University of Nebraska Lincoln

Safe Operating Procedure

(Revised 11/16)

DEWATERING

Introduction

Certain provisions of the Clean Water Act and related federal, state, and local regulations and ordinances are intended to protect the quality of surface waters (e.g., lakes, streams, rivers, etc.) by regulating certain activities having the potential to discharge pollutants.

Dewatering has the potential to introduce contaminants into surface waters. Potential contaminants include but are not limited to: petroleum hydrocarbons, total suspended solids/sediment, metals, organics and high or low pH based on soil and groundwater characteristics. Therefore, dewatering activities are subject to authorization by permit and compliance with permit conditions.

UNL contractors are responsible to obtain the appropriate permit and maintain compliance with the terms of the permit at all times. UNL employees intending to engage in a dewatering activity that requires a permit must contact EHS, and EHS will assist in obtaining the necessary permit or advise that the activity can be conducted under the authority of an existing permit. EHS will also assist with required sampling, as applicable.

NPDES Construction Site General Permit

All construction sites that disturb an area of one (1) acre or more are subject to authorization under Nebraska Department of Environmental Quality (NDEQ), General NPDES Permit NER160000 for Storm Water Discharges from Construction Sites to Waters of the State of Nebraska. This permit requires implementation of a site-specific Storm Water Pollution Prevention Plan (SWPPP). Dewatering of **storm water** on the site can be conducted under the authority of this permit so long as the SWPPP incorporates dewatering Best Management Practices to remove sediments. Dewatering must cease immediately if the BMP(s) is/are ineffective in removing suspended solids or if there are signs of other contamination (odor, sheen, etc.). The permit holder must report signs of chemical contamination to NDEQ. NDEQ will then determine what additional sampling is needed and whether continued dewatering must be conducted under the authority of a different dewatering permit

The Construction Site General Permit (NER160000) can also be used for dewatering of uncontaminated, free-flowing groundwater from springs or artesian pressure, but cannot be used for dewatering of **groundwater** that accumulates in excavations.

NPDES General Dewatering Permit

A separate permit, General NPDES Permit Number NEG671000 - A General NPDES Permit Authorizing Dewatering Discharges, must be obtained for dewatering of groundwater or groundwater mixed with storm water accumulations in excavations. This permit anticipates that the only contaminant of concern is suspended solids/sediment. The General Dewatering Permit for groundwater in excavations requires:

- daily metering of flow
- daily physical characteristics examination of the discharge
- weekly pH measurement
- weekly Total Suspended Solids (TSS) analysis

In the event that a daily or weekly monitoring parameter such as the daily physical characteristic inspection indicates pollutants present (smells like petroleum, there's a sheen, etc.) pumping must **STOP** and the situation reported to NDEQ by the permit holder**.** NDEQ will then determine what additional sampling is needed and whether continued dewatering must be conducted under the authority of a different dewatering permit.

Discharge of Contaminated Groundwater

Dewatering of contaminated groundwater to the storm sewer system is likely to require treatment prior to discharge to the sanitary or storm sewer and will be subject to an entirely different NPDES Permit that is specific to treated groundwater (General NPDES Permit NEG710000 – A General NPDES Permit Authorizing Treated Groundwater Remediation Discharges. The conditions of the permit will be determined by NDEQ and will be specific to site characteristics and conditions. When a project is likely to require dewatering of groundwater where contamination is suspected, it may be advisable to conduct pre-characterization sampling of groundwater. This will help determine what kind of discharge permit may be necessary, and the type of treatment technology that may be necessary.

Discharges of Groundwater to the Sanitary Sewer

Another option may be to dewater groundwater or groundwater mixed with storm water to the sanitary sewer system. However, this option requires authorization from the City and is subject to metering and payment of fees. The City is likely to restrict their authorization to groundwater contaminated by petroleum and when Total Extractable Hydrocarbons (TEH) are near to or exceed 10 mg/L and less than 100 mg/L. The City will require a sample of the accumulated groundwater prior to authorizing the discharge to the sanitary sewer. They will not accept prior groundwater characterization sample data.

Foundation Drains, Vaults, Tunnels

Dewatering of uncontaminated accumulated storm and ground water from foundation drains, and utility vaults and tunnels conducted by UNL employees is covered under UNL's Small Municipal Stormwater System (SMS4) permit rather than NDEQ's General Dewatering permit as an allowable non-stormwater discharge[1] (). If an illicit discharge

[1] per NDEQ correspondence 5/16/12

is detected, sampling will be conducted by EHS and corrective actions will be implemented.

Other Non-Construction Related Dewatering
At times, it may be necessary to remove flood or accumulated stormwater from areas on campus. There are three options: 1) direct the flow to a sanitary sewer; 2) direct the flow towards vegetation for land application wherein no water discharges to the storm drain; 3) direct the flow to the storm drain under the authority of UNL's SMS4 permit. If discharged directly to the storm drain, the water must be void of color, turbidity, odors, surface sheens, films, or other unusual condition (e.g., off-gassing, foaming, etc.). No sampling is required for this type of dewatering, and the PCE does not need to be recorded. However, if the presence of pollutants are detected, water may not discharge to storm drain and alternative actions must be taken.

Dewatering Best Management Practices (BMPs)
Following are common dewatering BMPs:

- **Sediment Bags:** Direct the discharge flow through a sediment bag. This allows sediments to settle prior to discharging into surface waters.
- **Flocculants**: Disperse flocculant (see manufacturers recommendation on dose) over the excavation/utility vault that needs to be dewatered. Allow time for flocculant to bond to clay particles in soil. This will result in lower suspended solids. Carefully start pump and discharge.
- **Vegetative Buffer/Land Application**: Reuse water (i.e., for watering plants, or dust control) or dewater to a vegetative buffer (grassy swale), provided the following conditions are met:
    - Land application shall not be conducted when the ground is frozen or saturated.
    - Land application sites shall have a slope of 12% or less.
    - Land application shall not occur on sites where the water table is less than 4 feet from the surface.
    - The total hydraulic application rate shall not exceed 2 inches per acre (54,304 gallons) per week.
    - Land application sites shall be free of perennial or intermittent streams, ponds, lakes, or wetlands.
    - Land application is not allowed on crops that are intended for distribution in their raw form for direct human consumption (e.g., fresh produce).
    - Land application must cease immediately if any adverse impacts to animal or plant life is discovered or if any film, foam, color, or noxious odors occur, or if erosion, channelization, ponding, or surface runoff occurs.
- **Drum**: Dewatering into a 55-gallon drum. Allow sediments to settle prior to discharging. This is feasible when dewatering small volumes of water.
- **Discharge Point**: Ensure a BMP is utilized to address for concentrated flow. Force from discharging large amounts of water can itself result in erosion at the discharge point.