

APPENDIX 1 – Minimum Technical Requirements for New Development and Redevelopment

Section 1. Exemptions

Forest practices:

Forest practices regulated under Title 222 WAC, except for Class IV General forest practices that are conversions from timber land to other uses, are exempt from the provisions of the minimum requirements.

Commercial agriculture:

Commercial agriculture practices involving working the land for production are generally exempt. However, the conversion from timberland to agriculture, and the construction of impervious surfaces are not exempt.

Oil and Gas Field Activities or Operations:

Construction of drilling sites, waste management pits, and access roads, as well as construction of transportation and treatment infrastructure such as pipelines natural gas treatment plants, natural gas pipeline compressor stations, and crude oil pumping stations are exempt. Operators are encouraged to implement and maintain Best Management Practices to minimize erosion and control sediment during and after construction activities to help ensure protection of surface water quality during storm events.

Road Maintenance:

The following road maintenance practices are exempt: pothole and square cut patching, overlaying existing asphalt or concrete pavement with asphalt or concrete without expanding the area of coverage, shoulder grading, reshaping/regrading drainage systems, crack sealing, resurfacing with in-kind material without expanding the road prism, and vegetation maintenance.

The following road maintenance practices are considered redevelopment, and therefore are not categorically exempt. The extent to which this Appendix applies is explained for each circumstance.

- Removing and replacing a paved surface to base course or lower, or repairing the roadway base: If impervious surfaces are not expanded, Minimum Requirements #1 - #5 apply. ~~However, in most cases, only Minimum Requirement #2, Construction Stormwater Pollution Prevention, will be germane. Where appropriate, project proponents are encouraged to look for opportunities to use permeable and porous pavements.~~

- 1 • Extending the pavement edge without increasing the size of the road prism, or paving
2 graveled shoulders: These are considered new impervious surfaces and are subject to the
3 minimum requirements that are triggered when the thresholds identified for [new or](#)
4 redevelopment projects are met.
- 5 • Resurfacing by upgrading from dirt to gravel, asphalt, or concrete; upgrading from gravel
6 to asphalt, or concrete; or upgrading from a bituminous surface treatment (“chip seal”) to
7 asphalt or concrete: These are considered new impervious surfaces and are subject to the
8 minimum requirements that are triggered when the thresholds identified for [new or](#)
9 redevelopment projects are met.

10 **Underground utility projects:**

11 Underground utility projects that replace the ground surface with in-kind material or materials
12 with similar runoff characteristics are only subject to Minimum Requirement #2, Construction
13 Stormwater Pollution Prevention.

14 ~~All other new development is subject to one or more of the Minimum Requirements (see Section~~
15 ~~3 of this Appendix).~~

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17 **Section 2. Definitions Related to Minimum Requirements**

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19 **Arterial** – A road or street primarily for through traffic. [The term generally includes roads or](#)
20 [streets considered collectors. A major arterial connects an Interstate Highway to cities and](#)
21 [counties. A minor arterial connects major arterials to collectors. A collector connects an arterial](#)
22 [to a neighborhood. A collector is not an arterial. It does not include A-local access roads which](#)
23 [are generally limited to providing access to abutting property. econnects individual homes to a](#)
24 [collector. See also RCW 35.78.010 and RCW 47.05.021.](#)

25 **Bioretention BMPs** – [Engineered facilities that store and treat stormwater by passing it through a](#)
26 [specified soil profile. Refer to the Stormwater Management Manual for Western Washington](#)
27 [\(2012\), Chapter 7 of Volume V for Bioretention BMP types and design specifications.](#)

28 **Certified Erosion and Sediment Control Lead (CESCL)** - means an individual who has current
29 certification through an approved erosion and sediment control training program that meets the
30 minimum training standards established by the [Washington Department of Ecology](#)
31 [Department\(Ecology\)](#) (see BMP C160 in the *Stormwater Management Manual for Western*
32 [Washington \(20052012\)](#)). A CESCL is knowledgeable in the principles and practices of erosion
33 and sediment control. The CESCL must have the skills to assess site conditions and construction
34 activities that could impact the quality of stormwater and, the effectiveness of erosion and
35 sediment control measures used to control the quality of stormwater discharges. Certification is
36 obtained through an Ecology approved erosion and sediment control course. Course listings are
37 provided online at Ecology’s web site.

38 **Converted Pervious Surface** – [The surfaces on a project site where native vegetation is](#)
39 [converted to lawn or landscaped areas, or where native vegetation is converted to pasture.](#)

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Effective Impervious surface – Those impervious surfaces that are connected via sheet flow or discrete conveyance to a drainage system. Impervious surfaces are considered ineffective if: 1) the runoff is dispersed through at least one hundred feet of native vegetation in accordance with BMP T5.30 – “Full Dispersion” as described in Chapter 5 of Volume V of the Stormwater Management Manual for Western Washington (2005/12); 2) residential roof runoff is infiltrated in accordance with Downspout Infiltration Systems in Volume III; or 3) approved continuous runoff modeling methods indicate that the entire runoff file is infiltrated.

Erodible or leachable materials – Wastes, or chemicals that measurably alter the physical or chemical characteristics of runoff when exposed to rainfall. Examples include erodible soils that are stockpiled, uncovered process wastes, manure, fertilizers, oily substances, ashes, kiln dust, and garbage dumpster leakage.

Hard Surface – An impervious surface, a permeable pavement, or a green roof.

Highway – A main public road connecting towns and cities

Impervious surface – A hardnon-vegetated surface area that either prevents or retards the entry of water into the soil mantle as under natural conditions prior to development. A hardnon-vegetated surface area which causes water to run off the surface in greater quantities or at an increased rate of flow from the flow present under natural conditions prior to development. Common impervious surfaces include, but are not limited to, roof tops, walkways, patios, driveways, parking lots or storage areas, concrete or asphalt paving, gravel roads, packed earthen materials, and oiled, macadam or other surfaces which similarly impede the natural infiltration of stormwater. Open, uncovered retention/detention facilities shall not be considered as impervious surfaces for purposes of determining whether the thresholds for application of minimum requirements are exceeded. Open, uncovered retention/detention facilities shall be considered impervious surfaces for purposes of runoff modeling.

Land disturbing activity – Any activity that results in movement of earth, or a change in the existing soil cover (both vegetative and non-vegetative) and/or the existing soil topography. Land disturbing activities include, but are not limited to clearing, grading, filling, and excavation. Compaction that is associated with stabilization of structures and road construction shall also be considered a land disturbing activity. Vegetation maintenance practices are not considered land-disturbing activity. Stormwater facility maintenance is not considered land disturbing activity if conducted according to established standards and procedures.

Low Impact Development (LID) – A stormwater and land use management strategy that strives to mimic pre-disturbance hydrologic processes of infiltration, filtration, storage, evaporation and transpiration by emphasizing conservation, use of on-site natural features, site planning, and distributed stormwater management practices that are integrated into a project design.

1 **LID Best Management Practices** – Distributed stormwater management practices, integrated
2 into a project design, that emphasize pre-disturbance hydrologic processes of infiltration,
3 filtration, storage, evaporation and transpiration. LID BMPs include, but are not limited to,
4 bioretention/rain gardens, permeable pavements, roof downspout controls, dispersion, soil
5 quality and depth, minimal excavation foundations, vegetated roofs, and water re-use.

6 **LID Principles** – Land use management strategies that emphasize conservation, use of on-site
7 natural features, and site planning to minimize impervious surfaces, native vegetation loss, and
8 stormwater runoff.

9 **Maintenance** – Repair and maintenance includes activities conducted on currently serviceable
10 structures, facilities, and equipment that involves no expansion or use beyond that previously
11 existing and results in no significant adverse hydrologic impact. It includes those usual activities
12 taken to prevent a decline, lapse, or cessation in the use of structures and systems. Those usual
13 activities may include replacement of dysfunctional facilities, including cases where
14 environmental permits require replacing an existing structure with a different type structure, as
15 long as the functioning characteristics of the original structure are not changed. One example is
16 the replacement of a collapsed, fish blocking, round culvert with a new box culvert under the
17 same span, or width, of roadway. See also Road Maintenance exemptions in Section 1 of this
18 Appendix.

19 **Native vegetation** – Vegetation comprised of plant species, other than noxious weeds, that are
20 indigenous to the coastal region of the Pacific Northwest and which reasonably could have been
21 expected to naturally occur on the site. Examples include trees such as Douglas Fir, western
22 hemlock, western red cedar, alder, big-leaf maple, and vine maple; shrubs such as willow,
23 elderberry, salmonberry, and salal; and herbaceous plants such as sword fern, foam flower, and
24 fireweed.

25 **New development** – Land disturbing activities, including Class IV -general forest practices that
26 are conversions from timber land to other uses; structural development, including construction or
27 installation of a building or other structure; creation of impervious surfaces; and subdivision,
28 short subdivision and binding site plans, as defined and applied in Chapter 58.17 RCW. Projects
29 meeting the definition of redevelopment shall not be considered new development.

30 **Permeable pavement** – Pervious concrete, porous asphalt, permeable pavers or other forms of
31 pervious or porous paving material intended to allow passage of water through the pavement
32 section. It often includes an aggregate base that provides structural support and acts as a
33 stormwater reservoir.

34 **Pervious Surface** – A surface which allows stormwater to infiltrate into the ground. Examples
35 include lawn, landscape, pasture, native vegetation areas, and permeable pavements.

36 **Pollution-generating hard surface (PGHS)** – Those hard surfaces considered to be a significant
37 source of pollutants in stormwater runoff. See the listing of surfaces under pollution-generating
38 impervious surface.

1 | **Pollution-generating impervious surface (PGIS)** – Those impervious surfaces considered to be
2 | a significant source of pollutants in stormwater runoff. Such surfaces include those which are
3 | subject to: vehicular use; industrial activities (as further defined in the glossary of the
4 | Stormwater Management Manual for Western Washington (2012)); or storage of erodible or
5 | leachable materials, wastes, or chemicals, and which receive direct rainfall or the run-on or
6 | blow-in of rainfall. ~~Erodible or leachable materials, wastes, or chemicals are those substances~~
7 | ~~which, when exposed to rainfall, measurably alter the physical or chemical characteristics of the~~
8 | ~~rainfall runoff. Examples include erodible soils that are stockpiled, uncovered process wastes,~~
9 | ~~manure, fertilizers, oily substances, ashes, kiln dust, and garbage dumpster leakage.~~ Metal roofs
10 | are also considered to be PGIS unless they are coated with an inert, non-leachable material (e.g.,
11 | baked-on enamel coating).

12 | **Pollution-generating pervious surfaces (PGPS)** – Any non-impervious surface subject to
13 | vehicular use, industrial activities (as further defined in the glossary of the Stormwater
14 | Management Manual for Western Washington (2012)); or storage of erodible or leachable
15 | materials, wastes, or chemicals, and that receive direct rainfall or run-on or blow-in of rainfall,
16 | use of pesticides and fertilizers, or loss of soil. Typical PGPS include permeable paved roads,
17 | driveways and parking lots, lawns, landscaped areas, golf courses, parks, cemeteries, and sports
18 | fields.

19 | **Pre-developed condition** – The native vegetation and soils that existed at a site prior to the
20 | influence of Euro-American settlement. The pre-developed condition shall be assumed to be a
21 | forested land cover unless reasonable, historic information is provided that indicates the site was
22 | prairie prior to settlement.

23 | **Project site** – That portion of a property, properties, or right of way subject to land disturbing
24 | activities, new impervious surfaces, or replaced impervious surfaces.

25 | **Rain Garden** – A non-engineered shallow landscaped depression, with compost-amended native
26 | soils and adapted plants. The depression ponds and temporarily stores stormwater runoff from
27 | adjacent areas. Designed to allow stormwater to pass through the amended soil profile.
28 | Stormwater that exceeds the storage capacity is designed to overflow to an adjacent drainage
29 | system. Refer to the Rain Garden Handbook for Western Washington Homeowners (WSU 2007
30 | or as revised) for rain garden specifications and construction guidance.

31 | **Receiving waters** - Bodies of water or surface water systems to which surface runoff is
32 | discharged via a point source of stormwater or via sheet flow. Ground water to which surface
33 | runoff is directed by infiltration.

34 | **Redevelopment** – On a site that is already substantially developed (i.e., has 35% or more of
35 | existing impervious surface coverage), the creation or addition of impervious surfaces; the
36 | expansion of a building footprint or addition or replacement of a structure; structural
37 | development including construction, installation or expansion of a building or other structure;;
38 | replacement of impervious surface that is not part of a routine maintenance activity; and land
39 | disturbing activities.

1 | **Replaced impervious surface** – For structures, the removal and replacement of any exterior
 2 | impervious surfaces or down to the foundation. For other impervious surfaces, the removal
 3 | down to bare soil or base course and replacement.

4 | **Site** – The area defined by the legal boundaries of a parcel or parcels of land that is (are) subject
 5 | to new development or redevelopment. For road projects, the length of the project site and the
 6 | right-of-way boundaries define the site.

7 | **Source control BMP** – A structure or operation -that is intended to prevent pollutants from
 8 | coming into contact with stormwater through physical separation of areas or careful
 9 | management of activities that are sources of pollutants. This manual separates source control
 10 | BMPs into two types. *Structural Source Control BMPs* are physical, structural, or mechanical
 11 | devices, or facilities that are intended to prevent pollutants from entering stormwater.
 12 | *Operational BMPs* are non-structural practices that prevent or reduce pollutants from entering
 13 | stormwater. See Volume IV of the *Stormwater Management Manual for Western Washington*
 14 | ([20052012](#)) for details.

15 | **Threshold Discharge Area** – An onsite area draining to a single natural discharge location or
 16 | multiple natural discharge locations that combine within one-quarter mile downstream (as
 17 | determined by the shortest flowpath). The examples in Figure 2.1 below illustrate this definition.
 18 | The purpose of this definition is to clarify how the thresholds of this manual are applied to
 19 | project sites with multiple discharge points.

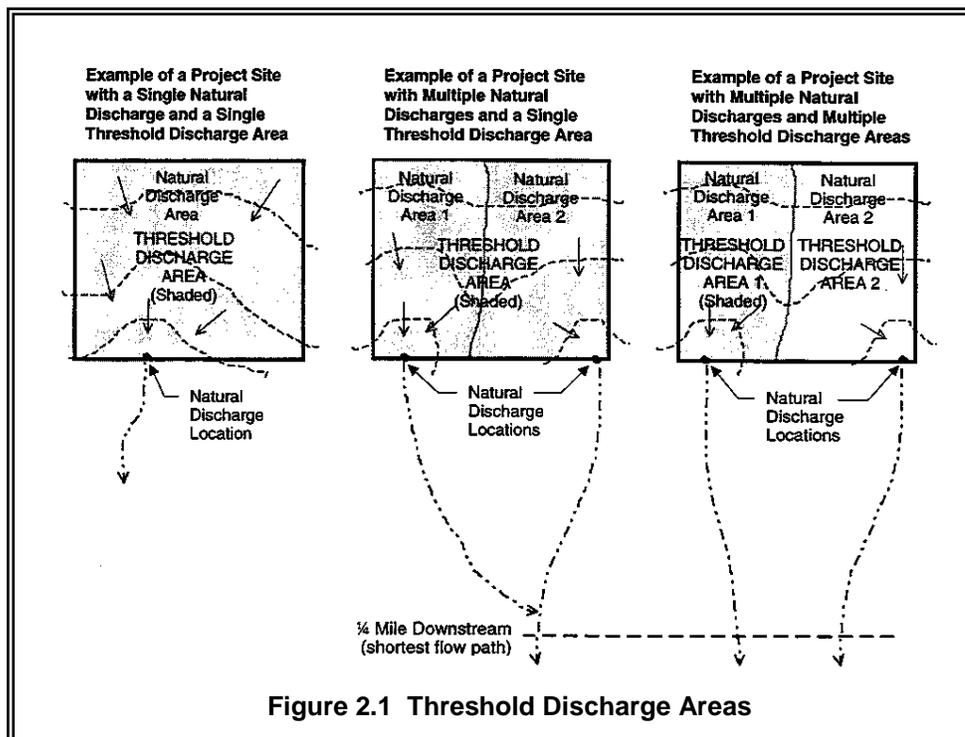


Figure 2.1 Threshold Discharge Areas

1 ***Vehicular Use*** – Regular use of an impervious or pervious surface by motor vehicles. The
2 following are subject to regular vehicular use: roads, un-vegetated road shoulders, bike lanes
3 within the traveled lane of a roadway, driveways, parking lots, unfenced fire lanes, vehicular
4 equipment storage yards, and airport runways.

5 The following are not considered subject to regular vehicular use: paved bicycle pathways
6 separated from and not subject to drainage from roads for motor vehicles, fenced fire lanes, and
7 infrequently used maintenance access roads.

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9 ***Wetland*** – Those areas that are inundated or saturated by surface or ground water at a frequency
10 and duration sufficient to support, and that under normal circumstances do support, a prevalence
11 of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include
12 swamps, marshes, bogs, and similar areas. Wetlands do not include those artificial wetlands
13 intentionally created from non-wetland sites, including, but not limited to, irrigation and drainage
14 ditches, grass-lined swales, canals, detention facilities, wastewater treatment facilities, farm
15 ponds, and landscape amenities, or those wetlands created after July 1, 1990, that were
16 unintentionally created as a result of the construction of a road, street, or highway. Wetlands may
17 include those artificial wetlands intentionally created from non-wetland areas to mitigate the
18 conversion of wetlands.
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20 **Section 3. Applicability of the Minimum Requirements**

21 **3.1 Thresholds**

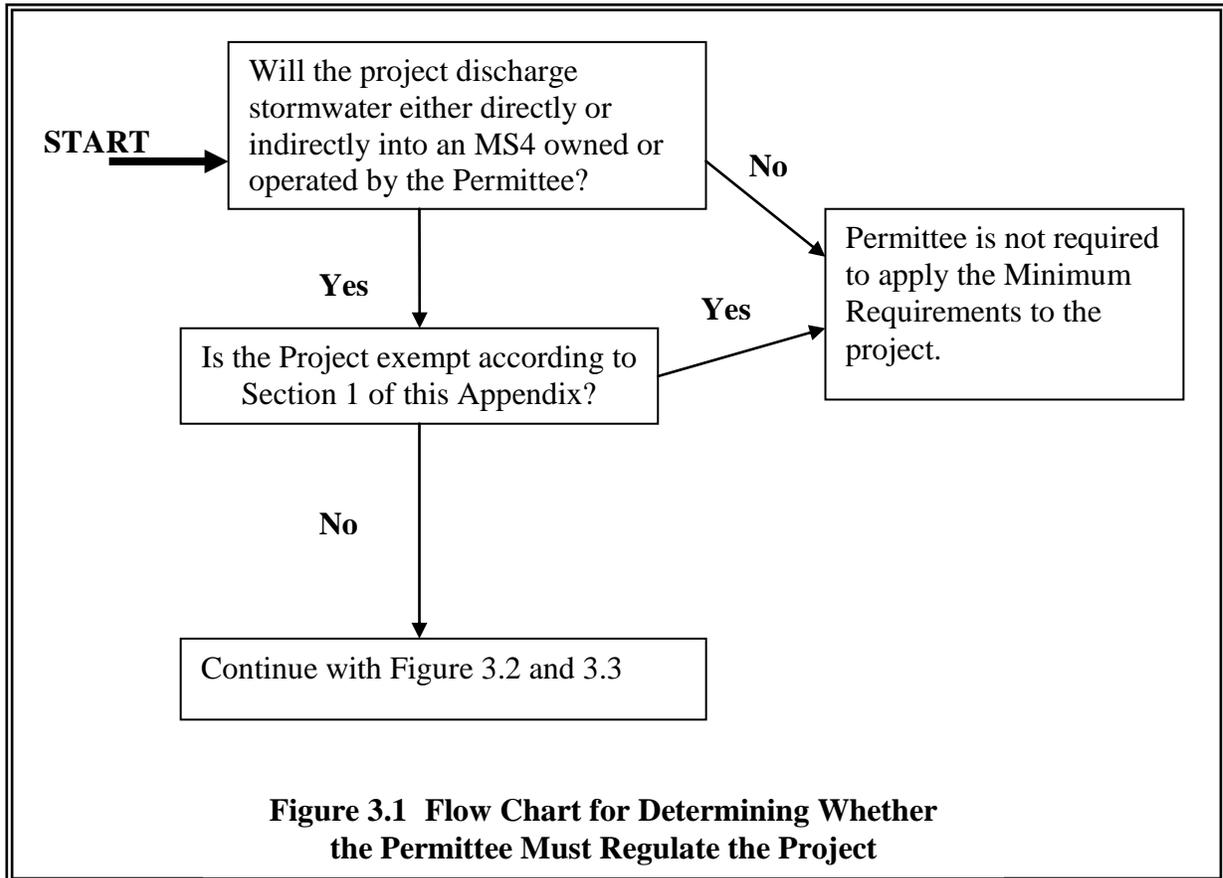
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23 Not all of the Minimum Requirements apply to every development or redevelopment
24 project. The applicability varies depending on the type and size of the project. This
25 section identifies thresholds that determine the applicability of the Minimum
26 Requirements to different projects. The flow charts in Figures 3.1, 3.2 and 3.3 must be
27 used to determine which of the Minimum Requirements apply. The Minimum
28 Requirements themselves are presented in Section 4 of this Appendix.

29 ~~The thresholds below apply to new development, redevelopment, and construction site~~
30 ~~activities that result in land disturbance of equal or greater than one acre, including~~
31 ~~projects less than one acre that are part of a larger common plan of development or sale.~~
32 ~~This threshold is defined as the “regulatory threshold”. If as described above, the project~~
33 ~~exceeds the one-acre regulatory threshold, the technical thresholds contained in this~~
34 ~~section (Section 3) shall be applied by the Permittee to determine which of the minimum~~
35 ~~requirements must be applied to the project.~~

36 ~~Permittees whose ordinances at the time of permit issuance, regulate new development~~
37 ~~and redevelopment at sites below the regulatory threshold must continue to regulate~~
38 ~~stormwater from these project sites. For these project sites below the regulatory~~
39 ~~threshold, the permittee must continue to apply the local stormwater requirements in~~
40 ~~effect at the time of permit issuance or apply the minimum requirements for new~~
41 ~~development and re-development contained in this Appendix.~~

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[Use the thresholds in sections 3.2 and 3.3 at the time of application for a subdivision, plat or a short plat. The thresholds apply to a common plan of development or sale as defined in the definitions and acronyms section of this permit. For projects involving only land disturbing activities, \(e.g., clearing or grading\), the thresholds apply at the time of application for the permit allowing or authorizing that activity. Note the exemption in Section 1 for forest practices.](#)



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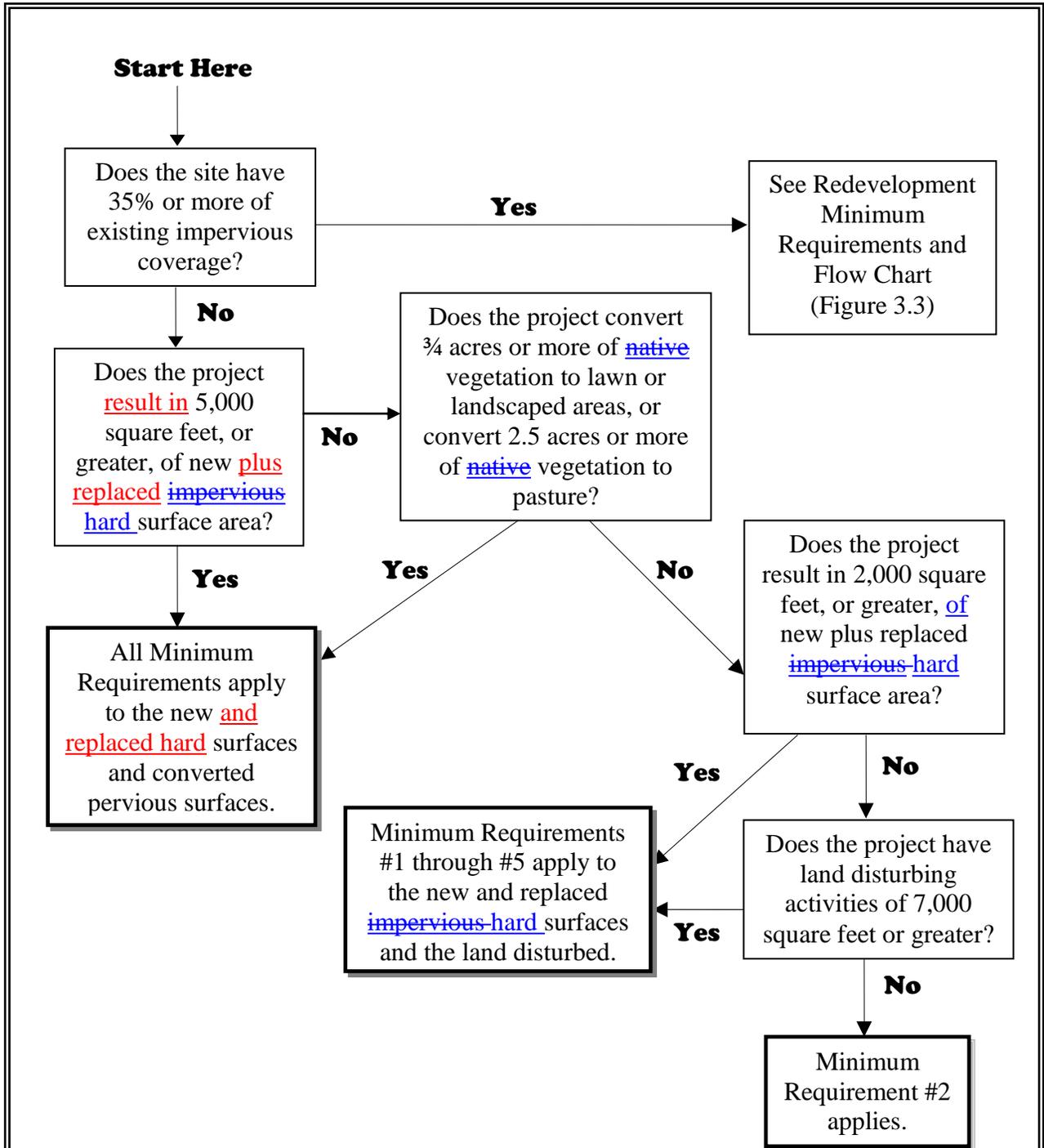


Figure 3.2 Flow Chart for Determining Requirements for New Development

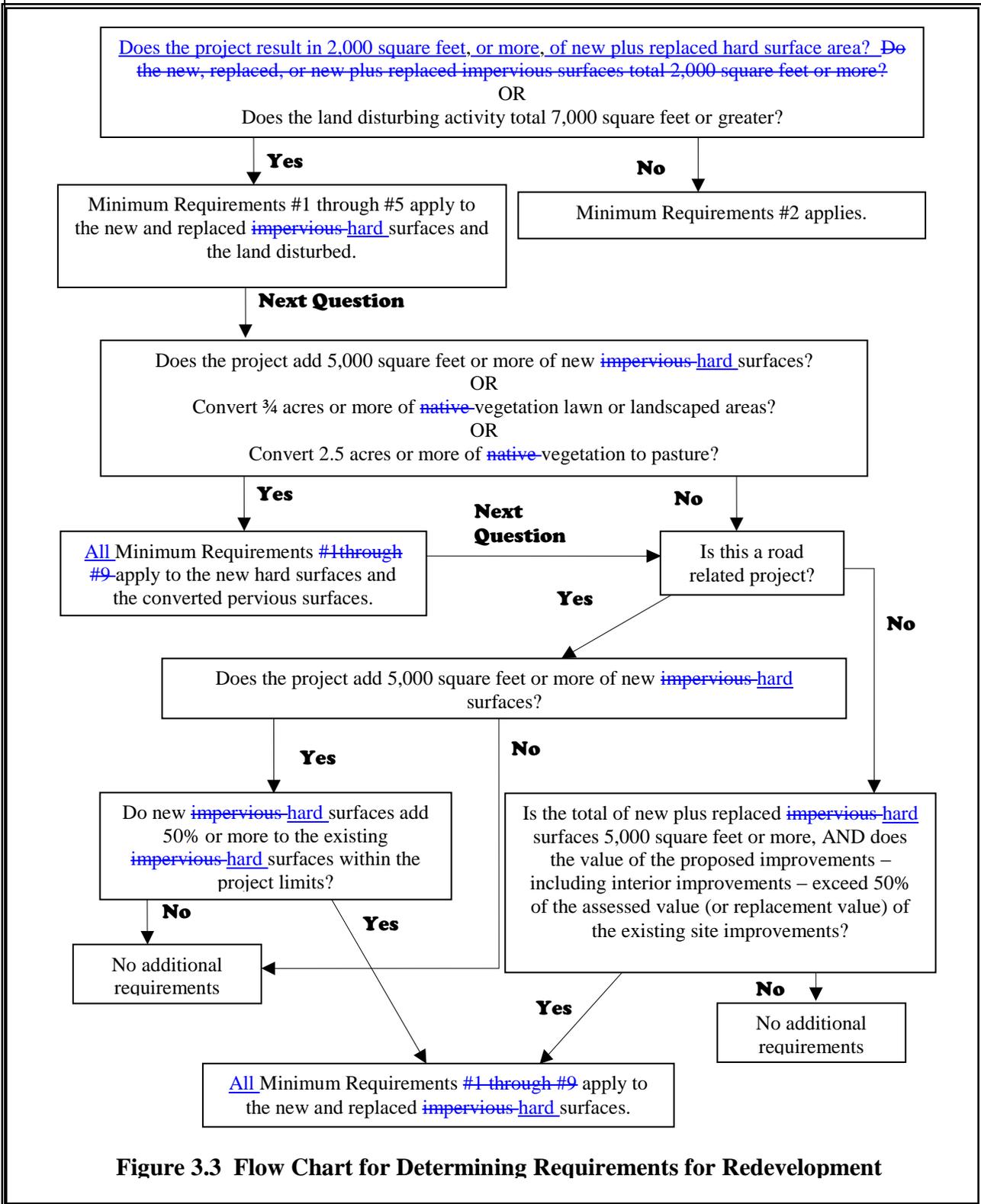


Figure 3.3 Flow Chart for Determining Requirements for Redevelopment

3.2 New Development

All new development, regardless of size, shall be required to comply with Minimum Requirement #2.

The following new development shall comply with Minimum Requirements #1 through #5 for the new and replaced impervious-hard surfaces and the land disturbed:

- ~~Creates or adds~~Results in 2,000 square feet, or greater, of ~~new, replaced, or~~ new plus replaced impervious-hard surface area, or
- Has land disturbing activity of 7,000 square feet or greater.;

The following new development shall comply with Minimum Requirements #1 through #109 for the new and replaced impervioushard surfaces and the converted pervious surfaces:

- ~~Creates or adds~~Results in 5,000 square feet, or ~~more~~greater, of new plus replaced impervious-hard surface area, or
- Converts ¾ acres, or more, of ~~native~~vegetation to lawn or landscaped areas, or
- Converts 2.5 acres, or more, of ~~native~~ vegetation to pasture.

3.3 Redevelopment

All redevelopment, regardless of size, shall be required to comply with Minimum Requirement #2. ~~In addition, all redevelopment that exceeds certain thresholds shall be required to comply with additional Minimum Requirements as follows.~~

The following redevelopment shall comply with Minimum Requirements #1 through #5 for the new and replaced impervious-hard surfaces and the land disturbed:

- Results in 2,000 square feet, or more, of new plus replaced hard surface area~~The new, replaced, or total of new plus replaced impervious surfaces is 2,000 square feet or more,~~ or
- Has land disturbing activity of 7,000 square feet or greater.~~7,000-square-foot or more of land-disturbing activities.~~

The following redevelopment shall comply with Minimum Requirements #1 through #109 for the new impervious-hard surfaces and converted pervious areas:

- Adds 5,000 square feet or more of new impervious-hard surfaces or,
- Converts ¾ acres, or more, of ~~native~~vegetation to lawn or landscaped areas, or
- Converts 2.5 acres, or more, of ~~native~~vegetation to pasture.

If the runoff from the new impervious-hard surfaces and converted pervious surfaces is not separated from runoff from other surfaces on the project site, the stormwater ~~treatment~~ facilities must be sized for the entire flow that is directed to them.

The local government may allow the Minimum Requirements to be met for an equivalent (flow and pollution characteristics) area within the same site. For public roads' projects,

1 the equivalent area does not have to be within the project limits, but must drain to the
2 same receiving water.
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4 **3.4 Additional Requirements for Re-development Project Sites**

5 For road-related projects, runoff from the replaced and new [impervious-hard](#) surfaces
6 (including pavement, shoulders, curbs, and sidewalks) shall meet all the Minimum
7 Requirements if the new [impervious-hard](#) surfaces total 5,000 square feet or more and
8 total 50% or more of the existing [impervious-hard](#) surfaces within the project limits. The
9 project limits shall be defined by the length of the project and the width of the right-of-
10 way.
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12 Other types of redevelopment projects shall comply with ~~all the~~ Minimum Requirements
13 [#1 through #9](#) for the new and replaced [impervious-hard](#) surfaces if the total of new plus
14 replaced [impervious-hard](#) surfaces is 5,000 square feet or more, and the valuation of
15 proposed improvements – including interior improvements – exceeds 50% of the
16 assessed value of the existing site improvements.
17

18 The Permittee may exempt or institute a stop-loss provision for redevelopment projects
19 from compliance with Minimum Requirements for treatment, flow control, and wetlands
20 protection as applied to the replaced [impervious-hard](#) surfaces if the Permittee has
21 adopted a plan and a schedule that fulfills those requirements in regional facilities. [See](#)
22 [also Sections 5, 6 and 7 of this Appendix.](#)
23

24 The Permittee may grant a variance/exception to the application of the flow control
25 requirements to replaced impervious surfaces if such application imposes a severe
26 economic hardship. See Section 6 of this Appendix.
27

28 **3.5 Modification of the Minimum Requirements**

29 Basin Planning is encouraged and may be used to tailor [Minimum Requirement #5 On-](#)
30 [site Stormwater Management](#), Minimum Requirement #6 Runoff Treatment, Minimum
31 Requirement #7 Flow Control, and/or Minimum Requirement #8 Wetlands Protection.
32 Basin planning may be used to support alternative treatment, flow control, and/or wetland
33 protection requirements to those contained in Section 4 of this Appendix. Basin planning
34 may also be used to demonstrate an equivalent level of treatment, flow control, and/or
35 wetland protection through the construction and use of regional stormwater facilities.
36 See Section 7 of this Appendix for details on Basin Planning and how [Permittees may use](#)
37 basin planning ~~may be used~~ to modify the Minimum Requirements ~~isn~~ Section 4.
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1 | **Section 4. Minimum Requirements**

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3 | This Section describes the Minimum Requirements for stormwater management at [new](#)
4 | development and redevelopment sites. Section 3 of this Appendix should be consulted to
5 | determine which of the minimum requirements below apply to any given project. Figures
6 | 3.2 and 3.3 should be consulted to determine whether the minimum requirements apply to
7 | new surfaces, replaced surfaces or new and replaced surfaces.
8

9 | **4.1 Minimum Requirement #1: Preparation of Stormwater Site Plans**

10 | The permittee shall require a Stormwater Site Plan from all projects meeting the
11 | thresholds in Section 3.1 of this Appendix. [Stormwater Site Plans shall use site-](#)
12 | [appropriate development principles to retain native vegetation and minimize impervious](#)
13 | [surfaces to the extent feasible.](#) Stormwater Site Plans shall be prepared in accordance
14 | with Chapter 3 of Volume 1 of the *Stormwater Management Manual for Western*
15 | *Washington (20052012)*.

16 | **4.2 Minimum Requirement #2: Construction Stormwater Pollution Prevention Plan (SWPPP)**

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19 | Permittees may choose to allow compliance with this Minimum Requirement to be
20 | achieved for an individual site if the site is covered under Ecology's *General NPDES*
21 | *Permit for Stormwater Discharges Associated with Construction Activities* and fully
22 | implementing the requirements of that permit.

23 | ~~Permittees may choose to allow site operators to apply an "Erosivity Waiver" to projects~~
24 | ~~disturbing less than five acres that meet the requirements at the end of this section; such~~
25 | ~~projects would be waived from the requirement that the Permittee review site plans for~~
26 | ~~construction phase stormwater pollution prevention.~~

27 | ~~The Permittee may develop an abbreviated SWPPP format to meet the SWPPP~~
28 | ~~requirement under this permit for sites that are less than 1 acre.~~

29 | ***General Requirements***

30 | All new development and redevelopment projects are responsible for preventing erosion
31 | and discharge of sediment and other pollutants into receiving waters. Permittees must
32 | require a Construction Stormwater Pollution Prevention Plan (SWPPP) ~~as part of the~~
33 | ~~Stormwater Site Plan (see Minimum Requirement #1 above)~~ for all projects which [result](#)
34 | [in 2,000 sq. ft. or more of new plus replaced hard surface area, or which disturb 7,000 sq.](#)
35 | [ft. or more meet the thresholds in Section 3 of this Appendix.](#) [Projects below those](#)
36 | [thresholds are not required to prepare a Construction SWPPP, but must consider all of the](#)
37 | [Elements listed below for Construction SWPPP's and develop controls for all elements](#)
38 | [that pertain to the project site.](#) [The Permittee may develop an abbreviated SWPPP format](#)
39 | [to meet the SWPPP requirement under this permit for sites that are less than 1 acre.](#)

1 The SWPPP shall be implemented beginning with initial [soil-land](#) disturbance and until
2 final stabilization.

3 Sediment and Erosion control BMPs shall be consistent with the BMPs contained in
4 chapters 3 and 4 of Volume II of the *Stormwater Management Manual for Western*
5 *Washington* ([20052012](#)), and/or other equivalent BMPs contained in technical stormwater
6 manuals approved by [Ecologythe Department](#).

7 The SWPPP shall include a narrative and drawings. All BMPs shall be clearly referenced
8 in the narrative and marked on the drawings. The SWPPP narrative shall include
9 documentation to explain and justify the pollution prevention decisions made for the
10 project. Clearing and grading activities for developments shall be permitted only if
11 conducted pursuant to an approved site development plan (e.g., subdivision approval) that
12 establishes permitted areas of clearing, grading, cutting, and filling. ~~When establishing~~
13 ~~these permitted clearing and grading areas, consideration should be given to minimizing~~
14 ~~removal of existing trees and minimizing disturbance/compaction of native soils except~~
15 ~~as needed for building purposes.~~ These permitted clearing and grading areas and any
16 other areas required to preserve critical or sensitive areas, buffers, native growth
17 protection easements, or tree retention areas as may be required by local jurisdictions,
18 shall be delineated on the site plans and the development site.

19 Seasonal Work Limitations - From October 1 through April 30, clearing, grading, and
20 other soil disturbing activities may only be authorized by the Permittee if silt-laden runoff
21 will be prevented from leaving the site through a combination of the following:

- 22 1. Site conditions including existing vegetative coverage, slope, soil type and
23 proximity to receiving waters; and
- 24 2. Limitations on activities and the extent of disturbed areas; and
- 25 3. Proposed erosion and sediment control measures.

26 Based on the information provided and/or local weather conditions, the Permittee may
27 expand or restrict the seasonal limitation on site disturbance. The following activities are
28 exempt from the seasonal clearing and grading limitations:
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- 30 1. Routine maintenance and necessary repair of erosion and sediment control BMPs,
31
- 32 2. Routine maintenance of public facilities or existing utility structures that do not
33 expose the soil or result in the removal of the vegetative cover to soil, and
34
- 35 3. Activities where there is one hundred percent infiltration of surface water runoff
36 within the site in approved and installed erosion and sediment control facilities.
37

38 ***Construction Stormwater Pollution Prevention Plan (SWPPP) Elements***

39 The construction site operator shall include each of the [twelvethirteen](#) elements below in
40 the SWPPP and ensure that they are implemented unless site conditions render the
41 element unnecessary and the exemption from that element is clearly justified in the

1 SWPPP. The SWPPP shall include both narrative and drawings. All BMPs shall be
2 clearly referenced in the narrative and marked on the drawings. The SWPPP narrative
3 shall include documentation to explain and justify the pollution prevention decisions
4 made for the project.
5

6 1. Preserve Vegetation/Mark Clearing Limits:
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- 8 a. ~~Prior to~~Before beginning land disturbing activities, including clearing and
9 grading, clearly mark all clearing limits, sensitive areas and their buffers, and
10 trees that are to be preserved within the construction area.
11
12 b. ~~Retain T~~the duff layer, native top soil, and natural vegetation ~~shall be retained~~ in
13 an undisturbed state to the maximum degree practicable.
14

15 2. Establish Construction Access:
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- 17 a. ~~Limit C~~construction vehicle access and exit ~~shall be limited~~ to one route, if
18 possible.
19
20 b. ~~Stabilize A~~access points ~~shall be stabilized~~ with a pad of quarry spalls, crushed
21 rock, or other equivalent BMPs, to minimize ~~the~~ tracking of sediment onto public
22 roads.
23
24 c. ~~Locate W~~wheel wash or tire baths ~~shall be located~~ on-site, if the stabilized
25 construction entrance is not effective in preventing tracking sediment ~~from being~~
26 ~~tracked~~ onto public roads.
27
28 d. If sediment is tracked off site, clean the affected roadways ~~shall be cleaned~~
29 thoroughly at the end of each day, or more frequently as necessary (for example,
30 during wet weather). Remove Ssediment ~~shall be removed~~ from roads by
31 shoveling, sweeping, or pick up sweeping and ~~shall be~~ transported the sediment to
32 a controlled sediment disposal area.
33
34 e. ~~Conduct S~~street washing ~~is allowed~~ only after sediment is removed in accordance
35 with 2.d, above.
36
37 f. ~~Control S~~street wash wastewater ~~shall be controlled~~ by pumping back on-site, or
38 otherwise ~~be prevented~~ it from discharging into systems tributary to waters of the
39 sState.
40

41 3. Control Flow Rates:
42

- 43 a. Protect Pproperties and waterways downstream ~~from of~~ development sites ~~shall~~
44 ~~be protected~~ from erosion and the associated discharge of turbid waters due to
45 increases in the velocity and peak volumetric flow rate of stormwater runoff from
46 the project site.
47

- 1 | b. Where necessary to comply with 3.a, above, construct stormwater retention or
2 | detention facilities ~~shall be constructed~~ as one of the first steps in grading. Assure
3 | that ~~Detention facilities shall be functional properly prior to before~~
4 | constructing on ~~of~~ site improvements (e.g., impervious surfaces).
5 |
6 | c. If permanent infiltration ponds are used for flow control during construction,
7 | protect these facilities ~~should be protected~~ from siltation during the construction
8 | phase.
9 |
10 | 4. Install Sediment Controls:
11 |
12 | ~~a. Stormwater runoff from disturbed areas shall pass through a sediment pond, or~~
13 | ~~other appropriate sediment removal BMP, prior to leaving a construction site or~~
14 | ~~prior to discharge to an infiltration facility. Runoff from fully stabilized areas~~
15 | ~~may be discharged without a sediment removal BMP, but shall meet the flow~~
16 | ~~control performance standard of 3.a, above.~~
17 | ~~ab. Design, install, and maintain effective erosion controls and sediment controls to~~
18 | ~~minimize the discharge of pollutants.~~
19 | b. Construct ~~S~~ sediment control BMPs (sediment ponds, traps, filters, etc.) ~~shall be~~
20 | ~~constructed~~ as one of the first steps in grading. ~~These BMPs shall be functional~~
21 | ~~before other land disturbing activities take place.~~
22 | c. Minimize sediment discharges from the site. The design, installation and
23 | maintenance of erosion and sediment controls must address factors such as the
24 | amount, frequency, intensity and duration of precipitation, the nature of resulting
25 | stormwater runoff, and soil characteristics, including the range of soil particle
26 | sizes expected to be present on the site.
27 | d. Direct stormwater runoff from disturbed areas through a sediment pond or other
28 | appropriate sediment removal BMP, before the runoff leaves a construction site or
29 | before discharge to an infiltration facility. Runoff from fully stabilized areas may
30 | be discharged without a sediment removal BMP, but must meet the flow control
31 | performance standard in 3.a, above.
32 | ee. Locate BMPs intended to trap sediment ~~on on~~-site ~~shall be located~~ in a manner to
33 | avoid interference with the movement of juvenile salmonids attempting to enter
34 | off-channel areas or drainages.
35 | f. Where feasible, design outlet structures that withdraw impounded stormwater
36 | from the surface to avoid discharging sediment that is still suspended lower in the
37 | water column.
38 | 5. Stabilize Soils:
39 | a. Stabilize ~~E~~ exposed and unworked soils ~~shall be stabilized~~ by application of
40 | effective BMPs that prevent erosion. Applicable BMPs include, but are not

1 limited to: temporary and permanent seeding, sodding, mulching, plastic
2 covering, erosion control fabrics and matting, soil application of polyacrylamide
3 (PAM), the early application of gravel base early on areas to be paved, and dust
4 control.

5 b. Control stormwater volume and velocity within the site to minimize soil erosion.

6 c. Control stormwater discharges, including both peak flow rates and total
7 stormwater volume, to minimize erosion at outlets and to minimize downstream
8 channel and stream bank erosion.

9 bd. Depending on the geographic location of the project, No-soils ~~must not should~~
10 remain exposed and unworked for more than the time periods set forth below to
11 prevent erosion:

12 • During the dry season (May 1 – September 30): 7 days

13 • During the wet season (October 1 – April 30): 2 days

14 ~~c. The time period may be adjusted by the Permittee, if the Permittee can show that~~
15 ~~local precipitation data justify a different standard.~~

16 de. Stabilize Ssoils ~~shall be stabilized~~ at the end of the shift before a holiday or
17 weekend if needed based on the weather forecast.

18 ef. Stabilize Ssoil stockpiles ~~must be stabilized~~ from erosion, protected
19 with sediment trapping measures, and where possible, ~~be located~~ away from storm drain inlets,
20 waterways and drainage channels.

21 g. Minimize the amount of soil exposed during construction activity.

22 h. Minimize the disturbance of steep slopes.

23 i. Minimize soil compaction and, unless infeasible, preserve topsoil.

24 6. Protect Slopes:

25 a. Design and construct cut- and -fill slopes in a manner to that will minimize
26 erosion. Applicable practices include, but are not limited to, reducing continuous
27 length of slope with terracing and diversions, reducing slope steepness, and
28 roughening slope surfaces (for example, track walking).

29 b. Divert Ooff-site stormwater (run-on) or ground water shall be diverted away from
30 slopes and undisturbed areas with interceptor dikes, pipes and/or swales. -Off-site
31 stormwater should be managed separately from stormwater generated on the site.

32 c. At the top of slopes, collect drainage in pipe slope drains or protected channels to
33 prevent erosion.

- Temporary pipe slope drains ~~shall-must~~ handle the ~~expected~~-peak 10-minute ~~flow-velocity~~ of flow from a Type 1A, 10-year, 24-hour frequency storm for the developed condition. ~~-Alternatively, the 10-year, 1-hour flow rate predicted by an approved continuous runoff model, increased by a factor of 1.6, may be used. -The hydrologic analysis shall-must use the existing land cover condition for predicting flow rates from tributary areas outside the project limits. -For tributary areas on the project site, the analysis shall-must use the temporary or permanent project land cover condition, whichever will produce the highest flow rates. -If using the Western Washington Hydrology Model to predict flows, bare soil areas should be modeled as “landscaped area.”~~

d. ~~Place E~~excavated material ~~shall-be-placed~~ on the uphill side of trenches, consistent with safety and space considerations.

e. ~~Place C~~check dams ~~shall-be-placed~~ at regular intervals within constructed channels that are cut down a slope.

7. Protect Drain Inlets:

a. ~~Protect S~~storm drain inlets made operable during construction ~~shall-be-protected~~ so that stormwater runoff does not enter the conveyance system without first being filtered or treated to remove sediment.

b. ~~Clean or remove and replace I~~inlet protection devices ~~shall-be-cleaned-or-removed and-replaced~~ when sediment has filled one-third of the available storage (unless a different standard is specified by the product manufacturer).

8. Stabilize Channels and Outlets:

a. ~~Design, construct, and stabilize A~~all temporary on-site conveyance channels ~~shall be designed, constructed, and stabilized~~ to prevent erosion from the following expected peak flows:-

- Channels ~~shall-must~~ handle the ~~expected~~-peak 10-minute ~~flow-velocity~~ of flow from a Type 1A, 10-year, 24-hour frequency storm for the developed condition. ~~-Alternatively, the 10-year, 1-hour flow rate predicted-indicated by an approved continuous runoff model, increased by a factor of 1.6, may be used. -The hydrologic analysis shall-must use the existing land cover condition for predicting flow rates from tributary areas outside the project limits. -For tributary areas on the project site, the analysis shall use the temporary or permanent project land cover condition, whichever will produce the highest flow rates. -If using the Western Washington Hydrology Model to predict flows, bare soil areas should be modeled as “landscaped area.”~~

b. ~~Provide S~~stabilization, including armoring material, adequate to prevent erosion of outlets, adjacent stream banks, slopes, and downstream reaches ~~shall-be provided~~ at the outlets of all conveyance systems.

1 9. Control Pollutants:

2 a. Design, install, implement and maintain effective pollution prevention measures
3 to minimize the discharge of pollutants.

4 b. Handle and dispose ~~All~~ pollutants, including waste materials and demolition
5 debris, that occur on-site ~~shall be handled and disposed of~~ in a manner that does
6 not cause contamination of stormwater.

7 bc. Provide ~~C~~cover, containment, and protection from vandalism ~~shall be provided~~
8 for all chemicals, liquid products, petroleum products, and other materials that
9 have the potential to pose a threat to human health or the environment. On-site
10 fueling tanks ~~shall~~ must include secondary containment. Secondary containment
11 means placing tanks or containers within an impervious structure capable of
12 containing 110% of the volume contained in the largest tank within the
13 containment structure. Double-walled tanks do not require additional secondary
14 containment.

15 ed. Conduct ~~M~~maintenance, fueling and repair of heavy equipment and vehicles ~~shall~~
16 ~~be conducted~~ using spill prevention and control measures. Clean ~~C~~contaminated
17 surfaces ~~shall be cleaned~~ immediately following any spill incident.

18 de. Discharge ~~W~~wheel wash or tire bath wastewater ~~shall be discharged~~ to a separate
19 on-site treatment system that prevents discharge to surface water, such as closed-
20 loop recirculation or upland application, or to the sanitary sewer, with local sewer
21 district approval.

22 ef. Application of ~~fertilizers and pesticides shall be conducted~~ in a manner and at
23 application rates that will not result in loss of chemical to stormwater runoff.
24 Follow ~~M~~manufacturers' label requirements for application rates and procedures
25 ~~shall be followed.~~

26 fg. Use ~~BMPs shall be used~~ to prevent ~~or treat~~ contamination of stormwater runoff by
27 pH modifying sources. ~~These~~ sources for this contamination include, but are not
28 limited to: bulk cement, cement kiln dust, fly ash, new concrete washing and
29 curing waters, waste streams generated from concrete grinding and sawing,
30 exposed aggregate processes, dewatering concrete vaults, concrete pumping and
31 mixer washout waters.

32 h. Adjust the pH of stormwater if necessary to prevent ~~Permittees shall require~~
33 ~~construction site operators to adjust the pH of stormwater if necessary to prevent~~
34 violations of water quality standards.

35 i. Assure that washout of concrete trucks is performed offsite or in designated
36 concrete washout areas only. Do not wash out concrete trucks onto the ground, or
37 into storm drains, open ditches, streets, or streams. Do not dump excess concrete
38 on-site, except in designated concrete washout areas. Concrete spillage or
39 concrete discharge to surface waters of the State is prohibited.

- 1 | j. ~~Permittees shall require construction site operators to~~ Obtain written approval from
2 | ~~Ecology the Department prior to before~~ using chemical treatment other than CO2
3 | or dry ice to adjust pH.

4 | 10. Control De-Watering:

- 5 | a. ~~Discharge F~~ foundation, vault, and trench de-watering water, which have similar
6 | characteristics to stormwater runoff at the site, ~~shall be discharged~~ into a
7 | controlled conveyance system ~~prior to before~~ discharge to a sediment trap or
8 | sediment pond.
- 9 | b. ~~Discharge C~~ clean, non-turbid de-watering water, such as well-point ground water,
10 | ~~can be discharged~~ to systems tributary to, or directly into surface waters of the
11 | sState, as specified in 8, above, provided the de-watering flow does not cause
12 | erosion or flooding of receiving waters. ~~Do not route C~~ clean de-watering water
13 | ~~should not be routed~~ through stormwater sediment ponds. Note that “surface
14 | waters of the State” may exist on a construction site as well as off site; for
15 | example, a creek running through a site.
- 16 | c. Handle highly turbid or otherwise contaminated dewatering water separately from
17 | stormwater.
- 18 | ~~ed.~~ Other treatment or de-watering disposal options may include:
- 19 | (i) ~~(i)~~ Infiltration;
- 20 | (ii) ~~(ii)~~ Transport offsite in vehicle, such as a vacuum flush truck, for legal
21 | disposal in a manner that does not pollute state waters.;
- 22 | (iii) ~~(iii)~~ Ecology-approved on-site chemical treatment or other suitable
23 | treatment technologies ~~approved by the Permittee;~~
- 24 | (iv) ~~(iv)~~ Sanitary or combined sewer discharge with local sewer district
25 | approval, if there is no other option.;
- 26 | ~~(i)(v)~~ (v) Use of a sedimentation bag with outfall to a ditch or swale for small
27 | volumes of localized de-watering.
- 28 | ~~d. Highly turbid or contaminated dewatering water shall be handled separately from~~
29 | ~~stormwater.~~

30 | 11. Maintain BMPs:

- 31 | a. Maintain and repair All temporary and permanent erosion and sediment control
32 | BMPs ~~shall be inspected, maintained and repaired~~ as needed to assure continued
33 | performance of their intended function in accordance with BMP specifications.

- 1 b. ~~Remove A~~all temporary erosion and sediment control BMPs ~~shall be removed~~
2 within 30 days after achieving final site stabilization ~~is achieved~~ or after the
3 temporary BMPs are no longer needed.

4 12. Manage the Project:

- 5 a. ~~Phase D~~development projects ~~shall be phased~~ to the maximum degree practicable
6 and ~~shall~~ take into account seasonal work limitations.

- 7 b. ~~The Permittee must require construction site operators~~ Inspection and monitoring
8 – Inspect, to maintain, and repair ~~as needed,~~ all ~~sediment and erosion control~~
9 BMPs as needed to assure continued performance of their intended function.
10 Projects regulated under the Construction Stormwater General Permit must
11 conduct site inspections and monitoring in accordance with Special Condition S4
12 of the Construction Stormwater General Permit.

- 13 c. Maintaining an updated construction SWPPP – Maintain, update, and implement
14 the SWPPP.

- 15 ~~ed.~~ ~~The Permittee must require construction site operators to periodically inspect their~~
16 ~~sites. For p~~Projects that disturb one or more acres must have ; site inspections
17 ~~shall be~~ conducted by a Certified Erosion and Sediment Control Lead (CESCL).
18 Sites less than one acre may have a person without CESCL certification conduct
19 inspections. The SWPPP must who shall be identified in the SWPPP the
20 CESCL or inspector, and who shall must be present on-site or on-call at all times.
21 The CESCL or inspector (sites less than on acre) must have the skills to assess
22 the:

- 23 • Site conditions and construction activities that could impact the quality of
24 stormwater.
- 25 • Effectiveness of erosion and sediment control measures used to control the
26 quality of stormwater discharges.

- 27 c. The CESCL or inspector must examine stormwater visually for the presence of
28 suspended sediment, turbidity, discoloration, and oil sheen. They must evaluate
29 the effectiveness of BMPs and determine if it is necessary to install, maintain, or
30 repair BMPs to improve the quality of stormwater discharges.

31 Based on the results of the inspection, construction site operators must correct the
32 problems identified by:

- 33 • Reviewing the SWPPP for compliance with the 13 construction SWPPP
34 elements and making appropriate revisions within 7 days of the inspection.
- 35 • Immediately beginning the process of fully implementing and maintaining
36 appropriate source control and/or treatment BMPs as soon as possible,
37 addressing the problems not later than within 10 days of the inspection. If

1 installation of necessary treatment BMPs is not feasible within 10 days, the
2 construction site operator may request an extension within the initial 10-day
3 response period.

- 4 • Documenting BMP implementation and maintenance in the site log book
5 (sites larger than 1 acre).

6 c. The CESCL or inspector must inspect all areas disturbed by construction
7 activities, all BMPs, and all stormwater discharge points at least once every
8 calendar week and within 24 hours of any discharge from the site. (For purposes
9 of this condition, individual discharge events that last more than one day do not
10 require daily inspections. For example, if a stormwater pond discharges
11 continuously over the course of a week, only one inspection is required that
12 week.) The CESCL or inspector may reduce the inspection frequency for
13 temporary stabilized, inactive sites to once every calendar month.

14 ~~d. Permittee must require construction site operators to maintain, update and~~
15 ~~implement their SWPPP. Permittees shall require construction site operators to~~
16 ~~modify their SWPPP whenever there is a change in design, construction,~~
17 ~~operation, or maintenance at the construction site that has, or could have, a~~
18 ~~significant effect on the discharge of pollutants to waters of the state.~~

19 13. Protect Low Impact Development BMPs

20 a. Protect all Bioretention and Rain Garden BMPs from sedimentation through
21 installation and maintenance of erosion and sediment control BMPs on portions of
22 the site that drain into the Bioretention and/or Rain Garden BMPs. Restore the
23 BMPs to their fully functioning condition if they accumulate sediment during
24 construction. Restoring the BMP must include removal of sediment and any
25 sediment-laden Bioretention/rain garden soils, and replacing the removed soils
26 with soils meeting the design specification.

27 b. Prevent compacting Bioretention and rain garden BMPs by excluding
28 construction equipment and foot traffic. Protect completed lawn and landscaped
29 areas from compaction due to construction equipment.

30 c. Control erosion and avoid introducing sediment from surrounding land uses onto
31 permeable pavements. Do not allow muddy construction equipment on the base
32 material or pavement. Do not allow sediment-laden runoff onto permeable
33 pavements or base materials.

34 d. Keep all heavy equipment off existing soils under LID facilities that have been
35 excavated to final grade to retain the infiltration rate of the soils.

36 ***Erosivity Waiver***

37 ~~Permittees may allow construction site operators to qualify for a waiver from the~~
38 ~~requirement to submit a SWPPP for review by the Permittee provided the following~~
39 ~~conditions are met:~~

- ~~1. The site will result in the disturbance of less than 5 acres; and the site is not a portion of a common plan of development or sale that will disturb 5 acres or greater; and~~
- ~~2. The project's rainfall erosivity factor ("R" Factor) is less than 5 during the period of construction activity, as calculated using the Texas A&M University online rainfall erosivity calculator at: <http://ei.tamu.edu/>. The period of construction activity begins at initial earth disturbance and ends with final stabilization; and~~
- ~~3. The entire period of construction activity falls between June 15 and September 15; and~~
- ~~4. The site or facility has not been declared a significant contributor of pollutants; and~~
- ~~5. There are no planned construction activities at the site that will result in non-stormwater discharges; and~~
- ~~6. A waiver is allowed by the Permittee; and~~
- ~~7. The construction site operators notify the Permittee of the intention to apply this waiver at least one week prior to commencing land disturbing activities. The notification must include a summary of the project information used in calculating the project's rainfall erosivity factor (see #2 above) and a certified statement that:
 - ~~• The operator will comply with applicable local stormwater requirements; and~~
 - ~~• The operator will implement appropriate erosion and sediment control BMPs to prevent violations of water quality standards.~~~~

4.3 Minimum Requirement #3: Source Control of Pollution

All known, available and reasonable source control BMPs must be required for to all projects approved by the Permittee. Source control BMPs must be selected, designed, and maintained in accordance with Volume IV of the *Stormwater Management Manual for Western Washington* ([20052012](#)) or an approved equivalent manual approved by ~~the~~ [DepartmentEcology](#).

4.4 Minimum Requirement #4: Preservation of Natural Drainage Systems and Outfalls

Natural drainage patterns shall be maintained, and discharges from the project site shall occur at the natural location, to the maximum extent practicable. The manner by which runoff is discharged from the project site must not cause a significant adverse impact to downstream receiving waters and down gradient properties. All outfalls require energy dissipation.

4.5 Minimum Requirement #5: On-site Stormwater Management

The Permittee must require On-site Stormwater Management BMPs in accordance with the following project thresholds, standards, and lists to infiltrate, disperse, and retain stormwater runoff onsite to the ~~maximum~~ extent feasible without causing flooding or erosion impacts. ~~Roof Downspout Control BMPs, functionally equivalent to those described in Chapter 3 of Volume III of the Stormwater Management Manual for Western Washington (2005);~~

Project Thresholds

Projects triggering **only** Minimum Requirements #1 through #5 shall use On-site Stormwater Management BMP's from Mandatory List #1 for all surfaces within each type of surface listed below.

Projects triggering only Minimum Requirements #1 through #5 may choose to demonstrate compliance with the LID Performance Standard in lieu of using Mandatory List #1. Projects selecting that option cannot use Rain Gardens. They can choose to use Bioretention options as described in the Stormwater Management Manual for Western Washington (2012) to achieve the LID Performance Standard.

Projects triggering Minimum Requirements #1 through #9, must apply On-site Stormwater Management in accordance with the table below.

| <u>Project Type and Location</u> | <u>Requirement</u> |
|---|---|
| <u>New development on any parcel inside the UGA, or new development outside the UGA on a parcel less than 5 acres</u> | <u>Low Impact Development Performance Standard and BMP T5.13; or Mandatory List- #2 (applicant option).</u> |
| <u>New development outside the UGA on a parcel greater than of 5 acres or larger</u> | <u>Low Impact Development Performance Standard and BMP T5.13.</u> |
| <u>Redevelopment on any parcel inside the UGA, or redevelopment outside the UGA on a parcel less than 5 acres</u> | <u>Low Impact Development Performance Standard and BMP T5.13; or Mandatory List #2 (applicant option).</u> |
| <u>Redevelopment outside the UGA on a parcel greater than of -5 acres or larger</u> | <u>Low Impact Development Performance Standard and BMP T5.13.</u> |

NOTE: This table refers to the Urban Growth Area (UGA) as designated under the Growth Management Act of the State of Washington. If the Permittee is located in a county that is not subject to GMA planning, the city limits shall be used instead.

1 **Low Impact Development Performance Standard**

2 Stormwater discharges shall match developed discharge durations to pre-developed
3 durations for the range of pre-developed discharge rates from 8% of the 2-year peak flow
4 to 50% of the 2-year peak flow. Refer to the Standard Flow Control Requirement section
5 in Minimum Requirement #7 for information about the assignment of the pre-developed
6 condition. Project sites that must also meet minimum requirement #7 – flow control -
7 must match flow durations between 8% of the 2-year flow through the full 50-year flow.

8
9
10 **Mandatory List #1**

11
12 For each surface, consider the BMP's in the order listed for that type of surface. Use the
13 first BMP that is considered feasible. No other On-site Stormwater Management BMP is
14 necessary for that surface. Feasibility shall be determined by evaluation against design
15 requirements for the BMP and the feasibility criteria in Section 8 of this Appendix:

16
17
18 Lawn and landscaped areas:

- 19 • Soil Quality BMPs, functionally equivalent to those BMP T5.13 in Chapter 5 of
20 Volume V, of the Stormwater Management Manual for Western Washington
21 (SMWW¹)(2005) at all projects; shall be required to reduce the hydrologic
22 disruption of developed sites.

23
24 Roofs:

- 25 1. Full Dispersion in accordance with BMP T5.30 in Chapter 5 of Volume V of the
26 SMMWW
27 2. Downspout Infiltration Systems in accordance with Section 3.1.1 of the
28 SMMWW
29 3. Rain Gardens in accordance with design procedures in the “Rain Garden
30 Handbook for Western Washington”
31 4. Downspout Dispersion Systems in accordance with BMP T5.10 of the SMMWW
32

33 Other Hard Surfaces:

- 34 1. Full Dispersion in accordance with BMP T5.30 in Chapter 5 of Volume V, of the
35 SMMWW
36 2. Permeable pavement² in accordance with design criteria in Appendix III-C of the
37 SMMWW
38 3. Rain Gardens in accordance with design procedures in the “Rain Garden
39 Handbook for Western Washington”
40 4. Sheet Flow Dispersion in accordance with BMP T5.12, or Concentrated Flow
41 Dispersion in accordance with BMP T5.11 of the SMMWW
42
43

¹ All references to the *Stormwater Management Manual for Western Washington* assume the 2012 version.

² This is not a requirement to pave these surfaces. Where pavement is proposed, it must be permeable to the extent feasible.

1 **Mandatory List #2**

2
3 For each surface, consider the BMP's in the order listed for that type of surface. Use the
4 first BMP that is considered feasible. No other On-site Stormwater Management BMP is
5 necessary for that surface. Feasibility shall be determined by evaluation against design
6 requirements for the BMP and the feasibility criteria in Section 8 of this Appendix:

7
8 Lawn and landscaped areas:

- 9 • BMP T5.13 in Chapter 5 of Volume V of the SMMWW at all projects.

10
11 Roofs:

- 12 1. Full Dispersion in accordance with BMP T5.30 in Chapter 5 of Volume V of the
13 SMMWW
14 2. Downspout Infiltration Systems in accordance with Section 3.1.1 of the
15 SMMWW
16 3. Bioretention BMP's (See Chapter 7 of Volume V of the SMMWW) that have a
17 minimum horizontally projected surface area below the overflow which is at least
18 5% of the of the total surface area draining to it. If the short-term native soil
19 infiltration rate is less than 0.3 in/hr, do not use this option unless the roof is
20 classified as pollution-generating impervious surface.
21 4. Downspout Dispersion Systems in accordance with Section 3.1.2 of the
22 SMMWW
23 5. For a commercial building, a vegetated roof or an impervious roof with runoff
24 routed below permeable pavement. If the latter option is not used, a cost analysis
25 is necessary to claim infeasibility of a vegetated roof.

26
27
28 Other Hard Surfaces:

- 29 1. Full Dispersion in accordance with BMP T5.30 in Chapter 5 of Volume V of the
30 SMMWW
31 2. Permeable pavement² in accordance with design criteria in Appendix III-C of the
32 SMMWW
33 3. Bioretention BMP's (See Chapter 7, Volume V of the SMMWW) that have a
34 minimum horizontally projected surface area below the overflow which is at least
35 5% of the of the total surface area draining to it. If the short-term native soil
36 infiltration rate is less than 0.3 in/hr, do not use this option unless the hard surface
37 is classified as pollution-generating.
38 4. Sheet Flow Dispersion in accordance with BMP T5.12, or Concentrated Flow
39 Dispersion in accordance with BMP T5.11 of the SMMWW

40
41
42 **4.6 Minimum Requirement #6: Runoff Treatment**

43 ***Project Thresholds***

44 The following require construction of stormwater treatment facilities (see Table 4.1
45 below):

- Projects in which the total of effective, pollution-generating impervious hard surface (PGIS) is 5,000 square feet or more in a threshold discharge area of the project, or
- Projects in which the total of pollution-generating pervious surfaces (PGPS) with the exception of permeable pavements - is three-quarters (3/4) of an acre or more in a threshold discharge area, and from which there is a surface discharge in a natural or man-made conveyance system from the site.

| Table 4.1 Treatment Requirements by Threshold Discharge Area | | | | |
|---|-----------------------------------|-----------------------------|-------------------------------|----------------------------|
| | < 3/4 acres of PGPS | ≥ 3/4 acres PGPS | < 5,000 sf PGIS | ≥ 5,000 sf PGIS |
| Treatment Facilities | | ✓ | | ✓ |
| Onsite Stormwater BMPs | ✓ | ✓ | ✓ | ✓ |

PGPS = pollution-generating pervious surfaces
 PGIS = pollution-generating impervious surfaces
 -sf = square feet

Treatment-Type Thresholds

1. **Oil Control:**

Treatment to achieve Oil Control applies to projects that have “high-use sites.” High-use sites are those that typically generate high concentrations of oil due to high traffic turnover or the frequent transfer of oil. High-use sites include:

- a. An area of a commercial or industrial site subject to an expected average daily traffic (ADT) count equal to or greater than 100 vehicles per 1,000 square feet of gross building area;
- b. An area of a commercial or industrial site subject to petroleum storage and transfer in excess of 1,500 gallons per year, not including routinely delivered heating oil;
- c. An area of a commercial or industrial site subject to parking, storage or maintenance of 25 or more vehicles that are over 10 tons gross weight (trucks, buses, trains, heavy equipment, etc.);
- d. A road intersection with a measured ADT count of 25,000 vehicles or more on the main roadway and 15,000 vehicles or more on any intersecting roadway, excluding projects proposing primarily pedestrian or bicycle use improvements.

2. **Phosphorus Treatment:**

The requirement to provide phosphorous control is determined by the local government with jurisdiction (e.g., through a lake management plan), or the Department of Ecology (e.g., through a waste load allocation). The local

1 government may have developed a management plan and implementing
2 ordinances or regulations for control of phosphorus from new/redevelopment for
3 the receiving water(s) of the stormwater drainage. The local government can use
4 the following sources of information for pursuing plans and implementing
5 ordinances and/or regulations:

- 6 a. Those waterbodies reported under section 305(b) of the Clean Water Act, and
7 designated as not supporting beneficial uses due to phosphorous;
8 b. Those listed in Washington State's Nonpoint Source Assessment required
9 under section 319(a) of the Clean Water Act due to nutrients.

10
11 3. Enhanced Treatment:

12 Except where specified below under "4. Basic Treatment," Enhanced treatment
13 for reduction in dissolved metals is required for the following project sites that
14 discharge to fish-bearing streams, lakes, or to waters or conveyance systems
15 tributary to fish-bearing streams or lakes:

16
17 Industrial project sites,
18 Commercial project sites,
19 Multi-family project sites, and
20 High AADT roads as follows:

21
22 Within Urban Growth Management Areas:

- 23 • Fully controlled and partially controlled limited access highways with
24 Annual Average Daily Traffic (AADT) counts of 15,000 or more
25 • All other roads with an AADT of 7,500 or greater

26
27 Outside of Urban Growth Management Areas:

- 28 • Roads with an AADT of 15,000 or greater unless discharging to a 4th
29 Strahler order stream or larger;
30 • Roads with an AADT of 30,000 or greater if discharging to a 4th Strahler
31 order stream or larger (as determined using 1:24,000 scale maps to
32 delineate stream order).

33
34 ~~However, such sites listed above that discharge directly (or, indirectly through a~~
35 ~~municipal storm sewer system) to Basic Treatment Receiving Waters (Appendix~~
36 ~~I-C of the Stormwater Management Manual for Western Washington~~
37 ~~(2005/2012)), and Any~~ areas of the above-listed project sites that are identified as
38 subject to Basic Treatment requirements (below), are ~~also~~ not also subject to
39 Enhanced Treatment requirements. For developments with a mix of land use
40 types, the Enhanced Treatment requirement shall apply when the runoff from the
41 areas subject to the Enhanced Treatment requirement comprise 50% or more of
42 the total runoff within a threshold discharge area.
43

1 4. Basic Treatment:

2 Basic Treatment is required in the following circumstances~~generally applies to:~~

- 3 • Project sites that discharge to the ground, UNLESS:
- 4 1) The soil suitability criteria for infiltration treatment are met (see
- 5 Chapter 3 of Volume III of the *Stormwater Management Manual for*
- 6 *Western Washington (20052012)* for soil suitability criteria) and
- 7 pretreatment is provided; or
- 8 2) The project uses infiltration strictly for flow control – not treatment -
- 9 and the discharge is within ¼-mile of a phosphorus sensitive lake (use
- 10 a Phosphorus Treatment facility), or within ¼ mile of a fish-bearing
- 11 stream, or a lake (use an Enhanced Treatment facility).
- 12
- 13 • Residential projects not otherwise needing phosphorus control as
- 14 designated by USEPA, the Department of Ecology, or by the Permittee;
- 15 and
- 16 • Project sites discharging directly (or indirectly through a municipal
- 17 separate storm sewer system) to- Basic Treatment Receiving Waters
- 18 (Appendix I-C of the *Stormwater Management Manual for Western*
- 19 *Washington (2012)*), salt waters, river segments, and lakes listed in
- 20 Appendix I-C of the *Stormwater Management Manual for Western*
- 21 *Washington (20052012)*; and
- 22 • Project sites that drain to streams that are not fish-bearing, or to waters not
- 23 tributary to fish-bearing streams;
- 24 • Landscaped areas of industrial, commercial, and multi-family project sites,
- 25 and parking lots of industrial and commercial project sites that do not
- 26 involve pollution-generating sources (e.g., industrial activities, customer
- 27 parking, storage of erodible or leachable material, wastes or chemicals)
- 28 other than parking of employees’ private vehicles. For developments with
- 29 a mix of land use types, the Basic Treatment requirement shall apply when
- 30 the runoff from the areas subject to the Basic Treatment requirement
- 31 comprise 50% or more of the total runoff within a threshold discharge
- 32 area.
- 33

34 ***Treatment Facility Sizing***

35 Water Quality Design Storm Volume: The volume of runoff predicted from a 24-hour

36 storm with a 6-month return frequency (a.k.a., 6-month, 24-hour storm). Wetpool

37 facilities are sized based upon the volume of runoff predicted through use of the Natural

38 Resource Conservation Service curve number equations in Chapter 2 of Volume III of the

39 *Stormwater Management Manual for Western Washington (20052012)*, for the 6-month,

40 24-hour storm. Alternatively, the 91st percentile, 24-hour runoff volume indicated by an

41 approved continuous runoff model may be used.

42

1 **Water Quality Design Flow Rate**

2 1. Preceding Detention Facilities or when Detention Facilities are not required:

3 The flow rate at or below which 91% of the runoff volume, as estimated by an
4 approved continuous runoff model, will be treated. Design criteria for treatment
5 facilities are assigned to achieve the applicable performance goal at the water
6 quality design flow rate (e.g., 80% TSS removal). At a minimum, 91% of the
7 total runoff volume, as estimated by an approved continuous runoff model, must
8 pass through the treatment facility(ies) at or below the approved hydraulic loading
9 rate for the facility(ies).

10
11 2. Downstream of Detention Facilities:

12 The water quality design flow rate must be the full 2-year release rate from the
13 detention facility.

14
15 Alternative methods may be used if they identify volumes and flow rates that are
16 at least equivalent.

17
18 That portion of any development project in which the above PGIS or PGPS
19 thresholds are not exceeded in a threshold discharge area shall apply On-site
20 Stormwater Management BMPs in accordance with Minimum Requirement #5.
21

22 **Treatment Facility Selection, Design, and Maintenance**

23 Stormwater treatment facilities shall be:

- 24 • Selected in accordance with the process identified in Chapter 4 of Volume I of the
- 25 *Stormwater Management Manual for Western Washington* ([20052012](#)),
- 26 • Designed in accordance with the design criteria in Volume V of the *Stormwater*
- 27 *Management Manual for Western Washington* ([20052012](#)), and
- 28 • Maintained in accordance with the maintenance schedule in Volume V of the
- 29 *Stormwater Management Manual for Western Washington* ([20052012](#)).

30
31 **Additional Requirements**

32 The discharge of untreated stormwater from pollution-generating ~~impervious~~hard
33 surfaces to ground water must not be authorized by the Permittee, except for the
34 discharge achieved by infiltration or dispersion of runoff ~~from residential sites~~
35 use of On-site Stormwater Management BMPs in accordance with Chapter 5, Volume V
36 and Chapter 7, Volume V.
37
38
39

1 **4.7 Minimum Requirement #7: Flow Control**

2 ***Applicability***

3 Except as provided below, the Permittee must require all projects provide flow control to
4 reduce the impacts of stormwater runoff from impervious surfaces and land cover
5 conversions. The requirement below applies to projects that discharge stormwater
6 directly, or indirectly through a conveyance system, into a fresh water.
7

8 | Flow control is not required -for projects that discharge directly to, or indirectly through
9 | an MS4 to a water listed in Appendix I-E of the *Stormwater Management Manual for*
10 | *Western Washington* ([20052012](#)) subject to the following restrictions:

- 11 • Direct discharge to the exempt receiving water does not result in the diversion of
12 drainage from any perennial stream classified as Types 1, 2, 3, or 4 in the State of
13 Washington Interim Water Typing System, or Types “S”, “F”, or “Np” in the
14 Permanent Water Typing System, or from any category I, II, or III wetland; and
- 15 • Flow splitting devices or drainage BMP’s are applied to route natural runoff volumes
16 from the project site to any downstream Type 5 stream or category IV wetland:
 - 17 ○ Design of flow splitting devices or drainage BMP’s will be based on
18 continuous hydrologic modeling analysis. The design will assure that flows
19 delivered to Type 5 stream reaches will approximate, but in no case exceed,
20 durations ranging from 50% of the 2-year to the 50-year peak flow.
 - 21 ○ Flow splitting devices or drainage BMP’s that deliver flow to category IV
22 wetlands will also be designed using continuous hydrologic modeling to
23 preserve pre-project wetland hydrologic conditions unless specifically waived
24 or exempted by regulatory agencies with permitting jurisdiction; and
- 25 • The project site must be drained by a conveyance system that is comprised entirely of
26 manmade conveyance elements (e.g., pipes, ditches, outfall protection, etc.) and
27 extends to the ordinary high water line of the exempt receiving water; and
- 28 • The conveyance system between the project site and the exempt receiving water shall
29 have sufficient hydraulic capacity to convey discharges from future build-out
30 conditions (under current zoning) of the site, and the existing condition from non-
31 project areas from which runoff is or will be collected; and
- 32 • Any erodible elements of the manmade conveyance system must be adequately
33 stabilized to prevent erosion under the conditions noted above.

34
35 If the discharge is to a stream that leads to a wetland, or to a wetland that has an outflow
36 to a stream, both this minimum requirement (Minimum Requirement #7) and Minimum
37 Requirement #8 apply.
38

39 Permittees may petition Ecology to exempt projects in additional areas. A petition must
40 justify the proposed exemption based upon a hydrologic analysis that demonstrates that
41 the potential stormwater runoff from the exempted area will not significantly increase the

erosion forces on the stream channel nor have near-field impacts (see Section 7 of this Appendix).

Thresholds

The following circumstances require construction of flow control facilities and/or land use management BMPs that will achieve ment of the standard flow control requirement for western Washington (see Table 4.2):

- Projects in which the total of effective impervious surfaces is 10,000 square feet or more in a threshold discharge area, or
- Projects that convert ¾ acres or more of native vegetation to lawn or landscape, or convert 2.5 acres or more of native vegetation to pasture in a threshold discharge area, and from which there is a surface discharge in a natural or man-made conveyance system from the site, or
- Projects that through a combination of effective impervious hard surfaces and converted effective pervious surfaces cause a 0.1 cubic feet per second increase in the 100-year flow frequency from a threshold discharge area as estimated using the Western Washington Hydrology Model or other approved model and one-hour time steps (or a 0.15 cfs increase using 15-minute time steps).

That portion of any development project in which the above thresholds are not exceeded in a threshold discharge area shall apply Onsite Stormwater Management BMPs in accordance with Minimum Requirement #5.

| Table 4.2 Flow Control Requirements by Threshold Discharge Area | | |
|--|-------------------------|------------------------------------|
| | Flow Control Facilities | On-site Stormwater Management BMPs |
| < ¾ acres conversion to lawn/landscape, or < 2.5 acres to pasture | | ✓ |
| ≥ ¾ acres conversion to lawn/landscape, or ≥ 2.5 acres to pasture | ✓ | ✓ |
| < 10,000 square feet of effective impervious area | | ✓ |
| ≥ 10,000 square feet of effective impervious area | ✓ | ✓ |
| ≥ 0.1 cubic feet per second increase in the 100-year flood frequency | ✓ | ✓ |

Standard Flow Control Requirement

Stormwater discharges shall match developed discharge durations to pre-developed durations for the range of pre-developed discharge rates from 50% of the 2-year peak flow up to the full 50-year peak flow. The pre-developed condition to be matched shall be a forested land cover unless:

- Reasonable, historic information is available that indicates the site was prairie prior to settlement (modeled as “pasture” in the Western Washington Hydrology Model); or
- The drainage area of the immediate stream and all subsequent downstream basins have had at least 40% total impervious area since 1985. In this case, the pre-developed condition to be matched shall be the existing land cover condition. [The map in Appendix I-G of the 2012 Stormwater Management Manual for Western Washington depicts those areas which meet this criterion.](#) Where basin-specific studies determine a stream channel to be unstable, even though the above criterion is met, the pre-developed condition assumption shall be the “historic” land cover condition, or a land cover condition commensurate with achieving a target flow regime identified by an approved basin study.

This standard requirement is waived for sites that will reliably infiltrate all the runoff from [impervioushard](#) surfaces and converted pervious surfaces.

Western Washington Alternative Requirement

An alternative requirement may be established through application of watershed-scale hydrological modeling and supporting field observations. Possible reasons for an alternative flow control requirement include:

- Establishment of a stream-specific threshold of significant bedload movement other than the assumed 50% of the 2-year peak flow;
- Zoning and Land Clearing Ordinance restrictions that, in combination with an alternative flow control standard, maintain or reduce the naturally occurring erosive forces on the stream channel; or
- A duration control standard is not necessary for protection, maintenance, or restoration of designated beneficial uses or Clean Water Act compliance.

See Section 7 Basin/Watershed Planning of this Appendix for details on how alternative flow control requirements may be established.

Additional Requirement

Flow Control BMPs shall be selected, designed, and maintained in accordance with Volume III of the *Stormwater Management Manual for Western Washington (20052012)* or an approved equivalent.

4.8 Minimum Requirement #8: Wetlands Protection

Applicability

The requirements below apply only to projects whose stormwater discharges into a wetland, either directly or indirectly through a conveyance system. [These requirements must be met in addition to meeting Minimum Requirement #6, Runoff Treatment.](#)

1 **Thresholds**

2 The thresholds identified in Minimum Requirement #6 – Runoff Treatment, and
3 Minimum Requirement #7 – Flow Control shall also be applied to determine the
4 applicability of this requirement to ~~for~~ discharges to wetlands.

5 **Standard Requirement**

6 ~~Projects within the drainage area of a wetland Discharges to wetlands shall~~ comply with
7 Guide Sheets #1 through #3 in Appendix I-D of the Stormwater Management Manual for
8 Western Washington (2012). maintain the hydrologic conditions, hydrophytic vegetation,
9 and substrate characteristics necessary to support existing and designated uses. The
10 hydrologic analysis shall use the existing land cover condition to determine the existing
11 hydrologic conditions unless directed otherwise by a regulatory agency with jurisdiction.
12 ~~A wetland can be considered for hydrologic modification and/or stormwater treatment in~~
13 ~~accordance with Guide Sheet 1B in Appendix I-D on the Stormwater Management~~
14 ~~Manual for Western Washington (20052012).~~

15 **Additional Requirements**

16 Stormwater treatment and flow control facilities shall not be built within a natural
17 vegetated buffer, except for:

- 18 • ~~N~~necessary conveyance systems as approved by the Permittee; or
- 19 • ~~A~~as allowed in wetlands approved for hydrologic modification and/or treatment in
20 accordance with Guide ~~S~~sheet ~~1B~~2 in Appendix I-D of the *Stormwater Management*
21 *Manual for Western Washington (20052012).*

22
23 An adopted and implemented basin plan prepared in accordance with the provisions of
24 Section 7 of this Appendix may be used to develop requirements for wetlands that are
25 tailored to a specific basin.
26

27 **4.9 Minimum Requirement #9: Operation and Maintenance**

28 Permittees must require an operation and maintenance manual that is consistent with the
29 provisions in Volume V of the *Stormwater Management Manual for Western Washington*
30 ~~(20052012)~~ for ~~all~~ proposed stormwater facilities and BMPs. The party (or parties)
31 responsible for maintenance and operation shall be identified in the operation and
32 maintenance manual. For private facilities approved by the Permittee, a copy of the
33 operation and maintenance manual shall be retained onsite or within reasonable access to
34 the site, and shall be transferred with the property to the new owner. For public facilities,
35 a copy of the operation and maintenance manual shall be retained in the appropriate
36 department. A log of maintenance activity that indicates what actions were taken shall be
37 kept and be available for inspection by the local government.

1 **Section 5. Adjustments**

2 Adjustments to the Minimum Requirements may be granted by the Permittee provided that a
3 written finding of fact is prepared, that addresses the following:

- 4 • The adjustment provides substantially equivalent environmental protection.
- 5 • Based on sound Engineering practices, the objectives of safety, function,
6 environmental protection and facility maintenance, are met.

9 **Section 6. Exceptions/Variations**

10
11 Exceptions/variances (exceptions) to the Minimum Requirements may be granted by the
12 Permittee following legal public notice of an application for an exception or variance, legal
13 public notice of the Permittee's decision on the application, and written findings of fact that
14 documents the Permittees determination to grant an exception. Permittees shall keep records,
15 including the written findings of fact, of all local exceptions to the Minimum Requirements.

16 Project-specific design exceptions based on site-specific conditions do not require prior approval
17 of [the Department Ecology](#). The Permittee must seek prior approval by [the Department Ecology](#)
18 for any jurisdiction-wide exception.

19 The Permittee may grant an exception to the minimum requirements if such application imposes
20 a severe and unexpected economic hardship. To determine whether the application imposes a
21 severe and unexpected economic hardship on the project applicant, the Permittee must consider
22 and document with written findings of fact the following:

- 23 • The current (pre-project) use of the site, and
- 24 • How the application of the minimum requirement(s) restricts the proposed use of
25 the site compared to the restrictions that existed prior to the adoption of the
26 minimum requirements; and
- 27 • The possible remaining uses of the site if the exception were not granted; and
- 28 • The uses of the site that would have been allowed prior to the adoption of the
29 minimum requirements; and
- 30 • A comparison of the estimated amount and percentage of value loss as a result of
31 the minimum requirements versus the estimated amount and percentage of value
32 loss as a result of requirements that existed prior to adoption of the minimum
33 requirements; and
- 34 • The feasibility for the owner to alter the project to apply the minimum
35 requirements.

36
37 In addition any exception must meet the following criteria:

- The exception will not increase risk to the public health and welfare, nor injurious to other properties in the vicinity and/or downstream, and to the quality of waters of the state; and
- The exception is the least possible exception that could be granted to comply with the intent of the Minimum Requirements.

Section 7. Basin/Watershed Planning

Basin/Watershed planning may be used by the Permittee to tailor [Minimum Requirement #5 On-site Stormwater Management](#), Minimum Requirement #6 Runoff Treatment, Minimum Requirement #7 Flow Control, and/or Minimum Requirement #8 Wetlands Protection. Basin planning may be used to support alternative [on-site stormwater management](#), treatment, flow control, and/or wetland protection requirements to those contained in Section 4 of this Appendix. Basin planning may also be used to demonstrate an equivalent level of treatment, flow control, and/or wetland protection through the construction and use of regional stormwater facilities.

Basin planning provides a mechanism by which the minimum requirements and implementing BMP's can be evaluated and refined based on an analysis of a basin or watershed. Basin plans ~~are~~ may be used to develop control strategies to address impacts from future development and to correct specific problems whose sources are known or suspected. Basin plans can be effective at addressing both long-term cumulative impacts of pollutant loads and short-term acute impacts of pollutant concentrations, as well as hydrologic impacts to streams, wetlands, and ground water resources.

Basin planning will require the use of computer models and field work to verify and support the models. ~~USEPA has developed the SUSTAIN model (System for Urban Stormwater Treatment and Analysis Integration) The USGS has developed software called "GenSen" (Generation and Analysis of Model Simulation Scenarios) that can be used with continuous runoff models to facilitate basin planning. The program is a Windows based application of HSPF that predicts water quality and quantity changes for multiple scenarios of land use and water management within a basin.~~ Permittees who are considering the use of basin/watershed plans to modify or tailor one or more of the minimum requirements are encouraged to contact Ecology early in the planning stage.

Some examples of how Basin Planning can alter the minimum requirements are given in Appendix I-A from the *Stormwater Management Manual for Western Washington* ([20052012](#)).

In order for a basin plan to serve as a means of modifying the minimum requirements the following conditions must be met:

- The plan must be formally adopted by all jurisdictions with responsibilities under the plan; and
- All ordinances or regulations called for by the plan must be in effect; and
- The basin plan must be reviewed and approved by Ecology.

1
2
3 **Section 8. Feasibility Criteria for Selected Low Impact Development**
4 **Best Management Practices**

5
6 **I. Site/Engineering-based Conditions (any listed condition triggers an infeasibility**
7 **decision)**

8
9 **A. Bioretention BMP's and Rain Gardens are considered infeasible:**

10 **(Note: Criteria with setback distances are as measured from the bottom edge of the**
11 **bioretention soil mix.)**

12 Where land for bioretention is within area designated as a Landslide Hazard Area.

13
14 Where the site cannot be reasonably designed to locate bioretention facilities on slopes
15 less than 15%, . or if bioretention is within the road right-of-way and the right-of-way
16 cannot be feasibly designed to locate bioretention facilities on slopes less than 8%

17
18 Within 50 feet from the top of slopes that are > 20%.

19
20 Where geotechnical evaluation recommends infiltration not be used anywhere within the
21 project area due to reasonable concerns about erosion, slope failure, or downgradient
22 flooding.

23
24 Within 100 feet of a known hazardous waste site; or an abandoned or active landfill.

25
26 Within 100 feet of a drinking water well, or a spring used for drinking water supply.

27
28 Within 10 feet of small on-site sewage systems and greywater reuse systems. For
29 setbacks from a "large onsite sewage disposal system", see Ch 246-272B WAC.

30
31 Within 10 feet of an underground storage tank.

32
33 Within local setbacks from structures.

34
35 Where the drainage area is less than 5,000 sq. ft. of pollution-generating impervious
36 surface, or less than 10,000 sq. ft. of impervious surface; or less than ¾ acres of pervious
37 surface, and the minimum vertical separation of 1 foot to the seasonal high water table,
38 bedrock, or other impervious layer is not achieved.

39
40 Where the drainage area is more than any of the above amounts, and cannot reasonably
41 be broken down into amounts smaller than those designated above, and the minimum
42 vertical separation of 3 feet to seasonal high water table, bedrock, or other impervious
43 layer is not achieved.
44

1 Where the field testing indicates potential bioretention/rain garden sites have a short term
2 (a.k.a., initial) native soil saturated hydraulic conductivity less than 0.30 inches per hour.
3 In these instances bioretention/rain gardens serving pollutant-generating surfaces can be
4 built with an underdrain, preferably elevated within the underlying gravel layer, unless
5 other feasibility restrictions apply.

6
7 Where they are not compatible with surrounding drainage system as determined by the
8 local government (e.g., project drains to an existing stormwater collection system whose
9 elevation or location precludes connection to a properly functioning bioretention facility).

10
11 Where the only area available for siting would threaten the safety or reliability of pre-
12 existing underground utilities, pre-existing underground storage tanks, or pre-existing
13 structures.

14
15 Where there is a lack of usable space for rain garden/bioretention facilities at re-
16 development sites.

17
18
19 **B. Permeable Pavements are considered infeasible:**

20 **Note: These criteria also apply to impervious pavements that would employ storm**
21 **water collection and redistribution below the pavement**

22
23 Where the road type is classified as arterial or collector rather than access. See RCW
24 35.78.010 and RCW 47.05.021.

25
26 In the drive aisles of parking lots as long as runoff is directed to pervious pavement
27 parking spaces.

28
29 At sites defined as “high use” in Volume V of the SMMWW.

30
31 In areas with “industrial activity” as identified in 40 CFR 122.26(b)(14).

32
33 Within an area designated as a Landslide Hazard Area.

34
35 Where geotechnical engineering evaluation recommends infiltration not be used
36 anywhere in the project area due to reasonable concerns about erosion, slope failure, or
37 flooding.

38
39 Within 100 feet of a known contaminated site or abandoned landfill.

40
41 Within 100 feet of a drinking water well, or a spring used for drinking water supply.

42
43 Within 10 feet of a small on-site sewage disposal drainfield. For setbacks from a “large
44 on-site sewage disposal system”, see Ch 246-272B WAC.

1 Where the site cannot reasonably be designed to have a porous asphalt surface at less
2 than 5 percent slope, or a pervious concrete surface at less than 6 percent slope, or a
3 pervious paver surface (where appropriate) at less than 10 percent slope. Portions of
4 pavements that must be laid at greater than 5 percent slope must prevent drainage from
5 upgradient base courses into its base course.

6
7 Excessively steep slopes where water within the aggregate base layer or at the subgrade
8 surface cannot be controlled by detention structures and may cause erosion and structural
9 failure, or where surface runoff velocities may preclude adequate infiltration at the
10 pavement surface.

11
12 Where the native soils below a road or parking lot do not meet the soil suitability criteria
13 for providing treatment. Note: In these instances, the local government has the option of
14 requiring a six-inch layer of media meeting the soil suitability criteria or the sand filter
15 specification as a condition of construction.

16
17 Where the site design cannot avoid putting pavement in areas likely to have long-term
18 excessive sediment deposition after construction (e.g., construction and landscaping
19 material yards).

20
21 Down slope of steep, erosion prone areas that are likely to deliver sediment.

22
23 Where the risk of concentrated pollutant spills is more likely such as gas stations, truck
24 stops, and industrial chemical storage sites.

25
26 Where seasonal high groundwater creates saturated conditions within one foot of the
27 bottom of the lowest gravel base course.

28
29 Where fill soils are used that can become unstable when saturated.

30
31 Where regular, heavy applications of sand occur to maintain traction during winter.

32
33 Where infiltrating and ponded water below new permeable pavement area would
34 compromise adjacent impervious pavements.

35
36 Where infiltrating water below new permeable pavement area would threaten existing
37 below grade basements.

38
39 Where infiltrating water would threaten shoreline structures such as bulkheads.

40
41 Where permeable pavements do not provide sufficient strength to support heavy loads at
42 industrial facilities such as ports.

43
44 Where installation of permeable pavement would threaten the safety or reliability of pre-
45 existing underground utilities or pre-existing underground storage tanks.

46

1 Where underlying soils are unsuitable for supporting traffic loads when saturated. Soils
2 meeting a California Bearing Ratio of 5% are considered suitable for residential roads.

3
4 Where appropriate field testing indicates soils have a short-term (a.k.a., initial) native soil
5 saturated hydraulic conductivity less than 0.3 inches per hour. In these instances, roads
6 and parking lots can be built with an underdrain, preferably elevated within the base
7 course, unless other feasibility restrictions apply.

8
9
10 **C. Vegetated Roofs are considered infeasible where:**

11 Roof design has a slope greater than 20%.

12
13 A Building cannot technically be designed to accommodate structural load of a vegetated
14 roof.

15
16
17
18 **II. Competing Needs**

19
20 The On-site Stormwater Management requirements can be superseded or reduced where they are
21 in conflict with:

22
23 A. Requirements of the following federal or state laws, rules, and standards: Historic
24 Preservation Laws and Archaeology Laws as listed at [http://www.dahp.wa.gov/learn-and-](http://www.dahp.wa.gov/learn-and-research/preservation-laws)
25 research/preservation-laws , federal Superfund or state Model Toxic Control Act, Federal
26 Aviation Administration requirements for airports, Americans with Disabilities Act.

27
28 B. Local design codes, standards and rules that have been reviewed under the code revision
29 process required in S5.C.5.c to remove barriers and to require the use of LID principles
30 and BMPs. Where an LID requirement has been found to be in conflict with special
31 zoning district design criteria adopted and being implemented pursuant to a community
32 planning process, the existing local codes may supersede or reduce the LID requirement.

33
34 C. Public health and safety standards.

35
36 D. Transportation regulations to maintain the option for future expansion or multi-modal use
37 of public rights-of-way.