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Technical Memorandum

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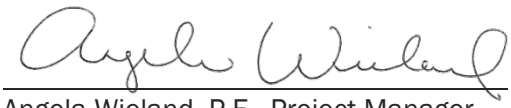
Prepared by: 
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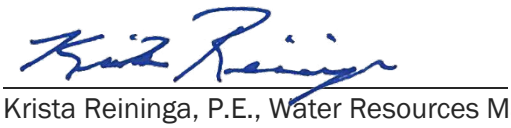
Reviewed by: 
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List of Abbreviations

ACWA	Association of Clean Water Agencies
BC	Brown and Caldwell
BMP	Best Management Practices
Chapter	Ch.
City	City of Salem
Construction	Permit Schedule A.3.d Construction Site Runoff Control
DEQ	Oregon Department of Environmental Quality
Design Standards Administrative Rules	Design Standards
EPSC	Erosion Prevention and Sediment Control
ESCP	Erosion and Sediment Control Plans
Div.	Division
ESCP	Erosion Prevention and Sediment Control Plan
FC	Flow Control
GI	Green Infrastructure
GSI	Green Stormwater Infrastructure
in/hr	inches/hour
LID	Low Impact Development
MCM	Minimum Control Measures
MEF	Maximum Extent Feasible
MS4	Municipal Separate Storm Sewer System
N/A	Not Applicable
NPDES	National Pollutant Discharge Elimination System
NSRR	Numeric Stormwater Retention Requirement
O&M	Operation and Maintenance
NPDES MS4 Permit	NPDES MS4 Phase I General Permit
Post-construction	Permit Schedule A.3.e Post Construction Site Runoff for New Development and Redevelopment
RG	Raingarden
ROW	Right-of-Way
SF	square feet
SFD	Single-Family Development
SFR	Single-Family Residential
SOPs	Standard Operating Procedures
SRC	Salem Revised Code
SWMP	Stormwater Management Plan Program
Tc	Time of Concentration
TM	Technical Memorandum
TSS	Total Suspended Solids
WQ	Water Quality

Executive Summary

This Technical Memorandum (TM) summarizes the work completed under Task 2 (Regulatory Review and Gap Analysis) and Task 3 (Performance Standards for Stormwater Facilities), to support future updates to the City of Salem's (City's) Salem Revised Code (SRC) and the Administrative Rules-Design Standards (dated January 2014, referred to as Design Standards hereafter).

The City was issued their National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Phase I Permit (NPDES MS4 Permit) on October 1, 2021. The City is required to update construction and post-construction-related code and standards, if necessary, for compliance with the NPDES MS4 Permit by November 1, 2024.

In addition, the City is required to document their strategy for using Low Impact Development (LID) and Green Infrastructure (GI) to minimize effective impervious area and reduce the volume and pollutant discharge of stormwater from new and redevelopment projects by November 1, 2023.

Efforts completed and documented as part of this TM include the results of the gap analysis comparing the SRC and Design Standards against the City's NPDES MS4 Permit requirements for *Construction Site Runoff Control* (construction) outlined in Schedule A.3.d and for *Post-Construction Site Runoff for New Development and Redevelopment* (post-construction) outlined in NPDES MS4 Permit Schedule A.3.e.

Section 1 provides a short introduction and background on the Salem Stormwater Standards Update project.

Section 2 provides an overview of the City's Design Standards, SRC and SOPs that were reviewed to inform the gap analysis, and the resulting recommendations and conclusions in this TM.

Section 3 includes a summary of the relevant NPDES MS4 Permit requirements, including discussion of post-construction performance standards in additional detail, and a summary of a regional comparison to the performance standards. Review of the SRC and Design Standards indicate that, while Salem currently emphasizes low impact development approaches and green infrastructure, updates to the City's existing standards will be required to meet selected portions of the NPDES MS4 Permit requirements.

Section 4 summarizes results of the construction and post-construction gap analysis including general recommendations for updates to the City's SRC and Design Standards, and other related considerations.

Section 5 details conclusions and recommendations, including those related to establishing an NSRR, and establishing technical infeasibility criteria related to infiltration. In addition, other conclusions and recommendations on reorganization, thresholds, and definitions are provided. Recommendations and conclusions are summarized below:

- Establish a Numeric Stormwater Retention Requirement (NSRR). As written, it appears the City does implement an NSRR, although it is not explicit in the Design Standards (i.e., upfront under Section 4.1-Introduction or Section 4.2- General Design) or directly implemented for development applications submitted for approval. It is recommended that the City refine their Design Standards to more explicitly reflect an NSRR that is associated with a goal to retain and/or infiltrate the such as the water quality design storm using Green Stormwater Infrastructure (GSI) to the Maximum Extent Feasible (MEF).
- Establish updated Technical Infeasibility Criteria related to the use of infiltration.
- Update project threshold requirements to adhere to the new NPDES MS4 Permit requirement for large project thresholds.
- Refine the organization of the Design Standards, *Div. 400*, *Section 4.2 General Design Requirements* to support improved interpretation and implementation of standards.

- Refine definitions to ensure consistency between the NPDES MS4 Permit, SRC, and Design Standards. BC conducted an initial review and prepared a definitions summary that compared definitions in Salem's Phase I Permit, SRC *70.005, 75.0202, 82.005* and Design Standards *Ch. 109-001*.
- Review Appendix 4E to confirm whether infiltration-based limitations may be specified instead of relying on the more discretionary approach for achieving MEF (Appendix 4E, Section 4E.7).

Section 6 summarizes potential policy questions by technical topics to be discussed at the upcoming project workshops. The technical topics include thresholds, NSRR Site Performance and Treatment Standards, technical infeasibility criteria, practical/financial infeasibility criteria, stormwater facility design, operations and maintenance, and definitions.

Section 1: Introduction and Background

This TM provides background information to inform the decisions and processes for updating the SRC and Design Standards by November 1, 2024.

Brown and Caldwell (BC) conducted a detailed review (gap analysis) of the City's current stormwater-related construction and post-construction code, standards, and standard operating procedures (SOPs) with respect to the NPDES MS4 Permit requirements, identifying gaps and recommendations for updates.

Compliance with the post-construction NPDES MS4 Permit *Schedule A.3.e.iii* requirements necessitate identification of a preferred "performance standard" specific to the retention and treatment of stormwater runoff. Compliance with the construction NPDES MS4 Permit *Schedule A.3.d* necessitates minimal updates to the City's current construction related code, standards, and SOPs.

BC met with City staff and outside development review (consultant) staff to understand current challenges and feedback from the development community with regards to implementation of the City's standards, with the desire that any updates to code and standards will improve or address those challenges.

Based on the selected approach to address gaps and the "performance standard," recommendations for future internal policy discussions and supporting technical evaluations are identified. These policy and technical topics will inform decision making needs and future stakeholder outreach and will also be discussed during internal project workshops. The overall approach to addressing gaps and updating standards also informs the larger LID/GI Strategy documentation (due November 1, 2023).

This TM is organized as follows:

- Section 2 provides an overview of the City's Design Standards, SRC, and SOPs.
- Section 3 includes a summary of the relevant NPDES MS4 Permit requirements, including discussion of post-construction performance standards in additional detail and a summary of a regional comparison to the performance standards approach.
- Section 4 summarizes results of the construction and post-construction gap analysis including general recommendations for updates to the City's SRC and Design Standards.
- Section 5 details conclusions and recommendations, including on establishing an NSRR, establishing technical infeasibility criteria related to infiltration. In addition, other conclusions and recommendations on reorganization, thresholds, and definitions.
- Section 6 summarizes potential policy needs and discussion topics for the upcoming project workshops.

Section 2: Summary of City's Existing Standards

The City's post-construction stormwater design requirements are primarily detailed in their Design Standards, *Ch. 109, Div. 400* and codified in SRC *Ch. 71*. The City's construction-related requirements are primarily detailed in SRC *Ch. 75* and Design Standards, *Ch. 109, Div. 700*. SRC *Ch. 75* provides the City with the legal authority to enforce erosion prevention and sediment control on construction sites.

The Design Standards and SRC were adopted by City Council in November 2013 (documents dated January 2014) following a significant public outreach process and public hearing during which the local homebuilder's association recommended approval. More recent updates (2020) to SRC *Ch. 70 (70.005–Definitions)*, SRC *Ch. 71 (71.090–Requirements for Large Projects*; *71.095–Flow Control Facilities*), and SRC *601.070* were made under Ordinance 8-20. Comparable updates to the Design Standards to adhere to the 2020 SRC update have not been made yet.

The City's construction and post-construction programs are robust and include enforceable requirements (as detailed in the SRC and Design Standards), as well as procedural elements implemented through SOPs, internal checklists, and other guidance documentation. Relevant excerpts of the City's existing standards are detailed below, more specific to the codified requirements and update needs to the SRC and Design Standards, as opposed to programmatic and implementation-related needs.

2.1.1 Construction Requirements

In addition to the SRC and Design Standards, the City has several construction-related SOPs, checklists, and guidance and training documentation that help implement provisions of their program including:

- City's *Erosion Prevention and Sediment Control Technical Guidance Handbook*
- City's *Erosion Prevention and Sediment Control (EPSC) Plans for Small Development* (2014)
- ACWA Construction Site Stormwater Guide: Illustrated BMPs (2013)
- *Erosion Sediment Control Site Plan Review (Minimum Requirements for all Development Projects, except Single-Family/Duplex)* (2013)
- Provisions of the City's Project Management Manual (2013), specifically
  - 9.12 *Erosion Control Plan Review Standard of Practice*
  - 10.13 *Erosion Control Inspection Procedure Standard of Practice*
  - 10.14 *Erosion Control Enforcement Standard of Practice*

The City requires erosion control permits for projects that are 1,000 square feet (SF) of ground disturbance but includes exemptions (listed in SRC *75.050*) for home gardening and projects with less than 25 cubic yards of impact. City erosion control permits are not currently required for sites that also require a 1200-CA permit. The Design Standards govern all construction and other land disturbing activities within the City of Salem in accordance with the administrative authority granted in the SRC. The Design Standards, with demonstrative authority granted by the SRC, applies to both publicly and privately owned lands and projects within the right-of-way.

The City requires an Erosion and Sediment Control Plan (ESCP) to be prepared that contains methods and interim facilities to be constructed, used, operated, and maintained during ground disturbing activities to prevent and to control erosion. The City's ESCP Checklist may be used during ESCP development to ensure compliance with the City's SRC and Design Standards.

The City requires erosion prevention and sediment control measures to be inspected and approved prior to the start of any ground disturbing activities including preliminary grading work. The City may require inspections during construction at other times, as deemed necessary or specific in the erosion control permit. The City's *10.13 Erosion Control SOP* details out the construction inspection requirements.

2.1.2 Post-Construction Requirements for Infiltration, Water Quality and Flow Control

The City's Design Standards (2013) were developed specific to the previous (2011) NPDES MS4 Permit conditions, which required:

> *1) the incorporation of site-specific management practices to target natural surface or predevelopment hydrologic functions as much as practicable;*
>
> *2) reduce site specific post-development stormwater runoff volume, duration, and rates of discharges to the MS4;*
>
> *3) prioritize and include implementation of LID, GI or equivalent approaches; and*
>
> *4) capture and treat 80% of the average annual runoff volume, based on documented local or regional rainfall frequencies and intensity.*

2.1.2.1 Post-Construction Thresholds

Div. 400, Section 4.2(a) of the Design Standards requires an initial identification of project type, impervious area threshold, and point of discharge to inform the requirements for facility selection and design, Unique from other NPDES MS4 Phase I permitted communities in Oregon, Salem's Design Standards contain two impervious area thresholds triggering post-construction stormwater treatment and flow control requirements based on three project-specific development types– Single-Family Residential (SFR), Small Project (non-SFR) and Large Project:

- **SFD (total impervious surface is 1,300 to 10,000 SF)**. Shall be designed and constructed with GSI to the MEF except where flow control facilities and treatment facilities have already been constructed per SRC *Ch. 71* to serve the lot or parcel.
- **Small Project, Non-SFR (less than 10,000 SF of new or replaced impervious surface).** SRC does not require non-SFR projects consisting of less than 10,000 SF of new or replaced impervious surface to provide stormwater flow control or general stormwater treatment.
- **Large Projects (new or replaced impervious surface greater than 10,000 SF).** Large projects are required to provide both flow control and treatment facilities using GSI to the MEF and conforming to the City's Design Standards. This includes all projects with 10,000 SF or more of ground disturbing activities. To fully meet the requirements for large projects, both treatment and flow control facilities must meet the standards for GSI to the MEF.

Establishment of the thresholds was based on a City-conducted analysis of development applications (both SFR and other development) and determination of an impervious area threshold that would result in management of 90 percent of the cumulative impervious area to be added or replaced during the 2013 Design Standards update.

There are additional requirements that apply to all projects, regardless of size such as those related to source control, discharge to wetlands, preserving trees, and providing landscaping. Projects that are adjacent to an existing open channel waterway or within the 100-year floodplain of any waterway must meet the requirements of SRC *Ch. 140* (now SRC *Ch. 601*).

2.1.2.2 Post-Construction Requirements for Infiltration, Water Quality and Flow Control

The prioritization of stormwater interception, infiltration, and evapotranspiration is included in the upfront objectives of the Design Standards, and all projects triggering stormwater standards are required to implement GSI to the MEF. GSI is defined as *stormwater facilities that mimic natural surface hydrologic functions through infiltration or evapotranspiration, or that involve stormwater reuse* (SRC *Ch. 71.005(7)).* Thus, a GSI facility is a facility with retention functionality. Examples of GSI facilities as provided in Design Standards include permeable pavement, stormwater planters, raingardens, and vegetated filter strips.

Two facility sizing methodologies (simple and engineered) are defined in Design Standards *Div. 400, Ch. 4.2(n)*. Each methodology accounts for the sizing of water quality and flow control facilities and incorporates infiltration into the design. Facility-specific design criteria for GSI establish a minimum infiltration rate of 0.5 inches per hour (in/hr) as requiring infiltration facilities; less than 0.5 in/hr warrants design as a partial infiltration facility. A rainfall analysis using local rainfall data was conducted in 2010 and identified a water quality design storm reflective of 80 percent of the average annual runoff volume as 1.38 inches over a 24-hour period.

The current flow control standards are based on a peak flow matching standard and numeric criteria designed to satisfy the 2011 NPDES MS4 Permit's requirement to "*incorporate site-specific management practices to mimic natural surface or predevelopment hydrologic functions as much as practicable*." This is achieved by:

1. Establishing pre-development runoff conditions as reflective of a grassland and woods per established curve numbers in Design Standards *Div. 400, Appendix 4D*, Table 4D-6 "City of Salem Predevelopment", and,
2. Requiring peak flow matching (pre-development to post-development) for half of the 2-, 10-[1], 24-hour design storm event (SRC *Ch. 71.095(c)*).

Figure 2-1 summarizes the City's Design Standards by development category.

[1] Flow control is also required for the 25- and 100-year, 24-hour storm events, but not required for water quality purposes.

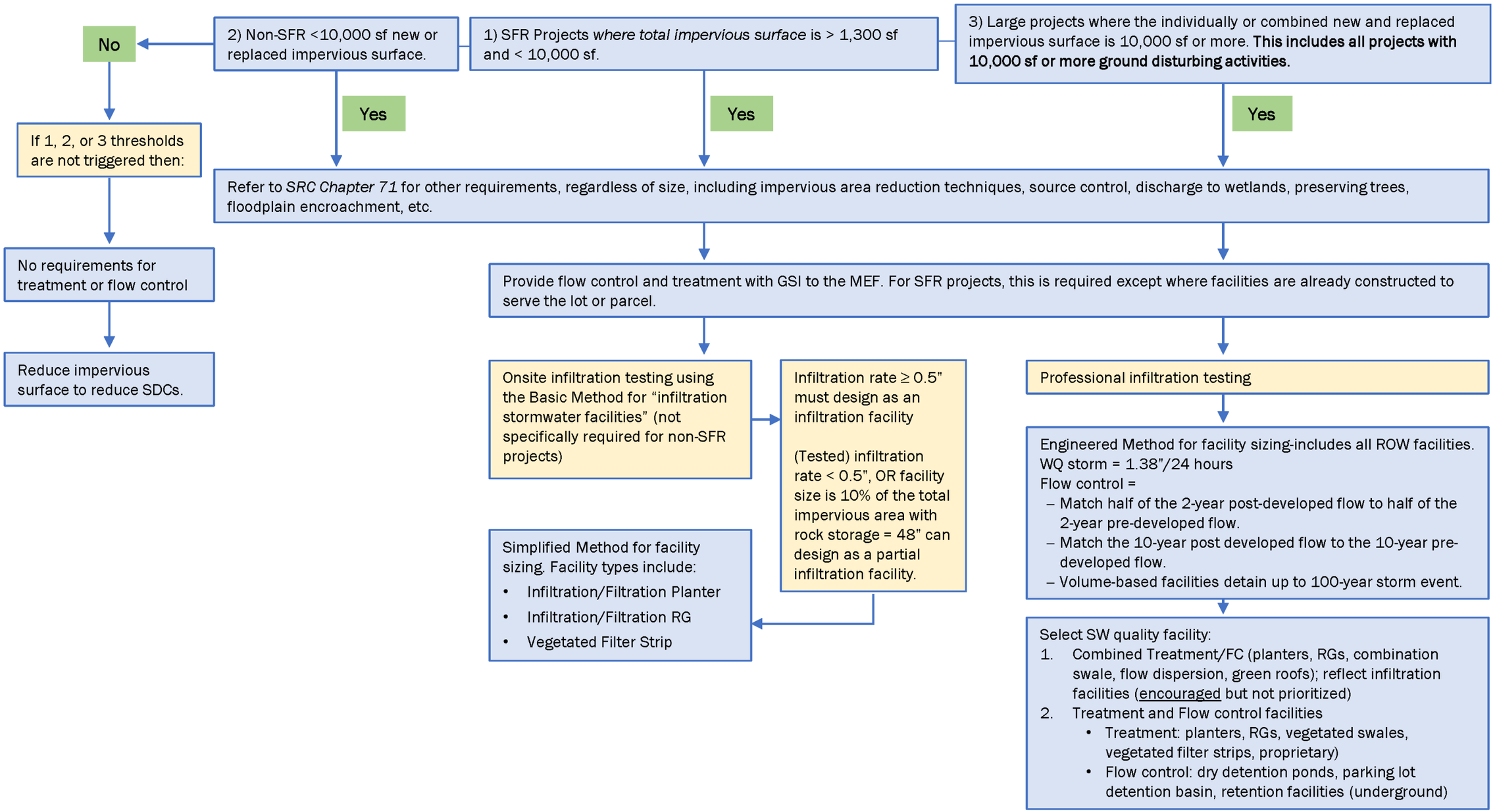

Figure 2-1. City Design Standards Overview

2.2 Implementation Challenges and Clarification Needs

Ongoing implementation of the standards have resulted in the identification of areas in the Design Standards that need clarification and technical updates.

BC met with the City and OTAK (*City's outside development review consultant*) in June 2023 to review current policy and technical challenges associated with implementation of Design Standards. Policy-related challenges and clarification needs to be addressed/resolved through the larger updates to the SRC and Design Standards are summarized below and distinguished based on whether the need has an associated NPDES MS4 Permit driver[2]. Other topics that are not NPDES MS4 Permit-related can be found in the separate transmittal spreadsheet sent to the City.

- Clarify wording associated with pavement maintenance exemption.
- Clarify that impervious area reduction techniques are intended to reduce impervious area subject to treatment and/or flow control in a facility and do not reduce the project's total impervious area to avoid triggering stormwater standards. Clarify whether pervious pavement is an allowable impervious area reduction technique.
- Specify requirements for estimating the seasonally high groundwater level, as it impacts infiltration feasibility.
- Provide recommendations or guidelines regarding the use of stormwater proprietary treatment systems and following manufacturer sizing requirements. The Permit requires documentation of model number, manufacturer identifiers and schedules for replacement for proprietary systems if used.
- Update the definition of "impervious area" to include gravel, as it impacts NPDES MS4 Permit threshold triggers.
- Require a factor of safety to be applied to measured infiltration rates for use in design calculations to account for potential clogging and lapses in maintenance that may occur.
- Clarify the definition of "ground disturbing activity" and add a definition for "large projects" to the SRC and Design Standards, as it impacts NPDES MS4 Permit threshold triggers.
- Specify when and on what type of projects infiltration testing is required to ensure consistency among development projects. The City and OTAK currently have a difficult time enforcing the required infiltration testing in conjunction with current land use approval processes (i.e., pre-application and selection of the anticipated stormwater management approach) and SRC and Design Standards Language[3].
- Clarify the pre-development conditions' allowable flow rate and how it should be calculated based on the predeveloped Time of Concentration (Tc). Clarify acceptable shallow concentrated flow conditions for the pre-developed condition.
- Clarify how pervious areas factor into facility sizing. Identify what are pollution generating and non-pollution generation surfaces and provide definitions.
- Identify how and when a private facility becomes a public facility.
- Clarify the downstream submittal process. Define the point of discharge.

Additional, technical-related adjustments are currently being reviewed by City staff for confirmation of need.

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[2] OTAK's complete list was reviewed by BC and sent to the City in a separate transmittal in July 2023. Not all the challenges are clarifications needed for NPDES MS4 Permit compliance.

[3] The Design Standards have Infiltration Testing Requirements in Chapter 109, Division 004, Appendix C. The City's Development Services Operations Manager is currently exploring options to adjust the land use review process and associated submittal information at the pre-application stage.

Section 3: NPDES MS4 Permit Requirements

Under the City's 2021 NPDES MS4 Permit, the City must develop and execute programs to minimize stormwater pollution under the following category of program control measures:

- Public Education and Outreach (Schedule A.3.a)
- Public Involvement and Participation (Schedule A.3.b)
- Illicit Discharge Detection and Elimination (Schedule A.3.c)
- Construction Site Runoff Control (Schedule A.3.d)
- Post-Construction Site Runoff Control (Schedule A.3.e)
- Pollution Prevention and Good Housekeeping for Municipal Operations (Schedule A.3.f)
- Industrial and Commercial Facilities (Schedule A.3.g)
- Infrastructure Retrofit and Hydromodification Assessment Update (Schedule A.3.h)

In 2022, the City completed updates to their Stormwater Management Plan Program Document (SWMP)[4] that reflects initial construction and post-construction-related modifications to the SRC and Design Standards, including clarification around peak flow matching standards (for flow control to address water quality) and implementation of when infiltration testing is required, including more discrete requirements related to infiltration feasibility.

Detailed explanation of the 2021 NPDES MS4 Permit requirements and associated City best management practices for addressing construction and post-construction requirements are outlined in the 2022 SWMP Sections 3.1 and 3.2.

3.1 Construction Overview

Construction requirements per the 2021 NPDES MS4 Permit include implementation of ordinances and other regulatory mechanisms specific to construction area thresholds and enforcement practices; submittal of Erosion Prevention and Sediment Control Plans (ESCP) and plan review activities; and implementation of construction inspections to ensure compliance.

Relevant excerpts from the City's NPDES MS4 Permit are detailed below, and critical elements are underlined. Critical elements are those specific to the content of this TM and identification of update needs to the SRC and Design Standards, as opposed to programmatic and implementation-related needs.

Schedule A.3.d.i of the NPDES MS4 Permit is related to ordinance and other regulatory mechanisms and states that the Permittee must:

> *…require construction site operators to complete and implement an Erosion and Sediment Control Plan (ESCP) for construction project sites that results in a minimum land disturbance of 1,000 square feet:*

Schedule A.3.d.ii of the NPDES MS4 Permit states that the ESCP must:

> *…maintain written specifications that address the proper installation and maintenance of erosion and sediment controls during all phases of construction activity occurring their cover area. The written specifications must include an ESCP template, worksheet, checklist, or similar document for*

[4] The 2022 SWMP can be found on the City's Stormwater webpage: 637989335050870000 (cityofsalem.net)

> *construction site operators to document how erosion, sediment, and waste materials management controls for non-stormwater wastes will be implemented and maintained at the project site.*

Schedule A.3.d.iii of the NPDES MS4 Permit states that the Permittee must continue to implement procedures:

> *…to review Erosion and Sediment Control Plans from construction projects that will result in land disturbance of equal to or greater than 1,000 square feet using a checklist or similar document to determine compliance…review procedures must include consideration of the construction activities' potential water quality impacts and remain in accordance with applicable state and local public notice requirements.*

Schedule A.3.d.iv of the NPDES MS4 Permit states that the Permittee must continue to perform inspections of construction sites to ensure:

> *…the approved ESCP or other documented set of control is properly implemented.*

Schedule A.3.d.v of the NPDES MS4 Permit states that the Permittee must:

> *…continue to implement and maintain written escalating enforcement and response procedures for all qualifying construction sites and summarize or reference in the SWMP Document. The procedure must address repeat violations through progressively stricter responses, as needed, to achieve compliance. The escalating enforcement and response procedure must describe how the permittee will use enforcement techniques to ensure compliance. The enforcement procedures must include timelines for compliance and when formulating response procedures and penalties should consider factors (or multipliers) such as the type and severity of pollutant discharge, and whether the discharge was intentional or accidental.*

Figure 3-1 presents a flow chart illustrating the 2021 NPDES MS4 Permit requirements for construction.

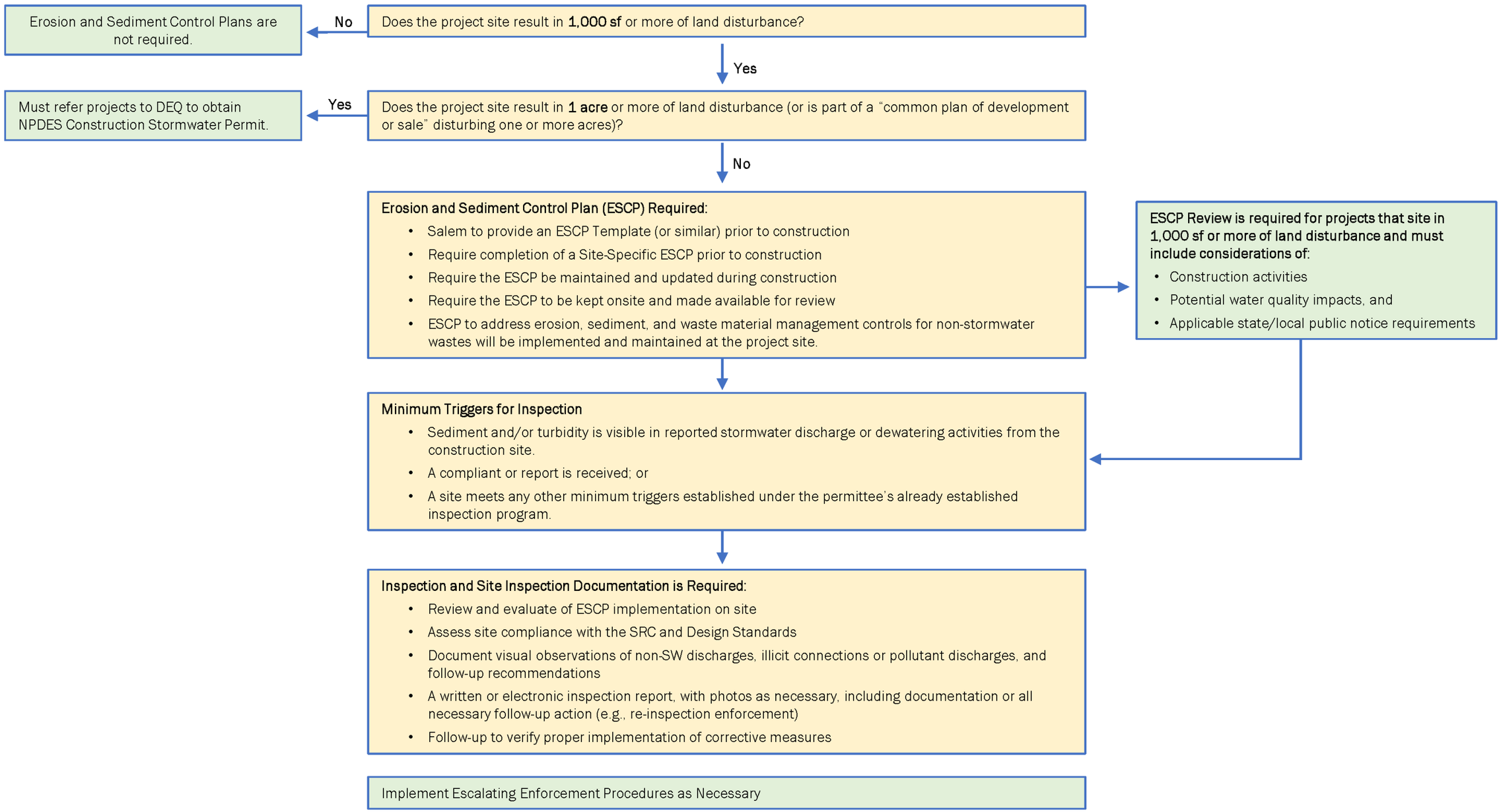

Figure 3-1. NPDES MS4 Permit Requirements for Construction

3.2 Post-Construction Overview

Post-construction requirements per the City's 2021 NPDES MS4 Permit include requirements to implement an ordinance and/or other regulatory mechanism (i.e., the SRC and Design Standards); prioritize LID and GI; establish a site performance standard for retention and treatment; maintain requirements for a water quality benefit offset programs; conduct post-construction site runoff plan review, long-term operation and maintenance, training and education, and tracking and assessment.

Like the 2011 NPDES MS4 Permit, any stormwater discharged offsite from new/replaced impervious surface must target natural surface or redevelopment hydrology (in terms of rate, duration, and volume) to minimize the potential for hydromodification impacts. However, unique to the 2021 NPDES MS4 Permit, there is a specific requirement to use structural stormwater controls that retain stormwater onsite to minimize offsite discharge and those stormwater controls should infiltrate and facilitate evapotranspiration.

The most substantive changes reflected in the City's 2021 NPDES MS4 Permit as compared to the 2011 NPDES MS4 Permit are: specific impervious thresholds (regulating when stormwater standards apply), additional definition related to the prioritization of LID and GI, and Post-Construction Stormwater Management Requirements specific to defined performance standards (including a numeric stormwater retention requirement or NSRR), and detention without infiltration and/or filtration is not allowed as a water quality treatment facility. These specific requirements and relevant excerpts of the City's NPDES MS4 Permit are detailed below. Critical elements specific to the content of this TM and identification of update needs to enforceable regulatory elements (i.e., the SRC and Design Standards), as opposed to programmatic and implementation-related needs are underlined.

A flow chart illustrating the NPDES MS4 Permit requirements for post-construction is provided as Figure 3-2.

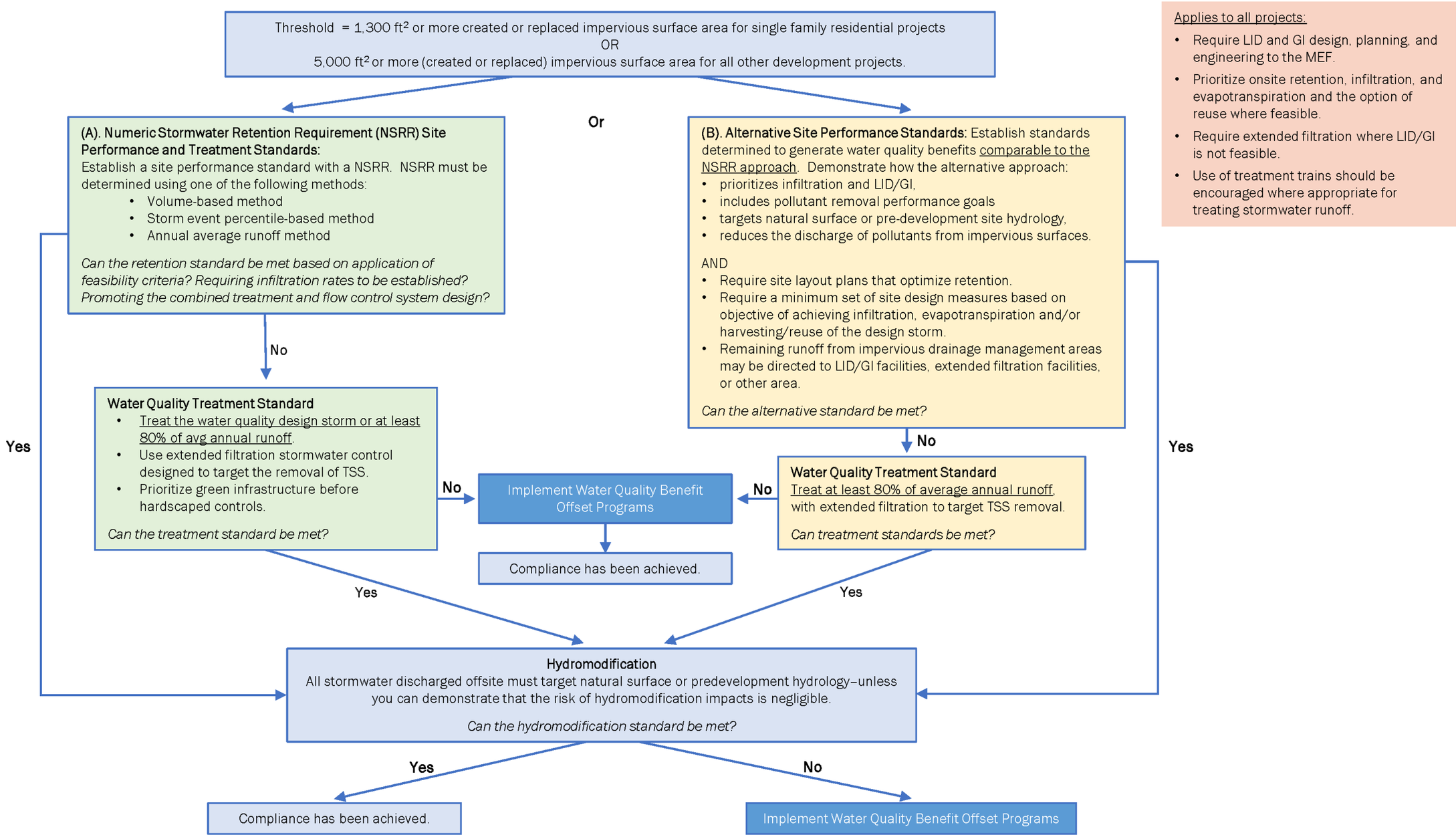

Figure 3-2. NPDES MS4 Permit Requirements for Post-Construction

3.2.1 Impervious Threshold

Schedule A.3.e.i of the NPDES MS4 Permit states that the Permittee must:

> *…require the following for project sites discharging stormwater to the MS4 that create or replace 1,300 square feet or more of impervious surface area for single family residential projects or 5,000 square feet or more of impervious surface area for all other development projects:*
>
> *A. The use of structural stormwater controls at all qualifying sites.*
>
> *B. A site-specific stormwater management approach that targets natural surface or predevelopment hydrological function through the installation and long-term operation and maintenance of structural stormwater controls.*
>
> *C. Long-term operation and maintenance of stormwater control at project sites that are under the ownership of a private entity.*

This change affects the City's current definition of a Large Project and has the potential to affect the number of development applications submitted to the City for review in conjunction with their Design Standards. Because this upper range of the thresholds is also used to differentiate SFR projects in the City's Design Standards, it has the potential to impact the type of design method (use of the simplified method versus engineered) that can be employed by the development community.

3.2.2 Prioritization of LID and GI

Schedule A.3.e.ii of the NPDES MS4 Permit states that the Permittee must:

> *…review and update, or develop and begin implementation of a strategy to require to the maximum extent feasible, the use of LID/GI design, planning, and engineering strategies intended to minimize effective impervious area or surfaces, and reduce the volume of stormwater discharge and the discharge of pollutants in stormwater runoff from development and redevelopment projects…the permittee must review ordinance and development code for opportunities to reduce the volume of discharge by design, engineering, and planning methods that prioritize onsite retention, infiltration, and evapotranspiration and the option of reuse where feasible in order to make LID/ GI the preferred and commonly used approach to site development…*

The City's current Design Standards incorporate GSI stormwater facilities that meet the 2021 NPDES MS4 Permit definition of LID/GI. However, LID-related site planning approaches also fit within this requirement, and this change may affect how the City requires their site assessment efforts (including where and when to conduct infiltration testing). The City will prepare an LID/GI Strategy document by November 1, 2023, and the findings will be reflected in the updates to the SRC and Design Standards.

3.2.3 Performance Standards

One of the biggest changes to the 2021 NPDES MS4 Permit is the requirement to establish a site performance standard based either on an NSRR or specific alternative site performance standards. Although defined as two separate performance standards, both approaches encourage a retention first approach to stormwater control design.

Schedule A.3.e.iii(A) of the NPDES MS4 Permit is related to the NSRR performance standard and states that the Permittee must:

> *…the permittee must establish a site performance standard with a Numeric Stormwater Retention Requirement (NSRR) that retains stormwater onsite and minimizes the offsite discharge of pollutants in runoff by utilizing stormwater controls that infiltrate and facilitate evapotranspiration.*
>
> *The NSRR volume must be determined using one of the following methods: 1) volume based method; 2) storm event percentile method; 3) average annual runoff based method…. The NSRR is met when the NSRR runoff volume from new and/or replaced impervious surface is managed by structural stormwater controls with sufficient capacity…. The first priority of this option is onsite retention but at sites where the NSRR cannot be met due to technical infeasibility or site constraints (including zoning or land use regulations) the permittee must require treatment of the runoff volume up to a specified water quality design storm.*

Schedule A.3.e.iii(B) of the NPDES MS4 Permit is related to the alternative compliance performance standard and states that the Permittee must:

> *…the permittee may establish design requirements including site performance standards determined to generate water quality benefits comparable to the NSRR approach for new development and redevelopment…. Such local requirements and thresholds shall provide equal or similar protection of receiving waters and equal or similar levels of treatment as the NSRR approach.*
>
> *The permittee must demonstrate how alternative compliance approaches prioritize infiltration and LID/ GI, include pollutant removal performance goals, target natural surface or pre-development site hydrology and reduce the discharge of pollutants from new and/or redevelopment…*
>
> *The Permittee shall set requirements for site layout plans and a minimum site of specific onsite stormwater controls based on a GI approach of emphasizing infiltration, evapotranspiration and or harvesting/ reuse of stormwater. Site design measures shall be used to reduce the amount of runoff, comparable to the NSRR, and to the extent technically feasible and not prohibited by other constraints…*

Both site performance standards essentially require establishment of a retention-based standard and promote the use of infiltration to manage a specified volume or storm event. However, the alternative performance standard requires the permittee to demonstrate their standards are comparable to having an NSRR.

As background, the alternative performance standard was a focus during negotiations of the current NPDES MS4 Permit. The language associated with the alternative performance standard was developed in consideration of those jurisdictions who, in accordance with requirements of the 2011 NPDES MS4 Permit, had established a peak flow and flow duration-based standard (and tool) to address hydromodification impacts. Instead of requiring a specific infiltration or retention volume/design storm, these jurisdictions require use of a separate tool based on continuous simulation to directly match post-development peak flows and the duration of those flows to pre-development (historic) conditions. By nature, this standard requires infiltration or retention-based stormwater facilities to achieve that goal, but a specific amount or reduction was not assumed given the variation in pre-development conditions by site.

Research into performance standards used by select Phase I and II communities were documented for comparative purposes. Some of the agencies reviewed are currently updating their standards to reflect the new performance standards requirements and so the currently pending approach is listed. Because there is

much correlation between the two performance standards, some jurisdictions could potentially be meeting either performance standard.

Table 3-1 provides an overview of the performance standard comparison. A detailed description of the comparison is included in Attachment A.

Table 3-1. Performance Standards for Stormwater Facilities Comparison of Other Local Jurisdictions Summary

Jurisdiction	NPDES MS4 Permit and Post-Construction Standards Update Compliance Date	Performance Standard A: NSRR Standard (NSRR Design Storm)	Performance Standard B: Alternative Compliance Standard
City of Albany	Phase II General Permit February 28, 2024	Pending (WQ)[5]	Not Applicable (N/A)
City of Corvallis	Phase II General Permit February 28, 2024	Pending (WQ)	N/A
City of Eugene	Phase II Individual Permit December 1, 2024	Pending (To be determined)	N/A
City of Gresham	Phase I Gresham Group Permit November 1, 2024	Yes (WQ and 10-year)	N/A
Marion County	Phase II General Permit February 28, 2023	Yes (WQ)	N/A
City of Portland	Phase II Portland Group Permit November 1, 2024	Yes (TBD)	N/A
City of Oregon City	Phase I Clackamas County (CC) Group Permit December 1, 2024	Yes (10-year)	Yes (flow duration matching standard with BMP Sizing Tool)
City of Wilsonville	Phase I CC Group Permit December 1, 2024	Yes (10-year)	Yes (flow duration matching standard with BMP Sizing Tool)
Water Environment Services (WES)	Phase I CC Group Permit December 1, 2024	Yes (10-year)	Yes (flow duration matching standard)

3.2.4 Additional Requirements

Additional requirements related to site plan review and operations and maintenance are detailed below.

Schedule A.3.e.v of the NPDES MS4 Permit states that the Permittee must:

> *…have documented, standardized procedures for the review and approval of structural stormwater control plans for new development and redevelopment projects, and procedures must be detailed or referenced in the SWMP Document.*
>
> *…the Permittee must review and approve or disapprove plans for structural stormwater controls at new development and redevelopment sites that result from the creation or replacement of impervious area equal to or greater than 1,300 square feet for single family residential projects or 5,000 square feet for all other development projects; and site that use alternative compliance to meet the retention requirement…*

[5] WQ stands for the Water Quality Design Storm.

> *…the Permittee must require and subsequently review and approve or disapprove the written technical justification to evaluate any technical infeasibility or site constraints which prevent the onsite management of the runoff amount stipulated in the NSRR or the site's ability to meet the alternative site performance standard.*

Schedule A.3.e.vi of the NPDES MS4 Permit states that the Permittee must:

> *…continue to maintain an inventory and implement a strategy to ensure that all public and private stormwater controls that discharge to the MS4 are operated and maintained to the maximum extent practicable.*

The Permit requires site runoff plans are reviewed for technical feasibility and to identify if technical infeasibility is properly justified. The City has a robust plan review process that meets the NPDES MS4 Permit requirements. As the project thresholds are updated to meet Permit requirements, it may have an impact on the total number of required stormwater reviews.

The City's O&M requirements can be found in multiple places in the Design Standards. Maintenance protocols and documentation will be discussed during the project workshops.

Section 4: NPDES MS4 Permit Gap Analysis

BC reviewed the City's SRC and Design Standards with respect to the construction and post-construction requirements from the 2021 NPDES MS4 Permit and documented results in a formal permit gap analysis. The following sections of the City's SRC and Design Standards were reviewed and documented:

- SRC *Ch. 70 Utilities*
- SRC *Ch. 71 Stormwater*
- SRC *Ch. 75 Erosion Prevention and Sediment Control*
- SRC *Ch. 82 Clearing and Grading of Land*
- Design Standards *Ch. 109, Div. 004 Stormwater System*
- Design Standards *Ch. 109, Div. 007 Erosion and Sediment Control Plan*
- Design Standards *Ch. 109, Div. 011 Operations and Maintenance of Stormwater Facilities*
- Design Standards *Ch. 109, Div. 012 Stormwater Source Controls*
- Design Standards *Ch. 109, Div. 100 Public Works Enforcement of Public Works Regulations*

In addition, the erosion control documents listed in Section 2.1.1 of the TM were reviewed and documented in the construction gap analysis. Results of the gap analysis for construction are detailed in Attachments B and C. Attachment C reflects a review of the specific construction site enforcement provisions. Results of the gap analysis for post-construction are detailed in Attachment D.

Gaps and recommendations are summarized below. This summary reflects direct reference to components of the City's Design Standards and permit requirements. Refer to Figures 2-1, 3-1, and 3-2 for a graphical summary of construction and post-construction requirements.

4.1 Construction

In general, the City's current SRC, Design Standards, and supporting documentation adheres to the requirements of the 2021 NPDES MS4 permit. There are a few items where the SRC or Design Standards could be updated to meet provisions of the permit more explicitly.

- **Gap**: The explicit threshold to trigger an applicant to document site-specific erosion and sediment controls for construction projects is not listed in Design Standards *Ch. 109, Div. 007, 7.1(d)*. Review/confirm the exemptions in the SRC *75.050* so all construction projects that result in land disturbance of equal to or greater than 1,000 SF document site specific erosion and sediment controls.

  Recommendation: Consider adding the 1,000 SF threshold to the Design Standards update so developers/other designers don't have to refer to the NPDES MS4 Permit to access threshold information. Consider updating the exemptions in SRC *75.050*, if needed after a more detailed review.

In addition to the gaps and recommendations above, some further considerations were identified that can be addressed during the SRC and Design Standards Update. These considerations include:

- Consider updating the City's Plan Requirement Checklist to ensure consistency with the SRC/Design Standards and the Permit. Some considerations for updating the checklist include: 1) add a line to the checklist for the applicant to report the total ground disturbance area for the project; 2) add a note section at the end of the checklist to remind the developer that the ESPC Plan needs to always be kept onsite and written EPSC inspection logs need to be maintained onsite and available to City inspectors upon request.
- The 1200-CA permit cannot be obtained by a private entity, only authorized government entities. If the City holds a 1200-CA permit (or has obtained one), consider revising code language to remove the reference in SRC *75.050(d)* that indicates applicants could obtain a 1200-CA permit.

The City's Construction Escalating Enforcement requirements were reviewed in detail (see Attachment C). Between the *10.14 Erosion Control Enforcement SOP*, Administrative Rules *Ch. 109, Div. 100-1 Enforcement of Public Works Regulations,* and SMC, *Section 75*, it appears that the City is following the Permit's escalating enforcement requirements.

4.2 Post-Construction

In general, the City's Design Standards and SRC will require select updates to adhere to requirements of the NPDES MS4 Permit. The large-project threshold will need to be adjusted (and associated implications of adjusting the impervious area threshold for large projects confirmed with City staff) and a performance standard will need to be established. There are a few items where the SRC or Design Standards could be updated to meet provisions of the NPDES MS4 Permit more explicitly as summarized below:

- **Gap**: The current 10,000 SF threshold for large projects/non-SFR projects to require flow control (for hydromodification) or treatment does not meet the 5,000 SF Permit requirement.
  - **Recommendation**: The Large Project threshold must be reduced to 5,000 SF or lower to meet the permit requirement.
  - **Recommendation**: The Design Standards reference to SFR development lists TOTAL impervious surface area as the threshold. This needs to be revised to be specific to new or replaced impervious surface in accordance with SRC Ch. 71.005.
  - **Recommendation**: Applicability of new and replaced impervious surface should be clarified in the Design Standards and a definition for both new impervious surface and replaced impervious surface should be added.
- **Gap**: Duplexes are not addressed under threshold descriptions.
  - **Recommendation**: Discuss duplexes in the threshold descriptions, as it seems from reading the SRC and Design Standards that duplexes have the same requirements as an SFR projects.

- **Gap**: The City does not explicitly identify their NSRR. The definition of GSI (infiltration facility) and requirement to use GSI to the MEF indicates infiltration (or retention) is prioritized. Design criteria associated with GSI facilities indicate sizing for infiltration of the water quality storm is required. Therefore, an NSRR appears to be established but the Design Standards do not document it as such.
  - **Recommendation**: As written, it appears the City does implement an NSRR, although it may not be explicit in the Design Standards or regulated with development applications submitted for approval. Establish a more explicit NSRR (design storm event is still to be determined but recommended to be the water quality storm) as further described in Section 5.1 of the TM.
  - **Recommendation**: Determine how the NSRR is used to inform GSI applications, and the process associated for applicants to meet GSI to the MEF.
  - **Recommendation**: Decide whether infiltration testing (or literature values) should be required to inform GSI applications and GSI facility sizing.
- **Gap**: Combined treatment and flow control facilities can be designed as infiltration or partial infiltration/ filtration (treatment) systems, but it is unclear how GSI is prioritized if combined facilities are used. Infiltration must be prioritized first for the design of combined treatment and flow control facilities.
  - **Recommendation**: Clarify how combined treatment and flow control facilities utilizing GSI (infiltration-based facilities) are prioritized. Is infiltration testing always conducted for combined facilities?
- **Gap**: Appendix 4E appears to primarily only to pertain to large projects; however, SFR projects are not covered in Appendix 4E.
  - **Recommendation**: Update Appendix 4E for clarity regarding SFR projects.
- **Gap**: Technical infeasibility criteria for infiltration are listed in Design Standards Section 4.3 and include slope stability concerns, sites with a high groundwater table, sites with contaminated soils and sites where physical limitations do not allow for a setback from a build foundation. The current standards are missing other considerations such as areas of shallow bedrock, areas with fill soils, erosion/landslide hazard areas, and proximity to drinking water wells.
  - **Recommendation**: Update Design Standards Section 4.3 to expand technical infeasibility criteria to include those readily identified during the site assessment and currently influence the use and application of GSI (see Section 5.2).
- **Gap**: The current standards do not specify pollutant removal performance goals as required by the permit beyond the volume-based requirement to treat 80 percent of the average annual runoff.
  - **Recommendation**: The City will need to document how their program meets overall pollutant removal performance goals of retention and treatment.
- **Gap**: It is not clear from the SRC or Design Standards that SFR projects must submit a stormwater submittal or not. The use of "may be used" does not specify that they must use either the Simplified or Engineered Method.
  - **Recommendation**: Update the language from "may be used" to something more definitive about the required use of the Simplified or Engineered Method for SFR projects.
- **Gap**: Tracking mechanisms for documenting enforcement actions and compliance was not identified.
  - **Recommendation**: Develop a tracking mechanism for documenting enforcement actions and compliance actions as required by the permit. This is a procedural activity.

Section 5: Conclusions and Recommendations

Based on review of the City's SRC and Design Standards, and findings outlined in the gap analysis, it appears that the City's current construction and post-construction requirements meet the main intent of the 2021 NPDES MS4 Permit language, but specific construction and design standard language adjustments and revisions are needed for consistency and to improve interpretation.

5.1 Establish an NSRR

One of the primary areas of focus of this TM is whether the City's post-construction design standards, as primarily documented in the City's Design Standards, *Div. 004*, adhere to the NPDES MS4 Permit's Post-Construction Stormwater Management Requirements and associated performance standards (Schedule A.3.e.iii.(A) and (B)). As written, it appears the City does implement an NSRR, although it is not clearly explicit in the Design Standards or regulated with development applications submitted for approval. The rationale for this understanding is as follows:

- The City's definition of GSI and MEF reflects the prioritized use of stormwater retention in the selection of stormwater facilities for new and redevelopment projects.
  - GSI (by definition) includes stormwater facilities that mimic natural surface hydrologic functions through infiltration or evapotranspiration, or that involve stormwater reuse (SRC *Ch. 71.005(7)*). Thus, GSI is a stormwater facility that is intended to retain stormwater onsite. Examples of GSI facilities as provided in the Design Standards include permeable pavement, stormwater planters, raingardens, and vegetated filter strips.
  - MEF is the extent to which a requirement or standard must be complied with as constrained by the physical limitations of a site, practical considerations of engineering design, and reasonable considerations of financial costs and environmental impacts (SRC *Ch. 71.005(12)*). Thus, the definition of MEF provides the framework to regulate or control when GSI (or retention) is used onsite.
- SRC *Ch. 71.085* and *71.090*, and multiple sections of the Design Standards include how and when GSI is required to the MEF; GSI applications extend to all types of development regulated by the City's Design Standards.
  - Except as provided in SRC *71.085(b)*, all SFR projects shall be designed and constructed with GSI to the MEF, except where flow control facilities and treatment facilities have already been constructed per SRC *71.080 (Requirements of Land Divisions)* to serve the lot or parcel.
  - For large projects, both treatment and flow control facilities must meet the standards for GSI/MEF. Although site constraints, limitations in engineering design, and financial costs should rarely completely restrict the use of GSI, the City recognizes some projects will be unable to exclusively provide GSI. Therefore, per Design Standards, *Div. 400, Appendix 4E—Implementing GSI to the MEF* establishes the criteria for meeting the requirements to meet MEF for GSI.
- Stormwater facility sizing requirements per the Design Standards (*Section 4.2(n) and 4.3(a)(2 and 3*) reference use of a minimum infiltration rate of 0.5 inches per hour to support infiltration facility sizing (i.e., should be included as technical feasibility criteria supporting use of infiltration systems).
- Various sizing methodologies (Design Standards *Section 4.2(n),* the *Simplified Approach for Stormwater Managemen*t, and *4.3(a)(3))* reference using identified GSI facilities to meet "treatment requirements."

While the City's standards address the intent of an NSRR, it is recommended that the City refine the Design Standards to more explicitly reflect an NSRR that is associated with a specific goal to retain and/or infiltrate a storm such as the water quality design storm using GSI to the MEF. GSI applications currently appear to be required for water quality; sizing for water quality (as opposed to sizing for flow control or flood control) would likely fit within the City's current definition of MEF, based on physical and practical constraints of a site.

As the City's flow control standards to prevent flooding require facility design to the 100-year storm event, it is unlikely that use of GSI will negate the need to install these flow controls for a site.

5.2 Update Infeasibility Criteria related to the use of Infiltration

Per City staff, use of infiltration-based stormwater facilities is typically limited in the City, as site conditions generally do not allow for their widespread use. However, the NPDES MS4 Permit requires the prioritization of retention while also allowing for the establishment of technical infeasibility criteria for sites where the NSRR cannot be met. Clearly defining the characteristics and constraints related to the application of GSI (infiltration-based stormwater facilities) will be beneficial in maintaining the practicality of implementing the standards.

The City's definition of MEF considers physical/practical/financial limitations[6] related to compliance with a requirement or standard. These limitations related to the use of GSI are outlined in Design Standard's *Section 4.3.(a)(4)* and *Appendix 4E*, and they may be refined to expand on physical limitations of the site that preclude the use of GSI, specifically physical (technical) infeasibility criteria precluding the use of infiltration. These limitations for constructing infiltration facilities (that could be defined in the Design Standards) include physical limitations on the site such as:

- Steep slopes (e.g., over 15 percent)
- Soil type (especially mapped areas of Group D soils)
- High Groundwater/areas of perched groundwater
- Areas with underground contamination
- Proximity to structures or building foundations.
- Areas with fill soils
- Areas with shallow bedrock
- Proximity to drinking water wells.
- Erosion Hazard or Landslide Hazard Areas
- Professional Geotechnical evaluation recommendations.

Review of Appendix 4E to confirm whether infiltration-based limitations may be specified instead of the discretionary approach for achieving MEF (*Appendix 4E, Section 4E.7*).

Currently the City specifies that a Geotechnical Engineering or geologist report is required for sites with slope stability concerns or high groundwater, but other criteria are documented generally. There are measurable guidelines detailed in the Design Standards or SRC; however, they guidelines are scattered throughout the document, and it would be helpful to consolidate them in one place. If technical infeasibility criteria are more defined, and consolidated in one section, potentially there would be less discretionary determination of MEF and plan review activities may be more straightforward.

[6] Limitations listed in Design Standards *Appendix 4E* includes surface slopes, mandatory setbacks, downspout configuration, minimum vertical or horizontal clearance, presence of sensitive areas, restricting pedestrian, bike or vehicle access, limitations due to Historical Preservation requirement (*SRC Chapter 230*).

5.3 Other Recommendations

In addition to establishing an explicitly defined NSRR performance standard and technical infeasibility criteria, the following are recommendations related to refining the City's Design Standards and SRC.

- Update project thresholds requirements to adhere to NPDES MS4 Permit and large project thresholds.
  - Identify whether changing the upper SFR threshold to 5,000 SF (from 10,000 SF), to adhere to the new, large project threshold definition is also needed to support interpretation of standards. Per the NPDES MS4 Permit, the City could maintain the SRF threshold range as is (thereby not impacting the number of eligible SFR-related projects).
- Refine the organization of the Design Standards, D*iv. 400, Section 4.2 General Design Requirements to Support Improved Interpretation and Implementation of Standard*s. Potential revisions could include:
  - Moving the project and threshold requirements upfront into a dedicated section (not under *4.1©* and *4.2(a)*) for clarity.
  - Consolidate site assessment activities (*4.2(c, d, e, and f*) to meet NPDES MS4 Permit requirements related to LID and "site planning." Require results of the site assessment efforts to be submitted with land use approval.
  - Establish more explicit guidelines related to when infiltration testing is required. Memorialize, in Design Standards or another document.
  - Include a summary table identifying the use, constraints and application of various stormwater facilities, prior to introducing design criteria.
- Refine definitions to maintain consistency between the NPDES MS4 Permit, SRC, and Design Standards. BC conducted an initial review and prepared a definitions summary that compared definitions in Salem's Phase I Permit, SRC *70.005, 75.0202, 82.005,* and Design Standards *Ch. 109-001*. As the SRC and Design Standards are updated, further review of the definitions will be conducted to ensure the terms are: a) *used in the SRC or Design Standards updated language;* and, b) *are defined in a clear, concise, and technically accurate manner consistent with the Permit*.

  Key areas where refinements are recommended include:
  - Numerous inconsistent definitions exist between the SRC and Design Standards, which should be updated for consistency, including but not limited to: Best Management Practices, Design Storm/Design Storm Event, Flow Control/Flow Control Facility, and Source Controls.
  - Definitions listed in the NPDES MS4 Permit that are not included in the SRC or Design Standards, that may be advantageous to add, including but not limited to Clean Water Act, Construction Activity, Control Measure, Discharge, Effective Impervious Area, Green Infrastructure, and Low Impact Development.
  - Additional terms not currently included in SRC and/or Design Standards that may need to be added for consistency with current SRC and/or Design Standards language, including Large Project, New Impervious Surface, New Pervious Surface, Non-Stormwater Pollution Controls, NPDES MS4 Permit, Detention, Conveyance System, Downstream Analysis, Drywell, Pollution Generating Surfaces, Non-Pollutant Generating Surfaces, Point of Discharge, Post-Developed Condition, Pretreatment, Retention and Seasonal High Groundwater.
  - See Attachment E for the detailed Definitions Comparison Summary.

Section 6: Potential Policy Needs and Discussion

Based on recommendations detailed in Section 5, policy and technical topics recommended for inclusion in a more in-depth discussion with City staff during project workshops are listed in Table 6-1. Outcomes from discussions regarding these key topics, policy issues, and technical requirements will inform additional revisions to the SRC and Design Standards.

Table 6-1. Performance Standards Policy and Technical Issues Matrix

Topic	Policy Issue or Technical Question	Other Considerations
Thresholds	• Should SFR projects to 10,000 SF thresholds be preserved as an SFR Project? • Should the SIM approach still be used for < 10,000 SF?	• Prior to stakeholder meetings, may want to conduct an impervious threshold analysis to confirm: – the number of additional large project development applications if adjusting the threshold from 10,000 SF to 5,000 SF – the number of SFR applications unable to use the simplified sizing method if the project range is changed from 1,300 to 5,000 SF (as opposed to 10,000 SF).
Numeric Stormwater Retention Requirement Site Performance and Treatment Standards	• How will a numeric retention requirement be specified in Design Standards? • Does the City want to provide an incentive for sites that retain more than the required storm event? • Should the SIM form be revised? Does it currently reflect WQ or WQ and FC? • How are facility types (combination treatment and flow control, treatment only) prioritized? • Is the feasibility criteria of 10% of the total new plus replaced impervious surfaces based on facilities ability to service as a combined treatment and flow control facility? Should the 10% requirement be revised in this update?	• Prior to stakeholder meetings, consider conducting a sizing factor analysis to confirm facility sizing at various design infiltration rates, to confirm: – Sizing limitations related to the 10% MEF standard – Minimum infiltration rates to support "partial infiltration applications". – Whether adjustment of the height or location of underdrain in planters/raingardens/etc. supports additional infiltration capabilities.
Technical Infeasibility Criteria	• General Infeasibility Criteria: What infeasibility criteria should be allowed for the NSRR? What are typical limitations or conditions encountered? – Should infeasibility conditions be mapped or documented? • Infiltration Infeasibility Criteria: – How should feasibility be defined for infiltration, including a more quantitative metric for limiting the use of infiltration? When in the process should infiltration testing be conducted. Should it be submitted with land use approval? – What types of projects require onsite testing and which projects can rely on anecdotal information? – Should infiltration testing be conducted as part of site assessment activities? – What factor of safety should be applied to measured infiltration rates, and how should the factor of safety influence infiltration rates used for design? If yes, is two an appropriate factor of safety? – Should 0.5 inches per hour be reflected as the minimum infiltration rate supporting use of infiltration-based facilities? – The definition of GSI is specific to infiltration facilities. Can combined treatment and flow control facilities be prioritized if infiltration rates deem feasible? – Are partial infiltration facilities always required over other treatment facilities?	
Practical/Financial Infeasibility Criteria	How are limitations outlined in Appendix 4E confirmed?	If refining the technical infeasibility criteria, are the financial factors limiting implementation of GSI applicable or still needed to get at the MEF requirement? (Design Standards *Appendix 4E, Section 4E.9*). The current financial factors are for large projects.

Table 6-1. Performance Standards Policy and Technical Issues Matrix		
Topic	**Policy Issue or Technical Question**	**Other Considerations**
Stormwater Facility Design	Are there any updates needed to the current facilities as detailed in the Design Standards the City has identified?	
Operation and Maintenance	• Maintenance protocols–what is the issue or challenge with the existing maintenance protocols in the standards? Should any maintenance protocols be revised or updated? • How to include the required maintenance documentation for manufactured facilities?	
Definitions[7]	Ensure Definitions are reviewed and revised to ensure consistency with the Salem NPDES MS4 Permit, the SRC and the Design Standards. Add new definitions.	

[7] Specific definitions to be reviewed can be found in Attachment E and summarized in Section 5.

References

NPDES MS4 Phase I City of Salem Permit, Oregon Department of Environmental Quality, 2021.

1200-CN General Permit NPDES Stormwater Discharge Permit, Oregon Department of Environmental Quality, 2018.

Marion County's Stormwater Quality Treatment Engineering Standards (2022).

Gresham's Stormwater Management Manual (GSMM, 2019).

Eugene Municipal Code (EMC, 9.6792)

City of Corvallis' Stormwater Design Standards (2015)

City of Portland Stormwater Management Manual (2020)

Oregon City's Stormwater and Grading Design Standards (2020)

City of Wilsonville's Public Works Standards for Stormwater and Surface Water (2015)

WES Stormwater Standards (2023)

Salem Revised Code

Administrative Rules - Design Standards (January 2014)

City of Salem's Erosion Prevention and Sediment Control Technical Guidance Handbook.

City of Salem's Erosion Prevention and Sediment Control Plans for Small Development (2014)

ACWA Construction Site Stormwater Guide: Illustrated BMPs (2013)

Erosion Sediment Control Site Plan Review (Minimum Requirements for all Development Projects, except Single-Family/Duplex) (2013)

City's Project Management Manual (2013):

- 9.12 Erosion Control Plan Review Standard of Practice
- 10.13 Erosion Control Inspection Procedure Standard of Practice
- 10.14 Erosion Control Enforcement Standard of Practice

Robert Chandler's *"How Salem Crafted its First-Ever stormwater ordinance and got unanimous approval".*

Attachment A: Post-Construction Performance Standards: Comparison of Other Local Jurisdictions

Table A-1. Post-Construction Performance Standards FINAL Comparison of Other Local Jurisdictions

Jurisdiction	NPDES MS4 Permit Update Compliance Date	Performance Standard A: NSRR Standard	Performance Standard B: Alternative Compliance Standard
City of Albany	Phase II General Permit Feb. 28, 2024	The City is currently coordinating with Corvallis and updating standards to include an established NSRR prioritizing retention of the water quality storm on-site, except in areas with technical infeasibility and/or site constraints. The updated standards will be customized for the City of Albany.	Not Applicable (N/A)
City of Corvallis	Phase II General Permit Feb. 28, 2024	- The current City Stormwater Design Standards (2015) state that infiltration facilities are permissible and preferred where native soil infiltration rates support their function. - The City is in the process of updating standards to include an established NSRR prioritizing retention of the water quality storm on-site, except in areas with technical infeasibility and/or site constraints. The City has prepared a Citywide infiltration feasibility map to support their standards update. Infiltration testing requirements will be included. - The pending updated standards may include an NSRR for the water quality storm. In addition, the standards may limit infiltration facilities in Group D and related soils (A/D, B/D, C/D) soils. Facilities may be constructed with open bottoms (i.e., unlined) in these areas but sizing should be for treatment and not take infiltration into account. If infiltration facilities are desired, and an applicant thinks that the soils map is not reflective of actual on-site infiltration rates, the applicant should conduct in-situ testing to confirm the soil type and infiltration rates to confirm.	N/A
City of Eugene	Phase II Individual Permit Dec. 1, 2024	- In the Stormwater Quality section of the Eugene Municipal Code (EMC, 9.6792), infiltration facilities must be prioritized, but it doesn't specify an NSRR or say that full (or partial) infiltration/retention of the water quality design storm (or other identified storm) is required as specified in the permit. - The City anticipates updates to their standards to conform with the permit requirement more explicitly for retention.	N/A
City of Gresham	Phase I Gresham Group Permit Nov. 1, 2024	Gresham's Stormwater Management Manual (GSMM, 2019) requires infiltration of stormwater runoff to the maximum extent feasible, and a filtration (versus infiltration) facility is allowed for water quality treatment only in cases of infiltration infeasibility. In areas where infiltration is deemed infeasible, water quality treatment (filtration) using vegetated facilities shall be maximized. For subdivision and partitions the following options apply: **A. Dispersed**. Infiltrate/retain the 10-yr storm event in a private facility located on the same residential taxlot as the impervious surface being treated. Conveyance must be provided, but no further downstream detention/flow control required. **B. Hybrid**. Infiltrate (subject to technical infeasibility requirements) or manage the water quality event (1.2 in. in 24 hrs) at most localized scale possible, then meet the flow control requirements at a downstream centralized facility. Infiltration based facilities have a minimum infiltration rate of 0.5 in./hr to 2 in./hr depending on the facility type. Can assume impervious surfaces treated for water quality are 50% pervious for sake of downstream facility detention/flow control calculations. **C. Centralized**. Use centralized facility to treat both water quality and flow control for all impervious surface within development.	N/A
Marion County	Phase II General Permit Feb. 28, 2023	Marion County's Stormwater Quality Treatment Engineering Standards (2022), Section 3 has an NSRR Standard: 1. Projects that create or replace 10,890 square feet (1/4 acre) or more of impervious surface must retain the site runoff produced by the Design Storm of 1.38 ins. in 24 hrs to satisfy the performance requirements. 2. For projects that demonstrate an inability to meet the retention requirement in Item 1 above, the remainder of the runoff generated by the Water Quality Design Storm must be treated prior to discharge from the project site. Treatment must be implemented to satisfy the performance requirements. 3. If the retention and treatment performance requirements cannot be met, offsite mitigation may be allowed as an alternative compliance option for both public and private projects.	N/A
City of Portland	Phase I Portland Group Permit Nov. 1, 2024	City of Portland Stormwater Management Manual (SMM, 2020), Summary of Infiltration and Discharge Hierarchy Stormwater Management Requirements: - Level 1: Full Onsite Infiltration–Fully infiltrate the 10-yr design storm *(3.4 in. is the retention storm and is volume based)* for sites with infiltration rates of 2 in./hr +. Ecoroofs may receive exceptions. Level 2: Offsite Discharge to the Separated Stormwater System–If infiltration is determined infeasible (less than 2 in./hr) based on-site constraints, then water quality treatment is required for runoff from a storm. Pollution Reduction Required (achieve 70% TSS removal from the runoff resulting from 90% of the average annual rainfall) and Flow Control Required (match post-developed and pre-development rates for the one-half the 2-yr event, and for the 5-, 10-, 25-yr events).	N/A

Table A-1. Post-Construction Performance Standards FINAL Comparison of Other Local Jurisdictions

Jurisdiction	NPDES MS4 Permit Update Compliance Date	Performance Standard A: NSRR Standard	Performance Standard B: Alternative Compliance Standard
The cities of Wilsonville and Oregon City, and Water Environment Services (WES) have similar approaches to meeting both performance standards requirements of the permit. In general, the agencies are meeting the NSRR performance standard by requiring retention (infiltration) of the 10-yr storm event. If the full 10-yr storm event is retained, then both water quality and flow control requirements are met. If the 10-yr storm cannot be fully retained due to infeasibility criteria, then a water quality and flow control standard (*ensuring the predevelopment hydrologic function is maintained*) should be met. All three agencies promote the use of the BMP Sizing Tool to quantify the amount of infiltration achieved.			
City of Oregon City	Phase I Clackamas County Group Permit Dec. 1, 2024	Oregon City's Stormwater and Grading Design Standards (SGDS, 2020) 2.2.4: Stormwater Management Strategy states: - The City has a stormwater management hierarchy (Levels 1-4). Applicants must demonstrate that the strategies on the hierarchy are not feasible before selecting a lower-level strategy for stormwater management. - Level 1: Onsite retention of the 10-yr design storm for site with infiltration rates of 2 in./hr+. Utilization of infiltration stormwater facilities which can infiltrate the full 10-yr design storm will be considered the MEF to satisfy both water quality and flow control requirements. Infeasibility criteria are provided. - Level 2: Onsite Stormwater Management using LID: For sites with infiltration between 0.5 and 2.0 in./hr, the LID facility should be designed with infiltration as the primary means of flow control. - For sites with design infiltration rates less than 0.5 in./hr, the LID facility will require an underdrain connected to a flow control structure. - If the 10-yr storm can't be infiltrated, Oregon City has a flow control requirement to match flow duration for hydromodification. The BMP Sizing Tool is the mechanism for determining the amount infiltration.	Oregon City is an agency that is meeting both performance standards. They use the BMP Sizing Tool to quantify the amount of infiltration achieve and if it meets the alternative compliance standard that is equivalent to the NSRR.
City of Wilsonville	Phase I Clackamas County Group Permit Dec. 1, 2024	The City of Wilsonville's Public Works Standards for Stormwater and Surface Water (2015), requires: - LID to the MEF - Utilize LID facilities to address water quality and flow control requirements of the site. When site constraints limit surface area available for stormwater management facilities, MEF is defined as installing LID with a surface area of at least 10% of new and replaced impervious surface area. - Retain and fully infiltrate the 10-yr design storm onsite using LID facilities. Infiltration of the full 10-yr design storm is assumed to satisfy both water quality and flow control requirements. - Limited Infiltration-When conditions (fill, steep slopes, high groundwater table, well-head protection areas, and/or contaminated soils) restrict the practicality of using onsite infiltration and may require the use of lined, non-infiltrating stormwater management facilities or underground facilities to meet stormwater management requirements.	Wilsonville is an agency that is meeting both performance standards. If the 10-yr storm can't be infiltrated, the applicant should use LID to the MEF and has a duration-based flow-control standard to meet predevelopment hydrologic function. They use the BMP Sizing Tool to quantify the amount of infiltration achieved, and if it meets the alternative compliance standard, that is equivalent to the NSRR.
WES	Phase I Clackamas County Group Permit Dec. 1, 2024	- The WES Stormwater Standards (SS 2023), Section 6.2.1 states that when site conditions allow, infiltration is the preferred strategy to achieve the stormwater management performance standards. When a stormwater management facility is designed to fully infiltrate the 10-yr, 24-hr storm, the facility is assumed to meet the flow control performance standards without further analysis. Such facilities provide onsite stormwater retention for most rainfall conditions and should only result in partial downstream discharge during events larger than a 10-yr storm. - When site conditions do not allow infiltration of the full 10-yr, 24-hr design storm, infiltration can still be incorporated into the flow control facility design with partial infiltration should include an underdrain, and overflow system to manage the release rates from the facility. An infiltration rate of 0.5 in./hr is considered limiting for use of infiltration systems. Whether or not infiltration is incorporated into the design, release rates from the facility must meet the flow control performance standard.	WES is an agency that is meeting both performance standards. The WES Stormwater Standard states there is a flow Control Performance Standard that requires the duration of peak flow rates from Post-Development Conditions shall be less than or equal to the duration of peak flow rates from pre-development conditions for all peak flows between 42% of the 2-yr peak flow rate up to the 10-yr peak flow rate.

Attachment B: Construction Gap Analysis Matrix

Attachment B: Construction Gap Analysis Matrix

	Requirement from the Phase I Permit (effective October 1, 2021)	Current Status of Salem's Standards with Respect to Addressing the Requirement	Manual and/or Code Reference	Identified Gaps	Further Clarification or Discussion
Schedule A.3.d	**Construction Site Runoff Control**				
	The permittee must continue to implement and enforce a construction site runoff control program to reduce discharges of pollutants from construction sites in its coverage area. The permittee must continue to implement their existing construction site runoff program as the new requirements are developed and implemented.	N/A - procedural (see the City's 2022 SWMP).			
i.	**Ordinance and/or Other Regulatory Mechanism**				
	Through ordinance or other regulatory mechanism, and to the extent allowable under state law, the permittee must continue to require erosion, sediment, and waste materials management controls to be used and maintained at all qualifying construction projects from initial clearing through final stabilization to reduce pollutants in stormwater discharges to the MS4 from construction sites.	SRC 75.050: Erosion Control is required. An erosion control permit for projects that area 1,000 square feet of ground disturbance, but it includes exemptions for home gardening and projects with less than 25 cubic yards of impact. City permits are not currently required for site that also require a 1200-CA. Erosion control permit exemptions are listed in SRC 75.050. Design Standards Ch. 109, Division 007 7.1(b): The standards govern all construction and other land disturbing activities within the City of Salem in accordance with the administrative authority granted in SRC 65, 68, 69 and 75 and with the regulatory requirements and permits as referenced in this chapter. They apply to both publicly and privately owned lands and those projects within the ROW.	Salem Revised Code (SRC) 75.050 Administrative Rules - Design Standards (dated January 2014, referred to as Design Standards hereafter) Chapter 109 Div. 007, Erosion and Prevention Control Plan, 7.1(b)	None.	
	The permittee must require construction site operators to document site specific erosion and sediment controls for construction project sites that result in land disturbance of equal to or greater than 1,000 square feet.	SRC 75.050: (a) Except as provided in subsection (b) of this section, no person shall conduct ground disturbing activities that cause or are likely to cause a temporary or permanent increase in the rate of soil erosion from a site without first obtaining an erosion control permit from the Director. (b) Erosion control permits are not required for the following: (1) Home gardening and landscaping activities, unless the ground disturbing activity meets either of the following criteria: (A) The activity takes place within 50 feet of a waterway, and the work involves the disturbance of more than 1,000 square feet of land surface at one time; or (B) The slope of the land exceeds 25 percent. (2) Ground disturbing activities involving less than 25 cubic yards of material or 1,000 square feet of land surface at one time. (3) Interior improvements to an existing structure. (4) Activity for which there is no physical disturbance to the surface of the land. (5) Ground disturbing activities conducted under a 1200-CA General Permit issued by the DEQ in accordance with the Phase I and Phase II Stormwater Regulations adopted by the Environmental Protection Agency. (6) Activities within the City which constitute a "farm use" or "accepted farming practices" as those terms are defined or used in ORS Ch. 215. (7) Mining activities conducted under permits issued by the Oregon Department of Geology and Mineral Industries. (8) Routine maintenance of gravel roads, road shoulders, paths, parking lots, and storage yards. (9) Routine maintenance of sports fields or playgrounds surrounded by vegetative ground cover or permanently installed curbing. (c) An exception from the erosion control permit requirement does not exempt the applicant from the performance responsibilities of SRC 75.030, 75.090 and 75.140, except to the extent allowed under local, state, or federal permits issued for a specific site or purpose. (d) Applicants for construction activity within the City subject to the 1200-C or 1200-CA General Permit requirements must obtain the 1200-C or 1200-CA General Permit directly from the Oregon Department of Environmental Quality and provide evidence of such to the Director.	SRC 75.050 SWMP (2022)	None.	City may review/ confirm the exemptions in SRC 75.050 to ensure all construction projects that result in land disturbance of equal to or greater than 1,000 square feet document site specific erosion and sediment controls. For example, the City may want to remove the exemption for projects under 25 cubic yards of disturbance, as that is unrelated to the disturbance area thresholds outlined in the permit (and sites larger than 1,000 square feet may not be regulated if there is less than 25 cubic yards of disturbance).
		SRC 76.060 (b): A single EPSC plan may be submitted for multiple contiguous residential building lots or parcels or multiple building lots or parcels in the same subdivision or partition. SRC 75.060(c): EPSC plans for construction projects disturbing 10,000 square feet or more of land surface shall require the stamp or signature of a certified professional.	SRC 75.060(c):	None.	Does the City want to adjust this threshold for requiring a stamp or signature on EPSC plans (note this is not a gap)?
		Design Standards Ch. 109, Division 007 7.1(d): (1) All ground disturbing activity shall conform to the applicable regulatory requirements including the NPDES MS4 Permit issued to the City. (2) SRC Chapter 75 - Erosion Prevention and Sediment Control (3) Oregon DEQ 1200C Permits - Required for private development sites greater that one acre. (4) Oregon DEQ 1200 CA Permits - General blanket DEQ permit issued to the City of capital construction (5) Requirements of other involved agencies such as Marion County, Polk County, City of Keizer, ODOT, UPRR, and/or BNSF (6) Oregon Department of Land (DSL) Permits - This includes special requirements of other state agencies such as the Oregon Department of Fish and Wildlife (ODFW) and Oregon DEQ. (7) United States Army Corps of Engineers (USACE) Permits - This includes special requirements of other federal agencies such as the EPA, the National Marine Fisheries Services (NMFS) and the U.S. Fish and Wildlife Service (USFWS).	Design Standards Ch. 109, Division 007 , 7.1(d)	Explicitly add to the Design Standards the 1,000 square feet threshold, so the developer or other designer doesn't have to go to the NPDES Permit to find the threshold information.	
	The permittee must use appropriate enforcement procedures and actions to ensure compliance with Schedule A.3.d.ii-vi, below.	See Schedule A.3.d.v below for enforcement procedures documentation.			
ii.	**Erosion and Sediment Control Plans (ESCPs)**				
	The permittee must continue to maintain written specifications that address the proper installation and maintenance of erosion and sediment controls during all phases of construction activity occurring in their coverage area. The written specifications must include an ESCP template, worksheet, checklist, or similar document for construction site operators to document how erosion, sediment, and waste material management controls for non-stormwater wastes (e.g., discarded building materials, concrete truck washout, chemicals, litter, and sanitary waste) will be implemented and maintained at the construction project site. At a minimum, through ordinance or other regulatory mechanism the permittee must:	SRC 75.060 (a): An application for an erosion control permit shall include all information necessary for the determination of whether the permit should be issued. This information includes, but not limited to: an EPSC Plan that contains methods and interim facilities to be constructed, used, operated, and maintained during ground disturbing activities to prevent and to control erosion Design Standards 7.2(f) Plan Review Checklist Appendix 7B - Plan Requirement Checklist will be used by the City during review evaluation of an EPSC Plan. The checklist is provided as part of these Design Standards to inform designers of the items the City will evaluate during plan review. HD: Seems like we could also add reference to DS Appendix A (109-007 – Standard Notes)? Design Standards, Appendix 7A - Standard Notes (to be included on each ESCP) The City also has a document titled "Erosion Prevention and Sediment Control (EPSC) Plans for Small Development" that provides the standards for EPSC Plans for small projects (1,000 to 10,000 square feet of ground disturbance). The purpose of this document is to provide small development builders and contractors with standard EPSC plans and specifications for their use and implementation on new construction projects within the City.	SRC 75.060 Design Standards Ch. 109, Division 007,7.2(f) City's Erosion Control Site Plan Review Checklist (Appendix B) Design Standards Ch. 109, Appendix A General Notes "ESCP Plans for Small Development" Guidance Document (January 1, 2014)	None.	Some considerations for updating the City's Plan Requirement Checklist require updates: 1. Add a line for the total ground disturbance area for the project. 2. Add a note at the bottom to remind the developer the ESPC Plan needs to be kept onsite at all times and written EPSC inspection logs need to be maintained onsite and available to City inspectors upon request. The City makes the ACWA Construction Site Stormwater Guide available on their website. This document provides a guide that highlights the most common best management practices (BMPs) to help inspectors and construction contractors address common problems related to erosion and construction site stormwater pollution.
	(A) Require construction site operator to complete a site-specific Erosion and Sediment Control Plan or other documentation of site specific controls prior to beginning construction/land disturbance;	Design Standards Ch. 109, Division 007 7.2(a): An EPSC Plan is required to be submitted with site development plans, subdivision plans, grading plans and/or public improvement plans for review and approval by the City. An approved EPSC Plan is required to be available on site at all times for review. BMPs should be adjusted and modified in the field as necessary and as required to provide adequate EPSC.	Design Standards Ch. 109, Division 007, 7.1(a)	None.	
	(B) Require the Erosion and Sediment Control Plan be maintained and updated as site conditions change, or as specified by the permittee;	Design Standards Ch. 109, Division 007 7.1(c): The applicant is responsible to ensure that adequate erosion prevention and sediment control measures are planned, designed, constructed, operated and maintained to prevent sediment and pollutants from leaving the construction site. These requirements shall be upheld throughout the life of the construction project. Additional or revised erosion control measures may be necessary based upon field observations of the effectiveness of the original planned measures. The applicant shall revise and add measures as necessary to comply with SRC and regulatory permit requirements.	Design Standards Ch. 109, Division 007 7.1©	None.	
	(C) Require Erosion and Sediment Control Plans to be kept on site and made available for review by the permittee, DEQ, or another administrating entity during site inspections or upon request; and,	Design Standards Division 007, Appendix A: (1) The EPSC Plan must be kept onsite at all times (also noted in 7.2(a)). (2) Written EPSC inspection logs shall be maintained onsite and available to City inspectors upon request.	Design Standards Division 007, Appendix A	None.	
	(D) Continue to ensure that ESCPs for construction sites disturbing one acre or greater are consistent with the substantive requirements of the State of Oregon's 1200-C NPDES permit ESCPs.	SRC 75.050(d) Applicants for construction activity within the City are subject to the 1200-C or 1200-CS General Permit requirements must obtain the 1200-C or 1200-CA General Permit directly from DEQ and provide evidence as such to the City. Design Standards Ch. 109, Division 007 7.1(d): (3) Oregon DEQ 1200C Permits - Required for private development sites greater that one acre. (4) Oregon DEQ 1200 CA Permits - General blanket DEQ permit issued to the City of capital construction.	SRC 75.050(d) Design Standards Ch. 109, Division 007, 7.1(d)	A 1200-CA permit cannot be obtained by a private entity, only authorized government entities. If the City holds a 1200-CA permit (or has obtained one), consider revising code language to reflect correct responsible party. Otherwise remove reference.	
	Permittee may require or issue a simplified ESCP or a list of expected outcomes with prescribed BMPs for small or low-risk construction sites, provided that the permittee's criteria and specifications are clear and documented or referenced in the SWMP Document, and provided that construction operators are required to meet expectations and keep documentation of how they meet those expectations on site for reference during operations, maintenance activities, and inspections. The permittee must include or refer to a description of all Erosion and Sediment Control Plan requirements in the SWMP Document.	N/A - procedural (see the City's 2022 SWMP).			The City also has a document titled "Erosion Prevention and Sediment Control (EPSC) Plans for Small Development" (January 1, 2014) that provides the standards for EPSC Plans for small projects (1,000 to 10,000 square feet of ground disturbance). The purpose of this document is to provide small development builders and contractors with standard EPSC plans and specifications for their use and implementation on new construction projects within the City.
iii.	**Erosion and Sediment Control Plans Review**				
	At a minimum, the permittee must continue to implement procedures to review Erosion and Sediment Control Plans from construction projects that will result in land disturbance of equal to or greater than 1,000 square feet using a checklist or similar document to determine compliance with the ordinance or other regulatory mechanism required.	N/A - procedural (see the City's 2022 SWMP, City's Erosion Control Site Plan Review Checklist, and 9.12 Erosion Control Plan Review Standard of Practice (SOP)).		There are no gaps in the City's review processes or procedures.	The City has well documented processes and procedures for construction site inspections. There are no gaps in the City's review processes or procedures.
	Erosion and Sediment Control Plan review procedures must include consideration of the construction activities' potential water quality impacts, and remain in accordance with applicable state and local public notice requirements.	N/A - procedural (see the City's 2022 SWMP, City's Erosion Control Site Plan Review Checklist, and 9.12 Erosion Control Plan Review SOP).		There are no gaps in the City's review processes or procedures.	
iv.	**Construction Site Inspections**				

Attachment B: Construction Gap Analysis Matrix

		Requirement from the Phase I Permit (effective October 1, 2021)	Current Status of Salem's Standards with Respect to Addressing the Requirement	Manual and/or Code Reference	Identified Gaps	Further Clarification or Discussion
		The permittee must continue to perform inspections of construction sites to ensure that the approved ESCP or other documented set of controls is properly implemented. The SWMP Document must describe procedures, including:	SRC 75.080: The City may require erosion prevention and sediment control measures to be inspected and approved prior to the start of any ground disturbing activities including preliminary grading work. The City may require inspection at other times as deemed necessary or as specified in the erosion control permit. For individual single family residential and duplex construction, or manufactured home placement on individual lots or parcels or in manufactured home parks, erosion prevention and sediment control measures shall be properly installed either before or concurrent with the initial ground disturbing activity. 10.13 SOP: The SOP explains how to conduct high quality erosion control inspections. The SOP provides the accepted practices to ensure that inspectors have the understanding and guidance necessary to conduct thorough and comprehensive inspections that not only provide accurate documentation, but also provide guidance for contractors and permit holder to implement effective erosion control strategies.	SRC 75.080 10.13 Erosion Control Inspection Procedures SOP	None.	
	(A)	Minimum Triggers for Inspection	Design Standards Division 007, Appendix A: (3) All BMPs shall be inspected at least every week. When a rainfall event exceed 1/2" in a 24-hour period, daily inspection of the erosion controls, sediment controls, and discharge outfalls must be conducted and documented. Inspections shall be done by a representative of the permit registrant who is knowledgeable and experienced in the principles, practices, installation, and maintenance of erosion and sediment controls.	Design Standards Division 007, Appendix A	None.	
		At a minimum, the permittee must inspect construction sites if:				
	1	Sediment and/or turbidity is visible in reported stormwater discharge or dewatering activities from the construction site;	Design Standards Ch. 109, Division 007, 7.3(l): When groundwater is encountered is an excavation or other area; control, treat, and discharge it in a manner as to not exceed DEQ's turbidity and pollution standards. Uncontaminated dewatering water is an authorized non-stormwater discharge. If dewatering water comes into contact with pH-modifying substances, monitor and sample before discharge to surface waters of the State to ensure high-pH groundwater is not discharged into surface waters of the State. Examples of pH-modifying substances frequently found in construction are concrete, Portland cement, lime, ash, fuels etc. Infiltrate in designated areas or neutralize before discharge.	Design Standards Ch. 109, Division 007, 7.3(l)	None.	
	2	A complaint or report is received; or	SRC 71.060 (a) Any person owning, engaging in any activity on, or occupying real property shall report the discharge of any pollutant from that property to the Public Works Department if the discharge has introduced, or is likely to introduce, a pollutant into the public stormwater system, a private stormwater system, or receiving water. The report shall be made at the earliest possible time, but in no case later than 24 hours after discovery of the discharge. Reporting pursuant to this section is in addition to, and not in lieu of, any other reporting requirements imposed by federal, state, or local laws.	SRC 71.060(a)	The SRC or Design Standards do not explicitly indicate that an inspection will be triggered if a public complaint or report is received. The City should ensure their internal processes address this response (in conjunction with illicit discharge investigatons).	
	3	A site meets any other minimum triggers established under the permittee's already established inspection program.	See Schedule A.3.d.iv(A) for minimum inspection triggers.			
	(B)	Minimum Inspection & Documentation Requirements				
		Permittee inspections of construction sites must follow standardized procedures for inspection and documentation of inspections. Procedures and requirements for inspection and documentation must be detailed in a manual referenced or linked to in the SWMP Document, and include minimum required outcomes, criteria, and/or BMPs for disturbed areas of the site, as well as locations of material and waste storage areas, stockpile areas, construction site entrances and exits, sensitive areas, and points of discharge to the MS4 or receiving waters. The permittee must include or reference in the SWMP Document a description of how the permittee's site inspection procedures ensure, accomplish, or generate the following:	N/A - procedural (see the City's 2022 SWMP and 10.13 Erosion Control Inspection Procedures SOP).			
	1	A review and evaluation of the ESCP or other documented set of site specific controls and the operator's records of maintenance or operation of BMPs where applicable, to determine if the described control measures were installed, implemented and maintained properly.	N/A - procedural (see the City's 2022 SWMP and 10.13 Erosion Control Inspection Procedures SOP).			The City should review their Erosion Control related SOPs to ensure compliance.
	2	An assessment of the site's compliance with the permittee's ordinances or requirements.	N/A - procedural (see the City's 2022 SWMP and 10.13 Erosion Control Inspection Procedures SOP).			The City should review their Erosion Control related SOPs to ensure compliance.
	3	Documentation of visual observations and of any existing or potential non-stormwater discharges, illicit connections, and/or discharge of pollutants from the site, as well as of recommendations to the construction site operator for follow-up.	N/A - procedural (see the City's 2022 SWMP and 10.13 Erosion Control Inspection Procedures SOP).			The City should review their Erosion Control related SOPs to ensure compliance.
	4	A written or electronic inspection report, with photographs as necessary, including documentation of all necessary follow-up actions (e.g., re-inspection, enforcement) to ensure compliance with their applicable requirements.	N/A - procedural (see the City's 2022 SWMP and 10.13 Erosion Control Inspection Procedures SOP).			The City should review their Erosion Control related SOPs to ensure compliance.
	5	Follow up to verify proper implementation of corrective measures in cases where a permittee-employed or contracted inspector finds evidence of erosion or of deficiencies in BMP maintenance or in adherence to ordinances or other regulations, as well as documentation of the corrective action.	N/A - procedural (see the City's 2022 SWMP and Design Standards Chapter 109 Div. 100-1, Enforcement of Public Works Regulations).			The City should review their Erosion Control related SOPs to ensure compliance.
v.		Enforcement Procedures				
		The permittee must continue to implement and maintain a written escalating enforcement and response procedure for all qualifying construction sites and summarize or reference in the SWMP Document. The procedure must address repeat violations through progressively stricter response, as needed, to achieve compliance. The escalating enforcement and response procedure must describe how the permittee will use enforcement techniques to ensure compliance. The enforcement procedures must include timelines for compliance and, when formulating response procedures and penalties should consider factors (or multipliers) such as the type and severity of pollutant discharge, and whether the discharge was intentional or accidental. If the escalating enforcement procedure already in place does not meet these requirements, a revision or update must be submitted with the Annual Report due November 1, 2023, and, if necessary as specified under Schedule A.2.f, added to the SWMP Document at that time.	SRC 71.060(b): Failure to report a discharge under subsection SRC 71.060(a) is an infraction. SRC 75.175: Describes the following a) stop work orders and permit revocation, civil penalty, civil penalty against agents, prohibition of further approvals; injunctive relief, appeals. SRC 75.200: It is a violation of the SRC 75, if any person to knowingly make any false statement, representation, or certification in any application, record, report, plan or other document filed or required to be maintained by SRC 75. SRC 75.210: Violations of SRC 75.170, 75.175(a) and 75.200 is a misdemeanor. Violation of any other provision of this chapter is an infraction. SRC 75.220: The remedies of SRC 75 are not exclusive. The City may seek any remedy or combination of remedies provided by law for violation of any provision of this chapter or failure to comply with any order issued under SRC 75. 10.14 SOP: Provides enforcement steps when efforts fail to generate the required action to correct or implement EPSC measures: 1) Inspection Notice of Correction 2) Notice of Non-Compliance Incident 3) Stop Work Order 4) Civil Penalties for Violations (refers to Design Standards Chapter 109 Div. 100-1) Design Standards: 1.4 Determination of Civil Penalties and Enforcement Evaluation Criterion and Criteria Rating Guidance (Points 0 to 3 based on violation severity).	SRC 71.060(b), SRC 75.175, SRC 75.200, SRC 75.210, SRC 75.220 10.14 Erosion Control Enforcement SOP Design Standards Chapter 109 Div. 100-1, Enforcement of Public Works Regulations	The City's escalating enforcement procedures were reviewed. A summary of the findings can be found in a separate document titled "Escalating Enforcement Summary Memo".	
vi.		Construction Runoff Control Training and Education				
		The permittee must ensure that all staff responsible for ESCP reviews, site inspections, and enforcement of the permittee's requirements are trained or otherwise qualified to conduct such activities, and training strategies and frequencies must be described or referenced in the SWMP Document.	N/A - procedural (see the City's 2022 SWMP).			
vii.		Tracking and Assessment				
		The permittee must routinely or continuously track all construction sites that result in a total land disturbance of equal to or greater than 1,000 square feet. The inventory must include relevant contact information for each project (e.g., name, address, phone, etc.), the size of the project including area and/or volume of disturbance, the date the permittee approved the ESCP in accordance with Schedule A.4.d.iii or in accordance with coverage under the 1200-CN permit as applicable, and whether any complaints have been received or inspections made.	N/A - procedural (see the City's 2022 SWMP).			
		The permittee must also track implementation of activities required by the Construction Site Runoff program. In each corresponding Annual Report, the permittee must summarize metrics or tracking measures related to implementation of the program, which may include but is not limited to number of regulated construction projects, number of inspections, and number of enforcement actions.	N/A - procedural (see the City's 2022 SWMP).			

Note:

Cells shaded in this color indicate that the requirement in the NPDES MS4 Permit is not one that is typically addressed in code or standards.

Acronyms and Abbreviations:

DEQ	Oregon Department of Environmental Quality
DSL	Department of State Lands
ESCP	Erosion and Sediment Control Plan
N/A	Not Applicable
NMFS	National Marine Fisheries Services
MS4	Municipal Separate Storm Sewer System
ODFW	Oregon Department of Fish and Wildlife
ODOT	Oregon Department of Transportation
ROW	Right of Way
SOP	Standard Operating Procedure
SRC	Salem Revised Code
SWMP	Stormwater Management Program
USACE	United States Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Services

Attachment C: Construction Escalating Enforcement Memo

Research Summary

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Prepared for: City of Salem

Project Title: NPDES MS4 Phase I Permit–Escalating Enforcement for Construction Sites Research Summary

Project No.: 180289

Summary by: Jessica Christofferson

Reviewed by: Angela Wieland, PE

Date: June 20, 2023, Revised September 7, 2023

Schedule A.3.d.v of the City of Salem's National Pollutant Discharge Elimination System (NPDES) municipal separate storm sewer (MS4) Permit requires permittees to implement and maintain written escalating enforcement and response procedures for all qualifying construction sites. The procedures must:

1. Address repeat violations through progressively stricter response.
2. Use enforcement techniques to ensure compliance.
3. Include timelines for compliance and, when formulating response procedures and penalties, should consider factors such as the type and severity of pollutant discharge, and whether the discharge was intentional or accidental.

BC conducted a detailed review of the Salem Revised Code (SRC) Section as well as the City's Erosion Control Enforcement Standard of Practice (Section 10.14) and Administrative Rules, Chapter 109, Division 100 to confirm documentation for each of the four major areas of compliance:

- Repeat violations
- Timelines for compliance
- Type and severity of pollutant discharge
- Whether the discharge was intentional or accidental.

Findings from the review are documented in Table 1 and detailed in Attachment 1: Escalating Enforcement Regulations for Construction Sites–Research Summary.

Table 1. Summary of Findings–Reviewed Against Requirements in Schedule A.3.d.v*

Permit Requirement Summary	City of Salem
Repeat Violations	Yes
Timelines for Compliance	Yes
Type and Severity of Pollutant Discharge	Yes [a]
Whether the Discharge was Intentional or Accidental	Yes

a. Salem has escalating enforcement in the form of notifications, stop work orders, and civil penalties; if there is an imminent threat to sediment leaving the site then an immediate stop work order is authorized.

Attachment 1: Escalating Enforcement Regulations for Construction Sites Summary (June 2023)

Escalating Enforcement Regulations for Construction Sites Summary (June 2023)			
Document References	**10.14 Erosion Control Enforcement–Standard of Practice**	**Administrative Rules-Chapter 109 Division 100-1 Enforcement of Public Works Regulations**	**Salem Municipal Code, Section 75**
Considers Repeat Violations	Not directly reflected in the progression of Steps 1-4, but may be implied.	Chapter 109, Division 100-1, Section 1.5 addresses repeat violations as an enforcement evaluation criterion.	SRC 75 does not specifically address repeat violations. Below is what is stated in that section: • "No person shall cause or suffer visible and measurable erosion or sediment which enters or is likely to enter the public storm drainage system, drainage courses, or wetlands. Any visible and measurable erosion and sediment shall be immediately abated or removed by the person using hand labor or approval mechanical needs (per SMC 75.090). • Visible and measurable erosion or sediment means (per SMC Section 75): • Deposits or tracking of mud, dirt, sediment, or similar material which exceeds one-half cubic foot in volume, on public or private streets, adjacent property, or into the storm drainage system or a drainage course, either by direct deposit, dropping, discharge, or as a result of the action of erosion; • Evidence of concentrated flows of water over bare soils; turbid or sediment laden flows; or evidence of on-site erosion such as rivulets on bare soil slopes, where the flow of water is not filtered or captured before leaving the site; or • Earth slides, mud flows, earth sloughing, or other earth movement in excess of one-half cubic foot in volume, which leaves the site."
Timelines for Enforcement	• Inspection Notice of Correction: The intent of this notice is to alert the responsible person(s) that corrective action must be taken within **3** calendar days. • Notice of Non-Compliance Incident: If the responsible EPSC person does not complete correction items documented and distributed under "Inspection Notice of Correction" within the **3 days** allowed, follow-up formal notice will be given using *Notification of Erosion Sediment Control Non-Compliance Incident (Attachment B of the SOP)*. • This notice indicates that serious consequences will result if non-compliant EPSC measures are not brought into compliance within **1 day** of this notice.	Not addressed.	• Per SMC 75.175-For a Stop Work Order appeal: Any person affected by any decision, action, or determination made by the Director, interpreting or implementing the provisions of this chapter, may file a written request for reconsideration with the Director **within 10 days of such decision, action, or determination**, setting forth in detail the facts supporting the person's request for reconsideration. • The Director's final order upon reconsideration may be appealed to the Hearings Officer by filing a written notice of appeal **no later than 10 days** after notification of the Director's final order. The Director's final order shall remain in effect during such pendency of reconsideration and appeal (per SMC 75.175).
Considers Severity of the Discharge	Step 1–Inspection Notice of Correction Step 2–Notice of Non-Compliance Incident Step 3–Stop Work Order: Step 3 includes if there is an imminent threat to sediment leaving the site then an immediate stop work order is authorized. This considers the severity of the discharge. Step 4–Civil Penalties for Violations	Section 1.4–Determination of Civil Penalties: • Table 1 includes an Enforcement Penalty Matrix that provides the following evaluation criterion: • Was the violation the result of events or circumstances not reasonably within the person's control? • Was the person negligent by failing to obtain or comply with the necessary permits and approvals? • Was the action a willful and knowing violation? • Was the person unresponsive in correcting the violation? • Is this a repeat violation of the same or related provisions of the Salem Revised Code?	Under SMC 75.175–Stop Work Orders, Permit Revocation, Civil Penalties and Enforcement: • Stop Work Orders • Civil Penalty • Civil Penalties against agents • Prohibition of further approval, injunctive relief • Appeals *These are in order of implementation regarding enforcement. This would be considered escalation of enforcement.*
Penalties and Cost Recovery considers whether the discharge was accidental or intentional	• City Code SRC Chapter 75 provides for civil penalties to be issued to the responsible person(s) when there is an EPSC violation. Civil penalties will be levied in accordance with established processes in the amounts dictated by code and prescribed by Administrative Rule 109-001 Enforcement of the Utility Code (Attachment D of SOP). • Typical civil penalties will not be issued unless the Stop Work Order does not achieve the desired results; however, if the non-compliance issue is repeated offense and/or the violation is serious enough, civil penalties may be levied at any time in the enforcement process. • Administrative Rules (Design Standards) 109-001 Enforcement of Utility Code (Attachment D of SOP) is a guideline for uniform procedures and methodology for the imposition of civil penalties for SRC violations.	Chapter 109, Division 100-1, Section 1.5 addresses willful violations as an enforcement evaluation criterion. Section 1.5–Criteria Rating Guidance: Points assigned based on a person's involvement and knowledge of a violation. Points range from 0 to 3 per criteria.	• *Civil penalty.* Any person who fails to comply with the requirements of this chapter, or the terms of a permit issued hereunder, who undertakes an activity regulated by this chapter without first obtaining a permit, or who fails to comply with a stop work order issued pursuant to this chapter shall also be subject to a civil penalty, not to exceed $2,000.00 per violation. Each day that a permit violation continues shall constitute a separate violation (Per SMC 75.175). • *Falsifying Information*: It shall be a violation for any person to knowingly make any false statement, representation, or certification in any application, record, report, plan, or other document filed or required to be maintained pursuant to this SMC 75 (per SMC 75.200).
	Yes, Salem considers if the discharge was accidental or intentional through the falsifying information clause.		

Attachment D: Post-Construction Gap Analysis

Attachment D: Post-Construction Gap Analysis

	Requirement from the Phase I Permit (effective October 1, 2021)	Current Status of Salem's Standards with Respect to Addressing the Requirement	Manual and/or Code Reference	Identified Gaps	Further Clarification or Discussion
Schedule A.3.e	**Post-Construction Site Runoff for New Development and Redevelopment**				
	The Permittee must continue to implement their post-construction stormwater pollutant and runoff control program as they develop, implement, and enforce the requirements of Schedule A.3.e to control stormwater runoff from new development and redevelopment project sites in its coverage area and reduce the discharge of pollutants. The Permittee must describe or refer to full documentation of its programs in the SWMP Document.	N/A - procedural (see the City's 2022 SWMP).			
i.	**Ordinance and/or Other Regulatory Mechanism**				
	Through ordinance or other regulatory mechanism, to the extent allowable under state law and within the constraints of land use and zoning regulations, the permittee must require the following for project sites discharging stormwater to the MS4 that create or replace impervious 1,300 SF or more of impervious surface area for single family residential projects or 5,000 SF or more of impervious surface area for all other development projects:	In Administrative Rules - Design Standards Div 400, Section 4.2(a), Project types include: • Single Family Residential (total impervious surface is 1,300 to 10,000 SF) shall be designed and constructed with GSI to the MEF except where flow control facilities and treatment facilities have already been constructed per Salem Revised Code (SRC) Chapter 71 to serve the lot or parcel. • Non Single Family Residential (less than 10,000 SF of new or replaced impervious surface). SRC does not require Non-SFR projects consisting of less than 10,000 SF of new or replaced impervious surface to provide stormwater flow control or general stormwater treatment. • Large Projects (new or replaced impervious surface greater than 10,000 SF). Large projects are required to provide both flow control and treatment facilities using GSI to the MEF and conforming to these Design Standards. This includes all projects with 10,000 SF or more of ground disturbing activities. To fully meet the requirements for large projects, both treatment and flow control facilities must meet the standards for GSI/MEF. • All Projects. Refers to SRC Chapter 71 for other requirements for all projects regardless of size such as source control, discharge to wetlands, preserving trees, providing landscaping. Project that are adjacent to an existing open channel waterway or within the 100-year floodplain of any waterway must meet the requirements of SRC Chapter 140.	Administrative Rules - Design Standards (dated January 2014, referred to as Design Standards hereafter) Div 400, Section 4.2(a) Project Type Thresholds and Discharge Requirements SRC 70.005 Definitions (SFR, Large Projects, Projects, Replaced Impervious) SRC Sec 71.085 (requirements for single family residential projects) SRC Sec. 71.090 (requirements for large projects)	The 10,000 SF threshold for large projects/non-single family residential projects to require flow control or treatment does not meet the 5,000 SF Permit requirement. Note - SRC Sec. 71.095 lists projects exempt from flow control requirements. This includes road maintenance projects "replacing existing impervious surface down to earth material". The Permit definition of "replace or replacement" mirrors the SRC definition of replacement does not include repair or maintenance activities on structures or facilities, or impervious surface, as long as no additional hydrologic impact results from the repair or maintenance activity. Clarify where duplex projects fit into the threholds. It appears when reading the SRC and Admin Rules, that duplexes have the same stormwater requirements as Single-Family Residential.	The Design Standards reference to SFR development lists TOTAL impervious surface area as the threshold. This needs to be revised to be specific to new or replaced in accordance with SRC 71.005. New and replaced impervious surface are both not defined in the Design Standards definitions.
(A)	The use of stormwater controls at all qualifying sites.	See previous row.	See previous row.	See previous row.	
(B)	A site-specific stormwater management approach that targets natural surface or predevelopment hydrological function through the installation and long-term operation and maintenance of stormwater controls, with focus on management of quantity and quality of stormwater discharge.	SRC 71.095.(c) Flow Control Performance Standard: (1) The post-development peak runoff rates from design storm events equal to or less than one-half the 2-year, 24-hour design storm event shall not exceed the predevelopment peak runoff rate for one-half the 2-year, 24-hour design storm event; (2) The post-development peak runoff rates from design storm events equal to or less than the 10-year, 24-hour design storm event shall not exceed the predevelopment peak runoff rate for the 10-year, 24-hour design storm event; and (3) The post-development peak runoff rates from design storm events equal to or less than the 25-year, 24-hour design storm event shall not exceed the predevelopment peak runoff rate for the 25-year, 24-hour design storm event; and (4) The post-development peak runoff rates from design storm events equal to or less than the 100-year, 24-hour design storm event shall not exceed the predevelopment peak runoff rate for the 100-year, 24-hour design storm event. Design Standards Div 400, Section 4.2(b) Green Stormwater Infrastructure to the Maximum Extent Feasible (GSI/MEF): • GSI means a stormwater facility that mimics natural surface hydrologic functions through infiltration and evotranspiration, or that involves stormwater reused (SRC Chapter 71.005(7)). SRC Chapter 71 requires the use of GIS to the MEF for SFR project or large projects.	SRC Sec. 71.095(c) Administrative Rules - Design Standards Div 400, Section 4.2(b) Green Stormwater Infrastructure to the Maximum Extent Feasible (GSI/MEF) Administrative Rules - Design Standards Div 400, Section 4.5(b)(2)(b) Flow control volume calculations, Peak discharge rate	None.	Definition in Design Standards: GSI indicate it HAS to be an infiltration facility. Stormwater management facilities is used for other treatment, conveyance and detention. The permit references "structural or extended filtration control". May want to expand definitions to better reflect permit terminology. The City does not require flow duration targets for matching predeveloped hydrology. However, enhancing infiltration; matching pre-development conditions that are more historic than current conditions; and matching peak flow for a range of storms does address flow duration. Given peak flow duration matching is not specifically required, Salem's standards are okay as is.
(C)	Long-term operation and maintenance of stormwater controls at project sites that are under the ownership of a private entity.	Design Standards Div 400, Section 4.2(s): • Operations and Maintenance (O&M) requirements apply to all private stormwater treatment facilities and related facility components. Owners are required to provide access to the City and check their facilities regularly to determine maintenance needs. In addition, privately owned and maintained stormwater facilities require the submittal of a "Private Facility Agreement" and a "Facility Maintenance Form". See Administrative Rule 109-011—Operations and Maintenance of Stormwater Facilities.	Design Standards Div 400, Section 4.2(s) Operations and Maintenance Requirements Administrative Rule 109-011—Operations and Maintenance of Stormwater Facilities.	N/A	
	The permittee must use appropriate enforcement procedures and actions to ensure compliance with Schedule A.3.e.v. The local ordinance or other regulatory mechanism adopted must meet the requirements of Schedule A.3.e.ii-vi.	SRC 71.120 - Civil Penalties: • Any person who is found to have violated an order of the Director, or who willfully or negligently failed to comply with any provision of this chapter, and the orders, rules, and regulations issued hereunder, shall forfeit and pay not more than $1,000.00 for each offense as determined by the Hearings Officer. Each day on which a violation shall occur or continue shall be deemed a separate and distinct offense.	SRC Sec. 71.120	N/A	
ii.	**Prioritization of Low Impact Development and Green Infrastructure**				
	The Permittee must, by November 1, 2023, review and update or develop and begin implementation of a strategy to require to the maximum extent feasible, the use of Low Impact Development and Green Infrastructure (LID/GI) design, planning, and engineering strategies intended to minimize effective impervious area or surfaces, and reduce the volume of stormwater discharge and the discharge of pollutants in stormwater runoff from development and redevelopment projects. This LID/GI strategy must be documented in the subsequent Annual Report and incorporated into or referenced in the SWMP Document after completion and DEQ approval. In development of this strategy, the Permittee must review ordinance and development code for opportunities to reduce the volume of discharge by design, engineering, and planning methods that prioritize onsite retention, infiltration, and evapotranspiration and the option of reuse where feasible, in order to make LID/GI the preferred and commonly used approach to site development. The Permittee may include evapotranspiration and reuse of stormwater in accounting for retention volumes but are not required to exhaust those options prior to allowing treatment or offsite options as described below. Where LID/GI controls that infiltrate or otherwise retain stormwater onsite are infeasible, extended filtration shall be required.	SRC Chapter 71.085 - Requirements for SFR and SRC Chapter 71.090 Requirements for Large Projects: • Except as provided in SRC 71.085(b), all SFR projects shall be designed and constructed with GSI to the MEF, except where flow control facilities and treatment facilities have already been constructed per SRC 71.080 (Requirements of land divisions) to serve the lot or parcel. For large projects, flow control and treatment facilities using GSI to the MEF are required. Design Standards - Multiple Sections • To fully meet the requirements for SFR projects, all SFR projects must meet the standards for GSI/MEF. • To fully meet the requirements for large projects, both treatment and flow control facilities must meet the standards for GSI/MEF. Although site constraints, limitations in engineering design, and financial costs should rarely completely restrict the use of GSI, the City recognizes that some projects will be unable to exclusively provide GSI. Appendix 4E—Implementing GSI to the MEF establishes the criteria for meeting the requirements to meet MEF for GSI (MEF/GSI).	SRC Chapter 71.085 and 71.090 Design Standards Div 400, Section 4.2(a) Project Type Thresholds and Discharge Requirements Design Standards Div 400, Section 4.2(b) Green Stormwater Infrastructure to the Maximum Extent Feasible (GSI/MEF) Design Standards Div 400, Appendix 4E - Implementing Green Stormwater Infrastructure to the Maximum Extent Feasible	As a result of the review and update of the LID/GI Strategy, the City must review applicable ordinances and development codes to identify any necessary updates.	The review and update of the LID/GI Strategy is procedural.
iii.	**Post-Construction Stormwater Management Requirements**				
	The Permittee must by November 1, 2024, develop and implement enforceable post-construction stormwater management requirements in ordinance or other regulatory mechanism that, at a minimum, prioritize onsite retention of stormwater and pollutant removal, and include technical standards according to either of the following options:	It is clear from the Design Standards that onsite GSI to the MEP is prioritized. See Schedule A.e.ii above.	N/A	N/A	
(A)	Numeric Stormwater Retention Requirement Site Performance and Treatment Standards If this option is selected, the Permittee must establish a site performance standard with a Numeric Stormwater Retention Requirement (NSRR) that retains stormwater onsite and minimizes the offsite discharge of pollutants in runoff by utilizing stormwater controls that infiltrate and facilitate evapotranspiration. The NSRR volume must be determined using one of the following methods: 1. Volume-based method (e.g., retain volume created from the first inch of rainfall). 2. Storm event%ile-based method (e.g., retain the 95th%ile storm event–95% of the time the data is below this value). 3. Annual average runoff-based method (e.g., retain 85% of annual average runoff).	SRC 71.095(b)(4): Construction of a flow control facility at a location other than the site is allowed if: (A) The Director has determined that it is in the public interest to construct a flow control facility at a location other than the site. This determination shall consider the feasibility of constructing the flow control facility on the site; the costs associated with construction, operations, and maintenance of the flow control facility; and the benefits provided by the flow control facility in terms of accomplishing the purposes of this chapter; and (B) The flow control facility constructed at a location other than the site will mitigate similar impacts that have been identified as a consequence of the project. SRC 71.100(c): Treatment facilities must be designed to capture and treat at least 80% of the average runoff volume predicted by the water quality design storm (defined in SRC 70.005 as the total inches of rainfall, distributed during a 24-hour period using a standard synthetic rainfall distribution identified as Type I-A by the Natural Resources Conservation Service). Design Standards 4.2(b): GSI by definition means a stormwater facility that mimics natural hydrologic function through infiltration or evapotranspiration. Design Standards 4.2(p) and 4.2(p)(2): Treatment facilities must be designed to capture and treat at least 80% of the average runoff volume predicted by the water quality design storm of 1.38 inches/24 hours. Design Standards 4.3: Combined treatment and flow control facilities can be designed as infiltration, partial infiltration or filtration (treatment) systems. Infiltration >=0.5 in/hr requires full infiltration. Filtration facilities are required with A. sites with slope stability concerns; B. Sites with a high groundwater table; C. Sites with contaminated soils; D. Where the physical limitations of the site do not allow for the detback from building foundations.	SRC Sec 71.095(b)(4), 71.100(c), and SRC 70.0005 Design Standards Section 4.2(p) and 4.2(p)(2)	Salem does not explicitly have a numerical retention standard in place. However, because of the definition of GSI (infiltration facility) and requirement to use GSI to the MEF, infiltration (or retention) is prioritized. Design criteria associated with GSI facilities indicate sizing for infiltration of the water quality storm is required. It is not clear if combined treatment and flow control facilities (infiltration based facilities) are prioritized. Is infiltration testing required to qualify their use?	Were the SIM form sizing factors based on a specific design storm? Is the feasibility criteria of 10% of the site area based on a facilities ability to serve as a combined treatment and flow control facility?
	The NSRR is met when the NSRR runoff volume (as determined by the method chosen above) from new and/or replaced impervious surfaces is managed by one or more structural stormwater controls with sufficient capacity to retain the stormwater runoff onsite without adversely impacting groundwater quality per DEQ's groundwater protection requirements (OAR 340-40). The Permittee may require retention or detention in excess of the NSRR in order to prevent hydromodification or other capacity issues that might result from stormwater runoff discharging from the site.	N/A - see above	N/A	See above.	
	The first priority of this option is onsite retention, but at sites where the NSRR cannot be met due to technical infeasibility and/or site constraints (including zoning or land use regulations), the Permittee must require treatment of the runoff volume up to a specified water quality design storm, or at least 80% of average annual runoff, in structural or extended filtration stormwater control prior to discharge. The evaluation of technical infeasibility or site constraints should be based on justification provided in the site plan (see Schedule A.3.e.iv and v.).	Design Standards 4.3: Combined treatment and flow control facilities can be designed as infiltration, partial infiltration or filtration (treatment) systems. Infiltration >=0.5 in/hr requires full infiltration. Filtration facilities are required with A. sites with slope stability concerns; B. Sites with a high groundwater table; C. Sites with contaminated soils; D. Where the physical limitations of the site do not allow for the detback from building foundations. Design Standards, Appendix 4E Implementing GSI to the MEF: Financial and non-financial factors are listed to substantiate not using GSI to the MEF (i.e., no infiltraiton).	Design Standards Appendix 4E.8 and 9	Appendix 4E appears to primarily pertain only to large projects, are SFR projects regulated similarly? Technical infeasibility criteria are listed in Design Standards Section 4.3, but do not include those readily identified during site assessment (distance to GW, min infiltration rate, slopes and setbacks).	How are these confirmed during plan review?

Attachment D: Post-Construction Gap Analysis

		Requirement from the Phase I Permit (effective October 1, 2021)	Current Status of Salem's Standards with Respect to Addressing the Requirement	Manual and/or Code Reference	Identified Gaps	Further Clarification or Discussion
		The procedures for allowing treatment of a portion of the NSRR (as opposed to 100% retention of the NSRR, in situations where 100% retention of the NSRR is infeasible or impracticable) should include a description of allowable structural stormwater controls that are designed to target the removal of TSS. The description of allowable structural stormwater controls must include site-specific design requirements, design requirements that do not inhibit maintenance, conditions where each control applies, and the operation and maintenance standards for each type of control. The Permittee may include an upper and lower bound on the effluent TSS concentration that reflects the practical limitation of an engineered control (e.g., 80% removal of TSS for typical influent concentrations ranging from 20 mg/L to greater than 200 mg/L). The Permittee must give priority to implementing green infrastructure before considering hardscaped structural stormwater controls (such as concrete vaults and piping, proprietary technologies, or other static non-GI facilities) for stormwater treatment. The Permittee may adopt specifications created by another entity that comply with these requirements.	SRC 71.100(c): Treatment facilities must be designed to capture and treat at least 80% of the average runoff volume predicted by the water quality design storm (defined in SRC 70.005 as the total inches of rainfall, distributed during a 24-hour period using a standard synthetic rainfall distribution identified as Type I-A by the Natural Resources Conservation Service). Design Standards 4.3: Combined treatment and flow control facilities can be designed as infiltration, partial infiltration or filtration (treatment) systems. Infiltration >=0.5 in/hr requires full infiltration. Design requirements for various facility types are provided Design Standards 4.4: Stormwater treatment facilities require additional detention/ retention and must be situated offline. Design requirements for various facility types are provided	Design Standards Section 4.3 and 4.4	N/A	
		All stormwater discharged offsite from new and/or replaced impervious surfaces, at least up to the NSRR volume must target natural surface or predevelopment hydrology (in terms of rate, duration, and/or volume) to minimize the potential for hydromodification impacts offsite except in circumstances where the Permittee can demonstrate that the risk of hydromodification impacts is negligible, (e.g., large tidally-influenced waterways or flow-managed waterways). The use of treatment trains of post-construction stormwater controls should be encouraged where appropriate for treating stormwater runoff that is managed offsite before discharging to receiving waters, to improve stormwater runoff quality and reduce discharge quantity.	N/A - see above	N/A	The City does not require flow duration targets for matching predeveloped hydrology. However, enhancing infiltration; matching pre-development conditions that are more historic than current conditions; and matching peak flow for a range of storms does address flow duration. Given peak flow duration matching is not specifically required, Salem's standards are okay as is.	
		Alternative Site Performance Standards As an alternative or in addition to Option A in Schedule A.3.e.iii, the Permittees may establish design requirements including site performance standards determined to generate water quality benefits comparable to the NSRR approach for new development and redevelopment. The alternative site performance standards shall be included in ordinances or other enforceable documents adopted by the Permittee. Such local requirements and thresholds shall provide equal or similar protection of receiving waters and equal or similar levels of treatment as the NSRR approach. The Permittee must demonstrate how alternative compliance approaches prioritize infiltration and LID/GI, include pollutant removal performance goals, target natural surface or pre-development site hydrology, and reduce the discharge of pollutants from new and/or replaced impervious surfaces.	Salem requires projects that meet their thresholds to implement both flow control and treatment measures, as detailed above. These requirements are listed in the Salem Revised Code and Administrative Rules Design Standards, as referenced in the rows above.	N/A	Salem's standards appear to satisfy the criteria identified in the remainder of this subsection (B). However, there may be a gap in requirements, depending on how the criteria of "comparable to the NSRR approach" and "provide equal or similar protection of receiving waters and equal or similar levels of treatment as compared to the NSRR approach" will be evaluated.	It is unclear from the Permit, other than the remaining paragraphs in this section, how the criteria of "comparable to the NSRR approach" and "provide equal or similar protection of receiving waters and equal or similar levels of treatment as compared to the NSRR approach" will be evaluated. In the previous gap analysis Salem thought that their standards are "a better reflection of the state-of-the-practice and that our regulations produce higher benefits to receiving waters than DEQ's proposed requirements." How is infiltration testing enforced?
	(B)	The Permittee shall set requirements for site layout plans and a minimum set of specific onsite stormwater controls (collectively "site design measures") based on the GI approach of emphasizing infiltration, evapotranspiration and/or harvesting/reuse of stormwater. Site design measures shall be used to reduce the amount of runoff, comparable to the NSRR, to the extent technically feasible and not prohibited by other constraints such as land use regulations or other state or federal regulations. Any remaining runoff from impervious drainage management areas may be directed to one or more LID/GI facilities, extended filtration facilities, or other area. Site planning procedures shall require projects to consider site layout options that optimize retention of stormwater.	Prioritize LID/GI: SRC Chapter 71 requires projects exceeding specified thresholds to use GSI/MEF to mitigate the impacts of stormwater runoff from the new and replaced impervious surfaces. This means the extent to which a requirement or Standard must be complied with as constrained by the physical limitations of the site, practical considerations of engineering design, and reasonable considerations of financial costs and environmental impacts. Design Standards include site planning and impervious reduction techniques. Include pollutant removal performance goals: Gap in compliance Adequately maintain pre-development site hydrology: SRC flow control performance standards include (1) The post-development peak runoff rates from design storm events equal to or less than one-half the 2-year, 24-hour design storm event shall not exceed the predevelopment peak runoff rate for one-half the 2-year, 24-hour design storm event; (2) The post-development peak runoff rates from design storm events equal to or less than the 10-year, 24-hour design storm event shall not exceed the predevelopment peak runoff rate for the 10-year, 24-hour design storm event; and (3) If a volume-based stormwater flow control facility is used, the detention volume shall be sufficient to detain a 100-year design storm event without overflow. Reduce the discharge of pollutants from new/replaced impervious surfaces: "Treatment facilities shall be designed and installed to capture and treat at least 80% of the average runoff volume predicted by the design storm event for that portion of the site requiring treatment." Both flow control and treatment are required for projects meeting thresholds. Where flow-control only measures are constructed, treatment measures must also be constructed to meet the requirements in SRC Sec. 71, and vice versa.	SRC Sec. 71.095 (c) Design Standards Div 400, Section 4.2(b) Green Stormwater Infrastructure to the Maximum Extent Feasible (GSI/MEF)	Current standards do not specify pollutant removal performance goals beyond the volume-based requirement to treat 80% of the average runoff. Salem will need to document how their program meets overall goals of retention and treatment similar to the retention performance standard.	"Adequately" maintaining pre-development hydrology appears to be defined in the following paragraphs as "measured by rate, duration, and volume of discharge".
		At sites where retention is infeasible due to technical and/or site constraints, the Permittee must develop a process whereby at least 80% of average annual runoff from new and/or replaced impervious surfaces, must be treated with an extended filtration stormwater control prior to discharge, to target removal of TSS. Stormwater discharged offsite must target natural surface or predevelopment hydrology (as measured by rate, duration, and/or volume of discharge) to minimize the potential for hydromodification impacts, except in circumstances where the Permittee can demonstrate that the risk of hydromodification impacts is negligible, (e.g., large tidally influenced waterways or flow-managed waterways). More stringent requirements may be used, and/or certain requirements may be tailored to local circumstances through the use of sub-basin plans or other similar stormwater management planning efforts.	SRC 71.095(c) and Sec 71.100(c): Treatment facilities shall be designed and installed to capture and treat at least 80% of the average runoff volume predicted by the design storm event for that portion of the site requiring treatment. SRC flow control performance standards have peak flow rate and volume-based criteria. Flow duration requirements are not included. (1) The post-development peak runoff rates from design storm events equal to or less than one-half the 2-year, 24-hour design storm event shall not exceed the predevelopment peak runoff rate for one-half the 2-year, 24-hour design storm event; (2) The post-development peak runoff rates from design storm events equal to or less than the 10-year, 24-hour design storm event shall not exceed the predevelopment peak runoff rate for the 10-year, 24-hour design storm event; and (3) If a volume-based stormwater flow control facility is used, the detention volume shall be sufficient to detain a 100-year design storm event without overflow.	SRC Sec 71.095(c) and Sec 71.100(c)	The City does not require flow duration targets for matching predeveloped hydrology. However, enhancing infiltration does address flow duration. Given peak flow duration matching is not specifically required, Salem's standards are okay as is, and they are meeting the 80% of average annual runoff volume requirement.	
iv.		**Water Quality Benefit Offset Programs**				
		The Permittee may develop water quality benefit offset programs as options for sites that, under Option A of Schedule A.3.e.iii, cannot meet the NSRR and for which full treatment of the NSRR design storm event is impracticable, or for sites under Option B that require special consideration for other reasons, or for sites unable to meet other stormwater requirements established by the Permittee. Economic considerations alone are insufficient reason for not requiring adherence to the retention or treatment standards above. The options may include, but are not limited to stormwater mitigation options, a payment-in lieu program, groundwater replenishment program, or another option that matches the water quality goals of retaining or treating stormwater at any given site. If the Permittee choose to provide one or more water quality benefit offset programs, the Permittee must develop and document how the alternative option works and what the standards and management systems are to value, estimate, and/or account for the ecological impact of untreated stormwater at qualifying sites. All programs developed should implement mitigation or other projects in the same sub-watershed (as defined in Schedule D) as the proposed project, to the degree possible. Exceptions should be documented with appropriate rationale.	SRC 71.025(a) Fee-in-lieu of Construction: City code authorizes the Director to "allow a developer to enter into a voluntary agreement with the City for the payment of a fee-in-lieu of constructing a stormwater facility". A requirement of this program is: "in no event shall the Director allow a developer to enter into a fee-in-lieu agreement with the City if the resulting post-development conditions could result in a violation of the City's NPDES municipal stormwater permit." SRC 71.025(a) Fee-in-lieu of Construction: The fee-in-lieu program includes specifications that "This determination shall consider the feasibility of constructing the stormwater facility on the site; the costs associated with construction, operations, and maintenance of the stormwater facility; and the benefits provided by the stormwater facility in terms of accomplishing the purposes of this chapter." SRC 71.025(b) Fee-in-lieu of Construction: The code language says that the fee can (not must) be used to fund all or a portion of the cost of planning, designing, acquiring land for, or constructing a new or existing public stormwater facility. SRC 71.030 Fee-in-lieu amount: The fee-in-lieu amount shall be in accordance with a fee schedule approved by Council and will be based on 100% of the average cost of constructing an equivalent stormwater facility.	SRC Sec. 71.025, 71.030	N/A	
v.		**Post-Construction Site Runoff Plan Review**				
		The Permittee must have documented, standardized procedures for the review and approval of structural stormwater control plans for new development and redevelopment projects, and procedures must be detailed or referenced in the SWMP Document.	Design Standards Appendix 4A contains Stormwater Submittal Requirements.	Design Standards Div 400, Appendix 4A	N/A	Following updates to the post construction design standards, review and update (if necessary) the stormwater submittal requirements checklist for land use and design submittals, outlining what content and supporting calculations are required at each level of submittal. The checklist guides applicants in providing the correct information, so that the City can evaluate the technical feasibility and site constraints related to onsite management of stormwater runoff. Following updates to the post construction design standards, review and update (if necessary) the internal SOP for stormwater plan review that guides the review and approval of structural stormwater control plans.
		At a minimum, the Permittee must review and approve or disapprove plans for structural stormwater control at new development and redevelopment sites that result from the creation or replacement of impervious surface equal to or greater than 1,300 SF for single family residential or 5,000 SF for all other development projects; and sites that use alternative compliance to meet the retention requirement, before construction permits are issued. The Permittee must review plans for consistency with the ordinance/regulatory mechanism and specifications required by Schedule A.3.e.i.	Design Standards Appendix 4A.1 and 4A.2: The Simplified Method may be used to design stormwater facilities for SFR projects and for other projects where the total impervious area is less than 10,000 SF. For projects where the impervious surface area is 10,000 SF or more, the Engineered Method must be used to design the stormwater facilities. For these projects, the applicant will submit all the items listed in Subsection 4A.1—Simplified Method Submittal Guide in addition to a Stormwater Management Report.	Design Standards Div 400, Appendix 4A including 4A.1 and 4A.2	The 10,000 SF threshold for large projects/non-single family residential projects to require flow control or treatment does not meet the 5,000 SF threshold requirement. It is also not clear from the SRC or Design Standards that SFR projects must submit a stormwater submittal. The use of "may be used" does not specify that they must use either the Simplified or Engineered Method.	Change the language from "may be used" to something more definitive.
		The Permittee must require and subsequently review and approve or disapprove the written technical justification to evaluate any technical infeasibility or site constraints which prevent the onsite management of the runoff amount stipulated in the NSRR or the site's ability to meet the alternative site performance standard. The written technical justification must be in the form of a site-specific hydrologic or technical analysis. The Permittee must establish criteria or circumstances under which such analysis must be conducted, and the results of the Permittee's review must be documented. Such infeasibility or constraint factors may include, but are not limited to, low infiltration rates, shallow bedrock, high groundwater, groundwater contamination, soil instability as documented by geotechnical analysis, or land use or zoning constraints. The determination that the NSRR or Alternative Site Performance Standard cannot be achieved at a project site must be based on documented infeasibility criteria or constraints considering multiple technical factors.	Design Standards Appendix 4E.10 (c) - Implementing Green Stormwater Infrastructure to the Maximum Extent Feasible, Approval Process: Stipulates that The Director may require an applicant to provide an engineering report, signed and stamped by a licensed professional.	Design Standards Appendix 4E.10(c)	This standard does not require a site-specific hydrologic report stamped by a licensed professional. The standard is the Director "may require" an engineering report, signed and stamped by a licensed professional. Need to determine the review criteria considering multiple technical factors for determining if the NSRR cannot be achieved.	Did not identify any other standards relating to justification of technical infeasibility besides this one for the GSI to MEF when conducting this analysis

Attachment D: Post-Construction Gap Analysis

		Requirement from the Phase I Permit (effective October 1, 2021)	Current Status of Salem's Standards with Respect to Addressing the Requirement	Manual and/or Code Reference	Identified Gaps	Further Clarification or Discussion
vi.		Long-Term Operation and Maintenance (O&M)				
		The Permittee must continue to maintain an inventory and implement a strategy to ensure that all public and private stormwater controls that discharge to the MS4 are operated and maintained to the maximum extent practicable. This strategy must, at minimum, include the following:	Design Standards Div 400, Sec. 4.2(s) Operations and Maintenance Requirements: specifies that "Operations and Maintenance (O&M) requirements apply to all private stormwater treatment facilities and related facility components. Owners are required to provide access to the City and check their facilities regularly to determine maintenance needs." In addition, privately owned and maintained stormwater facilities require the submittal of a "Private Facility Agreement" and a "Facility Maintenance Form".	Design Standards Div 400, Sec. 4.2(s)	N/A	Do the Private Facility Agreement or Facility Maintenance Forms needs to be updated?
	(A)	Legal authority allowing the Permittee to inspect and require effective operation and maintenance of privately owned and operated stormwater controls that discharge to the MS4.	Administrative Rule 109-011 1.1(c) Introduction, Authority to Adopt: The requirements for O&M are outlined and cite legal authorization as SRC Chapters 20J, 70, and 71. The requirements contained in the Administrative Rule 109-011 shall be consistent with the SRC. In the cases where a conflict may exist, the SRC takes precedence.	Administrative Rule 109-011	N/A	
	(B)	Continued maintenance of the inventory and mapping developed under the previous permit term for all public stormwater facilities, as well as private facilities which discharge to the MS4 and which have been either constructed since January 1, 2011, used to estimate pollutant load reduction as part of the TMDL benchmark evaluation, or otherwise determined by the Permittee to be major stormwater facilities or controls.	N/A - procedural (see the City's 2022 SWMP).			
	(C)	Maintenance and inspection criteria, rationale, priorities, frequency, and procedures, and an inspection schedule ensuring compliance with the O&M requirements of each type of stormwater control operated by the Permittee and by other private entities.	All specified in Administrative Rule 109-011 - Operations and Maintenance of Stormwater Facilities	Administrative Rule 109-011	N/A	
	(D)	Tracking mechanism(s) for documenting inspections, as well as verification that site owners are prepared to meet the O&M requirements for private stormwater controls. The tracking mechanism(s) must document enforcement actions and compliance response. For stormwater controls that include vegetation, the O&M requirements must at minimum include requirements to remove sediment accumulation and manage the vegetation community to ensure the functionality of the control. For stormwater controls that include soils in the treatment process, O&M requirements must at minimum include requirements for practices to maintain soil permeability. For manufactured stormwater technology, O&M requirements must include, as applicable, documentation of the model number, manufacturer, or equivalent identifiers where available, information about suppliers and/or vendors, and schedules for replacement at regular intervals, as well as plans or contracts for an appropriate supply of such components to ensure proper treatment function and timely maintenance.	Administrative Rule 109-011 - O&M, 1.5 Maintenance or Private Stormwater Facilities and 1.6 Minimum Requirements for Operations and Maintenance These sections specify the recordkeeping requirements. The Private Stormwater Facilities Agreement is required. It provides address and contact info of property owner, documents locations of facilities, establishes the responsibility of the owner for inspection, operations, and maintenance, identifies the specific maintenance activities that will be implemented, and grants the City access for inspection and emergency action. Administrative Rule 109-011 Appendix B contains Facility Maintenance forms. These include specifications for vegetations including schedule and direction for maintenance, specification that amended soils shall function properly. Item number 8 contains specifications for Manufactured Treatment Technology to be maintained in accordance with manufacturer specs.	Administrative Rule 109-011 - O&M, Sections 1.5 and 1.6; Appendices A and B	Documentation of a tracking mechanism for documenting enforcement actions and compliance was not identified. Appendix B, item 8 - Manufactured Treatment Technology does not require documentation of the model number, manufacturer, etc. for manufactured facilities.	
	(E)	Required training or appropriate qualifications to inspect private stormwater facilities.	Administrative Rule 109-011 **Most** facilities listed in Appendix B contain the requirement that "Training and/or written guidance information for operating and maintaining treatment wetlands shall be provided to all property owners and tenants. This Facility Maintenance Form can be used to meet this requirement."	Administrative Rule 109-011 - O&M, Appendix B	All facilities should have this requirement for training.	Will need to evaluate whether the language that "This Facility Maintenance Form can be used to meet this requirement" will be enough to fulfill the permit requirement. Is this training provided to all those private facility owners sufficient to meet Permit requirements?
	(F)	Reporting requirements, where appropriate as determined by the Permittee, for privately owned and operated stormwater controls.	Administrative Rule 109-011 Appendix B is an O&M plan for existing stormwater controls	Administrative Rule 109-011 - O&M, Appendix B	N/A	
	(G)	The location of all public and private stormwater controls installed in compliance with this permit must be included with the MS4 Map and Digital Inventory described in Schedule A.3.c.i.	N/A - procedural (see the City's 2022 SWMP).			
vii.		Training and Education				
		The Permittee must ensure that staff responsible for performing post-construction runoff site plan reviews, administering the post-construction program requirements, and performing O&M practices or evaluating compliance with long-term O&M requirements, are trained or otherwise qualified to conduct such activities, and training strategies and frequencies for staff must be described or referenced in the SWMP Document.	N/A - procedural (see the City's 2022 SWMP).			
viii.		Tracking and Assessment				
		The Permittee must maintain records for activities conducted to meet the requirements of the Post-Construction Site Runoff program, and include a descriptive summary of their activities and report on metrics or tracking measures related to implementation of the program in the corresponding Annual Report.	N/A - procedural (see the City's 2022 SWMP).			

Note:

Cells shaded in this color indicate that the requirement in the NPDES MS4 Permit is not one that is typically addressed in code or standards.

Acronyms and Abbreviations:

SRC	Salem Revised Code
O&M	Operation and Maintenance
N/A	Not Applicable
MEF	Maximum Extent Feasible
LID	Low Impact Development
GI	Green Infrastructure
GSI	Green Stormwater Infrastructure
MS4	Municipal Separate Storm Sewer System

Attachment E: Definitions Comparison Summary

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List of documents consulted:

Salem's Phase I Permit

Salem's Revised Code Sections 70.005, 75.0202, 82.005

Admin Rules - Chapter 109-001 Acronyms and Definitions

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Term	Salem's Phase I Permit Definition	Salem Revised Code Sections 70.005, 75.0202, 82.005 Definitions	Admin Rules-Chapt 109-001 Acronyms and Definitions	Notes/Suggestions for Updating Definitions
Adaptive Management	A structured, iterative process designed to refine and improve stormwater programs over time by evaluating results and adjusting actions based on what has been learned.	Not defined.	Not defined.	Add the Permit definition to the SRC and Admin Rules, if the term is used in the standards update.
Antecedent Dry Period	The period of dry time between precipitation events that include less than 0.1 inch of precipitation.	Not defined.	Not defined.	Add the Permit definition to the SRC and Admin Rules, if the term is used in the standards update.
Best Management Practices (BMPs)	Schedules of activities, prohibition of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the state. BMPs are also treatment requirements operating procedures, and practices to control runoff, spillage, or leads, sludge, or waste disposal, or drainage from raw material storages. See 40 CFR § 122.2 and 122.44(k). For the purposes of this permit, BMPs are synonymous with structural and non-structural stormwater controls and include the schedule of activities, controls, prohibition of practices, maintenance procedures and other management practices designed to prevent or reduce pollution	Activities, prohibitions of practices, operational and maintenance procedures, structural facilities, or managerial practices or devices that, when used singly or in combination, prevent, reduce, or treat contamination in drainage water, prevent or reduce soil erosion, or prevent or reduce other adverse effects of drainage water on receiving waters. BMPs prescribed by the Director, whether or not adopted by ordinance, shall be the BMPs required for compliance with this Code.	The technique, measure, or structural control that is used for a given set of conditions to manage and prevent erosion, control sediment, and improve the quality of storm water runoff.	Review and revise this definition for consistency between the Permit and the SRC and Admin Rules, if the term is used in the standards update.
CFR	The Code of Federal Regulations, which is the official annual compilation of all regulations and rules promulgated during the previous year by the agencies of the United States government, combined with all the previously issued regulations and rules of those agencies that are still in effect.	Not defined.	Not defined.	Add the Permit definition to the SRC and Admin Rules, if the term is used in the standards update.
Chronic Illicit Discharges	Continuous or repeated illicit discharges to an MS4 potentially resulting from sanitary/wastewater connections to an MS4, sanitary/wastewater inflows into an MS4, unpermitted industrial wastewater discharges to the MS4, or other types of illegal dumping or poor housekeeping practices upstream from an outfall where irregular flows, color, smell, or other monitoring parameters indicate an issue that may need repeat investigations over time to ensure cross connections or illegal dumping are remedied. Chronic illicit discharges may not be long-term and ongoing as in the case of illicit connections that can be stopped easily. Chronic illicit discharges may be defined by inconclusive findings of outfall investigations indicating pollutant discharge or repeated reports by members of the public that have not been traced back to a definite source.	Not defined.	Not defined.	Add the Permit definition to the SRC and Admin Rules, if the term is used in the standards update.
City	Not defined.	Not defined.	Not defined.	Add this definition to the SRC and Admin Rules.
Clean Water Act (CWA)	Refers to what was formally called the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972) Public Law 92-500, as amended by Public Law 95-217, Public Law 95-576, Public Law 96-483, and Public Law 97-117, 33 U.S.C. § 1251 et seq. [40 CFR §122.2].	Not defined.	Not defined.	Add the Permit definition to the SRC and Admin Rules, if the term is used in the standards update.
Construction activity	Includes, but is not limited to, clearing, grading, excavation, and other site preparation or ground disturbing work related to the construction of residential buildings and non-residential buildings, and heavy construction (e.g., highways, streets, bridges, tunnels, pipelines, transmission lines and industrial non-building structures).	Not defined.	Not defined.	Add the Permit definition to the SRC and Admin Rules, if the term is used in the standards update.
Control Measure	As used in this permit, refers to any action, activity, Best Management Practice or other method used to control the discharge of pollutants in MS4 discharges.	Not defined.	Not defined.	Add the Permit definition to the SRC and Admin Rules, if the term is used in the standards update.
Conveyance System	Not defined.	Not defined.	Not defined.	Add this definition to the SRC and Admin Rules, if the term is used in the standards update.
Design Storm	Not defined.	Not defined.	The distribution of rainfall intensity over time, identified to have a probability of recurrence, given in years (i.e., five-year design storm). Often, the term “design storm” is truncated when describing design storm characteristics (i.e., five-year flow).	Add this definition to the SRC.
Design Storm Event	Not defined.	The size of the storm event used to calculate runoff volumes and peak rates of discharge when designing stormwater facilities. The design storm event is the total inches of rainfall, distributed during a 24-hour period using a standard synthetic rainfall distribution identified as Type I-A by the Natural Resources Conservation Service.	Not defined.	Add this definition to the Admin Rules.
Detention	Not defined.	Not defined.	Not defined.	Add this definition to the SRC and Admin Rules, if the term is used in the standards update.

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Discharge	Of a pollutant means any addition of any "pollutant" or combination of pollutants to "waters of the state" from any "point source," or any addition of any pollutant or combination of pollutants to the waters of the "contiguous zone" or the ocean from any point source other than a vessel or other floating craft which is being used as a means of transportation. This definition includes additions of pollutants into waters of the state from surface runoff, which is collected or channeled by humans; discharges through pipes, sewers, or other conveyances owned by a State, municipality, or other person, which do not lead to a treatment works; and discharges through pipes, sewers, or other conveyances, leading into privately owned treatment works. This term does not include an addition of pollutants by any "indirect discharger" [40 CFR §122.2].	Not defined.	Not defined.	Add the Permit definition to the SRC and Admin Rules, if the term is used in the standards update.
Downstream Analysis	Not defined.	Not defined.	Not defined.	Write a new definition for this term to be added to the Admin Rules and SRC, if the term is used in the standards update.
Drywell	Not defined.	Not defined.	Not defined.	Write a new definition for this term to be added to the Admin Rules and SRC, if the term is used in the standards update.
Effective Impervious Area	The subset of the total impervious area often hydrologically connected to stream networks via stormwater infrastructure. Many methods of calculating effective impervious area have been developed, and its importance in runoff modeling and watershed health has been well established in stormwater related academic and scientific literature, making it a governing characteristic of urban watersheds.	Not defined.	Not defined.	Add the Permit definition to the SRC and Admin Rules, if the term is used in the standards update.
Erosion	The process of carrying away soil particles by the action of water, wind, or other process.	The wearing away of the ground surface, or the movement, detachment or dislocation and transport of sediment including soil particles by the action of water or wind.	Not defined.	Review and revise this definition for consistency between the Permit and the SRC and Admin Rules, if the term is used in the standards update.
Erosion Control Permit	Not defined.	A permit issued by the City for the construction of facilities for the prevention or control of erosion, runoff, or sediment.	Not defined.	Review and revise this definition for consistency between the Permit and the SRC and Admin Rules, if the term is used in the standards update.
Erosion Prevention	Not defined.	A measure that prevents or reduces the creation of sediment.	Not defined.	Add the SRC definition to the Admin Rules, if the term is used in the standards update.
Erosion and Sediment Control Plan	A site-specific plan, map, or document that illustrates and/or lists erosion and sediment control measures that are implemented by type and location on a construction site, that for operators and inspectors alike: (1) identifies potential sources of stormwater pollution at the construction site; (2) describes stormwater controls to prevent pollutants in stormwater discharges from the construction site; (3)tracks or records updates and corrective actions implemented as site conditions or needs change; and (4) identifies procedures the operator will implement to comply with the terms and conditions of this permit.	Not defined.	Not defined.	Add the Permit definition to the SRC and Admin Rules, if the term is used in the standards update.
Evaporate	Rainfall that is changed or converted into a vapor.	Not defined.	Not defined.	Add the Permit definition to the SRC and Admin Rules, if the term is used in the standards update.
Evapotranspiration	The sum of evaporation and transpiration of water from the earth's surface to the atmosphere. It includes evaporation of liquid or solid water plus the transpiration from plants.	Not defined.	Not defined.	Add the Permit definition to the SRC and Admin Rules ,if the term is used in the standards update.
Extended Filtration	The technique of using stormwater facilities designed to promote stormwater runoff filtration through natural or engineered media. The runoff is treated through physical, biological, and chemical processes as it filters through the media of the facility. Filtration is promoted by constructing the facility with media of an appropriate infiltration rate and typically includes an underlying aggregate rock reservoir or other engineered flow-through and filtration media, with an underdrain to convey to a discharge location.	Not defined.	Not defined.	Add the Permit definition to the SRC and Admin Rules, if the term is used in the standards update.
Final Stabilization	Is determined by satisfying the following criteria: (1) there is no reasonable potential for discharge of a significant amount of construction related sediment or turbidity to surface waters; (2) construction materials and waste have been removed and disposed of properly. This includes any sediment that was being retained by the temporary erosion and sediment controls; (3) all temporary erosion and sediment controls have been removed and disposed of properly, unless doing so conflicts with local requirements; (4) all soil disturbance activities have stopped and all stormwater discharges from construction activities that are authorized by this permit have ceased; (5) all disturbed or exposed areas of the site are covered by either final vegetative stabilization or permanent stabilization measures. However, temporary or permanent stabilization measures are not required for areas that are intended to be left unvegetated or unsterilized following construction (such as dirt access roads, utility pole pads, areas being used for storage of vehicles, equipment, or materials), provided that measures are in place to eliminate or minimize erosion.	Not defined.	Not defined.	Add the Permit definition to the SRC and Admin Rules, if the term is used in the standards update.

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Flow Control	Not defined.	Not defined.	The practice of limiting the release of peak flow rates and volumes from a site. Flow control is intended to protect downstream properties, infrastructure, and natural resources from the increased stormwater runoff peak flow rates and volumes resulting from development.	Add the Admin Rules definition to the SRC, if the term is used in the standards update.
Flow Control Facility	Not defined.	A stormwater facility designed to control the flow rate, flow volume, or flow duration of drainage water.	Not defined.	Add the SRC definition to the Admin Rules, if the term is used in the standards update.
Green Infrastructure (GI)	A specific type of stormwater control using vegetation, soils, and natural processes to manage stormwater. At the scale of a neighborhood or site, green infrastructure refers to stormwater management systems designed to mimic nature by reducing and/or storing stormwater through infiltration, evaporation, and transpiration. At the site level, such measures may include the use of plant or soil systems, permeable pavement or other pervious surfaces or substrates, stormwater harvest and reuse, or landscaping to store, infiltrate, or evapotranspiration stormwater and reduce flows to sewer systems or to surface waters. At the scale of city or county, green infrastructure refers to the patchwork of natural areas that provides flood protection and natural processes that remove pollutants from stormwater.	Not defined.	Not defined.	GSI (SRC and Admin Rules) vs GI: GI definition is broader to include plant or soil systems. GSI requires infiltration. Revise definitions if needed, and review how the terms are used in the SRC and Admin Rules for consistency.
Green Stormwater Infrastructure	Not defined.	a stormwater facility that mimics natural surface hydrologic functions through infiltration or evapotranspiration, or that involves stormwater reuse.	A stormwater facility that mimics natural surface hydrologic functions through infiltration or evapotranspiration, or that involves stormwater reuse (SRC 71.005(7)).	
Ground Disturbing Activity	Not defined.	Any activity that exposes soil through the use of mechanical equipment, including, but not limited to, grading, excavating, filling, clearing, or working of land. Such disturbance may be permanent (i.e., gravel mining, farming, gardening, sports fields, etc.); or temporary or short-term duration such as construction, excavation, fill, grading, landscape installation, or other vegetative clearing activities.	Not defined.	Add the SRC definition to the Admin Rules, if the term is used in the standards update.
Impaired Water	Any waterbody that does not meet applicable water quality standards for one or more parameters as identified on Oregon's 303(d) list.	Not defined.	Not defined.	Add the Permit definition to the SRC and Admin Rules, if the term is used in the standards update.
Infiltration	The process by which storm water penetrates into soil.	Not defined.	Not defined.	Add the Permit definition to the SRC and Admin Rules, if the term is used in the standards update.
Illicit Connections	Include, but are not limited to, pipes, drains, open channels, or other conveyances that are connected to the MS4 but were constructed for or are currently being used to convey non-stormwater discharges to the public stormwater system or waters of the state and are controlled under the permittee's IDDE program.	any drain or conveyance system that results in a discharge to a stormwater system or receiving water that is not entirely drainage water.	Not defined.	Review and revise this definition for consistency between the Permit and the SRC and Admin Rules, if the term is used in the standards update.
Illicit Discharge	Any discharge to a municipal separate storm sewer system that is not composed entirely of stormwater except discharges authorized under Section A.4.a.xii., discharges permitted by a NPDES permit or other state or federal permit, or otherwise authorized by DEQ.	Not defined.	Not defined.	Add the Permit definition to the SRC and Admin Rules, if the term is used in the standards update.
Impervious	Not defined.	Not defined.	Areas or surfaces located above ground, at the ground surface, or below ground which retard saturation of direct rainfall into the land subsurface or otherwise cause stormwater to run off the land surface at an increased rate of flow from that present under natural, undeveloped conditions.	Review and revise these definitions for consistency of use and the Permit definition, if the term is used in the standards update. Impervious can imply land coverage below grade and may be used to indicate threshold exceedance. Clarify in definitions of impervious to include gravel.
Impervious Surface	Any surface resulting from development activities that prevents the infiltration of water or results in more runoff than in the undeveloped condition. Common impervious surfaces may include but are not limited to building roofs, traditional concrete or asphalt paving on walkways, driveways, parking lots, gravel lots and roads, and packed earthen materials.	Any surface exposed to rainwater from which most water runs off.	Not defined.	
Integrated Pest Management	An ecosystem-based strategy that focuses on long-term prevention of pests or their damage through a combination of techniques such as biological control, habitat manipulation, modification of cultural practices, and use of resistant plant varieties.	Not defined.	Not defined.	Add the Permit definition to the SRC and Admin Rules, if the term is used in the standards update.
Landscape Architect	Not defined.	Not defined.	Not defined.	Write a new definition for this term to be added to the Admin Rules and SRC, if the term is used in the standards update.
Large Project	Not defined.	Not defined.	Not defined.	Add a definition for Large Project to the SRC and Admin Rules.

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Low Impact Development (LID)	A stormwater management approach that seeks to mitigate the impacts of increased runoff and stormwater pollution using a set of planning, design and construction approaches and stormwater management practices that promote the use of natural systems, green infrastructure, and other techniques for infiltration, filtration, evapotranspiration, and reuse of rainwater, and can occur at a wide range of landscape scales (e.g., regional, community and site). Low impact development is a comprehensive land planning and engineering design approach to stormwater management with a goal of mimicking the pre-development hydrologic regime of urban and developing watersheds.	Not defined.	Not defined.	Add the Permit definition to the SRC and Admin Rules, if the term is used in the standards update. The City should include a definition of LID to cover site planning and impervious reduction practices.
Maximum Extent Feasible	Not defined.	the extent to which a requirement or standard must be complied with as constrained by the physical limitations of the site, practical considerations of engineering design, and reasonable considerations of financial costs and environmental impacts	The extent to which a requirement or standard must be complied with as constrained by the physical limitations of the site, practical considerations of engineering design, and reasonable considerations of financial costs and environmental impacts (SRC 71.005(12)).	Same definition between the SRC and Admin Rules.
Maximum Extent Practicable (MEP)	The technology-based discharge standard for municipal separate storm sewer systems to reduce pollutants in storm water discharges that was established by Section 402(p)(3)(B)(iii) of the Clean Water Act [33 U.S.C §1342(p)(3)(B)(iii)].	Not defined.	Not defined.	Add the Permit definition to the SRC and Admin Rules, if the term is used in the standards update.
Minimize	To reduce and/or eliminate to the extent achievable using control measures (including BMPs) that are technologically available, economically practicable, and achievable in light of best industry or municipal practices.	Not defined.	Not defined.	Add the Permit definition to the SRC and Admin Rules, if the term is used in the standards update.
Municipal Separate Storm Sewer System (MS4)	Defined in 40 CFR §122.26(b) and means a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains): (I) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, storm water, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under Section 208 of the Clean Water Act that discharges to waters of the United States; (ii) Designed or used for collecting or conveying storm water; (iii) Which is not a combined sewer; and (iv) Which is not part of a Publicly Owned Treatment Works as defined at 40 CFR §122.2.	Not defined.	Not defined.	Add the Permit definition to the SRC and Admin Rules, if the term is used in the standards update.
Municipality	A city, town, borough, county, parish, district, association, or other public body created by or under state law and having jurisdiction over disposal of sewage, industrial wastes, or other wastes, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under Section 208 of the Clean Water Act.	Not defined.	Not defined.	Add the Permit definition to the SRC and Admin Rules, if the term is used in the standards update.
National Pollutant Discharge Elimination System (NPDES)	The national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under sections 307, 402, 318, and 405 of Clean Water Act [40 CFR §122.2].	Not defined.	Not defined.	Add the Permit definition to the SRC and Admin Rules, if the term is used in the standards update.
New Impervious Surface	Not defined.	Not defined.	Not defined.	Write a new definition for this term to be added to the Admin Rules and SRC, if the term is used in the standards update.
New Pervious Surface	Not defined.	Not defined.	Not defined.	Write a new definition for this term to be added to the Admin Rules and SRC, if the term is used in the standards update.
NPDES MS4 Phase I Permit	Not defined.	Not defined.	Not defined.	Write a new definition for this term to be added to the Admin Rules and SRC, if the term is used in the standards update.
Non-Stormwater Pollution Controls	Not defined.	Not defined.	Not defined.	*Used in the Admin Rules.* Write a new definition for this term to be added to the Admin Rules and SRC, if the term is used in the standards update.

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List of documents consulted:

Salem's Phase I Permit

Salem's Revised Code Sections 70.005, 75.0202, 82.005

Admin Rules - Chapter 109-001 Acronyms and Definitions

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Term	Salem's Phase I Permit Definition	Salem Revised Code Sections 70.005, 75.0202, 82.005 Definitions	Admin Rules-Chapt 109-001 Acronyms and Definitions	Notes/Suggestions for Updating Definitions
Non-structural Stormwater Controls or BMPs	Stormwater controls in the form of development standards or other regulatory mechanisms intended to minimize and treat stormwater by minimizing impervious surfaces and by using soil infiltration, evaporation, and transpiration. These controls may also take the form of procedural practices to prevent pollutants from contaminating stormwater. The use of this term in this Permit is consistent with the discussion of non-structural stormwater BMPs in 64 Federal Register 68760 (December 9, 1999) which encompasses preventative actions that involve management and source controls such as: (1) policies and ordinances that provide requirements and standards to direct growth to identified areas, protect sensitive areas such as wetlands and riparian areas, maintain and/or increase open space (including a dedicated funding source for open space acquisition), provide buffers along sensitive waterbodies, minimize impervious surfaces, and minimize disturbance of soils and vegetation; (2) policies or ordinances that encourage infill development in higher density urban areas, and areas with existing storm sewer infrastructure; (3) education programs for developers and the public about project designs or stormwater design standards that minimize water quality impacts; and (4) other measures such as minimization of the percentage of impervious area after development, use of measures to minimize directly connected impervious areas, and other source control measures such as good housekeeping, street sweeping, preventive maintenance, spill prevention, and public education and outreach.	Not defined.	Not defined.	Add the Permit definition to the SRC and Admin Rules, if the term is used in the standards update.
Outfall	A point source at the point where a municipal separate storm sewer discharges to waters of the State, and does not include open conveyances connecting two municipal separate storm sewers or pipes, tunnels, or other conveyances which connect segments of the same stream or other waters of the State and are used to convey waters of the State.	Not defined.	Not defined.	Add the Permit definition to the SRC and Admin Rules, if the term is used in the standards update.
Owner or Operator	The owner or operator of any “facility or activity” subject to regulation under the NPDES program.	Not defined.	Not defined.	Add the Permit definition to the SRC and Admin Rules, if the term is used in the standards update.
Pesticide	As used in this Permit carries the same definition as used in the Federal Insecticide, Fungicide, and Rodenticide Act and is any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest. Under FIFRA, pest is any insect, rodent, nematode, fungus, weed, or any other form of terrestrial or aquatic plant or animal life or virus, bacteria, or other micro-organism.	Not defined.	Not defined.	Add the Permit definition to the SRC and Admin Rules, if the term is used in the standards update.
Pollutant	Dredged spoil; solid waste; incinerator residue; sewage; garbage; sewerage sludge; munitions; chemical wastes; biological materials; radioactive materials; heat; wrecked or discarded equipment; rock; sand; cellar dirt; and industrial, municipal, and agricultural waste discharged into water. [40 CFR §122.2]	Any substance that affects, or has the potential to affect, water quality in a manner that is detrimental to human health or safety or to the environment.	Not defined.	Review and revise this definition for consistency between the Permit and the SRC and Admin Rules, if the term is used in the standards update.
Pollutants of Concern	Defined in NPDES permitting as 1) pollutants with applicable Technology Based Effluent Limitations (TBELs) defined in an NPDES permit based on national or state standards or on a case by case basis, 2) pollutants for which a wasteload allocation (WLA) has been assigned to a discharge through a TMDL, 3) those pollutants identified in a previous iteration of the discharger’s permit as needing Water Quality Based Effluent Limitations (WQBELs), 4) pollutants identified through monitoring as present in the effluent or stormwater discharges, or 5) pollutants not in any of the previous categories but otherwise expected to be present in the discharge. For this permit, use of the term is intended to focus on pollutants known by the permittee to be present in stormwater per categories 4) and 5), and prioritized for reduction via stormwater controls identified in this permit.	Not defined.	Not defined.	Add the Permit definition to the SRC and Admin Rules, if the term is used in the standards update.
Pollution Control Measures	Not defined.	Not defined.	Not defined.	Write a new definition for this term to be added to the Admin Rules and SRC, if the term is used in the standards update.
Pollution Generating Activities	Not defined.	Not defined.	Not defined.	*Current term used in the Admin Rules and are defined in SRC 71. Write a new definition for this term to be added to the Admin Rules and SRC, if the term is used in the standards update.
Pollution Generating Surfaces	Not defined.	Not defined.	Not defined.	Write a new definition for this term to be added to the Admin Rules and SRC, if the term is used in the standards update.
Non-Pollutant Generating Surfaces	Not defined.	Not defined.	Not defined.	Write a new definition for this term to be added to the Admin Rules and SRC, if the term is used in the standards update.
Point of Discharge	Not defined.	Not defined.	Not defined.	*As it related to the downstream analysis*. Write a new definition for this term to be added to the Admin Rules and SRC, if the term is used in the standards update.

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List of documents consulted:

Salem's Phase I Permit

Salem's Revised Code Sections 70.005, 75.0202, 82.005

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Term	Salem's Phase I Permit Definition	Salem Revised Code Sections 70.005, 75.0202, 82.005 Definitions	Admin Rules-Chapt 109-001 Acronyms and Definitions	Notes/Suggestions for Updating Definitions
Post-Construction Site Runoff Plan	A plan developed by a site owner or operator and/or their designer to demonstrate compliance with the post-construction stormwater management and long-term operation and maintenance requirements of this permit.	Not defined.	Not defined.	Add the Permit definition to the SRC and Admin Rules, if the term is used in the standards update.
Post-Developed Condition	Not defined.	Not defined.	Not defined.	Write a new definition for this term to be added to the Admin Rules and SRC, if the term is used in the standards update.
Predevelopment	Not defined.	The conditions on a site in its natural, undeveloped state, generally characterized by a mixture of trees, brush, weeds, and grass, and which is used to determine the allowable post-development discharge peak rates and flow volumes.	Not defined.	Currently defined in the SRC has site in its natural, undeveloped state. Review and revise the definition to be more clearly defined (i.e. is undeveloped state = Lewis and Clark?). In Appendix 4 pre-developed conditions are defined as "A homogeneous basin area will be assumed, regardless of the current conditions, when determining the peak runoff for pre-development conditions. The runoff characteristics for calculating allowable outflow are based on the combination of woods and grassland. These curve numbers have been calculated and provided in Appendix 4D—Hydrologic Analysis, Table 4D-6, “City of Salem Predevelopment.” These curve numbers shall always be used for determining pre-development flow condition selected for the predominate soil type where the project is located."
Predevelopment Hydrologic Function	The hydrology of a site reflecting the local rainfall patterns, soil characteristics, land cover, evapotranspiration, and topography. The term predevelopment as used in predevelopment hydrologic function is consistent with the term predevelopment as discussed in Federal Register Volume 64, Number 235 and refers to the runoff conditions that exist onsite immediately before the planned development activities occur. Predevelopment is not intended to be interpreted as the period before any human-induced land disturbance activity has occurred.	Not defined.	Not defined.	Add the Permit definition to the SRC and Admin Rules, if the term is used in the standards update.
Pretreatment	Not defined.	Not defined.	Not defined.	Write a new definition for this term to be added to the Admin Rules and SRC, if the term is used in the standards update.
Private Stormwater Facility	Not defined.	any facility that is not owned or operated by the City that has been installed or constructed for the purpose of removing pollutants from stormwater, or for controlling the discharge flow rate, flow duration, or flow quantity of stormwater.	Not defined.	Add the SRC definition to the Admin Rules, if the term is used in the standards update.
Private Stormwater System	Not defined.	Not defined.	Owned and operated by a private property owner, a storm collection and conveyance system located outside the building envelope which serves one or multiple building storm drains, catch basins, area drains, or other drainage facilities. Generally synonymous with private storm sewer and private storm drain.	Add the Admin Rules definition to the SRC, if the term is used in the standards update.
Professional Engineer	Not defined.	Not defined.	Not defined.	Write a new definition for this term to be added to the Admin Rules and SRC, if the term is used in the standards update.
Receiving Water	Not defined.	the surface water, groundwater, or wetland receiving any discharge of drainage water or pollutants.	Not defined.	Add the SRC definition to the Admin Rules, if the term is used in the standards update.
Redevelopment	A project on a previously developed site that results in the addition or replacement of impervious surface.	Not defined.	Not defined.	Add the Permit definition to the SRC and Admin Rules, if the term is used in the standards update.
Replaced Impervious Surface	Not defined.	The removal of impervious surface down to earth material and replacement with new impervious surface. Replacement does not include repair or maintenance activities on structures, paved surfaces, or facilities taken to prevent decline, lapse, or cessation in the use of the existing impervious surfaces as long as no additional hydrologic impact results from the repair or maintenance activity.	Not defined.	Add the SRC definition to the Admin Rules, if the term is used in the standards update.

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Replace or Replacement	in the context of this permit, these words will usually refer to the removal of an impervious surface that exposes soil followed by the placement of an impervious surface. Replacement does not include repair or maintenance activities on structures or facilities taken to prevent decline, lapse or cessation in the use of the existing structures, facilities, or impervious surface, as long as no additional hydrologic impact results from the repair or maintenance activity.	Not defined.	Not defined.	Add the Permit definition to the SRC and Admin Rules, if the term is used in the standards update.
Retention	Not defined.	Not defined.	Not defined.	Write a new definition for this term to be added to the Admin Rules and SRC, if the term is used in the standards update.
Retrofit	Not defined.	Not defined.	The creation or modification of an urban runoff management system in a previously developed area. This may include wet ponds, infiltration systems, wetland plantings, stream bank stabilization, and other BMP techniques for improving water quality and creating aquatic habitat. A retrofit can consist of the construction of a new BMP in a developed area, the enhancement of an older urban runoff management structure, or a combination of improvement and new construction.	Add the Admin Rules definition to the SRC, if the term is used in the standards update.
Seasonal High Groundwater	Not defined.	Not defined.	Not defined.	Write a new definition for this term to be added to the Admin Rules and SRC, if the term is used in the standards update.
Sediment Control	Not defined.	A measure that prevents or reduces the amount of eroded material leaving the site.	Not defined.	Add the SRC definition to the Admin Rules, if the term is used in the standards update.
Single Family Residential Project	Not defined.	The construction of one single family dwelling or two attached single family dwellings on a single existing unit of land that is zoned Single Family Residential (RS) where the total new and replaced impervious surface is 1,300 square feet or more, but less than 10,000 square feet.	Not defined.	Add the SRC definition to the Admin Rules, if the term is used in the standards update.
Source Controls	Not defined.	Structures or operations that minimize or prevent pollutants from coming in contact with drainage water through physical separation or management of activities.	Facilities and/or actions that address site activities and characteristics with the potential to generate pollutants that may not be addressed solely through the pollution reduction facilities.	Add the SRC definition to the Admin Rules, if the term is used in the standards update.
Stream	Not defined.	Not defined.	Not defined.	Write a new definition for this term to be added to the Admin Rules and SRC, if the term is used in the standards update.
Storm Drainage System	Not defined	All conduits, ditches, gutters, catch basins, or any other facilities convenient or necessary to carry away and dispose of stormwater and subsurface drainage, surface water, or unpolluted surplus water.	Not defined.	Add the SRC definition to the Admin Rules, if the term is used in the standards update.
Stormwater	Not defined	That portion of precipitation and snowmelt that does not naturally percolate into the ground or evaporate, but flows into receiving water by overland flow, interflow, pipes, and other features of a stormwater system.	Not defined.	Add the SRC definition to the Admin Rules, if the term is used in the standards update.
Stormwater or Stormwater runoff	Includes snow melt runoff, and surface runoff and drainage, and is defined in 40 CFR §122.26(b)(13). "Stormwater" means that portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, channels, or pipes into a defined surface water channel or a constructed stormwater control or infiltration facility.	Not defined.	Not defined.	Add the Permit definition to the SRC and Admin Rules, if the term is used in the standards update.
Stormwater Control	Refers to non-structural, structural stormwater controls and/or BMPs.	Not defined.	Not defined.	Add the Permit definition to the SRC and Admin Rules, if the term is used in the standards update. The Permit's definition is confusing, especially with the existence of "Structural Stormwater Controls or BMPs" as a separately defined term. Revise and revise the definition as needed.
Stormwater Facility	Not defined.	A facility designed to control the flow rate, flow volume, or flow duration of drainage water, or a facility designed to remove pollutants from drainage water.	Not defined.	Review and revise these definitions for consistency of use.

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Stormwater Management Facilities	Not defined.	Not defined.	Pipes, catch basins, waterways, detention basins, culverts, and other related facilities, used singularly or in combination for the purpose of collecting, conveying, storing, and/or treating stormwater runoff	Admin Rules definition includes conveyance; consistent terminology to be used for treatment facilities and flow control facilities not classified as GSI.
Stormwater Management Program (SWMP)	Refers to a comprehensive program that includes legal authority, permitting and stormwater control and facility design standards, capital projects and retrofits, monitoring and a stormwater management plan that collectively manages the quality of stormwater discharged from the municipal separate storm sewer system. For the purposes of this permit, the SWMP consists of the actions and activities conducted by the permittee as required by the permit and described in the permittee's SWMP Document.	Not defined.	Not defined.	Add the Permit definition to the SRC and Admin Rules, if the term is used in the standards update.
SWMP Document	The written summary that describes the comprehensive management practices, structural and non-structural controls (or BMPs), techniques, systems, and design and engineering methods employed to reduce the discharge of pollutants from the MS4 to the MEP in accordance with the terms of the permit. A SWMP Document includes or references stormwater plans, manuals, documents or code/ordinances, as applicable, describing the unique and/or cooperative means by which an individual permittee or entity implements the specific stormwater management control measures required by the permit.	Not defined.	Not defined.	Add the Permit definition to the SRC and Admin Rules, if the term is used in the standards update.
Stormwater Mitigation Bank Program	A program for offsite compliance that establishes a market with an entity that tracks the life cycle of an offsite mitigation credit by certifying the credit, issuing a tradable credit to the seller, transferring the ownership of the credit from the seller to the buyer, and use or retirement of the credit to receive a benefit when buyer of the credit is unable to meet a retention requirement on their site.	Not defined.	Not defined.	Add the Permit definition to the SRC and Admin Rules, if the term is used in the standards update.
Stormwater Payment-in-Lieu Program	A program for offsite compliance where the permittee or site owner/operator pays a fee in lieu of full compliance with Schedule A.3.e.iii on the development site with this fee based on volume ratios (e.g., volume of stormwater to be retained onsite to the volume to be retained at the mitigation site) or impervious area unavailable for infiltration, at a rate or rates specified by the permittee. The permittee can aggregate fees and apply them to a public stormwater structural or non-structural control at a later point in time.	Not defined.	Not defined.	Add the Permit definition to the SRC and Admin Rules, if the term is used in the standards update.
Stormwater System	Not defined.	all stormwater facilities and improvements such as catch basins, curbs, gutters, ditches, manmade channels, and storm drains, that collect, convey, or control the flow of drainage water or remove pollutants from drainage water.	Not defined.	Add the SRC definition to the Admin Rules, if the term is used in the standards update.
Structural Stormwater Controls or BMPs	Stormwater controls that are physically designed, installed, and maintained to prevent or reduce the discharge of pollutants in stormwater to minimize the impacts of stormwater on waterbodies. As noted in the 64 Federal Register 68760 (December 9, 1999), examples of structural stormwater controls or BMPs include: (1) storage practices such as wet ponds and extended-detention outlet structures; (2) filtration practices such as grassed swales, sand filters and filter strips; and, (3) infiltration practices such as infiltration basins and infiltration trenches.	Not defined.	Not defined.	Add the Permit definition to the SRC and Admin Rules, if the term is used in the standards update.
Subwatershed	A subdivision of a Watershed and is the sixth-level, 12-digit unit of the hydrologic unit hierarchy as defined by the National Watershed Boundary Dataset (USGS et al. 2013)	Not defined.	Not defined.	Add the Permit definition to the SRC and Admin Rules, if the term is used in the standards update.
Total Maximum Daily Load (TMDL) or applicable TMDL	Any TMDL, which has been issued or approved by EPA on or before the issuance date of this permit.	Not defined.	Not defined.	Add the Permit definition to the SRC and Admin Rules, if the term is used in the standards update.
TMDL Pollutant Load Reduction Benchmark (TMDL benchmark)	An estimated total pollutant load reduction target for each parameter or surrogate, where applicable, for waste load allocations established under an EPA-approved or EPA-issued TMDL. A benchmark is the anticipated pollutant load reduction goal to be achieved during the permit cycle through the implementation of the stormwater management program and BMPs identified in the SWMP Document. A benchmark is used to measure the effectiveness of the stormwater management program in making progress toward the waste load allocation, and is a tool for guiding adaptive management. A benchmark is not a numeric effluent limit; rather it is an estimated pollutant reduction target that is subject to the MEP standard. Benchmarks may be stated as a pollutant load range based upon the results of a pollutant reduction empirical model.	Not defined.	Not defined.	Add the Permit definition to the SRC and Admin Rules, if the term is used in the standards update.
Transpiration	To release water vapor into the atmosphere through plant stomata or pores.	Not defined.	Not defined.	Add the Permit definition to the SRC and Admin Rules, if the term is used in the standards update.
Uncontaminated	For the purposes of this Permit, means that the MS4 discharge does not: result in the discharge of a reportable quantity for which notification is or was required pursuant to 40 CFR 117.21 or 40 CFR 302.6 at any time since November 16, 1987; or result in the discharge of a reportable quantity for which notification is or was required pursuant to 40 CFR 110.6 at any time since November 16, 1987; or contribute to a violation or exceedance of an applicable Oregon water quality standard.	Not defined.	Not defined.	Add the Permit definition to the SRC and Admin Rules, if the term is used in the standards update.

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Underground Injection Control	Not defined.	Not defined.	Not defined.	Write a new definition for this term to be added to the Admin Rules and SRC, if the term is used in the standards update.
Variance	Not defined.	Not defined.	Not defined.	Write a new definition for this term to be added to the Admin Rules and SRC, if the term is used in the standards update.
Violation	Not defined.	Not defined.	Not defined.	Write a new definition for this term to be added to the Admin Rules and SRC, if the term is used in the standards update.
Waters of the State	Lakes, bays, ponds, impounding reservoirs, springs, wells, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Pacific Ocean within the territorial limits of the State of Oregon, and all other bodies of surface or underground waters, natural or artificial, inland or coastal, fresh or salt, public or private (except those private waters that do not combine or effect a junction with natural surface or underground waters) that are located wholly or partially within or bordering the state, or within its jurisdiction.	Not defined.	Not defined.	Add the Permit definition to the SRC and Admin Rules, if the term is used in the standards update.
Waterway	Not defined.	Means any watercourse within the City as designated by the Director.	Not defined.	Add the SRC definition to the Admin Rules, if the term is used in the standards update.
Wetland	Not defined.	Any area that is inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions.	Not defined.	Add the SRC definition to the Admin Rules, if the term is used in the standards update.