APPENDIX 18B

Temporary Discharges

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1. INTRODUCTION

This document presents Seattle Public Utilities (SPU) standard business practices for evaluating temporary connections and discharges to SPU drainage and wastewater infrastructure.

For all construction projects, the 2016 Stormwater Code has a minimum requirement to "Control Dewatering". Construction Dewatering is also addressed in the 2014 City of Seattle Standard Specifications in Sections 8-01.3(2) D; 8-01.3(2) E; 8-01.3 (12), 8-01.3 (12) D.

These guidelines are standard business practices of SPU reviewers (and designers) making decisions about allowing temporary discharges into SPU's infrastructure. This document is meant to aid SPU reviewers in the review and decision-making for temporary discharges. It is important to note that reviewers have discretion in every aspect of their decision. It is up to the SPU engineer's judgment to decide on an appropriate balance between SPU's interests, a project's needs, and the ultimate public benefit of allowing the discharge. If challenges to the SPU engineer's decisions arise, they will be resolved through the SPU supervisory process, starting with the engineer's supervisor.

1.1 DEFINITIONS

Term	Definition
Drainage Water	Stormwater and all other discharges permissible per Seattle Municipal Code (SMC) 22.802.030.A. This includes surface water and groundwater, although either may need to be treated to become a 'permissible discharge".
Groundwater	Water in a saturated zone or stratum beneath the surface of land or a surface water body, permanently, seasonally, or as the result of the tides. Refer to Ground Water Quality Standards, Chapter 9 173-200 WAC.
Permissible Discharge	Defined in SMC 22.802.030 as water that has been treated to the extent required so that it may be discharged to the Separated Storm System. (e.g. groundwater with contaminants that may be treated to become 'uncontaminated groundwater', which is a Permissible Discharge.)
PSD	A separated public storm main.
POD or POC	Point of Discharge or Point of Connection, respectively. The specified location to which a discharge will connect its temporary discharge. King County uses the vernacular POD. The City of Seattle Department of Planning and Development (DPD) uses both.
Process Water	Water that has been used during a process that makes it prohibited from discharging to the separated storm system. Examples include well-establishment water, wheel wash water, tunneling waste, and auger waste. .
Sanitary	Any conveyance system which carries wastewater, is not designed to convey drainage water, and is ultimately connected to the King County sewer system.
Combined Sewer System	Any conveyance system which carries drainage water and wastewater and flows to a publicly owned treatment works.
Separated Storm System	The public drainage conveyance system for only drainage water. This could include PSDs (with a dedicated outfall, but not PSDs that discharge to the combined sewer system), ditch and culverts, creeks, etc.
SSPTD	Side Sewer Permit for Temporary Discharge (or Dewatering). A permit that allows

Term	Definition
	temporary discharge of on-site surface and subsurface water to existing public drainage and/or sewer facilities during construction activities. This permit is issued by DPD's side sewer permitting team.
Drainage Water	Stormwater and all other discharges permissible per Seattle Municipal Code (SMC) 22.802.030.A. This includes surface water and groundwater, although either may need to be treated to become a 'permissible discharge".
Groundwater	Water in a saturated zone or stratum beneath the surface of land or a surface water body, permanently, seasonally, or as the result of the tides. Refer to Ground Water Quality Standards, Chapter 9 173-200 WAC.
Permissible Discharge	Defined in SMC 22.802.030 as water that has been treated to the extent required so that it may be discharged to the Separated Storm System. (e.g. groundwater with contaminants that may be treated to become 'uncontaminated groundwater', which is a Permissible Discharge.)

2. WHAT IS DEWATERING? WHY IS IT IMPORTANT?

Dewatering discharges are usually construction-related discharges, including drainage water (surface rainwater and groundwater) and process water. Requests for temporary discharges, however, can come from a variety of sources, including water from ships and barges temporarily moored in Seattle and ongoing remediation projects with regular small discharges.

SPU has interest in controlling the amount and rate of discharge into its main lines, as well as how connections to its infrastructure are constructed.

The purpose of reviewing temporary discharges to SPU's drainage and wastewater

infrastructure is to decide on an appropriate balance between SPU's interests, a project's needs, and the ultimate public benefit of allowing the discharge. The goal is to:

1. **Abate potential risks** of backups in SPU infrastructure and causing, or contributing to, a combined sewer overflow (CSO) event. Backups in SPU's system can cause backups into side sewers and localized flooding. SPU could be required to pay claims for damage associated with these backups, and could be held responsible to Washington State Department of Ecology for CSOs pursuant to SPU's Consent Decree with the Environmental Protection Agency, Department of Justice, and the Washington State Department of Ecology.
2. **Protect the environment**. Provide water-quality requirements for discharges to the Separated Storm System, and determine discharge rate restrictions.
3. **Protect SPU's assets**. Ensure that connections to SPU infrastructure do no harm. Facilitate inspections of the connections (and their removals).
4. **Enable billing**. A clearly established process to permit dewatering discharges allows the discharges to be billed when required.

3. WHAT ARE THE PERMITS INVOLVED? WHO ELSE IS INVOLVED IN THE PROCESS?

As of this writing, there is only an ***informal* process** for administering dewatering decisions.

When a project connects to the Sanitary or Combined System, a King County Industrial Waste (KCIW) Discharge Authorization (DA) is required. Sewer fees may be applied to the discharge. If the discharges are charged sewer fees, an account is set up with SPU's Customer Service Branch in association with the King County Industrial Waste (KCIW) Discharge Authorization (DA). Currently, the SPU billing contact is **Daniela Schwedas**.

For private property projects that receive a DPD construction permit, the DPD Drainage and Side Sewer reviewers also review the dewatering design (included in the Construction Stormwater Control Plan). It is DPD's responsibility to communicate discharge-rate restrictions and to approve the point of connection, which should be shown on approved plans in the project's permit set. If the discharge goes to the Sanitary or Combined System, DPD requires the applicant to submit an approved KCIW DA prior to approving the temporary discharge.

For **non-SPU capital projects** solely in the ROW, a DSO engineer or the assigned SPU drainage reviewer (for a Major Interagency Project) is responsible for reviewing and approving the dewatering connection and discharge rate. There is no City 'dewatering' permit for these projects; the only City-required permit is the SDOT Street Use Permit. This is why the reviewer should require the inclusion of the dewatering conditions in the project bid documents.

For **SPU CIP projects**, the SPU design team is responsible for designing the dewatering system (and the Construction Stormwater Control Plan design), identifying the point of discharge, and deciding the allowable discharge rates. Again, there is no City 'dewatering' permit for projects in the ROW; the only required permit is the SDOT Street Use Permit. This is why the SPU reviewer (or designer) should require the inclusion of the dewatering conditions in the project bid documents. Some SPU CIP projects may have portions of the projects on private parcels, and DPD reviews the dewatering requirements for those portions of the projects.

For **large projects that require an Ecology Construction Stormwater General Permit** (projects that will disturb one or more acres of land and discharge to the separated storm system), construction discharges to the separated storm system are regulated by Ecology's Construction Stormwater General Permit. However, the discharge plan should be coordinated with all City permits, and the SPU reviewer (or designer) should still require that necessary restrictions and conditions be included in the project bid documents.

A note to CIP designers: When considering discharging directly to a receiving water body, a permit from the Army Corps of Engineers and others may be required for construction of any structure (e.g., a discharge pipe or dispersion device).

A note for SPU's Field Operations & Maintenance (FOM) discharge: Discharges from SPU Crew work should be in accordance with FOM Standard Operating Procedures for discharges, as well as regulations from King County Industrial Waste. Flow rate and water quality restrictions may apply to FOM discharges.

4. WHERE DO I START?

Decide to which sewer system the discharge should be permitted to go. Usually the options are: a combined sewer; a separated sanitary sewer; a storm drain discharging to the combined sewer, a receiving water body, or a creek; or a ditch & culvert system. See Table B-1 for specific flow rate thresholds for different water sources and receiving systems. Many times, it is up to the SPU reviewers (or designer's) best judgment which system is most appropriate for a specific discharge.

The starting point for the decision is that **drainage water belongs in the drainage conveyance system**. However, the pipes available to the project site and the condition of the sewer and drainage systems in the vicinity can affect the approved receiving system.

If a drainage system or receiving water body is available, **drainage water should be treated to become a permissible discharge** (per Stormwater Code 22.802.030) and kept out of the Sanitary or Combined systems. However, the reviewing engineer should use their best judgment. For example, if a project's discharge is for a very short duration, it may make more sense to allow a connection to the sanitary or combined system instead of testing and treating drainage water to discharge to the PSD. In some cases, an economic analysis can assist in making and documenting a decision.

Wastewater and process water needs to be discharged to the sanitary or combined sewer system.

4.1 HOW DO I CHOOSE A POINT OF DISCHARGE?

The preferred POD allowed for construction discharges and all temporary discharges **is a private side sewer or private structure on private property**. However, some construction projects do not have access to an adequate privately owned pipe or structure. Typical examples of this include project sites that are solely located in the ROW (e.g. SDOT roadway projects) or projects that are located in areas that don't have side sewers or private inlets that drain to the correct sewer system (e.g. a project on Parks property, or a project on an undeveloped parcel without an existing side sewer).

Projects that do not have a side sewer to connect to, but have a new side sewer designed as part of the project, should phase the project to build the side sewer and use it as their POD during the remainder of the construction. This is usually applicable to construction of a private parcel development.

Discharge is not allowed into a structure with monitoring equipment installed in it, unless approval from the owners of the equipment is obtained. Monitoring equipment can have a variety of ownership and many are unmapped. System designers and the reviewer are encouraged to investigate structure/s during design to identify factors that could affect discharge location.

The allowed Point of Discharge (POD) can be affected by the infrastructure that is available to the project and the project's discharge rate and duration. There are also some projects where the main must be extended and the project can't temporarily dewater until the main construction is completed. **Types and locations of POD are listed below in order of preference to SPU:**

1. Private structure on private property (i.e., a side sewer or a private drain on private property that connects to a side sewer connected to an SPU mainline).

2. Existing unused side sewer in the ROW (condition must be verified).
3. Non-structural connection to SPU infrastructure. This could be discharge to the gutter line with a downstream inlet, surface discharge draining to an SPU MH or CB (i.e., remove the cover and use sandbags to direct flow into the open structure), or a surface pipe with a 90° elbow directing flow into the structure either through the open MH protected with sandbags and an A-frame sign, or a temporary cover with a porthole cut into it. In general, these temporary alterations would be for a short-term scenario with appropriate flow rates for the POD, and where the project can protect the public from the non-structural connections (e.g. an open MH) to SPU infrastructure.
4. Temporary core tap into SPU infrastructure.+

4.2 WHAT ARE THE WATER QUALITY REQUIREMENTS FOR THE TEMPORARY DISCHARGE?

For discharge to the sanitary or combined sewer, the water quality discharge limits are set by KCIW. These are found on the KCIW program's website. Because KCIW issues the Discharge Authorization, King County has the authority to enforce these discharge parameters.

For discharge to the Separated Storm System, the discharge shall meet Ecology's Surface Water Quality requirements in WAC-173-201A, for Freshwater or Marine, whichever is applicable. If the source of discharge water is groundwater, then the discharge must also meet all additional parameters listed in MTCA Method A. The project reviewer should note these requirements on the plans and also the applicant's responsibility for compliance. SPU does not monitor or enforce these criteria due to lack of assigned resources.

4.3 WHAT IS THE MAXIMUM ALLOWED DISCHARGE RATE?

The maximum discharge rate should be specified based on the available capacity of the receiving sewer system, and then possibly further restricted if the connection is made directly to SPU structures.

In general, the discharge rates in Table B-1 are used to specify a maximum instantaneous discharge rate. For projects on private property, DPD sets the discharge rate using this Table. At the reviewer's discretion, the rate can be lowered or raised based on project needs and review and risk assessment of the sewer capacity. The goal is to determine a discharge rate that balances protecting the City's interests (i.e., minimizes the risk of backups or flooding) and serves the customer's needs.

Factors in assessing the risk to the City include:

Duration of discharge. A one-time batch discharge over the period of a day is not as concerning as a large construction project that will discharge over several years.

Project's required or requested flow rate. Smaller discharges into larger systems (50 g.p.m to a 24" pipe) are not as concerning as larger discharges to smaller systems (300 g.p.m to a 12" pipe).

Project's Point of Discharge. If the project can only discharge to the curb or into a public CB, the discharge rate is restricted.

Connection to specific SPU structures. Flow rate restrictions for connections to specific SPU infrastructure include:

- For discharge directly into a catch basin, the maximum instantaneous flow rate shall be: 50 g.p.m with a 6" outfall, and 100 g.p.m with an 8" outfall. A higher discharge rate may be allowed at the discretion of an SPU engineer based on the collected drainage area of the CB and other factors.
- Discharges into the curb line or into an inlet should take into account the drainage area served, and the capacity of the inlet grate and outfall line.

Known issues of SPU's Infrastructure. Data may exist about pipe capacity constraints downstream from the proposed POD that limit discharge rates. Sources for these data include: Pipe information in GIS or as-built drawings, Sewer Capacity Model, Work Order history, and local knowledge. This is more likely to apply to the sanitary or combined sewer system than for the separated storm system. A process for checking pipe capacity is described below.

1. **Theoretical pipe capacity calculation (for sanitary or combined sewers).** Calculate the theoretical pipe capacity for each pipe segment from the proposed discharge point to the confluence with the King County system (or outfall point). SPU uses 10% of full flow capacity as a base for appropriate discharge. Resources for this calculation include the theoretical flow capacity calculator spreadsheet, and Haestad's FlowMaster.
2. **SPU Sewer Capacity Model (for combined sewers).** Review the Sewer Capacity Model on ArcMap to see if there are modeled shortfalls for the pipes.
3. **History of SPU work orders (for all SPU sewers).** Review the Field Ops Mapping System (FOMS) to see if work orders exist on these pipes that indicate decreased capacity. These would include frequent preventive maintenance cycles (e.g., scheduled root-cutting every 6 months) or responses to backups. To get more information about a specific work order, use the Maximo Reports Access database.

A note to SPU CIP designers: You may need to consult with the DWW LOB for research assistance if you do not have access to the Sewer Capacity Model.

4.4 DESIGN GUIDELINES FOR A CORE TAP INTO AN SPU STRUCTURE FOR A TEMPORARY CONNECTION

A core tap into a brick MH must be:

- Below the upper cone of the MH and witnessed by an SPU inspector.
- The core hole diameter may not be greater than 8" into a brick structure.

A core tap into a concrete structure with a cone top:

- The preferred core location is below the cone.
- A core tap into a concrete cone should be located at ½ the height of the cone.
- The tap location may be in the riser section above the cone/top slab and below the frame and grate.

Core location shall be the maximum distance possible from the ladder and any appurtenance in the structure (e.g. outlet trap, inside drop connection piping, flow control piping, etc.).

5. SPECIAL CONSIDERATIONS TO BE WRITTEN INTO THE PERMIT OR CONTRACT DOCUMENTS

It is important to document restrictions and special conditions in an official, enforceable manner. In many cases, restrictions and special conditions can be included in a permit, but sometimes the only way to document requirements is to include them in a project's plans or specifications.

Permits are typically a KCIW Discharge Authorization, SDOT Street Use Permit, or potentially a DPD-Issued SSPTD. For MIPs and other-agency projects, the plan reviewer may require that the conditions are included on the plans, specs, or other contract documents. For an SPU CIP project, the conditions should be included in the plans, specs, or other contract documents.

Include the following special conditions for each discharge scenario:

5.1 WHEN THE DISCHARGE IS A SURFACE DISCHARGE AND DIRECTED INTO SPU INFRASTRUCTURE:

- The final configuration must be approved by an SPU inspector when discharge occurs on the surface in City ROW.
- The structure shall be left in as good or better condition than it was prior to the project's connection. If the structure is damaged during work associated with the temporary connection, the contractor is responsible for repairing or replacing the structure as specified by the SPU inspector.

5.2 WHEN DISCHARGE IS PIPED INTO THE COVER OR OPENING OF AN EXISTING STRUCTURE:

- Discharge pipe must be hard-plumbed and fitted with a 90-degree pipe and must extend at least three feet into the structure;
- A temporary cover must be placed over the opening of the structure; and
- Temporary fencing must be placed around the structure to restrict accessibility.
- The structure shall be left in as good or better condition as it was prior to the project's connection. If the structure is damaged during work associated with the temporary connection, the contractor is responsible for repairing or replacing the structure as specified by the SPU inspector.
- During periods where SPU requires access to the structure, SPU representatives reserve the authority to request that discharge through the temporary connection be stopped.
- Include any additional requirements for the CB or MH such as: "The sump of the catch basin must be cleaned before and after permitted discharge."
- Include any additional site-specific instructions about the location, methods, or materials of the connection.

5.3 FOR A TEMPORARY CONNECTION: CORE TAP TO AN EXISTING MAINTENANCE HOLE:

(Language in italics should be included or modified to be applicable to the individual site)

- Connection must be scheduled, inspected, and approved by the project's SPU inspector (specify project's assigned inspector, or by the SPU core tap crew. If project needs a core tap, include this language: "Contractors are not allowed to core into mains or structures without prior approval from SPU. To schedule core taps, contact SPU at 206-615-0511 a minimum of 48 hours in advance. SPU shall be on site prior to the start of contractor performed core tap. Contractors performing core taps shall provide the cored coupon of removed material to SPU.").
- There shall be a maximum of 3" of protrusion of the temporary piping into the structure.
- There shall be 12" minimum clear on the inside diameter between any two core holes.
- After the temporary connection is removed, the hole shall be plugged. Remove all pipe (including sand collar), mud in the hole with grout that meets City of Seattle spec 9- 12.4(3) (ref. 9-04.3(2)C), and smooth the grout to match the inside face of the structure.

The repair shall be inspected and approved by the project's SPU inspector (or by the SPU core tap crew).

- The structure shall be left in as good or better condition as it was prior to the project's connection. If the structure is damaged during work associated with the temporary connection, contractor is responsible for repairing or replacing the structure as specified by the SPU inspector.
- During periods where SPU requires access to the structure, SPU representatives reserve the authority to request that discharge through the temporary connection be stopped.
- *For pumped flows, there shall be a minimum of ten feet of gravity pipe prior to connection to the SPU structure.*
- *Core tap into a Brick MH must be below the cone and witnessed by an SPU inspector.*
- *The core hole may not be greater than 8" into a brick structure.*
- *Core tap into a concrete structure with a cone top: the preferred core location is below the cone. Core tap to a concrete cone should be at ½ the height of the cone.*
- *Connection may be in the riser section above the cone/top slab and below the frame & grate.*
- *Core location shall be the maximum distance possible from the ladder and any appurtenance in the structure (e.g. outlet trap, inside drop connection piping, flow control piping, etc.).*
- *Include any site-specific instructions about the location, methods, or materials of the core tap.*
- *If conditions warrant an inside drop connection, include the following language:*
  - The connection shall be a piped inside drop connection per Standard Plan 233b with the following modifications:
    - Pipe hangers shall be spaced 5' minimum
    - No clean-out will be installed
    - The drop shall be terminated at an elbow on the existing shelf, directing flow to the channel.

All piping and anchors shall be removed with the rest of the temporary connection. Damage to the structure shall be repaired with grout that meets City of Seattle spec 9-12.4(3) (ref. 9-04.3(2) C), and smoothly applied to match the inside face of the structure. The repair shall be inspected and approved by the project's SPU inspector (or by the SPU core tap crew).

5.4 FOR A TEMPORARY CONNECTION: CORE TAP TO AN EXISTING CATCH BASIN:

(Language in italics should be included or modified to be applicable to the individual site)

- The sump of the catch basin must be cleaned before and after the permitted discharge.

- Connection must be scheduled, inspected, and approved by the project's SPU inspector *(specify project's assigned inspector, or by the SPU core tap crew. If the project needs a core tap, include this language: "Contractors are not allowed to core into mains or structures Without prior approval from SPU. To schedule core taps, contact SPU at 206-615-0511 a minimum of 48 hours in advance. SPU shall be on site prior to the start of a contractor performed core tap. Contractors performing core taps shall provide the coupon of removed material to SPU.")*
- The invert of the discharging pipe must be 2" minimum above the invert of the outlet pipe.
- There shall be a maximum of 3" of protrusion of the temporary piping into the structure.
- There shall be 12" minimum clear on the inside diameter between any two core holes.
- Core location shall be the maximum distance possible from the outlet trap and any appurtenance in the structure.
- After the temporary connection is removed, the hole shall be plugged. Remove all pipe (including sand collar), mud in the hole with grout that meets City of Seattle spec 9-12.4(3) (ref. 9-04.3(2)C), and smooth the grout to match the inside face of the structure. The repair shall be inspected and approved by the project's SPU inspector (or by the SPU core tap crew).
- The structure shall be left in as good or better condition as it was prior to the project's connection. If the structure is damaged during work associated with the temporary connection, contractor shall be responsible for repairing or replacing the structure as specified by the SPU inspector.
- During periods where SPU requires access to the structure, SPU representatives reserve the authority to request that discharge through the temporary connection be stopped.
- *For pumped flows, there shall be a minimum of ten feet of gravity pipe prior to connection to the SPU structure.*
- *Include any site-specific instructions about the location, methods, or materials of the core tap.*

6. RESOURCES

Ecology's Surface Water Quality Numeric Criteria
http://www.ecy.wa.gov/programs/wq/swqs/criteria.html

King County Industrial Waste Program
http://www.kingcounty.gov/environment/wastewater/IndustrialWaste.aspx

SPU Field Ops Mapping System (FOMS)
http://fieldoperationsmappingsystem/ergis/

SPU Capacity Model GIS Layer

Access through ArcGIS, or could request DWW LOB to look up any shortfalls (Sahba Mohandessi), Usmgis/Separated Systems/ArcReader/Maps/Sep_Systems_Base_Map

Theoretical Pipe Flow Capacity calculator

Excel spreadsheet, available in the J:PlanReview/Dewatering folder; additional resources are the online pipe flow calculator, and Haestad's FlowMaster, purchase this through IT to download onto your computer.

Online Pipe Flow Calculator:
http://www.calctool.org/CALC/eng/civil/hazen-williams_g

Maximo Reports

This is an SPU application. You can have IT install it on your computer. It is located at N: MAXAPPS.

Table 18B-1
Guidelines for Flowrate Thresholds for temporary discharges to SPU infrastructure

	Discharge Water Source			
Discharge Pipe System	Surface Water	Uncontaminated Groundwater	Process Water	Contaminated Surface and/or Ground Water
PS[2] (wet season)[1]	230 g.p.m[5] for 'batch' discharge	8-in pipe: 65 g.p.m >8-in pipe: 200 g.p.m[7]		Surface Water: 230 g.p.m[5] for 'batch' discharge Groundwater: 25,000 g.p.d
PS[2] (dry season)[1]	230 g.p.m[5] for 'batch' discharge	8-in pipe: 65 g.p.m >8-in pipe: 200 g.p.m[7]		Surface Water: 230 g.p.m[5] for 'batch' discharge

Discharge Pipe System	Discharge Water Source			
	Surface Water	Uncontaminated Groundwater	Process Water	Contaminated Surface and/or Ground Water
				Groundwater: 75,000 g.p.d
PSS[2] (wet season)	not allowed	not allowed	25,000 g.p.d	not allowed[3]
PSS[2] (dry season)	not allowed	not allowed	75,000 g.p.d	
PSD discharging to PS[2] (wet season)	230 g.p.m[5] for 'batch' discharge	8-in pipe: 65 g.p.m >8-in pipe: 200 g.p.m[7]	not allowed	not allowed[4]
PSD discharging to PS[2] (dry season)	230 g.p.m[5] for 'batch' discharge	8-in pipe: 65 g.p.m >8-in pipe: 200 g.p.m[7]		
PSD to Receiving Water (wet season)	No Limitation[6]	230 g.p.m[5]	not allowed	not allowed
PSD to Receiving Water (dry season)	No Limitation[6]	230 g.p.m[5]		
PSD discharging to listed or non-listed creek basin (wet season)	230 g.p.m[5] for 'batch' discharge	230 g.p.m[5]	not allowed	not allowed
PSD discharging to listed or non-listed creek basin (dry season)	230 g.p.m[5] for 'batch' discharge	230 g.p.m[5]		
Ditch & Culvert, or Capacity Constrained Basin (wet season)	230 g.p.m[5] for 'batch' discharge	230 g.p.m[5]	not allowed	not allowed
Ditch & Culvert, or Capacity Constrained Basin (dry season)	230 g.p.m[5] for 'batch' discharge	230 g.p.m[5]		