

Watershed-Based Planning Project

Planning Commission
March 18, 2015





What we will cover today

- Recap of February intro meeting
- Efforts over the last month – Final Draft Plan
- Presentation of Plan Actions
 - Actions for development standards
 - Actions for stormwater management
 - Actions for sensitive areas
- Feedback from Planning Commission

Recap - Project Background

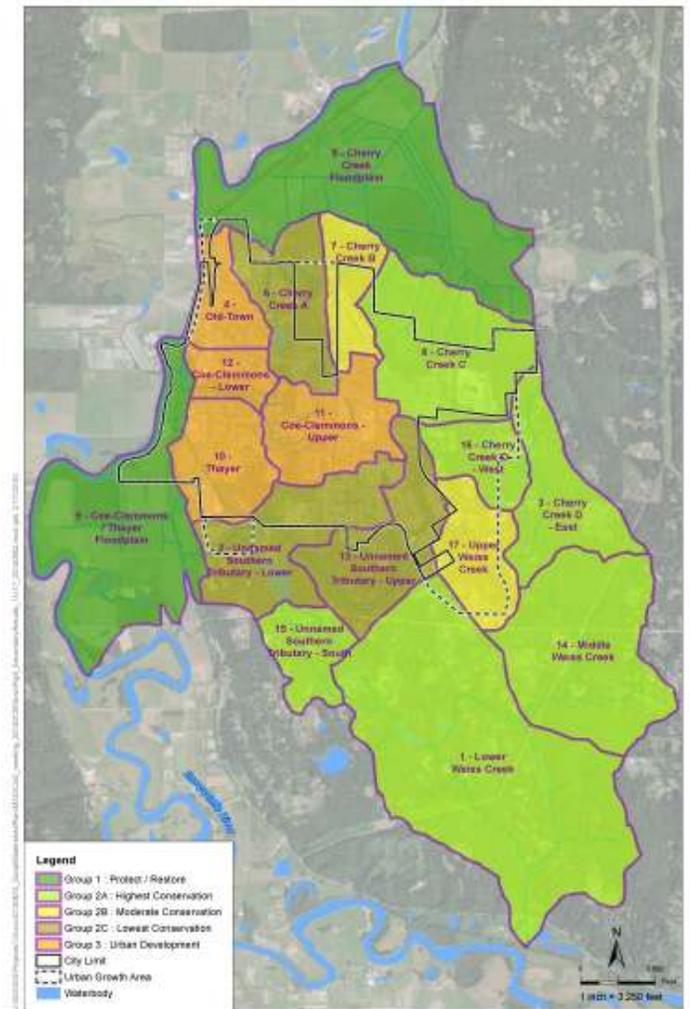
- Urban flooding
- Grow in the right places
- Sensitive areas protection





Recap – Management Groups

1. Protect/Restore
2. Highest Conservation
3. Moderate Conservation
4. Lowest Conservation
5. Urban Development



SOURCE: IBC Consulting, 2013; USDA NRP, 2013; King County, 2014

City of Duval Watershed Planning | 13074

DRAFT Secondary Results - Subbasin Management Recommendations
Figure 2-4

Urban Development (Old Town)

PRELIMINARY DRAFT - ADVISORY GROUP REVIEW

SUBBASIN

Old - Town (PAU 4)

BASIN: Duvall Tributaries - Direct to Skopacine River

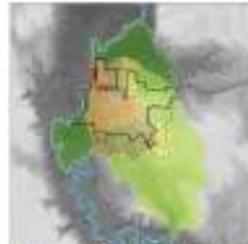
Management Recommendation: Urban Development

What Does this Management Recommendation Mean?

This subbasin is an area of *lowest* importance to watershed processes and can be targeted for intense urban development.

Why is this the Management Recommendation?

Compared to other areas of the city, this subbasin scored lowest for importance and highest for level of degradation. High impervious surface cover and altered conveyance of surface flows. As new development / redevelopment in the subbasin occurs, it should be paired with targeted restoration focused on improving Skopacine River conditions. Analysis results are detailed below:



Surface Storage	Groundwater and Base Flow Maintenance	Fish and Wildlife Habitat	Water Quality
<p>The subbasin has low importance for surface storage processes</p> <ul style="list-style-type: none"> Minimal to no wetlands or other surface storage features, outside of former Skopacine River floodplain at upstream edge Threats to development has resulted in riparian / riparian conversion directly to river Limited opportunity for storage enhancement due to stream and existing development / infrastructure patterns 	<p>Historically, wetlands features were exceedingly important for groundwater recharge and base flow maintenance processes, however those processes have been highly degraded</p> <ul style="list-style-type: none"> 10% permeable area supports recharge Very low wetlands Process degradation due to high impervious surface cover and altered flow pathways 	<p>The subbasin is moderately important for fish and wildlife habitat</p> <ul style="list-style-type: none"> Importance due to stream presence within the Skopacine River along western subbasin edge Fluvial channel highly impervious with no open channel or forest buffers Forest loss and development within Skopacine River riparian corridor has degraded habitat quality and structure along river banks 	<p>The subbasin has moderate sediment export potential and direct discharge to Skopacine River tributaries</p> <ul style="list-style-type: none"> Tributary sources primarily surface runoff due to soil erodibility and subsoil slope Impervious surface cover and alternate conveyance type and ditch infrastructure has likely reduced export potential, however increases water quality due to runoff from developed areas has increased
<p>Broad management priorities:</p> <ul style="list-style-type: none"> Limit new development Reduce erosion impacts and silt Eliminate flow control structures to encourage high density development unless consistent with (SAC 19.06) 	<p>Broad management priorities:</p> <ul style="list-style-type: none"> Protect floodplain development Increase infiltration by reducing impervious surface Identify retrofit opportunities that provide infiltration 	<p>Broad management priorities:</p> <ul style="list-style-type: none"> Protect riparian environment into Skopacine River riparian corridor Reduce riparian and bank zone flows Identify retrofits to improve water quality functions 	<p>Broad management priorities:</p> <ul style="list-style-type: none"> Identify retrofit actions focused on water quality Focus areas with Sediment Erosion and Sediment Control (SEDC) BMPs during clearing and grading activities

SEWERAGE STATUS

Average: 1.00 | Within City: 0.00 | Within USA: 0.00

Development uses within Duvall: Single-family residential and public right-of-way

Effluent: East bank Skopacine River (downstream flow directly to Skopacine River through pipelined conveyance)



PRELIMINARY DRAFT - ADVISORY GROUP REVIEW

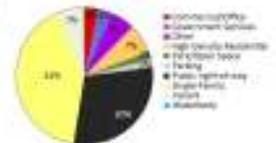
SUBBASIN

Old - Town (PAU 4)

Land Use Opportunities and Constraints

- Opportunities for moderate density to improve water quality
- Riparian and bank conditions along the Skopacine River are degraded, with stream corridor and riparian species with secondary riparian habitat opportunity for restoration
- Is suitable for additional residential density but redevelopment opportunity constrained by zoning parcel and build-out patterns

Existing Land Use:

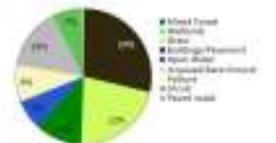


Optimal existing conditions for areas within the Old Town. Other areas of the subbasin are typically agricultural or open County jurisdiction.

Preliminary Management Priorities and Objectives

- Encourage high density development by directing flow control requirements (with enhanced water quality treatment) when consistent with DUC: PAU 4
- Reduce effective impervious surface by stormwater infiltration generating improved water for multiple uses, (e.g., irrigation)
- Protect riparian environment into Skopacine River riparian corridor / floodplain and restore habitat conditions
- Improve water quality functions throughout subbasin through redevelopment incentives and stream actions

Existing Land Cover:



Depicts existing land cover for other subbasins including areas within County jurisdiction.



Legend: Subbasin Boundary, Watershed, Stream, Pipe Conveyance, City Limit, City USA, Urban Growth Area, PAU 4

ALL RECOMMENDATIONS APPLICABLE TO DURALL CITY LIMITS AND USA ONLY. CONTENT HAS NO BEARING ON LAND USE DECISIONS IN UNINCORPORATED KING COUNTY.



Recap – Outreach Efforts



Open House

7 PM tonight

CRITICAL AREAS			
#	Management Tool	Appropriate for:	Prioritization:
28	Further integrate tree protection standards into stream and wetland buffer standards.	<ul style="list-style-type: none"> 2014 response Citywide Priority areas: Groups 1, 2, 3, and 4 	Initial response: 2, 4 Most common: 2
29	Increase steep slope and erosion hazard area buffers.	<ul style="list-style-type: none"> Initial response Groups 1, 2, 3, and 4 Citywide 	Initial response: 2, 4 Most common: 4 <i>1 - steep slope hazard</i>
30	Decrease allowances to re-tilt or reduce critical areas buffers.	<ul style="list-style-type: none"> Initial response Citywide Group 2 	Initial response: 2, 4 Most common: 2 & 4 <i>4 - 10' max 3' grading code</i>
37	Increase buffers for depositional wetlands.	<ul style="list-style-type: none"> Initial response Groups 1, 2, 3, and 4 Citywide NO comments for group 	Initial response: 2, 4 Most common: 4 <i>2 - 10' max 3' grading code</i> <i>4 - 10' max 3' grading code</i>
Other tool?			
ZONING REGULATIONS			
#	Management Tool	Appropriate for:	Prioritization:
50	Reduce maximum impervious surface limits.	<ul style="list-style-type: none"> Initial response Groups 1 and 4 Groups 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100 	Initial response: 2, 4 Most common: 2 <i>4 - 10' max 3' grading code</i>
51	Increase maximum impervious surface limits.	<ul style="list-style-type: none"> Initial response Group 1 Groups 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100 NO comments for group 	Initial response: 2, 4 Most common: 1
52	Increase residential/commercial (M488)	<ul style="list-style-type: none"> Initial response Group 1 Group 2 Group 3 	Initial response: 2, 4 Most common: 4
53	Allowed shared parking for commercial uses.	<ul style="list-style-type: none"> Initial response Group 1 Group 2 Group 3 	Initial response: 2, 4 Most common: 2
54	Allow small decentralized parking lots rather than individual garages for townhomes, cottage housing, multi-family.	<ul style="list-style-type: none"> Initial response Group 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100 Group 2 	Initial response: 2, 4 Most common: 2 & 4 <i>4 - 10' max 3' grading code</i>
58	Establish landscaping standards for single-family residential (trees, shrubs, moisture laws, etc.)	<ul style="list-style-type: none"> Initial response Groups 1, 2, 3, and 4 Group 2 	Initial response: 2, 4 Most common: 2 & 4 <i>4 - 10' max 3' grading code</i>
59	Establish soil standards for landscaping.	<ul style="list-style-type: none"> Initial response Citywide Groups 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100 	Initial response: 2, 4 Most common: 2 & 4 <i>4 - 10' max 3' grading code</i>
Other tool?			



Goals, Policies, and Implementation

- Goals and policies – **Chapter 3**
- Implementation – actions to achieve watershed goals
 - Development Standards – **Chapter 5**
 - Stormwater – **Chapter 6**
 - Sensitive Areas – **Chapter 7**

Table 3-1. Watershed Actions

Action Number	Action	Watershed Processes that would Benefit				Applicable Subbasin Management Group	Prioritization	More Detail Provided in:				Watershed Policies Addressed
		Surface Storage	Groundwater / Base Flow Maintenance	Fish & Wildlife Habitat	Water Quality			Chapter 5 – Watershed Strategies for Development Standards	Chapter 6 – Watershed Strategies for Stormwater Management	Chapter 7 – Watershed Strategies for Sensitive Areas Management	Chapter 8 – Urban Growth Area Land Use Strategies Overview	
DS-1	Revisit zoning limits for impervious surfaces and identify appropriate reductions in subbasin management groups 1 and 2.	X	X		X	Groups 1 and 2	High	X				W1.1
DS-2	Revisit density standards for zoning districts located in subbasin management groups 2C and 3 and identify opportunities to increase densities consistent with the Comprehensive Plan update			X	X	Group 3	High	X				W1.1



DS-2 – Increase residential densities in subbasins prioritized for development

- *What is required now?*

A minimum of 4 units per acre to no upper limit in mixed use zones

- *How should City code be changed?*

Upzone some areas or allow infill development

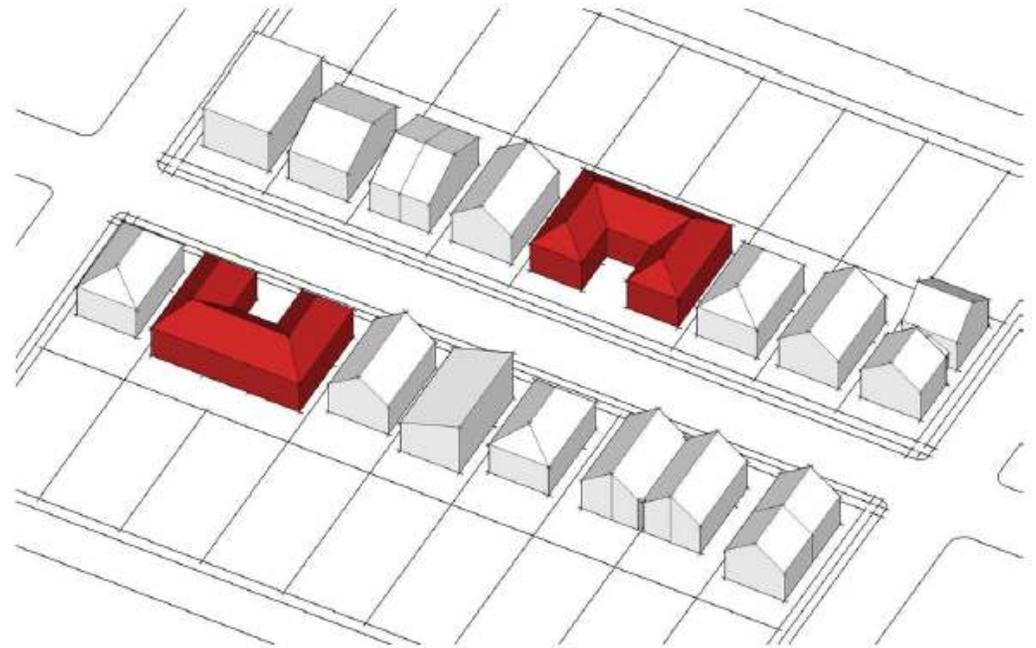
- *Which watershed processes would benefit?*

Relieves development pressure in other areas that have intact watershed processes

DS-2 – *continued*

- *Where would this apply?*

Subbasin
management
group 3



Courtyard housing. The divided massing of courtyard housing, especially when street-fronting units have house-like forms, provide opportunities to integrate higher-density housing into neighborhood patterns where detached houses predominate.

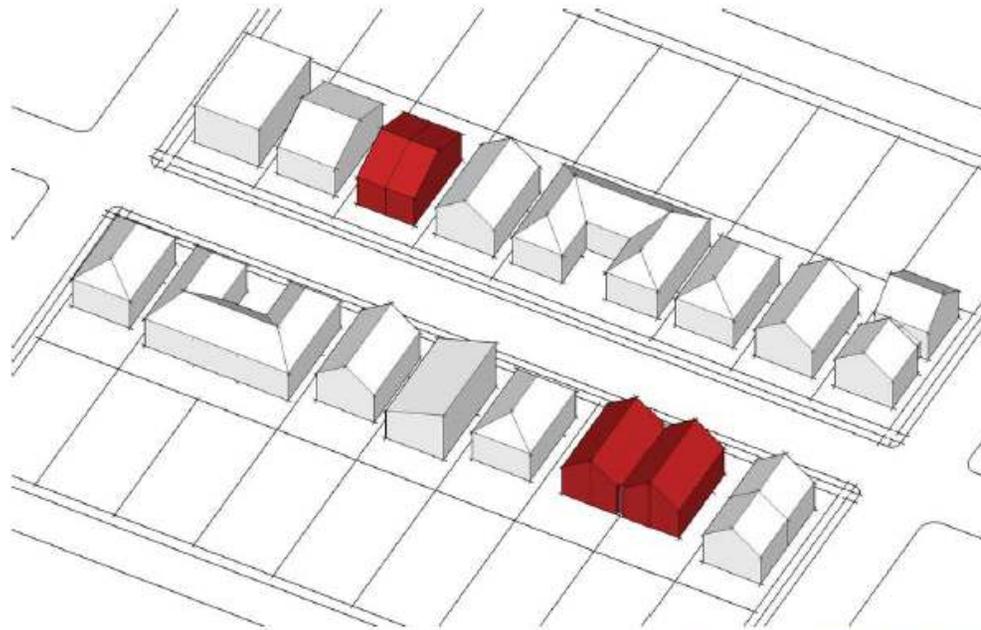


1920s courtyard apartments. Form of end units reflects neighborhood context of detached houses.



Recent courtyard housing examples with house-like forms at street frontages

City of Portland. The Infill Design
Toolkit: Medium Density Residential
(City of Portland, 2008)



Paired rowhouses. Divide rowhouse projects into paired units, with massing reflective of nearby detached houses. Contextual fit can be optimized by pairing units under the same roof, instead of using separate gables for each unit.



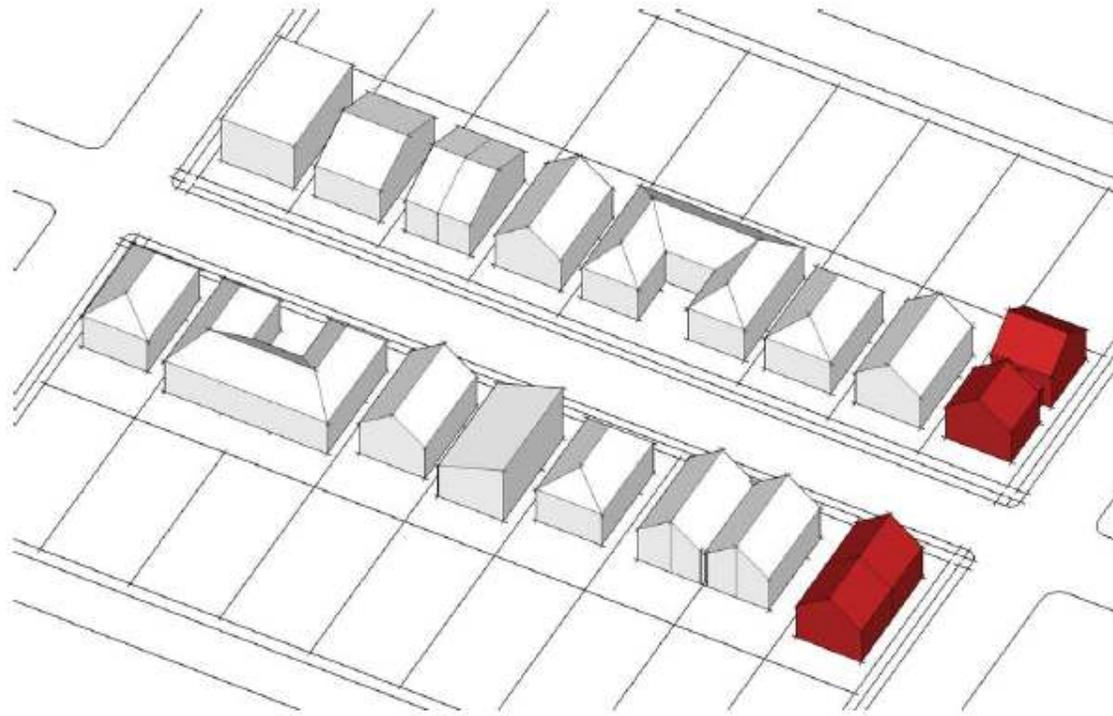
Four-unit rowhouse project divided into distinct building volumes, with two units under each gable, that reflect massing of nearby houses (pre-existing house visible to right)



"House" at center is actually two side-by-side rowhouse units, each only 10' wide. Their combination into a single house-like form avoids any appearance of being overly narrow and continues the neighborhood rhythm.



Examples of paired rowhouses (also called semi-detached houses)—continue patterns established by houses on 50'-wide lots



Corner Attached Houses. Corner sites provide opportunities for attached houses to reflect neighborhood patterns, by enabling units to be oriented to different street frontages, providing the appearance of distinct houses.



Attached houses (joined at garage visible in top image) divided into volumes similar in form to nearby detached houses.

City of Portland. The Infill Design Toolkit: Medium Density Residential (City of Portland, 2008)



DS-7 – Strengthen and integrate tree, open space, and sensitive areas protections

- *What is required now?*

Retain 35% significant trees or replace at 3:1 ratio, replace remaining trees at 1:1 ratio

- *How should City code be changed?*

Remove allowance to replace in groups 1 and 2, replace trees in contiguous tracts, retain trees according to certain criteria

- *Which watershed processes would benefit?*

Water flow, water quality and habitat



DS-7– *continued*

- *Where would this apply?*

City-wide and groups 1
and 2



DS-9 Cluster residential development

- *What is required now?*

Take topography and vegetation into account in design; avoid mass grading and clearing

- *How should City code be changed?*

Add design guidelines encouraging open space subdivision designs

- *Which watershed processes would benefit?*

Water flow, water quality, and habitat

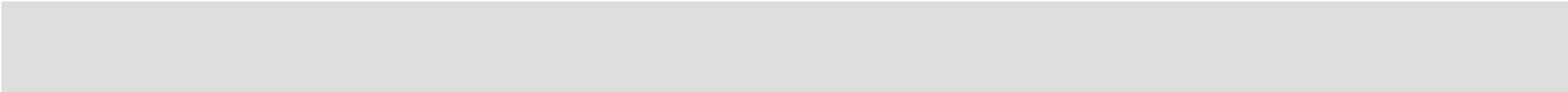
DS-9 – *continued*

- *Where would this apply?*

Groups 2A, 2B, 2C



(Arendt, 2010)



Puget Sound Action Team (PSAT, 2005)



Conventional urban subdivision



cluster housing

Open space urban subdivision

bioswales

bioretention areas

vegetation retention

bioswales

open space

narrow streets



DS-11 Establish limits on mass grading

- *What is required now?*

Terraced four foot tall walls

- *How should City code be changed?*

Limit the number of terraced walls or total length of terraced walls

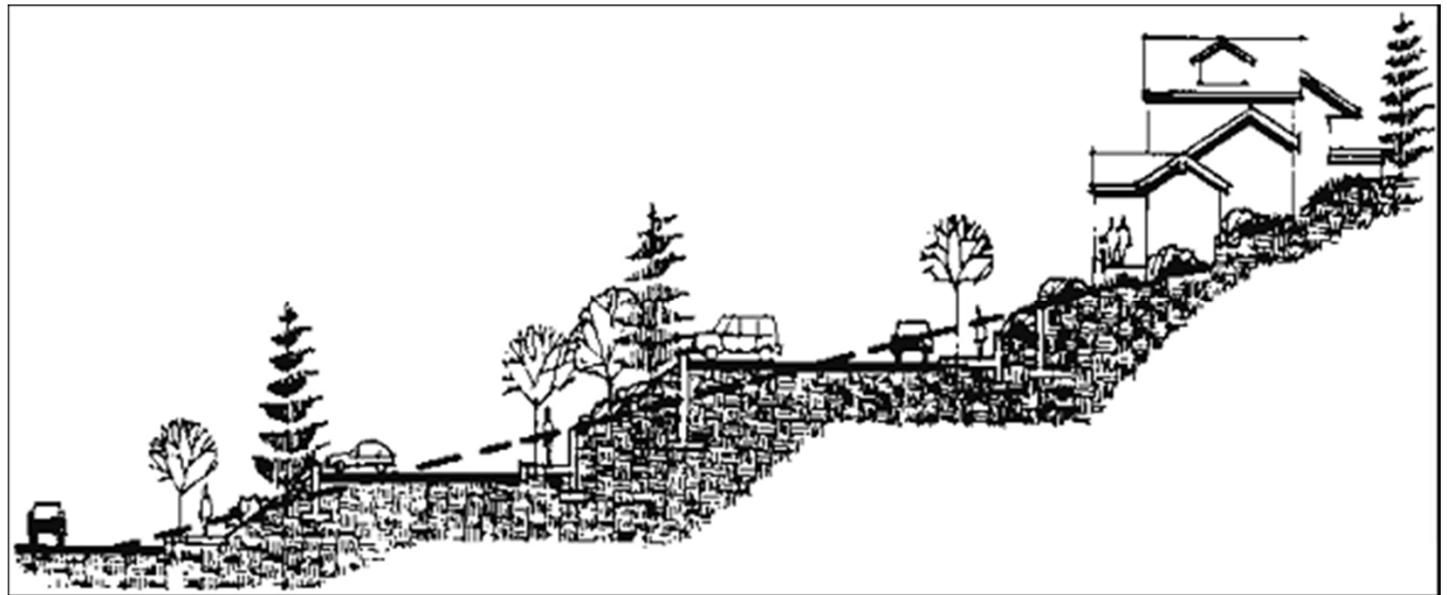
- *Which watershed processes would benefit?*

Water flow and water quality processes

DS-11 – *continued*

- *Where would this apply?*

Groups 1 and 2



SW-1 – Define and require low impact development (LID) best management practices (BMPs)

- *What is required now?*

Encouraged by both City and adopted King County Surface Water Design Manual

- *How should City code be changed?*

Identify the most useful LID BMPs appropriate for Duvall, and require their use.

- *Which watershed processes would benefit?*

Primary benefit to delivery and water quality processes; also surface storage and recharge

SW-1 – *continued*

- *Where would this apply?*

City-wide, with specific LID BMPs required for appropriate subbasins based on infiltration capacity and other considerations



- 1 Rain Gardens
- 2 Preservation of Existing Trees and Vegetation
- 3 Composting and Mulching
- 4 Natural Yard Management (No Pesticides or Fertilizers)
- 5 Retain/Restore Native Plantings as Lawn Alternatives
- 6 Rainwater Harvesting/Cisterns
- 7 Green Roofs
- 8 Permeable Pavement
- 9 Splash Blocks for Roof Downspouts
- 10 Soil Amendments



SW-3 – Target stormwater retrofit opportunities

- *What is required now?*

No requirements for redevelopment activities;
Comp Plan includes Stormwater Capital Facilities
Plan (and City PW has completed past retrofits)

- *How should City code be changed?*

Require retrofit actions for redevelopment
(disconnect roof downspouts)

Update retrofit plan for City-owned SW facilities



SW-3 – *continued*

- *Which watershed processes would benefit?*

Primary benefit to storage, discharge and recharge as well as water quality processes

- *Where would this apply?*

City-wide, with actions most applicable to subbasins in management groups 2B, 2C and 3 (areas of older development, predating stormwater detention and treatment requirements)



SW-4 – Flow control exemption

- *What is required now?*

Flow control generally required (except through existing narrow allowance)

- *How should City code be changed?*

Provide flow control exemption to areas of the city that drain directly to the Snoqualmie River floodplain through pipes / ditches; pair with requirements to implement appropriate BMPs (potentially within other priority subbasins)



SW-4 – *continued*

- *Which watershed processes would benefit?*

Primary benefit to water quality processes

- *Where would this apply?*

- Old Town (PAU D-2)

- Portions of Lower Coe-Clemmons (PAU D-6)

- Portions of Thayer (PAU D-4)



SA-1 – Identify and protect habitat corridors

- *What is required now?*

No protections, other than along stream corridors

- *How should City code be changed?*

Map and establish protections for habitat corridors (to protect intact forested connections inside the city and to surrounding areas)

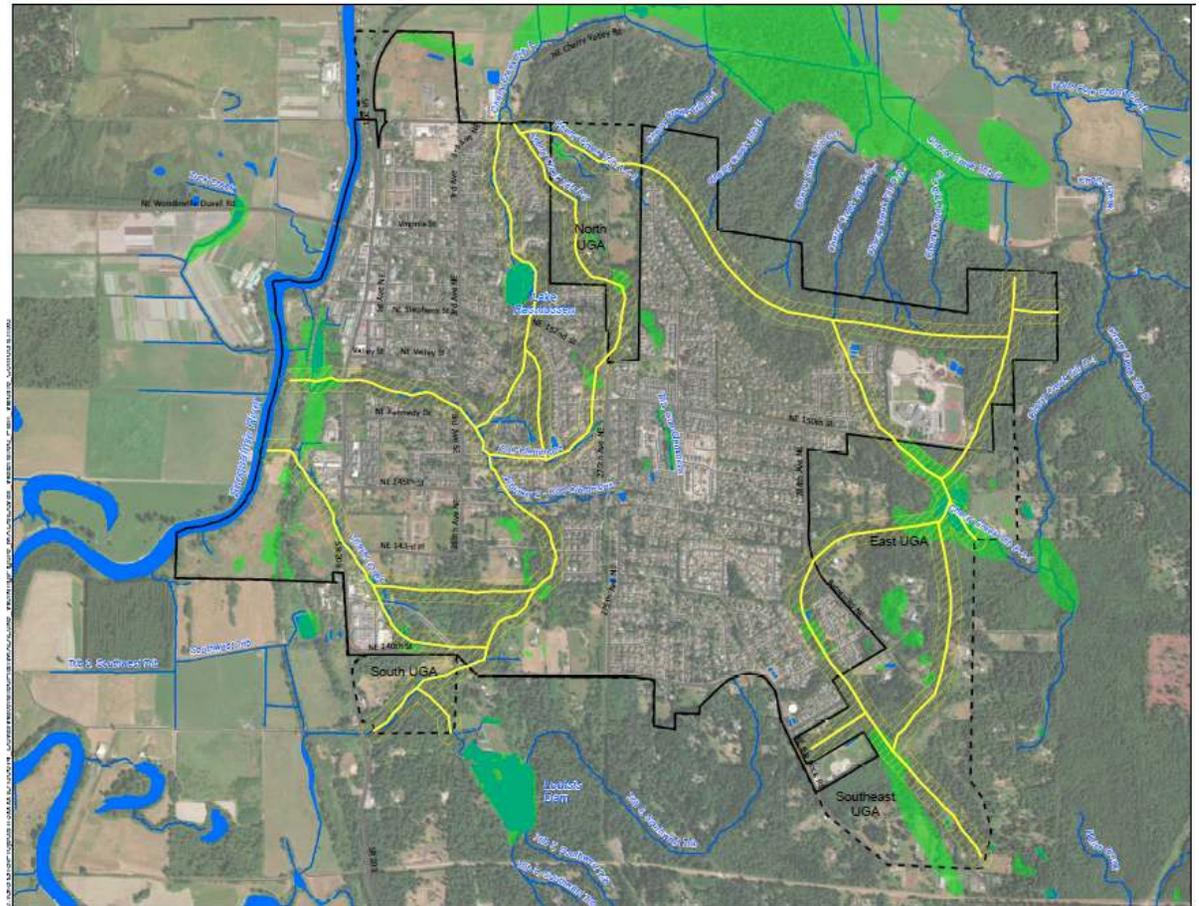
- *Which watershed processes would benefit?*

Fish and wildlife habitat processes

SA-1 – continued

- *Where would this apply?*

City-wide
(along
mapped
habitat
corridors)





SA-2 – Protections for depressionnal wetlands

- *What is required now?*

Regulated consistent with other wetlands through the Sensitive Areas Ordinance

- *How should City code be changed?*

- Reduce buffer reduction / impact allowances
- Require LID strategies to maintain hydrology

- *Which watershed processes would benefit?*

Primarily surface storage, as well as recharge, discharge, water quality and habitat processes



SA-2 – continued

- *Where would this apply?*

Groups 1 and 2

Depressional wetland in Upper Coe-
Clemmons Subbasin





SA-7 – Tree protections for geologic hazards

- *What is required now?*

Buffer required for landslide and severe erosion hazard areas; can be reduced to 10 feet

- *How should City code be changed?*

Modify code to encourage protection of mature trees extending away from geologic hazards

Eliminate allowance for buffer reduction



SA-7 – continued

- *Which watershed processes would benefit?*

Primarily erosion (sediment export processes), as well as recharge and discharge

- *Where would this apply?*

City-wide; most applicable to Group 2 subbasins with geologic hazards

Land use recommendations for North UGA

- Apply standard buffers
- Require LID
- Limit runoff to Lake Rasmussen
- Limit tree loss in northwest portion
- Require a master plan
- Avoid crossing streams and habitat corridors





Next Steps

- Final draft of Watershed Plan
Available for review before end of March
- April joint session with
Planning Commission and City Council
- Updates based on review and public comment
- Draft regulations (March – June)
- Finalize Watershed Plan by June 2015