

Dewatering and basin draining

National Pollutant Discharge Elimination System/State Disposal System permit guidance on dewatering and basin draining

This document is meant to provide guidance on dewatering and basin draining practices of construction sites that are compliant with the Minnesota National Pollutant Discharge Elimination System/State Disposal System (NPDES/SDS) construction stormwater permit (Permit).

Definition

Dewatering is the removal of surface or ground water to dry and/or solidify a construction site to enable construction activity. Examples of dewatering include pumped discharges, trenches, and ditch cuts that are used for drainage.

What is required by the NPDES/SDS Permit?

The Minnesota NPDES/SDS Permit regulates the discharge of stormwater. The Permit identifies certain requirements for dewatering and basin draining to effectively prevent and/or control erosion and sediment problems on a construction site.

Turbid, or sediment-laden, water that is removed during construction must be released to an onsite sedimentation basin or to a system constructed with appropriate best management practices (BMPs) before the water may be discharged to surface waters. Permittees are prohibited from using receiving waters as part of the treatment area. The water must be properly treated or filtered to remove sediment and other contaminants prior to discharge. To the extent feasible, use well-vegetated (e.g., grassy or wooded), upland areas of the site to infiltrate dewatering water.

Dewatering activities must not result in adverse impacts such as nuisance conditions, erosion or scour, flooding, or inundation of wetlands and other surface waters. Nuisance conditions includes, but is not limited to, a sediment plume in the discharge or the discharge appears cloudy, or opaque, or has a visible contrast, or has a visible oil film, or has aquatic habitat degradation that can be identified by an observer. Energy dissipation BMPs, such as riprap, plastic sheeting, or sandbags, must be installed at the discharge points of the dewatering system for adequate protection from erosion and scouring.

Discharge from dewatering and basin draining practices must be visually checked and photographed at the beginning and at least once every 24 hours of operation to ensure adequate treatment has been obtained. Photographs and visual inspection records must be retained to provide documentation of permit compliance. Dewatering discharges that only last for minutes, as opposed to hours, and do not reach a surface water, do not require photographs or documentation.

Consider having a backup plan (i.e.: a stabilized diversion channel) to be utilized should site conditions change or complications arise while the dewatering and basin practice is in operation.

- Should nuisance conditions occur, cease dewatering immediately and notify the Minnesota Duty Officer. Corrective actions must occur before dewatering is resumed. It is the duty of every individual involved to report the incident immediately to the Minnesota Duty Officer:
 - 651-649-5451
 - TDD: 800-627-3529
 - 800-422-0798
 - Satellite phone: 254-543-6890

Sedimentation treatment chemicals such as flocculants and polymers may be used to treat water if the following requirements are met:

- Conventional erosion and sediment controls must be used prior to chemical addition.
- Treated water must be directed to a sediment control system that allows for filtration or settlement of the floc prior to discharge.
- Appropriate chemicals must be chosen based on the expected soil types and pH, turbidity, and flowrate of stormwater into the chemical treatment system.
- Chemicals must be used in accordance with accepted engineering practices and all dosing and use specifications provided by the manufacturer or distributor of the product.

For filters with backwash systems, use these methods to manage backwash:

- Haul away the backwash water for proper disposal; or
- Send the backwash water back through the treatment process; or
- Develop a way to utilize the backwash water on the site that does not result in erosion; or
- Obtain permission from the local sanitary sewer authority to be allowed to discharge the backwash water directly to the sanitary sewer.

If the removed water contains oil or grease, an oil-water separator or suitable filtration device must be used to treat the water before its release. If other contaminants are present, they must be treated appropriately.

Suggestions for planning dewatering and basin draining activities

Often the individual who developed a construction site plan will have determined if the need to dewater the site is necessary before construction begins. However, site conditions discovered while excavating may present the need to implement a dewatering and basin draining practice, as well. Here are some things to consider should the need to dewater arise:

Other requirements

- Local government units (LGU) may have their own dewatering and basin draining requirements.
 - If the dewatering practice will be done within a regulated Municipal Separate Storm Sewer System (MS4), check with the LGU to determine if they require a dewatering permit.
- If dewatering water is contaminated, discharge of such water may require an individual MPCA Contaminated Groundwater Discharge NPDES/SDS MNG790000 permit.
- Review the Minnesota Department of Natural Resources' (DNR) water use (appropriation) permit and determine if coverage under this permit is required.
 - http://www.dnr.state.mn.us/waters/watermgmt_section/appropriations/permits.html

Time of year and weather

Knowing the extended forecast and what to expect given the time of year is very important when planning to conduct a dewatering and basin draining practice. Here are some things to consider:

- Be prepared. It is best to avoid planning a dewatering or basin draining practice right before or immediately after a significant rain event or snow melt. At this point, it is too late.
- Try to begin and end the dewatering and basin draining practice during the driest time of the year such as late spring and early fall.
- Avoid conducting a dewatering or basin draining practice when ground freezing is expected in the immediate forecast.

Location

The placement of a dewatering and basin draining practice on a construction site is very important in order to perform the practice in a compliant manor. Here are some things to consider when deciding where to construct an onsite temporary or permanent sedimentation basin or a system constructed with appropriate BMPs:

- Be aware of where the water table is throughout the site.
- Identify how the released water will travel to reach the receiving water(s).
 - Utilize appropriate BMPs such as plastic sheeting to minimize the potential of sediment travel and erosion.
 - Avoid slopes, exposed soils, and areas with signs of instability and erosion.
 - Discharge the water to well vegetated areas that are adjacent to the receiving water. This will allow for additional treatment.
- Be aware of the site's space constraints when determining what dewatering and basin draining practice to use.

Sedimentation basin or BMP utilized system

The following are suggestions for possible dewatering practices to utilize on the site:

- **Sediment trap**
A sediment trap is a temporary containment area that allows sediment in collected stormwater to settle out during infiltration or before the runoff is discharged through a stabilized spillway. Sediment traps are formed by excavation or construction of an embankment to detain sediment-laden runoff and allow sediment to settle out before discharging.
- **Wet sedimentation basin**
A wet sedimentation basin is a temporary or permanent basin with a controlled release structure formed by excavation or construction of an embankment to detain sediment-laden runoff and allow sediment to settle out before discharging. A wet sedimentation basin should always have a permanent pool of water. The removal efficiency of this practice can be improved if the outlet structure is designed to withdraw water from the surface with a floating head skimmer (floating weir).
- **Dewatering tank/weir tank**
In a dewatering tank, flow enters the BMP through the top of the tank and is discharged from the tank after adequate settling time. Weirs can be added to enhance settling.
- **Filter bag**
A filter bag, also referred to as a dewatering bag, is a square or rectangular bag made of non-woven geotextile fabric that collects sand, silt, and fines. Water to be treated is pumped into one side of the bag and seeps through the bottom and sides of the bag. It is beneficial to direct the effluent to a pond or vegetated area for additional treatment. Alternatively, a secondary barrier, such as a rock filter bed or straw bale barrier, is placed beneath and beyond the edges of the bag to capture sediments that escape the bag.

- **Sand media filter**

Generally, sand filters are used as a polishing step or final treatment. They are often used after a significant amount of sediment and other pollutants are removed with other treatment technologies. Sand filters can be used as a standalone treatment or in conjunction with a filter bag or other BMP.

- **Active Treatment System**

An Active Treatment System (ATS) uses a coagulant or flocculent for the treatment of water with a sedimentation basin for turbidity reduction. In addition, pH adjustment or bag or sand filters may be included. The Construction General Permit does not require the use of an ATS; however, for waters and sites where the reliability of the stormwater is of concern, these systems are recommended. In general, these systems are most useful for construction sites with: 1) severely impaired receiving waters, 2) sediment that is difficult to remove from suspension, and 3) sites with small disturbed areas. In each of these cases an ATS provides an extra degree of control over the quality of the stormwater leaving the construction site.