

STORMWATER DESIGN STANDARDS HANDBOOK

CITY OF WALLA WALLA

**Prepared for
City of Walla Walla**

**Prepared by
Herrera Environmental Consultants, Inc.**



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March 9, 2018

ACKNOWLEDGEMENTS

Portions of this Handbook were adapted from the following resources:

- Spokane Regional Stormwater Manual (City of Spokane, City of Spokane Valley, and Spokane County)
- Yakima County Regional Stormwater Manual (Yakima County, City of Yakima, City of Union Gap, and City of Sunnyside)

CONTENTS

Chapter 1 – Introduction	1
Purpose	1
Applicability.....	2
New Development.....	2
Redevelopment.....	2
Stormwater Retrofit Projects.....	2
Exemptions	3
Full Exemptions.....	3
Partial Exemptions	4
Project Tiers.....	4
Requirements Based on Project Tier.....	5
Small Project Requirements	5
Medium Project Requirements	5
Large Project Requirements.....	7
Stormwater Report Submittals.....	7
Applicability.....	7
Requirements.....	8
Geotechnical Information	8
Construction Stormwater Pollution Prevention Submittals	9
Large Project Requirements.....	10
Chapter 2 – Core Elements.....	11
Applicability.....	11
New Development.....	11
Redevelopment.....	14
Core Elements Overview.....	14
Core Element #1 – Preparation of a Stormwater Site Plan.....	15
Core Element #2 – Construction Stormwater Pollution Prevention	15
Core Element #3 – Source Control of Pollutants	16
Core Element #4 – Preservation of Natural Drainage Systems	16
Core Element #5 – Runoff Treatment.....	17
Core Element #6 – Flow Control.....	20
Core Element #7 – Operation and Maintenance.....	21
Core Element #8 – Local Requirements.....	22

Chapter 3 – Hydrologic Analysis and Design	23
Applicability.....	23
Design Storm Parameters	23
Hydrologic Analysis Methods.....	24
Conveyance System Sizing	24
Chapter 4 – Runoff Treatment, Flow Control, and Source Control Design.....	27
Applicability.....	27
Design Infiltration Rate Determination.....	27
Approved Infiltration Testing Methods	27
Correction Factors.....	28
Low Impact Development.....	28
On-Site Retention Infeasibility	29
Underground Injection Control (UIC) Guidance.....	31
Applicability.....	31
Prohibitions	32
Requirements.....	33
Source Control	35
Chapter 5 – Stormwater Facility Maintenance	37
Applicability.....	37
Maintenance Responsibility	37
Operation and Maintenance Plan.....	38
Maintenance Criteria.....	39
Maintenance Access Requirements	39
Tracts and Easements.....	40
Tracts.....	40
Easements	41
Maintenance Agreements.....	42
Chapter 6 – Inspections	43
Construction Inspections.....	43
Structural BMP Inspection	43
Post-construction Inspection.....	43
Testing of Infiltration Facilities.....	43
Glossary.....	45
Abbreviations and Acronyms	49
References.....	51

APPENDICES

Appendix A	Construction Stormwater Pollution Prevention for Small Projects
Appendix B	Medium Project Checklist
Appendix C	Large Project Checklist
Appendix D	Maintenance Agreement Template

TABLES

Table 1.	Core Elements to be Evaluated for New Development for Large Projects.	14
Table 2.	Core Elements to be Evaluated for Redevelopment for Large Projects.	14
Table 3.	Core Elements to be Evaluated Based on Project Tier.	15
Table 4.	Runoff Treatment Thresholds and Requirements for Projects that Add or Replace $\geq 5,000$ square feet of PGIS.	18
Table 5.	Flow Control Thresholds.	21
Table 6.	Design Storm Parameters for Runoff Treatment, Flow Control, and Conveyance System Sizing.	23
Table 7.	Hydrology Analysis Methods for Runoff Treatment, Flow Control, and Conveyance System Sizing.	24
Table 8.	Approved Infiltration Testing Methods.	27
Table 9.	Correction Factors for Native Soil Infiltration Rate.	28
Table 10.	UIC Registration Requirements.	34

FIGURES

Figure 1.	Flow Chart for Determining Project Tier and Applicable Requirements.	6
Figure 2.	Flow Chart for Determining Applicable Requirements for New Development for Large Projects.	12
Figure 3.	Flow Chart for Determining Applicable Requirements for Redevelopment for Large Projects.	13

CHAPTER 1 – INTRODUCTION

PURPOSE

The purpose of this Stormwater Design Standards Handbook (Handbook) is to assist developers, engineers, contractors, and the public in meeting the stormwater requirements of the City of Walla Walla (City). It is expressly the purpose of these design standards to:

- Provide for and promote the health, safety, and welfare of the general public through sound development policies and construction procedures which:
 - Respect and preserve the City’s watercourses
 - Minimize water quality degradation and control of sedimentation of creeks, streams, ponds, and other water bodies
 - Preserve and enhance the suitability of waters for contact recreation and fish habitat
 - Preserve and enhance the aesthetic quality of the waters
 - Maintain and protect valuable groundwater quality, quantities, locations, and flow patterns
 - Ensure the safety of City roads and rights-of-way
 - Decrease drainage-related damages to public and private property
- Provide clarity, consistency, and clear expectations for project proponents
- Reflect local conditions
- Clarify responsibilities for maintenance of stormwater facilities

The City is subject to the terms and conditions of the Eastern Washington Phase II Municipal Stormwater Permit issued by the Washington Department of Ecology (Ecology). This permit requires the City to implement an ordinance that requires all new development and redevelopment projects and land disturbing activities 1 acre or more in size or part of a common plan of development or sale that disturb 1 acre or more to comply with the standards and requirements of Ecology’s Stormwater Management Manual for Eastern Washington (SWMM EW) or an approved equivalent. This and other stormwater requirements are contained in Chapters 13.06, 13.15, and 13.16 and Title 19 of the City of Walla Walla Municipal Code (WWMC). The standards in this Handbook are intended to supplement the most recent version

of the SWMMEW and the WWMC. These standards clarify and, in some cases, strengthen the requirements of the SWMMEW for use within the City. In the case of conflict between the Handbook and the SWMMEW, the more stringent standard will apply.

The standards established by this Handbook are intended to represent the minimum stormwater design standards for erosion prevention and sediment control as well as the design and construction of permanent stormwater facilities in the City. Compliance with these standards does not relieve the designer of the responsibility to apply conservative and sound professional judgment to protect the health, safety, and welfare of the general public. Special site conditions and environmental constraints may require a greater level of protection than would normally be required under these standards.

APPLICABILITY

This Handbook applies to all applications for new development and redevelopment projects and land-disturbing activities within the city limits unless exempt as described in this chapter. Requirements for stormwater retrofit projects are also outlined briefly below.

New Development

New development is defined as the conversion of previously undeveloped or pervious surfaces to impervious surfaces. New development can occur either as a stand-alone project or in conjunction with a redevelopment project. In both cases, the new impervious surfaces must meet requirements for new development.

Redevelopment

Redevelopment is defined as the replacement or improvement of impervious surfaces on a developed site including the replacement of impervious surfaces with in-kind materials. New impervious surfaces added as part of a redevelopment project are considered new development and must meet the requirements for new development. Both new and replaced impervious surfaces are included when determining the applicable requirements.

Stormwater Retrofit Projects

This section provides guidance on requirements for stormwater retrofit projects. These projects involve the addition or replacement of existing stormwater facilities as stand-alone projects or in conjunction with projects that do not meet the definition of new development or redevelopment. They also include the replacement of existing stormwater facilities on projects that are fully or partially exempt. Stormwater retrofit projects are exempt from all of the Core Elements, but must meet the requirements of the UIC rule and guidance in Chapter 4 of this Handbook if they involve the construction or replacement of UICs.

EXEMPTIONS

The SWMMEW defines eight Core Elements (described in more detail in Chapter 2 of this Handbook) that must be considered for all development. Depending upon the project type, it can be fully or partially exempted from the Core Elements as detailed in the sections below. See Chapter 2 of this Handbook for specific exemptions associated with Core Elements #5, #6, and #8. Note: All projects that involve the construction of Underground Injection Control (UIC) wells must meet the requirements of the UIC rule and guidance in Chapter 4 of this Handbook whether exempt or partially exempt from Core Elements as described below.

Full Exemptions

A project is exempt from all Core Elements if it can be categorized as any of the following:

- Forest practices regulated under Title 222 WAC; however, conversions of forest lands to other uses are not exempt
- Commercial agriculture practices involving working the land for production are generally exempt; however, the construction of impervious surfaces is not exempt
- Municipal road and parking area preservation/maintenance projects such as:
 - Pothole and square cut patching
 - Crack sealing
 - Resurfacing with in-kind material without expanding the area of coverage
 - Overlaying existing asphalt or concrete pavement with bituminous surface treatment (BST or chip seal), asphalt, or concrete without expanding the area of coverage
 - Shoulder grading
 - Reshaping or regrading drainage systems
 - Vegetation maintenance

In addition to those exemptions, the following activities are also exempt from stormwater requirements, subject to the approval of the City Engineer, which may include conditions deemed necessary to mitigate potential adverse impacts:

- Actions by a public utility or any other governmental agency to remove or alleviate an emergency condition that represents an imminent threat to life, property, public safety or the environment.
- Operation and maintenance or repair of existing facilities (e.g., stormwater facilities).

Partial Exemptions

Core Elements #3 through #8

A project is exempt from all Core Elements, except for Core Element #1 and Core Element #2, if it can be categorized as any of the following:

- Underground utility projects that replace the ground surface with in-kind material or materials with similar runoff characteristics
- Removing and replacing a concrete or asphalt roadway to base course or subgrade or lower without expanding the impervious surfaces
- Repairing the roadway base or subgrade
- Overlaying existing gravel roads with BST ("chip seal"), asphalt, or concrete without expanding the area of coverage and average daily traffic (ADT) < 7,500 vehicles (urban road) or ADT < 15,000 vehicles (rural road, freeway, or limited access control highway)
- Overlaying existing gravel parking areas with BST ("chip seal"), asphalt, or concrete without expanding the area of coverage and number of trip ends < 40 per 1,000 square feet of building area or < 100 total trip ends/day
- Most safety improvement projects that improve motorized and/or non-motorized user safety such as most sidewalks, bike lanes, Americans with Disabilities Act (ADA) ramps and bus pullouts, but do not enhance the traffic capacity of a roadway

PROJECT TIERS

This section highlights the three project tiers established by the City for stormwater management for new development and redevelopment projects. Projects are classified in one of the following three tiers which have different requirements related to stormwater management:

- **Small projects:** New development and redevelopment projects that add and/or replace less than 5,000 square feet of impervious surface and land-disturbing activities of less than 5,000 square feet.
- **Medium projects:** New development and redevelopment projects that add and/or replace 5,000 square feet or more of impervious surface and disturb less than 1 acre, and land-disturbing activities of 5,000 square feet or more, but less than 1 acre.
- **Large projects:** All projects and activities that disturb 1 acre or more, or are part of a common plan of development or sale that disturbs 1 acre or more.

REQUIREMENTS BASED ON PROJECT TIER

Small, medium, and large projects have specific stormwater management requirements based on project tier. These requirements are summarized for each project tier in separate subsections below. Figure 1 also provides a summary of the requirements that apply to small, medium, and large projects.

Small Project Requirements

Small projects must:

1. Control erosion and avoid adverse impacts to adjacent properties from stormwater runoff.

Medium Project Requirements

Medium projects that add or replace impervious surface must:

1. Prepare and submit a Stormwater Report (which includes a Site Plan and may include a Geotechnical Report)
2. Prepare and submit an Erosion and Sediment Control Plan
3. Control erosion and avoid adverse impacts of stormwater runoff from the 100-year event to adjacent properties
4. Retain the 25-year, 24-hour storm event on site at a minimum except for residential development of fewer than five dwelling units per parcel
5. Address Core Element #3 (Source Control of Pollution), Core Element #5 (Runoff Treatment) and Core Element #7 (Operation and Maintenance) requirements at high-use sites as defined in the SWMMEW

Medium projects that involve land-disturbing activities, but do not add or replace impervious surfaces must:

1. Prepare and submit a Site Plan
2. Prepare and submit an Erosion and Sediment Control Plan

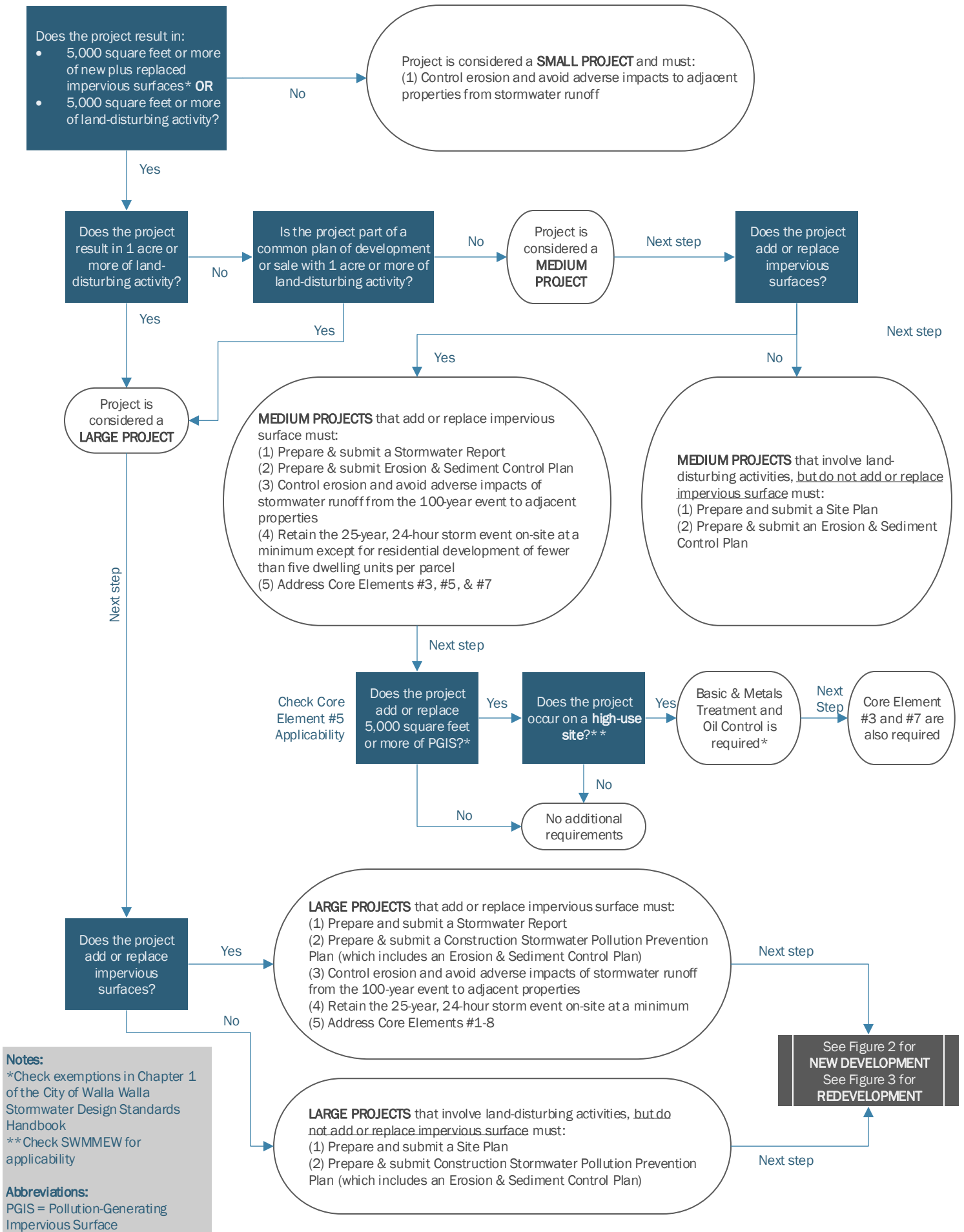


Figure 1. Flow Chart for Determining Project Tier and Applicable Requirements.

Large Project Requirements

Large projects that add or replace impervious surface must:

1. Prepare and submit a Stormwater Report (which includes a Site Plan and may include a Geotechnical Report)
2. Prepare and submit a Construction Stormwater Pollution Prevention Plan (SWPPP) (which includes an Erosion and Sediment Control Plan)
3. Control erosion and avoid adverse impacts of stormwater runoff from the 100-year event to adjacent properties
4. Retain the 25-year, 24-hour storm event on site at a minimum
5. Address Core Elements #1-8 as specified in this Handbook and the SWMMEW

Large projects that involve land-disturbing activities, but do not add or replace impervious surfaces must:

1. Prepare and submit a Site Plan
2. Prepare and submit a Construction SWPPP (which includes an Erosion and Sediment Control Plan)

STORMWATER REPORT SUBMITTALS

This section provides guidance on implementing the Stormwater Site Plan requirements outlined in the SWMMEW and City-specific requirements for small, medium, and large projects. The City refers to the full submittal package (which includes a Site Plan and may include a Geotechnical Report) as the Stormwater Report.

Applicability

Preparation of a Stormwater Report is required for all medium and large projects that add or replace impervious surfaces unless they are fully exempt (see Exemptions section and Requirements Based on Project Tier of this chapter). Medium and large projects that are partially exempt are not exempt from Core Element #1 and must prepare a Stormwater Report or Site Plan if they involve land-disturbing activities, but do not add or replace impervious surfaces. See Chapter 2 of this Handbook for further details on applicability of the Core Elements.

Requirements

Stormwater Report submittal requirements vary depending on the project tier and type of land disturbance:

- **Small projects:** Do not require a Stormwater Report.
- **Medium projects:**
 - Stormwater Report (which includes a Site Plan and may include a Geotechnical Report) for projects that add or replace impervious surface (see checklist in Appendix B)
 - Site Plan only for projects that involve land-disturbing activities, but do not add or replace impervious surfaces (see checklist in Appendix B)
- **Large projects:**
 - Stormwater Report (which includes a Site Plan and may include a Geotechnical Report) for projects that add or replace impervious surface (see checklist in Appendix C)
 - Site Plan only for projects that involve land-disturbing activities, but do not add or replace impervious surfaces (see checklist in Appendix C)

Stormwater Report submittals shall be prepared by a civil engineer licensed in the state of Washington and bear a certification by the project proponent's design engineer that they were prepared in conformance with and meet City design requirements and all other applicable laws and regulations. The City Engineer or authorized representative will review and approve the Stormwater Report submittals prior to construction. The City will provide comments to the project proponent on the Stormwater Report as necessary, which will need to be incorporated or addressed in the final Stormwater Report before it can be approved by the City.

Geotechnical Information

A complete geotechnical report may be required on a variety of development projects for a variety of purposes besides stormwater design. However, geotechnical information is only required for Stormwater Report submittals for medium and large projects that include the following best management practices (BMPs) or facilities or site conditions:

- Projects proposing infiltration BMPs or facilities (e.g., drywells, infiltration trenches or galleries, infiltration ponds, bioretention, permeable pavement)
- Projects located within or draining to a problem drainage area, flood-prone basin, or study area as determined by the City

- Projects with administrative conditions (e.g., contaminated soils) requiring a geotechnical site characterization

Required geotechnical information includes:

- Soil type(s)
- Permeability (Refer to Chapter 4 for Approved Infiltration Testing Methods)
- Treatment capacity
- Groundwater depth
- Proximity to surface waters

The above geotechnical information must be submitted as a separate geotechnical report (provided as an appendix to the Stormwater Report) unless it is included in a more extensive geotechnical report prepared for the project. This geotechnical report must be prepared and stamped by a professional engineer, geologist, hydrogeologist, or engineering geologist registered in the State of Washington.

The required geotechnical information must be obtained from on-site investigation unless otherwise approved by the City. Information from an off-site location may be accepted on a case-by-case basis based on its proximity to the project site and similarity of geographic site conditions such as its position in the landscape (e.g., ground surface elevation and soil type).

CONSTRUCTION STORMWATER POLLUTION PREVENTION SUBMITTALS

Construction stormwater pollution prevention submittal requirements vary depending on the project tier:

- **Small projects:** do not require a submittal for construction stormwater pollution prevention; however, project proponents are required to control erosion and avoid adverse impacts to waterways and adjacent properties from stormwater runoff. Guidance for controlling erosion and other construction considerations for small projects is included in Appendix A.
- **Medium projects:** Erosion and Sediment Control Plan (see checklist in Appendix B).
- **Large projects:** full Construction Stormwater Pollution Prevention Plan (SWPPP) regardless of whether the project proponent or contractor applies for coverage under Ecology's Construction Stormwater General Permit (CSWGP) or not (see checklist in Appendix C and additional information under Large Project Requirements below).

Large Project Requirements

CSWGP Requirements

A CSWGP is required by Ecology for construction activities that involve the clearing, grading, and/or excavation of 1 acre or more and discharge to surface waters of the State or such activities that are part of a common plan of development or sale (as defined in the Glossary) that is 1 acre or more and discharges to surface waters of the State. It is the responsibility of the project proponent or contractor to obtain coverage under the CSWGP. If project proponent or contractor does not believe there will be a discharge to surface waters, they may choose not to obtain coverage. However, if they do not obtain coverage and there is a discharge, the discharge is unauthorized and may be subject to enforcement action by Ecology. The City does not enforce the CSWGP or require documentation to demonstrate compliance with the CSWGP.

Construction SWPPP Requirements

The Construction SWPPP must be prepared by a Certified Erosion and Sediment Control Lead (CESCL) using Ecology's template and meet the requirements for a Construction SWPPP in the CSWGP for all large projects, even if a CSWGP is not obtained for the project. If engineering calculations are involved in the design of proposed construction stormwater BMPs (e.g., sediment ponds or traps), the Construction SWPPP must be prepared and stamped by a professional engineer. The Construction SWPPP does not have to be submitted with the Stormwater Report but must be submitted at least 2 weeks prior to the start of construction or any land-disturbing activity for review and approval. The City will provide comments to the project proponent on the Construction SWPPP as necessary, which will need to be incorporated or addressed in the Construction SWPPP before it can be approved by the City and land-disturbing activities are allowed.

CHAPTER 2 – CORE ELEMENTS

This chapter provides a brief overview of the eight Core Elements in the SWMMEW and their applicability to new development and redevelopment projects:

- Core Element #1: Preparation of a Stormwater Site Plan
- Core Element #2: Construction Stormwater Pollution Prevention
- Core Element #3: Source Control of Pollution
- Core Element #4: Preservation of Natural Drainage Systems
- Core Element #5: Runoff Treatment
- Core Element #6: Flow Control
- Core Element #7: Operation and Maintenance
- Core Element #8: Local Requirements

Project proponents should reference the SWMMEW for additional detail on the Core Elements and how they should be applied to a specific project.

APPLICABILITY

This section primarily focuses on defining which Core Elements should be applied to large projects classified as either new development or redevelopment projects. Figures 2 and 3 provide additional detail on the requirements for large projects for both new development and redevelopment, respectively.

New Development

The applicable Core Elements to be evaluated for large projects classified as new development are summarized in Table 1. Refer to Figure 2 for additional guidance on the applicable Core Elements for large projects classified as new development projects.

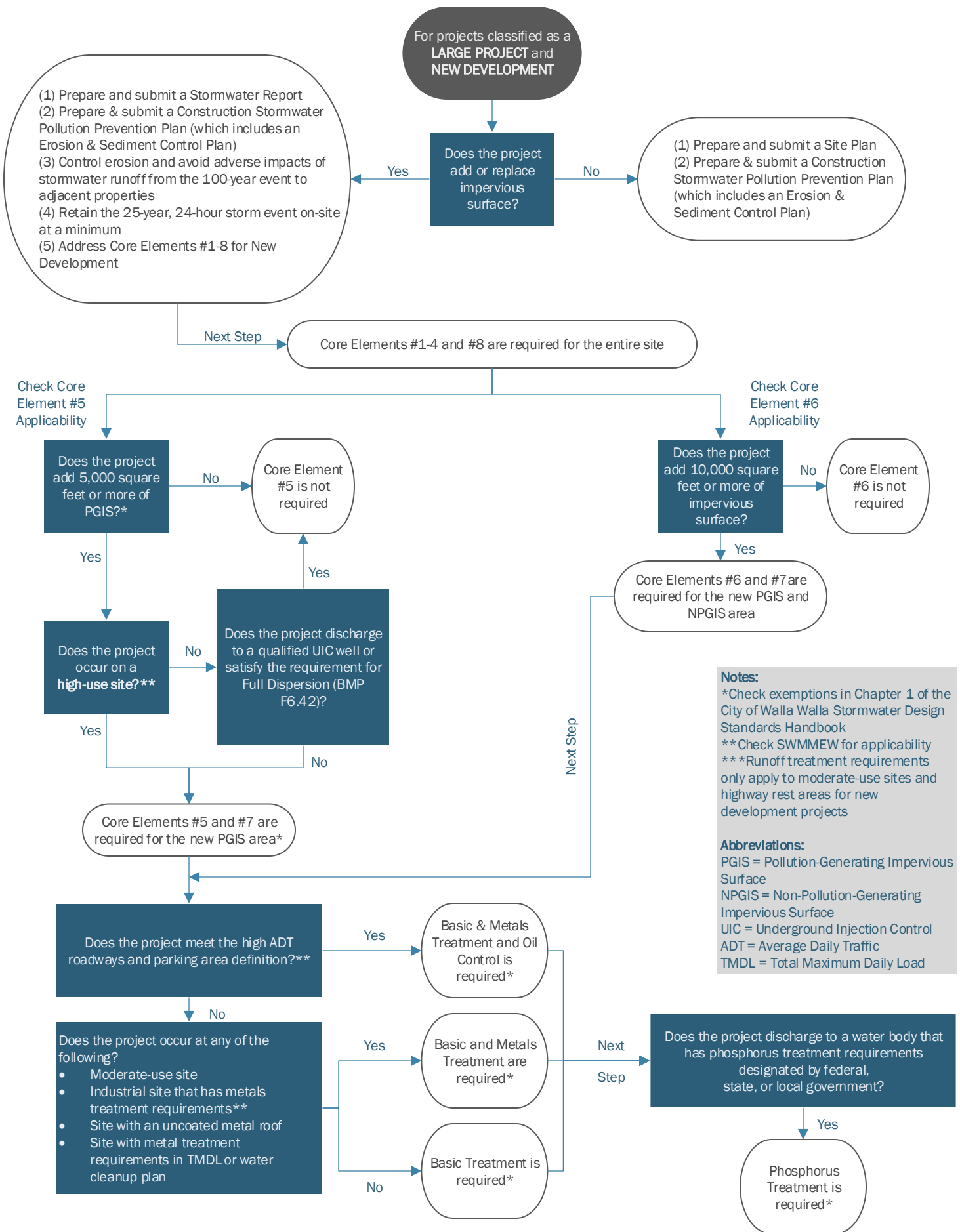
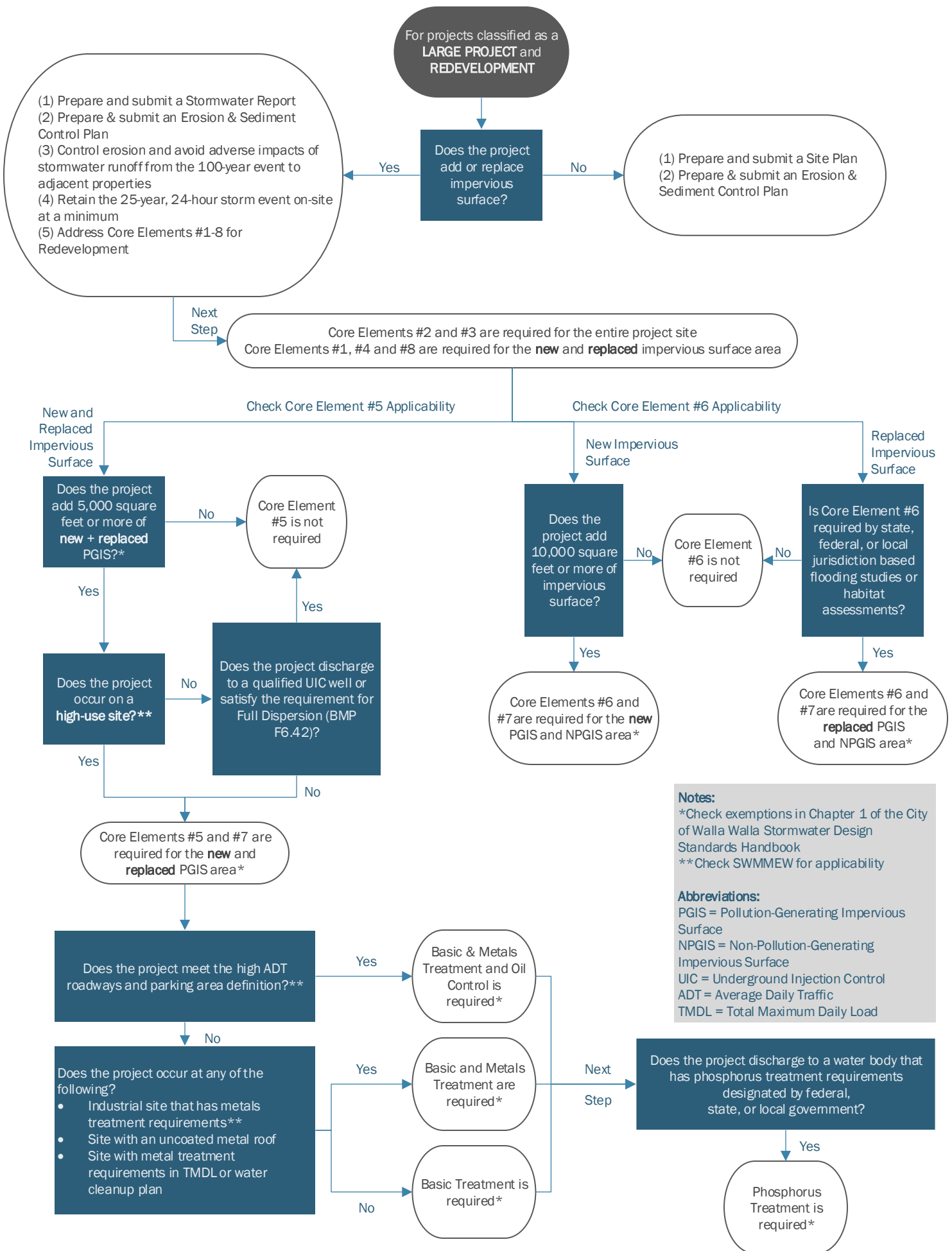


Figure 2. Flow Chart for Determining Applicable Requirements for New Development for Large Projects.



Does the project meet the high ADT roadways and parking area definition?*

Basic & Metals Treatment and Oil Control is required*

Does the project occur at any of the following?

- Industrial site that has metals treatment requirements**
- Site with an uncoated metal roof
- Site with metal treatment requirements in TMDL or water cleanup plan

Basic and Metals Treatment are required*

Basic Treatment is required*

Does the project discharge to a water body that has phosphorus treatment requirements designated by federal, state, or local government?

Phosphorus Treatment is required*

Notes:
 *Check exemptions in Chapter 1 of the City of Walla Walla Stormwater Design Standards Handbook
 **Check SWMMEW for applicability

Abbreviations:
 PGIS = Pollution-Generating Impervious Surface
 NPGIS = Non-Pollution-Generating Impervious Surface
 UIC = Underground Injection Control
 ADT = Average Daily Traffic
 TMDL = Total Maximum Daily Load

Figure 3. Flow Chart for Determining Applicable Requirements for Redevelopment for Large Projects.

Core Element Number and Name	Entire Site	New Impervious Surface
Core Element #1: Preparation of a Stormwater Site Plan	✓	
Core Element #2: Construction Stormwater Pollution Prevention	✓	
Core Element #3: Source Control of Pollution	✓	
Core Element #4: Preservation of Natural Drainage Systems	✓	
Core Element #5: Runoff Treatment		✓
Core Element #6: Flow Control		✓
Core Element #7: Operation and Maintenance		✓
Core Element #8: Local Requirements	✓	

✓ = Core Element applies to this project and surface type

Redevelopment

The applicable Core Elements for redevelopment projects depend on the type of surface added during a large project and are summarized in Table 2. Refer to Figure 3 for additional guidance on the applicable Core Elements for large projects classified as redevelopment projects.

Core Element Number and Name	Entire Site	New Impervious Surface	Replaced Impervious Surface	
			PGIS and NPGIS	PGIS
Core Element #1: Preparation of a Stormwater Site Plan		✓	✓	
Core Element #2: Construction Stormwater Pollution Prevention	✓			
Core Element #3: Source Control of Pollution	✓			
Core Element #4: Preservation of Natural Drainage Systems		✓	✓	
Core Element #5: Runoff Treatment		✓		✓
Core Element #6: Flow Control		✓	✓	
Core Element #7: Operation and Maintenance		✓	✓	
Core Element #8: Local Requirements		✓	✓	

NPGIS = Non-Pollution-Generating Impervious Surface

PGIS = Pollution-Generating Impervious Surface

SF = square feet

✓ = Core Element applies to this project and surface type

CORE ELEMENTS OVERVIEW

Each of the eight Core Elements is briefly described in the following subsections. Refer to the SWMMEW for additional detail on each of the Core Elements. The applicability of the Core Elements depends on the project tier (refer to thresholds in Chapter 1) and is summarized in Table 3.

Core Element Number and Name	Small Projects	Medium Projects	Large Projects
Core Element #1: Preparation of a Stormwater Site Plan		✓	✓
Core Element #2: Construction Stormwater Pollution Prevention	▼	▼	✓
Core Element #3: Source Control of Pollution		✓*	✓
Core Element #4: Preservation of Natural Drainage Systems			✓
Core Element #5: Runoff Treatment		✓*	✓
Core Element #6: Flow Control			✓
Core Element #7: Operation and Maintenance		✓*	✓
Core Element #8: Local Requirements	✓	✓	✓

✓ = Core Element applies to this project tier.

▼ = A streamlined version of this Core Element applies to this project tier (refer to Appendix A for Small Projects and Appendix B for Medium Projects).

✓* = Core Element applies to projects designated as high-use sites only.

Core Element #1 – Preparation of a Stormwater Site Plan

The project proponent must demonstrate compliance with the applicable Core Elements through preparation of a Stormwater Site Plan per the requirements outlined in the SWMMEW. The City refers to the full submittal package (which includes a Site Plan and may include a Geotechnical Report) as the Stormwater Report. The City requires Stormwater Report submittals for medium and large projects, but not for small projects (refer to thresholds in Chapter 1). Checklists summarizing the Stormwater Report content for medium and large projects are included in Appendices B and C of this Handbook.

Core Element #2 – Construction Stormwater Pollution Prevention

Project proponents are responsible for preventing erosion and discharge of sediment into the City’s stormwater drainage system and surface waters during construction of all new development and redevelopment projects (small, medium, and large) (refer to thresholds in Chapter 1). No erosion control documentation is required for small projects; however, guidance is provided in Appendix A. An Erosion and Sediment Control Plan is required for all medium projects (see Appendix B). A Construction Stormwater Pollution Prevention Plan (SWPPP) is required for all large projects (see Appendix C).

The 13 elements of Construction Stormwater Pollution Prevention are:

1. Mark Clearing Limits
2. Establish Construction Access
3. Control Flow Rates
4. Install Sediment Controls
5. Stabilize Soils
6. Protect Slopes
7. Protect Drain Inlets
8. Stabilize Channels and Outlets
9. Control Pollutants
10. Control De-Watering
11. Maintain BMPs
12. Manage the Project
13. Protect Low Impact Development BMPs (Infiltration BMPs)

Core Element #3 – Source Control of Pollutants

Source control involves operational or structural practices intended to prevent pollutants from coming into contact with stormwater through physical separation of areas or careful management of activities that can generate pollutants. Project proponents shall apply known, available, and reasonable source control BMPs identified in the SWMMEW to meet this requirement for all new development and redevelopment projects that are defined as large projects (refer to thresholds in Chapter 1). This Core Element also applies to medium projects that are defined as high-use sites (refer to thresholds in Chapter 1 and the high-use site definition in the Glossary).

Core Element #4 – Preservation of Natural Drainage Systems

All new development and redevelopment projects defined as large projects (refer to thresholds in Chapter 1), must preserve natural drainage systems to the maximum extent possible. Meeting this Core Element includes the following:

- Stormwater should be discharged in the same manner, at the same location, and at the same flow rate and volume as predevelopment conditions to the maximum extent practicable.
- Runoff discharged from the site should not cause a significant adverse impact to downstream receiving waters and downgradient properties. A downstream analysis in accordance with the requirements outlined in the SWMMEW is required for large projects that meet the following conditions:
 - Conveyance system capacity problems
 - Localized flooding

- Upland erosion impacts, including landslide hazards
- Stream channel erosion at the outfall location
- Violations of surface water quality standards identified in a Basin Plan or a TMDL (Water Cleanup Plan)
- Violations of groundwater standards in a wellhead protection area
- Aggravated existing problems (e.g., increasing frequency of occurrence and/or severity)
- All outfalls must address energy dissipation as necessary, or provide justification for why energy dissipation is not needed.
- Discharge of stormwater to existing jurisdictional wetlands should be avoided unless the wetland receives runoff from the existing site.

Core Element #5 – Runoff Treatment

Requirements

The goal of Core Element #5 is to treat approximately 90 percent of the annual runoff generated by pollution-generating surfaces at the project site. Runoff treatment requirements are applied to new development and redevelopment projects for large projects (refer to thresholds in Chapter 1) that add or replace $\geq 5,000$ square feet of PGIS. Core Element #5 also applies to medium projects that are defined as high-use sites that add or replace $\geq 5,000$ square feet of PGIS (refer to thresholds in Chapter 1 and the high-use site definition in the Glossary). Note that *existing* PGIS counts toward the total PGIS threshold if the surface receives runoff from or drains runoff to the new or replaced PGIS. For example, a project that adds 3,000 square feet of PGIS will trigger Core Element #5 if it receives runoff from 3,000 square feet of existing PGIS, for a total of 6,000 square feet of PGIS.

Table 4 identifies the site conditions and thresholds outlined in the SWMMEW that trigger runoff treatment of various types (i.e., basic, metals, oil, and phosphorus) for new or redevelopment projects. For example, if a new development project will involve the addition of greater than 5,000 square feet of PGIS, basic treatment is required. If that same project involves runoff from uncoated metal roofs, basic *and* metals treatment is required. If a parking area with more than 100 trip ends per 1,000 square feet of gross building area (or more than 300 total trip ends) is also involved in the project, then basic treatment, metals treatment, and oil control is required. Refer to the SWMMEW for further details.

Table 4. Runoff Treatment Thresholds and Requirements for Projects that Add or Replace $\geq 5,000$ square feet of PGIS.

Development Type		Threshold(s)	Treatment Type			
New	Redevelopment		Basic	Metals	Oil	Phosphorus
✓		$\geq 5,000$ square feet PGIS, but does not fall into any of the other New Development categories listed below	✓			
✓		Moderate-use site (refer to Glossary for definition)	✓	✓		
✓		Industrial sites subject to handling, storage, production, or disposal of metallic products or other materials	✓	✓		
✓		On-street parking areas of municipal streets in commercial and industrial areas	✓	✓		
✓		Runoff from metal roofs not coated with an inert, non-leachable material	✓	✓		
✓		High-use site	✓	✓	✓	
✓		High ADT roadways with ADT $\geq 30,000$ vehicles and parking areas with more than 100 trip ends per 1,000 square feet of gross building area or more than 300 total trip ends	✓	✓	✓	
✓		Federal, state, or local government determination of a phosphorus sensitive waterbody	✓			✓
✓	✓	Industrial sites with benchmark monitoring requirements for metals	✓	✓		
	✓	Metals removal specified in a TMDL or water cleanup plan	✓	✓		
	✓	Industrial site with outdoor handling, processing, and storage or transfer of solid raw materials and finished products	✓			
	✓	Commercial site with outdoor storage or transfer of solid raw materials or treated wood products	✓			
	✓	TMDL or water cleanup plan	✓			
	✓	High-use site	✓		✓	
	✓	Soft shoulder to curb and gutter improvement with ADT $\geq 7,500$ vehicles	✓			
	✓	Parking area with number of trip ends > 40 per 1,000 square feet of building area or 100 total trip ends/day	✓			
	✓	Urban road with ADT $\geq 7,500$ vehicles	✓			
	✓	Rural road, freeway, or highway with limited access control with ADT $\geq 15,000$ vehicles	✓			

Development Type		Threshold(s)	Treatment Type			
New	Redevelopment		Basic	Metals	Oil	Phosphorus
	✓	Within 500 feet of a controlled intersection on a limited access control highway with ADT $\geq 7,500$ vehicles	✓			
	✓	Parking area with number of trip ends > 100 per 1,000 square feet of building area or 300 total trip ends/day	✓	✓	✓	
	✓	Urban road, rural road, freeway, or highway with limited access control with ADT $\geq 30,000$ vehicles	✓	✓	✓	

ADT = Average Daily Traffic

PGIS = Pollution-Generating Impervious Surface

TMDL = Total Maximum Daily Load

✓ = Applies to this project threshold

Exemptions

Exemptions from Basic Treatment include:

- Non-pollution generating impervious surface (NPGIS) (unless runoff is not separated from pollution-generating impervious surface [PGIS] areas)
- Projects that meet the requirements for dispersal and infiltration and do not meet the thresholds for requiring oil control
- Discharges to surface water from projects with a total PGIS area < 5,000 square feet unless those areas are subject to the storage or handling of hazardous substances, materials or wastes as defined in 49 CFR 171.8, RCW 70.105.010, and/or RCW 70.136.020

Exemptions from Metals Treatment include:

- Discharges to non-fish-bearing streams including:
 - Barber Creek
 - Bryant Creek
 - Butcher Creek
 - College Creek
 - Kathy Creek

- Lincoln Creek
- Owen Spring
- Peter Spring
- Subsurface discharges via Underground Injection Control (UIC) wells
- Restricted residential and employee-only parking areas, unless subject to through traffic
- Category 4 Wetlands (refer to SWMMEW for details)

Exemptions from Oil Control include:

- Preservation/maintenance, improvement, or safety enhancement projects that does not increase motorized vehicular capacities as defined in the Exemptions and Partial Exemptions sections in Chapter 1 of this Handbook

Core Element #6 – Flow Control

Requirements

The intent of Core Element #6 is to mitigate to the maximum extent practicable the impacts of increased stormwater runoff volumes and flow rates on smaller waterbodies in the City which are more susceptible to changes in runoff patterns caused by development including, but not limited to:

- Barber Creek
- Bryant Creek
- Butcher Creek
- Caldwell Creek
- College Creek
- Garrison Creek
- Kathy Creek
- Lincoln Creek
- Russell Creek
- Stone Creek

- Titus Creek
- Yellowhawk Creek

Flow control requirements are applied to new development projects that are classified as large projects (refer to thresholds in Chapter 1) and have $\geq 10,000$ square feet of new impervious surfaces as summarized in Table 5. Core Element #6 only applies to redevelopment projects when there is a flooding study or habitat assessment that triggers a federal, state, or local determination.

Table 5. Flow Control Thresholds.		
Development Type		Threshold
New	Redevelopment	
✓		$\geq 10,000$ square feet new impervious surfaces
	✓	If required by federal, state, or local determination based on a flooding study or habitat assessment

✓ = Applies to this project threshold

Exemptions

Exemptions from Core Element #6 include projects that:

- Discharge directly to Mill Creek.
- Discharge to a wetland that has no surface water outlet (note: this exemption applies only to Core Element #6; refer to Core Element #4 and the SWMMEW for additional guidance to protect wetland hydrology).
- Discharge to a stream which flows only during runoff-producing events if a downstream analysis (refer to Core Element #4 in Chapter 2 of this Handbook) does not show an increased potential for streambank erosion, other potential cumulative downstream effects, or unique habitat characteristics.

Core Element #7 – Operation and Maintenance

If a runoff treatment facility is constructed as part of Core Element #5 and/or a flow control facility is constructed as part of Core Element #6, then Core Element #7 is also applicable. The project proponent must prepare an Operation and Maintenance (O&M) Plan to ensure that runoff treatment and flow control facilities are adequately maintained and properly operated. Detailed requirements for the O&M Plan are described in Chapter 5 and Appendices B and C of this Handbook.

Core Element #8 – Local Requirements

This Handbook is intended to clarify and streamline stormwater design guidance provided in the SWMMEW and meets the intent of Core Element #8. The City has incorporated several modifications or clarifications from the SWMMEW into this Handbook. One key threshold that is more stringent in the City compared to Ecology's requirement is:

- All medium and large projects that add or replace impervious surfaces must retain the 25-year, 24-hour storm event on-site unless determined by the City to be infeasible based on criteria in Chapter 4.

Exemptions from this City-specific requirement for medium projects to retain the 25-year, 24-hour storm event on site includes projects that consist of:

- Residential development of fewer than five dwelling units per parcel

CHAPTER 3 – HYDROLOGIC ANALYSIS AND DESIGN

The purpose of this chapter is to provide guidance on implementing the hydrologic analysis and design requirements in the SWMMEW including design storm parameters, hydrologic analysis methods, and conveyance system sizing.

APPLICABILITY

This chapter is primarily focused on sizing runoff treatment facilities, flow control facilities, and conveyance systems. Stormwater facilities that serve new or replaced impervious surfaces must be sized and designed to meet current runoff treatment and flow control requirements for the *entire flow* that is directed to them. This includes runoff from existing impervious surfaces that will flow to the new or replaced impervious surfaces and vice versa, even if the existing impervious surfaces will not be replaced or altered as part of the new development or redevelopment project. If existing impervious surfaces can be hydrologically separated from the new or replaced impervious surfaces, only the stormwater facilities that serve new or replaced impervious surfaces must be sized and designed to meet current runoff treatment and flow control requirements.

DESIGN STORM PARAMETERS

Walla Walla is in **Region 3** (Okanogan, Spokane, Palouse) of eastern Washington (refer to the SWMMEW for a map of the climatic regions in eastern Washington). Design requirements for runoff treatment facility bypasses can be found in the SWMMEW. The City’s accepted design storm distributions, depths, and return frequencies for treatment and flow control facility sizing are summarized in Table 6. In addition, Stormwater Reports for medium and large projects must also evaluate the impacts of stormwater runoff from the 100-year event on adjacent properties.

Table 6. Design Storm Parameters for Runoff Treatment, Flow Control, and Conveyance System Sizing.					
Type			Design Storm Distribution	Design Storm Depth (inches)	Return Frequency
Runoff Treatment	Flow Control	Conveyance			
✓ (flow-rate based)			3-hour short duration storm	0.32	6-month
✓ (volume-based)			24-hour SCS Type IA storm	1.0	6-month
	✓		24-hour SCS Type IA storm	2.2	25-year
		✓	24-hour SCS Type II storm	2.2	25-year

HYDROLOGIC ANALYSIS METHODS

The City's accepted hydrologic analysis methods are summarized in Table 7. Additional hydrologic analysis methods are included in the SWMMEW and may be accepted on a case-by-case basis. The minimum time of concentration that should be used is 5 minutes. Single-event modeling software should be used to size runoff treatment and flow control facilities using the Santa Barbara Urban Hydrograph (SBUH) and level-pool reservoir routing. Common hydrologic models include HydroCAD, StormSHED, and WinTR-55. Sizing tools for conveyance system design using the Rational Method can be downloaded from WSDOT's Hydraulics Program webpage: <www.wsdot.wa.gov/Design/Hydraulics/ProgramDownloads.htm>.

Table 7. Hydrology Analysis Methods for Runoff Treatment, Flow Control, and Conveyance System Sizing.			
Type			Method
Runoff Treatment	Flow Control	Conveyance System	
✓	✓	✓	Santa Barbara Urban Hydrograph (SBUH) single-event hydrograph
	✓		Level-pool reservoir routing
		✓	Rational Method

CONVEYANCE SYSTEM SIZING

The SWMMEW does not provide any guidance regarding stormwater conveyance system sizing. The City has approved the following list of materials for conveyance pipe:

- PVC (Polyvinyl Chloride) plastic pipe ASTM 3034 SDR-35 (20-foot lengths shall not be used due to warping)
 - 4 to 15-inch PVC (4 to 15-foot depth), ASTM D3034-SDR35
 - 4 to 15-inch PVC (> 15-foot depth), ASTM D3034-SDR26 (PS 115)
 - 18 to 48-inch PVC (all depths), ASTM F679-08-SDR26 (PS 115)
- HDPE (High-Density Polyethylene) smooth bore, annular ring pipe meeting ASTM F 667
- Corrugated polyethylene pipe meeting the requirements of WSDOT Standard Specification 7-04 or ASTM 3034 PVC with watertight gaskets
- Ductile iron pipe shall be substituted in situations where minimum cover over pipe is not feasible, with the approval of the City Engineer
- Other pipe materials as approved by the City Engineer

Conveyance systems shall meet the following minimum size and spacing requirements:

- The minimum diameter of any public stormwater conveyance system pipe shall be 10 inches for laterals from catch basins or inlets and 12 inches for main lines.
- The minimum diameter of driveway culverts shall be 12 inches.
- The maximum length of pipe between stormwater manholes or other stormwater structures (e.g., catch basins, inlets) shall be no greater than 400 feet, unless conveyance calculations are provided to justify otherwise.
- The maximum number of catch basins allowed to be linked prior to the connection to a stormwater drainage mainline shall be three (e.g., two catch basins independently connected in series to a third catch basin), unless conveyance calculations are provided to justify otherwise.

Stormwater inlets shall meet the following design requirements, unless conveyance calculations are provided to justify otherwise:

- For medium projects, stormwater inlets can be sized using a maximum drainage area of 7,500 square feet drainage to a single inlet.
- For large projects, stormwater inlets shall meet the following requirements:
 - Water depth shall be no deeper than 6 inches at the curb during the 25-year storm event
 - Water shall not encroach more than 2 feet into a travel lane during the 25-year storm event
 - If bypass flow occurs during the 25-year storm event, check sags. Sizing tools for sag inlet design can be downloaded from WSDOT's Hydraulics Program webpage: <www.wsdot.wa.gov/Design/Hydraulics/ProgramDownloads.htm>.

CHAPTER 4 – RUNOFF TREATMENT, FLOW CONTROL, AND SOURCE CONTROL DESIGN

This chapter provides additional guidance on implementing runoff treatment, flow control, and source control requirements in the SWMMEW.

APPLICABILITY

This chapter clarifies some of the requirements related to designing runoff treatment and flow control facilities including siting of stormwater facilities, design infiltration rate determination, low impact development (LID), on-site retention infeasibility, and Underground Injection Control (UIC) Siting of Stormwater Facilities

Stormwater facilities that serve private property must be located on private property. Stormwater facilities constructed in conjunction with private development (i.e., residential subdivisions, binding site plans) that serve the City right-of-way must be located in the City right-of-way to the maximum extent feasible and must be separated from stormwater facilities that serve private property. If, for any reason, it is infeasible to locate such stormwater facilities in the right-of-way, they must be located in a privately-owned tract. See Chapter 5 for the City’s policy for publicly-owned and privately-owned stormwater facility maintenance responsibilities.

DESIGN INFILTRATION RATE DETERMINATION

Approved Infiltration Testing Methods

The City has approved the following infiltration testing methods summarized in Table 8 that are included in the SWMMEW and the *Eastern Washington Low Impact Development Guidance Manual*.

Method	Reference
Borehole percolation test	SWMMEW
Large-scale Pilot Infiltration Test (PIT)	Eastern Washington LID Guidance Manual
Small-scale PIT	Eastern Washington LID Guidance Manual
Single-ring infiltrometer	SWMMEW
Constant head permeability test	SWMMEW
Laboratory grain size analysis (ASTM D2487-90)	SWMMEW
Soil grain size analysis method	Eastern Washington LID Guidance Manual

LID = Low Impact Development
SWMMEW = Stormwater Management Manual for Eastern Washington

Correction Factors

Correction factors account for site variability, number of tests conducted, potential for long-term clogging due to siltation and bio-buildup, and the uncertainty of the test method. The specific correction factors used shall be determined based on the professional judgment of the licensed engineer or other site professional considering all issues that may affect the long-term infiltration rate. Table 9 summarizes correction factors (CF) that may be considered to determine the design infiltration rate.

Table 9. Correction Factors for Native Soil Infiltration Rate.		
Correction Factor Designation	Site Analysis Issue	Correction Factor
CF _v	Site variability and number of locations tested	0.33 to 1.0
	Sufficient infiltration tests are conducted and/or site conditions are known (uniform through previous exploration and site geological factors)	1.0
	Site conditions are highly variable due to a deposit of ancient landslide debris or buried stream channels	0.33 to 0.50
	Conditions are variable, but few explorations and only one PIT is conducted	0.33 to 0.50
CF _m	Degree of influent control to prevent siltation and bio-buildup	0.90 to 1.0
	Bioretention	1.0
	Quality of pavement aggregate base material (permeable pavement)	0.90 to 1.0
CF _t	Uncertainty of test method	0.40 to 0.75
	Large-scale PIT	0.75
	Small-scale PIT	0.50
	Other small-scale (e.g., single-ring infiltrometer, constant head permeability test)	0.40
	Soil grain size analysis method	0.40
CF_T		0.13 to 0.75

CF = Correction Factor

PIT = Pilot Infiltration Test

The total correction factor (CF_T) is calculated as follows:

$$\text{Total Correction Factor, } CF_T = CF_v \times CF_t \times CF_m$$

LOW IMPACT DEVELOPMENT

Low Impact Development (LID) is an approach to stormwater management that seeks to minimize the impact of new development (or redevelopment) and restore natural hydrologic patterns. LID principles include preserving native vegetation, minimizing impervious (paved) surfaces, and minimizing stormwater runoff through the implementation of distributed LID BMPs.

LID BMPs include small-scale facilities that are designed to disperse or infiltrate water to restore natural flow patterns such as dispersion, bioretention, permeable pavement, and minimal excavation foundations. LID BMPs also include flow control BMPs that are designed to slow down and retain water for other site uses such as vegetated roofs and rainwater harvesting systems.

The City promotes implementation of LID practices and LID BMPs in accordance with the *Eastern Washington Low Impact Development Guidance Manual*.

The *Eastern Washington LID Guidance Manual* includes design guidance for the following LID BMPs:

- Amending Construction Site Soils
- Dispersion
- Bioretention
- Trees
- Permeable Pavement
- Vegetated Roofs
- Minimal Excavation Foundations
- Rain Water Harvesting

ON-SITE RETENTION INFEASIBILITY

The City requires most medium and all large projects to retain the 25-year, 24-hour storm event on site (see Chapter 2, Core Element #8). There are some site-specific conditions that may cause this on-site retention requirement to be infeasible. The infeasibility criteria presented in this section are targeted towards on-site infiltration BMPs. Infeasibility criteria for specific LID BMPs or non-infiltration BMPs can be found in the SWMMEW and the *Eastern Washington LID Guidance Manual*.

The following infeasibility criteria for on-site infiltration BMPs must be based on an evaluation of site-specific conditions and a written recommendation from an appropriate licensed professional (e.g., professional engineer, geologist, hydrogeologist, or engineering geologist registered in the state of Washington):

- Where professional geotechnical evaluation recommends infiltration not be used due to reasonable concerns about erosion, slope failure, or downgradient flooding.

- Within an area where groundwater drains into an erosion hazard, or landslide hazard area.
- Where the only area available for siting would threaten the safety or reliability of existing underground utilities, existing underground storage tanks, existing structures, or existing road or parking lot surfaces.
- Where the only area available for siting does not allow for a safe overflow pathway to a public or private stormwater drainage system or would result in water running across a sidewalk.
- Where there is insufficient space within the existing public right-of-way on public road projects.
- Where infiltrating water would threaten existing below grade basements.
- Where infiltrating water would threaten shoreline structures such as bulkheads.

The following infeasibility criteria for on-site infiltration BMPs can be cited as reasons for infeasibility without further justification (though some require professional services to make the observation):

- Within 20 feet from building foundations, unless evaluation and a written recommendation from an appropriate licensed professional (e.g., professional engineer, geologist, hydrogeologist, or engineering geologist registered in the state of Washington) provides justification for a different setback.
- Where they are not compatible with surrounding drainage system (e.g., project drains to an existing stormwater collection system where the elevation or location precludes connection to a properly functioning facility).
- Within an area designated as an erosion hazard or landslide hazard.
- Within 50 feet from the top of slopes that are greater than 20 percent and over 10 feet of vertical relief.
- For properties with known soil or groundwater contamination (typically federal Superfund sites or state cleanup sites under the Model Toxics Control Act (MTCA):
 - Within 100 feet of an area known to have deep soil contamination.
 - Where groundwater modeling indicates infiltration will likely increase or change the direction of the migration of pollutants in the groundwater.
 - Wherever surface soils have been found to be contaminated unless those soils are removed within 10 horizontal feet from the infiltration area.

- Any area where these facilities are prohibited by an approved cleanup plan under the state Model Toxics Control Act or federal Superfund Law, or an environmental covenant under Chapter 64.70 RCW.
- Within 100 feet of a closed or active landfill.
- Within 100 feet of a drinking water well, or a spring used for drinking water supply.
- Within 10 feet of small on-site sewage disposal drainfield, including reserve areas, and grey water reuse systems. For setbacks from a “large on-site sewage disposal system,” see Chapter 246-272B WAC.
- Within 10 feet of an underground storage tank and connecting underground pipes when the capacity of the tank and pipe system is 1,100 gallons or less. (As used in these criteria, an underground storage tank means any tank used to store petroleum products, chemicals, or liquid hazardous wastes of which 10 percent or more of the storage volume (including volume in the connecting piping system) is beneath the ground surface.
- Within 100 feet of an underground storage tank and connecting underground pipes when the capacity of the tank and pipe system is greater than 1,100 gallons.

Note: If on-site retention is not feasible and runoff must be discharged to a surface water body, the applicable treatment requirements of the SWMMEW must be met.

UNDERGROUND INJECTION CONTROL (UIC) GUIDANCE

The Underground Injection Control (UIC) program is intended to protect underground sources of drinking water from existing and new UIC wells. Ecology has prepared a statewide guidance document *Guidance for UIC Wells that Manage Stormwater* (Ecology 2006) to address UIC in relation to stormwater management. The intent of this section of the Handbook is to clarify the guidance provided in the *Guidance for UIC Wells that Manage Stormwater*. Additional detail can be found on Ecology’s UIC program webpage: < <https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Underground-injection-control-program>>.

Applicability

A UIC well is a manmade subsurface fluid distribution system designed to discharge fluids into the ground and consists of an assemblage of perforated pipes, drain tiles, or other similar mechanisms, or a dug hole that is deeper than the largest surface dimension. Examples of UIC wells (or a subsurface infiltration systems) include:

- Drywells

- Pipe or French drains
- Drain fields
- Infiltration trenches with perforated pipe
- Similar devices that discharge stormwater directly into the ground

UIC wells do not include the following:

- Buried pipe and/or tile networks that serve to collect water and discharge that water to a conveyance system or to surface water.
- Surface infiltration basins and flow dispersion stormwater infiltration facilities.
- Infiltration trenches designed without perforated pipe or a similar mechanism.

Prohibitions

UIC wells may not receive stormwater from the following types of areas due to the potential to contaminate groundwater:

- Vehicle maintenance, repair and service.
- Commercial or fleet vehicle washing.
- Airport de-icing activities.
- Storage of treated lumber.
- Storage or handling of hazardous materials.
- Generation, storage, transfer, treatment or disposal of hazardous wastes.
- Handling of radioactive materials.
- Recycling facilities, except for those that recycle only glass, paper, plastic, or cardboard
- Industrial or commercial areas that have outdoor processing, handling, or storage of raw solid materials or finished products at the facility and are without management plans for proper storage and spill prevention, control, and containment appropriate to the types of materials handled at the facility.
- Contaminated sites when the stormwater would increase the mobility of the contaminants at the site (e.g., a drywell could not be used up gradient of or over the contaminant plume at a leaking underground storage tank site).

Note: The term “area” refers to a specific portion of an industrial or business facility where the activities occur. Stormwater from other portions of the site that do not contact the areas listed (such as roofs and parking areas) may be discharged to UIC wells. Requirements for roofs and parking areas (see Core Element #5) must still be met.

Requirements

Ecology’s UIC Program includes requirements for new and existing UIC wells. The following requirements apply to all projects that involve the construction or replacement of UICs whether the project is exempt or partially exempt from the Core Elements or it is classified as a stormwater retrofit project as described in Chapter 1:

- All new UIC wells must be constructed in accordance with the specifications in the *Guidance for UIC Wells that Manage Stormwater*.
- All new UIC wells that require a two-stage drywell or pretreatment must develop an O&M Plan.

The following subsections address registration and design considerations for new UIC wells.

Design Considerations

Guidance for constructing new UIC wells is described in detail in the *Guidance for UIC Wells that Manage Stormwater*. This subsection highlights some key considerations related to pretreatment, siting, and design.

The City allows certain types of UIC wells that discharge stormwater in critical aquifer recharge areas (CARAs) as specified in Section 21.04.260 of the WWMC.

Registration

Project proponents are required to register all new UIC wells and provide proof of registration to the City. Registration requirements for UIC wells that include a stormwater component are briefly summarized in Table 10. Wells can be registered online or using forms downloaded from Ecology’s website: <<https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Underground-injection-control-program/Register-UIC-wells-online>>.

Pretreatment

Pretreatment requirements for UIC wells are summarized in detail in the *Guidance for UIC Wells that Manage Stormwater*.

Table 10. UIC Registration Requirements.		
Land Use	Stormwater Source	Registration Form(s)
Municipal	City roads and parking lots	UIC Well Registration Form for Municipal Stormwater County and City Roads and Parking
Private Residential	Roads and parking lots	UIC Well Registration Form for Non-Municipal Stormwater Roads and Parking
Industrial or Commercial	Parking, driveway, roof, road, loading dock, fueling, landscape, other	UIC Well Registration Form for Industrial or Commercial Facilities
Industrial or Commercial	Runoff from a facility that uses, stores, handles, or processes hazardous substances	In addition to the UIC Well Registration Form for Industrial or Commercial Facilities, the No Exposure Form for UIC Wells is also required
Commercial	Inert roof runoff: roof coated with an inert, nonleachable material that is not located at an industrial facility and is not subject to venting of manufacturing, commercial, or other indoor pollutants.	UIC Well Registration Form for Class V UIC Wells that Automatically Meet the Nonendangerment Standard
Residential	Roof runoff	Registration not required
Residential	Basement flooding control	Registration not required
All	Non-pollution-generating surfaces (NPGIS) only: paved bicycle pathways and sidewalks that are separate from the road and fenced fire lanes that are not frequently treated with salt or other deicing chemicals.	UIC Well Registration Form for Class V UIC Wells that Automatically Meet the Nonendangerment Standard

Siting

The City does not include any specific siting requirements for UIC wells in the WWMC; however, the project proponent should consider the following siting guidance included in the *Guidance for UIC Wells that Manage Stormwater*:

- The UIC well may not be sited in prohibited areas (refer to Prohibitions section)
- The UIC well should not be sited in areas of known soil contamination
- The UIC well should be sited at least 100 feet away from a drinking water well or spring used for drinking water supplies (WAC 173-160-171)

The City also implements the following advisory setbacks for slopes and building foundations included in the *Guidance for UIC Wells that Manage Stormwater*:

- The UIC well should be no closer than 30 feet center-to-center or twice the depth, whichever is greater.
- The UIC well should not be built on slopes greater than 25 percent (4:1).

- The UIC well should not be placed on or above a landslide hazard area or slopes greater than 15 percent without evaluation by a civil engineer licensed in the state of Washington with geotechnical expertise or qualified geologist and City approval.
- The UIC well should be sited at least 100 feet upslope and 20 feet downslope from building foundations.
- The minimum setback for a UIC well located up-slope from a structure or behind the top of a slope inclined in excess of 15 percent is equal to the height of the slope, but should be evaluated by a civil engineer licensed in the state of Washington with geotechnical expertise or qualified geologist.

Design

UIC wells must be designed and installed in accordance with the design guidelines included in the SWMMEW. The following design guidance and advisory design considerations included in the *Guidance for UIC Wells that Manage Stormwater* should also be implemented:

- The minimum vertical separation is 5 feet between the base of a UIC well and the seasonal high groundwater table, bedrock, hardpan, or other low permeability layer. A separation of 3 feet may be considered if pretreatment requirements are met and if the groundwater mounding analysis, volumetric receptor capacity, and design of the overflow and/or bypass structures are judged by the design professional to be adequate to prevent overtopping and meet the site suitability criteria.
- Filter fabric (geotextile) may be useful in appropriate situations to prevent sedimentation.

SOURCE CONTROL

The SWMMEW contains source control BMPs for storage or transfer (outside) of solid raw materials, by-products, or finished products. The City requires that outdoor trash enclosures and crush pads at wineries be constructed in a bermed, covered area that is connected to the sanitary sewer system or designed to drain to a runoff treatment facility prior to discharge to the stormwater drainage system or infiltrating to groundwater.

CHAPTER 5 – STORMWATER FACILITY MAINTENANCE

This chapter provides guidance on maintenance responsibilities, O&M Plan content, maintenance criteria, maintenance access requirements, tracts and easements, and maintenance agreements.

APPLICABILITY

Operation and Maintenance is Core Element #7 of the SWMMEW and is applicable to all projects that construct runoff treatment or flow control facilities for Core Element #5 and/or Core Element #6. Core Element #7 is also required for all projects with discharges to UIC wells that require a two-stage drywell or pretreatment (refer to the *Guidance for UIC Wells that Manage Stormwater*).

MAINTENANCE RESPONSIBILITY

The City's policy for private and public stormwater facility maintenance responsibility depends on the facility location/ownership and the drainage area served and includes the following three options:

1. **Stormwater facility serving the City right-of-way constructed in the City right-of-way (City-owned):** City is responsible for maintenance.
2. **Stormwater facility serving private property constructed on private property (Privately-owned):** Private property owner is responsible for maintenance.
3. **Stormwater facility serving the City right-of-way constructed on private property (Privately-owned):**
 - a. City will accept responsibility for maintaining the structural elements (e.g., pipes, catch basins, and other drainage structures) as specified in the O&M Plan approved by the City. In order for the City to provide these services, the private property owner must have a Maintenance Agreement and maintenance access easement in place.
 - b. Private property owner is responsible for vegetation management (e.g., pruning, mulching, mowing, weed control, and irrigation) and aesthetics as specified in the O&M Plan approved by the City.

OPERATION AND MAINTENANCE PLAN

An O&M Plan is required for all privately-owned stormwater facilities designed to meet Core Element #5 and/or #6 and projects with discharges to UIC wells that require a two-stage drywell or pretreatment (refer to the *Guidance for UIC Wells that Manage Stormwater*). This does not include stormwater facilities constructed in the City right-of-way as part of a private development. All City-owned stormwater facilities and structural elements of privately-owned stormwater facilities that serve the City right-of-way as specified above will be maintained in accordance with the City's Stormwater O&M Plan.

The O&M Plan is required to include the following content (also documented on the checklists in Appendices B and C):

- Identification of party or parties responsible for O&M (including legal means of successorship)
- Right-of-entry for City inspection
- Maintenance Agreement (only as required in Maintenance Agreement section in this Chapter)
- Maintenance access easement
- List of inspection tasks
- List of maintenance tasks
- Schedule for routine inspection and maintenance (e.g., frequencies)
- Actions to be taken when maintenance is required
- Maintenance log template for recording inspection and maintenance actions
- Long-term funding mechanisms to support O&M
- List of the expected design life and replacement schedule of each component of the stormwater drainage system
- General site plan (drawn to scale) showing the overall layout of the site and all the facilities associated with the stormwater drainage system
- Description of the source control BMPs

MAINTENANCE CRITERIA

Maintenance criteria tables for stormwater drainage system components and stormwater facilities are included in the SWMMEW.

Additional maintenance criteria were developed for the following stormwater facilities and BMPs that are included in the *Eastern Washington Low Impact Development Guidance Manual*:

- Bioretention
- Amended construction site soils
- Permeable paving
- Vegetated roofs
- Rain water harvesting

MAINTENANCE ACCESS REQUIREMENTS

An access road is required when the stormwater facilities or structures are located 8 feet or more from an all-weather drivable surface and will be maintained by the City. When required, maintenance access roads shall meet the following minimum requirements:

- The horizontal alignment of all access roads shall be designed and constructed to accommodate the turning movements of a Single-Unit Truck (as defined by *AASHTO Geometric Design of Highways and Streets*, Exhibit 2-4, 2004 Edition).
 - The minimum outside turning radius shall be 50 feet.
 - The minimum width shall be 12 feet on straight sections and 15 feet on curves.
- Access roads shall consist of an all-weather, drivable surface; access roads constructed of gravel shall have a minimum of 6 inches of crushed surfacing top course in accordance with *WSDOT Standard Specifications* and shall be designed to support the heaviest anticipated maintenance vehicle year-round.
- Access roads shall be compacted to 95 percent.
- Access roads shall be located within a 20-foot-minimum-width (or as required by the horizontal alignment requirements) tract or easement, extending from a public or private road.
- Access roads shall have a maximum grade of 10 percent.

- A paved apron extending 10 feet back from the sidewalk or edge of road pavement must be provided where access roads connect to paved public roads. The depth of the paved apron should be designed to meet the City's minimum alley/private lane standards.
- The following access road requirements apply only when the City will be responsible for maintenance, though it is recommended that access roads for privately-maintained facilities also be designed to meet these criteria:
 - If the maintenance access road is longer than 150 feet, a turn-around is required at or near the terminus of the access road. Turn-arounds are required for long, winding, or steep conditions, regardless of the length of the drive, where backing up would otherwise be difficult.
 - Turnarounds shall conform to the City Standard Plan 2-3 (see the City of Walla Walla 2017 Standard Plans, Dead-End Hammerhead for Private Lane).

TRACTS AND EASEMENTS

Stormwater facilities must be located within the right-of-way (if publicly owned), within an easement parallel to the road, or within an individual tract. For lots larger than 1 acre, the stormwater facility may be located within an easement if the facility does not occupy more than 10 percent of the lot and does not straddle private property lines.

A stormwater facility, as defined for this section, is typically a swale or pond. It is acceptable for other types of facilities, such as a pipe, to be included in a drainage easement.

Tracts

A tract for access, maintenance, operation, inspection and repair shall be dedicated to the entity responsible for the maintenance and operation of the stormwater drainage system. A tract is required to be dedicated when any of the following situations are present:

- Stormwater facilities serving a residential development are located outside of the public right-of-way.
- Drainage ditches are located in residential neighborhoods. The limits of the tract may have to be delineated with a permanent fence when the ditch is located near property lines.
- A drainageway is present on a lot of 1 acre or smaller.
- Stormwater facilities serving more than one commercial property.

Tracts shall be of sufficient width to provide access to, and maintain, repair or replace elements of, the stormwater drainage system without risking damage to adjacent structures, utilities and normal property improvements, and without incurring additional costs for shoring or specialized equipment.

Easements

An easement for access, maintenance, operation, inspection and repair shall be granted to the entity responsible for maintenance and operation of the stormwater drainage system. The easement shall grant the City the right to ingress/egress over the easement for purposes of inspection or emergency repair. If it is not included in a tract and the City will be responsible for maintenance, the following information shall be included in an easement:

- Elements of a stormwater drainage system (e.g., pipe), located outside the public right-of-way.
 - The easement shall have a minimum width of 20 feet.
 - The conveyance pipe shall be centered in the easement.
 - No conveyance pipe in a drainage easement shall have its centerline closer than 5 feet to a private rear or side property line.
 - The easement shall be located on a single parcel and located adjacent to the lot line.
 - The easement width for conveyance pipes shall be wide enough to allow construction of all improvements, including any associated site disturbances, and access to maintain, repair or replace the pipe and appurtenances without risking damage to adjacent structures or incurring additional costs for shoring or special equipment.
- Drainage ditches and natural drainage pathways
 - The easement width shall be wide enough to contain the runoff from a 50-year, 24-hour storm event, plus a 30 percent freeboard of total depth or a minimum of 1 foot, whichever is greater.
 - Constructed drainage ditches will not typically be allowed to straddle lot lines.
 - Natural drainage pathways located on lots larger than 1 acre may be placed in an easement.
- Access roads and turnarounds
 - The easement shall have a minimum width of 20 feet.

Easement documents shall be drafted by the project proponent for review by the City and recorded by the project proponent.

Off-Site Easements

When a land action proposes stormwater infrastructure outside the property boundaries, an off-site easement shall be recorded separately from plat documents, with the auditor's recording number placed on the face of the plat. The easement document shall include language prescribed by the City. The easement language shall grant the City the right to ingress and egress for purposes of routine or emergency inspection and maintenance. The following will be submitted to the City for review:

- A legal description of the site stamped and signed by a surveyor
- An exhibit showing the entire easement limits and easement bearings, stamped and signed by a surveyor
- Proof of ownership for the affected parcel and a list of signatories
- Copy of the draft easement

The legal exhibit and description shall have 1-inch margins for all four sides of the page. All text shall be legible and at least 8-point type.

For plats and binding site plans, the off-site drainage facility must be clearly identified on the plans and operation and maintenance responsibilities must be clearly defined prior to acceptance of the project.

MAINTENANCE AGREEMENTS

A Maintenance Agreement is required for any stormwater facility that serves the public right-of-way constructed on private property. This agreement will specify the City's maintenance responsibility for the facility and identify who will be responsible for all other maintenance. Appendix D contains a template for this agreement. This Maintenance Agreement must be recorded on the plat with the County.

In situations where a privately-owned stormwater facility serves more than one private entity, a similar agreement may be required that clearly defines who is responsible for maintenance activities.

CHAPTER 6 – INSPECTIONS

CONSTRUCTION INSPECTIONS

The City will inspect the project site at the start of construction to ensure that adequate sediment and erosion control measures are in place. In addition, inspections of the project site will be conducted periodically during construction. Ecology, not the City, is responsible for enforcing the Construction SWPPP. However, if erosion occurs on the site during construction which results in sediment deposition into the City right-of-way, components of the City's stormwater drainage system, surface waters, or adjacent properties, the City may take enforcement action for a violation of the WWMC.

STRUCTURAL BMP INSPECTION

The City will inspect structural BMPs during installation to ensure they are constructed as designed.

POST-CONSTRUCTION INSPECTION

On projects with City-owned stormwater facilities serving the City right-of-way and privately-owned stormwater facilities serving the City right-of-way, the City will inspect all stormwater facilities and video all stormwater drainage pipes constructed as part of the project at the completion of construction. All deficiencies identified must be corrected as directed by the City before final acceptance.

In addition, all structural stormwater facilities constructed on large projects and on private, medium projects at high-use sites will be inspected by the City once every five years after final installation, or more frequently if determined to be necessary to prevent adverse water quality impacts, to ensure adequate maintenance is being performed, and to ensure that stormwater facilities are functioning as designed. The City will give written notice to the owner or person responsible for the property at least 15 days in advance of inspection. Maintenance deficiencies must be corrected as directed by the City.

TESTING OF INFILTRATION FACILITIES

All infiltration facilities constructed on private development projects that serve the City right-of-way must be tested to verify that infiltration design criteria are met. This testing must be conducted by a professional engineer using procedures specified in the SWMMEW, and must be

completed within 30 days of total site stabilization. A report documenting the dates and persons involved in the testing, the testing method and procedures used, the results, and a conclusion as to whether the design criteria are met must be prepared by a professional engineer and submitted to the City for review and acceptance. Facilities that do not meet design criteria will need to be replaced or retrofitted. All expenses related to this testing and corrective actions are the responsibility of the project proponent.

GLOSSARY

Basic Treatment means treatment of stormwater with the goal of removing at least 80 percent of the solids present in the runoff using one of the treatment facilities or methods identified in the SWMMEW. Basic treatment is required for all discharges that meet the thresholds defined in the SWMMEW. Additional treatment to remove metals, oil or phosphorus may be required at some sites or for some receiving water bodies. Refer to the SWMMEW for additional information.

Common plan of development or sale means a site where multiple separate and distinct construction activities may be taking place at different times on different schedules and/or by different contractors, but still under a single plan. Examples include:

1. Phased projects and projects with multiple filings or lots, even if the separate phases or filings/lots will be constructed under separate contract or by separate owners (e.g., a development where lots are sold to separate builders);
2. A development plan that may be phased over multiple years, but is still under a consistent plan for long-term development; and
3. Projects in a contiguous area that may be unrelated but still under the same contract, such as construction of a building extension and a new parking lot at the same facility. If the project is part of a common plan of development or sale, the disturbed area of the entire plan shall be used in determining permit requirements.

A “common plan” is defined as any announcement or piece of documentation including, but not limited to:

- Sign
- Drawing
- Public notice or hearing
- Permit application
- Sales pitch
- Zoning request
- Advertisement
- Computer design

Alternatively, a “common plan” can be a physical demarcation indicating construction activities may occur on a specific plot including, but not limited to:

- Boundary signs
- Surveyor markings.
- Lot stakes

Where only a small portion of the original common plan of development remains undeveloped and there has been a period of time where there are no ongoing construction activities (i.e., all areas are either undisturbed or have been finally stabilized), a project may be re-evaluated based on the acreage remaining from the original "common plan." Examples include:

1. If less than 5 acres, but more than 1 acre remains to build out the original "common plan," construction stormwater general permit coverage may still be required, but the project may be eligible for an Erosivity Waiver (e.g., one out of six lots totaling 2 acres in a 50-acre subdivision can be treated as part of a 2-acre development rather than a 50-acre "common plan").
2. If less than 1 acre remains of the original "common plan," an individual project may be treated as part of a less than 1-acre development, and no construction stormwater general permit would be required; however, the City's requirements as outlined in this Handbook will still apply.

After the initial "common plan" construction activity is completed for a parcel, any subsequent development or redevelopment of that parcel would be regarded as a new common plan of development. Examples include:

1. After a house is built and occupied, any future construction on that lot (e.g., reconstructing after fire, adding a pool or parking area, etc.)
2. For a commercial or industrial project, adding new buildings, a pipeline, new wastewater treatment facility, etc., that was not part of the original "common plan"

Conveyance system means the stormwater facilities, both natural and human-made, which collect, contain, and provide for the flow of surface and stormwater from the highest points on the land down to a receiving water. The natural elements of the conveyance system include swales and small drainage courses, streams, rivers, lakes, and wetlands. The human-made elements of the conveyance system include gutters, ditches, pipes, channels, and most retention/detention facilities.

High-use site means a site that generates high concentrations of oil due to high traffic turnover or the frequent transfer of oil and(or) other petroleum products. High-use sites are land uses where sufficient quantities of free oil are likely to be present such that they can be effectively removed with special treatment. Thresholds for determining high-use sites are based on Average Daily Traffic (ADT), facility or site type, and land use as listed the SWMMEW (Core Element #5). For sites that do not meet high-use site thresholds, refer to definition for moderate-use site.

Impervious surface means a hard surface area which either prevents or retards the entry of water into the soil mantle as under natural conditions prior to development. A hard 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. For purposes of determining whether thresholds for application of Core Elements are exceeded, open, uncovered retention or detention facilities shall not be considered as impervious surfaces. Open, uncovered retention or detention facilities shall be considered impervious surfaces for purposes of runoff modeling.

Land-disturbing activity means 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 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.

Moderate-use site means a site that is expected to generate sufficient concentrations of metals that additional runoff treatment is needed to protect water quality in non-exempt surface waters. This includes primary access points for high-density residential apartments, most intersections controlled by traffic signals, and transit center bus stops. This also includes sites that can be classified as *Moderate Average Daily Traffic* (ADT) roadways and parking areas as defined in the SWMMEW (Core Element #5). For sites that exceed the moderate-use site threshold, see glossary definition for high-use site.

New development means the conversion of previously undeveloped or pervious surfaces to impervious surfaces. New development may occur either as a stand-alone project or in conjunction with a redevelopment project.

Outfall means a point source as defined by 40 CFR 122.2 at the point where a discharge leaves the Permittee's MS4 and enters a surface receiving waterbody or surface receiving waters. Outfall does not include pipes, tunnels, or other conveyances which connect segments of the same stream or other surface waters and are used to convey primarily surface waters (i.e., culverts).

Redevelopment means the replacement or improvement of impervious surfaces on a developed site including the replacement of impervious surfaces with in-kind materials. New impervious surfaces added as part of a redevelopment project are considered new development and must meet the requirements for new development.

Runoff means water originating from rainfall and other precipitation that is found in drainage facilities, rivers, streams, springs, seeps, ponds, lakes, and wetlands, as well as shallow ground water. As applied in this manual, it also means the portion of rainfall or other precipitation that becomes surface flow and interflow.

Stormwater drainage system means public or privately-owned facilities which function together as a system to collect, convey, channel, retain, detain, infiltrate, divert, treat, or filter

stormwater. This includes but is not limited to any roads and streets with curbs and gutters, storm drain inlets, piped storm drains, and stormwater facilities.

Stormwater facility means any constructed component of a stormwater drainage system designed or constructed to provide one or more of the following functions: collection, conveyance, retention, detention, infiltration, diversion, treatment, or filtration of stormwater. Stormwater facilities include, but are not limited to: pipes, swales, ditches, culverts, street gutters, detention ponds, retention ponds, constructed wetlands, infiltration devices, catch basins, oil/water separators, biofiltration swales, UIC wells, bioretention, and permeable pavement.

Source Control BMP means a structure or operation intended to prevent pollutants from coming into contact with stormwater through physical separation of areas or careful management of activities that are sources of pollutants. The SWMMEW separates source control BMPs into two types. Structural source control BMPs are physical, structural, or mechanical devices or facilities that are intended to prevent pollutants from entering stormwater. Operational BMPs are non-structural practices that prevent or reduce pollutants from entering stormwater. See the SWMMEW for details.

Underground injection control (UIC) wells means wells as defined in the Stormwater Management Manual for Eastern Washington and in the Washington State Department of Ecology's *Guidance for UIC Wells that Manage Stormwater* (Ecology, 2006).

ABBREVIATIONS AND ACRONYMS

AASHTO	American Association of State Highway and Transportation Officials
ADT	Average Daily Traffic
ASTM	American Society for Testing and Materials (now ASTM International)
BMPs	Best Management Practices
CARAs	Critical Aquifer Recharge Areas
CEC	Cation Exchange Capacity
CF	Correction factor
CFR	Code of Federal Regulations
HDPE	High Density Polyethylene
LID	Low Impact Development
NPGIS	Non-Pollution-Generating Impervious Surface
O&M	Operation and Maintenance
PGIS	Pollution-Generating Impervious Surface
PVC	Polyvinyl Chloride
RCW	Revised Code of Washington
SWMMEW	Stormwater Management Manual for Eastern Washington
SWPPP	Stormwater Pollution Prevention Plan
TMDL	Total Maximum Daily Load
UIC	Underground Injection Control
WAC	Washington Administrative Code
WSDOT	Washington State Department of Transportation
WWMC	Walla Walla Municipal Code

REFERENCES

AASHTO. 2004. A Policy on Geometric Design of Highways and Streets, Fifth Edition, Exhibit 2-4. Prepared by the American Association of State Highway and Transportation Officials (AASHTO).

Ecology. 2004 (or most recent version). Stormwater Management Manual for Eastern Washington. Publication Number 04-10-076. Washington State Department of Ecology, Olympia, Washington. September 2004.

Ecology. 2006. Guidance for UIC Wells that Manage Stormwater. Publication Number 05-10-067. Prepared by the Washington State Department of Ecology. December 2006.

Ecology. 2013. Eastern Washington Low Impact Development Guidance Manual. Prepared by AHBL and HDR for the Washington State Department of Ecology. June 2013.

Ecology. 2014 (or most recent version). Eastern Washington Phase II Municipal Stormwater Permit. National Pollutant Discharge Elimination System and State Waste Discharge General Permit for Discharges from Small Municipal Separate Storm Sewers in Eastern Washington. Washington State Department of Ecology, Olympia, Washington. Effective date of August 1, 2014.

APPENDIX A

Construction Stormwater Pollution Prevention for Small Projects



Construction Stormwater Pollution Prevention for Small Projects

Are you constructing a new driveway, patio, or a small addition to your house or business?

Did you know that all new development and redevelopment projects are responsible for preventing erosion and discharge of sediment and other pollutants into water bodies?

This handout provides guidance for recommended best management practices (BMPs) for Construction Stormwater Pollution Prevention associated with small projects in the City of Walla Walla that involve:

- Less than 5,000 square feet of new plus replaced impervious surface

This guidance is not intended to be all inclusive and additional prevention measures may be required based on site conditions.

Construction Stormwater Pollution Prevention		
Element #	Element Name	Recommended Practices
1	Preserve Vegetation/ Mark Clearing Limits	<ul style="list-style-type: none"> • Clear only the areas needed. • Keep exposed areas to a minimum. • Phase clearing so that only those areas that are actively being worked are left uncovered. • Flag clearing limits in the lot or area prior to initiating clearing. • Fence or clearly mark trees that are to be preserved during construction activities. • If you have wetlands or water bodies on your property, it may be necessary to hire a contractor or consultant to ensure that you are adequately protecting those sensitive areas.
2	Establish Construction Access	<ul style="list-style-type: none"> • Avoid tracking sediment off site during construction activities. • Consider providing a construction entrance consisting of a pad of quarry spalls or crushed rock (BMP C105 in the Stormwater Management Manual for Eastern Washington [SWMMEW]). • Remove sediment that has been tracked out by shoveling or sweeping and placing in a suitable disposal area .
3	Control Flow Rates	<ul style="list-style-type: none"> • Protect properties and waterways downstream of your site to make sure that your construction activities are not impacting other property owners or adversely impacting nearby water bodies.



Construction Stormwater Pollution Prevention		
Element #	Element Name	Recommended Practices
4	Install Sediment Controls	<p>Install sediment controls such as:</p> <ul style="list-style-type: none"> • Brush barriers (BMP C231 in the SWMMEW) • Gravel filter berms (BMP C232) • Silt fences (BMP C233) • Vegetated strips (BMP C234) • Wattles (BMP C235)
5	Stabilize Soils	<ul style="list-style-type: none"> • Ensure that construction practices do not cause damage to or compromise the design of infiltration areas. • Manage soils to avoid permanent compaction or deterioration. • Restore soil depth, soil quality, permeability, and percent organic matter at the end of construction activities. • Locate soil stockpiles so that sediment does not run into the street or adjoining yards. • Cover soil stockpiles until the soil is either used or removed • Backfill basement walls as soon as possible. • Rough grade the lot to prepare the area for temporary cover. • Remove excess soil from the site as soon as possible after backfilling. • Install a trench or berm if a lot has a soil bank higher than the curb to provide a storage and settling area for stormwater. <p>Implement soil stabilization techniques such as:</p> <ul style="list-style-type: none"> • Temporary and permanent seeding (BMP C120 in the SWMMEW) • Mulching (BMP C121) • Nets and blankets (BMP C122) • Plastic covering (BMP C123) • Sodding (BMP C124) • Topsoiling (BMP C125)



Construction Stormwater Pollution Prevention		
Element #	Element Name	Recommended Practices
6	Protect Slopes	<ul style="list-style-type: none"> • If you have steep slopes (typically greater than 15%) on your site, you may need to hire a contractor or consultant to ensure that you are adequately protecting those areas and not creating potential future issues for the property or for adjacent properties. • Backfill utility trenches within 7 days that run up or down slopes. • Considering leaving cross-slope trenches open throughout construction to provide runoff interception and sediment trapping, provided that they do not convey turbid runoff off site.
7	Protect Drain Inlets	<ul style="list-style-type: none"> • Install storm drain inlet protection (BMP C220 in the SWMMEW).
8	Stabilize Channels and Outlets	<ul style="list-style-type: none"> • If there is an on-site conveyance channel, refer to the SWMMEW for stabilization techniques such as channel lining (BMP C202).
9	Control Pollutants	<ul style="list-style-type: none"> • Ensure that concrete handling tools are washed in formed areas or containers such as Eco-Pans. • Cover and provide containment for all chemicals, liquid products, and petroleum products. • Use drip pans when maintaining and repairing heavy equipment and vehicles.
10	Control De-Watering	<ul style="list-style-type: none"> • If dewatering is necessary from foundations, vaults, or trenches, refer to the SWMMEW for techniques such as subsurface drains (BMP C205) and sediment ponds (BMP C241).
11	Maintain BMPs	<ul style="list-style-type: none"> • Maintain and repair all temporary and permanent erosion and sediment control BMPs to ensure continued performance of their intended function. • Remove temporary erosion and sediment control BMPs 30 days after achieving final site stabilization or after they are no longer needed. • Leave biodegradable BMPs (e.g., compost socks) in place following construction.
12	Manage the Project	<ul style="list-style-type: none"> • Phase construction to accommodate weather patterns, if needed.

APPENDIX B

Medium Project Checklist



Medium Project Checklist

This checklist reflects the recommended structure and minimum required content for Stormwater Reports and Erosion and Sediment Control Plan submittals for projects that involve:

- New development or redevelopment projects that add and/or replace 5,000 square feet or more of impervious surface and disturb less than 1 acre.
- Land-disturbing activities of 5,000 square feet or more, but less than 1 acre.

If a project only involves land-disturbing activities, but does not add or replace impervious surfaces, then a Site Plan, but not a Stormwater Report is required. Erosion and Sediment Control Plans are required for both categories. Stormwater Report and Erosion and Sediment Control Plan requirements included in this checklist also apply to projects with drywells and other underground injection control (UIC) rule-authorized subsurface infiltration systems. This list is intended to be used as an aid to provide a consistent review of development work in the City of Walla Walla. This list is not intended to be all inclusive and additional information may be required by the Development Services Department.

Applicant:

Name of reviewer:

Application #:

Title of reviewer:

Date review was completed:

Reviewer phone number:

Within each blank cell, Development Services Department plan reviewer to enter comment codes:	
C = Complete	R = Revise (i.e., make corrections)
N/A = Not Applicable	M = Missing (i.e., please include)
IC = Incomplete	
COVER SHEET	
1	Project title
2	Site address
3	Tax parcel number(s)
4	Vicinity map
5	Owner contact information (name, address, phone number, e-mail address)
6	Engineer contact information (name, address, phone number, e-mail address)
7	PE stamp, signature, and date (include on cover sheet or in Stormwater Report)
STORMWATER REPORT	
Project Narrative	
<i>Project Overview</i>	
8	Brief description of proposed project
9	Total area of land disturbing activities



Within each blank cell, Development Services Department plan reviewer to enter comment codes:	
C = Complete	R = Revise (i.e., make corrections)
N/A = Not Applicable	M = Missing (i.e., please include)
IC = Incomplete	
STORMWATER REPORT (continued)	
Project Narrative (continued)	
<i>Project Overview</i>	
10	Total new impervious surface area
11	Total replaced impervious surface area
12	Total Pollution-generating Impervious Surface (PGIS) area
13	Total Non-pollution-generating Impervious Surface (NPGIS) area
14	Description of Core Elements (#3, #5, and #7) if applicable to the project
<i>Existing Conditions</i>	
15	Description of existing topography
16	Description of existing vegetation
17	Description of existing site development
18	Identification and description of existing drainage facilities and stormwater structures located on site, which are proposed to be utilized by the development including condition (e.g., maintenance and repair needs) and capacity (e.g., undersized, oversized)
19	Description of on-site or adjacent areas upslope and downslope of construction that may be affected by site disturbance, including streams, lakes, wetlands, residential areas, roads, buildings, facilities, or other adjacent areas
20	Description of existing on-site and adjacent encumbrances such as wells, utilities, existing or abandoned septic drainfields, etc.
21	Description of site drainage patterns (e.g., upstream, on site, and downstream) and the downstream drainage path (e.g., pipe, ditch, etc.) leading from the site to the receiving body of water
22	Historical stormwater problems (and cause, if known) associated with the project site or adjacent properties
<i>Sensitive and Critical Areas</i>	
23	Identification and description of critical areas on or adjacent to the site such as steep slopes, fish-bearing streams, floodplains, wetlands, mine hazard areas, etc.
24	Applicable floodplain maps or relevant studies within the project area
Proposed Design	
25	Design criteria (e.g., design storm, safety factors, design infiltration rate, etc.)
26	Soil classifications for hydrology, infiltration rate, and soil treatment capacity <i>Note: Historic data and/or data from nearby sites may be used to design facilities if site conditions are similar or when otherwise appropriate as approved by the City Engineer.</i>
27	Best Management Practice (BMP) & facility selection for Core Element #5 (Runoff Treatment)



Within each blank cell, Development Services Department plan reviewer to enter comment codes:	
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IC = Incomplete	
STORMWATER REPORT (continued)	
Proposed Design (continued)	
28	BMP & facility selection for Core Element #6 (Flow Control)
29	BMP & facility suitability (based on Site Suitability Criteria in the Stormwater Management Manual for Eastern Washington [SWMMEW])
30	Runoff (volume and flow) contributing to runoff treatment and flow control facilities
31	BMP & facility volume and flow
32	Description of BMP & facility performance during 100-year storm event
33	Operations and Maintenance (O&M) Requirements (refer to items listed in Appendix D)
APPENDICES	
APPENDIX A	
SITE PLAN	
34	North arrow
35	Legend
36	Vertical and horizontal scale bar
37	Vertical and horizontal datum
38	Site and property boundaries
39	Delineation of drainage basin boundaries, including on-site and off-site areas which contribute or receive stormwater runoff onto or from the project (field verified by the engineer)
40	Delineation of drainage subbasin limits, clearly labeled and correlated with calculations
41	Total land-disturbing area
42	Total new impervious surface area
43	Total replaced impervious surface area
44	Total Pollution-generating Impervious Surface (PGIS) area
45	Total Non-pollution-generating Impervious Surface (NPGIS) area
46	Existing topographic contours (2-foot intervals)
47	Proposed topographic contours (2-foot intervals)
48	Existing significant natural or man-made drainage features such as creeks, seasonal channels, and culverts
49	Indications of floodplain limits as defined by FEMA or other studies
50	Delineation of wetlands
51	Existing development (buildings, impervious areas, etc.)
52	Proposed site development or redevelopment (e.g., buildings, impervious areas, etc.)



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 IC = Incomplete

**APPENDIX A
 SITE PLAN (continued)**

53	Right-of-Way
54	Time of concentration routes, clearly labeled and correlated with calculations
55	Directional flow arrows
56	Existing BMPs and facilities (infiltration facilities, detention facilities, etc.) – plan view
57	Proposed BMPs and facilities (infiltration facilities, detention facilities, etc.) – plan, profile, cross-sections, existing and proposed contours, and details.
58	Existing conveyance system (pipes, culverts, ditches, etc.)
59	Proposed conveyance system (pipes, culverts, ditches, inlets, manholes, etc. – plan, profile, elevations, offsets, stationing, cross-sections, details, etc.
60	Location of drainage easements, with key dimensions for width and length
61	Existing underground and above-ground utilities
62	Proposed underground and above-ground utilities

**APPENDIX B
 CALCULATIONS**

63	Hydrology computations
64	Total drainage area to each stormwater inlet or conveyance calculations (if applicable)
65	Detention/retention storage capacities (volume)
66	Computer printouts that include the following information: <ul style="list-style-type: none"> • All assumptions, variables, and computer input/output data for applicable subbasin(s) • Indicate which calculations are applicable to which subbasin(s) • Include identifying names (corresponding to site plan) • Associated design storm event
67	Copies of design charts, nomographs, soil maps, or other design aids used in the analysis

**APPENDIX C
 SUPPORTING GEOTECHNICAL INFORMATION**

68	Geotechnical report (prepared and stamped by a professional engineer, geologist, hydrogeologist, or engineering geologist registered in the state of Washington) if required
69	Soil logs (including locations of soil tests)
70	Subsurface testing information (including Cation Exchange Capacity [CEC] and organic content for native soils proposed to be used for infiltration treatment)
71	Evidence of shallow bedrock, high groundwater, seasonally perched groundwater, or clay lenses in the substrata



Within each blank cell, Development Services Department plan reviewer to enter comment codes:	
C = Complete	R = Revise (i.e., make corrections)
N/A = Not Applicable	M = Missing (i.e., please include)
IC = Incomplete	
APPENDIX C	
SUPPORTING GEOTECHNICAL INFORMATION (continued)	
72	Depth to seasonal ground water table (including month that measurements were collected), depth to impermeable layer, and shrink-swell potential, if necessary
73	Well logs including: <ul style="list-style-type: none"> • Dates that the on-site groundwater explorations were conducted • Location of on-site groundwater explorations
APPENDIX D	
OPERATIONS AND MAINTENANCE PLAN AND AGREEMENT	
74	Identification of party or parties responsible for O&M
75	Maintenance access easement
76	List of inspection tasks
77	List of maintenance tasks
78	Schedule for routine inspection and maintenance
79	Actions to be taken when maintenance is required
80	Maintenance log template for recording inspection and maintenance actions
81	Long-term funding mechanisms to support O&M
82	General site plan (drawn to scale) showing the overall layout of the site and all the facilities associated with the stormwater drainage system
83	Description of the source control BMPs
OTHER SUBMITTALS	
CONSTRUCTION STORMWATER POLLUTION PREVENTION	
84	Erosivity Waiver from Ecology (if applicable)
85	Erosion and sediment control plan including the following information: <ul style="list-style-type: none"> • Standard erosion and sediment control notes • Locations of selected erosion and sediment control BMPs – plan view • Standard details for selected erosion and sediment control BMPs • Location of BMPs to be used for the control of pollutants other than sediment (e.g., concrete wash water)

APPENDIX C

Large Project Checklist



Large Project Checklist

This checklist reflects the recommended structure and minimum required content for Stormwater Reports and Construction Stormwater Pollution Prevention Plans (SWPPPs) for projects that involve:

- All projects and activities that disturb 1 acre or more or
- Part of a common plan of development or sale that disturbs 1 acre or more

If a project only involves land-disturbing activities, but does not add or replace impervious surfaces, then a Site Plan, but not a Stormwater Report, is required. Construction SWPPPs are required for both categories. Stormwater Report and Construction SWPPP requirements included in this checklist also apply to projects with drywells and other underground injection control (UIC) rule-authorized subsurface infiltration systems. This list is intended to be used as an aid to provide a consistent review of development work in the City of Walla Walla. This list is not intended to be all inclusive and additional information may be required by the Development Services Department.

Applicant:

Name of reviewer:

Application #:

Title of reviewer:

Date review was completed:

Reviewer phone number:

Within each blank cell, Development Services Department plan reviewer to enter comment codes:	
C = Complete	R = Revise (i.e., make corrections)
N/A = Not Applicable	M = Missing (i.e., please include)
IC = Incomplete	
COVER SHEET	
1	Project title
2	Site address
3	Tax parcel number(s)
4	Vicinity map
5	Owner contact information (name, address, phone number, e-mail address)
6	Engineer contact information (name, address, phone number, e-mail address)
7	PE stamp, signature, and date (include on cover sheet or in Stormwater Report)
STORMWATER REPORT	
Project Narrative	
<i>Project Overview</i>	
8	Brief description of proposed project
9	Total area of land disturbing activities
10	Total new impervious surface area
11	Total replaced impervious surface area



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STORMWATER REPORT (continued)	
Project Narrative (continued)	
<i>Project Overview (continued)</i>	
12	Total Pollution-generating Impervious Surface (PGIS) area
13	Total Non-pollution-generating Impervious Surface (NPGIS) area
14	List of Core Elements (#1 through #8) and applicability to the project
<i>Existing Conditions</i>	
15	Description of existing topography
16	Description of existing vegetation
17	Description of existing site development
18	Identification and description of existing drainage facilities and stormwater structures located on site, which are proposed to be utilized by the development including condition (e.g., maintenance and repair needs) and capacity (e.g., undersized, oversized)
19	Description of on-site or adjacent areas upslope and downslope of construction that may be affected by site disturbance, including streams, lakes, wetlands, residential areas, roads, buildings, facilities, or other adjacent areas
20	Description of existing on-site and adjacent encumbrances such as wells, utilities, existing or abandoned septic drainfields, etc.
21	Description of site drainage patterns (e.g., upstream, on site, and downstream) and the downstream drainage path (e.g., pipe, ditch, etc.) leading from the site to the receiving body of water
22	Historical stormwater problems (and cause, if known) associated with the project site or adjacent properties
<i>Sensitive and Critical Areas</i>	
23	Identification and description of critical areas on or adjacent to the site such as steep slopes, fish-bearing streams, floodplains, wetlands, mine hazard areas, etc.
24	Applicable floodplain maps or relevant studies within the project area
Proposed Design	
25	Design criteria (e.g., design storm, safety factors, design infiltration rate, etc.)
26	Soil classifications for hydrology, infiltration rate, and soil treatment capacity <i>Note: Historical data and/or data from nearby sites may be used to design facilities if site conditions are similar or when otherwise appropriate as approved by the City Engineer.</i>
27	Best Management Practice (BMP) and facility selection for Core Element #5 (Runoff Treatment)
28	BMP and facility selection for Core Element #6 (Flow Control)



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STORMWATER REPORT (continued)	
Proposed Design (continued)	
29	BMP and facility suitability (based on Site Suitability Criteria in the Stormwater Management Manual for Eastern Washington [SWMMEW])
30	Runoff (volume and flow) contributing to runoff treatment and flow control facilities
31	BMP and facility volume and flow
32	Description of BMP and facility performance during 100-year storm event
33	Operations and Maintenance (O&M) Requirements (refer to items listed in Appendix D)
34	Downstream Analysis and Proposed Mitigation (refer to items listed in Appendix E)
APPENDICES	
APPENDIX A	
SITE PLAN	
35	North arrow
36	Legend
37	Vertical and horizontal scale bar
38	Vertical and horizontal datum
39	Site and property boundaries
40	Delineation of drainage basin boundaries, including on-site and off-site areas which contribute or receive stormwater runoff onto or from the project (field verified by the engineer)
41	Delineation of drainage subbasin limits, clearly labeled and correlated with calculations
42	Total land-disturbing area
43	Total new impervious surface area
44	Total replaced impervious surface area
45	Total Pollution-generating Impervious Surface (PGIS) area
46	Total Non-pollution-generating Impervious Surface (NPGIS) area
47	Existing topographic contours (2-foot intervals)
48	Proposed topographic contours (2-foot intervals)
49	Existing significant natural or man-made drainage features such as creeks, seasonal channels, and culverts
50	Indications of floodplain limits as defined by FEMA or other studies
51	Delineation of wetlands
52	Existing development (buildings, impervious areas, etc.)
53	Proposed site development or redevelopment (e.g., buildings, impervious areas, etc.)
54	Right-of-Way



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**APPENDIX A
 SITE PLAN (continued)**

55	Time of concentration routes, clearly labeled and correlated with calculations
56	Directional flow arrows
57	Existing BMPs and facilities (infiltration facilities, detention facilities, etc.) – plan view
58	Proposed BMPs and facilities (infiltration facilities, detention facilities, etc.) – plan, profile, cross-sections, existing and proposed contours, and details.
59	Existing conveyance system (pipes, culverts, ditches, etc.)
60	Proposed conveyance system (pipes, culverts, ditches, inlets, manholes, etc.) – plan, profile elevations, offsets, stationing, cross-sections, details, etc.
61	Location of drainage easements, with key dimensions for width and length
62	Existing underground and above-ground utilities
63	Proposed underground and above-ground utilities

**APPENDIX B
 CALCULATIONS**

64	Hydrology computations
65	Inlet capacities and bypass percentages
66	Detention/retention storage capacities (volume)
67	Culvert and pipe system capacities and outlet velocities
68	Ditch capacities and velocities
69	Computer printouts that include the following information: <ul style="list-style-type: none"> • All assumptions, variables, and computer input/output data for applicable subbasin(s) • Indicate which calculations are applicable to which subbasin(s) • Include identifying names (corresponding to site plan) • Associated design storm event
70	Copies of design charts, nomographs, soil maps, or other design aids used in the analysis

**APPENDIX C
 SUPPORTING GEOTECHNICAL INFORMATION**

71	Geotechnical report (prepared and stamped by a professional engineer, geologist, hydrogeologist, or engineering geologist registered in the state of Washington), if required
72	Soil logs (including locations of soil tests)
73	Subsurface testing information (including Cation Exchange Capacity [CEC] and organic content for native soils proposed to be used for infiltration treatment)
74	Evidence of shallow bedrock, high groundwater, seasonally perched groundwater, or clay lenses in the substrata



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APPENDIX C	
SUPPORTING GEOTECHNICAL INFORMATION (continued)	
75	Depth to seasonal ground water table (including the month(s) that measurements were collected), depth to impermeable layer, and shrink-swell potential, if necessary
76	Well logs including: <ul style="list-style-type: none"> • Dates that the on-site groundwater explorations were conducted • Location of on-site groundwater explorations
APPENDIX D	
OPERATIONS AND MAINTENANCE PLAN AND AGREEMENT	
<i>Monitoring Locations</i>	
77	Water quality sampling locations (upstream and downstream of the project site)
78	Identification of party or parties responsible for O&M
79	Maintenance agreement
80	Maintenance access easement
81	List of inspection tasks
82	List of maintenance tasks
83	Schedule for routine inspection and maintenance
84	Actions to be taken when maintenance is required
85	Maintenance log template for recording inspection and maintenance actions
86	Long-term funding mechanisms to support O&M
87	General site plan (drawn to scale) showing the overall layout of the site and all the facilities associated with the stormwater drainage system
88	Description of the source control BMPs
APPENDIX E	
DOWNSTREAM ANALYSIS	
89	Topographic map (minimum USGS 1:24000 Quadrangle Topographic Map) including: <ul style="list-style-type: none"> • Site boundaries • Study area boundaries • Downstream flowpath
90	Description of field inspection including: <ul style="list-style-type: none"> • Date(s) • Weather • Existing/potential flooding problems • Existing/potential overtopping, scouring, bank sloughing, or sedimentation • Significant destruction of aquatic habitat such as siltation or stream incision



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**APPENDIX E
 DOWNSTREAM ANALYSIS (continued)**

91	<p>Summary of resource review of the following:</p> <ul style="list-style-type: none"> • Available basin plans • Groundwater management areas plans • Drainage studies • Floodplain/floodway FEMA maps • Wetlands inventory maps • Critical Areas maps • Stream habitat reports • Other relevant or historical data
92	<p>Documented correspondence regarding drainage problems with:</p> <ul style="list-style-type: none"> • Drainage review authority • Neighboring property owners • Residents
93	<p>Qualitative description of existing or potential problems identified during resource review and field inspection including:</p> <ul style="list-style-type: none"> • Magnitude of or damage caused • General frequency and duration • Return frequency of flow when the identified problem occurs (include quantitative analysis where required) • Water elevation when the identified problem occurs • Names and concerns of parties involved • Current mitigation of the identified problem • Possible cause of the identified problem • Likelihood that the proposed project may aggravate the identified problem or create a new problem
OTHER SUBMITTALS	
CONSTRUCTION STORMWATER POLLUTION PREVENTION	
Construction Stormwater Pollution Prevention Plan (SWPPP) Narrative	
<i>Project Information</i>	
94	Completed Department of Ecology's Construction Stormwater General Permit (CSWGP) Stormwater Pollution Prevention Plan (SWPPP) template
95	Erosivity Waiver from Ecology (if applicable)



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CONSTRUCTION STORMWATER POLLUTION PREVENTION (continued)	
Construction Stormwater Pollution Prevention Plan (SWPPP) Narrative (continued)	
<i>Project Information (continued)</i>	
96	Reference Number
97	Review Date
98	On-site Inspection Review Date
99	Construction SWPPP Reviewer
100	Total proposed impervious area
101	Total volumes of proposed cuts/fill
<i>Financial/Ownership Responsibilities</i>	
102	Identification of property owner responsible for initiation of bonds and/or other financial securities
103	Description of bonds and/or other evidence of financial responsibility for liability associated with erosion and sedimentation impacts
Erosion and Sediment Control Plans	
<i>General Requirements</i>	
104	Vicinity map
105	Standard erosion and sediment control notes
<i>Site Plan Requirements</i>	
106	Legal description of subject property
107	North arrow
108	Boundaries of existing vegetation, including unique or sensitive vegetation
109	Boundaries of existing denuded or exposed soil areas
110	Potential erosion problem areas
111	On-site or adjacent critical areas and associated buffers
112	FEMA base flood boundaries and Shoreline Management boundaries
113	Existing and proposed contours
114	Drainage basins and direction of flow for individual drainage areas
115	Final grade contours and identify developed condition drainage basins
116	Delineate areas to be cleared and graded
117	Cut and fill slopes indicating top and bottom of slope catch lines
<i>Conveyance Systems</i>	
118	Swale, interceptor trench, or ditch locations
119	Temporary and permanent drainage pipes, ditches, or cut-off trenches required for erosion and sediment control



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CONSTRUCTION STORMWATER POLLUTION PREVENTION (continued)	
Erosion and Sediment Control Plans (continued)	
<i>Conveyance Systems (continued)</i>	
120	Minimum slope and cover or invert elevation for all temporary pipes
121	Ditches, swales, culverts and pipes including the following information: <ul style="list-style-type: none"> • Grades • Dimensions • Flow direction
122	Details for bypassing off-site runoff around disturbed areas
123	Location(s) and outlet(s) of any dewatering systems
<i>Location of Detention BMPs</i>	
124	Location(s) of detention BMPs
<i>Erosion and Sediment Control BMPs</i>	
125	Construction entrance location and detail
126	Silt fabric including the following information: <ul style="list-style-type: none"> • Location(s) • Detail • Specifications
127	Rock check dams including the following information: <ul style="list-style-type: none"> • Rock specifications • Detail • Spacing • Front and side sections
128	Sediment trap(s), pipes and structures including the following information: <ul style="list-style-type: none"> • Location(s) • Detail • Required storage • Dimensions (depth, length and width)
129	Sediment pond(s) including the following information: <ul style="list-style-type: none"> • Location(s) • Required storage • Dimensions (pond berm widths, inside and outside pond slopes) • Typical section views through pond and outlet structure
130	Typical details of gravel cone and standpipe, and/or other filtering devices



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CONSTRUCTION STORMWATER POLLUTION PREVENTION (continued)	
Erosion and Sediment Control Plans (continued)	
<i>Erosion and Sediment Control BMPs (continued)</i>	
131	Detail stabilization techniques for outlet/inlet
132	Detail control/restrictor device location and details
133	Mulch and/or recommended cover or berms and slopes
<i>Detailed Drawings</i>	
134	Provide detailed drawings (and explanation) for any structural practices used that are not referenced in the Ecology Manual
<i>Location of Other Pollutant BMPs</i>	
135	Location of BMPs to be used for controlling pollutants other than sediment (e.g., concrete wash water)

APPENDIX D

Maintenance Agreement Template

STORMWATER MAINTENANCE AGREEMENT

THIS AGREEMENT TO MAINTAIN STORMWATER FACILITIES IS ENTERED INTO THIS _____ DAY OF _____, 20__, BY AND BETWEEN THE CITY OF WALLA WALLA (HEREINAFTER "CITY") AND _____ AND ITS HEIRS, SUCCESSORS, OR ASSIGNS (HEREINAFTER "OWNER").

Permit Application No.:

Project Name:

Parcel No. or Short Legal Description:

WITNESSETH

WHEREAS, the Owner has submitted, for approval by the City, a permit application and Site Plan for a construction project on the real property (Property) described above pursuant to the City of Walla Walla Construction and Post-Construction Stormwater Ordinance (Ordinance) and the City of Walla Walla Design Standards Handbook (Handbook); and

WHEREAS, the Ordinance requires, as a condition of permit approval, the construction and installation of stormwater management facilities as shown on the Site Plan, an Operation and Maintenance (O&M) Plan specifying maintenance responsibilities standards and an inspection and maintenance schedule for the stormwater facilities identified in the Site Plan; and a Maintenance Agreement between the City and the Owner to ensure the Owner maintains the stormwater facilities identified in the Site Plan in a condition such that they continue to function as designed; and

WHEREAS, the Handbook specifies privately-owned stormwater management facilities serving private property must be maintained by the property owner; and

WHEREAS, the Handbook specifies that on privately-owned stormwater management facilities serving the public right-of-way the property owner must maintain vegetation, landscaping and other aesthetic improvements and the City will maintain the stormwater infrastructure; and

WHEREAS, the City and the undersigned, its heirs, successors and assigns, including any homeowners association, agree that the health, safety, and welfare of the residents of the City requires that on-site stormwater management facilities be constructed and maintained.

NOW, THEREFORE, in consideration of the foregoing premises, the mutual covenants contained herein, and the following terms and conditions, the parties hereto agree as follows:

1. The Owner shall construct and install stormwater management facilities as depicted and shown on the Site Plan attached hereto, in accordance with the plans and specifications.
2. The Owner shall be responsible for the maintenance of privately-owned stormwater management facilities as specified in the O&M Plan attached hereto.
3. The Owner hereby grants permission to the City, its authorized agents, and employees to enter the Property and to inspect any privately-owned stormwater management facilities provided the City gives written notice to the Owner at least fifteen (15) days in advance that entry on the Property is planned for the inspection of such facilities.
4. If the City determines from its inspection that maintenance, repair, restoration, and/or mitigation work (Work) is required on any privately-owned stormwater management facility, the City will notify the Owner of the specific Work required to be done and establish a reasonable deadline for the Owners to complete the Work.
5. After the deadline has passed, the Owners shall allow the City access to re-inspect the stormwater facilities to determine if the Work has been satisfactorily completed.
6. If the City determines the Work has not been satisfactorily completed by the deadline specified above, the City will provide written notice to the Owner at least seven (7) days in advance indicating it intends to enter the Property to perform the required Work. If the City determines there exists an imminent or present danger, the seven (7) day notice period will be waived and the Work will begin immediately.
7. It is expressly understood and agreed that the City is under no obligation to maintain or repair said facilities, and in no event shall this Agreement be construed to impose any such obligation on the City.
8. The Owners shall assume all responsibility for the cost of any maintenance, repair work, or any other measures taken by the City to address conditions described above. Such

responsibility shall include reimbursement to the City within thirty (30) days of the receipt of the invoice for any such work performed. Overdue payments will require payment of interest at the maximum legal rate allowed by RCW 19.52.020. Costs, if not paid, shall become a lien on the Property.

9. If the City is responsible for the maintenance of stormwater management facilities on privately-owned property as specified in the O&M Plan, the Owner hereby grants permission to the City, its authorized agents, and employees to enter the Property to perform its maintenance responsibilities of such facility.
10. If the City initiates legal action to enforce this Agreement, the prevailing party in such action is entitled to recover reasonable litigation costs and attorney's fees.
11. The Owner, its executors, administrators, assigns, and any other successors in interest, shall indemnify and hold the City and its agents and its employees harmless for any and all damages, accidents, casualties, occurrences, or claims which might arise or be asserted against the City from the construction, presence, existence, or maintenance of the stormwater management facilities by the Owner or the City.
12. In the event a claim is asserted against the City, its agents, or employees, the City shall notify the Owner and the Owner shall defend at his own expense any suit based on such claim. If any judgment or claims against the City, its agents, or its employees shall be allowed, the Owner shall pay all costs and expenses in connection therewith.
13. This Agreement shall be recorded in the real property records of Walla Walla County, Washington, and shall constitute a covenant running with the land, and shall be binding on the Owner, its administrators, executors, assigns, heirs, and any other successors in interest.
14. This Agreement may be terminated by execution of a written agreement by the Owner and the City that is recorded in the real property records of Walla Walla County, Washington.

IN WITNESS THEREOF, the parties hereto acting through their duly authorized agents have caused the Agreement to be signed, sealed and delivered:

Owner's Name/Title

Owner's Name/Title

Address

Address

Approved By:

Accepted By:

City Engineer

City Manager

State of Washington)
County of Walla Walla) ss.

I certify that I know or have satisfactory evidence that _____ is/are the person(s) who appeared before me, and said person(s) acknowledged that he/she/they signed this instrument and acknowledged it to be his/her/their free and voluntary act for the uses and purposes mentioned in the instrument.

Witness my hand and official seal hereto affixed the day and year first above written.

Notary Public in and for the State of Washington, residing in _____.

Dated at Walla Walla, Washington, this _____ day of _____, 20__.