



## TUALATIN RIVERKEEPERS®

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July 27, 2011

Councilor Kathryn Harrington  
Metro Council  
600 NE Grand Ave.  
Portland, OR 97232-2736

Dear Councilor Harrington,

Thank you for your recent e-mail alerting us to the open house in Hillsboro about the 2011 growth management decision.

Tualatin Riverkeepers is concerned with the impacts of stormwater runoff on streams caused by any decision by Metro to expand the Urban Growth Boundary (UGB). Low Impact Development Approaches (LIDA) that Metro has promoted through their *Green From the Ground Up Seminars* can help mitigate the impacts of urbanization, but many of these techniques are not applicable in areas of shallow soils or slopes. According to the Clean Water Services' (CWS) *Low Impact Development Approaches Handbook*, "... a LIDA based on infiltration might not be allowed on unstable slopes, areas of high groundwater table, or soils with poor infiltration." (LIDA Handbook, Page 5)

Page 6 of the CWS LIDA Handbook states that in site planning, one should, "Use soil maps, which are available from the Natural Resources Conservation Service (NRCS) Soil Survey for Washington County. Sizing may be adjusted for some LIDAs based on tested infiltration rates unless high groundwater is an issue."

An examination of Web Soil Survey data from the Natural Resources Conservation Service (NRCS) shows that 100% of Area 6B South Cooper Mountain is "Very Limited" for "Disposal of Wastewater by Rapid Infiltration".

*"Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.*

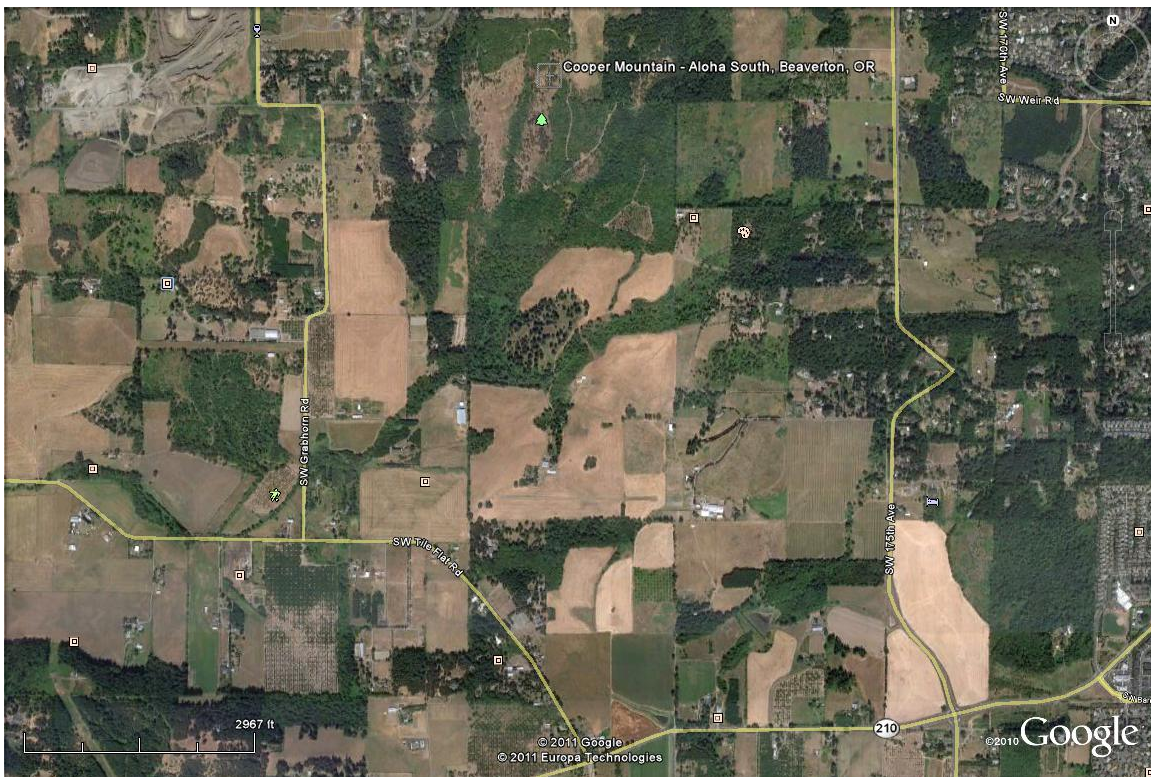
The following constraints apply to the sub-area of South Cooper Mountain proposed for 2011 inclusion in the UGB according to the NRCS Web Soil Survey:

- Depth of groundwater table is 86cm or less for 93.7% of the area.
- Depth to restrictive layer is 96 cm or less for 93.7 % of the area.
- 62.6% of the area is "Very Limited" for shallow excavations for utilities etc.

- 62.7% of the area is “Very Limited” for slow treatment of wastewater.
- 70.2% of the area is “Very Limited” for local roads and streets.
- 100% of the area is “Very Limited” for overland treatment of wastewater.
- 100% of the area is “Very Limited” for rapid infiltration of wastewater.

A copy of this soil survey report is included for your use.

Seattle Public Utilities, an agency with far more experience in Low Impact Development than Clean Water Services or Metro has run into significant problems trying to install roadside rain gardens in Ballard, a community with similar slopes and soils a South Cooper Mountain. Seattle will spend \$500,000 to fix the rain gardens and after the fixes, the gardens will not meet their original performance criteria of reducing runoff. *(See attached Seattle P-I article and SPU Letter).*



Area 6B - South Cooper Mountain currently has less than 10% Effective Impervious Area (EIA) cover. If urbanization is allowed in this area, EIA is likely to increase to 30% - 50%. Typically residential areas have an EIA of 30%. Numerous scientific studies cited in Clean Water Services’ Healthy Streams Plan document the ecological damage that occurs when EIA crosses the 10% threshold. According to Clean Water Services 2005 Healthy Streams Plan:

*A significant body of scientific evidence that extends across diverse geographic regions, concentrates on many different variable, and employs widely different methods has yielded a similar conclusion: Stream degradation occurs at relatively low levels of imperviousness, less than 10 percent TIA (Total Impervious Area)(Schuler 2001). Studies by University of Washington (May et al. 2000; Henshaw and Booth 2000,;*

*Booth et al. 1997; Booth and Jackson 1997; Horner et al. 1997) have found that a host of physical habitat and biological characteristics change with increasing urbanization, most rapidly in areas where TIA has increased from 0 to between 5 and 8 percent....the modified hydrology that accompanies urbanization exerts the earliest and, at least initially, the strongest deleterious influences on freshwater systems.*

Clean Water Services, in the Healthy Streams plan used National Marine Fisheries Service 2003 Endangered Species Act guidance to develop generalized health targets of the four stream reach types found in the Tualatin Basin. The NOAA-Fisheries guidance focused on managing stormwater quantity through forest preservation, limiting watershed imperviousness, preserving riparian conditions and matching stream flow rate to historic conditions.

<b>Clean Water Services Healthy Streams Target By Reach Type</b>			
<b>Reach Type</b>	<b>Description</b>	<b>Effective Impervious Area</b>	<b>Forest Cover</b>
Type I	Low Gradient Headwaters	<20% EIA	>30% FC
Type II	High Gradient Headwaters	<10% EIA	>65% FC
Type III	Moderate Gradient Streams	<15% EIA	>50% FC
Type IV	Low Gradient Streams	<20% EIA	>40% FC

Based on a rough measurement of gradient of the 3 streams on USGS map and the Rosgen Classification used by CWS, the proposed South Cooper Mountain 2011 UGB inclusion area has two streams of Type II and one of Type III. Most of the rest of the streams in Area 6B are High Gradient Headwaters. Achieving CWS Healthy Streams Targets would require maintaining Effective Impervious Area at less than 10% (as is the current condition) and reforesting area to 65% forest cover.



We have seen dramatic visual evidence of increased runoff with the development of Bull Mountain. The above photo was taken in June 2011 along the Tualatin River south of Bull Mountain, showing massive erosion and uprooted trees in a creek blown out by heavy runoff from Bull Mountain. Residents of King City have been the victims of frequent flooding from this runoff. We would like to avoid these types of impacts from development of South Cooper Mountain.

One way of avoiding impacts would be to not bring South Cooper Mountain within the Urban Growth Boundary. Other areas with less slopes and more conducive to Low Impact Development Approaches could be brought in.

Changes in hydrology can sometimes be mitigated through low impact development techniques that infiltrate stormwater into the groundwater system. The NRCS soil survey reveals that 100% of the acreage in the entire Area 6B is "Very limited" for "disposal of wastewater by rapid infiltration" and also "Very limited" for "overland flow treatment of wastewater".

One way of avoiding impacts would be to not bring South Cooper Mountain within the Urban Growth Boundary. Other areas with less slopes and more conducive to Low Impact Development Approaches could be brought in, with constraints requiring onsite detention of stormwater.

Following NOAA-Fisheries guidance and meeting CWS Healthy Streams targets would be extremely challenging because the geology of the area is not conducive to low impact stormwater management techniques that rely on infiltration. If South Cooper Mountain is to be urbanized, it should be done so with a Zero Impact Development standard that relies on tree cover, evapotranspiration and rainwater harvesting. This standard would require the following:

- Tree preservation and reforestation to 65% tree canopy
- Onsite retention of all post-construction stormwater from development and roads.
- Broad stream buffers, vegetated corridors greater than 1 tree height potential
- Minimize road crossings
- Relaxed building limitations (such as height) to accommodate smaller footprint, clustering, pier construction, and other low impact approaches.

Sincerely,

A handwritten signature in blue ink that reads "Brian Wegener". The signature is fluid and cursive, with the first name being more prominent than the last.

Brian Wegener  
Tualatin Riverkeeper

#### Attachments

- NRCS Soil Survey Report
- Seattle Post-Intelligencer Article on Ballard Roadside Rain Gardens
- Seattle Public Utilities Letter on Ballard Project