Gap Analysis

Audit of City of Beaverton Plans and Codes

Based upon Tualatin Basin Issue Paper #2

Gap Analysis

Audit of City of Beaverton Plans and Codes
identifying changes to be made in order to allow use of
Habitat Friendly Development Practices in accordance with the Tualatin Basin Program

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Direct quotes from Issue Paper #2 from the Tualatin Basin Steering Committee are in Garamond font.

A. INTRODUCTION

1. Background

On September 29, 2005 the Metro Council voted to approve a regional Nature in Neighborhoods (Goal 5) program. This council action incorporated the *Tualatin Basin Fish & Wildlife Habitat Program*, as developed and recommended by the Tualatin Basin Partners for Natural Places (Partners). The City of Beaverton is an active participant in Partners work. Under an intergovernmental agreement between the Partners and Metro, applicable elements of the adopted Basin program must be implemented within one year following the Metro Council's final decision (or within 60 days of LCDC's acknowledgement of Metro's Functional Plan provisions, whichever is later).

Applicable elements included compliance with the six steps identified in Section B of Chapter 7 of the *Tualatin Basin Fish & Wildlife Habitat Program.* One of these steps is the development of a model Low Impact-Development (LID) ordinance for the basin, which would provide tools designed to reduce environmental impacts of new development and removing barriers to their utilization. This step includes local adoption of LID guidelines. In addition, Basin jurisdictions must adopt provisions that facilitate and encourage the use of habitat-friendly development practices, where technically feasible and appropriate, in all areas identified as Class I and II riparian habitat areas.

An important feature of the Basin program is the encouragement of land developers and property owners to incorporate habitat friendly practices in their site design. *Habitat friendly development practices* include a broad range of development techniques and activities that reduce the detrimental impact on fish and wildlife habitat relative to traditional development practices. While the phrases are sometimes used interchangeably, for the purposes of this paper *low impact development*, which is more specifically focused on minimizing hydrologic impacts, e.g., reducing *effective impervious area (EIA)* and improving water quality, is considered a subset of habitat friendly practices.

2. Purpose

This paper has been prepared by City of Beaverton staff to discuss whether or not the City of Beaverton's City Code, Comprehensive Plan, Development Code, and Engineering Design Manual include barriers to implementation of habitat friendly development practices. The proposed amendments reflect the content of two Issue Papers created by the Tualatin Basin Steering Committee (TBSC) and their consultant, Angelo Eaton & Associates, as part of the *Tualatin Basin Fish & Wildlife Habitat Program* (Tualatin Basin Program). City staff will use the information provided in the TBSC Issue Papers and other references to discuss potential changes to City codes and plans in order to implement the basin program.

TBSC Issue Paper #1 (draft dated February 24, 2006) identified those approaches and methods which could be successfully used within the Tualatin Basin to develop and encourage habitat

friendly development practices. TBSC Issue Paper #2 suggests code concepts that could be included in local comprehensive plans and development codes in order to implement and encourage those habitat friendly practices recommended for the Basin in Issue Paper #1. These concepts include addressing typical barriers to habitat friendly development, as well as those that may preclude the implementation of low impact development techniques being considered by Clean Water Services (CWS) as acceptable methods of on-site stormwater management. The implementation discussion in Issue Paper #2 is meant to identify those provisions that facilitate and encourage the use of habitat-friendly development practices for the benefit of Goal 5 resources.

The City currently exercises some practices which reduce the detrimental impact of development on fish and wildlife; therefore, all of the suggested changes may not be necessary. In these cases, City staff has documented current practices.

3. Summary of Approaches and Methods

As previously described in Issue Paper #1, some of the approaches and methods that can be used to encourage habitat friendly development could be effective anywhere within the basin *(including within or adjacent to habitat areas)*; others are only recommended for areas within or adjacent to habitat areas. This distinction becomes particularly important in terms of implementation. In some cases, a method may be effective in both situations. For example, reducing parking space requirements basin-wide may help reduce Effective Impervious Area (EIA), if the "saved" area is used for landscaping or to retain existing vegetation. Alternatively, if the concept were only applied on a more limited basis to those sites which contain Goal 5 resources, it could help create the flexibility needed to protect the resource while allowing development of the site.

In addition, some of the approaches and methods recommended in Issue Paper #1 will have limited applicability in the Basin due to soil conditions. As noted in Issue Paper #1, a review of the SCS (NRCS) *Soil Survey of Washington County - Table 8* shows all but three soils types in the Basin to be listed with "restrictive soil features". These soils are not necessarily impervious, but may be very slow draining. Those approaches and methods which are listed as "soil limited" will require soil amendments or other engineering solutions to offset this permeability issue when located on these soils. Finally, full implementation of some methods is dependent on adoption of technical design specifications. CWS has developed, or will be developing, technical specifications for some approaches. In other cases, the input of the Basin jurisdictions' building officials or engineers will be required. Metro may also be able to assist in the development of technical design specifications.

The table below summarizes the approaches and methods recommended in Issue Paper #1 and notes whether they are applicable basin-wide or only on sites that include habitat. In addition, the table notes whether they are limited or constrained in applicability by soil conditions. It also

identifies those methods that will require technical specifications to be developed in order to be fully implemented.

Table 1: Applicability of Approaches and Methods from Issue Paper #1

Approaches and Methods from Issue Paper #1	Sites w/ Habitat	Basin-Wide	Soil Limited	Design Specs
Planning and development approaches				
1) Land Division Design				
o Clustering/lot size averaging, on-site density transfers	**X**			
2) Site Design				
o Increased flexibility for setbacks	**X**			
o Increased flexibility for lot coverage	**X**			
o Increased flexibility for building heights	**X**	**x***		
3) Parking Design				
o Reduced parking ratios	**X**	**x***		
o Shared driveways and parking areas		**X**		
o Flexibility in parking lot landscaping / Additional parking lot landscaping	**X**			
o Smaller car spaces and stall dimensions	**X**	**x***		
o Increased use of pervious materials		**X**	**X**	**X**
4) Landscaping/Hardscape Design				
o Locating landscaping adjacent to habitat areas	**X**			
o Increased use of native plant	**X**	**X**		
o Improved soil amendment		**X**		**X**
o Reduction of non-ADA sidewalks within a site	**X**	**x***		
o Increased use of habitat-friendly fencing	**X**			
o Preservation of existing trees and maximize forest canopy	**X**	**X**		
5) Lighting Design				
o Re-directed outdoor lighting, reducing light spill-off	**X**			
6) Density Reduction for Regionally Significant Habitat				
o Modified definition of net buildable areas	**X**			
o Reduced minimum buildable lot sizes	**X**			
Engineering and Design Approaches				
1) Street design				
o Minimize paving	**X**	**x***		
o Use pervious paving materials		**X**	**X**	**X**
o Maximize street tree usage		**X**		
o Use multi-functional open drainage systems / modify drainage practices		**X**	**X**	**X**
2) Stream crossing and street connectivity standards				

Approaches and Methods from Issue Paper #1	Sites w/ Habitat	Basin-Wide	Soil Limited	Design Specs
o Minimize the number of stream crossings/place crossings perpendicular	**X**	**x**		**X**
o Allow narrow paved widths through stream corridors	**X**	**x**		
o Use habitat sensitive bridge and culvert designs	**X**	**x**		**X**
3) *Stormwater management facility design*				
o Use vegetated stormwater management facilities		**X**	**X**	**X**
o Use detention ponds		**X**		**X**
o Use of underground detention and/or treatment		**X**		**X**
Building Design Solutions				
o Encourage Green roofs (eco-roofs)		**X**		**X**
o Disconnect downspouts		**X**	**X**	**X**
o Use rain barrel or cistern system		**X**		**X**
** The encouragement of these methods basin-wide, above and beyond current practices, may not be practicable or may have conflicts with other policy considerations. The primary recommendation is for consideration within or adjacent to habitat areas at this time.*				

Staff discusses implementation issues associated with each of the approaches and methods and other topics in Section B, below, via individual Issue Discussions numbered 1 through 11.

B. IMPLEMENTATION RECOMMENDATIONS FOR DEVELOPMENT SITES WITH HABITAT

1. Encouragement through Flexibility

Pursuant to the intergovernmental agreement with Metro, Basin jurisdictions must adopt provisions that facilitate and encourage the use of habitat-friendly development practices, where technically feasible and appropriate, in all areas identified as Class I and II riparian habitat areas. Jurisdictions may also choose to encourage habitat-friendly development practices in other habitat areas including Class III riparian areas and Class A uplands. For development sites that include Class I and II riparian habitat areas (and other habitat types), providing increased flexibility in the development standards for projects that use habitat-friendly development techniques is one way of facilitating and encouraging habitat protection.

As proposed, the approach is intended to convey a benefit to the developer in exchange for the use of habitat-friendly development practices. It is not intended to increase development restrictions. Use of the standards would be at the option of the developer/property owner.

2. Defining Habitat Areas

The general location of Habitat Benefit Areas is indicated on Metro's Regionally Significant Fish and Wildlife Habitat Inventory Map (or Habitat Conservation Areas Map), and Basin jurisdictions may

wish to include a reference to the map as a source document. However, the standards should be applied based on the definition of habitat and delineation methodologies (see example in Appendix A). Because use of these standards is optional and conveys a benefit to the property owner, delineation of the habitat area and its buffer is not likely to be a major issue.

3. Establishing a Habitat Benefit

Given the policy trade-offs that are necessary for implementation of these standards, the public should be assured of a reciprocal habitat benefit. The advantages should only be available to projects that provide habitat benefits above and beyond what is otherwise required by current regulations (e.g., CWS D&C standards, Division of State Lands). Only qualified "Habitat Benefit Areas" would be allowed to take advantage of the flexibility offered by the standards. Table 2, below, outlines some suggested minimum criteria for qualifying Habitat Benefit Areas.

Table 2: Suggested minimum criteria for qualifying Habitat Benefit Areas

Resource Type	Requirements for Habitat Benefit Areas
Class I riparian habitat area Class II riparian habitat area	Habitat and buffer areas must be placed in a non-buildable tract or protected with a restrictive easement.
Class III riparian habitat area Class A Upland habitat area Habitat buffer area	Restoration and enhancement of habitat and buffer areas required, including monitoring for a minimum of five years. Restoration and enhancement include, but are not limited to:
	o Revegetation of non-vegetated areas
	o Removal of non-native vegetation
	o Improved soil amendments
	o Preservation of existing trees and forest canopy
	o Planting native vegetation
	o Use of habitat-friendly fencing, if needed
	o Use of habitat friendly outdoor lighting design adjacent to buffer
	o Buffer area must be adjacent to a protected habitat area

C. IMPLEMENTATION RECOMMENDATIONS FOR BASIN-WIDE APPROACHES

One element of the adopted Basin program is the development of a model Low Impact-Development (LID) ordinance for the basin, which would provide tools designed to reduce environmental impacts of new development and removing barriers to their utilization. This step includes local adoption of LID guidelines. This effort is closely tied to Clean Water Services goal of reducing Effective Impervious Area (EIA) within the Basin and a number of the suggested methods will be addressed in the update of CWS Design and Construction Standards. It is also closely related to the issues raised in the Audubon Society of Portland's 2004 Stormwater/Pavement Impacts Reduction (SPIR) Project Report, which made recommendations for stormwater management for new development, redevelopment and public projects.

D. GUIDELINES FOR LOCAL JURISDICTIONS

The Tualatin Basin Steering Committee (TBSC) recommends that local jurisdictions should consider providing flexibility in their land development ordinances to encourage the protection of qualified Habitat Benefit Areas. Included in the TBSC issue discussions, below, are some suggested concepts to do so. Not all of the suggested concepts will be appropriate for the City of Beaverton. The City may already meet or exceed some of these suggestions; in those cases, staff has documented current practices.

E. ISSUE DISCUSSIONS

Tualatin Basin Steering Committee comments from Issue Paper #2 are represented in Garamond font, below.

City of Beaverton staff comments are provided in Arial font, below.

1. Land Division Design

Planning and Development Approaches				
Approaches and Methods from Issue Paper #1	**Sites w/ Habitat**	**Basin-Wide**	**Soil Limited**	**Design Specs**
1) Land Division Design				
o Clustering/lot size averaging, on-site density transfers	**X**			

- On-site density transfers/lot size averaging – At a minimum, all jurisdictions should consider allowing all development potential to be transferred from a qualified Habitat Benefit Area to the remainder of the development site; provided that the transferred density shall not more than double the density allowed on the buildable portion of the site. For development sites with split zoning, transfers should be permitted across zoning districts. NOTE: Most jurisdictions already allow some level of on-site transfer to protect resources. These should remain in place as this transfer would only apply to Habitat Benefit Areas and not those areas already protected by existing natural resource regulations (e.g., DSL/COE, CWS).

The City of Beaverton Development Code allows for flexibility in land division design through a Conditional Use - Planned Unit Development (Type 3) application process. Within this process the site density and setbacks are applied to the "parent parcel," thereby leaving development within the site's boundaries to be flexible and respectful of existing site conditions. Currently the City of Beaverton does not limit the density applied to one portion of the site nor does the City require a minimum lot size for parcels created within the boundaries of the "parent parcel."

CHANGES

The City of Beaverton may consider allowing review of Planned Unit Developments at an administrative level of review rather than a public hearing level of review when associated with protection of habitat benefit areas and habitat friendly development practices.

- Lot dimensional standards – Jurisdictions should consider allowing lot dimensional standards (width, depth, and frontage) to be reduced by up to 40%.

The City of Beaverton allows for adjustments from numerical Site Development Requirements specified in Chapter 20 (Land Uses), which includes reductions to lot dimensional standards, through one of three applications. A Minor Adjustment (Type 2) approval allows for and adjustment from the standards up to and including 10%, a Major Adjustment (Type 3) approval

allows for an adjustment of more than 10% and up to and including 50%, and a Variance (Type 3) approval allows for changes of more than 50%.

CHANGES

A policy change affecting the level of review may be an option toward encouraging this practice when associated with preserving habitat areas.

- Minimum density – Local jurisdictions should adopt procedures to allow a waiver of the minimum density requirements. These procedures would be used at the option of the subdivider and should only allow for a reduction in the minimum number of units required to be built based on the amount of area protected. This reduction would not be limited to only Habitat Benefit Areas, but could include all regionally significant habitat on the property that has been protected through a public dedication or restrictive covenant. Procedures should include a standard protocol for notifying Metro by Report to Metro by April 15 of every year of the impact of this provision. Jurisdictions should work with Metro to ensure that "lost" units are allocated back to the Basin.

The City of Beaverton does not have a mechanism to allow for a waiver of the minimum density requirements.

CHANGES

Metro and all jurisdictions within Metro's purview will need to tackle this issue together.

- Net Acre –Alternatively, jurisdictions could amend their definitions of "net acre" or "buildable area" to exclude Habitat Benefit Areas (at the option of the developer). However, this may require an amendment to the Functional Plan (Section 3.07.1010) definition of "net acre" as the definition does not "net out" lands for which the local zoning code provides a density bonus or other mechanism which allows the transfer of the allowable density or use to another area or to development elsewhere on the same site.

The City of Beaverton's definition of Net Acreage is the proposal size expressed in acreage minus any unbuildable area. This definition allows for removal of areas deemed undevelopable, which includes environmentally constrained lands, such as open water areas, floodplains, water quality facilities, wetlands, natural resource areas and tree preservation areas set aside in separate tracts or dedicated to a public entity.

CHANGES

The City may consider adding habitat benefit areas to this definition of Net Acreage while at the same time adding a definition for habitat benefit areas to Chapter 90.

2. Site Design

Planning and Development Approaches				
Approaches and Methods from Issue Paper #1	**Sites w/ Habitat**	**Basin-Wide**	**Soil Limited**	**Design Specs**
2) Site Design				
o Increased flexibility for setbacks	**X**			
o Increased flexibility for lot coverage	**X**			
o Increased flexibility for building heights	**X**	**x***		
** The encouragement of these methods basin-wide, above and beyond current practices, may not be practicable or may have conflicts with other policy considerations. The primary recommendation is for consideration within or adjacent to habitat areas at this time.*				

- Setbacks – Encouraging protection of Habitat Benefit Areas may require flexibility in terms of setbacks. Except for lot lines adjacent to property zoned single-family residential, jurisdictions should consider allowing the minimum building setback established by the base zone to be reduced to any distance between the base zone minimum and zero, unless this reduction conflicts with applicable fire or life safety requirements. Codes should also allow this level of flexibility for setbacks that are internal to new single family residential developments.

The City of Beaverton provides for flexibility regarding Site Development Requirements for setbacks through six different Flexible and Zero Yard Setback applications, as follows:

1. Flexible Setback for Individual Lot With Endorsement (Type 1) - Development on individual residentially zoned lots of record proposes to use flexible setbacks and can demonstrate abutting property owners of record endorsement of the request.
2. Flexible Setback for Individual Lot Without Endorsement (Type 3) - Development on individual residentially zoned lots of record proposes to use flexible setbacks and cannot demonstrate abutting property owners of record endorsement of the request.
3. Flexible Setback for a Proposed Residential Land Division (Type 3) - The property is located within a residential zoning district and is accompanied by a land division application for the subject property.
4. Flexible Setback for a Proposed Annexation (Type 3) - The property is located within a residential zoning district which is the subject of a petition for annexation into the City.
5. Zero Side or Zero Rear Yard Setback for a Proposed Residential Land Division (Type 3) - The property is located within a residential zoning district and is accompanied by a land division application for the subject property.
6. Zero Side Yard Setback for a Proposed Non-Residential Land Division (Type 2) - The property is located within a commercial, industrial, or multiple use zoning district and is accompanied by a land division application for the subject property.

CHANGES

The City may look toward reducing the processing for a Flexible Setback for a Proposed Residential Land Division to a Type 2 if associated with protection of a habitat benefit area.

- Lot coverage - Smaller single family lots (and townhouse lots) created through density transfer may need increased lot coverage in order to be buildable. Jurisdictions should consider allowing lot coverage to be increased up to 80%, provided the square footage of the additional coverage doesn't exceed the total square footage of the Habitat Benefit Area. NOTE: This will need to be established at the time of the land division.

The City of Beaverton Development Code regulates lot coverage only in association development of industrially zoned properties for which the maximum is 60%. For all other development the percentage of lot coverage is inferred from setbacks for various built features and standards for landscaping, resulting in variations from site to site.

CHANGES

The City may choose to allow for an increase in lot coverage for industrially zoned properties in association with preserved habitat benefit area.

- Building heights - Except for areas within 40 feet of property zoned single-family residential, jurisdictions should consider allowing an increase in the maximum building height established by the base zone of up to 12 feet, unless this increase conflicts with applicable fire or life safety requirements.

The City of Beaverton allows for adjustments from numerical Site Development Requirements specified in Chapter 20 (Land Uses), which includes increases in building heights, through one of three applications. A Minor Adjustment (Type 2) approval allows for an adjustment from the standards up to and including 10%, a Major Adjustment (Type 3) approval allows for an adjustment of more than 10% and up to and including 50%, and a Variance (Type 3) approval allows for changes of more than 50%.

Currently, with respect to a proposal for 12 additional feet of building height, an applicant is required to apply for a Major Adjustment in all zones except the Regional Center-Transit Oriented zone, which requires a Minor Adjustment.

CHANGES

A policy change affecting the level of review may be an option toward encouraging this practice when associated with preserving habitat benefit areas.

3. Parking Design

Planning and Development Approaches				
Approaches and Methods from Issue Paper #1	**Sites w/ Habitat**	**Basin-Wide**	**Soil Limited**	**Design Specs**
3) Parking Design				
o Reduced parking ratios	**X**	**x***		
o Shared driveways and parking areas		**X**		
o Flexibility in parking lot landscaping / Additional parking lot landscaping	**X**			
o Smaller car spaces and stall dimensions	**X**	**x***		
o Increased use of pervious materials		**X**	**X**	**X**

** The encouragement of these methods basin-wide, above and beyond current practices, may not be practicable or may have conflicts with other policy considerations. The primary recommendation is for consideration within or adjacent to habitat areas at this time.*

- Shared parking and On-Street Parking Credit - Jurisdictions should review their codes to confirm that they encourage the use of shared parking and on-street parking credits as a means of reducing the amount of required on-site parking.
- Jurisdictions should evaluate their codes for opportunities to reduce the need for paved areas by permitting shared driveways and parking areas where practicable. The Model Code suggests that when a shared driveway is provided or required as a condition of approval, the land uses adjacent to the shared driveway may have their minimum parking standards reduced in accordance with the shared parking provisions of Section 3.3.300C. However, the extent to which this area is then retained as pervious will likely be affected by the availability of incentives to reduce effective impervious area.

The City of Beaverton does not restrict the use of shared driveways other than to require specific designs appropriate for the situation. The City does allow for shared parking with the approval of a Shared Parking (Type 2) application, under which seven criteria are to be met including the following:

3. *The location of the shared off street parking is on an abutting property and is within 200 feet of the subject use in which the shared parking is intended to serve, except in Multiple Use zoning districts where the location may be at any distance.*
4. *If multiple properties are involved, the owners of each of the properties has agreed to the shared parking by entering into a shared parking agreement.*
5. *The time of peak parking demand for the various uses located on the subject properties occur at different times of the day.*
6. *Adequate parking will be available at all times when the various uses are in operation.*

CHANGES

The City may want to re-visit the requirement for abutting property and may want to consider a change in the review type to a Type 1 when the proposed shared parking arrangement or shared driveway is beneficial to a habitat benefit area.

- Reduced parking ratios – For sites with Habitat Benefit Areas, jurisdictions should consider reducing parking ratios for non-residential development by up to 10%.

The Off-Street Parking Requirements of the Beaverton Development Code outline required (minimum) parking space ratios for motor vehicles by zone and outline maximum parking space ratios for motor vehicles by zone and distance from transit type (Zone A and Zone B). Section 60.30.10.10 provides options to reduce the minimum parking requirement by up to 30% when transit amenities are provided.

CHANGES

It may be possible for the City to create options for reductions to the minimum parking ratio when related to a habitat benefit area as have been created for transit amenities.

- Jurisdictions may also wish to consider allowing some flexibility in their parking lot landscaping standards (the number, dimension, spacing of landscape islands and required trees) to retain individual mature trees in, or adjacent to, the parking area. For example, requiring one tree per X parking spaces *on average* be planted *or retained* to create a partial tree canopy over and around the parking area. Using an average would allow some rows of parking to have more spaces between trees and some to have fewer and this flexibility could allow for the retention of more existing trees.

The City of Beaverton Engineering Design Manual and Standard Drawings requires that, "parking spaces along the outer boundary of a parking area… shall be designed… not less than six feet from the property line." This requirement works with the design standard of section 60.05.20.4 of the Beaverton Development Code for Type 2 Design Review approval that requires one of two options be met for perimeter parking lot landscaping. The first of the two requires one tree every 30 feet with a 30 to 36 inch hedge planted along those areas that front a street, and the second requires construction of a 30 to 36 inch wall along a street. Both options require all other areas to be planted with live ground cover. If an applicant chooses to design the parking area street frontage differently that the standard, an application for Type 3 Design Review approval may be made.

Section 60.05.20.5 of the Development Code requires, for Type 2 Design Review approval, one landscaped planter island for every eight to 12 parking spaces dependant on the type of development. The island is to be a minimum of 70 square feet and six feet wide. Each landscape island is to be planted with at least one tree, unless otherwise approved and at least

75% of the islands contain trees. If an applicant chooses to design the parking area street frontage differently than the standard, an application for Type 3 Design Review approval may be made.

CHANGES

The City may investigate options for flexibility when a developer is working to preserve a habitat benefit area.

- Smaller car spaces and stall dimensions – For sites with Habitat Benefit Areas, jurisdictions should consider allowing up to 40% of the required parking spaces to be compact. Parking space dimensions may vary by jurisdiction; however, as a general guideline, DLCD's *Model Development Code & User's Guide for Small Cities* (Model Code) includes the following dimensions for 90° compact stall: width = 7' 6" and length = 15'. The suggested standard vehicle parking space is 8' 6" wide by 18' long (or 16' feet long, with not more than a 2' overhang).

The City of Beaverton Development Code Section 60.30.10.11 allows for use of compact motor vehicle parking spaces, as follows:

- Residential – only for excess parking spaces
- Other than Residential – up to 20% of the required long term or designated employee parking spaces. The Facilities Review Committee has the option to recommend allowing for additional compact spaces with justification.
- The Facilities Review Committee may recommend allowing compact spaces for short-term parking with justification.
- Compact spaces are to be grouped and designated.

CHANGES

The City may choose to review this section to allow for additional compact spaces in relation to protection of habitat benefit areas.

Increased use of pervious materials/ Use pervious paving materials

- Jurisdictions should consider amendments to remove barriers to, and encourage the use of, pervious paving materials in parking areas and low traffic private streets. For example, many existing codes require parking and street areas to be hard-paved surfaces with asphalt or concrete.
- Technical design specifications will need to be adopted Basin-wide to facilitate the use of this method. Specifications should address site suitability criteria and additional steps needed for sites that are not highly suitable in terms of soil permeability. Concerns about slope stability and impacts to adjacent properties should also be addressed. Specifications should include project monitoring to help ensure that these facilities are functioning as

designed. The work completed at CWS Merlo Road Field Operations Facility could be used as the basis to establish Technical Specifications for the use of porous concrete, concrete paver blocks, and structural gravels.

The materials and techniques used in construction of parking lot improvements are dictated by the City of Beaverton Engineering Design Manual and Standard Drawings (EDM) with some instruction by the Beaverton City Code. All public improvements defined by Beaverton City Code Section 9.05.020 shall have a minimum design life of 20 years, which includes construction of parking lots. Multiple sections of the EDM require sub-grade compaction and asphalt or concrete mixes that together provide enough strength to support an 80,000 pound vehicle. The City does distinguish between areas that require engineered paving for access and movement of 80,000 pound vehicles and areas that are intended for parking of light passenger vehicles or bicycle and pedestrian use. Pervious pavement has been approved by the City in such areas.

CHANGES

The City may look toward encouraging, through education, use of pervious materials in those areas that do not require access for large vehicles. This may include, but not be limited to, parking spaces and bicycle and pedestrian ways. The detention goal of each site will need to be taken into account when engineering and reviewing plans for each site.

4. Landscaping/Hardscape Design

Planning and Development Approaches				
Approaches and Methods from Issue Paper #1	**Sites w/ Habitat**	**Basin-Wide**	**Soil Limited**	**Design Specs**
4) Landscaping/Hardscape Design				
o Locating landscaping adjacent to habitat areas	X			
o Increased use of native plant	X	X		
o Improved soil amendment		X		X
o Reduction of non-ADA sidewalks within a site	X	x*		
o Increased use of habitat-friendly fencing	X			
o Preservation of existing trees and maximize forest canopy	X	X		

** The encouragement of these methods basin-wide, above and beyond current practices, may not be practicable or may have conflicts with other policy considerations. The primary recommendation is for consideration within or adjacent to habitat areas at this time.*

- Flexibility in parking lot landscaping/Locating landscaping adjacent to habitat areas – For sites with Habitat Benefit Areas, jurisdictions should consider allowing a reduction of up to 15% of the required landscaping and/or parking lot landscaping square footage; provided that the square footage of landscaping reduction does not exceed the size of the Habitat Benefit Area. Jurisdictions should also consider allowing a commensurate reduction in their parking lot landscaping dimensional and spacing standards.

Since the identification of habitat benefit areas is a construct of the Tualatin Basin Partners' work, the City does not currently have an allowance of this type available for use. However, the City of Beaverton does allow stormwater quality and quantity facilities to be placed within required landscaping.

CHANGES

It may be reasonable that the City could allow a reduction in the amount of required landscaping in exchange for equivalent preserved habitat benefit area.

- Jurisdictions should consider adding language to encourage the use of native plants and the preservation of existing trees throughout the Basin. The Model Code suggests the following language: "Existing non-invasive vegetation may be used in meeting landscape requirements. When existing mature trees are protected on the site (e.g., within or adjacent to parking areas) the decision making body may reduce the number of new trees required by a ratio of one (1) inch caliper of new tree(s) for every one (1) inch caliper of existing tree(s) protected." Most jurisdictions require the irrigation of landscaped areas. Installing irrigation in existing vegetated areas may not be possible without destroy the existing vegetation. Jurisdictions could consider waiving the irrigation requirement for landscaped areas that are retaining

existing, native vegetation. [NOTE: CWS further augments the habitat benefits provided by vegetated stormwater facilities by requiring the incorporation of native plant species.]

The City of Beaverton Development Code requires review for removal of existing trees based upon the zoning and size of the site and the classification definition that the tree(s) satisfy. Most trees proposed for removal are reviewed through a Tree Plan application, which ranges from Type 1 to Type 3 depending on the tree classification and amount of removal requested. Landscape Trees are reviewed separately within the applicable Design Review application.

Significant Individual Trees, Trees within Significant Natural Resource Areas (SNRAs), Trees within Significant Groves and Landscape Trees receive the greatest amount of protection as their removal results in requirements for mitigation. Historic Trees and Community Trees are reviewed for removal, but their removal does not result in a required mitigation.

There are several exceptions to required review. Included in the list of exceptions are removal of specific nuisance and non-native vegetation, planting of native vegetation when done with non-mechanized equipment, and enhancement activities. The Code refers readers to Metro's Native Plant List or Clean Water Services' *Design and Construction Standards*.

When development is proposed in SNRAs and Significant Groves, the trees that are to be preserved are to be held in "Preservation Areas" that are clustered (not linear). Preservation Areas are to be set aside in conservation easements or, through the Land Division process, be set aside in tracts. The regulations require preservation of native trees over non-native trees and preservation of native understory within preservation areas.

CHANGES

The City may look for opportunities to further encourage the use of native vegetation. One option may be adding Habitat Benefit Areas as a classification under the definition of "Protected Tree".

- Jurisdictions should encourage the use of soil amendments to improve the permeability of soils within landscaped areas. While stormwater management is typically not a stated benefit of landscaped areas, it could be noted as an ancillary benefit in the purpose statement. For the purposes of calculating effective impervious area, performance standards and technical specification for soil permeability should be adopted basin-wide.

The City of Beaverton has adopted Clean Water Services *Design and Construction Standards* with some amendments. Design requirements and standards regarding amendment of landscape soils to enhance water storage, attenuate storm flows, and reduce erosion should be added to the Clean Water Services standards as a "best management practice" in locations where the native soil or post-development disturbed soil conditions in landscape areas do not provide such benefits. The EDM states that, "All City standards meet or exceed…," CWS requirements.

Deleted: The EDM states that "All City standards meet or exceed these requirements."

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CHANGES

For areas outside CWS' jurisdiction, the City may choose to encourage soil amendment options through the EDM that will improve the permeability of landscaped areas.

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- Reduction of non-ADA sidewalks within a site – For sites with Habitat Benefit Areas, jurisdictions should consider creating an exception in their pedestrian connectivity standards that allows a reduction in the width of required sidewalks and pedestrian accessway to the minimum necessary to comply with the Americans with Disabilities Act.

The Design Review Standards of Chapter 60 include pedestrian circulation standards and refer to planned pedestrian facilities in the Comprehensive Plan. The Standard Drawings within the EDM include specific designs for sidewalks and associated improvements along streets. The EDM does allow for pre-approved modifications of sidewalk design by the City Engineer.

CHANGES

The City may choose to revise Design Review Standards and Guidelines or to develop incentives that will deter construction of internal walkways that are not required by ADA or will allow for reductions of walkway widths. These reductions should be evaluated to determine if there is a direct relationship to protection or improvement of a preserved habitat benefit area and to determine the minimum impact necessary to balance function in relation to habitat benefit area.

a. Increased use of habitat friendly fencing –

The City of Beaverton regulates fencing for the protection of preservation areas during construction and with regard to vision clearance for permanent fencing. The proposed use of habitat friendly fencing is not discouraged by the City.

CHANGES

Provisions may need to be added to specifically allow for or encourage its use.

- Jurisdictions should document their existing tree cutting and mitigation standards. Avoiding the cost of mitigation can be a significant incentive for preserving existing trees. However, most tree preservation standards don't make a distinction between native species and non-native species and trees are typically not required to be replaced with native species. Jurisdictions could consider encouraging or requiring that a certain percent of mitigation trees be native species. Alternatively, as an incentive, jurisdictions could allow somewhat smaller specimens to be planted if native species are used (e.g., 2" caliper instead of 2.5").

The City of Beaverton Development Code requires review for removal of existing trees based upon the zoning, the size of the site, and the classification definition that the tree(s) satisfy. Most trees proposed for removal are reviewed through a Tree Plan application, which ranges from Type 1 to Type 3 depending on the tree classification and amount of removal requested. Separately, Landscape Trees are reviewed within the applicable Design Review application.

Significant Individual Trees, Trees within Significant Natural Resource Areas (SNRAs), Trees within Significant Groves and Landscape Trees receive the greatest amount of protection as their removal results in requirements for mitigation. Historic Trees and Community Trees are reviewed for removal, but their removal does not result in a required mitigation.

There are several exceptions to required review. Included in the list of exceptions are removal of specific nuisance and non-native vegetation, planting of native vegetation when done with non-mechanized equipment, and enhancement activities. The Code refers readers to Metro's Native Plant List or Clean Water Services' *Design and Construction Standards*.

When development is proposed in SNRAs and Significant Groves, the trees that are to be preserved are to be held in "Preservation Areas" that are clustered (not linear). Preservation Areas are to be set aside in conservation easements or, through the Land Division process, be set aside in tracts. The regulations require preservation of native trees over non-native trees and preservation of native understory within preservation areas.

CHANGES

The City may look for opportunities to further encourage the use of native vegetation.

5. Lighting Design

Planning and Development Approaches				
Approaches and Methods from Issue Paper #1	**Sites w/ Habitat**	**Basin-Wide**	**Soil Limited**	**Design Specs**
5) Lighting Design				
o Re-directed outdoor lighting, reducing light spill-off	**X**			

a. Re-directed outdoor lighting, reducing light spill-off

Chapter 60 of the City's Development Code includes Lighting Standards that strive to provide lighting for the specified use, but limit illumination at the property line to 0.5 foot-candles or less to avoid lighting adjoining properties; which infers that lighting at the edge of a preservation tract be limited to 0.5 foot-candles as well. The EDM specifies the type of lighting that is to be use for public areas including specific bulb type that is used by City maintenance crews. Both sets of regulation require cut-off with regard to light distribution.

CHANGES

Language may need to be added to both documents specifically noting the need to reduce light spill-off into habitat benefit areas. Steps may also need to be taken to encourage the use of mercury vapor, metal halide or fluorescent lamps, in that order, and discourage the use of high-pressure sodium and low-intensity incandescent near habitat benefit areas.

6. Density Reduction for Regionally Significant Habitat

Planning and Development Approaches				
Approaches and Methods from Issue Paper #1	**Sites w/ Habitat**	**Basin-Wide**	**Soil Limited**	**Design Specs**
6) Density Reduction for Regionally Significant Habitat				
o Modified definition of net buildable areas	**X**			
o Reduced minimum buildable lot sizes	**X**			

a. Modified definition of net buildable areas –

The City of Beaverton's definition of Net Acreage is the proposal size expressed in acreage minus any unbuildable area. This definition allows for removal of areas deemed undevelopable, which includes environmentally constrained lands, such as open water areas, floodplains, water quality facilities, wetlands, natural resource areas and tree preservation areas set aside in separate tracts or dedicated to a public entity.

CHANGES

The City may consider allowing a developer to remove from the minimum density requirement all lands determined to be undevelopable, thereby reducing the density requirement for subject sites.

b. Reduced minimum buildable lot sizes -

The City does not have minimum buildable lot sizes. The closest the City regulations get to minimum buildable lot size is the minimum lot area for residential development. However, it is not equivalent to minimum buildable lot size, as the minimum lot area can be averaged over an entire development through the Planned Unit Development process.

CHANGES

None proposed.

7. Street Design

Engineering and Design Approaches				
Approaches and Methods from Issue Paper #1	**Sites w/ Habitat**	**Basin-Wide**	**Soil Limited**	**Design Specs**
1) Street design				
o Minimize paving	**X**	**x***		
o Use pervious paving		**X**	**X**	**X**
o Maximize street tree usage		**X**		
o Use multi-functional open drainage systems / modify drainage practices		**X**	**X**	**X**

** The encouragement of these methods basin-wide, above and beyond current practices, may not be practicable or may have conflicts with other policy considerations. The primary recommendation is for consideration within or adjacent to habitat areas at this time.*

- Minimize or allow alternative (pervious) paving – Jurisdictions should consider allowing reductions in required pavement (and sidewalk) width (and right-of-way dedications) for sites with Habitat Benefit Areas.

The City of Beaverton EDM specifies design widths for streets dependant on the functional classification given to the street in the City's Comprehensive Plan. The street design standards of the EDM were revised in the late 1990s to address the Transportation Planning Rule requirements to reduce right of way and lane widths to minimum standards. Modifications to the street design standards can be submitted to the City Engineer for approval prior to or concurrent with development review. However, staff has noted that reducing the roadway width for arterials and collectors is not generally approved due to traffic flow requirements; yet, under the right circumstances they may be approved for neighborhood routes and local streets. Additionally, the City Code and the EDM require construction of streets to assure adequate emergency access. Any reductions that inhibit the ability of emergency vehicles to pass will not be approved.

Requests for reductions to the overall width of a right-of-way may be approved by the City Engineer. Although the roadway (motor-vehicle travel) width may not be reduced for a given Functional Classification or for emergency access issues, the City Engineer has approved reduction/removal of planter strips with curb-tight sidewalks in certain situations, typically to reduce the amount of wetland mitigation required at a stream crossing.

The Development Code encourages design of sites to be sensitive to the location of trees and to avoid their removal. Tree Plan exemptions include public street and sidewalk improvements within SNRAs or Significant Groves that are within an existing public vehicular right-of-way OR are made to meet the functional classification standards of the Comprehensive Plan (such as street widening or half street improvements) AND do not exceed the minimum standards of the EDM. These Tree Plan exemptions infer that streets not identified for development to specific standards are required to mitigate for trees removed for streets in SNRAs and Significant Groves.

Allowances for the use of pervious pavement are approved on a case-by-case basis. Site and soil conditions in conjunction with an engineered design must be proven to meet the goals that are set by the applicant for detention/run-off reduction.

CHANGES

The City may choose to specifically state that a street modification for reduced width may be approved if, given all the engineering requirements for safe motor-vehicle movement are met, the modification results in preservation of a habitat benefit area(s).

The approach, described above, for tree removal/preservation in right-of-way areas may be applied to encourage preservation of habitat benefit areas and minimize the amount of pavement internal to the development of a site.

Increased use of pervious materials/ Use pervious paving materials

- Jurisdictions should consider amendments to remove barriers to, and encourage the use of, pervious paving materials in parking areas and low traffic private streets. For example, many existing codes require parking and street areas to be hard-paved surfaces with asphalt or concrete.
- Technical design specifications will need to be adopted Basin-wide to facilitate the use of this method. Specifications should address site suitability criteria and additional steps needed for sites that are not highly suitable in terms of soil permeability. Concerns about slope stability and impacts to adjacent properties should also be addressed. Specifications should include project monitoring to help ensure that these facilities are functioning as designed. The work completed at CWS Merlo Road Field Operations Facility could be used as the basis to establish Technical Specifications for the use of porous concrete, concrete paver blocks, and structural gravels.

The materials and techniques used in construction of street improvements are dictated by the City of Beaverton EDM with some instruction by the Beaverton City Code. All public improvements defined by Beaverton City Code Section 9.05.020 shall have a minimum design life of 20 years, which includes construction of streets. Multiple sections of the EDM require sub-grade compaction and asphalt or concrete mixes that together provide enough strength to support an 80,000 pound vehicle. City staff recognize that, while it is necessary for improvements to support the movements of an 80,000 pound vehicle, not all portions of a street require this type of construction.

The City currently allows for use of pervious pavement as approved on a case-by-case basis. Site and soil conditions in conjunction with an engineered design must be proven to meet the goals that are set by the applicant for detention/run-off reduction.

CHANGES

The City may look toward encouraging use of pervious materials in those areas that are not required for large vehicle maneuvering including, but not be limited to, parking, bicycle and pedestrian ways. Changes to the City Code, Comprehensive Plan, Development Code and

EDM may be required. Referencing new ODOT design standards for pervious pavement applications may be appropriate.

Maximize street tree usage

- Jurisdictions should document their existing standards to ensure that they are requiring street trees be planted appropriately. For example, Metro's *Green Street* recommends spacing large and very large trees 35 feet to 50 feet, respectively. Jurisdictions may also wish to document any street tree planting efforts they have engaged in.

The Development Code requires spacing of street trees at 30 feet on center. The City's Public Works Department publishes a list of approved street trees and has an ongoing urban forestry program that reviews alterations to and maintains the City's tree canopy resulting in recognition of the City of Beaverton by the US Department of Forestry as a Tree City USA.

CHANGES

None proposed.

Use multi-functional open drainage systems / vegetated stormwater management facilities / modify drainage practices

- Technical design specifications will need to be adopted Basin-wide to facilitate the use of these methods. Specifications should address site suitability criteria and additional steps needed for sites that are not highly suitable in terms of soil permeability. CWS and the Basin jurisdictions should consider developing and adopting Basin-wide standards for the construction and maintenance of stormwater management facilities, including working with building officials to identify UBC and Plumbing code issues. This may help to encourage the use of alternative systems and would ensure fair application of any stormwater mitigation credits. Specifications should include project monitoring to help ensure that these facilities are functioning as designed. The work completed at CWS Merlo Road Field Operations Facility could be used as the basis to establish Technical Specifications for vegetated conveyance swales and biofiltration.

CHANGES

Will require changes to the City Code, Comprehensive Plan, Development Code and EDM. The City may want to develop a "typical" street section for inclusion in the EDM. However, staff recognize that designs will typically be site specific and dependant on the components of the proposed Green Street.

8. Stream Crossing and Street Connectivity Standards

Engineering and Design Approaches				
Approaches and Methods from Issue Paper #1	**Sites w/ Habitat**	**Basin-Wide**	**Soil Limited**	**Design Specs**
2) Stream crossing and street connectivity standards				
o Minimize the number of stream crossings/place crossings perpendicular	**X**	**x**		**X**
o Allow narrow paved widths through stream corridors	**X**	**x**		
o Use habitat sensitive bridge and culvert designs	**X**	**x**		**X**

[NOTE: Most stream crossings occur within Class I, II, or III riparian areas. Therefore, these guidelines are recommended for sites with habitat; however, they are also applicable in cases where stream crossings occur in areas not designated as riparian habitat.]. The approaches include:

- Minimize the number of stream crossings/placing crossings perpendicular

Construction of new stream crossings is generally discouraged by construction costs alone. Therefore, it is expected that most new stream crossings in the City of Beaverton will generally only occur with construction of collector or arterial streets. These two street classifications typically require specific alignments to provide necessary motor vehicle movement and connectivity to other streets.

Staff is unsure about the viability of minimizing stream crossings and/or placing the crossings perpendicular to the stream alignment for arterial and collector streets. This is due to the facts that:

- extension or construction of arterials and collectors is likely to occur only where the need for motor vehicle movement is greatest,
- extension or construction of arterials and collectors is likely to occur only where the improvement will have the most benefit for the community; and
- the typical amount of physical space available for construction of arterials and collectors is limited, thereby leaving little room to align the street in a perpendicular manner.

CHANGES

The City may want to evaluate the Transportation Plan in relation to stream and creek locations when it is updated. This type of evaluation may lead to fewer stream crossings in the future.

City staff may work to find ways to encourage minimization of stream crossings and the placement of those crossing perpendicular to streams in association with neighborhood routes, local streets, and infill residential streets.

- Allow narrow paved widths through stream corridors

City of Beaverton street designs are based upon the Functional Classification designation of the Comprehensive Plan and the associated minimum street width designs of the EDM. Requests for reductions to minimum street width requirements may be approved by the City Engineer;

however, reductions to roadway widths for motor vehicle movement are generally not approved for arterials and collectors.

CHANGES

The City may choose to explore design options. However, staff understand that designs for stream crossings typically vary dependant on the specific portion of a stream that is to be crossed.

- Use habitat sensitive bridge and culvert designs. Implementation is on-going. CWS has existing standards and technical specifications for these methods.
  - Jurisdictions, together with CWS, continue to coordinate culvert work and efforts to verify the critical basins where safe fish passage is a design issue.
  - Jurisdictions should confirm that their culvert list has been evaluated relative to their capital programming to determine the order of implementation.
  - Jurisdictions should consider amending their codes to permit culvert replacement and associated enhancement work outright and not require additional land use or vegetative corridor mitigation review for those culvert projects and enhancement projects listed in the Healthy Streams Plan.
  - Jurisdictions should review their Transportation System Plans and Comprehensive Plan Transportation Elements to ensure that block length and connectivity standards include necessary flexibility to minimize stream crossings.
  - Basin should encourage Metro to amend the RTP (Section 6.4.5 Design Standards for Street Connectivity) to refer to all Goal 5 resources, as well as Title 3 water features, and to include a reference to the other stream crossing standards (e.g., CWS).

Clean Water Service's *Healthy Streams Plan* provides options for bridge and culvert designs that are sensitive to site conditions and allow for fish passage. The City of Beaverton works within the *Healthy Streams Plan* program to remove, upgrade, and install structures as storm utility and road projects provide the opportunity and funding consistent with Oregon Department of Fish and Wildlife and CWS guidelines.

CHANGES

None proposed.

9. Stormwater Management Facility Design

Engineering and Design Approaches				
Approaches and Methods from Issue Paper #1	**Sites w/ Habitat**	**Basin-Wide**	**Soil Limited**	**Design Specs**
3) *Stormwater management facility design*				
o Use vegetated stormwater management facilities		X	X	X
o Use detention ponds		X		X
o Use of underground detention and/or treatment		X		X

Use multi-functional open drainage systems / vegetated stormwater management facilities / modify drainage practices

- Technical design specifications will need to be adopted Basin-wide to facilitate the use of these methods. Specifications should address site suitability criteria and additional steps needed for sites that are not highly suitable in terms of soil permeability. CWS and the Basin jurisdictions should consider developing and adopting Basin-wide standards for the construction and maintenance of stormwater management facilities, including working with building officials to identify UBC and Plumbing code issues. This may help to encourage the use of alternative systems and would ensure fair application of any stormwater mitigation credits. Specifications should include project monitoring to help ensure that these facilities are functioning as designed. The work completed at CWS Merlo Road Field Operations Facility could be used as the basis to establish Technical Specifications for vegetated conveyance swales and biofiltration.

The City does not have standards for the use of multi-functional open drainage systems, vegetated stormwater management facilities or modified drainage practices.

CHANGES

Language changes specifically allowing for use of these systems may be required. Some basic standards may need to be developed with specific performance measures included.

City staff has discussed the use of different credits for the purpose of encouraging the use of development practices that result in reduction of stormwater runoff from sites. While several ideas have been 'brought to the table', staff is unsure of how effective any of the credits would truly be in the long run. Continued discussions are required.

Underground detention and/or treatment

- While underground detention and treatments facilities do not provide any habitat benefits on-site, by helping to improve water quality they do serve to benefit in-stream habitat within the watershed. Jurisdictions should address when it is appropriate to allow these facilities (e.g., in conjunction with street/road projects).

For nearly all projects, the City of Beaverton requires the installation of detention and treatment facilities. The City Code and EDM mandate storm water detention and storm flow attenuation to a much higher standard than Clean Water Services. Underground facilities are typically provided where the space for a surface, vegetated facility is unavailable due to development constraint or land value. If a project meets adopted code criteria, a systems development charge is collected (i.e. fee in lieu of) rather than requiring construction of detention and/or treatment facilities. The funds from such fees are used for regional facility installation.

CHANGES

None proposed.

10. Building Design Solutions

Building Design Solutions				
Approaches and Methods from Issue Paper #1	**Sites w/ Habitat**	**Basin-Wide**	**Soil Limited**	**Design Specs**
o Encourage Green roofs (eco-roofs)		X		X
o Disconnect downspouts		X	X	X
o Use rain barrel or cistern system		X		X

Encourage Green roofs (eco-roofs)

- Technical design specifications will need to be adopted Basin-wide to facilitate the use of this method. CWS and the Basin jurisdictions should consider developing and adopting Basin-wide standards for the construction and maintenance of green roofs, including working with building officials to identify UBC and Plumbing code issues. This may help to encourage the use of these systems and would ensure fair application of any stormwater mitigation credits. Specifications should include project monitoring to help ensure that these facilities are functioning as designed. The green roof completed at CWS Merlo Road Field Operations Facility could be used as the basis to establish Technical Specifications.

City of Beaverton Building Division staff has confirmed that the State Building Code allows for the use of green roofs as part of building construction. It is up to the person who wishes to construct a building with a green roof the have the roof and building structural components designed by a licensed structural engineer for review by the Building Division. This process of review would be no different than for any other custom building.

CHANGES

Encouraging the use of green roofs may be as simple as educating people that the option is available. Using stormwater credit may help to encourage the use of green roofs, but will require further discussion. Changes to the City Code, Comprehensive Plan, Development Code and EDM may be required.

Disconnect downspouts / Use rain barrel or cistern system

- Technical design specifications will need to be adopted Basin-wide to facilitate the use of this method. Specifications should address site suitability criteria and additional steps needed for sites that are not highly suitable in terms of soil permeability. Concerns about slope stability and impacts to adjacent properties should also be addressed. If overflow from the cistern is connected to the stormwater system, then site suitability may not be an issue.

On sites with adequate landscape area, the opportunity to develop a rain garden, bio-retention or bio-detention facility between the roof downspout and the public storm sewer system exists. While the State Plumbing Code may require a connection to the public storm sewer system, it is

the opinion of City of Beaverton staff that the connection does not have to be made solely by a sub-surface piped system. Staff has discussed that, given the right distance from a structure, a rain garden, bio-retention or bio-detention facility may be constructed as long as high flows are directed toward a catch basin that connects to the public storm sewer system.

Staff has voiced concerns over the use of rain barrel or cistern systems, especially if not connected to the storm sewer system, during winter (rainy season) months. However, staff is open to continuing discussion regarding their use given specific conditions.

CHANGES

Changes to the City Code, Comprehensive Plan, Development Code and EDM may be required.

11. Process

- Discretionary processes represent increased time, money, and risk for the developer. Optimally, the standards to encourage the protection of habitat would be clear and objective, with no additional land use processes required to take advantage of them. Jurisdictions should evaluate their codes to determine if their review processes are appropriate to encourage the use of the standards. Some jurisdictions may wish to allow this flexibility only through their existing planned development processes. In that case, fees, approval criteria, open space dedications, and review processes for planned developments should be reviewed and minimized for sites with Habitat Benefit Areas.

City processes, relevant to specific issues, are discussed above.