

Flood guidance for wastewater treatment facilities

Flooding poses many problems and challenges for municipalities and industries. Among these is the protection and continued operation of wastewater treatment facilities (WWTFs). This guidance provides information to consider when preparing for potential floods.

Vocabulary

Bypass – The intentional diversion of a waste stream from any portion of your WWTF. Examples of a bypass include diverting the flow of wastewater around a clarifier or dechlorination system. Bypass wastewater must enter waters of the state from outfalls specifically authorized by the facility's permit and cannot, by law, cause an effluent limit exceedance. Bypasses are prohibited except in very rare circumstances. State Rules and Federal Regulations provide some protection for permit holders in the event of a bypass. Additional information is available on the Minnesota Pollution Control Agency (MPCA) website's [Scheduled Maintenance Bypassing Review](#) page.

Release – Any overflow or spill of wastewater or materials to the environment. A release is an unauthorized discharge of wastewater and is prohibited. Examples include sanitary sewer overflows from a plugged collection system or pumping untreated wastewater out of a manhole to a nearby ditch. Unauthorized releases, such as sanitary sewer overflows, are the most common type of event when wastewater systems are inundated with rain/snow melt or from pump or electrical failures.

Avoid a bypass/release if possible

Every WWTF operator wants to avoid bypassing/releasing untreated wastewater into the environment; however, sometimes it becomes necessary for a number of reasons, including:

Power outages – WWTFs can avoid or minimize a release/bypass due to power outages if generators are available to provide emergency electricity for power. Facilities that have emergency generators available should routinely exercise the generators to make sure they will operate in emergency situations. Facilities that do not have emergency generators available should develop a plan that identifies emergency generator sources such as other local communities and/or the Minnesota Water/Wastewater Agency Response Network (MnWARN).

Lift pump failures – A common problem during floods is failure of overworked lift pumps. If possible, lift pumps should be inspected and serviced ahead of a potential flood so they will operate at peak efficiency as flows begin to rise. If your lift pumps have had recurring problems with specific parts or components in the past, consider having spare replacement parts on hand to repair pumps in emergency situations.

Excess flows – As floodwaters rise, sump pumps begin running full time and water may also find its way into the sanitary collection system through leaky manholes, open connections, or cracked and leaky collection pipes. Lift pumps can be overwhelmed and unable to transport all of the flow to the WWTF. Sump pumps should be disconnected from the sanitary system. If possible, some manhole cover sealing can be done. Open connections should be located and sealed. Routine collection system maintenance and inflow & infiltration (I&I) reduction activities can greatly reduce the likelihood of a bypass or release during wet weather conditions.

Treatment system problems – Pond systems are normally full in the spring. Extra water from flooding can raise water in ponds to critical levels. In emergency situations, it may be preferable to open the discharge structure to allow water to leave the pond system at the same rate it is entering or to conduct a greater than six inch (6") per

day pond discharge if the situation allows. Be cautious of allowing water to continue to accumulate in the ponds to the top of the dikes as the clay dike core or vinyl liner does not extend all the way to the dike top. Maintaining water above the core or liner can lead to catastrophic dike failure. Contact your assigned MPCA wastewater compliance staff if you have any questions about discharging your pond system during flooding conditions.

If you must bypass/release

If a bypass or release is the only alternative, remember that you are obligated to:

- **Immediately contact the Minnesota Duty Officer at 800-422-0798 or 651-649-5451.** If you need assistance or advice from the MPCA, you can inform the Minnesota Duty Officer or contact the MPCA directly. WWTF staff are often required to perform numerous tasks upon discovery of a release; therefore, it may be useful to consider having a designated person make a preliminary Duty Officer notification for the bypass/release. A final notification, with supplemental information, could then be made to the Duty Officer once all bypass/release details are obtained.
- **Discontinue the bypass/release as soon as possible.** If a bypass/release is expected to last for more than a day or two, contact your MPCA representative to keep them informed of your status and to discuss sampling requirements.
- **Recover all substances and materials.** In a flood situation this may not be possible, but a reasonable effort should be made to recover substances and materials to minimize human health and environmental impacts.
- **Collect representative sample(s) of the bypass/release.** WWTFs should have sampling kits available to perform sampling requirements.

The following are actions that any facility experiencing a release or bypass should review and implement if appropriate.

Public notice:

1. It is **recommended** signage be posted where the release, force main line break, etc., occurred. Signage **may** also be placed in the areas that have been determined as high potential for risk to public safety such as areas along the walk/bike path, beaches, boat launches, parks, etc. and the area(s) where the release is occurring from the wastewater collection system. Notice should be sufficient to communicate about the recent release and the risks of contact with the water.
2. To help ensure protection of human health for releases that are ongoing and/or are a high potential risk for public health, work with local government units, including public health departments, it is **recommended** to notify all downstream users in the event of a spill, release, or discharge that exceeds an effluent limit or water quality standard which could endanger human health, public drinking water supplies, recreation, or the environment. Such public notification shall occur promptly using the most effective and efficient communications available in the community (i.e. news media, social media, signage and/or direct contact to downstream users).
3. Provide fencing (e.g. snow fencing) around wastewater impacted soil/grass areas determined as high potential for risk to public safety, as reasonably possible, to prevent access by persons or animals to soils impacted by the release of wastewater. The fence shall remain in place for 20 days OR until 24 hours after liming has been completed.
 - In areas with a high potential for human contact, apply lime to areas (of soil or grass) impacted by the release of wastewater, and till or spade the lime well into the soil. Alternately, apply hydrated lime to these areas and water according to manufacturer's instructions (Note – hydrated lime is a caustic material and can be dangerous to handle and apply. Lime should only be used or applied by people experienced in using this material).
4. In the event of a spill, release, or discharge the MPCA recommends avoiding contact with the impacted water if possible. If you come in contact with the affected waters or other potentially contaminated water

sources, take responsible precautions, you should bathe with soap and water and wash clothes thoroughly as soon as possible.

Signage language examples

- “Water in this area may be contaminated by a temporary overflow of a sanitary sewer. Please avoid physical contact as it may pose a health risk.”
- “Warning unauthorized release of sewage - this area may contain sanitary sewage. Contact with water contaminated with sewage poses a potential health risk.”

Additional notification to the Minnesota Department of Health, Minnesota Department of Natural Resources, Watershed District, and local units of government (i.e. County Health Departments for public beaches) may be necessary based on the event occurring.



Other potential considerations

Fuels in sewers – A number of mishaps can occur during floods that can lead to spills of fuel entering the WWTF collection system. Significant amounts of fuels can cause many problems for WWTFs whether they are pond or mechanical systems. If a fuel spill enters the collection system, call the Duty Officer immediately. Determine the origin of the spill and approximate volume. Fuels are lighter than water and will float, so it is sometimes possible to contain the spill in the wet well by adjusting float levels or running the pumps manually, so the water level does not pump all the way down. If the spill does reach the treatment system, the type of system and amount of fuel will determine how serious the problem becomes. Fuels can completely kill beneficial bacteria in a mechanical system and it may need to be “reseeded” after the fuel has passed. Pond systems can handle some fuel without major problems. The fuel should be contained in a single pond, where it may be recoverable with proper equipment.

Flooding around a pond system – During the 1997 flood, many pond systems in the Red River Valley had floodwaters rise to within a foot or two of the tops of the dikes. One of the problems this poses is that dikes become saturated from inside and out. This can weaken dikes and, as floodwaters recede, may lead to dike failure from the pressure of the water in the ponds pushing against saturated dikes. During the 1997 flood, pond operators were advised to open gates and valves and allow water in the ponds to go down with the receding floodwaters. This should only be done when absolutely necessary and after consultation with MPCA staff.

Plan ahead

Finally, if you believe you may have to face flooding problems, contact MPCA staff to discuss. Make sure you have emergency numbers you may need readily available and make sure that other staff who may assist you are aware of these numbers and of the need to contact the Minnesota State Duty Officer or others for assistance.

Assistance

Minnesota Pollution Control Agency

Toll free (all offices) 800-657-3864
Brainerd 218-828-2492
Detroit Lakes 218-847-1519
Duluth 218-723-4660
Mankato 507-389-5977
Marshall 507-537-7146
Rochester 507-285-7343
St. Paul 651-296-6300

Willmar 320-214-3786
Website <http://www.pca.state.mn.us>

Minnesota Duty Officer

Toll free 800-422-0798
Metro 651-649-5451
Minnesota Water/Wastewater Agency
Response Network (MnWARN) 800-367-6792