LID ELEMENT #2: RETAIN AND PLANT NATIVE VEGETATION

OBJECTIVE

Provide stormwater flow control via interception, transpiration, and increased infiltration associated with the natural functions of native vegetation and soils. Additional environmental benefits include improved air quality, carbon sequestration, reduced heat island effect, reduced irrigation, pollutant removal, and habitat preservation or formation.

CONSIDERATIONS

For this memorandum it is assumed that native vegetation encompasses both those species that occur naturally, but also those that are well adapted to current and anticipated environmental conditions in Olympia. Allowing adapted plants promotes greater diversity and allows for more creativity with a greater plant palette to select from.

RELATED ELEMENTS

Element 1 Minimize Site Disturbance
Element 4 Restrict Maximum Impervious Surface Coverage

TRADITIONAL SITE DEVELOPMENT TECHNIQUES

Unless prevented by regulations (critical area restrictions, tree tract requirements, shoreline, conservation areas, etc.), sites are typically cleared of all vegetation in preparation for development activity. Preserving areas of natural vegetation on-site may limit the density that can be developed, constrain the maneuverability of large, heavy equipment around the site and restrict both on-site and adjacent property construction activities, especially site grading operations. Therefore, unless required to, developers will not typically preserve much, if any, natural site vegetation. Developers also do not always prioritize the use of native plantings in landscaping of sites, and instead landscape to meet code requirements, to achieve a specific aesthetic, or to use readily available plant materials.

CODES AND STANDARDS REVIEWED

Olympia Municipal Code (OMC) 16.60 (Tree Protection & Replacement), 18.32 (Critical Areas), 18.36 (Landscaping & Screening)
Drainage Design and Erosion Control Manual (DDECM) Volumes 3 and 5
2014 Comprehensive Plan

> "Mature native vegetation and soil are necessary to maintain watershed hydrology, stable stream channels, wetland hydro-periods, and healthy aquatic systems... (and) are also the most cost-effective and efficient tools for managing stormwater quantity and quality."
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> Puget Sound Partnership: Low Impact Development Technical Guidance Manual for Puget Sound December 2012

BENEFITS OF RETAINING AND PLANTING NATIVE VEGETATION

According to the Puget Sound Partnership *Low Impact Development Technical Guidance Manual*, the conservation and use of on-site native soil and vegetation for stormwater management is a central principle of low impact development design. Protecting these natural features achieves three goals: it reduces total impervious area; it maintains stormwater storage, infiltration and evaporation; and it provides potential dispersion areas for stormwater and maintains natural hydrologic processes. Protection of native forests can provide additional benefits such as providing critical habitat buffers, open space and recreation opportunities.

OLYMPIA CODE ANALYSIS

The retention of native vegetation on new and existing development sites is currently achieved through regulations requiring the preservation of critical areas and associated buffers (OMC 18.32). Regulations addressing tree protection and replacement (OMC 16.60) are also a means to preserve some existing mature trees; however, the requirements specifically do not extend to protecting the critical understory vegetation.

Areas of intact native vegetation could be protected by prohibiting any activities within a tree tract that would potentially damage the trees' critical root zones; however, it is not an explicit regulatory requirement in OMC 16.60 or the primary intent of the ordinance. Trees are also not necessarily required to be protected in stands (or tracts) in multi-family or commercial projects; instead, trees are often retained individually, which is more difficult than, and often not as successful as, preserving trees in existing stands.

Other mandatory landscaping standards encourage native vegetation, but do not require it. The DDECM indicates in Volume 3, Section 3.2 that native vegetation is preferred for landscaping of stormwater ponds. Retention of native vegetation for stormwater flow control is not a significant element of the existing Landscaping Code (OMC 18.36). Landscaping, as required in OMC 18.36, is primarily required to provide visual and physical buffers between uses and to reduce or improve aesthetic impacts from new development.

HURDLES TO RETAINING AND PLANTING NATIVE VEGETATION

The retention and planting of native vegetation is encouraged in almost all cases of new development. The assumption is that it will be suitable to regional climate conditions and subsequently require less maintenance in terms of labor, water and chemicals (fertilizers and pesticides). However voluntary and successful retention or planting of native vegetation can be difficult to achieve, especially in the following:

> **Small Sites.** Due to the City's required implementation the policies of the Washington State Growth Management Act, Olympia's residential design standards have been updated over the past two decades to require small lot sizes. Placing buildings and related infrastructure (driveways, walkways, utilities, etc.) on a small developable site leaves less area for retaining native vegetation. Attempts to preserve native soils and vegetation on small sites have resulted in small, marginally vegetated set asides. These areas are often not viewed as amenities by

residents. As a result, they are not protected and maintained. They tend to disappear in favor of other uses. Small, infill sites in existing neighborhoods are also problematic.

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Tree tracts are required for subdivisions comprised of four lots or greater because retaining mature, native trees on small sites is particularly challenging, isolating trees that once grew as a stand can expose the remaining trees to conditions that they have not had time to adapt to, severely weakening or killing the tree and creating a hazardous condition. Mature native trees also require extensive protected areas around the base of the tree to prevent compaction of the critical root zone. Damage from compaction or regrading beyond just a couple inches in depth will destroy the tree's roots and cause severe weakening or death.

Development Investment and Cost. Incorporating native plant retention into a project's site design requires specialized knowledge and analysis of site soils, drainage, climate and other factors, as well as the ability to apply this analysis to a design that is physically, aesthetically and economically viable.

This requires engaging a highly trained team of designers, engineers and other professionals early and throughout the site design process. The team can then identify and address potential areas of conflict in advance of the City's land use review process, or be prepared to adapt and address issues quickly in collaboration with City staff during the permit review process. Currently requirements are often addressed piecemeal or only after having been highlighted by City staff.

There may be a higher cost at the beginning of the process to acquire this level of expertise, continuity, and responsiveness; however, it can result in a site design that meets the City's regulations with reduced potential for delays or requests for revisions.

Site Design. Considering all factors impacting site design thoroughly and early on is critical to successful native vegetation retention. Applicants will need to take into consideration existing site characteristics when determining where to allocate preserved native vegetation. Currently, the City requires a Tree Plan be submitted with nearly all Land Use

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Applications, as well as identification of all critical areas and critical area buffers. Retention areas for native vegetation would potentially be in addition to these already existing requirements.Similar to the process for identifying where there are viable and mature trees suitable for preservation, the site design needs to reconcile the areas to be developed with suitable areas for native vegetation. This requires an in-depth analysis and understanding of existing site conditions. For example, the existing soils may be in poor condition or not conducive to supporting native shrubs or trees without extensive remediation or amendments. Due to previous activity on some sites, the existing vegetation may be sparse, of poor quality, or predominantly comprised of invasive species. Similarly, grading and clearing in one area may adversely affect hydrology patterns in another, resulting in conditions unsuitable for native vegetation.

Lastly, site design would also need to address potential future conflicts with other desirable activities that require space or solar access, such as urban gardening, children's play structures, and siting for solar power.

Implementation. To fully realize the benefits intended through preserving or planting native vegetation, the vegetation that is preserved or planted needs to become established and remain viable in the long-term. Significant attention needs to be paid to determining suitable plant species, protecting or installing the vegetation correctly, and ensuring proper on-going management.

Plant Selection

Plants native to this region are accustomed to growing in specific environmental conditions, so it is critical to understand these conditions and to avoid significantly impacting or destroying them during the construction phases of a project. Changes in drainage patterns, soil compaction, or exposure to wind and sun can make some native plant communities less likely to survive throughout construction, or will greatly increase their vulnerability to invasive species, pests and diseases.

There have also been significant challenges in implementing the mandatory subdivision and individual parcel LID requirements.

Climate change in the Pacific Northwest will likely cause warmer winters with more rainfall, and hotter summers, as well as more extreme storms and drought. These are not the conditions native vegetation necessarily evolved under and will increase stress on plant communities. Plants need to be selected that have shown an ability to either thrive in or adapt to changing climate conditions in the future.

Plant Protection

Mature trees are often lost during the construction process due to a lack of proper or effective protection. Fencing may be installed initially, but over time its level of effectiveness is diminished if the project manager is not held accountable for its condition. Native vegetation, if not protected properly and in particular in constricted constructions areas on small lots, will be destroyed during construction.

Long-term Maintenance

Retained and planted areas of native vegetation are vulnerable to whole host of threats during establishment or following construction. Most critical is whether or not the area is properly maintained. "Natural" areas are no longer natural in the sense that they will thrive on their own; continual management is necessary to prevent native vegetation area from being diminished or lost entirely. There may be less interest or community will to pay for the cost of on-going maintenance or to ensure that the maintenance that is done is appropriate when an area appears more natural and is not appreciated for its ecological function by the end user. Very often, native vegetation will be maintained the same as a formal landscape, with hedge trimmers and a lawnmower.

Lastly, development will likely increase the perimeter length, or edge, of retained vegetation areas, and create soil disturbance. Both allow for greater and quicker establishment of invasive plants, which decrease the aesthetic appeal of the site. Their removal and replacement with native plants can be time-consuming and significantly increase maintenance costs. However, if not addressed, many of the benefits of the preserved area are slowly lost over time.

Tree Retention. Existing exemptions for tree removal permits may prevent native tree retention in the long term. OMC 16.60.040 includes many exemptions to tree protection requirements. Trees under 6 inch DBH, trees on developed single-family lots where tree density is maintained, and trees on developed property (up to 6 trees per acre per 12 month period) are exempt and may be removed without a permit. Harvesting with a Forest Practice Permit is also exempted which can include total removal of a forest from a parcel.

Special Considerations. For areas of natural vegetation to be established, preserved, and managed, those responsible for ensuring compliance during permitting and construction, and those responsible for the long-term management of these areas need to understand and become champions for the community-wide benefits they provide. The likelihood of this continues to evolve in our community, and there are still some outstanding cultural belief systems that shape what many property owners desire for the landscapes they exercise control over.

Property owners expect to have freedom of choice on how to use their property. Requiring the retention and maintenance of native vegetation areas in perpetuity contradict this expectation, and may be resisted or ignored by property owners.

Native trees, shrubs, and groundcovers can be perceived as messy, weedy and unkempt. Their natural growing forms may be perceived to block light or visibility, creating dark, dangerous, and unsafe conditions. Their seeds, leaves, or berries may be a maintenance issue.

Also, relative to grassy lawns, areas with native vegetation may have limited passive uses, preventing desirable active recreation. Areas with a significant understory left intact don't allow for throwing a frisbee or playing soccer. In some cases, natural areas can also become too highly used by dog-walkers, people cutting through, BMX bikes, or mountain bikes. Over-use by some activities can compact the soils and destroy the understory vegetation.

The City of Olympia provides education and technical assistance to property owners regarding native vegetation and open space protection, but regulatory enforcement on the issue is challenging and ineffective.

Updating codes to require using native vegetation in planting areas is relatively straightforward and feasible to implement.

OPTIONS CONSIDERED

Option 1: No change to the existing regulations; native vegetation is preserved and planted in tree tracts (as it applies to trees only in residential subdivisions), shorelines, critical areas, and critical areas buffers. Provide ongoing education and technical assistance.

Option 2: Update codes requiring that native plants be used when landscaping is required and when revegetating the open space area. Expand the requirements for preservation of native vegetation and soils in designated areas or tracts to include all multi-family and some commercial developments (as appropriate by existing commercial zoning districts).

Option 3: Expand the amount of area required as preserved natural vegetation within new development sites. Establish a percentage of the site to be retained in natural vegetation based on a variety of factors. For example, current low impact development regulations for Olympia's Green Cove basin result in the protection of approximately 60% of the overall development plat. The Green Cove regulations were established approximately 15 years ago in acknowledgement of the unique environmental attributes of the basin. Given growth management practices and Olympia's goal of creating relatively dense land uses, the feasibility of applying those regulations to other areas of the City is limited. However, other less rigorous preservation requirements could be required.

ANALYSIS

A study done by City of Olympia staff in 2011 cited that many cities are opting for an approach to LID that incorporates a mix of both voluntary and regulatory tools to implement changes; however, results have shown a greater impact is realized through regulation. All of the options noted above for retaining and planting native vegetation emphasize a regulatory approach; the question is to what *extent* do we regulate retention of native vegetation?

The conservation and use of native on-site soil and vegetation for stormwater is a central principle of LID design.

A significant emphasis of native vegetation retention for LID is mature tree retention. Option 1 (no change) continues implementing Olympia's existing tree preservation and replacement requirements, which have been in place for nearly three decades, in addition to protections for critical areas. Both requirements have preserved some level of native vegetated areas in both residential and commercial developments. Changing landscape practices are evident in our community (e.g. more native species, less pesticide, herbicide and fertilize use, increasing compost use).

Option 2 (require native plants where landscaping required) acknowledges that there are areas where the current regulations may be readily expanded for greater effectiveness in preserving and planting specifically native vegetation. OMC 16.60 (Tree Protection & Replacement) can be revised to preserve soils and understory vegetation, and to include soil and vegetation preservation areas in multi-family and some commercial projects. Credit towards landscaping requirements can be expanded to stormwater treatment areas, and all landscaped areas shall be comprised of preserved or planted native vegetation.

These requirements would be relatively straightforward and feasible to implement as the areas impacted are already required to be set aside by an existing regulatory mechanism. The requirements would also continue to be implemented primarily by the development community and City staff on property that will either be deeded to the City as right-of-way or owned or maintained by an association, and not individual homeowners.

The short-term and long-term effectiveness of Option 2 would require improved and expanded training for private developers, construction companies, and City staff to ensure proposed vegetation is site-appropriate and protected or planted properly during construction. There will also need to an improved system for ensuring plant survival and establishment after the initial growing season. Education will be critical for ensuring parties responsible for future on-going maintenance of protected areas are doing so correctly, consistently, and in perpetuity.

Option 3 (expand requirements for vegetation preservation) references a level of tree and vegetation preservation that is currently applied only to Green Cove's Residential Low-Impact (RLI) zoning district. A 1998 study of the Green Cove Creek Basin completed jointly by the City of Olympia and Thurston County found that there was more that could and should be done to protect this environmentally

sensitive watershed within the City and Urban Growth Area (UGA). The study's findings resulted in the adoption of a special Green Cove zoning district, which through tree preservation regulations results in approximately 60% of a new development site in the basin be set aside as preserved area. Not coincidentally, wetlands are prevalent and large in the basin, and can be used to meet the 60% set aside. Wetlands are also protected by the City's Critical Area Ordinance. The 60% set aside is consistent with current stormwater full dispersion techniques outline in Ecology's stormwater manual.

Vegetation set asides less than 60% could be implemented in other areas of the City. However, the implications of mandating increased natural vegetation protection on developed sites are substantial. City goals and policies emphasize the importance of relatively dense land uses for our community. Increasing vegetation protection on a broad basis would require extensively revisiting our expectations for future land use.

RECOMMENDATION

Staff recommends Option 2. Staff recommends that all areas under which the City currently requires landscaping or the allocation of open space be appropriately landscaped with preserved or planted native vegetation, and that the requirement for native vegetation and soil protection areas be extended to all multi-family and some commercial development where appropriate.