all required zoning and land division review procedures, decisions, and conditions of approval.

- (a) "Satisfied all applicable zoning laws" shall mean: the parcel, lot, or group thereof was created and, if applicable, reconfigured in full compliance with all zoning minimum lot size, dimensional standards, and access requirements.*

Finding: The Home Highway Company conveyed parcel III to H.F. Schritsmier on February 6, 1946, document no. 12528, Book 1328, Pages 246-251. In 1946, there were no minimum lot sizes, dimensional standards, or access requirements. Multnomah County did not apply zoning laws to this area until its first zoning ordinance in July 10, 1958.

- (b) "Satisfied all applicable land division laws" shall mean the parcel or lot was created:*
- 2. By a deed, or a sales contract dated and signed by the parties to the transaction, that was recorded with the Recording Section of the public office responsible for public records prior to October 19, 1978; or*

Finding: The Home Highway Company conveyed parcel III to H.F. Schritsmier on February 6, 1946, document no. 12528, Book 1328, Pages 246-251.

MCC § 33.2275 CFU-1 Lot of Record

- (A) In addition to the Lot of Record definition standards in MCC 33.0005, for the purposes of this district a Lot of Record is either:*
- (1) A parcel or lot which was not contiguous to any other parcel or lot under the same ownership on February 20, 1990, or*

- (2) *A group of contiguous parcels or lots:*
- (a) *Which were held under the same ownership on February 20, 1990; and*
 - (b) *Which, individually or when considered in combination, shall be aggregated to comply with a minimum lot size of 19 acres, without creating any new lot line.*
 - 1. *Each Lot of Record proposed to be segregated from the contiguous group of parcels or lots shall be an existing legally created lot lines and shall not result in any remainder individual parcel or lot, or remainder of contiguous combination of parcels or lots, with less than 19 acres in area. See Examples 1 and 2 in this subsection.*
 - 2. *There shall be an exception to the 19 acre minimum lot size requirement when the entire same ownership grouping of parcels or lots was less than 19 acres in area on February 20, 1990, and then the entire grouping shall be one Lot of Record. See Example 3 in this subsection.*

Finding: Parcel III (tax lot 2N1W20 -00400) is 139.77 acres. United States National Bank of Oregon, et al., conveyed the subject lots by statutory special warranty deed to Agency Creek Management Co. in April of 1990, recorded in Multnomah County Book 2296, Pages 2833-2836. This standard is met.

Lot of Record Documentation for tax lots:

2N1W20B-00100; 2N1W20BC-00800; 2N1W20BC-01000;
2N1W20BC-01200; 2N1W20B-00300; 2N1W20BC-00900;
2N1W20B-00500; 2N1W20BD-03700; 2N1W20C-00100;
2N1W20C-00200; 2N1W20C-00300; 2N1W20C-00400;
2N1W20B-00600; 2N1W20B-00400; 2N1W20C-00500;
2N1W20C-00600; 2N1W20C-00700; 2N1W20-00400

Property owner: Metro

TICOR TITLE INSURANCE

WARRANTY DEED

This Space Reserved for Recorder's Use

GRANTOR: Agency Creek

GRANTEE: Metro

Until a change is requested, all tax statements shall be sent to the following address:

Metro
Attn: April Olbrich
600 NE Grand Ave.
Portland, OR 97232

Escrow No. 661705A

Title No. M661705A-RH

After recording return to:

Metro
Attn: April Olbrich
600 NE Grand Ave.
Portland, OR 97232

Recorded in the County of Multnomah, Oregon

C. Swick, Deputy Clerk

Total : 44.00

2000-007612 01/20/2000 10:30:39am ATKLM

A37	6	REC	SUR	DOR	OLIS
		30.00	3.00	10.00	1.00

SPECIAL WARRANTY DEED - STATUTORY FORM

Agency Creek Management Co., an Oregon corporation Grantor, conveys and specially warrants to Metro, a municipal corporation Grantee, the following described real property free of encumbrances created or suffered by the Grantor, except as specifically set forth herein situated in Multnomah County, Oregon, to wit:

SEE 'LEGAL DESCRIPTION' ATTACHED HERETO AND BY REFERENCE MADE A PART HEREOF.

THIS INSTRUMENT WILL NOT ALLOW USE OF THE PROPERTY DESCRIBED IN THIS INSTRUMENT IN VIOLATION OF APPLICABLE LAND USE LAWS AND REGULATIONS. BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON ACQUIRING FEE TITLE TO THE PROPERTY SHOULD CHECK WITH THE APPROPRIATE CITY OR COUNTY PLANNING DEPARTMENT TO VERIFY APPROVED USES AND TO DETERMINE ANY LIMITS ON LAWSUITS AGAINST FARMING OR FOREST PRACTICES AS DEFINED IN ORS 30.930.

The said property is of all encumbrances created or suffered by the Grantor except (if none, so state):

See attached exhibit B

The true consideration for this conveyance is \$1,800,000.00 paid to a qualified intermediary to facilitate an IRC 1031 Tax Deferred Exchange. (Here comply with the requirements of ORS 93.030)

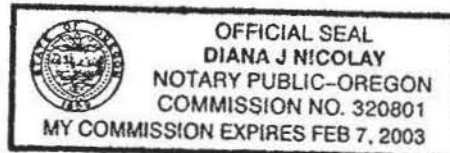
Dated this 12th day of January, 2000

Agency Creek Management Co., an Oregon corporation

By: R C Parker
Ronald C. Parker Its: PresidentState of Oregon, County of Washington

The foregoing instrument was acknowledged before me this 12th day of January, 2000 by Ronald C. Parker, as President of Agency Creek Management Co., an Oregon corporation, on behalf of the corporation.

Diana J. Nicolay
Notary Public for Oregon
My commission expires: 2/7/03



6.

EXHIBIT 'A'

LEGAL DESCRIPTION

PARCEL 1: Lots 1 through 5, inclusive, and Lots 12 through 18, inclusive, Block 4; Lots 1 through 12, inclusive, and Lots 15 through 18, inclusive, Block 5; Lots 1, 2, Lots 6 through 19, inclusive, and Lots 25 and 26, Block 6; Lots 1 through 4, inclusive, Block 7; Lots 4 through 9, inclusive, Lots 10 through 14, inclusive and Lots 22 through 25, inclusive, Block 10; Lots 1 through 22, inclusive, Block 11; Lots 1 through 11, inclusive and Lots 13 through 25, inclusive, Block 12, Lots 1 through 3, inclusive, Lots 9 through 14, inclusive, and Lots 16, 24 and 25, Block 15; Lots 1 through 5, inclusive and Lots 14 through 18 inclusive, Block 16; Lots 3 through 12, inclusive, Block 17; Lots 1 through 7, inclusive, Block 18; Block 19; Block 20; Lots 1 through 16, inclusive, Block 21; Lots 1 through 10, inclusive, Block 22; Lots 1 through 5, inclusive, and Lots 7 through 13, Block 23; Lots 1, 2 and Lots 4 through 11, inclusive, Block 24; Lot 8 and Lots 10 through 19, Block 25, inclusive, Block 25; Block 26; Lots 1 and 2, Block 27; Lots 1 through 14, inclusive, Block 28; Lots 1 through 17, inclusive, Block 29, Lots 1 through 14, inclusive, Block 36; Lots 1 through 7, inclusive, Block 37; Lots 1 through 5, inclusive, Block 38; Lots 1 through 13, inclusive, Block 39; Lots 1 through 15, inclusive, and Lots 17 through 19, inclusive, Block 40; Lots 1 through 5, inclusive, Block 41; Lots 1, 2 and 3, Block 42; Lots 1 through 8, inclusive, Block 43; Lots 1 and 2, Block 44; Lots 1 through 16, inclusive, Block 45, except that portion of Lots 6 through 9 taken for the widening of McNamee Road. Lots 1 through 5, inclusive, Block 46; Lots 1 through 6, inclusive, Block 47; Lots 1 through 28, inclusive, Block 48; except that portion of Lots 1, 8 and 9 taken for the widening of McNamee Road. Lots 1 through 43, inclusive, Block 49; Lots 1 through 12, inclusive, Block 50; Lots 1 through 10, inclusive, and Lots 12 and 13, Block 51; Lots 1 through 7, inclusive, Block 52; Lots 1 through 7, inclusive, Block 53; all in BURLINGTON, in the County of Multnomah and State of Oregon;

EXCEPT those portions described in deeds to The State of Oregon, by and through its State Highway Commission, recorded August 23, 1932 in Book 183, page 502 and recorded January 6, 1967 in book 542, page 188.

PARCEL 2: A tract of land in the Northeast one-quarter of Section 19, Township 2 North, Range 1 West, described as follows:

Beginning at the one-quarter corner between Sections 19 and 20, Township 2 North, Range 1 West Willamette Meridian; running thence South 89° 23' West 1233.7 feet to the Southwest corner of Southeast one-quarter of Northeast one-quarter of Section 19; thence North 0° 36' East 1300.2 feet to the Northwest corner of Southeast one-quarter of Northeast one-quarter of Section 19; thence South 89° 20' West on the South line of the Northwest one-quarter of the Northeast one-quarter of Section 19, 538.79 feet to the Southeasterly line of the United Railway Company's right of way; thence following the Southeasterly and Southerly line of said right of way on a curve to the right of 1287.3 foot radius, 1908.3 feet to the line between Sections 19 and 20; thence South 1° 47' West on said line between Section 19 and 20, 1700.06 feet to the place of beginning.

PARCEL 3: A tract of land described as follows: Beginning at the section corner of 19, 20, 29, 30 in Township 2 North, Range 1 West, this being the Southwest corner of Section 20; thence North 1642.0 feet, to the South line of the John G. Tomlinson Donation Land Claim which is also the South line of Burlington; thence East along South line of said claim, 1,213.04 feet to the East line of Lanoche Drive as platted in plat of Burlington; thence Northeasterly along Easterly line of Lanoche Drive, 1,744.0 feet to the United Railway Company's right of way Westerly boundary; thence Southeasterly along said right of way to point where right of way boundary intersects the South line of Section 20; thence West 4501.95 feet to the Southwest corner of Section 20 to place of beginning;

EXCEPT that portion described in deed to The Friends of Forest Park, an Oregon nonprofit Corporation recorded July 7, 1993 in Book 2719, page 1631, more particularly described as follows:

Beginning at the Southwest corner of said Section 20; thence South 88° 43' 46" East along the South line of said Section 20, 1,455.40 feet to an iron rod; thence North 0° 50' 41" East 308.33 feet to an iron rod; thence North 18° 31' 04" West 954.64 feet to an iron rod; thence North 89° 38' 15" West 1,226.02 feet to an iron rod on the West line of said Section 20; thence South 3° 21' 00" East along said West line 1191.03 feet to the point of beginning.

Exhibit 'B' - Exceptions to Deed

1. As disclosed by the tax rolls, the premises herein described have been zoned or classified as forest lands. At any time that said land is disqualified for such use, the property will be subject to additional taxes or penalties and interest pursuant to the provisions of ORS chapter 321.
2. The premises herein described are subject to the easements and the statutory powers, including the power of assessment, of Fire Patrol-Northwest District.
(No unpaid assessments as of the date hereof.)
3. Any adverse claim based upon the assertion that said land or any portion thereof is now, or at any time has been below high water mark of the Trout Creek.
4. Reservations, including the terms and provisions thereof, in deed
From: Ruth Trust Company, an Oregon corporation
To: W. S. Moore and L. M. Cleek
Recorded: September 23, 1911
Book: 548 Page: 443
Records of Multnomah County, Oregon.
For: the right to lay and maintain water mains across said property where its general plan for a water system calls for such laying
Affects: Lot 12, Block 25, Burlington
5. Rights of the public in and to that portion lying within McNamee Road and Summit Drive.
6. Easement, including the terms and provisions thereof,
From: Highway Home Company, a corporation
To: State of Oregon
Recorded: August 23, 1932
Book: 183 Page: 502
Records of Multnomah County, Oregon.
For: slopes
Affects: areas along the State Highway in various blocks of Burlington
7. Easement(s) as described in Judgment on the Declaration of Taking under Suit No. 430, including the terms and provisions thereof,
To: United States of America
Recorded: August 17, 1940
Book: 563 Page: 164, as amended by instrument recorded March 3, 1941 in Book 591, page 576 and as also described in Final Judgment recorded December 13, 1941 in Book 654, page 9
Records of Multnomah County, Oregon.
For: electric power transmission lines, telephone and/or telegraph lines, and necessary appurtenances
Affects: a strip of land 100 feet in width in Sections 19 and 20, Township 2 North, Range 1 West except for portion in Lot 12, Block 25, Burlington
8. Danger Tree Rights described in Judgment on Declaration of Taking under Suit No. 733, including the terms and provisions thereof,
To: United States of America
Recorded: May 21, 1941
Book: 608 Page: 503, and as described in order and Final Judgment recorded April 16, 1942 in Book 675, page 557
Records of Multnomah County, Oregon.
Affects: area near and appurtenant to 100 foot wide BPA right of way

9. Easement, including the terms and provisions thereof,
From: H. F. Scritsmier also known as Harold F. Scritsmier and Patricia J. Scritsmier
To: United States of America
Recorded: May 7, 1958
Book: 1896 Page: 467
Records of Multnomah County, Oregon.
For: access roads
Affects: part of Section 20, Township 2 North, Range 1 West
10. Easement, as disclosed in deed, including the terms and provisions thereof,
From: Multnomah County
To: H. F. Scritsmier
Recorded: November 29, 1965
Book: 430 Page: 128
Records of Multnomah County, Oregon.
For: transmission line easement for the benefit of the United States of America
Affects: the Northeasterly part of Lot 12, Block 25, Burlington
11. Access Restrictions, including the terms and provisions thereof, contained in Deed,
From: H. F. Scritsmier and Patricia C. Scritsmier
To: State of Oregon, by and through its State of Oregon, by and through its State Highway Commission
Recorded: January 6, 1967
Book: 542 Page: 188
Records of Multnomah County, Oregon.
Affects: various portions of blocks in Burlington along the State Highway
12. Easement, including the terms and provisions thereof,
From: H. F. Scritsmier
To: Portland General Electric Company, an Oregon corporation
Recorded: February 11, 1971
Book: 772 Page: 644
Records of Multnomah County, Oregon.
For: electric power transmission lines and appurtenances
Affects: a 250 foot wide strip of land in Sections 19 and 20, Township 2 North, Range 1 West
13. Easement, including the terms and provisions thereof,
From: Agency Creek Management Co., an Oregon corporation
To: The Friends of Forest Park, Oregon non-profit corporation
Recorded: July 7, 1993
Book: 2719 Page: 1645
Records of Multnomah County, Oregon.
For: conservation as defined in said easement
Affects: the property in Sections 19 and 20
14. Easement, including the terms and provisions thereof,
From: Agency Creek Management Co., an Oregon corporation
To: The Friends of Forest Park, Oregon nonprofit corporation
Recorded: July 7, 1993
Book: 2719 Page: 1652
Records of Multnomah County, Oregon.
For: pedestrian hiking trail
Affects: a strip of land in Sections 19 and 20

15. Easement, including the terms and provisions thereof,
From: Agency Creek Management Co., an Oregon corporation
To: The Friends of Forest Park, an Oregon non-profit corporation
Recorded: July 7, 1993
Book: 2719 Page: 1659
Records of Multnomah County, Oregon.
For: hiking trail
Affects: a strip of land in Sections 19 and 20
16. Easement, including the terms and provisions thereof,
From: Agency Creek Management Co., an Oregon corporation
To: the Friends of Forest Park, an Oregon non-profit corporation
Recorded: July 7, 1993
Book: 2719 Page: 1665
Records of Multnomah County, Oregon.
For: vehicular ingress and egress
Affects: a strip of land in Section 20
17. Rights of the public in and to that portion lying within McNamee Road as described in Order No. 99-60 of the Board of County Commissioners for Multnomah County, recorded April 22, 1999 as Fee No. 99080467.
18. Rights of the public in and to that portion lying within Cornelius Pass Road as may be realigned and as stated on Sheet 1 and drawn on Sheet 6 of survey by Theodore G. Lambert of Stuntzner Engineering and Forestry, LLC dated September 3, 1999, revised November 5, 1999, Job No. 3993031.
19. Rights of the public in and to that portion lying within Burlington Drive and Wapato Drive as drawn on Sheet 9 of survey by Theodore G. Lambert of Stuntzner Engineering and Forestry, LLC dated September 3, 1999, revised November 5, 1999, Job No. 3993031.
Affects: part of Block 7 and 15, Burlington, now lying within Co. Rd. No. 2073
20. Any rights, interests or claims which may exist or arise by reason of the following facts shown by survey by Theodore G. Lambert of Stuntzner Engineering and Forestry, LLC dated September 3, 1999, revised November 5, 1999, Job No. 3993031, of said land:
 - a) Use of roads as noted on Sheet 2 under the section "Agency Creek Interior Road System".
 - b) Trail as shown on Sheets 3 and 4 across Blocks 39, 40 and 43, Burlington.
 - c) Foot trail and underground telephone cable as shown on Sheets 4 and 5 across Block 28, Burlington.
 - d) Utility lines and facilities in and along McNamee Road and Cornelius Pass Road.
 - e) Concrete walk and footpath as shown in the "Detail" drawing on Sheet 4 and which lies between the Southeast line of McNamee Road and the South line of the Northeast one-quarter of Section 19.
 - f) Footpath as shown on Sheet 5 in Northwest portion of Block 23, Burlington.
 - g) Chain link fence and gate as shown in the "Water Tank Detail" drawing on Sheet 5 in Block 40, Burlington.
 - h) Cable gate(s) lie within McNamee Road and Summit Road as shown on Sheet 5.
 - i) Wood shed, hot tub, out-building, lawn and area of usage as shown on Sheet 9 in Lots

1 and 2, Block 6, Burlington.

j) Guy and anchors, overhead telephone and electric lines, and grass area used for parked cars as shown on Sheet 9 in Block 7, Burlington.

k) Underground telephone line as shown on Sheet 9 across Block 15, Burlington. (See Note No. 1 on Sheet 9)

l) 2 inch pipe as shown on Sheet 9 across Block 15, Burlington. (See Note No. 2 on Sheet 9)

m) Lawn/yard, footpath and road or driveway as shown on Sheet 9 across part of Lots 1, 2, 3 and 24, Block 15, Burlington.

n) Gate shown on Sheet 9 along West line of Lot 1, Block 15, Burlington, which lies partly in Burlington Drive.

o) Shed, deck and overhead telephone line as shown on Sheet 10 across part of Lot 6, Block 6, Burlington.

p) Parking and storage as shown on Sheet 10 over part of Lot 13, Block 6, Burlington.

q) Fence and PVC risers as shown on Sheet 10 in Lot 9, Block 15, Burlington.

r) Sand box, rose bed, planter bed, water/pond, lawn and yard, concrete walk, wood steps, potting shed, path, deck and driveway or walkway as shown on Sheet 10 in Lots 14 and 16, Block 15, Burlington.

s) Overhead telephone and electric lines as shown on Sheet 10 across Lot 1, Block 5, Burlington.

t) Trail, area of usage, dog cage and building materials as shown on Sheet 10 in Lots 5, 14 and 18, Block 16, Burlington.

u) Gravel driveway as shown on Sheet 10 in Lot 5, Block 4, Burlington.

v) Wood shed, yard and area of "activity" as shown on Sheets 10 and 11 in Lots 12 and 13, Block 4, Burlington.

w) Gravel road as shown on Sheets 10 and 11 across Lots 6 and 7, Block 17, Burlington.

x) Gravel road, culvert pipe and sign as shown on Sheet 11 in Lots 1, 2 and 3, Block 18, Burlington.

y) Gravel road as shown on Sheet 11 across Northwesterly corner of Block 19, Burlington.

z) Encroachments and/or any other facts which a correct survey would disclose.

4-30-94



Fidelity National Title Company of Oregon

401 S.W. Fourth Avenue, Portland, Oregon 97204
(503) 223-8338

Page No. 13
Order No. 402172-001

EXHIBIT A

PARCEL I:

Lots 1 through 5, inclusive, and Lots 12 through 18, inclusive, Block 4, BURLINGTON, except those portions of Lots 12 through 18 taken for the establishment of N.W. St. Helens Rd.

Lots 1 through 12, inclusive, and Lots 15 through 18, inclusive, Block 5, BURLINGTON, except those portions of Lots 10 through 12 and Lots 15 through 18 taken for the establishment of N.W. St. Helens Rd..

Lots 1, 2, Lot 6 through 19, inclusive, and Lots 25 and 26, Block 6, BURLINGTON, except those portions of Lots 14 through 19 taken for the establishment of N.W. St. Helens Rd.

Lots 1 through 4, inclusive, Block 7, BURLINGTON, except those portions of Lots 3 and 4, taken for the establishment of N.W. St. Helens Rd.

Lots 4 through 9, inclusive, Lots 10 through 14, inclusive and Lots 22 through 25, inclusive, Block 10, BURLINGTON, except those portions of Lots 8, 9, 10 through 14 and 22 through 25 taken for the establishment of NW St. Helens Rd.

Lots 1 through 22, inclusive, Block 11, BURLINGTON.

Lots 1 through 11, inclusive and Lots 13 through 25, inclusive, Block 12, BURLINGTON.

Lots 1 through 3, inclusive, Lots 9 through 14, inclusive, and Lots 16, 24 and 25, Block 15, BURLINGTON.

Lots 1 through 7, inclusive and Lots 12 through 18, Block 16, BURLINGTON.

Lots 1 through 14, inclusive, Block 17, BURLINGTON.

Lots 1 through 7, inclusive, Block 18, BURLINGTON, except that portion of Lot 7 taken for the establishment of N.W. St. Helens Rd.

Block 19, BURLINGTON, except that portion taken for the establishment of N.W. St. Helens Rd.

Block 20, BURLINGTON.

Lots 1 through 16, inclusive, Block 21, BURLINGTON.

Lots 1 through 10, inclusive, Block 22, BURLINGTON.

Lots 1 through 5, inclusive, and Lots 7 through 13, Block 23, BURLINGTON.

Lots 1, 2 and 4 through 11, inclusive, Block 24, BURLINGTON.

Lot 8 and Lots 10 through 19, Block 25, inclusive, Block 25, BURLINGTON.



Fidelity National Title Company of Oregon

401 S.W. Fourth Avenue, Portland, Oregon 97204
(503) 223-8338

Page No. 14
Order No. 402172-001

Block 26, BURLINGTON.

Lots 1 and 2, Block 27, BURLINGTON.

Lots 1 through 14, inclusive, Block 28, BURLINGTON.

Lots 1 through 17, inclusive, Block 29, BURLINGTON.

Lots 1 through 14, inclusive, Block 36, BURLINGTON.

Lots 1 through 7, inclusive, Block 37, BURLINGTON.

Lots 1 through 5, inclusive, Block 38, BURLINGTON.

Lots 1 through 13, inclusive, Block 39, BURLINGTON.

Lots 1 through 15, inclusive and Lots 17 through 19, Block 40, BURLINGTON.

Lots 1 through 5, inclusive, Block 41, BURLINGTON.

Lots 1, 2 and 3, Block 42, BURLINGTON.

Lots 1 through 8, inclusive, Block 43, BURLINGTON.

Lots 1 and 2, Block 44, BURLINGTON.

Lots 1 through 16, inclusive, Block 45, BURLINGTON, except that portion of Lots 6 through 9 taken for the widening of McNamee Rd.

Lots 1 through 5, inclusive, Block 46, BURLINGTON.

Lots 1 through 6, inclusive, Block 47, BURLINGTON.

Lots 1 through 28, inclusive, Block 48, BURLINGTON, except that portion of Lots 1, 8 and 9 taken for the widening of McNamee Rd.

Lots 1 through 43, inclusive, Block 49, BURLINGTON.

Lots 1 through 12, inclusive, Block 50, BURLINGTON.

Lots 1 through 10, inclusive, and Lots 12 and 13, Block 51, BURLINGTON.

Lots 1 through 7, inclusive, Block 52, BURLINGTON.

Lots 1 through 7, inclusive, Block 53, BURLINGTON.

all in the County of Multnomah and State of Oregon.

PARCEL II:

PARCEL II:

A tract of land in the Northeast one-quarter of Section 19, Township 2 North, Range 1 West, described as follows:

Beginning at the quarter corner between Sections 19 and 20, Township 2 North, Range 1 West Willamette Meridian; running thence South 89 degrees 23' West 1233.7 feet to the Southwest corner of Southeast one-quarter of Northeast one-quarter of Section 19; thence North 0 degrees 36' East 1300.2 feet to the Northwest corner of southeast one-quarter of Northeast one-quarter of Section 19; thence South 89 degrees 20' West on the South line of the Northwest one-quarter of the Northeast one-quarter of Section 19, 538.79 feet to the Southeasterly line of the United Railway Company's right-of-way; thence following said Southeasterly line of right-of-way on a curve to the right of 1287.3 foot radius, 1908.3 feet to the line between Sections 19 and 20; thence South 1 degree 47' West on said line between Sections 19 and 20, 1700.06 feet to the place of beginning.

PARCEL III:

A tract of land described as follows:

Beginning at the section corner of 19, 20, 29, 30 in Township 2 North, Range 1 West, this being the Southwest corner of Section 20; thence North 1,642.0 feet, to the South line of the John G. Tomlinson donation land claim which is also the South line of Burlington, thence east along South line of said claim, 1,213.04 feet to the East line of Lanoche Drive as platted in platte of Burlington, thence Northeasterly along Easterly line of Lanoche Drive, 1,744.0 feet to the United Railway Company's right-of-way Westerly boundary thence Southeasterly along said right-of-way to point where right-of-way boundary intersects the South line of Section 20, thence West 4501.95 feet to the Southwest corner of Section 20 to place of beginning.

035700

STATE OF OREGON
Multnomah County

I, a Deputy for the Recorder of Conveyances, in and for said County, do hereby certify that the within instrument of writing was received for record and recorded in the record of said County.

RECORDED
JUN 20 1930

In Book

On Page
BOOK 2296 PAGE 2833

Witness my hand and seal of office at said

Recorder of Conveyances

m Butte Deputy

20-
3-
20-

BURLINGTON.

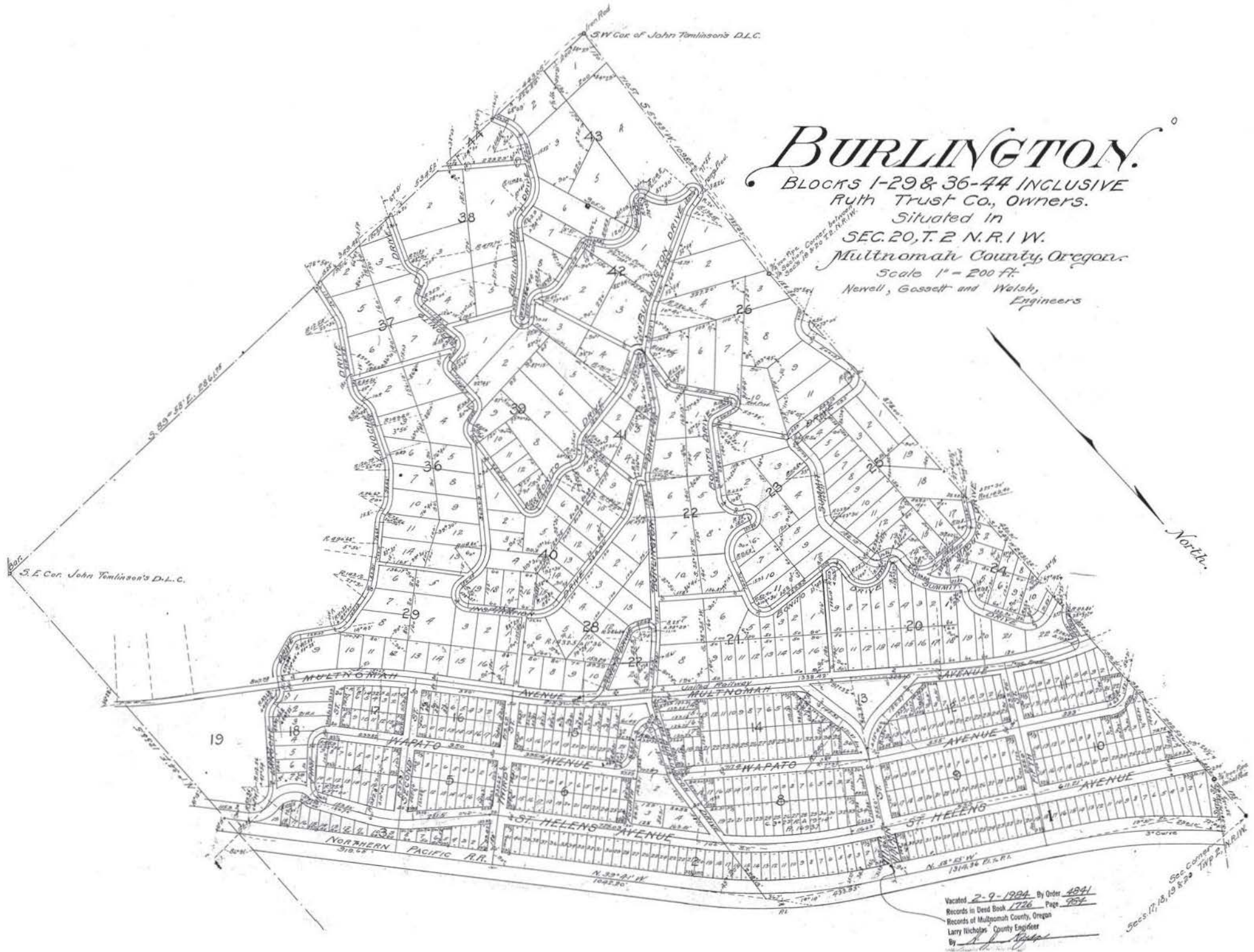
BLOCKS 1-29 & 36-44 INCLUSIVE
Ruth Trust Co., Owners.

Situated in
SEC. 20, T. 2 N. R. 1 W.

Multnomah County, Oregon.

Scale 1" = 200 ft.

Newell, Gosselt and Welsh,
Engineers



Vacated 2-9-1924 By Order 4841
Records in Deed Book 1726 Page 954
Records of Multnomah County, Oregon
Larry Nicholas County Engineer
By A. J. Nichols

Sec. 17, 18, 19 & 20
T. 2 N. R. 1 W.

KNOW ALL MEN BY THESE PRESENTS, That the Ruth Trust Company, a corporation organized and existing under the laws of the State of Oregon, hereby declared the annexed map to be a true plat of the property owned and laid out by it, known as Burlington, and described as follows :

Beginning at the common section corner between Sections 17, 18, 19 and 20, Township 2 North, Range 1 West Willamette Meridian; thence south on section line 175 feet to point of beginning; thence south 2431.34 feet on section line between 19 and 20, it also being the west line of the John G. Tomlison Donation Land Claim, to 1/4 corner between Section 19 and 20; thence south 1098 feet on said west line of the John G. Tomlison Donation Land Claim to the southwest corner of said Donation Land Claim; thence east on south line of said Donation Land Claim 1342.33 feet to the east line of road designated on filing plat as Lanoche Drive; thence northeasterly following along said east line to a point in the center of the United Railways as now located; thence easterly along said center line to a point on the east line of the said John Tomlison Donation Land Claim; thence north along said east line to the south line of the right of way of the Northern Pacific Railroad as now located and constructed; thence northwesterly along said south line of Right of Way to a point on a line bearing north 34° east from the initial point; thence south 34° west along said line to point of beginning. The lots or tracts are of the dimensions indicated on said plat, and the streets, alleys, drives or roads are of the width and as delineated on said plat, and said Ruth Trust Company do hereby dedicate all streets, alleys, drives and roads within said property and set out on said plat to the use of the public forever as highways, excepting and reserving for itself, its successors and assigns, the right and privilege, but not the exclusive right or privilege, in and to use all said streets and public highways as shown thereon for the purpose of erecting, laying and operating any and all of the following named rights and privileges, to-wit : Any street, tram or railway, any water or gas pipes and mains, any electric wires for any and all purposes to which electricity may be put.

IN WITNESS WHEREOF, the said owner has hereunto set its hand and seal this 23rd day of March, 1909.

(Corp. Seal of Ruth Trust Co.)

STATE OF OREGON,)
County of Multnomah) ss.

Ruth Trust Company

By O. W. Taylor
General Manager.

A. C. Emmons Secretary.

On this twenty-third day of March, 1909, before me appeared O. W. Taylor and A. C. Emmons, both to me personally known, who being duly sworn did say that he, the said O. W. Taylor, is the General Manager, and he, the said A. C. Emmons, is the Secretary of the Ruth Trust Company, the within named corporation, and that the seal affixed to said instrument is the corporate seal of said corporation, and that the said instrument was signed and sealed in behalf of said Corporation by authority of its Board of Directors; and said O. W. Taylor and A. C. Emmons acknowledged said instrument to be the free act and deed of said corporation.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal, this the day and year first in this my certificate written.

(Notarial Seal.)

L. Wanless

Notary Public in and for
said County and State.

STATE OF OREGON,)
County of Multnomah) ss.

I, the undersigned F. J. Walsh, of the County of Multnomah, State of Oregon, being first duly sworn according to law, depose and say : That I have carefully surveyed and marked with proper stakes and monuments, the lands as represented and shown upon the hereunto annexed map or plat of Burlington, Blocks 1-24 & 36-44 inclusive, situated in Section Twenty (20), Township Two (2) North, Range One (1) West of the Willamette Meridian, in Multnomah County, Oregon.

That at the initial point of the survey of said tract I planted an iron pipe 3/4 inch in diameter and 3 feet long, driven firmly below the surface of the ground; said initial point is south one hundred and seventy-five feet on the section line from the common corner of Sections Seventeen (17), Eighteen (18) Nineteen (19) and Twenty (20), in Township Two (2) North, Range One (1) West of the Willamette Meridian, and is north on said section line eighty-five and 14/100 feet from the intersection of said section line with the center line St. Helen's Avenue, as shown and designated upon said map or plat; the sizes and dimensions of the various blocks, lots and other subdivisions, the widths of the streets, avenues, alleys and thoroughfares, the courses, distances, curves, angles, and variations, are all as shown and designated upon said map or plat.

The figures designating distances upon said map or plat all refer to feet and fractions thereof.

F. J. Walsh.

Subscribed and sworn to before me, this 22nd day of March, 1909.

(Notarial Seal.)

J. O. Stearns

Notary Public for Oregon.
County Judge.

Approved March 24th, 1909.

Lionel R. Webster

W. L. Lightner

County Commissioner.

(Co. Court Seal.)

F. C. Barnes

County Commissioner.

Attest : F. S. Fields County Clerk.

Approved March 23rd, 1909.

B. D. Sigler Assessor.

L. H. Maxwell Deputy.

Taxes from 1901 to 1908 inclusive are "Paid".

R. L. Stevens Sheriff.

S. B. Martin Deputy.

All taxes due Multnomah County from 1888 to 1901 Paid.

F. S. Fields County Clerk.

By F. G. Wilde Deputy.

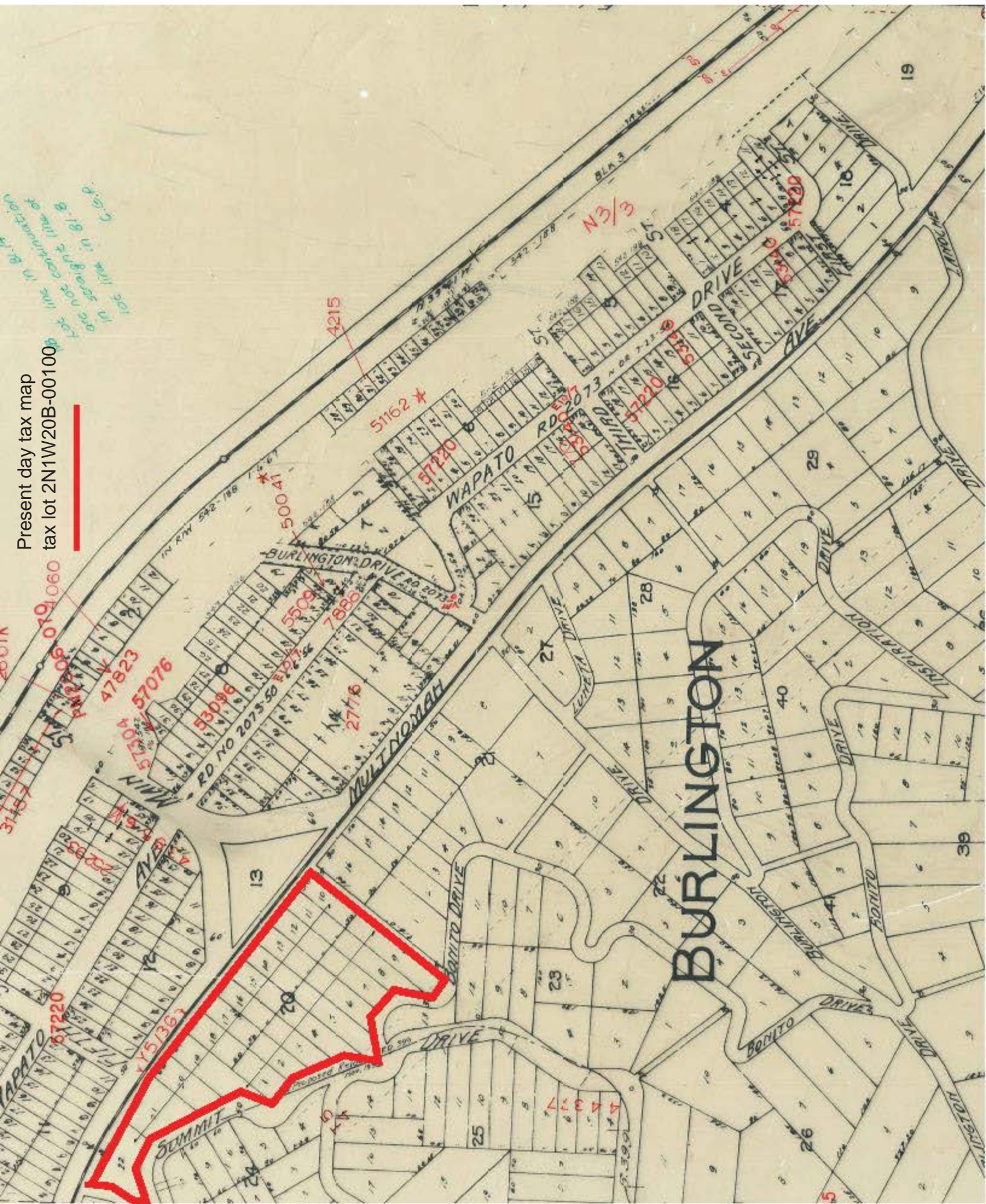
Received for Record March 24, 1909, at 11 A. M.

Lot of Record Documentation

Tax lot: 2N1W20B-00100 (Agency)

Property owner: Metro

1



Lot of Record Documentation

Tax lot: 2N1W20BC-00800 (Agency)

Property owner: Metro

Present day tax map -- tax lot 2N1W20BC-00800

THIS MAP WAS PREPARED FOR
ASSESSMENT PURPOSE ONLY

SW1/4 NW1/4 SEC. 20 T.2N. R.1W. W.M.
MULTNOMAH COUNTY
1" = 100'

2N 1W 20BC

CANCELLED NO.
1900



SEE MAP 2N 1W 20BD

2N 1W 20BC

Lot of Record Documentation

Tax lot: 2N1W20BC-01000 (Agency)

Property owner: Metro

THIS MAP WAS PREPARED FOR
ASSESSMENT PURPOSE ONLY

2N 1W 20BC

CANCELLED NO.
1900



SEE MAP 2N IN 2080

2N 1W 20BC

Lot of Record Documentation

Tax lot: 2N1W20BC-01200 (Agency)

Property owner: Metro

THIS MAP WAS PREPARED FOR
ASSESSMENT PURPOSE ONLY

2N 1W 20BC

CANCELLED NO.
1900



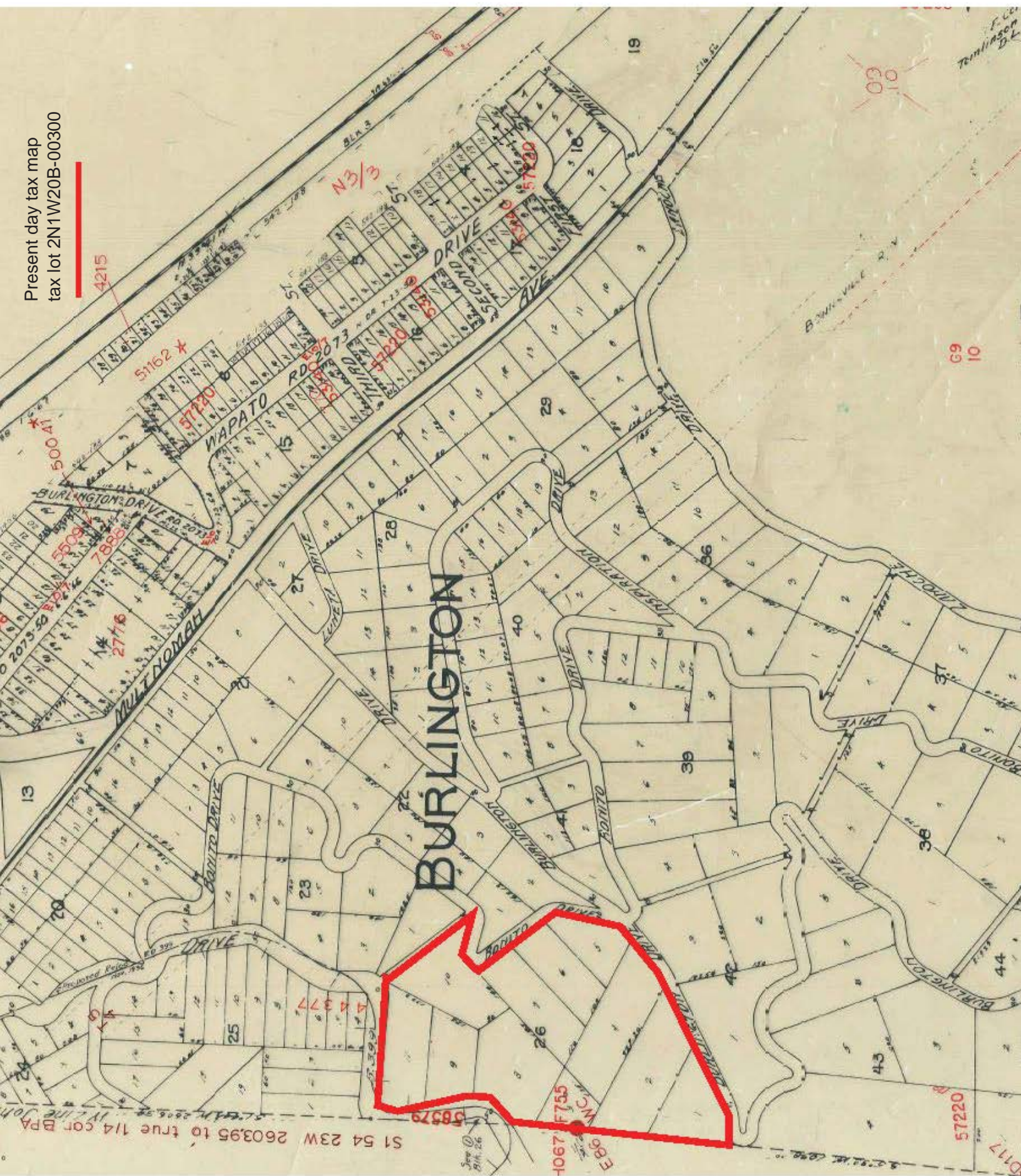
2N 1W 20BC

Lot of Record Documentation

Tax lot: 2N1W20B-00300 (Agency)

Property owner: Metro

10



Lot of Record Documentation

Tax lot: 2N1W20BC-00900 (Agency)

Property owner: Metro

THIS MAP WAS PREPARED FOR
ASSESSMENT PURPOSE ONLY

2N 1W 20BC

CANCELLED NO.
1900



2N 1W 20BC

Lot of Record Documentation

Tax lot: 2N1W20B-00500 (Agency)

Property owner: Metro

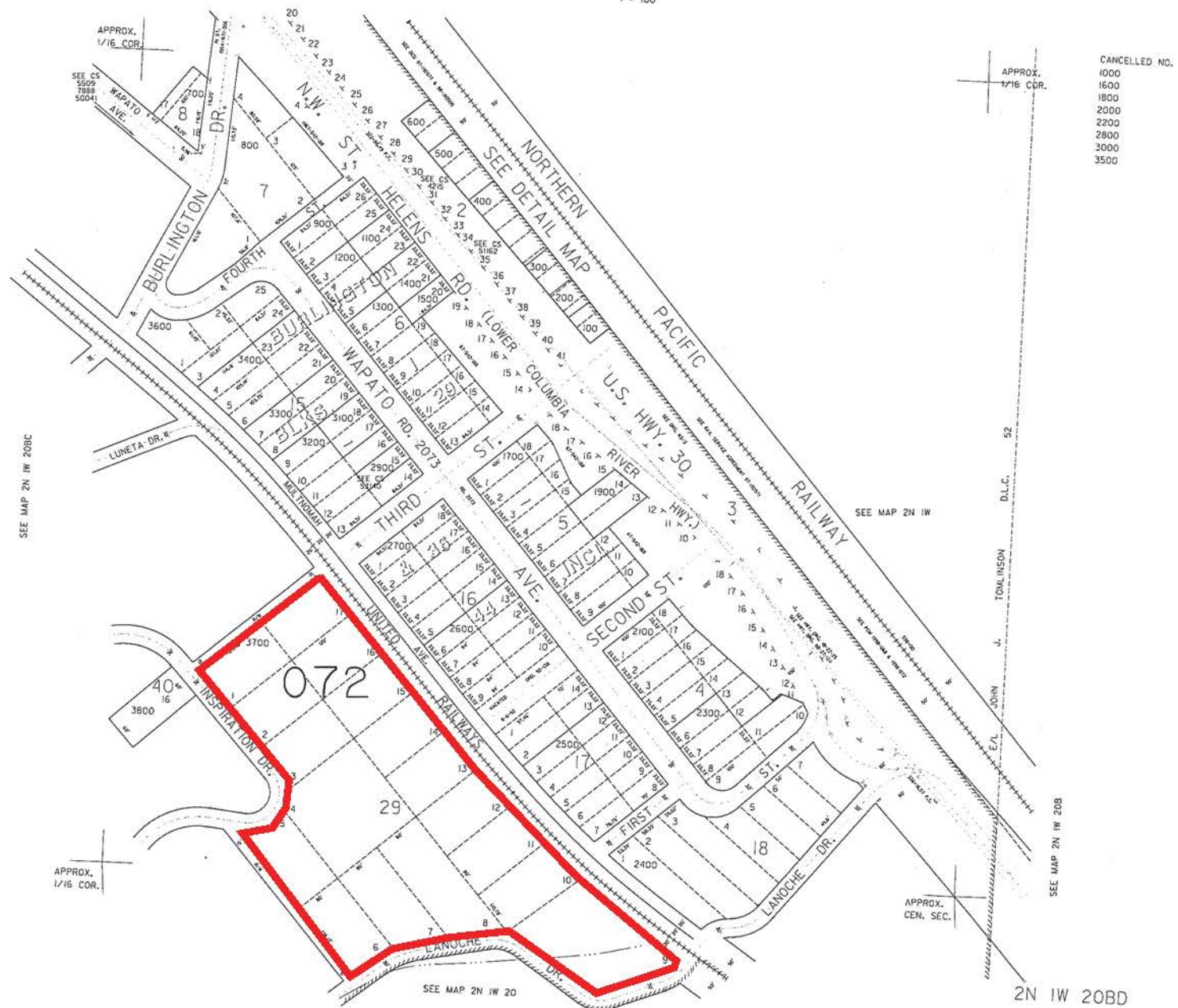
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Lot of Record Documentation

Tax lot: 2N1W20BD-03700 (Agency)

Property owner: Metro

2N 1W 20BD



Lot of Record Documentation

Tax lot: 2N1W20C-00100 (Agency)

Property owner: Metro

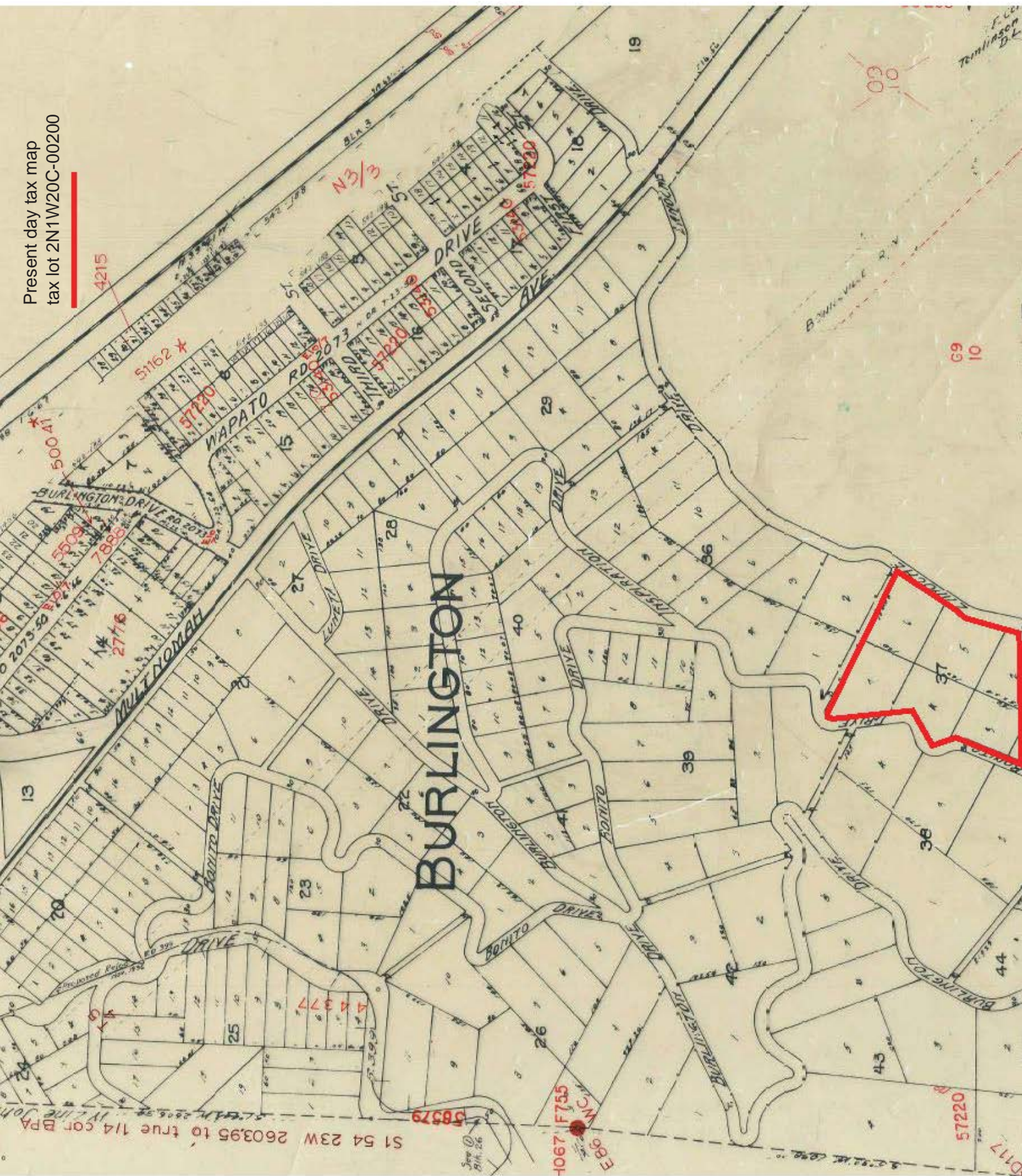
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Lot of Record Documentation

Tax lot: 2N1W20C-00200 (Agency)

Property owner: Metro

1

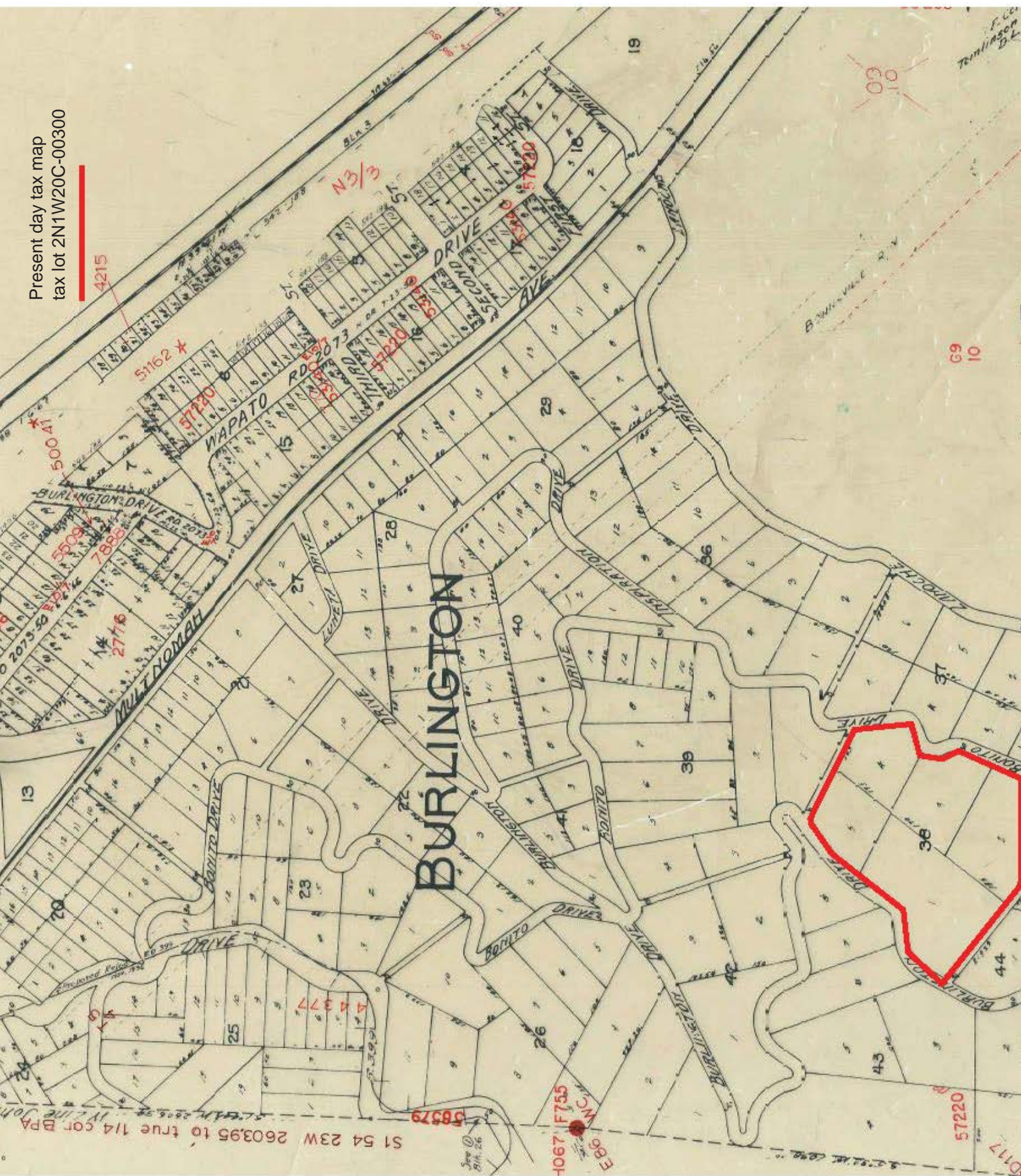


Lot of Record Documentation

Tax lot: 2N1W20C-00300 (Agency)

Property owner: Metro

1

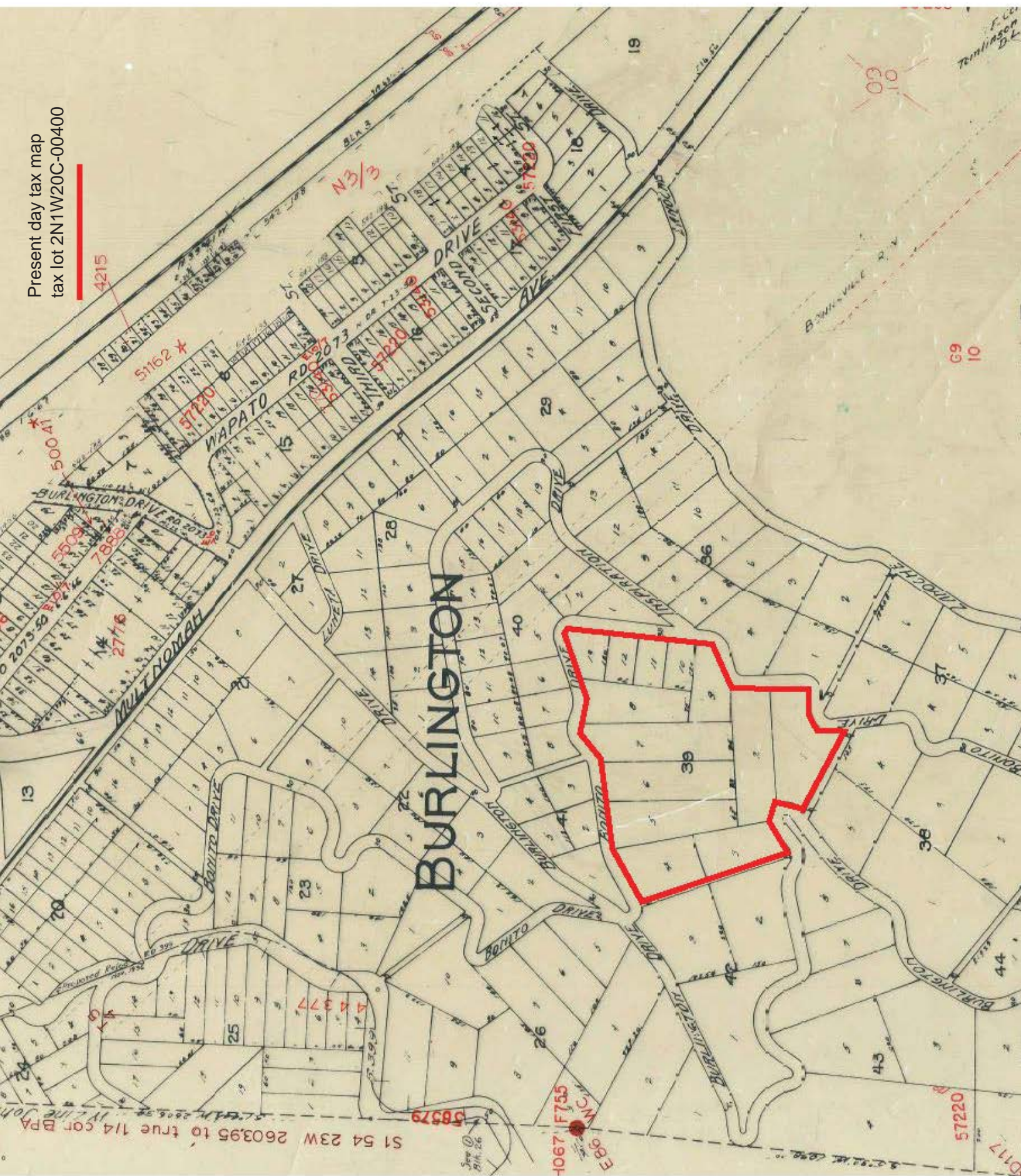


Lot of Record Documentation

Tax lot: 2N1W20C-00400 (Agency)

Property owner: Metro

1

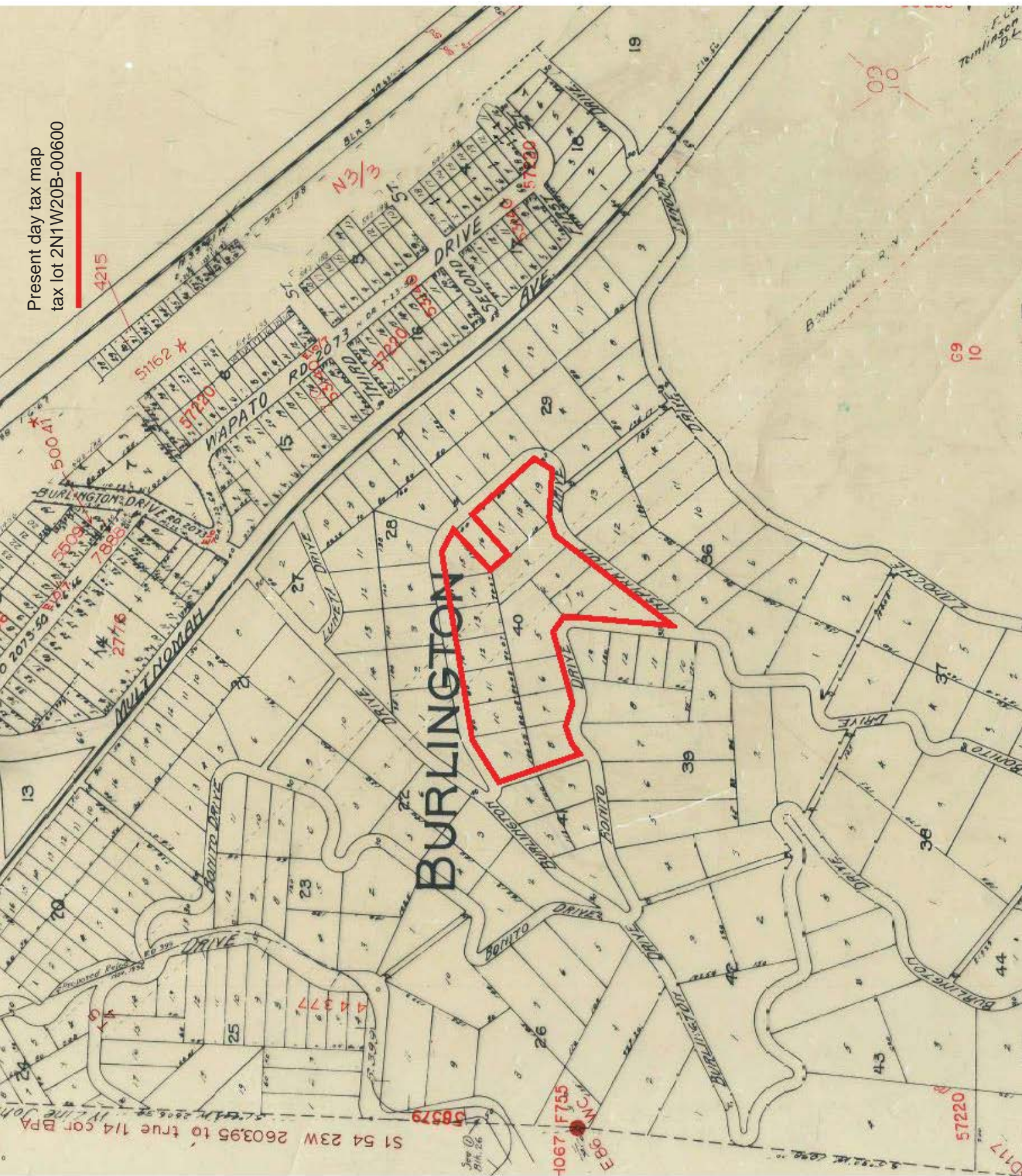


Lot of Record Documentation

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Property owner: Metro

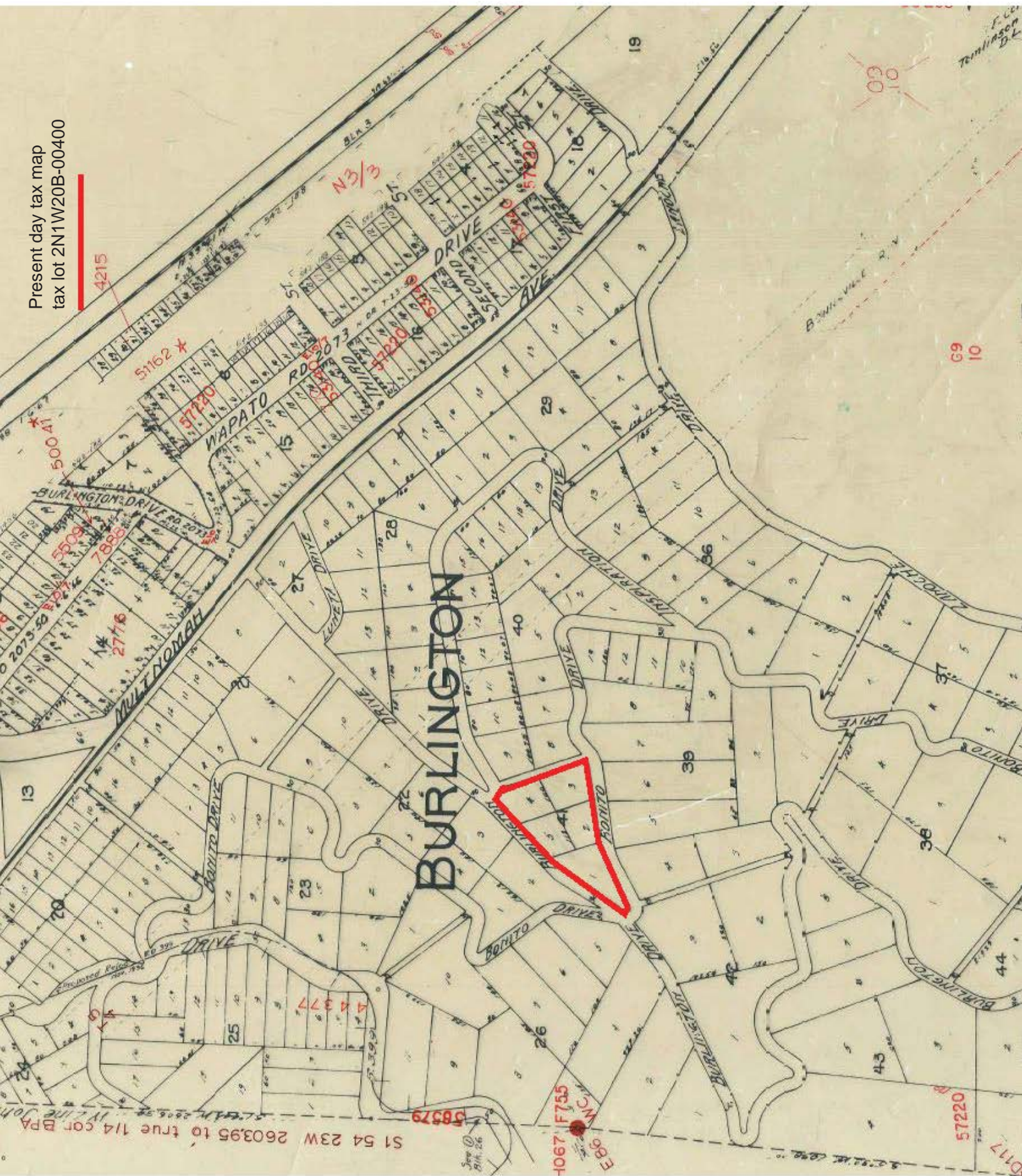
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Lot of Record Documentation

Tax lot: 2N1W20B-00400 (Agency)

Property owner: Metro

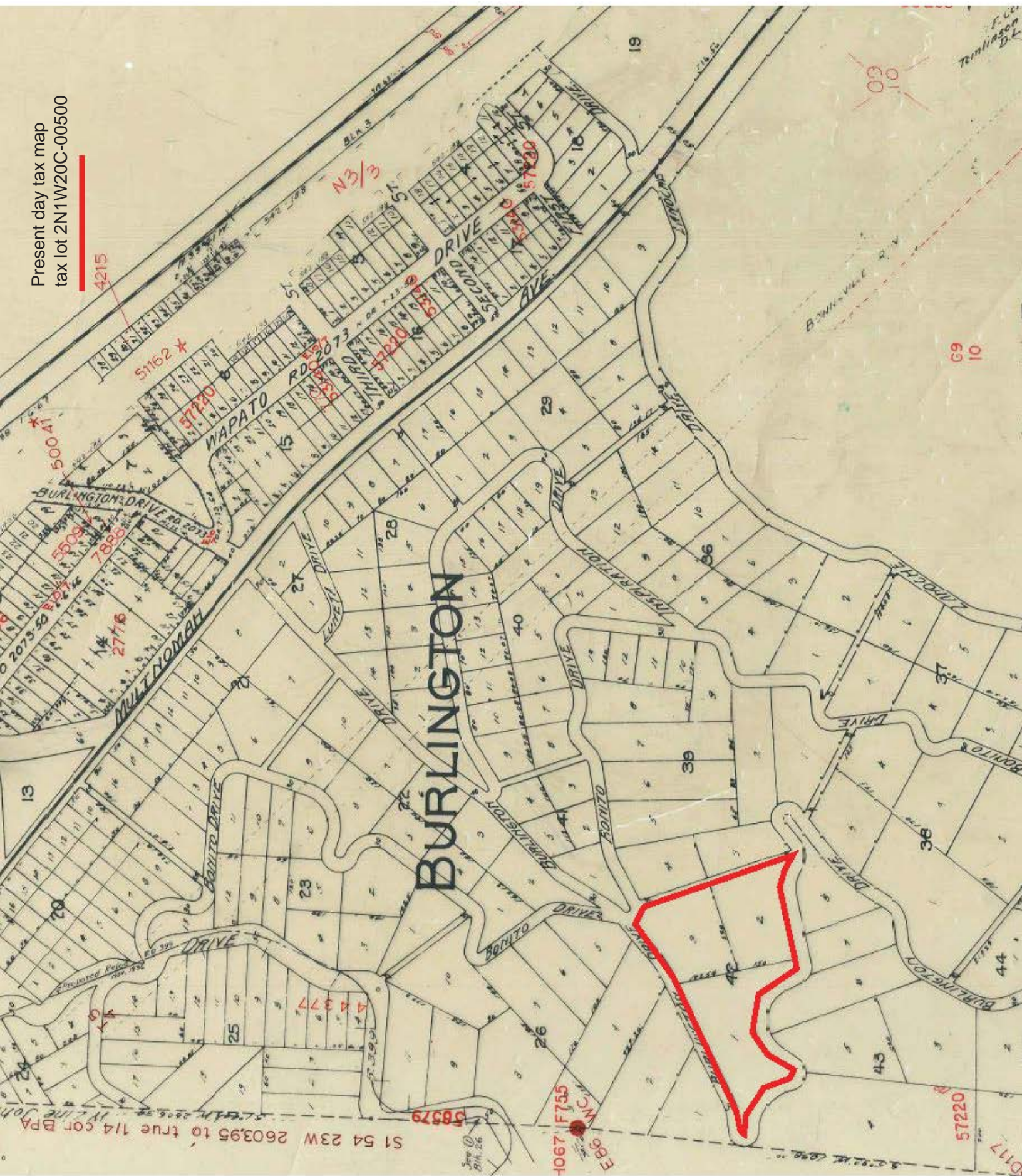


Lot of Record Documentation

Tax lot: 2N1W20C-00500 (Agency)

Property owner: Metro

1

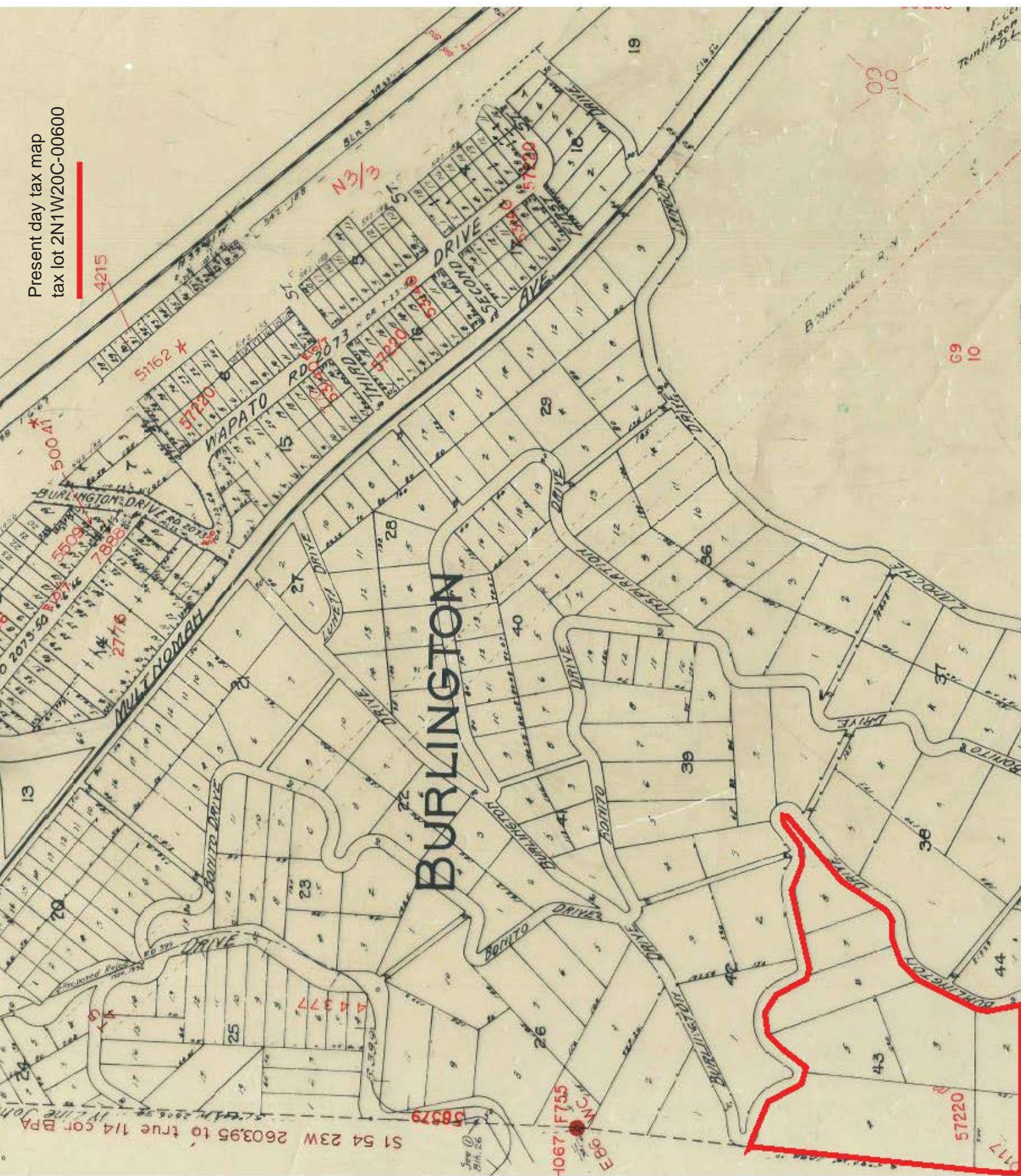


Lot of Record Documentation

Tax lot: 2N1W20C-00600 (Agency)

Property owner: Metro

100

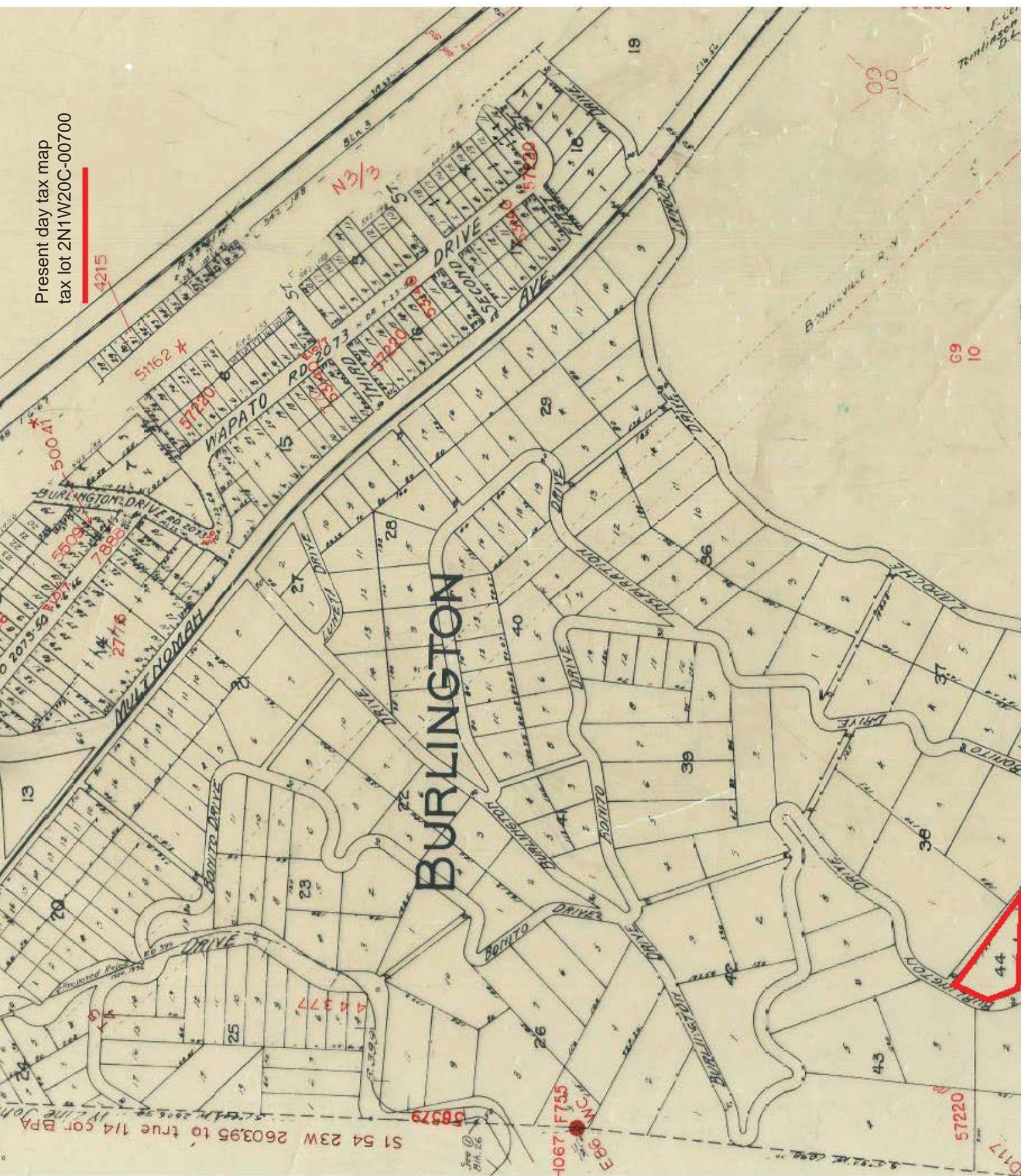


Lot of Record Documentation

Tax lot: 2N1W20C-00700 (Agency)

Property owner: Metro

4215



Lot of Record Documentation

Tax lot: 2N1W20-00400 (Agency)

Property owner: Metro

1328 246

KNOW ALL MEN BY THESE PRESENTS, That HIGHWAY HOME COMPANY, a corporation duly organized and existing under the laws of the State of Oregon, the principal office of which is located in the City of Portland, in consideration of the sum of Ten and no/100 Dollars (10.00) to it paid by H. F. SCRITSMIER of Portland, Oregon does hereby grant, bargain, sell and convey to said H. F. SCRITSMIER, his successors and assigns forever, the following real property, with the tenements, hereditaments and appurtenances thereunto belonging, or in anywise appertaining; and also all the estate, right, title and interest, at law and equity, therein and thereto, situated in the Townsite of Burlington, County of Multnomah, and State of Oregon, bounded and described as follows, to-wit:

All of Block Nineteen (19), except highway right-of-way; All of Block Twenty (20); All of Block Twenty-One (21), excepting Lots Two (2), Three (3), Four (4), and Sixteen (16); All of Block Twenty-Two (22); All of Block Twenty-Three (23), except Lot Number Six (6); All of Block Twenty-Four (24), except Lot Three (3); All of Block Twenty-Five (25), except Lots One (1), Two (2), Three (3), Four (4), Five (5), Six (6), Seven (7), Nine (9) and Twelve (12); All of Block Twenty-Six (26); All of Block Twenty-Seven (27); All of Block Twenty-Eight (28); All of Block Twenty-Nine (29); All of Block Thirty-Six (36); All of Block Thirty-Seven (37); All of Block Thirty-Eight (38); All of Block Thirty-Nine (39); All of Block Forty (40), except Lot Sixteen (16); All of Block Forty-One (41); All of Block Forty-Two (42); All of Block Forty-Three (43); All of Block Forty-Four (44); All of Block Forty-Six (46); All of Block Forty-Eight (48); All of Block Forty-Nine (49); All of Block Fifty (50); Lots Twelve (12) and Thirteen (13) in Block Fifty-One (51); All of Block Fifty-Two (52), excepting Lots Eight (8) and Nine (9).

ALSO, a tract or parcel of land described as follows: beginning at the quarter (1/4) corner between Sections Nineteen (19) and Twenty (20), Township 2 North, Range 1 West Willamette Meridian; running thence South 89 Degrees 23' West 1233.7 feet to the Southwest corner of Southeast one-quarter of Northeast one-quarter of Section Nineteen (19); thence North 0 degrees 36' East 1300.2 feet to the Northwest corner of southeast one-quarter of Northeast one-quarter of Section Nineteen (19); thence South 89 degrees 20' West on the South line of the Northwest one-quarter of the Northeast one-quarter of Section Nineteen (19) 538.79 feet to the Southeasterly line of the United Railway Company's right-of-way thence following said Southeasterly line of

right-of-way on a curve to the right of 1587.3 feet radius, 1968.3 feet to the line between Sections Nineteen (19) and Twenty (20); thence South 1 degree 47' West on said line between Sections Nineteen (19) and Twenty (20) 1700.06 feet to the place of beginning, containing 84.18 acres.

Subject, however, to the county road across said tract.

Also a tract of land described as follows: Beginning at the section corner of 19, 20, 29, 30 in Township 2 North Range 1 West, this being the Southwest corner of Section 20 thence North 1,642.0 feet, to South line of the John O. Tomlinson donation land claim which is also the South line of Burlington, thence East along South line of said claim 1,213.04 feet to East line of Lanoch Drive as platted in platte of Burlington, thence Northeasterly along Easterly line of Lanoch Drive 1,744.0 feet to United Railway Company's right-of-way Westerly boundary thence Southeasterly along said right-of-way to point where right-of-way boundary intersects the South line of Section 20 thence West 4501.95 feet to the Southwest corner of Section 20 to place of beginning.

Certain parcels of the above described lands are subject to right-of-way easements of Bonnaville Power line as now constructed and built.

Also, a parcel of land located in the Northwest Quarter of the Southeast Quarter and the Northeast Quarter of the Southwest Quarter of Section 20 Township 2, North Range 1 West. Starting at the Southeast corner of John O. Tomlinson's donation land claim thence 705.3 feet North along East line of said claim to Easterly line of the United Railway right-of-way boundary to place of beginning, thence 301.5 feet North following the above line which is also the East boundary of Burlington to Westerly boundary of the state highway; thence 1,402.5 feet Southeasterly along Westerly highway boundary to point where said highway boundary intersects the United Railway Company's right-of-way Easterly boundary, thence 1,160.0 feet Northwesterly along said boundary to point of beginning;

Also, a parcel of land in the Southeast Quarter of Section 20, Township 2, North Range 1 West. Starting at the Southeast corner of the John O. Tomlinson donation land claim thence North 1,226.2 feet to the Westerly boundary of right-of-way of the North Pacific Railway, thence Southeasterly 852.6 feet along said North Pacific Railway right-of-way to point of beginning thence Southeasterly along said right-of-way 1,303.6 feet to point where this boundary intersects state highway Easterly boundary thence 1,402.5 feet Northwesterly along highway boundary to point of beginning;

KNOW ALL MEN BY THESE PRESENTS, That HIGHWAY BOND COMPANY, a corporation duly organized and existing under the laws of the State of Oregon, the principal office of which is located in the City of Portland, in consideration of the sum of Ten and no/100 Dollars (10.00) to it paid by H. F. SCRITSNIER of Portland, Oregon does hereby grant, bargain, sell, and convey to said H. F. SCRITSNIER, his successors and assigns forever, the following real property, with the tenements, hereditaments and appurtenances thereunto belonging, or in anywise appertaining; and also all the estate, right, title and interest, at law and equity, therein and thereto, situated in the Townsite of Burlington, County of Multnomah, and State of Oregon, bounded and described as follows, to-wit:

- Block One (1) - Lot 1 to 7, Lots 10 to 19, Lots 24 to 28; except that portion deeded to state highway
- Block Two (2) - Lots 11 to 27; except that portion deeded to state highway
- Block Three (3) - All; except that portion deeded to state highway
- Block Four (4) - Lots 1 to 7, Lots 12 to 18; except that portion deeded to state highway
- Block Five (5) - Lots 1 to 12, Lots 15 to 18; except that portion deeded to state highway
- Block Six (6) - Lots 1 to 3, Lots 5 to 19, Lots 25 and 28;
- Block Seven (7) - All; except that portion deeded to state highway
- Block Eight (8) - Lots 29 to 33; except that portion deeded to state highway
- Block Nine (9) - Lots 29 to 30; except that portion deeded to state highway
- Block Ten (10) - Lots 4 to 25; except that portion deeded to state highway
- Block Eleven (11) - All;
- Block Twelve (12) - Lots 1 to 11; Lots 13 to 25;
- Block Fifteen (15) - Lots 1 to 3, Lots 9 to 14, Lot 18; Lots 24 to 25;
- Block Sixteen (16) - Lots 1 to 7, Lots 12 to 18;
- Block Seventeen (17) - All;
- Block Eighteen (18) - All;
- Block Forty-Five (45) - All;
- Block Forty-Six (46) - All;
- Block Fifty-One (51) - Lots 1 to 10;
- Block Fifty-Three (53) - All;

together with, all and singular, the tenements, hereditaments and appurtenances thereunto belonging or in anywise appertaining, and also all its estate, right, title and interest in and to the same.

RECORDED APR 8 1915

TO HAVE AND TO HOLD the same to the said H. P. SCRITAMIER, his successors and assigns forever. And the said HIGHWAY HOME COMPANY does covenant with the said H. P. SCRITAMIER, his successors and assigns forever, that it is lawfully seized in fee simple of the above described and granted premises, and has a valid right to convey same; that the said real property is free from all encumbrances, and that it will, and its successors shall WARRANT AND DEFEND the same to the said grantee, his successors and assigns forever, against the lawful claims and demands of all persons whomsoever.

IN WITNESS WHEREOF, HIGHWAY HOME COMPANY, pursuant to a resolution of its Board of Directors, duly and legally adopted, has caused these presents to be signed by its President and Secretary, and its corporate seal to be hereunto affixed this 6 day of Feb, 1948.

HIGHWAY HOME COMPANY

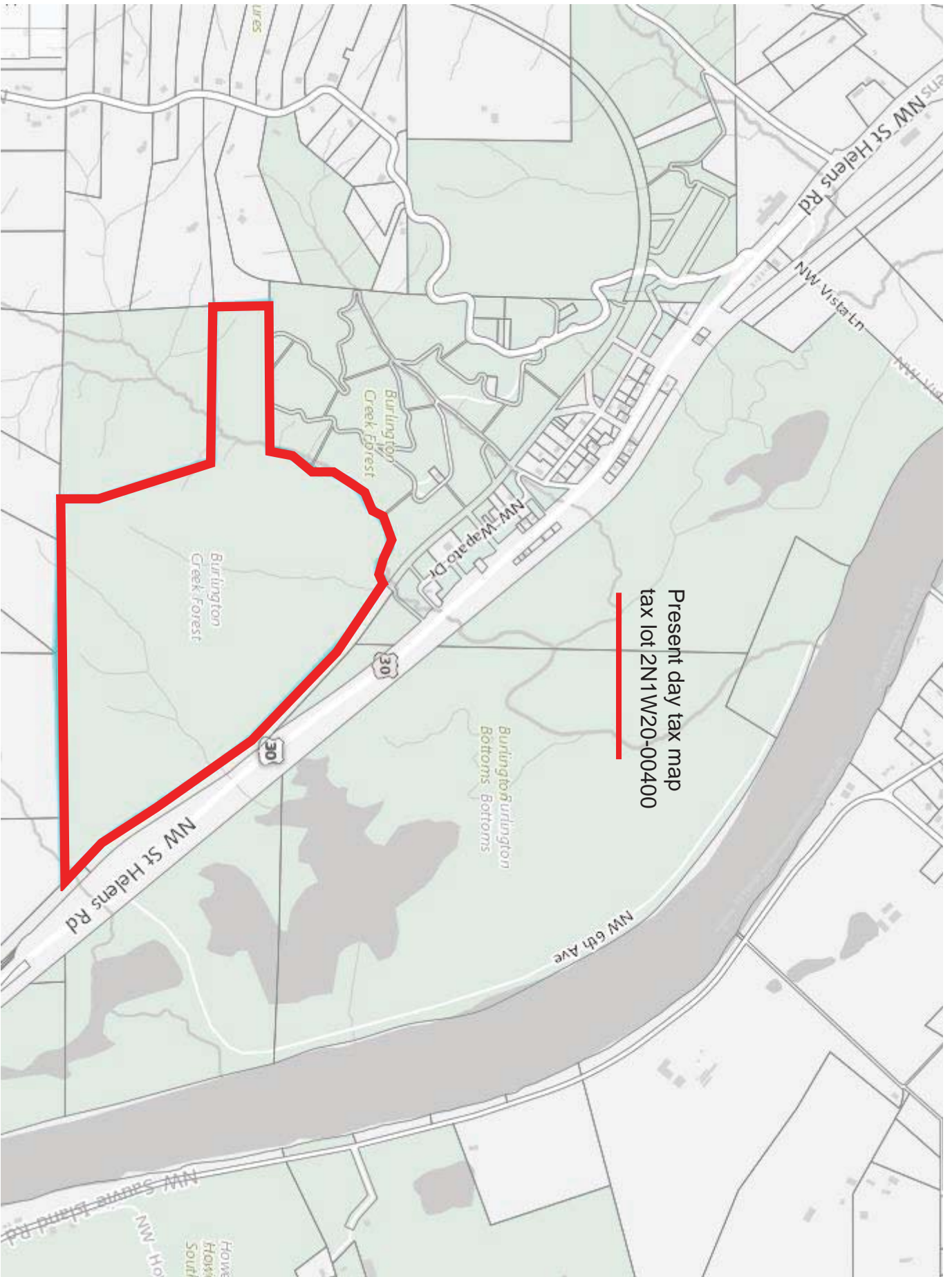
F. S. Scritamier
PRESIDENT
Mrs. E. S. Raven
SECRETARY-TREASURER

On this 6 day of Feb, 1948, before me appeared F. S. Scritamier and Mrs. E. S. Raven, each to me personally known, who being each duly, severally sworn, did say that he, the said F. S. Scritamier is the president, and she, the said Mrs. E. S. Raven, is the Secretary-Treasurer of the Highway Home Company, the corporation within named and described, and that the seal affixed to said instrument is the corporate seal of said corporation by authority of its Board of Directors, and said F. S. Scritamier and Mrs. E. S. Raven each severally acknowledged said instrument to be the free act and deed of said corporation.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my Notarial Seal the day and year in this, my certificate, last above



A. M. Scritamier
Notary Public in and for the State of Oregon
My Commission Expires March 1-1948



SEC-H AND SEC-V PERMIT REPORT

Proposed Trail System Development
Burlington Creek Forest Natural Area
Multnomah County, Oregon

Prepared for:

Metro
Parks and Nature Department
Portland, Oregon

Prepared by:

John Villella, Senior Botanist



Siskiyou BioSurvey
324 Avery St.
Ashland, OR 97520
(541) 482-5039

September 25, 2017



Land Use Planning Division
1600 SE 190th Ave, Ste 116
Portland OR 97233
Ph: 503-988-3043 Fax: 503-988-3389
multco.us/landuse

**Significant
Environmental
Concern for Wildlife
Habitat Worksheet
(Type I)**

PROPERTY ID

Address:	Metro, 600 NE Grand Ave., Portland, OR 97232				Property ID#:	R See below	
Township	2N	Range	1W	Section	20	Tax lot(s):	W/NW St. Helens Rd.

PROPOSED DEVELOPMENT: Please provide a description of your proposal. This should, at a minimum, include the size and use of any structures you are proposing. Also include a description of any land clearing you will be doing including tree removal, area to be graded or excavated and the slope of the development area.

Response: In order to enhance and maintain public recreation on public land, Metro is proposing to develop approximately five miles of trails with associated stream crossings and a trailhead with parking and a restroom structure at Burlington Creek Forest Natural Area. All proposed development would occur on land owned by Metro and wholly contained within the Burlington Creek Forest Natural Area. Although this area is a contiguous block, there are several properties involved. The Property ID numbers are as follows: R124323, R124324, R124325, R124329, R124331, R124332, R124333, R124334, R124337, R124338, R124341, R124342, R124343, R124346, R124347 and R491652.

The trailhead area will include an information kiosk, picnic table, and a vault toilet. The restroom will have a footprint of 150 square feet, approximately 10 feet by 15 feet and approximately 12 feet tall. The kiosk will have a footprint of 30 square feet and be 9 feet by 5 feet and stand approximately 8 feet tall.

The trail system will be natural surface trails designated for uses including shared hiking/off-road cycling or hiking only. Six stream crossings will be constructed along various trails, including one bridge structure and five drainage crossings. The footprint for these structures is as follows: the bridge structure is 75 square feet, and there are two crossings of 100 square feet, two crossings at 60 square feet, and one at 90 square feet.

The majority of this development will take place in already cleared areas, such as the power line utility right of way and a cleared area near the existing road. Trail construction including bridges and other stream crossings in forested areas will not result in conversion from "forested areas" to "cleared areas" as defined by MCC Section 33.4570. Forested areas traversed by the proposed natural surface trails will maintain at least 75% crown closure and/or at least 80 square feet of basal area per acre of trees of 11 inch DBH or larger. According to MCC Section 33.4515, SEC permitting is not required for "Activities to protect, conserve, enhance, and maintain public recreational, scenic, historical, and natural uses on

public lands". It is the interpretation of the applicant that this development falls under this exception.

Total land clearance within currently forested areas would be approximately .05 acres and associated with the trailhead area. This will include the removal of approximately nine trees and some existing vegetation. An additional eighteen trees will be removed within the public road right-of-way in order to meet sight distance requirements. Grading and excavating activities will occur to install the new vault toilet and the parking facilities. This site is moderately sloping with all trailhead development occurring in areas with less than 10% slope. The trails have been aligned to avoid steep slopes but some trail segments will be in areas of >25% slope. Required grading along McNamee to meet sight distance requirements will also occur on land in the 10-25% slope range. Please see Area Map (figure 1) for locations of proposed development.

EXISTING DEVELOPMENT: Please list the existing buildings, structures and improvements on your property, including a description of the use of these buildings, and identify them on your site plan.

Response: Burlington Creek Forest Natural Area currently does not have any buildings. There is a gated road system that is accessed from McNamee road. These are shown on the Area Map (figure 1.)

DEVELOPMENT STANDARDS

(1) Where a parcel contains any non-forested "cleared" areas, development shall only occur in these areas, except as necessary to provide access and to meet minimum clearance standards for fire safety.

Does your property contain any non-forested "cleared" areas?

Response: Yes, the only currently cleared area that is available for development on the property is at the location where the development is proposed. Other currently cleared areas include the area within the utility corridor and can not be planted in trees or otherwise developed.

If yes, will your proposed development be contained in the existing cleared area?

Response: No

If your development will not be contained in the existing cleared area, explain what portions of your development will be outside the existing cleared area.

Response: The trailhead area will be developed with a bathroom facility and a twenty-five car parking area. This area will be located almost completely within an existing cleared area. After considering areas required to be cleared for fire and sight distance requirements, there is an additional area of approximately .05 acres that will need to be cleared. In order to meet fire safety standards some of the trees to be cleared will be removed as per MCC 35.2256. Regarding the primary fire safety zone

around the bathroom building (30 feet), the clearing of one tree falls within the primary fire safety zone. For the secondary fire safety zone (100 ft.) in order to maintain the required distance of greater than 15 feet between tree crowns four additional trees would be removed. This leaves an additional nine trees that will need to be removed within the area designated for the parking lot and road improvements.

Additionally, areas along NW McNamee Road will be graded and trees will be cleared or pruned to achieve sight distance requirements at our park access point. This area is within the sight distance easement of the road right of way. According to MCC 33.4515(2) timber cleared for public safety is exempt from SEC permitting. It is the interpretation of the applicant that the area occupied by these trees falls under this exemption.

Explain why any new land clearing is the minimum needed to site the proposed buildings, provide access, and meet fire safety standards.

Response: Burlington Creek Forest Natural Area is heavily forested, with only small cleared areas. In consideration of SEC-h requirements the development activities resulting in land clearing are concentrated within already cleared areas as much as possible, the location of the trailhead development is sited with this consideration in mind. The area to be cleared is the minimum required to site the proposed development without having to clear more area or conduct extensive grading activities that would further impact the site. The site location also takes into consideration SEC-v and SEC-s development standards. The proposed trailhead development will be mostly within already cleared areas associated with the road but will also include a small area of forest adjacent to the currently cleared area. Aside from the area to be cleared for fire safety and sight distance regulations the area to be cleared is approximately .05 acres. Proposed development would result in the removal of all vegetation and twelve trees with DBH ranging from 10-15 inches. The proposed improvements will have only a very minor impact on the forest canopy within Burlington Creek Forest Natural Area and will enhance public recreation opportunities at this public site. Site planning documents have been drafted in such a way as to provide access, and meet fire safety and sight distance standards while also minimizing the number of trees removed to accomplish the proposed development.

(2) Development shall occur within 200 feet of a public road capable of providing reasonable practical access to the developable portion of the site. What is the distance between your proposed development and the nearest public road?

Response: The development of the trailhead and information kiosk is adjacent to the current access road and approximately 325 ft. from McNamee road. The locations of the proposed trailhead/parking facility is the closest location to the roadway that is available to physically and practicably construct the facilities with the least impact.

(3) The access road/driveway and service corridor serving the development shall not exceed 500 feet in length. What is the length of the driveway serving your development?

Response: As shown on Figure 2, the access road is the existing road through the property. This access way is currently in use and no new roads are proposed. The distance from McNamee road to the development is approximately 325 feet. This is the minimum length needed to connect the public road to the proposed development.

(4) For the purpose of clustering access road/driveway approaches near one another, one of the following two standards shall be met:

(a) The access road/driveway approach onto a public road shall be located within 100 feet of a side property line if adjacent property on the same side of the road has an existing access road or driveway approach within 200 feet of that side property line; or

(b) The access road/driveway approach onto a public road shall be located within 50 feet of either side of an existing driveway on the opposite side of the road.

Response: Applicant is proposing to improve the existing access drive; the improvements are to promote safe and efficient access to the site. There is no existing access road or driveway within proximity to the access road where improvements are proposed.

(5) The development shall be within 300 feet of a side property line if adjacent property has structures and developed areas within 200 feet of that common side property line.

Are there structures and developed areas on the neighboring properties within 200 feet of the common side property lines?

Response: Yes, neighboring properties have developments including electrical transmission towers and a train track that are within 200 feet of the common property lines. The proposed development is less than 300 feet from both of these developments.

(6) Fencing within a required setback from a public road shall meet the following criteria:

(a) Fences shall have a maximum height of 42 inches and a minimum 17-inch gap between the ground and the bottom of the fence.

(b) Wood and wire fences are permitted. The bottom strand of a wire fence shall be barbless. Fences may be electrified, except as prohibited by County Code.

(c) Cyclone, woven wire, and chain link fences are prohibited.

(d) Fences with a ratio of solids to voids greater than 2:1 are prohibited.

(e) Fencing standards do not apply in an area on the property bounded by a line along the public road serving the development, two lines each drawn perpendicular to the principal structure from a point 100 feet from the end of the structure on a line perpendicular to and meeting with the public road serving the development,

and the front yard setback line parallel to the public road serving the development.

Does your proposal include the installation of any fencing?

Response: No new fencing is proposed with this development.

(7) The nuisance plants listed in the table attached to the end of this form shall not be planted on the subject property and shall be removed from cleared areas of the subject property.

Are any of the listed nuisance plants present on your property? Show the location of the nuisance species on your site plan.

Response: Yes. Because of the rural nature of the site in close proximity to urban densities, and the presence of a cleared right of way for the powerlines, Burlington Creek Forest Natural Area is heavily infested with nuisance plant species. The heaviest concentrations of infestation are along the powerline right of way and along the roadside edges. Also there is a general trend towards higher concentrations of nuisance plants in the northwest section of the property near the access from McNamee road. Nuisance plants located at the trailhead location are: Himalayan blackberry (*Rubus armeniacus*), Scotch broom (*Cytisus scoparius*), Canada thistle (*Cirsium arvense*), English ivy (*Hedera helix*), Tansy ragwort (*Senecio jacobaea*) and Robert geranium (*Geranium robertianum*). See figure 4 for nuisance plant infestations located near the proposed development.

Do you acknowledge that you cannot plant any of the listed nuisance species on your property as landscaping or for any other reason?

Response: Yes, Metro is actively working to minimize nuisance plants in Burlington Creek Forest Natural Area and strives to plant native species for mitigation, restoration or landscaping purposes.

Describe how the listed nuisance plant species will be controlled in the cleared areas on your property.

Response: When nuisance plants are detected they are removed as soon as possible using best management practices. Hand removal is preferred with herbicides only used as a last resort for larger infestations.

Have you met ALL of the above criteria?

Response: No, the applicant cannot meet development standards 1 because of physical characteristics unique to the property, specifically the lack of previously cleared areas. According to MCC Section 33.4515, SEC permitting is not required for "Activities to protect, conserve, enhance, and maintain public recreational, scenic, historical, and natural uses on public lands". It is the interpretation of the applicant that this development falls under this exception. Because of this a formal wildlife conservation plan has not been proposed for this project. That being said, Metro is actively restoring the site. Metro currently has a plan in place to restore 50 acres in the fall of 2017 by thinning and planting. 7,000 native plants will be planted in 2017 as

part of this effort. To date, restoration activities at Metro's North Tualatin Mountains properties have included 1.3 miles of stream restoration, 700 acres of forest thinning and the planting of 85,000 trees and shrubs.

WILDLIFE CONSERVATION PLAN

(1) The proposed development cannot meet the development standards because of physical characteristics unique to the property. The applicant must show that the wildlife conservation plan results in the minimum departure from the standards required in order to allow the use;

Can you meet all of the development standards? If no, please explain which development standard(s) you cannot meet and why.

Response: No, the applicant cannot meet development standards 1 regarding the restriction of development to already cleared areas because of physical characteristics unique to the property including the current forest cover of the site. It is the opinion of the applicant that the proposed development is exempt from SEC permitting as per MCC Section 33.4515.

Explain how your proposal results in the minimum departure from the development standards that will still allow your proposed use.

Response: Burlington Creek Forest Natural Area is heavily forested, with only small cleared areas. In consideration of SEC-h requirements the development activities resulting in land clearing are concentrated within already cleared areas as much as possible. The site location of the development also takes into consideration SEC-v and SEC-s development standards. The location of the trailhead development is sited with all of these considerations in mind. The area to be cleared is the minimum required to site the proposed development without having to clear more area or conduct extensive grading activities that would further impact the site. The proposed trailhead development will be mostly within already cleared areas associated with the road but because of characteristics unique to the site a small area of forest adjacent to the currently cleared area will have to be cleared of twelve trees. The area to be cleared is approximately .05 acres. The proposed improvements will have only a very minor impact on the forest canopy and wildlife habitat within Burlington Creek Natural Area. Site planning documents have been drafted in such a way as to provide access and meet fire safety standards while absolutely minimizing the number of trees removed to accomplish the proposed development.

STANDARDS FOR REVIEW OF A WILDLIFE CONSERVATION PLAN

(3) The wildlife conservation plan must demonstrate the following:

(a) That measures are included in order to reduce impacts to forested areas to the minimum necessary to serve the proposed development by restricting the amount of clearance and length/width of cleared areas and disturbing the least amount of forest canopy cover.

(b) That any newly cleared area associated with the development is not greater than

one acre, excluding from this total the area of the minimum necessary access way required for fire safety purposes.

How much land clearance are you proposing? Show the area proposed for clearance on your site plan. You cannot exceed 1 acre of clearing (43,560 square feet).

Response: .05 acres.

Explain why this amount of land clearance is the minimum necessary to serve your proposal. Attach additional sheets if necessary.

Response: The amount of land proposed for clearance is the minimum necessary to allow for the proposed development. The placement of the development site has been carefully selected and sited in a way that minimizes tree removal. As much as possible the development is in already cleared areas. By fully utilizing the already cleared area for the development sites the impacts on the forested areas is minimized.

(c) That no fencing will be built and that existing fencing will be removed outside of areas cleared for the site development except for existing cleared areas used for agricultural purposes.

Does your proposal include any new fencing?

Response: No, there is no fencing included in this proposal. There may be some areas such as viewpoints and steep edges where short sections of split cedar guardrails are installed to exclude people from certain areas.

Is there existing fencing outside the cleared areas on the property?

Response: No

(d) That revegetation of existing cleared areas on the property at a 2:1 ratio with newly cleared areas occurs if such cleared areas exist on the property.

Do you have any existing cleared areas on the site?

Response: Burlington Creek Forest Natural Area is heavily forested. Besides the area where the trailhead is proposed to be located, the cleared areas within the property are restricted to the right-of-way for the powerlines, and cannot be replanted as part of a mitigation plan. It is the opinion of the applicant that the proposed development is exempt from SEC permitting as per MCC Section 33.4515.

Are you proposing new land clearance? If yes, how much land clearing are you proposing?

Response: The area to be cleared for the trailhead area is approximately 2,178 square feet or .05 acres.

If you have an existing cleared area but are proposing to clear new land, then you must replant the existing clearing. The amount of newly planted area must be double the amount of land you are clearing. Show the areas to be replanted on your

site plan.

How much land are you proposing to replant?

Response: Because of the heavily forested nature of Burlington Creek Natural Area there is a lack of previously cleared areas on the site. That being said Metro is actively restoring the site. There is a plan in place to restore 50 acres in the fall of 2017 by thinning and planting in areas with currently closed canopy. 7,000 native plants will be planted in 2017 as part of this effort. To date restoration activities have included 1.3 miles of stream restoration, 700 acres of forest thinning and the planting of 85,000 trees and shrubs. It is the opinion of the applicant that the proposed development is exempt from SEC permitting as per MCC Section 33.4515.

Describe your plan to revegetate the existing cleared areas. This should, at minimum, discuss the number and type of species you will plant, where the planting will occur, when the planting will occur, and how you plan on ensuring the survival of the new plants. Attach additional sheets if necessary.

Response: Only drought tolerant native vegetation will be planted on site as deemed necessary. Species include plants such as dwarf Oregon grape, Salal or Western sword fern. Park facilities staff or site contractor will monitor any newly installed plants. Best management practices will be used and implemented. Regular monitoring and watering will ensure their survival. Planting will occur in the cleared area to the south of the proposed development. Metro typically overplants its restoration and mitigation areas to ensure an acceptable survival rate.

(e) That revegetation and enhancement of disturbed stream riparian areas occurs along drainages and streams located on the property.

Do you have any streams or drainages on your property?

Response: Burlington Creek and several unnamed streams pass through the property. Trails have been aligned as practicable to avoid the need for new stream crossings or cross at existing stream crossings (culverts under existing roadways). Where new stream or drainage crossings are proposed, abutments shall be located outside of the 10-year flood zone. Any disturbed vegetation that occurs as a result of trails or crossing structures in riparian corridors will be replanted. Trail placement has been done to minimize going into SEC-s overlay areas.

(4) For Protected Aggregate and Mineral (PAM) resources within a PAM subdistrict, the applicant shall submit a Wildlife Conservation Plan which must comply only with measures identified in the Goal 5 protection program that has been adopted by Multnomah County for the site as part of the program to achieve the goal.

If your property is in the PAM overlay, ask staff to provide you a copy of the Goal 5 protection program for the specific aggregate and mineral site that affects your property.

Response: This project is not located in a PAM overlay.



MULTNOMAH COUNTY
LAND USE & TRANSPORTATION PROGRAM
1600 SE 190TH Ave, Suite 116
Portland OR 97233
Ph 503.988.3043 Fax 503.988.3389
<http://www.multco.us/landuse>

**Significant Environmental
Concern for Views (SEC-v)
Permit Worksheet**

Address: __ Metro, 600 NE Grand, Portland OR, 97232 __ **Site Size:** __ 350 acres __

Township: __ 2N __ **Range:** __ 1W __ **Section:** __ 20 __ **Tax Lot(s):** __ See below __

PROPOSED DEVELOPMENT: Please provide a description of your proposal. This should, at a minimum, include the size and use of any structures you are proposing. Also include a description of any land clearing you will be doing including tree removal, area to be graded or excavated and the slope of the development area.

Response: The proposal is to develop approximately five miles of trails with associated stream crossings and a trailhead. Proposed trail and trailhead construction would occur on land owned by Metro and wholly contained within the Burlington Creek Forest Natural Area. Although this area is a contiguous block, there are several properties involved. The Property ID numbers are as follows: R124323, R124324, R124325, R124329, R124331, R124332, R124333, R124334, R124337, R124338, R124341, R124342, R124343, R124346, R124347 and R491652.

The trailhead area will include an information kiosk, picnic table, and a restroom structure. The restroom will have a footprint of 150 square feet, approximately 10 feet by 15 feet and approximately 12 feet tall. The kiosk will have a footprint of 30 square feet and be 9 feet by 5 feet and stand approximately 8 feet tall. Grading activities will be restricted to the area around the proposed trailhead development and near McNamee road to meet sight distance requirements. Grading and vegetation removal within the public road right-of-way and on property owned by PGE is proposed to meet sight distance requirements. Eighteen trees within the right of way and sight distance easement will be pruned or removed in order to meet sight distance requirements.

There are four areas that will require fills or grading. A sixty by twenty foot area will be graded near the beginning of the access road, this will be south of the road. This grading activity will be in order to smooth out a steep slope and to construct a ditch along the road. Three additional areas will be associated with the parking lot and will include an area of forty by fifteen foot area to the northwest of the bathroom, an area of forty by fifteen feet at the northeast corner of the parking lot, and an area of approximately one hundred by twenty feet along the southern edge of the parking area. The final area to be graded is thirty feet by two

hundred feet, located along McNamee Road. The slope ranges from 1.5% to 10% within this area.

The trail system will be natural surface trails designated for uses such as shared hiking/off-road cycling, or hiking only. Six bridges will be constructed along various trails at drainage crossings to minimize impacts. The footprint for these structures is as follows: the bridge structure is seventy five square feet, and there are two crossings of one hundred square feet, two crossings at sixty square feet and one at ninety square feet.

The vast majority of this development will take place in already cleared areas, such as the powerline right of way and a cleared area near the existing road. Trail construction including bridges and other stream crossings in forested areas will not result in conversion from "forested areas" to "cleared areas" as defined by Multnomah County Code Section 33.4570. Forested areas traversed by the proposed natural surface trails will maintain at least 75% crown closure and/or at least 80 square feet of basal area per acre of trees of 11 inch DBH or larger. Total land clearance within currently forested areas would be approximately .05 acres. Eighteen trees within the site distance easement will be pruned or cut in order to meet sight distance requirements. This site is moderately sloping with all development occurring in some areas with greater than 25% slope.

Please see Area Map (figure 1) for locations of proposed development.

EXISTING DEVELOPMENT: Please list the existing buildings, structures and improvements on your property, including a description of the use of these buildings, and identify them on your site plan.

Burlington Creek Forest Natural Area currently does not have any buildings. There is a gated road system that is accessed from McNamee road. These are shown on the Area Map (figure 1.)

REQUIRED DRAWINGS FOR SEC-V PERMIT The checklist below lists all of the drawings that are required when making an SEC-v application. You will need to provide 2 copies of each of the drawings listed below, preferably on 8 ½ x 11 inch or 11 x 17 inch paper. Make sure the size of paper is appropriate to the scale of the drawing. All required drawings must be drawn to an even and measurable scale such as 1 inch = 20 feet, or ¼ inch = 1 foot.

☐A **map of the property** drawn to scale showing:

Boundaries, dimensions, and size of the subject parcel (if zoned Farm or Forest use, include all contiguous properties in your ownership);
Location and size of existing and proposed structures;
Contour lines and topographic features such as ravines or ridges with the direction of the slope; or provide slope percent;
Location of natural streams, drainageways, springs, seeps, and wetlands on the site;
Proposed fill, grading, site contouring or other landform changes;
Location and predominant species of existing vegetation on the parcel, areas where vegetation will be removed, and location and species of vegetation to be planted, including landscaped areas;
Location and width of existing and proposed roads, driveways, parking and maneuvering areas, and service corridors and utilities such as wells, underground wires, septic and storm water systems;
Septic system location;

☐Elevation drawings (side views) showing the appearance of proposed structures when build and surrounding final ground grades;

☐Details on the height, shape, colors, outdoor lighting, and exterior building materials of any proposed structure; and

☐A landscape screening plan, showing information on the type, height and location of any vegetation or other materials which will be used to screen the development from the view from identified significant viewing areas.

CRITERIA FOR APPROVAL OF SEC-v PERMIT

The purpose of the SEC-v permit is to ensure that new development is "visually subordinate" to the landscape. *Visually subordinate* means development does not noticeably contrast with the surrounding landscape, as viewed from an Identified Viewing Area (see below). Development that is visually subordinate may be visible, but is not visually dominant in relation to its surroundings. In other words, your eyes are not drawn towards it. Please note that for most development, this means that you may have a view, but that it will likely be through trees that provide screening for the building.

Guidelines to help you attain visual sub ordinance for your project are presented below. In no case should the proposed structure be taller than the surrounding forest canopy level. You will need to provide detailed information about the height, shape, colors, outdoor lighting, and exterior building materials you are proposing to use. Chosen colors should be dark natural or earth-tone colors and building materials should be selected to minimize reflectivity. Topography and vegetation may be used to screen the building, but primary emphasis is placed on the building's location, design and construction materials. Please be aware that many of your neighbors have buildings that were constructed before the current standards went into effect. It may not be possible for the County to approve a

house that is similar in size, color, visibility, and placement as other structures in the vicinity of your property.

The entries in bold text below are the standards for approval. The questions below each standard are intended to help you address the standards. Staff will use your responses to determine whether or not your proposal meets each specific standard. Please respond to each standard as fully as you can. When responding to the questions, remember to address the 'how' and 'why' each standard is met. Attach additional sheets if necessary.

Any portion of a proposed development (including access roads, cleared areas and structures) that will be visible from an Identified Viewing Area shall be *visually subordinate*.

Check all of the Identified Viewing Areas from which your property is visible. *Identified Viewing Areas* are public areas that provide important views of a significant scenic resource, and include both sites and linear corridors.

Identified Viewing Areas are:

<input checked="" type="checkbox"/> Bybee-Howell House	<input checked="" type="checkbox"/> Highway 30
<input type="checkbox"/> Virginia Lakes	<input checked="" type="checkbox"/> The Multnomah Channel
<input checked="" type="checkbox"/> Sauvie Island Wildlife Refuge	<input checked="" type="checkbox"/> The Willamette River
<input type="checkbox"/> Kelley Point Park	<input checked="" type="checkbox"/> Public Roads on Sauvie Island
<input type="checkbox"/> Smith and Bybee Lakes	

If your property is topographically screened from view from all Identified Viewing Areas, then your proposal does not have to achieve visual subordination. "Topographically screened" means that a hill, ravine, or other natural land feature prevents your property from being seen from any of the listed Identified Viewing Areas. If you feel your property is not visible from any of the identified viewing areas, please explain why.

Keep in mind that screening from the tree canopy does not equate to topographic screening. It is possible that your property could be hidden from view by trees but would not be topographically screened from all Identified Viewing Areas if the trees were removed in the future through logging, fire, disease etc.

Response: The property is not topographically screened from the Identified Viewing Areas indicated above.

If your property can be topographically seen from any identified viewing area, regardless of how remote the possibility, complete the remainder of this questionnaire. The questions below are intended to assist you in explaining why your proposal will be visually subordinate.

Guidelines which may be used to attain visual subordination, and which shall be considered in making the determination of visual subordination include:

(1) The development must be sited on portions of the property where topography and existing vegetation will screen the development from the view of identified viewing areas.

Explain how existing topography will block the development from view from identified viewing areas. (Topography means ground terrain only.)

Explain how existing vegetation that is located only on your property will screen the development from view of identified viewing areas. You cannot include any vegetation that is not on your property since your neighbors could log their properties at any time. Please note that any vegetation you plan to use to screen the development must be permanently retained on the site to keep the new structure visually subordinate.

Response: The proposed development includes one small building, a single stall bathroom facility associated with the trailhead development and a retaining for the access road. This retaining wall will have a maximum exposed height of eight feet and will be earth toned in color. The building will be on the north side of the access road. North of the proposed development in the direction of the Identified Viewing Areas, there is 250 feet to the property line. This area is heavily forested with conifer trees. In order to achieve visual subordination and comply with SEC-V permitting requirements this forest will be left in place in perpetuity. Some tree thinning will occur in this area to bring the former commercial tree stand to a natural forest density as well as meet fire safety requirements associated with the restroom. The current height of the tree canopy in this area is approximately 50 feet and as the trees continue to grow this height will increase. This will completely obscure the proposed development from view from the Identified Viewing Areas. Please see Figure 3 for where the existing vegetation will be retained.

(2) Nonreflective or low reflective building materials and dark natural or earthtone colors must be used.

What materials are you proposing for the exterior of the structure including the roofing material? Examples of non-reflective or low reflective building materials include wood and composition shingles. An example of reflective material which will not meet this standard is metal roofing.

What colors are you proposing to use on the exterior of the structure? This information should include the name of the manufacturer and the name or number of the color(s) you propose. Dark earth tone colors should be proposed. These are colors such as dark brown and forest green that will blend into the surrounding forest landscape. Example colors are available for viewing at the land use planning office.

Response: The bathroom facility will have exterior coloration of earth tones such as brown or grey. Roofing materials will be non-reflective and made of concrete. The bathroom facility is a prefabricated facility manufactured by CXT, model name Rocky Mountain. See figure 5 for the schematic of the bathroom building.

(3) Any exterior lighting must be directed downward and sited, hooded and shielded so that it is not highly visible from identified viewing areas. Shielding and hooding materials should be composed of nonreflective, opaque materials.

Will there be any new exterior lighting installed as part of your project? ☒ Yes ☐ No

Response: We are proposing to include one exterior light near the bathroom structure. This light will be orientated downward and hooding material will be composed of opaque non reflective material.

(4) Screening vegetation or earth berms may be used to block and/or disrupt views of the development from Identified Viewing Areas. Priority should be given to retaining existing vegetation over other screening methods. Planting new trees or building new berms should only be considered if you cannot design a development that can be screened from view using existing topography and vegetation. Trees planted for screening purposes should be coniferous to provide winter screening. The applicant is responsible for the proper maintenance and survival of any vegetation used for screening.

Will existing on-site vegetation provide screening for your project? Yes ☒ No ☐

If yes, describe how the vegetation will screen your project. This should include information on the size, height, species, and location of the vegetation. Please note that any vegetation you plan to use to screen the development must be permanently retained on site.

Response: The proposed development includes only one small building, a bathroom facility associated with the trailhead development. This building will be on the north side of the access drive. North of the proposed development in the direction of the Identified Viewing Areas, there is 250 feet to the property line. This area is heavily forested with trees including Douglas-fir, Western hemlock, Western red cedar and Red alder. The forest canopy in this area is a minimum of forty feet with some trees reaching sixty feet. In order to achieve visual subordination and comply with SEC-V permitting requirements the forest will be left in place in perpetuity. This will completely obscure the proposed development from view from the Identified Viewing Areas. Please see Figure 3 for where the existing vegetation will be retained.

Are you proposing to plant any new vegetation to screen your project? Yes ☐ No ☒

If yes, describe how the new vegetation will screen your project. This should include information on the number, size, height, species and location of the proposed vegetation

as well as a timeline for planting that vegetation. Please note that any vegetation you plan to use to screen the development must be permanently retained on site.

Will any earth berms provide screening for your project? Yes___ No_X_

If yes, describe how the berms will screen your project. This should include info size, height, and location of the berms.

(5) Proposed developments or land uses shall be aligned, designed and sited to fit the natural topography and to take advantage of vegetation and land form screening, and to minimize visible grading or other modifications of landforms, vegetation cover, and natural characteristics.

Examples of how to minimize grading and take advantage of existing topography are given on the last page of this application.

Will your proposal require any grading? Yes_X_ No___

If yes, describe how your proposed project is designed to fit with the natural topography. This should include a discussion of why any proposed grading is minimizing the amount of land modification needed to install your project.

Response: The site location of the development takes into consideration SEC development standards. The location of the trailhead development is sited with SEC-h, SEC-v and SEC-s standards in mind. The parking lot and trailhead development is orientated on the landscape perpendicular to the slope in order to take advantage of the grade provided by the existing road. Given the unique topographic constraints of the property, the proposed area to be graded is the minimum required to site the proposed development without having to clear more area or conduct extensive grading activities that would further impact the site. The proposed trailhead development will be mostly within an already cleared; mostly flat area associated with the road and will have only a very minor impact on the forest canopy and wildlife habitat within Burlington Creek Natural Area. Site planning documents have been drafted in such a way as to provide access and meet fire safety standards while minimizing the amount of grading to accomplish the proposed development.

Describe what grading activities will be needed in order to construct your project. This should include information such as the location, size, and % slope of the grading area, and the length, width and depth of any cuts or fills.

Response: Grading activities will be restricted to the area around the proposed trailhead development and access road. There are five areas that will require fills or grading. A sixty by twenty foot area will be graded near the beginning of the access road, this will south of the road. This grading activity will be in order smooth out a steep slope and to construct a ditch along the road. There are three area that will be graded associated with the parking lot and will include an area of forty by fifteen foot

area to the northwest of the bathroom, an area of forty by fifteen feet at the northeast corner of the parking lot, and an area of approximately one hundred by twenty feet along the southern edge of the parking area. The final area to be graded is thirty feet by two hundred feet, located along McNamee Road. The slope ranges from 1.5% to 5.25% within this area.

(6) Limit structure height to remain below the surrounding forest canopy level

How tall is the forest canopy surrounding your project from existing grade on the downslope side?

50 Ft.

How tall is your proposed structure (grade to tallest part of the structure)?

15 Ft.

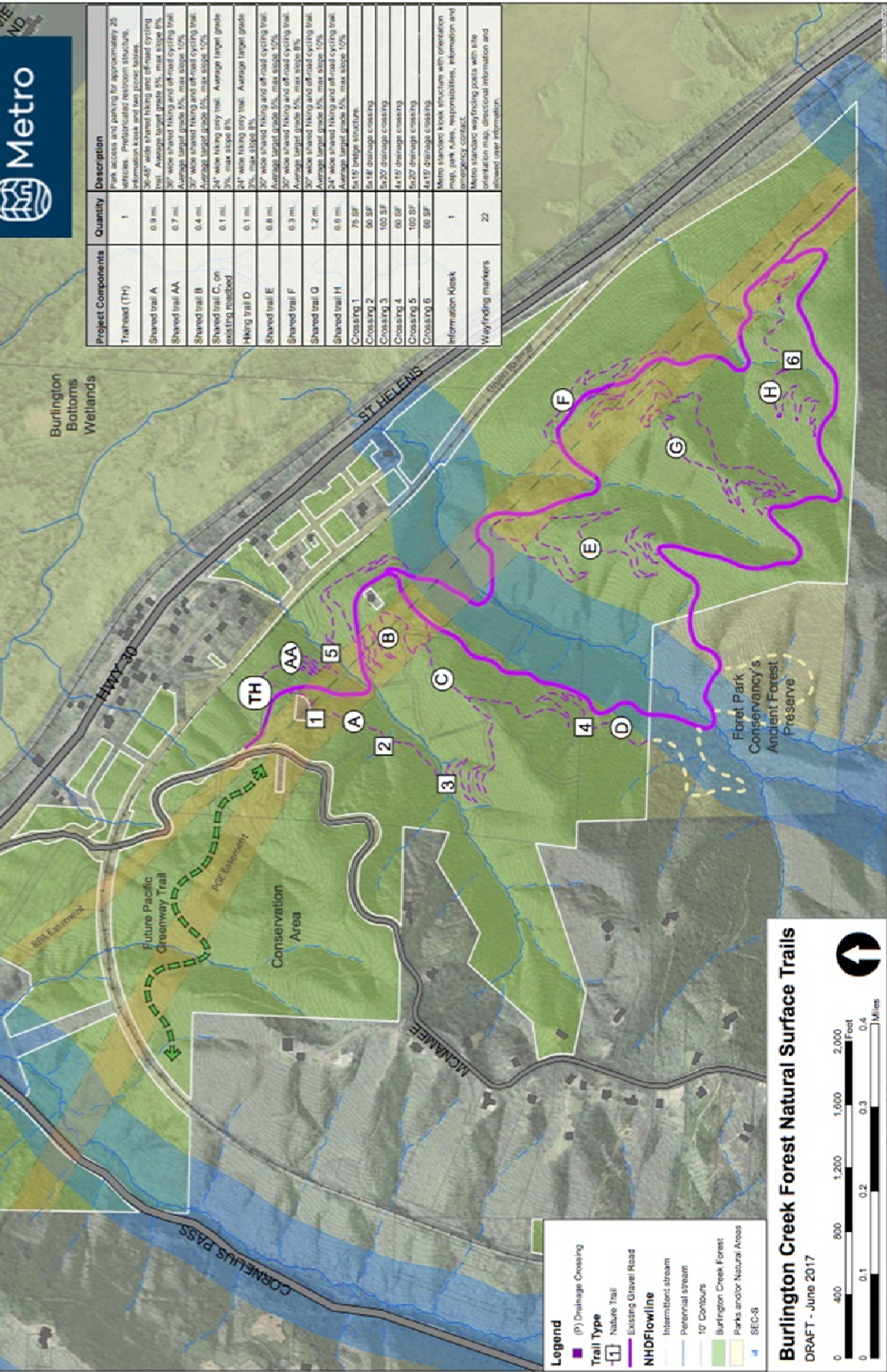
Your proposed structure must be shorter than the surrounding forest canopy measured from existing grade on the downslope side.

(7) The silhouette of buildings and other structures must remain below the skyline of bluffs or ridges as seen from identified viewing areas. This may require modifying the building or structure height and design as well as location on the property. Some exemptions apply to new communications facilities as explained below.

Will your proposed structure break the skyline or ridgeline as seen from any Identified Viewing Area?

 Yes X No

If yes, you must modify your proposal so that the structure does not break the skyline or ridgeline unless your project is a new communications facility.



Burlington Creek Forest Natural Surface Trails
 DRAFT - June 2017

Figure 1. Area Map showing location of proposed development including trails

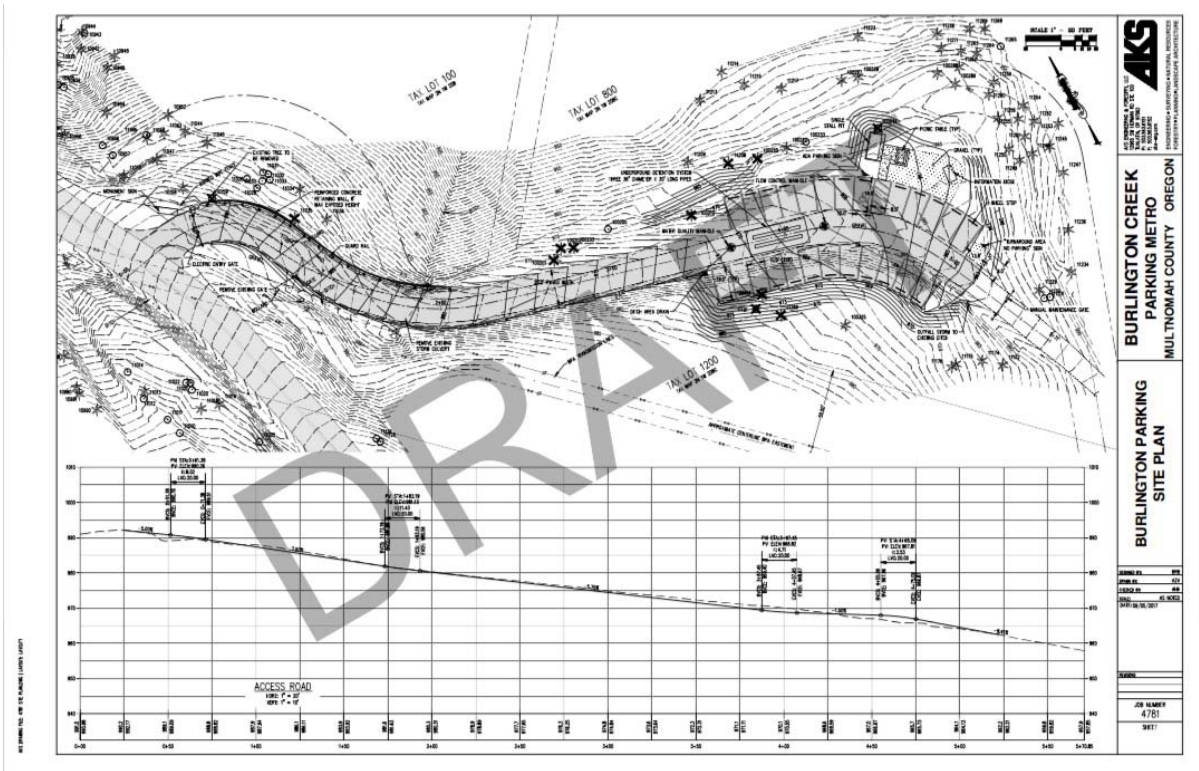


Figure 2. Site Plan showing proposed development and trees to be removed

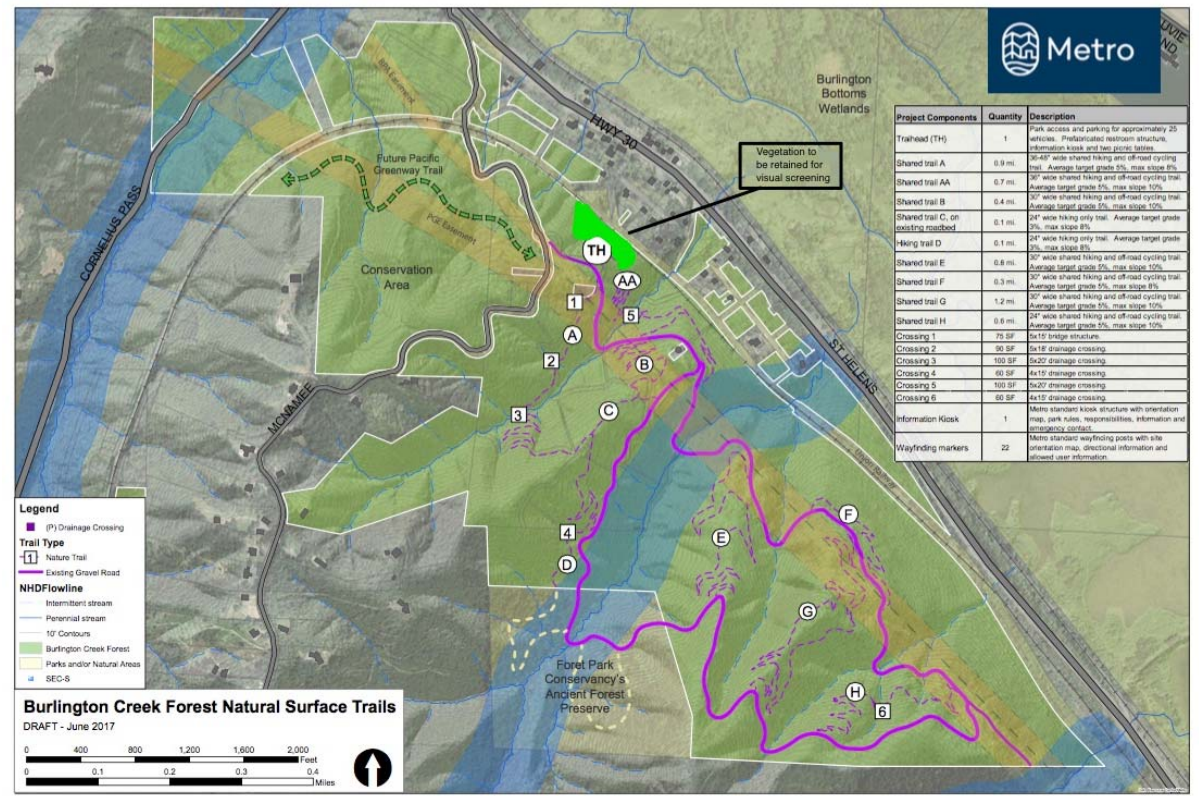


Figure 3. Vegetation to be retained for visual screening

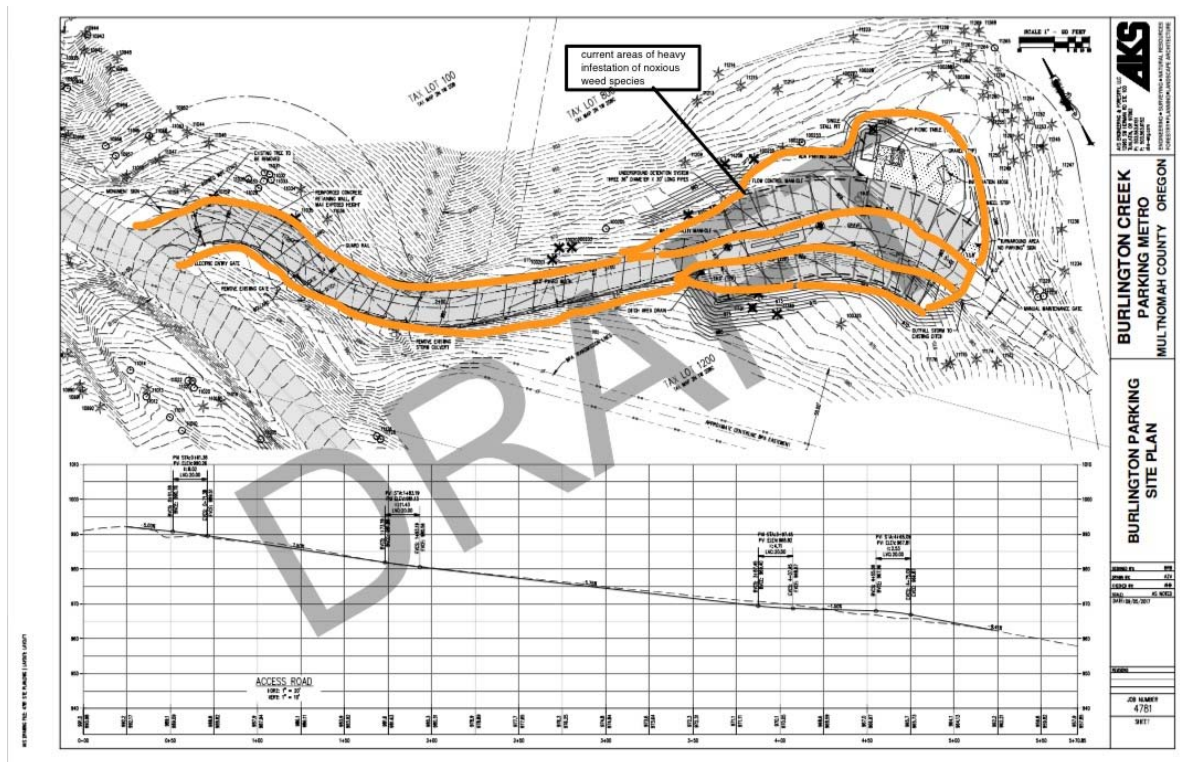


Figure 4. Current areas of noxious weed infestations around proposed development

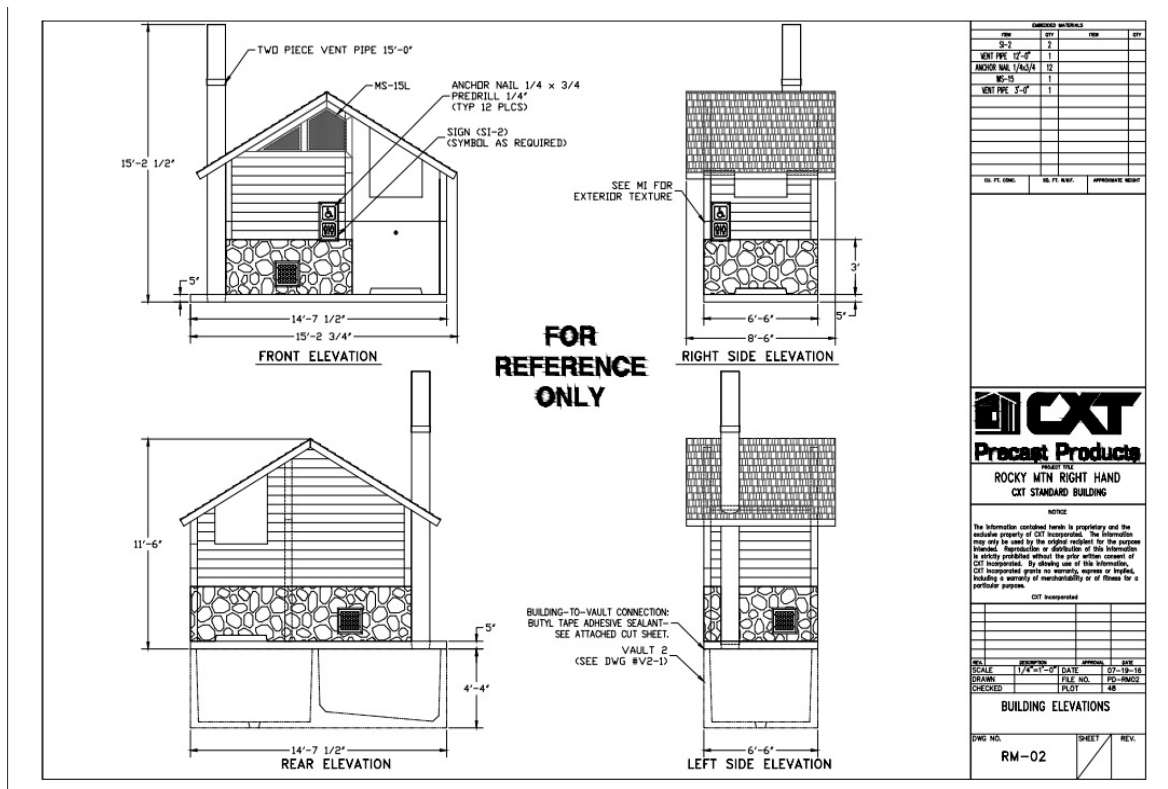


Figure 5. Schematic of bathroom structure

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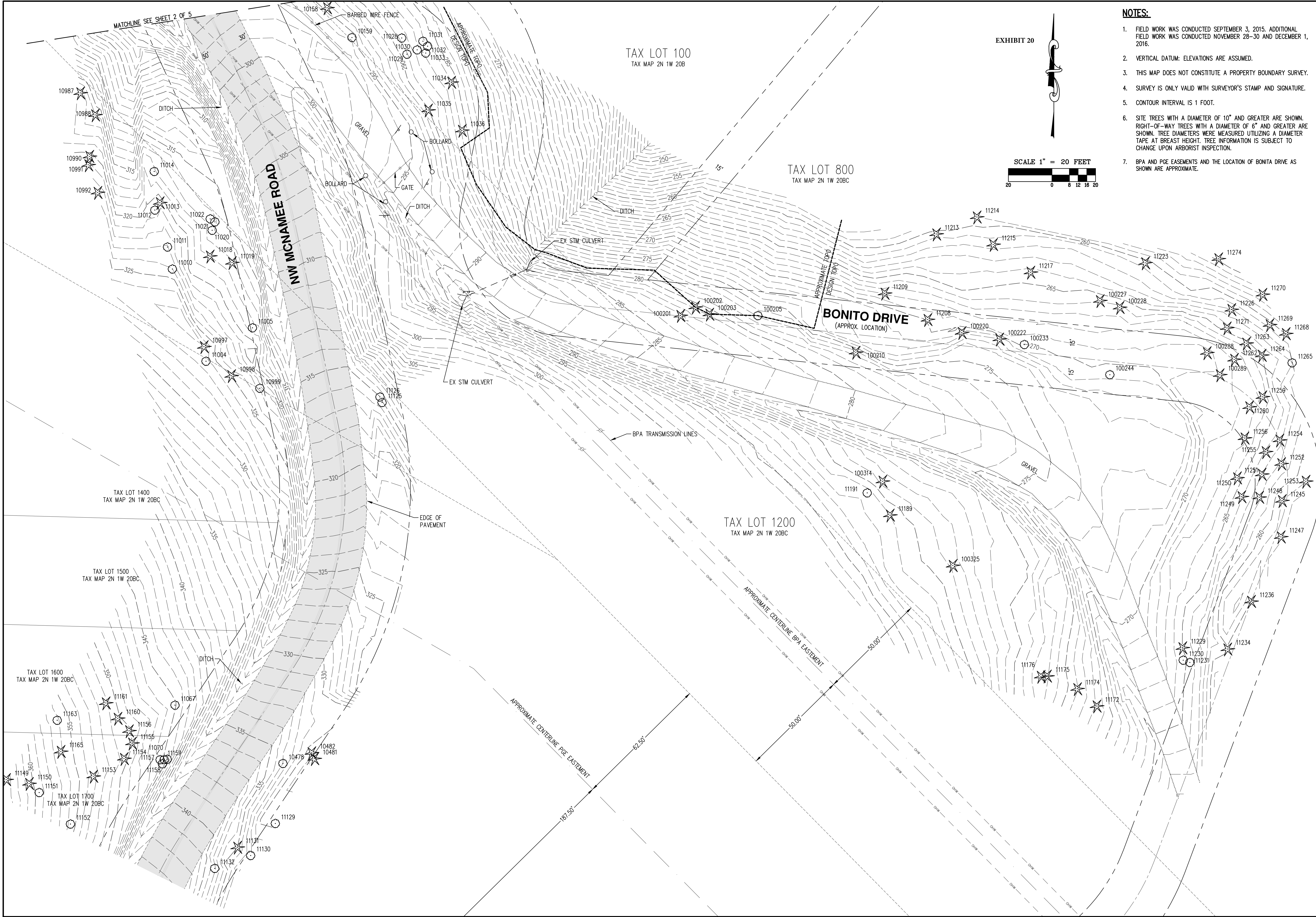


EXHIBIT 20

SCALE 1" = 20 FEET

NOTES:

1. FIELD WORK WAS CONDUCTED SEPTEMBER 3, 2015. ADDITIONAL FIELD WORK WAS CONDUCTED NOVEMBER 28-30 AND DECEMBER 1, 2016.
2. VERTICAL DATUM: ELEVATIONS ARE ASSUMED.
3. THIS MAP DOES NOT CONSTITUTE A PROPERTY BOUNDARY SURVEY.
4. SURVEY IS ONLY VALID WITH SURVEYOR'S STAMP AND SIGNATURE.
5. CONTOUR INTERVAL IS 1 FOOT.
6. SITE TREES WITH A DIAMETER OF 10" AND GREATER ARE SHOWN. RIGHT-OF-WAY TREES WITH A DIAMETER OF 6" AND GREATER ARE SHOWN. TREE DIAMETERS WERE MEASURED UTILIZING A DIAMETER TAPE AT BREAST HEIGHT. TREE INFORMATION IS SUBJECT TO CHANGE UPON ARBORIST INSPECTION.
7. BPA AND PGE EASEMENTS AND THE LOCATION OF BONITA DRIVE AS SHOWN ARE APPROXIMATE.

AKS
AKS ENGINEERING & FORESTRY, LLC
12065 SW HERMAN RD. STE 100
TUALATIN, OR 97062
P: 503.563.6151
F: 503.563.6152
aks-eng.com

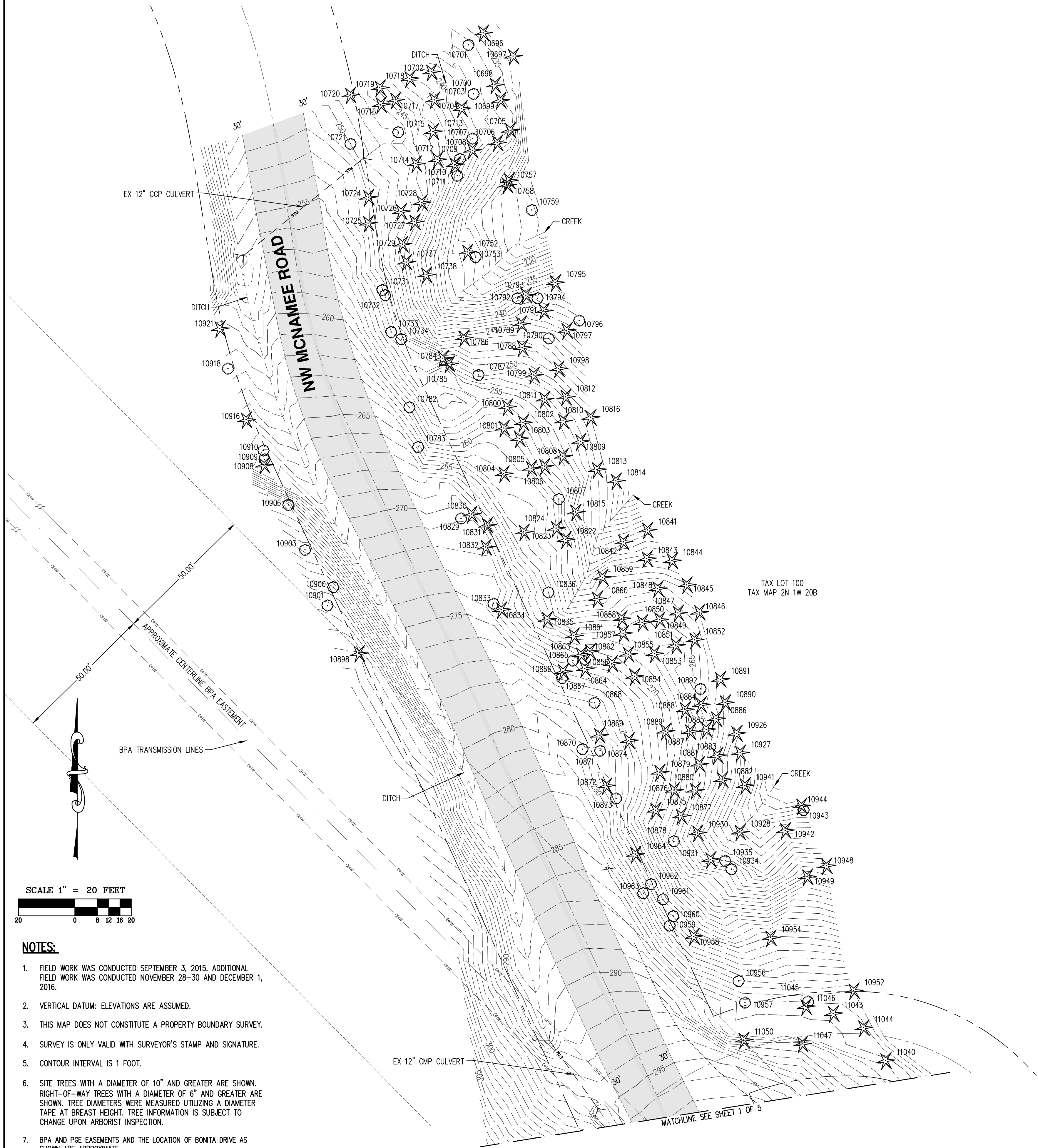
BURLINGTON CREEK
PARKING METRO
MULTNOMAH COUNTY OREGON
TAX MAP 2N 1W 20BC

EXISTING CONDITIONS
PLAN

DESIGNED BY:
DRAWN BY: BRH
CHECKED BY: NSW
SCALE: AS NOTED
DATE: 9/19/2017
REGISTERED PROFESSIONAL LAND SURVEYOR
PRELIMINARY FOR CONSTRUCTION
JANUARY 9, 2007
DAVID WHITE
00652LS
RENEWS: 6/30/18

REVISIONS
JOB NUMBER
4781
SHEET
1 OF 5

AKS DRAWING FILE: 4781EX COND.DWG | LAYOUT: LAYOUT1 (2)



NOTES:

1. FIELD WORK WAS CONDUCTED SEPTEMBER 3, 2015. ADDITIONAL FIELD WORK WAS CONDUCTED NOVEMBER 28-30 AND DECEMBER 1, 2016.
2. VERTICAL DATUM: ELEVATIONS ARE ASSUMED.
3. THIS MAP DOES NOT CONSTITUTE A PROPERTY BOUNDARY SURVEY.
4. SURVEY IS ONLY VALID WITH SURVEYOR'S STAMP AND SIGNATURE.
5. CONTOUR INTERVAL IS 1 FOOT.
6. SITE TREES WITH A DIAMETER OF 10" AND GREATER ARE SHOWN. RIGHT-OF-WAY TREES WITH A DIAMETER OF 6" AND GREATER ARE SHOWN. TREE DIAMETERS WERE MEASURED UTILIZING A DIAMETER TAPE AT BREAST HEIGHT. TREE INFORMATION IS SUBJECT TO CHANGE UPON ARBORIST INSPECTION.
7. BPA AND POE EASEMENTS AND THE LOCATION OF BONITA DRIVE AS SHOWN ARE APPROXIMATE.

TREE NUMBER	SPECIES	DBH (INCH)	TREE NUMBER	SPECIES	DBH (INCH)	TREE NUMBER	SPECIES	DBH (INCH)
10158	CONIFEROUS	12	10846	CONIFEROUS	12	11020	DECIDUOUS	12
10159	DECIDUOUS	10, 10	10847	CONIFEROUS	8	11021	DECIDUOUS	12
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EXISTING CONDITIONS
PLAN

DESIGNED BY:
DRAWN BY: BRH
CHECKED BY: NSW
SCALE: AS NOTED
DATE: 9/19/2017

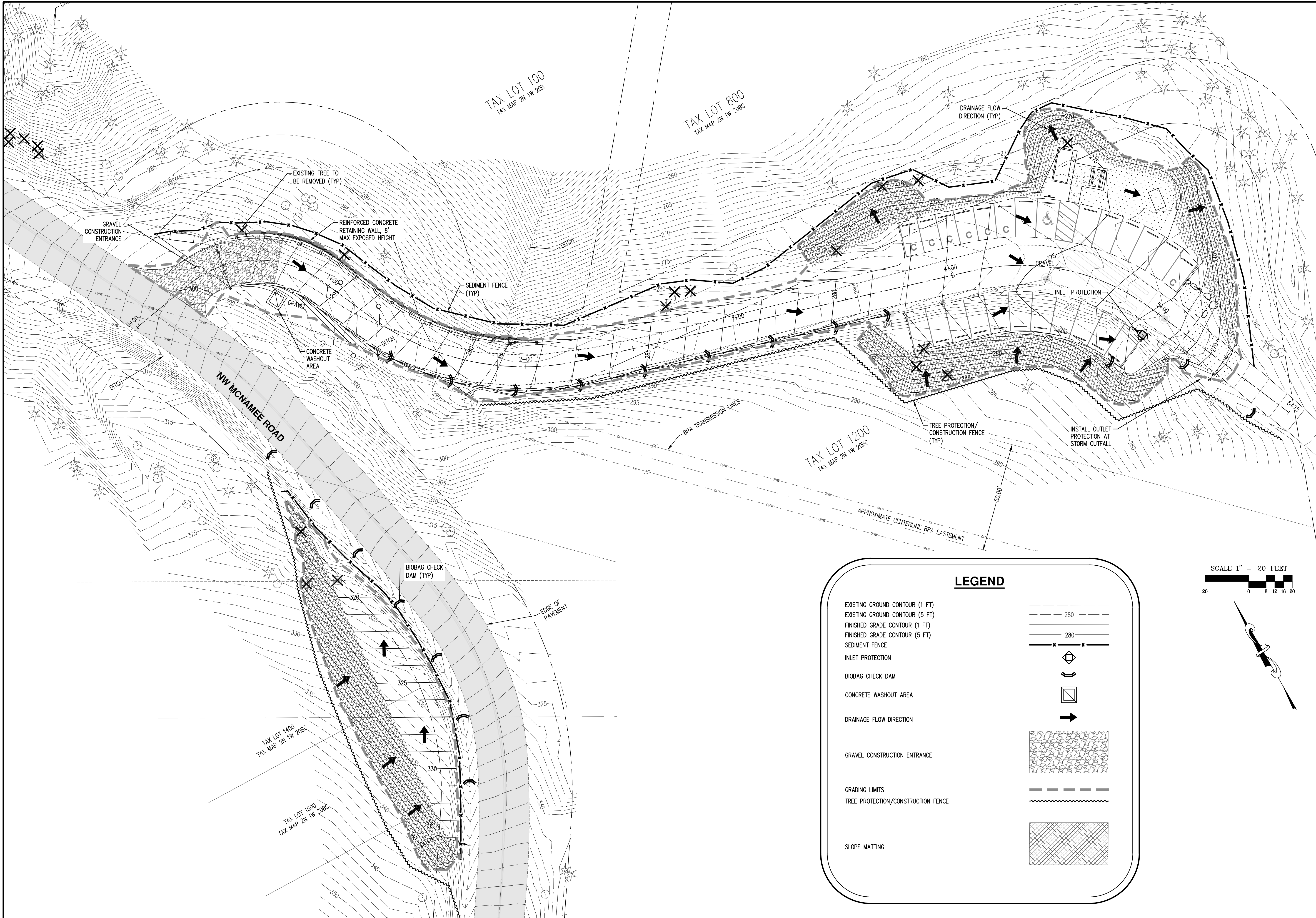
REGISTERED
PROFESSIONAL
LAND SURVEYOR
PRELIMINARY FOR
CONSTRUCTION
JANUARY 9, 2007
C. WHITE
00652LS
RENEWS: 6/30/18

REVISIONS

JOB NUMBER
4781

SHEET
2 OF 5

AKS DRAWING FILE: 4781 ESC PLANDWG | LAYOUT: LAYOUT1



AKS
AKS ENGINEERING & FORESTRY, LLC
12065 SW HERMAN RD. STE 100
TUALATIN, OR 97062
P: 503.563.6151
F: 503.563.6152
aks-eng.com

ENGINEERING · SURVEYING · NATURAL RESOURCES
FORESTRY · PLANNING · LANDSCAPE ARCHITECTURE

**BURLINGTON CREEK
PARKING METRO**
MULTNOMAH COUNTY OREGON
TAX LOT 1200

**BURLINGTON PARKING
PRELIMINARY GRADING AND
EROSION CONTROL PLAN**

DESIGNED BY: BRB
DRAWN BY: AZV
CHECKED BY: AHH
SCALE: AS NOTED
DATE: 09/19/2017

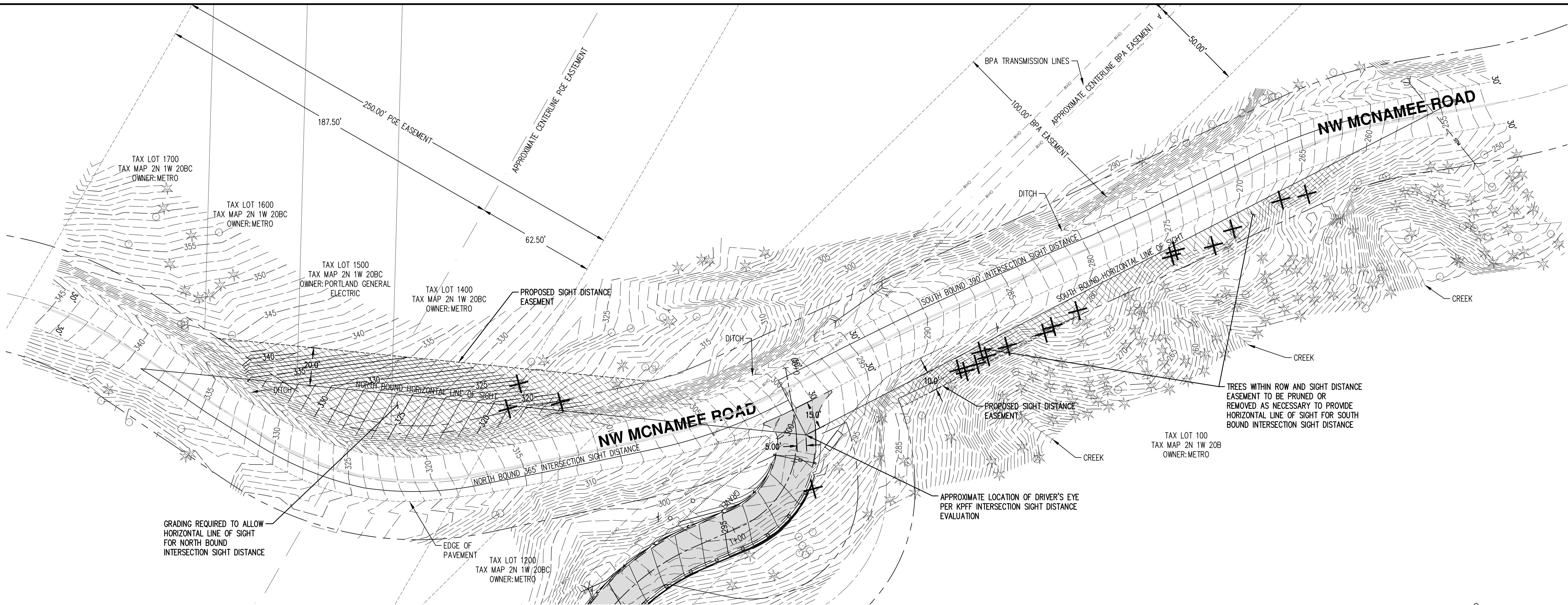
RENEWAL DATE: 6/30/19

REVISIONS



JOB NUMBER
4781

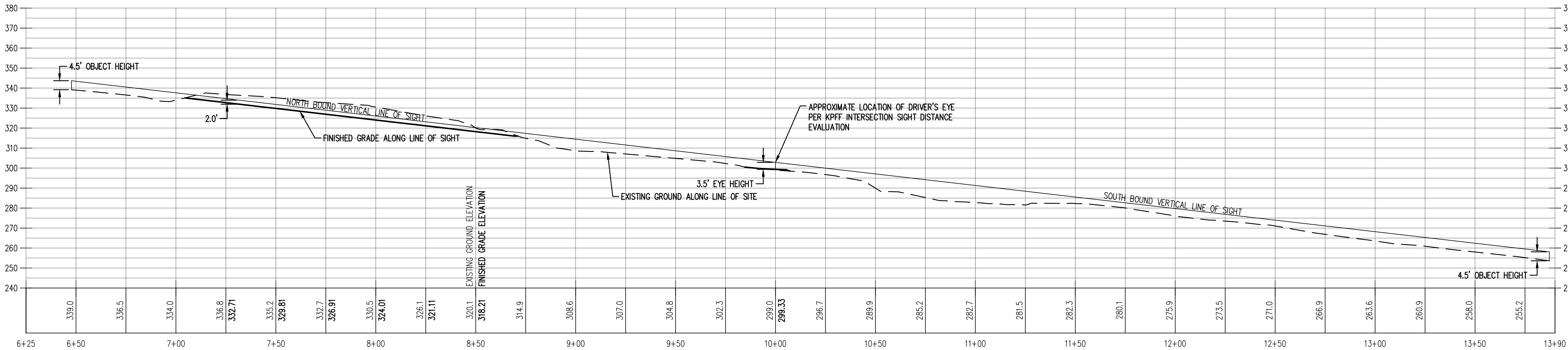
SHEET
3 OF 5

AKS DRAWING FILE: 4781 MCNAMEE SIGHT DISTANCE.DWG | LAYOUT: LAYOUT1



LEGEND:

- SIGHT DISTANCE CLEARING AREA 
- TREE REMOVAL/PRUNING 

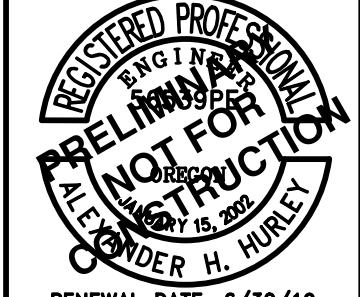


SITE DISTANCE

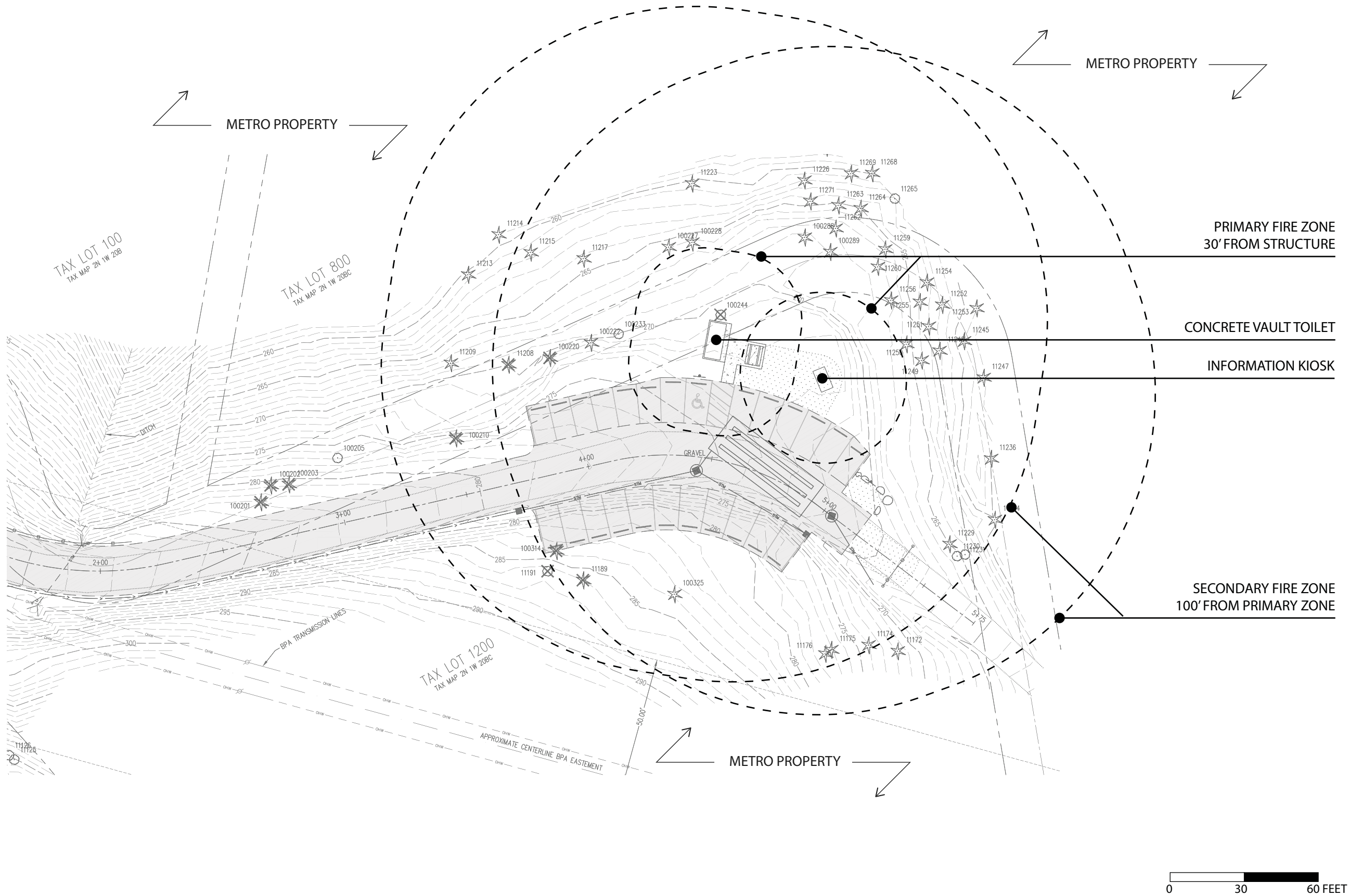
Hor. Scale: 1" = 30'
Vert. Scale: 1" = 30'

**BURLINGTON CREEK
PARKING METRO
MULTNOMAH COUNTY OREGON**
TAX MAP 2N 1W 20BC

**NW MCNAMEE ROAD
PRELIMINARY SIGHT
DISTANCE PLAN**

DESIGNED BY:	BRB
DRAWN BY:	AZV
CHECKED BY:	AHH
SCALE:	AS NOTED
DATE:	09/19/2017
	
RENEWAL DATE:	6/30/19

REVISIONS
JOB NUMBER 4781
SHEET 5 OF 5

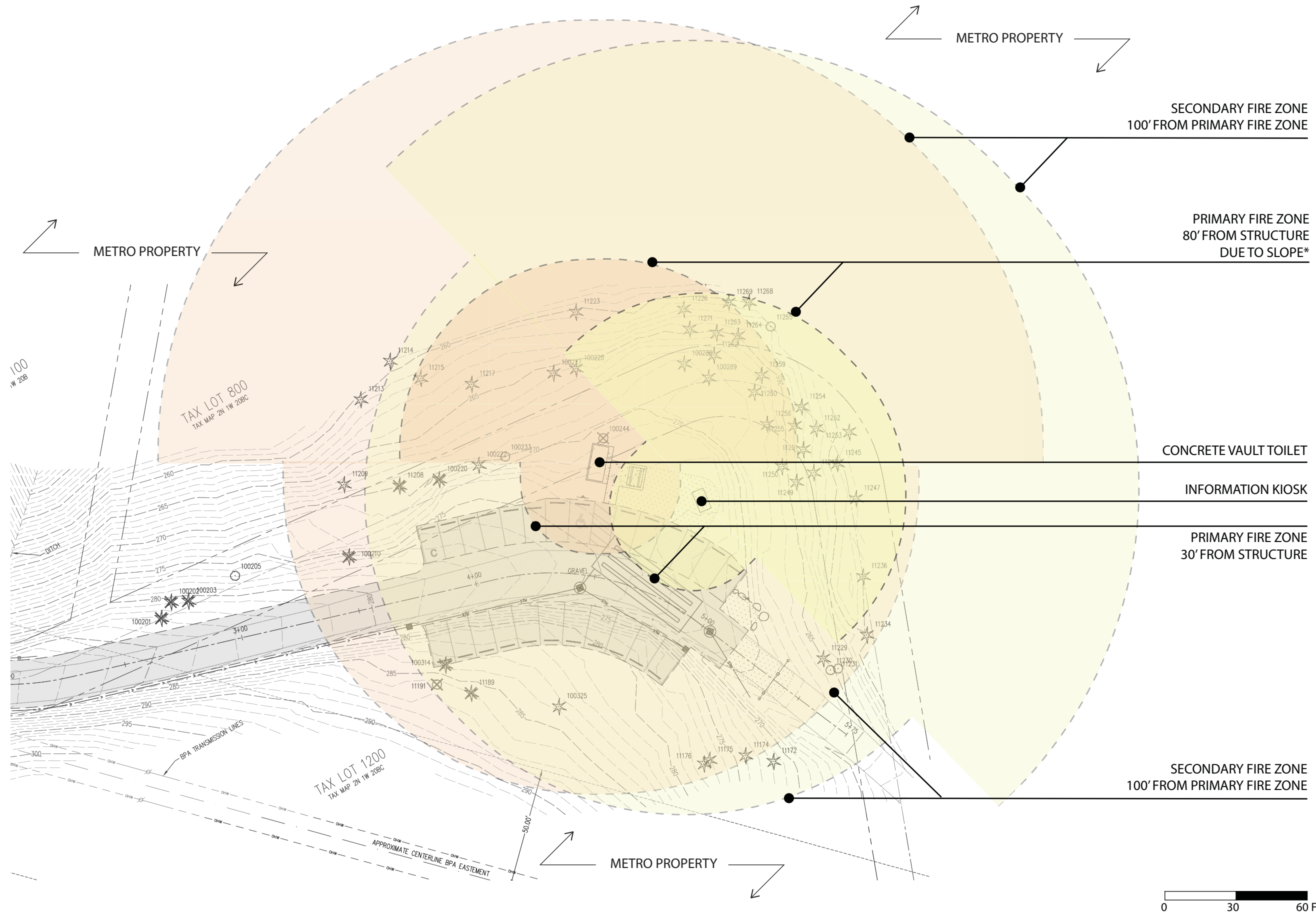


Burlington Creek Forest
Nature Park
FIRE SAFETY ZONE

SUBMITTAL:
30% REVIEW SET

North Tualatin Mountains
Multnomah County

DATE:
30 NOV 2017



* Applicant does not understand structures to be on slopes >10%.



Burlington Creek Forest
Nature Park
FIRE SAFETY ZONE

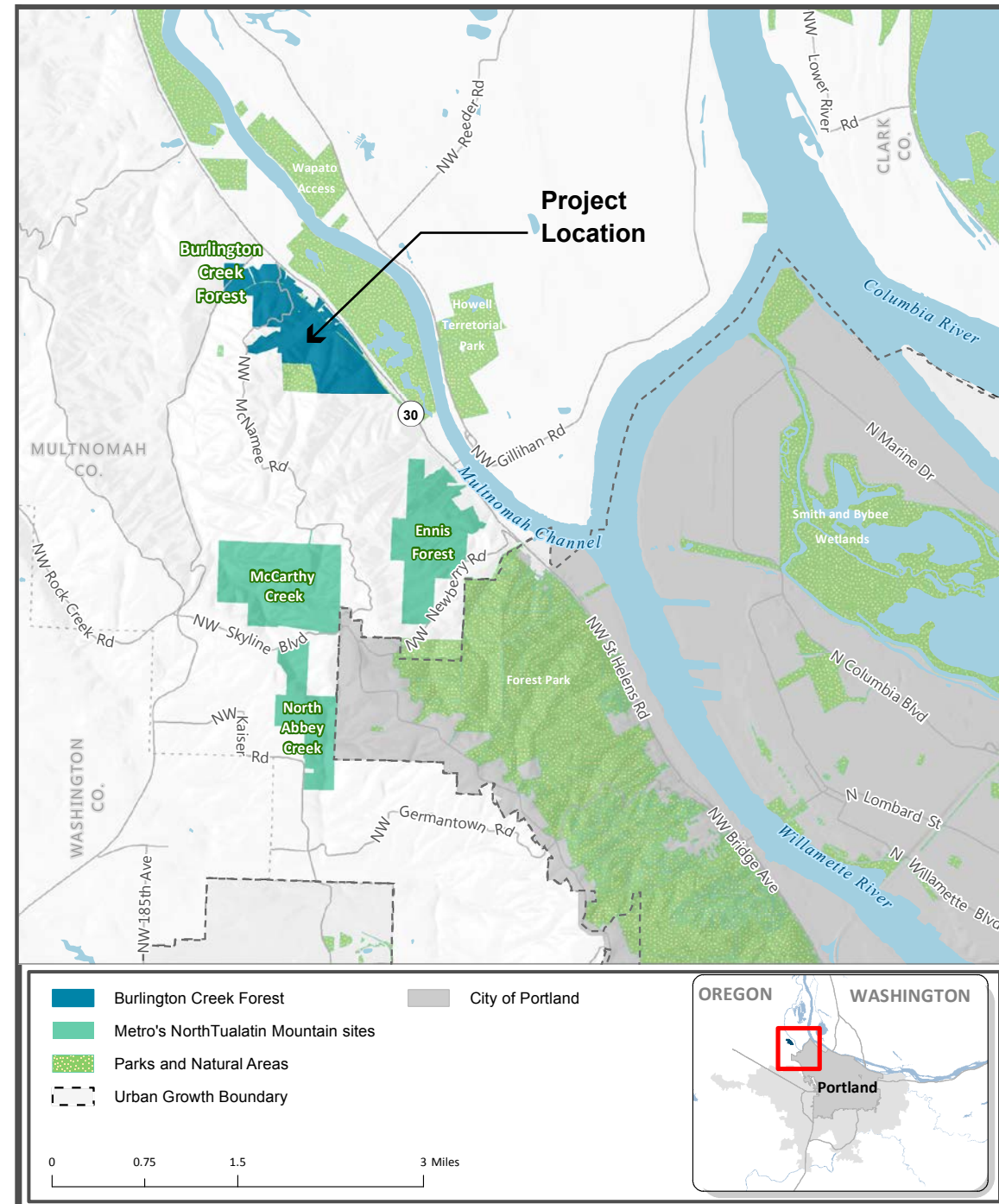
SUBMITTAL:
30% REVIEW SET
North Tualatin Mountains
Multnomah County

DATE:
30 NOV 2017

BURLINGTON CREEK FOREST NATURE PARK

EXHIBIT 22

VICINITY MAP



DRAWING INDEX

- COVER SHEET
- OVERVIEW MAP
- TRAIL LAYOUT - NORTH
- TRAIL LAYOUT - CENTRAL
- TRAIL LAYOUT - SOUTH
- SITE DETAILS

OWNER'S REPRESENTATIVE

METRO
KAREN VITKAY, PLA - PROJECT MANAGER
600 NE GRAND AVENUE
PORTLAND, OR 97232
503.797.1874

PROJECT ENGINEER

AKS ENGINEERING & FORESTRY
BRUCE BALDWIN
12965 SW HERMAN ROAD, SUITE 100
TUALATIN, OR 97062
503.563.6151

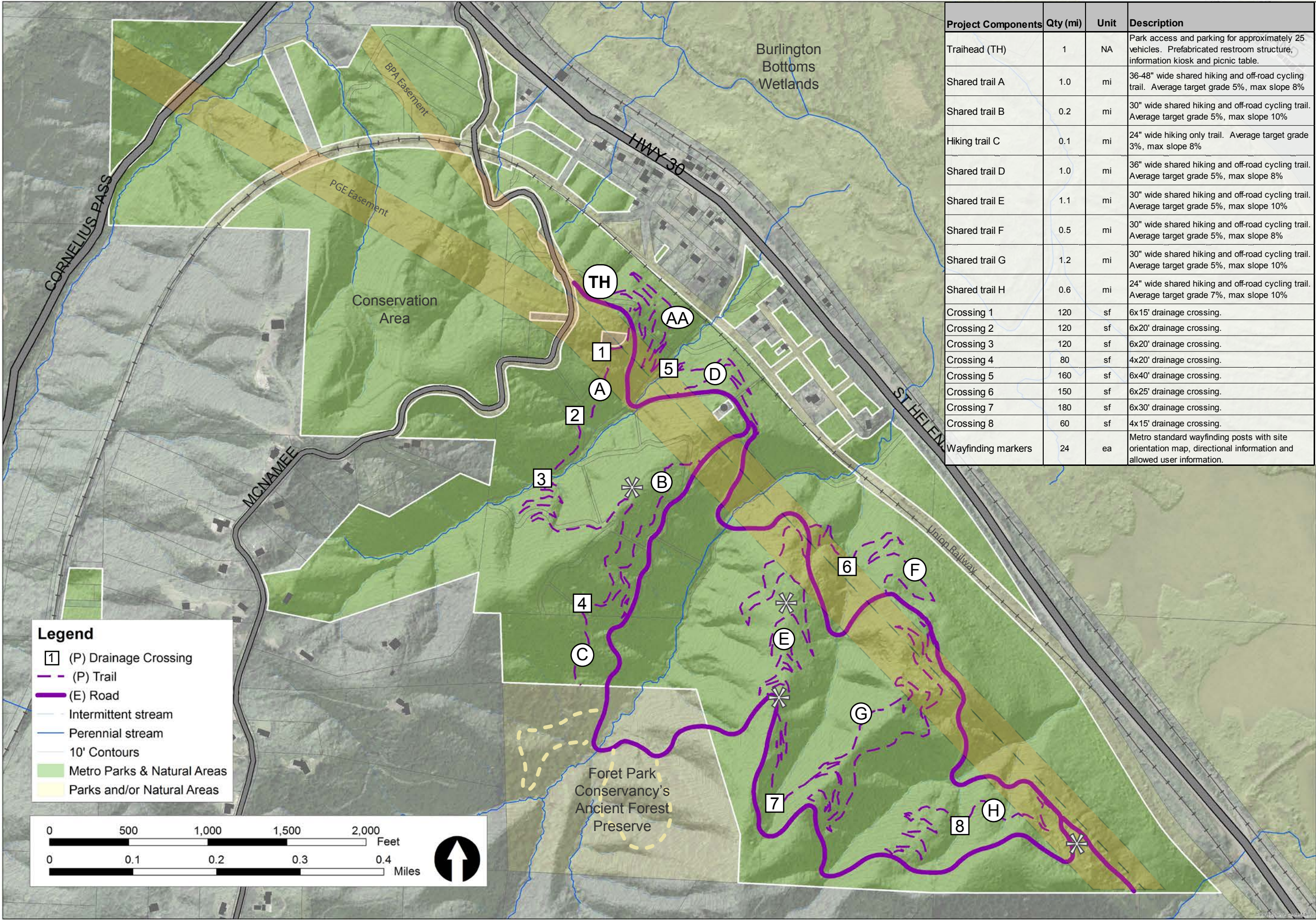


Burlington Creek Forest Nature Park

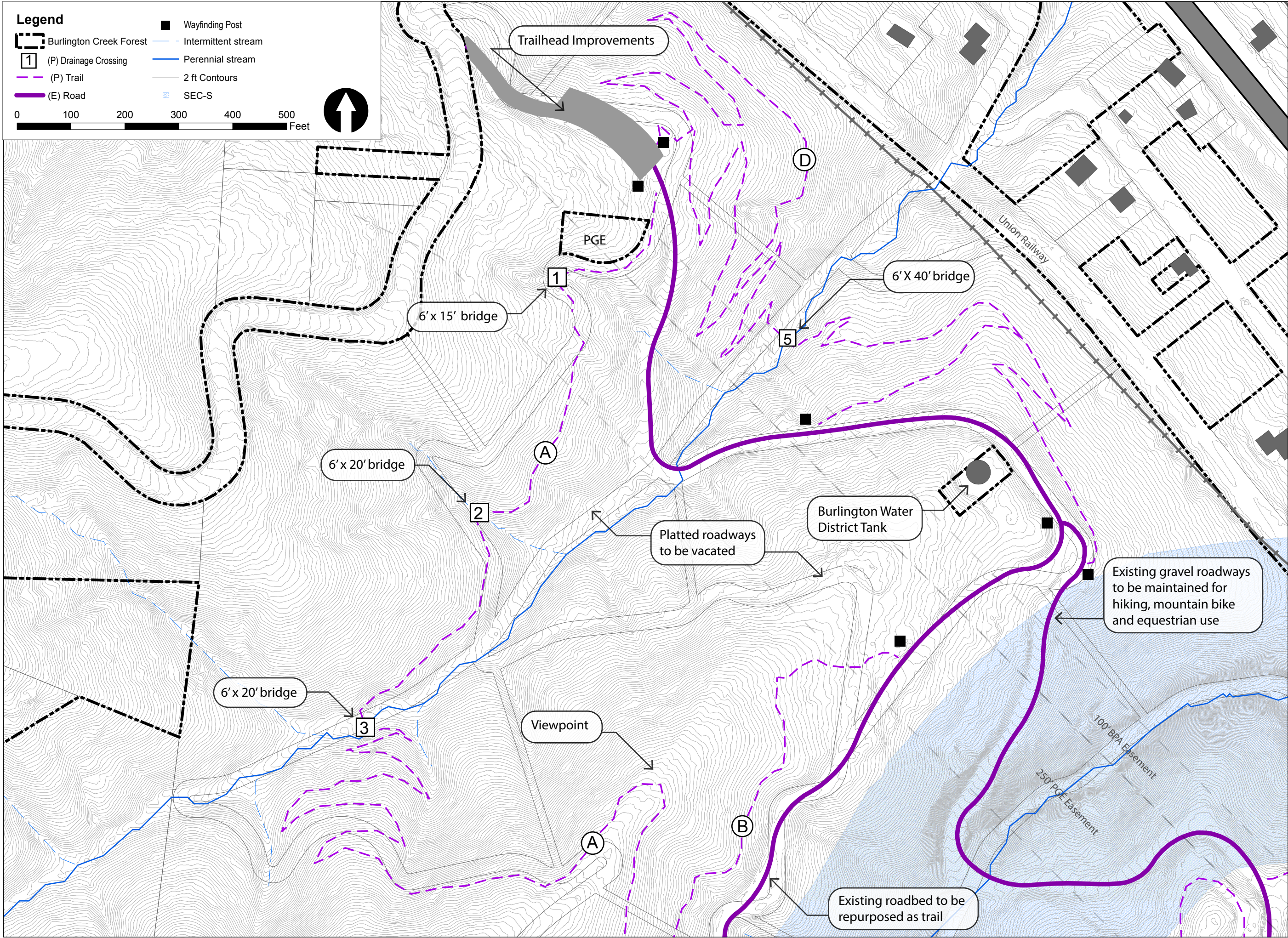
SUBMITTAL:
30% REVIEW SET

North Tualatin Mountains
Multnomah County

DATE:
15 DEC 2017



Project Components	Qty (mi)	Unit	Description
Traihead (TH)	1	NA	Park access and parking for approximately 25 vehicles. Prefabricated restroom structure, information kiosk and picnic table.
Shared trail A	1.0	mi	36-48" wide shared hiking and off-road cycling trail. Average target grade 5%, max slope 8%
Shared trail B	0.2	mi	30" wide shared hiking and off-road cycling trail. Average target grade 5%, max slope 10%
Hiking trail C	0.1	mi	24" wide hiking only trail. Average target grade 3%, max slope 8%
Shared trail D	1.0	mi	36" wide shared hiking and off-road cycling trail. Average target grade 5%, max slope 8%
Shared trail E	1.1	mi	30" wide shared hiking and off-road cycling trail. Average target grade 5%, max slope 10%
Shared trail F	0.5	mi	30" wide shared hiking and off-road cycling trail. Average target grade 5%, max slope 8%
Shared trail G	1.2	mi	30" wide shared hiking and off-road cycling trail. Average target grade 5%, max slope 10%
Shared trail H	0.6	mi	24" wide shared hiking and off-road cycling trail. Average target grade 7%, max slope 10%
Crossing 1	120	sf	6x15' drainage crossing.
Crossing 2	120	sf	6x20' drainage crossing.
Crossing 3	120	sf	6x20' drainage crossing.
Crossing 4	80	sf	4x20' drainage crossing.
Crossing 5	160	sf	6x40' drainage crossing.
Crossing 6	150	sf	6x25' drainage crossing.
Crossing 7	180	sf	6x30' drainage crossing.
Crossing 8	60	sf	4x15' drainage crossing.
Wayfinding markers	24	ea	Metro standard wayfinding posts with site orientation map, directional information and allowed user information.

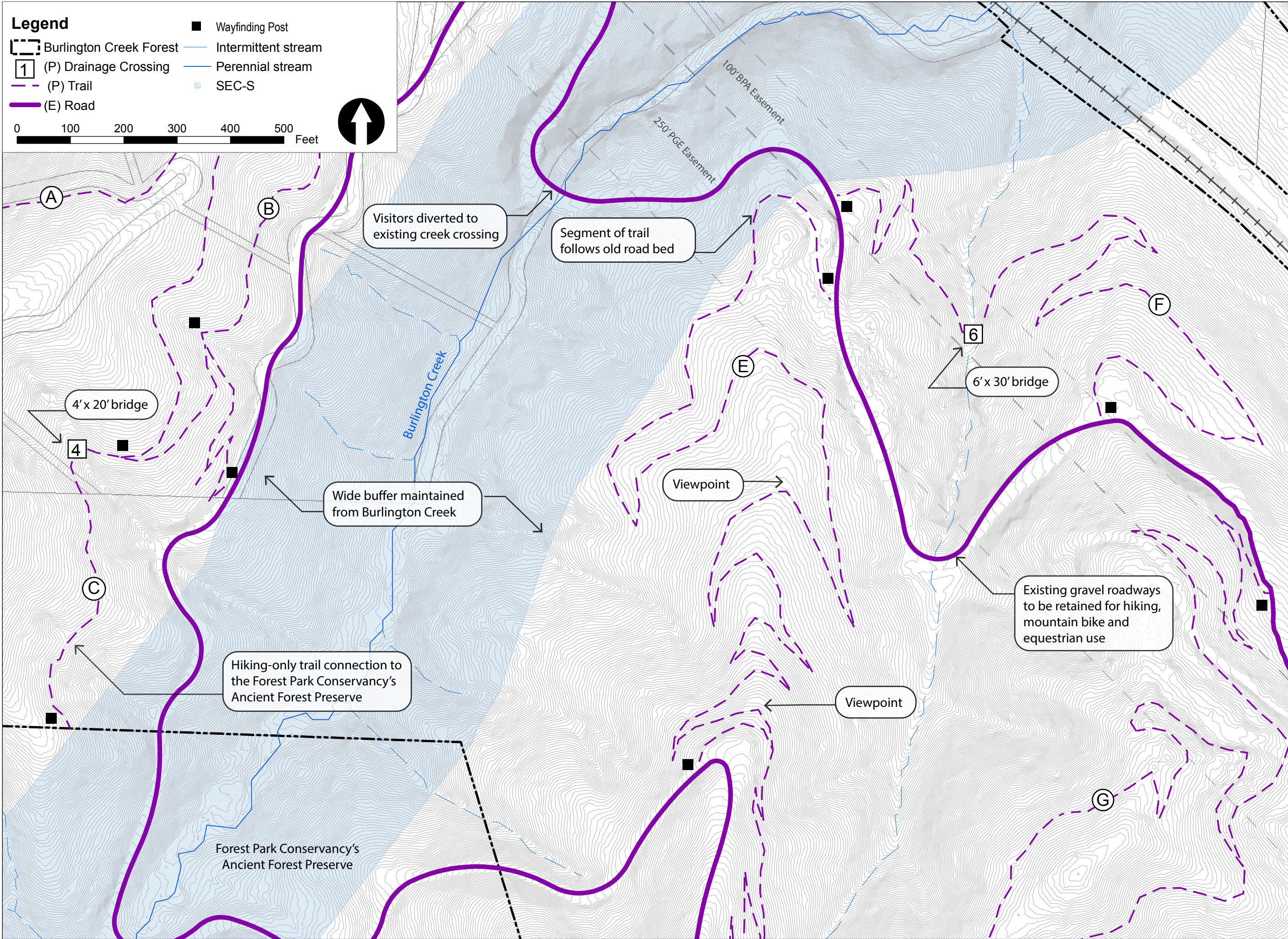


Burlington Creek Forest
Nature Park
Trail Layout - NORTH

SUBMITTAL:
30% REVIEW SET

North Tualatin Mountains
Multnomah County

DATE:
15 DEC 2017

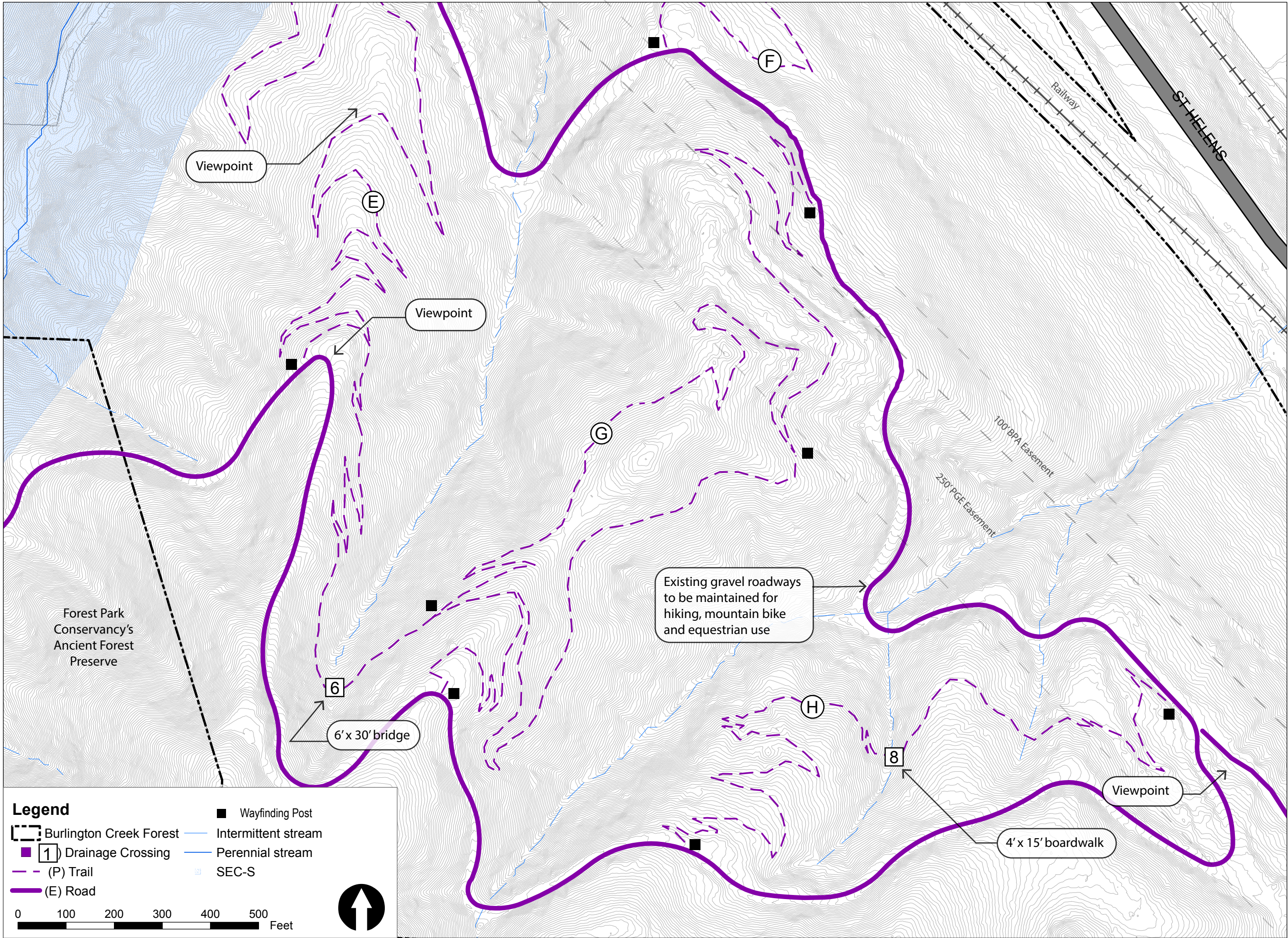


Burlington Creek Forest
Nature Park
Trail Layout - CENTRAL

SUBMITTAL:

North Tualatin Mountains
Multnomah County

DATE:
15 DEC 2017

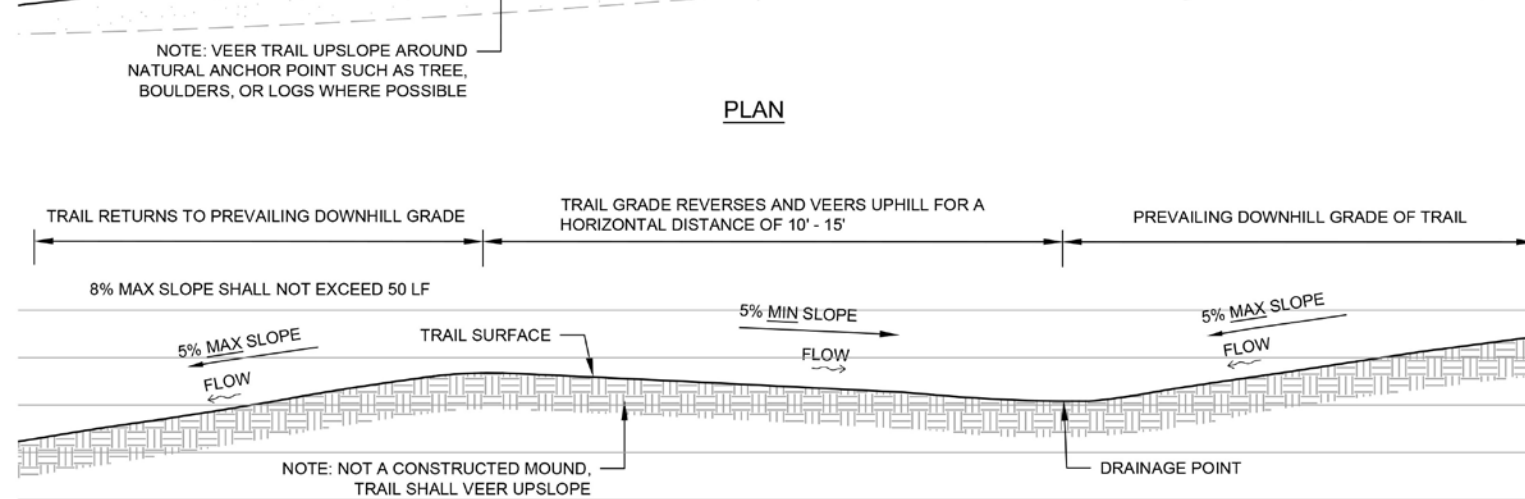
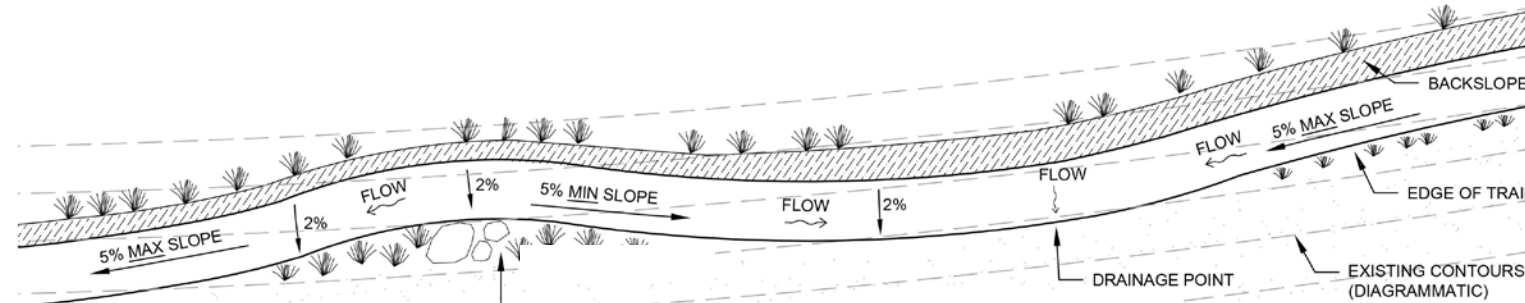


Burlington Creek Forest
Nature Park
Trail Layout - SOUTH

SUBMITTAL:
30% REVIEW SET

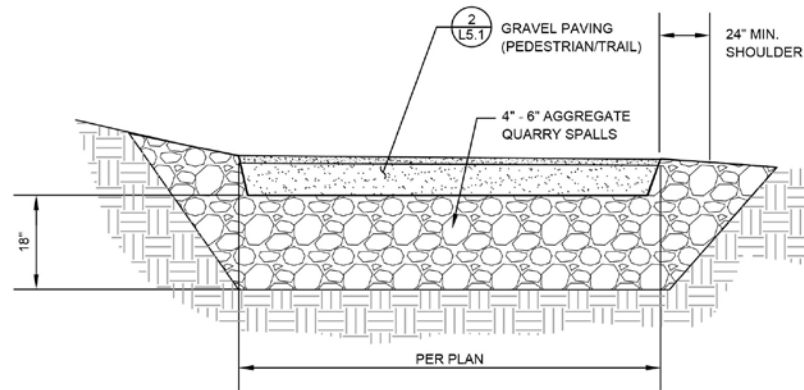
North Tualatin Mountains
Multnomah County

DATE:
15 DEC 2017



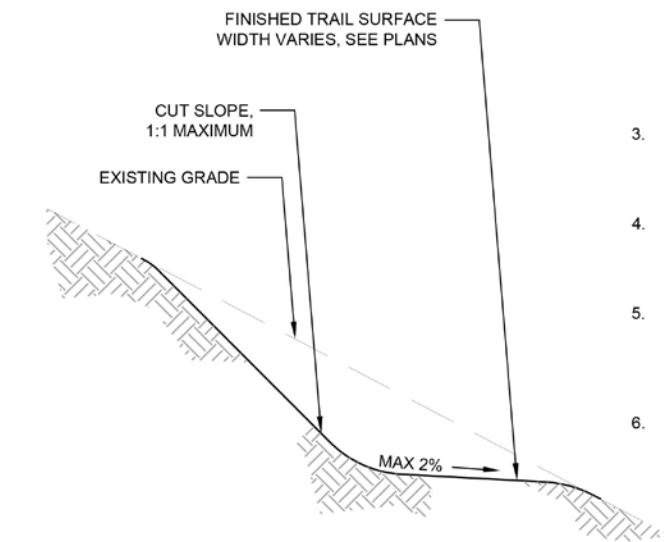
1 GRADE REVERSAL

NTS



3 ROCK CAUSEWAY

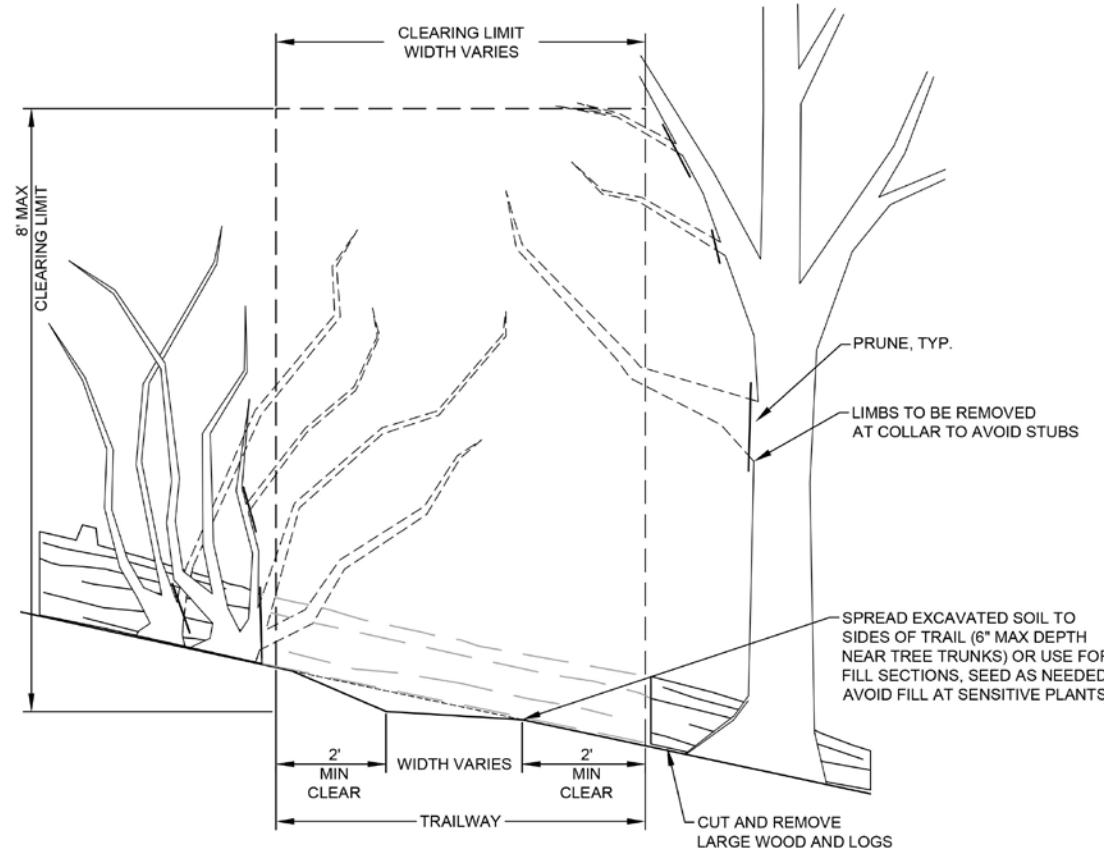
NTS



2 FULL BENCH TRAIL

NTS

- NOTES:**
1. USE CUT SOIL MATERIAL TO BUILD DRAINAGE FEATURES, FILL DEPRESSIONS, AND AID IN OVERALL GRADING.
 2. EXCESS MATERIAL MAY BE SCATTERED ALONG THE TRAIL BELOW THE CUT BENCH. THIS MATERIAL SHALL NOT BE PLACED WITHIN TWO HORIZONTAL FEET OF THE DOWNHILL EDGE OF THE TRAIL. SCATTERED MATERIAL SHALL BE DISTRIBUTED EVENLY AT A MAXIMUM DEPTH OF 4 INCHES.
 3. SCATTERED EXCESS MATERIAL SHALL NOT DAMAGE PLANTS, PREVENT DRAINAGE, OR CAUSE SEDIMENT MOVEMENT INTO CREEKS.
 4. CUT SLOPES SHALL BE 2H:1V WHEN HEIGHT OF CUT IS MORE THAN 2 FEET. WHEN HEIGHT OF CUT IS LESS THAN 2 FEET SLOPE CAN STEEPEN TO 1H:1V.
 5. CUT SLOPES MAY BE STEEPENED TO 1.5H:1V OR 1H:1V IN SPECIFIC AREAS TO PROTECT TREES AND/OR MAINTAIN A MAXIMUM CLEARED CORRIDOR WIDTH OF 6 FEET.
 6. SEE EROSION CONTROL DETAILS FOR STRAW WATTLE INSTALLATION.



4 CLEARING LIMITS

NTS

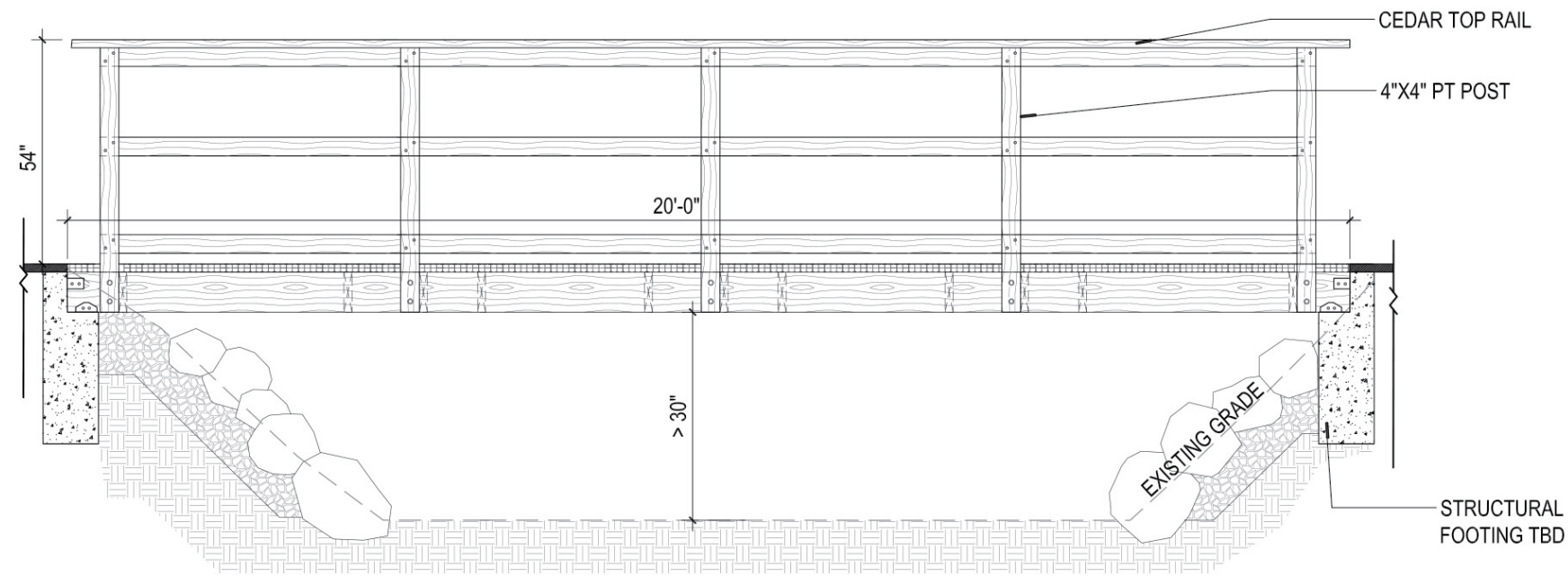


Burlington Creek Forest
Nature Park
SITE DETAILS

SUBMITTAL:
30% REVIEW SET

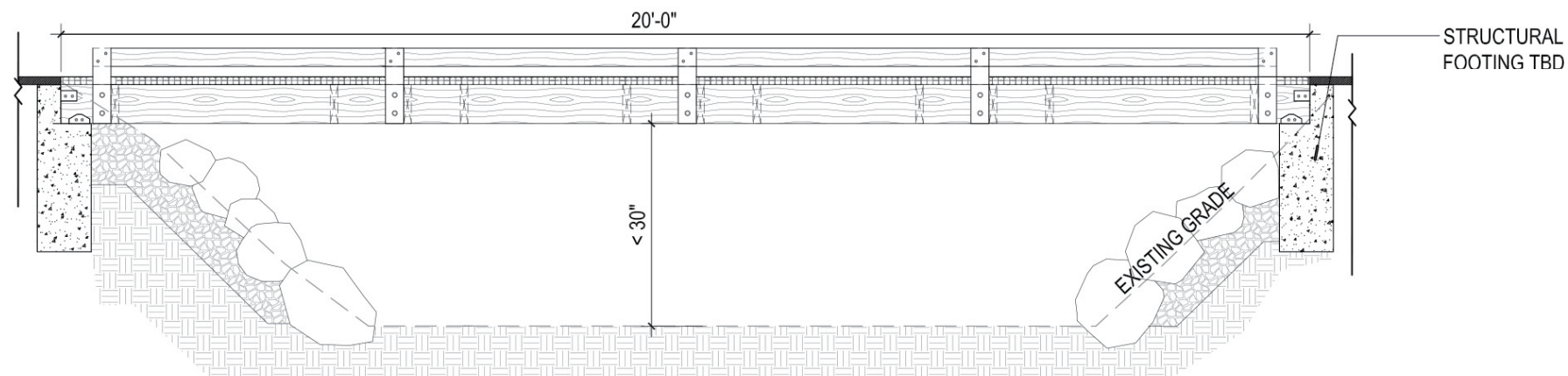
North Tualatin Mountains
Multnomah County

DATE:
28 SEPT 2017

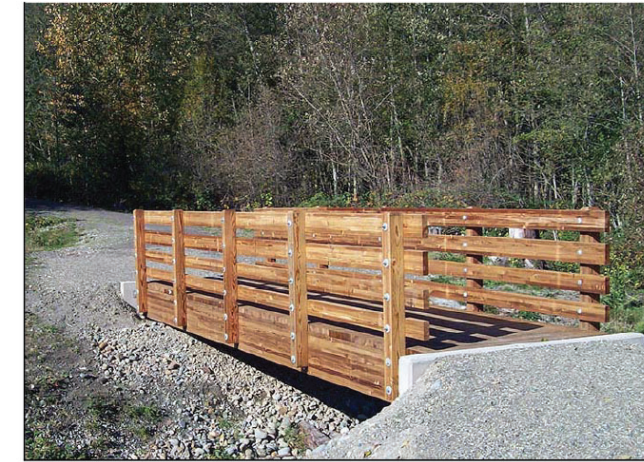


1 GLULAM- SHORT SPAN (20') WITH RAILING

NOT TO SCALE



2 GLULAM BRIDGE - SHORT SPAN (20') WITHOUT RAILING



3 EXAMPLE: GLULAM BRIDGE WITH RAILING

NOT TO SCALE

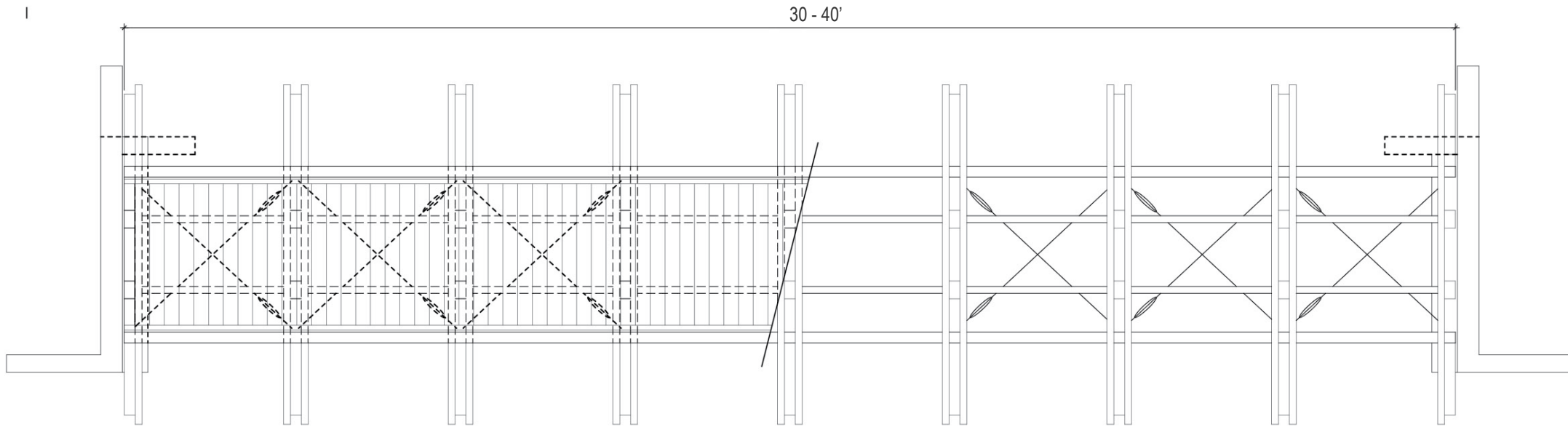


Burlington Creek Forest
Nature Park
SITE DETAILS

SUBMITTAL:
30% REVIEW SET

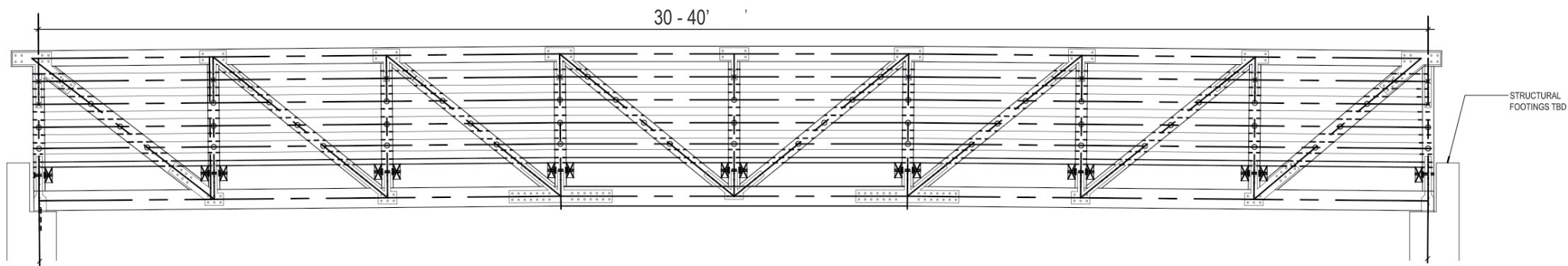
North Tualatin Mountains
Multnomah County

DATE:
28 SEPT 2017



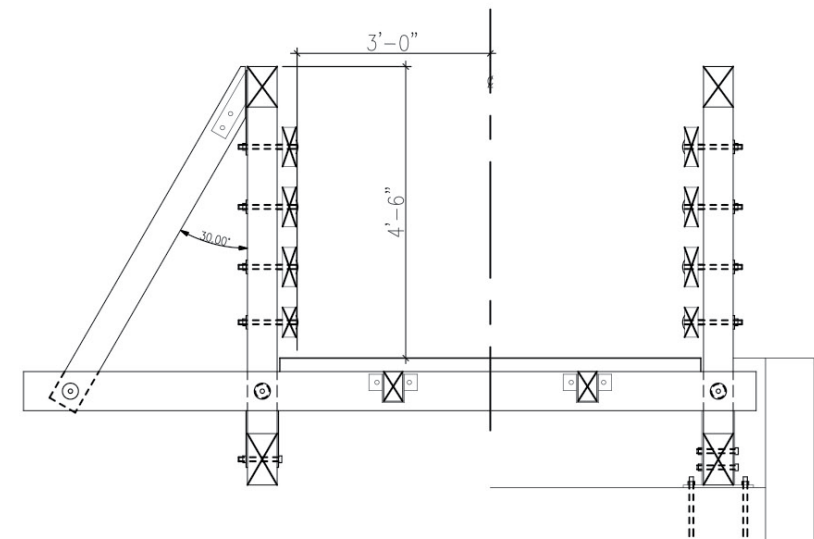
1 PONY TRUSS BRIDGE
PLAN

NOT TO SCALE



2 PONY TRUSS BRIDGE
ELEVATION

NOT TO SCALE



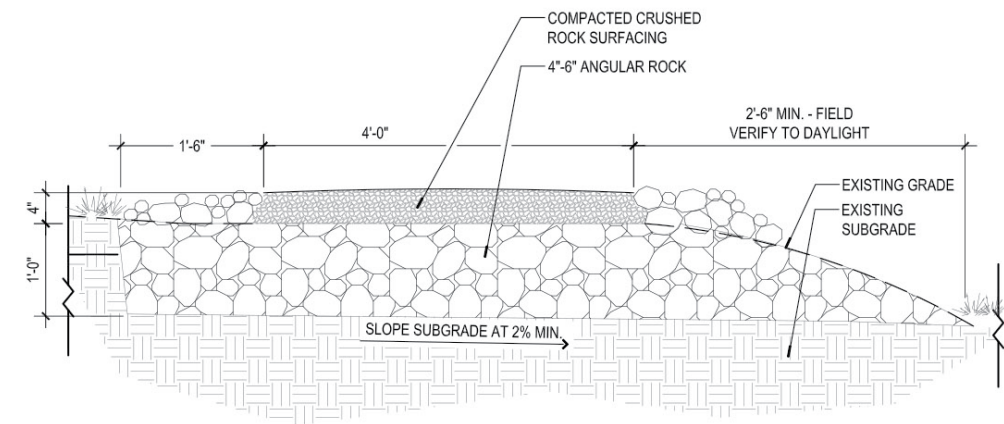
3 PONY TRUSS BRIDGE - LONG SPAN ()
SECTION

NOT TO SCALE



4 EXAMPLE: PONY TRUSS BRIDGE
SECTION

NOT TO SCALE



5 CAUSEWAY
SECTION

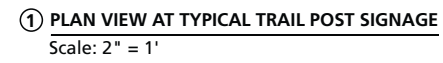
NOT TO SCALE



Burlington Creek Forest
Nature Park
SITE DETAILS

SUBMITTAL:
30% REVIEW SET
North Tualatin Mountains
Multnomah County

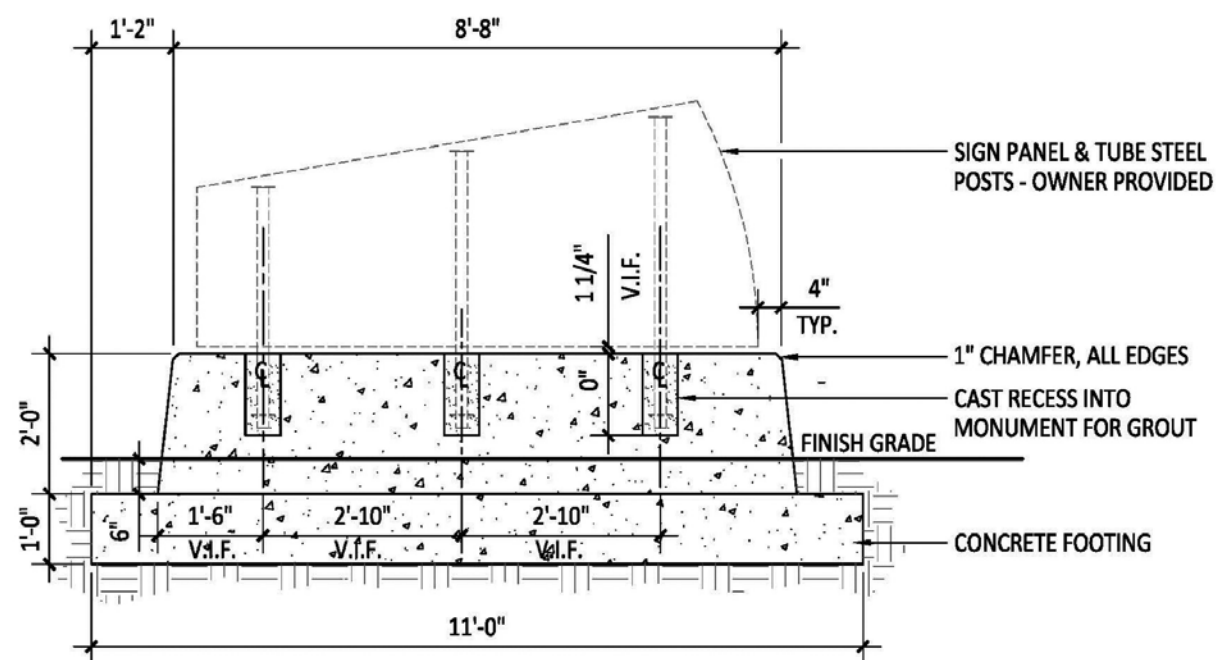
DATE:
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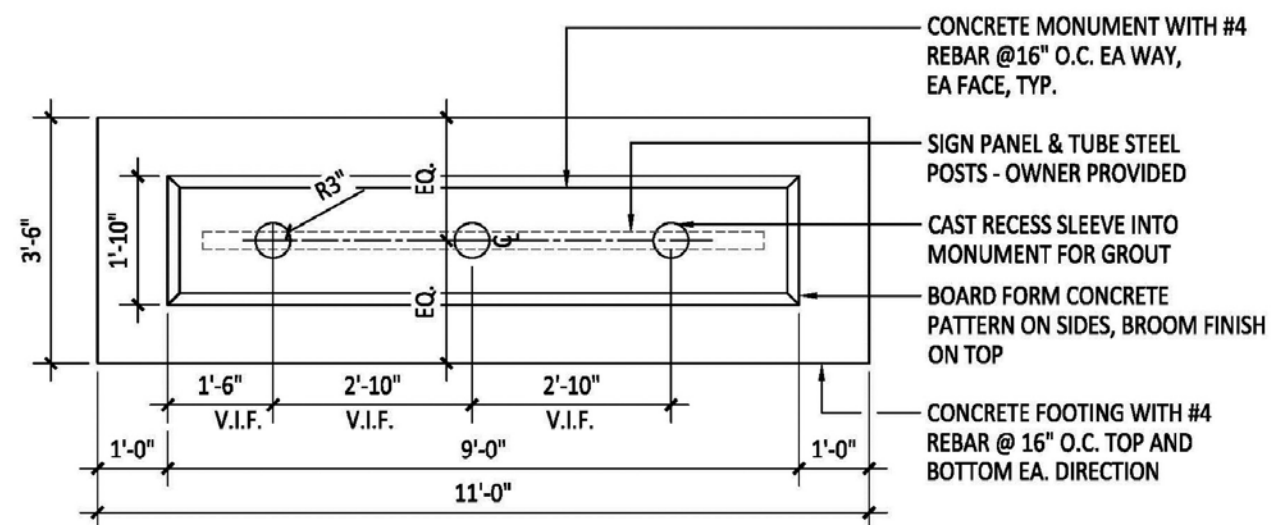
SUBMITTAL:
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North Tualatin Mountains
Multnomah County

DATE:
28 SEPT 2017

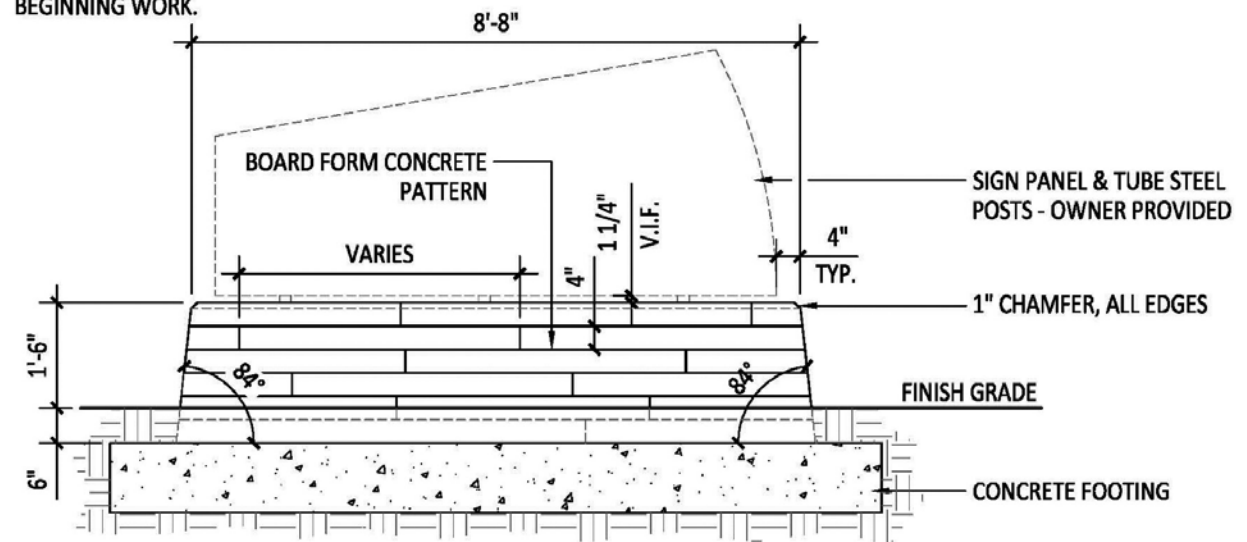


MONUMENT FOOTING AND CORE - SECTION



MONUMENT FOOTING - PLAN

1. BOARD WOOD FOR INTERIOR OF CONCRETE FORMS SHALL BE 4" WIDE, SAND BLASTED SPRUCE IN RANDOM LENGTHS, OR APPROVED EQUAL.
2. CONTRACTOR TO PROVIDE OWNER'S REPRESENTATIVE WITH BOARD FORM MATERIALS AND PATTERN FOR APPROVAL PRIOR TO BEGINNING WORK.

ENTRY MONUMENT - ELEVATION



600 NE Grand Ave.
Portland, OR 97232
Ph. 503.797.1700

METRO KIOSK

Submittal PROTOYPE SUBMITTAL

Sheet Description

Revisions

Revision	Date

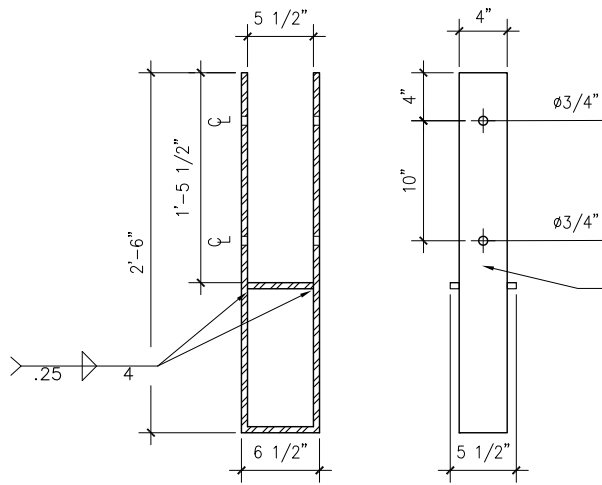
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Date: 12/28/16

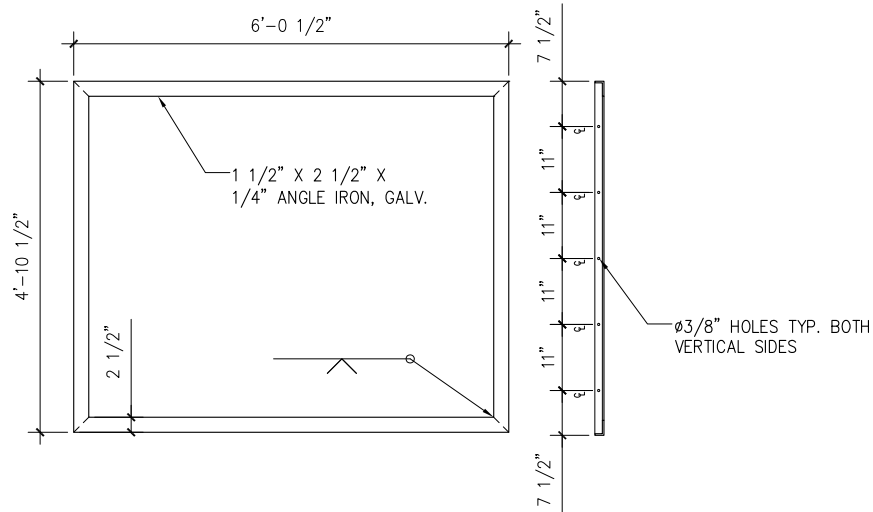
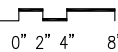
Drawn by: ELKIN

Checked by:

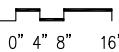
Sheet 1 of 1



3 POST BRACKET
Section

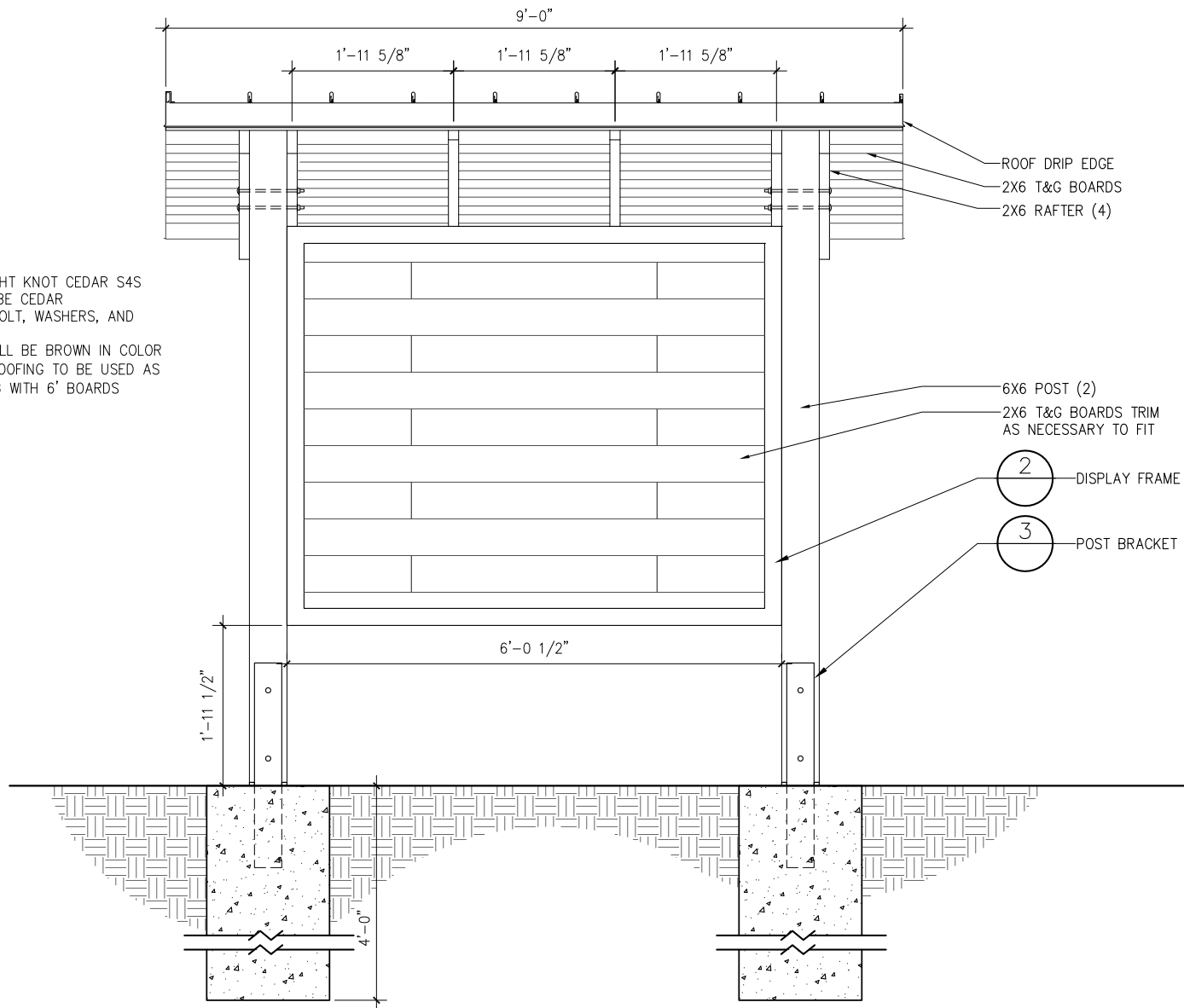


2 DISPLAY FRAME
Section

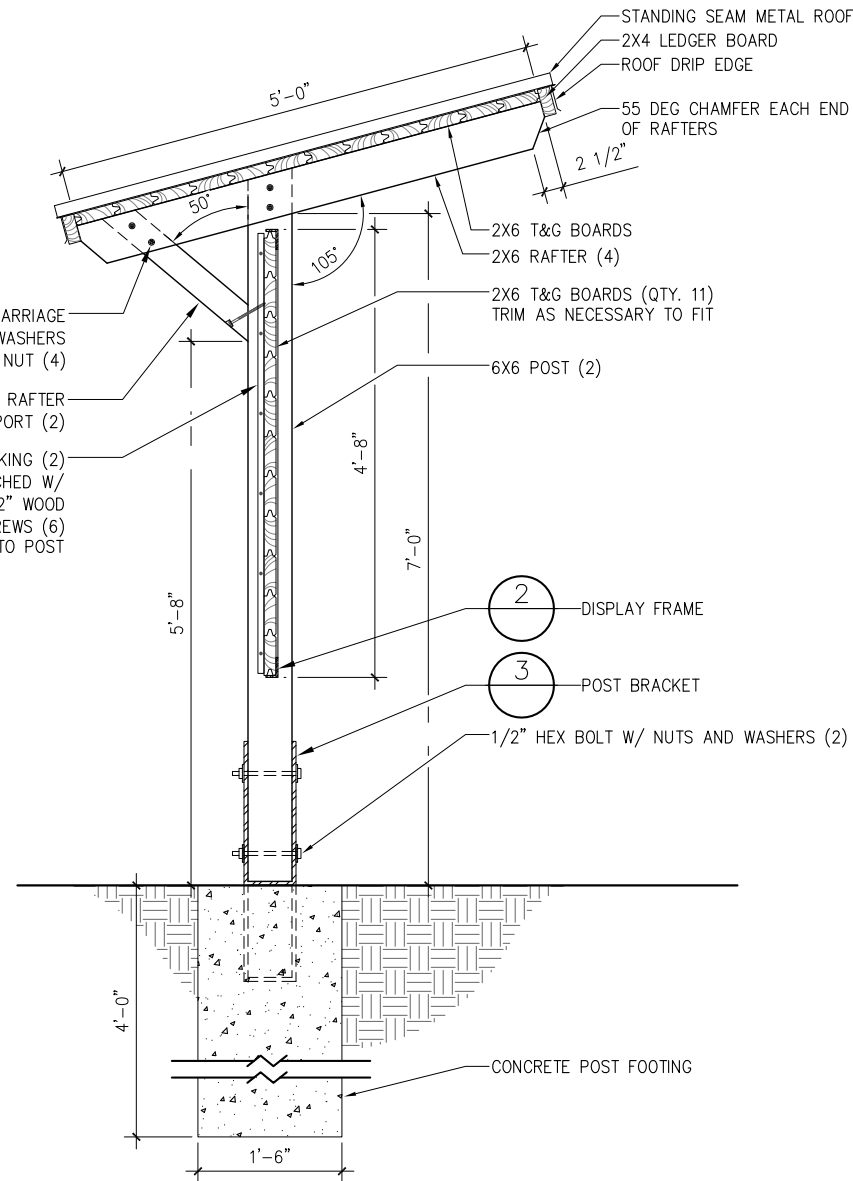
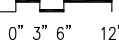


NOTES:

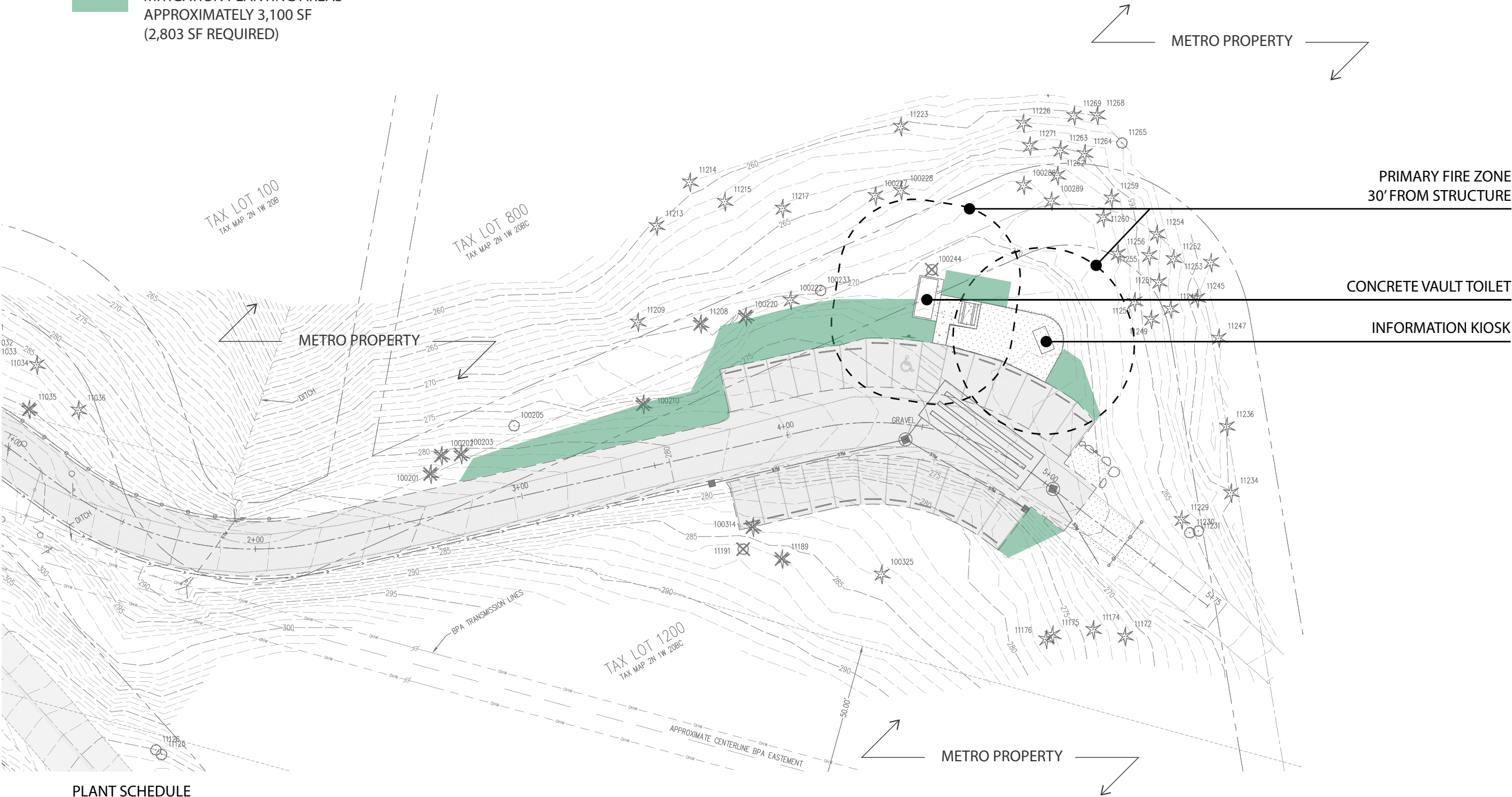
1. ALL WOOD FRAMING SHALL BE TIGHT KNOT CEDAR S4S
2. ALL T&G WOOD MATERIAL SHALL BE CEDAR
3. ALL METAL FRAMES, BRACKETS, BOLT, WASHERS, AND NUTS SHALL BE GALVANIZED
4. STANDING SEAM METAL ROOF SHALL BE BROWN IN COLOR
5. 3' CUT OFFS FROM T&G CEDAR ROOFING TO BE USED AS INFILL FOR DISPLAY BOARD ALONG WITH 6' BOARDS



1 METRO KIOSK
Elevation and Section



MITIGATION PLANTING AREAS
APPROXIMATELY 3,100 SF
(2,803 SF REQUIRED)



PLANT SCHEDULE

Scientific Name	Common Name	Quantity	Spacing
<i>Acer circinatum</i>	Vine maple	3	10' O.C.
<i>Amelanchier alnifolia</i>	Serviceberry	3	10' O.C.
<i>Gautheria shallon</i>	Salal	3	10' O.C.
<i>Holodiscus discolor</i>	Oceanspray	3	10' O.C.
<i>Mahonia aquifolium</i>	Oregon grape	3	10' O.C.
<i>Pteridium aquilinum</i>	Bracken fern	10	4' O.C.
<i>Ribes sanguineum</i>	Red flowering currant	4	10' O.C.
<i>Rubus parviflorus</i>	Thimbleberry	2	6' O.C.
<i>Sambucus racemosa</i>	Red elderberry	2	6' O.C.
<i>Symphoricarpos albus</i>	Common snowberry	2	6' O.C.
<i>Vaccinium membranaceum</i>	Black huckleberry	8	6' O.C.
<i>Vaccinium ovatum</i>	Evergreen huckleberry	2	8' O.C.



Burlington Creek Forest
Nature Park
MITIGATION PLAN

SUBMITTAL:
30% REVIEW SET

North Tualatin Mountains
Multnomah County

DATE:
18 DEC 2017

Park Comparables

Park	Location	Acres	15 Minute Population*	20 Minute Population*	30 Minute Population*	No. Parking Spaces	Activities
Burlington Creek Forest	Multnomah County, OR	350	35,000	144,000	721,000	25	Hiking, MTB, equestrian, 1-2 picnic tables, nature education
Newell Creek Canyon **	Oregon City, OR	233	80,000	183,000	675,000	24	Hikers, MTB, play area, picnicking
Graham Oaks Nature Park	City of Wilsonville, OR	246	77,000	209,000	765,000	19	Hiking, walking, biking, play area, nature education center, shelter and picnic tables, regional trail
Mount Talbert Nature Park	Happy Valley, OR	253	283,000	559,000	1,348,000	29	Hiking, accessible trail, sheltered picnic area, nature education
Whipple Creek Regional Park	Vancouver, WA	300	156,000	316,000	787,000	10 passenger, 12 trailer	Hiking, equestrian, MTB
Powell Butte Nature Park	Portland, OR	612	302,000	530,000	1,180,000	65 passenger vehicle and 4 trailer spaces	Hiking, MTB, equestrian, nature education center, picnicking

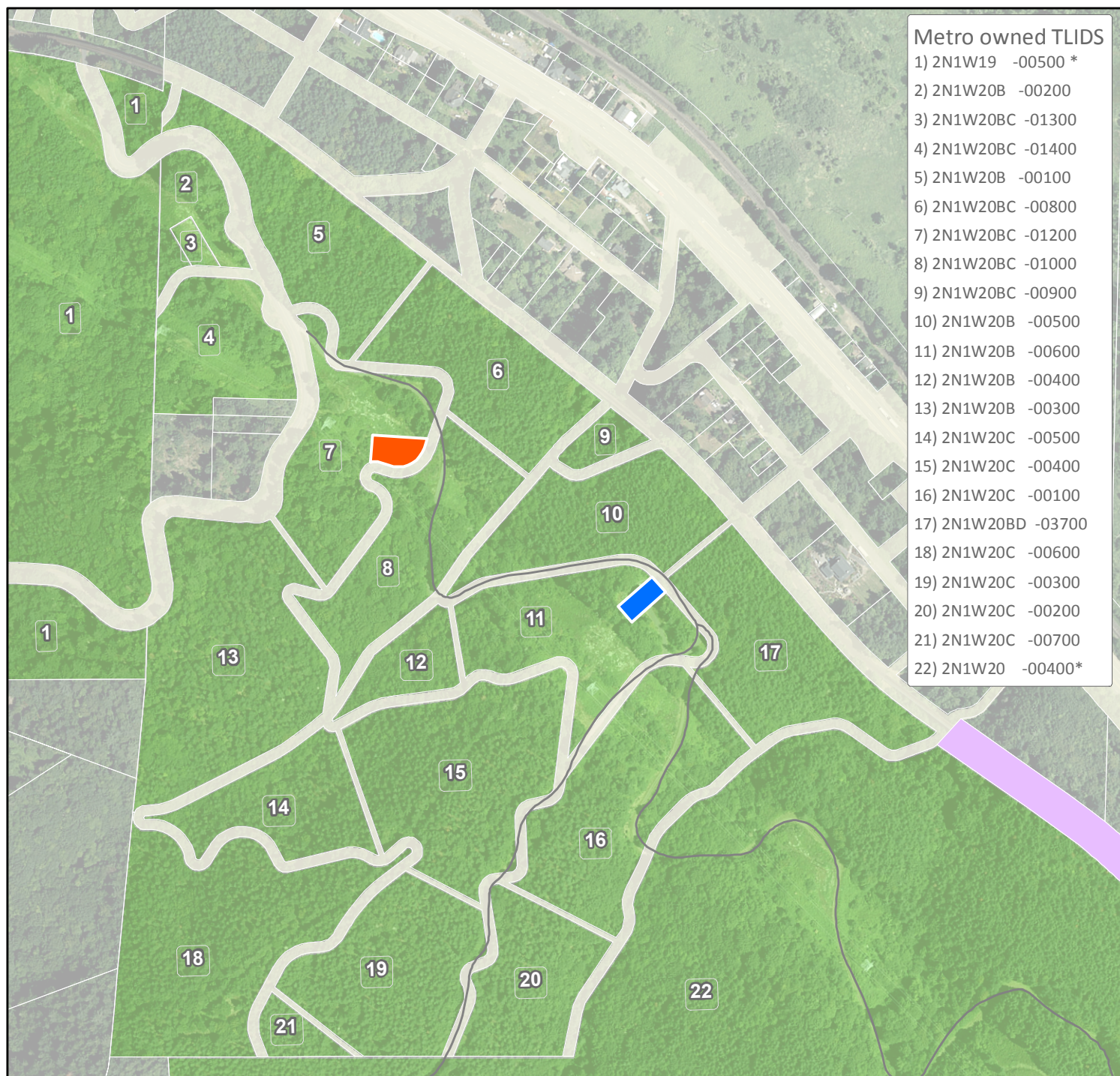
*Based on 2016 census data.

** Planned park, not yet developed.



Metro

Burlington Right-of-Ways



map produced: 12/15/2017

0 0.1 0.2 0.3 Miles

taxlots

- Metro**
- Burlington Water District (2N1W20BD -03800)**
- ODOT (2N1W20 -00500*)**
- PG&E (2N1W20BC -01100)**

* portion of taxlot

Forest practice road

Right-of-way

Fire Incident Action Plan

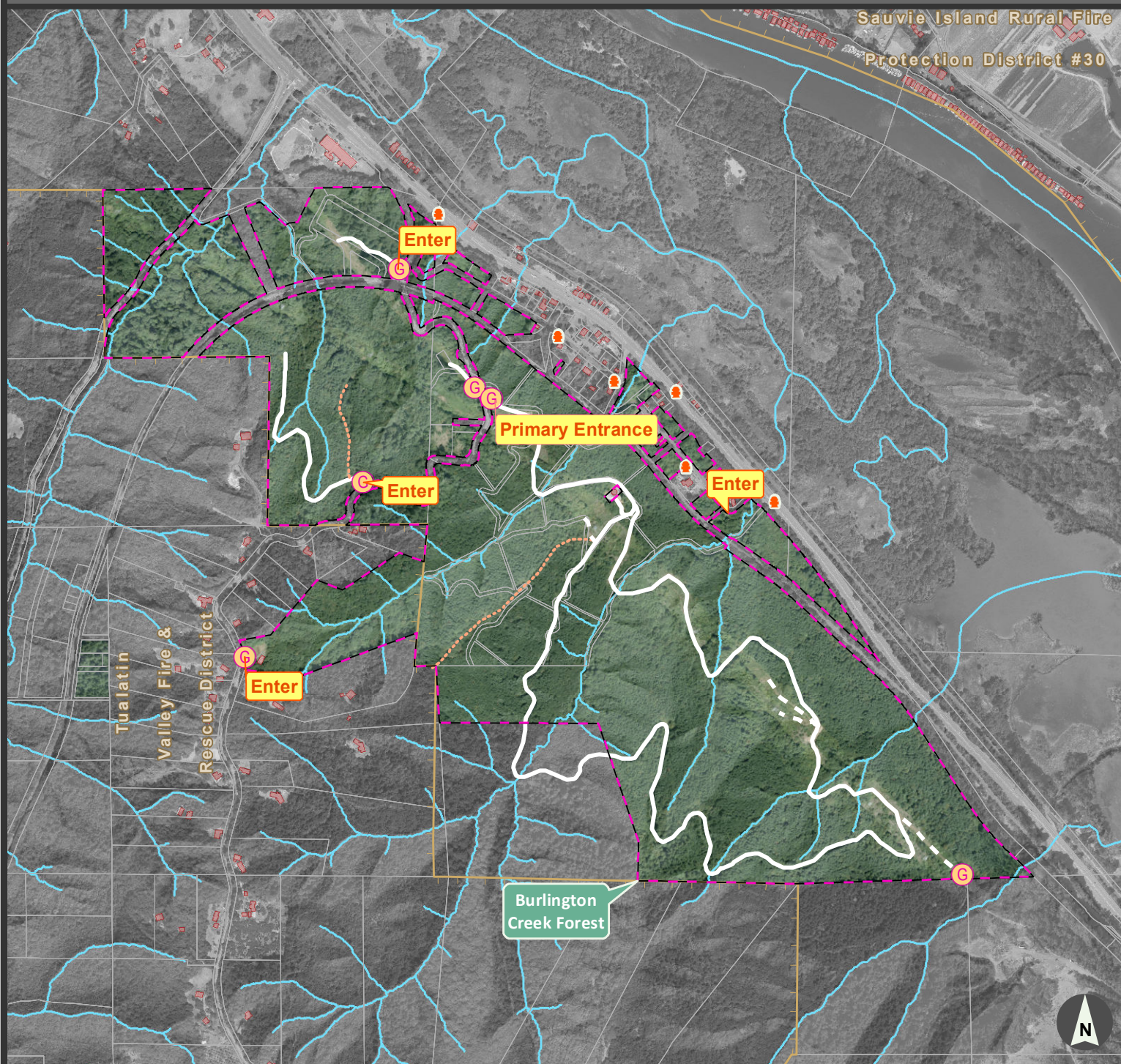
primary entrance: approx 16700 NW McNamee Rd, Portland, OR 97231

Site Stewardship Plan



EXHIBIT 26

Metro



Featured site

Roads

other (unmaintained or historic)

dirt/gravel

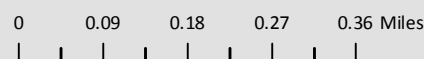
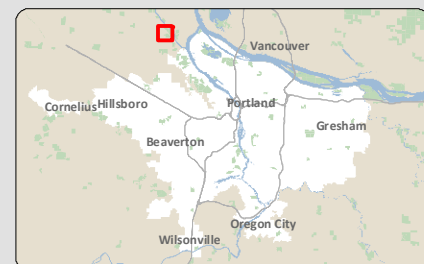
4x4 / Dry Season

Proximal Hydrants

gate

Structures

Fire districts



Burlington Creek Forest

lat/long for primary entrance: ((45.64486328, -122.84560172))

Metro Parks & Nature - map date: 11/28/2017