SPU	Director's Rule DWW-285
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Subject:	**Code and Section Reference:**
University of Washington Stormwater Code Adjustment for Minimum Requirement #5 (On-Site Management) in San Juan Drainage Basin	Ch. 22, Building and Construction Codes Subtitle VIII, Stormwater Code
	Type of Rule: Code Interpretation
	Ordinance Authority: SMC 3.06.040, 3.32.020

Index:	**Approved:**	**Date**
SMC 22.805.050 and 22.805.070 (Stormwater Code)	Mami Hara (Jun 22, 2021 08:12 PDT) Mami Hara, GM/CEO, SPU	06/22/2021
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PURPOSE

This Directors' Rule ("Rule") applies to construction of University of Washington ("UW") projects within the San Juan Drainage Basin ("Basin") and associated Seattle Stormwater Code ("Code") requirements. Specifically, the Rule:

- Establishes an adjustment to the City of Seattle's On-site Stormwater Management ("OSM") minimum requirement as stated in Seattle Municipal Code ("SMC") 22.805.070. The Director of SPU may approve an adjustment when finding that the adjustment provides substantially equivalent environmental protection and that the objectives of safety, function, environmental protection, and facility maintenance are met.
- This adjustment allows the construction of a regional Green Stormwater Infrastructure ("GSI") facility designed to provide substantially equivalent or better environmental protection to the receiving water from the impacts of planned development in the approximately 34-acre Basin, as compared to the protection which typically would be provided by following the requirements of SMC 22.805.070 on a site-by-site basis.
- Establishes GSI facility as a "bank" for management of stormwater from hard surfaces associated with the UW's Health Sciences Education Building ("HSEB") and all subsequent development planned for the Basin in the 2019 UW Seattle Campus Master Plan up to a maximum allowable bank area of 17.7 acres.
- Adjustment shall be documented as an Integrated Drainage Plan ("IDP"), authorized under SMC 22.800.080.E, which states that the "Director of SPU is authorized, to the extent allowed by law, to develop, review or approve an [IDP] as an equivalent means of complying with [Code] requirements." Using the approved IDP, "the developer of a project voluntarily enters into an agreement with the Director of SPU to implement [the] IDP that is specific to one or more sites where best management practices are employed such that the cumulative effect on the discharge from the site(s) to the same receiving water is the same or better than that which would be achieved by a less integrated, site-by-site implementation of best management practices."

This Rule governs only the Stormwater Code OSM minimum requirements for new development and redevelopment in the Basin. Though the City currently does not intend to change the Rule, it cannot foresee all circumstances and reserves the right to change the Rule in the future. The City intends that, in the event changes are required, it will alert the UW in advance.

BACKGROUND

The University of Washington is constructing a new Health Sciences Education Building within the San Juan Drainage Basin, which includes portions of South Campus, City right-of-way (Northeast Pacific Street), and Central Campus (see Appendices A and B for basin map and campus master plan map, respectively). Runoff from the approximately 34-acre basin discharges to a 36-inch-diameter, UW-

owned stormwater drainage main with an outfall to Portage Bay. The HSEB is the first in a series of development projects planned under the 2019 Seattle Campus Master Plan.

The HSEB project triggers OSM requirements in the Seattle Stormwater Code. While compliance with both OSM and Basic Water Quality ("WQ") treatment is required for all development within the Basin according to SMC thresholds, many typical UW redevelopment projects only exceed the new plus replaced hard surface thresholds for OSM and not for WQ. As an alternative to constructing OSM on a project-by-project basis (with certain exceptions as outlined in Table 1 below), the UW proposes building an end-of-pipe regional GSI facility, immediately upstream of the UW-owned outfall to manage low flows from the Basin (as described below in the Regional Facility Overview section). The facility will be constructed on UW property and will be owned and maintained by UW.

Based on an assessment of the facility's treatment potential, SPU and SDCI find and agree that this approach will yield better and faster WQ outcomes for the receiving water as the Basin redevelops than would be achieved through incremental OSM on a site-by-site basis. The UW will continue to evaluate the feasibility of, and construct if feasible, the BMPs identified in Table 1 below to reduce associated runoff volumes.

Specific benefits this approach brings to downstream receiving waters include:

- Treatment of hard surfaces within the Basin that would not otherwise be triggered or achieved through Code application
- Immediate removal of more total suspended solids (TSS) by constructing and maintaining a regional GSI facility for the whole basin now rather than waiting for redevelopment to trigger OSM on a site-by-site basis
- Treatment of runoff that enters the piped system from roadways, including City-owned Pacific Avenue NE, a principal arterial running through the Basin with frequent vehicle and bus traffic, which it is assumed would not otherwise be treated as part of future parcel-based projects in the Basin

INTEGRATED DRAINAGE PLAN (IDP) REQUIREMENTS

I. **On-Site Management Feasibility**

a. The regional facility is capable of providing water quality treatment of runoff from 17.7 acres of hard surface area from the Basin. Appendix D contains an explanation of the methodology used to calculate the bank area.

b. Based on the UW's commitment to build and maintain the regional GSI facility and design to provide equivalent or better environmental protection, Table 1 strikes, as of the effective date of this Rule and for the next 20 years, some OSM requirements for UW development projects in the Basin that elect to follow the OSM list-based approach.

c. For OSM BMPs that remain on Table 1, the UW shall assess and construct, if feasible, those BMPs for the HSEB project and all future

projects in the Basin according to the Code. Feasibility shall be determined pursuant to SMC 22.805.070.D.

d. Any BMPs from the OSM list in Table 1—including those that are not required to be considered by this Rule—that are deemed feasible and constructed on a project-by-project basis, do not count against the bank. For example, if a BMP manages 5,000 square feet of hard surface from a total of 50,000 square feet of hard surface produced by a given project, the project would reduce the credit in the bank by 45,000 square feet rather than 50,000 square feet.
e. If no BMPs from the OSM list in Table 1 are feasible, then the total hard surface area of the given development counts against the bank.
f. If the Basin develops to a point where new plus replaced hard surface exceeds the 17.7-acre threshold—which would result in a water quality flow rate that is beyond the capacity of the facility to manage—the UW has two options for compliance:
    i. Expand the regional GSI Facility footprint to manage additional flows
    ii. Revert to project-by-project OSM, considering all BMPs using the list approach for parcel-based projects

Table 1: On-Site List for Parcel-Based Projects

Category	Best Management Practices (BMP)	Projects Discharging to a Designated Receiving Water or its Basin
1	Full Dispersion	**R, S**
	Infiltration Trenches	**R, S**
	Dry Wells	**R, S**
2	~~Rain Gardens~~	~~R , S~~
	~~Infiltrating Bioretention~~	~~R, S~~
	~~Rainwater Harvesting~~	~~X~~
	~~Permeable Pavement Facilities~~	~~R, S~~
	~~Permeable Pavement Surfaces~~	~~S~~
3	Sheet Flow Dispersion	**R, S**
	Concentrated Flow Dispersion	**S**
	Splashblock Downspout Dispersion	**R**
	Trench Downspout Dispersion	**R**
	~~Non-infiltrating Bioretention~~	~~R, S~~
	~~Vegetated Roofs~~	~~X~~
4	Perforated Stub-out Connections	**R**
	Newly Planted Trees	**S**

II. **Tracking & Documentation**

a. For the HSEB, the UW shall submit a Memorandum of Drainage Control (MDC) to SDCI for review as part of the Grading Permit process that complies with all SMC requirements. The MDC shall reference this Rule.
b. The MDC shall indicate which OSM BMPs are installed from the list in Table 1 and document technical infeasibility for the remaining BMPs according to SMC 22.805.070.D.
c. The MDC shall include a version of the chart in Appendix C, updated for each subsequent building, with total acreage for the Basin, new plus replaced hard surface the regional facility will manage for each building and remaining capacity of the regional facility.
d. For subsequent development in the Basin, MDCs shall follow all requirements above and reference connection to the HSEB side sewer permit and the regional GSI facility.

III. **Stormwater Code Requirements**

a. Except as stated above, development projects in the Basin shall meet all other requirements per the Stormwater Code, including, but not limited to:
    i. “Post-Construction Soil Quality and Depth” (SMC 22.805.050.A)
    ii. Water Quality Treatment (SMC 22.805.050.D)
    iii. Flow Control (SMC 22.805.080)
    iv. Construction Stormwater Control (SMC 22.805.020.D)
    v. Source Control for Real Property (SMC 22.803.030)

REGIONAL FACILITY OVERVIEW

I. Design

a. The City and UW agree to the following design approach, which seeks to provide OSM for portions of the San Juan Basin as well as to mitigate high sediment loading in the swale through pre-treatment measures.
    i. The UW will repurpose an existing concrete flume, located near a 36-inch UW-owned storm drain outfall to Portage Bay, for a regional offline stormwater treatment system. The facility shall discharge to this outfall.
    ii. The facility design will include a biofiltration swale connected by a network of conveyance piping and the following main components:
        1. A diversion structure and pump station to divert up to 0.72 cubic feet per second (cfs) from the existing 36-inch outfall to the facility.
        2. A pretreatment facility located between the diversion structure and the pump station to provide pretreatment and sediment removal.
        3. A forebay at the head of the swale for secondary settling.

4. New storm drain piping to convey up to 0.72 cfs of runoff to and from the biofiltration swale.

iii. The pretreatment structure and pump station will feature access points that provide safe and adequate access for operation and maintenance activities.

II. Maintenance

a. The engineer of record agrees to create an operations and maintenance (O&M) plan as a guide for UW maintenance staff. The O&M plan should rely on available guidance in the Seattle Stormwater Manual and allow for adaptive management in response to ongoing monitoring of facility performance.
   i. The O&M plan will, at a minimum, describe the following:
      1. Maintenance schedule
      2. Maintenance actions
      3. Adaptive management strategies
      4. Performance criteria
      5. Troubleshooting strategies
   ii. Components of the O&M plan may be updated by UW, as needed, based on historical evidence and sound scientific and engineering judgment, that any updates will not decrease facility efficacy.
b. UW will maintain the facility according to the O&M plan
c. Records of maintenance and troubleshooting activities will be retained by UW for a minimum of two years

III. Monitoring Requirements

a. Baseline Monitoring
   i. UW shall perform baseline monitoring of the facility a minimum of once per calendar quarter:
      1st quarter = January, February, and March
      2nd quarter = April, May, and June
      3rd quarter = July, August, and September
      4th quarter = October, November, and December
   ii. Baseline monitoring shall be conducted at the following structures:
      a) Vortech (presettling)
      b) Forebay of the swale
      c) Trench drain inlet
      d) Trench drain outlet
   iii. Baseline monitoring consists of a quantitative assessment of material volume within structures identified in the preceding bullet. Material volume may be calculated from the known structural dimensions and a single point measurement from the finished grade to top of material.

iv. For each baseline monitoring event performed, the following information will be recorded and retained for a minimum of two years.
    a) Monitoring date
    b) Monitoring location
    c) Depth from finished grade to top of material
v. If more than one monitoring event occurs in a single calendar quarter, then any additional monitoring events shall be included in the annual report, described below in section IV(a).

b. Voluntary Monitoring
    i. UW may choose to engage with faculty and students to monitor, assess, and gauge performance of the facility, collectively referred to as *voluntary monitoring*. Any voluntary monitoring performed by UW staff is not required to be reported to the City of Seattle. However, UW may elect to provide voluntary monitoring records and results to the City of Seattle in any coincident annual report for the sole purpose of scientific study.
    ii. Results of voluntary monitoring will not subject the facility to additional maintenance requirements aside from what is already described in the O&M plan.
    iii. Results of voluntary monitoring will not have any required retention schedule.

IV. Reporting Requirements

a. UW will submit an annual report to the City of Seattle every May 15th, beginning May 15, 2022. The contents of the annual report will cover the following elements:
    i. Results of quarterly baseline monitoring for the previous calendar year
    ii. A summary of maintenance activities for the previous calendar year
b. UW may elect to include results of voluntary monitoring to any annual report.
c. A copy of the annual report will be retained by UW for a minimum of two years.
d. The annual report will be sent to: SPU_GSI_Partnering@seattle.gov

APPENDICES

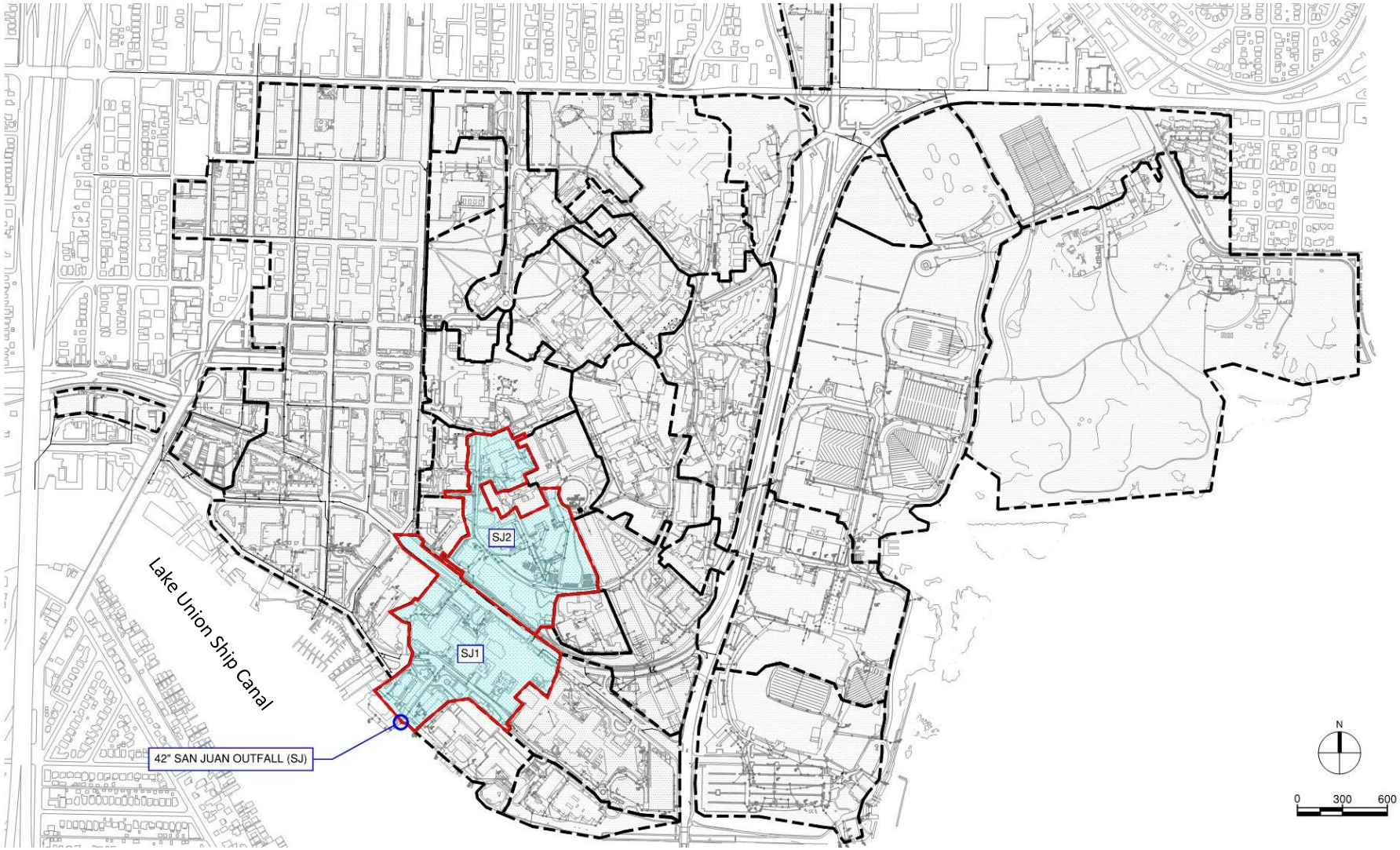
A. San Juan Drainage Basin

B. Planned Development in the 2019 UW Seattle Campus Master

C. OSM Bank Area Tracking Table

D. Bank Area Methodology

Appendix A: San Juan Drainage Basin



Appendix B: Planned Development in the 2019 UW Campus Master Plan

Appendix C: OSM Bank Area Tracking Table

UW San Juan Drainage Basin OSM Bank Area Tracking Table

The following tracking table must be completed for each project that uses the modified On-site Stormwater Management requirements allowed per Director's Rule SPU DWW-285/SDCI 16-2020 - University of Washington Stormwater Code Adjustment for Minimum Requirement #5 (On-Site Management) in San Juan Drainage Basin.

Project Name and SDCI Permit Number	Total New + Replaced Hard Surface By Project (Acres)	Total Hard Surface Managed w/ OSM BMP's on Project Site (Acres)	OSM Bank Area Used by Project (Acres)	Total Remaining OSM Bank Area (Acres)	Date
				17.7 (Initial OSM Bank Area)	
Health Sciences Education Building (SDCI #6756569-PH)	**0.90**	**0.00**	**0.90**	**16.80**	**1/20/2021**

Appendix D: Bank Area Methodology

KPFF, the engineering firm of record for UW, determined the volume treated through the facility to be approximately 8,150 acre-feet (af) over the 158-year analysis period and used this volume to back out an equivalent bank area of roughly 25 acres total (17.7 acres of new plus replaced hard surface for a typical project of 70% hard surface). The 17.7-acre hard surface bank area was calculated using MGS Flood, Version 4, demonstrating that 91% of the runoff volume from the 25-acre basin is equivalent to the volume that flows through the proposed regional facility over the 158-year analysis period. The City agrees that a volume of 8,150 af has the potential to be treated by the proposed facility if using a flow diversion approach that allows all flow from the 34-acre basin to enter the facility up to 0.72 cubic feet per second (cfs), provided sufficient pre-settling is achieved.

The 17.7-acre bank area indicates the sum of new plus replaced hard surface area from all future development projects in the Basin that may be counted towards those projects' OSM requirements. This sum does not include new plus replaced hard surface mitigated by OSM BMPs that this Rule requires each project to assess and, if feasible, to build. If the collective new plus replaced hard surface area from the HSEB and future development projects should exceed the 17.7-acre threshold, the UW may expand the GSI facility footprint to manage additional flows for future projects in the Basin, or projects may revert to standard OSM requirements per the Seattle Stormwater Manual.