



# Peat Operations and Environmental Protection

Peat mining is an important enterprise for Minnesota. The Minnesota Pollution Control Agency (MPCA) works with potential peat operators to share information about water quality planning and environmental protection. The agency and peat operators share many interests and goals in ensuring that our valuable environmental quality is protected. This brief summary reviews water quality concerns, water quality planning considerations, and MPCA permitting for peat excavation activities in Minnesota.

## Why Is Peat Mine Drainage a Water Quality Concern?

Poorly managed peat operations can cause water pollution, an important problem that must be addressed. These water quality impacts are mostly due to the intensive land disturbance and water table lowering activities associated with peat extraction. Peat mine drainage can harm Minnesota waters with these pollutants:

**Turbidity:** Turbidity comes from erosion of the excavation areas and ditches. Cloudy water can eliminate some kinds of fish and other aquatic life, in part by damaging their feeding methods.

**Suspended solids:** Suspended solids also come from erosion of excavation areas and ditches. Solids can fill in streams, lakes, and wetlands, and destroy the environments on which many fish, waterfowl, plants and other animals depend. They can also deplete dissolved oxygen as they decompose.

**Phosphorus:** Phosphorus is mostly related to suspended solids, but can also be dissolved. Phosphorus is a nutrient that can stimulate excessive algae growth in lakes and make lakes too polluted for fishing or recreation.

**Acidity (low pH):** Drainage aerates the peat and releases the acids (often nitric acid and sulfuric acid). Acid waters can kill fish and aquatic life, and limit egg

production and hatching, especially during spring snowmelt, when peat field drainage often peaks.

**Aluminum:** Acid waters in peat drainage help to dissolve aluminum from the peat and carry it downstream. Aluminum can be highly toxic to fish and other aquatic life.

**Iron:** Acid waters in peat drainage also dissolve iron; iron also can be released when attached to suspended solids. Iron deposits can clog fish gills and deposit harmful scums on stream, lake and wetland bottoms.

**Mercury:** Mercury can be released during peat drainage. It is very toxic to fish, and accumulates through the food chain.

**Ammonia:** Peat drainage causes decomposition of much of the soil to release ammonia. Certain forms of ammonia are very toxic to fish and other aquatic life.

**Sulfate:** Dissolved sulfate is released from peat by aeration and draining. High sulfate levels can prevent wild rice growth.

**Other pollutants:** Other pollutants, such as different metals and nitrate, may also be generated by peat mining.

## Water Quality Planning Considerations

Siting and drainage flexibility are keys to good environmental planning. Some peatlands and downstream waters may be resources of special concern to the state. Early coordination with the MPCA on siting is important in the initial design of these facilities, and can prevent un-anticipated project delays.

Regular, efficient, sediment removal and storage systems are critical for any type of large-scale peat operation design. The MPCA can provide suggestions for the design, operation and maintenance of sediment



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removal systems. Effective sediment management is critical to the development of environmentally sound peat operations.

## MPCA Water Quality Permit Requirements

A National Pollutant Discharge Elimination System (NPDES) permit is required for surface drainage from a peat operation. This drainage is typically discharged through gravity-flow field and collection ditches to wetlands and/or neighboring ditches.

For smaller peat operations, permit coverage is usually through an NPDES general storm water permit. This permit requires the operator to develop and implement an erosion control pollution prevention plan, and usually does not involve regular water quality monitoring. Larger peat operations, particularly those that would exceed 160 acres, are covered by individual NPDES permits. These individual permits include discharge limits and regular monitoring requirements. Complete permit applications for new or expanded peat operations should be provided to the MPCA at least six months before the new excavation work is planned. The operator thus can help to ensure that the NPDES permit authorization is in effect.

Peat operations that have long-term expansion plans should contact the MPCA before choosing sites. In this way, potential environmental concerns and costs can be addressed upfront, to avoid expensive retrofitting later during expansion. Good early communication with the MPCA in planning peat development can be very valuable in the overall development plans.

Water quality permits include requirements for properly collecting and removing sediments to minimize their impacts on Minnesota's lakes, streams, wetlands and other waters. Larger peat operations need to have an MPCA-approved sedimentation treatment system, typically involving dual, parallel settling basins.

For more information on NPDES permitting, please contact the MPCA at (612)296-7238.

## MPCA 401 Certification

The Clean Water Act Section 401 requires that an applicant for a federal permit or license to conduct an activity that may result in a discharge must obtain a certification from the state that the activity will comply with the water quality standards of the state. Typically an Army Corps of Engineers Section 404 permit is required for most peat excavation activities. The certification requires a demonstration that the project impacts have been avoided, minimized and mitigated, as well as compliance with the NPDES permit if one is issued. It is the policy of the state to protect all waters including wetlands from significant degradation, wetland alteration and to maintain existing designated uses. Peat mining alters the wetland. The wetland sequence mitigation principles of avoidance, minimization and compensatory mitigation maintain nondegradation of wetland designated uses. The compensatory mitigation plan or a requirement for a plan to be developed at operational closure is considered during the 401 certification process. If no NPDES permit is required, the certification lists conditions for water quality compliance. For more information on the 401 certification process, please contact the MPCA at (612)297-8219.

## MPCA Air Quality Permit Requirements

Facilities must meet the MPCA minimum requirements for dust (Minn. R. 7011.0150 and 7011.0700-0735) and noise control (Minn. R. ch. 7030). Facilities with crushing or screening operations also may have to meet federal standards for emissions of particulate matter from processing equipment. Depending on their capacity and processing equipment, an Air Emission Permit may be required. For more information on air quality concerns and MPCA requirements, please call (218)846-7391.