Standard Operating Procedure:
Sanitary Bypass Pumping

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Scope

This procedure includes all requirements for implementing a temporary pumping system for the purpose of diverting sanitary sewage flow around any construction-related activity to an approved reintroduction point within the sanitary sewer system.

Responsibility

This procedure applies to anyone conducting operations described herein on UVA property.

The UVA Project Manager shall be responsible for managing communication between the Utilities Distribution staff and appropriate members of the project team. The Associate Director for Utilities Distribution or their designee is responsible for reviewing the Bypass Pumping Plan and for working with the Project Manager to ensure project compliance with this policy.

For the purposes of this SOP, the **Requestor** is the contractor performing or overseeing the bypass pumping operation.

1. The Requester shall manage the flow of wastewater in a planned and proactive manner.
2. The project team shall be fully responsible for all damages and costs related to the installation, modification of existing manholes/structures, operation, and maintenance of bypass pumping operations including damages, clean up, fines, penalties, and other related costs.
3. The Requester shall be responsible for the design of the bypass pumping plan and system. The bypass pumping system design shall be developed based upon the requirements provided in Section 1.
4. For all projects requiring bypass pumping, the Requester shall prepare and submit a Bypass Pumping Plan (BPP).

Procedures

1. **Bypass Pumping Plan Requirements -** A Bypass Pumping Plan (BPP) is required for all projects that will perform a sanitary sewer bypass pumping operation. The BPP shall be submitted a minimum of two weeks prior to commencing any portion of the proposed scope of work and shall be approved by UVA Utilities Distribution and the UVA Project Manager prior to beginning work. The Requester shall submit manufacturer's product data, instructions, recommendations, shop drawings, and necessary certifications for the proposed BPP to be reviewed and approved. The BPP must include:
    a. The project name and job number,
    b. The name and address of the Requester,

c. Contact information of the Requester's project manager, superintendent, foreman/supervisor, safety professional, etc.,

d. A description and location of the planned bypass pumping work to be performed and components to be used, including data for stationary and pump and haul bypass systems as applicable,

e. Emergency ("24/7") contact information including the name, cell phone number, and title of the person(s) onsite responsible for the bypass pumping operation,

f. An estimate of the maximum amount of sanitary sewer flow in GPM to be bypassed by the Requester's bypass pumping system and how the flow conditions will be monitored during system operations (including all flow measurement devices, calculations, equipment, or other sources of how data was obtained),

g. Bypass pump(s) size(s) and capacity, as well as the size(s) and capacity of the suction/discharge piping. The description shall also include manhole(s)/structure(s) depth(s) and size(s) that will be used during the bypass pumping operation, sanitary sewer plugging method and type of plugs to be used, flowmeter installation locations, etc.,

h. The date and time the bypass pumping is expected to begin and be completed. Indicate if bypass pumping will take place outside normal work hours. Any request for extension should be communicated to the Project Manager and Utilities

i. The pump curves, showing operating range. This shall include the proposed system curve, addressing the pump operation in relation to the suction/discharge piping's alignment with respect to restriction and/or elevations,

j. Suction and discharge piping material(s) and capacity to be used for the bypass pumping operation, including the material(s) for any bend(s) and/or valve(s) that will be used,

k. All equipment shall be designed and manufactured for sanitary sewer service, shall function acceptably, be reliable, and be free from leaks or other deleterious environmental impacts.

l. During bypass pumping, it will be the Requester's responsibility to always maintain a safe and secure environment. All provisions and/or requirements of the BPP must be followed throughout the course of any bypass flow operations.

m. Requester shall provide UVA with adequate prior notification (at least 5 days) to witness installation and removal of all plugs or for any demonstration of pump and haul operations.

n. A sketch showing the location of the pump(s) and the route of the suction, and discharge piping.

2. **Stationary Bypass Pumping System Requirements**

a. High-level alarm notification to cell phones (pump alert) shall be required if the pumps are not staffed during operation.

b. High-Density Polyethylene (HDPE) is the preferred pipe material for all bypass piping. HDPE shall be used when bypass discharge pipe will be going through streams, storm water culverts, and/or environmentally sensitive areas. Streams, stormwater culverts, and/or environmentally sensitive areas should be avoided as much as possible. At other

locations, flexible discharge hose that is in good condition and does not leak, may be allowed subject to it acceptably passing testing.

c. HDPE pipe must be assembled and joined using couplings, flanges, or fusion welding to avoid joint leakage.

d. HDPE fusion welding must be performed by personnel certified as fusion technician(s) by the manufacturer of HDPE pipe and/or fusing equipment.

e. BPP shall indicate the proposed dimension ratio of the pipe to be used.

f. Rigid suction hose that is in good condition and does not leak may be allowed for withdrawal of flows from the suction point into the bypass pumps.

g. Pipe material other than HDPE shall be submitted for approval as part of the BPP.

h. Neither “Irrigation type” pipe nor glued PVC pipe will be permitted.

i. Any hoses or pipes that leak shall be removed and replaced with non-leaking hoses or pipes. Spare hoses and pipes should be available on site at all times to be installed in the event a hose or pipe is leaking

j. Pumps must be fully automatic self-priming units that do not require the use of foot valves or vacuum pumps to prime the system.

k. No electric pumps will be allowed; all pumps must be diesel powered. Pumps must have screens to prevent clogging.

l. Requester shall provide suitable spill control and containment measures to avoid environmental contamination by pumps, fuels, or lubricants.

m. Requester shall have one backup pump, equal in capacity to the largest pump in the system, connected into the bypass pumping system, and ready for operation in case any of the primary pumps fail. The backup pump shall not be used in Contractor’s calculations for determining the pumping capacity requirements for the stated flow conditions above.

n. Operations and equipment should be inspected daily at the start and end of shift, at minimum, and shall include inspection of pump screens.

o. Lines inserted into any manholes or structures shall be constructed with elbows, or be otherwise angled, to direct discharge along the most efficient path for entry into the downstream line without causing unnecessary turbulence of flow.

p. Requester shall protect all components of the bypass operations from vandalism and vehicular damage by making the site secure.

q. Requester shall be solely responsible for all damages to private and/or public property caused by, or during, the installation, operation, and/or removal of the bypass pumping system.

r. Once all work is completed and the bypass pumping operation is no longer required, the Requester must disinfect and drain the entire bypass pumping system.

s. Plugs must be selected and installed in accordance with the manufacturer’s recommendations.

t. Provide spare plugs on-site ready to be installed in the event a plug fails or becomes dislodged.

3. **Pump and Haul Systems -** Pump and haul bypass systems may use a relay system of vacuum trucks using a pump and haul approach to bypass sewage flows. For locations where pump and haul bypass systems are allowed, the Requester may elect to submit a BPP using a pump and haul bypass system or using a stationary bypass system.

    a. The sketch shall show the location of all system components along with the staging areas, haul routes, and an explanation of the expected cycle time of all aspects of the operation.

    b. Clear photographs of the manhole(s) interior that will be used for the bypass pumping operation, including pole camera photographs of pipes where plugs will be installed. All photographs will be labeled with the manhole number, date, and intended use of the manhole by the Requester's BPP.

    c. Contractor shall maintain pedestrian and vehicular traffic and comply with ADA regulations for access to all residential and commercial property unless written approval is otherwise obtained from the property owner allowing for reduced access.

    d. An Emergency Plan detailing procedures to be followed in the event any portion of the bypass operation fails and causes either surcharging or an actual SSO.

    e. Requester shall be fully responsible for all damages and costs related to the installation, operation, and maintenance of Requester's bypass pumping operations. The University could seek reimbursement from the Requester for any cleanup expenses incurred due to a release of pollution or costs associated with corrective action measures required by the Department of Environmental Control (DEQ). The BPP shall identify the licensed disposal site to be used.

    f. The Requester shall provide all necessary pumping equipment, piping and all other necessary appurtenances to maintain adequate and reliable sanitary sewer flow in the sanitary sewer system, including any temporary manholes, at all times during construction for stationary pumping and pump and haul.

    g. All materials, equipment, etc., must be in good condition, and should not have visible damage such as cracks, holes, foreign material, blisters, etc.

    h. Pipe Plugs must be selected and installed according to the size of the line to be plugged. Plugs shall be adequately secured and anchored to prevent plug movement or escape into the adjoining sanitary sewers should the plug fail. An additional plug (for each size of plug used) must be onsite and ready to be installed in the event a plug fails or becomes dislodged. Plug(s) will be visually examined by the Inspector and/or Engineer for defects that might lead to failure prior to being installed.

    i. It is also imperative that the Requester notify the Project Manager and UVA Utilities Distribution at the completion of the work to verify that all plugs have been removed from the system and inspect the system for proper operation.

    j. The Requester shall provide all necessary equipment, plugs, hoses, gauges, and necessary appurtenances to install the plug, maintain the plug during use and remove the plug at completion.

k. Pump and haul bypass pumping systems shall use good-quality vacuum trucks, equipment, and materials from manufacturers commonly engaged in the manufacture, service, and repair of these types of sanitary sewer service trucks and equipment.

l. The Requester must perform a demonstration test of the proposed pump and haul bypass system to prove that the system can be successfully used for bypass pumping at the proposed locations. The test shall be performed at least 5 days in advance of the desired start date and shall use all the equipment and staff that will operate the bypass pumping system during performance of the work.

m. Pump and haul system flow shall be disposed of in a licensed facility and all manifests shall be kept and submitted to UVA.

n. Disposal of pump and haul flow in a nearby manhole is not acceptable.