

Date: October 19, 2016  
To: Environmental Overlay PMT  
From: Cathy Corliss  
cc: File  
Re: DRAFT Memorandum #2: Alternatives Analysis - PART 1

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## INTRODUCTION

Part 1 of the alternatives analysis covers the following three Development Code issues:

- A. CONSOLIDATE ZONES (FULL AND PARTIAL CONSOLIDATION)
- B. CONSOLIDATE WQRA INTO HCA
- C. DENSITY TRANSFER

The draft alternatives analysis below provides an initial evaluation of the strengths and weaknesses of various solutions in terms of how well they address the specific deficits and challenges identified in Task 1 as well as the overall goals for the Environmental Overlay project. In particular, the following project goals relate to these three Development Code issues:

- Clarify, simplify, and, if possible, unify the three environmental codes (HCA, ESRA-PV and ESRA-SW).
- Revise regulations to be more easily implementable, effectively integrated with Gresham development code regulations, and supported by the City's Comprehensive Plan.
- Maintain compliance with Oregon's Statewide Planning Goals and regional requirements.
- Maintain the degree of resource protection currently provided.

This draft is intended as a starting place for discussion.

Our analysis of other code and mapping issues will be addressed in Part 2 and Part 3 of the Alternatives Analysis which will be provided under separate cover.

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## A. CONSOLIDATE ZONES

**Alternative A.1: Full consolidation.** The consultant team completed a side-by-side comparison of the three zones (HCA, ESRA-PV, ESRA-SW). Our overall assumption is that it would be easiest to convert the ESRA into HCA and retain and amend the HCA code rather than the reverse. Key findings include:

- Differing purpose. HCA is limited to Title 13 which addresses Goal 5 riparian and fish and wildlife only, not wetlands (other than those adjoining riparian). Upland habitat is only protected in UGB expansion areas. The ESRA, which are very similar to each other, cover a wider range of natural resources riparian areas, fish and wildlife habitat (including upland habitat) and wetlands. This is potentially one of the biggest challenges to full consolidation.

HCA does include provisions for mapping and protecting upland habitat in UGB expansion areas. Metro identified upland habitat based on the existence of contiguous patches of forest canopy, with limited canopy openings [are these provisions being applied anywhere in Gresham?]. A possible map/code consolidation option would be to re-map the ESRA upland using Metro's upland habitat mapping protocols and apply the HCA to ESRA (this will be addressed further in Part 3).

- Overlay vs. Base Zone. While the ESRA are structured as base zones, converting them to overlay zones might not be as complicated as initially thought given ESRA map verification language: *If the modification of ESRA-SW boundary under this section results in land being relocated or removed from ESRA-SW designation then the former ESRA-SW land shall assume the Springwater Plan District sub-district(s) designation adjacent to the land.* [NOTE: same provision is included in ESRA-PV]. The challenge will be on split zoned sites that have multiple designations on adjacent land. However, for this limited number of sites a methodology could be devised that fairly and consistently extends the adjacent zones. Additionally, the conversion to overlay zones could impact Density Transfer (see below).
  - Applicability. Both HCA and ESRA misstate the correct extent of the applicability. ESRA state that regulations only apply within zone, but establish requirements for activities outside the boundary. Similarly, HCA states that it applies to entire parcel that contains overlay, but then includes requirements for adjacent parcels as well. This should be clarified in all cases.
  - Exemptions/prohibitions/field-verification. HCA and ESRA have many of the same exemptions and prohibitions, although ESRA require field-verification within 100 ft. and in HCA it is only required within 50 ft. This could be consistent and should be a reflection of the accuracy of the mapping.
  - Standards/procedures. HCA and ESRA have many of the similar standards and procedures. ESRA standards tend to be stricter than HCA, but not in all cases. HCA includes discretionary review process and detailed submittal requirements, which could be useful in ESRA. HCA standards are complicated by multiple classes. If consolidated, all ESRA would be most similar
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to High HCA. ESRAs include special standards for trails and rights-of-way which could be helpful in HCA.

- Mitigation. Many of the mitigation standards are very similar and could be consolidated across zones; however, ESRAs require 2:1 mitigation area, whereas HCA requires tree planting, but does not specify a 2:1 mitigation area. Also, ESRAs require finding of “no feasible alternative,” while HCA has the somewhat easier criterion of “no practical alternative”.
- Density Transfer. ESRAs allow residential transfer of 1 unit per acre whereas HCA allows 50% of the maximum density of the underlying zone. If ESRAs become overlay zones, then an approach similar to HCA could be used, but it could result in more units being permitted than were intended by the concept plans. (See discussion of Density Transfer in Section C below).
- Procedures. Review procedures are similar for ESRAs and HCA. HCA includes a variance process that could be helpful in ESRAs.

**Alternative A.2: “Partial” consolidation (ESRA-PV and ESRA-SW).** The consultant team completed a side-by-side comparison of the two zones (ESRA-PV, ESRA-SW) to evaluate whether it would be possible to consolidate the Pleasant Valley Environmentally Sensitive Restoration Area District and the Springwater Environmentally Sensitive Resource Area District into a single overlay zone. Key findings include:

- ESRA-PV and ESRA-SW are identical in most aspects.
- References to different background documents and location-specific resources could be solved in a consolidated zone. For example, by noting that within the Pleasant Valley Plan area, “X” goals and policies are being implemented or “Y” resources are being protected.
- Farming practices as defined in ORS 215.203 and farm uses, excluding buildings and structures, as defined in ORS 215.203 are listed as exempt in Springwater, but not in Pleasant Valley. However, they are likely exempt in Pleasant Valley in practice even though not listed and so could be included in a consolidated zone with no impact.
- There is a substantive difference in Uses Allowed Under Prescribed Conditions that should be resolved in a consolidated zone.
  - PV 4.1437.B. *Development on a vacant lot that existed before annexation and that has less than 3,500 sq. ft. of buildable area, with minimum dimensions of 40 feet by 40 feet remaining outside the ESRA-PV portion of the property.*
  - SW 4.1577.B. *A residence on a vacant lot that existed before annexation and that had less than 5,000 square feet of buildable area, with minimum dimensions of 50 feet by 50 feet, remaining outside the ESRA-SW.*

- Density transfer provisions are similar except that Pleasant Valley allows unused credits to be transferred to other non-ESRA-PV properties where site constraints prevent the use of awarded credits. This does not appear to be the case in Springwater which only allows density transfer on-site or on contiguous properties within the same development site. (See discussion of Density Transfer in Section C below).
- Springwater includes additional standards for industrial uses; however, because they are specific to uses and zones which do not occur in Pleasant Valley, including them in a consolidated zone would not impact Pleasant Valley.
- There are slight differences in the standards (e.g., the description of the in-water work window); however, these should be resolved in favor of best practices in a consolidated zone.
- As noted above, while the ESRAs are structured as base zones, converting them to overlay zones might not be as complicated as initially thought given ESRA map verification language: *If the modification of ESRA-SW boundary under this section results in land being relocated or removed from ESRA-SW designation then the former ESRA-SW land shall assume the Springwater Plan District sub-district(s) designation adjacent to the land.* [NOTE: same provision is included in ESRA-PV]. The challenge will be on split zoned sites that have multiple designations on adjacent land. However, for this limited number of sites a methodology could be devised that fairly and consistently extends the adjacent zones.

<b>CONSOLIDATED ZONES</b>	
<b>Strengths of the Alternative A.1</b>	<b>Weaknesses of the Alternative A.1</b>
<ul style="list-style-type: none"> <li>• Full consolidation would simplify the overall development code making it easier for staff to learn and apply.</li> <li>• Opportunity to benefit from lessons learned and apply best standards from all 3 chapters.</li> <li>• Consistent regulations across all of Gresham may feel more equitable.</li> </ul>	<ul style="list-style-type: none"> <li>• It is possible that the overlay chapter itself would be more complicated if additional distinctions between zones are needed. Given that most property owners only have property in one natural resource zone, any internal complexity in the Chapter may add to their confusion.</li> <li>• Compromises between HCA and ESRA standards may be needed which could change levels of protections in some circumstances.</li> <li>• May be challenging to ensure consistency with adopted plans and ESEEs.</li> </ul>
<b>Strengths of the Alternative A.2</b>	<b>Weaknesses of the Alternative A.2</b>
<ul style="list-style-type: none"> <li>• Similar to the above alternative, but because the ESRA zones are so similar it would be relatively easy to implement this alternative; however, benefits from consolidation would also be less.</li> </ul>	<ul style="list-style-type: none"> <li>• Similar to the above alternative, but because the ESRA zones are so similar few compromises would need to be made when consolidating just the ESRAs.</li> </ul>

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## B. CONSOLIDATE WQRA INTO HCA

The alternatives analysis below considers whether the Water Quality Resource Areas (WQRA) provides protection for resources that are not otherwise protected by the HCA/ESRAs; Compliance with Metro's Titles 3 and 13.

- Title 3 implements Statewide Planning Goals 6 and 7. Because it is not implementing Goal 5, it's not subject to the Goal 5 process requirements in OAR 660-023 (i.e., inventory, determination of significance, ESEE, and program).
- Currently Gresham applies WQRAs only within the HCA, not ESRAs. The UGMFP Title 3 applies within the entire Metro Boundary and requires protection of WQRAs. However, jurisdictions can demonstrate that existing regulations substantially comply with all performance standards. [Is this what Gresham did in Pleasant Valley and Springwater?]
- Current requirements regulate WQRAs as "High" value resources. HCA standards are generally comparable to the Title 3 performance measures (i.e., focus on "no practicable alternatives", minimize, mitigate).
- Title 3 requires that the City have a process to amend its Title 3 map to add Title 3 regulated wetlands. The HCA requirements state that:  
*Section 5.0402 I. A wetland identified during the course of a development permit review that meets the State of Oregon's definition of a "Locally Significant Wetland" shall be subject to the standards of this overlay. Such wetlands shall be added to the HCA map by the Manager, under the Type 1 procedure, after the development permit becomes final.*
- Title 3 allows jurisdictions to choose to either adopt code language which prevails over the map and uses the map as reference; **or** adopt a city field verified map of Water Quality and Flood Management Areas based on the Metro Water Quality and Flood Management map implementing this title which prevails over adopted code language. Based on the language below it appears Gresham selected the second option (map based), although the first option would have provided the City with greater latitude to protect resources found during development review.  
*Section 5.0417: The WQRA, Water Quality Resource Area is an area identified by the City of Gresham in order to comply with Title 3 of Metro's Urban Growth Management Functional Plan, Metro Code sections 3.07.310-3.07.370. These areas are shown on Gresham's Title 3 map.*

The City of Milwaukie protects both Water Quality Resources and HCAs using one map and generally one set of standards but has differing language addressing the role of the map. For WQRs, the NR Administrative Map is a general indicator of the location of vegetated corridors; the specific location of vegetated corridors shall be determined in the field in accordance with

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Table 19.402.15. For HCAs the HCA locations on the NR Administrative Map are assumed to be correct unless demonstrated otherwise.

- Consolidating WQRAs into HCAs as High value resources could expand the geographic extent of High value HCAs.
- Within ESRAs the current regulations are generally more protective than for High Value HCAs, so unless WQRAs would apply to resources in Pleasant Valley and Springwater that are not currently protected, expanding WQRAs to ESRAs would not provide additional protection. [NOTE: Consider mapping WQRAs in ESRAs to evaluate how boundaries relate to ESRA boundaries].

CONSOLIDATE WQRA INTO HCA (as HCA “High” value)	
Strengths of the Alternatives	Weaknesses of the Alternatives
<ul style="list-style-type: none"> <li>• If City continues to rely on the Title 3 map rather than the definitions, consolidating Title 3 resources and HCA High value resources seems like a useful simplification.</li> <li>• Clarifies the requirements for property owners and staff.</li> </ul>	<ul style="list-style-type: none"> <li>• Even though there is no substantive impact property owners may see this as an expansion of the HCA.</li> <li>• If WQRA were applied based on definitions (map as general reference only), then keeping as a separate requirement would provide the City with more latitude to protect resources found during development review.</li> </ul>

### C. DENSITY TRANSFER

Staff suggested that there should be more robust density transfer provisions to reduce the impact to land within the ESRAs/HCA while providing incentives for developers to protect these areas. For example, if a lot has ESRA over 100% of it, the City allows one home to be built on that lot. If a density transfer of two homes to another location were permitted, the owner of the lot with ESRA could build twice the lots at another location or sell/trade those rights, increasing his monetary benefit while eliminating the impact of one home to the ESRA.

On-Site Density Transfer - The table on the following page compares the current density transfer requirements between the ESRAs (Pleasant Valley and Springwater) and the Habitat Conservation Areas. The focus of the current standards is on on-site transfer. HCA provides a larger bonus and more flexibility to make use of it within the receiving area. The City of Milwaukie provides an example of even more flexibility in on-site transfer of residential density (See Attachment A). Under Milwaukie’s code, all of the residential units may be clustered so that land can be developed at allowed densities while avoiding or minimizing impacts to WQRs or HCAs. The cumulative density for all lots or parcels cannot exceed the density allowed for the parent lot; however, considerable flexibility is permitted in terms of

housing types and development standards. Impacts must be avoided or minimized to the greatest degree practicable.

Off-Site Density Transfer - With the exception of a mention of it in Pleasant Valley, the concept of off-site transfer is not addressed. Transfer of development rights (TDR) programs can be complicated to develop and administer. Community acceptance of, and developer demand for, the increased density at the receiving area is a fundamental concern. In addition, the procedures to track and record the transferred units on the public side, and the real estate transactions involved on the private side can be challenging. The Pleasant Valley ESRA is silent on all of these points, so it's unclear how the City would implement the current provisions. The City of Portland has a Floor Area Ratio (FAR) Transfer Program consisting of six different transfer mechanisms which apply to some or all of the Central City (e.g. to protect historical and other landmarks). The code is specific about where within the Central City FAR can be transferred and the maximum amount that can be received; however, the results have been somewhat controversial at some receiving sites.

Comparison of Current Density Transfer Provisions	
ESRAs (Pleasant Valley and Springwater)*	HCA
Density may be transferred from the ESRA-PV sub-district to non-ESRA-PV portions of the same property or of contiguous properties within the same development site; or  <i>Where site constraints prevent the use of awarded credits, unused credits may be transferred to other non-ESRA-PV properties [Pleasant Valley Only].</i>	Flexible Site Design (On-site Density Transfer) to avoid or minimize development within HCAs.
The residential transfer credit shall be 1 unit per acre of land within the ESRA-PV Sub-district	For residential development proposals on lands with a HCA, a transfer of density of up to 50% of the maximum density permitted on the HCA portion of the site is permitted to be transferred onto the non-HCA portion of the site.
For transfers to the Employment sub-district, the transfer credit is 10,000 sq. ft. FAR per acre of land within the ESRA-PV sub-district;	For on-site density transfers in Commercial or Industrial districts, the transfer credit is 10,000 sq. ft. FAR per acre of land within the HCA.
The maximum gross density for the non-ESRA-PV area of the site shall not exceed 150% of the maximum density or FAR allowed by the underlying sub-district;	lot sizes may be adjusted by no more than 20 percent.
All other applicable development standards, including setbacks and building heights, shall continue to apply when a density transfer occurs  <i>however, the minimum lot size may be reduced by 20% for only those units transferred outside of the ESRA-PV district. Such transfers and reductions shall be exempted from a PD process [Pleasant Valley Only].</i>	In order to accommodate the transferred density, dimensional standards and lot sizes may be adjusted by no more than 20 percent.  Building setback flexibility to avoid or minimize development within HCAs. The minimum building setback of the base district may be reduced to any distance between the base district minimum and zero, unless this reduction conflicts with applicable fire or life safety requirements.  Flexible landscaping requirements to avoid, or minimize, development within HCAs.  Minimum percentage landscaping requirements, apart from those required for parking lots, street trees, buffers (Section 9.0100) and required mitigation areas may be met by preserving the HCA.

Comparison of Current Density Transfer Provisions	
ESRAs (Pleasant Valley and Springwater)*	HCA
	<p>Facilities that infiltrate stormwater onsite, including the associated piping, may be placed within the HCA so long as the forest canopy and the areas within the driplines of the trees are not disturbed.</p> <p>Density bonus if HCA is protected. In multi-family residential districts, a 25 percent density bonus may be allowed for any development of four (4) or more dwelling units if 75 percent or more of the HCA on a site is permanently preserved, such as by making a public dedication or executing a restrictive covenant. The bonus density shall be in addition to the base density allowed in the applicable zoning district.</p>
* Code language in table from ESRA-PV; however, ESRA-PV and ESRA-SW code language is the same except where specified.	

**Density Transfer Comparative Example:**

6 acre site with 2 acres of protected natural resources



ESRAs (Pleasant Valley or Springwater)	HCA
<p>4 acres LDR-PV or LDR-SW @ 5000 sf minimum lot size = 35 dwelling units</p> <p>Plus 2 acres ESRA = 2 dwelling units</p> <p>Acceptable max density with ESRA = 150% of zone</p> <p>11.85 du/ac in LDR-PV</p> <p>10.95 du/ac in LDR-SW</p> <p><b>Result</b></p> <p>37 possible dwelling units</p> <p>Density in developable area = 9.25 du/ac</p>	<p>6 acres LDR-5 @ 5000 sf minimum lot size = 52 dwelling units</p> <p>[Total constrained by lot size of receiving area]</p> <p>Acceptable min lot size with HCA = 80% of zone</p> <p>Max lot size in receiving area = 4,000 sf</p> <p>4 acres at 4,000 sf min lot size</p> <p><b>Result</b></p> <p>44 possible dwelling units</p> <p>Density in developable area = 11 du/ac</p>



<b>Provide More Robust On-Site Density Transfer and/or Off-Site Density Transfer</b>	
<b>Strengths of the Alternative</b>	<b>Weaknesses of the Alternative</b>
<p>On-Site Density Transfer</p> <ul style="list-style-type: none"> <li>• For consistency and fairness ESRAs should have same flexibility for receiving sites that is available for HCA.</li> <li>• Providing even more flexibility in the standards applied to receiving areas (as in Milwaukie) would be a way of making on-site transfer more viable.</li> </ul> <p>Off-Site Density Transfer</p> <ul style="list-style-type: none"> <li>• Off-site transfer could provide a means to reduce impacts to protected resources while mitigating costs to property owners.</li> </ul>	<p>On-Site Density Transfer</p> <ul style="list-style-type: none"> <li>• Providing a consistent approach to the amount of residential density that can be transferred would significantly increase the potential buildout in PV and SW (or reduce the amount available in HCA).</li> <li>• Additional flexibility in receiving areas could mean that housing types are not necessarily the type envisioned by the underlying zone.</li> </ul> <p>Off-Site Density Transfer</p> <ul style="list-style-type: none"> <li>• Creating an off-site TDR program is complex and would require identifying receiving areas and establishing a tracking program in order to ensure that transferred development rights are used only once and then extinguished.</li> </ul>

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## ATTACHMENT A

### City of Milwaukee

19.402 NATURAL RESOURCES NR

<http://qcode.us/codes//milwaukee/?view=desktop&topic=19-19 400-19 402-19 402 3>

19.402.14 Adjustments and Variances

#### C. Residential Cluster Development

For residential proposals, development may be clustered so that land can be developed at allowed densities while avoiding or minimizing impacts to WQRs or HCAs. The intent of this section is to encourage creative and flexible site design that enables the allowable density to be transferred elsewhere on a site to protect environmentally sensitive areas and preserve open space and natural features. A residential cluster development may be permitted in any residential or mixed-use zoning district, subject to Type III review and approval by the Planning Commission. A cluster development proposal may be considered in conjunction with a proposal for land division or property line adjustment as provided in Subsection 19.402.13.

##### 1. Calculation of Permitted Number of Dwelling Units

a. The maximum number of dwelling units proposed for a residential cluster development shall not exceed the number of dwelling units otherwise permitted for the residential zoning district in which the parcel is located. The number of units allowed on a parent lot may be transferred to one or more newly created lots or parcels on the site. The cumulative density for all lots or parcels shall not exceed the density allowed for the parent lot.

b. The number of permitted dwelling units on a site shall be calculated in the following manner:

(1) Measure the gross area of the proposed cluster development site in acres and tenths of an acre.

(2) From the gross area, subtract the area of public streets, other publicly dedicated improvements, and common open space (whether or not it is conveyed pursuant to Subsection 19.402.14.C.2.c), measured in acres and tenths of an acre. The remainder shall be the net buildable area.

(3) Convert the net buildable area from acres to square feet, using the equivalency of 43,560 sq ft = 1 acre.

(4) Divide the net buildable area by the smallest minimum lot size (in square feet) per unit for a dwelling unit permitted in the zoning district. This figure shall be rounded to the nearest lower number to establish the maximum number of dwelling units permitted in the cluster development.

##### 2. Development Standards

a. All principal and accessory uses authorized in the underlying zoning district(s) shall be allowed in the cluster development. In addition, single-family attached dwellings, multifamily dwellings, and

townhouses may be permitted for a cluster development located in a residential zoning district that does not otherwise allow attached dwelling units.

b. Maximum lot coverage, building height, and off-street parking requirements for the applicable zoning district shall apply to the cluster development. Maximum lot coverage, floor area ratios, and off-street parking requirements shall be applied to the entire site rather than to any individual lot.

c. The following provisions shall apply to any residential cluster development, regardless of the general requirements of the applicable residential zoning district:

(1) The adjustments allowed by Subsection 19.402.14.A shall be available for cluster development proposals.

(2) Minimum lot width and lot depth standards shall not apply.

(3) A minimum separation of 10 ft shall be provided between all principal buildings and structures.

(4) A minimum yard or common open space shall be provided, with a minimum depth of 25 ft, as measured from all public streets and from the side and rear lot lines of the entire cluster development.

(5) Each lot shall provide at least 12 ft of frontage on a public street.

(6) More than 1 principal building or structure may be placed on a lot.

(7) No less than 25% of the site shall be conveyed as common open space.

(8) No less than 50% of the designated natural resources on the site shall be included in calculating the common open space.

### 3. Site Plan Requirements

The preliminary and final site plans for a residential cluster development shall include the following information, in addition to the items listed on the City's Site Plan Requirements:

a. The maximum number and type of dwelling units proposed.

b. The areas of the site on which the dwelling units are to be constructed or are currently located and their size. This may take the form of the footprint of the dwelling unit or a building envelope showing the general area in which the dwelling unit is to be located.

c. The calculations for the permitted number of dwelling units, derived pursuant to Subsection 19.402.14.C.2.

d. The areas of the site on which other principal and accessory uses are proposed to be located and their size.

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e. The areas of the site designated for common open space and their size.

4. Approval Criteria

a. Proposals for residential cluster development shall demonstrate compliance with the following criteria:

(1) The site plan satisfies the requirements of Subsections 19.402.14.C.1 and 2.

(2) Buildings and structures are adequately grouped so that at least 25% of the total area of the site is set aside as common open space. To the greatest degree practicable, common open space shall be designated as a single tract and not divided into unconnected small parcels located in various parts of the development. Common open space shall be conveyed as allowed by Subsection 19.402.13.J.

(3) Individual lots, buildings, structures, streets, and parking areas are situated to minimize the alteration of natural features, natural vegetation, and topography.

(4) Impacts to WQRs and HCAs are avoided or minimized to the greatest degree practicable.

(5) The cluster development advances the purposes established in Subsection 19.402.1.

b. The Planning Commission may apply such conditions or stipulations to its approval as may be required to maintain harmony with neighboring uses and promote the objectives and purposes of the Comprehensive Plan and the Zoning and Land Division Ordinances.

c. If the Planning Commission finds that the criteria in Subsection 19.402.14.C.4.a are met, it shall approve the residential cluster development, subject to any conditions established pursuant to Subsection 19.402.14.C.4.b.

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Date: December 5, 2016  
To: Environmental Overlay PMT  
From: Cathy Corliss  
cc: File  
Re: DRAFT Memorandum #2: Alternatives Analysis - PART 2

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## INTRODUCTION

Part 2 of the alternatives analysis covers the following five Development Code issues<sup>1</sup>:

- D. TEMPORARY DISTURBANCE AREAS
- E. TREE SURVEY
- F. MITIGATION PROGRAM
- G. FIELD VERIFICATION - DEVELOPER OBLIGATIONS / PROCESS
- H. MAP UPDATE PROCESS

The draft alternatives analysis below provides an initial evaluation of the strengths and weaknesses of various solutions in terms of how well they address the specific deficits and challenges identified in Task 1 as well as the overall goals for the Environmental Overlay project. In particular, the following project goals relate to these five Development Code issues:

- Clarify, simplify, and, if possible, unify the three environmental codes (HCA, ESRA-PV and ESRA-SW).
- Revise regulations to be more easily implementable, effectively integrated with Gresham development code regulations, and supported by the City's Comprehensive Plan.
- Maintain compliance with Oregon's Statewide Planning Goals and regional requirements.
- Maintain the degree of resource protection currently provided.

The draft is intended as a starting place for discussion. In some cases, we have also identified "best practices" from other jurisdictions where we thought it would be helpful to illuminate options.

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<sup>1</sup> Part 1 of the Alternatives Analysis addressed the following: A. CONSOLIDATE ZONES (FULL AND PARTIAL CONSOLIDATION); B. CONSOLIDATE WQRA INTO HCA; and C. DENSITY TRANSFER

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## D. TEMPORARY DISTURBANCE AREAS

The Gresham Development Code defines “Disturbance Area” to include both temporary and permanent development.

*Disturbance Area. An area that contains all temporary and permanent development, exterior improvements, and staging and storage areas on the site. For new development, the disturbance area must be contiguous. The disturbance area does not include agricultural and pasture lands or naturalized areas.*

However, in practice the existing environmental regulations do recognize a distinction between temporary and permanent disturbances. For example, the ESRAs and HCA include exemptions for certain small scale activities such as site investigations and utility services (single utility pole) *provided that such areas are restored to their original condition when the investigation is complete*. In addition, ESRAs and HCA provide special exceptions for underground utility facilities, in part on the assumption that the area can and will be restored.

Staff has asked whether there would there be a benefit in defining disturbance areas that are permanent, versus those that are temporary. Staff noted that in some cases, due to existing vegetation conditions on lots, it may be reasonable to permit temporary disturbance areas beyond the MDA amounts that can be utilized as “construction or staging zones” during construction activities. There could be a separate cap on the size of these temporary disturbance areas, such as a 5-foot buffer from the edge of the home’s footprint. There could be an overall maximum square footage cap as well. These temporary disturbance areas would have to be fully revegetated prior to issuance of C/O.

### Best Practices from Other Jurisdictions

**Portland.** The City of Portland defines Disturbance Area as: *The area where all temporary and permanent disturbance occurs. For new development the disturbance area must be contiguous. Native vegetation planted for resource enhancement, mitigation, remediation, and agricultural and pasture lands is not included. The disturbance area may contain two subareas, the permanent disturbance area and the temporary disturbance area:*

- *Permanent Disturbance Area. The permanent disturbance area includes all areas occupied by existing or proposed structures or exterior improvements. The permanent disturbance area also includes areas where vegetation must be managed to accommodate overhead utilities, existing or proposed non-native planting areas, and roadside areas subject to regular vegetation management to maintain safe visual or vehicle clearance.*
  - *Temporary Disturbance Area. The temporary disturbance area is the portion of the site to be disturbed for the proposed development but that will not be 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 that will not be covered by permanent development. It also includes areas disturbed during construction to place underground utilities,*
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where the land above the utility will not otherwise be occupied by structures or exterior improvements.

Portland’s Environmental Zones allow some additional area for temporary disturbance. For example, where the distance between a building and the edge of the disturbance area is less than 10 feet, additional temporary disturbance area is allowed. The edge of the additional temporary disturbance area may extend no more than 10 feet from the building.

**Milwaukie.** The City of Milwaukie also defines “temporary disturbance areas” and allows some additional leeway for these areas relative to permanent disturbance areas.

*Temporary disturbances are those that occur during an allowed or approved development or activity but will not persist beyond completion of the project. Temporary disturbances include, but are not limited to, accessways for construction equipment; material staging and stockpile areas; and excavation areas for building foundations, utilities, stormwater facilities, etc.*

In Milwaukie, all disturbances within an HCA that occur during construction or other development activities, whether temporary or permanent disturbances, count equally for the purposes of calculating and tracking the maximum disturbance area allowed for a particular site. However, natural resources that are affected by temporary disturbances are only required to be restored, whereas those affected by permanent disturbances must be mitigated. It appears this approach would produce a result similar to Gresham’s current requirements for HCAs; however, because ESRAs require 2:1 mitigation it would result in less mitigation in those areas.

### Alternatives

**Alternative 1:** Retain the current HCA approach to disturbance areas and apply to ESRAs as well. Do not require 2:1 mitigation for temporary disturbance areas in ESRAs (this approach is also similar to Milwaukie).

**Alternative 2:** Implement an approach similar to the City of Portland – define temporary disturbance areas and allow additional areas of temporary disturbance with required restoration.

TEMPORARY DISTURBANCE AREAS	
Strengths of the Alternative 1	Weaknesses of the Alternative 1
<ul style="list-style-type: none"><li>Recognizes that some resources (e.g., mature trees) will take decades to restore, thus temporary disturbance areas can have long-term impact.</li></ul>	<ul style="list-style-type: none"><li>Low quality resources areas might benefit from post-construction restoration, allowing additional temporary disturbance would increase that opportunity.</li></ul>
<ul style="list-style-type: none"><li>Limits the total area of disturbance to a fixed amount, applicants can choose to use area for permanent or temporary disturbance.</li></ul>	<ul style="list-style-type: none"><li>In order to maximize building area within the disturbance area, applicants may be unrealistic about the area needed for</li></ul>

	construction, resulting in additional impacts to areas outside the approved disturbance area.
<ul style="list-style-type: none"> <li>A single disturbance area number is easy to administer and explain.</li> </ul>	<ul style="list-style-type: none"> <li>Calculating mitigation could be confusing if 2:1 mitigation is required in ESRAs for permanent disturbance areas but not for temporary disturbance areas. (see analysis of Mitigation Program below)</li> </ul>
<b>Strengths of the Alternative 2</b>	<b>Weaknesses of the Alternative 2</b>
<ul style="list-style-type: none"> <li>Allows for the restoration of additional resource areas after construction, potentially improving the function of low value resources.</li> </ul>	<ul style="list-style-type: none"> <li>Some resources (e.g., mature trees) will take decades to restore, thus temporary disturbance areas can have long-term impact.</li> </ul>
<ul style="list-style-type: none"> <li>Applicants can allow for construction impacts without reducing the amount of land available for permanent disturbance area.</li> </ul>	<ul style="list-style-type: none"> <li>A larger total area can be approved for disturbance (permanent + temporary disturbance areas)</li> </ul>

## E. TREE SURVEY

The current code requires that Type II applications include a tree survey of all trees within the ESRA or HCA portion of the site (as applicable). Both ESRAs and HCA require some information about all trees within the ESRA or HCA (regardless of whether they are within the disturbance area) and more detailed information about trees that are proposed to be disturbed.

*ESRAs - Within the ESRA-PV area of the subject property:*

1. *The distribution outline of shrubs and ground covers, with a list of the most abundant species;*
2. *The individual location of trees 6 inches or greater in diameter, identified by species and size. When trees are located in clusters they may be described by the approximate number of trees, the diameter range, and a listing of dominant species;*
3. *An outline of the disturbance area or ESRA-PV area being challenged that identifies the vegetation that will be removed. All trees to be removed with a diameter of 6 inches or greater shall be specifically identified as to location, number, trunk diameters and species;*

*(NOTE: Similar language in ESRA-SW)*

*HCA - The following additional information shall be provided about the HCA:*

- a. *For properties containing less than one acre of HCA, the location of all trees within the HCA that are greater than six inches diameter at breast height (DBH), shall be identified by size and*



*species. For properties containing one acre or more of HCA, the applicant may approximate the number of trees and the diameter range, and provide a listing of the dominant species;*

*b. For proposed disturbance areas containing less than one acre of HCA, all trees with a diameter of six inches or greater that will be removed shall be specifically identified as to diameter at breast height (DBH) and species. For proposed disturbance areas containing one acre or more of HCA an approximation of the number of trees, their diameters and the dominant species;*

Staff has asked would it be more valuable to have the tree survey focus on those trees in a buffer distance from where the proposed permanent structures will be built. For example, establish a buffer distance such as 50, 75, 100, or 150 feet, or based on the critical root zone of those trees adjacent to a proposed driveway, house, utility line, etc. The remainder of the site can be summarized by dominant species and range of DBH.

#### Best Practices from Other Jurisdictions

**Portland.** Portland does not require detailed survey information about trees outside of the disturbance area.

*Within the disturbance area, all trees that are 6 or more inches in diameter must be indicated by size and species. Trees outside of the disturbance area must be shown as crown cover with an indication of species composition;*

**Wilsonville.** Wilsonville does not require detailed survey information about trees outside of the disturbance area.

*Within the area proposed to be disturbed, the location, size and species of all trees that are more than six (6) inches in diameter at breast height (DBH). Trees outside the area proposed to be disturbed may be individually shown or shown as drip line with an indication of species type or types;*

#### Alternatives

**Alternative 1:** Retain the current HCA approach and apply to ESRAs as well, but reduce the amount of area that triggers a detailed tree survey from one acre to one-half acre. For properties with more than one-half acre of HCA or ESRA, the applicant may approximate the number of trees and the diameter range, and provide a listing of the dominant species.

**Alternative 2:** Require detailed tree survey information only for those trees within 50 feet of the disturbance area. Other trees within the HCA and ESRA can be shown individually or shown as drip line with an indication of species type or types. (Similar to Wilsonville and Portland but with the addition of a 50 foot buffer)

**Both Alternatives.** Under both alternatives, apply current ESRA requirement for detailed tree survey information about trees to be disturbed in order to ensure accurate mitigation requirements. Delete reference to “tree groves” in the ESRAs.

TREE SURVEY	
Strengths of the Alternative 1	Weaknesses of the Alternative 1
<ul style="list-style-type: none"> <li>Alternative would reduce the area (and number of sites) subject to a detailed tree survey (when trees are not being disturbed) relative to current ESRA and HCA requirements.</li> </ul>	<ul style="list-style-type: none"> <li>On sites with a very small amount of disturbance area, a one-half acre tree survey may still generate unnecessary information about trees which are not being disturbed and increase applicant costs.</li> </ul>
<ul style="list-style-type: none"> <li>The current HCA language may not provide sufficient detail to accurately apply the required tree mitigation, alternative would require that all trees within the disturbance area be surveyed. This is already the case in the ESRAs.</li> </ul>	<ul style="list-style-type: none"> <li>The trees on sites within the HCA which have more than 1 acre of disturbance area would have to be surveyed. Currently for proposed disturbance areas containing one acre or more of HCA, applicants can provide an approximation of the number of trees, their diameters and the dominant species.</li> </ul>
Strengths of the Alternative 2	Weaknesses of the Alternative 2
<ul style="list-style-type: none"> <li>Similar to Alternative 1, but would allow a more targeted approach to the tree survey thus further reducing the cost for with relatively small amounts of resource area.</li> </ul>	<ul style="list-style-type: none"> <li>Similar to Alternative 1, applicant would have to survey trees within 50 feet of the disturbance area even if these trees were not being impacted.</li> </ul>

## F. MITIGATION PROGRAM

This section considers alternatives for the mitigation standards including updating the mitigation programs in a consistent manner across resource zones and potentially create a “shared” guidance document that is relied on by all three zones.

The ESRA-SW and ESRA-PV mitigation requirements are nearly identical. The HCA requirements are quite similar as well with just a few notable differences, as summarized below:

- ESRAs require mitigation at a 2:1 ratio of mitigation area to proposed disturbance area. HCA does not specify a land area, but instead focuses on vegetation replacement.
- ESRAs specifically name the watersheds in which mitigation should be provided. HCA requires same sub-watershed (6th Field Hydrologic Unit Code).
- Required plants and plant densities and plant size standards are the same for ESRAs and HCA.
- Monitoring and reporting standards are generally the same for ESRAs and HCA – 5 years, annual reporting, and financial guarantee. The ESRAs go into more detail about the nature of the financial guarantee.
- Required Tree and Shrub Survival Rates and General Stewardship Practices are the same.

- HCA provides two options for alternative mitigation – off-site mitigation or varying the number and size of trees and shrubs. ESRAs allow alternative mitigation, but criteria are stricter (even for varying the number or size of trees and shrubs) and 2:1 ratio for mitigation areas is still required (no alternative for that).

Alternatives

**Alternative 1:** Retain the current system of regulations and procedures as described above for ESRAs including the mitigation ratio of 2:1 ratio of mitigation area to proposed disturbance area, and apply this approach consistently to both ESRAs and HCAs.

**Alternative 2:** Retain the current system of regulations and procedures as described above for HCA (i.e., no 2:1 ratio, more options for alternative mitigation), and apply this approach consistently to both ESRAs and HCAs.

**Alternative 3:** Move the details of the mitigation requirements into a “shared” guidance document that is relied on by all three zones. This alternative could work with either Alternative 2 or Alternative 3. (The strengths and weaknesses of this alternative should be discussed with the City Attorney).

MITIGATION PROGRAM	
Strengths of the Alternative 1	Weaknesses of the Alternative 1
<ul style="list-style-type: none"> <li>• Maintains 2:1 mitigation ratio for ESRAs in addition to tree replacement. This approach serves to discourage encroachments as well as expand ESRAs.</li> </ul>	<ul style="list-style-type: none"> <li>• It’s unclear from a policy basis why mitigation areas in the ESRA are required to be larger than mitigation areas in the HCA. There is no relationship to quality of resource being impacted.</li> </ul>
<ul style="list-style-type: none"> <li>• Many of the mitigation requirements are already the same.</li> </ul>	<ul style="list-style-type: none"> <li>• Remaining differences between ESRAs and HCA can create confusion.</li> </ul>
Strengths of the Alternative 2	Weaknesses of the Alternative 2
<ul style="list-style-type: none"> <li>• Mitigation standards are applied consistently across the City. Treats PV and SW as part of the Gresham rather than separate places.</li> </ul>	<ul style="list-style-type: none"> <li>• Reduces mitigation requirements in ESRAs by removing requirement for 2:1 mitigation area.</li> </ul>
<ul style="list-style-type: none"> <li>• Removes all remaining differences between ESRAs and HCA simplifying implementation.</li> </ul>	<ul style="list-style-type: none"> <li>• Reduces requirements somewhat in ESRAs which are currently somewhat more restrictive.</li> </ul>
<ul style="list-style-type: none"> <li>• Allows more flexibility for alternative mitigation in the ESRAs (same as currently allowed in HCAs).</li> </ul>	<ul style="list-style-type: none"> <li>• More flexibility to allow off-site mitigation or vary the number and size of trees and shrubs may allow less effective mitigation.</li> </ul>

Strengths of the Alternative 3	Weaknesses of the Alternative 3
<ul style="list-style-type: none"> <li>Mitigation guidance could be updated to stay current with best practices without requiring a code amendment.</li> </ul>	<ul style="list-style-type: none"> <li>If an applicant wanted to challenge requirements, they might have less authority than if adopted as land use ordinance.</li> </ul>
<ul style="list-style-type: none"> <li>Mitigation requirements would apply to all three NR areas so changes and updates would apply to all consistently.</li> </ul>	<ul style="list-style-type: none"> <li>Reduces requirements somewhat in ESRA's which are currently somewhat more restrictive.</li> </ul>
<ul style="list-style-type: none"> <li>Technical standards and illustrations would not add to complexity of the development code.</li> </ul>	<ul style="list-style-type: none"> <li>Applicants will have to check a second document to understand the details of how the regulations apply.</li> </ul>

## G. FIELD VERIFICATION - DEVELOPER OBLIGATIONS / PROCESS

This section of the alternatives analysis addresses the development code requirements related to the field verification process. It is closely related to, but separate from, the analysis of field-verifiable map inputs. Under current Development Code, the three environmental code sections (HCA, ESRA-PV, and ESRA-SW Code) all require an applicant to verify the protection area boundary when development is proposed within or within the proximity of the resource area according to the map verification procedures outlined in the code. The ESRA-PV and ESRA-SW codes are largely the same, with only minor differences. Both require field verification of the mapped ESRA boundary when development is proposed within the ESRA or within 100 feet of the ESRA. The HCA code requires verification of the mapped HCA boundary when development is proposed within the HCA or within 50 feet of the HCA. The HCA code does not, however, specifically require field verification, and the map verification procedures for HCA allow the applicant to accept the mapped HCA if the applicant believes the HCA is accurately mapped. While accepting mapped HCA boundaries is allowed, all three code sections require the applicant to flag the environmental zone in the field prior to development. As such, for HCA, applicants could be flagging environmental boundaries that do not reflect field conditions.

### Best Practices from Other Jurisdictions

**Milwaukie.** The City of Milwaukie requires applicants to verify the boundaries of the Water Quality Resource (e.g., streams, wetlands and associated vegetated corridors) and HCA on a development site whether or not the applicant believes the City's Natural Resources Administrative Map is accurate. The NR Administrative Map is considered to be a general indicator of protected water features on a site, but the actual location of WQRs is determined according to the parameters spelled out in the Code. The HCA, as depicted on the City's mapping is assumed to be correct, unless demonstrated otherwise. The Code provides boundary verification procedures for correcting inaccuracies in the mapped HCA, but the applicant may use the HCA boundary, as mapped if he/she does not wish to challenge the mapping.

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**Water Environment Services (WES).** WES, which administers Sanitary Sewer, Surface Water Management and Erosion Control Programs in parts of Clackamas County, approaches field verification of HCA boundaries as described above for the City of Milwaukie.

With the exception of only a few jurisdictions, such as Clean Water Services and the City of Oregon City, confirmation by jurisdictions of the accuracy of their mapping does not occur. As such, in most jurisdictions there is a potential for incorrect environmental boundaries to be used for site development purposes.

The consultant team has looked at three alternatives for the field verification requirement for the three environmental protection zones with the goal of making verification requirements consistent throughout the City. In both cases, the distance wherein field verification is required, it should be a reflection of the accuracy of the mapping. If new maps are produced for ESRA and HCA based on the same underlying data sets, then the accuracy of those maps, and therefore the distance required for verification should be the same (i.e., either 50' or 100' or other?). Alternative 3 considers that the maps do not identify many resources (especially wetlands) and would therefore require that applicants evaluate the entire site.

#### Alternatives

**Alternative 1: No Field Verification Requirement.** Under Alternative 1, applicants would not be required to field verify the location of the environmental protection zone on their property. The boundary of the environmental zone, as mapped by the City, would be used to evaluate compliance with the applicable sections of the Development Code. This alternative would, however, include procedures for landowners to correct the environmental protection zones on their property when there are obvious mistakes in the City's mapping, as provided for in the current ESRA-PV, ESRA-SW, and HCA codes. This alternative is similar to that currently used for HCA properties where applicants can choose to accept the boundary as shown on the map.

**Alternative 2: Field Verification Required.** Under Alternative 2, applicants would be required to field verify the location of the environmental zone when development is proposed within a specified distance of the environmental zone, as mapped by the City. The City's environmental protection zone mapping would be used as a guide for landowners and show the approximate extent of environmental protection. It would be the landowner's responsibility to verify the actual location of the environmental protection zone boundaries on the parcel through mapping of streams, wetlands, and other resources on the parcel. This alternative is similar to that currently used for ESRA properties where applicants must field verify the location of the resource when development is proposed within 100 feet of the ESRA boundary.

**Alternative 3: Full Site Field Verification Required.** Currently development which is more than 100 feet from an ESRA or more than 50 feet from an HCA is exempt from the field verification process. Under Alternative 3, applicants would be required to field verify the location of the environmental

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zone on a development site when environmental zones are mapped within 200 feet of the development site or when other sources of information indicate the possibility that resources occur on the development site. To determine when a proposed activity requires field verification of environmental zones on a site, the City (or its designee) would use the most recent aerial photographs, the City’s natural resources mapping, NRCS soil surveys, and other applicable resources to determine if regulated natural resources are likely to occur on the site. It would be the landowner’s responsibility to verify the actual location of the environmental protection zone boundaries on the parcel through mapping of streams, wetlands, and other resources.

<b>FIELD VERIFICATION</b>	
<b>Strengths of the Alternative 1</b>	<b>Weaknesses of the Alternative 1</b>
<ul style="list-style-type: none"> <li>• Relying on City mapping would provide more certainty to property owners. Property owners would know what constraints related to environmental protection zones are on their property, and they would be certain that those constraints will not increase.</li> <li>• Relying on City mapping would result in less burden being placed on the property owner. Property owners would not be required to expend resources to confirm the presence and location of environmental protection zones on their property.</li> </ul>	<ul style="list-style-type: none"> <li>• Available GIS mapping for some resources on which the boundaries of environmental protection zones are based vary in accuracy. Many existing wetlands are not shown on existing inventories and would not be included in the City’s environmental protection zone mapping. Relying on City mapping would mean that some resources would not be protected and some non-resource areas would be protected.</li> <li>• There is a potential for the City to be considered partially liable for violations occurring due to unmapped and regulated wetlands being found on active development properties. This scenario could occur if City mapping does not identify an existing wetland and the property owner proceeds with development only to be cited by State and Federal agencies for filling a wetland without State and Federal permits.</li> </ul>
<b>Strengths of the Alternative 2</b>	<b>Weaknesses of the Alternative 2</b>
<ul style="list-style-type: none"> <li>• Requiring field verification would increase the probability that all resources would be captured within the environmental protection zone and all resources intended to be protected under the code would actually be protected.</li> </ul>	<ul style="list-style-type: none"> <li>• Requiring field verification would increase the burden to property owners. Property owners would be required to expend resources for surveys of streams, wetlands and other resources to accurately determine the location of the environmental protection zone on their property.</li> <li>• If field verification is required, property owners would be uncertain of the constraints on their property until after they</li> </ul>

	<p>have mapped streams wetlands and other resources on their property.</p> <ul style="list-style-type: none"> <li>• Requiring field verification for all development projects would increase the time and resources spent by the City to review individual projects.</li> </ul>
Strengths of the Alternative 3	Weaknesses of the Alternative 3
<ul style="list-style-type: none"> <li>• Requiring field verification would increase the probability that all resources would be captured within the environmental protection zone and all resources intended to be protected under the code would actually be protected.</li> </ul>	<ul style="list-style-type: none"> <li>• Requiring field verification would increase the burden to property owners. Property owners would be required to expend resources for surveys of streams, wetlands and other resources to accurately determine the location of the environmental protection zone on their property.</li> <li>• If field verification is required, property owners would be uncertain of the constraints on their property until after they have mapped streams wetlands and other resources on their property.</li> <li>• Requiring field verification for all development projects would increase the time and resources spent by the City to review individual projects.</li> </ul>

## H. MAP UPDATE PROCESS / PROCEDURES

The ESRA and HCA chapters acknowledge that the maps may not be accurate or that new information may become available and they outline processes for making updates. The current map updates can generally be categorized as follows:

- City-initiated map updates. Typically larger scale updates resulting from the availability of better data (e.g., updated floodplain maps) would be completed as part of a legislative process, although ESRAs and HCA each include language that seems to allow “resource information updates” to be done on an annual basis through a Type I procedure. All three chapters note that these Type I updates shall not be considered a comprehensive plan map amendment. However, it’s not clear whether there is a limit on the scale of a “resource information update” (i.e., wholesale update of resource information vs. site-specific) and it’s not clear whether compliance with Measure 56 notice requirements are addressed. In addition, all three chapters require that maps be amended through Type I process to add any wetlands that are identified during development review.

*The City shall incorporate all ESRA-SW delineations associated with development permit applications and **resource information updates** on the Springwater Plan District ESRA Map on an*

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*annual basis, or as necessary, through a **Type I** procedure initiated by the Manager. [Similar language is included in ESRA-PV and HCA].*

*A wetland identified during the course of a development permit review that meets the State of Oregon's definition of a "Locally Significant Wetland" shall be subject to the standards of the ESRA-SW sub-district. These wetlands shall be officially added to the City's Springwater Plan District ESRA Map by the Manager, under a **Type I** procedure, after the development permit becomes final. [Similar language is included in ESRA-PV and HCA].*

- Applicant-initiated map corrections. In all three chapters applicants can accept the boundary location through a Type I process, but applicant-initiated corrections are processed as a Type II.

*Any change to the ESRA-SW boundary, not initiated by the City, that requires an adjustment of the boundary as shown on the Springwater Plan District ESRA Map shall be processed under the Type II development permit procedure. [Similar language is included in ESRA-PV and HCA].*

When an applicant needs to amend the boundary to allow for a proposed development, or is proposing development in the ESRA or HCA, the Type II process seems appropriate (at least when the problem is not the result of an obvious mapping error). What's less clear is what happens when the map error is in the applicant's favor (i.e., the resource in the field is actually closer to the proposed development than shown on the map). In the case of the HCA, the applicant can choose to "accept the map" without field verification (see discussion of field verification above). In cases where the map is in the applicant's favor, this seems a likely outcome (although it could have a negative impact on natural resources). The ESRAs require that the applicant field-verify the location of the resource in all cases. However, the language is unclear with regard to the result. It could mean that even if the applicant would prefer to accept the map boundary as shown, they are required to apply for a Type II correction that is not in their favor. This is potentially an unreasonable request – after all, why would the applicant complete and pay for a Type II application that they don't want approved in the first place. A more logical result is that the applicant provides the information to the City and builds in compliance with the new boundary, but declines to initiate the Type II amendment. The City then updates the map as a City-initiated correction based on the applicant's information.

Adjustments to the map boundary resulting from development within the resource itself may require a Type III review if the development exceeds the standards or certain thresholds. Adjustments to the standards in ESRAs require a Type III review. This is similar to the requirement in HCA that a variance that would result in a reduction of greater than 20% of the HCA width on a site or an increase/decrease of more than 20% of another numerical standard requires a Type III Major Variance.

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### Best Practices from Other Jurisdictions

**Portland.** Portland’s Environmental Zones require Type II environmental review when an applicant wishes to fine-tune the zone boundary location based on a detailed environmental study. The approval criteria for map corrections requires that the applicant demonstrate that the proposed environmental zone line location accurately reflects the location of the significant or highly significant resources and functional values on the site, plus 25 feet of transition area. The significant or highly significant resources are identified in the Resource Site Inventory of the relevant Environmental Study Report (Natural Resource Management Plans).

**Milwaukie.** The NR Administrative Map shows the locations of WQRs and HCAs. Some locations are just WQRs, others have overlapping WQR/HCA designations (see figure below). For WQRs, the NR Administrative Map is a general indicator of protected water features and their associated vegetated corridors; the location of actual WQRs is determined according to established parameters. With respect to HCA locations, the NR Administrative Map is assumed to be correct unless demonstrated otherwise. In speaking recently with planners at the city, they lean heavily towards allowing applicants to accept the HCA mapping even when though the City may realize the results are in the developer’s favor. If a property owner or applicant believes that the NR Administrative Map is inaccurate, they may propose corrections. Minor corrections to mapped HCAs may be proposed are subject to Type I review, more significant corrections are subject to Type II.

**Excerpt from Milwaukie NR Administrative Map**



**Wilsonville.** The Significant Resource Overlay Zone (SROZ) represents the area within the outer boundary of all inventoried significant natural resources. The Significant Resource Overlay Zone includes all land identified and protected under Metro’s UGMFP Title 3 Water Quality Resource Areas and Title 13 Habitat Conservation Areas, as currently configured, significant wetlands, riparian corridors, and significant wildlife habitat that is inventoried and mapped on the Wilsonville Significant Resource Overlay Zone Map. The text provisions take precedence over the Significant Resource Overlay Zone maps. The Wilsonville Significant Resource Overlay Zone Map is used to determine whether a Significant Resource Impact Report (SRIR) is required. Through the development of an SRIR, a more specific determination can be made of possible impacts on the significant resources. The code then provides a list of maps and documents that may be used as references for identifying areas subject to the

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requirements (e.g., Metro's UGMFP Title 3 Water Quality Resource Area maps, Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM), Wilsonville Local Wetland Inventory (LWI) (1998), etc.)

*The Planning Director shall determine the location of any Significant Resource Overlay Zone on the subject property by considering information submitted by the applicant, information collected during any site visit that may be made to the subject property, information generated by Significant Resource Overlay Zone Map Verification that has occurred on adjacent properties, and any other relevant information that has been provided.*

**Regional Requirements: Metro UGMFP.**

- Title 3 (Water Quality Resource Areas) provides two options: adopt code language which prevails over the map and use the map as reference; or adopt a city or county field verified map of Water Quality and Flood Management Areas based on the Metro Water Quality and Flood Management map implementing this title which prevails over adopted code language. The City of Gresham appears to use the second option for its WQRAs.
- Title 13 (Nature In Neighborhoods) establishes an inventory of the areas that have been determined to contain regionally significant fish and wildlife habitat (high, medium and low in two categories: riparian and upland wildlife). Metro applied its ESEE analysis to the inventory to create the HCA map which established areas of high, moderate, and low levels of habitat conservation. The City is required to establish a map verification process consistent with Title 13. The site-level verification of Habitat Conservation Areas is a three-step process. The first step is determining the boundaries of the habitat areas on the property (which is itself a 5-step process for riparian area boundaries). The second step is determining the urban development value of the property. The third step is cross-referencing the habitat classes with the urban development value of the property. For territory brought within the Metro UGB after December 28, 2005, the location of upland wildlife habitat must also be verified – considerations for amending the upland wildlife habitat boundary include only: the habitat was legally removed, errors were made at the time the vegetative cover status was established, and discrepancies between the locations of property lot lines and the location of the HCA.

Title 13 specifies that the jurisdiction's regulations shall "provide property owners with a reasonable, timely, and equitable process to verify the specific location of habitat areas" and that it is "the intent of this requirement that, in the majority of cases, the process be as simple and straightforward as possible and not result in a change that would require an amendment to the city's or county's comprehensive plan." The Model Code (and City of Gresham HCA standards) limit the Type I corrections to three situations: Applicant Believes HCA Map is Accurate, Obvious Misalignment Between Mapped Habitat and Property Lot Lines, and Property Developed Between Summer 2002 and September 29, 2005. All other corrections require a detailed verification (even if there is an obvious GIS error).

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Alternatives

**Alternative 1:** Retain the current system of reviews and procedures as described above, including variation between ESRAs and HCA.

**Alternative 2:** Establish a new system as summarized in the table below that would be applied in all three zones.

Summary of Alternative 2: New Map Update Process	
1. City initiated updates to resource information based on new natural resource information.	Type IV legislative amendments on annual (or as needed) basis. Measure 56 notice to impacted property owners.
2. Applicant-initiated. Applicant proposes development within 100 ft of HCA or ESRA (consider reducing to 25 ft if new maps are more accurate).	
a. Applicant provides field verified information of boundary in all cases based on clear and objective mapping protocols (e.g., distance from stream centerline, slope, vegetation category, floodplain and wetland edges).	
b. If applicant desires an amendment of boundary to enable their development and...	
<ul style="list-style-type: none"> <li>The map change corrects a GIS error (i.e., the map shows resource where in reality none is present based on clear and objective mapping protocols).</li> </ul>	Type I (concurrent with application)
<ul style="list-style-type: none"> <li>The map change is <b>not</b> a GIS error (i.e., does not qualify for Type I) but the applicant can meet the standards for development in an ESRA or HCA.</li> </ul>	Type II (concurrent with application -- map change resulting from encroachment and mitigation)
<ul style="list-style-type: none"> <li>The map change is <b>not</b> a GIS error (i.e., does not qualify for Type I) and standards for development within an ESRA or HCA <b>cannot</b> be met.</li> </ul>	Type III (or consider making a Type II)
c. If applicant does not desire an amendment of boundary (i.e., map is in their favor or neutral), applicant provides the verification to the City and is required to build in compliance with verified boundary.	Map correction during annual update by City, no charge to applicant

MAP UPDATE PROCESS / PROCEDURES	
Strengths of the Alternative 1	Weaknesses of the Alternative 1
<ul style="list-style-type: none"> <li>Allows City to amend maps through a Type I process.</li> </ul>	<ul style="list-style-type: none"> <li>City amendments of map may require additional notice if process is happening without the property owner's approval.</li> </ul>

<ul style="list-style-type: none"> <li>• Applicants can accept map boundary through Type I process. Field verification not required in HCA.</li> </ul>	<ul style="list-style-type: none"> <li>• Applicants may be inclined to accept an inaccurate boundary when it is in their favor. Thus resources may go unprotected.</li> </ul>
<ul style="list-style-type: none"> <li>• Allows applicants to amend maps through a Type II process.</li> </ul>	<ul style="list-style-type: none"> <li>• A Type II process is required even when the error is clearly a result of the GIS mapping which seems an unfair burden to the applicant.</li> </ul>
<p><b>Strengths of the Alternative 2</b></p>	<p><b>Weaknesses of the Alternative 2</b></p>
<ul style="list-style-type: none"> <li>• Annual legislative update of the maps will ensure adequate notice.</li> </ul>	<ul style="list-style-type: none"> <li>• City will be required to provide notice and go through a public hearing process in order to amend NR maps. This will have an impact on administrative costs and City staff.</li> </ul>
<ul style="list-style-type: none"> <li>• Applicants required to field verify the boundary in all cases. If more accurate maps are available, could apply to development within 25 feet of resource boundary rather than 100 feet or more.</li> </ul>	<ul style="list-style-type: none"> <li>• Will require field verification for applicants with HCA who are satisfied with the mapped boundary. (Field verification currently required in ESRAs).</li> </ul>
<ul style="list-style-type: none"> <li>• Allows all types of map errors to be corrected through a Type I process.</li> </ul>	<ul style="list-style-type: none"> <li>• Requires clear and objective mapping protocols in order to process as a Type I.</li> </ul>
<ul style="list-style-type: none"> <li>• Type II review required for encroachments that meet the standards. This is consistent with current practice.</li> </ul>	<ul style="list-style-type: none"> <li>• Standards need to ensure that discretion is limited in order to allow for Type II decision.</li> </ul>
<ul style="list-style-type: none"> <li>• Type III review required for encroachments that cannot meet the standards and must use the discretionary approval process consistent with current practice.</li> </ul>	<ul style="list-style-type: none"> <li>• Type III approval process may not provide the best review for technical decisions such as the adequacy of mitigation.</li> </ul>



Date: January 31, 2017  
To: Environmental Overlay PMT  
From: Cathy Corliss and Andrew Parish  
cc: John van Staveren, PHS  
Re: DRAFT Memorandum #2: Alternatives Analysis - PART 3

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## INTRODUCTION

Part 3 of the alternatives analysis covers the following Development Code issue<sup>1</sup>:

I. GIS Model Inputs

The draft alternatives analysis below provides an initial evaluation of the strengths and weaknesses of various solutions in terms of how well they address the specific deficits and challenges identified in Task 1 as well as the overall goals for the Environmental Overlay project. In particular, the following project goals relate to this mapping issues:

- Clarify, simplify, and, if possible, unify the three environmental codes (HCA, ESRA-PV and ESRA-SW). More specifically, are three different models to create the buffers necessary? To what degree can we standardize across these areas?
- Update the geoprocessing models (and resulting maps) for the three buffer codes in order to incorporate new resource data and provide inputs that can be more easily understood by map users. More specifically, how do we incorporate new higher resolution LiDAR data and new floodplain maps? What changes would make it easier to field verify mapped features and to interpret setback calculations? How do we more easily correct maps when new data becomes available?
- Maintain compliance with Oregon's Statewide Planning Goals and regional requirements.
- Maintain the degree of resource protection currently provided.

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<sup>1</sup> Part 1 of the Alternatives Analysis addressed the following: A. CONSOLIDATE ZONES (FULL AND PARTIAL CONSOLIDATION); B. CONSOLIDATE WQRA INTO HCA; and C. DENSITY TRANSFER. Part 2 addressed: D. FIELD VERIFICATION; E. MAP UPDATE PROCESS/PROCEDURES; F. MITIGATION PROGRAM; G. TEMPORARY DISTURBANCE AREAS; H. TREE SURVEY

The “GIS Model Inputs” analysis is the most complicated of the topics in the alternatives analysis. For all three zones (ESRA-PV, ESRA-SW, and HCA), GIS-supported mapping processes were developed to map significant natural resources. While the inputs are different in all three zones, the GIS mapping process is similar. The GIS mapping process begins with the selection of specific data layers to represent landscape features that contribute to the identified riparian and wildlife habitat functions. Each GIS data layer represents a landscape feature that contributes to the riparian and upland wildlife functions. The GIS model searches for and maps features from each data layer that meet appropriate spatial parameters, and together these various layers form the boundaries of the zone. Once the initial GIS map is created, field-work can be used to correct errors and make refinements.

In theory the GIS program can easily and quickly incorporate new or updated data or criteria, and it produces a set of maps that can be easily accessed and distributed. The process also reflects a clear and logical set of steps that can be followed and repeated. However, the complexity of the current GIS models has presented challenges. The three alternatives considered below include:

- Alternative 1: Retain existing GIS model and inputs.
- Alternative 2: Establish resource boundaries based on average distances from stream centerline.
- Alternative 3: Established resource boundaries based on Metro HCA methodology (based on slope and veg cover, etc).

This draft is intended as a starting place for discussion.

## ALTERNATIVE 1. RETAIN EXISTING GIS MODEL AND INPUTS

This alternative represents a “base case” or “no change” alternative – under Alternative 1 the City of Gresham would not change the mapped extent or methodology of the ESRA-PV, ESRA-SW or HCA zones.

**Table 1. Areas Regulated by Alternative 1 (Current Regulations)**

<b>Zone</b>	<b>Acres</b>	<b>No. of Parcels Affected</b>
Environmentally Sensitive Restoration Area- Pleasant Valley (ESRA-PV) Land Use District		
Environmentally Sensitive Resource Area- Springwater (ESRA-SW) Land Use District		
Habitat Conservation Area (HCA) Overlay District		

A brief explanation of the current methodology and mapping for each zone is described below as well as some of the issues associated with the current approach.

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### ESRA-PV Methodology

ESRA-PV was based on field work, mapping, and original development code creation conducted between 1999 and 2003 in partnership with the City of Portland and is supported by an adopted ESEE. The basic resource functions listed below provided the foundation for the Pleasant Valley Riparian and Upland Habitat Functions significance criteria:

- Water quality
- Channel dynamics and morphology
- Water quantity: stream flow, sources, and storage
- Microclimate
- Fish and aquatic habitat
- Organic inputs
- Riparian and upland wildlife habitat quality
- Upland sensitive species
- Upland interior habitat

Each of the resource functions described above is represented in the criteria developed for determining the relative importance or “significance” of the resource areas identified in the inventory. The Pleasant Valley Significance Matrix identifies the applicable resource functions, the landscape features that contribute to the function, and the criteria used to weigh the quality or relative importance of the function.

The significance criteria (and primary and contributing factors) are based on suggested buffer widths and/or other size or distance thresholds recommended in recent scientific literature pertaining to riparian and upland wildlife habitat functions. Within Pleasant Valley all areas within the first 50 feet of a water body were deemed significant. The GIS search area for features that serve as contributing factors extend from primary factor area out to the greatest distance found in the scientific literature.

For example, vegetation, water bodies, and floodplains are the landscape features most essential to maintain the “Organic Materials” function. Vegetation contributes leaf litter, branches, logs, and other organic matter for fish and other wildlife to consume or utilize in other ways. The Pleasant Valley Significance Matrix identifies vegetation within 75 to 170 feet of a stream or water body as important for this function. The GIS mapping program maps all vegetation within 75 feet of a stream or wetland as a primary significant factor for the “Organic Materials” function, and vegetation between 75 feet and 170 feet of a stream or wetland as a contributing factor for this function. However, only areas with one or more primary factors were determined to be significant natural resources.

The Pleasant Valley Natural Resources appendix lists the following as GIS model inputs below. Sources were based on the data available at the time:

- Streams
  - Wetlands
  - Vegetation
  - Flood Area
  - Concept Plan Boundary
  - Fish Presence
  - Fish Barriers
  - Fish Habitat Rating
-



- Developed Floodplain
- Steep Slopes
- Stream Meander Zones
- Sensitive Species Sitings
- Subarea Wildlife Habitat Rating
- Wildlife Habitat Corridor

#### ESRA-PV Specific Issues

- ESRA-PV was adopted prior to the creation of the more accurate 2007 LiDAR-based stream data, resulting in ESRA where there's no stream, and stream where there's no ESRA.
- The mapping/modeling was completed by the City of Portland. Portland has since modified its model multiple times and re-defined the model inputs, and the City of Gresham was never given a copy of the original GIS model. Therefore the current model can't be rerun.
- The data sheets that support findings is scant, particularly for non-waterbody data.
- The juncture between ESRA and HCA is confusing. Junction points don't align, leaving odd discrepancies in resource protection.
- The data source for the Stream (Channel) Meander Zone is unavailable.

#### **ESRA-SW Methodology**

ESRA-SW was based on field work, modeling, and development code creation conducted by a consulting team in 2002-2005 and is supported by an adopted ESEE. Similar to ESRA-PV in approach, but representing the "next generation" in GIS mapping, ESRA-SW has many of the same issues. In ESRA-SW, field data collected and established in the GIS layers included land use, channel characteristics, aquatic habitat, fish barriers, riparian characteristics, and other features that are comparable to the baseline conditions inventory of the City of Gresham's Watershed Assessment (City of Gresham Department of Environmental Services prepared by NRPS 2002). Field observations were used to determine the condition of each stream reach and riparian corridors.

In Springwater the team used GIS, topographic maps (USGS quads), and aerial photography to determine sensitive natural resource areas and land use considering the following:

- Stream channels (including stream gradient and sinuosity)
- Riparian zones (width, composition, connectivity)
- Wetland areas (approximate locations)
- Vegetation Patches (composition of vegetation components in the area, including agricultural, commercial, residential, forested, and non-forested areas)
- Slope Stability (high erosion concern)
- Culvert and bridge locations
- Land use determination

ESRA-SW Specific Issues

- Field mapping “tree groves” as they were in 2005 is not possible.
- If there are changes in zoning, shifting from RSIA to residential, then the ESEE analysis needs to be revisited to reassess the economic development value vs. the environmental conservation value. The urban development values are a factor in assessing buffer widths.
- Adopted prior to 2007 LiDAR-based stream data, so as in PV, there is obvious misalignment between new stream layer and buffers in some areas and the model input of 1996 flood extent (from aerials) should be replaced with new floodplain model data.
- There are discrepancies between the field sheet records and the mapping model which makes it very difficult to interpret buffers.

**HCA Methodology**

The HCA implements environmental standards to protect Gresham’s streams, wetlands, riparian areas in all other areas of the City other than Pleasant Valley and Springwater. It was adopted in 2008, and largely reflects the original Metro Title 13 safe harbor ordinance language. Metro built on the methodologies the City of Gresham developed in Pleasant Valley and Springwater, so there are some significant similarities. The current HCA is intended to protect and improve the functions and values that contribute to fish and wildlife habitat in urban streamside areas. The ecological functions and the landscape features that were modeled are described in Table 5.0412(A) of Development Code shown below.

**Table 2. Table 5.0412(A) of Development Code**

Ecological function	Landscape features providing functional values
Microclimate and shade	Forest canopy or woody vegetation within 100 feet of a stream; a wetland <sup>1</sup> ; or a flood area <sup>2</sup> .
Streamflow moderation and water storage	A wetland or other water body <sup>3</sup> with a hydrologic connection to a stream; or a flood area <sup>2</sup> .
Bank stabilization, sediment and pollution control	All sites within 50 feet of a surface stream;  Forest canopy, woody vegetation, or low structure vegetation/open soils within 100 feet of a stream or a wetland; or forest canopy, woody vegetation, or low structure vegetation/open soils within a flood area; and,  Forest canopy, woody vegetation, or low structure vegetation/open soils within 100-200 feet of a stream if the slope is greater than 25%.
Large wood and channel dynamics	Forest canopy within 150 feet of a stream or wetland; or within a flood area; and  The channel migration zone is defined by the floodplain, but where there is no mapped floodplain a default of 50 feet is established to allow for the channel migration zone.
Organic material sources	Forest canopy or woody vegetation within 100 feet of a stream or wetland; or within a flood area.

1 Refers to “hydrologically-connected wetlands,” which are located partially or wholly within ¼ mile of a surface stream or flood area.  
 2 Developed floodplains are not identified as HCAs because they do not provide primary ecological functional value.  
 3 “Other water body” could include lakes, ponds, reservoirs, or manmade water feature that is not a water quality facility or farm pond.

Metro's HCA methodology was used to create the Title 13 Inventory features that are available on the Regional Land Inventory System (RLIS), for the purposes of creating a framework for comparing ecological values to competing development values and to break landscape features into logical units for management. It categorized natural resources throughout the region into the following categories shown in Table 3.

**Table 3. Metro Natural Resource Categories**

<b>Category</b>	<b>Criteria</b>
Riparian Corridors / Wildlife Habitat Class I	Areas support 3 or more riparian functions
Riparian Corridors / Wildlife Habitat Class II	areas supporting 1 or 2 primary riparian functions
Riparian Corridors Class III	Areas supporting only secondary riparian functions outside wildlife areas
Upland Wildlife habitat class A	Areas with secondary riparian value that have high value for wildlife habitat
Upland Wildlife habitat class B	Areas with secondary riparian value that have medium value for wildlife habitat
Upland Wildlife habitat class C	Areas with secondary riparian value that have low value for wildlife habitat
Aquatic Impact Areas	Areas within 150 of streams, river, lakes, or wetlands that are not considered regionally significant resources but could have some adverse impacts.
Upland Impact Areas	Areas within 25 feet of any regionally significant resources except riparian class III. Could adversely affect resource

Within existing urban areas only the first two categories listed above are applicable to private property. These inventory features were then cross-referenced with the urban land use categories in the Metro-adopted ESEE. The result was a system of High, Moderate and Low HCAs (the ESRAs only have a single classification).

HCA Specific Issues:

- Map verification requires use of Vegetated Cover Map by Metro. Current Metro data has "swiss cheese holes" on parcels that were always vegetated, and should be mapped as vegetated HCA.
- Wetland data should be further reviewed to remove non-wetland waterbodies such as active quarry pits.
- Need for simplification and clarification, especially related to field verification and map update processes.

## ALTERNATIVE 2. AVERAGE DISTANCES FROM STREAM CENTERLINE

This alternative is intended to simplify the GIS model and mapping process by “distilling” the various riparian layers described in Alternative 1, above, into an average distance from the stream centerline with the goal of maintaining the degree of resource protection currently provided. The average “buffer width” represents the riparian corridor. Wetlands, floodplain, and upland habitat areas (ESRA-PV and ESRA-SW districts only) are retained as separate GIS model layers.

The average riparian corridor is calculated using the existing maps, but once established it can be applied to updated 2007 LiDAR-based stream data, allowing for a level of protection that is, on average, similar to original ESRA protections. In order for the average riparian width to avoid over-protecting less significant streams and under-protecting more significant streams, some form of stream classification is required. Also because the three ESEE analyses resulted in different Allow/Limit/Prohibit decisions, the width of the riparian corridor also varies by location. The table below illustrates how this might work. (NOTE: in this version of the memo the stream classifications and riparian widths are only hypothetical)

**Table 4. Average Riparian Corridor Widths by Stream Classification and Location**

Stream Classification	ESRA-PV	ESRA-SW	HCA
Significant stream corridors (e.g., critical habitat and/or third order or greater streams)			
Moderate (second order streams)			
Minor/headwater (First order streams)			

Operationally, there are several options that the Project Team is examining:

- A total left-of-centerline and right-of-centerline average for all stream features
- Taking separate left-of-centerline and right-of-centerline measurements every five feet
- Taking a more generalized average left-of-centerline and right-of-centerline measurement for an entire stream reach
- A combination of the above methods as needed to produce the closest fit with existing ESRA protections.

**Table 5. Areas Regulated by Alternative 2**

Zone	Acres	No. of Parcels Affected
Environmentally Sensitive Restoration Area-Pleasant Valley (ESRA-PV) Land Use District		
Environmentally Sensitive Resource Area-Springwater (ESRA-SW) Land Use District		
Habitat Conservation Area (HCA) Overlay District		

## ALTERNATIVE 3 METRO HCA METHODOLOGY

The City currently uses the Metro HCA methodology in all of areas of the City except Pleasant Valley and Springwater. The HCA provides less protection for riparian resources when compared to ESRA-PV and ESRA-SW and doesn't protect upland resources on private land. This is a reflection of Metro's ESEE analysis which considered that areas inside the existing UGB were already substantially developed. In recognition of this Metro set a higher standard for lands added to the UGB after October 1, 2005. In these areas, Metro requires the protection and improvement of the following additional functions and values that contribute to upland wildlife habitat in new urban growth boundary expansion areas:

- Large habitat patches
- Interior habitat
- Connectivity and proximity to water; and
- Connectivity and proximity to other upland habitat areas

Under this alternative, within the ESRA areas all of the categories in the Metro inventory methodology (see Table 3) were evaluated to identify boundaries which approximate the current ESRA boundaries. Within the existing HCA the only change was to update the stream and floodplain data with the latest available information.

**Table 6. Areas Regulated by Alternative 3**

Zone	Acres	No. of Parcels Affected
Environmentally Sensitive Restoration Area-Pleasant Valley (ESRA-PV) Land Use District		
Environmentally Sensitive Resource Area-Springwater (ESRA-SW) Land Use District		
Habitat Conservation Area (HCA) Overlay District		

## COMPARISON OF ALTERNATIVES

Desired Attributes	Alternative 1: No Change	Alternative 2: Average Buffer Distances	Alternative 3: HCA Methodology
Provides a level of protection similar to today's regulations	Yes	Provides a similar level of protection, though will be different in places due to updated streams and more generalized protection boundaries. These differences may be difficult to explain in specific instances	Likely to provide a similar level of protection, but has the possibility of being the most different from today out of the alternatives
Easily updated with new LiDAR stream data	Unable to incorporate new, more accurate stream data. Some streams may not be protected due to map error	Fairly easy to update with new LiDAR data, once averages and classifications for a given stream segment are established	Fairly easy to update with new LiDAR data - it requires running all components of the model
Easily updated with additional new data (e.g. updated floodplains, new resource delineations)	Unable to incorporate expected changes to FEMA floodplains or additional new data	A separate methodology is required for incorporating other data, since the average is based on stream centerline	Fairly easy to update with other new data - it requires running all components of the model
Easily field verifiable	Difficult to verify in the field	Easily verified in the field, as lengths are measured from stream centerline	Challenging to verify in the field, although terms are better defined than in ESRAs
Supported by ESEE Analysis	Yes	Indirectly, but supplemental ESEE analysis may be required	Yes (Metro ESEE), but supplemental ESEE analysis may be required
Based on clear inputs that are well-documented	Not based on clear inputs, potentially erroneous documentation	Average widths are built on the assumptions in Alternative 1	Based on fairly clear inputs that are well-documented
Easily explained by planning staff	No, very unclear	Straightforward to explain, but may not clear why a distance from centerline is appropriate in a given location	Somewhat challenging

Desired Attributes	Alternative 1: No Change	Alternative 2: Average Buffer Distances	Alternative 3: HCA Methodology
Legal defensibility	Less defensible	Less defensible, though there are few judgment calls to be made once methodology is established	More defensible, though the HCA Methodology does contain some judgement calls in classification of inputs
Corrects various “donut holes” and other odd features of current boundary	Does not correct any GIS errors	May potentially correct errors by smoothing the shape of the area protected, but may introduce new errors for the same reason	May potentially correct errors, but may introduce new ones with a new “patch analysis” of vegetated cover
Resolves ESRA-PV geometries in relationship to Portland's ESRA's	No	No	Potentially
Support of Regulatory Bodies/Other Jurisdictions	Metro approved at time of adoption	Metro generally supportive	Metro generally supportive, and can provide resources to assist in the model run



**MAPS AND DATA TABLES TO BE ADDED FOLLOWING COMPLETION OF GIS ANALYSIS**