SALMON-SAFE URBAN STANDARDS

Version 2.0

Prepared for
Salmon-Safe Inc.

May 2018

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Executive Summary

The *Salmon-Safe Certification Standards for Urban Development* (Urban Standards) is a guide for site developers, designers, contractors and land managers interested in raising the bar for urban developments to demonstrate environmental stewardship by minimizing the impacts of development on sensitive aquatic and upland resources and enhancing salmon habitat.

These standards also include an update of the Salmon-Safe Standards for Corporate and University Campuses (Campus Standards) published in 2005. Combined, these standards are the most recent effort by Salmon-Safe to promote development at a variety of scales that emphasizes landscape-level conservation and protection of biological diversity.

Program Description

Based on a decade of work with more than 300 urban and agricultural landowners across the Pacific Northwest, Salmon-Safe brings a new project-specific, collaborative, peer-reviewed approach to urban certification that is unique among certification programs.

An interdisciplinary Evaluation Team of qualified experts is assigned to the project certification candidate to work with the development team during each stage of the design development process. The evaluation and certification process is a collaborative effort between Salmon-Safe and the development team. All certification standards and performance requirements are performance-based, not prescriptive, to give the development team (and their assigned Evaluation Team) the freedom to generate designs that work best for the developer, the development site and overall project budget. This team is available for the life of the project to work with the client in navigating standards and performance requirements.

Even after a project is certified, Salmon-Safe promotes the long-term environmental performance of certified sites through an annual verification process. This process reviews landscape management practices, habitat restoration progress, facility performance and other program elements to make sure the project is functioning as designed.

The Certification Standards describe the performance requirements or desired outcomes for the following seven Salmon-Safe management categories:

#	Category	CONTEXT	
U.1	Stormwater Management	X	CORE URBAN STANDARDS
U.2	Water Use Management	X	
U.3	Erosion Prevention and Sediment Control	X	
U.4	Chemical and Pesticide Reduction and Water Quality Protection	X	
U.5	Enhancement of Urban Ecological Function	X	
U.6	*Instream Habitation Protection and restoration*	*	*CONTEXT-DEPENDENT STANDARDS*
U.7	*Riparian, Wetland and Locally Significant Vegetation Protection and Restoration*	*	

Using This Document

Most of the urban development projects currently being reviewed by Salmon-Safe are high density urban infill projects, where streams, wetlands and other habitat features that have traditionally been a major focus of the certification standards are not present. Therefore, the main body of these standards targets performance requirements and metrics that likely apply for traditional urban infill type development (Categories 1-5) which are called the 'Core Urban Standards'. If a project site has a wetland or stream within the site boundary, the applicable 'Context-Dependent Standards' (Categories 6 and 7) must also be met. This provides an urban-focused approach to meeting standards while also allowing for additional requirements on sites with more intact ecological systems present.

Campus or Portfolio Approach

The Urban Standards focus on individual sites within an urban context. A 'Campus' and 'Portfolio' approach is provided to accommodate larger campuses and multi-building developments throughout a district or local area. Site boundaries will be reviewed by the Evaluation Team and additional submittal information may be required. Additional information on the process for incorporating multiple buildings within a boundary or campus is found in Appendix A.

Existing Developments

The document provides pathways for certification of both new and existing sites within an urban context. The criteria for certification follows all Urban Standards, with key elements required for existing review marked with an **E**. Specific submittal requirements for projects will be reviewed by the Evaluation Team to provide guidance to owners based on specific project characteristics. Additional information on the process for certification of existing urban development and portfolio, and campus is found in Appendix C.

NEW PROJECTS	
New Development	Review all Core and applicable Context Specific Standards during all phases from analysis through construction—working with Evaluation Team. See Appendix B for Required Submittals.
New Portfolio or Campus	See Appendix A for specific guidance on Portfolio or Campus and define boundary. Review all Core and applicable Context Specific Standards during all phases from analysis through construction—working with Evaluation Team. See Appendix B for Required Submittals.
EXISTING PROJECTS	
Existing Development	See Appendix C for specific guidance on Certification of Existing Developments. Reference Applicable Core and Context Specific Standards and work with Evaluation Team to determine Required Submittals based on project specifics.
Existing Portfolio or Campus	See Appendix A for specific guidance on Portfolio or Campus Approach. See Appendix C for specific guidance on Certification of Existing Development. Reference all Core and applicable Context Specific Standards and work with Evaluation Team to determine Required Submittals based on project specifics.

Introduction

Salmon-Safe

Salmon-Safe's urban development certification program is intended to promote ecologically sustainable land management that protects water quality and aquatic biodiversity. Beginning with the 2004 certification of the 10,000-acre Portland Park system, Salmon-Safe has successfully completed urban projects including certification of the Nike World Headquarters and many other urban campus, light industrial and large-scale development projects in Oregon, Washington and British Columbia.

This document presents Certification Standards for urban development (Urban Standards), as well as an overview description of the evaluation process that will be used to assess and certify candidate urban development projects. Salmon-Safe's urban development standards constitute a set of best management practices (or BMPs) that can be applied across a variety of urban development landscapes, ranging from high density urban infill to corporate campuses. While the Certification Standards are designed as a stand-alone program, they can also complement other leading certification standards (e.g., LEED, Sustainable Sites, Envision and Earth Advantage), by certifying project activities that specifically address fish and wildlife habitat quality.

The Salmon-Safe certification program focuses on salmonid species (i.e., salmon and trout) and their habitat requirements. Salmonid species are key indicator species in the Pacific Northwest and their conservation is entwined with the health of ecosystems that include a variety of aquatic and upland wildlife species. Therefore, this evaluation focuses on the following biological components of the ecosystem that most affect salmonids and the ways these components can be protected: (1) water quality, (2) water quantity, (3) instream habitat, (4) riparian habitat and (5) fish passage.

The Urban Context

The challenge of an urban setting is the physical disconnect between urban development and many of these biological systems. All types of development occur in the urban context, but it is often located on previously developed sites and absent intact natural systems like riparian corridors, wetlands and streams. Whether utilizing a previously developed polluted site (brownfield), or a site that had previously been undeveloped (greenfield), urban development can have many negative impacts on salmonid species—both directly (by introduction of polluted runoff to offsite, downstream locations) or indirectly (through unsustainable resource extraction, inefficient water use and contribution to global climate change).

Urban development can contribute positively to ecosystem health and provide regional habitat for many wildlife species. Using development techniques like green infrastructure, can help Improve water quality, facilitate the reuse of water that would otherwise be

wasted and consequently provide healthier water resources for aquatic species. Urban landscapes and rooftops can be planted with species that provide habitat for urban wildlife, creating corridors and refuges for birds, small mammals, pollinators and other species vital to our global health. These areas can also improve the treatment of stormwater through the filtering and biological uptake of pollutants. Even when specific ecological habitats are not present on site, urban ecosystems can help protect resources, clean up pollution, restore soil health and reduce the urban heat island effect, having a cumulative positive impact 'downstream.'

While the contents of this document focus on individual urban development projects, the Certification Standards also include a pathway for certifying multiple developments under the "boundary approach". This is provided to accommodate larger campuses and multi-building developments throughout a district local area. These standards replace and update the original Corporate & University Campus Certification Standards. Details on how to work with these standards are provided in Appendix A.

All of Salmon-Safe's certification standards receive formal peer review by scientists, technical experts, representatives of environmental organizations and other interested parties. Salmon-Safe may periodically review and revise these standards to reflect changes in the best available science and emerging development practices.

Organization of Standards

Following this Introduction section, the Urban Standards are presented in two main sections, with supporting documentation provided in the Appendices. The first main section includes the Core Certification Standards, presenting the specific standards and related performance requirements that must be met for the project to be considered for Salmon-Safe certification. The Certification Standards are organized by category.

The Core Certification Standards and their associated performance requirements are organized under one of the following five habitat-related management categories:

U.1 Stormwater Management

This management category focuses on the management of stormwater runoff within a development. High levels of impervious surface and drainage systems from roads, parking lots, buildings and walkways can contribute to flooding and increase the magnitude and frequency of peak flows in streams, which can degrade stream habitat. Stormwater from developed landscapes can also contain contaminants such as oils, heavy metals, pesticides and fertilizers that degrade water quality. This management category introduces standards that minimize the amount of stormwater generated on site and improve the quality of stormwater runoff.

U.2 Water Use Management

The focus of this management category is the use of water for irrigating vegetation. Water withdrawals have the potential to adversely affect salmonid habitat, primarily by reducing instream flows. Impacts can be minimized by selecting alternative water sources that do not reduce instream flows, by reducing the use of water (for example, through efficient irrigation or use of drought-tolerant landscaping) and harvesting water for irrigation from rainfall or building gray water.

U.3 Erosion Prevention and Sediment Control

Sediment delivery into fish-bearing streams is a major cause of habitat degradation, particularly for salmonid spawning areas. Stream bank erosion and upland surface soil erosion are the principal sources of sediment. This management category evaluates upland sources of erosion, as bank erosion is addressed in the instream channel management category. Effective erosion control design and maintenance practices can prevent erosion and capture sediment before it leaves the site.

U.4 Pesticide Reduction and Water Quality Protection in Landscaping

Salmon survival depends on clean water, free from harmful levels of chemical inputs, fertilizers (nutrients), pesticides (herbicides and insecticides, fungicides and other biocides), stormwater runoff pollutants and organic waste. These contaminants can travel long distances in stormwater runoff from a development to receiving streams. The principal methods to avoid contamination of salmon-bearing waters are to minimize overall inputs of these contaminants, restrict the type of inputs and develop an acceptable method of application through a comprehensive management program, such as an integrated pest management (IPM) plan.

U.5 Enhancement of Urban Ecological Function

Overall improvements to a broad range of ecological systems is an overarching goal of Salmon-Safe certification in highly urbanized environments and offers, in addition to improvements to aquatic habitat, the ability to promote broader, non-aquatic ecological functions important for urban wildlife such as birds, bats and pollinators. Improving urban ecological systems helps protect water quality by restoring soils, vegetation and ecological function in areas contributing to receiving waters within the watershed. Even small patches of urban habitat can aid in species movement and provide temporary refuges for urban wildlife, while also benefitting district residents through access to nature and additional amenity zones.

The additional Context Specific Certification Standards and their associated performance requirements are organized under one of the following two additional habitat-related management categories. It is uncommon but not improbable for urban sites to have streams, wetlands and riparian areas present within the site boundaries. Since not all urban development projects have onsite streams or wetlands and associated riparian areas, this section is only applicable to certain projects.

Documentation of context in preliminary review stages will determine if these specific site characteristics are present on a site. These additional standards will also provide necessary requirements for Salmon-Safe certification (designated with S for relation to streams or W for wetlands)—some are applicable to both.

U.6 Instream Habitat Protection and Restoration

This management category applies to certain stream types and other water bodies that occur within the boundary of the development. If within the boundary of the development, this may include lacustrine, estuarine and near-shore marine environments. The focus of this management category is on assessing the condition of the actual channel or waterbody, including the streambed and bank, and identifying opportunities for restoring or improving habitat. Physical as well as biological conditions contributing to habitat quality are considered for these standards.

U.7 Riparian, Wetland and Locally Significant Vegetation Protection and Restoration

The focus of this management category is on measures taken to protect areas closest to surface water bodies—riparian vegetation zones and wetlands. It also applies to areas with locally significant vegetation, as identified during the site inventory. The performance requirements may vary according to stream type.

Overlaps with the Urban Development Process

Each section above includes specific information and guidelines related to standards for stormwater, water use, erosion control, pesticide reduction and urban ecological function. Additional context-dependent sections cover wetlands, streams and riparian habitat as they could potentially be located and impacted on a site. The standards are meant to be broad to cover a range of project types and to be applied strategically at different stages of development, as follows:

I. **Inventory and Assessment:** Collection of site-specific and other data to assess the condition of the site, its context within the watershed, existing natural resources and habitat and opportunities and constraints for addressing habitat and resource-based concerns. Information gleaned during this

development stage will be useful to both the project design team and the Salmon-Safe Evaluation Team in determining existing site assets.

II. **Site Planning:** Development of conceptual building and site plans, master plans, renderings or other products that provide an orientation of overall site features. Applicable permit documents would also be developed during this stage.

III. **Site Design:** Design development of "hard" site elements including site utilities, infrastructure, buildings, roadways or other necessary site improvements. Design development of habitat elements, landscaped areas, open space and other "soft" natural resource features. These include native vegetative communities, landscaped areas (native or otherwise), water features and habitat buffers. Construction documents, specifications, cost estimates and easements would be developed during the design stage.

IV. **Site Construction:** Site mobilization, protection of natural resources and physical installation of approved plan elements onto a project site. This stage typically coincides with installation of roads, utilities and homes.

V. **Site Maintenance and Monitoring:** Long-term care, performance recording and adaptive management elements to be completed after the site is completely installed.

Each of the Standards includes a summary table to show the relationship of each specific criteria to the typical urban development process outlined above. This is a guideline for when to engage in planning, conceptual design, construction and maintenance to maximize the potential opportunities within a project to meet and exceed Salmon-Safe Urban Standards.

Evaluation Process For Certification

Scope of the Evaluation Process

The evaluation process begins with an initial consultation with Salmon-Safe to determine whether the project may be eligible for Salmon-Safe certification. If Salmon-Safe confirms that the project is eligible and the project proponent is interested in moving forward, Salmon-Safe would then select an appropriate Evaluation Team.

Eligibility for Salmon-Safe Certification

To be certified by Salmon-Safe, a proposed urban development must demonstrate thoughtful design stewardship and a commitment to long-term progress in addressing the impacts of the proposed development on sensitive aquatic and natural resources.

To begin this process, the project owner or developer should contact Salmon-Safe as early as possible to determine whether a proposed development will be eligible for Salmon-Safe Certification. Salmon-Safe will request information about the project site and general information on the proposed development. The objective of this preliminary screening is to determine if a proposed project is compatible with the mission and goals of Salmon-Safe and the Certification Standards themselves.

The Evaluation Team

The Certification Evaluation is conducted by a team of two or more qualified and independent experts hired by Salmon-Safe. The Evaluation Team is well versed in aquatic ecological science, development planning and design, as well as landscape management. Salmon-Safe will select the composition of the team for each project.

To conduct the Certification Evaluation for Salmon-Safe, the Evaluation Team conducts a detailed assessment of the development's overall design and planning documentation related to habitat and water quality protection. The team also conducts a field review of the development design and habitat conditions to evaluate whether such management is consistent with Salmon-Safe's site-specific Certification Standards for avoiding harm to aquatic and upland resources.

Description of Review Phases

The Evaluation Team assesses project plans, designs and maintenance practices against a defined set of standards that represent best site planning and design practices. The team also evaluates the extent to which the proposed development design and infrastructure elements protect and restore both aquatic and terrestrial components of local ecosystems, within the context of urban development criteria for human use and enjoyment. The Evaluation Team uses the standards and performance requirements in this document to evaluate whether the development as a whole will be awarded certification.

In particular, Salmon-Safe offers three formal opportunities for collaboration throughout the project planning and construction process. For maximum benefit to the project, Salmon-Safe recommends that the Evaluation Team participate in the process during the following review phases. The following table provides a summary of typically activities associated with each Salmon-Safe Review Phase and how it loosely aligns with typical project development phasing.

Phase	Salmon-Safe Review Phase	Summary of Review Phase
1	Site Assessment and Planning	This preliminary review provides information for design team and allows for communication about the project goals and Q&A for Salmon-Safe. Typical activities include: • Site Visit • Review Site Inventory and Assessment • Review Conceptual Plans • Review Salmon-Safe Standards • Issue Phase 1 Recommendation for Team Relevant Project Development Phases: *Project Inventory and Assessment, Site Planning; Schematic/Conceptual Design*
2	Review of Plan Submittal	This review occurs as project specifics are developed, as the project is working to obtain the necessary permits, approvals and entitlements. Typical activities include: • Review Plans and Documents • Discuss issues and additional opportunities and constraints • Issue Phase 2 Recommendation for Team to incorporate into final documents Relevant Project Development Phases: *Site Design; Design Development; Permit Documents; LEED Documentation; Construction and Bid Documents*
3	Certification of Constructed Project	This provides final documentation of built or almost completed project. Typical activities include: • Site Visit & review project • Review incorporation/implementation of Phase 1 and 2 recommendations • Review all necessary documentation • Final Report/Recommendations for Certification Relevant Project Development Phases: *Project construction; Punch list, Final Walkthrough; Final completion; O&M Activities/Plans*

A review list of required submittals by review phase is included in Appendix B *(Required Documentation for Urban Development Certification).*

Fast-Track Certification

For large-scale development projects where Salmon-Safe is engaged early in the design process, certification also can be awarded early in construction based upon certain benchmarks being met with respect to stormwater design, construction-phase runoff prevention and planning for post-construction operations. This fast-track certification process for new development is illustrated in Appendix I.

Decision Rule for Certification

Certification is awarded when the Evaluation Team and Salmon-Safe are satisfied that the development meets all relevant Certification Standards and associated performance requirements. If the candidate urban development does not fully meet the Certification Standards and performance requirements, the Evaluation Team may conditionally certify a development, subject to one or more conditions for certification that must be completed to the satisfaction of the Evaluation Team during the five-year certification period. The team also may stipulate one or more pre-conditions that must be completed prior to formalizing certification.

Maintaining Certification

Salmon-Safe Urban Development Certification is valid for five years, subject to annual verification of satisfactory progress in meeting any conditions to the certification. Annual verification requirements require preparation of an annual site summary report. This report typically includes a characterization of site conditions and observed performance, verification of incorporation of policies and procedures identified during certification, photo documentation of site conditions at select photo points and other reporting elements that are agreed upon at the time of certification. *The annual certification report and verification form is attached as Appendix H.*

After the five years are up, developments may be recertified through a recertification process composed of a project site audit and assessment.

General Standards For Certification

This section outlines general standards for certification must be met by the urban development for certification. This include mandatory conditions that must be met prior to certification R and provisional standards that can met by providing a written agreement to comply with specific conditions stipulated by the Evaluation Team.

(1) R Development is not in violation of national, state, or local environmental laws or associated administrative rules or requirements, as determined by a regulatory agency in an enforcement action.

(2) Provisions are made for the identification and protection of rare, threatened and endangered salmonids and their habitat, if any, existing on the site.

(3) Satisfactory progress is being made in addressing design and infrastructure that directly degrade salmon habitat. Restoration efforts may include those required by the Evaluation Team to address deficiencies, as well as efforts already being undertaken. This progress may include prioritized project lists for the site, including specific projects and other planning documents, as determined by the review team. There is demonstrated progress in correcting management deficiencies.

(4) Summary reporting is adequate to document compliance with Salmon-Safe standards. See Appendix B for a list of written summary reports, documents and data required for Salmon-Safe assessment.

(5) R Management allows monitoring by a third party authorized by Salmon-Safe and fully cooperates with such monitoring in so far as possible given staffing and funding constraints. Under rare circumstances, the Evaluation Team may request that owners conduct limited monitoring where such monitoring is critically needed to assess the efficacy of existing management practices in meeting Salmon-Safe standards. The Evaluation Team will carefully weigh the need for the monitoring against campus management's guidance regarding the scientific and economic feasibility of the proposed monitoring.

(6) R A policy addressing new alterations or re-development is in place. This policy requires that the design for expansion or re-development of an existing project be consistent with Salmon-Safe standards, as feasible considering human-use mandates and cost considerations.

Core Urban Certification Standards

These Certification Standards are intended for use by site designers for development projects as part of the Salmon-Safe certification process. Each standard falls under one of six management categories that cover a set of considerations important for conserving salmonid and upland habitat and promoting the protection and enhancement of urban ecology. The standards are designated with the alphanumeric prefix "U.1" through U.5"; the "U" designation is used to denote standards and performance requirements associated with urban development, in contrast to the numbered standards used in previous Salmon-Safe documents. As described below, symbols next to a particular performance requirement indicate specific requirements for a specific development type.

U.1 Stormwater Management

U.2 Water Use Management

U.3 Erosion Prevention and Sediment Control

U.4 Pesticide Reduction and Water Quality Protection

U.5 Enhancement of Urban Ecological Function

Throughout the standards, the phrase *"to the greatest extent operationally feasible"* is used. This phrase is used to describe actual potential for incorporating standards and performance requirements into site development activities. A mixture of economic, technical, biological, cultural/aesthetic and other reasonable factors are used to determine the "operational feasibility" of implementing a standard at a given site. Ultimately, the operational feasibility of implementing certain standards or performance requirements rests on the judgment of the interdisciplinary Evaluation Team and is evaluated on a case-by-case basis.

U.1 Stormwater Management

High levels of impervious surface and drainage systems from roads, parking lots, buildings and other surfaces reduce soil infiltration and can increase the magnitude and frequency of peak flows in receiving streams. Increased flooding can degrade stream habitat by eroding the channel bed and banks, scouring spawning gravels and removing stream structures. Frequent flooding can also directly impact juvenile rearing salmonids that require stable, slower waters as over-wintering habitat. Stormwater from parking lots, roads and landscapes can also be contaminated with oils, heavy metals, pesticides and fertilizers (nutrients) that degrade the water quality of the receiving streams. This management category addresses practices to control stormwater runoff to reduce both water quantity and water quality impacts.

For urban projects, stormwater management is often an important area where thoughtful development can improve salmon habitat. At a minimum (and to meet the general standards for certification), every development must meet local, state, federal and other applicable regulations related to stormwater management. However, a Salmon-Safe development should go beyond minimum regulatory requirements and use creative and thoughtful approaches to benefit urban ecology and salmon habitat through stormwater management practices. Replacing a predominantly impervious site with one that includes infiltration and vegetated stormwater facilities can improve the water quality and habitat of receiving waters.

Standard U.1.1: Existing site improvements related to stormwater management have been inventoried.

Performance Requirements

i. Information on existing stormwater infrastructure, if any, has been collected from record drawings, site mapping, or field visits. This includes locations of stormwater conveyance channels, pipes, catch basins, outlets and low-impact development stormwater facilities. E

ii. Existing improvements contributing to stormwater runoff, including impervious and semi-pervious (e.g. gravel or pavers) surfaces, are mapped. E

iii. Site topography has been mapped and a drainage area assessment conducted. This information shows major stormwater catchments and locations of receiving stormwater drains or streams, if present.[1] E

iv. Areas suitable for low impact development stormwater facilities based in part on soil infiltration capacity (U.1.5.1) have been mapped. E

[1]An existing site stormwater management plan, if updated and available, is generally sufficient to meet performance requirements U.1.1 (i-iii), and can be provided to the Evaluation Team as a substitute for these requirements.

Standard U.1.2: An offsite drainage analysis has been conducted.

Performance Requirements

i. Any known or potential off site drainage or stormwater resources entering the site from an adjacent property have been identified based on drainage or topographic maps or site visits. Offsite areas contributing to onsite hydrology have been characterized in terms of impervious and pervious area, any water quality concerns they may pose, and any proposed changes in offsite conditions that may affect stormwater flow or water quality on site. E

Standard U.1.3: Site layout responds to site conditions in a way that conserves contiguous existing vegetation, minimizes impervious or semi-pervious areas, eliminates effective (or connected) impervious area and minimizes stormwater runoff.

Performance Requirements

i. Noninvasive vegetation and soils are left undisturbed to the greatest extent operationally feasible. Disturbed locations are selected over undisturbed locations during overall site planning for building, infrastructure and other improvement locations. Locally significant patches of onsite native vegetation identified during the site inventory are left undisturbed. To the greatest extent operationally feasible, these patches of existing vegetation are spatially connected to other habitat elements via appropriate, native vegetation as a functioning conservation framework.

ii. Lots and buildings are clustered to the greatest extent operationally feasible to reduce sizes of building footprints, resulting in conservation of identified habitat areas and other open space, trees, other vegetation and soils, as well as greater overall infiltration of precipitation. Minimizing soil excavation and compaction and vegetation disturbance; minimizing impervious rooftops and building footprints; constructing streets, driveways, sidewalks and parking lot aisles to the minimum widths necessary, provided that public safety and a walkable environment for pedestrians are not compromised.[2]

iii. Roadway alignment maximizes contiguous open space and limits encroachment on natural resources. Parking areas are deliberately aggregated and are limited to the minimum number of required spaces required by code to minimize footprint.

[2]The 2012 *LID Technical Guidance Manual for Puget Sound* describes the techniques that can be incorporated into site design, depending on the density of the proposed development, to cluster impervious surfaces and conserve open space.

Standard U.1.4: Stormwater management planning results in clear benefits to water quality and flow control. Stormwater management planning generally follows a hierarchy that prioritizes total onsite treatment and infiltration as follows:

i. Total on-site treatment & infiltration with vegetated facilities, green roof and permeable pavements

ii. Total on-site infiltration with a combination of vegetated & pervious facilities (Level i) with outflow to subsurface infiltration facilities (i.e. drywell)

iii. Combination of on-site Infiltration (Level ii) and treatment/detention with vegetated facilities prior to outfall

iv. On-site treatment/detention use vegetated facilities, green roof, permeable paving (where no infiltration is feasible) prior to outfall

v. Combination of on-site treatment/detention using vegetated facilities with additional treatment/detention using filters/vaults

vi. Treatment using filters and detention using vaults (only after evaluation of Levels i through v, above)

Performance Requirements

i. Document evaluation of stormwater hierarchy Options i through vi.

ii. The project strives to treat and infiltrate stormwater on site. This is accomplished by low impact development design, using infiltration and reusing stormwater for non-potable uses (e.g., irrigation) to the greatest extent operationally feasible.

iii. Project runoff meets predevelopment surface water hydrology conditions (e.g., for peak flows, temp, volume and duration), to the greatest extent operationally feasible.[3]

iv. Existing drainage patterns (e.g., depressions, natural swales) are maintained to the greatest extent operationally feasible unless there are existing problems, such as flooding, channelization or improperly functioning stormwater infrastructure.

v. The project design minimizes contaminant loading of downstream receiving waters, especially for dissolved metals, sediment, nutrients and water temperature.

vi. Adequate provision during site planning has been made for low impact development techniques that intercept stormwater near the point of origin to minimize the need for centralized stormwater management facilities to the greatest extent operationally feasible.

[3]Predevelopment conditions can be defined as a naturally vegetated state, free from human disturbance. Predevelopment plant communities can be interpreted from historic records and other documentation.

Standard U.1.5: Parking and roadway design deliberately minimizes the footprint of impervious area and associated stormwater runoff.

Performance Requirements

i. Site designs minimize impervious surfaces where allowed by code and public safety is not compromised. Examples include reduction of parking space width, reduction of roadway widths, use of vegetated medians, shared driveways and specifying sidewalks on only one side of the street.

ii. Designs utilize permeable paving materials to the greatest extent operationally feasible.

iii. Roadbeds and utility lines are designed to avoid or limit impact on subsurface water flow.

iv. Stormwater runoff is managed per Standard U.1.7.

Standard U.1.6: Building design deliberately minimizes the footprint of impervious area and associated stormwater runoff.

Performance Requirements

i. Impervious rooftop areas and building footprints are minimized to the greatest extent operationally feasible.

ii. To the greatest extent operationally feasible, rooftop runoff is treated on site and dispersed or infiltrated rather than concentrated during treatment. Existing downspouts are disconnected and treated per Standard U.1.7 to the greatest extent operationally feasible.

iii. Building materials are selected to minimize pollutants in runoff. Uncoated galvanized metal roofs and/or downspouts may release metals that pose risks to fish and are expressly avoided.

iv. Stormwater runoff is managed per Standard U.1.7.

Standard U.1.7: Stormwater facility design results in water quality and flow control benefits that meet predevelopment hydrology planning goals established in U.1.4.

Performance Requirements

i. Stormwater facilities are designed with adequate bypass/overflow measures to avoid the risk of catastrophic failure during high flow events.[4]

ii. Stormwater management systems for roadway, parking lot and building runoff treat stormwater close to the source, and use dispersion and infiltration rather than flow concentration and retention/detention. Examples of system

components include rain gardens, vegetated swales; vegetated filter strips; infiltration trenches, roof rainwater collection cisterns and vegetated rooftops.

iii. To the extent that low-impact site design cannot prevent the generation of stormwater runoff containing pollutants, effective measures are used to reduce contaminants in stormwater discharging from a site by methods such as conventional infiltration, constructed wetlands, wet ponds, extended-detention basins, biofiltration swales and filter strips, and filtration by sand or other media.

iv. To the extent that low-impact site design alternatives cannot prevent the generation of peak flow rates and volumes of stormwater runoff greater than in an pre-developed condition, the project implements effective measures to slow runoff originating from all primary drainage areas on the project site through conventional infiltration, detention or other means.

v. For existing developments, an analysis is performed to identify and assess opportunities to retrofit existing stormwater drainage systems to manage runoff per the above performance requirements in U.1.7 and U.1.8 below. A report is submitted to Salmon-Safe within one year presenting a plan and schedule for implementing technically feasible retrofit projects.

Standard U.1.8: Stormwater facilities and infiltration features are fully integrated with habitat-based site features.

Performance Requirements

i. Stormwater facilities are planted with native and adapted vegetation adapted to the fluctuating water conditions characteristic of stormwater facilities.

ii. Stormwater facilities pose no fish trap hazard during normal or high flow conditions. Stormwater facilities are outfitted with screens to prevent fish from entering stormwater management facilities.

iii. Where consistent with the needs of local species, stormwater facilities incorporate habitat features such as logs, snags and varying pool depths, integrate with the surrounding habitat and vegetation, and support connectivity between nearby habitats.

iv. Significant open space that has been designed to manage stormwater is protected from future development by a perpetual conservation easement through an existing local agency or land trust, is protected by local buffer zoning regulations, or is owned and/or protected in perpetuity by the managing authority, as stipulated in development agreements or other

[4]General guidance for effective stormwater facility design may be found in the *Stormwater Management Manual for Western Washington*, or other similar documentation (Ecology, 2005).

binding documents. This includes existing locally significant patches of native vegetation inventoried in U.7.3 and identified in U.1.3 (i).

Standard U.1.9: Construction practices avoid or reduce short- and long-term negative stormwater impacts resulting from construction.

Performance Requirements

i. Construction practices eliminate stormwater runoff and sediment transport into surface waters during construction. A construction-phase stormwater management plan is used on site. See Appendix F *(Model Construction-Phase Stormwater Management Program)* for plan guidance.

ii. Vegetation disturbance, soil excavation and compaction are avoided or minimized to the greatest extent technically feasible during construction.

iii. LID facilities are fully protected from soil compaction and receiving sediment during construction.

Standard U.1.10: The appropriate managing authority within the development has adopted a long-term stormwater management plan as a concise written document to formalize the existing low impact development practices.

Performance Requirements

i. The plan provides a post-construction maintenance plan to ensure that installed low impact development stormwater control features are working as designed. The plan lists activities to perform, provides a schedule for activities, identifies visual and other indicators of performance problems, and identifies responsible parties. Adaptive management triggers actions that respond to changes in performance.

ii. The plan guides the design and construction of any future improvements, infill development, or new phases of development so that they comply with the Salmon-Safe Certification Standards defined in this document. The plan identifies areas with soils with high infiltration rates appropriate for future low impact development stormwater BMPs that should be protected to the greatest extent operationally feasible during construction of future improvements.

iii. The plan, as a whole, or its elements therein, have been adopted into the development's guiding documentation that formalizes the appropriate managing authority's responsibility to implement and enforce all aspects of the plan on both private property or common property managed for the public good.

U.2 Water Use Management

Traditional water demands associated with urban developments include use of potable water for irrigation, sinks and showers, and toilet flushing. Wastewater from sinks, laundry washing machines and showers is referred to as "graywater." If allowed by the local permitting agency and if the building is designed with appropriate safeguards, graywater can be reused for irrigation or toilet flushing. This can benefit salmonids and other species that rely on clean, abundant water in streams by reducing the amount of wastewater being discharged offsite.

Standard U.2.1: An existing site water infrastructure inventory as it relates to water use and disposal has been completed.

Performance Requirements

i. Availability of public water sources has been investigated to aid in avoiding the use of surface water rights, to the greatest extent operationally feasible. Information on existing sanitary/wastewater infrastructure, if any, has been collected from record drawings, site mapping, or field visits. E

ii. Local jurisdictional code as it relates to reuse of graywater and treated wastewater (black water) has been reviewed and documented, for reference during later stages of planning and design. E

Standard U.2.2: Surface water withdrawals are avoided and alternative water resources used, to the greatest extent operationally feasible. To the extent operationally feasible and as permissible by building codes and other regulations, reduction, reuse, treatment and recycling, and treatment and reclamation are incorporated into water use according to the following hierarchy:

(1) **Reduction**
Avoid water consumption and increase water conservation in site and building uses. Water-efficient plumbing and building components should be used in the design and construction of new or retrofitted structures (e.g. water-efficient toilets, faucets, laundry, showers and heating and cooling systems).

(2) **Reuse**
Capture, store and reuse 'clean' roof runoff without treatment for toilet flushing, irrigation and wash down.

(3) **Treatment and recycling**
Capture, store and reuse runoff and graywater for irrigation and toilet flushing after treatment.

(4) **Treatment and Reclamation**
Capture, store and reuse graywater and rainwater for potable uses after extensive treatment

(5) **Potable Use**
Use potable sources (only after evaluation on feasibility of options 1-4 above).

Performance Requirements

i. Document evaluation of each of the options in the water use management hierarchy.

Standard U.2.3: Opportunities for stormwater harvest, water reuse and wastewater reclamation under municipal code have been investigated during the site inventory and assessment and are employed to the greatest extent operationally feasible. **E**

Standard U.2.4: Sanitary systems connect to public infrastructure rather than onsite treatment and discharge to the greatest extent operationally feasible. Where onsite treatment is necessary, sanitary systems are sited outside of wetland and riparian buffers areas defined in U.7.4 and U.7.5, in such a way to avoid contaminant risk to surface water and groundwater resources. Sanitary systems are in full compliance with all standards applied to such systems by state and local jurisdictions. **E**

Standard U.2.5: Landscape vegetation has been selected and located appropriate to site conditions to limit water demand.

Performance Requirements

i. Drought-tolerant plants that require minimal (if any) irrigation are used in landscaping. Plants with high water demands have been avoided. Where suitable, drought-tolerant native vegetation is selected over non-native plants, especially near habitat buffers. No invasive species, as defined by local and state agency weed lists, are used.

ii. Open lawn is minimized to the greatest extent operationally feasible, or is composed of drought-tolerant alternative seed mixes.

iii. Construction details specify the use of suitable compost and mulch during installation to reduce irrigation requirements.

iv. For existing developments, an analysis is performed to identify and assess opportunities enhance or replace existing landscape vegetation per the above performance requirements in U.2.5. A report is submitted to Salmon-Safe within one year presenting a plan and schedule for implementing technically feasible enhancement or replacement projects.

Standard U.2.6: Water conservation practices are used during site maintenance. E

Performance Requirements

i. Modern drip irrigation, automated soil moisture sensors and other water-conserving techniques are part of the irrigation plan. Irrigation delivers water based on specific vegetation requirements, rate of infiltration, evapo-transpiration and other factors. Temporary irrigation systems are used for landscape vegetation that typically require water only during establishment periods.

ii. Stormwater reuse and gray water reuse systems, if compatible with code and regulatory requirements and investigated in Standard U.2.3, are used. Water may be reused within building water systems, irrigation or any water use that reduces consumption.

iii. For existing developments, an analysis is performed to identify and assess opportunities to retrofit existing water systems per the above performance requirements in U.2.6 (i-ii). A report is submitted to Salmon-Safe within one year presenting a plan and schedule for implementing technically feasible water conservation projects.

Standard U.2.7: Equipment cleaning occurs off site or sufficiently away from riparian and wetland resources or their buffers to avoid accidental runoff, contamination or other impacts on water and natural resources. E

Standard U.2.8: No surface water withdrawals are made in association with site construction activities.

Standard U.2.9: The appropriate managing authority within the development has adopted a water conservation plan as a short written document and formalizes the existing conservation practices, as detailed in Appendix G (Water Conservation Plan Guidance). E

Performance Requirements

i. The plan lists activities to perform, provides a schedule for activities and identifies responsible parties. Adaptive management triggers actions that respond to changes in performance. The water conservation plan shall include a drought management plan that details how significant reductions will be achieved during a drought.

ii. This plan as a whole, or its elements therein, have been adopted into the development's guiding documentation that formalizes the appropriate

managing authority's responsibility to implement and enforce all aspects of the plan on both private property or common property managed for the public good.

U.3 Erosion Prevention and Sediment Control

Poor construction practices that fail to adequately stabilize and protect soils can adversely impact salmonids and other species by exposing soils, subjecting them to erosion and allowing sediment to enter streams and other water bodies during storm events. Effective erosion prevention and sediment control relies on an understanding of sensitive areas within a site, e.g., unstable or highly erodible soils. Site planning and development should respond to existing terrain and soils and construction practices should integrate and maintain effective erosion and sediment control measures.

Standard U.3.1: Soil characteristics have been mapped. **E**

Performance Requirements

i. Soil characteristics to be mapped include but are not limited to soil types, presence of hydric soils, infiltration rates and erosion factors.[5]

ii. Unstable or highly erodible areas, as well as existing erosion and sedimentation problem areas, have been identified and mapped. These include existing slumps or failures, steep slopes and unstable soils.

iii. Any onsite soil tests or geotechnical bores have been made and are available to the project team early in the process.

Standard U.3.2: Site development responds to site conditions in a way that minimizes ground disturbance, erosion and sediment transport.

Performance Requirements

i. Site development responds to existing terrain to minimize excavation, grading and soil disturbance. Disturbed site locations are selected for development over undisturbed locations.

ii. Development on slopes, if any, is on soils and grades that are stable and will not pose long-term erosion or stability issues. Erosion prevention is emphasized over sediment control.

[5]This information is available in county soil inventories prepared by the Natural Resources Conservation Service (NRCS, formerly the Soil Conservation Service [SCS]).

iii. Utilities, including telephone lines, cable, water and sewage, are grouped to the greatest extent operationally feasible to minimize ground disturbance.

iv. Trail systems are sited sufficiently distant from riparian areas, wetlands and steep slopes such that they are not an obvious source of sediment, chemical pollution or bank instability.

Standard U.3.3: Soil is protected from erosion and generation of sediment that could enter surface water bodies.

Performance Requirements

i. Bare or exposed soils are temporary features only, to be vegetated with plant types consistent with Standard U.2.5. Erosion control blankets, mulch and/or tackifiers are used to prevent erosion. Erosion control seed mixes are composed of native species or other suitable species that contribute to soil stability and soil quality.

ii. Site improvements, including buildings, roads, bridges or other features are protected by BMPs as necessary to prevent erosion. Earthen trails, especially those in designated buffers, are protected by mulch, water bars, closures or other BMPs as necessary to prevent erosion.

iii. Permanent erosion control features, in the form of site grading, flow control and landscaping, are strategically placed to prevent turbid stormwater from leaving the site.

Standard U.3.4: Construction practices limit soil erosion and eliminate potential sediment inputs into surface waters to the greatest extent operationally feasible. Visible or measurable sediment or pollutants do not exit the site or enter the public right of way. Measures to prevent erosion and control sedimentation are installed according to plans, monitored and maintained regularly, and left in place until the site is stabilized. Please refer to Standard U.1.9 for additional guidance on meeting this standard. All new plans meet or exceed current state requirements for site pollution control during construction.

Standard U.3.5: Long-term erosion and sediment control provisions should be addressed in the plans required in Section U.7 (Riparian/Wetland/Vegetation Protection and Restoration) and in Section U.1 (Stormwater Management) by providing standards that protect soil from erosion and prevent transport of sediment into streams or offsite stormwater. E

U.4 Pesticide Reduction and Water Quality Protection

Certain pesticides are a serious threat to salmonids and other aquatic life, killing fish or causing sub-lethal impacts that stress juveniles, alter swimming ability and cause other behavioral changes that make salmonids more vulnerable to predation and otherwise reduce survival rate. Similar affects can result from other chemicals used for building construction or maintenance. Fecal coliform and bacteria associated with onsite sanitary systems or animals can introduce other water quality impacts that adversely affect salmonids and other species.

Standard U.4.1: High risk areas, where chemical use and storage should be avoided, have been identified and mapped (e.g., areas with surface water connection to stream, wetland or other sensitive water body; areas on steep slopes or unstable soils). Potential locations for temporary storage of chemicals during construction have been identified. E

Standard U.4.2: Areas identified for chemical storage during construction staging are mapped and located outside of high risk areas identified in U.4.1.

Standard U.4.3: Landscape plans require minimal chemical and nutrient use, if any. Areas that may require chemical use are planted outside of wetland and riparian buffer zones and are placed in such a way to minimize risk of chemicals leaving the site.

Standard U.4.4: Designated dog run or livestock areas are outside of required wetland and riparian buffers. Animal areas are located sufficiently away from aquatic zones. The site layout locates these areas to minimize the risk of animal waste leaving the site. Public education programs, signage and pickup stations promote proper waste disposal.

Standard U.4.5: Sanitary system designs connect to public infrastructure rather than onsite treatment and discharge to the greatest extent operationally feasible. Where on-site treatment is necessary, sanitary systems result in no impact to aquatic resources and buffers defined in U.7.4 and U.7.5 and avoid contaminant risk to surface water and groundwater resources. Sanitary systems are in full compliance with all standards applied to such systems by state and local jurisdictions. E

Standard U.4.6: Landscape vegetation includes either native plants or hardy non-native plants requiring minimal chemical application, if any.

Performance Requirements

i. Plants with known susceptibility to disease, or those that require high nutrient or chemical inputs to survive in existing soils, are avoided. No plants shall be used that require application of any chemical on Salmon-Safe's High Risk Pesticide List (Appendix E) unless written documentation is provided in advance to Salmon-Safe that demonstrates a clear need for use of the

pesticide, that no safer alternatives exist, and that the method of application (such as timing, location and amount used) does not represent a risk to water quality and fish habitat. Plants identified on local or regional invasive plant lists are not used.

ii. For existing developments, an analysis is performed to identify and assess opportunities to enhance or replace existing landscape vegetation per the above performance requirements in U.4.6 (i). A report is submitted to Salmon-Safe within one year presenting a plan and schedule for implementing technically feasible enhancement or replacement projects.

Standard U.4.7: The staging area for the project is located outside of any designated riparian, wetland, or other buffer for storage and maintenance of equipment, vehicles, chemicals, or other materials that could reasonably pose a risk to sensitive aquatic habitats.

Standard U.4.8: An equipment and vehicle cleaning, fueling and maintenance plan is used during construction to limit the import and export of invasive plant seeds, petroleum, or other toxic substances to and from the site. E

Standard U.4.9: Use of herbicides, pesticides, or other chemicals is expressly avoided to the greatest extent operationally feasible, especially within riparian and wetland buffer areas. E

Performance Requirements

i. Mechanical removal of invasive plants is chosen over chemical treatment to the greatest extent operationally feasible.

ii. No herbicides or pesticides listed in the *Salmon-Safe High Risk Pesticide List* (Appendix E) are used under any circumstance.

Standard U.4.10: The appropriate managing authority for the development shall prepare and implement an integrated pest management (IPM) plan and nutrient management plan consistent with Salmon-Safe standards as detailed in Appendix D *(IPM, Nutrient and Chemical Management Plan Guidance)*. E

Performance Requirements

i. The plans are prepared with the assistance of professionals with extensive expertise in preparing IPM plans and in managing landscapes using IPM practices.

ii. The plans as a whole, or their elements therein, have been adopted into the development's guiding documentation that formalizes the appropriate managing authority's responsibility to implement and enforce all aspects of the plans on both private property and common property managed for the public good.

iii. Contractor landscaping on publicly managed property, as well as any landscaping practices on privately managed property, shall be consistent with the IPM and nutrient management plans. Contractors must provide records and documentation to the homeowners association or other appropriate managing authority that their activities are consistent with the plans. The IPM record keeping system shall include notes on pest monitoring, all IPM methods used and evaluation of effectiveness. The managing authority shall ensure that property owner and contractor use of herbicides, pesticides or fertilizers is consistent with Salmon-Safe standards as defined in the plans.

U.5 Enhancement of Urban Ecological Function

Urban settings can host a surprising array of wildlife, including birds, bats and pollinators that can have ecological benefits far beyond the immediate site. Designing and developing urban sites to provide quality habitat, promote ecological corridors where feasible and protect wildlife helps to promote Salmon-Safe's overarching goal to improve ecological systems.

Standard U.5.1: Provide landscape scale mapping and analysis of habitat patches and corridors within the local region (sites, buildings, roofs, open space and site) as a tool for maximizing the connectivity between habitats at multiple sites and to larger core habitat zones beyond the immediate project area. E

Standard U.5.2: Conduct a survey of existing species of birds, mammals, insects and invertebrate composition within the region and onsite to aid in setting goals for successful establishment (e.g., types, numbers, distribution) of key indicator species E

Standard U.5.3: Work with local jurisdictions and other property owners in the region to create synergies with adjacent properties to provide larger parcels (two or more buildings with similar habitat functions adjacent) or corridors (more expansive and connected terrestrial and canopy coverage in right-of-way and through sites). E

Standard U.5.4: Using the analysis conducted in the previous standards, develop site strategies for creation and retention of habitat and landscape patches that provide for food, forage and refuge for a diversity of species, including key indicators of ecosystem health. Such strategies could include:

Performance Requirements

i. Creation of pollinator pathways of vegetation along roadways and through sites to attract bees, butterflies and other species of interest.

ii. Usage of street tree, shrub and groundcover species that provide biological diversity and consistent food, forage and refuge for a range of urban species.

iii. Extension of street planters and larger bulb-outs at corners to maximize street landscape coverage and diversity and incorporation of stormwater facilities to provide intermittent water, mud and nesting materials.

iv. Reduction of turf areas and strategic integration of large patches of green roof with specific habitat elements into designs, such as woody debris, gravel/cobble and other elements typically not found in urban settings.

Standard U.5.5: Ensure that building materials, lighting and facades do not endanger or pose a threat to wildlife. Use netting or screening to reflect glare on windows and prevent bird kills. Consider various types of living walls and infrastructure that increase the habitat value of the site. Hazardous or toxic building and landscape materials that pose a threat to wildlife should be avoided.

Standard U.5.6: Improve the existing environmental condition of sites prior to and during construction through restoration and retrofitting. Look at opportunities for temporary improvements to vacant or underutilized sites with low-cost plantings that have the potential to provide habitat value.

Standard U.5.7: Utilize maintenance strategies that maximize the conservation of beneficial species, reduce intrusion of invasive species and provide beneficial habitat elements of food, forage and refuge. E

Performance Requirements

i. Include such activities as leaving some vegetation over winter rather than cutting back, reducing pruning and allowing plantings to provide dense refuge.

ii. Use appropriate composts to amend soils, maintain healthy vegetation and support beneficial soil microorganisms.

Context-Dependent Urban Certification Standards

The following sections include additional sections that are atypical for dense urban conditions, but could be present in some cases. These should be included in certification documentation as required by the presence on-site of streams, wetlands, riparian habitat or other ecological systems as noted. Standards that apply to sites where wetlands are present are designated with W, while projects with streams present are indicated with S. Full documentation will be required for certification where resources are present.

U.6 Instream Habitat Protection and Restoration

Standard U.6.1: S A physical instream inventory has been completed that adequately characterizes factors contributing to habitat quality conditions for salmonids and other sensitive species. E

Performance Requirements

i. To understand the project's potential impacts and benefits to salmonids, the position of the site within the watershed is documented and has been mapped.

ii. Existing watershed-specific restoration or recovery plans and local salmonid recovery programs have been investigated via an expert interview or review of planning documents. Opportunities to incorporate objectives of these plans and programs into development planning decisions have been identified.

iii. Physical and biotic watershed conditions have been investigated using available data, existing information sources and/or expert interviews. Physical and chemical impairments to water quality within the system have been noted, if known, including 303(d) lists or designated total maximum daily loads (TMDLs). Biological impairments such as non-native fish have been noted, if known.

iv. Onsite stream channel deficiencies have been identified. Bank stability and channel incision have been characterized across the site. Onsite 100-year floodplain and channel migration zones have been mapped.

v. Onsite stream crossings have been inventoried and evaluated to determine priorities for fish and wildlife passage and flood conveyance.

Standard U.6.2: S A biological instream inventory has been completed that characterizes riparian and aquatic habitat conditions on site and investigates the likelihood that fish may be able to access the site and characterizes aquatic habitat conditions. E

Performance Requirements

i. Data on current or potential fish presence within the watershed system have been reviewed (if available). Based on available data, stream types in the system have been classified as either: (1) fish bearing, (2) potentially fish-bearing, (3) non-fishbearing with a defined channel connected to a fish-bearing or potential fish-bearing stream, or (4) none of the above. If no fish are currently present, historic fish presence/absence in the system has been estimated using available data and information sources.

ii. Presence or absence of fish on site has been documented either via fish surveys, use of available data or regulatory habitat designation or based on expert interviews.

iii. For onsite streams and rivers classified in U.6.2 as either (1) fish bearing, (2) potentially fish-bearing, or (3) non-fishbearing with a defined channel connected to a fish-bearing or potentially fish-bearing stream, significant aquatic habitat features (riffles, pools, runs, large wood, etc.) are identified and mapped within the parcel.

Standard U.6.3: S The site plan details locations for instream enhancement, barrier removal or other rehabilitation based on the results of the site inventory (per Standard U.6.1). E

Standard U.6.4: S The site plan avoids impacts to instream areas identified in the inventory to the greatest extent operationally feasible during development.

Performance Requirements

i. Buildings and other site improvements, included areas of compacted fill, are placed outside the floodplain and channel migration zone.

ii. Utility lines on stream crossings are placed on bridge crossings in serviceable locations, rather than buried.

Standard U.6.5: S When avoidance is not possible, the site plan minimizes impacts on instream habitat.

Performance Requirements

i. At a minimum, the site plan protects existing channels from new impacts such as filling and excavation, straightening, unnecessary additional stream crossings, unnecessary removal of wood or disconnection of off-channel wetlands and ponds.

ii. The number of stream crossings has been reduced (where existing crossings are present) or minimized (when new crossings are needed). Placement of crossings is accompanied by rehabilitation of riparian habitat and reduction of water quality impacts where applicable.

Standard U.6.6: S Where impacts on streams are unavoidable, impacts are mitigated by site improvements that offset physical and biological impacts on streams to the greatest extent operationally feasible.

Standard U.6.7: S Overall, stream bank conditions are acceptable on site. Key deficiencies identified in Performance Requirement U.6.1 (iii) have been addressed and resolved. E

Performance Requirements

i. Incised or eroded stream banks have been stabilized using bioengineering methods to the greatest extent operationally feasible.

ii. Where geomorphologically appropriate, stream banks are stabilized by native vegetation where suitable and beneficial.

iii. Channel manipulation for reasons other than habitat restoration is avoided to the greatest extent operationally feasible. If channel manipulation is absolutely required and all other feasible alternatives have been exhausted, bioengineered solutions for bank stabilization/habitat enhancement are chosen over "harder" solutions such as retaining walls, riprap or gabion revetments. Excepted forms of manipulation are those explicitly undertaken to meet specific habitat restoration objectives, e.g. floodplain storage enhancement, historic floodplain restoration, channel complexity and realignment activities to restore overall stream health.

Standard U.6.8: S Overall, channel and instream habitat is functioning on the property. Key deficiencies identified in Performance Requirement U.6.1 (iii) have been addressed and resolved. E

Performance Requirements

i. The stream has an intact channel and floodplain, existing off-channel habitats remain connected and no large wood has been unnecessarily removed.

ii. When geomorphically appropriate, habitat improvement projects specify the use of large woody debris that has been salvaged from the site or has been harvested sustainably from an offsite location.

iii. Habitat improvement projects incorporate large wood and rock features in a geomorphically appropriate manner in accordance with natural and historical conditions.

Standard U.6.9: S Key issues with regard to barriers and man-made features identified in Standard U.6.1 have been addressed and resolved. E

Performance Requirements

i. Unnatural barriers to fish and wildlife, water, sediment and large woody debris movement have been removed or plans are in place for removal.

ii. Existing levees have been removed/moved, floodplains restored to the greatest extent operationally feasible, and no new levees are proposed.

iii. Artificial ponds located in stream channels are either removed or are reconstructed as needed to provide adequate fish passage and habitat and to maintain stream temperatures and oxygen levels within applicable state water quality standards.

iv. Stream crossings avoid obstructions and encumbrances to fish, wildlife, large wood and sediment passage to the greatest extent operationally feasible.[6]

Standard U.6.10: S Fish and wildlife exclusion/protection measures are in place during construction near water bodies. For work below the ordinary high water line where fish may be harmed or entrapped during construction, work area isolation barriers such as cofferdams, silt curtains or other devices are used at all times and Applicant has coordinated with agencies to perform in-water work only when permitted. During in-water construction, a fisheries biologist or other qualified specialist is available on site in the event of accidental fish entrapment.

Standard U.6.11: S If instream habitat features have been installed, the appropriate managing authority within the development has adopted a post-construction inspection and maintenance plan (O&M) to ensure that instream habitat features are working as designed.

Performance Requirements

i. The plan lists activities to perform, provides a schedule for completion and identifies responsible parties. Adaptive management triggers actions that respond to changes in performance.

ii. This plan, as a whole, or its elements therein, have been adopted into the development's guiding documentation that formalizes the appropriate managing authority's responsibility to implement and enforce all aspects of the plan on both private property or common property managed for the public good.

U.7 Riparian/Wetland/Vegetation Protection and Restoration

Standard U.7.1: S A riparian inventory has been conducted by a biologist, ecologist, wetland scientist or other qualified professional that characterizes riparian habitat conditions on site. E

Performance Requirements

i. Local and watershed riparian habitat extent, quality and conditions have been characterized by species composition and estimated percent cover in the tree canopy, shrub layer and herbaceous layer, especially in areas adjacent to, immediately upstream or immediately downstream of the site.

ii. All onsite riparian areas are identified, mapped and described by width of existing buffer and stream length of riparian vegetation free from intrusions from roads, utilities and other clearings (i.e., riparian continuity). Particular note has been made of presence and extent of invasive plant populations. Damaged, exposed or at-risk areas, as well as locations of invasive species, have been identified and mapped to identify degraded riparian areas in need of restoration.

iii. Typical local terrestrial riparian species (vegetation, birds, mammals, reptiles and amphibians) have been characterized via interviews with local experts, review of relevant documents, or other methods.

iv. A site inventory of common local terrestrial riparian species (vegetation, birds, mammals, reptiles and amphibians), game trails or other signs of use by wildlife has been conducted at least once during the breeding or growing season to determine or estimate presence/absence of species on site. Locations identified in the survey that likely provide significant habitat value and/or may harbor sensitive species that may be impacted by nearby construction disturbance, particularly during the breeding/nesting season, have been mapped.

[6]WDFW (2003).

Standard U.7.2: W A wetland inventory has been conducted by a wetland scientist or other qualified professional that adequately characterizes wetland habitat conditions on site and in the local geographical area. Existing onsite wetlands are identified, classified and mapped. Classification of existing wetlands includes types of impacts and whether the wetland historically or currently provides fish habitat. E

Performance Requirements

i. Local and watershed wetland habitats have been characterized by type, quality and condition, especially in those areas adjacent, immediately upstream or immediately downstream of the site.

ii. All onsite wetland areas are identified, mapped and described by wetland type and condition. Conditions within 100 feet of the wetland are characterized by vegetative composition, land use characteristics and topography.

iii. Wetland hydroperiods have been estimated and hydrologic pathways have been determined to the greatest extent operationally feasible. Existing wetland functions and deficits have been characterized. Damaged, exposed or at-risk areas have been identified and mapped to identify degraded wetland areas in need of restoration.

iv. Typical local wetland species (vegetation, birds, mammals, reptiles and amphibians) have been characterized via interviews with local experts, review of relevant documents or other methods.

v. A site inventory and/or survey has been conducted at least once during the breeding or growing season to characterize the presence/absence of common wetland species (vegetation, birds, mammals, reptiles and amphibians), game trails, or other signs of use by wildlife. Locations identified in the survey that provide significant habitat value and/or may harbor sensitive species that may be impacted by nearby construction disturbance, particularly during the breeding/nesting season, have been mapped.

Standard U.7.3: S W Patches of locally significant vegetation and sensitive habitats that are not associated with riparian and wetland areas have been inventoried and mapped by a qualified biologist or in consultation with a local or state fish and wildlife agency. Tree species, diameter at breast height distribution, canopy cover, understory conditions and limits of contiguous canopy cover are noted.[7] E

Standard U.7.4: S W Riparian habitat across the site is maintained, restored and unimpeded by structures or improvements and is contiguously connected to riparian habitat in adjoining parcels. E

Performance Requirements

i. Development near riparian areas is avoided to the greatest extent operationally feasible. Specifically, for streams identified in Standard U.6.2 as either (1) fish bearing, (2) potentially fish-bearing or (3) non-fishbearing with a defined channel connected to a fish-bearing or potential fish-bearing stream, impacts on riparian functions affecting water quality, water quantity, floodplain condition, stream shading and contiguous riparian canopy connectivity shall be minimized within 200 feet of a stream or river channel migration zone or within the riparian protection areas cited in adopted local, regional or state plans, whichever distance is larger. If 100 percent avoidance of impacts to these riparian functions is not possible, the effect on riparian buffers is minimized and mitigated to offset the functional impacts.

ii. Degraded riparian areas identified in U.7.1 in need of restoration are restored by revegetation, removal of existing structures or impervious surfaces or other methods.

iii. Connectivity between riparian, wetland and upland habitats is maximized to the greatest extent operationally feasible. Life histories of identified local species are maintained by connecting riparian, wetland and upland habitats in a manner that supports habitat needs. Impediments to habitat connectivity, including fencing, buildings, or other barriers, are avoided.[8]

iv. 100-year floodplain areas are avoided and not filled to the greatest extent operationally feasible. If impacts are unavoidable, floodplain volume mitigation requirements are met onsite. Consideration is made for providing additional floodplain storage should there be room available on site.

Standard U.7.5: W Impacts to wetlands are avoided to the greatest extent feasible. If wetland impacts cannot be avoided, they are, in order of preference, protected, restored or recreated. The site plan strives to provide off-channel salmonid habitat, improved water quality, additional floodplain storage and/or other habitat benefits associated with proper wetland function. E

Performance Requirements

i. Degraded wetlands identified during Standard U.7.2 are restored, or new wetlands created to improve floodplain habitat, off-channel habitat and/or other wetland functions (e.g., habitat quality or water storage and infiltration), to the greatest extent operationally feasible.

ii. Existing wetlands are avoided and protected from development or site improvements, to the greatest extent operationally feasible. If 100 percent avoidance is impossible, wetland loss is mitigated on site to the greatest extent operationally feasible in a way that contributes to overall site ecological and hydrological functions.

iii. Development near wetlands is avoided to the greatest extent operationally feasible. Specifically, impacts on wetland functions affecting water quality, water quantity, floodplain condition and contiguous habitat connectivity shall be minimized within 100 feet of a wetland, or within the buffer protection areas cited in adopted local, regional or state plans, whichever distance is larger. If 100 percent avoidance of impacts to these wetland functions is not possible, the effect on wetlands and wetland buffers is minimized and mitigated to offset functional impacts.

iv. Where existing wetland buffers are degraded, buffers are restored by revegetation or removal of existing detrimental structures or impervious surfaces. Buffers are managed to respond to needs of known local wetland fauna that require accessible adjacent or nearby upland habitat during their life histories.[9]

v. Wetland habitats and their buffers are spatially connected by locally appropriate, contiguous native vegetation, to the greatest extent operationally feasible. These areas are also connected to other natural areas as part of a landscape-scale, conservation framework.[10]

Standard U.7.6: S Riparian zones and their buffers specified in Performance Requirement U.7.4 (i) are operating in a properly functioning condition.

Performance Requirements

i. Riparian zones are dominated by native vegetation that provide riparian functions of bank stability and shade. Invasive vegetation within the riparian area has been removed and replaced with native plantings.

ii. Riparian buffers adequately infiltrate and/or filter site sheet flow runoff in consideration of steepness, substrate and degree of vegetation. Riparian plantings can assist in meeting this requirement.

iii. Riparian buffers are protected in perpetuity by conservation easements through an existing local agency or land trust, are protected by local buffer zoning regulations or are owned and/or protected in perpetuity by the managing authority, as stipulated in the developments binding documents.

Standard U.7.7: W Wetlands and their buffers specified in Performance Requirement U.7.5 (iii) are operating in a properly functioning condition. E

[7]Work with a qualified biologist or a local or state fish and wildlife agency to identify locally significant vegetation or habitat types.

[8]Work with a qualified biologist or a local or state fish and wildlife agency to identify significant local species and their habitat requirements.

Performance Requirements

i. Wetlands are geomorphically and hydrologically similar to natural, well-functioning reference wetlands of similar types in the vicinity. Site and reference wetlands are similar in topography, pool and channel patterns, vegetation zones, depths of various zones, edge length to area ratio and other physical factors. Hydrologically, site and reference wetlands are similar in wetland hydroperiod (depth, frequency and duration of inundation).

ii. Wetland habitats are dominated by native vegetation that provides wetland functions of bank stability, infiltration, nutrient absorption and habitat value for wildlife. Wetland types, whether emergent, scrub-shrub or forested, are characteristic of existing local wetland types identified and consistent with habitat needs for known local wetland species identified in Standard U.7.2. Invasive vegetation within the wetland area has been removed and replaced with native plantings.

iii. Wetland buffers are designed to adequately infiltrate and/or filter site sheet flow based on steepness, substrate and degree of vegetation coverage. Buffer types and vegetation are consistent with the habitat needs of known local wetland species identified in Standard U.7.2.

iv. Wetlands, their buffers and connecting habitats are protected in perpetuity by conservation easements through an existing local agency or land trust are protected by local buffer zoning regulations or are owned and/or protected in perpetuity by the managing authority, as stipulated in the developments binding documents.

Standard U.7.8: S W Sensitive natural resources are protected during construction.

Performance Requirements

i. Intensive construction activities with the potential to disturb sensitive wildlife occur outside the height of the terrestrial breeding season (typically May through July) to the greatest extent operationally feasible. This applies in particular to construction in or near locally significant habitats, known nesting locations and designated surface water buffer zones.

ii. A tree protection plan has been developed with the aid of a certified arborist for use during construction. In addition to site-specific tree protection provisions, this plan should adhere to the following requirements:

[9]Work with a qualified biologist or local or state fish and wildlife agency to identify needs of known local wetland species.

[10]Work with a qualified biologist or local or state fish and wildlife agency to identify local wildlife corridors.

- Project work limits are clearly defined by a temporary construction fence, to protect tree drip lines and vegetation not-to-be disturbed.
- Riparian areas, wetland areas, identified locally significant vegetation, and their corresponding buffers are marked and protected from construction encroachment through the use of construction fence and signage.
- Pre-construction meetings are held on-site so that contractors understand project work limits and other construction restrictions.
- Where necessary, disturbed native plants, woody substrate and soils are salvaged and reused on site to the greatest extent operationally feasible.

Standard U.7.9: S W The appropriate managing authority within the development has adopted a post-construction inspection and maintenance plan to ensure that riparian and wetland features are in a properly functioning condition and invasive species are controlled. E

Performance Requirements

i. The plan lists activities to perform, provides an activity schedule and identifies responsible parties. Adaptive management triggers actions that respond to changes in performance.

ii. The plan as a whole, or its elements therein, have been adopted into the development's agreements or other guiding documentation that formalizes the appropriate managing authority's responsibility to implement and enforce all aspects of the plan on both private property or common property managed for the public good.

Summary of Applicable Standards by Project Phase

The following table is provided as a reference to better align the activities associated with each applicable Salmon-Safe Standards to when their relevant Phases in the development process. Each project will differ in scope and phasing and project teams should be familiar with all elements in order to be proactive in addressing each requirement (i.e. thinking about construction and maintenance issues during planning and design phases).

#	Salmon-Safe Standards	Project Phase				
		Site Inventory and Assessment	Site Planning	Site Design	Site Construction	Site Maintenance and Monitoring
Core Standards						
U.1	Stormwater Management	1.1 1.2	1.3 1.4	1.5 1.6 1.7 1.8	1.9	1.10
U.2	Water Use Management	2.1	2.2 2.3 2.4	2.5 2.6	2.7 2.8	2.9
U.3	Erosion Prevention and Sediment Control	3.1	3.2	3.3	3.4	3.5
U.4	Chemical and Pesticide Reduction and Water Quality Protection	4.1	4.2 4.3	4.4 4.5	4.6 4.7 4.8	4.9
U.5	Enhancement of Urban Ecological Function	5.1 5.2	5.3	5.4 5.5	5.6	5.7
Context Dependent Standards						
U.6	*Instream habitation protection and restoration*	*6.1* *6.2*	*6.3* *6.4* *6.5* *6.6*	*6.7* *6.8* *6.9*	*6.10*	*6.11*
U.7	*Riparian, wetland and locally significant vegetation protection and restoration*	*7.1* *7.2* *7.3*	*7.4* *7.5*	*7.6* *7.7*	*7.8*	*7.9*

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Ecology. 2012. *Stormwater Management Manual for Western Washington.* Washington State Department of Ecology. Available for download from agency website: *http://www.ecy.wa.gov/programs/wq/stormwater/index.html*

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Salmon-Safe. 2005. *Salmon-Safe Certification Standards for Corporate and University Campuses, Draft 3.1.* Prepared by Peter Bahls, Northwest Watershed Institute and Dan Kent, Salmon-Safe Inc.

Salmon-Safe. 2007. *Report of the Evaluation Team Regarding Salmon-Safe Assessment of the South Waterfront Central District, Portland, Oregon.* Salmon-Safe Inc.

WDFW. 2003. *Design of Road Culverts for Fish Passage. Washington Department of Fish and Wildlife.* Available for download from agency website: *http://wdfw.wa.gov/hab/engineer/cm/*

Glossary

303(d) List. Under the Clean Water Act (CWA), the 303(d) list is the list of waters (streams and lakes) identified as impaired for one or more pollutants and that do not meet one or more water quality standards. The CWA is administered by the U.S. Environmental Protection Agency, with authority often designated to a state agency for local implementation. In Oregon, the 303(d) list is maintained by the Oregon Department of Environmental Quality (Oregon DEQ). In Washington, the 303(d) list is maintained by the Washington Department of Ecology (Ecology).

Bankfull width. The average width of the stream when the flow is at the ordinary high water mark, generally considered the two year flow event and measured in the field as the stream channel below the line of perennial vegetation.

Best management practices, or BMPs. Schedules of activities, prohibitions of practices, maintenance procedures and structural or management measures that prevent or reduce the release of pollutants and other adverse impacts on the environment.

Bioretention. Bioretention facilities are vegetated depressions that provide stormwater treatment during the capture and infiltration of water runoff through a biofiltration soil medium. Runoff treatment is provided through physical, chemical and biological treatment processes as water comes into contact with soil, vegetation and media.

Brownfield. An urban site that has been previously developed.

Campus. A corporate or university campus consists of buildings in close proximity to each other with centralized support, amenities and other internal functions.

Certification standards. A set of specific guidelines or BMPs developed by Salmon-Safe for site developers, site designers and land managers with an interest in the development of urban sites in a manner that protects imperiled salmonid species and other associated aquatic and terrestrial habitat elements.

Developed campus land. Campus land that comprises part or all of a defined campus and is managed for moderate or intensive human uses, such as parking lots, sidewalks, sport fields, turf or gardens.

Development stage. In the context of these Certification Standards, five stages have been defined corresponding to the typical stages of the design and construction of an urban development project: (1) Project inventory and assessment; (2) Site planning; (3) Site design; (4) Site construction; and (5) Site maintenance and monitoring.

Evaluation team. Urban development assessments are conducted by a team of two or three qualified, independent experts hired by Salmon-Safe. The Evaluation Team is well versed in aquatic ecological science, development planning and design, as well as landscape management.

Existing developments. Existing Developments are those developments that have been already been constructed prior to evaluation for certification as a Salmon-Safe Certified urban development.

Fish-bearing stream. A stream that is known to provide habitat for fish during at least some portion of the year. Fish-bearing includes all species of fish to ensure that potential salmonid streams are not excluded because of current degraded conditions.

Green roof. A low-impact development stormwater technique consisting of soil media and vegetation that reduces impervious area associated with traditional roofing materials and promotes retention, evapotranspiration and treatment of rainwater on the vegetated roof surface.

Greenfield. A site that has not been developed previously.

Infrastructure. Constructed portions of a campus, such as roads, drainage structures, road crossings of streams, and parking lots. For certification purposes, infrastructure does not include buildings.

Landscape design. The established landscaping features of a developed campus, such as areas of mowed turf grass, buffers along watercourses, areas of trees and shrubs. These areas are intermediate in campus management influence, between day to day best management practices and infrastructure.

Large woody debris (LWD). Wood that is naturally occurring or artificially placed in streams. LWD is essential to a healthy stream because it provides habitat diversity and protects against flooding. Many streams negatively affected by human use lack a necessary amount of LWD.

LEED. Leadership in Energy and Environmental Design. A green building rating system established by the United States Green Building Council (USGBC).

Low impact development. A stormwater management approach that seeks to mitigate the impacts of increased runoff and stormwater pollution using a set of planning, design and construction approaches and stormwater management practices that promote the use of natural systems for infiltration, evapotranspiration and reuse of rainwater and can occur at a wide range of landscape scales.

Management category. In the context of these Certification Standards, six primary management categories have been defined to express the desired outcome of habitat conditions in a given project area:

(1) Instream habitat protection and restoration;
(2) Riparian, wetland and locally significant vegetation protection and restoration;
(3) Stormwater management;
(4) Water use management (irrigation activities);

(5) Erosion prevention and sediment control; and
(6) Chemical and nutrient containment.

National Wetlands Inventory (NWI). A nationwide inventory and mapping database of wetland habitat maintained by the U.S. Fish and Wildlife Service.

Natural area campus land. Campus land that comprises part or all of a defined campus and is managed to protect and restore native vegetation and species or is in a de facto natural area status because it has not been designated for other uses.

New development. In the context of these Certification Standards, new development refers to newly planned and unbuilt urban developments that are anticipated but that have not been constructed.

Performance requirement. Specific, measurable criteria that represent the desired outcome for habitat conditions associated with a project. Performance requirements are a subset of their broader Certification Standards.

Permeable pavement. Permeable pavement is a walking or driving surface constructed of open-graded asphalt, porous concrete or pavers that allow rainfall to percolate into the underlying soil or aggregate storage reservoir beneath the pavement.

Pesticide. A general term for any substance used to control pests including weeds, insects, disease organisms, rodents and burrowing mammals. Pesticides include insecticides, herbicides, fungicides and other natural or synthetic substances used to kill pests.

Planter. A planter is a vegetated reservoir with structural walls that treat stormwater through processes similar to those of bioretention. A flow-through planter is lined to prevent infiltration of stormwater due to unsuitable soils or other site constraints.

Potential fish-bearing stream. A stream that either historically provided habitat, or could with adequate restoration, potentially provide habitat for fish, including salmonids.

Review phase. Salmon-Safe offers three opportunities for collaboration throughout the project planning and construction process, as defined by the following review phases:

(1) Review Phase 1: Site Assessment and Planning Review;
(2) Review Phase 2: Review of Approved Plan Submittal; and
(3) Review Phase 3: Salmon-Safe Certification of Constructed Urban Development.

Riparian habitat. Characterized by vegetated areas along bodies of surface water, including streams, wetlands and lakes. Typically, riparian habitats are distinct from upland areas, demonstrating an obvious difference in vegetation types, density and structure.

Salmon-Safe. Salmon-Safe is an independent, nonprofit organization devoted to restoring agricultural and urban watersheds so that salmon can spawn and thrive. Founded as a

project of the Pacific Rivers Council, Salmon-Safe became an independent organization in 2002 and is based in Portland, Oregon.

Sustainable Sites Initiative. The sustainable sites initiative is a certification program that requires new or redevelopment to evaluate their site in terms of ecosystem services and do the maximum amount feasible to support and regenerate those services.

TMDL (Total Maximum Daily Load). A calculation of the maximum amount of a pollutant that a water body can receive and still meet water quality standards and an allocation of that amount to the pollutant's sources.

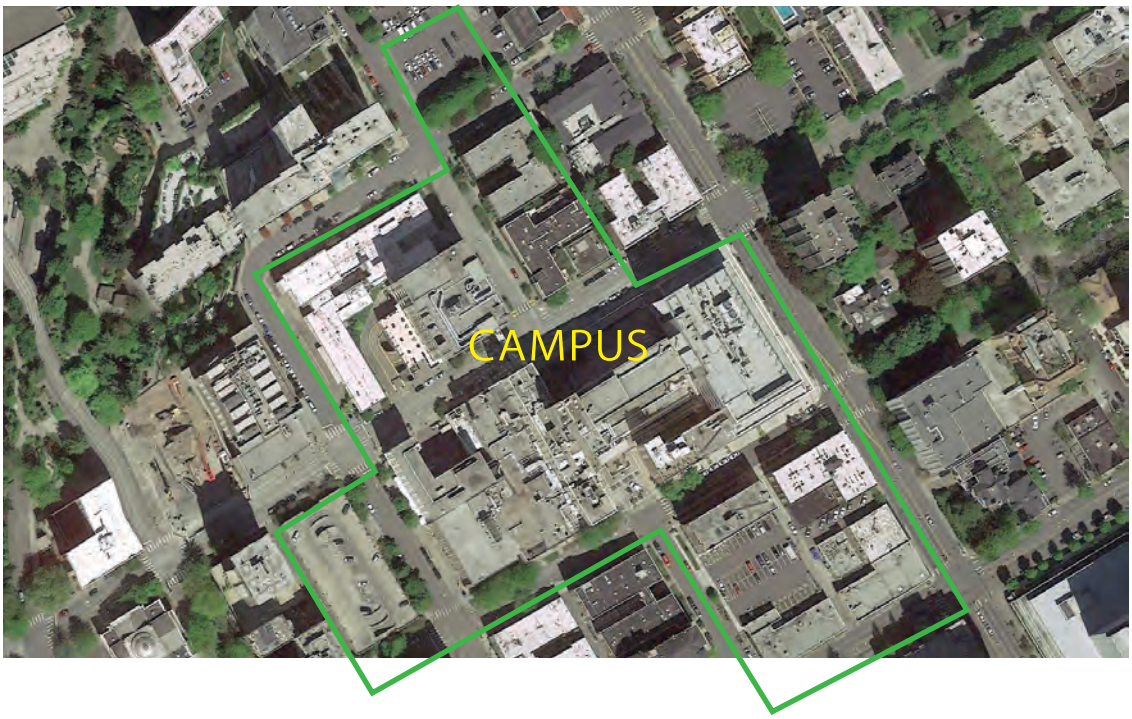
Waterway buffer. A corridor of land of a specified width adjacent to the stream or wetland edge in which there are special management restrictions to protect and restore aquatic habitats.

Wetlands. Areas that are inundated or saturated by ground or surface water at a frequency and duration sufficient to support hydric soils and vegetation typically adapted for life in hydric soil conditions. Wetlands are regulated at the federal, state and local levels.

APPENDIX A: Campus and Portfolio Approach for Certification of Multiple Sites

Developers and owners of campuses and multiple properties can exert additional control over strategies for future developments beyond the individual site scale. Interconnected urban projects may provide one another mutual benefits in a way that individual projects cannot, and thus offer additional pathways that continue existing Salmon-Safe Certification (Campus) as well as expanding the interconnections between adjacent individual project sites (Portfolio). Rather than every project having to meet every goal, there are opportunities during the certification process to acknowledge the unique characteristics of each project, while maintaining the maximum overall district-wide benefits.

This campus and portfolio-wide commitment represents a new approach for Salmon-Safe certification in highly urbanized environments and offers, in addition to improvements to aquatic habitat, the ability to promote broader, non-aquatic ecological functions important for urban wildlife such as birds, bats and pollinators. Even small patches of urban habitat can aid in species movement and provide temporary refuges for urban wildlife, while also benefitting district residents through access to nature and additional amenity zones.



Option 1: Campus Approach This approach provides a certification pathways for a campus or district scale, where one entity owns and operates an aggregation of elements adjacent to each other sharing a common use, such as a college, hospital or corporate

campus. In this case, the boundary surrounds the entirety of the campus and metrics are included as a cumulative total rather than as a collection of sites. The shared ownership and usage results in opportunities for district-wide solutions, such as water reclamation, local waste treatment and district energy. The shared ownership offers maintenance continuity for IPM programs, or campus-wide irrigation controls, as well as connected habitat patches to increase urban ecological continuity and connectivity. In some cases, private streets and alleys can be included within the parcel.

Option 2: Portfolio Approach The second approach groups together individual sites that are located on separate parcels and that do not share a common use. This may be a multiple-block development happening concurrently, or projects developed within

a community over time and added as they are completed. In these cases, the individual sites can be certified as a group, with individual buildings documented and assessed as a group. While each building may be separate, the accumulation of multiple sites developed and certified allows for many of the same district opportunities for stormwater management (through a regional facility), water reuse (through a common storage location) and other opportunities (such as green roofs with habitat plantings providing stepping stones for birds and insects)

This approach is more appropriate as different sites may offer different types of opportunities and constraints, such as an office building not generating as much graywater, which would be supplemented by an adjacent residential or mixed use building. Another opportunity is a building where rainwater reuse within that building is not permitted, such as a healthcare facility providing water for reuse in an adjacent office building.

In all cases there is flexibility by the Evaluation Team, owners and designers in determining appropriate pathway for these different boundary approaches. Additional factors (extent of boundary, inclusion of rights-of-way, level of compliance for individual buildings versus sum of all sites in total) will be at the discretion of the team.

There are multiple potential scenarios to explore boundary options that maximize campus and district-level opportunities that may not exist on a single site. These approaches also provide additional opportunities for Salmon-Safe Developer Certification, which could provide streamlined certification of projects based on prequalification. Contact Salmon-Safe staff for more information on these approaches.

APPENDIX B: Required Documentation For Urban Development Certification

REVIEW PHASE 1 > Submittals—Site Assessment and Planning Review

Documentation for Review Phase 1 consists of conceptual plans and a report summarizing the results of the site inventory and assessment. Note that the report may consist primarily of maps, tables and figures, with explanatory text provided only as needed. Possible items to be covered in the report are listed below. Based on the size of the proposed development and whether it qualifies as a Large Development as defined in the main Certifications Standards document, all of these submittals may not be required for smaller developments. See the Certification Standards for additional information.

i. **Developed site conditions** Provide a table summarizing areas of impervious area, landscaped area and undisturbed natural areas. This may be based on a survey, site visit, or visual inspection of aerial photographs, depending on the scale of the site. Differentiate between "pollutant-generating" impervious surfaces (roads, parking areas and other areas subject to vehicular traffic) and impervious sidewalks or bike lanes. Provide estimates of existing roof areas and document the roof material.

ii. **Identify existing infrastructure (sanitary, storm, water)** Identify any special stormwater mitigation projects that have been completed in the 5 years preceding the initiation of certification evaluation, such as reduction in pavement, detention ponds, or biofiltration swales.

iii. **Site soils and drainage** Map soil types, stability and hydraulic properties (identify areas of high infiltration capacity soils). Document depth to groundwater.

iv. **Water quality** Map any contaminated soils on site.

If streams, wetlands and riparian habitat areas area present on site:

v. **Information on stream channels (if applicable)**:

- Watershed map including any stream channels on the site.
- Inventory and mapping of fish species distribution (existing and potential distribution of native salmonid species).
- Classification of stream channel types. At a minimum, these stream channel types shall include: (1) fish-bearing, (2) potential fish-bearing and (3) non-fishbearing, but greater than two feet in bankfull width and connected to a fish-bearing stream.

- Assessment of channel condition. The assessment shall include a summary of existing habitat impacts by general type, such as locations of channelized streams, severely eroding or unstable banks, and other parameters. Include a map of the 100-year floodplain and document the source or method of determination.
- Stream crossings. Map and evaluate stream crossings to determine the need for fish passage and flood conveyance. Conduct a field investigation to assess whether crossings are complete or partial barriers to fish passage.

vi. **Describe the condition of riparian zones of all stream types listed above (if applicable).** Document the following:

- Existing protected buffer widths
- Condition and type of vegetation
- Length of riparian vegetation free from intrusions from roads, utilities and other clearings (riparian continuity).

vii. **Wetlands inventory, mapping and assessment** Inventory and mapping using National Wetlands Inventory (NWI) or local wetland inventory data is the minimum acceptable level of mapping. Wetland assessment will address types of impacts and whether the wetland historically or currently provides fish habitat.

REVIEW PHASE 2 > Submittals—Review of Plan Submittal

i. Submit copies of design drawings and renderings for building, site and infrastructure plans, including campus or district master plans, permit documents and/or other planning drawings that clarify the project intent.

ii. Submit a narrative describing how the site design has incorporated items from the recommendations summary provided in Review Phase 1, the standards and performance requirements defined in the applicable standards.

iii. Submit any relevant local, state, or federal permit application and/or record of approval for permits.

iv. Provide documentation showing that the standards and performance requirements defined in all relevant standard have been incorporated into design and permit plans.

If streams, wetlands and riparian habitat areas area present on site:

v. Submit applicable environmental permitting documents addressing compliance.

REVIEW PHASE 3 > Submittals—Salmon-Safe Certification of Constructed Site

The following submittals are required for Review Phase 3:

i. Evaluation Team Site Visit Report & Recommendations

ii. Operations & maintenance plan (O&M) for stormwater control features (Standard U.1.10)

iii. Water conservation plan (Standard U.2.8)

iv. Integrated pest management (IPM) plan and nutrient management plan (Standard U.4.10)

v. As-built drawings showing installed landscape features, final planting lists (with substitutions) and any relevant changes to submitted plans in Review Phase 2

vi. Evidence that elements within each of these plans have been incorporated into the development's O&M guidelines or other binding documents and are included as part of the transfer deeds prior to sale of units or parcels within the development

vii. A list of qualified personnel or contractors who will conduct monitoring and management activities over the life of the project

If streams, wetlands and riparian habitat areas area present on site:

viii. Operations & maintenance plan (O&M) for instream habitat features (Standard U.6.11)

ix. Operations & maintenance plan (O&M) for riparian and wetland features (Standard U.7.9)

APPENDIX C: Certification for Existing Urban Development

Certification of Existing Developments

Salmon-Safe offers a comprehensive assessment program for existing developments that focuses on current land management practices and commitment to reducing other water quality impacts over time. Salmon-Safe recognizes that longstanding infrastructure, particularly related to stormwater management, can degrade water quality and limit fish habitat. To be certified by Salmon-Safe, an existing urban development must demonstrate a dedication to long-term progress in addressing the impacts of existing infrastructure where feasible.

The team evaluates if an existing urban development complies with the Certification Standards by the following:

- Review of overall development and maintenance practices;
- Field assessment at the development, or a representative subsample of sites within the development; and
- Field assessment of representative restoration projects, or a subsample thereof (if applicable).

To obtain an understanding of the development, the evaluation team interviews grounds managers and inspects the drawings, summary reports and inventories required for certification (based on the standards in this document). Managers of the developments provide these documents. The list of required documents is presented in the Required Documentation for Existing Developments section, below. Because some management actions will not be evident to reviewers during the field assessment (such as pesticide application methods), landscape staff will accompany the evaluation team to describe recent management history. The more complete the documentation, the easier it will be to determine how the project meets the applicable standards for Salmon-Safe Certification.

The evaluation team uses all of the standards and related performance requirements to evaluate whether the development will be awarded certification. Following this evaluation, the team will provide a summary of recommendations based on the requirements listed below. At the discretion of the evaluation team, some of the listed standards may be met by providing a written agreement to comply with specific conditions or performance requirements on an agreed timeline.

[11]Existing developments must conform to all of the standards in the Certifi cation Standards listed in the main document. Depending on when the project was constructed, the Evaluation Team will

The following general requirements for Salmon-Safe certification apply to existing developments:[11]

i. The development is not in violation of national, state, or local environmental laws or associated administrative rules or requirements.

ii. Provisions are made for the identification and protection of rare, threatened and endangered salmonids or other listed species and their habitat on the development.

iii. The existing development provides data-gathering elements identified in all sections that are marked with an **E**.

iv. Standards required of the existing development for certification are identified in Section R.2 (Site Planning) and Section R.3 (Site Design). These are demarcated by an **E**, are required for all existing developments and must be implemented prior to certification. As indicated, implementation of improvements associated with these standards is conducted consistent with all performance requirements identified in Section R.4 (Site Construction).

v. The existing development conforms to all standards and performance requirements defined in Section R.5 (Site Maintenance and Management).

vi. As a prerequisite to certification, the evaluation team may also require that the managing authority demonstrate commitment to implementing additional improvements or practices with regard to landscape design, stormwater management and/or infrastructure features that degrade salmon habitat. The nature of these required improvements will generally be consistent with one or more of the standards identified Section R.2 (Site Planning), Section R.3 (Site Design) and/or Section R.4 (Site Construction). Demonstration of this commitment may include development of an explicit plan that defines which improvements must be implemented and by when. Salmon-Safe would negotiate with the managing authority to identify and implement these additional requirements.

vii. A policy addressing new design projects and future development phases is in place. Any future improvements or future development phases associated with the existing development must be executed consistent with all of the Certification Standards and related performance requirements defined by Salmon-Safe, to the greatest extent technically feasible. For example, future development plans should include green and low-impact development (LID) designs. To evaluate conformance, the evaluation team will review design policy and a sample of new design projects in existing developments or plans for future phases of development.

viii. Management allows monitoring by a third party authorized by Salmon-Safe and fully cooperates with such monitoring to the greatest extent technically

feasible, given staffing and funding constraints. Under rare circumstances the evaluation team may request that the owner conduct limited monitoring where such monitoring is critically needed to assess the efficacy of existing maintenance practices in meeting Salmon-Safe standards.

ix. Summary reporting is adequate to document compliance with Salmon-Safe standards. See below for a partial list of written summary reports, documents and data required for Salmon-Safe certification evaluation.

Required Documentation for Existing Developments

Possible items required for evaluation are listed below. Based on the size of the proposed development and whether it has streams, wetlands and riparian zones, all of these submittals may not be required for smaller developments. See the Certification Standards and performance requirements for existing developments for additional documentation that may be required. The evaluation team will work with the applicant to determine specifically which submittals will be required for a given development.

Requirements 5-9 apply only if stream, wetland or riparian habitat is present on the development site.

1. Summary report that provides an estimate of the types and condition of land cover, including the percent composition of impervious surface (pavement) on the development area, based on visual inspection of aerial photographs and field knowledge of the site. The report includes a summary of the total percent impervious estimate for both developed and natural areas of the development site. In addition, the report lists any special stormwater mitigation projects that have been completed, such as reduction in pavement, detention ponds or biofiltration swales.

2. An integrated pest management plan and nutrient management plan (see Appendix E for additional detail)

3. A summary report that assesses and identifies stormwater retrofit opportunities (Section U.1), water use management improvements and water use conservation enhancements (Section U.2), integrated pest management as specified in performance requirements (Section U.4) and enhancement of ecological function (Section U.5). A report is submitted to Salmon-Safe within one year presenting a plan and schedule for implementing technically feasible projects with regard to these objectives.

4. Summary reports on activities and findings for any monitoring conducted on the development site, such as irrigation and water use. Reports are also provided for any water quality and habitat monitoring projects that have been conducted, including stormwater runoff testing to help determine if overfertilization (nitrogen) is occurring in high fertilizer use areas and if soils are completely stabilized following removal of erosion prevention and sediment control measures.

5. Annual summary report from periodic soil testing conducted to determine the need for fertilizer and lime use and to demonstrate trends in fertilizer and lime use on the development site. The report should include soil analysis reports, as well as factors responsible for the reported increase or decrease in fertilizer use and relation to soil testing.

6. Inventory and mapping of fish species distribution (existing and potential distribution of native salmonid species) and stream channel types on the property. At a minimum, these stream channel types shall include: (1) fish-bearing, (2) potential fish-bearing, and (3) non-fishbearing, but greater than two feet in bankfull width and connected to a fish-bearing stream. The channel inventory shall include a summary of existing habitat impacts by general type, such as locations of channelized streams, severely eroding banks and other parameters, for each development site.

7. Inventory and mapping of stream crossings within the development site to determine the need for fish passage and flood conveyance.

8. Inventory, mapping and description of riparian zones (of all stream types listed in 1, above) to summarize existing protected buffer widths, shade condition, general vegetation types (such as mowed grass or mature native trees) within the protected buffer and outside that area in the riparian zone and riparian restoration opportunities. Local jurisdiction inventory and mapping of riparian areas overlaid with the development area are generally sufficient to meet this requirement.

9. Inventory, mapping and assessment of wetlands. Inventory and mapping using NWI or local wetland inventory data is the minimum acceptable level of mapping. Wetland assessment will address types of impacts and whether the wetland historically or currently provides fish habitat.

10. Annual restoration project monitoring reports summarizing the results of monitoring according to the restoration monitoring policy established by the appropriate management authority.

APPENDIX D: IPM, Nutrient and Chemical Management Plan Guidance

Salmon depend on clean water free from harmful levels of fertilizers (nutrients), pesticides (herbicides and insecticides, fungicides and other biocides), stormwater runoff pollutants and organic waste. These contaminants can travel long distances in stormwater runoff from an urban development to receiving waters. The principal methods to avoid contamination of salmon-bearing waters are to minimize overall inputs of these contaminants, restrict the type of inputs and develop an acceptable method of application through a comprehensive management program, such as an integrated pest management (IPM) plan. The appropriate managing partner for the urban development shall require that guiding O&M documents for each eligible phase of the project incorporate a Salmon-Safe approved IPM, nutrient and chemical management plan to ensure maintenance of Salmon-Safe practices over time.

IPM Requirements within the Plan

An IPM plan or policies are developed to promote management practices that reduce the impact of, the unnecessary reliance upon, or eliminate the need for hazardous chemicals and pesticides. Hazardous chemicals and pesticide use on the development should not result in contamination of stormwater or streams with amounts of any chemical or pesticide harmful to salmon or aquatic ecosystems. These practices generally include careful monitoring and scouting of insects, weeds and disease; use of non-spray control methods (cultural practices and mechanical controls); use of reduced impact pesticide controls; and/or managing specific sites without the use of chemical or pesticides. In addition to the required elements of an IPM plan outlined in Appendix A, the IPM plan should comply with the following guidelines:

i. Type of pesticides—All use of pesticides within the development, including waterways, waterway buffers and uplands, is limited in an IPM program by the specific policies on the method of use, including application type, rate, frequency, location and amount. Managers and residents use only those pesticides that are on an approved list for the development (see Appendix E). These pesticides will only be used when there is no undue risk of harm to salmon and aquatic ecosystems. This limited use list is established and reviewed on an annual basis by development management to ensure that potential harm to salmon and aquatic ecosystems is minimized.

ii. Minimize aquatic impacts from high-hazard pesticides—The use of any pesticides on the Salmon-Safe Cautionary List of High Risk Pesticides requires written explanation for each pesticide used that details the methods of use, including timing and location that demonstrate that the risk to aquatic systems is negligible (Appendix E: Salmon-Safe High-Hazard Pesticide List).

iii. **Restricted use zones**—Pesticide use is specially managed within: (1) waterways; and (2) adjacent waterway buffer areas. For the purposes of pesticide application, the buffer zone is defined as a corridor of land that is 60 feet in width on each side of a stream or other body of water (no-development buffers may be wider). Measurement of this buffer zone begins at the edge of the water line at the time of application and is measured horizontally as if on a map. Anticipated seasonal or weather-related changes affecting water level will be included in the decision-making process when dealing with buffer zones.

iv. **Pesticide treatment of trees**—Within riparian buffer zones, pesticides are used only on rare occasion for treating tree pests or diseases. Injection of pesticides within tree tissues or paintbrush application are the only application methods for trees allowed in riparian buffer zones.

v. **Application equipment**—Within riparian buffers, pesticide application for vegetation other than trees is done by hand and using low-volume, low-pressure, single-wand sprayers, wiping, daubing and painting equipment or injection systems. The methods used minimize fine mists and ensure that the applied materials reach targeted plants or targeted soils surfaces.

vi. **Pesticide drift**—Great care is taken to ensure that pesticide drift does not reach nearby surface waters by using appropriate equipment and methods. Spray applications are not allowed in the buffer area when wind speed is above 5 mph or wind direction would carry pesticides toward open water. Also, no spraying is done during an inversion.

vii. **IPM program**—Pesticide applicators, whether employees or contractors, are trained in the IPM plan and implement it fully.

viii. **Pesticide applicator licensing**—All persons applying pesticides must be currently licensed as private pesticide applicators by the applicable state agency (Department of Agriculture). Licensed personnel must be specifically endorsed for any of the state-defined categories of pest control they undertake, such as aquatic endorsement for all aquatic pest control activities.

ix. **Chemical and pesticide storage, rinsates and disposal**—The managing partner of the development has rigorous policies in place to ensure that no contamination of stormwater or streams occurs due to the storage, cleaning of equipment or disposal of chemicals and pesticides. These policies are adhered to by maintenance personnel, contractors and residents.

x. **Pesticide tracking system**—Detailed records are maintained for all pesticide applications on the part of the managing partner, including applications to aquatic areas and buffer zones, consistent with state requirements.

xi. **Pesticide application timing**—Pesticides are not applied when it is raining (unless otherwise directed by label instructions) or when there is a potential

for transport by runoff to stormwater drains or streams. Decisions regarding scheduling of pesticide applications should account for the expected impacts of anticipated storm events.

Nutrient Management Requirements within the Plan

The potential for nutrient and lime use to contaminate stormwater and streams can be minimized through a program that uses alternative cultural and mechanical practices to maintain soil fertility, uses fertilizers with discretion based on soil fertility and plant needs, uses slow-reacting fertilizers and ensures proper application of fertilizer and lime in terms of amounts and timing. The nutrient management plan should comply with the following guidelines:

i. Types of fertilizers—Fertilizer types are tailored to the existing soil conditions and plant requirements. Slow release, organic fertilizers or compost are generally used. Fertilizers must be selected through a state-approved screening and approval process to ensure the fertilizer does not contain toxic contaminants. If soluble fertilizers are used, the timing and rate of application are carefully considered (see below).

ii. Fertilizer application amounts—In general turf and shrub bed areas, soluble fertilizer rates of application are limited to no more than 0.5 lb N/1,000 square feet with restraints on timing to minimize fertilizer in stormwater runoff.

iii. Low fertilizer landscaping—Plants with low-fertilizer requirements are used for landscaping to the greatest extent technically feasible.

iv. Focused use—Fertilizer is used only on high- and moderate-intensity use areas, such as flower beds, ball fields, golf courses, some turf areas and planting beds, and some plantings associated with construction and restoration projects, if at all. Lime is used to adjust pH to minimize fertilizer use where suitable, in a manner that does not pose impacts to water quality.

v. Buffer zone width—Fertilizer and lime use is highly restricted within a waterway (riparian or wetland) buffer zone.

vi. Use within watercourse buffers—Fertilizer use in buffer zones of waterways is restricted depending on the intensity of application and type of fertilizers. The allowable use of fertilizer also varies depending on whether it is being used for routine maintenance or for restoration and construction projects.

vii. Soil testing—Periodic soil testing is used to determine the need for fertilizer (phosphorus and potassium), compost and lime relative to appropriate benchmarks established by the development managing partner. Testing is conducted a minimum of twice per year and prior to fertilizer application.

viii. **Soil fertility**—Practices such as on-site mulching of leaf and grass clippings are used to reduce the need for fertilizer.

ix. **A summary report of annual fertilizer use** is provided that shows a stable or declining trend in synthetic fertilizer use development-wide, taking into account the changes in acreage managed, specific uses and other relevant factors.

Other Contaminant Management within the Plan

Other contaminants, such as animal and chemical waste, should not contaminate storm-water or streams leaving the urban development. Recognizing that the managing partner may have a limited ability to control residents, the public and actions of other agencies, the project should comply with the following guidelines:

i. **Chemical use control**—Eliminate or minimize the use of chemicals commonly used to maintain urban infrastructure that may cause undue risk of harm to salmon and aquatic species. Evaluate various solvents, deicers, sealants, etc., to choose the least toxic or harmful product to aquatic ecosystems without compromising the health, safety and welfare of the human environment.

ii. **Animal waste control**—The development managing partner fosters management and education policies regarding dog or other domestic animal waste control that are effective in minimizing the contamination of stormwater or streams.

iii. **Wildlife waste control program (geese, ducks)**—If necessary and the greatest extent technically feasible, a management program is implemented to ensure that duck and goose waste does not contaminate stormwater or streams.

APPENDIX E: Salmon-Safe's List of High Hazard Pesticides

Salmon-Safe Urban High Hazard List of Pesticides (UHHL)

High hazard pesticides are a serious threat to salmon and other aquatic life. Pesticide formulations can also contain other ingredients that are potentially more toxic than the active ingredients, such as non-ionic surfactants. In addition to killing fish, high hazard pesticides at sublethal concentrations can stress juveniles, alter swimming ability, interrupt schooling behavior, cause salmon to seek suboptimal water temperatures, inhibit seaward migration and delay spawning. All of these behavioral changes ultimately affect survival rates.

The table below lists many of the pesticides known to cause problems for salmon and other aquatic life. Use this list to identify pesticides that require special consideration.

Note: This table lists only some of the currently available and commonly used pesticides.

SALMON-SAFE URBAN HIGH HAZARD LIST OF PESTICIDES			
Insecticides / Miticides			
abamectin	chlorpyrifos[1,2] (2)	imidacloprid[2]	prallethrin[1,2]
acetamiprid	cyfluthrin[1,2]	indoxacarb[2]	spinosad[2]
alpha-cypermethrin[1]	cypermethrin[1,2]	lamda-cyhalothrin[1,2]	spiromesifen[1]
bifenthrin[1,2]	deltamethrin[1,2]	malathion[1,2] (1)	tralomethrin[1]
carbaryl[2] (2)	esfenvalerate[1,2]	naled[1] (3)	zeta-cypermethrin[1]
chlorantraniliprole[2]	etofenprox[1]	novaluron	
chlorfenapyr[1,2]	fipronil[1,2]	permethrin[1,2]	
Fungicides			
acequinocyl	cyazofamid	folpet	thiram
azoxystrobin[2]	cyprodinil	pentachlorophenol (PCP) wood treatment	trifloxystrobin[1]
captan (4)	difenoconazole	propiconazole[2]	
chlorothalonil[1,2] (4)	fluazinam[1]	pyraclostrobin[1,2]	
copper[1,2]	fludioxanil[2]	thiophanate methyl	
Herbicides			
2,4-D[2] (4)	dithiopyr[2]	linuron[2] (4)	prodiamine
atrazine[2]	diuron[2] (4)	oxadiazon[2]	triclopyr BEE[2] (4)
benefin	diquat dibromide[2]	oxyfluorfen[2]	trifluralin[2] (5)
diclofop-methyl	flumioxazin[2]	pendimethalin[2] (5)	

Very Highly Acutely Toxic and/or Highly Acutely Toxic[1] to fish and/or aquatic invertebrates.
Based on EPA's Aquatic Life Benchmarks[2].

Pesticide names followed by a number in parentheses indicates the specific NOAA /NMFS Biological Opinion where it was assessed for jeopardy and/or habitat destruction/modification to endangered salmonids in accordance with the Endangered Species Act (***https://www.epa.gov/endangered-species***), regarding the 37 pesticides listed in the Washington Toxics Coalition (WTC) court settlement. Completed BiOps listed below[3].

* Active ingredients being Very Highly Acutely Toxic (LC50 or EC50 <100 ug/L) to BOTH fish and aquatic invertebrates

+ Active ingredients determined to generally have very high potential for risk of off target movement through surface runoff, based on the pesticide's adsorption to soil/sediment and it's field dissipation half-life (persistence) ***http://ccpestmanagement.ucanr.edu/files/237465.pdf***

1. US EPA Toxicity Classification	Acute Aquatic LC50 or EC50 (ug/L)
Practically Nontoxic	> 100,000
Slightly Nontoxic	> 10,000; <= 100,000
Moderately Toxic	> 1,000; <= 10,000
Highly Toxic	**> =100; < = 1,000**
Very Highly Toxic	**< 100**

These ratings are based on acute toxicity and do not account for chronic and/or possible sub-lethal effects:

- Fish acute toxicity is generally the lowest 96-hour LC50 or EC50 in a standardized test, commonly using rainbow trout, fathead minnow or bluegill.
- Acute invertebrate toxicity values are usually the lowest 48 or 96-hour LC50 or EC50 in a standardized test commonly using midge, scud or daphnia.

2. Both EPA-established acute and chronic aquatic benchmarks are available on the EPA website: *https://www.epa.gov/pesticide-science-and-assessing-pesticide-risks/aquatic-life-benchmarks-pesticide-registration*

   In addition to inherent toxicity, the overall assessment of the risk of a specific pesticide to aquatic water quality should consider a number of other factors: Pesticide Properties (e.g., water solubility, soil adsorption, half-life), Environmental Properties (e.g., soil makeup, climate) and Management Practices (e.g., application methods, use rate, irrigation, no-till). These properties and their possible interactions are discussed in detail in the following UC publications: *http://anrcatalog.ucanr.edu/pdf/8119.pdf* and *http://ccpestmanagement.ucanr.edu/files/237465.pdf*

   The 28 Threatened or Endangered species listed in the Biological Opinions (BiOps) are described as Evolutionarily Significant Units (ESU) and are species, location/habitat and temporally specific. For example, Chinook salmon are assessed as 9 separate ESU's in the BiOps: (1) Chinook salmon (Puget Sound); (2) Chinook salmon (Lower Columbia River); (3) Chinook salmon (Upper Columbia River Spring-run); (4) Chinook salmon (Snake River Fall-run); (5) Chinook salmon (Snake River Spring/Summer-run); (6) Chinook salmon (Upper Willamette River); (7) Chinook salmon (California Coastal); (8) Chinook salmon (Central Valley Spring-run); and (9) Chinook salmon (Sacramento River Winter-run).

   Refer to the Biological Opinions for a detailed list and description of each ESU and their geographic range *http://www.nmfs.noaa.gov/pr/consultation/pesticides.htm*

   Refer to the NOAA/NMFS Biological Opinion Schedule on the NOAA Fisheries website *http://www.nmfs.noaa.gov/pr/consultation/pesticide_schedule.htm*

Variances and Variance Requests

Urban sites or projects using any of the pesticides indicated as "High Hazard" may be certified only if written documentation is provided that demonstrates a clear need for use of the pesticide, that no safer alternatives exist and that the method of application (such as timing, location and amount used) represents a negligible hazard to water quality and fish habitat. All variances must be approved in advance by Salmon-Safe.

For more information about the variance process, or to request a variance form, please contact Salmon-Safe at *info@salmonsafe.org.*

Salmon-Safe Inc.
1001 SE Water Ave, Suite 450
Portland, Oregon 97214
(503) 232-3750
info@salmonsafe.org

www.salmonsafe.org

APPENDIX F: Model Construction-Phase Stormwater Management Program

Contractor Accreditation

Salmon-Safe provides an accreditation program (AP) for General Contractors that provides guidance for construction management. Accredited contractors have been pre-certified to adhere to the following guidelines and can streamline documentation and certification processes. Contact Salmon-Safe for a list of accredited contractors and to find out more about the accreditation process.

Construction Phase Stormwater Management

Erosion and Sediment Transport

Manage the construction site to avoid, or minimize to the greatest extent operationally feasible, the release of sediments from the site through the use of the following measures:

i. As the top priority, emphasize construction management BMPs, such as:

- Maintain existing vegetation cover, if it exists, to the greatest extent technically feasible.
- Perform ground-disturbing work in the season with the smaller risk of erosion and work off disturbed ground in the higher risk season.
- Limit ground disturbance to the amount that can be effectively controlled temporarily in the event of rain.
- Use natural depressions and plan excavations to drain runoff internally and isolate areas of potential sediment and other pollutant generation from draining off the site, so long as safe in large storms.
- Schedule and coordinate rough grading, finish grading and erosion control applications to be completed in the shortest possible time overall and with the shortest possible lag between these work activities.

ii. Stabilize with a cover appropriate to the site conditions, season and future work plans; for example:

- Rapidly stabilize disturbed areas that could drain off the site and will not be worked again, with permanent vegetation supplemented with highly effective temporary erosion control measures until at least 90 percent vegetative soil cover is achieved.
- Rapidly stabilize disturbed areas that could drain off the site and will not be worked again for more than three days, with highly effective temporary erosion control measures.
- If 0.1 inch of rain or more is predicted with a probability of 40 percent or greater, before the rain falls, stabilize or isolate disturbed areas that could drain off the site, and that are being actively worked or will be

within three days, with measures that will prevent or minimize to the greatest extent technically feasible the transport of sediment off the property.

iii. As backup for cases where all of the above measures are used to the greatest extent technically feasible but sediments still could be released from the site, consider the need for sediment collection systems including, but not limited to, conventional settling ponds and advanced sediment collection devices such as polymer-assisted sedimentation and advanced sand filtration.

iv. Specify emergency stabilization and/or runoff collection procedures (e.g., using temporary depressions) for areas of active work when rain is forecast.

v. If runoff can enter storm drains, use a perimeter control strategy as a backup where some soil exposure will still occur, even with the best possible erosion control (the above measures) or when there is a discharge to a sensitive water body.

vi. Specify flow control BMPs to prevent or minimize to the greatest extent technically feasible the following:

- Flow of relatively clean off site water over bare soil or potentially contaminated areas;
- Flow of relatively clean intercepted groundwater over bare soil or potentially contaminated areas;
- High velocities of flow over relatively steep and/or long slopes, in excess of what erosion control coverings can withstand; and
- Erosion of channels by concentrated flows either by using channel lining, velocity control, or both.

vii. Minimize the number of construction entrances. Specify stabilization of construction entrance and exit areas, provision of a nearby tire and chassis wash for dirty vehicles leaving the site with a wash water sediment trap, and a sweeping plan.

viii. Specify construction road stabilization.

ix. Specify wind erosion control.

x. Manage the construction site to avoid the release of pollutants other than sediments by preventing contact between rainfall or runoff and potentially polluting construction materials, processes, wastes, and vehicle and equipment fluids by such measures as enclosures, covers, and containments, as well as berming to direct runoff.

- Construction vehicles larger than pick-up trucks parked for more than two days shall be located so that any fluid leaks cannot contaminate stormwater runoff. The best way of preventing contamination is to park in a location that cannot drain into any stormwater conveyance leaving

the site. If a selected location could drain away, it should be modified by slightly recessing the parking spots to prevent draining out. An alternative if such a location cannot be found, is to place leakage collection trays under the vehicles. Any vehicle observed to be leaking any significant quantity of a fluid should be repaired immediately.

APPENDIX G: Water Conservation Plan Guidance

The appropriate managing partner for the urban development shall require binding agreements for the existing project, and future phases of the project, incorporate a Salmon-Safe water conservation plan to ensure that Salmon-Safe practices are maintained over time. Water conservation measures reduce irrigation water use to the minimum necessary to support maintenance of urban development grounds.

A long-term water use plan should incorporate the following performance guidelines:

i. Conservation plan—Development management follows a plan to conserve water by focusing watering in limited areas based on varying plant needs and human use objectives.

ii. Water use monitoring is conducted and annual summary reporting is available. Reporting documents a decline in water use per acre for the system over the most recent five-year period or explains how no further efficiencies are feasible.

iii. A plan is implemented that shows significant progress, where technically feasible within budgetary constraints and human use mandate, toward increased water conservation, including the following:

- Utilize water-efficient technologies within and around structures;
- Developing landscapes with native vegetation that requires less irrigation;
- Replacing outdated irrigation equipment with an efficient, modern irrigation system to adjust supply to vegetation requirements, infiltration, evapotranspiration and other factors;
- Water use plan to further limit irrigation areas to high priority sites as determined by the appropriate managing authority;
- Using rain catchment and recycled stormwater systems;
- Using soil management practices, such as composting and mulching, and thatching and aerating turf, to reduce irrigation requirements; and
- Minimizing total area of turf by converting turf areas to landscaping that requires less irrigation.

VISIT SALMONSAFE.ORG TO DOWNLOAD A FILL-AND-SAVE VERSION OF THIS FORM

APPENDIX H: ANNUAL CERTIFICATION REPORT AND VERIFICATION FORM

All organizations

Please complete this form down to the black bar.

Organizations with conditions

Please complete the entire form.

ABOUT CERTIFIED ORGANIZATION		
Organization Name	Date	Year First Certified
Primary Contact	Title	
Phone	Email	

STATEMENT OF ENVIRONMENTAL COMPLIANCE—*Provide a statement regarding your organization's compliance record during the last year. In the event your organization was issued a violation of non-compliance by a regulating agency, please detail the cause, the corrective action the organization conducted and the end result as applicable. Salmon-Safe may revoke the certification in the event of a compliance violation, but will determine this on a case-by-case basis.*

SUMMARY OF ACTIVITY—*Provide a statement summarizing major infrastructure changes including new construction or restoration activity over the past year. Any operational changes impacting your Salmon-Safe certification?*

SALMON-SAFE CERTIFICATION COMPLIANCE	☐ Certification is conditional ☐ Certification conditions have been satisfied ☐ Certification issued without conditions

• **CONDITION 1** *(describe condition)*	Met Condition? ☐ Yes ☐ No ☐ In Process ☐ Documentation Attached	CONDITION VERIFICATION *Condition Cleared* ☐ Yes ☐ No Reviewer Initials _____
Action Taken to Correct Issue		

• **CONDITION 2** *(describe condition)*	Met Condition? ☐ Yes ☐ No ☐ In Process ☐ Documentation Attached	CONDITION VERIFICATION *Condition Cleared* ☐ Yes ☐ No Reviewer Initials _____
Action Taken to Correct Issue		
• **CONDITION 3** *(describe condition)*	Met Condition? ☐ Yes ☐ No ☐ In Process ☐ Documentation Attached	CONDITION VERIFICATION *Condition Cleared* ☐ Yes ☐ No Reviewer Initials _____
Action Taken to Correct Issue		
• **CONDITION 4** *(describe condition)*	Met Condition? ☐ Yes ☐ No ☐ In Process ☐ Documentation Attached	CONDITION VERIFICATION *Condition Cleared* ☐ Yes ☐ No Reviewer Initials _____
Action Taken to Correct Issue		
• **CONDITION 5** *(describe condition)*	Met Condition? ☐ Yes ☐ No ☐ In Process ☐ Documentation Attached	CONDITION VERIFICATION *Condition Cleared* ☐ Yes ☐ No Reviewer Initials _____
Action Taken to Correct Issue		
• **CONDITION 6** *(describe condition)*	Met Condition? ☐ Yes ☐ No ☐ In Process ☐ Documentation Attached	CONDITION VERIFICATION *Condition Cleared* ☐ Yes ☐ No Reviewer Initials _____
Action Taken to Correct Issue		

• **CONDITION 7** *(describe condition)*	Met Condition? ☐ Yes ☐ No ☐ In Process ☐ Documentation Attached	CONDITION VERIFICATION *Condition Cleared* ☐ Yes ☐ No Reviewer Initials _____
Action Taken to Correct Issue		
• **CONDITION 8** *(describe condition)*	Met Condition? ☐ Yes ☐ No ☐ In Process ☐ Documentation Attached	CONDITION VERIFICATION *Condition Cleared* ☐ Yes ☐ No Reviewer Initials _____
Action Taken to Correct Issue		
• **CONDITION 9** *(describe condition)*	Met Condition? ☐ Yes ☐ No ☐ In Process ☐ Documentation Attached	CONDITION VERIFICATION *Condition Cleared* ☐ Yes ☐ No Reviewer Initials _____
Action Taken to Correct Issue		
• **CONDITION 10** *(describe condition)*	Met Condition? ☐ Yes ☐ No ☐ In Process ☐ Documentation Attached	CONDITION VERIFICATION *Condition Cleared* ☐ Yes ☐ No Reviewer Initials _____
Action Taken to Correct Issue		

ADMIN USE ONLY *Annual Certfication Report* ☐ APPROVED ☐ Not Approved

Name _____ Date _____

APPENDIX I: Fast-Track Certification for New Development