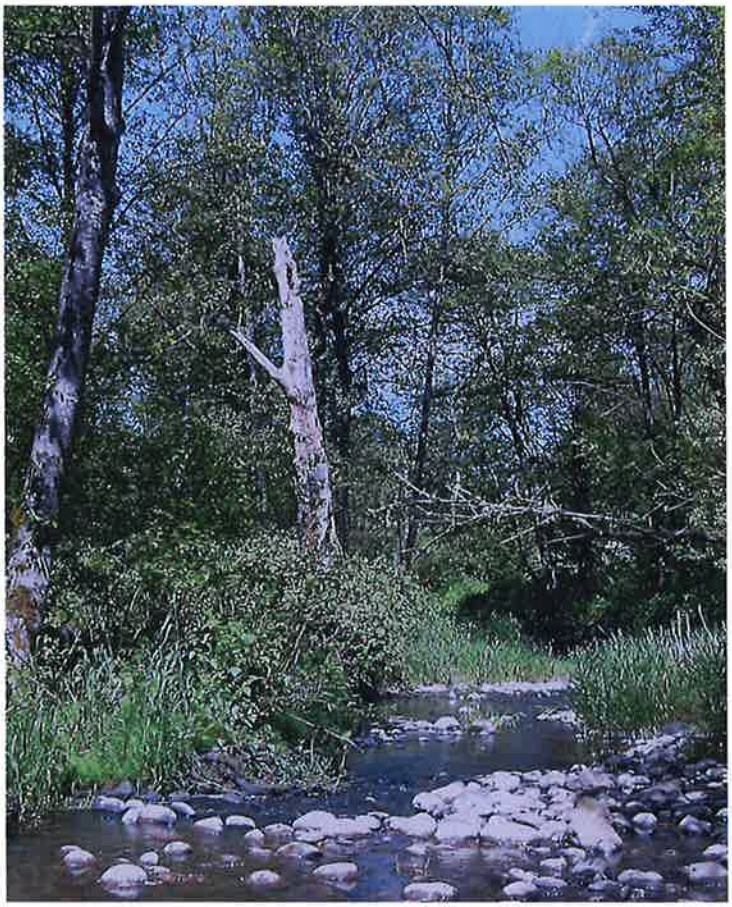
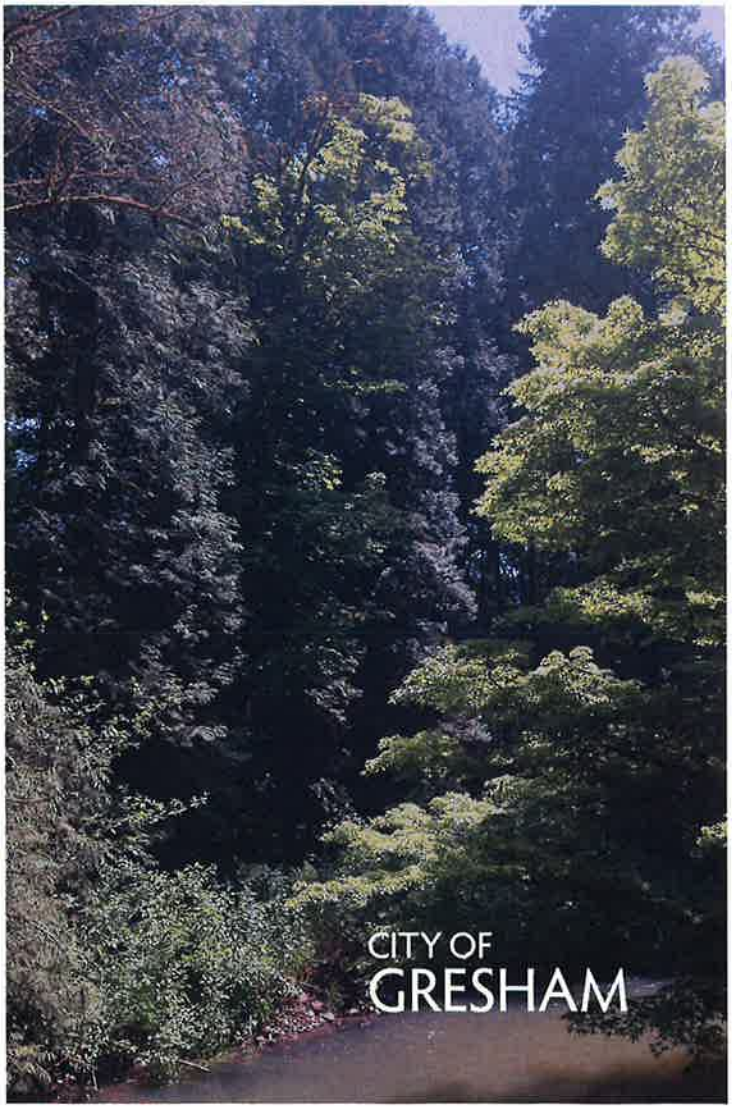




Environmental Technical Guidance Manual

CITY OF GRESHAM

Contents

1

Purpose 4

Manual Intent 5

Environmental Overlay Permit Coordination (City of Gresham) 6

Coordination with Other Regulations 6

2

Identifying Environmental Overlays on a Property 8

Online Map Resources 9

Locating Overlay Boundaries in the Field 9
- Visual Interpretation of GreshamMap data
- Field Verification

Floodplain Ovleray (FO) Mapping Specifics 13
- Components of the FO
- Understanding Flood Zones and Maps
- FO Map Correction Process and Letters of Map Change

Hillside and Geologic Risk Overlay (HGRO) Mapping Specifics 20
- Components of the HGRO
- HGRO Map Correction Process

Natural Resource Overlay (NRO) Mapping Specifics 23
- Components of the NRO
- NRO Field Measurement Process
- NRO Map Administration and Corrections

3

Is an Overlay Permit or Exemption Form Required? 34

Floodplain Overlay (FO) Permit Process Details 36
- FO-Exempt Activities
- FO Permit Submittal Guidance

Hillside and Geologic Risk Overlay (HGRO) Permit Process Details 36
- HGRO-Exempt Activities
- HGRO Permit Submittal Guidance

Natural Resources Overlay (NRO) Permit Process Details 38
- NRO-Exempt Activities
- NRO-Exempt Activities Needing an NRO Exemption Form
- NRO Permit Submittal Guidance
- Calculating Impact Area and Mitigation Requirements

Coordination with State and Federal Permitting Requirements 44

4

Permit Submittal Requirements and Process 48

Getting Started 49

General Permit Submittal Requirements 49
- Existing Conditions Map
- Proposed Site Plan
- Construction Management Plan
- Mitigation and Restoration Plan Elements

Permit Review Process 53
- Type I, Type II, and Type III Permits
- Variances

Pre-Application Process 53
- Type I, Type II, and Type III Permits
- Variances

5

Restoration and Mitigation 54

Restoration 55
- Voluntary Improvements
- Restoring and Stabilizing Temporary Disturbance Areas

Mitigation Plan (Basic) 57
- Considering Site-Specific Mitigation Goals
- General Mitigation Plan Components for All Overlays
- Additional Mitigation Plan Components for Areas with both HGRO and NRO
- Additional Mitigation Plan Components for NRO
- Monitoring + Maintenance
- Payment-in-Lieu of On-site Mitigation

Mitigation Plan (Detailed) 67
- Functional Goals
- Alternatives Analysis and Impact Evaluation
- Mitigation Plan for Alternative Review
- Approval Criteria
- Payment-in-Lieu Options

6

Programmatic Permits for Public Land Management 79

Qualifying Actions and Agencies 80

Programmatic Permit Submittal Instructions 80

Review Factors 81
- Biodiversity
- Erosion Prevention and Sediment Control
- Mitigation of Impacts
- Wildfire and Landslide Risk Reduction

Permit Specifications 85
- Monitoring and Reporting
- Revisions
- Compliance and Revocation

7

Tree, Vegetation, and Soil Protection 86

Identifying and Surveying Overlay-Protected Trees 87
- Measuring DBH
- Tree Surveys

Tree Protection 90
- Critical Root Zone
- Tree Protection Plans
- Proactive Pruning Cuts

Invasive Trees 95

Dangerous Trees 96
- Retaining Wildlife Snags or Habitat Trees

Fire Defensible Spaces 97

8

Habitat Protections: Best Management Practices 100

Habitat Friendly Development Practices 101

Wildlife Friendly Fencing 103

In-Water Work Windows 104

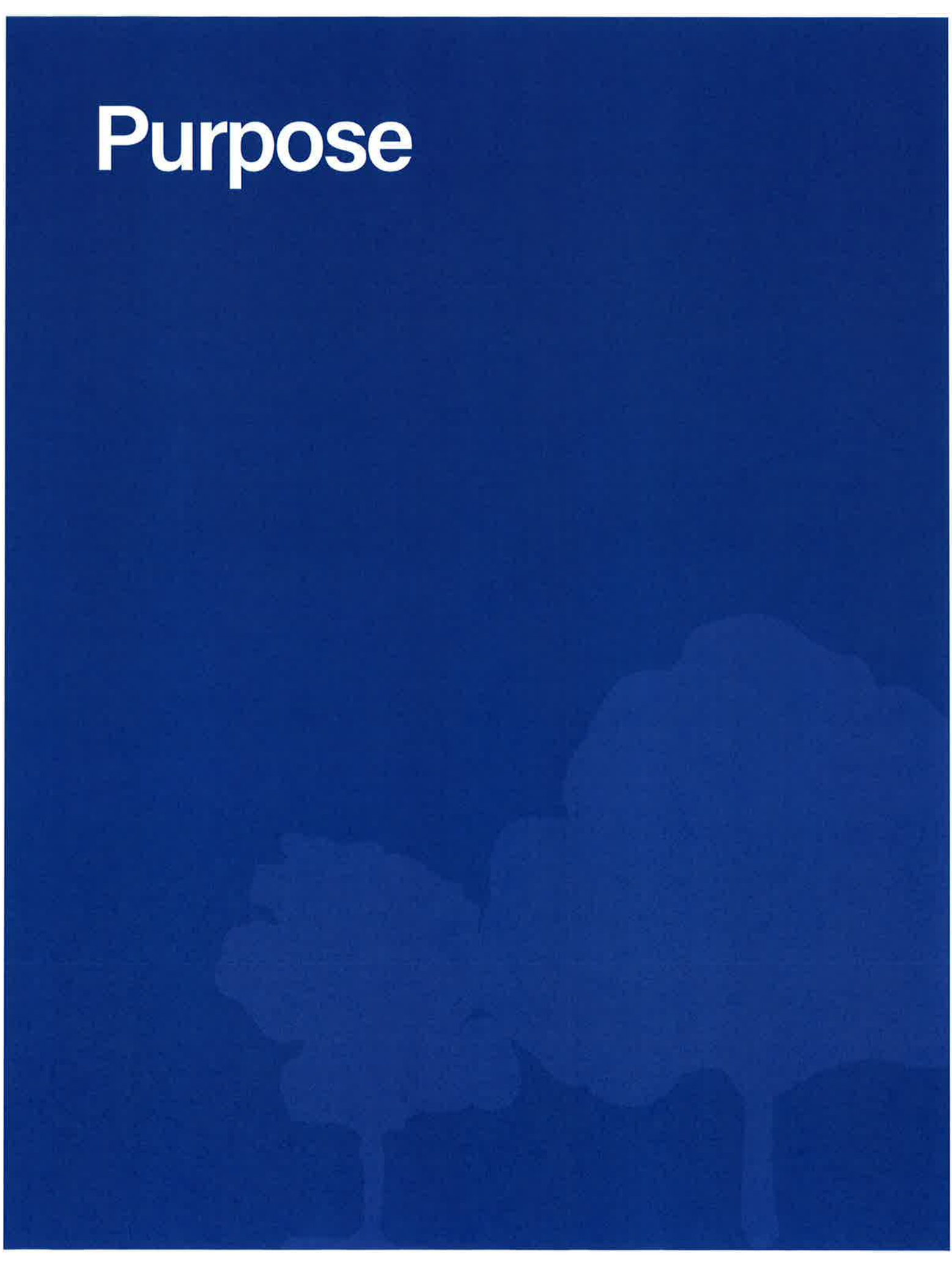
Migratory Bird Treaty Act Compliance 104

9

Appendices 105

Appendix A	Acronyms and Definitions	106
Appendix B	City of Gresham Native Plant List	109
Appendix C	City of Gresham Invasive Plant List	111
Appendix D	Site Plan Templates	113

Purpose



Purpose

Manual Intent

Gresham's Environmental Overlays, specifically the Natural Resource Overlay, the Hillside and Geologic Risk Overlay, and the Floodplain Overlay, are part of the Gresham Community Development Code. These code sections protect sensitive natural resources and the valuable functions they provide when they are in a healthy condition. Streams, wetlands, riparian areas, floodplains, and well-vegetated upland areas can provide immense public benefit realized in improved water quality, slope stabilization, flood management, and robust ecosystems. The digital models and resulting maps related to each of these overlays were updated in 2019 and 2020 to utilize best available data in updating natural resource feature locations, and to inform natural hazard risk reduction measures for the protection of public safety and our community's infrastructure. These updates support the community's efforts to comply with federal, state, and regional regulations protecting public safety, water quality, critical habitat, and sensitive species.

Gresham's Environmental Technical Guidance Manual (ETGM) was developed in part as a companion to these code updates to facilitate understanding of and compliance with these technical codes. The manual serves as a compilation of the detailed processes, timelines, and available options for meeting the intent of the regulatory language. Content of the ETGM is to be used in tandem with development code and does not substitute for or supersede the actual code language.

This document also serves as a repository of Best Management Practices for working in and near sensitive areas. It provides restoration guidelines for City staff, volunteers, and homeowners maintaining and enhancing riparian conditions, improving backyard or public land habitat, and protecting tree health. The ETGM also provides guidance for instituting voluntary wildfire and landslide risk mitigation practices, including suggestions related to how to maintain vegetation around homes to reduce fire risk, which is of particular importance in forested overlays where healthy trees are providing flood and landslide risk reduction benefits.

Changing climatic conditions continue to affect our region's natural resources and our natural hazard risk factors. As the science continues to evolve in how best to deal with changing stream flows, urbanizing stream morphology, and changing forest health conditions, this manual will evolve and be periodically updated to provide additional Best Management Practices for minimizing impacts to the sensitive resources and critical areas protected by Gresham code language. Similarly, as Gresham residents, land managers, restoration professionals, developers, consultants, and city staff work through this manual in applying updated environmental codes, or as they implement voluntary enhancement or risk reduction activities on their lands, this manual will be updated to provide improved clarification based on user feedback.

Environmental Overlay Permit Coordination (City of Gresham)

Urban Design and Planning (UDP) staff always will serve as the central point of contact for permit applicants and for property owners seeking clarification on how the Environmental Overlays relate to their parcel(s) or project concept. At the request of UDP, staff from the Natural Resources Program (NRP) in the Department of Environmental Services may support this feedback. When NRP staff respond to a request from UDP for review of a project submitted for an Environmental Overlay permit, NRP will provide review comments or recommendations in a memo sent directly to the Planner assigned to a particular project.

The ultimate resolution of NRP's concerns is the responsibility of the assigned Planner who is responsible for all formal communication between the City and the applicant. The comments and recommendations of NRP staff are not sent directly to the applicant. NRP may not receive submittals or respond to land use code questions which should be directed to UDP, and NRP may not forward documents to UDP on behalf of an applicant. If an applicant makes revisions to a submittal in response to NRP comments, NRP staff will be asked to review any revised plans and point-by-point responses by the assigned UDP planner.

While communication between permit applicants and NRP staff is welcomed to clarify technical content questions related to this manual and Gresham's Environmental Overlay codes, communication should always start with, and include, the assigned UDP planner or the Planner on Duty. NRP staff are not authorized to provide development code interpretation, to make assurances, or to negotiate on behalf of UDP.

Coordination with Other Regulatory Programs

The streams, wetlands, and other waters protected by Gresham's Environmental Overlay buffers are under the jurisdiction of multiple state and federal agencies, particularly Oregon Department of State Lands, Oregon Department of Environmental Quality, and US Army Corps of Engineers. Impacts to these resources most often trigger the need for state and federal permits that can take an average of 4-6 months to complete, and require fees to the regulating agencies as well as the development of mitigation plans that include up maintenance and reporting obligations into the future (typically 5 years). As such, property owners are advised to avoid, or minimize to the extent possible, impacts to streams, wetlands, and other waters in order to reduce regulatory burden, project costs, and potential for project delays.

As state and federal regulations are updated periodically, and as degrees of resource protection vary depending on the specific resource, the ETGM does not endeavor to provide detailed information on state and federal permitting pathways for various proposed impacts. However, the ETGM does provide on overview of likely state and federal permitting requirements that are triggered if a project generally cannot be designed to avoid work in jurisdiction water resources. Section 3 provides the information necessary for a property owner to initiate a conversation with the appropriate state or federal agency. It is not intended to be an authoritative guide on which state and federal agency permits are necessary.

Land use permits issued by Gresham for development within the Environmental Overlays are conditioned on the City's receipt of agency approval for all state and federal permits involving impacts to streams, wetlands, and other waters in advance of ground disturbance at a project site. It is the responsibility of the property owner, not City of Gresham, to ensure all appropriate state and federal regulations and permit conditions related to streams, wetlands, and other waters are being followed.

Identifying Environmental Overlays on a Property

Identifying Environmental Overlays on a Property

Overlays are a set of requirements applied over a base land use zone when a particular area requires special protections for the benefit of public welfare and community assets. Gresham's three Environmental Overlays (Floodplain, Hillside and Geologic Risk, and Natural Resource) provide an extra layer of planning protection for public safety, infrastructure investment, water quality, and related ecosystem functions in these areas. If a property has one or more environmental overlays, development of that land requires compliance with the Gresham Community Development Code regulations for both the base zone and the overlay(s) in order to ensure natural resources are protected and natural hazard risks are minimized.

Online Map Resources

There may be no environmental overlays on a property, or there may be Floodplain, Hillside and Geologic Risk, and/or Natural Resource Overlay. Review of which overlays have been mapped on a particular parcel can be done by visiting the mapping tool available at **GreshamOregon.gov/Maps**, then navigating to a parcel of interest and selecting the Floodplain, Hillside, and Natural Resource layers to see if any or all of those appear on the parcel. .

Locating Overlay Boundaries in the Field

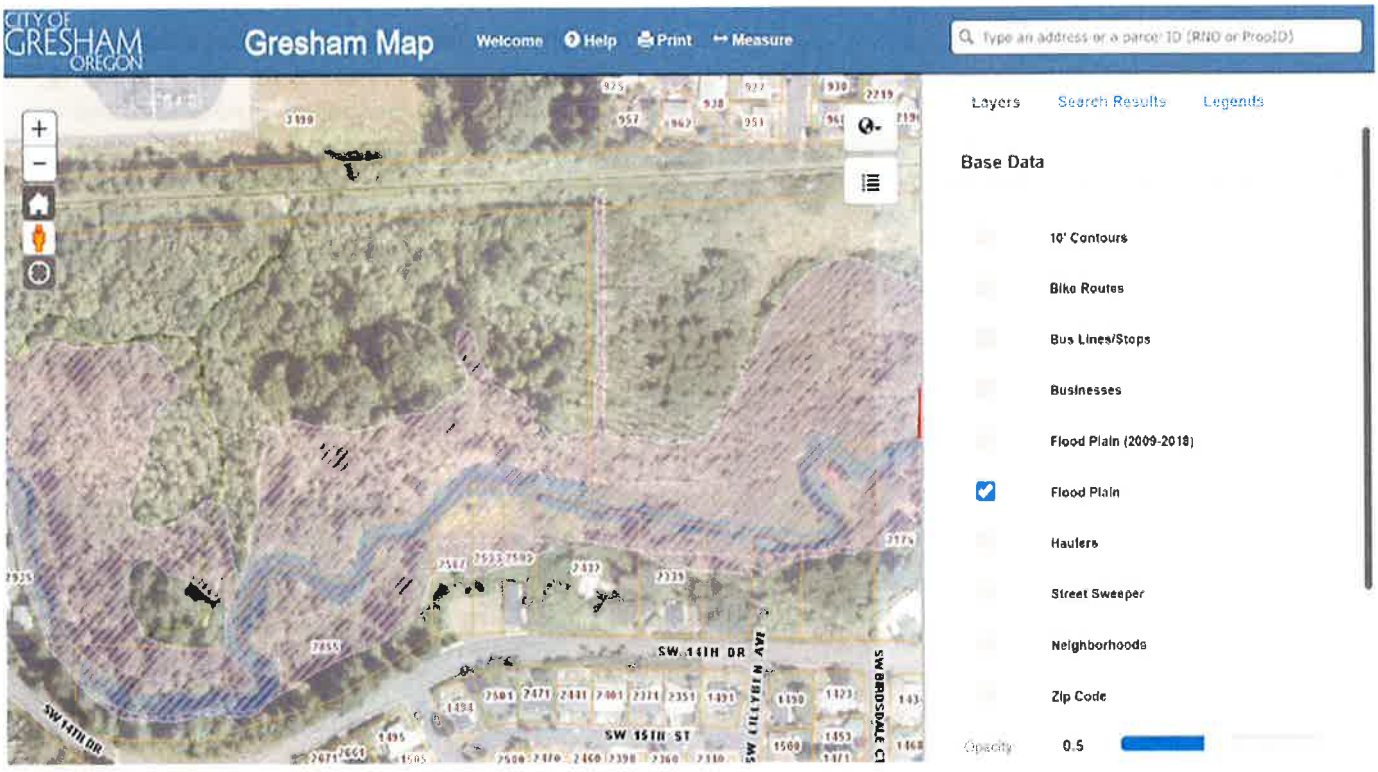
Once a property owner has a map of the overlays, they should find the corresponding boundary in the field, in order to ensure activities on the parcel consider the protections of the overlay. Locating the overlay boundary on a property can be challenging in certain landscape settings, or for those not accustomed to working with digital maps, GPS technology, or similar. Assistance in understanding how to find overlay-protected areas on a parcel is available by contacting Gresham's Planner on Duty. GIS mapping data (which can be made available for use with non-city mapping tools) may also be requested from the City through the Planner on Duty.

Planner on Duty
POD@GreshamOregon.gov
503-618-2780

Visual Interpretation of Gresham Map Data

By lining up the digital overlay boundary locations visually against the aerial photography that is also available on Gresham's mapping tool, digital boundaries can be transcribed in the field. Any permanent, low-stature feature that can be found both in the aerial image (i.e., not obscured by tree canopy), and on the ground at the parcel or project site, can be used to locate an overlay boundary. For example, a driveway or paved road edge, an isolated shrub, a well-defined lawn edge, a child's playset, or the footprint of a one-story structure can all serve as good reference points in locating a parcel's overlay boundaries.

Using taller structures or trees seen in the aerial images to find a boundary edge results in a rougher approximation of the overlay's location on a parcel. The existing technology that captures aerial photos is rarely directly above a given parcel when an aerial image is captured, and as such, any aerial image is likely to have a degree of "oblique angle error". This is a slight distortion of objects seen in the image, and distortions are exacerbated by vertical height. The taller the feature, the greater degree of distortion possible. A map user may note a 5-foot or even 10-foot deviation between a taxlot boundary and what appears to be the property edge on a given image. It may appear that a building was built several feet onto an abutting property, though a professional land survey would show it fully within the appropriate taxlot. Because of these slight but frequent distortions, aerial imagery interpretation is not as precise as the field verification methods listed below.



Example Gresham Map image. Visit **GreshamOregon.gov/Maps**.

Field Verification

When development activities are proposed within or near an environmental overlay boundary, a field-verified boundary is typically needed. Field verification methods rely on use of one or more type of mapping or surveying instruments while in the field. Property owners planning to develop often rely on a Professional Surveyor to establish an accurate overlay boundary in advance of starting their development design. To find a local professional with these skills, the Professional Land Surveyors of Oregon organization hosts a search tool online at **PLSO.org/Find**. Additionally, other professionals may already be involved with a development proposal and are often accustomed to these challenges and may be able to assist. These include engineers, landscape architects, natural resource professionals, or consulting arborists.

Data Accuracy Requirement

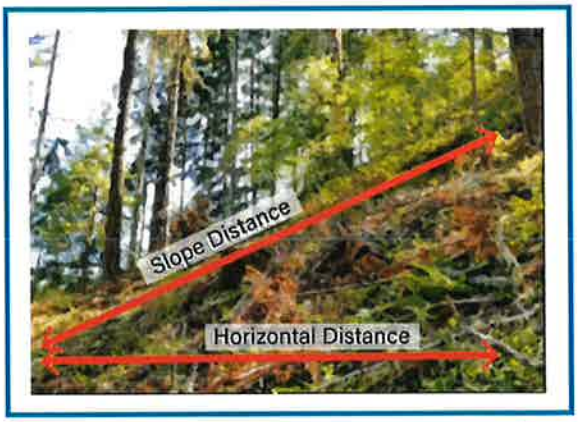
When submitting development application materials to the City, a minimum horizontal accuracy of "+/- 3 feet" is required. Readily available methods to field-locate the overlay to within 3 feet of horizontal accuracy are detailed in the following paragraphs.

Field Equipment

Global Positioning System (GPS), Global Navigation Satellite System (GNSS), and professional survey equipment can be used to locate the overlay or other locations on a parcel or to digitally record field locations for use in mapping. Positional accuracy demonstrating at least 3 horizontal feet of accuracy can be difficult to establish, but with professional tools it is commonplace and consumer grade tools are constantly improving. Typically, hiring a Professional Land Surveyor is the simplest way to reliably locate the overlay boundary on the property or to digitally record field locations.

Taking Field Measurements

Field measurements involve physically measuring distances in the field. This is useful when establishing a buffer distance from a protected water feature with a known location in the field or when you need to locate a mapped overlay boundary on the ground and other methods are not available or appropriate. For example, if a user knows from looking at Gresham's web map that the overlay boundary is 40 feet north of a property corner and that property corner has been professionally surveyed and marked in the field, then one can measure in the field and reliably place that portion of the overlay boundary. This can be a labor-intensive process but is more accessible for some. This method is most suitable to flat ground and short distances. On undulating or sloping terrain, one will need to correct for the topography of the land since map measurements are in horizontal feet without regard for site topography. This can make measurements and mathematical corrections challenging when on sloping or undulating terrain. One will need to be consistent in the compass direction used when measuring on the map and on the ground.



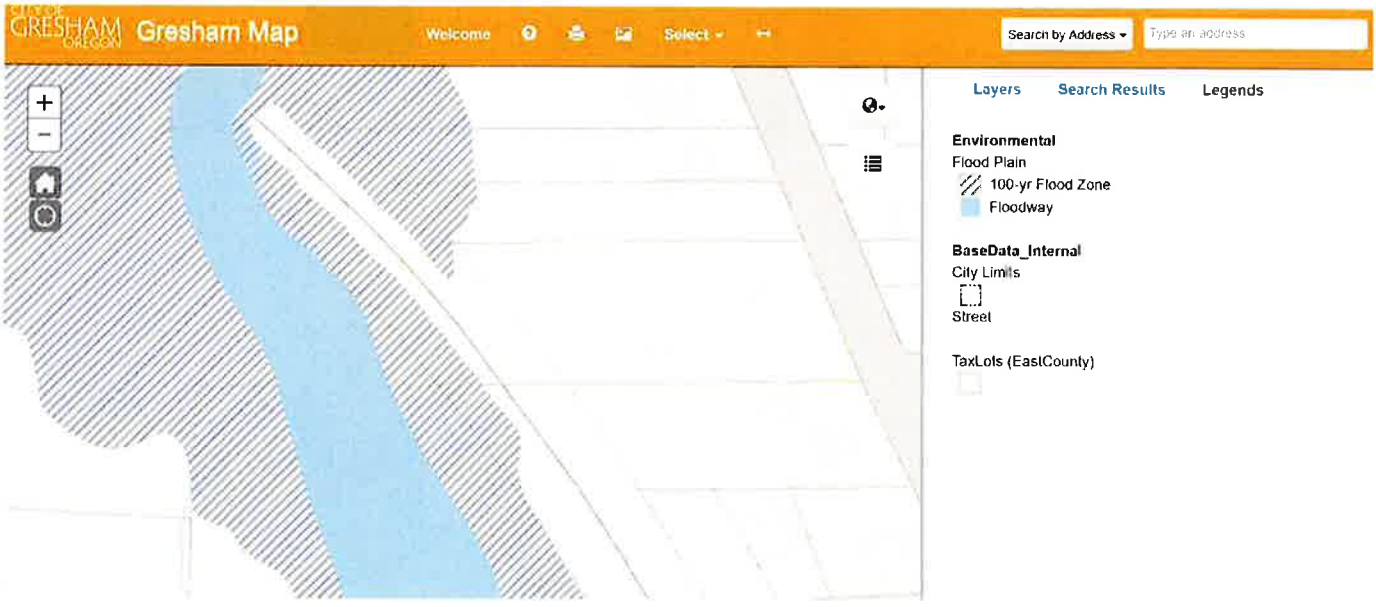
When you use a map's scale to measure the distance between points, you measure the horizontal (or map) distance. This is the "as-the-crow-flies" distance and doesn't take topography into account. When traveling on the ground, you travel the slope distance, which will be longer (unless the ground is perfectly flat).

Overlay Specific Considerations

Each of Gresham's three environmental overlays have specific requirements that need to be followed, per the Gresham Community Development Code section for each overlay. Also, there are specific resources available to help establish the overlay boundary for each of these overlay types. In addition to the general guidance above, the specific criteria unique to each overlay (Floodplain, Hillside and Geologic Risk, and Natural Resource) are listed in the following subsections and should be reviewed in advance of field verification efforts.

Floodplain Overlay (FO) Mapping Specifics

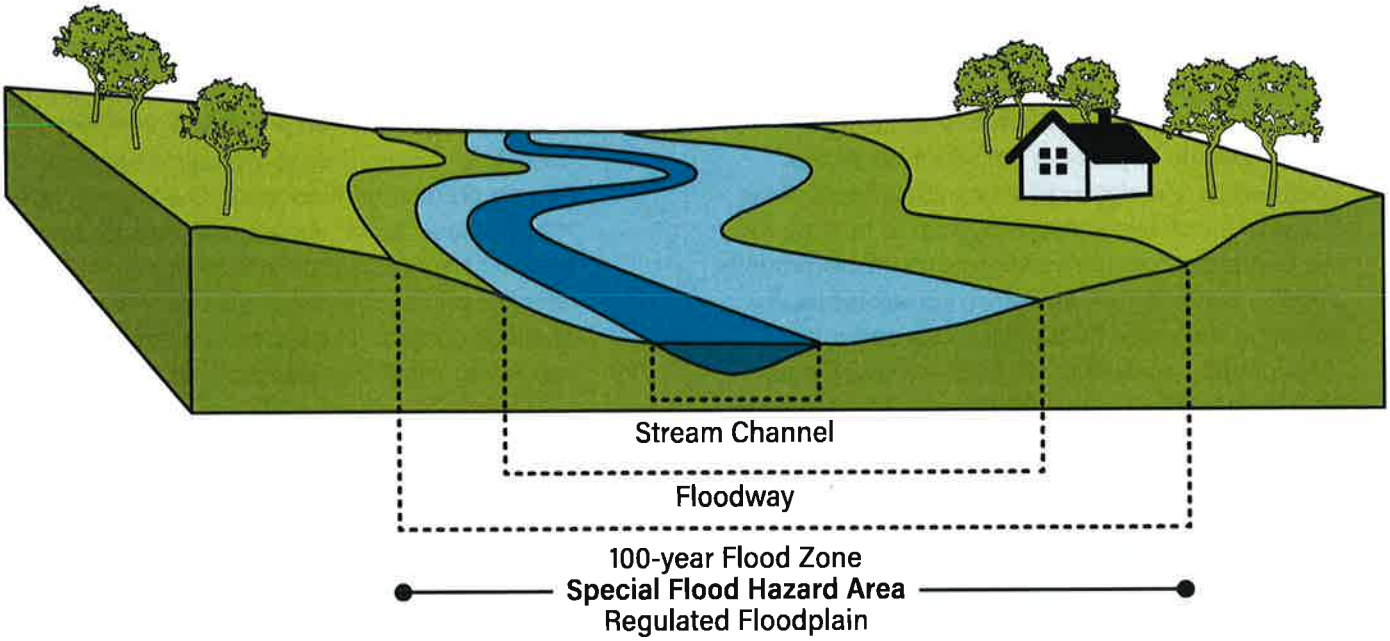
By storing floodwaters, floodplains provide a natural form of flood protection for the community by allowing floodwaters to spread out beyond the channel and temporarily store floodwater. Significant investments in stormwater infrastructure construction and maintenance are needed when natural floodplain function is lost. A floodplain can also improve water quality by filtering out pollutants and sediment and recharging groundwater. Vegetated floodplains can stabilize slopes and soils during floods, thus reducing erosive flow impacts on adjacent lands. When homes, businesses, and neighborhoods are built in flood hazard areas, flooding can result in public health and safety risks, damage to public and private property, damage to public infrastructure and utilities, and economic impacts to the residents of the community. Gresham regulates streamside areas found in floodplain surveys in order to provide for the floodplain functions that protect the community and the community's built and natural assets. By adopting regulated floodplain maps and related development code that has been reviewed and approved by the Federal Emergency Management Agency (FEMA), the City also ensures federal floodplain insurance is available to residents, organizations, and businesses. The City's floodplain overlay code language (GCDC Section 5.0100) is guided by FEMA standards that, when fully met and followed, allow a community to participate in the National Floodplain Insurance Program (NFIP). The NFIP underwrites flood insurance coverage only in those communities that adopt and enforce floodplain regulations designed to ensure that new buildings will be reasonably protected from damage by flooding, and that development within the floodplain will not increase the flood hazard risk for existing development. To find if a parcel has regulated floodplain on it, visit Gresham's mapping tool available at **GreshamOregon.gov/Maps** then navigate to the desired property and select "Floodplain" from the list of available layers. Parcels containing Floodplain Overlay will have a "100-yr Flood Zone" designated, and, depending on what type of floodplain field survey was done near the parcel, there may also be a "Floodway" area designated. The distinction between these two is important and is described below.



Gresham Map image of floodplain designations.

Components of the FO

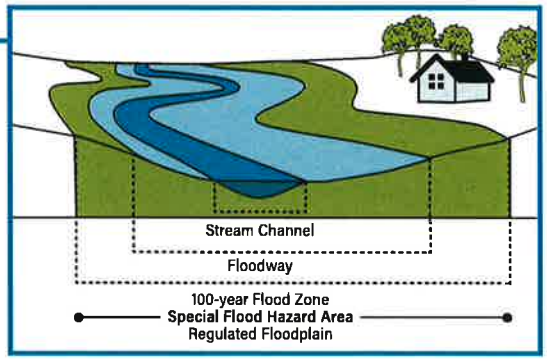
If regulated floodplain has been mapped on a parcel, the boundary information that can be retrieved from Gresham's mapping tool at **GreshamOregon.gov/Maps** will show the resulting geometry of a floodplain survey that was conducted by the City and approved by FEMA. Gresham's web map will show the outer boundary of the FEMA-approved **Floodplain**, and may also show a smaller regulated **Floodway** for those stream reaches where detailed field survey work was conducted.



Flood-Prone Areas

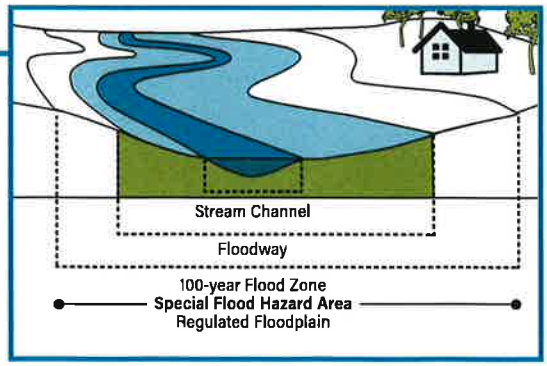
Not currently mapped on **GreshamOregon.gov/Maps** but mentioned in the Floodplain Overlay code are flood-prone areas of the city where a subset of Floodplain Overlay regulations apply when development is proposed. These areas have not yet been surveyed by floodplain modelers, so a regulated floodplain has not yet been established. The City maintains a list of flood-prone areas outside of the regulated floodplain; inclusion on this list is based on recorded incidences of recurrent flooding during high water events. If conducting a project on a property with a stream where no regulated floodplain exists, contact the Planner on Duty to ask if the area has been designated as flood prone.

Floodplain



Often referred to as the **regulated floodplain** or the **Special Flood Hazard Area**, the area noted on Gresham's web map as "**100-Year Flood Zone**" is the area on a parcel subject to inundation by the "**100-year flood**". A 100-year flood refers to a flood that has a one percent chance of occurring, or being exceeded, in any given year. The terms **base flood, 1% annual chance flood**, and **100-year flood event** are used interchangeably. 100-year flood event is a term that can cause confusion. It does not mean that that degree of flooding will only happen once in a 100-year period. Rather, there is an equal chance (a 1% chance) every year for there to be a base flood that would inundate the area mapped as regulated floodplain. Thus a 100-year flood event may happen at shorter or longer intervals than once-every-100 years. It is even possible to have multiple 100-year floods within a given year, though it is statistically very unlikely.

Floodway



The floodway is comprised of (a) the stream channel and (b) that portion of the adjacent floodplain which must remain open to permit passage of the 100-year flood. Floodwaters generally are deepest and swiftest in the floodway, and anything in this area is at the greatest risk during a flood.

Understanding Flood Zones and Maps

When development activities are proposed within or near the floodplain boundary, additional detailed information about the site's floodplain will need to be submitted with any land use permit. Information such as the Base Flood Elevation of the site's floodplain is available by finding the relevant Floodplain Insurance Rate Map (FIRM) for a given parcel. A digital FIRM (DFIRM) is available by visiting FEMA's Flood Map Service Center. Paper copies of FIRMs are also available through Gresham's Planner on Duty.

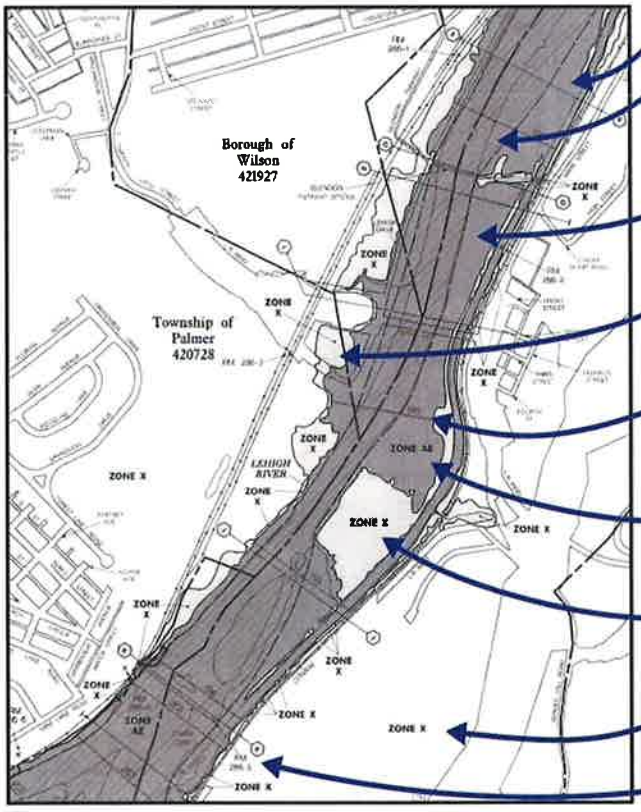
FIRMs show the varying levels of flood risk that FEMA has defined for a given geographic area.

Gresham's regulated floodplains were newly effective as of February 2019, and are split across 11 FIRM panels. As the majority of the City's regulated floodplain mapping was updated in 2019, property owners who already have in their possession the FIRM panel for their parcel(s) should ensure they are working with the most current version.

FEMA Flood Map Service Center
MSC.FEMA.gov/Portal
877-336-2627

Reading a FIRM

A typical FIRM shows the following features:



1. **Special Flood Hazard Area** (Shaded + Hatched)
   The land area covered by the floodwaters of the base flood
2. **Floodway** (Hatched)
   The channel of a watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surace elevation more than a designated height
3. **100-Year Floodplain** (Dark Gray Shaded)
   Land area subject to flooding by the 1% annual chance flood event
4. **500-Year Floodplain** (Light Gray Shaded)
   Land area subject to flooding by the 0.2% annual chance flood event
5. **Base Flood Elevation (BFE)** (Squiggly Line with # in Feet)
   Water surface elevation of the base flood at specific locations

Flood Hazard Zones

6. **Zone A, Zones A1-A30 + Zone AE**
   Flood hazard zones subject to flooding by the base or 100-year flood
7. **Zone X - Shaded**
   Flood hazard zone subject to flooding by the base or 500-year flood
8. **Zone X - Unshaded**
   All other zones with lower flood risk
9. **Elevation Reference Marks (RM)**
   Points for which ground elevation data have been established and recorded on the Flood Insurance Rate Map or in the Flood Insurance Study

Floodplain Boundary

Both the 100-year floodplain boundary (the 1% annual chance floodplain) and the 500-year floodplain boundary (the 0.2% annual chance floodplain) are shown. While the City regulates only to the 100-year floodplain boundary, the 500-year floodplain boundary should be considered by a property owner when making development decisions. Dark tints shown on the FIRM indicate areas of greater flood hazard (e.g. 100-year floodplain areas are darker gray than the 500-year floodplain areas).

Floodway Designation

Within detailed study areas (where floodplain field survey work was conducted), a hatched area within the 100-year floodplain is used to show the floodway. Special protections, as noted in GCDC Section 5.0121 are relevant in these areas.

Base Flood Elevation (BFE)

Within detailed study areas, this line and label indicates the water surface elevation of the base flood (the 100-year flood event). A wavy line is used to indicate when the base flood elevation varies along a watercourse. When the base flood elevation is uniform across a large area, a label is used.

Cross Section Symbols

Lettered or numbered cross sections for those streams that were studied by detailed methods are labeled consecutively from the downstream to the upstream limit of the study, and are shown on FIRMs with a hexagon at one end of the cross section line. These locations correlate to the flood profiles available in the most recent Gresham Flood Insurance Study. This study is available through the Planner on Duty at POD@GreshamOregon.gov.

FO Map Correction Process and Letters of Map Change

Gresham's floodplain mapping on Gresham Map can be revised only after FEMA review and approval is received after following established FEMA processes. FEMA's floodplain map change FEMA has defined for a given geographic area. Gresham's regulated floodplains were newly effective as of February 2019, and are split across 11 FIRM panels. As the majority of the City's regulated floodplain mapping was updated in 2019, property owners who already have in their possession the FIRM panel for their parcel(s) should ensure they are working with the most current version.

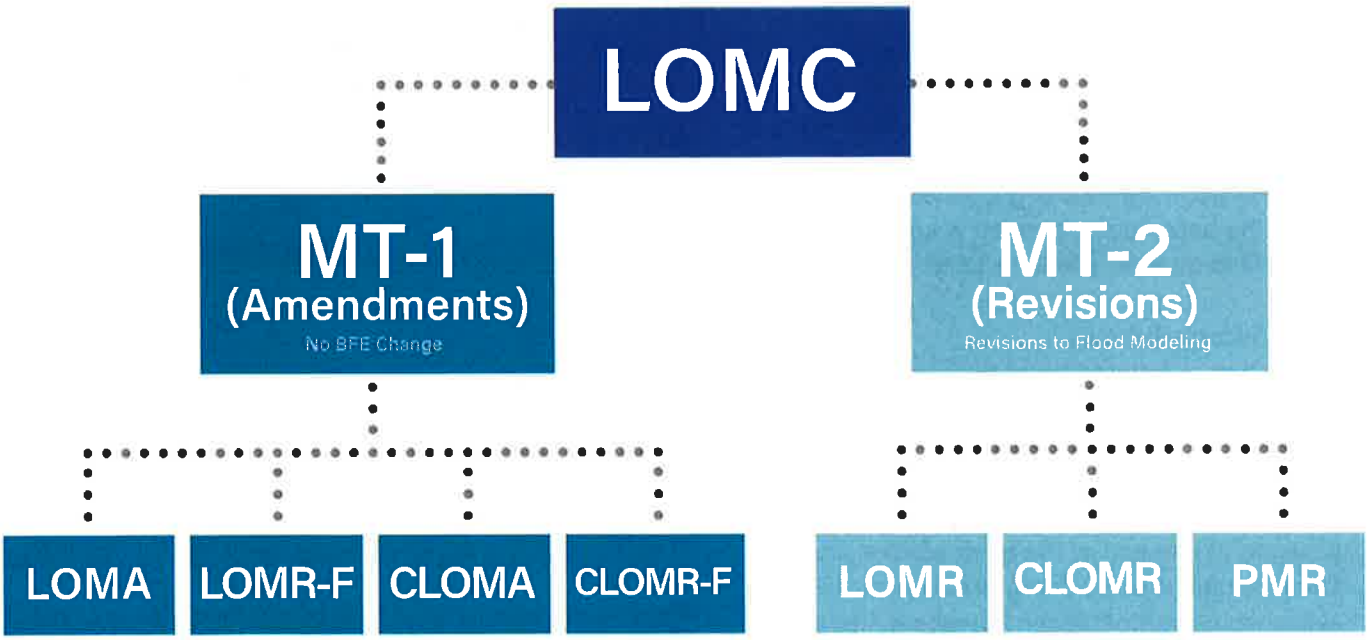
Amendments (which result in a letter that amends a FIRM panel) follow a process FEMA refers to as MT-1. Complete instructions, forms, and fee information for the MT-1 process are found on FEMA's website at:

FEMA.gov/Flood-Maps/Change-Your-Flood-Zone/Paper-Application-Forms/MT-1

Revisions can result in the reprinting of a FIRM panel by FEMA. A revision requires a different process and takes longer (6-12 months) for FEMA processing. Forms, instructions, and fee information are found on FEMA's website at:

FEMA.gov/Flood-Maps/Change-Your-Flood-Zone/Paper-Application-Forms/MT-2

Letter of Map Change (LOMC) Types



Letters of Map Change: FEMA's Process by Type

Acronym	Stands For	Purpose
CLOMA	Conditional Letter of Map Amendment	A CLOMA is FEMA's comment on a proposed project stating that a proposed structure that is not to be elevated by fill (rather it will be built on the natural grade) would not be inundated by the base flood if built as proposed. The CLOMA would determine whether a LOMA could be issued if the project is built as proposed in the CLOMA application.
LOMA	Letter of Map Amendment	An amendment to the currently effective Flood Insurance Rate Map (FIRM) which establishes that a property or as-built structure is not located in a Special Flood Hazard Area (SFHA) due to naturally high ground. LOMAs are usually issued because a property has been inadvertently mapped as being in the floodplain, but is actually on natural high ground above the base flood elevation. *Review and sign off on a Community Acknowledgement form by Gresham's Floodplain Administrator may be required for certain LOMAs.*
CLOMR-F	Conditional Letter of Map Revision (Based on fill)	A letter from FEMA stating that a parcel of land or proposed structure would not be inundated by the base flood once fill is placed on the parcel as proposed or a structure is built on fill as proposed. The CLOMR-F letter comments on whether the proposed project meets the minimum floodplain management criteria of the NFIP and, whether a LOMR-F could be issued by FEMA if the project is built as proposed. *Review and sign off on a Community Acknowledgement form by Gresham's Floodplain Administrator is required when submitting a CLOMR-F application to FEMA. This includes required review by Gresham of the applicant's Endangered Species Act assessment related to the proposed fill activities.*
LOMR-F	Letter of Map Revision (Based on fill)	LOMR-F is a letter from FEMA stating that an existing structure or parcel of land that has been elevated by fill material would not be inundated by the 100-year flood and therefore is not located within the SFHA. This is similar to a LOMA, except that a LOMA deals with properties that have not had any fill material brought in to elevate the structure above the 100-year flood elevation. *Review and sign off on a Community Acknowledgement Form by Gresham's Floodplain Administrator is required when submitting a LOMR-F application to FEMA. This may include required review by Gresham of the applicant's Endangered Species Act assessment related to the fill activities.*
CLOMR	Conditional Letter of Map Revision	A CLOMR is a letter from FEMA stating a proposed project would, upon construction, affect the hydrologic or hydraulic characteristics of a flooding source and thus result in the modification of the existing regulatory floodway, the effective BFE, or current SFHA. A CLOMR is needed if any floodway encroachment is proposed that will result in any (>0.00 foot) rise, or if floodplain encroachment is proposed and will result in an increase of >1.00 foot rise. *Review and sign off by Gresham's Floodplain Administrator is part of the required Notifications process. This includes required review by Gresham of the applicant's Endangered Species Act assessment related to the proposed fill activities.*
LOMR	Letter of Map Revision	A LOMR is an official revision via letter to an effective FIRM map that may change flood insurance risk zones, floodplain and/or floodway boundary delineations, and/or the BFE. LOMRs are submitted when there have been physical changes resulting in floodplain modifications, when there has been an updated, more detailed analysis, or to correct errors. *Review and sign off by Gresham's Floodplain Administrator is part of the required Notifications process. This may include required review by Gresham of the applicant's Endangered Species Act assessment related to the proposed fill activities.*
PMR	Physical Map Revision	An action whereby one or more map panels are physically revised and republished. It is used to change flood risk zones, floodplain and/or floodway delineations, flood elevations, and/or planimetric features. It must be adopted by the community.

For projects that included a CLOMR or CLOMR-F submittal, the corresponding LOMR or LOMR-F submittal to FEMA, including any updated floodplain modeling report and as-built information, is required immediately after a project is completed. **Gresham floodplain mapping information will be updated only after receipt of a FEMA-issued LOMA, LOMR, or LOMR-F.**

Hillside and Geological Risk Overlay (HGRO) Mapping Specifics

The HGRO represents the City's assessment as to a practicable methodology to ensure that development in, or adjacent to, hillside areas occurs in such a manner as to:

- Minimize the potential for earth movement and resultant hazards to life and property.
- Minimize soil erosion and siltation.
- Protect water quality.
- Minimize vegetation removal in sloped areas.
- Protect the aesthetic and scenic qualities of hillside areas.
- Assure the compatibility of new development with surrounding areas.
- Encourage site and building design which is consistent with the natural topography.
- Minimize the cost of public infrastructure provision.
- Provide for adequate access for emergency services.

Components of the HGRO

The HGRO overlay is generated by Oregon Department of Geology and Mineral Industries (DOGAMI) landslide mapping, landslide hazard modeling, and slope data. DOGAMI's landslide susceptibility modeling and Gresham's slope data is based on a 2014 DOGAMI LiDAR-derived digital elevation model (DEM). The mapping protocols Gresham used to develop these overlays are outlined in GCDC Section 5.0214.

Highly Sloped Subarea (HSS)

There is one subarea within the HGRO, the Highly Sloped Subarea (HSS). The HSS focuses additional restrictions on areas within the HGRO that have slopes of 35% or greater.

Be aware that landslide and other geologic hazards do exist outside the HGRO and HSS in Gresham.

For more information on Oregon's landslide dangers, visit:

- OregonGeology.org/Landslide/LandslideHome.htm

For additional information on how to prepare for landslides, visit:

- Ready.gov/Landslides-Debris-Flow
- OregonGeology.org/Landslide/GER_Homeowners_Guide_Landslides.pdf

HGRO Map Correction Process

HGRO and HSS Map Corrections are detailed in GCDC Section 5.0215(B) and additional relevant details are included below. HGRO can be corrected in two ways: addressing data issues relating to LiDAR bare-earth Digital Elevation Model (DEM), as well as correcting the location of streams. HGRO corrections are generally processed by the City when corrections to the data inputs are provided as below. The HSS can be corrected with updated professional topographic data and data processing.

HGRO Correction Based on LiDar DEM Issues

A LiDAR-derived, bare-earth Digital Elevation Model (DEM) forms one of the primary inputs to DOGAMI's shallow landslide susceptibility modeling. This dataset does have occasional data quality issues resulting in presumed inaccurate hazard identification. Acceptable data quality issues are those defined in the "Oregon LiDAR Consortium Metro 2014 Lidar Project Quality Control Report – November 30, 2016" and which are related to structures present at time of flight. Additionally, the Summer 2014 LiDAR flights used to create this dataset occasionally captured temporary slopes presumed to not reflect the landslide hazard at the time of code enactment (January 15, 2021). If data issues including temporary slopes, such as stockpiles or active grading areas, are found to have been captured in the dataset they can be removed from the shallow landslide susceptibility raster dataset following this protocol:

1. Document the data issue in a shapefile with these characteristics:
   - Polygon geometry.
   - Projected coordinate system of "NAD_1983_HARN_StatePlane_Oregon_North_FIPS_3601_Feet_Intl".
   - Polygon must identify the data issue to +/- 3 feet of horizontal accuracy.
   - One polygon per documented data issue.
   - Unique identifier for each polygon.

2. Describe each polygon's data issue(s) identified by unique identifier in a narrative. Additionally, describe and justify the methods used to identify and delineate the issue(s).

3. Visualize the data issues by submitting two maps with a scale of no less than 1 inch to 100 feet. The map should use a projected coordinate system of "NAD_1983_HARN_StatePlane_Oregon_North_FIPS_3601_Feet_Intl".

   Map 1 shall include the following layers:
   - Polygon(s) with data issue(s) including a label of the unique identifier.
   - Oregon LiDar Consortium Metro 2014 Project Bare-Earth DEM.
   - Scale bar in US feet.

   Map 2 shall include the following layers:
   - Polygon(s) with data issue(s) including a label of the unique identifier.
   - Current HGRO boundary (without any polygon fill).
   - DOGAMI IMS-57 Shallow Landslide Susceptibility High Hazard raster data.
   - Scale bar in US feet.

HGRO Correction Based on Mapped Stream Changes

The HGRO prioritizes for protection shallow landslide hazards near streams. When stream locations are remapped as part of NRO map corrections in GCDC Section 5.0715(C) it may alter the HGRO boundary. The HGRO will be remapped by the City upon request only after an associated NRO map correction is finalized.

HGRO Correction Based on Newly Mapped Landslides

Newly mapped landslide deposit(s) and scarp flank(s) which have been mapped by a Registered Geologist or Certified Engineering Geologist can be included in HGRO modeling. Field-mapped deposits should be mapped to within +/- 3 feet of horizontal accuracy and should be compatible with data compiled according to DOGAMI's Special Paper 42, Protocol for Inventory Mapping of Landslide Deposits from Light Detection and Ranging (Lidar) Imagery, 2009, by William J. Burns and Ian P. Madin. Landslides mapped using Lidar imagery should be mapped according to DOGAMI SP-42.

HSS Boundary Correction

Applicants may request a site-specific correction of the HSS boundary. Be aware that correcting the HSS after development of a site under the HGRO/HSS standards does not change the effective boundary of the HSS. The HSS at the time of development under HGRO/HSS standards remains in effect for subsequent development on site. Applicants must provide on-site slope survey data, new HSS boundary, and an HSS analysis map prepared in accordance with the following:

- *On-site survey data*: A survey shall be submitted of the natural/existing topography for the site of the proposed area of correction and a 50-foot buffer around it, stamped by a registered Civil Engineer or licensed Professional Land Surveyor. If access in the 50-foot buffer cannot be acquired, data from the Oregon LiDAR Consortium Metro 2014 Project Bare-Earth DEM may be substituted. Survey data must be provided as bare-earth DEM raster as well as a percent slope rise raster calculated using the bare-earth DEM. Survey data must meet or exceed standards set in "Oregon LiDAR Consortium Metro 2014 Lidar Project Quality Control Report – November 30, 2016" including an absolute vertical error of less than 0.20 meters.

- *New HSS boundary data*: The new slope raster must be processed according to the mapping protocol in GCDC Section 5.0214(B) and provided as a raster dataset. The City may be able to provide this processing, but it is not guaranteed.

- *HSS analysis map*: A map shall be provided having a scale of not less than 1 inch to 100 feet and a contour interval of not more than 10 feet with two-foot intermediates. The map shall also indicate the datum, source, and scale of topographic data used in the slope analysis and shall attest to the fact that the slope analysis has been accurately calculated. The map shall clearly delineate/identify the slopes of 35% or greater and new HSS boundary. The map shall be prepared using CAD-based, GIS-based, or other type of software specifically designed for such purpose.

- *Raster datasets must be provided in the following format:*
  - ESRI 32-bit pixel depth floating point grid
  - 3-foot cell size
  - Projected coordinate system of: "NAD_1983_HARN_StatePlane_Oregon_North_FIPS_3601_Feet_Intl" Metadata must be provided following ISO 19139 standards.

Natural Resource Overlay (NRO) Mapping Specifics

The protective boundaries of the Natural Resources Overlay (NRO) were developed in concert with Gresham land use code required for compliance with Metro Titles 3 and 13, and Statewide Planning Goals 5 and 6. The protections provided by the resulting NRO map and code contribute to the following community objectives:

- Protect and restore streams and riparian areas for their ecological functions and as an amenity for the community, and to recognize the unique natural resource attributes within the new communities of Pleasant Valley, Springwater, and Kelley Creek.
- Protect floodplains and wetlands, and restore them for improved hydrology, flood protection, aquifer recharge, and habitat functions.
- Protect upland habitats and enhance connections between upland and riparian areas.
- Maintain and enhance water quality and control erosion and sedimentation through the revegetation of disturbed sites and by placing limits on construction, impervious surfaces, and pollutant discharge in Resource Areas.
- Conserve scenic, recreational, and educational values of significant natural resources.
- Provide clear and objective standards and a discretionary review process, applicable to development in Resource Areas, in accordance with State Land Use Planning Goal 5.
- Allow and encourage habitat-friendly development, while minimizing the impact on fish and wildlife habitat functions and mitigating the loss of ecological functions and values.

Components of the NRO

The NRO has multiple mapped components that provide protection for those aquatic and terrestrial resources that have been identified during community and regional planning efforts between 1999 and 2020 as having regional and local significance. Specifically, the NRO components protect:

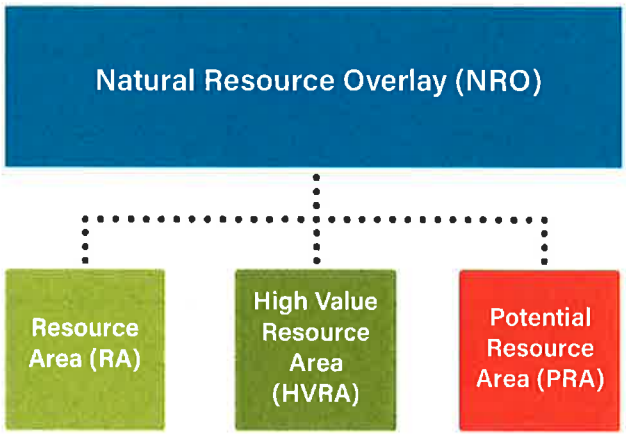
Aquatic (Waterway-Related) Resources:

- Streams and stream-adjacent corridors
- Wetlands and adjacent buffers
- Other regulated waters (such as ponds deeper than 6 feet) and adjacent buffers

Terrestrial (Upland-Related) Resources:

- Designated upland resources such as isolated forest groves in New Community Areas of Pleasant Valley and Springwater
- Publicly owned lands acquired specifically for natural resource conservation

The NRO is applied to each of the above-listed resources as follows:



Resource Area (RA)

Application of RA to Aquatic Resources:

As related to streams, wetlands, and other waters, the RA extends protections from the delineated edge of the protected feature landward and reflects an area of protection where limited development impacts can occur when mitigation is provided per GCDC Section 5.0711 or 5.0712. RA sizes vary, depending on stream size ("stream order"), and plan area, per the below table.

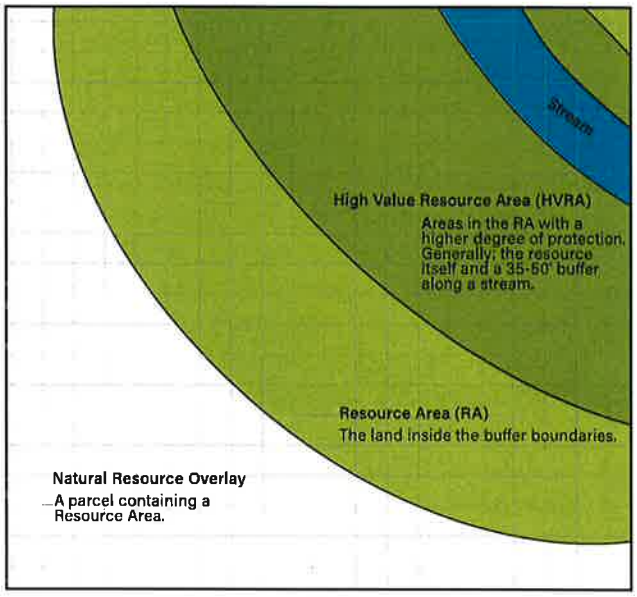
Regulated Water Feature		Resource Areas Type	Pleasant Valley Plan District, Springwater Plan District, Kelley Creek Headwaters	All other locations within the City of Gresham
Streams **Stream Orders 1 - 5** (Measured from centerline of stream)	1	RA	50 feet	50 feet
		HVRA	35 feet	35 feet
	2	RA	200 feet	100 feet
		HVRA	50 feet	50 feet
	3	RA	200 feet	100 feet
		HVRA	50 feet	50 feet
	4	RA	200 feet	100 feet
		HVRA	50 feet	50 feet
	5	RA	200 feet	125 feet
		HVRA	50 feet	50 feet
Wetlands (Measured from delineated edge)		RA	50 feet	50 feet
		HVRA	35 feet	35 feet
Other Waters (Measured from OHWM)		RA	50 feet	50 feet
		HVRA	35 feet	35 feet

Application of RA to Terrestrial Resources:

Upland RAs protections are established for:

- The full extent of protected trees groves identified by community stakeholder groups for both the Pleasant Valley Plan Area (during the 1999-2002 community planning process), and for the Springwater Community Area (during the 2001-2004 community planning process).
  - A Gresham web map available at **GreshamOregon.gov/Maps** details NRO uplands including such lands.
  - These uplands are protected as is and may not be field verified or corrected.
- The entirety of those taxlots purchased by City of Gresham, Metro, and/or other public conservation partners for the express purpose of securing the land for preservation of the land as natural area. In certain situations, lands are purchased by these public entities for a combination of natural resource preservation and for community benefits such as developed parks, education centers, or similar. RA is applied in this instance to that portion of the property purchased for the purpose of natural resource conservation.
  - A Gresham web map available at **GreshamOregon.gov/Maps** details NRO uplands parcels, the boundary is recorded in the City of Gresham's Greenspaces layer and coded as "Open Spaces" or "Conservation Areas" but excluding "Conservation Areas" categorized as "Stormwater Quality Facilities" including such lands. Verification of the boundaries of public land upland RA will match parcel boundaries as filed with Multnomah County. In the case of spliot parcels, the boundary is recorded in the City of Gresham's Greenspace layer and coded as "Open Spaces" or "Conservation Areas" except for "Conservation Areas" categorized as "Stormwater Quality Facilities".

The entirety of a parcel which contains a portion of RA is mapped as NRO. The below graphic shows the relationship of NRO, RA, and HVRA on a theoretical parcel.



High Value Resource Area (HVRA)

Application of HVRA to Aquatic Resources:

The HVRA is a protective buffer for the most impact-sensitive resources: streams, wetlands, other waters, and their immediately adjacent lands. HVRA protections are applied over the entirety of the aquatic resource itself and to the closest 35 feet of adjacent land. In most circumstances, only water-dependent impacts (culverts, outfalls, bridge footings) are allowed within the HVRA.

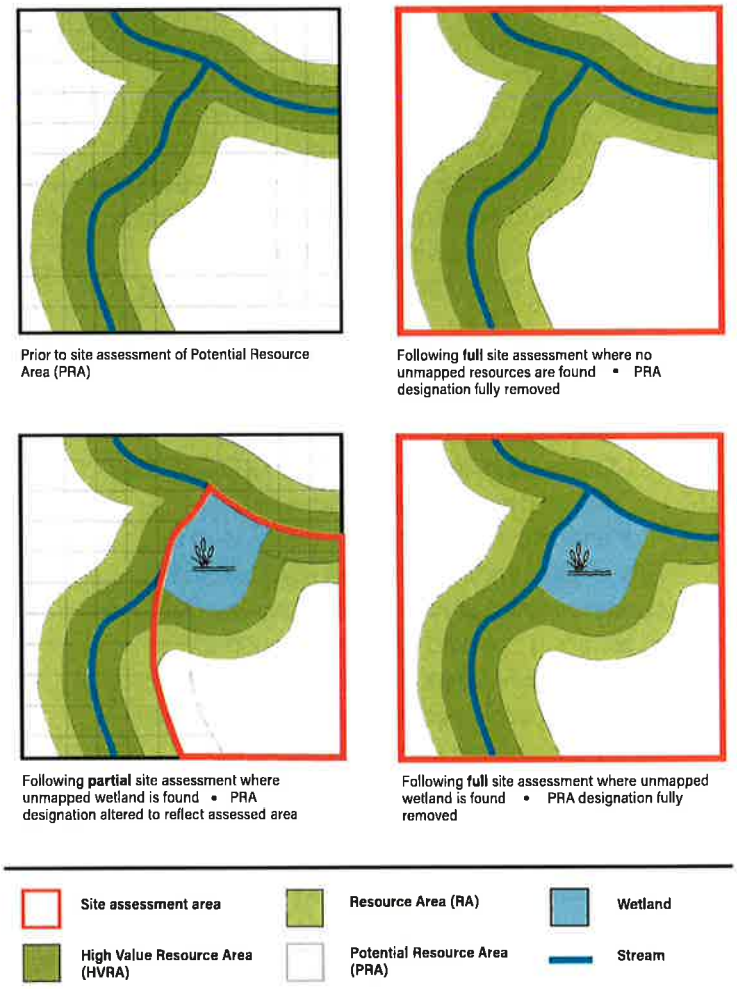
Application of HVRA to Terrestrial Resources:

In absence of aquatic resources, there are no HVRA protections applied to the NRO-protected terrestrial resources listed above.

Potential Resource Area (PRA)

Application of PRA to Aquatic Resources:
Potential Resource Areas are relevant only to aquatic resources, specifically wetlands. Areas were designated as PRAs based on a high probability of there being one or more unmapped wetlands, according to prior nearby wetland studies or recent observations. Current, legally established, existing uses within the PRA are allowed by city code to continue, however property owners need to:

- Ensure their legally established existing uses are not impacting wetland resources that may be under the jurisdiction of the Oregon Department of State Lands (DSL) or the US Army Corps of Engineers (USACE).
- Have a site assessment process completed and reviewed by the City's Natural Resources Program prior to submitting a land use application. The site assessment will consist of a wetland determination, and the findings will result in the removal of the PRA designation from those areas of the parcel reviewed during the site assessment in concert with any associated RA and HVRA updates. However, where the perimeter of such site evaluations do not coincide with a property line or regulated water feature they will be internally buffered by 50 feet and only the resulting areas will be removed from the PRA. If a wetland resource is found, the City will assess whether the wetland meets Metro Title 3 criteria. Those wetlands meeting Title 3 criteria (outlined in GCDC Section 5.0715(B)) will be added to the City's Title 3 wetland inventory and the NRO's RA and HVRA boundaries will be updated accordingly. The PRA designation will then be removed from the assessed portion of the site.



The PRA Site Assessment must be completed in advance of the land use process. Instructions and forms are available by contacting Gresham's Planner on Duty at at POD@GreshamOregon.gov.

NRO-Specific Overlay Field Measurement Process

General methods for locating overlays are described in Section 2.1. Those methods are appropriate for NRO overlays as well. Additionally, in the case of regulated water features (streams, wetlands, and other waters), field verification is a useful option, and may be necessary when proposing development within or near an RA or PRA. Field verification within the NRO involves measuring a buffer distance from a designated resource edge feature and marking the location on the ground. Field verification is not useful for protected uplands which are delineated in those input datasets referenced above in Section 2.

This method involves the following steps:

① *Identify regulated water features present on site*

All stream, wetlands, and other waters on a site should first be noted and compared against the inventory of aquatic resources included in the current NRO boundary and available in Gresham's mapping tool. In some cases, regulatory features have changed such that their location is no longer accurate or were not detected for inclusion in the inventory. In the event of a discrepancy between site assessment findings and the current city inventory of NRO-protected resources, a property owner can contact Gresham's Natural Resources Program to discuss the apparent discrepancy (503-618-2383), or they may need to hire a Natural Resource Professional to determine if the resources found meet the criteria for NRO-protected resources.

② *Determine designated resource edge feature*

Regulated water features, in addition to having specific definitions, also have specific rules about defining their boundaries. GCDC Table 5.0714-1 indicates the name of the delineated edge feature of a resource to be used. One may need to hire a natural resource professional to locate the boundary on a site.

Finding an Ordinary High Water Mark (OHWM)

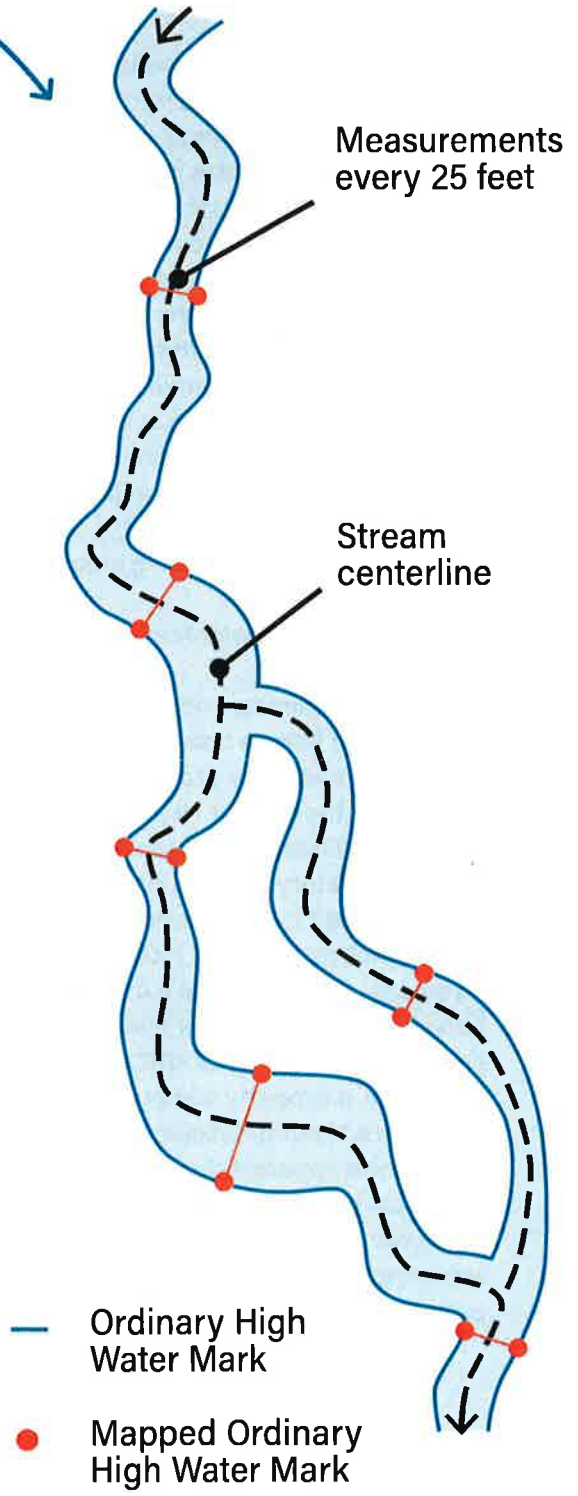
The OHWM is the line on a stream bank or pond shore that is made by water when it rises to its typical highest level each year. It is not the flood line.

The OHWM can usually be identified by the vegetation line or a physical line indicated by signs of active erosion or changes in soil characteristics along the streambank or pond shore. The vegetation line is the point on the bank below which no terrestrial vegetation grows as conditions are too frequently wet for these vegetation types to survive. Aquatic vegetation such as cattails, bulrush, or reed canarygrass may exist below the vegetation line.

Finding the Stream Centerline

The stream centerline is typically easy to locate in the field by first identifying the Ordinary High Water Mark (OHWM) on either side of the stream bank. This should be done outside of high water events that can obscure the OHWMs and make safe access for collecting field measurements a challenge.

A stream midpoint based on opposite banks' OHWMs should be taken every 25' along the relevant portion of stream reach, then connected with a line that follows the stream's alignment, including through any bends. The adjacent figure shows how the OHWMs along 125' of stream are used to establish a stream centerline along this reach of stream. In a braided stream, all braids that have independent OHWMs and are 25 feet or greater in length must be mapped individually using the above methodology. If a braid is less than 25 feet in length the outermost OHWMs of all associated braids are used to map the midpoint of the stream. In the situation that a stream transitions to an "other regulated water" or wetland and reemerges on the other side, the centerline should be extended through the midpoint of the delineated resource that interrupts the stream.



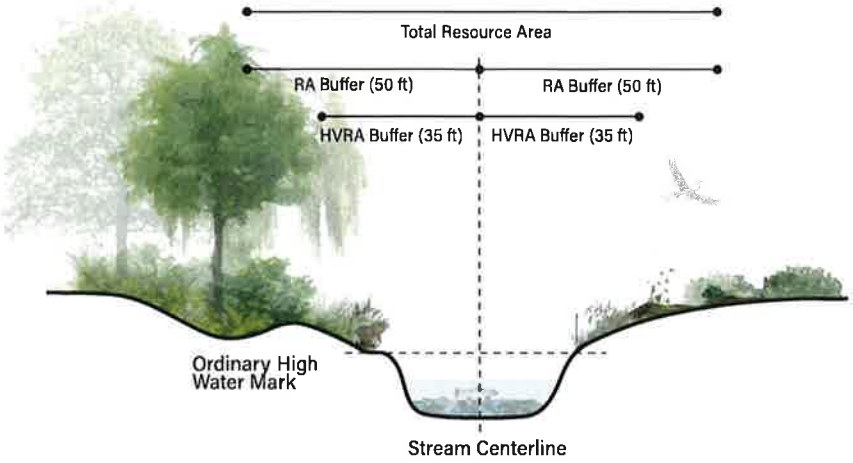
③ *Identify buffer distances*

The table on Page 24 identifies the appropriate RA and HVRA buffer distances for each regulated water feature. Depending on the water feature in question, you may also need to identify whether you are in the Pleasant Valley Plan District, Springwater Plan District, Kelley Creek Headwater Plan District, or in other location within the City of Gresham. These districts can be found in Gresham's mapping tool available at **GreshamOregon.gov/Maps.**

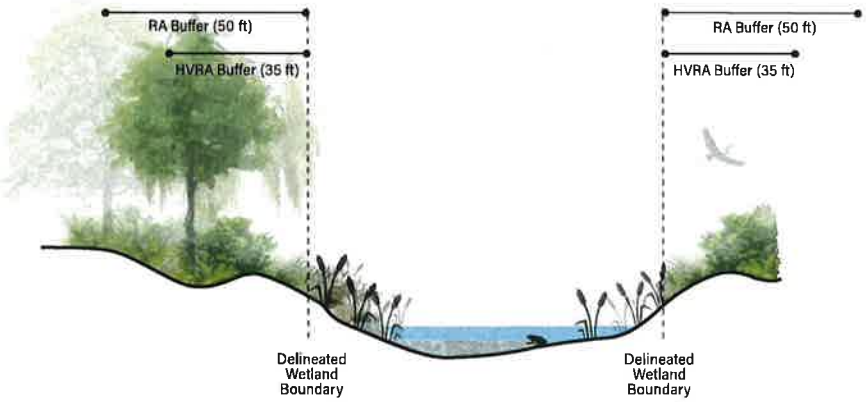
④ *Field measure buffer distance from jurisdictional boundary.*

Buffer distances are specified in horizontal feet, which can easily be measured on flat terrain. However, where slopes occur, measurements can get more complicated involving measuring multiple angles and distances and using trigonometry field locate the buffer's horizontal distance. Typically, you will need to field measure the buffer numerous times along the jurisdictional boundary.

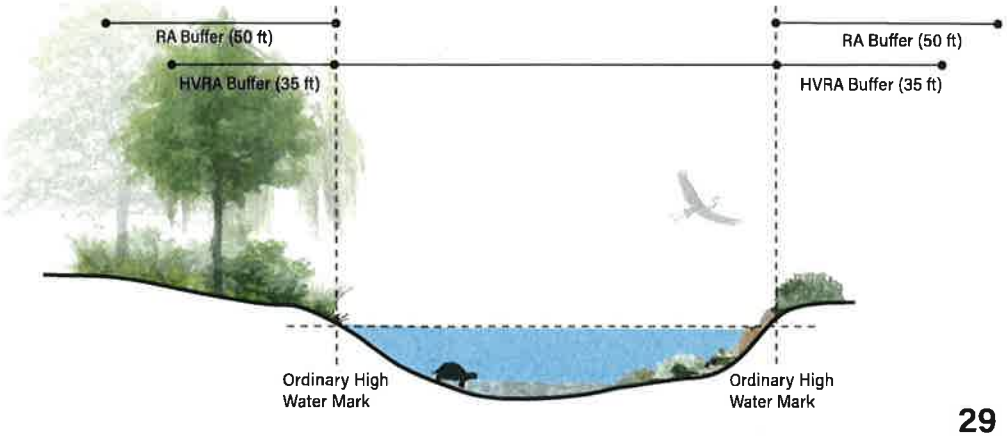
Measuring RA and HVRA from Stream Centerline



Measuring RA and HVRA from Wetland Delineated Boundaries



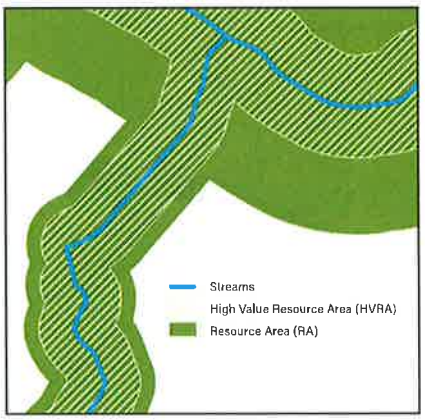
Measuring RA and HVRA from Other Waters' Top of Bank



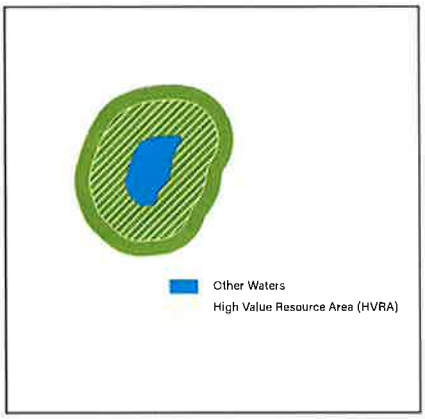
⑤ *Reassess overlay location after identifying all buffers*

Steps 1-4 must be repeated for RA and HVRA measurements for each regulated water feature found on a property. Since the RA of one feature may be within the HVRA of another (and therefor actually also in HVRA), you will need to remove or update field measurements that are superseded by other features. Additionally, in some cases in Pleasant Valley Plan District and the Springwater Plan District, protected Uplands may occur on private property, which while not buffered, are included in the RA.

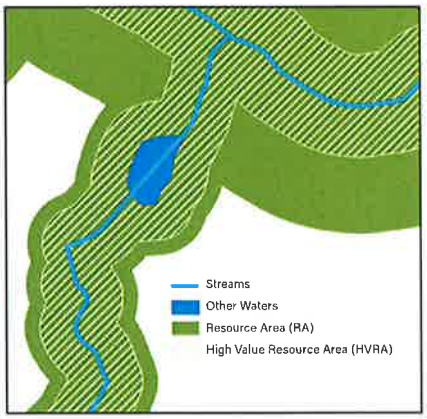
The below graphic shows that when multiple RAs and HVRAs intersect, they are combined.



Streams of different Strahler orders are buffered at different widths.



Other waters are buffered.



Resulting HVRA and RA buffers overlap each other and are merged accordingly.

NRO Map Administration and Corrections

RA, HVRA, and PRA Map Administration and Corrections are detailed in GCDC Section 5.0715 and additional relevant details are included below. RA and HVRA can be corrected by modifying certain input datasets and recompiling the NRO boundaries. This is required to account for overlapping RA and HVRA lands. These corrections are processed by the City as a standalone Type 1 permit or as part of an associated land use process. PRA overlay inputs do overlap but can be removed collectively and on a site-by-site basis without recompiling all PRA extents in concert, as outlined below.

Public RA

On a periodic basis, public taxlot data from Multnomah County, as maintained by Gresham GIS, will be reviewed for inclusion in the NRO RA. Public entities will be provided an opportunity to clarify the intent of property acquisitions which appear to be for "parks and open space" and not for active recreation to ensure RA regulations are applied accurately and with the knowledge of the agency. Public "parks and open space" lands already designated as Public RA can be removed or the boundaries altered provided documentation establishes the intent of acquisition and boundaries of the different property uses. To do so, an inventory of the status of such lands is maintained in the City's Greenspaces GIS dataset. Due to the potential for slight shifts in property lines over time, public "parks and open space" lands already protected within the NRO RA will be reviewed for minor geographic alignment issues with taxlot boundaries and updated accordingly. Removal of Public RA protections does not impact other mapped RAs (such as streams and wetlands) on any property.

Potential Wetlands

Potential wetlands include lands which have a high probability of including Title 3 wetlands but have not been field surveyed for wetlands. The lands form the basis of the Potential Resource Area (PRA) and include:

- Those portions of the East Buttes toe-of-slope (as represented by the breakline contour) that have hydric or partially hydric soils and have not been reviewed as part of a Local Wetland Inventory survey or are not subject to a wetland determination, submitted to the City for review within the last 5 years. These areas are indicated on GCDC Figure 5.0714-2.
- Lots shown on Gresham's Local Wetland Inventory survey as "potential wetland."
- General areas identified by Natural Resources staff and City Consultants as potential wetlands based on existing knowledge and remote sensing data.

Only the later can be modified over time and result in additions to PRA boundaries. Natural Resources staff and City Consultants have expertise in wetland determination and delineation which enables them to spot potential wetland characteristics including wetland hydrology and wetland vegetation from a distance as well as wetland soil indicators with onsite soil exploration. Potential wetland areas are recorded and included in periodic PRA boundary updates.

Addition of Regulated Wetlands

As required by Metro Urban Growth Management Plan Section 3.07.340, the City will amend the NRO wetland dataset and recompile the NRO's RA and HVRA to add a wetland and associated buffers when the City or County receives significant evidence that the wetland meets any one of the following criteria:

- The wetland is fed by surface flows, sheet flows or precipitation, and has evidence of flooding during the growing season, and has 60 percent or greater vegetated cover, and is over one-half acre in size; or
- The wetland qualifies as having "intact water quality function" under the 1996 Oregon Freshwater Wetland Assessment Methodology; or
- The wetland is in the Flood Management Area, and has evidence of flooding during the growing season, and is five acres or more in size, and has a restricted outlet or no outlet; or
- The wetland qualifies as having "intact hydrologic control function" under the 1996 Oregon Freshwater Wetland Assessment Methodology; or
- The wetland or a portion of the wetland is within a horizontal distance of less than one-fourth mile from a water body which meets the Department of Environmental Quality definition of "water quality limited" water body in OAR Chapter 340, Division 41.

Examples of significant evidence that a wetland exists that may meet the criteria above are a wetland assessment conducted using the 1996 Oregon Freshwater Wetland Assessment Methodology, or correspondence from the Department of State Lands that a wetland determination or delineation has been submitted or completed for property in the City or County.

Wetland Location Incorrectly Identified

Wetlands are included in the NRO wetland dataset from a variety of wetland source datasets and are outlined in GCDC Section 5.0714(A)(1)(a). These wetlands are included in Gresham's Title 3 wetland inventory and are buffered accordingly. Some inventoried wetlands have been field verified and some have not. Additionally, wetlands boundaries do change over time with altered wetland hydrology and other changes. Updating the wetland boundary is an option when an accurate wetland boundary has been delineated using methods currently accepted by the Oregon Department of State Lands and the U.S. Army Corps of Engineers, and concurrence has been received by Department of State Lands. Data shall be submitted to the city according to the most recent version of the Oregon Wetland Mapping Standard and OAR 141-090-0035 including a minimum required horizontal accuracy of 3 feet. Once submitted to the City it will be incorporated into the NRO wetland dataset. Wetland data within the delineation study area will replace existing data within this area and an updated NRO RA and HVRA will be created.

Title 3 Wetland Status Incorrectly Identified

Wetlands included in the NRO reflect Title 3 Wetlands per Metro Urban Growth Management Plan Section 3.07.340. The Title 3 status of wetlands may change over time and require correction. The criteria are listed above under "Addition of Regulated Wetlands".

Stream Location Incorrectly Identified

Inventoried streams are intended to map the centerline of jurisdictional streams. Streams can migrate over time and the centerline may become inaccurate. Section 2 in this manual describes the methods to field locate streams' OHWMs and resultant stream centerlines.

Documentation of the accurate stream location shall be submitted as two shapefiles: 1) a shapefile of point geometry indicating mapped ordinary high-water marks and 2) a shapefile of polyline geometry documenting the newly mapped stream centerline. Any sections of stream which are piped must be identified in the dataset as such. All field locations must be mapped to within 3ft horizontal accuracy and a narrative with photographic evidence shall be provided in a report. Natural Resources Staff from the City may need to field verify determinations. Proposed stream centerlines may be modified to align with topography, existing stormwater infrastructure, or other features at the discretion of the City.'

Other Regulated Waterbody Location Incorrectly Identified

Other regulated non-wetland waterbodies include ponds and lakes, including those created in-line with a stream. EGTM Section 2.5.2 describes the methods to field locate the OHWM. Like streams and wetlands, other regulated waterbodies may change location overtime or may have been excluded from the NRO other waters inventory and require correction. Documentation of the accurate other waters location shall be submitted as two shapefiles: 1) a shapefile of point geometry indicating mapped ordinary high-water marks and 2) a shapefile of polygon geometry documenting the corrected waterbody extent. Addition documentation and field visit may be requested.

PRA Requirements Satisfied

Upon satisfying the PRA site assessment process detailed in Section 2 of this manual, the City will update the PRA accordingly. Where the perimeter of such site evaluations does not coincide with a property line or regulated water feature they will be internally buffered by 50 feet and only the resulting areas will be removed from the PRA. The PRA site assessment must clearly indicate the extent of the PRA site assessment study area. If requested, please provide a shapefiles of survey data relied upon during the site assessment including the study area if it does not match parcel boundaries.

Is an Overlay Permit or Exemption Form Required?

Is an Overlay Permit or Exemption Form Required?

Floodplain Overlay (FO) Permit Process Details

FO Exempt Activities

Gresham's Floodplain Overlay (GCDC 5.0100) differs from Gresham's other Environmental Overlays in that there are no exemptions for development activities conducted within the boundary of the FO. The standards of GCDC 5.0100 apply to all Special Flood Hazard Areas (shown as 100-Year Flood Zones on Gresham Map), and applies to all flood-prone areas that have been identified by the City, as required by the Federal Emergency Management Agency (FEMA).

While there are no exemptions to the Floodplain Overlay standards, it is important to note that the definition of what constitutes "development" in the FO is different than it is for the HGRO or NRO. A narrower range of activities are regulated by the FO. Per GCDC Section 3.0120, for purposes of the FO, development is defined as:
Any man-made change to improved or unimproved real estate, including but not limited to buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations or storage of equipment or materials.

Under this definition, the FO does not regulate riparian restoration activities that do not include grading or large woody debris placement. Activities such as vegetation enhancement do not require a separate FO permit. Grading in the FO or seeking to anchor large woody debris or otherwise alter a watercourse within the FO would require an FO permit.

FO Permit Submittal Guidance

Any proposal for development within the FO must include documentation prepared by a registered civil engineer demonstrating to the satisfaction of the Floodplain Administrator that the development:

- Will not result in an increase in floodplain area on other properties;
- Will not reduce natural flood storage volumes; and
- Will not result in an increase in erosive velocity of the stream that may cause channel scouring or reduced slope stability downstream of the development. Stream velocity following development shall not exceed findings and recommendations of the stormwater master plan developed for the watershed relevant to the affected stream.

In flood-prone areas where elevation data is not available either through the Flood Insurance Study or FIRM, applications for permits shall be reviewed to assure that proposed construction will be reasonably safe from flooding. The test of reasonableness is a local judgement and includes use of historical data, high water marks, photographs of past flooding, where available.

Hillside and Geologic Risk Overlay (HGRO) Permit Process Details

HGRO Exempt Activities

If a project is located within the HGRO but meets the criteria for an exemption as described in GCDC Section 5.0205, a land use permit is not required.

To ensure a project is exempt, contact the City's Planner on Duty to discuss project specifics. For small projects this may be a simple e-mail exchange. The POD will need the parcel number and some general information about the proposed work and associated dimensions.

Planner on Duty
POD@GreshamOregon.gov
503-618-2780

Exemptions for HGRO Areas including HSS

Uses and activities meeting one or more of the following descriptions are exempt from the permit requirements of the HGRO standards. No Exemption Form is required in advance of these activities:

- A building permit for a phased development project for which the Applicant has previously met the application requirements, as long as the area of new construction was identified on the original permit and no new portion of the HGRO will be disturbed.
- Operation, maintenance or repair of existing improvements.
- Alteration or replacement of existing structures that do not alter building footprint.
- The trenchless subsurface installation of utilities (e.g., via boring, jacking, or microtunneling), provided there is no vegetation removal beyond the limits of this section, no earth movement, and no impacts to trees (e.g., damage to the critical root zone).
- The planting of native trees as designated and identified on the Gresham Native Plant List. See ETGM Appendix B for the Gresham Native Plant List.
- The planting, removal, or maintenance of Street, Parking Lot, or Buffer Trees as defined in GCDC Section 9.1012.
- The planting and maintenance of landscaped areas within an approved permanent disturbance area, including tree removal.
- Pruning and maintenance of trees which adheres to ANSI A300 pruning standards. ANSI A300 is a tree care industry standard of care. It was developed by Tree Care Industry Association and is maintained by consensus of various industry stakeholders. Part 1 details pruning standards. The standards are available for a fee at **TCIA.org**.
- Restoration work including stand management-related removal of no more than 3 trees when conducted as part of an annual restoration plan approved by the City.
- Fencing, excluding construction of walls.

Additional Exemptions for HGRO Areas other than Highly Sloped Subarea (HSS)

Except within the HSS, the following uses and activities are exempt from the permit requirements of the HGRO standards provided that in no case shall the activity result in the removal of any non-required trees over 6 inches DBH (see definition of "Required Tree" in GCDC Section 3.0103) outside of a permanent disturbance area or leave more than 500 square feet of ground exposed (devoid of stabilizing vegetation) between October 1 and May 1.

- One time excavation or filling of land (including temporary stockpiles) not exceeding 10 cubic yards per lot.
- One time installation of impervious surface not exceeding 1,000 square feet per site.
- Construction of retaining walls not exceeding 4 feet in height.
- Construction of ponds and in-ground swimming pools not exceeding 1.5 cubic yards.
- Any development that does not require a building permit except for development activities which exceed one or more of the thresholds in 1 through 4, above.
- Outdoor bike and pedestrian recreation facilities for public use, limited to accessways, trails, picnic areas, or interpretive and educational displays and overlooks that include benches and outdoor furniture.

Note: Meeting the GCDC Section 5.0205 HGRO exemption criteria for a particular activity does not exempt project work from needing to meet other GCDC standards.

HGRO Permit Submittal Guidance

Any proposal for development within the HGRO must include a Geotechnical Certification per GCDC Section 5.0207(C). This certification must be signed by a geotechnical engineer or certified engineering geologist on forms provided by the City. The certification shall be accompanied by any documentation the professional used to make their determination.

If an application is for an alternative review under GCDC Section 5.0212(B) or (C), then an Impact Evaluation and Alternatives Analysis will need to be submitted. The resulting report will need to meet GCDC Section 5.0212(A). If an application is for an alternative review per GCDC Section 5.0212(D), the application must include a Slope Analysis and Soils and Geology Report.

Natural Resource Overlay (NRO) Permit Process Details

NRO Exempt Activities

If a project is located within the NRO, but meets the criteria for an exemption as described in GCDC Section 5.0705 (A or B), a land use permit is not required, though **an NRO Exemption Form may needed, with UDP approval prior to activities taking place within the NRO**. (See below in Section 3 for a list of exempt activities needing advance authorization via an NRO Exemption Form).

To ensure a project is exempt, or to clarify whether an NRO Exemption Form will need City approval in advance of conducting proposed activities on a property mapped as NRO, contact the City's Planner on Duty to discuss project specifics. For small projects this may be a simple e-mail exchange. The POD will need the parcel number and general information about the proposed work, including project dimensions.

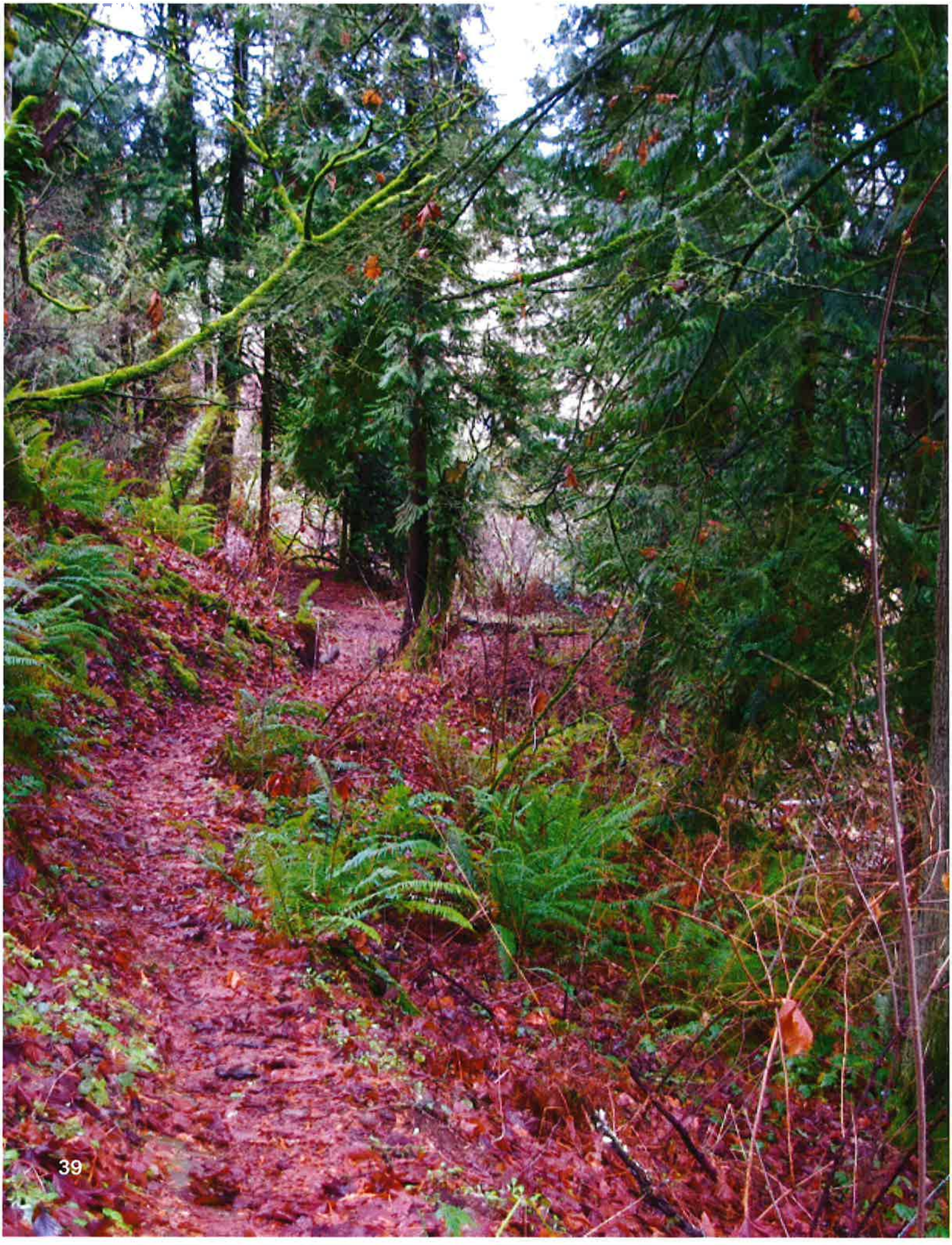
Planner on Duty
POD@GreshamOregon.gov
503-618-2780

Typical projects that may qualify for an exemption AND do not need an approved NRO Exemption Form include:

- Vegetation enhancement within the RA or HVRA that involves manual removal of non-native vegetation and protection and enhancement of native vegetation.
  - This does not include vegetation alterations exceeding 200 square feet of ground disturbance and/or removal of native species.
  - Manual removal does not include use of herbicides. Herbicide use in the RA and HVRA require advance review via the NRO Exemption Form Process (See ETGM Section 3).
- Projects involving routine maintenance and repair of existing legal development, including utility facilities, buildings, and landscaping within a permanent disturbance area, provided no increase in footprint within an RA or HVRA.
- Stabilizing an emergency situation in advance of obtaining the necessary permit(s).
- Project work that is far enough away from an RA that it will not impact the protected functions and resources within an RA.
- Installation of fencing (but not walls) that meets the Wildlife Friendly Fencing criteria provided in ETGM Section 8.
- Development within the boundaries of a Potential Resource Area review prepared in accordance with GCDC Section 5.0703(B), where the assessment shows that no RA is present on the site.
- Development within an RA that is completely separated by an improved right-of-way from the water feature which was the basis for the RA. This exemption only applies to RAs that are associated with a water feature (i.e., stream, wetland, or other waters)

See GCDC Section 5.0705 for the complete description of project types that may meet exemption requirements.

Note: Meeting the criteria of GCDC 5.0705 for exemption from needing a permit for a particular activity does not exempt other RA and HVRA area project work from needing to meet NRO or other GCDC standards.



NRO Exempt Activities Needing a NRO Exemption Form

In certain situations, the method(s) or timing selected for a proposed project can significantly influence whether the project activities will impact protected resources or functions within the RA or HVRA. In such cases, a written verification of exemption shall be obtained from the City prior to conducting exempt uses or activities. A completed NRO Exemption Form with a schematic showing location of the proposed work in relation to the RA, HVRA, or PRA on the site, a description of the work to be done, methods proposed to complete the work, and an anticipated schedule of the work shall be submitted to the City a minimum of seven business days prior to the proposed activity. City approval is required in advance of the activities commencing.

Within RA, HVRA, and PRA Areas

Per GCDC Section 5.0705 A, the following NRO exemptions are available for activities within the RA, HVRA, and PRA portions of the NRO, with advance city approval through an NRO Exemption Form:

- Development within the boundaries of a current PRA where an approved site assessment has been conducted and/or approved by Gresham's Natural Resources Program, and where the assessment shows that one or more RAs are present on the site, but where the proposed activity meets one or more of the exemptions of GCDC Section 5.0705A for uses or activities within or near an RA.
- New site improvements, disturbance or structures or other development that are more than 50 feet from an RA
- Removal of a 24" DBH or greater size tree within 50 feet of an RA. An Exemption From Tree Removal Permit will be required for any tree outside the RA. There is a limitation to how many trees can be removed in a 12-month period (see GCDC Section 9.1000). The Planner on Duty can assist with both exemptions.
- Restoration or mitigation activities that have been approved by the City.
- Removal of up to 6 invasive trees (per the Gresham Invasive Plant List) of 6" DBH or greater.
- The trenchless subsurface installation of new utilities (e.g., via microtunneling), provided there are no above-ground impacts or impacts to trees (e.g., damage to the critical root zone) within the RA.
- Projects with the sole purpose of restoring or enhancing wetlands, streams, or fish and wildlife habitat areas, provided that the project is part of an approved local, state, or federal restoration or enhancement plan.
- Development within an RA that is completely separated by an improved right-of-way from the water feature(s) which was the basis for the RA. This exemption only applies to RAs that are associated with a water feature (i.e., stream, wetland or other waters). It does not apply to upland habitat areas.

Within RA and PRAs Only

Per GCDC Section 5.0705 B, except within the HVRA, the following NRO exemptions are available for activities within the NRO, with advance city approval through an NRO Exemption Form:

- The alteration or replacement of existing structures with up to 500 square feet of intrusion in the RA or PRA, provided the intrusion is no closer to the HVRA than the pre-existing structure or improvement.
- Minor encroachments into the RA or PRA not to exceed 120 sq. ft. of impervious surface such as accessory buildings, eave overhangs, exterior building improvements required to meet access and exiting requirements, or other similar features.
- Facilities that infiltrate stormwater onsite, including the associated piping so long as the forest canopy and the areas within the Critical Root Zones of the trees above 6" DBH are not disturbed. Such facilities may include, but are not limited to, vegetated swales, rain gardens, vegetated filter strip, and vegetated infiltration basins.
- Temporary and minor clearing not to exceed 200 square feet for the purpose of site investigations and pits for preparing soil profiles, provided that such areas are restored to their original condition when the investigation is complete.
- Low-impact outdoor recreation facilities for public use, including, but not limited to, multi-use paths, access ways, trails, picnic areas, or interpretive and educational displays and overlooks that may include benches and outdoor furniture, provided that the facility meets the following requirements:
  - It contains less than 500 sq. ft. of new impervious surface. This area represents the total cumulative amount of new impervious surfaces that shall be allowed on a site under this exemption.
  - Any trails shall be constructed using non-hazardous, pervious materials, with a maximum width of four feet.
  - Trees 24-inch DBH or larger shall not be removed and their critical root zones shall be protected.
- Utility service using a single utility pole or where no more than 100 sq. ft. of ground surface is disturbed outside of the top of bank of water bodies and where the disturbed area is restored to the pre-construction conditions. This area represents the total amount of disturbance area that shall be allowed for a utility project under this exemption (regardless of the number of parcels).

The NRO Exemption Form may be found at UDP's website containing Planning Handouts and Forms, at **GreshamOregon.gov/Applications-and-Forms**. There is no fee associated with submitting an NRO Exemption Form.

NRO Permit Submittal Guidance

Any proposal for development within the NRO must include a Construction Management Plan. If any disturbance is proposed in the RA, a tree survey will be required as will a mitigation plan. See ETGM Section 5 for mitigation plan specifics. See Section 7 for tree survey specifics.

Assessing Impact Area for HGRO Tree Removals

Tree replacement standards for the HGRO have been set by GCDC Section 5.0208. Tree removal within the HGRO is equated to an "impact area" by measuring the area of canopy loss associated with the tree removal. Canopy area of the dripline (for trees still standing), or the Critical Root Zone (for trees removed prior to land use permitting process) will be used to calculate the impact area that will be applied to the Payment-in-Lieu Calculator. Any replacement tree canopy area achieved on site will be subtracted from the canopy loss calculation.

Example, a 24" tree with a 25' diameter canopy is removed from a Project Area outside of a Permanent Disturbance Area. Given the proximity of a new habitat structure being built, there is sufficient space for one replacement tree to be planted. The canopy loss area rounds to 491 square feet. The replacement tree has a 4' diameter canopy. The canopy replacement of the replacement tree rounds to 13 square feet. The overall canopy loss is 478 square feet. At $2.15 per

Assessing Impact Area for NRO Mitigation

Impacts within Resource Areas and High Value Resource Areas are calculated under the same formula:

IMPACT AREA x 2 = MITIGATION AREA

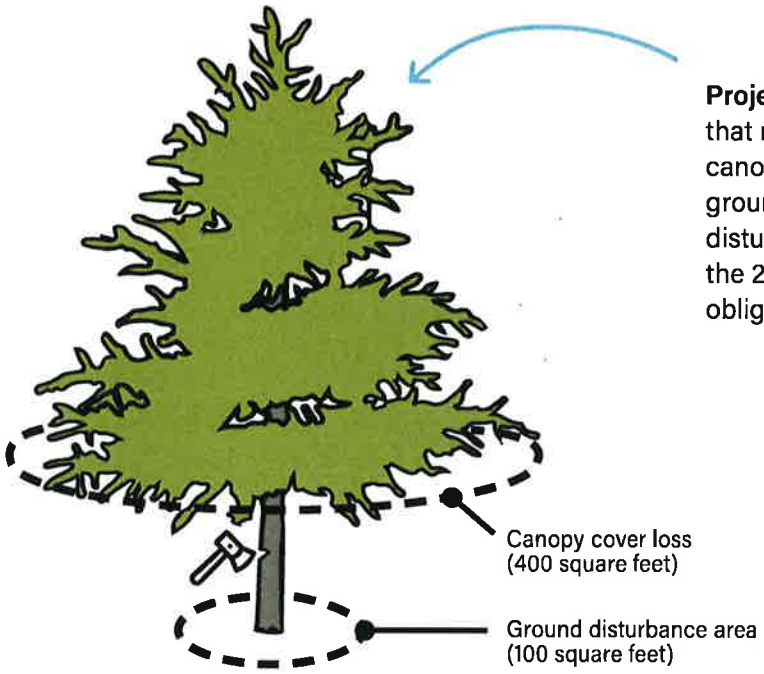
Assessing Impact Area

Impact area is the permanent ground disturbance area and/or canopy cover loss area. Disturbance area calculations need to reflect impacts to areas on the ground as well as loss of overhead canopy. Ground disturbance and canopy area disturbance areas are added together, then overlapping areas are subtracted so that any disturbance area on a proposed site plan will be counted only once, either as ground disturbance or canopy area removed.

Assessing Mitigation Area

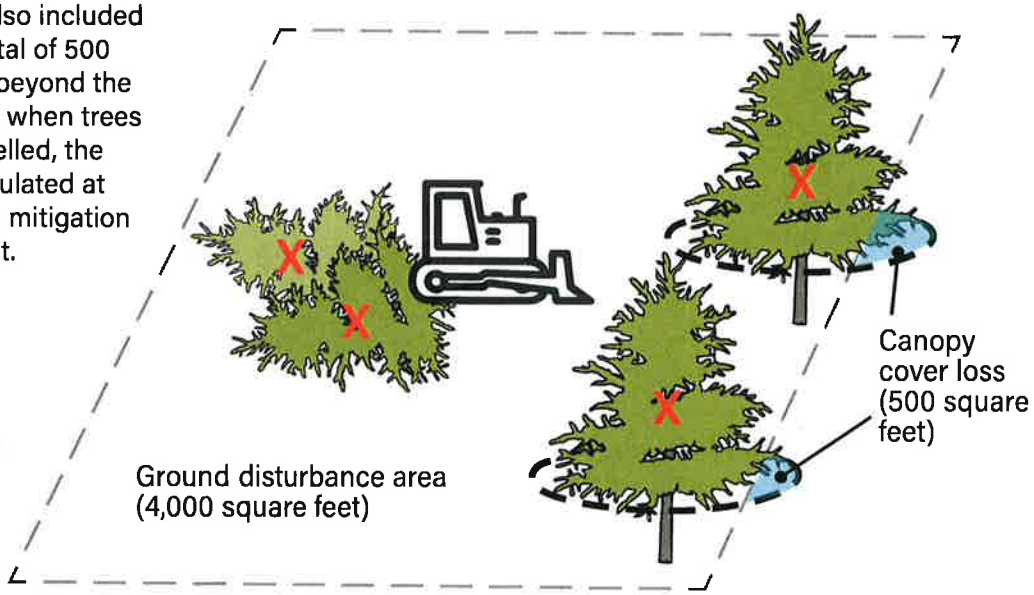
Once the disturbance impact area is calculated, a mitigation area is calculated. Per GCDC Section 5.0711, mitigation is assessed at a ratio of 2:1, meaning for every square foot of disturbance, two square feet of mitigation will be required.

Mitigation Examples



Project A involves removing a tree that results in 400 square feet of canopy cover removed and 100 feet of ground disturbance under the tree, the disturbance area is 400 square feet. Using the 2:1 mitigation ratio, the mitigation obligation that is 800 square feet.

Project B involves grading 4000 square feet and removing multiple trees. Canopy cover loss that extends beyond the 4000 square foot grading limit is also included in the project. If there is a total of 500 square feet of canopy cover beyond the grading area that is removed when trees within the grading area are felled, the total disturbance area is calculated at 4500 square feet, and the 2:1 mitigation obligation is 9000 square feet.



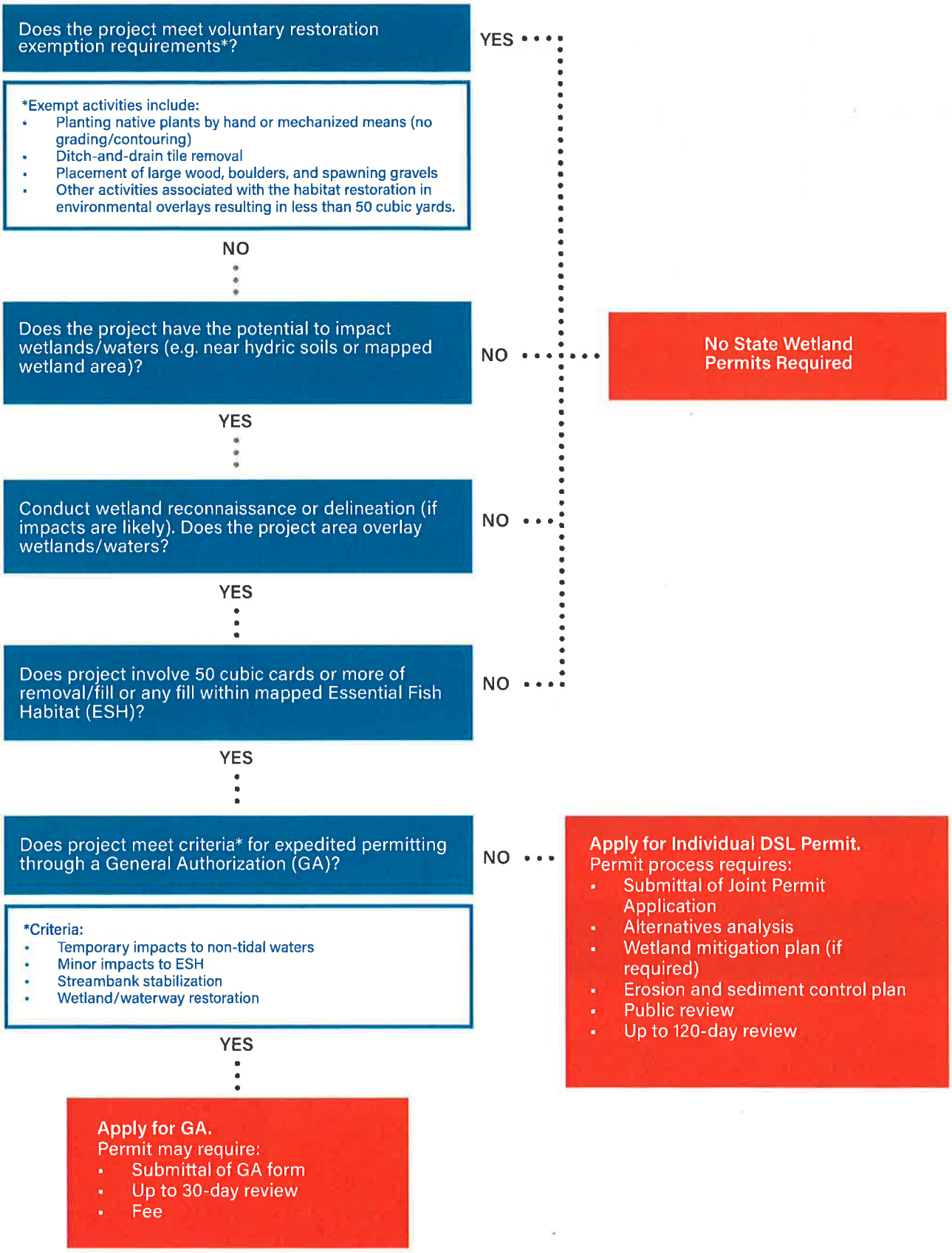
Coordinating with State and Federal Permitting Requirements

Oregon Department of State Lands Coordination

Wetlands and streams considered "Waters of the State" are regulated by the Oregon Removal-Fill Act, which is administered by the Oregon Department of State Lands (DSL). DSL generally regulates all wetlands unless they are artificially created from uplands and under one acre in area. They also regulate most waterways. The following flow chart identifies the general questions a property owner might walk through to understand whether they might need a Removal-Fill Permit permit from DSL. It is provided not as an authoritative guide to state permitting requirements, rather to provide property owners with an idea of what type of project impacts will trigger the need for DSL involvement. This should be used to inform a conversation with DSL staff within their Waterways and Wetlands Program. After reviewing the possible Removal-Fill permit triggers, property owners should reach out at the earliest stages of project planning to the Waterways and Wetlands staff at DSL to discuss their proposed project and gain a better understanding of state permit needs. A directory of DSL Waterways and Wetlands staff is available at **Oregon.gov/dsl/WW/Pages/WWStaff.aspx.**

Note: Certain voluntary habitat restoration activities conducted in waters of the state are exempt from state permit requirements. Exemptions depend on project-specific circumstances and may require the applicant to notify the DSL prior to commencing project activities. Exemptions from state permits are not necessarily correlated with exemptions from Gresham overlay code requirements.

DSL Permitting Flowchart

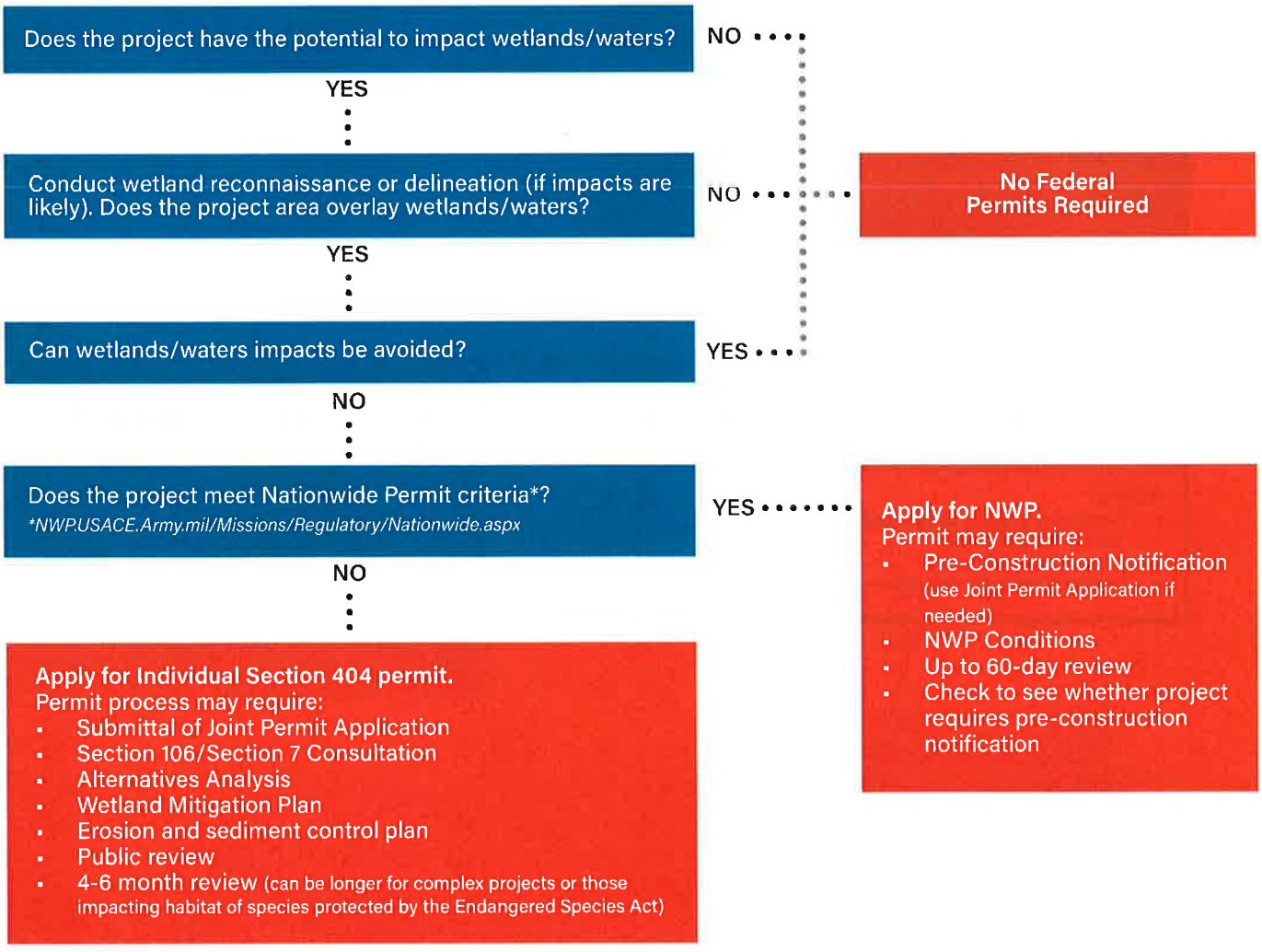


US Army Corps Engineers Coordination

Removal-Fill activities in wetlands and waterways are often regulated at the federal level by the US Army Corps of Engineers (USACE) under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act.

In general, most wetlands and waterways are considered to be "Waters of the US" (meaning they are under the jurisdiction of USACE), with the exception of small, hydrologically-isolated wetlands and ephemeral drainages. The following flow chart identifies the general questions a property owner might walk through to understand whether they might need a permit from USACE, or whether an advance letter of notice must be provided for small impact projects. The flow chart is provided not as an authoritative guide to federal permitting requirements, rather to provide property owners with an idea of what type of project impacts will trigger the need for USACE involvement. This should be used to inform a conversation with USACE staff within the Portland District's Regulatory Program Office. After reviewing the possible permit triggers, property owners or their natural resources consultant should reach out at the earliest stages of project planning to USACE staff, to gain a better understanding of federal permit needs. A directory of Regulatory Program staff at USACE is available at **NWP.USACE.Army.mil/Missions/Regulatory/Contact.aspx.**

USACE Permitting Flowchart



Additional federal regulations may apply if a USACE permit is required. Those include:

Federal Regulation	Regulatory Agency	Typical Process
Section 401 of the Clean Water Act	Oregon Department of Environmental Quality (DEQ)	Projects that could affect waters of the state require 401 Water Quality (WQ) Certification by the DEQ. Contact the DEQ 401 WQ Certification Coordinator for permitting guidance, particularly if a project would introduce impervious surfaces, including gravel fill.
Section 7 of the Endangered Species Act (ESA)	National Marine Fisheries Service (NMFS)	The USACE is required to consult with NMFS if project activities may result in impacts to species listed under the ESA. Johnson and Kelley Creeks are listed as Critical Habitat under the federal ESA, so projects impacting these waterways (and sometimes, their tributaries) may require additional federal agency involvement.
Section 106 of the National Historic Preservation Act (NHPA)	Oregon State Historic Preservation Office (SHPO)	The USACE is required to consider effects to cultural resources before federal approval is issued. Most areas near waters are considered to have a high potential for cultural resources. If a project involves excavation or alteration of above-ground structures over 50 years old, a cultural resource survey may be required.
National Flood Insurance Program (44 CFR Parts 59, 60, 65, and 70)	Federal Emergency Management Agency	Projects proposing changes to the regulated floodplain or floodway will need to be reviewed by FEMA in advance of construction. Gresham's Floodplain Administrator should review materials in advance of submitting materials to FEMA. The Floodplain Administrator's review will include the necessary ESA review to ensure applicants have assessed impacts of the proposed project on critical habitat.
National Pollutant Discharge and Elimination System	DEQ	Projects that would result in >1 acre of land disturbance require a Construction Stormwater Permit (1200-C) from the DEQ. This requires preparation of an erosion and sediment control plan and payment of fees.

Prior to Gresham's issuance of a land use permit for development within the NRO, an applicant shall provide evidence to the City that all necessary permits have been obtained from other federal, state, and local government agencies involved in regulating protected jurisdictional streams, wetlands, and other regulated waters.

Permit Submittal Requirements and Process

Permit Submittal Requirements and Process

Getting Started

The development planning application process begins when an applicant contacts Gresham's Planner on Duty (POD) in the Urban Design and Planning Department. Most answers from the POD will be site-specific, so applicants should initiate these conversations knowing the specific address or state ID of the parcel(s) they wish to discuss. They should also have a general idea of proposed project impacts they may wish to discuss. A site schematic of any proposed impacts, including an estimate of dimensions, is helpful in the initial conversation.

Planner on Duty
POD@GreshamOregon.gov
503-618-2780

To ensure a smoother permitting process, applicants are strongly advised to:

- Contact the POD at the earliest stage of project planning
- When considering development within an overlay, work with the site's features and in consideration of the additional regulatory nature of the overlays. Endeavor to understand a site's environmental constraints in advance of envisioning a development project, rather than investing in a design and only later assessing what impacts it will have on site resources. Avoiding impacts or at least understanding the implications of impacts is key to minimizing surprises, project delays, higher project costs, and additional permit requirements.
- When completing permit applications, provide ALL of the detailed information listed in the relevant code and in this manual. If an applicant is unsure how to interpret any code or manual content, they are encouraged to seek clarification from the POD or their assigned Planner.

General Permit Submittal Requirements

A Development Permit Application and associated Narrative Form(s) are required to be submitted with each of the overlay-specific land use permits discussed below. A land use permit application will not be considered complete until the required forms, fees, and all supporting materials are submitted to UDP. The applicant shall submit an electronic copy of all required documents at the time of application submittal. Instructions for electronic submittal can be found on the UDP website at **GreshamOregon.gov/Urban-Design-and-Planning**.

The following application materials are needed when submitting for permits under the Environmental Overlay codes. Ensure each of these below-listed plan items are complete to minimize the chance for permit processing delays.

Multiple plan types may be incorporated on the same sheet only where clarity is not affected.

Existing Conditions Map

An existing conditions map is an accurate, scaled drawing or map of a property that shows its size and shape, as well as the size, shape, and location of human-altered and natural features (like buildings, driveways, and trees) on the property. In addition, include:

- Any existing disturbance area (like adjacent streets, utilities, culverts, stormwater management facilities, or bridges)
- As applicable, location of regulated overlays as found through Gresham's online mapping services at **GreshamOregon.gov/maps**, including:
  - Regulated floodplain and floodway areas. Property owners with a stream lacking a regulated floodplain should contact the Planner on Duty to inquire if their parcel is within a listed "flood-prone" area. See ETGM Section 2 for additional discussion on flood prone areas.
  - Hillside and Geologic Risk Overlay, including any HSS subarea present on the parcel(s).
  - Natural Resource Overlay features, including Resource Areas, High Value Resource Areas, Potential Resource Areas, and mapped streams, wetlands, and/or other waters.
- Topography shown by contour lines.
  a. 2-foot contour lines should be used for areas with slopes 15% or less.
  b. 10-foot contour lines should be used for areas with slopes over 15%.

Example Existing Conditions Maps can be found in Appendix D of this manual.

Proposed Site Plan

The proposed site plan will contain much of the information included in the existing conditions map for a project site. In addition to what already exists on the site, the proposed site plan will include the physical changes proposed for the site. The proposed site plan will therefore show where on the property the temporary or permanent disturbance areas will be, including building footprints, site improvements, utilities, grading, and landscaping. If applicable, it will also show the proposed lot lines.

Note: Applicants can consult with the City of Gresham's Planner on Duty (POD) to ask questions about what can be done on a site in advance of incurring costs related to developing a proposed site plan. The preliminary concept brought to the POD should have enough information to help City staff understand the scope of a project. The POD will involve other City staff as necessary to assist an applicant in understanding project implications of various resource features, and will help identify codes, requirements, and processes that could impact a project.

Example Proposed Site Plans can be found in Appendix D of this manual.

Construction Management Plan

A construction management plan shows the overall planning, coordination, and control of a construction site and construction site activities from start to finish. Construction management plans ensure that trees, vegetation, and other natural resources remain protected and are not damaged during construction. A basic Construction Management Plan is required when disturbance is proposed in the HGRO (GCDC Section 5.0207 (B)) or the NRO (GCDC Section 5.0707(C)). **Within the NRO, if there is any disturbance (temporary or permanent) proposed for inside the Resource Area, a more detailed Construction Management Plan will be required (GCDC 5.0707(D)).**

Construction Management Plan - Basic

Per the code sections cited above, to ensure there is no disturbance to the site's vegetated areas, the following information will be included:

- Location of site access and egress that construction equipment will use.
- Equipment and material staging and stockpile areas.
- Erosion and sediment control measures in accordance with the City of Gresham "Erosion Prevention and Sediment Control Manual" appendix of the City of Gresham Stormwater Management Manual.
- Critical Root Zone of all trees to be preserved within 50 feet of the disturbance (See ETGM Section 6 for more information on delineating a Critical Root Zone).
- Measures to protect trees and other vegetation located within the RA and outside of a proposed disturbance area. Tree protection measures are discussed more fully in ETGM Section 7.

Example Basic Construction Management Plans can be found in Appendix D of this manual.

Construction Management Plan - Detailed

If there will be any disturbance within the site's Resource Area, additional detail will need to be added to the Basic Construction Management Plan detailed above. Per GCDC Sections 5.0207 and 5.0707(D), applicants will need to include a narrative explanation and materials necessary to demonstrate how the project meets the standards of GCDC 5.0210-5.0212 (HGRO) and 5.0710 or 5.0711 (NRO). Detailed Construction Management Plans need to contain all items listed under the above "Construction Management Plan – Basic" section, as well as the following:

- A grading plan showing any proposed alteration of the ground.
- An outline of the disturbance area showing the vegetation to be removed.
- For trees on the property, the location, diameter at breast height (DBH), and species of tree is required for any tree greater than six inches (DBH) located within the disturbance area and any tree greater than 24 inches (DBH) located within 50 feet of the disturbance area.
- For tree removal on the basis that the tree(s) is an invasive species or a dangerous tree, additional information such as an arborist report and supporting photographs will be required.
- A tree protection plan that indicates areas that will be prominently marked or barricaded to protect trees, individual tree protection measures, proactive pruning areas, and methods to ensure traffic, parking, grading, material storage, and dumping of chemicals or other materials will be prevented. Tree protection measures are discussed more fully in ETGM Section 7.

Example Detailed Construction Management Plans can be found in Appendix D of this manual.

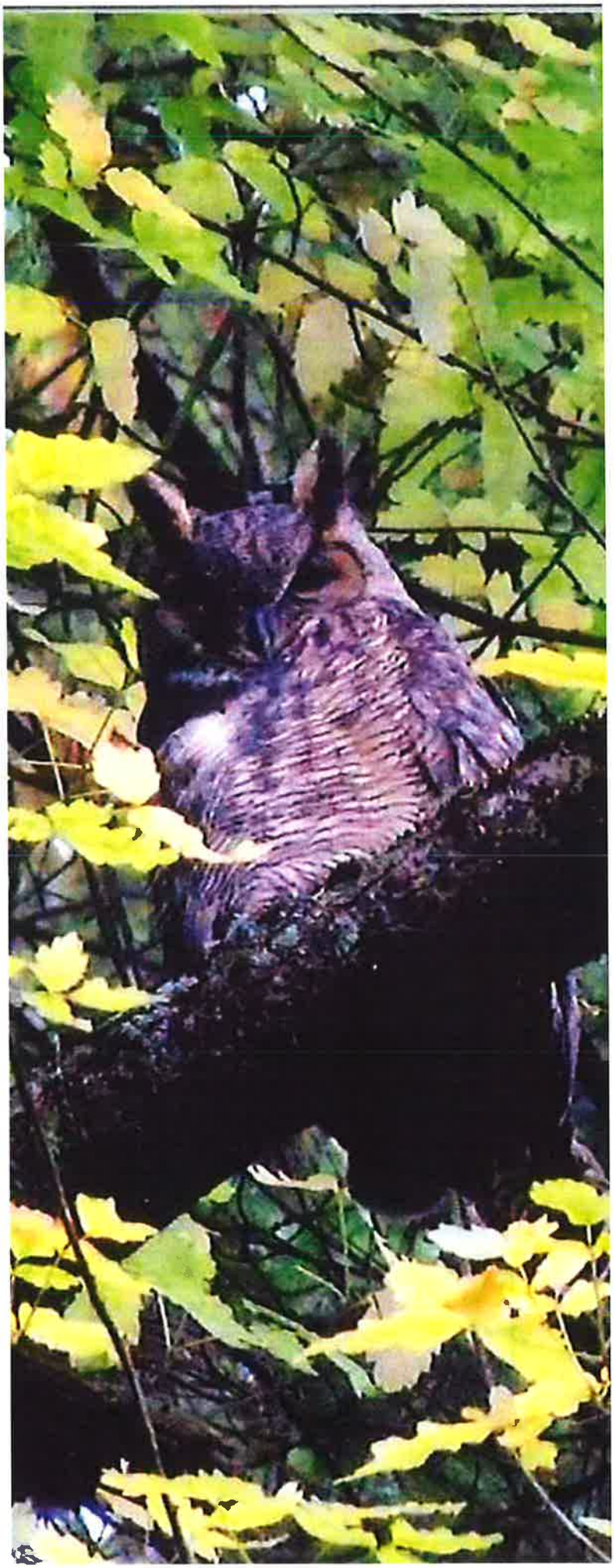
Mitigation and Restoration Plan Elements

Mitigation for impacts to the HGRO/HSS and the RA/HVRA is required. See Section 5 of this manual for mitigation plan information. There are two pathways for mitigation:

- A Clear and Objective (Type I) pathway for HGRO or NRO mitigation that follows this Basic Mitigation Plan pathway.
- An Alternative Review, discretionary (Type II or III) pathway for NRO mitigation that follows the Detailed Mitigation Plan pathway.

Within those ETGM sections, applicants will find the detailed information on developing a mitigation plan, including details on mitigation criteria such as plant location, spacing, species, and size at time of planting, and a plan for maintenance and monitoring.

> Example Detailed Construction Management Plans can be found in Appendix D of this manual.



Permit Review Process

Overlay applications may be stand-alone or processed with other applications. When applications are being processed concurrently, the review will be conducted under the process for the highest numbered procedure, as listed in the below table.

Permit Type	Description
Type I	▪ Used when there are clear and objective standards and criteria that do not require interpretation or the exercise of policy or legal judgment in their application ▪ No public notice, Hearing, or right of appeal ▪ Decisions expire after 1 year if they are not acted upon
Type II	▪ Used for development which would be Type II reviews if they were outside the Environmental Overlays ▪ Also used for Alternative Reviews *(when applicants cannot or chose not to comply with clear and objective standards, they can apply for alternative review and show they can meet discretionary standards)* ▪ Used when the standards and criteria require limited discretion or legal judgment in their application ▪ Public notice, but no Hearing and the public has a right of appeal ▪ Decisions expire after 1 year if they are not acted upon or a formal extension is not granted
Type III	▪ Used for review of permits for Planned Development within the Overlays or applications for Major Variances (see below) ▪ Used when the standards and criteria require discretion or legal judgment in their application ▪ Public notice and decisions are made either at or after a public hearing by the Hearings Officer, Design Commission, or Planning Commission ▪ Decisions expire after 1 year if they are not acted unless a formal extension is granted
Variances	▪ Used when an applicant wishes to vary from a quantitative standard by 20% or less they need to meet the standards of GCDC Section 10.1510 (for projects with HGRO or NRO) or GCDC Section 10.1511 for projects with FO ▪ Used if an applicant wishes to vary from a quantitative standard by more than 20% or wishes to vary a qualitative standard need to meet the standards of GCDC Section 10.1510 and 10.1530

Pre-Application Process

Certain projects will require a pre-application conference to acquaint the city and involved parties with a potential application, and to acquaint the applicant with City Code, Gresham's Comprehensive Plan, and other requirements. A pre-application conference is informational only. It is not an approval of a proposal or an in-depth review of project components.

A Pre-Application (Pre-App) Conference is required for Type II reviews within the NRO and is recommended for any other Type II permit in an Overlay. The purpose of the Pre-App is to discuss the proposal, the applicable approval criteria, and the application requirements. **There is a $1509 fee for a mandatory pre-app and $537 fee for a voluntary preapplication conference.** Following a mandatory Pre-Application Conference, the applicant will need to complete an Early Neighborhood Meeting (GCDC Section 11.0800).

Following the Pre-App (and, if appropriate, the Early Neighborhood Meeting), the applicant files a complete application with UDP using the Land Use Application form available at:

GreshamOregon.gov/ Applications-and-Forms

Restoration and Mitigation

Restoration and Mitigation

The following section should be used for:

- Restoration (NRO) and stabilization (HGRO) of temporary disturbance areas
- Developing a voluntary riparian restoration plan for City consideration by means of an NRO Exemption Form
- Basic mitigation planning for NRO impacts for applicants using a Clear and Objective path
- Detailed mitigation planning for NRO impacts for applicants using a discretionary (Alternative Review) path.

Restoration

Voluntary Improvements

City approval in advance of voluntary riparian restoration activities that involve:

- Use of herbicides or ground disturbing equipment (i.e. larger than a standard lawn mower)
- Ground disturbance of greater than 200 square feet
- Removal of trees over 6" DBH (including dangerous trees and invasive trees)
- Activities that extend on to adjacent City-owned land

Note: It should not be assumed that adjacent public open space is owned by Gresham. Public lands may be owned by Metro, or may be co-owned by the City and another resource conservation partner. In these instances, Metro or any other land owners would need to approve of any voluntary restoration work proposed through their own agency processes.

City review and approval in advance of these activities is not intended to be a roadblock, but rather is intended to increase the likelihood of successful restoration, and decrease the likelihood of unintended consequences. In review of NRO Exemption Forms submitted for Voluntary Restoration, staff will be reviewing to assist property owners in understanding and including in their plans:

- City, state, or federal limits on restoration activities in sensitive areas.
- Possible impacts to protected species and the related need for Best Management Practices.
- Coordination with any adjacent or overlapping land or resource management efforts.
- Site constraints such as existing utility easements
- Suitability of any proposed plant palette, based on staff's knowledge of general plant suitability for the site conditions and current species health considerations. to increase the likelihood of successful restoration efforts.

The NRO Exemption Form should be submitted in conjunction with a simple site plan that highlights:

- Site needs as identified by the owner
- Dangerous trees
- Invasive trees (per Gresham's Invasive Plant List, found in ETGM Appendix C)
- Slope or bank stabilization needs (note any fissures found near root plates or on slopes)
- Degree of current stream shade when a stream feature is present
- General notations on vegetation conversion needs (where invasives will be removed and replaced with natives)
- Native and invasive wildlife use of the site, as known to the owner

Voluntary restoration plans should be focused not on extending landscaped features into natural areas but rather into increasing the ecological integrity of the site, reducing encroachment of invasive monoculture plant species (and reducing ongoing maintenance needs related to those monocultures), and achieving over time a more natural, self-regulating system that is integrated ecologically with Gresham's native flora and fauna.

Restoring and Stabilizing Temporary Disturbance Areas

Areas disturbed during construction or site investigations, and that do not contain permanent development, will be restored with native vegetation comprised of species found on the Gresham Native Tree List (ETGM Appendix B) and the Portland Plant List (2016 version, **Portland.gov/BPS/Environ-Planning/Portland-Plant-List**).

Restoration (NRO) and stabilization (HGRO) activities should be implemented as soon as after the disturbance is completed as is possible, considering the season and associated practicalities of plant survival. Activities will be planned to ensure temporary disturbance areas involving exposed soil areas of greater than 500 square feet are stabilized prior to the wet weather window of October 1 to May 1.

It is recommended that when stabilizing or restoring temporary disturbance areas within close proximity of habitable structures that the following Fire Defensible Spaces considerations are followed:

Within 10 feet of an existing or proposed structure

Stabilization measures can include gravel; erosion control fabric; and/or maintained turfgrass or other low-growing, fire resistant herbaceous cover (see Appendix B for Fire Defensible Spaces species list). In keeping with Fire Defensible Spaces guidance (see Section 6 of this manual for more detail), the City discourages planting trees or shrubs within 10 feet of an existing structure.

10 feet to 30 feet from an existing structure

When this area is to be stabilized or restored plants can include low-density, fire-resistant, deciduous shrubs and herbaceous cover. Groupings of shrubs may be planted so that the combined canopy of a shrub grouping is a minimum of 10 feet from other groupings and structures.

Within 50 feet of an abutting private property

Shaded fuel break plantings of deciduous species can reduce the risk of wildfire spread between properties. Vegetation types should be chosen in part based on Fire Defensible Spaces considerations as shown in Section 7.5 of this manual. Preference should be given to native forbs, and deciduous tree and shrub species as opposed to conifer species such as arborvitae. Additional protective measures should be observed in areas with slopes greater than 15%. In these situations, the shaded fuel break zone of deciduous tree and shrub species should be expanded where possible to a minimum:

- Within 100' downslope of private property
- Within 60' upslope of private properties

Mitigation Plan (Basic)

This section provides an overview of the required elements of a basic mitigation plan to be submitted to the City per GCDC Sections 5.0207 and 5.0711. If submitting a mitigation plan for a Type I permit, all relevant mitigation guidance is provided in this section. If submitting a mitigation plan for a Type II or III permit, BOTH *Mitigation Plan: Basic* and *Mitigation Plan: Detailed* in Section 5 of this manual should be consulted to ensure an application contains all the mitigation plan elements required by the Gresham Community Development Code.

> Note: Protocols for mitigation area calculations for the NRO are found in ETGM Section 3.

The object of mitigation is to plan an ecosystem improvement project that results in successful replacement of lost ecological functions that occur when sensitive natural resource areas experience impacts that negatively affect their ability to provide ecosystem services. This may include ground disturbance, vegetation removal for purposes of development of public or private improvements, or when pre-existing vegetative cover is negatively impacted from natural hazards or climate stress.

Considering Site-Specific Mitigation Goals

Mitigation requirements listed in this "Basic Mitigation Plan" section are intended to support the generalized natural resource functions and features of areas that may be flood-prone, landslide-prone, critical for water quality, and/or contributing to intact and connected native species habitat. While a detailed site analysis of existing and proposed ecological functions is not required when developing a Basic Mitigation Plan, there are site specific considerations that need to be observed within the HGRO to better limit future landslide risks, and within the NRO to support City obligations under federal, state, and regional regulatory requirements such as the Clean Water Act and the Endangered Species Act. **These site-specific considerations are enumerated for Basic HGRO Mitigation and Basic NRO Mitigation in Section 5 of this manual.**

In Situations Where Multiple Overlays Apply

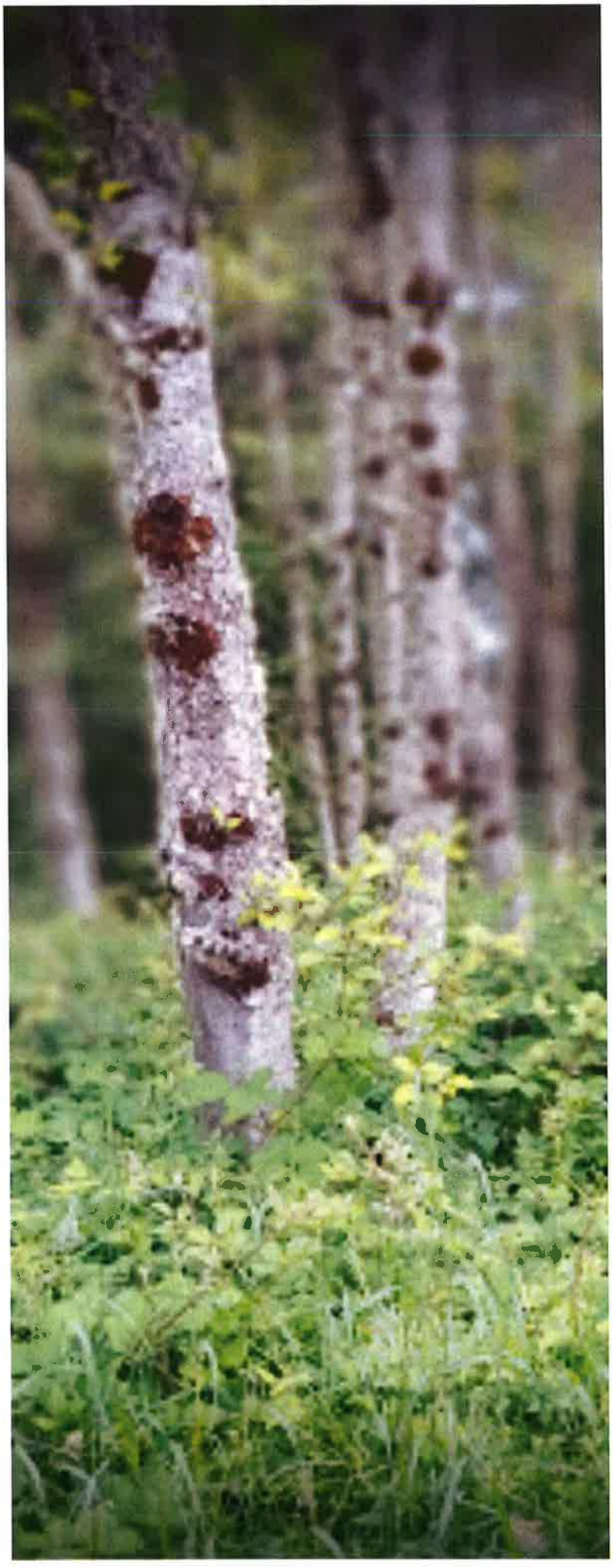
It is possible for impact areas within parcel to be covered in whole or in part by both HGRO and NRO. In such instances, applicants are encouraged to contact the City of Gresham's Planner on Duty (POD@greshamoregon.gov) to request additional technical support in interpreting how multiple mitigation obligations are to be considered. Applicants will not be required to implement additional mitigation in the event of multiple overlays. Rather, an applicant will need to interpret the mitigation standards for both overlays to arrive at a proposed plan that addresses any of the site-specific considerations enumerated in ETGM Section 5.

General Mitigation Plan Components for All Overlays

This section provides an overview of the required elements of a basic mitigation plan to be submitted to the City per GCDC Sections 5.0207 and 5.0711. If submitting a mitigation plan for a Type I permit, all relevant mitigation guidance is provided in this section. If submitting a mitigation plan for a Type II or III permit, BOTH sections ETGM *Mitigation Plan: Basic* and *Mitigation Plan: Detailed*) in Section 5 of this manual should be consulted to ensure an application contains all the mitigation plan elements required by the Gresham Community Development Code.

Note: this section provides guidance on how to meet the minimum mitigation submittal requirements for any mitigation plan to be submitted to the City. Additional submittal requirements will be required by GCDC based on which overlay(s) is/are present on the project area, and based upon the permit type sought by the applicant. As such, this section is to be used in tandem with ETGM Section 5:

- If mitigating within areas covered by both NRO and HGRO;
- If mitigating within the NRO using the "Clear and Objective" approach under a Type I permit application; or
- If mitigating within the NRO using the discretionary approach under a Type II, III, or IV permit application.



Plans need to include (per GCDC 5.0208 and 5.0710) the following:

☑ *Existing and proposed sctructures*
Development within the NRO reduces the ability of a site to perform ecological functions by altering site soils, vegetation, and hydrology. The extent of existing and proposed development within the NRO in relation to the overall NRO coverage within the site, the location of existing and proposed development within the RA versus the HVRA, and the intensity of the proposed development all have the potential to influence the extent of impacts to the ecological functions. The Mitigation Plan should include the square footage and dimensioned drawings of the existing and proposed structures so that the required mitigation area can be determined.

☑ *Resources to be retained*
Demonstrate how existing resources within the project site are retained and protected during the permitted activity. Project managers should keep in mind that the ecological functions provided by a mitigation site may take many years to reach the same level of ecological function as an existing system.

- Existing trees and vegetation
- Any protected streams, wetlands, or upland habitat, and the extent of the corresponding NRO boundary. Use distinct symbology for both RA and HVRA areas within any NRO parcels.
- Any PRA on the project site

☑ Any designated *regulated floodplain boundary* per Gresham's Floodplain Overlay

☑ Any *Hillside and Geologic Risk Overly* on the property, with distinct symbology used for any *Highly Sloped Subarea*

- Include any mapped landslide feature within the project area per DOGAMI IMS-57 (**OregonGeology.org/Pubs/IMS/IMS-57/StoryMap/Index.html**)

☑ *Resources to be impacted*

- Tree and vegetation removal
- Buffer impacts
- Impacts to wetlands or waters under state and/or federal jurisdiction

☑ *Planting plan* or representative plant layouts with unique plant symbols for each species

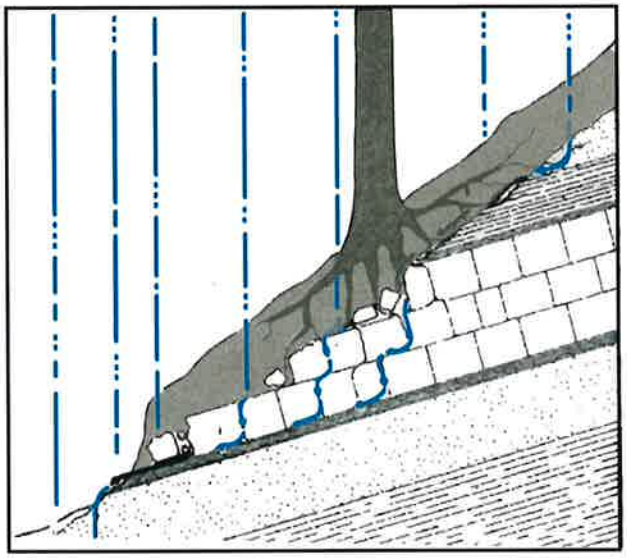
- The planting plan should include consideration of the Fire Defensible Spaces guidelines found in Section 7 of this Technical Guidance Manual.

☑ *Complete plant list* including:

- Botanical name
- Common name
- Number
- Size
- Spacing

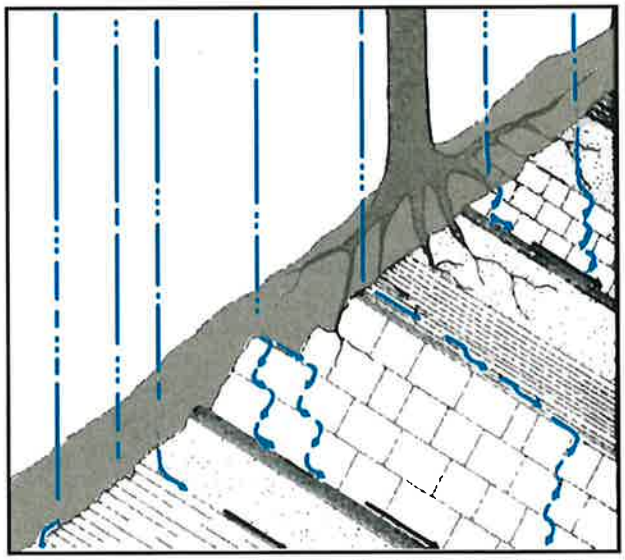
HGRO-Specific Additional Mitigation Plan Components (within NRO Overlay)

This section is to be used in tandem with the previous Section when submitting a mitigation plan for impacts within areas covered by both HGRO and NRO. HGRO has no mitigation standards beyond simple tree replacement requirements.



Source: Rice, Raymond. Forest Management to Minimize Landslide Risk. US Forest Service, Pacific Southwest Forest and Range Experiment Station.

Areas within the HGRO and HSS are prone to landslides based on the interaction between water, soils, vegetation, and the underlying "bedrock" of an area. Particularly on the East Buttes, there are multiple contributing variables, including steep slopes, parent material of basalt that prevents deep infiltration of water, and a structure to the parent material that encourages subsurface drainage to run downslope at the interface between the soils and bedrock.

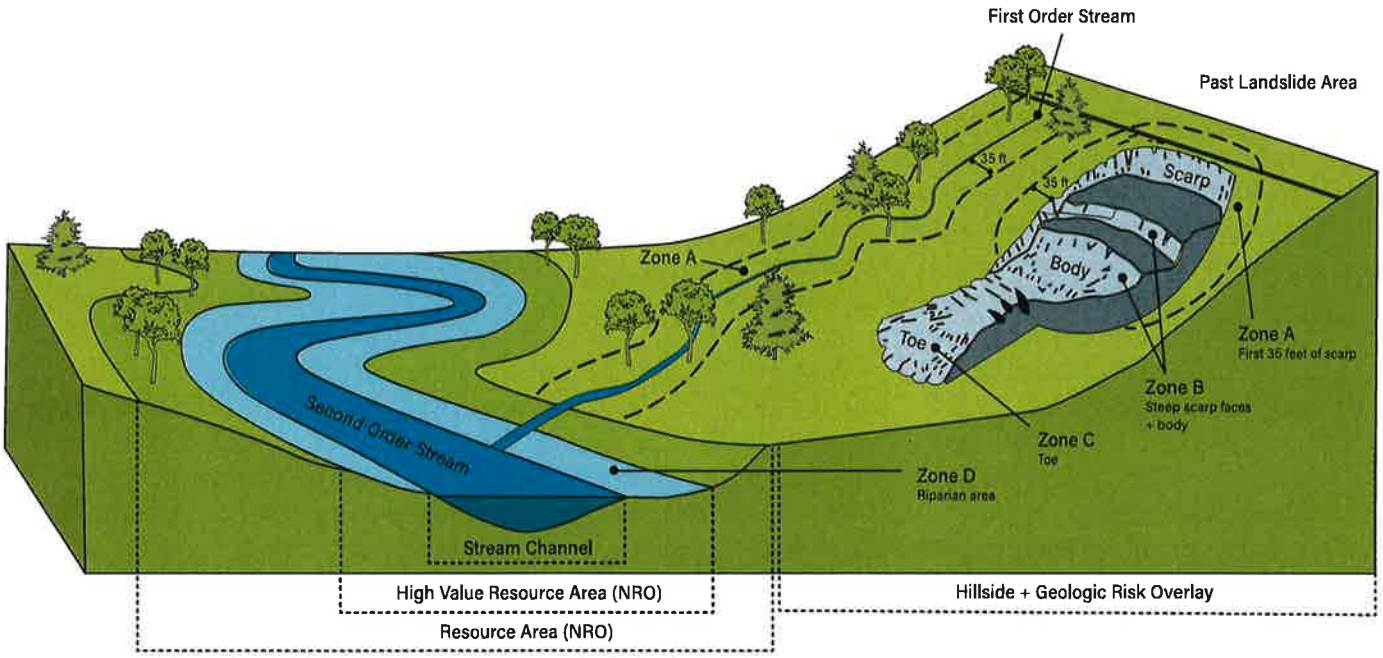


Source: Rice, Raymond. Forest Management to Minimize Landslide Risk. US Forest Service, Pacific Southwest Forest and Range Experiment Station.

Landslides are less likely in comparable slopes where the geological strata (layers) dip away from the slope, allowing subsurface rainwater flows to move deeper into parent material, away from soils. Tree roots are typically more likely to penetrate into anchoring parent material in these situations as well. These areas are more landslide-resistent, as they allow subsurface drainage to infiltrate into the bedrock, lessening the amount of water traveling between the soils and bedrock, and increasing slope stability.

Mitigation Zones for HGRO and HGRO/NRO Protected Areas

Given the landslide-prone nature of the HGRO and HSS, removing vegetation or altering soils within the overlay should be minimized to the extent possible, and proposed site changes should be vetted with geotechnical engineering professionals where indicated in the HGRO code. When alterations are permitted, mitigation and restoration work within the HGRO and HSS must incorporate the following location-specific guidelines, as illustrated in the mitigation zones below graphic developed to reduce future landslide risks. Where zones overlap, a geotechnical professional should be consulted for review of a proposed planting approach. The City will consider a mitigation plan that deviates from the below graphic when accompanied by a geotechnical certification supporting a different mitigation approach.



Zone A includes the area within 35 feet of a scarp crest and/or within 35 feet of a 1st order stream within the HGRO. Zone A also includes the Highly Sloped Subarea (HSS). These areas are sensitive to:

Slope weighting

Avoid planting tree species that will be very large, heavy trees at maturity. That includes species such as Big Leaf Maple, Western Redcedar, Douglas Fir, Black Cottonwood, and Western Hemlock.

Forest conversion

- The risk of slope failure in Zone A lands is high where there has been extensive removal or die-off of trees. Conversion of forest to groundcover or to groundcover and shrubs only should be avoided. Further, the establishment of single-species stands of the same age class should be avoided as these situations are more susceptible to stand loss as a result of disease, pests, and loss due to climate disruption.

Windthrow associated with large trees, especially large conifers

- Deciduous trees have considerably less wind cross-section in the winter when winds are typically strongest and when heavy precipitation is at its greatest.

Greater subsurface flow

- Areas immediately adjacent to streams and past landslides, as they are depressions on the landscape, have disproportionately more subsurface drainage. Additional saturation of soils increases the risk of landslides.

Most slope failures in lands characteristic of Zone A are associated with excess soil moisture. A healthy canopy of trees is necessary to reduce excess soil moisture through transpiration and by intercepting and infiltrating rainfall. However, perhaps counter-intuitively here, trees that are very large stature at maturity may actually exacerbate landslide risk at maturity. This is because their eventual mature weight, or biomass, can possibly contribute too much weight stress to the area. **Given these considerations, the mitigation approach in Zone A should focus on establishing a dense canopy of low- to moderate-stature, deciduous trees, low-stature coniferous trees and native arborescent shrubs.** Tree species recommended for this location are identified by the "HGRO Zone A Compatible" column in the Gresham Native Tree List found in Appendix B.

- Trees: 436 trees/acre (0.01 trees per square foot)
  - No trees that will be large stature at maturity
  - Low- to moderate-stature deciduous trees
  - Low-stature coniferous trees
  - See plant list in Appendix B
- Shrubs: 2,178 shrubs/acre (0.05 shrubs/square foot)
- All plant stock should be small, to minimize impacts to slopes. Use: 1-gallon (maximum), bare-root, or cuttings
- Where possible, the following ongoing management should be considered:
  - Inter-planting to establish stands with diverse age classes and species diversity
  - Avoid land management activities that removes trees or converts land in Zone A to a non-forest use.
  - Install and maintain a dense canopy.

Zone B includes the main body of debris and deposits between the scarp (point of failure of a past landslide) and just above the toe (the margin of the settled debris fallout of a landslide) as well as over-steepened scarp faces. Zone B lands contain very disturbed soils and, frequently, disturbed hydrology with sag pond areas. Trees should not be included in Zone B to avoid slope weighting and windthrow. Plantings should focus on establishing a dense shrub layer with a variety of species and rooting depths. The plant layout should consider variations in hydrologic conditions within the zone, and plantings should be comprised of species that can tolerate seasonal wetness for extended periods.

- No trees
- Shrubs: 2,178 shrubs/acre (0.05 shrubs/ square foot)
  - Use Facultative to Upland species in disturbed area
  - Use Facultative to Wetland species in and near sag ponds
- All plant stock should be small: Use bare-root or cuttings to minimize soil disturbance when planting.

Zone C includes:

- The toes of past landslides (lower margins of landslide debris accumulation)
- The toes of HSSs (which can be generalized as 30' or more past the break in slope area immediately downslope of HSS).

The goal of land management in Zone C is to provide base stability for Zone A and the HSS. Stabilization of past landslide areas and HSSs is greatly enhanced by significant support of heavy tree planting in these toe areas. Plantings in this zone should emphasize the establishment of conifers and climax species where there is no conflict with easements or fire defensible spaces.

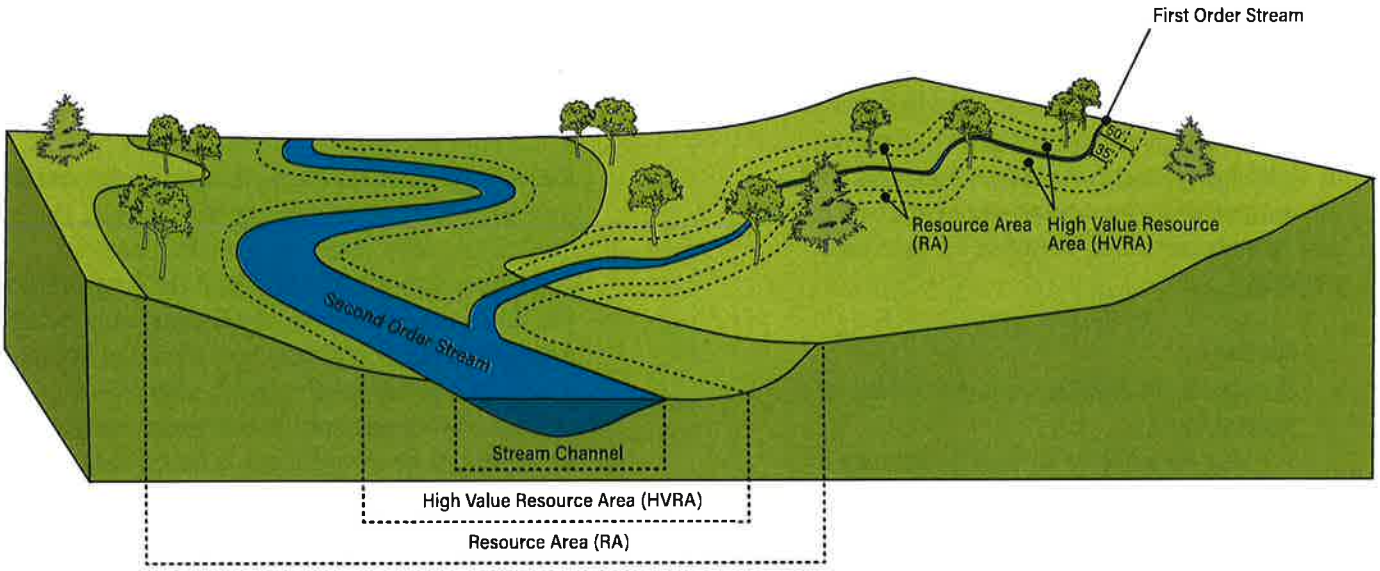
- Trees: 436 trees/acre (0.01 trees per square foot)
  - Emphasize conifers and climax species. Large stature trees with heavy biomass at maturity are especially stabilizing in these areas
  - See plant list in Appendix B
- Shrubs: 2,178 shrubs/acre (0.05 shrubs/ square foot)
- Plant stock can include a variety of potted, bare-root, or cuttings

Zone D includes riparian areas and adjacent upland areas that do not contain Zone A, B, or C. Especially when planting adjacent to streams which are 303(d) listed for temperature, the focus of plantings in this zone should be to establish a dense canopy that provides optimal shade, especially on the south side of the stream. Plantings should emphasize conifers and large trees where there is no conflict with utility easements or fire defensible spaces. As with the rest of the HGRO area, a dense, closed canopy is desired in order to maximize interception of precipitation.

- Trees: 436 trees/acre (0.01 trees per square foot)
  - Emphasize conifers and large trees that will provide dense shade
  - See plant list in Appendix B
- Shrubs: 2,178 shrubs/acre (0.05 shrubs/ square foot)
- Plant stock can include a variety of potted, bare-root, or cuttings

NRO-Specific Additional Mitigation Plan Components

This section is to be used in tandem with the "General Mitigation Plan Components for All Overlays" in Section 5 of this manual when submitting a mitigation plan for impacts within the NRO using the Basic Mitigation Approach. The guidelines of the Basic Mitigation Plan set forth in Section 5.2 are intended to provide a standardized approach to mitigation that will provide uplift to the ecological functions at most sites within the NRO. All mitigation is assessed at 2:1 (2 square feet of mitigation area required for every 1 square foot of impact).



Location Selection

The location of on-site mitigation should be prioritized as follows:

Riparian Priority 1
Within the HVRA, outside of Fire Defensible Spaces Zones 1 and 2, as defined in Section 7 of this manual.

Riparian Priority 2
Within the RA, outside of Fire Defensible Spaces Zones 1 and 2, as defined in Section 7 of this manual.

Riparian Priority 3
Within the HVRA or RA, within Fire Defensible Spaces Zone 2, as defined in Section 7 of this manual.

Note: No mitigation credit will be given for plantings proposed within a Fire Defensible Spaces Zone 1 (within 10 feet of a habitable structure).

Type

Plant selection shall be taken from the City of Portland Plant List (2016 version, **Portland.gov/BPS/Environ-Planning/Portland-Plant-List**). Species chosen should be selected in consideration of the site's soil type(s), hydrologic condition(s), aspect, existing vegetation coverage, topography, geologic hazard status, and location within the Fire Defensible Spaces if the site includes habitable structures.

Diversity

Plantings may consist of no more than 1 in 10 mitigation trees and shrubs designated as 'Suspected Climate Stressed' on the Gresham Native Plant List. Similarly, no more than 1 in 10 trees planted may be designated "Very High Forest Pest Risk" on the Gresham Native Plant List. Currently, the only species designated as having "Very High Forest Pest Risk" is Oregon ash (Fraxinus latifolia) due to its high susceptibility to Emerald Ash Borer, a forest pest likely to arrive in Gresham's region. Further, if 20 or more mitigation trees are planted, no more than 1/3 shall be of the same species. If fewer than 100 shrubs are planted at least 3 shrub species are required. For more than 100 shrubs at least 6 shrub species are required.

Size

Plants may be containerized, bare root, or cuttings. The minimum size that is appropriate for the site should be utilized.

- Trees: Maximum 2-gallon size, bare root (1-inch caliper), or cutting (1-inch caliper)
- Shrubs: Maximum 1-gallon size, bare root (1/2-inch caliper), or cutting (1/2-inch caliper)
- Ground cover: Seed or install native ground cover plants (grasses or forbs) to achieve 90 percent coverage within 3 years, 100 percent cover within 5 years.

Invasive Plants

All plants that are on the Gresham Invasive Plant List must be removed from the mitigation area prior to mitigation plant installation. See ETGM Appendix C for the Gresham Invasive Plant List. Invasive control methods prior to planting and after planting should be noted in the mitigation plan.

Monitoring and Maintenance

Success Thresholds

Minimum survival

- Trees: 350 trees/acre (0.008 trees/square foot)
- Shrubs: 1,750 shrubs/acre (0.04 shrubs/square foot)

Ground cover

- 90% cover after 3 years; 100% cover after 5 years

Invasive plants

- Invasive plant coverage may not exceed 20 percent or 25 square feet of contiguous area within the mitigation area.

How to Calculate Plant Survival

For small sites (mitigation area is 0.25 acres or less):

- Complete census of installed tree and shrub plantings
- Visual estimate to provide cover and species diversity of herbaceous plants
- Visual estimate of invasive plant coverage

For large sites (mitigation area greater than 0.25 acres):

- Vegetation sampling to provide annual estimates of cover, species diversity, and density of woody vegetation. Depending on the Mitigation Plan, sampling may need to be conducted within distinct planting zones (i.e. within Fire Defensible Spaces, within riparian forest, within utility corridor, etc). Annual monitoring should include the following:
- Use of permanent plots and visual estimates to sample tree, shrub, herbaceous, and invasive species coverage
- Sampling should be conducted during roughly the same stage of the growing season each year, during a period when plants are easily identifiable
- A minimum of 5 sample plots for mitigation areas 2 acres or less. An additional 2 sample plots for each acre of mitigation area thereafter.
- Sample plots should cover approximately 700 sf to 2,800 sf, depending on site conditions and the shape of the sample plot
- Additional vegetation monitoring details can be found in DSL's Routine Monitoring Guidance for Vegetation

If survival of trees or shrubs drops below 80% of the initial required planting quantities within the first five years, replacement plants must be added to maintain 80% or greater survival of plantings. Prior to re-planting, the cause of plant mortality must be determined and documented with a description of how the problem will be corrected.

Annual Monitoring Report

At a minimum, the annual monitoring report must contain the following:

- Photos from established photo-monitoring locations established to show progress of mitigation over mitigation year. (sufficient to show success across the site) If the below two include transect sampling data, then photopoints should be established for those same areas.
- Sampling data sheets.
- Summarized sampling results. It is for the specific reporting year.
- Monitoring plan showing the location of sample plots and photo points.
- Maintenance recommendations, if necessary. Could note extension of one year if failing to meet success criteria. That needs to include statement that they'll fix the problem and will follow the adaptive management criteria noted as needed in maintenance recommendations.

Note: No more than 20% of a mitigation area may be used for existing canopy credit. In the event that credit was given for existing canopy when calculating tree and shrub planting requirements for a mitigation area calculated at the standard 2:1 ratio, applicants must include the entirety of the mitigation area in the annual monitoring reports, showing success criteria continue to be met within the area of existing canopy as well as in the area of new planting.

Payment-in-Lieu of Onsite Mitigation

Per GCDC Section 5.0711(E), Payment-in-Lieu (PIL) of onsite mitigation is required for RA and HVRA impacts related to single-family dwellings or duplexes on existing legal lots of record. Per GCDC Section 5.0208(C)(6), PIL is available in the event that there is insufficient room for onsite tree replacement mitigation to be accomplished. For additional information on the Payment-in-Lieu option, see Section 5 of the ETGM.

The PIL amount is based on a calculated impact area. For HGRO impact area calculations (based on canopy loss associated with tree removal) see Section 3 of the ETGM.

Mitigation Plan: Detailed (Alternative Review)

Applicants following the Alternative Review pathway have the opportunity to implement a greater range of mitigation options, tailored to a site's existing and proposed conditions. Mitigation decisions (and the Impact Evaluation and Alternatives Analysis) should be based on how best to support and enhance the ecological conditions detailed in Section 5 of this manual.

Functional Goals

Hydrological Function Support

Water storage and delay to improve the stream network's ability to mimic a more natural hydrologic system. This depends upon slowing the arrival of precipitation to receiving waters through interception and infiltration. Increase in groundwater recharge and bank storage through natural means is included here. Also included is protection of streams from "hydromodification" such as downcutting, stream widening, and both slump and rotational failures of stream banks.

Water Quality Function Support

Capture of sediment and contaminants, particularly those listed as parameters of concern by Oregon Department of Environmental Quality, and as represented by established TMDLs or listing on the state's 303(d) list of impaired waters. Protection of slope stability for purposes of water quality is considered here.

Aquatic Habitat Function Support

Capacity to support an abundance of native anadromous fish (chiefly salmonids) and non-anadromous (resident) fish by providing rich feeding and rearing opportunities, shelter from predators, and thermal refuge.

Terrestrial Habitat Function

Capacity to support an abundance and diversity of terrestrial animals and plants, especially those which spend all or part of their life cycle in or near resource areas. Protection of slope stability for purposes of habitat protection is considered here.

For both *aquatic and terrestrial habitat functions,* consider:

- General Habitat Function (Nesting/Breeding, Cover, Corridor, Foraging)
- Support of Special Status Species known to be present in Gresham and the surrounding area.
  - Salmonids
  - Western Painted Turtles
  - Other listed species

Stream Temperature Moderation
Direct stream shade or protection of riparian microclimate to minimize diurnal temperature fluctuations and meet state-established temperature targets for protecting ESA-listed salmonids.

Where the value of one or more of these ecological functions is especially high in a local or regional context, special consideration may be given to designing a mitigation plan that deviates from the mitigation standards listed in ETGM Section 5 but will provide the most improvements to that ecological function(s). In addition, where site specific conditions dictate specific mitigation approach deviation from the standards of the basic mitigation plan may be allowed.

For example, a site that is known to support western painted turtles or is near existing turtle habitat, preference may be given to providing suitable habitat for turtle nesting or basking. A site that is adjacent to the south side of a regional water quality facility may be designed to support adequate functioning of the water quality facility, which needs adequate sun exposure in order to provide the bioremediation intended. A site with known or suspected contamination and/or erosion issues may be designed to reduce the risk of bank failure. Where special consideration is given to particular ecological functions, the applicant must provide additional detail for these, following the standards listed in GCDC Section 5.0712. Additional detail on how to meet these standards is provided below.

Alternative Analysis and Impact Evaluation
In addition to the Basic Mitigation Plan elements outlined above, projects pursuing the Alternative Review Path must also include an Alternatives Analysis and an Impact Evaluation completed according to guidlines on the following page.

Alternatives Analysis

- Overall project purpose and geographic area
- Documentation of the project need
- Project criteria that are necessary to meet the project purpose and need. Criteria include, but are not limited to, site size, location/distance to market, and specific amenities.
- For new development, an evaluation of alternative sites within the project's geographic area.
  - The project's geographic area should be specifically stated in the overall project purpose. The need for the project to be within a certain geographic area should be defined in the documentation of the project's need.
  - The selection of the preferred alternative must be the practicable alternative that will result in the least environmental impacts and is still capable of meeting the project criteria. Although this section relates to impacts to the NRO, other environmental considerations such as the floodplain overlay, hillside and geologic overlay, and landslide hazards should be considered during site selection.
- For new development and alterations to existing development, an evaluation of a minimum of three practicable alternatives for the project site (No Project, Practicable Alternative, Preferred Alternative). The applicant must demonstrate that there are no practicable alternatives to proposed RA and HVRA resource impacts at the project site.
- Assess the ecological functions provided by the RA and HVRA on the project site and, if it is reasonably certain that there will be off-site impacts , the functions of the RA and HVRA within the same sub-watershed.
  - Hydrologic Function (water storage and delay)
  - Water Quality Function (sediment stabilization and retention, phosphorous retention, nitrate removal and retention)
  - Aquatic Habitat Support Function (for anadromous and/or resident species)
  - Terrestrial Habitat (for invertebrates, native plant diversity, pollinators, birds, reptiles, amphibians, and mammals)
  - Stream Temperature Moderation (shade, microclimate)
- Evaluate each practicable alternative. Each practicable alternative must be capable of meeting the project criteria and apply equivalent avoidance and minimization measures, including consideration and, where applicable, the use of Habitat Friendly Development Practices listed in ETGM Section 8. The applicant must provide adequate detail for the evaluated alternatives so that the distinct locations, designs, and construction methods can be compared. To do so, the evaluation should include a comparison between the alternatives that describes the following:
  - Approximate Impact Areas within the RA and HVRA:
    - Where both RA and HVRA are present, priority is given to avoiding the HVRA
  - Impacts to the Ecological Functions of the RA and HVRA
  - Off-site impacts within the sub-watershed
    - Consider impacts to trees of an age, size, species, vigor, or habitat complexity that may be under-represented in the sub-watershed.
    - Shade loss may impact stream temperature beyond the site by loss of temperature moderating influence on streams and adjacent soils.
    - Consider impacts to habitat features that may be important for native species, in a sub-watershed context.

In addition to a general description of impacts, it may be useful to complete a side-by-side comparison of the practicable alternatives. Broad categories of impact may be used when comparing alternatives that do not have detailed development plans (i.e., rank impacts low, moderate, high).

Impact Type	Practicable Alternative	Preferred Alternative
RA Impact Area (approx. square feet)		
HVRA Impact Area (approx. square feet)		
HGRO Impact Area (approx. square feet)		
Total trees to be removed		
Trees greater than 24-inches to be re-moved		
Hydrologic Function Impacts		
Water Quality Function Impacts		
Aquatic Habitat Function Impacts		
Terrestrial Habitat Function Impacts		
Stream Temperature Moderation Function Impacts		
Special Status Habitat Function Impacts		
Off-site Function Impacts		

Selection of the Preferred Alternative and Associated Impacts

The applicant must clearly demonstrate that the preferred alternative's location, design, and construction methods is the least environmentally damaging of the alternatives.

Impact Evaluation. Once the preferred alternative has been selected, the full range of impacts must be quantified. The applicant must describe the extent of unavoidable impacts that will result from the project in a greater level of detail than was conducted during the alternatives analysis. The precise impact areas (both temporary and permanent) within the RA and HVRA must be identified so that the restoration areas for temporary impacts and mitigation areas for permanent impacts can be determined. Other details regarding the specific impacts to trees, other vegetation, and the functions within the RA, HVRA, and/or off-site resources will be used to inform the mitigation approach. At a minimum, the following information must be included in the impact evaluation:

- Temporary and Permanent Impact Areas within the RA and HVRA
- Impacts to the Ecological Functions of the RA and HVRA
- Off-site Impacts within the sub-watershed
- Impact Areas to other environmental resources (HGRO, FO)
- Other significant adverse effects of the project

Mitigation Plan for Alternative Review

Once impacts have been determined per the Impact Analysis and Alternatives Analysis, there are two options for developing a Mitigation Plan that can be submitted under the Alternative Review pathway:

- An Applicant may choose to develop a mitigation plan consistent with the requirements of GCDC Section 5.0711. ETGM Section 5 provides the guidance necessary for this pathway.
- An Applicant may choose to develop a mitigation plan that would not comply with the requirements of GCDC Section 5.0711. For this pathway, the following shall be submitted with the Impacts Analysis and Alternatives Analysis.
  - Hydrologic Function (water storage and delay)
  - Water Quality Function (sediment stabilization and retention, phosphorous retention, nitrate removal and retention)
  - Aquatic Habitat Support Function (for anadromous and/or resident species)
  - Terrestrial Habitat (for invertebrates, native plant diversity, pollinators, birds, reptiles, amphibians, and mammals)
  - Stream Temperature Moderation (shade, microclimate)
  - An explanation of how the proposed mitigation will adequately compensate for impacts to ecological functions described in the impact evaluation required by GCDC Section 5.0712(A)(1). The Applicant may use the mitigation that would be required under GCDC Section 5.0711 as the baseline mitigation required to compensate for disturbance to an RA that provides an average level of ecological functions.
  - Documentation of permits from Army Corps, DSL, MCDD and DEQ (if applicable).
  - A list of all parties responsible for implementing and monitoring the mitigation plan and, if mitigation will occur off-site, the names of the owners of property where mitigation plantings will occur and documentation of a deed restriction.
  - The Applicant's mitigation site monitoring, success criteria, and reporting plan.
  - A complete list of proposed mitigation plantings.
  - If offsite mitigation is proposed, a narrative description of why mitigation cannot be completed on site. The following could be considered:
    - Inadequate RA available
    - Remaining RA already includes a documented mitigation area
    - Remaining RA already provides a high level of functions

- If mitigation is proposed which is not within the same sub-watershed (6th Field Hydrologic Unit Code) as the proposed impact, documentation that provides evidence that there are no properties within the sub-watershed that are available for purchase and/or could provide the opportunity to off-set the project's unavoidable impacts to the functions of the RA. This could include documentation of the following:
  - Communication records with property owners that potential mitigation areas are not available
  - Records of existing mitigation for properties that contain potential mitigation areas
  - Documentation or analysis results that indicate there are inadequate mitigation opportunities on properties within the sub-watershed

- For a proposal that includes mitigation on a site within the same 5th Field Hydrologic Unit Code, the applicant's mitigation plan should include a narrative description of how the proposal will adequately off-set unavoidable project impacts to the functions of the RA.

- Mitigation shall not be allowed on sites that are outside of the same 5th Field Hydrologic Unit Code.
  - Communication records with property owners that potential mitigation areas are not available
  - Records of existing mitigation for properties that contain potential mitigation areas
  - Documentation or analysis results that indicate there are inadequate mitigation opportunities on properties within the sub-watershed

- The Impact Evaluation, Alternatives Analysis, and Mitigation Plan shall be prepared and signed by a knowledgeable and qualified natural resource professional, such as a wildlife biologist, wetland scientist, botanist, or other appropriate and knowledgeable discipline. The application shall include a description of the qualifications and experience of all persons that contributed to the Impact Evaluation and Alternatives Analysis and to the Mitigation Plan.

Approval Criteria

When Alternative Review is required because a proposal does not meet one or more of the development standards of GCDC Sections 5.0709 or 5.0710, then the approval criteria listed in GCDC Section 5.0712.B will only be applied to the aspect of the proposal that does not meet the development standard or standards.

Avoid

GCDC Section 5.0712.B.1

The development that is proposed shall have less detrimental impact to RAs than other practicable alternative(s), including a different practicable alternative(s) that proposes less development within RAs.

- The alternatives analysis described in Section 5 of this manual and prepared by a Natural Resources Professional must demonstrate that there are no practicable alternatives for the proposed use or activity to be located outside the RA or to be located inside the RA and to be designed and constructed in a way that will meet all of the applicable NRO development standards
  - If there is HVRA on a property then the Applicant shall first avoid the intrusion of development into the HVRA, to the extet practicable.
    - For new development, the alternatives analysis must demonstrate that all sites within the Gresham city limits, in which the proposed use or development is possible, would also result in unavoidable impacts to the HVRA.
    - For projects that must include intrusion into the HVRA (e.g. utilities, bridges, resource enhancements), the alternatives analysis must demonstrate that all practicable alternatives include unavoidable impact to the HVRA to achieve the project purpose.
- The construction management plan must demonstrate that project construction will not result in impacts to the RA or the functions of the RA in areas designated to be left undisturbed. As described in Section 4.2.3, the construction management plan will specify the location and details for the controlled construction access and egress point, designated staging and stockpile areas, erosion and sediment control measures, tree fencing, and other habitat friendly development practices, as appropriate. The construction management plan will be a tool used to ensure that project construction meets all of the applicable NRO development standards.
  - If there is HVRA on a property, then the development within HVRA shall be considered more detrimental than development within other parts of the RA.
  - For projects that must include intrusion into the HVRA (e.g. utilities, bridges, resource enhancements), the applicant should provide documentation in the alternatives analysis that the public benefits of the proposal outweigh all unavoidable impacts.

- The alternatives analysis should demonstrate that the use of the best management practices (BMPs) and habitat-friendly development practices have been employed to minimize grading, removal of native vegetation, disturbance and removal of native soils, adverse hydrological impacts on water resources , and impacts on wildlife corridors and fish passage, or that such BMPs and habitat-friendly development practices are not practicable for the proposed development.
- With the exception of the standard(s) subject to the alternative review, the Applicant must document that all other applicable NRO standards are met.

Mitigate

GCDC Section 5.0712.B.2

A mitigation plan that entails the amount of planting that would be required under GCDC 5.0711 based on the amount of proposed disturbance area within the RA, and that otherwise complies with all of the mitigation requirements in GCDC 5.0711, shall be considered to have satisfied the Approval Criteria of GCDC 5.0712.B.3.

Where alternative mitigation is proposed, the applicant's impact evaluation and mitigation plan, prepared by a Natural Resources Professional, should include information sufficient to demonstrate that it compensates for unavoidable impacts to ecological functions provided by RA onsite and within the sub-watershed (6th Field Hydrologic Unit Code) where the property is located. To ensure that GCDC Approval Criterion 5.0712.B.3.a is satisfied, this should include:

- An accounting or narrative description of the project's unavoidable impacts to the ecological functions of the RA and how the proposed mitigation will adequately off-set the unavoidable impacts.

Where impacts to the HVRA are to be mitigated, an additional narrative description of how the unavoidable impact(s) to the higher value areas will be off-set. Mitigation that occurs on the site of the disturbance shall be considered to have satisfied the requirements of GCDC Approval Criterion 5.0712.B.3.b.

- An accounting or narrative description of the project's unavoidable impacts to the ecological functions of the RA and how the proposed mitigation will adequately off-set the unavoidable impacts.

If onsite mitigation is demonstrated to not practicable, as described above, off-site mitigation that is within the same 5th Field Hydrologic Unit Code) where the property is located shall be considered to have satisfied the requirements of GCDC Approval Criterion 5.0712.B.3.b if the following can be demonstrated:

- Considering the purpose of the mitigation, the mitigation will provide more ecological functional value if implemented outside of the sub-watershed. There are no properties within the sub-watershed that are available for purchase and/or could provide the opportunity to off-set the project's unavoidable impacts to the functions of the RA. This could include documentation of the following:
  - Communication records with property owners that potential mitigation areas are not available
  - Records of existing mitigation for properties that contain potential mitigation areas
  - Documentation or analysis results that indicate there are inadequate mitigation opportunities on properties within the sub-watershed

- Mitigation shall not be allowed outside of the impacted 5th Field Hydrologic Unit Code.
  - If an applicant can demonstrate no feasible mitigation within the 5th Field HUC, then wetland impacts up to 0.25 acres in size may utilize state-approved wetland PIL or bank options to fulfill the wetland component of the mitigation requirement.
- Payment-in-Lieu of mitigation shall be considered to have satisfied the requirements of GCDC Approval Criterion 5.0712.B.3.b if if the Applicant has demonstrated that it is not practicable to complete all or a portion of the mitigation on-site.
- All re-vegetation plantings shall be with native plants listed in the City of Gresham Technical Guidance Manual (see ETGM Appendix B).
  - The applicant's mitigation plan must include a complete list of proposed mitigation plantings so that GCDC Approval Criteria 5.0712.B.3.c can be evaluated.
- All in-stream work in fish-bearing streams shall be done in accordance with the Oregon Department of Fish and Wildlife (ODFW) in-stream work timing schedule or approved in-water work timing variance (approved by National Marine Fisheries Service (NMFS).
  - To demonstrate compliance with GCDC Approval Criterion 5.0712.B.3.d, the applicant's construction management plan must include a construction schedule that includes the timing of in-stream work. In addition, the CMP must include written notification of the ODFW and NFMS requirements.
- A mitigation maintenance plan shall be included and shall be sufficient to ensure the success of the planting. Compliance with the plan shall be a condition of development approval.
  - To demonstrate compliance with GCDC Approval Criterion 5.0712.B.3.e, the maintenance plan should be prepared by a Natural Resources or Landscape Professional as part of the mitigation plan. It should be based on the existing condition of the site (e.g. prevalence of invasive plants, density of existing vegetation) as well as commensurate to the size and accessibility of the site.
- To demonstrate compliance with GCDC Approval Criterion 5.0712.B.3.f, a financial guarantee, in the form of an instrument approved by the City, shall be submitted to the City before building permits are issued, or when no building permit is required, before development within the RA commences. It shall be in an amount adequate to cover 110% of the cost of performing the mitigation. The City will release the guarantee at the end of the five-year monitoring period, or before, if it determines that the trees and shrubs have been successfully established.

Mitigation Plan for Alternative Review

Note: The City's Payment-in-Lieu (PIL) program has no relevance to mitigation for impacts to stream or wetland features under the jurisdiction of the state or federal government. Therefore, use of the Gresham PIL program for buffer mitigation in no way fulfills the wetland and waterway mitigation requirements of the state and federal government. Where state and federal approval for wetland or stream impacts are accomplished through a wetland mitigation bank or state-approved Payment-in-Lieu option, riparian mitigation associated with the loss of stream or wetland function will be mitigated through the Gresham PIL option.

Program Overview

If the City approves the use of the PIL for required buffer mitigation, a fee will be calculated based on the rate approved by City Council. Payment of the required fee to the City will be in lieu of buffer mitigation and will satisfy the applicant's NRO mitigation requirement. The responsibility for the buffer mitigation will be transferred to the City and applied to the preservation and restoration elements of the City's Natural Resources Program's work.

The City's objectives for the Payment-in-Lieu Program are to:

- Support highly functioning riparian buffers which provide Gresham with a variety of valuable functions including: enhancing local stream and wetland water quality, augmenting bank storage and summer in-stream flows, moderating stream temperatures, supporting shallow groundwater storage, restoring natural floodplain function, and providing wildlife habitat connectivity.
- Provide off-site mitigation for unavoidable ecological function impacts by:
  - Contributing to City-implemented restoration of stream, wetland, and riparian buffer areas as prioritized in the City's Natural Resources Master Plan; and
  - Preserving high-quality wetlands, streams, and buffer habitat in perpetuity.
- Streamline the land use process for compensatory buffer mitigation and reduce potential conflicts between conservation and development objectives.
- Reduce administrative complexity of monitoring and enforcing riparian buffer mitigation on single family lots.
- Ensure successful, timely implementation of riparian improvements to offset riparian impacts.

Conveyance of Land

Conveyance of land within a Resource Area or Potential Resource Area may substitute for cash payment when utilizing the Payment-in-Lieu option for mitigation. Fair market value of the proposed conveyance needs to meet or exceed the calculated Payment-in-lieu mitigation obligation of the applicant. A current (completed within the last 6 months) valuation based on a fair market appraisal completed by a firm currently on-call with Metro will be used to demonstrate land value. In the event that the proposed area of donation contains certain unique features such as connectivity between protected habitat areas, restoration of floodplain terrace and storage potential, or exceptionally high wetland restoration potential, the City may opt to accept a property conveyance offer that has a fair market valuation that falls short of the calculated Payment-in-lieu mitigation obligation, recognizing the inherent challenge of establishing a fair market value for unique ecological features.

Service Area

The service area for the PIL, that is, the area in which the City will conduct ecosystem function improvements with PIL funds includes the area within the Gresham city limits and its Urban Growth Boundary (UGB), as they now exist or as they may be amended in the future. This includes the new community areas of Pleasant Valley, Springwater, and Kelley Creek Headwaters.

Mitigation Receiving Sites

Stream and wetlands and their associated buffers are prioritized for receipt of PIL funding as identified in the City of Gresham's Natural Resources Master Plan process. Through the master planning process, sites have been assessed and prioritized through a watershed-based approach for site identification that seeks to respond to current regional, state, and federal regulations regarding water quality, water temperature, habitat function, and floodplain function. The Natural Resources Master Plan undergoes public review as part of its adoption and periodic update processes. Mitigation receiving sites will be identified as such and recorded on the City's mitigation GIS layer, and will be protected from future impacts by private development. Though all sites will be selected to avoid conflict with existing utility and transportation master plans, on the off chance of a proposed future municipal impact, those impacts will only be approved following an alternatives analysis showing no practicable alternative to the impact. Re-mitigation of a mitigation area will be assessed at 3 (three) times the area (3:1 ratio instead of the standard 2:1 ratio).

Programmatic Permits for Public Land Management

Programmatic Permits for Public Land Managament

Qualifying Actions and Agencies

Programmatic Permits are Type II blanket permits for conducting routine tree and vegetation activities within one of Gresham's Environmental Overlays. Only public agencies and utilities with a Gresham franchise license are eligible for Programmatic Permits. The intent of the Programmatic Permit is to facilitate standardized routine maintenance and enhancement activities across agencies, and to remove the need for individual permits for these activities within overlay protected areas. Programmatic permits do not cover tree or vegetation removal, planting, or mitigation associated with a development permit.

Programmatic Permit Submittal Instructions

Programmatic Permit application forms and electronic submittal instructions are found at **GreshamOregon.gov/Applications-and-Forms**. Per the submittal instructions found at that site, applicants will need to provide:

- A map plus any similarly informative description of the geographic extent of activities the applicant intends to manage under the Programmatic Permit terms.
- A narrative describing the proposed scope of activities related to tree removal that will be conducted on any of the parcels included in the description of the geographic extent of activities provided by the applicant.
- A Type II permit fee.

Review Factors

The Manager may approve a Programmatic Permit upon finding that the following review factors are met or will be met with

Biodiversity

Planting associated with permit activities will result in the same or better native species diversity within each project area treated under the programmatic permit. A project area is an area where management actions off a common type are being taken rather than gross areas involved in all permit activities. Gresham's standards focus on tree species diversity with the goal of increasing our forests' resiliency to climate impacts, forest pests, wildfire, and other stressors and threats.

The applicant will adhere to the following conditions:

- Species designated as "Suspected Climate Stressed" in the Gresham Native Plant List may not account for more than 1 in 10 trees planted per project area.
- Species designated as "Very High Forest Pest Risk" on the Gresham Native Plant List may not account for more than 1 in 10 trees planted per project area. Oregon ash, Fraxinus latifolia, is currently the only species meeting this criteria due to its high susceptibility to Emerald Ash Borer, a forest pest likely to arrive in the Gresham region.
- Native Species Diversity
  - No more than 1/3 of trees planted in a project area shall be of the same species; or
  - When utilizing an alternative mitigation strategy better suited to meet at least 2 of the ecosystem service functional gains outlined in ETGM Section 5 or when the above standard is in conflict with biodiversity enhancement goals deviation from the 1/3 standard is acceptable with conditions. A native species diversity evaluation and planting narrative for each project area shall be provided in annual reporting and shall include the following:
    - Document on a map the extent of the forest stands or habitat types within a project area. Also indicate the project area on the map.
    - Estimate percent cover or trees per acre for all tree species found in each project area.
    - Describe how the project increases native species diversity overall as well as how it impacts native tree diversity and forest health within this project area. Include planting lists with species and quantity identified by project area.

Location

Mitigation location considerations listed in Section 4 of this manual will be observed for mitigation conducted under Programmatic Permits.

- Density requirements for HGRO Zones A-D in Section 4 will be need to be met under Programmatic Permits, unless the applicant submits a geotechnical certification that an alternative planting regime is better suited to protect slope stability.
- Density requirements for NRO Priority 1 areas will need to be met under Programmatic Permits, in order to comply with City of Gresham's Temperature TMDL obligations. Outside of the HVRA (NRO Priority 1 areas), applicants can propose alternative mitigation densities where they can demonstrate an alternative mitigation strategy is better suited to meet at least 2 of the ecosystem service functional gains outlined in Section 4.

Erosion Prevention and Sediment Control

The applicant will adhere to the following wet weather standards:

- With the exception of Dangerous tree removal, no tree removal October 1st through May 1st within the RA or HGRO. However, treatment of invasive trees (per City of Gresham Invasive Plant List) via girdling, "hack and squirt" or similar methods can be conducted in advance of dry weather tree felling.
- With the exception of imminent Dangerous tree removal, no tree felling should be conducted within the HVRA or HSS September 1st through June 1st. However, treatment of invasive trees (per City of Gresham Invasive Plant List) via girdling, "hack and squirt" or similar methods can be conducted in advance of dry weather tree felling.
- Erosion prevention measures will be employed prior to October 1st of each year where:
  - More than 500 square feet of contiguous area has been exposed, or
  - Impacts from equipment on forest soils has created ruts running parallel to the slope such that rill erosion would possibly be initiated from these impacts.

The applicant agrees that when the city receives a report of erosion concerns related to an applicant's project, the site's activities authorized through this programmatic permit will cease until the applicant has worked with City erosion control staff within the Water Quality Program to remedy the erosion situation.

Mitigation of Impacts

The applicant has demonstrated in their application the intent to conduct land management activities not just to resolve existing maintenance needs, but to simultaneously be working to protect or enhance project areas' urban forest functions and benefits, considering the applicants' proposed performance measures, proposed tree planting, and other proposed means to improve the overall health of the urban forest. Such benefits and functions to be addressed in the permit application include:

- Recognition of slope stabilization needs with the HGRO, HSS, and HVRA
- Dense canopy cover needs within the HGRO, HSS and HVRA
- Weight load limits within past landslide areas, and adjacent to 1st order streams on the East Buttes
- Protecting sensitive resources from informal (unplanned) access by humans and pets

Timing

- Regulated trees removed under a programmatic permit will be compensated by replanting trees within the planting season immediately following removal.
- Trees and shrubs planted for mitigation shall be monitored for at least 3 years and replaced in kind if they die within that timeframe.

Payment-in-Lieu

- Mitigation unable to be met through tree and shrub planting shall be paid into the Payment-in-Lieu fund, detailed in Section 4 of this manual.

Wildfire and Landslide Risk Reduction

The applicant will adhere to the following risk reduction specifications during all routine operations.

- The buildup of ignition fuels from illegal dumping and cured grasses along property
- boundaries must be addressed prior to any stand management. Programmatic permit holders will be required to work with Gresham Code Enforcement to resolve any encroachment dumping of yard debris and other flammable materials within project area prior to applicant's work commencing.
  - Dangerous Trees may be removed in advance of encroachment resolution provided that notification to Code Enforcement of any illegal dumping found within 500' of the Dangerous Tree work area occurs within 3 business days following the tree removal work.
  - No resolution of past encroachment will be required if all project work is more than 500' from the above-listed encroachments or a flammable structure, though it will still be encouraged and supported by Gresham Code Enforcement and Natural Resources.
- Coarse Woody Debris (CWD) from stand management is to be left in contact with the forest floor to speed decomposition and avoid excessive drying, and must be placed away high use areas (trails and similar points of human use) as to avoid increasing a site's fire risk from likely ignition sources.
- CWD from coniferous species more readily combust, and will generally remain intact longer than deciduous species. Coniferous CWD should be left as far distant from private structures as possible without risking harm to living trees and forest soils from moving large wood.
- Emergency access protocols to be observed:
  - Observe a 20' setback from private property boundaries to allow for fire response access. Within this zone no trunk sections or branches, or suspended CWD will be left within 20' of property fence lines or flammable structures. Only chipped CWD may be left within this 20' buffer. Standards for chipped CWD are in section 5 below.
- Shaded Fuel Breaks at the interface of public and privatep property should be provided.
  - Preferential retention of healthy deciduous vegetation during thinning should be observed, unless resulting in removal of conifer trees 24" DBH or greater. New plantings in the shaded fuel break should be deciduous species.
    - On grades of 0-15%, observe a shaded fuel break of 50' from private property.
    - On grades over 15% observe a shaded fuel break of 100' downslope from private property, and 60' upslope from private property.
- In developing mitigation plans, no trees should be planted where their mature canopy will be within 10' of an occupied building or flammable structure. Only deciduous shrubs should be proposed within 30' of an occupied building or flammable structure, if site conditions require planting within 30' of such areas.
- Ensure no cut major branch (8" diameter or greater) suspended CWD ("widow-maker") remains in the project area. No material larger than 3" diameter should remain suspended where it can fall onto areas designated for human use, such as yards, trails, or parking lots.

- Felled trunk and primary branch (8" diameter and greater) material may be retained in long, intact sections within the project area only when it can be left:
  - Perpendicular to the slope to prevent rill erosion
  - In contact with the forest floor, in a single layer (no stacking of logs)
  - Further than 20' from fence lines or other flammable structures
  - In such a way that downslope movement, particularly "rolling logs" is prevented
    - Permittees are encouraged to leave attached stubs or entire lengths of those primary branches in contact with the forest floor.
    - Those major branches not in contact with the forest floor should be removed from the bole to prevent "blackberry ladders" or similar support of invasive weed growth (and associated ladder fuel).
  - Without causing stress or damage to retained healthy trees. Felled trees of 12" DBH or greater shall not be left in contact with living trees 6" DBH or greater.
- CWD smaller than 8" DBH may be left in "habitat piles", provided that:
  - Piles do not exceed 3' in height and 6' in any horizontal direction
  - Piles are left at least 15' from conifers 6" DBH or larger
  - Piles are left further than 20' from fence lines, flammable structures, or areas designated for human use (yards, trails, parking lots)
  - Piles must be spaced a minimum of 20' apart
- Retention of chipped CWD as part of stand management is generally encouraged in order to retain soil and duff moisture, and to suppress weed growth, provided:
  - Depths of chipped CWD does not exceed 4" in depth
  - Chipped material is not added within the high water level of water quality facilities, or within open water, streams, or below top-of-bank of streams
  - Chipped material is not placed within 5" of the trunks of existing trees
- Snag (habitat tree) retention is encouraged where snag height can be established so that if the remaining portion of tree fell, it would not land within 20' of a "target" such as a property boundary fence, flammable structure, or area designated for human use (yards, trails, parking lots, sidewalks, etc.).
- Each project area should be reviewed in advance for past landslide features per DOGAMI IMS-57. When working in or adjacent to past landslides:
  - Avoid placing anything other than up to a 4" depth of chipped CWD within 30' of the scarp crest, scarp trough, free face, or debris slope of a past landslide (diagram to be included).
  - Up to 4" of chipped CWD can be left at the toe or base of the landslide deposits.
  - When deemed safe by a geotechnical professional, additional CWD may be left. The associated geotechnical report and quantification of CWD left must be provided in the annual report.

Permit Specifications (City of Gresham)

Monitoring and Reporting

The number of trees removed, species removed, DBH, general condition, and reason for the trees' removal shall be reported for each parcel treated under the Programmatic Permit. Photos of site conditions after leaving Coarse Woody Debris on-site will be submitted with each annual report.

Issues experienced by the applicant in adhering to the programmatic permit will be included in each annual report to facilitate an adaptive management approach focused on increased cost efficiency for the ecological service benefits being realized.

Revisions

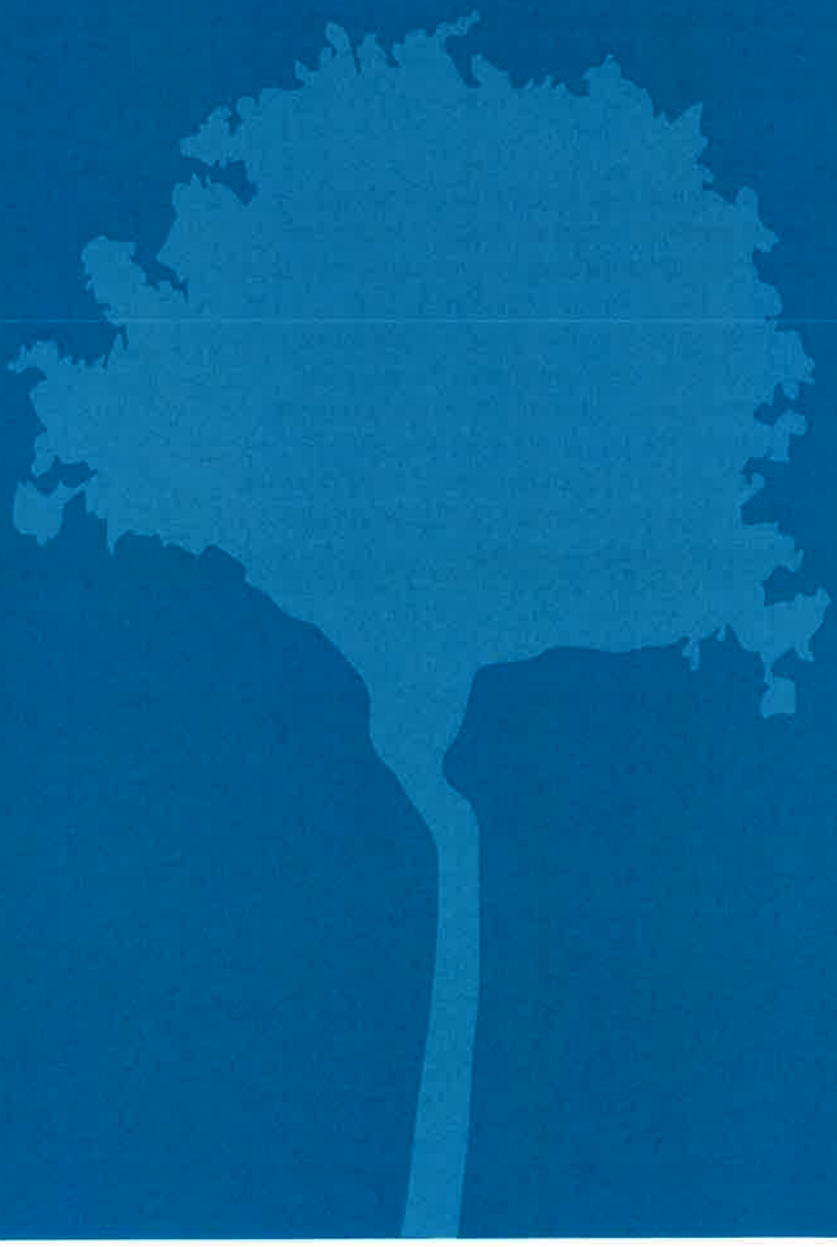
The Manager may modify the specifications of the permit in order to respond to concerns, changes in regulations, or previously unforeseen issues. The permittee shall be notified at least 6 weeks in advance in writing of the intent to modify the permit and shall be provided an opportunity to comment on the proposed changes. The permittee shall also have an opportunity to appeal the permit if changes are made. Changes shall not go into effect until the permit is updated in writing.

Compliance and Revocation

It is the permit holder's responsibility to adhere to the terms of the permit. If the terms of the permit are not met, the permit holder shall be notified of the violation in writing and informed of the actions necessary to correct the violation(s). If the corrective actions are not undertaken within the specified timeframe, the Manager may impose any or all of the following actions until the violation is corrected:

- Temporary work stoppage
- Revocation of the Programmatic Permit
- Denial of future Programmatic Permits
- Addition conditions imposed upon the activities permitted by the Programmatic Permit
- Enforcement penalties
- Civil penalties
- Restoration fees to stabilize site conditions (fees will be based on the Payment-in-Lieu amount in Section 4 of this manual.

Trees, Vegetation, and Soil Protection



Tree, Vegetation, and Soil Protection

Identifying and Surveying Overlay-Protected Trees

Trees of 6" Diameter Breast Height (DBH) and above are regulated in Gresham's Environmental Overlays, with each overlay having specific allowances for tree removal and related tree replacement or mitigation standards.
Gresham's Planner on Duty (POD@GreshamOregon.gov), should be contacted to discuss any tree removal for trees that are 6" DBH or larger. (Information on how to measure a tree's DBH follows below.) When contacting the Planner on Duty provide the tree species, if known, or a photo that provides adequate detail that staff can identify the tree. Also provide information about the location of the tree in relation to any habitable structure, and in relationship to any overlay boundary.

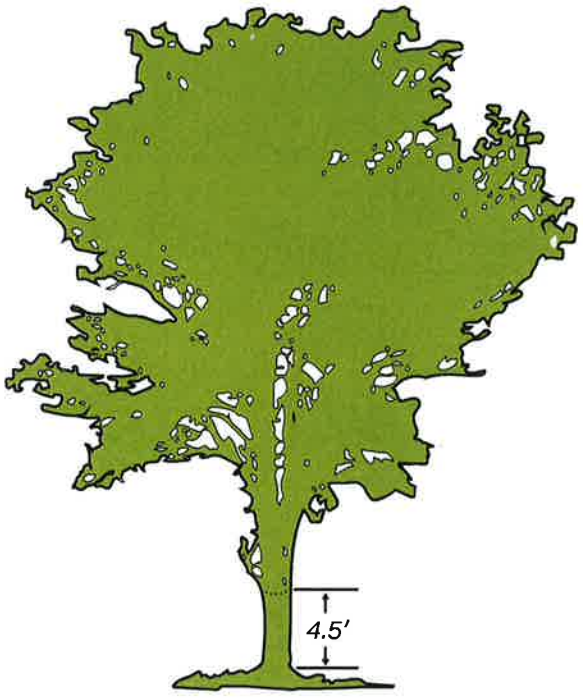
Measuring Diameter at Breast Height (DBH)

Diameter at breast height, or DBH, is the standard for measuring trees. DBH refers to the tree diameter measured at 4.5 feet above the ground.

DBH can be measured quickly with a specially calibrated diameter tape, often referred to as a d-tape, that displays the diameter measurement when wrapped around the circumference of a tree.

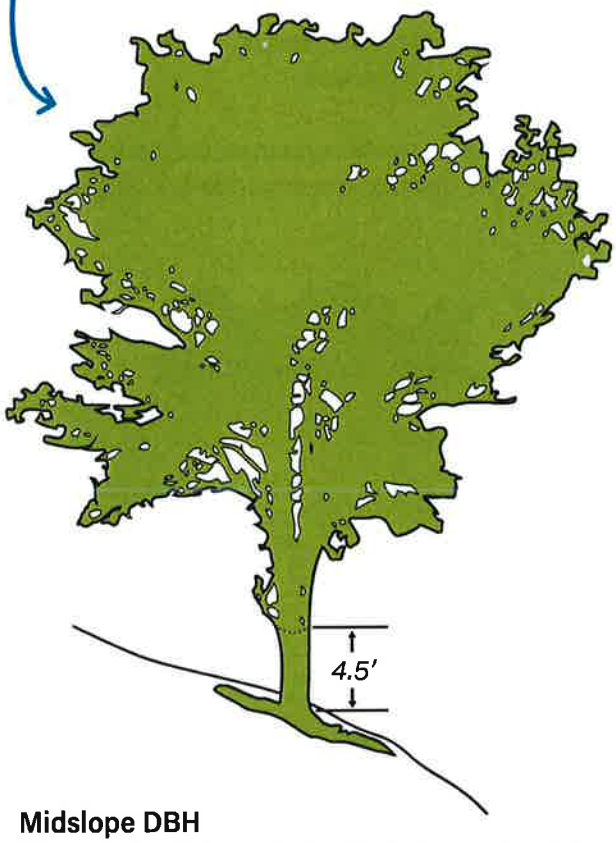
If you don't have access to a d-tape, you can find the diameter of the tree using a string, a measuring tape, a thumb tack, and a calculator.

1. With the measuring tape, measure 4.5 feet up the trunk of the tree from the ground. Use a thumb tack to mark the height on the tree.
2. Wrap your string around the tree trunk at 4.5 feet. Make sure the string is straight and tight around the trunk, and mark or cut the circumference on the string.
3. Measure the length of string to get the circumference of the tree.
4. Convert the circumference measurement to diameter by dividing the circumference by pi (3.14).

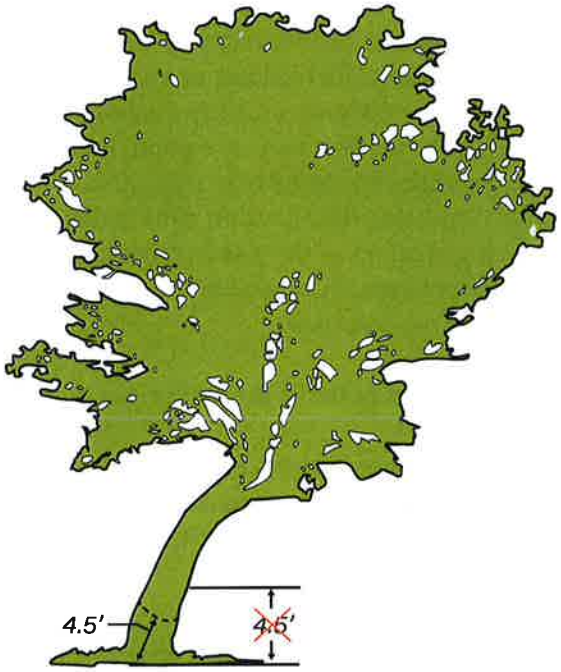


Measuring tree DBH
Measure DBH of tree at 4.5 feet from the ground

When the trunk is at an angle or is on a slope, the trunk is measured at right angles to the trunk 4.5 feet along the center of the trunk axis, so the height is the average of the shortest and the longest sides of the trunk.

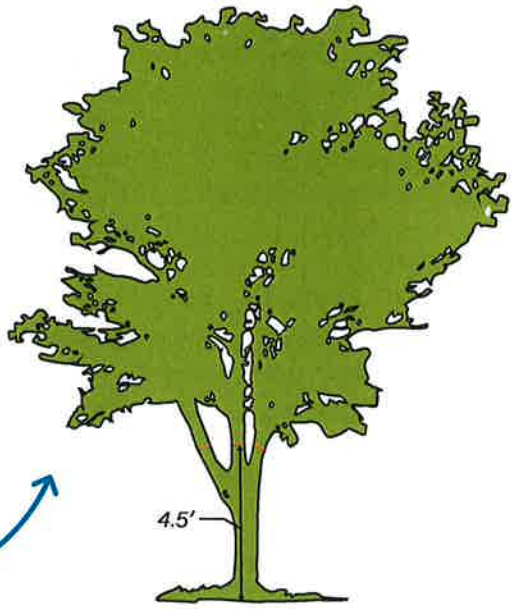


Midslope DBH
Measure perpendicular to the trunk center axis at 4.5 feet, so the height is the average of the shortest and longest sides of the trunk.



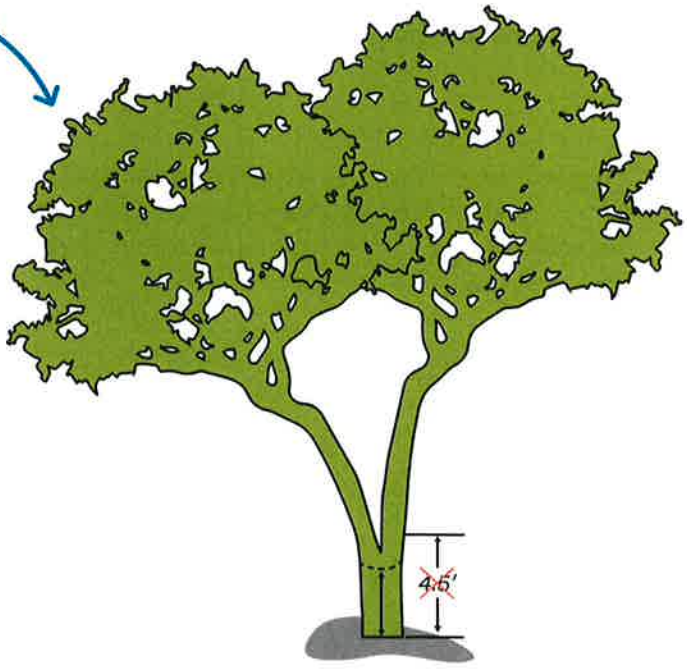
Leaning tree
Measure perpendicular to the trunk center axis at 4.5 feet so the height is the average of the shortest and longest sides of the trunk.

For multi-stemmed trees, the size is determined by measuring all the trunks, and then adding the total diameter of the largest trunk to one-half the diameter of each additional trunk. A multi-stemmed tree has trunks that are connected above the ground and does not include individual trees growing close together or from a common root stock that do not have trunks connected above the ground.



Multi-stemmed DBH
Measure around each trunk at 4.5 feet from the ground. Add the total diameter of the largest trunk to 1/2 the diameter of each additional trunk.

When the trunk branches or splits less than 4.5 feet from the ground, measure the smallest circumference below the lowest branch. If the tree has a branch or a bump at 4.5 feet, it is better to measure the diameter slightly below or above the branch/bump.



Split trunk tree
When the trunk branches or splits less than 4.5 feet from the ground, measure the smallest circumference below the lowest branch.

Tree Surveys

When impacts are proposed within the Environmental Overlays, most often a tree survey is required. Tree surveys should be completed by a certified arborist, registered landscape architect, professional land surveyor, or qualified natural resources professional. All trees, regardless of species 6" DBH or larger need to be included in the survey and reflected on the survey sheet graphically and in the legend. Ensure accuracy, as if it is found in a field inspection that the survey is inaccurate, an application can be deemed incomplete, delaying the development application review process while the survey is corrected.

Information to be provided on the tree survey:

- *Location*
  The location of each tree's trunk should be shown, relative to property lines, overlay boundaries, other trees, and any other features relevant to the evaluation of a proposed project and the associated proposed impacts to or preservation efforts for the site's trees. Tree location data must be the result of a ground survey, not aerial photo analysis.

- *Critical Root Zone (CRZ)*
  Trees are to be represented on the tree survey by a concentric circle centered on the trunk location. See more on establishing the CRZ for a tree in the Section below.

- *Diameters and types of existing trees*
  Tree DBHs (to the nearest inch) and types shall be shown on the survey within a legend. Tree numbers on the legend shall correlate with the appropriate tree circle drawn on the plan and the trees in the field. Health status or other special conditions such as "dead" should be noted. Unless proposing tree removal based on inclusion on the City of Gresham Invasive Plant List, identifying each tree to species is not necessary, though the information is welcome. Tree type should identify tree to the genus level (i.e., "maple) at a minimum.

- *Tree numbers*
  tree numbers on the plan shall correlate with tags assigned to trees during the survey.

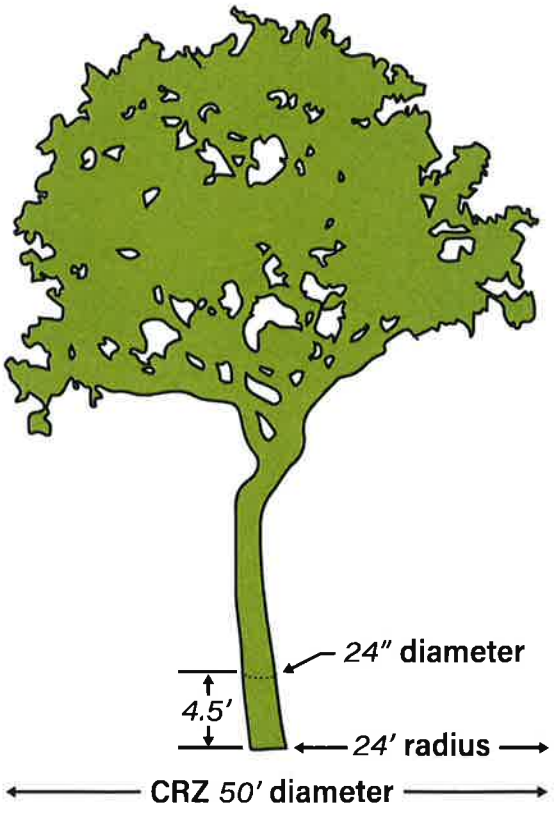
- *Tree survey table*
  A table will be included listing all surveyed trees by number, species, size, protection status, removal status, health conditions, and creditable trees under eight inches.

Tree Protection

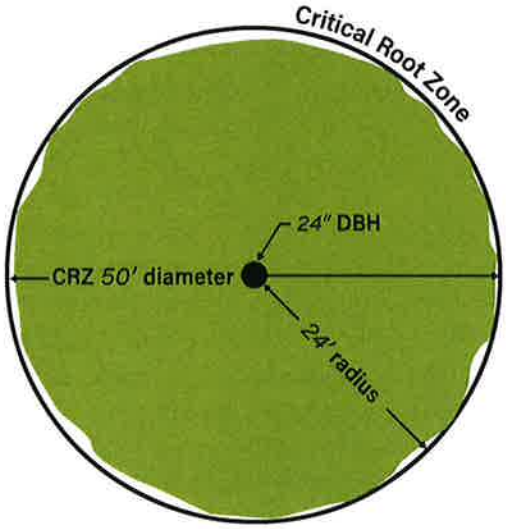
Critical Root Zone (CRZ)

Preserving tree roots and surrounding soil in an intact state will help preserve trees and reduce risks associated with damaged or destabilized trees.

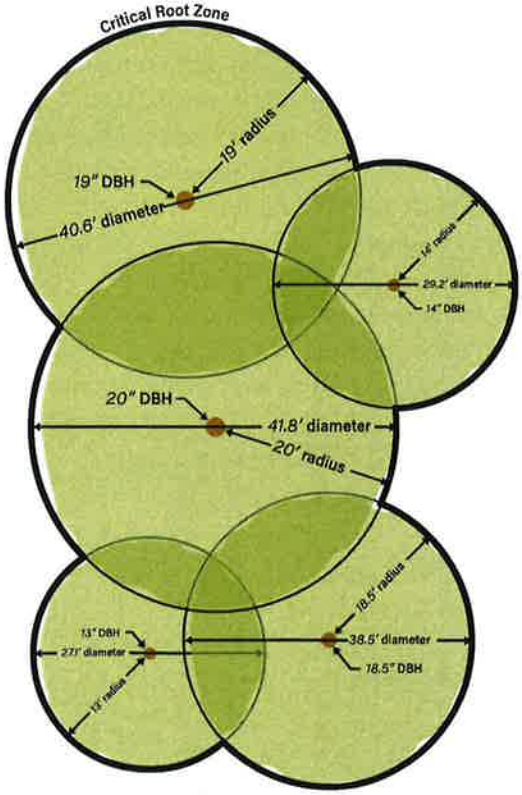
To accomplish this, a root protection area needs to be observed for the area of soil beneath a tree where various root types required for future tree health and stability are located. While the actual root plate structure of any tree will vary by species and site conditions, the Critical Root Zone (CRZ) is a recognized International Society of Arboriculture's root protection standard that is referenced in Gresham's Environmental Overlay codes. The CRZ is defined by a circle with a minimum radius of 1' for 1" in trunk DBH, measured horizontally from the base of the tree.



Measuring the CRZ of a Single Tree



Measuring the CRZ of Multiple Trees



Tree Protection Plans

Prior to the start of any development project, an applicant will have prepared and submitted for review a Tree Protection Plan for all protected trees. Tree protection during development helps to reduce the negative impacts of construction and is necessary to:

- Keep the foliage crown, branch structure and trunk clear from direct contact and injury by equipment, materials, or disturbances (see Section 7 of this manual on proper pruning cuts that should be made proactively on branches susceptible to injury by heavy equipment);
- To preserve roots and soil in an intact and non-compacted state; and
- To visibly identify the critical root zone in soil disturbance is prohibited or restricted per permit conditions. Tree protection measures should remain in place until the project is complete.

Tree protection shall be represented on the proposed site plan, grading plan, erosion control plan, and/or construction management plan and should provide adequate detail to convey

- The specific type of tree protection BMP being utilized for each tree.
- The percentage of the Critical Root Zone encroachment for each tree, if any.
- Construction details showing selected options in tree fencing and protection.
- Tree protection symbols, and, if applicable, tree protection notes.

Simple Tree Protection Plans

- Trees are protected at the Critical Root Zone (as established per Section 7 of this manual).
  - Show existing encroachments into the critical root zone.
  - Minimal encroachments into the Critical Root Zone are allowed provided:
    - The encroachment is baewd on the recommendations of a certified arborist.
    - Monitoring at 3 years post construction will be provided for each tree where the CRZ standard was reduced, and if construction impacts are associated with significant decline, mitigation per ETGM Section 3.3.4 will be provided.
    - The area of all new encroachments is less than 25 percent of the remaining Critical Root Zone when existing encroachments are subtracted; and
    - No new encroachment is closer than 1/2 the required radius distance.

- Protection fencing around the CRZ should be shown on the plan.
  - Fencing should be a minimum 6-foot high and be metal chain link. The fencing should be secured with 8-foot metal posts at the edge of the critical root zone/ established encroachments. Existing structures and/or existing secured fencing at least 6 feet tall can serve as the required protective fencing.
  - If the critical root zone extends off-site, the fencing can be placed at the critical root zone and may be existing structures and/or existing secured fencing at least 6 feet tall.
  - The fences should be signed. Signs should be attached to the fence, made of a waterproof material, at least 2.5 square feet, have lettering in a contrasting color to the background and be clearly legible. Signs must include:
    - "Tree Protection Area" in letters at least 6 inches tall
    - The penalties for violations in letters at least 1 inch tall
  - The fence should be installed before any ground disturbing activities (including clearing and grading) or construction
- starts. Fences should remain until all work is complete (until final inspection when in conjunction with a building permit).

  The following is not appropriate inside the fenced area:
  - Ground disturbances or construction activity including vehicle or equipment access
  - Storage of equipment or materials including soil, temporary or permanent stockpiling, proposed buildings, impervious surfaces, underground utilities, excavation or fill, trenching or other work activities

Alternative Review Tree Protection

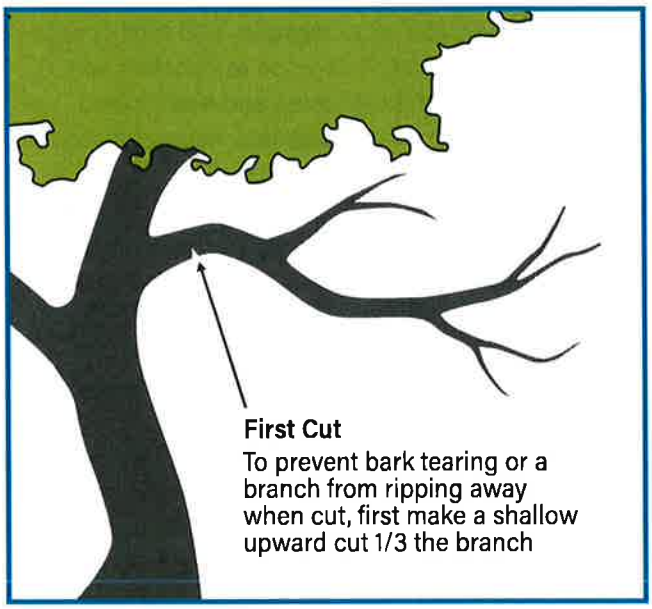
Prescriptive Based Protections are often not practicable within environmentally sensitive areas. Alternate plans proposed should reference:

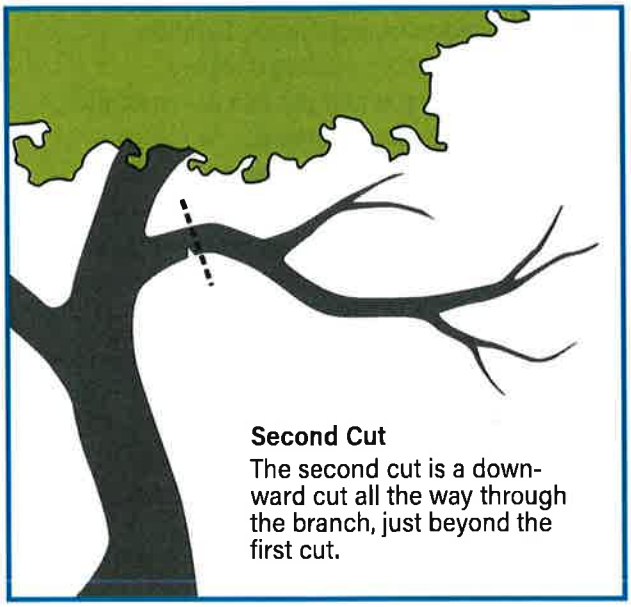
- An alternative root protection zone prepared by an arborist who has visited the site and examined the specific trees' size, location, and root cover, evaluated the tree's tolerance to construction impact based on its species and health, and identified any past impacts that have occurred within the root zone.
- An arborist-prepared plan providing the rationale used to demonstrate that the alternate method provides an adequate level of protection based on the findings from the site visit described above; Signage, stating that penalties will apply for violations, and providing contact information for the arborist.
- If and when the arborist is required to be on site during construction activity. If the arborist is required, the applicant should submit a copy of the contract for those services prior to permit issuance and a final report from the arborist documenting the inspections and verifying the viability of the trees prior to the City's final inspection.
- If the alternative tree protection method involves alternative construction techniques, an explanation of the techniques and materials used shall be submitted.
- Changes to tree protection. Changes to the tree protection measures during the course of the development are only allowed when approved by the City.

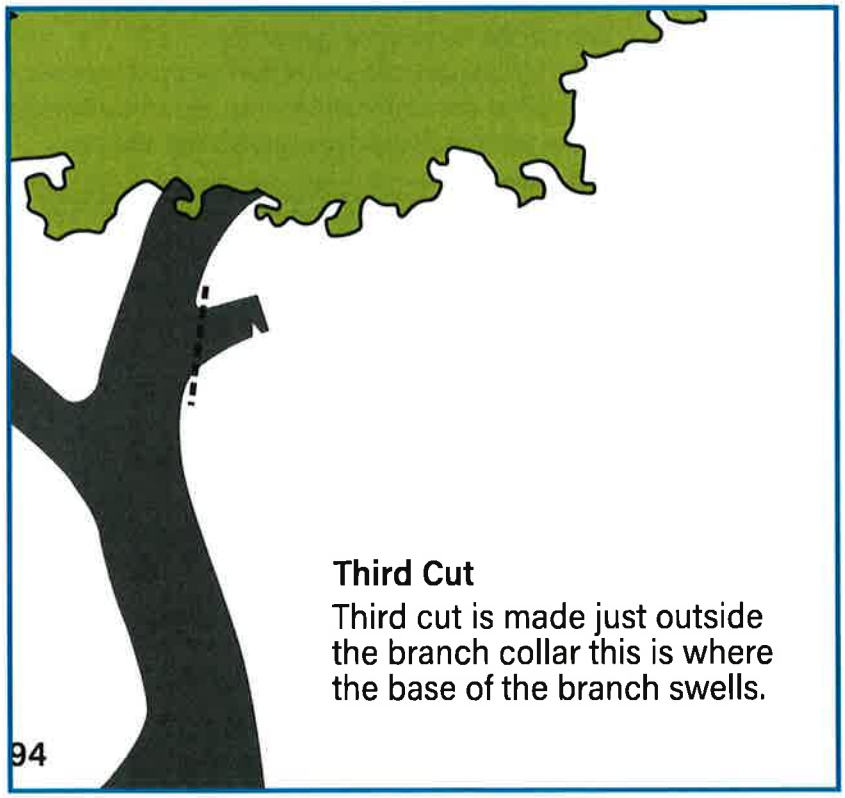
Use of Alternative Tree Protection BMPs will necessitate monitoring at 3 years post construction for each tree where the CRZ standard was reduced, and if construction impacts are associated with significant decline, mitigation per Section 3 of this manual will be provided.

Proactive Pruning Cuts

Prior to construction, various trees may require that branches be pruned clear from structures or activities such as heavy equipment traffic where the equipment might break away tree branches. Tree pruning needs should be assessed by a certified arborist in advance of the work beginning. If after professional pruning it is discovered a branch has potential to be damaged by equipment, following pruning cut protocol needs to be followed.







Invasive Trees

Outside of the wet weather windows listed in 6.3.2 of this manual, invasive trees may be removed without a permit, and without replacement criteria.

In advance of the tree removal, an HGRO

- The species of the tree to be removed.
- Verification that the tree is listed on the City of Gresham Invasive Plant List or the Oregon State Noxious Weed List.
- In-focus, high resolution photographs sufficient for in-office determination of species by City staff.
  - Pictures of the bark, trunk, crown, flowers, fruits, branching pattern, twigs and/or leaves or needles may be submitted.
  - If staff are unable to identify the tree to species, additional site photos may be requested, or a field site visit may be requested.

Dangerous Trees

For the purposes of the Environmental Overlays, Gresham defines a hazardous or "Dangerous Tree" as a tree that meets one of the following:

- A tree which is diseased, infested by insects or fungus, or rotting and which cannot be saved by reasonable treatment or pruning or which must be removed to prevent spread of the infestation or disease to other trees.
- A tree in such condition that presents a foreseeable danger of inflicting damage that cannot be alleviated by treatment or pruning. Damage may include injury to people or damage to structures or vehicles within a target zone equal to the height of the tree. Conditions may include root damage instability, and completely dead trees.

Each of Gresham's Environmental Overlays includes provisions for removing Dangerous Trees, and typically a replacement tree is required to be planted on the same site. Contact Gresham's Planner on Duty (POD@GreshamOregon.gov) in advance of removing any tree above 6" DBH in an Environmental Overlay.

Due to the wildfire risk that can be posed by dead wood, any tree felling in the Environmental Overlays include removal of wood from a site where the Coarse Woody Debris standards listed above in this Section can not be followed, or when within 50' of a habitable structure.

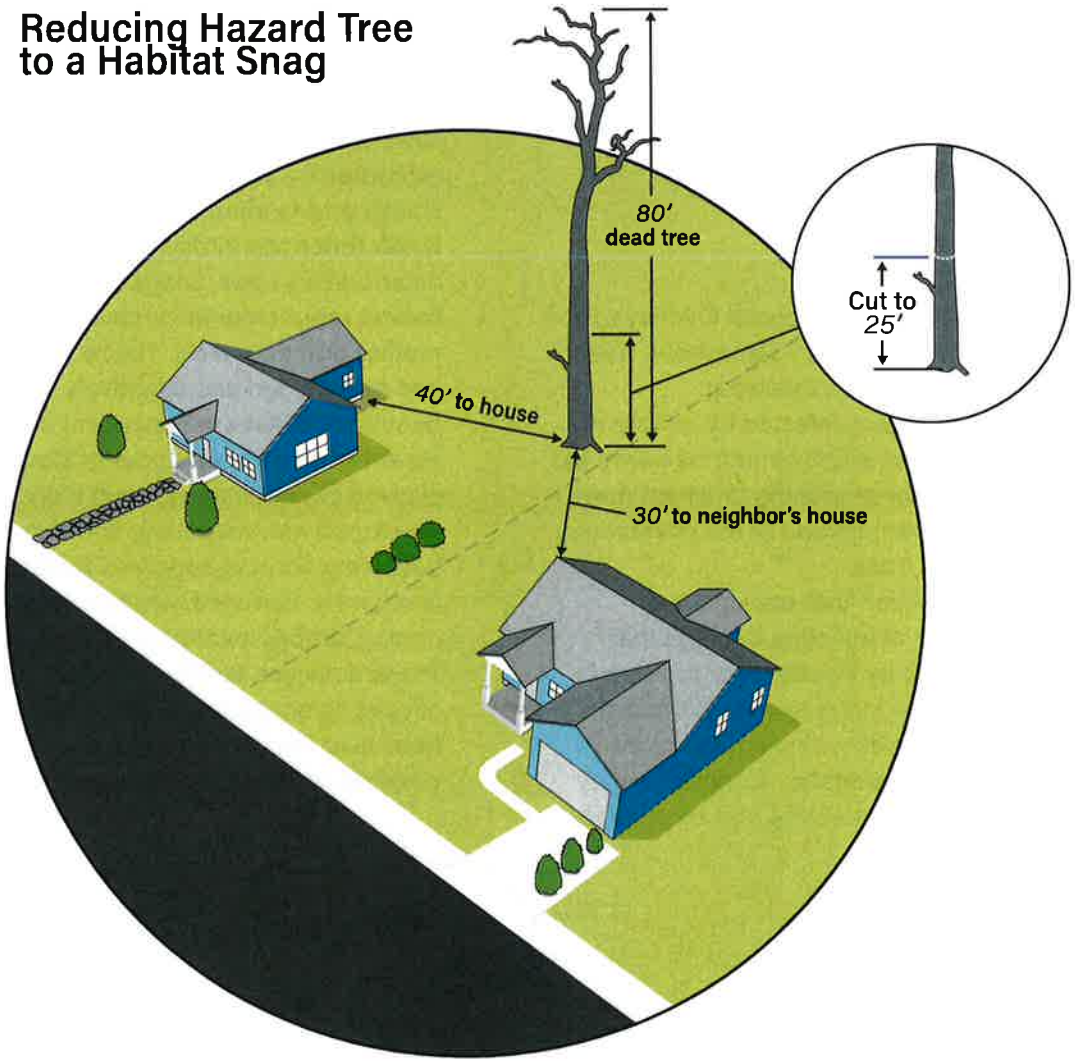
Retaining Wildlife Snags or Habitat Trees

A wildlife snag or habitat tree is any dead or dying standing tree. Snags may develop cavities which either occur naturally or are excavated by wildlife, and are used for nesting, shelter and feeding sites. Over 85 species of North American birds use cavities in dead or deteriorating trees. Snags also provide essential habitat requirements for cavity-using amphibians, reptiles and mammals. The removal of all dead and dying wood can negatively impact wildlife populations that are dependent on them as essential habitat components. Cavity nesters evolved in unmanaged forest stands where snags developed naturally. Snag and den trees are becoming short in supply as forests are being intensively managed, whether through cordwood cutting, timber management or land clearing. These activities tend to accelerate the removal of existing snags and diminish the probability of trees ever becoming large enough to serve as possible snag or den trees.

Within Gresham's wooded areas, dead and dying trees can, in certain situations, be converted safely into wildlife snags by reducing the height of the dead or dying tree to a point where, if it fell, it would not land on a structure, into the right of way, onto a trail, or onto similar areas that people frequent. To benefit wildlife, snags should be at least 12" in diameter at breast height (DBH) and at least six feet tall as even smaller snags of that size can provide needed perching and feeding stations for birds and wildlife. Older trees with thicker bark and early or advanced cavity features make the most valuable snags, and are likely to attract more wildlife into an area, thus for many are desirable in or adjacent to a formal landscape.

Wildlife snags created or converted from dangerous or other hazard trees have a very low risk of failure after conversion. Any conversion into a wildlife snag should carefully consider any potential "targets" (where people might be present) by measuring proximity to any areas where people are likely to be present and reducing the height to be less than the distance to the closest possible "target" area, per the below graphic.

Reducing Hazard Tree to a Habitat Snag



Fire Defensible Spaces

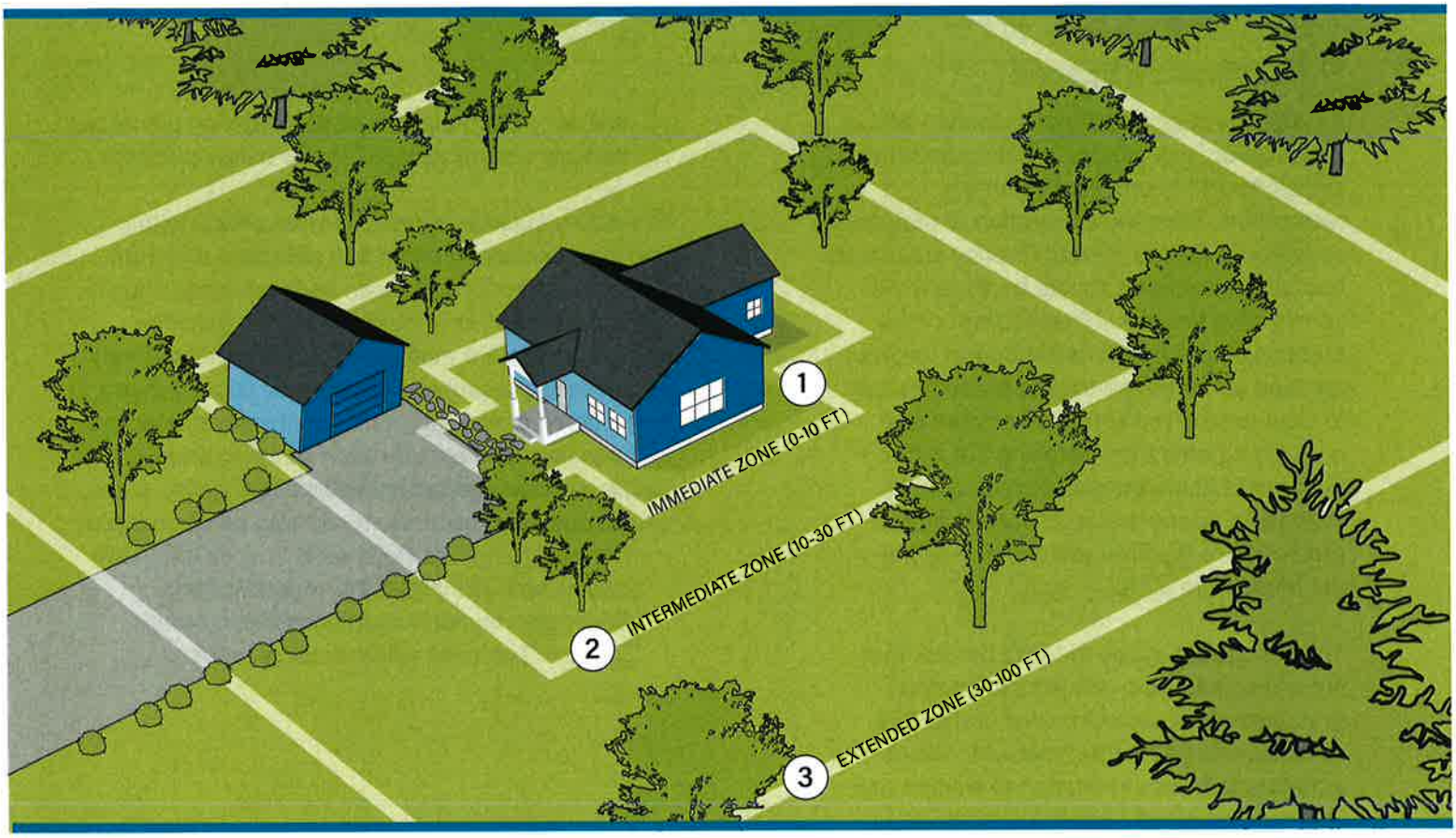
It is the intent of the City to consider various public safety risk factors in both permitting decisions and approval of voluntary restoration. Planning restoration or mitigation activities in Environmental Overlay areas near habitable structures should be done while considering fire risk. "Firescaping" or the creation of a Fire Defensible Space, involves creating and maintaining the space needed to slow or stop the spread of wildfire and protects a home from catching fire, either from direct flame contact or radiant heat. Defensible space is also important for the protection of the firefighters that may defend the home from a fire.

This defensible space reduces the risk that fire will spread from one area to another, or to a structure, and provides firefighters access and a safer area from which to defend a threatened area. In relation to wildfire risk, Gresham does not require implementation of Fire Defensible Space planting regimes, however, the City:

- Recommends incorporation of this or similar guidance in any restoration planning in order to reduce risk of wildfires reaching a habitable structure, and
- Will not permit placement of mitigation plantings that are contraindicated by the below guidance.

Fire safety considerations are most critical within and immediately adjacent to a habitable structure. Beyond precautions that can be taken when initially building or later retrofitting a structure (such as using fire resistant materials such as metal roofing), and beyond precautions that can be taken within a home (such as ensuring functional smoke detectors on each floor and outside each sleeping area), landscape management activities, restoration plans, and mitigation proposals should also be considered.

- Implementing Fire Defensible Spaces generally begins with looking at the vegetation and flammable material conditions around one's home or business within various zones.



Zone (1)

The Home Ignition Zone is the house plus a 10-foot distance. The objective is to reduce windblown embers from a nearby fire from landing near the home and causing significant damage. Within Zone 1:

- Keep flammable materials away from this zone: pine needles, leaves, and organic mulches such as wood chips. Replace organic mulch with hardscape or landscape rocks. Remove dead vegetation.
- Shrubs and trees are not recommended this close to the house.
- Using proper pruning practices to protect tree health, trim away branches overhanging the roof, and within 10 feet of chimney.
- Keep rain gutters and roof clean.

Zone (2)

The "lean, clean, and green" zone. Here the objective is to create and maintain a landscape that, if ignited, will not readily transmit fire to the home. This zone should have an area at least 30-feet-wide that is:

Lean – Vegetation is well spaced and comprised of the most fire-resistant species. Over time, replace more flammable species with less flammable plants. In general:

- Conifer species (such as pine, fir, and cedar species) have tough thick foliage, but their high resin content ignites quickly and burns hotly. Conifers often drop lots of litter, including resin-filled cones, that can catch wind-blown firebrands or catch spark from discarded cigarettes or fire pit clean out

- Broadleaf evergreens (such as magnolia trees or rhododendron shrubs) are more fire resistant than conifers. Broadleaf trees have tough leathery leaves that give up their moisture slowly and will scorch before catching fire.
- Deciduous trees and shrubs (maples, poplar, ash species) are considered even more fire safe, since their thin, moist leaves simply shrivel when exposed to extreme heat and give the flames little purchase in their canopy. See Gresham Native Plant List in Appendix B for examples of coniferous, broadleaf evergreen, and deciduous species known to be an above average Fire Accelerant.

Clean –

- Remove dead vegetation from your property. Address dead or dying trees by first contacting the Gresham Planner on Duty at (POD@greshamoregon.gov) to inquire about Dangerous tree removal permits.
- Do not dump yard debris or woody material into the adjacent open space as it will cure and become tinder, and can hamper emergency fire response to your home.
- Do not store flammables such as propane tanks, or stockpile wood material (including fireplace woodpiles) within 30 feet of your house or building.

Green – Plants are healthy and green during fire season.

- Prune dead branches from trees, using proper arborist cuts to protect overall tree health.
- Plants that are green and lush are more fire resistant. If regularly watered and maintained to eliminate the accumulation of dry plant litter within this zone, these plants will be far less likely to carry fire to your home. While all plants will eventually burn, healthy ones with a high moisture content are more difficult to ignite.

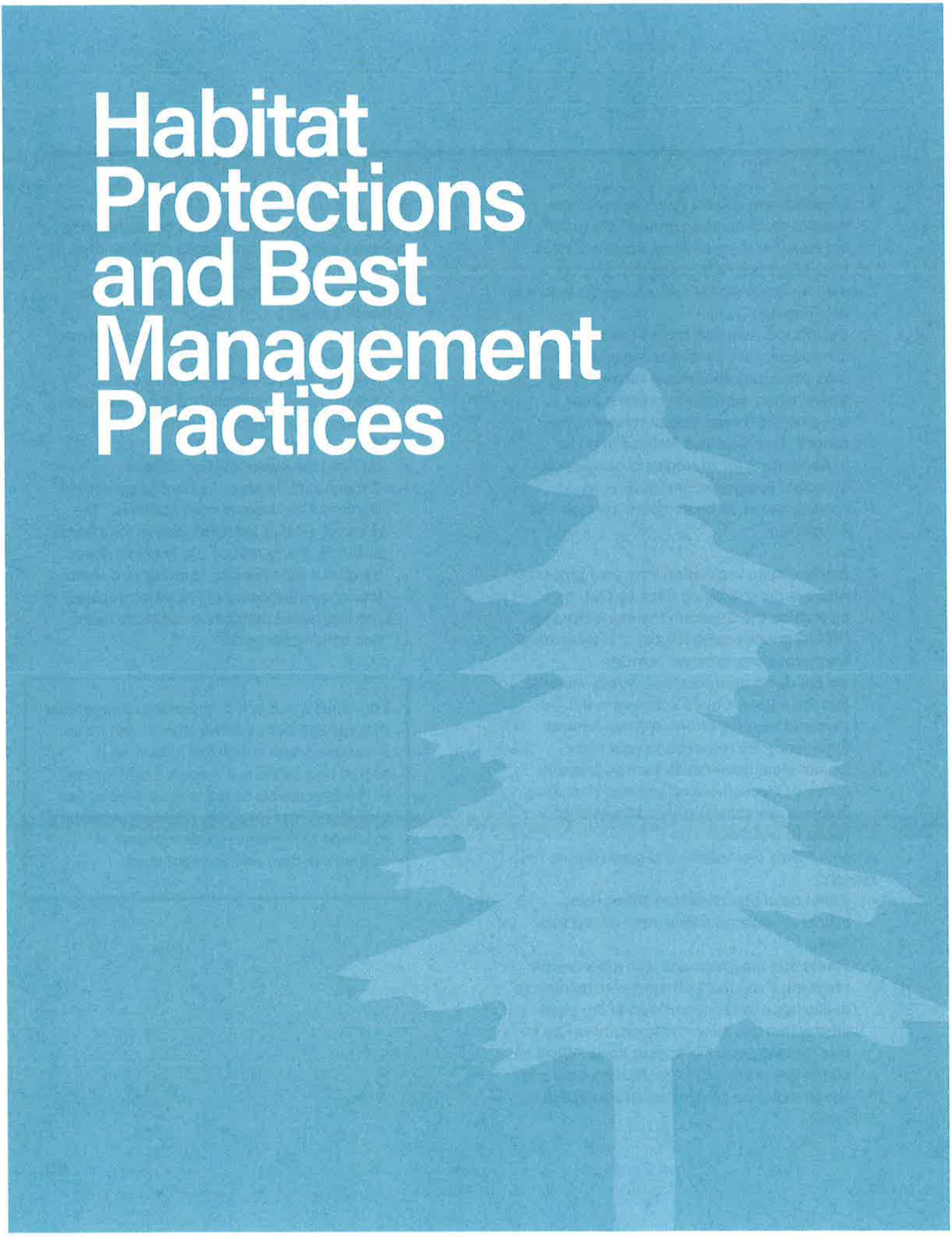
Zone ③

The Reduced Fuel Zone should be managed to decrease the energy and speed of the wildfire by converting over time dense coniferous vegetation to more deciduous species. Also within this zone:

- Provide separation between plants or small groups of plants.
- Reduce shrub growth beneath trees or against fences, especially shrubs that retain significant amounts of flammable dead material, such as arborvitae.
- Be Fire Risk Aware of your activities throughout this area. Eighty-five percent of wildfires stem from human activities. The greatest wildfire safety measures for a home or building is to reduce the fire risks posed by sparks from fire pits, burning yard waste, improperly disposing of fire pit or fireplace ash, discarded matches or cigarette butts, and lighting fireworks.

For Zones 2 and 3, it is important to remember that spacing out trees and shrubs can invite in invasives with a high fire hazard, so it should only be done if there is a willingness to increase maintenance to keep species like blackberry from invading. Allowing blackberry to invade may create a higher degree of wildfire risk than no treatment at all.

Habitat Protections and Best Management Practices



Habitat Protections and Best Management Practices

Habitat Friendly Development Practices

The magnitude of development impacts within the FO, HGRO, and NRO can be minimized by use of the habitat-friendly development practices described below, and as set forth in Metro's Title 13, or through additional innovative techniques. Integration of such Best Management Practices can result in a reduced impact on protected areas which provides a benefit in preservation of ecosystem functions in the resulting undisturbed areas, as well as possibly reducing permitting and mitigation obligations tied to protected area impacts.

In the most general terms, habitat friendly development practices include preservation, enhancement, and creation of areas on the landscape that consider the habitat and migration needs of wildlife bird, fish, and wildlife species.

Part A Impacts: Design and Construction Practices to Minimize Hyrdrologic Impacts

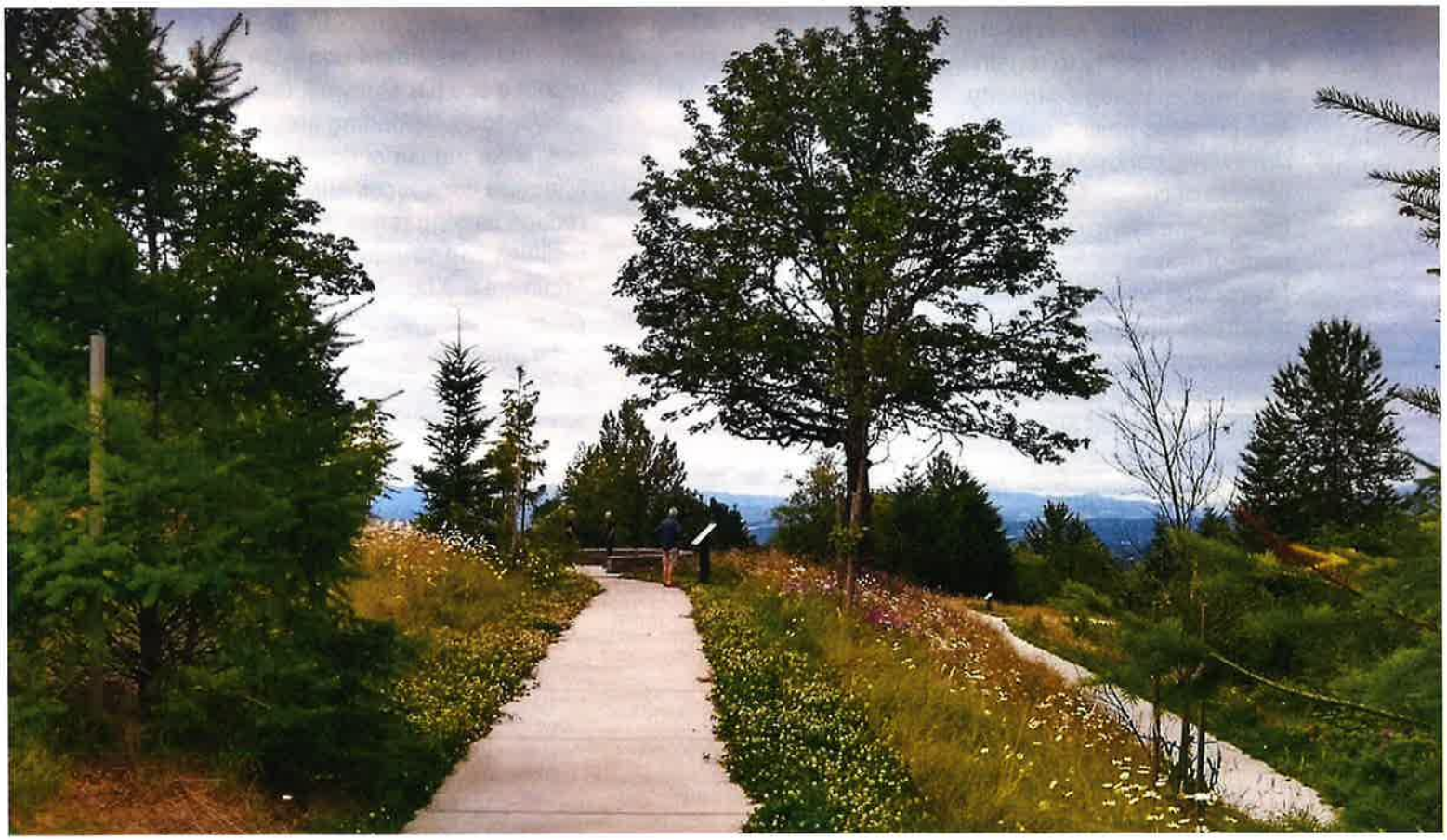
- Amend disturbed soils to original or higher level of porosity to regain infiltration and stormwater storage capacity.
- Use pervious paving materials for residential driveways, parking lots, walkways, and within centers of cul-de-sacs.
- Incorporate stormwater management in road right-of-ways.
- Landscape with rain gardens to provide on-lot detention, filtering of rainwater, and groundwater recharge.
- Use green roofs for runoff reduction energy savings, improved air quality, and enhanced aesthetics.
- Disconnect downspouts from roofs and direct the flow to vegetated infiltration/filtration areas such as rain gardens.
- Retain rooftop runoff in a rain barrel for later on-lot use in lawn and garden watering.
- Use multi-functional open drainage systems in lieu of more conventional curb-and-gutter systems.
- Use bioretention cells as rain gardens in landscaped parking lot islands to reduce runoff volume and filter pollutants.
- Apply a treatment train approach to provide multiple opportunities for stormwater treatment and reduce the possibility of system failure.
- Reduce sidewalk width and grade them such that they drain to the front yard of a residential lot or retention area.
- Reduce impervious impacts of residential driveways by narrowing widths and moving access to the rear of the site.
- Use shared driveways.
- Reduce width of residential streets, depending on traffic and parking needs.
- Reduce street length, primarily in residential areas, by encouraging clustering and using curvilinear designs.
- Reduce cul-de-sac radii and use previous vegetated islands in center to minimize impervious effects, and allow them to be utilized for truck maneuvering/loading to reduce need for wide loading areas onsite.
- Eliminate redundant non-ADA sidewalks within a site (i.e. sidewalk to all entryways and/or to truck loading areas may be unnecessary for industrial developments.
- Minimize car spaces and stall dimensions, reduce parking ratios, and use shared parking facilities and structured parking.
- Minimize the number of stream crossings and place crossing perpendicular to stream channel if possible.
- Allow narrow street right-of-ways through stream corridors whenever possible to reduce adverse impacts of transportation corridors.

Part B Impacts: Design and Construction Practices to Minimize Impacts on Wildlife Corridors and Fish Passage

- Carefully integrate fencing into the landscape to guide animals toward animal crossings under, over, or around transportation corridors.
- Use bridge crossings rather than culverts wherever possible.
- If culverts are utilized, install slab, arch or box type culverts, preferably using bottomless designs that more closely mimic scream bottom habitat.
- Design stream crossings for fish passage with shelves and other design features to facilitate terrestrial wildlife passage.
- Extend vegetative cover through the wildlife crossing in the migratory route, along with sheltering areas.

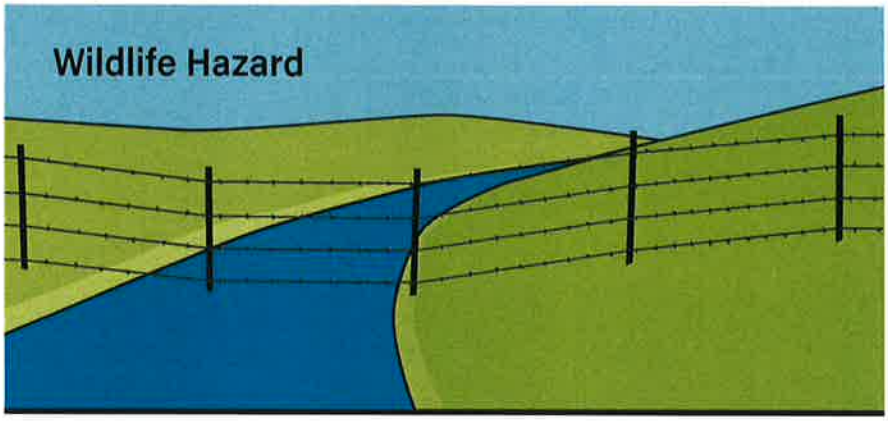
Part C Impacts: Miscellaneous Other Habitat-Friendly Design and Construction Practices

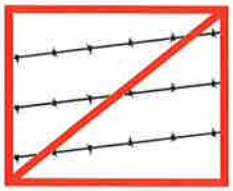
- Use native plants throughout the development (not just in HCA).
- Locate landscaping (required by other sections of the Code) adjacent to HCA.
- Reduce light-spill off into HCAs from development.
- Preserve and maintain existing trees and tree canopy coverage, and plant trees, where appropriate, to maximize future tree canopy coverage.



Wildlife Friendly Fencing

While the best fence for wildlife is no fence at all, site encolsures are a necessity to protect gardens and play areas, to provide dog runs, and to define property boundaries. In certain situations, fence alternatives can be used to define boundaries, discourage trespass, or maintain privacy. A line of trees, shrubs, and other vegetation can be used to mark a boundary, screen for privacy, beautify a landscape, and provide additional food and cover for wildlife. Often, the time required to grow a living hedge makes such a vegetated solution unrealistic for a property owner. In those cases, and especially when within Environmental Overlays where wildlife traffic is most concentrated, wildlife friendly fencing can be designed. This approach assumes wildlife will attempt to cross fencing in their quest for accessing food, water, resting areas, and migration corridors.





No barbed wire
Barbed wire can injure or kill wildlife.

No structures in the floodplain
Fences in the floodplain can catch material and cause flooding and damage. Wildlife use creeks as important corridors.

Don't cross streams
Fences crossing creeks can cause log jams and prevent wildlife passage.

Problem Fences

What kinds of fence cause problems for wildlife? Fences that:

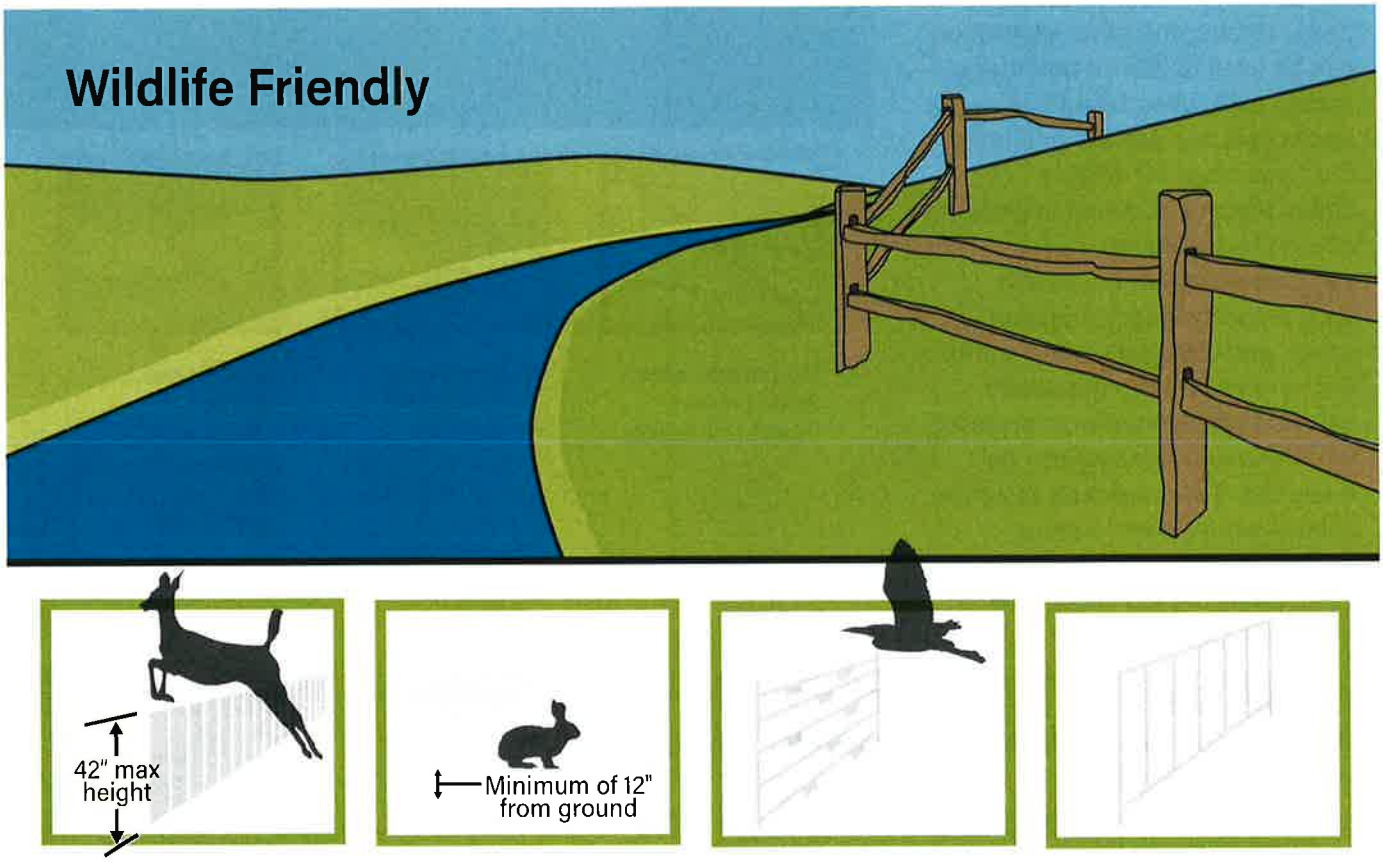
- Are too high to jump;
- Are too low to crawl under;
- Have loose wires;
- Have wires spaced too closely together;
- Are difficult for fleeing animals or birds to see;
- Create a complete barrier to water sources and migration routes

Birds can collide with fences, breaking wings, and can tangle in wire fences. Waterfowl fly into fences that run near or across waterways, and low-flying hawks and owls may careen into fences when swooping in on prey.

Recommended Wildlife-Friendly Fencing Strategies

The "friendliest" fences for wildlife are very visible and allow wild animals to easily jump over or slip under the wires or rails. Design features should include:

- Height of top rail or wire should be 42" or less
- Smooth wire or rounded rail for the top
- Using a rail, high-visibility wire, flagging or other visual markers for the top
- At least 12" and ideally 16" between the bottom wire or rail and the ground
- Smooth wire or otherwise rounded bottom



Not too high
Fences that are too high can trap or injure wildlife.

Space to get under
Young or small wildlife can't jump a fence. A gap between the ground and the fence can let them through.

Very visible
Birds can't always see wire or string fences.

Smooth top
Spikes and pointed tops on fences can injure wildlife.

In-Water Work Windows

Oregon Department of Fish and Wildlife (ODFW) has developed guidelines for the timing of in-water work in the waterways of Oregon. The guidelines were established to encourage in-water work to occur when it will avoid the vulnerable life stages of fish including migration, spawning, and rearing. In developing the guidelines, primary considerations were given to certain fish species such as anadromous and other game fish, and threatened, endangered, or sensitive species.

For Environmental Overlay-area projects requiring a state or federal permit, these In-Water Work Windows are included as permit requirements. For projects below thresholds requiring a state or federal permit, In-Water Work Windows should still be observed whenever possible to minimize the chance of negative impacts to fish present in Gresham's waterways.

These windows vary by stream, and are grouped by watershed. According to ODFW, the times that in-water work is least likely to have negative impacts on native fish species are:

Watershed	In-Water Work Window
Johnson Creek and its tributaries (e.g., Kelley, Hogan, Butler, Badger, Sunshine)	July 15 - August 31
Kelly, Burlingame Beaver Creeks (these are tributaries to the Sandy River)	July 15 - August 31
Fairview Creek and the Columbia Slough	June 15 - September 15

Migratry Bird Treaty Act Compliance

The City of Gresham routinely reviews and updates its Migratory Bird Treaty Act (MBTA) protocol, last reviewing in Summer 2020. These MBTA protocols are required of City of Gresham staff conducting work for the city. Programmatic Permits issued by the City to non-City entities contain this language as a requirement. Tree removal permits issued by the City to private entities contain this language as a recommendation.

> In the event of regulatory directives at the federal level that may seemingly alter the enforceability of the MBTA by US Fish and Wildlife Agency, the City will continue to require MBTA compliance for its own public works projects and for routine Operations and Maintenance activities.

These Migratory Bird Treaty Act protocols apply to all birds, except starlings, house sparrows, and pigeons.

Avoid vegetation clearing between February 1 and July 31. This is the period when the majority of birds are nesting. Note that nests can be in any vegetation, including the ground, and on structures.

If tree removal must be conducted between February 1 and July 31, staff are to consult with the Natural Resources Program, who will schedule either a staff person or a consultant to conduct a survey for nesting birds within the project area.

The survey will determine whether there is a nest present

- Nest present, but empty: The nest can be legally removed, and planned activities can proceed
- Nest present, and has young birds or eggs: The nest cannot be removed, and vegetation cannot be cleared until the young have fledged (i.e. left the nest). Bird surveys will continue to determine status of young birds. When young have fledged, the vegetation can be removed.

Appendices

Appendix A: Acronyms and Definitions

Acronyms Commonly Used in this Manual

CMP	Construction Management Plan
CLOMR	Conditional Letter of Map Revision
CRZ	Critical Root Zone
CWD	Coarse Woody Debris
DGH	Diameter Breast Height
DOGAMI	Oregon Department of Geology and Mineral Industries
DSL	Oregon Department of State Lands
ETGM	City of Gresham's Environmental Technical Guidance Manual
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FO	Floodplain Overlay
GIS	Geographic Information System
GCDC	Gresham Community Development Code
HGRO	Hillside & Geologic Risk Overlay
HSS	Highly Sloped Subarea
HUC	Hydrologic Unit Code
HVRA	High Value Resources Area
LOMC	Letter of Map Change (FEMA)
MBTA	Migratory Bird Treaty Act
NFIP	National Flood Insurance Program
NRO	Natural Resources Overlay
NRP	Natural Resources Program (Gresham)
ODFW	Oregon Department of Fish & Wildlife
OHWM	Ordinary High Water Mark
OFWAM	Oregon Freshwater Wetland Assessment Methodology
POD	Planner on Duty (Gresham)
PRA	Potential Resource Area
RA	Resource Area
SFHA	Special Flood Hazard Area
USACE	United States Army Corps of Engineers
UDP	Urban Development and Planning (Gresham)

Definitions

Base Flood — Refers to a flood that has a one-percent chance of occurring in any given year. The terms "base flood," "100year flood," and "one-percent annual chance flood" are often used interchangeably.

Coarse Woody Debris — Defined as downed wood such as felled trees, logs, uprooted stumps, large branches, and coarse roots. This includes dead wood in all stages of decomposition. Coarse woody debris is 3" or greater in diameter and does not include dead trees that are still standing, dead branches that are still attached to the tree, or exposed live tree roots.

Critical Root Zone — A protection area beneath a tree containing sufficient roots required for future tree health and stability, and delineated by a circle with a minimum radius of 1' for each 1" of trunk diameter (see DBH), measured horizontally from the base of the tree.

Diameter at Breast Height — The diameter measurement of the trunk or stem of a tree at a height 4.5 feet above the ground level at the base of the tree.

Floodway — The channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height.

Hydrologic Unit Code — Nationally standardized divisions of drainage basins, created by the United States Geologic Service (USGS) and Natural Resource Conservation Service, based on topographic, hydrologic, and other relevant landscape characteristics without regard for administrative, political, or jurisdictional boundaries. Hydrologic Units provide a standardized system for organizing, collecting, and reporting hydrologic information for the nation. Metro regional Hydrologic Unit Codes can be found on USGS's national database, the Watershed Boundary Dataset.

Large Woody Debris Placement — Large Woody Debris Placement: Intentional placement of large (4" minimum diameter at midpoint) woody material (trees, logs, root wads, or major branches) in a waterway, for the purpose of improving the interaction of stream channel elements including water, sediment and bed material, nutrients, and aquatic organisms.

Permanent Disturbance — The permanent disturbance area includes all areas occupied by existing or proposed structures or exterior improvements (including landscaping). The permanent disturbance area also includes areas where vegetation must be managed to accommodate overhead utilities, existing or proposed landscaped areas, and roadside areas subject to regular vegetation management to maintain safe visual or vehicle clearance.

Definitions

Shaded Fuel Break	A defensible location, where vegetation conditions that support a wildfire have been modified in the interest of wildfire suppression. Replacement of vegetation types that can more readily serve as a fire accelerant (such as conifers with high terpene levels) with vegetation types that are more resistant to combustion (such as deciduous trees) can be used to create a shaded fire break.
Special Flood Hazard Area	The land subject to a one-percent or greater chance of flooding in any given year.
Temporary Disturbance	The temporary disturbance area is the portion of the site that will be disturbed for the proposed development but not permanently occupied by structures or exterior improvements. It includes staging and storage areas used during construction and all areas graded to facilitate proposed development on the site, but will not be covered by permanent development. It also includes areas disturbed during construction to place underground utilities, where the land above the utility will not otherwise be occupied by structures or exterior improvements.
Unavoidable Impacts	Impacts that remain after the application of avoidance and minimization efforts that are necessary to achieve the project purpose. Any significant effect on the resource area that cannot be avoided if the project is implemented.
Woody Debris Stockpiling	Intentional accumulation of Coarse Woody Debris in amounts exceeding 3' high and 6' in any horizontal direction.

Appendix B: City of Gresham Native Plant List

The City of Gresham recognizes the importance of native plants in Gresham. These species supply numerous services for humans and wildlife as well as having intrinsic worth and beauty. Gresham encourages their preservation and use, where appropriate, in the Gresham area.

For the purposes of Gresham's Native Plant List, a native plant is a plant that was:

- An element of the Gresham-area flora prior to European settlement,
- A recently described taxon found in Gresham, and/or
- A taxon disjunct in Gresham if it is considered native nearby;

all of which established in the landscape independent of direct or indirect human intervention.

Additionally, in very limited circumstances Gresham may designate species as native which do not fit the above definition. For example, Gresham lists Alnus rhombifolia (white alder) as native because Alnus rubra (red alder) is becoming unsuitable in Gresham under our changed climate, with significant die-off of red alder found throughout Gresham since 2016. Alnus rhombifolia is found nearby in the Willamette Valley at similar elevations and has not shown the same climate vulnerability while still providing essential ecological services as a riparian tree.

Native species listed below follow the nomenclature established by the Oregon Flora Project at **OregonFlora.org/Checklist.php**. Gresham determined native status by consulting herbarium records, the Oregon Flora Project Checklist, and the Urbanizing Flora of Portland.

The plants designated as native in the Portland Plant List (2016 version, **Portland.gov/BPS/Environ-Planning/Portland-Plant-List**) serve as Gresham's Native Plant List for all native plants listed therein except for native trees. Species designated as native trees are listed below in the City of Gresham Native Tree List.

City of Gresham Native Tree List

Species	Common Name	Synonym(s)	Fire Accelerant	Suspected Climate Stressed	Very High Forest Pest Risk	HGRO Zone A Compatible	Habitat						Mature Dimensions		Commercial Availability	Growth Rate
							Wetland	Riparian	Forest	Forest Slope	Thicket	Grass	Max Height	Max Spread		
Abies grandis	grand fir		Y	Y	N	N		X	X	X			150	40	High	Medium
Acer macrophyllum	bigleaf maple		N	N	N	N		X	X	X			90	75	High	Fast
Alnus rhombifolia	white alder		N	N	N	Y	X	X					80	30	High	Very fast
Alnus rubra	red alder		N	Y	N	N	X	X	X	X			100	40	High	Very fast
Arbutus menziesii	pacific madrone		N	N	N	Y				X			50	50	High	Very slow
Cornus nuttallii	western flowering dogwood		N	N	N	Y			X	X			40	20	High	Medium
Crataegus gaylussacia	Suksdorf's hawthorn	*Crataegus douglasii var. suksdorfii, Crataegus suksdorfii*	N	Y	N	Y	X	X	X	X	X		35	25	High	Medium
Rhamnus purshiana	cascara	*Frangula purshiana ssp. purshiana*	N	N	N	Y		X	X	X	X		30	25	High	Medium
Fraxinus latifolia	Oregon ash		N	N	Y	N	X	X					75	25	High	Medium
Pinus ponderosa var. benthamiana	Willamette Valley ponderosa pine		Y	N	N	N			X	X			200	30	High	Fast
Populus tremuloides	quacking aspen		N	N	N	Y	X	X					60	30	High	Fast
Populus trichocarpa	black cottonwood	*Populus balsamifera, Populus balsamifera ssp. trichocarpa*	N	N	N	N	X	X					175	40	High	Very fast
Prunus emarginata var. mollis	bitter cherry		N	N	N	Y		X		X	X		45	20	High	Medium
Pseudotsuga menziesii var. menziesii	Douglas fir		Y	N	N	N			X	X			200	60	High	Very fast
Quercus garryana var. garryana	Oregon white oak		N	N	N	N			X	X	X	X	65	45	High	Very slow
Salix lasiandra ssp. lasiandra	Pacific willow	*Salix lucida ssp. lasiandra*	N	N	N	Y	X	X					40	30	High	Fast
Salix prolixa	rigid willow		N	N	N	Y	X	X					30	20	Low	Fast
Salix scouleriana	Scouler's willow		N	N	N	Y	X	X	X	X			40	40	High	Fast
Taxus brevifolia	Pacific yew		Y	N	N	Y		X	X	X			40	30	Low	Very slow
Thuja plicata	western red cedar		Y	Y	N	N	X	X	X	X			100	30	High	Medium
Tsuga heterophylla	western hemlock		Y	Y	N	N		X	X	X			150	40	High	Fast

Fire Accelerant: Y (Yes): plants with higher than average flammable combustion potential due to flammability chemicals present within the leaves, needles, and stems; N (Neutral): plants with average flammable combustion potential (There are no chemicals present within the stems, leaves, and needles that make it less flammable or more flammable than average).

Suspected Climate Stressed: Y (Yes): Plants experiencing climatic stress in the Gresham region based on consultation with Oregon Department of Forestry, Oregon State University Extension foresters, and/or based on methods in Kral, George L., Melodie L. Putnam, and David E. Rupp. "Rapid Retreat of the Pacific Maritime Forest." bioRxiv (2020). These species are not suitable in some niches, use with caution.; N (Neutral): Plants likely to remain suitable under current climate conditions.

Very High Forest Pest Risk: Species at Very High Risk of near extirpation from Gresham due to an invasive insect or pathogen for which there is no widely available, effective, economical, and low risk management strategy as determined by the Oregon Department of Forestry.

HGRO Zone A Compatible: Y (Yes): Allowed tree for planting in certain regulated areas of the Hillside & Geologic Risk Overlay which are identified as having potentially unstable soils. These species pose reduced risk due to their lower weight at maturity; N (No) Species not identified as posing a reduced risk on potentially unstable soils.

Commercial Availability: High: Wide availability from local native plant nurseries, but not necessarily from a retail nursery.; Low: Infrequently available from local native plant nurseries. See http://plantnative.org/nd_or.htm

Habitat: Wetland - All forms of wetlands | Riparian - Stream and river shorelines and bottomlands | Forest - Flat or mildly rolling forests | Forest slope - Steeply sloping upland forests such as in the Buttes

Thicket - hedgerow, clumps of vegetation in meadows | Grass - open areas, meadows

Appendix C: City of Gresham Invasive Plant List

Scientific Name	Common Name	Plant Form	Gresham's Reason for Listing[a]	Portland Plant List Rank[b]	Oregon Dept. of Agriculture Rank[c]
CLASS 1 (REQUIRES ERADICATION)					
City to Arrange Eradication					
Brachypodium sylvaticum	False brome	Herb	1, 2, 3, 4	A	B, T
Heracleum mantegazzianum	Giant hogweed	Herb	2, 3, 4	A	
Polygonum cuspidatum (=Fallopia japonica)	Japanese knotweed	Herb	1, 2, 3	B	B
Polygonum sachalinense (=Fallopia sachalinensis)	Giant knotweed	Herb	2, 3	B	B, T
Polygonum x bohemicum (=Fallopia x bohemica)	Bohemian, hybrid Japanese knotweed	Herb		B	
Pueraria lobata	Kudzu	Shrub/Vine	2, 3, 4	A	A, T
Landowner to Arrange Eradication					
Acroptilon repens [=Centaurea repens]	Russian knapweed	Herb	3, 4	A	B
Amorpha fruticosa	Indigo bush	Shrub	2	A	
Alliaria officinalis (=A. petiolata)	Garlic mustard	Herb	1, 2, 3	B	B, T
Daphne laureola	Spurge laurel	Shrub	1, 2, 3	B	B
Hieracium aurantiacum	Orange hawkweed	Herb	2, 3, 4	A	A, T
Impatiens glandulifera	Policeman's helmet	Herb	3, 4	A	B
Lamiastrum galeobdolon	Yellow archangel	Herb	1, 2		
Onopordum acanthium	Scotch thistle	Herb	3, 4	A	B
Phytolacca americana	Pokeweed	Herb	2	A	
Silybum marianum	Milk thistle	Herb	3, 4	A	B
Tribulus terrestris	Puncture vine	Herb	3		B
CLASS 2					
Acer platanoides	Norway maple	Tree	1	B	
Ailanthus altissima	Tree of heaven	Tree	1	B	
Arundinaria, Sasa, etc.(Bamboo varieties)	Running (vs. Clumping) bamboo	Herb	1		
Buddleja davidii (B.variabilis)	Butterfly bush (except sterile hybrids)	Shrub	1, 3	B	B
Calystegia sepium ssp. angulata [=Convolvulus sepium]	Wild morning glory	Herb	1	C	
Centaurea diffusa	Diffuse Knapweed	Herb	3	B	B
Centaurea pratensis (=C. jacea x C. nigra)	Meadow knapweed	Herb	1, 3	C	B
Centaurea stoebe ssp. micranthos (=C. maculosa)	Spotted knapweed	Herb	3	B	B, T
Chondrilla juncea	Rush skeletonweed	Herb	2, 3	B	B, T
Clematis vitalba	Traveler's joy	Shrub/Vine	1, 2, 3	C	B
Cirsium arvense	Canada thistle	Herb	1, 3	C	B
Cirsium vulgare	Bull thistle	Herb	1, 3	C	B
Conium maculatum	Poison hemlock	Herb	3	C	
Crataegus spp. (besides C. suksdorfii)	Hawthorn (except native sp.)	Shrub	1	C	
Cytisus scoparius	Scotch broom	Shrub	1, 3	C	B
Dipsacus fullonum [=D. sylvestris]	Wild teasel	Herb	1	C	
Geranium lucidum	Shining geranium	Herb	3	B	B
Geranium robertianum	Herb Robert	Herb	1, 3	C	B
Hedera helix, Hedera hibernica, etc.	English ivy, other invasive varieties	Shrub/Vine	1, 3	C	B
Ilex aquifolium	English holly	Shrub	1	C	
Iris pseudacorus	Yellow flag iris	Herb	1, 3	B	B
Ludwigia hexapetala	Water primrose	Herb		A	
Lythrum salicaria	Purple loosestrife	Herb	1, 2, 3	B	B
Myriophyllum aquaticum	Parrotfeather	Herb		B	B
Myriophyllum spicatum	Eurasian watermilfoil	Herb	3	C	B
Phalaris arundinacea	Reed canarygrass	Herb	1	C	
Prunus laurocerasus	Cherry or English laurel	Shrub	1, 3	C	
Prunus lusitanica	Portugal laurel	Shrub		C	
Ranunculus ficaria	Lesser celandine	Herb		B	B
Rubus armeniacus [=R. discolor]	Himalayan blackberry	Shrub/Vine	1	C	B
Senecio jacobaea	Tansy ragwort	Herb	1, 3	C	B, T
Vinca minor and *V. major*	Periwinkle, bigleaf periwinkle	Shrub/Vine	1	B	
CLASS 3					
Convolvulus arvensis	Field bindweed	Herb	1, 3	C	B
Daucus carota	Queen Anne's lace	Herb		C	
Egeria densa (=Elodea densa)	South American waterweed	Herb	3	B	B
Foeniculum vulgare	Fennel (except bulb-forming 'Florence' variety)	Herb		C	
Hypericum perforatum	St. Johnswort	Herb	3	D	B
Lactuca serriola	Prickly lettuce	Herb		D	
Leucanthemum vulgare	Oxeye daisy	Herb		D	
Linaria vulgaris	Yellow toadflax/ butter and eggs	Herb	3	D	B
Lotus corniculatus	Bird's-foot trefoil	Herb	1, 3	D	
Parentucellia viscosa	Yellow parentucellia	Herb		D	
Polygonum convolvulus var. convolvulus	Black bindweed	Herb		B	
Potentilla recta	Sulfur cinquefoil	Herb			B
Ranunculus repens	Creeping buttercup	Herb	1	D	
Robinia pseudoacacia	Black locust	Tree	1	C	

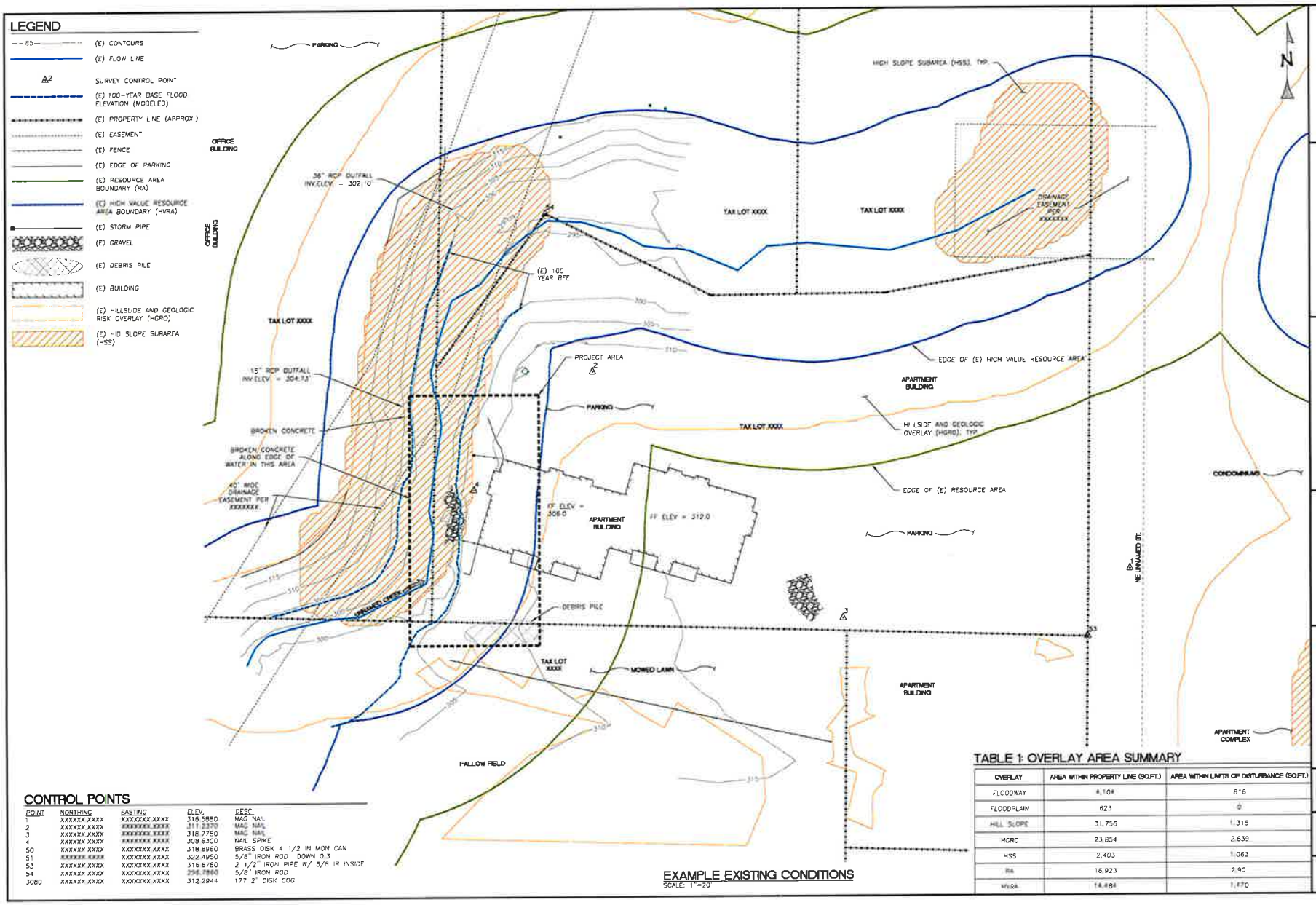
Rorippa sylvestris	Creeping yellowcress	Herb	3		B
Rosa multiflora	Multiflora rose	Shrub		C	
Solanum nigrum	Garden or black nightshade	Herb	1	B	
Taeniatherum caput-medusae	Medusahead rye	Herb	3	C	B
Vicia cracca	Tufted vetch	Herb		D	
Vicia sativa	Common vetch	Herb		D	
CLASS 4 (WATCH)					
Carduus pycnocephalus	Italian thistle	Herb	4	A	
Carduus tenuiflorus	Slender-flowered thistle	Herb	3	A	
Centaurea calcitrapa	Purple starthistle	Herb	2, 3		A
Centaurea iberica	Iberian starthistle	Herb	3		A
Centaurea jacea	Brown knapweed	Herb	3	F	
Centaurea solstitialis	Yellow starthistle	Herb	2, 3		B
Cortaderia jubata	Jubata grass	Herb	3, 4	A	B
Echium plantagineum	Paterson's curse	Herb	3, 4	A	A, T
Hieracium laevigatum	Smooth hawkweed	Herb		D	
Hieracium pilosella	Mouse-ear hawkweed	Herb		D	A
Hieracium pratense (=H. cespitosum)	Meadow or yellow hawkweed	Herb	2, 3, 4	A	A, T
Hieracium vulgatum	Common hawkweed	Herb			
Lepidium chalepensis (=Cardaria c.)	Lens-podded whitetop	Herb	3		B
Lepidium draba (=Cardaria d.)	Hoary cress whitetop	Herb	3	W	B
Lepidium pubescens (=Cardaria p.)	Hairy whitetop	Herb	3	W	B
Linaria dalmatica (=L. genista)	Dalmatian toadflax	Herb	3	F	B, T
Nymphoides peltata	Yellow floating heart	Herb	3		A
Petasites japonicus	Japanese butterbur	Herb	2		
Phragmites australis	Common reed	Herb	3, 4	A	
Polygonum polystachyum (=Persicaria wallichii)	Himalayan knotweed	Herb		B	B
Solanum rostratum	Buffalobur	Herb	3		B
Tamarix ramosissima	Saltcedar	Shrub	3, 4	A	B, T
Ulex europaeus	Gorse	Shrub	3, 4	A	B, T
Verbena bonariensis	Tall verbena	Herb		A	

Notes:

Species were classified based on their known potential for causing ecosystem and infrastructure damage, in conjunction with their existing distribution levels within Gresham, and their existing rank by Oregon Dept. of Agriculture, City of Portland, and CWMA. As such, the proposed COG classification does not necessarily correlate with any one of these lists, and may be revised as additional information or need for control becomes apparent.

[a]**Reason for Listing:**	[b]**Portland Plant List Rank**	[c]**ODA Rank:**
1 = Known invasive in Gresham currently undergoing control 2 = Listed by the 4-County Cooperative Weed Management Area board as a priority management species under their Early Detection/Rapid Response (EDRR) plan 3 = Listed by Oregon Dept. of Agriculture as a Noxious Weed 4 = Listed on City of Portland's approved "Required Eradication List"	A = Portland requires eradication B - D = W = Watch List F =	Species are categorized as either A or B. Species from either list may be designated as 'T' or Target species in any one year based on potential for economic impacts.

Appendix D: Example Existing Conditions Maps



EXAMPLE EXISTING CONDITIONS
SCALE: 1"=20'

CONTROL POINTS

POINT	NORTHING	EASTING	ELEV.	DESC.
1	XXXXXX.XXXX	XXXXXXX.XXXX	316.5880	MAG NAIL
2	XXXXXX.XXXX	XXXXXXX.XXXX	311.2370	MAG NAIL
3	XXXXXX.XXXX	XXXXXXX.XXXX	316.7760	MAG NAIL
4	XXXXXX.XXXX	XXXXXXX.XXXX	309.6300	NAIL SPIKE
50	XXXXXX.XXXX	XXXXXXX.XXXX	318.8960	BRASS DISK 4 1/2 IN MON CAN
51	XXXXXX.XXXX	XXXXXXX.XXXX	322.4950	5/8" IRON ROD DOWN 0.3
53	XXXXXX.XXXX	XXXXXXX.XXXX	316.6780	2 1/2" IRON PIPE W/ 5/8 IR INSIDE
54	XXXXXX.XXXX	XXXXXXX.XXXX	296.7860	5/8" IRON ROD
3080	XXXXXX.XXXX	XXXXXXX.XXXX	312.2944	177 2" DISK COG

TABLE 1: OVERLAY AREA SUMMARY

OVERLAY	AREA WITHIN PROPERTY LINE (SQ.FT.)	AREA WITHIN LIMITS OF DISTURBANCE (SQ.FT.)
FLOODWAY	4,104	816
FLOODPLAIN	623	0
HILL SLOPE	31,756	6,315
HCRO	23,854	2,639
HSS	2,403	1,063
RA	16,923	2,901
HVRA	14,484	1,470

COMPANY

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PREPARED AT THE REQUEST OF:
CLIENT
STREET ADDRESS
GRESHAM, OR XXXXX

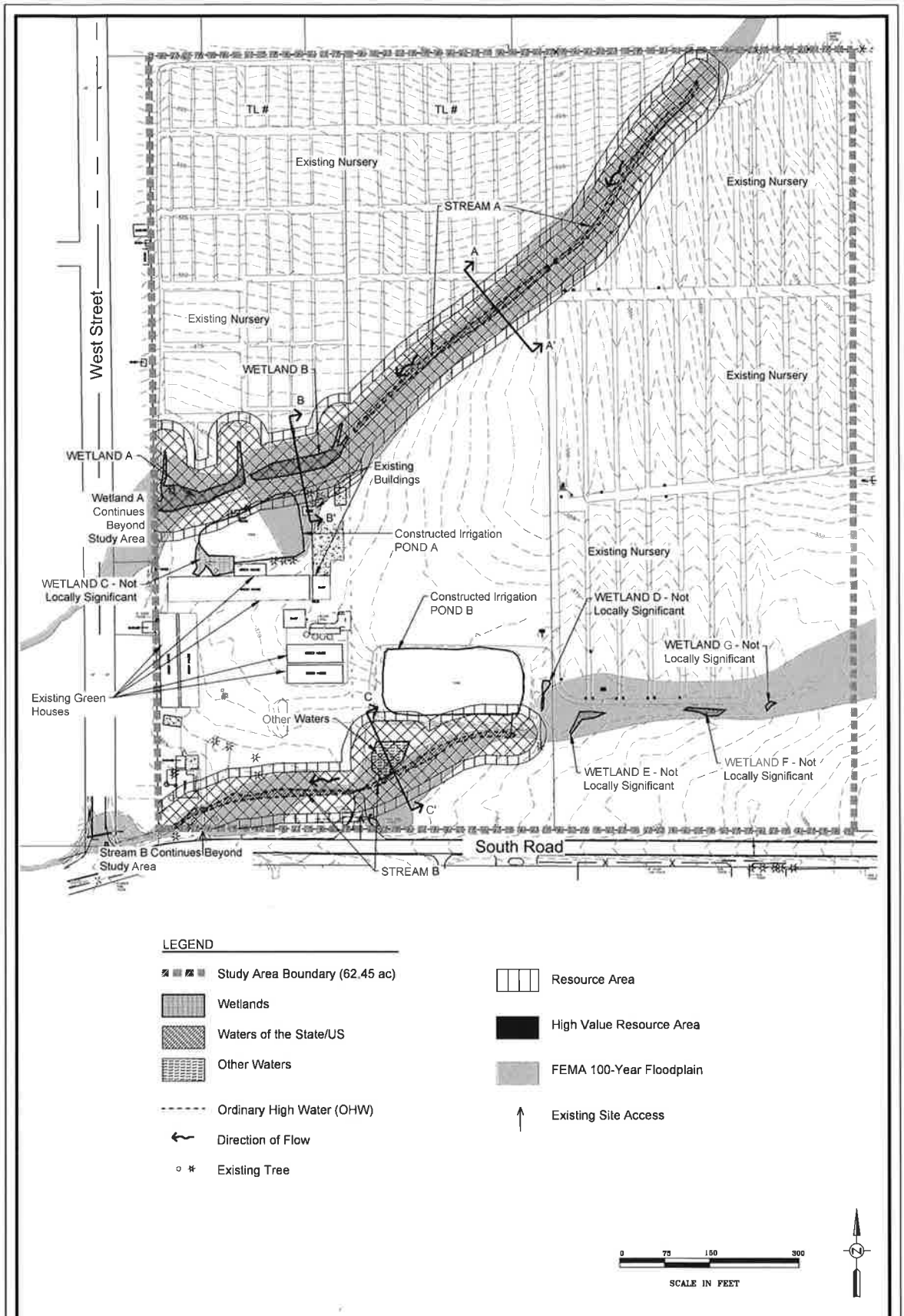
EXAMPLE EXISTING CONDITIONS

PROJECT NAME
XX% DESIGN

DESIGNED BY: XX
DRAWN BY: XX
CHECKED BY: XX
DATE XX/XX/XXXX
JOB NO. XXXX

BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS

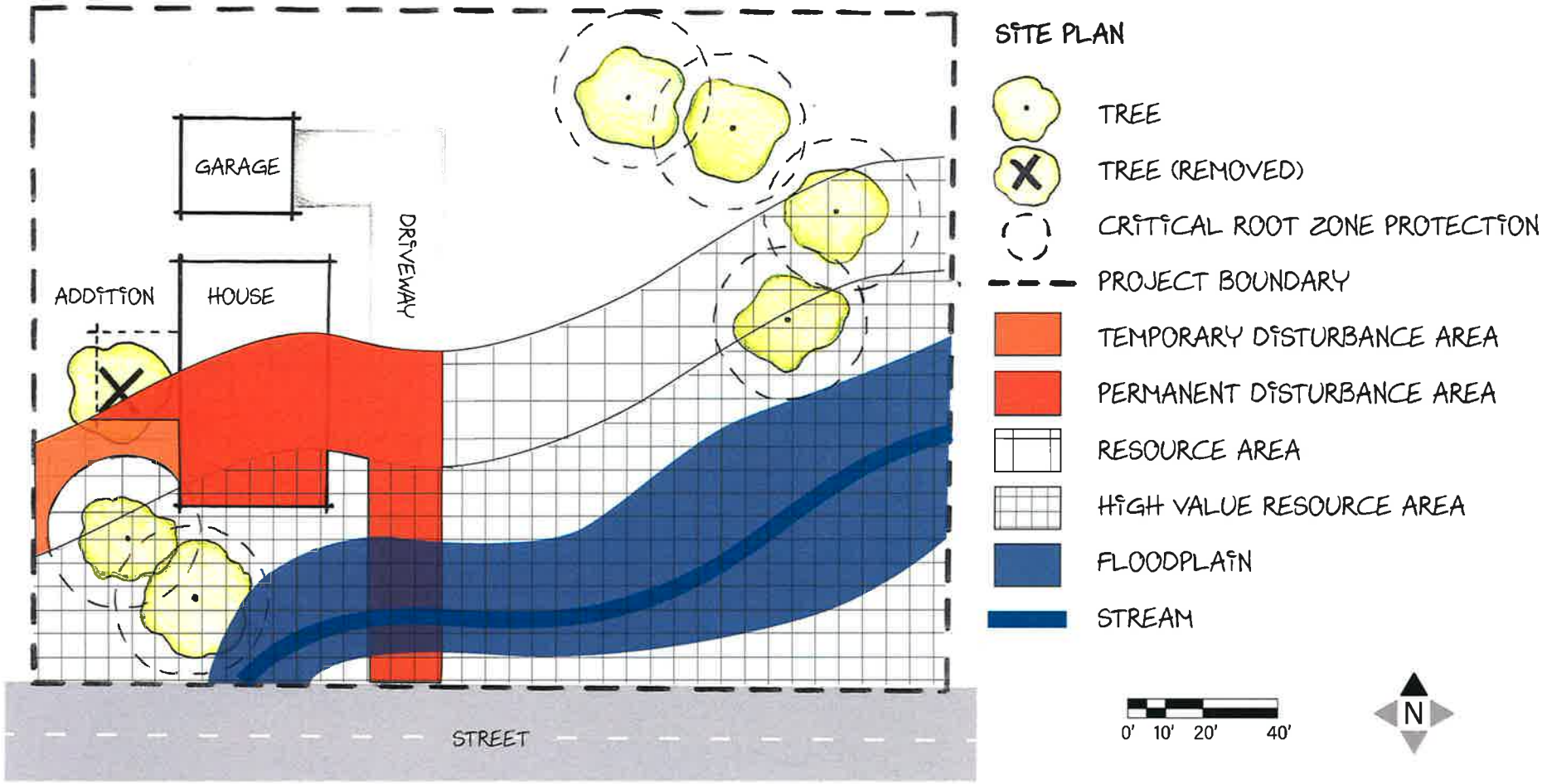
C1 | 1 OF 4



Existing Conditions

Project Name - Location

Appendix D:
Proposed Site Plans


GARAGE
DRIVEWAY
ADDITION
HOUSE
STREET
SITE PLAN
TREE
TREE (REMOVED)
CRITICAL ROOT ZONE PROTECTION
PROJECT BOUNDARY
TEMPORARY DISTURBANCE AREA
PERMANENT DISTURBANCE AREA
RESOURCE AREA
HIGH VALUE RESOURCE AREA
FLOODPLAIN
STREAM
0' 10' 20' 40'
N

LEGEND

- (E) CONTOURS
- (P) CONTOURS
- (E) FLOW LINE
- (E) 100-YEAR BASE FLOOD ELEVATION (MODELED)
- (E) FEMA FLOODWAY
- (E) PROPERTY LINE
- (E) FENCE
- (E) TREE PROTECTION ZONE
- (N) TEMPORARY BOUNDARY FENCE
- LIMITS OF DISTURBANCE
- LIMITS OF CLEARING
- LIMITS OF GRADING
- EXISTING TREE, DIAMETER AS LABELED
- (E) BUILDING
- EXISTING TREE, TO BE REMOVED
- VEGETATED RSP SLOPE
- (E) DEBRIS PILE
- LOG STRUCTURE
- CREEK DIVERSION PUMP
- TEMPORARY SANDBAG
- PUMP DIVERSION HOSE

NOTES

1. 4% OF THE PROPERTY AREA WITH THE SLOPES GREATER THAN 15% WILL BE AFFECTED BY CLEARING AND GRADING ACTIVITIES.
2. ALL WORK ON SLOPES GREATER THAN 15% SHALL ONLY BE ALLOWED BETWEEN JULY 15 AND SEPTEMBER 30TH

GRADING SUMMARY

TOTAL FILL BELOW BASE FLOOD ELEVATION (100-YEAR WATER SURFACE) = 11.3 CY.

TOTAL CUT BETWEEN BASE FLOOD ELEVATION AND NON-STORM WINTER WATER LEVEL (ORDINARY HIGH WATER) = 69.5 CY.

NET CUT/FILL BELOW BASE FLOOD ELEVATION = 58.2 CY (CUT)

EXAMPLE PROPOSED SITE PLAN
SCALE: 1" = 10'

COMPANY

STAMP

PREPARED AT THE REQUEST OF:
CLIENT
STREET ADDRESS
GRESHAM, OR XXXXX

EXAMPLE PROPOSED SITE PLAN

PROJECT NAME
XXX DESIGN

DESIGNED BY:	XX
DRAWN BY:	XX
CHECKED BY:	XX
DATE:	XX/XX/XXXX
JOB NO..	XXXX

BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS

0 1"

C3 | 3 OF 4

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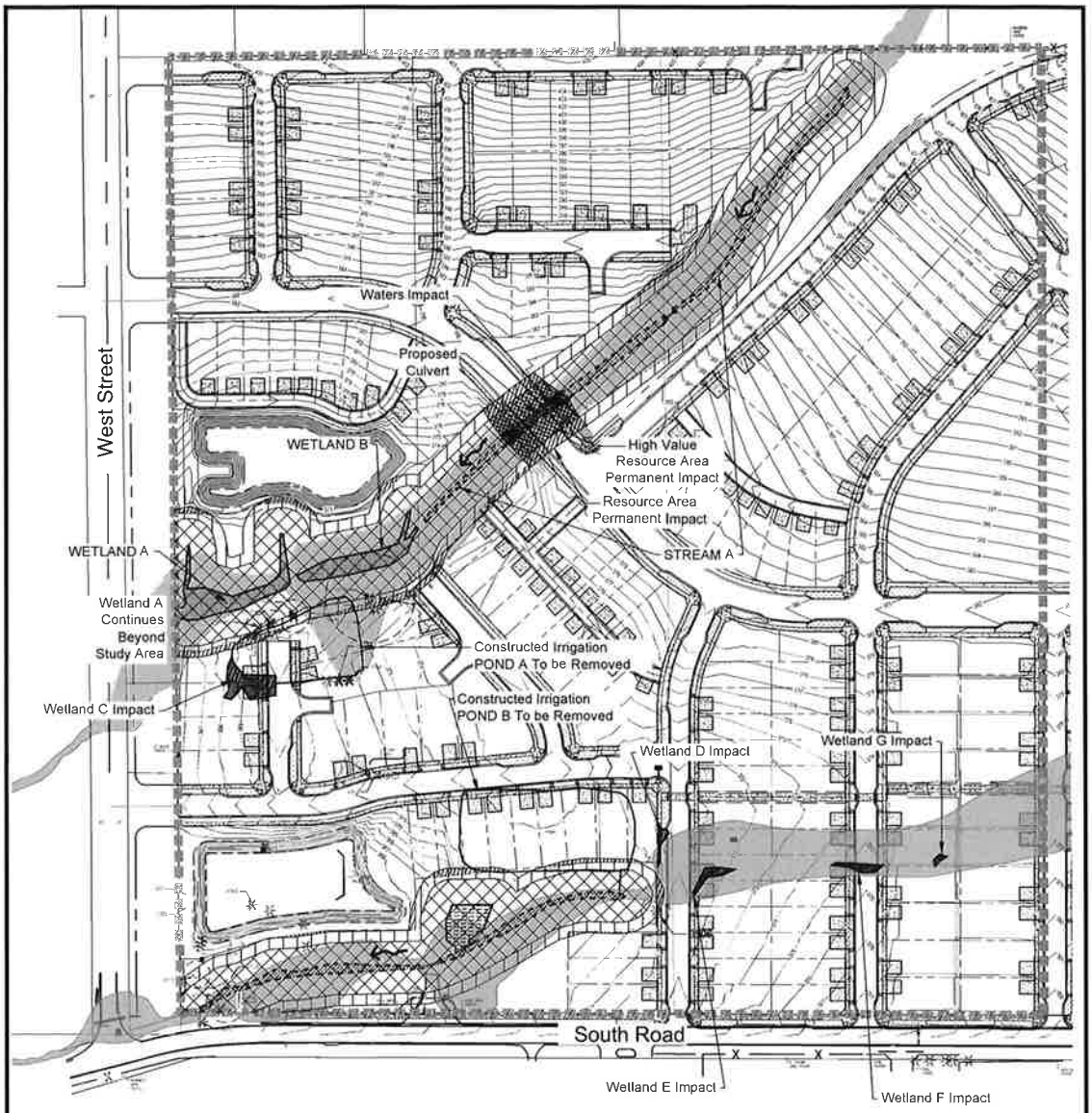


LEGEND

- Study Area Boundary (62.45 ac)
- Wetlands
- Waters of the State/US
- Other Waters
- Ordinary High Water (OHW)
- Direction of Flow
- Existing Tree
- Trees to be Removed
- Resource Area
- High Value Resource Area
- FEMA 100-Year Floodplain
- Wetlands / Waters Impact
- Resource Area Impact
- High Value Resource Impact

0 75 150 300

SCALE IN FEET

N

Site Plan

Project Name - Location

Appendix D: Construction Management Plans

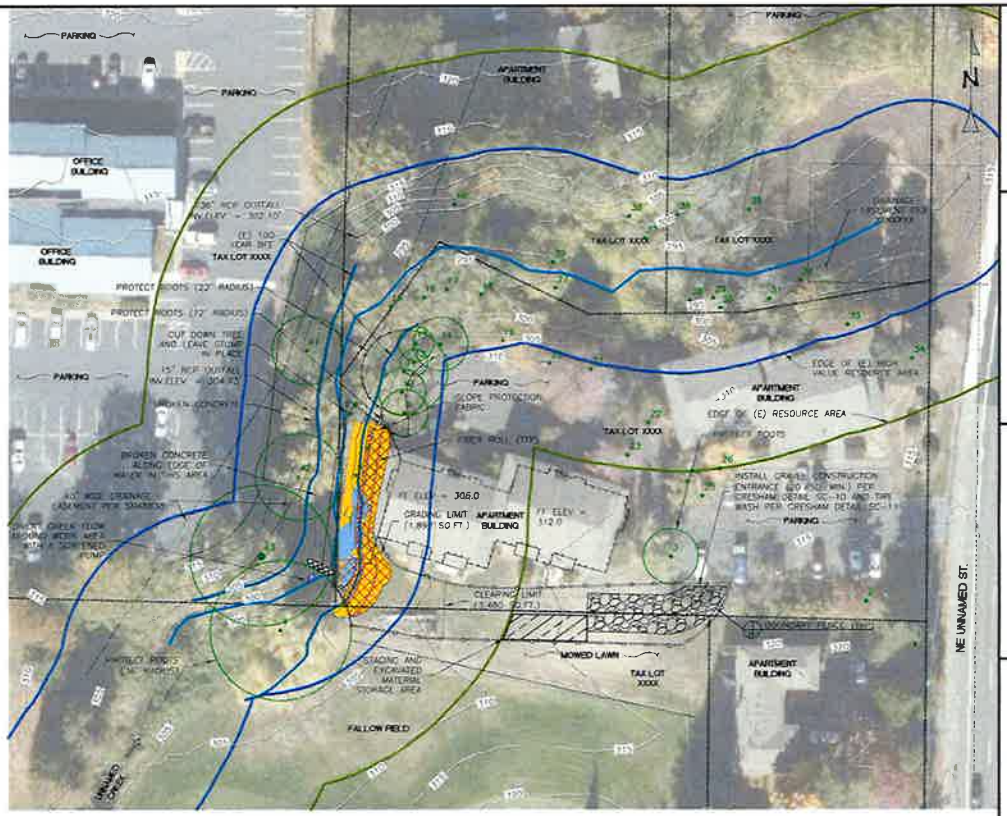
122

TREE SURVEY TABLE

ID #	SPECIES	TYPE	DBH (IN)	CONDITION	ON PROPERTY?	INTENT
1	PINUS SYLVESTRIS	SCOTCH PINE	22	GOOD	NO	PRESERVE
2	ACER PLATANOIDES	NORWAY MAPLE	9.5	GOOD	YES	PRESERVE
3	ACER SACCHARINUM	SILVER MAPLE	14.5	GOOD	YES	PRESERVE
4	SALIX SP.	WILLOW	22 & 36	GOOD	NO	PRESERVE
6	ULNUS RUBRA	ALDER	10	DEAD-POTENTIAL HAZARD	YES	PRESERVE
7	ULNUS RUBRA	ALDER	8	DEAD-POTENTIAL HAZARD	YES	PRESERVE
8	POPULUS TRICHOCARPA	COTTONWOOD	40	POTENTIAL HAZARD	YES	REMOVE
9	PINUS CONTORTA	PINE	11	PREVIOUSLY TOPPED	YES	PRESERVE
10	PINUS CONTORTA	PINE	11	GOOD	YES	PRESERVE
11	POPULUS TRICHOCARPA	COTTONWOOD	22	OFF CENTER	YES	PRESERVE
12	ACER SP.	MAPLE	7, 5	DAMAGED-POTENTIAL HAZARD	YES	PRESERVE
13	POPULUS TRICHOCARPA	COTTONWOOD	9	GOOD	YES	PRESERVE
14	PINUS CONTORTA	PINE	13	GOOD	YES	PRESERVE
15	POPULUS TRICHOCARPA	COTTONWOOD	13	GOOD	YES	PRESERVE
16	POPULUS TRICHOCARPA	COTTONWOOD	29	GOOD	YES	PRESERVE
17	POPULUS TRICHOCARPA	COTTONWOOD	35	GOOD	YES	PRESERVE
18	POPULUS TRICHOCARPA	COTTONWOOD	13	GOOD	YES	PRESERVE
19	SALIX SP.	WILLOW	19	GOOD	YES	PRESERVE
20	CRAETAEGUS SP.	HAWTHORNE	23	GOOD	YES	PRESERVE
21	ACER RUBRUM	MAPLE	17	GOOD	YES	PRESERVE
22	ACER RUBRUM	MAPLE	18.5	GOOD	YES	PRESERVE
23	ACER RUBRUM	MAPLE	10	GOOD	YES	PRESERVE
24	BETULA PAPYRIFERA	BIRCH	10	DAMAGED-POTENTIAL HAZARD	YES	PRESERVE
25	ACER RUBRUM	MAPLE	8, 6	GOOD	YES	PRESERVE
26	BETULA PAPYRIFERA	BIRCH	11	MINOR DAMAGE	YES	PRESERVE
27	SALIX SP.	WILLOW	15	LEANING	YES	PRESERVE
28	SALIX SP.	WILLOW	13	LEANING	YES	PRESERVE
29	ULNUS RUBRA	ALDER	21	DAMAGED-POTENTIAL HAZARD	YES	PRESERVE
30	GLEDITSIA TRIACANTHOS	HONEY LOCUST	10	GOOD	YES	PRESERVE
31	ULNUS RUBRA	ALDER	16	DAMAGED (SNAG)	YES	PRESERVE
32	ULNUS RUBRA	ALDER	12	DEAD-POTENTIAL HAZARD	YES	PRESERVE
33	PRUNUS SP.	FLOWERING CHERRY	19	GOOD	YES	PRESERVE
34	PINUS SYLVESTRIS	SCOTCH PINE	20	GOOD	YES	PRESERVE
35	ULNUS RUBRA	ALDER	16	DEAD, LEANING	NO	PRESERVE
36	ULNUS RUBRA	ALDER	14	DAMAGED	NO	PRESERVE
37	FRAXINUS LATIFOLIA	OREGON ASH	12	GOOD	NO	PRESERVE
38	FRAXINUS LATIFOLIA	OREGON ASH	11	DECAY, OPEN CAVITY	NO	PRESERVE
39	SALIX SP.	WILLOW	9.5	GOOD (FALL IN TRUNK SPROUT)	NO	PRESERVE
40	ULNUS RUBRA	ALDER	16	GOOD	NO	PRESERVE
41	ULNUS RUBRA	ALDER	13	GOOD	NO	PRESERVE
42	ULNUS RUBRA	ALDER	25	DEAD-POTENTIAL HAZARD	NO	PRESERVE
43	POPULUS TRICHOCARPA	COTTONWOOD	45	IVY COVERED	NO	PRESERVE

LEGEND

- (E) CONTOURS (SURVEYED)
- (E) CONTOURS (LIDAR)
- (E) FLOW LINE
- (E) 100-YEAR BASE FLOOD ELEVATION (MODELED)
- (E) PROPERTY LINE (APPROX.)
- (E) EASEMENT
- (E) RESOURCE AREA BOUNDARY (RA)
- (E) HIGH VALUE RESOURCE AREA BOUNDARY (HVRA)
- (E) FENCE
- (E) EDGE OF PARKING
- (E) TREE PROTECTION PLAN
- TEMPORARY ACCESS ROAD
- LIMITS OF DISTURBANCE
- LIMITS OF CLEARING
- TEMPORARY BOUNDARY FENCE
- (N) FIBER ROLL
- (E) BUILDING
- (N) STAGING AREA
- (N) SLOPE PROTECTION FABRIC
- CUT
- FILL
- EXISTING TREE (N.T.S.), ID #S LABELED
- EXISTING TREE TO BE REMOVED
- CREEK DIVERSION PUMP
- SANDBAG
- PUMP DIVERSION HOSE



EXAMPLE CONSTRUCTION MANAGEMENT AND TREE PROTECTION PLAN

SCALE: 1" = 30'

TREE PROTECTION PLAN NOTES

1. NO TREE REMOVAL ACTIVITY SHALL OCCUR UPON SUBMISSION OF THE DEVELOPMENT PERMIT.
2. TREE PROTECTION ZONES, LIMITS OF DISTURBANCE, AND BOUNDARY FENCE LOCATIONS SHALL BE FLAGGED IN THE FIELD BY THE ENGINEER AND INSPECTED BY THE CITY PRIOR TO MOBILIZATION.

INSPECTION FREQUENCY:

SITE CONDITION	
1. ACTIVE PERIOD	~~DAILY BETWEEN OCTOBER 1 AND APRIL 30 OR WHEN~~ STORMWATER RUNOFF, INCLUDING RUNOFF FROM SNOWMELT, IS OCCURRING. AT LEAST ONCE EVERY TWO (2) WEEKS REGARDLESS OF WHETHER STORMWATER RUNOFF IS OCCURRING BETWEEN MAY 1 AND SEPTEMBER 30. ONCE TO ENSURE THAT EROSION AND SEDIMENT CONTROL MEASURES ARE IN WORKING ORDER. ANY NECESSARY MAINTENANCE AND REPAIR MUST BE MADE PRIOR TO LEAVING THE SITE.
2. PRIOR TO THE SITE BECOMING INACTIVE OR IN ANTICIPATION OF SITE INACCESSIBILITY.	ONCE EVERY TWO (2) WEEKS OR WITHIN 24 HOURS FOLLOWING A STORM EVENT. IF PRACTICAL, INSPECTIONS MUST OCCUR DAILY AT A
3. INACTIVE PERIODS GREATER THAN FOURTEEN (14) CONSECUTIVE CALENDAR DAYS.	
4. PERIODS DURING WHICH THE SITE IS INACCESSIBLE DUE TO INCLEMENT WEATHER.	RELEVANT AND ACCESSIBLE DISCHARGE POINT OR DOWNSTREAM LOCATION.

* HOLD A PRE-CONSTRUCTION MEETING OF PROJECT CONSTRUCTION PERSONNEL THAT INCLUDES THE INSPECTOR TO DISCUSS EROSION AND SEDIMENT CONTROL MEASURES AND CONSTRUCTION LIMITS. (Schedule A.8.c.i.(3))

* ALL INSPECTIONS MUST BE MADE IN ACCORDANCE WITH DEQ'S 1200-C PERMIT REQUIREMENTS.

* INSPECTION LOGS MUST BE KEPT IN ACCORDANCE WITH DEQ'S 1200-C PERMIT REQUIREMENTS.

* RETAIN A COPY OF THE ESCP AND ALL REVISIONS ON SITE AND MAKE IT AVAILABLE ON REQUEST TO DEQ, AGENT, OR THE LOCAL MUNICIPALITY. DURING INACTIVE PERIODS OF GREATER THAN SEVEN (7) CONSECUTIVE CALENDAR DAYS, RETAIN THE ESCP AT THE CONSTRUCTION SITE OR AT ANOTHER LOCATION. (Schedule B.2.c)

BMP CONSTRUCTION SCHEDULE

YEAR:	2020	
BMPs	8	9
STORM DRAIN INLET PROTECTION	X	X
CONSTRUCTION ENTRANCE	X	X
ORANGE FENCING (SENSITIVE AREAS)	X	X
PLASTIC SHEETING	X	X
SEDIMENT FENCING	X	X
STRAW WATTLES/FIBER ROLLS	X	X
DEWATERING	X	X
EROSION PROTECTION FABRIC		X
SEEDING AND MULCHING		X

BMP NOTES:

1. PROJECT DOES NOT INCLUDE CONCRETE WORK. SHOULD CONCRETE WORK BECOME NECESSARY, CONCRETE TRUCK AND EQUIPMENT CLEANOUT MUST BE IDENTIFIED AND INSTALLED PER GRESHAM DETAIL NS-14.
2. STORM DRAINS DOWNSTREAM OF PROJECT WORK WILL BE INDENTIFIED BY THE CONTRACTOR AND PROTECTED PRIOR TO CONSTRUCTION PER GRESHAM DETAIL SC-8.
3. INSTALL TEMPORARY VEGETATION, MATTING, MULCH, OR OTHER GROUNDCOVERS PER GRESHAM DETAILS EP-5 AND EP-6. SEE SHEET C4 FOR PERMANENT SEEDING AND VEGETATION.
4. DETENTION FACILITIES ARE NOT APPLICABLE TO THE WORK.

PERMITTEE'S SITE INSPECTOR:

INSPECTOR: XXX
COMPANY/AGENCY: XXX
PHONE: XXX-XXX-XXXX
FAX: XXX-XXX-XXXX
E-MAIL: XXX@XXX.COM
DESCRIPTION OF EXPERIENCE: CESCL CERTIFIED WITH X YEARS OF CONSTRUCTION AND EROSION CONTROL MEASURE INSPECTION WITHIN OREGON.

CONSTRUCTION MANAGEMENT NOTES

1. ACCESS TO THE CONSTRUCTION AREA SHALL BE FROM NE UNNAMED STREET, THROUGH THE APARTMENT COMPLEX PARKING LOT TO THE TEMPORARY ACCESS ROAD SHOWN IN THE PLANS.
2. ALL BOUNDARY FENCES AND EROSION CONTROL BMPS (SEE SHEET C7) SHALL BE INSTALLED AND INSPECTED BY THE CITY PRIOR TO GROUND DISTURBANCE.
3. ALL EQUIPMENT STAGING AND REFUELING SHALL BE PERFORMED IN A DESIGNATED PORTION OF THE STAGING AREA AT LEAST 150 FEET AWAY FROM THE TOP OF STREAM BANK.
4. PROPOSED CITY OF GRESHAM INSPECTION SCHEDULE: 0.1 PRE-CONSTRUCTION EROSION CONTROL AND TREE PROTECTION BMP INSPECTION (AUGUST 5TH, 2020)
5. SITE GRADING INSPECTION: AUGUST 19TH, 2020
6. FINAL EROSION CONTROL STABILIZATION INSPECTION: SEPTEMBER 9TH, 2020
7. PLANTING INSPECTION: FEBRUARY 24, 2021

COMPANY

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PREPARED AT THE REQUEST OF:
CLIENT
STREET ADDRESS
GRESHAM, OR XXXXX

EXAMPLE CONSTRUCTION MANAGEMENT AND TREE PROTECTION PLAN

PROJECT NAME
XX% DESIGN

DESIGNED BY: XX
DRAWN BY: XX
CHECKED BY: XX
DATE: XX/XX/XXXX
JOB NO.: XXXX

BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS

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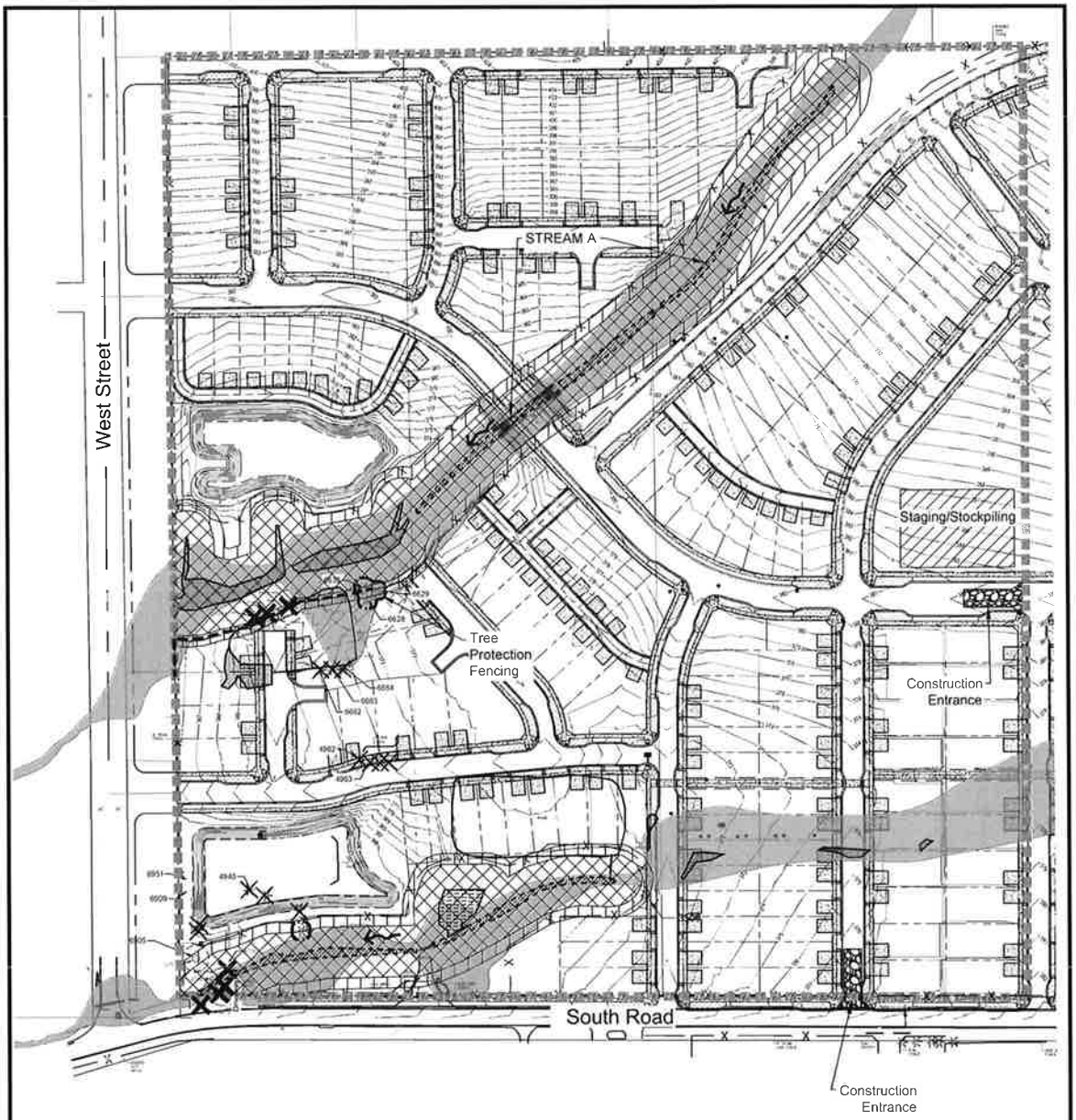


LEGEND

- Study Area Boundary (62.45 ac)
- Wetlands
- Waters of the State/US
- Other Waters
- Ordinary High Water (OHW)
- Direction of Flow
- Existing Tree
- Tree Protection Fence Around Critical Root Zone
- Resource Area
- High Value Resource Area
- FEMA 100-Year Floodplain
- Limits of Disturbance
- Silt Fence
- Tree to be Removed
- Tree to be Removed within Resource Area or High Value Resource Area

0 75 150 300

SCALE IN FEET

Construction Management Plan

Project Name - Location

Appendix D: Example Mitigation Plans

LEGEND

- (E) CONTOURS
- (P) CONTOURS
- (E) FLOW LINE
- (E) ORDINARY HIGH WATER LINE
- (E) PROPERTY LINE
- (E) FENCE
- ZONE A VEGETATION AREA
- ZONE B VEGETATION AREA
- (E) HIGH VALUE RESOURCE AREA BOUNDARY (HBRA)
- (E) RESOURCE AREA BOUNDARY (RA)

TABLE 1: SEED MIX

BOTANICAL NAME	COMMON NAME	% MIX BY WEIGHT
ELYMUS GLAUCUS	BLUE WILD	60
HORDEUM BRACHYANTHERUM	MEADOW BARLEY	30
BROMUS CARINATUS	CALIFORNIA BROME	10

TABLE 2: ZONE A PLANTING MIX

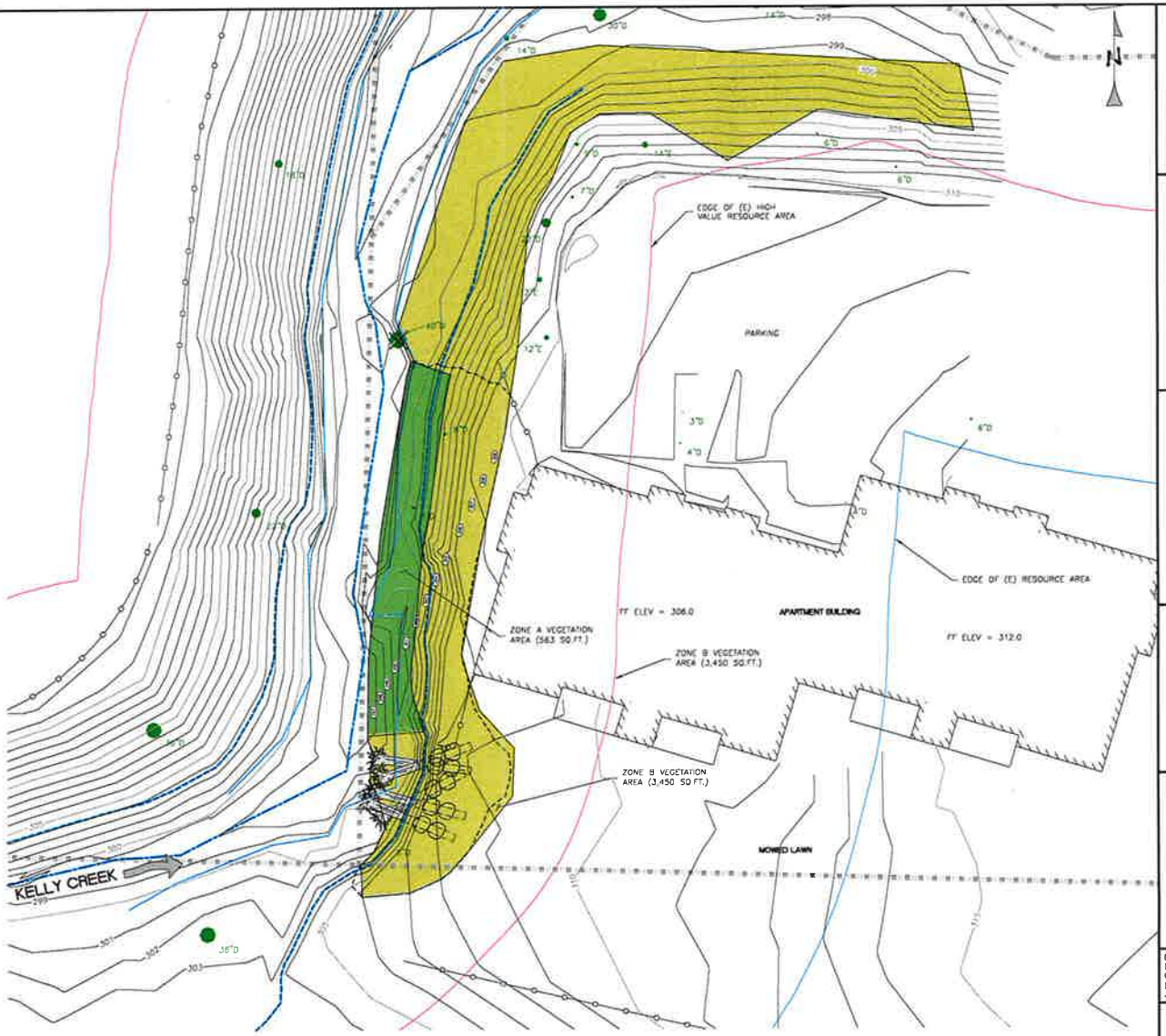
BOTANICAL NAME	COMMON NAME	PLANT TYPE	# OF PLANTS
SALIX SCOULERIANA	SCOULER'S WILLOW	LIVE STAKE	100
CORNUS SERICEA	RED-OSIER DOGWOOD	LIVE STAKE	100

TABLE 3: ZONE B PLANTING MIX

BOTANICAL NAME	COMMON NAME	PLANT TYPE	# OF PLANTS
POPULUS TRICOCARPA	BLACK COTTONWOOD	LIVE POLE	40
SALIX LUCIDA	PACIFIC WILLOW	LIVE STAKE	25
THUJA PLICATA	WESTERN RED CEDAR	BARE ROOT	20

PLANTING NOTES

1. APPLY SEED AND STRAW MULCH TO ALL EXPOSED SOILS ABOVE ORDINARY HIGH WATER WITHIN THE RESOURCE AREAS PER TABLE 1 AND 29 POUNDS PER ACRE. INSTALL SEED AND MULCH PRIOR TO INSTALLING SLOPE PROTECTION FABRIC WHERE CALLED FOR ON THE PLANS.
2. RESTORE MOWED LAWN OUTSIDE REVEGETATION ZONES SHOWN BY GRADING OUT RUTS, TOP DRESSING EXPOSED SOIL WITH 3 WAY TOPSOIL, SEEDING WITH LAWN MIX, AND MULCHING WITH STRAW.
3. BARE ROOT AND LIVE STAKE PLANTS SHALL BE INSTALLED BETWEEN 12/1 AND 2/28.
4. ZONE A PLANTS SHALL BE INSTALLED IN THE VEGETATED RSP WALL AT 2 FT. O.C.
   4.1. VOIDS BETWEEN RSP WALL SHALL BE PACKED WITH COMPOST MULCH PRIOR TO INSTALLING PLANTS.
5. ZONE B PLANTS SHALL BE INSTALLED AT 7 FT. ON-CENTER AVERAGE SPACING.
   5.1. WHEN PLANTING NEAR EXISTING TREES, THIS MEASUREMENT SHALL BE FROM THE DRIP LINE OF EXISTING TREES.
   5.2. ALL ZONE B PLANTS SHALL BE MULCHED WITH COMPOST 3 IN. DEEP AND 9 IN. AROUND EACH PLANT.
6. ALL PLANTS SHALL BE INSTALLED IN A NON-LINEAR FASHION TO MIMIC NATURAL CONDITIONS.
7. REMOVE ALL INVASIVES FROM THE REVEGETATION ZONES PRIOR TO PLANTING.
8. A MINIMUM OF 30 TREES AND 65 SHRUBS PLANTED SHALL SURVIVE THROUGH THE 5 YEAR MONITORING PERIOD.



EXAMPLE MITIGATION PLAN
SCALE: 1" = 10'

COMPANY

STAMP

PREPARED AT THE REQUEST OF:
CLIENT
STREET ADDRESS
GRESHAM, OR XXXXX

EXAMPLE MITIGATION PLAN

PROJECT NAME
XX% DESIGN

DESIGNED BY:	XX
DRAWN BY:	XX
CHECKED BY:	XX
DATE:	XX/XX/XXXX
JOB NO.:	XXXX

BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS

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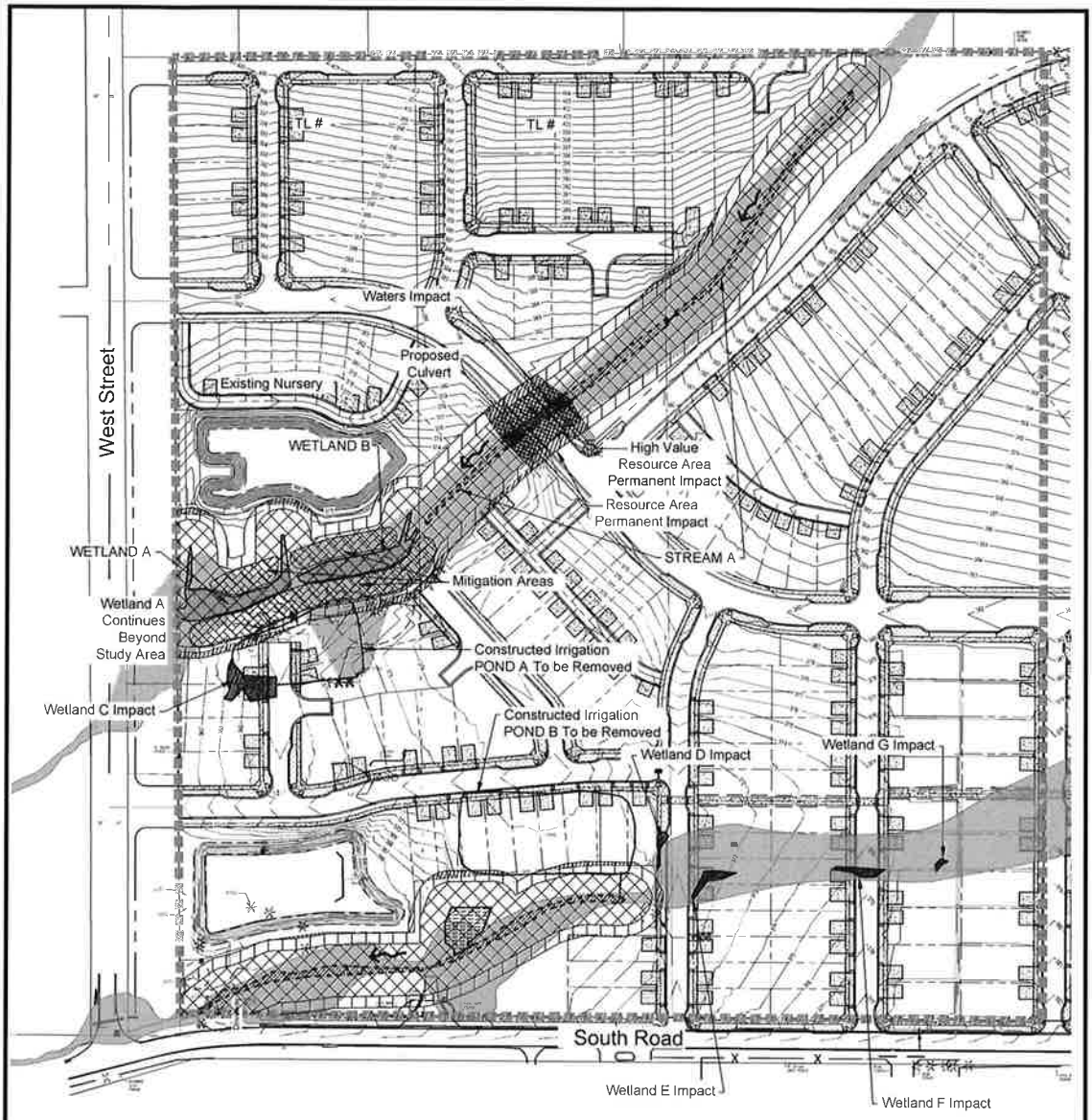

LEGEND

- Study Area Boundary (62.45 ac)
- Wetlands
- Waters of the State/US
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- Ordinary High Water (OHW)
- Direction of Flow
- Existing Tree
- Resource Area
- High Value Resource Area
- FEMA 100-Year Floodplain
- Wetlands / Waters Impact
- Resource Area Impact
- High Value Resource Area Impact
- Mitigation Area

0 75 150 300

SCALE IN FEET

Mitigation Plan

Project Name - Location