

Implementing the
MODEL EROSION AND SEDIMENT CONTROL ORDINANCE
To meet your community's water quality goals

Produced for
Northland Nonpoint Education for Municipal Officials (NEMO) Program

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Erosion and Sediment Control Model Ordinance Language – Summary

Background for Model Ordinance Concept

The water quality within a community is greatly affected by erosion and sedimentation in the watersheds. During construction activities land is highly susceptible to erosion and/or sedimentation especially when Best Management Practices (BMPs) for erosion and sediment control are not installed and maintained properly. Erosion and sediment control are defined in the following manner:

- Erosion control consists of BMPs designed to intercept precipitation and prevent soil particles from moving. Practices that prevent erosion are construction staging, protecting existing vegetation, tracking of disturbed slopes, etc. Products designed for this include straw, mulch, ground covers, fiber blankets, hydro-seeding, etc.
- Sediment control consists of BMPs designed to capture soil particles after they have been dislodged and have begun to be carried away from the site. Products designed for this include silt fences, straw bale check dams, sedimentation ponds, etc.

Sediment is considered to be one of the most damaging pollutants in Minnesota, and is the major pollutant by volume in state surface waters. Runoff from construction sites is by far the largest source of sediment in urban areas under development. Sediment-loading rates from construction sites are 5 to 500 times greater than those from undeveloped land (USEPA, 1977). Another major source of sediment is streambank erosion, which is accelerated by increases in peak rates and volumes of runoff due to urbanization. Proper design and installation of BMPs, monitoring BMP effectiveness, and maintaining BMPs are issues that are critical in reducing the effects of erosion and are best addressed at the local level.

Regulating erosion and sediment before, during and after construction is a powerful and effective local government tool for protecting water quality in communities. Erosion and sediment control is regulated in a number of ways in Minnesota. Some communities rely primarily on the Minnesota Pollution Control Agency (MPCA) to administer and enforce federal and state regulations known as the National Pollutant Discharge Elimination System (NPDES) permit program. Other communities defer erosion and sediment control authority to local government organizations such as watershed districts, watershed management organizations, or the county. Soil and Water Conservation Districts (SWCDs) often help monitor and enforce these regulations through these local government organizations. Now, through the NPDES Phase II permit program, communities have an opportunity to create meaningful localized regulation and programs that protects water quality, property values, recreational resources, and habitat.

Communities are critical to enforcing erosion and sediment control regulation because state and federal agencies simply cannot track the development activities happening to the landscape on a day-to-day basis. Communities keep track of local development under building

code, permitting processes, tax valuations, and general protection of health, safety, and welfare issues. Many communities have some erosion and sediment control performance standards with minimal permitting processes in place. Water quality analysis is showing, however, that these standards frequently fail to protect water quality. The NPDES Phase II program requires many communities to update their erosion and sediment control standards. The NPDES Phase II rules reflect the growing awareness, supported by extensive study and scientific measurement, that erosion and sediment control is a substantial component of non-point source pollution. As communities incorporate the new permitting requirements into local regulation, they can take the opportunity to address specific local considerations and priorities in managing erosion and sedimentation.

NEMO Ordinance Education Goal

The Nonpoint Education for Municipal Officials (NEMO) program has developed this information and model ordinance language to help identify issues related to land use and water quality protection for use in the development of community administered erosion and sediment control regulation. Erosion and sediment control is closely integrated with stormwater protection and management components. Consequently, communities may choose to incorporate erosion and sediment control right into their stormwater regulations. Management of erosion and sediment control techniques is of particular importance to water quality in the community, and is therefore dealt with separately in the NEMO model ordinance and guidelines.

This document is designed to assist communities with applying NEMO land use and water quality principles to each community's unique circumstances. Building upon the requirement of the NPDES rules, this model provides alternative language and recommendations explaining how erosion and sediment control regulation can be implemented and enforced in different local government settings.

Applying NEMO Concepts to the Erosion and Sediment Control Regulation - Summary

The key NEMO land use and water quality points emphasized in the model ordinance are as follows:

- Maintaining soil stability through effective use of BMPs.
- The scheduling of land disturbing activities in the development process to prevent erosion and sedimentation.
- The importance of inspection and enforcement.

XX.01 Purpose, Scope and Definitions

- A. Purpose.** The purpose of this ordinance is to control or eliminate storm water pollution along with soil erosion and sedimentation within the community. It establishes standards and specifications for conservation practices and planning activities designed to minimize nonpoint source pollution, soil erosion and sedimentation.
- B. Scope.** Except where a variance is granted, any person, firm, sole proprietorship, partnership, corporation, state agency, or political subdivision proposing a land disturbance activity within the community shall apply to the community for the approval of the Stormwater Pollution Prevention Plan (SWPPP). No land shall be disturbed until the plan is approved by the community and conforms to the standards set forth herein.
- C. Definitions.** Unless specifically defined below, words or phrases used in this Chapter shall be interpreted so as to give them the same meaning as they have in common usage and to give this Chapter its most reasonable application. For the purpose of this Chapter, the words “must” and “shall” are mandatory and not permissive. All distances, unless otherwise specified, shall be measured horizontally.

As used in this Chapter (see Appendix A of this model ordinance), the following words and terms shall have the meanings ascribed to them in this Section . . .

XX.02. SWPPP

- A. General Criteria for SWPPP.** The SWPPP shall be required for any project larger than 20,000 square feet and shall meet the following criteria:
1. Minimize, in area and duration, exposed soil and unstable soil conditions.
 2. Minimize disturbance of natural soil cover and vegetation.
 3. Protect receiving water bodies, wetlands and storm sewer inlets.
 4. Protect adjacent properties from sediment deposition.
 5. Minimize off-site sediment transport on trucks and equipment.

XX.01 Section D – The text does not include definitions, due to the large number of terms that communities may wish to define. A compilation of definitions is provided in Appendix B of this model ordinance.

XX.02 Section A. sets a 20,000 sq. ft. threshold for stormwater management plans. Communities may need to adjust this threshold up or down. 20,000 is an appropriate general threshold for urban areas or within the subwatershed of a sensitive natural area (such as a lake, trout stream, erosion-prone bluff or river bank, or high-quality wetland). The maximum threshold however is one acre, as this is the minimum size that is covered under NPDES permits.

The SWPPP described in Section A. of XX.02. should comply with the NPDES permit and other local regulations. The SWPPP should also conform to the design manual referenced in the same section. Rather than incorporate recommended erosion and sediment control technologies in the ordinance, communities can create or reference a separate design manual. The manual can define the appropriate erosion and sediment control designs for each community, and be modified as newer approaches are recognized. A list of model design manuals is included in Appendix C of this ordinance.

6. Minimize work in and adjacent to water bodies and wetlands.
7. Maintain stable slopes.
8. Avoid steep slopes and the need for high cuts and fills.
9. Minimize disturbance to the surrounding soils, root systems and trunks of trees adjacent to site activity that are intended to be left standing.
10. Minimize the compaction of site soils.

B. SWPPP Requirements. The SWPPP shall include the following on all relevant plans and drawings:

1. Site plans for existing and proposed conditions. A complete site plan and specifications, signed by the person who designed the plan shall be drawn to an easily legible scale, shall be clearly labeled with a north arrow and a date of preparation, and shall include, at a minimum, the following information:
 - a. Project map – An 8.5 by 11 inch United States Geological Survey (USGS) 7.5 minute quad or equivalent map indicating site boundaries and existing elevations, property lines and lot dimensions in relation to surrounding roads, buildings and other structures, and other significant geographic features.
 - b. Identification of all natural and artificial water features (including drain tiles) on site and within 1/2 mile of project boundary, including, but not limited to lakes, ponds, streams (including intermittent streams), wetlands, natural or artificial water diversion or detention areas, subsurface drainage facility, stormwater conveyance, and storm sewer catch basins. Show ordinary high water marks of all navigable waters, 100-year flood elevations and delineated wetland boundaries, if any. If not available, appropriate flood zone determination or wetland delineation, or both, may be required at the applicant's expense.
 - c. Map of watershed drainage areas showing direction of flow for pre and post construction drainage, soil types, infiltration rates, depth to bedrock, and depth to seasonal high water table.

In order for local officials to adequately monitor the installation and maintenance of BMPs, and to enable the community to identify high-risk situations, the developer must provide sufficient background information and description of mitigation efforts. While some information required in Sections B. and C. may seem irrelevant, redundant, or unnecessary, officials should not compromise on meeting these baseline planning requirements.

A key requirement of the NPDES Construction Permit is the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP) that includes BMPs to minimize the discharge of pollutants from the site. The following elements must be addressed in the SWPPP:

- 1. Temporary erosion prevention and sediment control BMPs*
- 2. Permanent erosion prevention and sediment control BMPs*
- 3. Permanent stormwater management system (see model stormwater ordinance)*
- 4. Pollution prevention management measures.*

The MPCA website includes the NPDES permit requirements, forms, fact sheets, and other pertinent information. It is located at: <http://www.pca.state.mn.us/water/stormwater/stormwater-c.html>

- d. Existing and proposed grades showing drainage on and adjacent to the site.
- e. Existing and proposed impervious surfaces.
- f. Steep slopes where areas of 12% or more existing over a distance for 50 feet or more.
- g. Location of all areas not to be disturbed during construction including trees, vegetation, and appropriated areas for infiltration.
- h. Proposed grading or other land-disturbing activity including areas of grubbing, clearing, tree removal, grading, excavation, fill and other disturbance; areas of soil or earth material storage; quantities of soil or earth material to be removed, placed, stored or otherwise moved on site, and delineated limits of disturbance.
- i. Locations of proposed runoff control, erosion prevention, sediment control, and temporary and permanent soil stabilization measures.
- j. If more than 10 acres are disturbed and drained to a single point of discharge temporary sediment basins must be installed, however, if the site has special waters as determined by the community or defined by the NPDES Construction Permit requirements, then temporary sediment basins must be installed where 5 or more acres are disturbed. When site restrictions do not allow for a temporary sediment basin, equivalent measures such as smaller basins, check dams, and vegetated buffer strips can be included.

2. **SWPPP Specifications.** The Stormwater Pollution Prevention Plan (SWPPP) shall include a specifications section that addresses and includes the following requirements:

- a. For all land disturbing activities covering one (1) acre, the applicant shall comply with all requirements of the NPDES Phase II regulations.
- b. Limit total off-site permissible annual aggregate soil loss for exposed areas resulting from sheet and rill erosion to an annual, cumulative soil loss rate not to exceed 7.5 tons per acre annually. This shall be determined by using the U.S. Natural Resources Conservation Service Technical

B.1. j refers to the NPDES Construction Permit for temporary basin design standards.

B.2.a. states that all construction activities or other land disturbances of one acre or more must comply with NPDES Phase II requirements, administered by the MPCA. Disturbances of less than one acre may also need permit coverage if that activity is part of a "large common plan of development or sale" that is greater than one acre.

Guide or another commonly accepted soil erosion methodology approved by the community that considers season of year, site characteristics, soil erodibility and length and steepness of slopes. Erosion control measures for plan approval need not attempt to regulate soil transportation within the boundaries of the applicant's site.

- c. Identification of the nature of the construction activity and the potential for sediment and other pollutant discharges from the site.
- d. Designation of an individual to oversee implementation of the SWPPP and provide a chain of responsibility.
- e. Stockpiles of soil or other materials subject to erosion by wind or water shall be covered, vegetated, enclosed, fenced on the down gradient side or otherwise effectively protected from erosion in accordance with the amount of time the material will be on site and the manner of its proposed use. No stockpiling is allowed in the street.
- f. To reduce soil compaction and enhance vegetation establishment all compacted soil shall be tilled to a depth of at least six inches before re-vegetation.
- g. Provide that all silt fences used for erosion and sedimentation control and all other temporary controls shall not be removed until the community has determined that the site has been permanently stabilized and shall be removed within 30 days thereafter.
- h. Methods to prevent sediment damage to adjacent properties and sensitive environmental areas such as water bodies, plant communities, rare, threatened and/or endangered species habitat, wildlife corridors, greenways, etc.
- i. Design and construction methods to stabilize steep slopes.
- j. Measures to control the quality and quantity of stormwater leaving a site before, during, and after construction.
- k. Stabilization of all waterways and outlets.
- l. Protection of storm sewer infrastructure from sediment loading/plugging.

B.2.b requires that the applicant design their project by using the Universal Soil Loss Equation to determine that annual amount of potential soil loss from the site. This program has been developed by the Dane County Land Conservation and is included in their requirements. For more information see www.mnerosion.org or www.co.dane.wi.us/landconservation/ecswpg.htm

- m. Precautions taken to contain sediment when working in or crossing water bodies.
 - n. Stabilization of disturbed areas, including utility construction areas, as soon as possible.
 - o. Protection of outlying roads from sediment and mud from construction site activities.
 - p. Disposal of collected sediment and floating debris.
 - q. Any mitigation measures required as a result of any review conducted for the project (e.g. wetland mitigation, etc.).
 - r. Any additional measures to comply with surface and groundwater standards in sensitive areas (e.g. karst areas, trout stream watersheds, etc.).
3. **Schedule of events.** A detailed schedule indicating dates and sequence of land alteration activities; implementation, maintenance and removal of erosion and sedimentation control measures; and permanent site stabilization measures shall be provided.
4. **Monitoring and inspection.** A detailed description of how erosion control, sediment control and soil stabilization measures implemented pursuant to the SWPPP will be monitored, maintained and removed. The SWPPP must identify a person knowledgeable and experienced in erosion and sediment control who will oversee the implementation of the SWPPP and the installation, inspection, and maintenance of the temporary and permanent stormwater management system. This person shall have completed an approved training and certification program.
5. **Other information.** The community will require additional or modified information as warranted.
- a. On the request of an applicant proposing to landscape an improved residential property and a finding that certain required information is not needed to assess the characteristics of the property and the adequacy of proposed control measures, the community may reduce the submittal requirements of this section.

Section B. 4. includes a training and certification requirement. For more information on erosion and sediment control training and certification programs go to www.mnerosion.org.

- b. On a determination that the condition of the soils is unknown or unclear and that additional information is required to find that an applicant's proposed activity will meet the standards and purposes of this rule, the community may require soil borings or other site investigation to be conducted and may require submission of a soils engineering or geology report. The report shall include the following as requested by the community.
 - i. Data and information obtained from the requested site investigation.
 - ii. A description of the types, composition, permeability, stability, erodibility and distribution of existing soils on site.
 - iii. A description of site geology.
 - iv. Conclusions and revisions, if any, to the proposed land-disturbing activity at the site or the erosion control plan, including revisions of plans and specifications.
- c. The SWPPP shall be modified when there is a change in design, operation, maintenance, weather or seasonal conditions that have a significant effect on discharge and/or inspections indicate that the plan is not effective and existing BMPs are not controlling pollutants and discharges from the site.

C. SWPPP Performance Standards and Design Criteria. All SWPPPs shall be reviewed by the community for effectiveness of erosion and sediment control measures in the context of the site topography and drainage. Proposed design, suggested location and phased implementation of effective, practicable stormwater pollution prevention measures for SWPPPs shall be designed, engineered and implemented using the following performance standards and design criteria.

1. **Runoff easements** - If a stormwater management plan involves directing some or all runoff from the site, the applicant shall obtain from adjacent property owners any necessary easements or other property interests concerning flowage of water.
2. **Scheduling site activities** - The applicant shall schedule site activities to lessen their impact on erosion and sediment creation.

3. **Minimize exposed soil** - The applicant shall minimize the amount of exposed soil. Mass grading should be avoided and sequencing promoted. At no time shall no more than 20 acres be exposed.
4. **Perimeter sediment controls** - Perimeter sediment control measures shall be properly installed by the builder before construction activity begins. Such structures may be adjusted during dry weather to accommodate short term activities, such as those that require very large vehicles. As soon as this activity is finished or before rainfall, the erosion and sediment control structures must be returned to the configuration specified by the community. A sediment control inspection must then be scheduled and passed before a footing inspection will be done.
5. **Channel protection** - Channels shall be diverted around disturbed areas if practical, or other channel protection measures will be required. The normal wetted perimeter of any temporary or permanent drainage channel must be stabilized within 200 lineal feet for the property edge, or from a point of discharge to any surface water. Stabilization must be completed within 24 hours of connecting to surface water. Sediment control is required along channel edges to reduce sediment reaching channel.
6. **Outlet Protection**- pipe outlets must have energy dissipation installed within 24 hours of connection to a surface water.
7. **Erosion and sediment control methods** - The applicant shall control runoff as follows (a and b or a and c):
 - a. All exposed soil areas with a continuous positive slope that are within 200 lineal feet of any surface water, or any conveyance (curb, gutter, storm sewer inlet, drainage ditch, etc.) to a surface water, must have temporary or permanent cover year round. The area shall be stabilized if it has not been worked for seven (7) days on slopes greater than three feet horizontal to one foot vertical (3:1), fourteen (14) days on slopes ranging from 3:1 to 10:1 and twenty-one (21) days for flatter slopes. On sensitive sites or sites with special waters, as defined by Appendix A or the Community, exposed soil areas with a greater than three feet horizontal to one foot vertical (3:1),

C. 3. 20 acres is the suggested maximum amount of area, however, the community should consider limiting the amount of bare soil area exposed based on the size of the development, erodibility of the soils, sensitivity of the site, steep slopes, etc.

three (3) days and all other cases seven (7) days. All exposed soil areas must have temporary erosion protection or permanent cover no later than November 1st regardless of the stabilization requirements listed above. All exposed soils from construction activities taking place after November 1st must provide temporary erosion protection or permanent cover by the end of the work day.

- b. If more than 10 acres are disturbed and drained to a single point of discharge temporary sediment basins must be installed, however, if the site has special waters as defined by the Appendix A or the community, temporary sediment basins must be installed where 5 or more acres are disturbed. When site restrictions do not allow for a temporary sediment basin, equivalent measures such as smaller basins, check dams, and vegetated buffer strips can be included.
 - c. For disturbed areas less than ten (10) acres sedimentation basins are encouraged, but not required. The applicant shall install erosion and sediment controls at locations directed by the community. Minimum requirements include silt fences, rock check dams, or other equivalent control measures along slopes. Silt fences, rock check dams, etc. must be regularly inspected and maintained.
8. **Sediment basins related to impervious surface area** - Where a project's ultimate development replaces surface vegetation with one or more cumulative acres of impervious surface, and all runoff has not been accounted for in a community's existing stormwater management plan or practice, runoff from the ½-inch 24-hour storm event shall be treated unless discharge is to a special water where runoff from the 1-inch 24-hour storm event shall be treated.
9. **Silt fence** – Silt fence shall be properly installed by being trenched and buried at least six inches into the soil. Generally, sufficient silt fence will be required to contain sheet flow runoff generated at an individual site.

C.7.b and c refer to the NPDES Construction Permit requirements for temporary basin design standards.

C.8 refers to the NPDES Construction Permit requirement for post construction stormwater management.

10. **Soil stockpiling** - Temporary stockpiling of fifty (50) or more cubic yards of excess soil on any lot or other vacant area will not be allowed without issuance of a grading permit for the earth moving activity in question.
11. **Stockpile protections** - For soil stockpiles greater than ten (10) cubic yards the toe of the pile must be more than twenty-five (25) feet from a road, drainage channel or stormwater inlet. If left for more than seven (7) days, they must be stabilized with mulch, vegetation, tarps or other means. If left for less than seven (7) days, erosion from stockpiles must be controlled with perimeter control devices such as silt fence. If for any reason a soil stockpile is located closer than twenty-five (25) feet from a road, drainage channel or stormwater inlet, it must be covered with tarps and controlled with perimeter control devices immediately.
12. **Vehicle entrances** - Temporary rock construction entrances must be installed and maintained wherever vehicles enter and exit a site. The design of this entrance shall take into consideration the amount of traffic that will be entering and exiting the site. Construction entrances shall be stabilized with 1-1/2" –3" clear aggregate or an approved equal. On sites with high traffic, the community may require wash racks, wash ponds or other means of minimizing sediment leaving the site.
13. **Street cleaning** - Streets shall be cleaned and swept within 24 hours whenever tracking of sediments occurs and before sites are left idle for weekends and holidays.
14. **Dewatering treatment required** – Sediment laden water that is being removed from the site by pumping or trenching shall be treated to remove a minimum of 80 percent removal of suspended solids before discharge. Water may not be discharged in a manner that causes erosion to receiving channels or flooding of the discharge site.
15. **Storm drain protection** - All storm drain inlets shall be protected during construction with control measures as approved by the community. These devices shall remain in place until final stabilization of the site. A regular inspection and maintenance plan shall be developed in implemented to assure these devices are operational at all times.

D. Contractor/Owner inspections and maintenance - The contractor or owner shall be responsible for inspections and maintenance on the site.

1. Inspections and maintenance must be documented and readily available for review. Inspections are required as follows:
 - a. Once every 7 days on exposed soil areas.
 - b. Within 24 hours after a one half inch rain event over 24 hours.
 - c. Once every 30 days on stabilized areas.
 - d. As soon as runoff occurs or prior to resuming construction on frozen ground.
2. Maintenance is required as follows:
 - a. When sediment reaches 1/3 the height of the BMP on perimeter control devices, sediment must be removed within 24 hours.
 - b. If the perimeter control device is not functional it must be repaired or replaced within 24 hours.
 - c. Temporary sediment basins shall be maintained when sediment reaches 1/2 the outlet height or 1/2 the basin storage volume. Basin must be drained or sediment removed within 72 hours.
 - d. Construction site vehicle entrance and exit locations sediment must be removed from paved surfaces within 24 hours of discovery.

D. Review – The community shall complete a review the SWPPP within fourteen (14) days of receiving the plan from the developer.

1. **Permit Required** - If community determines that the SWPPP meets the requirements of this ordinance, community shall issue a permit valid for a specified period of time that authorizes the land disturbance activity contingent on the implementation and completion of the SWPPP.
2. **Denial** - If community determines that the SWPPP does not meet the requirements of this ordinance, the Community shall not issue a permit for the land disturbance activity. The SWPPP must be resubmitted for approval before the land disturbance activity begins. All land use and building permits

shall be suspended until the developer has an approved Stormwater Pollution Prevention Plan.

3. **Community inspections and enforcement** - The community shall conduct inspections on a regular basis to ensure that erosion and sediment control measures are properly installed and maintained. In all cases the inspectors will attempt to work with the builder or developer to maintain proper erosion and sediment control at all sites. A charge of \$75.00 per hour will be assessed for any inspections that are necessary. In cases where cooperation is withheld, construction stop work orders shall be issued by the community, until erosion and sediment control measures meet the requirements of this ordinance. An inspection must follow before work can commence.

Inspections are required as follows:

- a. Before any land disturbing activity begins
- b. For residential construction, at the time of footing inspections
- c. At the completion of the project
- d. Prior to the release of financial securities

E. Modification of Plan. The applicant must amend the SWPPP as necessary to include additional requirements such as additional or modified BMPs designed to correct problems identified or address situations whenever:

1. A change in design, construction, operation, maintenance, weather, or seasonal conditions that has a significant effect on the discharge of pollutants to surface waters or underground waters.
2. Inspections indicate the SWPPP is not effective in eliminating or significantly minimizing the discharge of pollutants to surface waters or underground waters or that the discharges are causing water quality standard exceedances.
3. The SWPPP is not achieving the general objectives of controlling pollutants or is not consistent with the terms and conditions of this permit.

D.3 calls for a \$75.00 per hour inspection fee to be charged for all inspections of the site. This number should be determined by the community after determination of program costs.

- F. Variance Requests.** The community may grant a variance on a case-by-case basis. The content of a variance shall be specific, and shall not affect other approved provisions of a SWPPP.
1. The variance request shall be in writing and include the reason for requesting the variance.
 2. Economic hardship is not sufficient reason for granting a variance.
 3. Community shall respond to the variance request in writing and include the justification for granting or denying the request.
- G. Financial Securities.** The applicant shall provide security for the performance of the work described and delineated on the approved Stormwater Pollution Prevention Plan and related remedial work in an amount of \$3,000 per gross acre (\$6,000 for work done Special Water of sensitive site, as determined by the Community) or \$1,000 for each single or twin family home, whichever is greater. This amount shall apply to the maximum acreage of soil that will be simultaneously exposed during the project's construction. The form of the securities shall be one or a combination of the following to be determined by the community:
1. **Cash deposit** - The first \$3,000 of the financial security for erosion control shall be by cash deposit to the community.
 2. **Securing deposit** - Deposit, either with the community, a responsible escrow agent, or trust company, at the option of the community, either
 - a. an irrevocable letter of credit or negotiable bonds of the kind approved for securing deposits of public money or other instruments of credit from one or more financial institutions, subject to regulation by the state and federal government wherein said financial institution pledges funds are on deposit and guaranteed for payment; or
 - b. Cash in U.S. currency.

Section G calls for a financial security of \$3000 per acre of exposed soil. This is a number that should be determined by each community. Practical experience indicates that this will cover the costs for minor site preparation and seeding should the need arise.

Section G.2 describes the various forms of deposits that are available. An irrevocable letter of credit is recommended, as it is the fastest and easiest form of deposit to access should the need arise.

This security shall save the community free and harmless from all suits or claims for damages resulting from the negligent grading, removal, placement or storage of rock, sand, gravel, soil or other like material within the city.

- H. Maintaining the Financial Security.** If at anytime during the course of the work this amount falls below 50% of the required deposit, the developer shall make another deposit in the amount necessary to restore the cash deposit to the required amount. If the developer does not bring the financial security back up to the required amount within seven (7) days after notification by the community that the amount has fallen below 50% of the required amount the community may:
1. **Withhold inspections** - Withhold the scheduling of inspections and/or the issuance of a Certificate of Occupancy.
 2. **Revocation of permits** - Revoke any permit issued by the Community to the applicant for the site in question or any other of the applicant's sites within the community's jurisdiction.
- I. Proportional Reduction of the Financial Security.** When more than one-third of the applicant's maximum exposed soil area achieves final stabilization, the Community can reduce the total required amount of the financial security by one-third. When more than two-thirds of the applicant's maximum exposed soil area achieves final stabilization, the Community can reduce the total required amount of the financial security to two-thirds of the initial amount. This reduction in financial security will be determined by the community staff.
- J. Action Against the Financial Security.** The Community may access financial security for remediation actions if any of the conditions listed below exist. The Community shall use the security to finance remedial work undertaken by the Community, or a private contractor under contract to the Community, and to reimburse the Community for all direct cost incurred in the process of remedial work including, but not limited to, staff time and attorney's fees.

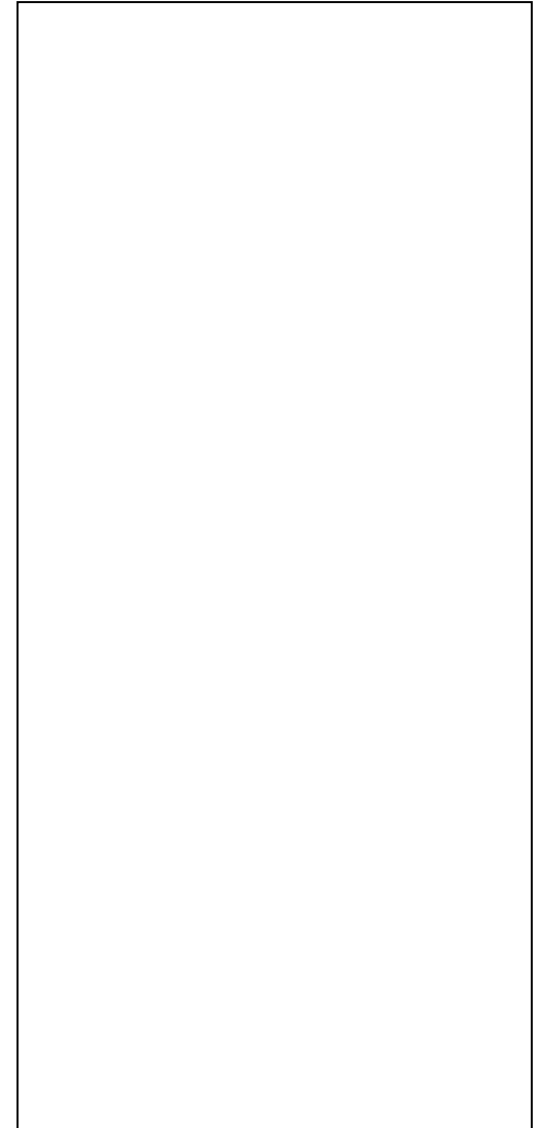
1. **Abandonment** - The developer ceases land disturbing activities and/or filling and abandons the work site prior to completion of the grading plan.
2. **Failure to implement SWPPP** - The developer fails to conform to the grading plan and/or the SWPPP as approved by the Community.
3. **Failure to perform** - The techniques utilized under the SWPPP fail within one year of installation.
4. **Failure to reimburse community** - The developer fails to reimburse the Community for corrective action taken.

K. Emergency Action. If circumstances exist such that noncompliance with this ordinance poses an immediate danger to the public health, safety and welfare, as determined by the community, the community may take emergency preventative action. The community shall also take every reasonable action possible to contact and direct the applicant to take any necessary action. Any cost to the community may be recovered from the applicant's financial security.

L. Returning the Financial Security. The security deposited with the community for faithful performance of the SWPPP and any related remedial work shall be released one full year after the completion of the installation of all stormwater pollution control measures as shown on the grading and/or the SWPPP.

M. Notification of Failure of the SWPPP. The community shall notify the permit holder of the failure of the SWPPP's measures.

1. **Initial contact.** The initial contact will be to the party or parties listed on the application and/or the SWPPP as contacts. Except during an emergency action, forty-eight (48) hours after notification by the community or seventy-two (72) hours after the failure of erosion control measures, whichever is less, the community at its discretion, may begin corrective work. Such notification should be in writing, but if it is verbal, a written notification should follow as quickly as practical. If after making a good faith effort to notify the responsible party or parties, the community has



been unable to establish contact, the community may proceed with corrective work. There are conditions when time is of the essence in controlling erosion. During such a condition the community may take immediate action, and then notify the applicant as soon as possible

2. **Erosion off-site.** If erosion breaches the perimeter of the site, the applicant shall immediately develop a cleanup and restoration plan, obtain the right-of-entry from the adjoining property owner, and implement the cleanup and restoration plan within forty-eight (48) hours of obtaining the adjoining property owner's permission. In no case, unless written approval is received from the community, may more than seven (7) calendar days go by without corrective action being taken. If in the discretion of the community, the permit holder does not repair the damage caused by the erosion, the Community may do the remedial work required. When restoration to wetlands and other resources are required, the applicant should be required to work with the appropriate agency to ensure that the work is done properly.
3. **Erosion into streets, wetlands or water bodies.** If eroded soils (including tracked soils from construction activities) enter or appear likely to enter streets, wetlands, or other water bodies, cleanup and repair shall be immediate. The applicant shall provide all traffic control and flagging required to protect the traveling public during the cleanup operations.
4. **Failure to do corrective work.** When an applicant fails to conform to any provision of this policy within the time stipulated, the community may take the following actions.
 - a. Issue a stop work order, withhold the scheduling of inspections, and/or the issuance of a Certificate of Occupancy
 - b. Revoke any permit issued by the community to the applicant for the site in question or any other of the applicant's sites within the community's jurisdiction.
 - c. Correct the deficiency or hire a contractor to correct the deficiency. The issuance of a permit constitutes a right-of-entry for the community or its contractor to enter upon the

construction site for the purpose of correcting deficiencies in erosion control.

- d. Require reimbursement to the community for all costs incurred in correcting stormwater pollution control deficiencies. If payment is not made within thirty (30) days after costs are incurred by the community, payment will be made from the applicant's financial securities as described in Section G above.
- e. If there is an insufficient financial amount in the applicant's financial securities as described in Section G above then the Community may assess the remaining amount against the property. As a condition of the permit, the owner shall waive notice of any assessment hearing to be conducted by the Community, concur that the benefit to the property exceeds the amount of the proposed assessment, and waive all rights by virtue of Minnesota Statute 429.081 to challenge the amount or validity of assessment.

N. Enforcement. The Community shall be responsible enforcing this ordinance.

1. **Penalties.** Any person, firm, or corporation failing to comply with or violating any of these regulations, shall be deemed guilty of a misdemeanor and be subject to a fine or imprisonment or both. All land use and building permits must be suspended until the applicant has corrected the violation. Each day that a separate violation exists shall constitute a separate offense.

O. Right of Entry and Inspection.

1. **Powers.** The applicant shall allow the Community and their authorized representatives, upon presentation of credentials to:

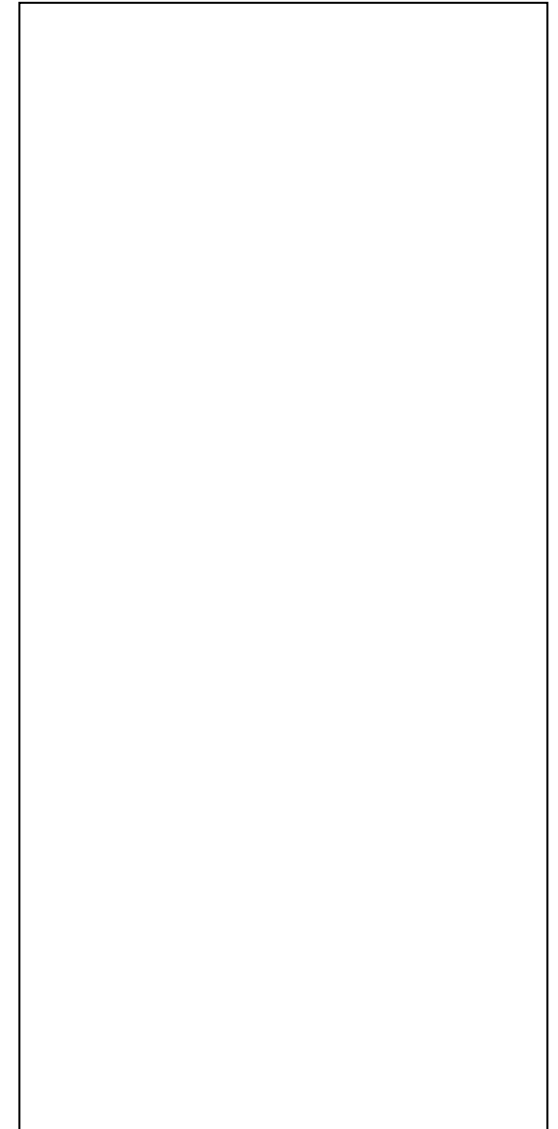
M. 4.e. - The statute referenced in (Minn. Stat. 429.081) is included below for the community's reference.

Within 30 days after the adoption of the assessment, any person aggrieved, who is not precluded by failure to object prior to or at the assessment hearing, or whose failure to so object is due to a reasonable cause, may appeal to the district court by serving a notice upon the mayor or clerk of the municipality. The notice shall be filed with the court administrator of the district court within ten days after its service. The municipal clerk shall furnish appellant a certified copy of objections filed in the assessment proceedings, the assessment roll or part complained of, and all papers necessary to present the appeal. The appeal shall be placed upon the calendar of the next general term commencing more than five days after the date of serving the notice and shall be tried as other appeals in such cases. The court shall either affirm the assessment or set it aside and order a reassessment as provided in section 429.071, subdivision 2. If appellant does not prevail upon the appeal, the costs incurred shall be taxed by the court and judgment entered therefor. All objections to the assessment shall be deemed waived unless presented on such appeal. This section provides the exclusive method of appeal from a special assessment levied pursuant to this chapter.

- a. Enter upon the permitted site for the purpose of obtaining information, examination of records, conducting investigations or surveys.
- b. Bring such equipment upon the permitted development as is necessary to conduct such surveys and investigations.
- c. Examine and copy any books, papers, records, or memoranda pertaining to activities or records required to be kept under the terms and conditions of this permitted site.
- d. Inspect the storm water pollution control measures.
- e. Sample and monitor any items or activities pertaining to storm water pollution control measures.

P. Abrogation and Greater Restrictions. It is not intended to repeal, abrogate, or impair any existing easements, covenants, or deed restrictions. However, where this ordinance imposes greater restrictions, the provisions of this ordinance shall prevail. All other ordinances inconsistent with this ordinance are hereby repealed to the extent of the inconsistency only.

Q. Severability. The provisions of this ordinance are severable, and if any provision of this ordinance, or application of any provision of this ordinance to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this ordinance must not be affected thereby.



APPENDIX A—SPECIAL WATERS

A. GENERAL REQUIREMENTS

All requirements in this Appendix are in addition to **BMPs** already specified in the ordinance. Where provisions of Appendix A conflict with requirements elsewhere in the ordinance, the provisions in Appendix A take precedence. All **BMPs** used to comply with this Appendix must be documented in the **SWPPP** for the project.

B. REQUIREMENTS FOR DISCHARGES TO SPECIAL WATERS

Additional **BMPs** together with enhanced runoff controls, are required for discharges to the following special waters (part B.1 through B.8 of Appendix A). The **BMPs** identified for each special water are required for those areas of the project draining to a discharge point on the project that is within 2000 feet of a special water and flows to that special water.

1. **Wilderness areas:** Boundary Waters Canoe Area Wilderness; Voyageurs National Park; Kettle River from the site of the former dam at Sandstone to its confluence with the Saint Croix River; Rum River from Ogechie Lake spillway to the northernmost confluence with Lake Onamia. Discharges to these waters must incorporate the **BMPs** outlined in C.1, C.2, C.3 and C.4 of this appendix.
2. **Mississippi River:** Those portions from Lake Itasca to the southerly boundary of Morrison County that are included in the Mississippi Headwaters Board comprehensive plan dated February 12, 1981. Discharges to these waters must incorporate the **BMPs** outlined in C.1, C.2 and C.3 of this appendix.
3. **Scenic or recreational river segments:** Saint Croix River, entire length; Cannon River from northern city limits of Faribault to its confluence with the Mississippi River; North Fork of the Crow River from Lake Koronis outlet to the Meeker-Wright county line; Kettle River from north Pine County line to the site of the former dam at Sandstone; Minnesota River from Lac qui Parle dam to Redwood County state aid highway 11; Mississippi River from county state aid highway 7 bridge in Saint Cloud to northwestern city limits of Anoka; and Rum River from state aid Highway

Appendix A is taken from the NPDES Construction Permit and defines the special waters and BMPs required for work within 2000 feet of a special water. The Community should determine if there are special waters located within its jurisdiction and apply the appropriate requirements as a part of the ordinance. Many of the BMPs that are described should also apply to sensitive sites within the Community

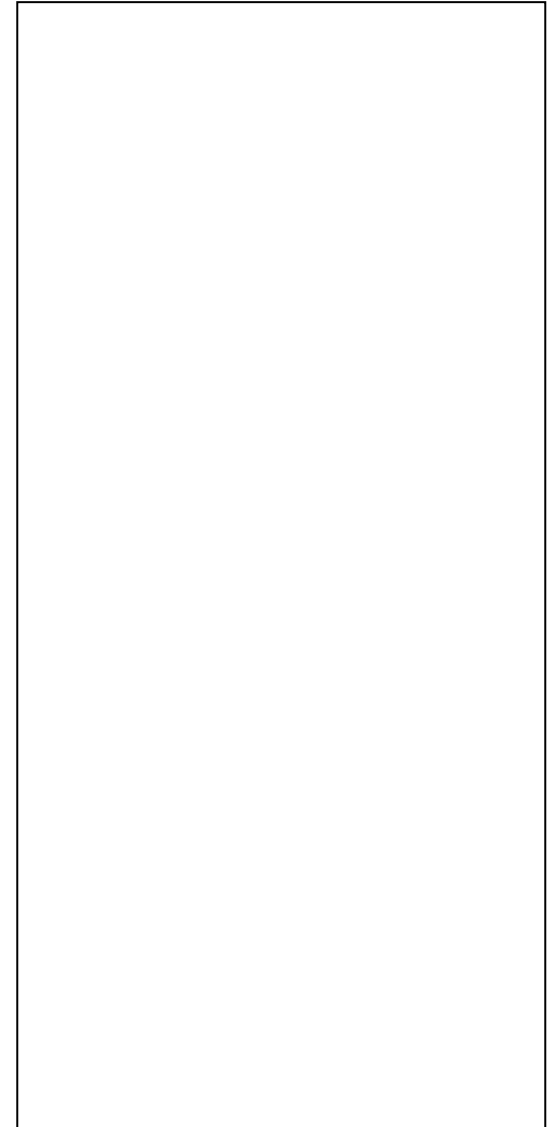
27 bridge in Onamia to Madison and Rice streets in Anoka. Discharges to these waters must incorporate the **BMPs** outlined in C.1, C.2 and C.3 of this appendix.

4. **Lake Superior:** (prohibited and restricted) Discharges to Lake Superior must incorporate the **BMPs** outlined in C.1, C.2 and C.3 of this appendix.
5. **Lake Trout Lakes:** Identified in Minn. R. 7050.0470, including those inside the boundaries of the Boundary Waters Canoe Area Wilderness and Voyageurs National Park. Discharges to these waters must incorporate the **BMPs** outlined in C.1, C.2, C.3 and C.4 of this appendix.
6. **Trout Lakes:** identified in Minn. R. 6264.0050, subp. 2. Discharges to these waters must incorporate the **BMPs** outlined in C.1, C.2, C.3, and C.4 of this appendix.
7. **Scientific and natural areas:** Boot Lake, Anoka County; Kettle River in sections 15, 22, 23, T 41 N, R 20, Pine County; Pennington Bog, Beltrami County; Purvis Lake-Ober Foundation, Saint Louis County; Waters within the borders of Itasca Wilderness Sanctuary, Clearwater County; Iron Springs Bog, Clearwater County; Wolsfeld Woods, Hennepin County; Green Water Lake, Becker County; Blackdog Preserve, Dakota County; Prairie Bush Clover, Jackson County; Black Lake Bog, Pine County; Pembina Trail Preserve, Polk County; and Falls Creek, Washington County. Discharges to these waters must incorporate the **BMPs** outlined in C.1, C.2, C.3 and C.4 of this appendix.
8. **Trout Streams:** listed in Minn. R. 6264.0050, subp. 4. Discharges to these waters must incorporate the **BMPs** outlined in Appendix A C.1, C.2, C.3, and C.5 of this appendix.

C. ADDITIONAL BMPS FOR SPECIAL WATERS

For the BMPs described in C.2, C.4 and C.5 of this Appendix:

Where the proximity to bedrock precludes the installation of any of the permanent **storm water** management practices outlined in Appendix A, other treatment such as grassed swales, smaller ponds, or grit chambers is required prior to discharge to **surface waters**.



For work on road projects where the lack of right of way precludes the installation of any of the permanent **storm water** management practices outlined in Appendix A, other treatment such as grassed swales, smaller ponds, or grit chambers is required prior to discharge to **surface waters**.

1. During construction.
 - a. All exposed soil areas with a slope of 3:1 or steeper, that have a continuous positive slope to a special water must have **temporary erosion protection** or **permanent cover** within 3 days after the area is no longer actively being worked. All other slopes that have a continuous positive slope to a special water must have **temporary erosion protection** or **permanent cover** within 7 days after the area is no longer actively being worked.
 - b. Temporary sediment basin requirements described in Part III.B.1-5 must be used for common drainage locations that serve an area with five (5) or more acres disturbed at one time.
2. Post construction. The **water quality volume** that must be treated by the project's permanent **storm water** management system described in Part III.C. shall be one (1) inch of runoff from the new **impervious surfaces** created by the project.
3. Buffer zone. An undisturbed buffer zone of not less than 100 linear feet from the special water (not including tributaries) shall be maintained at all times. Exceptions from this requirement for areas, such as water crossings or limited water access, are allowed if the **Permittee** fully documents in the **SWPPP** the circumstances and reasons that the buffer encroachment is necessary. All potential water quality, scenic and other environmental impacts of these exceptions must be minimized and documented in the **SWPPP** for the project.
4. Enhanced runoff controls. The permanent **storm water** management system must be designed such that the pre and post project runoff rate and volume from the 1, and 2-year 24-hour precipitation events remains the same.
5. Temperature Controls. The permanent **storm water** management system must be designed such that the discharge from the project will minimize any increase in the temperature of trout stream receiving waters resulting from the 1, and 2-year 24-hour precipitation events. This includes all tributaries of designated trout streams within the section that the trout stream is located. Projects

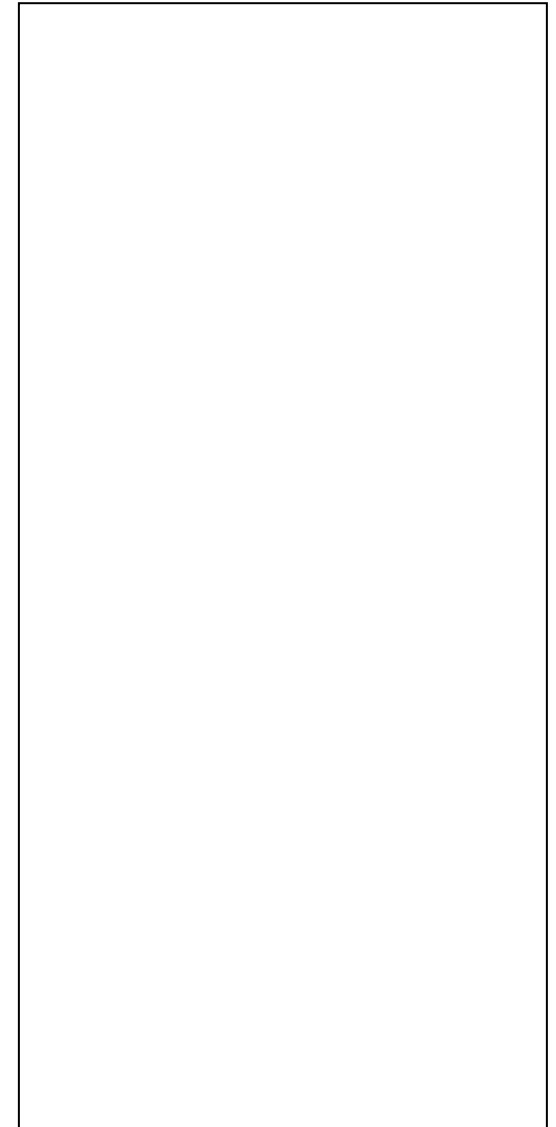
that discharge to trout streams must minimize the impact using one or more of the following measures, in order of preference:

- a. Minimize new **impervious surfaces**.
- b. Minimize the discharge from connected **impervious surfaces** by discharging to vegetated areas, or grass swales, and through the use of other non-structural controls.
- c. Infiltration or evapotranspiration of runoff in excess of pre-project conditions (up to the 2-year 24-hour precipitation event).
- d. If ponding is used, the design must include an appropriate combination of measures such as shading, filtered bottom withdrawal, vegetated swale discharges or constructed **wetland** treatment cells that will limit temperature increases. The pond should be designed to draw down in 24 hours or less.
- e. Other methods that will minimize any increase in the temperature of the trout stream.

D. REQUIREMENTS FOR DISCHARGING TO WETLANDS

If the project has any **storm water** discharges with the potential for significant adverse impacts to a **wetland** (e.g., conversion of a natural **wetland** to a **storm water** pond) , the **Permittee(s)** must demonstrate that the **wetland** mitigative sequence has been followed in accordance with D.1 or D.2 of this appendix.

1. If the potential adverse impacts to a **wetland** on a specific project site have been addressed by permits or other approvals from an official statewide program (U.S. Army Corps of Engineers 404 program, Minnesota Department of Natural Resources, or the State of Minnesota Wetland Conservation Act) that are issued specifically for the project and project site, the **Permittee** may use the permit or other determination issued by these agencies to show that the potential adverse impacts have been addressed. For the purposes of this permit, de minimus actions are determinations by the permitting agency that address the project impacts, whereas a non-jurisdictional determination does not address project impacts.
2. If there are impacts from the project that are not addressed in one of the permits or other determinations discussed in Appendix A, Part D.1 (e.g., permanent inundation or flooding of the **wetland**, significant degradation of water quality, excavation, filling, draining), the **Permittee** must minimize all adverse impacts to **wetlands** by utilizing appropriate measures. Measures used



must be based on the nature of the **wetland**, its vegetative community types and the established hydrology. These measures include in order of preference:

- a. Avoid all significant adverse impacts to **wetlands** from the project and post project discharge.
- b. Minimize any unavoidable impacts from the project and post project discharge.
- c. Provide compensatory mitigation when the **Permittee** determines that there is no reasonable and practicable alternative to having a significant adverse impact on a **wetland**. For compensatory mitigation, wetland restoration or creation shall be of the same type, size and whenever reasonable and practicable in the same watershed as the impacted wetland.

E. DISCHARGES REQUIRING ENVIRONMENTAL REVIEW

This permit does not replace or satisfy any environmental review requirements, including those under the Minnesota Environmental Policy Act (MEPA) or the National Environmental Policy Act (NEPA). The **owner** must complete any environmental review required by law, including any required Environmental Assessment Work Sheets or Environmental Impact Statements, Federal environmental review, or other required review.

F. DISCHARGES AFFECTING ENDANGERED OR THREATENED SPECIES

This permit does not replace or satisfy any review requirements for Endangered or Threatened species, from new or **expanded discharges** that adversely impact or contribute to adverse impacts on a listed endangered or threatened species or adversely modify a designated critical habitat. The **owner** must conduct any required review and coordinate with appropriate agencies for any project with the potential of affecting threatened or endangered species, or their critical habitat.

G. DISCHARGES AFFECTING HISTORIC PLACES OR ARCHEOLOGICAL SITES

This permit does not replace or satisfy any review requirements for Historic Places or Archeological Sites, from new or **expanded discharges** which adversely affect properties listed or eligible for listing in the National Register of Historic Places or affecting known or discovered Archeological Sites. The **owner** must be in compliance with National Historic Preservation Act and conduct all required review and coordination related to historic preservation, including significant anthropological sites and any burial sites, with the Minnesota Historic Preservation Officer.

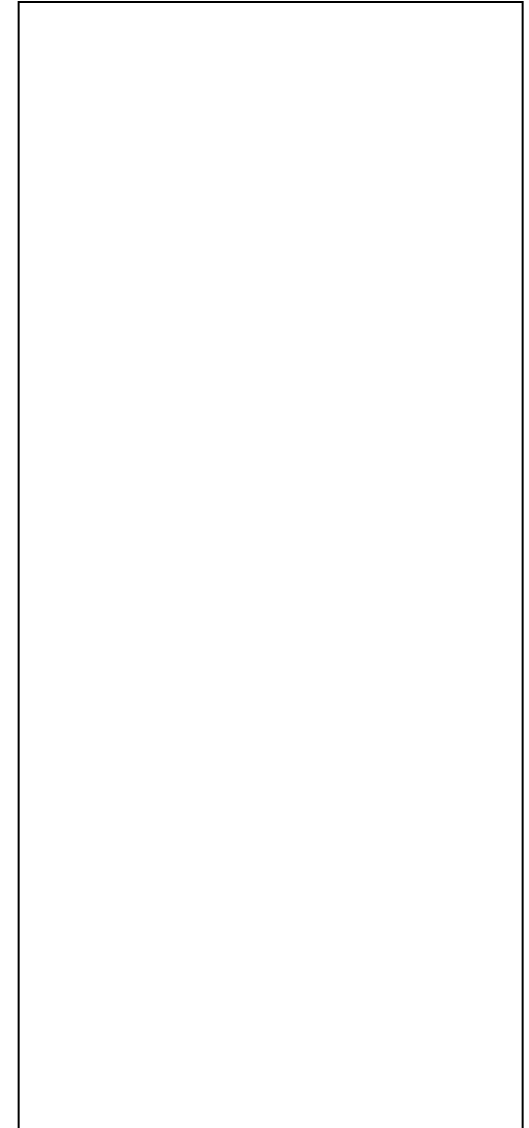
The list of definitions is taken from the NPDES Phase II Construction Permit and may require some adaptation for each Community

APPENDIX B. DEFINITIONS

1. "**Best Management Practices (BMPs)**" means erosion and **sediment control** and water quality management practices that are the most effective and practicable means of controlling, preventing, and minimizing degradation of **surface water**, including avoidance of impacts, construction-phasing, minimizing the length of time soil areas are exposed, prohibitions, and other management practices published by state or designated area-wide planning agencies.

Individual **BMPs** found in this permit are described in the current version of **Protecting Water Quality in Urban Areas**, Minnesota Pollution Control Agency 2000. **BMPs** must be adapted to the site and can be adopted from other sources. However, they must be similar in purpose and at least as effective and stringent as MPCA's **BMPs**. (Other sources include manufacturers specifications, **Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices**, U.S. Environmental Protection Agency 1992, and **Erosion Control Design Manual**, Minnesota Department of Transportation, et al, 1993).

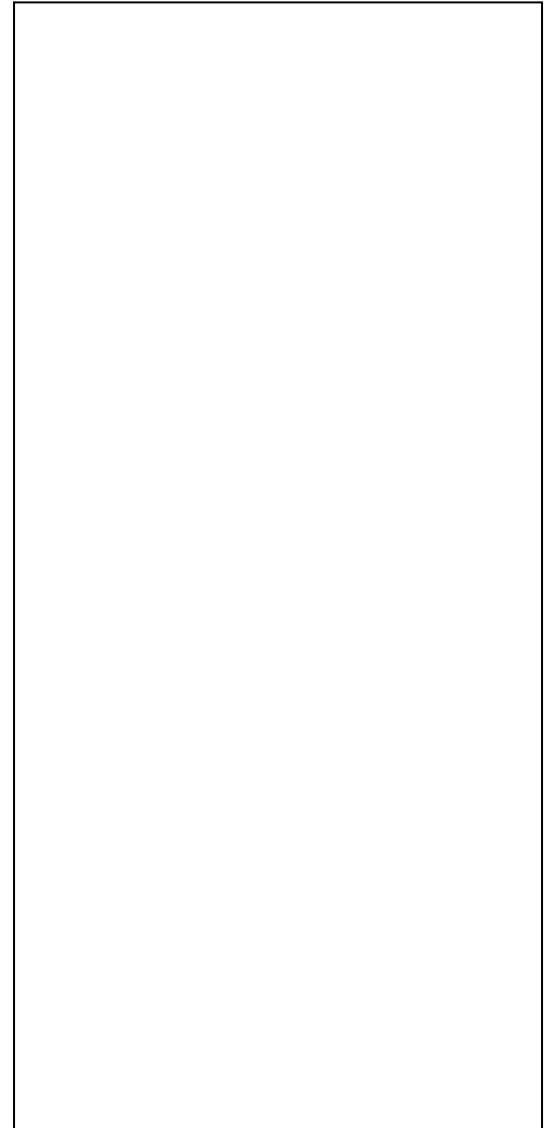
2. "**Commissioner**" means the **Commissioner** of the Minnesota Pollution Control Agency or the **Commissioner's** designee.
3. "**Common Plan of Development or Sale**" means a contiguous area where multiple separate and distinct land disturbing activities may be taking place at different times, on different schedules, but under one proposed plan. One plan is broadly defined to include design, permit application, advertisement or physical demarcation indicating that land-disturbing activities may occur.
4. "**Construction Activity**" For this permit, **construction activity** includes **construction activity** as defined in 40 C.F.R. part 122.26(b)(14)(x) and **small construction activity** as defined in 40 C.F.R. part 122.26(b)(15). This includes a disturbance to the land that results in a change in the topography, existing soil cover (both vegetative and non-vegetative), or the existing soil topography that may result in accelerated **storm water** runoff, leading to soil erosion and movement of sediment into **surface waters** or drainage systems. Examples of construction activity may include clearing, grading, filling and excavating. **Construction activity** includes the disturbance of less than one acre of total land area that is a part of a larger **common plan of development or sale** if the larger common plan will ultimately disturb one (1) acre or more.



5. **“Dewatering”** means the removal of water for **construction activity**. It can be a discharge of appropriated surface or groundwater to dry and/or solidify a construction site. It may require Minnesota Department of Natural Resources permits to be appropriated and if contaminated may require other MPCA permits to be discharged.
6. **“Energy Dissipation”** means methods employed at pipe outlets to prevent erosion. Examples include, but are not limited to: concrete aprons, riprap, splash pads, and gabions that are designed to prevent erosion.
7. **“Erosion Prevention”** means measures employed to prevent erosion including but not limited to: soil stabilization practices, limited grading, mulch, temporary or **permanent cover**, and construction phasing.
8. **“Final Stabilization”** means that either:
 - a. All soil disturbing activities at the site have been completed and a uniform (e.g., evenly distributed, without large bare areas) perennial vegetative cover with a density of 70% of the native background vegetative cover for the area has been established on all unpaved areas and areas not covered by permanent structures, or equivalent permanent stabilization measures (such as the use of riprap, gabions, or geotextiles) have been employed;
 - b. For individual lots in residential construction by either: (a) The homebuilder completing **final stabilization** as specified above, or (b) the homebuilder establishing temporary stabilization including perimeter controls for an individual lot prior to occupation of the home by the homeowner and informing the homeowner of the need for, and benefits of, **final stabilization**. (Homeowners typically have an incentive to put in the landscaping functionally equivalent to **final stabilization** as quick as possible to keep mud out of their homes and off sidewalks and driveways.); or
 - c. For construction projects on land used for agricultural purposes (e.g., pipelines across crop or range land) **final stabilization** may be accomplished by returning the disturbed land to its preconstruction agricultural use. Areas disturbed that were not previously used for agricultural activities, such as buffer strips immediately adjacent to **surface waters** and drainage systems, and areas which are not being returned to their preconstruction agricultural use must meet the **final stabilization** criteria in (a) or (b) above.

9. "**General Contractor**" means the party who signs the construction contract with the **owner** to construct the project described in the final plans and specifications. Where the construction project involves more than one contractor, the **general contractor** will be the party responsible for managing the project on behalf of the **owner**. In some cases, the **owner** may be the **general contractor**. In these cases, the **owner** may contract an individual as the **operator** who would become the Co-Permittee.
10. "**Homeowner Factsheet**" means a fact sheet developed by the MPCA to be given to homeowners at the time of sale by a builder to inform the homeowner of the need for, and benefits of, **final stabilization**.
11. "**Impervious Surface**" means a constructed hard surface that either prevents or retards the entry of water into the soil and causes water to run off the surface in greater quantities and at an increased rate of flow than prior to development. Examples include rooftops, sidewalks, patios, driveways, parking lots, storage areas, and concrete, asphalt, or gravel roads.
12. "**National Pollutant Discharge Elimination System (NPDES)**" means the program for issuing, modifying, revoking, reissuing, terminating, monitoring, and enforcing permits under the Clean Water Act (Sections 301, 318, 402, and 405) and United States Code of Federal Regulations Title 33, Sections 1317, 1328, 1342, and 1345..
13. "**Normal Wetted Perimeter**" means the area of a conveyance, such as a ditch, channel, or pipe that is in contact with water during flow events that are expected to occur once every year.
14. "**Notice of Termination**" means notice to terminate coverage under this permit after construction is complete, the site has undergone **final stabilization**, and maintenance agreements for all permanent facilities have been established, in accordance with all applicable conditions of this permit. **Notice of Termination** forms are available from the MPCA.
15. "**Operator**" means the person (usually the **general contractor**), designated by the **owner**, who has day to day operational control and/or the ability to modify project plans and specifications related to the **SWPPP**. The person must be knowledgeable in those areas of the permit for which the **operator** is responsible, (Part II.B. and Part IV.) and must perform those responsibilities in a workmanlike manner.

16. "**Owner**" means the person or party possessing the title of the land on which the construction activities will occur; or if the **construction activity** is for a lease holder, the party or individual identified as the lease holder; or the contracting government agency responsible for the **construction activity**.
17. "**Permanent Cover**" means **final stabilization**. Examples include grass, gravel, asphalt, and concrete.
18. "**Permittee**" means a person or persons, firm, or governmental agency or other institution that signs the application submitted to the MPCA and is responsible for compliance with the terms and conditions of this permit.
19. "**Saturated Soil**" means the highest seasonal elevation in the soil that is in a reduced chemical state because of soil voids being filled with water. **Saturated soil** is evidenced by the presence of redoximorphic features or other information.
20. "**Sediment Control**" means methods employed to prevent sediment from leaving the site. **Sediment control** practices include silt fences, sediment traps, earth dikes, drainage swales, check dams, subsurface drains, pipe slope drains, storm drain inlet protection, and temporary or permanent sedimentation basins.
21. "**Small Construction Activity**" means small construction activity as defined in 40 C.F.R. part 122.26(b)(15) . Small construction activities include clearing, grading and excavating that result in land disturbance of equal to or greater than one acre and less than five acres. **Small construction activity** includes the disturbance of less than one (1) acre of total land area that is part of a larger **common plan of development or sale** if the larger common plan will ultimately disturb equal to or greater than one and less than five (5) acres.
22. "**Stabilized**" means the exposed ground surface has been covered by appropriate materials such as mulch, staked sod, riprap, wood fiber blanket, or other material that prevents erosion from occurring. Grass seeding is not stabilization.
23. "**Standard Plates**" means general drawings having or showing similar characteristics or qualities that are representative of a construction practice or activity.



24. "**Storm water**" is defined under Minn. R. 7077.0105, subp. 41(b), and includes precipitation runoff, **storm water** runoff, snow melt runoff, and any other surface runoff and drainage.
25. "**Storm Water Pollution Prevention Plan**" means a plan for **storm water** discharge that includes **erosion prevention** measures and **sediment controls** that, when implemented, will decrease soil erosion on a parcel of land and decrease off-site nonpoint pollution.
26. "**Surface Water or Waters**" means all streams, lakes, ponds, marshes, **wetlands**, reservoirs, springs, rivers, drainage systems, waterways, watercourses, and irrigation systems whether natural or artificial, public or private.
27. "**Temporary Erosion Protection**" means methods employed to prevent erosion. Examples of temporary cover include; straw, wood fiber blanket, wood chips, and erosion netting.
28. "**Underground Waters**" means water contained below the surface of the earth in the saturated zone including, without limitation, all waters whether under confined, unconfined, or perched conditions, in near surface unconsolidated sediment or regolith, or in rock formations deeper underground. The term ground water shall be synonymous with underground water.
29. "**Waters of the State**" (as defined in Minn. Stat. § 115.01, subd. 22) means all streams, lakes, ponds, marshes, watercourses, waterways, wells, springs, reservoirs, aquifers, irrigation systems, drainage systems and all other bodies or accumulations of water, surface or underground, natural or artificial, public or private, which are contained within, flow through, or border upon the state or any portion thereof.
30. "**Water Quality Volume**" means ½ inch of runoff from the new **impervious surfaces** created by this project and is the volume of water to be treated in the permanent **storm water** management system, as required by this permit except as provided in Appendix A.C.2.
31. "**Wetland**" or "**Wetlands**" is defined in Minn. R. 7050.0130, subp. F and includes those areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted

for life in **saturated soil** conditions. **Wetlands** generally include swamps, marshes, bogs, and similar areas. Constructed **wetlands** designed for wastewater treatment are not **waters of the state**.

Wetlands must have the following attributes:

- a. A predominance of hydric soils;
- b. Inundated or saturated by **surface water** or groundwater at a frequency and duration sufficient to support a prevalence of hydrophytic vegetation typically adapted for life in a **saturated soil** condition; and
- c. Under normal circumstances support a prevalence of such vegetation.

APPENDIX C. MODEL DESIGN MANUALS

- *Protection Water Quality in Urban Areas, March 2000, Minnesota Pollution Control Agency, www.pca.state.mn.us.*
- *Urban Small Sites BMP Manual, 2001, Metropolitan Council, <http://www.metrocouncil.org/environment/Watershed/BMP/manual.htm>*
- *Low Impact Design Center, <http://www.lowimpactdevelopment.org/>*
- *Low Impact Development Design Manual, 1997, Prince George's County, Maryland, Department of Environmental Resources*
- *Stormwater BMP Design Supplement for Cold Climates, 1997, Center for Watershed Protection, Ellicott City, MD., <http://www.cwp.org/>*
- *Design of Stormwater Filtering Systems, 1996, Center for Watershed Protection, Ellicott City, MD., <http://www.cwp.org/>*
- *Wet Extended Detention Pond Design, 1995, Center for Watershed Protection, Ellicott City, MD.*
- *Impervious Surface Reduction Study, 1995, Olympia, WA and Washington State Department of Ecology, <http://www.cwp.org/>*
- *Better Site Design: A Handbook for Changing Development Rules in Your Community, 1998, Center for Watershed Protection, Ellicott City, MD., <http://www.cwp.org/>*
- *Consensus Agreement on Model Development Principles to Protect Our Streams, Lakes, and Wetlands, 1998, Center for Watershed Protection, Ellicott City, MD., <http://www.cwp.org/>*
- *Maryland Stormwater Design Manual, Volumes I and II, October 2000, Maryland Department of the Environment. Baltimore, MD <http://www.mde.state.md.us/Programs/WaterPrograms/SedimentandStormwater/>*
- *Site Planning for Urban Stream Protection, 1995, Center for Watershed Protection, Ellicott City, MD, <http://www.cwp.org/>*
- *State of Minnesota Storm Water Advisory Group. June 1997. Storm-Water and Wetlands: Planning and Evaluation Guidelines for Addressing Potential Impacts*

- of Urban Storm Water and Snow-Melt Runoff on Wetlands. Minnesota Pollution Control Agency, www.pca.state.mn.us*
- *State of Minnesota Storm Water Advisory Group. September 1997. Buffer Zones. Minnesota Pollution Control Agency, www.pca.state.mn.us*
 - *Design Calculations for Wet Detention Ponds (Walker, 1987a).*
 - *Criteria for planning and design considerations are given in Chapter 4 of Protecting Water Quality in Urban Areas by the MPCA (1989). Stormwater BMP Design Supplement for Cold Climates, Center for Watershed Protection (December 1997), <http://www.cwp.org/>*