	UMass Amherst Sewer System Use Protocol	Document #: EHS-SEW-SOP.01 Rev.05
		Approval Date: September 6, 2017

1. Purpose and Scope

1.1. This protocol applies to any activity or operation on the main campus that discharges wastewater to the UMass Amherst (UMA) sewer lines and subsequently the Amherst Waste Water Treatment Plant (WWTP). This includes any operation or activity undertaken by UMA personnel, UMA contractors, and contractors working on University of Massachusetts Building Authority (UMBA) or Division of Capital and Asset Management (DCAM) construction projects.

1.2. The Town of Amherst Department of Public Works may allow discharges into the sanitary sewer system or wastewater treatment plant that do not consist of typical sanitary sewage flow. These discharges must be preapproved by Amherst Department of Public Works (DPW) personnel. The Town of Amherst reserves the right to reject any and all non-standard discharges to the sanitary sewer or treatment plant.

1.3. Dischargers must comply with all applicable federal, state, and local laws, permits, and regulations, including but not limited to 314 CMR 12.00 “Operation, Maintenance and Pretreatment Standards for Wastewater Treatment Works and Indirect Dischargers”.

2. Definitions

2.1. **Standard Discharge** – A standard discharge, has been historically in service and/or conducted on the main campus, and is considered an element of an operation or activity that occurs as a result of design and/or engineering or regular maintenance and has a corresponding volume that will not negatively impact the Town of Amherst WWTP. The University considers the following examples as standard discharges:

1) Boiler Blowdown	2) Steam System Discharge
3) Cooling Tower Blowdown	4) Building Heating System Discharges
5) Building Cooling System Discharges	6) Charging Steam Lines already in Services
7) Swimming Pools	8) Hockey Rink Ice-Melt
9) Oil Water Separators	10) Bus Wash (PVTA)
11) Effluent RO Discharges	12) Building RO Waste Systems
13) Discharges less than 1,000 gallons that would not negatively impact the Amherst Treatment Plant	

2.2. **Non-Standard Discharge*** – A non-standard discharge includes any discharge associated with an activity or operation not listed as a standard discharge or is greater than 1,000 gallons (report any discharge volume if the constituent has the potential to negatively impact the Amherst WWTP – See Section 3). The University considers the following as non-standard discharges:

1) Any activity not listed in the Standard Discharge classification	2) Manually Controlled Discharges
3) Construction Activities (e.g. Hydro-Static Testing, System Flush)	4) Discharges greater than 1,000 gallons. (any volume if constituents could negatively impact the Amherst WWTP)

***Discharge of a Non-Standard Discharge requires prior approval from the Amherst WWTP and coordination among a number of departments on the UMA campus.*

If there is uncertainty concerning how to classify a discharge please contact Theresa Wolejko, Assistant Director, Environmental and Hazardous Materials Management Services at 413-577-3632 for assistance.

3. Constituents of Concern

- Any known constituents in a proposed discharge MUST be reported to the Town of Amherst prior to discharge.
- It is the responsibility of the discharger to identify constituents of concern in a proposed discharge. Laboratory analysis for the identified pollutants may be required by the Town of Amherst.
- Based on the description of the proposed discharge and its source, the Town of Amherst may require testing for additional constituents as well.
- The discharger must complete calculations to determine total mass loading of each constituent to be sent to the Amherst WWTP. These mass loadings must be reported to Town of Amherst DPW personnel for approval prior to discharge.

3.1. Hazardous Waste

Under no circumstance is hazardous waste to be discharged into the Town of Amherst Sanitary Sewer or the Amherst WWTP, either directly or indirectly. It is the responsibility of the discharger to characterize the waste stream prior to any discharge. Dilutions of hazardous waste or other discharges deemed unsuitable for the treatment plant shall not be permitted.

3.2. pH

Any discharge outside of a 5-10 pH range must be reviewed carefully by Amherst DPW personnel before acceptance into the collection system or WWTP. A discharge with a pH outside of a 2-12.5 range is considered hazardous waste by EPA due to corrosivity. Testing strips for pH may be suitable to analyze this parameter, as deemed appropriate by Town of Amherst DPW personnel.

3.3. Chlorine

Discharges containing chlorine in amounts that may disrupt the treatment process are prohibited. Excess levels of chlorine and chloramines are toxic to microbiological organisms and can cause issues with nitrification and denitrification.

Free chlorine will quickly react with organic matter and therefore is not overly concerning when dealing with small volume discharges into the collection system. However, high volume proposed discharges (>1000 gallons) with high levels of residual chlorine may need to be discharged at a staggered rate, i.e. over the span of a few days, or chemically reduced prior to discharge. Discharges containing chlorine will have to be evaluated and handled on a case-by-case basis.

3.4. Fats, Oils, and Grease

Discharges must be primarily aqueous. Discharges of solid or viscous pollutants like fats, oils, and grease (FOG) in amounts that can cause blockages in sewer lines or disrupt the wastewater treatment process will not be permitted. Appropriate measures should be used to mitigate FOG in typical influent wastewater such as grease traps in kitchens. Grease traps in kitchens must be regularly checked and cleaned as needed to prevent excess FOG in wastewater.

3.5. Polychlorinated Biphenyls (PCBs)

Discharges containing polychlorinated biphenyls will not be permitted. Requests for PCBs analysis will be made at the discretion of Town of Amherst DPW personnel. Suspect materials that may contain PCBs, per the EPA:

- Transformers and capacitors
- Electrical equipment including voltage regulators, switches, re-closers, bushings, and electromagnets
- Oil used in motors and hydraulic systems (Elevators!)
- Old electrical devices or appliances containing PCB capacitors
- Fluorescent light ballasts
- Cable insulation
- Thermal insulation material including fiberglass, felt, foam, and cork
- Adhesives and tapes
- Oil-based paint
- Caulking
- Plastics
- Carbonless copy paper
- Floor finish

The manufacture of PCBs was banned by EPA in 1979. Facilities or appurtenances constructed near this time, even after, may still contain PCBs. For reference, PCBs can appear in groundwater near industrial facilities or utilities. If there is any possibility or evidence that a proposed discharge may contain PCBs, the Town of Amherst will require laboratory analysis to confirm the absence of PCBs prior to discharge authorization.

3.6. Metals

Heavy metals have previously affected the WWTP's treatment process. Iron, in particular, has caused costly issues with sludge pumping in the past. Metals can adhere to sludge and cause it to thicken or settle too quickly. Also, they affect the final sludge composition which can be detrimental for sludge disposal if it does not meet limits required by the receiving facility. Metals can also be toxic to biological organisms. Thorough questioning and examination must be performed to determine whether or not a discharge should be analyzed for metals, particularly iron, prior to discharge authorization.

Attention should be paid to the corrosivity of discharges as well, since metals from the collection system (especially iron) can leach into the influent water.

Metals that may be of concern (limit of 2 mg/L per metal unless otherwise noted):

- Arsenic
- Beryllium
- Cadmium (1 mg/L)
- Chromium
- Copper
- Cyanide*
- Iron
- Lead
- Manganese
- Mercury (1 μg/L)
- Nickel
- Selenium (1 mg/L)
- Zinc

If it is determined that any of these metals may be present in the proposed discharge, the analyses result must be reported and a load calculated for the discharge. Based on specific volumes and waste characteristics, discharges containing metals above 2 mg/L may be permissible under certain circumstances.

*Cyanide included with metals category although technically not a metal.

3.7. Biochemical Oxygen Demand

Discharges containing excess biochemical oxygen demand (BOD) negatively impact the treatment process as nitrification requires dissolved oxygen. Known constituents in wastewaters must be reviewed and their BOD quantified prior to authorization for discharge. Propylene glycol, for example, has a high BOD. Milk, surprisingly, has a high BOD as well! Discharges will be limited to 250 mg/L BOD, or a total mass BOD loading of 50 lbs, whichever is greater. Note: depending on the constituent 50 lbs could be reached well under 1000 gal of non-standard discharge. If the BOD of a proposed discharge is greater than these limits, it is possible to stagger a discharge over a span of time in order to reduce loading on the WWTP.

3.8. Volatile Organic Compounds

Some volatile organic compounds (VOCs) can be particularly toxic to microorganisms in the treatment process, and if not sufficiently removed from processed water, to microorganisms in the effluent receiving waters. VOCs are commonly found in chemical solvents, paints, fuels, and cleaners. Proposed discharges with total VOC concentrations above 2 mg/L will have to be reviewed closely before authorization.

3.9. Heat

Any discharge greater than 104˚F when it enters the treatment works will be prohibited due to potential negative effects on the treatment process. Waste streams with elevated temperatures that are below 104˚F must be further reviewed by Town of Amherst DPW personnel to determine eligibility for discharge into the Town of Amherst sanitary sewer system or WWTP.

3.10. Industrial chemicals

Ammonia: Typical wastewater influent at the Amherst WWTP contains approximately 20-25 mg/L of ammonia. Elevated ammonia levels in a discharge will only be accepted in small volumes, at the discretion of the Town of Amherst DPW personnel.

Petroleum: Oil/petroleum products should never be discharged to the collection system. Groundwater impacted with petroleum (based on odor, sheen, any other known information) should be analyzed for PCBs and VOCs prior to discharge authorization. If required by the Town of Amherst, Total Petroleum Hydrocarbons or other constituents may be requested for analysis.

Cleaners must be used according to the Manufacturer’s Instructions. The labels or Safety Data Sheet will contain information on whether the product, used according to manufacturers instructions, can enter the Town of Amherst sanitary sewer system. Unused chemicals are NOT to be poured down any drain. Contact Environmental Health and Safety if disposal assistance is needed.

4. Procedure

4.1. At no time is it acceptable to discharge to storm sewer anything other than uncontaminated water from a storm event.

4.2. An activity or operation with a discharge that falls within the Standard Discharge classification is not affected by this protocol.

4.3. An activity or operation with a discharge that falls within the Non-Standard Discharge Classification must follow the remainder of this protocol to ensure that the Amherst WWTP is not adversely affected and/or that the discharge is managed and treated appropriately.

4.4. Non-Standard Discharges

4.4.1. An electronic copy of the Non-Standard Discharge form can be found on the UMass Environmental Health and Safety or Physical Plant web pages. Completed forms must be sent to both:

Gary Ritter, EH&S Manager Central Heating Plant at gritter@ehs.umass.edu
Theresa Wolejko – Assistant Director Environmental Management Services – twolejko@ehs.umass.edu

4.4.2. To minimize a disruption to the project's timeline the form must be submitted seven business days in advance of the anticipated discharge date.

4.4.3. A non-standard discharge shall occur during normal business hours, or between 8:00 am and 5:00 pm. Exceptions will be considered on a case by case basis.

4.4.4. A Safety Data Sheet (SDS) must be submitted for each chemical included in the discharge.

4.4.5. EHS or Utilities will contact the Amherst WWTP and inform them of the need to discharge a Non-Standard Discharge. The information provided on the submitted form will be reviewed by Amherst WWTP with the UMass representative.

4.4.6. The Amherst WWTP will consider the request and respond within a timely fashion. Approval may be granted, with or without caveats, or be denied. The UMass representative will contact the Point of Contact listed on the form to inform him or her of the decision.

4.4.7. Request approved with or without conditions.

- If the approval includes no conditions then the discharge can commence accordingly. Contact EHS and Utilities to confirm the discharge date(s) and duration.
- If there are conditions UMA, or the contractor, will adopt and initiate the requirements prior to discharging. UMA, or the contractor, can weigh the cost implications of adopting these measures against the cost of off-site disposal. Inform EHS and Utilities of the chosen course of action.

4.4.8. Request denied.

- If discharge to the Amherst WWTP is not allowed the wastewater must be shipped off-site and treated appropriately.
- Contact EHS to coordinate this effort with a pre-approved vendor. UMBA and DCAM contractors can contact EHS for vendor recommendations.

4.4.9. The Town of Amherst reserves the right to make site visits and inspections to examine discharges and their sources prior, during, or after discharge.

4.4.10. All disposal and treatment records must be provided to the EHS Environmental Services Manager for retention.

5. Training

5.1. All UMass Amherst personnel whose job may be impacted by this protocol will receive training on the requirements of the protocol. Refresher training will be provided every three years unless the protocol is revised. Training will then be provided at the time of the revision.

5.2. A copy of this protocol will be provided to the UMA Design and Construction Management Division for inclusion in all bid-packets and contracts.

5.3. All contractors will receive a copy of this protocol during the project's initial safety briefing provided by UMA EHS.

6. References

6.1. 314 CMR 12.00 "Operation, Maintenance and Pretreatment Standards for Wastewater Treatment Works and Indirect Dischargers"

6.2. "Amherst Wastewater Treatment Plant Non-Standard Discharge Protocol", Town of Amherst, Department of Public Works, Date

7. Attachments

7.1. UMass Amherst Sewer System Use Protocol (Process Flow Diagram)

7.2. Non-Standard Discharge Form

Non-Standard Discharge Form

An electronic version of this form can be found on the Physical Plant and EH&S webpage

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Requestor: _____ **Date:** _____

UMass Department or Company: _____

Phone #: _____ **Email:** _____

1) Project, Activity, or Operation: _____

_____

_____

2) Anticipated Volume of Discharge*: _____

3) Anticipated Rate of Discharge: _____

(***If more than one discharge is anticipated note the additional number of discharges and the corresponding rates in #8)**

4) Are chemicals an element of the activity or operation*? ◯ **Y (If yes, list chemicals)** ◯ **N**

Chemical	Volume

(***An SDS must be provided for each chemical. Provide a web link to the SDS or include it as an attachment to the email when the form is submitted.)**

5) Was the wastewater analyzed? ◯ **Y A ttach results and list pollutant with respective loads**

◯ **N (If no, list potential pollutants)**

6) What is the pH* of the discharge?_____**(*The pH must be between 5.0 and 10.0)**

7) What is the temperature* of the discharge?_____**(*The discharge at the Amherst WWTP Shall never exceed 104 degrees F.)**

8) Scheduled date(s) of discharge: _____

9) Anticipated duration of discharge: _____

Complete and submit form to:
Gary Ritter, EHS Manager Central Heating Plant at gritter@ehs.umass.edu and Theresa Wolejko, Assistant Director Environmental Management Services at twolejko@ehs.umass.edu

UMass Amherst Sewer System Use Protocol
Process Flow Diagram