Stormwater Advisory Group Meeting #1

Salem Public Library, Anderson Room A

March 11, 2024

Agenda

1. Welcome and Introductions (10 min)
2. Schedule (5 min)
3. Updated Stormwater Regulations (5 min)
4. Updated Post-Construction Stormwater Requirements for Salem (30 min)
    a. Impervious area thresholds
    b. LID/GI strategy implementation
    c. Performance standards
5. Additional Changes (5 min)
6. Roundtable Discussion (35 min)
    a. Issues and opportunities for improvement

Common Acronyms

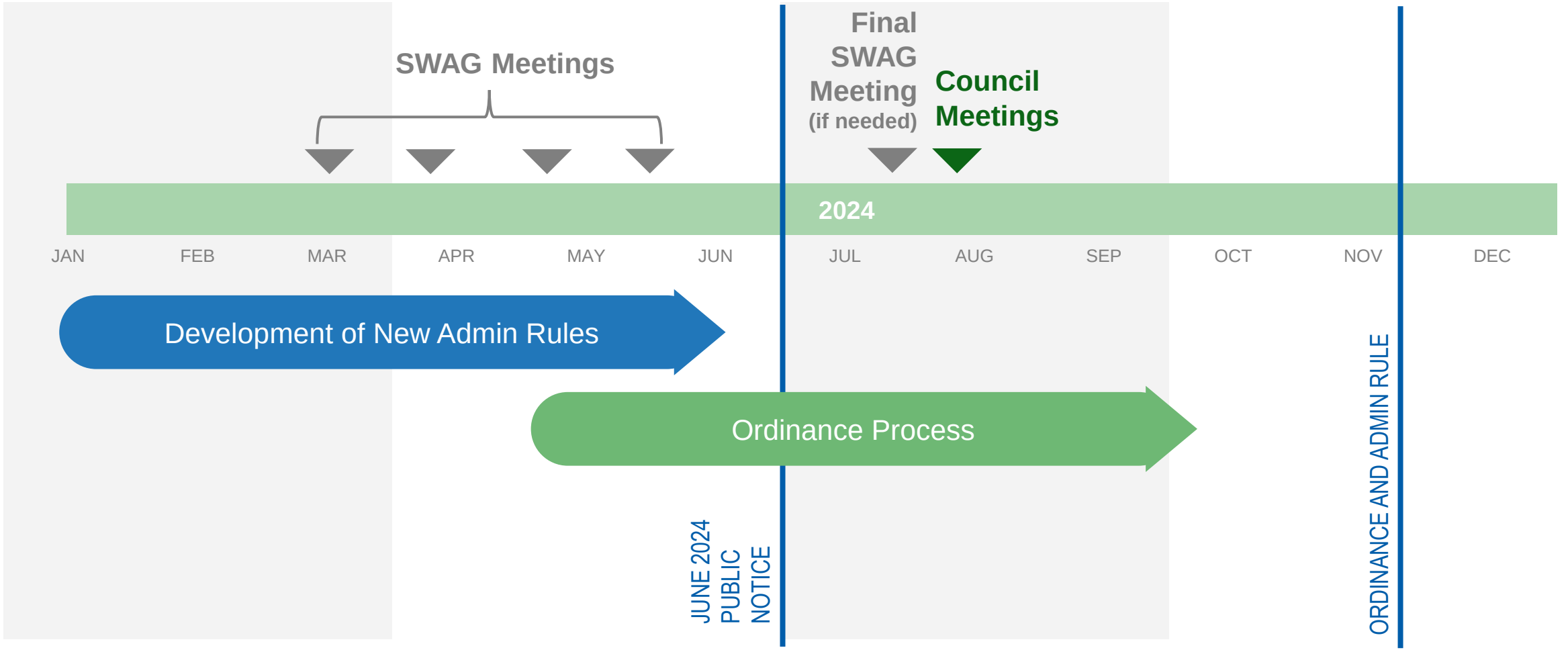
- LID: Low Impact Development
- MS4: Municipal Separate Storm Sewer
- Related Terms:
  - GI: Green Infrastructure (Permit term)
  - GSI: Green Stormwater Infrastructure (City term)
  - MEP: Maximum Extent Practical (Permit term)
  - MEF: Maximum Extent Feasible (City term)

1. Welcome and Introductions

CITY OF Salem
AT YOUR SERVICE

2. Schedule

Schedule

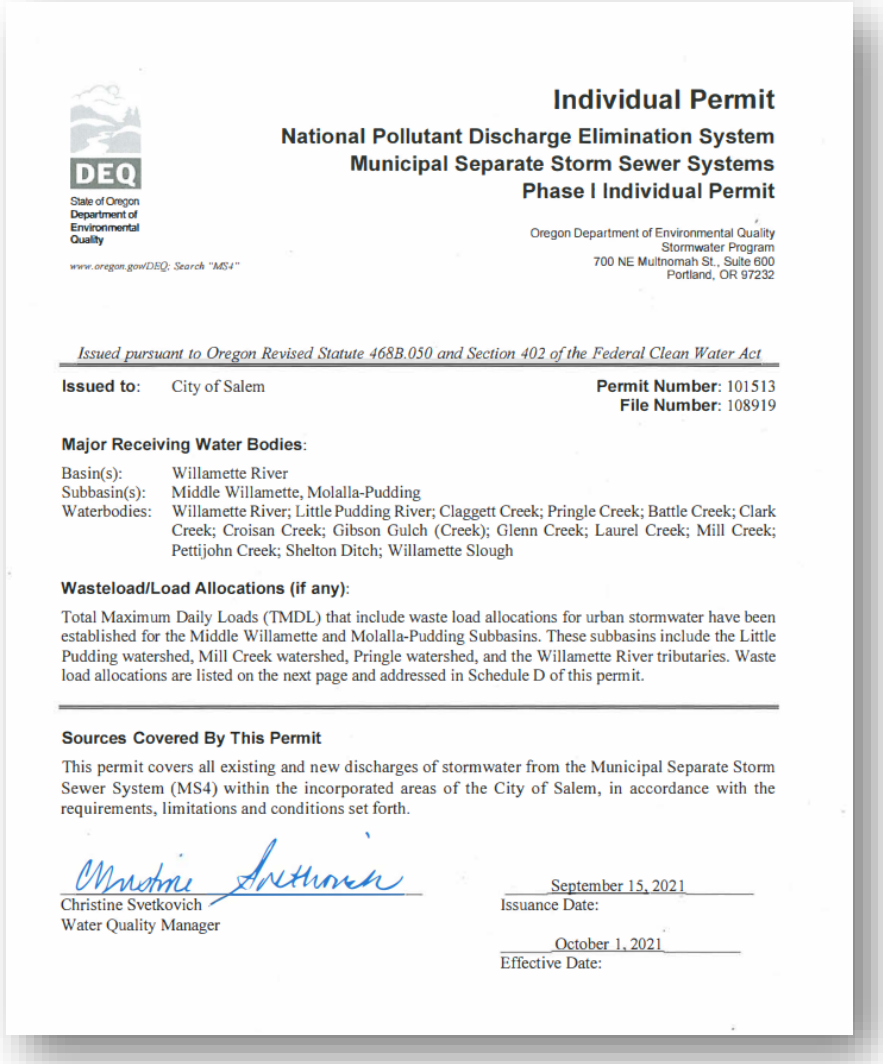

SWAG Meetings
Final SWAG Meeting (if needed)
Council Meetings
2024
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
Development of New Admin Rules
Ordinance Process
JUNE 2024 PUBLIC NOTICE
ORDINANCE AND ADMIN RULE

3. Updated Stormwater Regulations

CITY OF Salem
AT YOUR SERVICE

City's Phase I MS4 NPDES Permit

- Issued September 15, 2021
- Updated Post-Construction Requirements
  - Ordinance consistency
  - Performance standards
  - Operations and maintenance
- Deliverables
  - Updated Stormwater Management Program Document (Nov 2022)
  - LID/ GI Strategy (Nov 2023)
  - Updated Standards (Nov 2024)



DEQ
State of Oregon Department of Environmental Quality
www.oregon.gov/DEQ; Search "MS4"

Individual Permit
National Pollutant Discharge Elimination System
Municipal Separate Storm Sewer Systems
Phase I Individual Permit

Oregon Department of Environmental Quality
Stormwater Program
700 NE Multnomah St., Suite 600
Portland, OR 97232

Issued pursuant to Oregon Revised Statute 468B.050 and Section 402 of the Federal Clean Water Act

Issued to: City of Salem

Permit Number: 101513
File Number: 108919

Major Receiving Water Bodies:

Basin(s): Willamette River
Subbasin(s): Middle Willamette, Molalla-Pudding
Waterbodies: Willamette River; Little Pudding River; Claggett Creek; Pringle Creek; Battle Creek; Clark Creek; Croisan Creek; Gibson Gulch (Creek); Glenn Creek; Laurel Creek; Mill Creek; Pettijohn Creek; Shelton Ditch; Willamette Slough

Wasteload/Load Allocations (if any):

Total Maximum Daily Loads (TMDL) that include waste load allocations for urban stormwater have been established for the Middle Willamette and Molalla-Pudding Subbasins. These subbasins include the Little Pudding watershed, Mill Creek watershed, Pringle watershed, and the Willamette River tributaries. Waste load allocations are listed on the next page and addressed in Schedule D of this permit.

Sources Covered By This Permit

This permit covers all existing and new discharges of stormwater from the Municipal Separate Storm Sewer System (MS4) within the incorporated areas of the City of Salem, in accordance with the requirements, limitations and conditions set forth.

Christine Svetkovich
Water Quality Manager

September 15, 2021
Issuance Date:

October 1, 2021
Effective Date:

NPDES MS4 Permit History
PHASE I Post-Construction Standards

1995

- Reduce discharge of pollutants to the maximum extent practicable (MEP) from the municipal separate storm sewer system (MS4)
- Implement the Stormwater Management Plan

2004

- Implement and enforce controls to reduce discharge of pollutants from the MS4 from new and significant redevelopment

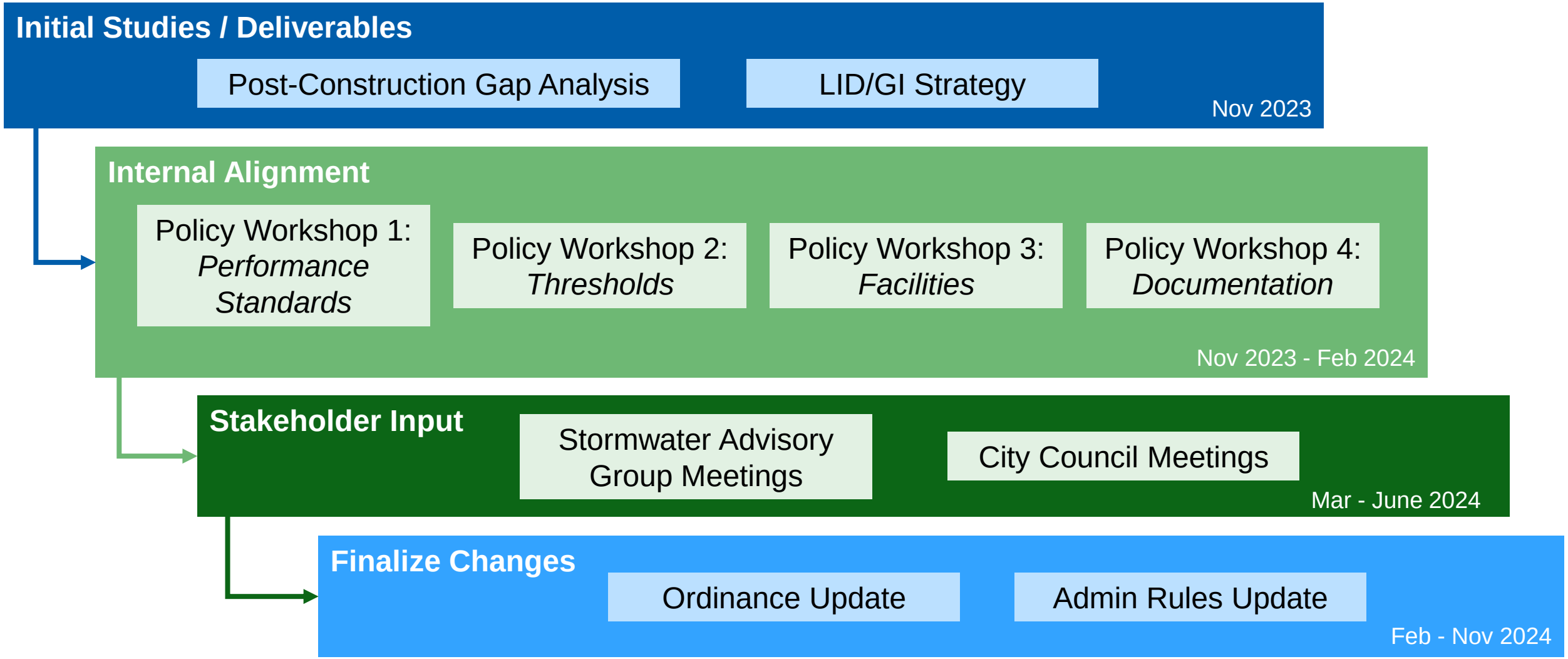
2010 / 2012

- Implement impervious area threshold for new and redevelopment
- Mimic natural surface or predevelopment hydrologic function
- Reduce runoff volumes, duration and rates
- Prioritize LID/GI
- Capture and treat 80% of annual average runoff volume
- Develop a manual or equivalent document
- Include pollutant removal goals

2021

- Implement updated impervious area threshold for new/redevelopment
- Require on-site retention for a numeric stormwater retention requirement (NSRR)
- Mimic natural surface or predevelopment hydrologic functions (up to NSRR)
- Prioritize LID/GI in planning and design
- Capture and treat 80% of annual average runoff volume

Post-Construction Standards Update Process



4. Updated Post-Construction Stormwater Requirements for Salem

a. Impervious area thresholds
b. LID/GI Strategy implementation
c. Performance standards

Thresholds

- Thresholds remain the same for single family residential (1,300 SF);
- Threshold lowered from 10,000 to 5,000 SF for all other development.

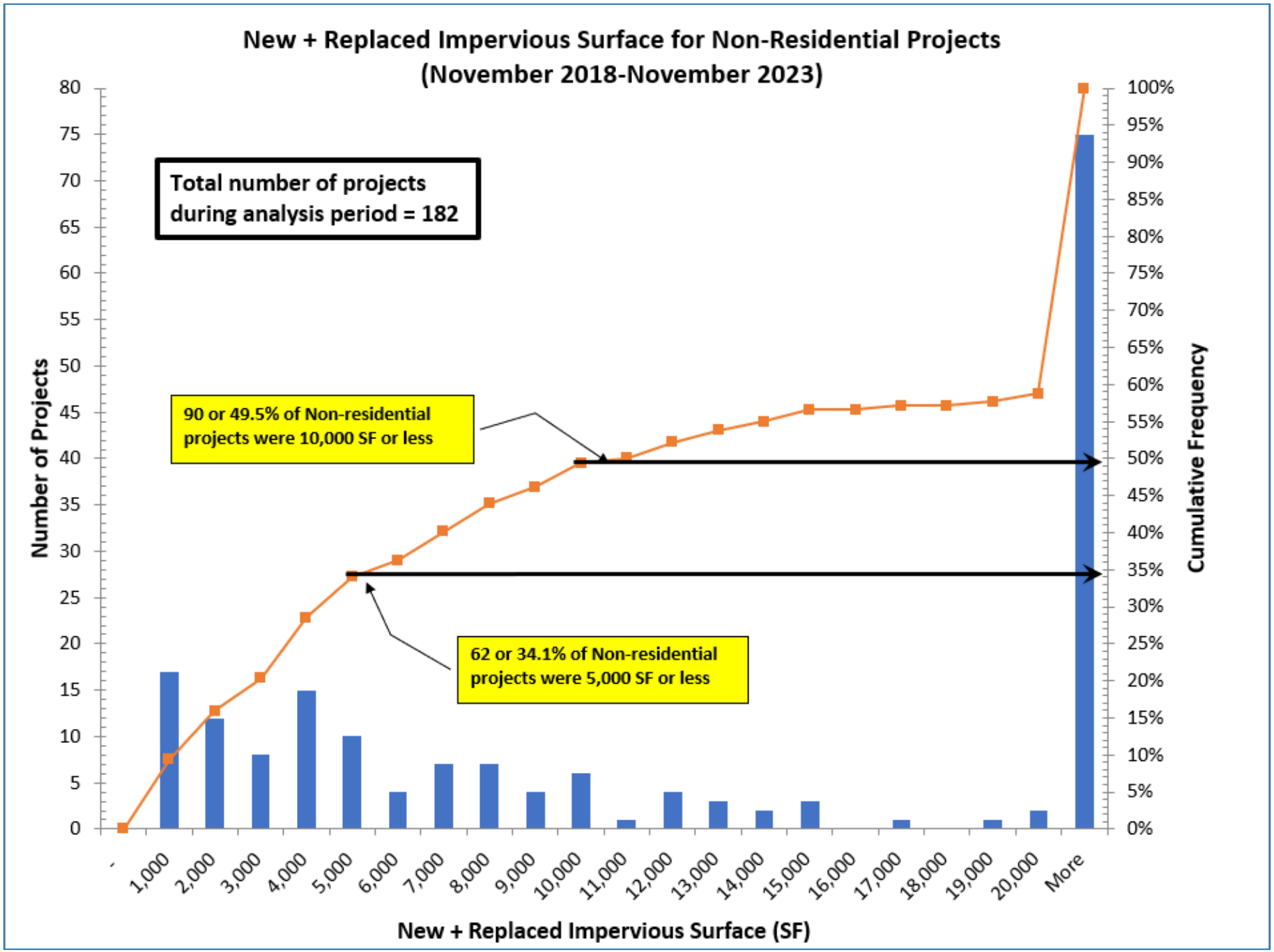
Schedule A.3.e.i: Ordinance and/or Other Regulatory Mechanism

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 1,300 square feet (SF) or more of impervious surface area for single family residential (SFR) projects **or 5,000 SF or more of impervious surface area for all other development projects**:

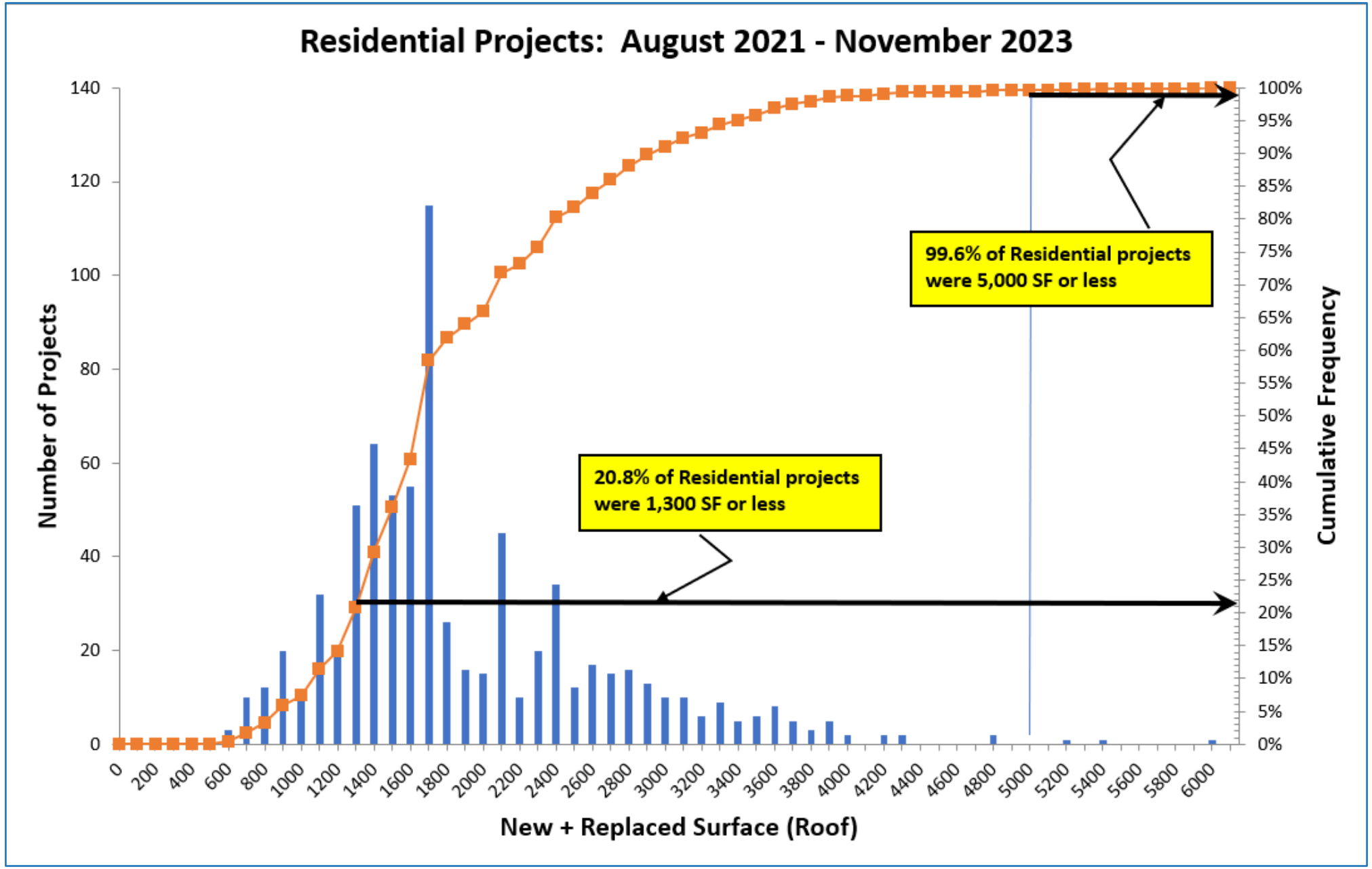
(A) The use of stormwater controls at all qualifying sites.

(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 stormwater controls, with focus on management of quantity and quality of stormwater discharge.

(C) Long-term operation and maintenance of stormwater controls at project sites that are under the ownership of a private entity.



Graphic from *Review of Impervious Surface Areas and Impacts of Implementing NPDES Municipal Stormwater Permit Thresholds* (2024)



Graphic from *Review of Impervious Surface Areas and Impacts of Implementing NPDES Municipal Stormwater Permit Thresholds* (2024)

PROPOSED REVISIONS

Thresholds

- Specify “Residential,” not Single Family Residential
- Define Residential Project Threshold as 1,300 to 5,000 SF
- Reduce Large Project Threshold to 5,000 SF
- Maintain use of Simplified Sizing Method for projects 10,000 SF and less

Simplified Approach for Stormwater Management

The City has produced this form to assist with a quick and simple approach to manage stormwater on-site. Facilities sized with this form are presumed to comply with basic treatment and flow control requirements.

INSTRUCTIONS	SITE INFORMATION
1. Enter Square footage of new and/or replaced impervious site area.	(1) Total Impervious Area _____ sf
2. Enter amount of area reduction. This includes pervious pavement, green roofs, and areas with rainwater harvesting.	(2) Total Impervious Area Reduction _____ sf
3. Subtract (2) from (1) to calculate total impervious area requiring stormwater facilities (3) = (1) – (2)	(3) Required Mitigation Area _____ sf
4. Select desired stormwater facilities from rows (b) through (f) in Column 1, below. Enter the square footage of impervious area that will flow into each facility type in Column 2.	
5. Multiply each impervious area from Column 2 by the corresponding sizing factor in Column 3, and enter the result in Column 4. This is the facility surface area required.	
6. Total Column 2 (Rows b - f) and enter the resulting "Impervious Area Managed" on line (6).	(6) Total Impervious Area Managed _____ sf
7. Subtract (6) from (3) and enter the result on line (7). This must be zero or less. Submit this form with the application for permit. (7) = (3) - (6)	(7) Remaining Area _____ sf

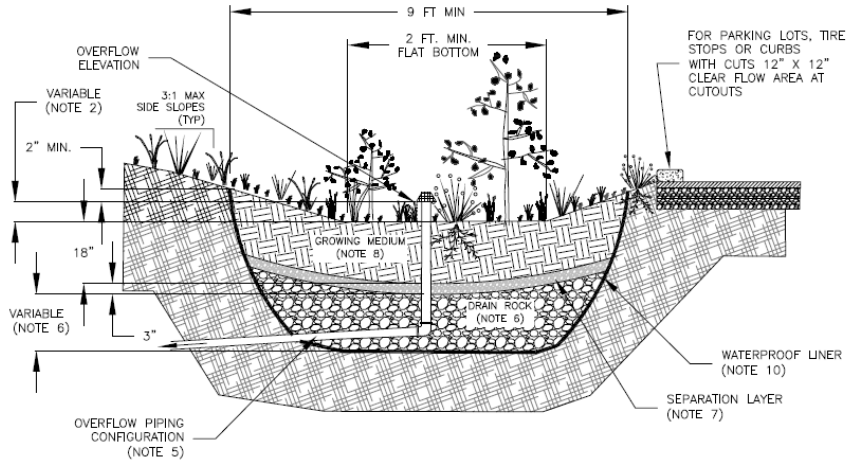
Column 1	Column 2	Column 3		Column 4
Stormwater Management Facility	Impervious Area Managed	Infiltration Rate	Sizing Factor	Facility Surface Area
b. Infiltration Planter	_____ sf	0.5-0.75	0.11	= _____ sf
		0.75-1.25	0.09	= _____ sf
		1.25-1.75	0.07	= _____ sf
		>1.75	0.06	= _____ sf
c. Filtration Planter	_____ sf		0.06	= _____ sf
d. Infiltration Rain Garden	_____ sf	0.5-0.75	0.11	= _____ sf
		0.75-1.25	0.09	= _____ sf
		1.25-1.75	0.07	= _____ sf
		>1.75	0.06	= _____ sf
e. Filtration Rain Garden	_____ sf		0.06	= _____ sf
f. Vegetated Filter Strip	_____ sf		0.20	= _____ sf

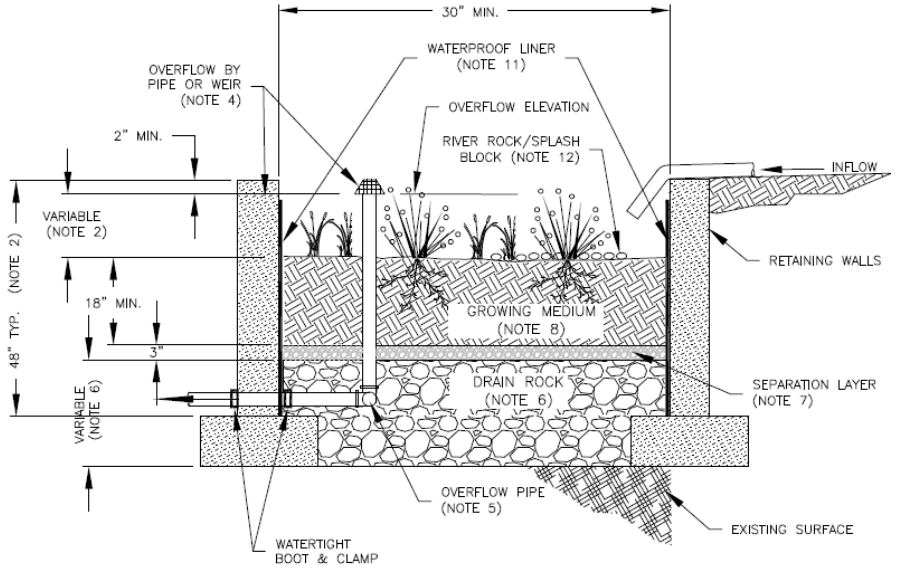
Figure 4-1. Simplified Method Sizing Tool

PROPOSED REVISIONS

Simplified Method

- Planter and Raingarden Applications
- Sizing for Treatment and Treatment/ Flow Control
- Design Infiltration Rates: 0.125 - 2 in/hr
- Updated facility design criteria
- Sizing Factors
  - Updated using Albany's spreadsheet sizing tool
  - Unit hydrograph methodology (accounts for infiltration in the facility)





LID/GI Strategy

- Use LID and GI strategies to minimize impervious area and reduce stormwater runoff
- LID/ GI Strategy (submitted November 2023)
  - Highlight site assessment requirements per Section 4.1(c)(3)
  - Continued prioritization of GSI

Schedule D.4: Low Impact Development

A stormwater management approach that seeks to mitigate the impacts of increased runoff and stormwater pollution using a set of planning, design and construction approaches and stormwater management practices that promote the use of natural systems, green infrastructure and other techniques for infiltration, filtration……Low impact development is a comprehensive land planning and engineering design approach to stormwater management with a goal of mimicking the predevelopment hydrologic regime of urban and developing watersheds.

Green Stormwater Infrastructure (City Definition)

A stormwater facility that mimics natural surface hydrologic functions through infiltration or evapotranspiration, or that involves stormwater reuse.

- *Stormwater planters, rain gardens, combination swales, flow dispersion, pervious pavement, green roofs, constructed wetlands, etc.*

Current Infiltration Testing Requirements

- All projects that require a stormwater treatment facility must evaluate existing site conditions and determine if the infiltration rate is adequate to support the proposed stormwater treatment facility.
  Administrative Rules, Appendix 4C, Section 4C.1

- Natural Resource Conservation Service (NRCS) Soil Survey data may be used to obtain an approximate infiltration rate; however, actual site conditions may be significantly different.
  Administrative Rules, Ch. 109, Div 004, Section 4.2(I)

- Infiltration testing data must be submitted for all proposed stormwater infiltration facilities, in accordance with requirements in Appendix 4C.
  Administrative Rules, Ch. 109, Div 004, Section 4.2(I)

PROPOSED REVISIONS

LID/ GI Strategy

- Updated Definitions
- Clarify Site Assessment Requirements (per Standards 4.2(c))
- Update infiltration guidelines
  - Design vs Measured
  - Use Factor of Safety (2) on measured rates
- Development of Site Assessment Checklist (to aid in Land Use review)
  - Reference mapping and area information typically requested at land use
  - Outline infiltration assumptions/ technical exemption criteria
- Update stormwater facility application information to ensure GSI is prioritized.

Performance Standards

- ❑ Establish a Numeric Stormwater Retention Requirement (NSRR) requiring infiltration of a specified storm event
- ☑ Require treatment using structural controls (for runoff unable to be infiltrated)
- ☑ Target natural surface or predevelopment (for offsite discharge)

Schedule A.3.e.iii.A: Numeric Stormwater Retention Requirement

- The permittee must establish a site performance standard with a 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-based method; or
    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.

Current Infiltration Standards

- If onsite testing demonstrates the infiltration rate is 0.5 in/hr or greater, the stormwater facility should be designed as an infiltration facility.
  Administrative Rules, Appendix 4C, Section 4.3(A)(2)

- If onsite testing demonstrates the infiltration rate is <0.5 in/hr, the treatment facility shall be designed as a partial infiltration facility.
  Administrative Rules, Appendix 4C, Section 4.3(A)(2)

Revised Water Quality Facility Definitions

- **Infiltration**: Full infiltration, unlined and no underdrain
- **Partial Infiltration:** Some infiltration assumed to occur, unlined and may have underdrain
- **Treatment-only**: Lined or conveyance-based facility, no infiltration assumed

Post-Construction Gap Analysis

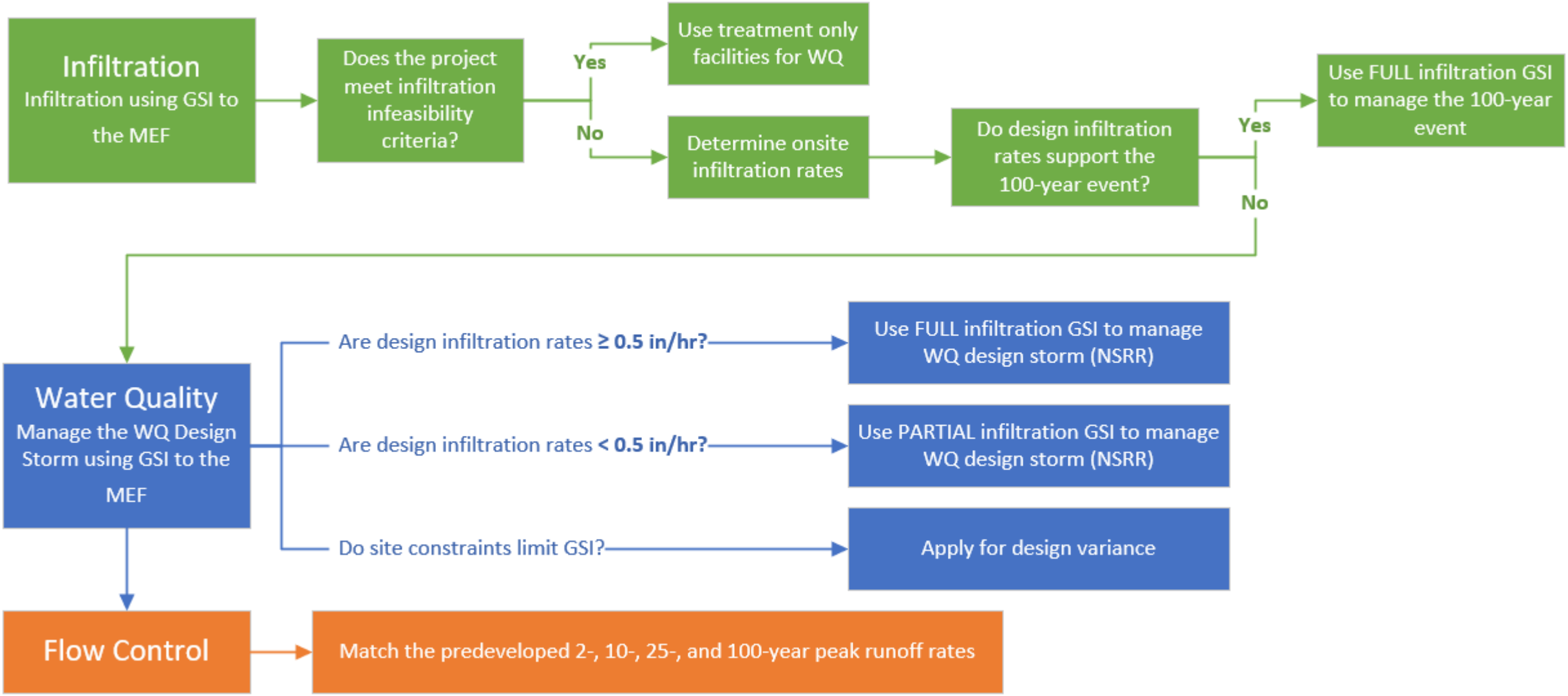
- Gap: Does not explicitly identify an NSRR.
  - The definition of GSI (infiltration facility) and requirement to use GSI to the MEF indicates infiltration (or retention) is prioritized.
  - GSI design criteria indicates sizing for infiltration of the water quality storm is the minimum required.
  - Therefore, an NSRR appears to be established as the water quality design storm, but the Design Standards do not document it as such.
- Recommendation: Establish a more explicit NSRR (i.e., water quality storm).
- Recommendation: Define technical infeasibility criteria identifying where the NSRR can be addressed.

When is full infiltration assumed?

Jurisdiction	NSRR Storm	Infiltration Rate	Design vs. Measured
City of Salem	WQ	> 0.5 in/hr	Not specified
City of Oregon City	10	> 2.0 in/hr	Design
City of Portland (BES)	Pending	> 2.0 in/hr	Design
City of Gresham	WQ	Assumes Type A and B soils	Not specified
City of Eugene	Pending	> 2.0 in/hr	Measured
City of Corvallis - draft (Phase II)	WQ	≥ 1.0 in/hr	Measured
Marion County (Phase II)	WQ	≥ 1.0 in/hr	Measured

PROPOSED REVISIONS

Performance Standards



5. Additional Changes

Additional Changes

- Design Standards Reorganization
  - Inclusion of Exemptions (from SRC)
  - Design Methods
  - Inclusion of Checklists
- Flow Control Performance Standard
  - Update for consistency with SRC
- Stormwater Facilities
  - Design Criteria
  - Applications
  - Hierarchy

6. Roundtable Discussion

a. Issues and opportunities for improvement

Thank you.

Any questions?

CITY OF Salem
AT YOUR SERVICE


CITY OF Salem
AT YOUR SERVICE