



Modification of Permit Coverage Form for Industrial Stormwater General Permit

Permit No. WA R 1 2 5 5 8 3

I. Operator/Permittee for the Facility (All permit and billing correspondence will be mailed here)

Operator/Permittee's Name Jeff Fowler, Solid Waste Line of Business, Deputy Director of SPU		Phone No. (206) 233-2540	Email Address Jeff.Fowler@seattle.gov
Company Name Seattle Public Utilities South Transfer Station			
Street Address or P.O. Box 130 S. Kenyon St.			
City Seattle	State WA	Zip + 4 98108-4206	

II. Modified Permit Information CHECK ALL THAT APPLY

New Industrial Process (requires public notice), please list the associated SIC codes:

1	2	3	4	5
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Type or Nature of New Industrial Activities: _____

Are there new monitoring points associated with the new industrial process? No Yes

If no, please list the previously established monitoring points associated with the new process (i.e., CB1, DP4):

If yes, please identify new monitoring points:

Discharge identifier. These cannot be symbols. (maximum of three characters ex. 01A)	Latitude degrees, minutes, seconds	Longitude degrees, minutes, seconds	Location description (i.e. Catch Basin 1)
	° ' N	° ' W	
	° ' N	° ' W	
	° ' N	° ' W	

If Applicable, New Receiving Water

Receiving Water Body	Latitude degrees, minutes, seconds	Longitude degrees, minutes, seconds
	° ' N	° ' W
	° ' N	° ' W

What type of modification are you requesting?

- Level 2 / Level 3 Deadline Extension, please list the new deadline requested (MM/DD/YYYY): 1/31/2030.
 - Attach detailed technical basis for extension. Include proposed timeline for completion and describe issues that affect completion date; for example, state/local permits, study, design, financing, professional services and contracting, etc.
- Level 2 / Level 3 Waiver. Attach technical basis for request.
 - If request is based on claim that it is "not feasible" to perform corrective actions, provide detailed information to support request (e.g., lease, contract, affidavit, maps, photos, and/or other documentation).
 - If request is based on claim that corrective action is "not necessary" to prevent violations of water quality standards, Ecology recommends including an engineering report and sampling information to support claim.
- Other (please explain): _____

III. Public Notice

Facilities modifying existing coverage must publish a public notice at least once a week for **two** consecutive weeks with **seven** days in between publications, in a **single** newspaper of general circulation in the county in which the facility is located. Ecology cannot grant permit coverage sooner than the end of the 30-day public comment period, which begins on the date of the second public notice.
 Submit (or fax: 360-407-6426) the application to Ecology on or **before** the date of the first public notice. If you fax the application to Ecology, you must follow up with hard copy by mail.

Date of the first public notice: 05 / 13 / 2024
 Date of second public notice: 05 / 20 / 2024 (Begins 30-day public comment period)
 Example: Date of the first public notice: 01 / 01 / 2010
 Date of second public notice: 01 / 08 / 2010

Name of the newspaper that will publish the public notices: Daily Journal of Commerce.

Complete this template using site-specific information. The **bold** language is required by WAC 173-226-130 and must be included in its entirety. (Either use the fill-in template below or attach on a separate sheet of paper, if necessary.)

Seattle Public Utilities, 130 S. Kenyon St, Seattle WA 98108 **is seeking modification of coverage under the Washington Department of Ecology’s NPDES General Permit for Stormwater Discharges Associated with Industrial Activities at the industrial site, known as South Transfer Station located at 130 S. Kenyon St, Seattle WA 98108.**

Activities requiring permit modification include a request for an extension for Level 3 corrective action.

Any person desiring to present their views to the Department of Ecology concerning this application may notify Ecology in writing within 30 days from the last date of publication of this notice. Comments may be submitted to:

**Washington Dept of Ecology
 Water Quality Program – Industrial Stormwater
 PO Box 47696
 Olympia, WA 98504-7696**

IV. Certification of Permittee

“I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.”

Jeff Fowler	Seattle Public Utilities	05/14/2024
Printed Name <u>Jeffrey A Fowler</u> <small>Jeffrey A Fowler (May 14, 2024 07:56 PDT)</small>	Company	Date 05/14/2024
Signature		Date

***Federal regulations require this application is signed by one of the following:**

- A. In the case of corporations, by a principal executive officer of at least the level of vice president.
- B. In the case of a partnership, by a general partner of a partnership.
- C. In the case of sole proprietorship, by the proprietor.
- D. In the case of a municipality, state, federal, or other public facility: by either a principal executive officer or ranking elected official.

Return this signed original document to the address below. Make sure you retain a copy for your records.

Washington Department of Ecology
Water Quality Program – Industrial Stormwater
PO Box 47696
Olympia, WA 98504-7696

If you have any questions, please call:

- **Shawn Hopkins** 360-407-6442 or shop461@ecy.wa.gov for Adams, Asotin, Columbia, Ferry, Franklin, Garfield, Grant, Lincoln, Pend Oreille, Skagit, Snohomish, Spokane, Stevens, Walla Walla, Whatcom, and Whitman counties.
- **Clay Keown** 360-407-6048 or ckeo461@ecy.wa.gov for Island, King (except Seattle), and San Juan counties.
- **Josh Klimek** 360-407-7451 or jokl461@ecy.wa.gov for city of Seattle and Kitsap, Pierce, and Thurston counties
- **Joyce Smith** 360-407-6858 or josm461@ecy.wa.gov for Benton, Chelan, Clallam, Clark, Cowlitz, Douglas, Grays Harbor, Jefferson, Kittitas, Klickitat, Lewis, Mason Okanogan, Pacific, Skamania, Wahkiakum, and Yakima counties.

To ask about the availability of this document in a version for the visually impaired call the Water Quality Program at 360-407-6600. Persons with hearing loss, call 711 for Washington Relay Service. Persons with a speech disability, call 877-833-6341.

Date: 05/14/2024
To: Hui Yang and Mark Jusayan, Seattle Public Utilities
Copy to: Erika Vossbeck and Rose Propst, Seattle Public Utilities
From: Aaron Werner BHC Consultants, and Mary Shanks, and Nigel Baummer, Herrera Environmental Consultants
Subject: Technical Memorandum Pertaining to Level 3 Corrective Action Response at Seattle Public Utility South Transfer Station Facility (Permit WAR125583)

The Herrera Team has prepared the following memorandum as a supporting technical document for a request for Modification of Permit Coverage under permit number WAR125583 of the Industrial Stormwater General Permit (ISGP). The permit covers the discharge from Seattle Public Utility's South Transfer Station's two monitored stormwater discharges. The request is in regard to the ISGP Level 3 Corrective Actions required for turbidity and heavy metal benchmark exceedances at both the East Discharge (01E) and West Discharge (01W) for calendar year 2023 as required by ISGP S8.D.

Introduction and Background

Site Overview

City of Seattle (City) Seattle Public Utilities (SPU) currently owns and operates the South Transfer Station (STS) in south Seattle. STS, as an industrial use site, requires stormwater discharge monitoring under Washington Department of Ecology's ISGP. STS is located at 130 South Kenyon Street and was constructed in 2013 to replace South Recycling and Disposal Station (SRDS) for waste material disposal.

STS receives municipal solid waste from commercial and self-haulers (general public). The solid waste is moved from the tipping floor, within the building, and compacted into containers that are then hauled by truck to the rail yard. Stormwater discharges from STS are authorized by the ISGP (permit number WAR125583).

SPU also owns and operates the South Recycling and Disposal Station (SRDS), located at 8100 South 2nd Avenue, and is the site of the previous transfer station. The SRDS site consists of the South Household Hazardous Waste drop off facility, several SPU staff facilities, open lot parking, tent-covered maintenances for SPU transfer trailers, and vehicle washdown pad. SRDS has separate coverage under the ISGP (permit number WAR000737). The monitored discharges from the SRDS site do not currently require a Level 3 corrective action as required by the ISGP.

SPU is in the process of designing upgrades for the SRDS site. This project, named South Transfer Station Phase Two (STS2), includes removing the majority of the buildings at SRDS, improving site drainage and paving, and updating the site for a more beneficial use to the City. The improvements

are also meant to meet the requirements of the landfill closure elements of the South Park Landfill which the SRDS site is located over. The 60% design documents for the STS2 project, completed in August of 2023, included a new stormwater quality treatment system to meet the stormwater discharge requirements set forth in the Industrial Stormwater General Permit and per the 2021 City of Seattle Title 22.800 Stormwater Code and 2021 City of Seattle Stormwater Manual (2021 Stormwater Code and Manual).



Exhibit 1 -Vicinity Map (Seattle GIS)

Site Drainage

STS is divided into two storm drainage basins, an east system and west system, that collect stormwater from the entire site. Each basin includes a series of catch basins, collection piping, and a water quality vault. The western basin is equipped with northern and southern oil-water separators. Each basin also has a dedicated discharge location and monitoring point identified as 01E (eastern discharge) and 01W (western discharge).

Both discharge locations connect to a public storm drain system in South 5th Avenue that flows to the west and discharges into 1st Avenue Bridge Southwest Wetland, a constructed wetland, see Exhibit 2.

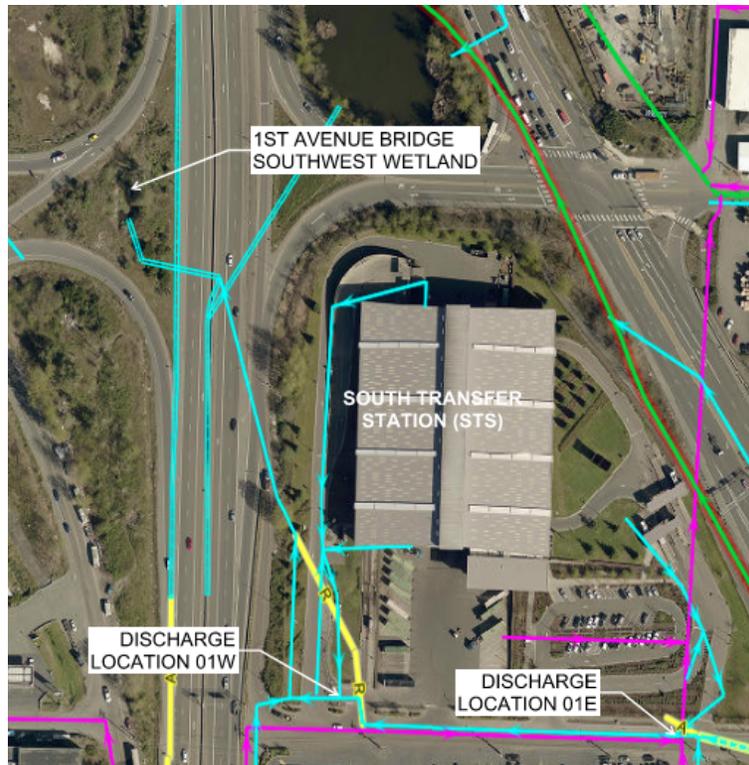


Exhibit 2 -Discharge and Outfall Locations (Seattle GIS)

The STS ISGP requires quarterly stormwater monitoring. This monitoring has shown increased levels of heavy metals (copper and zinc) and turbidity over the past couple of years, including benchmark exceedances during the 2023 calendar year. SPU has developed a robust maintenance program for the on site stormwater collection and treatment systems but are continuing to see permit exceedances.

This Technical Memorandum addresses the Level 3 Corrective Actions for the east and west drainage basins at STS.

Regulatory Drivers and Response

Under the ISGP, permittees are required to institute corrective actions in response to any quarterly average sample concentrations above a permit benchmark. If one quarterly average concentration is above a benchmark, a Level 1 Corrective Action - Operational Source Control Best Management Practices (BMPs), are required for that drainage basin. If two quarterly average concentrations are above the same benchmark in the same drainage basin, a Level 2 Corrective Action - Structural Source Control BMPs are required. If three or four quarterly average concentrations are above the same benchmark in the same drainage basin, a Level 3 Corrective Action - Treatment BMPs are required.

In 2023, sampling at both the East and West discharges resulted in three quarterly averages (2023 Q2, Q3, and Q4) with turbidity concentrations above the ISGP turbidity benchmark of 25 nephelometric turbidity units (NTU), triggering a Level 3 Corrective Action. Sampling has also shown Total Copper and Total Zinc concentrations above the benchmark permit limit of 14 micrograms per liter ($\mu\text{g/L}$) and

117 µg/L, respectively. The quarterly monitoring from Q1 to Q4 of 2023 for turbidity, zinc, and copper is summarized in Table 1.

Table 1: 2023 Quarterly ISGP Monitoring Data

	Discharge	2023			
		Q1	Q2	Q3	Q4
Turbidity (NTU) 25 or less	East	19.4	29.4	30.16	68.52
	West	34.65	44	23.34	15.76
Total Zinc (µg/L) 117 or less	East	65	63	88	100
	West	137	960	145	46
Total Copper(µg/L) 14 or less	East	7.8	12	16	14
	West	14.5	76	17	5

Notes:

- C = no discharge
- Values in bold are benchmark exceedances
- NTU = nephelometric turbidity units
- µg/L = micrograms per liter

As a result of triggering a Level 3 Corrective Action, SPU is required by the ISGP to prepare an engineering report for treatment requiring site specific sizing by May 15, 2024 and to implement applicable Treatment BMPs by no later than September 30, 2024, or to submit a request for an extension of this deadline via a Modification of Permit Coverage form to the State of Washington Department of Ecology (Ecology) by May 15, 2024. SPU is submitting a Modification of Permit Coverage form to request:

- An extension of time to submit an Engineering Report for the design.
- An extension of time for the installation of the Treatment BMPs.

This memorandum supports SPU’s request for a Modification of Permit Coverage.

Existing STS Stormwater Collection System

The stormwater management system for the STS site collects and treats surface water runoff from pollution-generating impervious surfaces into two separate systems, the East and West stormwater systems. Each system includes a water quality vault for treatment prior to discharging to the public storm drain system in South 5th Avenue, and the western basin is equipped with two oil-water separators. The transfer building and administrative building roof water are directed to a rainwater system for re-use. Overflow water from the rainwater cistern is discharged to the eastern stormwater system, bypassing the east water quality vault (URS, 2010).

Water quality treatment facility volumes and off line flow rates were originally calculated using the Western Washington Hydrology Model (WWHM) 3. The water quality treatment facility volumes and off line flow rates were verified using the latest WWHM version (WWHM12), which indicated no significant change from the results provided in the drainage report. The WWHM12 model results are provided in Tables 2 and 3 below.

Table 2 – East Side Water Quality Model Results

Water Quality BMP Facility Volume	0.16 Ac-Feet, 6,699 cf
Water Quality Target Flow (adjusted for 15 minutes)	Off Line: 0.12 cfs

Table 3 – West Side Water Quality Model Results

Water Quality BMP Facility Volume	0.24 Ac-Feet, 10,454 cf
Water Quality Target Flow (adjusted for 15 minutes)	Off Line: 0.18 cfs

The water quality requirements for the STS site were reviewed using the 2021 Stormwater Code and Manual and it was determined that basic water quality and oil control requirements are still applicable for the STS site.

Planned Treatment Filter Media System

SPU has determined that improving the treatment BMPs using approved enhanced water quality treatment methods will provide the best results for addressing the turbidity and heavy metals removal. Examples of treatment BMPs include detention ponds, oil and water separators, filtration, and constructed wetlands. A list of treatment BMPs may be found in Volume V of the Stormwater Management Manual for Western Washington (Ecology, 2019).

STS physical site constraints do not allow for the addition of a detention pond or bioswale to provide enhanced water quality treatment. The use of an engineered filter media system will be required. The StormMix Filter Media system developed by Oldcastle, and provided in their BioPod Vaults, was selected as the basis of design, see Attachment A. The StormMix filter media is the only non-vegetative media approved by Ecology to provide enhanced water quality treatment.

Evaluation of Alternatives

In response to the Level 3 Corrective Action requirement for the discharges at STS, SPU proposes to treat the combined stormwater from STS (WAR125583) and SRDS (WAR000737) in a single water quality treatment system constructed as part of the improvements planned for the SRDS with the STS2 project.

Three alternatives were evaluated to provide enhanced water quality treatment for the discharge flows from STS. These alternatives were evaluated in detail as part of the Draft Combined Stormwater System Alternative Analysis Report. Findings from that report are summarized here.

Enhanced Treatment at South Transfer Station

The East and West stormwater collection systems were evaluated to determine if they could be modified to incorporate a filter media system. An initial evaluation indicated that the west stormwater collection system would require significant modifications to the upstream collection system and experience system surcharging during most storm events.

The addition of stormwater lift stations was also considered for both systems. This would alleviate the system surcharging but would introduce a much higher operational and maintenance effort and cost.

Combine Treatment of Stormwater Flows at South Transfer Station

The proximity of STS to the STS2 design project currently underway at SRDS makes it feasible to consider combining the stormwater treatment improvements for both projects. The combination of the projects will provide time savings on the evaluation and design of improvements at STS and reduce the costs of operating and maintaining only one system.

An alternative of sending the STS2 flows to STS for treatment was considered. This alternative would result in cost savings on the STS2 improvements and combine the two systems for shared operation and maintenance costs. It was determined that this alternative would also result in surcharging of the existing collection system at STS or the addition of a stormwater lift station. Also, the site constraints at STS would make it difficult to locate a facility large enough to handle both sites.

Combine Treatment of Stormwater Flows at Proposed South Transfer Station Phase 2

Conversely, sending the discharge flows from STS to STS2 for treatment was considered. This alternative would convey the stormwater flows from STS by gravity in a dedicated stormdrain line. This alternative would take advantage of the stormwater quality treatment system already planned at STS2 and only require upsizing of the stormwater water quality treatment system to handle the STS flows.

An evaluation of this alternative determined that both the East and West stormwater collection systems at STS could be conveyed to STS2 by gravity with minimal impacts to the STS system. Also, the STS2 site has ample footprint to accommodate the expanded stormwater quality system to handle the STS flows.

This alternative was selected by SPU for further evaluation and detailing.

Design Description

A conceptual layout of a gravity piping system indicates that a gravity system is feasible from STS to the STS2 project site. The depth of the stormwater main from STS will require lowering the wet well

associated with the stormwater lift station already planned for the stormwater treatment system at STS2. Larger pumps will also be required to handle the additional flows from STS and the increased pumping head conditions.

Exhibit 3 provides the overall layout associated with gravity main between the two sites.

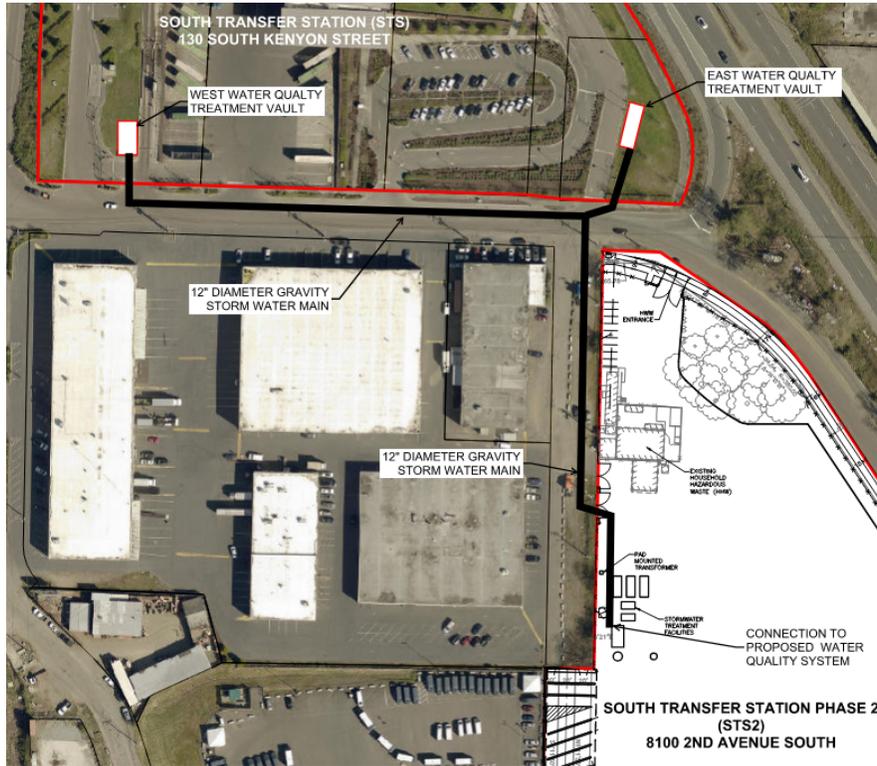


Exhibit 3 -Gravity Main Routing from STS to STS2 (Seattle GIS)

Attachment B provides a more detailed layout of the proposed gravity stormwater main between the two sites.

The proposed stormwater quality elements from each site for each system are presented below.

STS East and West Water Quality Systems

- Flow Splitting Structure (existing)
- Water Quality Vault (existing)

STS2 Water Quality System

- Flow Splitting Structure
- Hydrodynamic Solids Separator

Combined Elements

- Stormwater Lift Station
- Oil Water Separator
- Water Quality Vaults
- Stormwater Lift Station
- Oil Water Separator
- Water Quality Vaults

The combined elements above will be sized to handle the offline design flows for both the East and West collections systems at STS (provided in Tables 2 and 3) as well as the offline design flows for STS2.

Filter Media System Sizing

The sizing of the required filter media area is based on the design flow criteria per the Seattle Stormwater Design Manual and the treatment capacity of the filter media. Table 4 provides the required filter media using Oldcastle’s StormMix product.

Table 4 – BioPod Filter Media Area Requirements

Water Quality System	Water Treatment Flow (2.3 factor of Safety) (cfs)	Filter Media Treatment Capacity (Required Treatment Surface Area (surface area)
East	0.28	281 sf / cfs	78
West	0.41	281 sf / cfs	115

The resulting size of the combined water quality system is shown in Table 5.

Table 5 – Water Quality Elements for STS2 with Combined Stormwater Flows

Component	STS2 Only		Combined Sites		Basis of Design
	Design Flow	Number of Units	Design Flow	Number of Units	
Pump Station	325 gpm		460 gpm		SPU Standard Duplex Station
Oil Water Separator	325 gpm	2	460 gpm	3	VortclarexVCL80-2 by Contech
Biopods	750 gpm (2.3 factor)	7	1,100 gpm (2.3 factor)	10	BPU-812IB units by Oldcastle

See Attachment C for the planned layout of the water quality system for STS2 with the added units to handle the STS flows.

Operation and Maintenance

The assumed maintenance requirements for all system components are presented in Table 6 below.

Table 6 – Operation and Maintenance Task and Schedule

Component	Maintenance Task		Maintenance Interval
STS Site Elements			
Catch Basins	BMP Inspection	Trash and debris removal	Monthly
	Sump Inspection	Trash and debris removal	Annually
Flow Splitter	Sump Inspection	Trash and debris removal	Annually
Water Quality Vault	BMP Inspection	Measure solids accumulation	Semi-Annually
	Vault Cleaning	Removal of accumulated solids	As Required
STS2 Site Elements			
Catch Basins	Sump Inspection	Trash and debris removal	Annually
Flow Splitter	Sump Inspection	Trash and debris removal	Annually
Hydrodynamic Separator	BMP Inspection	Measure solids accumulation	Semi-Annually
	Structure Cleaning	Removal of accumulated solids	As Required
Pump Station Wetwell	Sump Inspection	Trash and debris removal	Annually
Oil Water Separator	BMP Inspection	Remove floatables	Semi-Annually
		Inspect Coalescing Plates	Semi-Annually
		Measure solids accumulation	Annually
	Structure Cleaning	Removal of accumulated solids	As Required
		Coalescing plate cleaning	As Required
Water Quality Units	BMP Inspection	Trash and debris removal	Monthly
	Filter Media Replacement	Replace Mulch	6 – 12 months
		Replace Filter Media	As Required

Request for Modification of Permit Coverage to Grant Time Extension

SPU requests an extension of the deadline for submitting an Engineering Report, completion design, and installation of the Treatment BMPs. The reasoning and basis for this request is as follows:

1. SPU considered installing basic treatment improvements by making minor modifications to the current stormwater infrastructure; however, it was determined that adding enhanced water quality treatment to STS will provide the highest likelihood of success for adequately reducing pollutants in the stormwater discharge.
2. STS operates seven days a week between 8 AM and 5:30 PM except major holidays. Commercial and self-haul (residential/public) customers bring waste to the facility on the west and east sides of the facility, respectively. Due to space and activity, any construction at the facility significantly disrupts operations which are crucial to both commercial and public customers for safe and proper waste disposal. SPU does not currently have an agreement with any other local facilities to divert waste streams with the exception of emergencies. The limited available space and limitations with the existing stormwater collection system make it very

challenging, and in some alternatives unfeasible, to add enhanced water quality treatment at STS. Combining the stormwater discharge flows from STS with the improvements planned for STS2 and siting the Treatment BMPs at STS2 will provide the greatest flexibility in design and opportunity to provide the necessary water quality treatment system.

3. Combining the water quality treatment systems lowers the overall operation and maintenance for the stormwater collection system and water quality treatment for both locations.
4. The STS2 project is already contracted for design and is past the initial stages of project startup and funding. It is advantageous to include improvements to address STS stormwater quality in the STS2 project rather than initiate a new capital project. However, contracting law requires SPU to follow competitive processes for bidding on the construction of the STS2 project following final design.
5. Conveyance of stormwater from STS across South Kenyon Street to the SRDS parcel for combined treatment will require significant coordination, review time, and likely additional permitting with the Seattle Department of Transportation and Seattle Department of Construction Inspections.

In the intervening time before the enhanced water quality treatment BMPs are installed and operational, SPU will continue to operate and maintain the STS stormwater system in accordance with the ISGP.

Timeline for Implementation of Stormwater Treatment

Another advantage to moving forward with combining the stormwater treatment systems from both sites is the ability to engage the design consultant already under contract for the work at STS2. SPU will be able to move right into predesign investigations and not have to go through a new consultant solicitation process.

Table 7 proposes the completion dates for submitting the Level 3 Corrective Action Engineering Report and associated Design Documents, and construction and commissioning of the Treatment BMPs for STS.

Table 7 – Estimated Implementation Schedule

Implementation Schedule Completion Dates	
Amendment Negotiations	June 15, 2024
Predesign Investigations	October 31, 2024
Level 3 Corrective Action Engineering Report and 30% Design	March 31, 2025
Final STS 2 Design	July 31, 2025
STS2 Construction Permitting	August 31, 2025
Advertise for Bid and Contractor NTP	December 31, 2025
Construction	June 30, 2029
Start Up and Commissioning	January 31, 2030
Submittal of Operations & Maintenance Manual	February 28, 2030

The implementation schedule presented above is an estimate based on currently available information. Unforeseen delays due to increased permit review timelines, scope changes, changed conditions, unsuccessful bids etc., may change this schedule; however, SPU will make every effort to meet or exceed this schedule.

Stormwater Quality Efforts Prior to Commissioning of Stormwater Treatment

Corrective Actions Already Implemented

SPU currently conducts a robust operational BMP program to help manage sources of stormwater pollutants including conducting sweeping throughout the day using an SPU-owned vacuum sweeper truck, and supplemental sweeping during non-business hours using a sweeping vendor. SPU also contracts a vendor to inspect and clean stormwater infrastructure on a regular basis including jetting and vactoring catch basins, conveyance pipes, oil-water separators, and vaults. Ongoing stormwater BMP training is provided to SPU staff as well as vendors to ensure stormwater management remains a priority in daily operations.

In response to the benchmark exceedances reported in 2023, the STS implemented Level 1 corrective actions (inspections, investigations, and SWPPP reviews). The SWPPP was also comprehensively revised in 2023. Following the first quarter 2023 benchmark exceedances, STS contracted a vendor to perform stormwater conveyance structure cleaning, including vactoring out floatable debris in the water quality vaults. STS also replaced the onsite vacuum sweeper brushes and met with operators

who perform onsite sweeping to discuss sweeping techniques and target areas. In the third quarter 2023, STS installed socks filled with MetalZorb® media in the catch basin fabric filters and increased the stormwater conveyance structure cleaning schedule.

Planned Corrective Actions

SPU has evaluated STS stormwater catch basin measurements for installing CleanWay® catch basin inserts with rigid strainer baskets, fabric filters, and MetalZorb® elements as an interim solution for treatment at STS. These catch basin inserts, and specific filter elements were selected for their ability to capture large debris in the rigid strainer basket and smaller sized sediments in the geotextile fabric filters, and to provide treatment of metals (copper and zinc) through increased contact time with the MetalZorb® media insert element, thereby reducing concentrations of turbidity and metals in stormwater discharges. SPU evaluated each catch basin at the STS and selected approximately 10 locations that will be equipped with these inserts to provide more robust runoff treatment in high-traffic/high-flow-receiving areas, and they will be maintained on the same schedule as the existing filters. The remainder of the catch basins will keep their filter fabric inserts with MetalZorb® and oil control socks. Ordering, receipt, and installation of the CleanWay® catch basin inserts will occur within the second quarter of 2024. SPU will continue to implement the ISGP.

Conclusion

SPU has been working for a number of years to maintain the existing system, implement Level 1 and Level 2 Corrective Actions required under the ISGP, and to otherwise maintain permit compliance. SPU recognizes the need, and requirements under the ISGP, for Treatment BMPs at STS under Permit WAR125583.

SPU feels that the addition of enhanced water quality treatment BMPs will provide the treatment needed to successfully lower the turbidity and reduce the heavy metals from stormwater prior to discharge. Conveying the stormwater from STS to the water quality treatment system planned for STS2 provides the adequate area needed for the enhanced water quality system, consolidates the operational and maintenance efforts for both sites, and provides the ability to expand or modify the water quality system in the future.

SPU is requesting a permit modification for a deadline extension to accomplish the design and construction tasks to provide the best possible long-term solution for both sites.

References

The following references were used in the development of this report and are available upon request.

1. Combined Stormwater Treatment System Alternative Analysis Report, Draft; Herrera, May 2024.
2. Combined Stormwater Treatment System Feasibility Memorandum; Herrera, September 2023.
3. South Transfer Station Construction As-Builts; Mortenson/URS, June 2013
4. January 30, 2024 Site Visit Report; BHC, February 2024
5. Final Drainage Report, Seattle Public Utilities South Transfer Station; URS, September 2010
6. South Transfer Station Phase II – 60% Design Stormwater Technical Memorandum for Parcel; Herrera, August 2023
7. South Transfer Station Phase II – SW Pump Station Basis of Design; BHC, June 2023

**Attachment A – Oldcastle BioPod System Brochure and Oldcastle Specifier
Drawing BPU-812IB**

Biopod™ System

with StormMix™ Media

Biofiltration

Environmentally Friendly

Aesthetically Pleasing

Low Maintenance



**Stormwater
Treatment
Naturally**

 **Oldcastle Infrastructure™**
A CRH COMPANY

BioPod™ systems utilize an advanced biofiltration design for filtration, sorption and biological uptake to remove total suspended solids (TSS), dissolved metals, nutrients, gross solids, trash and debris as well as petroleum hydrocarbons from stormwater runoff. BioPod systems are a proven, Low-Impact Development (LID) solution for stormwater treatment that integrate seamlessly into standard site drainage and can accommodate a wide variety of vegetation to meet green infrastructure requirements.

Biofilter system. Stormwater treatment naturally.

BioPod™ uses proprietary StormMix™ media, an engineered, high-flow media to enable treatment of a large area in a compact footprint. The BioPod system comes as an all-in-one, single-piece unit composed of durable precast concrete for ease of installation and a long service life. Offering flexibility of design and construction for your storm drain system, the BioPod system is offered in four configurations: planter, tree, surface, and underground.

High-Flow Bypass

BioPod system offers an optional internal high-flow bypass that eliminates the need for a separate bypass structure, reducing costs and simplifying design so unit can be placed in a “sag” condition.

Hydromodification

BioPod system can be used in conjunction with other Oldcastle detention systems to address hydromodification and water treatment requirements. Collected flows may be utilized to supplement irrigation of the unit or surrounding vegetated areas by integrating a harvesting system, reducing consumption of local potable water.

LEED with BioPod

The BioPod system is approved by regulatory agencies in Washington, New Jersey, and many others. The BioPod may assist in earning LEED credits for:

- Sustainable Sites
- Water Efficiency
- Materials & Resources

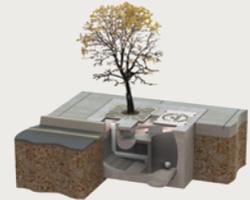


BioPod Configurations



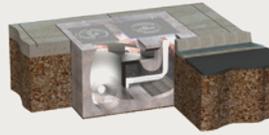
BioPod Planter

Vault with media and vegetation.



BioPod Tree

Vault with media and tree(s).



BioPod Surface

At-grade vault with media only, no vegetation.



BioPod Underground

Below-grade vault with media only, no vegetation.

Standard Sizes

BioPod units (planter, tree, surface and underground) are available in many standard sizes to meet most site-specific requirements. Contact your local Oldcastle Infrastructure representative for additional sizes.

- 4' x 4'
- 4' x 6'
- 4' x 8'
- 4' x 12'
- 6' x 6'
- 6' x 8'
- 6' x 12'
- 8' x 12'
- 8' x 16'

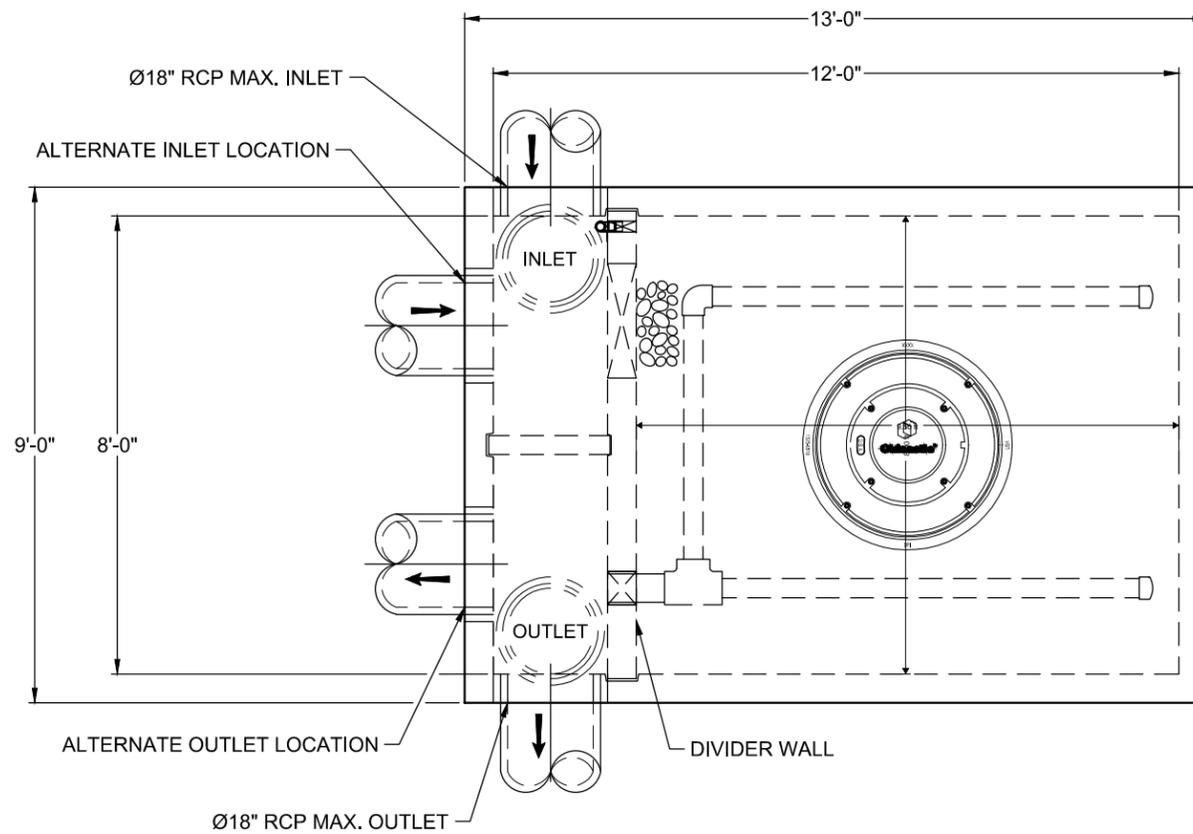
4-A-001 Revision 3/2023

Trusted partnerships.
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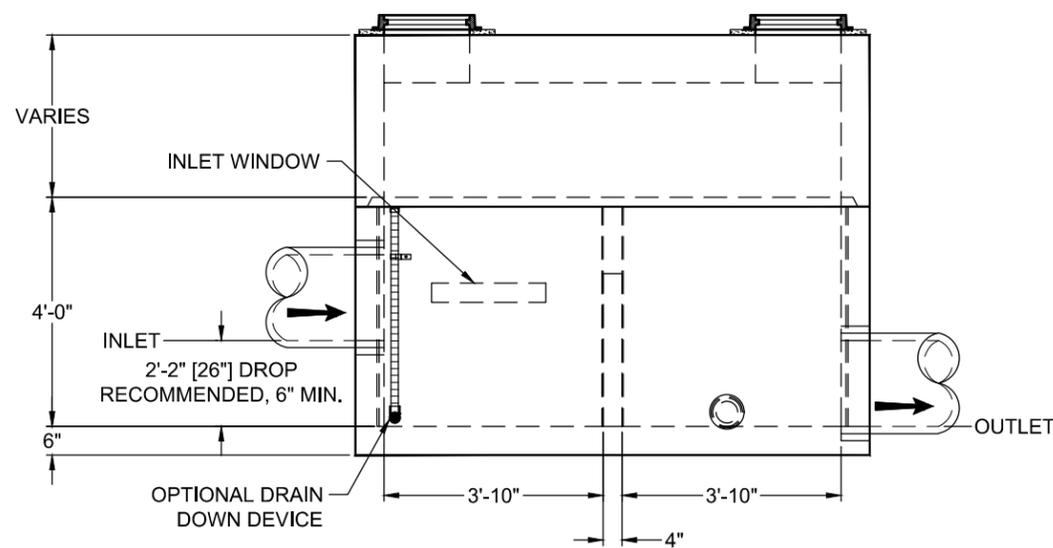
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SITE SPECIFIC DATA				
Structure ID	ID			
Treatment Flow Rate (cfs)	-			
Peak Flow Rate (cfs)	-			
Rim Elevation	-			
Top of Vault Elevation	-			
Pipe Data	Pipe Location	Pipe Size	Pipe Type	Invert Elevation
Inlet	-	-	-	-
Outlet	-	-	-	-
Notes:				
PERFORMANCE SPECIFICATIONS				
Treatment Flow Capacities:*				
NJDEP 80% Removal, 75 micron	0.304 cfs			
WA Ecology GULD - Basic, Enhanced & Phosphorus	0.270 cfs			
Bypass Capacity	6.5 cfs			
*Contact Oldcastle for alternative treatment flow capacities.				

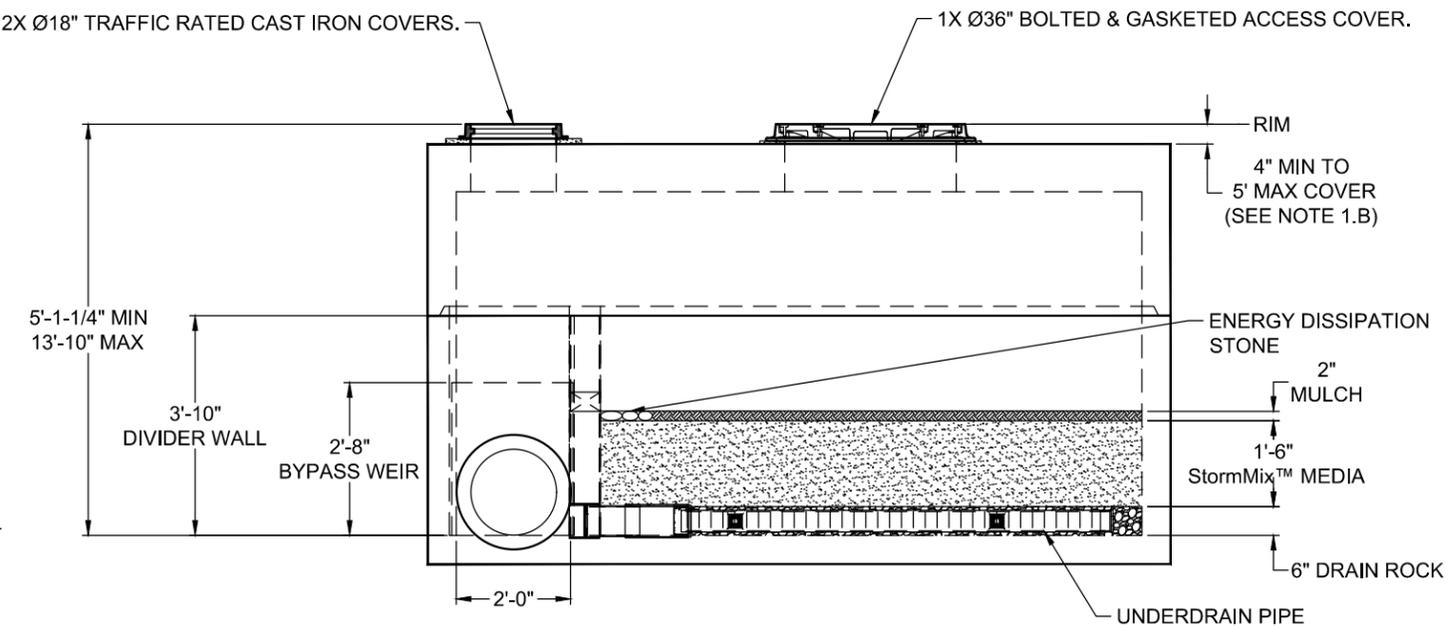


PLAN VIEW

2X Ø18" TRAFFIC RATED CAST IRON COVERS. 1X Ø36" BOLTED & GASKETED ACCESS COVER.



LEFT END VIEW



ELEVATION VIEW

NOTES:

- DESIGN LOADINGS:
 - AASHTO HS-20-44 (WITH IMPACT)
 - DESIGN SOIL COVER: 5'-0" MAXIMUM
 - ASSUMED WATER TABLE: BELOW BASE OF PRECAST (ENGINEER-OF-RECORD TO CONFIRM SITE WATER TABLE ELEVATION)
 - LATERAL EARTH PRESSURE: 45 PCF (DRAINED)
 - LATERAL LIVE LOAD SURCHARGE: 80 PSF (APPLIED TO 8'-0" BELOW GRADE)
 - NO LATERAL SURCHARGE FROM ADJACENT BUILDINGS, WALLS, PIERS, OR FOUNDATIONS.
- CONCRETE 28-DAY MINIMUM COMPRESSIVE STRENGTH: 5,000 PSI MINIMUM.
- REINFORCING: REBAR, ASTM A615/A706, GRADE 60
- CEMENT: ASTM C150
- REQUIRED ALLOWABLE SOIL BEARING CAPACITY: 2,500 PSF
- REFERENCE STANDARD:
 - ASTM C890
 - ASTM C913
 - ACI 318-14
- THIS STRUCTURE IS DESIGNED TO THE PARAMETERS NOTED HEREIN. ENGINEER-OF-RECORD SHALL VERIFY THAT NOTED PARAMETERS MEET OR EXCEED PROJECT REQUIREMENTS. IF DESIGN PARAMETERS ARE INCORRECT, REVIEWING ENGINEER/AUTHORITY SHALL NOTIFY OLDCASTLE INFRASTRUCTURE UPON REVIEW.
- INLET AND OUTLET HOLES WILL BE FACTORY CORED/CAST PER PLAN AND CUSTOMER REQUIREMENTS. INLET AND OUTLET LOCATIONS CAN BE MIRRORRED.
- CONTRACTOR RESPONSIBLE TO VERIFY ALL SIZES, LOCATIONS, AND ELEVATIONS OF OPENINGS.
- CONTRACTOR RESPONSIBLE TO ENSURE ADEQUATE BEARING SURFACE IS PROVIDED (I.E. COMPACTED AND LEVEL PER PROJECT SPECIFICATIONS).
- SECTION HEIGHTS, SLAB/WALL THICKNESSES, AND KEYWAYS ARE SUBJECT TO CHANGE AS REQUIRED FOR SITE REQUIREMENTS AND/OR DUE TO PRODUCT AVAILABILITY AND PRODUCTION FACILITY CONSTRAINTS.
- MAXIMUM PICK WEIGHTS*:
 - TOP: XX,XXX LBS
 - BASE: XX,XXX LBS* (* COMBINED WEIGHT OF BASE INCLUDES BYPASS WEIR, DIVIDER WALL, ROCK & MEDIA)
- INTERNALS SHALL CONSIST OF UNDERDRAIN PIPE, ROCK, STORMMIX™ MEDIA, MULCH, DIVIDER WALL, BYPASS WEIR AND OPTIONAL DRAIN DOWN.



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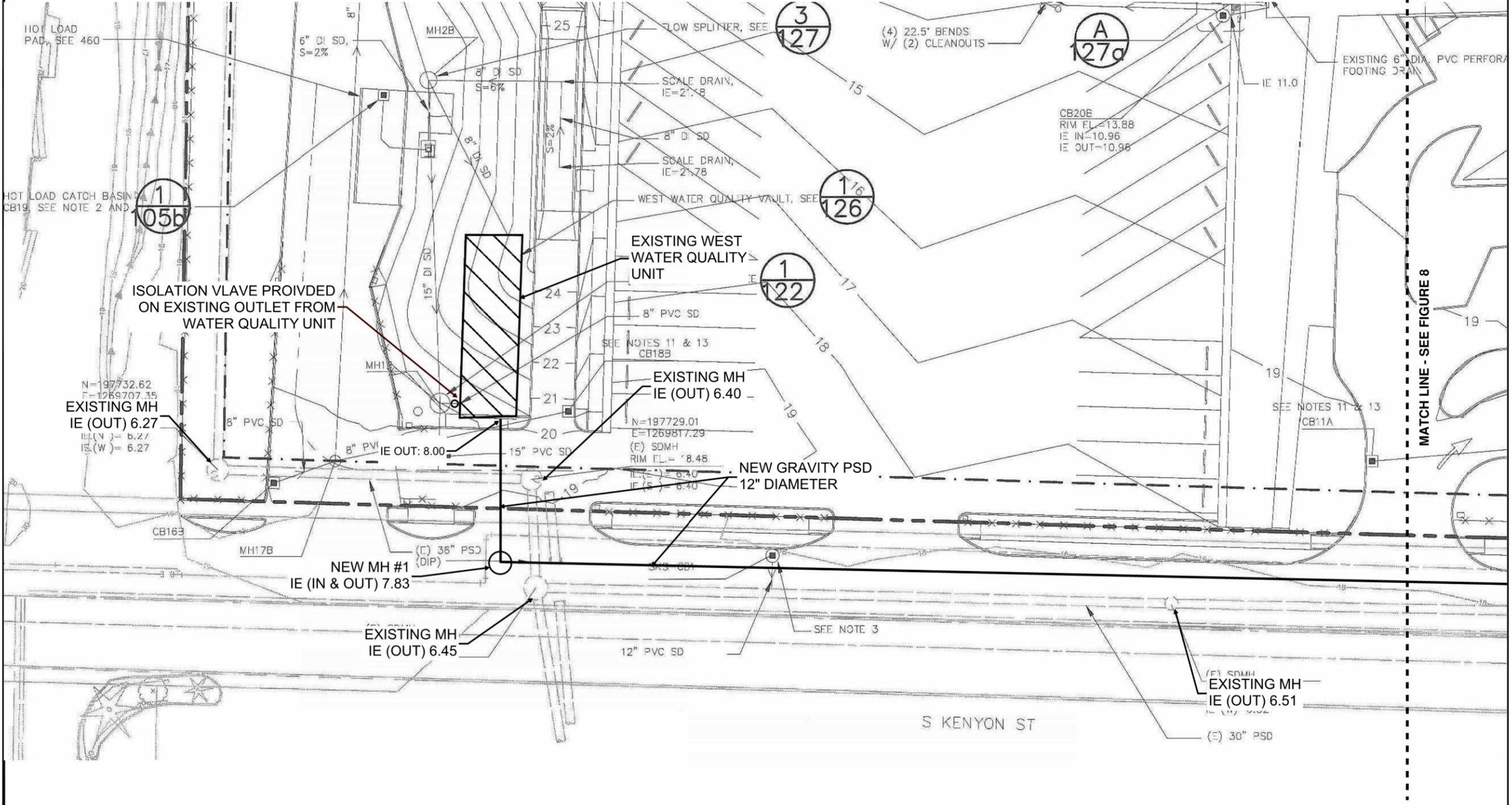
BioPod™ Biofilter System (STANDARD)
 8' x 12' Underground with Internal Bypass

CUSTOMER	-	
PROJECT NAME	-	
SHEET NAME	REVISION	SHEET
Specifier Drawing BPU-812IB	-	1 OF 1
REV DATE	-	



Attachment B – Alternative 3 Gravity Main Conceptual Routing

NORTH



- NOTES:**
1. DETAIL CALLOUTS AND PIPE INFORMATION FROM STS AS-BUILT DRAWINGS.
 2. OUTLET FROM WEST WATER QUALITY UNIT IS AT CURRENT OUTLET LOCATION AND IS APPROXIMATELY 9 FT ABOVE THE FLOOR OF THE VAULT. VAULT CAN BE KEPT IN SERVICE FOR CONTINUED SOLIDS SETTLING OR MODIFIED TO PREVENT ANY WATER RETENTION.
 3. INVERT ELEVATIONS BASED ON A MINIMUM SLOPE OF 0.5%.
 4. ALL PIPING ASSUMED TO BE 12" IN DIAMETER.
 5. MAINTENANCE HOLES PER SPU STANDARDS.
 6. ISOLATION VALVE PROVIDED ON EXISTING OUTLET FROM WATER QUALITY UNIT TO PROVIDE A MEANS FOR DIVERTING FLOWS BACK TO ORIGINAL DESIGN.

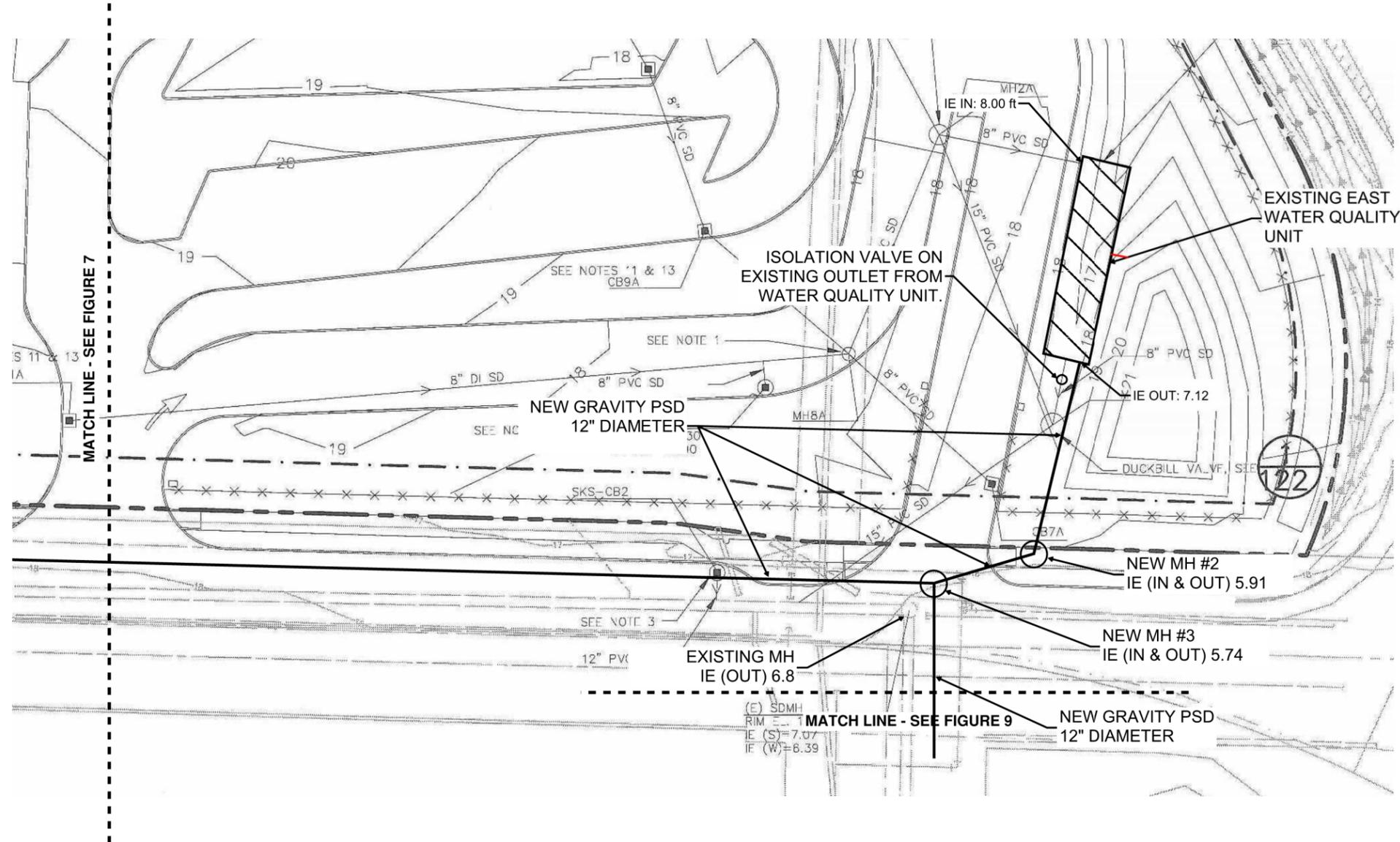
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SEATTLE PUBLIC UTILITIES
STS / STS2 COMBINED STORMDRAIN EVALUATION
 ALTERNATIVE 3 - TREATING STORMWATER FROM BOTH SITES AT STS2
 FIFTH AVE SOUTH (WEST)

Figure 7

NORTH



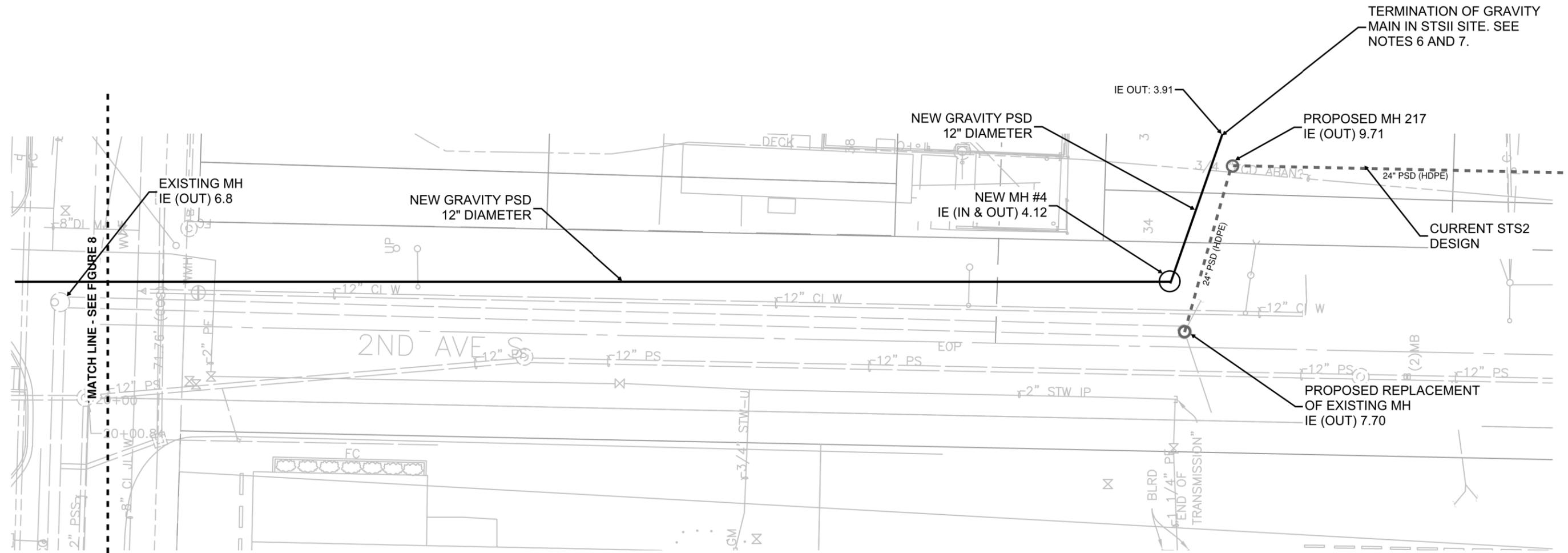
- NOTES:**
1. DETAIL CALLOUTS AND PIPE INFORMATION FROM STS AS-BUILT DRAWINGS.
 2. OUTLET FROM EAST WATER QUALITY UNIT IS APPROXIMATELY 4 FT ABOVE THE FLOOR OF THE VAULT. VAULT CAN BE KEPT IN SERVICE FOR SOME SOLIDS SETTLING OR MODIFIED TO PREVENT ANY WATER RETENTION.
 3. INVERT ELEVATIONS BASED ON A MINIMUM SLOPE OF 0.5%.
 4. ALL PIPING ASSUMED TO BE 12" IN DIAMETER.
 5. MAINTENANCE HOLES PER SPU STANDARDS.
 6. ISOLATION VALVE PROVIDED ON EXISTING OUTLET FROM WATER QUALITY UNIT TO PROVIDE A MEANS FOR DIVERTING FLOWS BACK TO ORIGINAL DESIGN.

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SEATTLE PUBLIC UTILITIES
STS / STS2 COMBINED STORMDRAIN EVALUATION
 ALTERNATIVE 3 - TREATING STORMWATER FROM BOTH SITES AT STS2
 FIFTH AVE SOUTH (EAST)

Figure
8



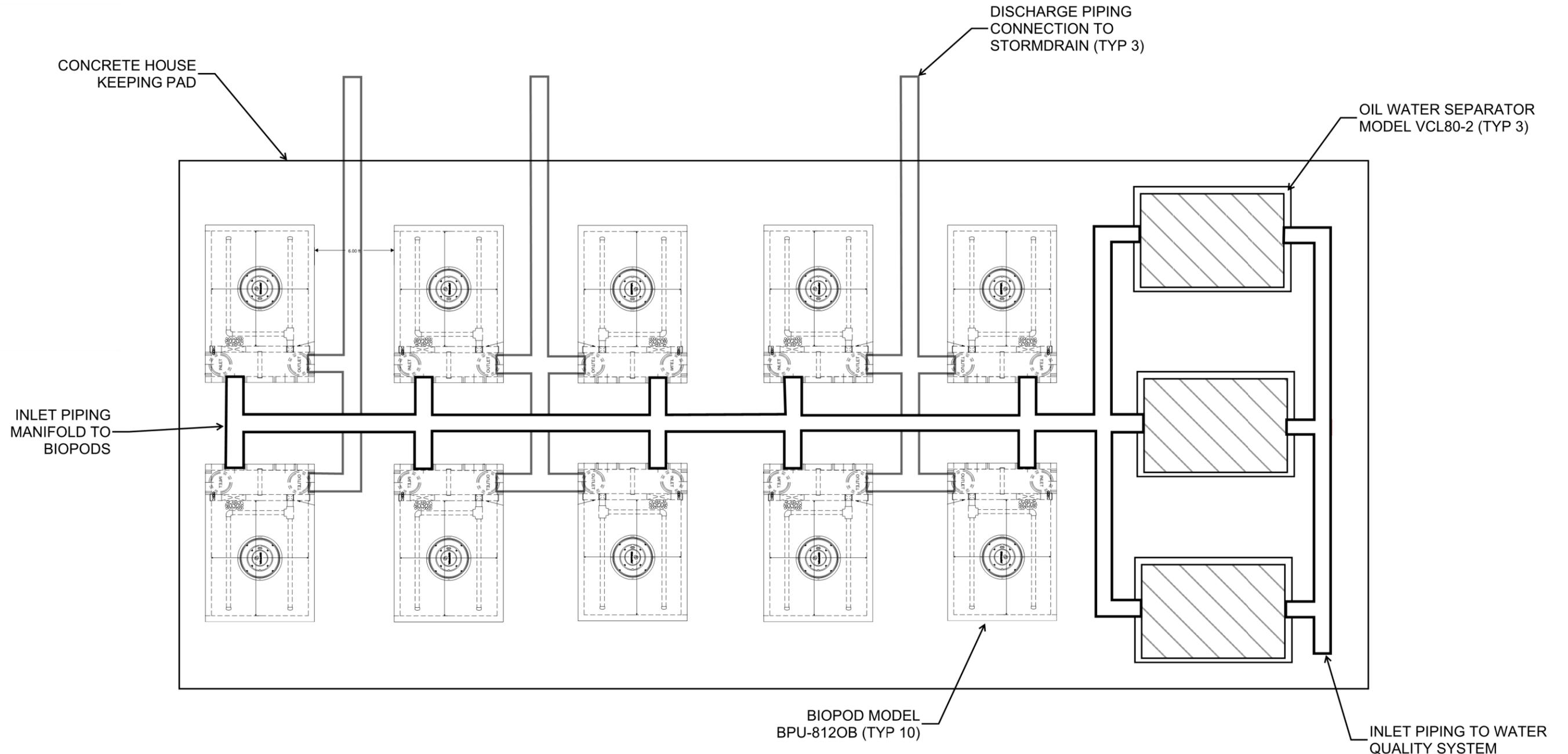
NOTES:

1. EXISTING PIPE INFORMATION FROM STSII EXISTING CONDITIONS DRAWINGS. CURRENT STS2 DESIGN FROM 60% DESIGN PACKAGE.
2. INVERT ELEVATIONS BASED ON A MINIMUM SLOPE OF 0.5%.
3. ALL PIPING ASSUMED TO BE 12" IN DIAMETER.
4. MAINTENANCE HOLES PER SPU STANDARDS.
5. GRAVITY MAIN FROM STS WILL BE ROUTED TO STS2 STORMWATER PUMP STATION.
6. CURRENT STS2 WATER QUALITY SYSTEM LAYOUT WILL NEED TO BE RE-EVALUATED TO ACCOMMODATE DEEPER WETWELL TO ACCEPT STS GRAVITY MAIN AND ADDITIONAL WATER QUALITY TREATMENT UNITS.
7. THE SIZE OF THE PUMPS SELECTED FOR THE STORMWATER PUMP STATION WILL NEED TO BE EVALUATED AND WILL MOST LIKELY INCREASED IN PUMPING CAPACITY TO ACCOMMODATE THE ADDITIONAL OFF LINE FLOWS FROM STS.



SEATTLE PUBLIC UTILITIES
STS / STS2 COMBINED STORMDRAIN EVALUATION
 ALTERNATIVE 3 - TREATING STORMWATER FROM BOTH SITES AT STS2
 SECOND AVE SOUTH

Attachment C – STS2 Water Quality System Improvements



NOTES:

1. BIOPODS AND OIL WATER SEPARATORS WILL OPERATE IN PARALLEL.
2. VALVING WILL BE PROVIDED TO TAKE INDIVIDUAL STRUCTURES OFF LINE DURING MAINTENANCE
3. ALL PIPING WILL BE COATED DUCTILE IRON PIPE.
4. ALL UNITS WILL BE ACCESSIBLE FROM ABOVE VIA AN FRP GRATE WORKING PLATFORM. NOT SHOWN FOR CLARITY.
5. HYDRODYNAMIC SOLIDS SEPARATOR AND STORMWATER LIFT STATION ARE UPSTREAM OF THESE ELEMENTS.

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SEATTLE PUBLIC UTILITIES
STS / STS2 COMBINED STORMDRAIN EVALUATION
 STS2 WATER QUALITY SYSTEM IMPROVEMENTS

Figure
10