

Stormwater Compliance Assistance Toolkit for Small Construction Operators



Minnesota Pollution Control Agency

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Introduction

This guidance is intended as a resource to help small construction operators comply with the Minnesota Pollution Control Agency’s (MPCA) Construction Stormwater General Permit. The permit requires the development and implementation of a stormwater pollution prevention plan (SWPPP), which is your plan to decrease soil erosion and water pollution during construction. Small construction operators manage construction projects on sites less than five acres; however, large construction operators may also benefit from the information in this guidance.

This guidance explains who needs to apply for the permit, how to develop a stormwater pollution prevention plan (SWPPP), typical best management practices (BMPs) you may use during construction, and what you need to do during and after construction. In addition, a SWPPP template is included in Attachment A to help small construction operators develop a SWPPP that meets permit requirements.

This guidance does not replace the construction stormwater permit. All construction operators are strongly encouraged to read and understand the requirements described in the actual permit before applying for the permit and commencing construction.

It’s important to note that the BMPs described in this guide need to be executed in the proper manner or the expected benefits will not be realized and the site may be deemed in violation.

Comments welcome

This is the second edition of the *Compliance Assistance Toolkit*. We welcome comments and suggestions on how it might be changed in future editions to better assist developers and construction firms in reducing stormwater runoff, both during construction and longterm. Send comments to:

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Chapter 1

MPCA's Construction Stormwater Permit

The MPCA issued the National Pollutant Discharge Elimination System/State Disposal System (NPDES/SDS) General Stormwater Permit for Construction Activity in August 2013. Owners and operators of construction activity disturbing **one acre or more** of land need to obtain the construction stormwater permit. Sites disturbing less than one acre within a larger common plan of development or sale that is more than one acre also need permit coverage.

Who is required to obtain the MPCA construction stormwater permit?

The **owner** who signs the application is a permittee and is responsible for compliance with all terms and conditions of this permit. The **operator** (usually the general contractor) who signs the application is a permittee for Parts II.B., Part II.C. and Part IV. of the permit and is jointly responsible with the owner for compliance with those portions of the permit.

The owner can also be a lease, easement, or mineral rights license holder if the construction activity is for the leaseholder, or the owner can be the contracting government agency responsible for the construction activity. The owner and operator can be one and the same and must sign both sections in the application. However, if you are required to have permit coverage on a site that already has a NPDES permit, you may transfer the coverage to your name by using the Notice of Termination (NOT)/Permit Modification form.

What is a "larger common plan of development or sale?"

A common plan of development or sale means a contiguous area where multiple separate and distinct construction activities are occurring under one overall plan (e.g., the operator is building on three half-acre lots in a six-acre development). The "plan" in a common plan of development or sale is broadly defined as any announcement or documentation or physical demarcation indicating that construction activities may occur on a specific plot.



The operator is the person designated by the owner who has day-to-day operational control and/or the ability to modify project plans and specifications related to the stormwater pollution prevention plan (SWPPP). This person must be knowledgeable in those areas of the permit for which he is responsible (Part II.B and Part IV).

What type of projects do not require this construction stormwater permit?

Agricultural land disturbing activity – if one or more acres of land will be disturbed for conversion of previously non-agricultural (crop) land to agricultural (crop) land, that activity is not required to have permit coverage.

Silvicultural activity – logging activity that is not associated with a construction project (not performed in order to clear land for anticipated construction activity) is not required to have permit coverage.

What are some of the main permit requirements?

Permittees are required to develop a SWPPP and submit an application and \$400 application fee. Application must be completed on-line by creating an e-Service account. Access the e-Services webpage by visiting https://rsp.pca.state.mn.us/TEMPO_RSP/Orchestrate.do?initate=true.

In addition to developing the SWPPP, permittees must implement the SWPPP, conduct regular inspections, and maintain BMPs. Inspections are required once every seven days during active construction and within 24 hours after a rainfall event greater than 0.5 inches in 24 hours. The next inspection must be conducted within seven days after that. At the end of the project, after all disturbed

surfaces are stabilized, the permittee must submit a NOT to let MPCA know that the construction activity is complete.

For most sites, construction may begin seven days after the application is postmarked. For sites that are more than 50 acres and that discharge to outstanding natural resource value waters (special waters) or impaired waters, the SWPPP and application materials must be submitted to the MPCA at least 30 days prior to commencing construction.

What are “special waters?”

Additional requirements apply to construction sites that discharge within one mile of a special water. These waters can include:

- Wilderness areas (such as the Boundary Waters Canoe Area Wilderness, Voyageurs National Park, and parts of Kettle River and Rum River)
- Mississippi River (portions of)
- Scenic or recreational river segments (such as the Saint Croix River and Cannon River)
- Lake Superior
- Lake trout lakes
- Trout lakes
- Scientific and natural areas
- Trout streams

(See Appendix A, Part B of the construction stormwater permit for more information or use the Special Waters Search tool on the MPCA construction stormwater webpage.)



How do I apply for the construction stormwater permit?

To help you comply with the requirements in the construction stormwater permit, the MPCA has developed the following “Steps to construction” to assist with the permit requirements. These steps are also available on the MPCA’s stormwater website. Remember that completing the application is one of the last things you do. Follow the steps below:

Step 1. Identify the construction site boundaries, the latitude and longitude for the site, and the major phases of the project.

The first thing you will need to do is identify the boundaries of your construction site. Identifying these construction site boundaries is important for determining which environmental resources may be at risk of being impacted by the project. This will also help you fill out the application, which requires you to fill out the total number of acres to be disturbed, the latitude and longitude of the center of the site, surface waters within one mile of the project that will receive stormwater from the site, and a copy of a U.S. Geological Survey (USGS) 7.5-minute quad or equivalent map with the site boundaries indicated. The latitude and longitude should correspond to a point “on site” which is closest to the approximate center of the construction site.

Identifying the major phases of a project will help you develop a plan to eliminate or minimize the potential environmental impacts.

Step 2. Determine if additional permits are needed.

It is your responsibility to contact other state and federal agencies and local governments to determine if additional permits are required in addition to the NPDES/SDS permit issued by MPCA. An example of an additional permit that could be required is a Section 404 permit from the Army Corps of Engineers if work will occur in a waterway or wetland. Local zoning offices are good places to check for required permits.

Step 3. Determine if Environmental Review is needed.

Contact the Minnesota Environmental Quality Board, the appropriate state agency, or local government agency to determine if your proposed project meets or exceeds the thresholds outlined in the state environmental review rules. For more information, see the two web links below:

Minnesota Environmental Quality Board: Environmental Review
www.eqb.state.mn.us/program.html?id=18107

MPCA: Environmental Review
www.pca.state.mn.us/programs/envr_p.html

Step 4. Understand the requirements of the NPDES/SDS Construction Stormwater General Permit.

Read and understand the requirements in the NPDES/SDS Construction Stormwater Permit itself. MPCA has developed this guidance document and a summary of the permit (*Overview of Minnesota’s NPDES/SDS Construction Stormwater Permit, August 2008*) to help you understand the requirements. Copies of the permit and this summary are available at www.pca.state.mn.us/water/stormwater/stormwater-c.html or call the MPCA front desk at 651-296-6300 or 800-657-3864 and ask for Construction Stormwater Support Staff.

By signing and submitting the application described below, you are legally committing to follow the permit requirements. Make sure you know what these requirements are!

Step 5. Identify waters that have the potential to receive a discharge of stormwater runoff from the project or discharge from a permanent stormwater management system.

Page 2 generally describes “Special Waters.” Impaired waters are those identified by the state and U. S. Environmental Protection Agency as waters not meeting their designated uses for specific pollutants. You will need to identify all waters, including special waters or impaired waters, that are within a mile of a discharge point from your project.

Special Waters. MPCA has developed an electronic map tool called Special Waters Search to help you identify these waters (www.pca.state.mn.us/water/stormwater/stormwater-c.html). You can also download the *Special Waters Document* from the MPCA’s stormwater Web site and use a quad map to identify your construction site and any special waters located within a mile of your site boundary.

Impaired Waters. Use the Special Waters Search or the *most recent TMDL List of Impaired Waters* (www.pca.state.mn.us/water/tmdl/tmdl-303dlist.html) and a quad map to identify impaired waters within a mile of your site boundary. If you discharge to an impaired water, go to MPCA’s Total Maximum Daily Load (TMDL) website to determine if that water has a TMDL that includes construction stormwater requirements.

Use a USGS 7.5-minute quad map to identify all waters (other than those identified above) that are within a mile of your construction site and have the potential of receiving a discharge from the site.

Step 6. Determine if discharges from the construction site will impact endangered or threatened species, historic places, or calcareous fens.

It is your responsibility to check if discharges from your site will impact endangered or threatened species, historic places, or calcareous fens. Information on calcareous fens is available using the *Special Waters Search* tool. Projects that discharge to a calcareous fen must get a letter of approval from the Minnesota Department of Natural Resources.



Information on endangered or threatened species and historic places is available from the contacts below:

Minnesota Department of Natural Resources – Natural Heritage Program
www.dnr.state.mn.us/eco/nhnrp/nhis.html

Minnesota Historical Society – National Register Properties
<http://nrhp.mnhs.org>

Step 7. Prepare a stormwater pollution prevention plan (SWPPP).

See Chapter 2 for more information on developing a SWPPP. You must have this SWPPP developed before you submit your application (Step 11).

Step 8. Re-check the receiving waters that the project discharges to.

After developing your SWPPP, you may find that your project boundaries have moved or your discharge locations have changed. Double check the information you obtained in steps 5 and 6 to make sure it is still accurate. You will need to list the waters that receive a discharge from your construction site on the permit application form.

Step 9. Complete the application form for an MPCA NPDES/SDS stormwater permit for construction activities.

Complete the permit application on-line by creating an e-Services account. The permit application includes prerequisite questions, information about the construction activity, and information including signatures of the responsible parties (both the construction site owner and operator). Create an e-Services account by accessing the e-Service webpage:

https://rsp.pca.state.mn.us?TEMPO_RSP/Orchestrate.do?initate=true. Feel free to call Construction Stormwater Support Staff at 651-296-6300 or 800-657-3864 for questions relating to the permit application process.

Step 10. Submit the application form and fee to the MPCA.

Submit the application on-line by creating an e-Services account. Access the e-Services webpage by visiting https://rsp.pca.state.mn.us/TEMPO_RSP/Orchestrate.do?initate=true.



You must submit the application at least 7 days before your construction start date, except for the following situations.

- Projects requiring an Individual Permit must submit applications at least 180 days before the construction start date.
- For projects disturbing 50 acres or more and discharging within a mile of a special water or impaired water, you must submit the application fee and SWPPP for MPCA review at least 30 days before the construction start date.

Keep a copy of your completed application form.

Step 11. Implement the SWPPP and begin construction.

Unless notified to the contrary, you can begin construction after completing your SWPPP and after permit coverage is granted, which is 7, or 30 days (depending on the applicable review period) after the completed application form, except for the following situations:

- For Individual NPDES/SDS Construction Stormwater Permit projects, permit coverage starts only after permit development, public input, and permit issuance.
- For projects with alternative technology, permit coverage starts after receiving an alternative treatment approval letter from the MPCA.
- For projects disturbing 50 acres or more and discharging within a mile of a special water or impaired water, permit coverage starts 30 days after the completed application unless notified in writing that the SWPPP does not meet the general permit requirements.

If the application was submitted on-line, when notified to the contrary, you can begin construction after completing your SWPPP and 7 days after submitting your on-line application.

Why get a permit? Addressing the problem of runoff

Construction activity can impact our water resources in two main ways: through water **quality** impacts from excessive erosion and discharge of other pollutants and through water **quantity** impacts caused by increases in impervious surfaces.

During a short period of time, construction activity can contribute more sediment to streams than would be deposited naturally over several decades, causing physical and biological harm to our waters. Uncontrolled construction site runoff can reduce clarity and lower dissolved oxygen in waterbodies; deposit excess sediments in waterways; and smother aquatic habitat including spawning sites. Runoff can also transport other pollutants attached to sediment particles such as pesticides and chemicals.

The addition of impervious surfaces increases the temperature, velocity and volume of discharges into wetlands, ponds and rivers. These factors reduce vegetative filtering and infiltration (less water soaks into the ground for recharge of the aquifer and base flow for streams). Impervious surfaces also increase flooding, which threatens human life and property, causes stream bank erosion, and damage to aquatic habitat and water quality.

There is a suite of enforcement options available to local government or state agencies to help achieve permit compliance, ranging from field requests and formal notices to local citations, administrative penalty orders, stipulation agreements, stop-work orders and permit revocations. Local governments may require developers to acquire a performance bond. State law provides for civil and criminal penalties for permit and water quality law violations of up to \$10,000 per violation per day.

An important element when assessing stormwater program violations is whether or not a permit has been applied for. The application process requires a site-specific Stormwater Pollution Prevention Plan (SWPPP), because experience has shown regulated parties are less likely to analyze site conditions relative to erosion and loss of sediment when a SWPPP is not developed. Lack of analysis becomes a key component of environmental harm considerations in the enforcement process.

While enforcement options are available, assisting contractors in achieving permit compliance and resource protection is our main focus and the goal of this publication.



Chapter 2

How Do I Develop a Stormwater Pollution Prevention Plan (SWPPP)?

Steps to developing an effective SWPPP

The following steps will help you develop and implement an effective SWPPP:

- Step 1. Evaluate the site
- Step 2. Identify goals and objectives
- Step 3. Describe roles, the site and construction activity
- Step 4. Develop BMPs for construction activity
- Step 5. Develop BMPs for permanent stormwater management
- Step 6. Implement the SWPPP
- Step 7. Inspect, maintain and evaluate BMPs
- Step 8. Update the SWPPP

The person preparing the SWPPP must have received appropriate training. (Part III.A.3.)

Step 1: Evaluate the site

Begin by evaluating the site to determine the critical issues that will need to be addressed in the SWPPP. Determine how stormwater will drain from the site, including the number and location of discharge points. Identify any surface waters within a mile that will receive runoff from your site. Note whether any are special or impaired waters. Identify any storm drain inlets that may receive a discharge from your project.

Identify potential sources of pollution that may reasonably be expected to affect the quality of stormwater discharges from your construction site. These could be fueling areas, concrete washouts, material storage areas, trash containers, and other materials that can be mobilized by stormwater runoff. You must also identify potential construction exits from the site, and determine if there are steep slopes on the project that will require extra protection.

Step 2: Identify project goals and objectives

Your overall goals during construction are to prevent erosion and minimize any sediment transport from your site. Post-construction goals are to reduce or minimize the impact on receiving waters from stormwater discharges from the site. You will do this primarily through developing and implementing your SWPPP.

Every project must also try to meet the following objectives:

- *Minimize disturbed areas and protect vegetation.* If practical for your site, consider phasing construction activities so that you only clear the portion of the site that you will be working on in the near future. Identify areas of vegetation, trees, and sensitive areas that must be protected by placing a physical barrier around these areas.
- *Protect slopes and channels.* Convey stormwater runoff around the top of slopes and stabilize slopes as soon as possible. Where a large amount of runoff must flow over a disturbed slope, use a slope drain to convey the water to the bottom of the slope for minimum erosion. Avoid disturbing natural channels.
- *Reduce impervious surfaces and promote infiltration.* Reducing impervious surfaces will ultimately reduce the amount of runoff leaving your site. Also, divert rooftops and other impervious surfaces to grassy areas when possible to promote infiltration.
- *Control the perimeter of your site.* Divert runoff coming on to your site. Install BMPs such as silt fences to capture sediment before it leaves your site.
- *Follow pollution prevention measures.* Provide proper containers for waste and garbage from your site. Store hazardous materials and chemicals so that they are not exposed to stormwater runoff. Define and place signs for concrete washout. Do not degrease machinery on-site.

Step 3: Describe roles, the site and construction activity

The construction *owner* is the person possessing the title of the land on which the construction activities will occur. The construction *operator* has operational control over construction plans and specifications and can commit resources to implementing the BMPs described in the SWPPP. However, stormwater pollution control is typically not the job of a single person; therefore, you must describe in the SWPPP the roles and responsibilities of everyone involved in implementing the SWPPP.

The owner is responsible for identifying a person (or job title such as foreman) who is knowledgeable, experienced and trained in the application of erosion and sediment control BMPs before and during construction. The owner must also identify the person (or entity) who will have the responsibility for long-term operation and maintenance of the permanent stormwater management system. The owner must also develop a chain of responsibility with all operators on the site to ensure that the SWPPP will be implemented and stay in effect until the construction project is complete; the entire site has undergone final stabilization; and a NOT has been submitted to the MPCA.



Provide a brief description of the nature of the construction activity. This must include:

- The function of the project (e.g., low density residential, shopping mall, highway, etc.)
- The intended sequence and timing of activities that disturb soils at the site
- Estimates of the total area expected to be disturbed by excavation, grading, or other construction activities, including dedicated off-site borrow and fill areas.

Site Map

Include in your SWPPP a legible site map, showing the entire site, and identifying:

1. Existing and final grades, including dividing lines and direction of flow for all pre and post-construction stormwater runoff drainage areas located within the project limits
2. Impervious surfaces and soil types
3. Locations of areas that will not be disturbed
4. Location of areas where construction will be phased in to minimize duration of exposed soil areas
5. All surface waters and existing wetlands, which can be identified on maps such as USGS 7.5-minute quad maps within one mile from the project boundaries, which will receive stormwater runoff from the construction site, during or after construction. If these waters do not fit onto the site map, identify them with an arrow indicating the direction and distance to the surface water.
6. Methods to be used for final stabilization of all exposed soil areas.

Your site plan is a dynamic document. As conditions change at the construction site, such as the locations of BMPs, you must update your site plan to reflect those changes. The person overseeing the implementation of the SWPPP has to have the appropriate training (Part III A.3.).

Step 4: Develop BMPs for construction activity

Select appropriate BMPs to control stormwater runoff during construction. The following BMPs are commonly used on small sites disturbing less than five acres:

- *Protect storm drain inlets.* All inlets receiving stormwater from the project must be protected until all disturbed areas with a potential for discharging to the inlet have been stabilized. Inlet protection may be removed for a particular inlet if a specific safety concern has been identified and you have received a written correspondence from the jurisdictional authority.
- *Establish stabilized construction exits.* Use stone pads, concrete or steel wash racks, or equivalent practices to contain vehicle tracking of sediment. Sweep the street if necessary.

- Protect slopes. Slopes longer than 75 feet on a 3:1 grade must be broken up using sediment control practices (e.g., sediment barrier). Stabilization of all exposed soils should be initiated immediately to limit soil erosion, but in no case later than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased. If you are within one-mile of impaired or special waters, all exposed soil must be stabilized as soon as possible but in no case later than seven days after the construction activity in that portion of the site has temporarily or permanently ceased.
- Protect ditch bottoms (normal wetted perimeter). Any temporary or permanent ditch that drains water from a construction site or diverts water around a site, must be stabilized within 200 lineal feet from the property line or from the point of discharge to any surface water. Stabilization must take place within 24 hours of connecting to a surface water.
- Install silt fence (or equivalent sediment control) along the down slope perimeter. Use practices such as silt fence, sediment traps, or other practices to capture runoff leaving the site.
- Control any dewatering practices. Discharge dewatering or basin draining water to a temporary or permanent sedimentation basin on the project.
- Control the location of and runoff from temporary stockpiles. Place temporary stockpiles away from surface waters including stormwater conveyances such as curb and gutter systems, or conduits and ditches. Control runoff from stockpiles by tarping, using silt fences or other effective sediment controls.
- Implement pollution prevention measures. Control solid waste using proper trash management practices. Properly store oil, gasoline, paint and other hazardous substances. External washing of vehicles must be limited to a defined area on the site. No engine degreasing allowed on site. Runoff must be contained. Concrete washout must be limited to defined sites. These sites have to have a sign. Be aware that if your site has a point that is within one mile and discharges to special waters or impaired waters (impaired because of phosphorous, turbidity dissolved oxygen, or biotic impairment) additional BMPs are needed. These additional BMPs can be found in Appendix A of the permit. (Part I.A.7, Part III.A.9, Appendix A .B.9)

Step 5: Develop BMPs for permanent stormwater management

If your project replaces vegetation and/or other pervious surfaces with one or more acres of cumulative impervious surface, then you will need to design practices to treat the runoff from these impervious surfaces. At least one inch of runoff (called the water quality volume or live storage) from the new impervious surfaces must be treated.

Calculations for determining the size of your stormwater management system should be kept with the SWPPP.



The methods available for treating the water quality volume include (see the permit for all of the design requirements):

- *Infiltration/filtration.* Options include infiltration basins, infiltration trenches, rainwater gardens, sand filters, organic filters, bioretention areas, enhanced swales, dry storage ponds with underdrain discharge, off-line retention areas, and natural depressions.
- *Wet sedimentation basins.* A permanent storage volume (dead storage) of 1800 cubic feet/acre that drains to the basin must be provided. The water quality volume (live storage) must be discharged at no more than 5.66 cubic feet per second (cfs) per acre of surface area of the pond.
- *Regional ponds.* You must obtain written authorization from the pond owner before discharging to a regional pond and the pond must meet the permit's design requirements.
- *Combination of practices.* You can use a combination of the above practices.
- *Alternative method.* You can propose an alternative method, but it must achieve 80% removal of total suspended solids on an annual average basis and MPCA must approve your plan before construction.

For those areas of your project where there is no feasible way to meet the requirements for the water quality volume, you may use other treatment such as grassed swales, smaller ponds, or grit chambers prior to discharging to surface waters. You can treat a cumulative maximum of three acres or 1% of project size (whichever is larger) in this manner.

See part III.D of the general permit for more information and minimum design requirements of the permanent stormwater management system. Additional information on permanent stormwater management practices is available in MPCA's guidance document called *Minnesota Stormwater Manual*. The Minnesota Stormwater Manual is available on the MPCA's website: https://stormwater.pca.state.mn.us/index.php/Main_Page.

Step 6: Implement the SWPPP

You must implement your SWPPP *before* construction activity begins. This typically means installing storm drain inlet protection, stabilizing construction exits, and installing perimeter sediment controls before clearing and grading activities begin. The person who implements the SWPPP has to have appropriate training. (Part III.A.3).

Additional BMPs must be installed as soon as possible during construction.

Step 7: Inspect, maintain and evaluate BMPs

Your responsibility doesn't stop after your BMPs are implemented. You are required to periodically inspect and maintain the BMPs on your site and you need to have received

the appropriate training (Part III A.3). See Chapter 4 for more information on the inspection and maintenance requirements.

You must also evaluate whether the BMPs you have selected are working. If they are not, modify your practices. For example, if your perimeter silt fence is frequently failing, you may need additional erosion controls upslope of the silt fence. You must continuously evaluate the practices you've implemented to determine if something better would work.

Records

You must keep the SWPPP, all changes to it, and inspection and maintenance records at the construction site. The SWPPP can be kept in either the field office or in an on-site vehicle. After the construction project is complete, keep the SWPPP on file for at least three years after submittal of your NOT.

Step 8: Update the SWPPP

Finally, update your on-site SWPPP as necessary during construction to reflect any changes made. The MPCA requires you to update your SWPPP whenever:

- There is a change in design, construction, operation, maintenance, weather or seasonal conditions that has significant effect on the discharge of stormwater from your site.
- Inspections indicate the SWPPP is not effective in minimizing the discharge of pollutants to surface waters.
- The SWPPP is not consistent with the requirements in the permit.
- The MPCA notifies you in writing that changes are needed.

Updates to your SWPPP must also include updates to your site plan as necessary to reflect changes in where BMPs are being implemented on-site.

Construction SWPPP Template

To help you develop a construction SWPPP, the MPCA has developed a template which is provided as Attachment A in this guide. This template is also available as a Microsoft Word document on the MPCA stormwater construction website.

The Word document allows you to “fill in the blanks” when developing your SWPPP. This is only a template, you may need to include additional information based on the conditions at your site, or based on requirements from local agencies.



Chapter 3

What kind of BMPs can I use in my SWPPP?

Erosion Prevention and Sediment Control BMPs

You can avoid many problems at your construction site by following the advice “divert the clean water, trap the dirty water.” Limit the amount of ground you disturb and re-vegetate as soon as possible to prevent runoff from getting dirty in the first place. Divert clean water coming on to your site so you don’t have to spend extra money treating it. Finally, for the areas of the construction site you do have to disturb, design practices to minimize erosion and then select practices to control sediment once erosion occurs. Not that you must include in the SWPPP the estimated preliminary quantities anticipated at the start of the project for the site of the project for all erosion prevention and sediment control BMPs (Part III A.5.b). Below are some common BMPs to help you achieve these goals. Note that it is important to construct BMPs properly in order to achieve the desired benefits.

The BMPs below are intended to provide information on selecting appropriate BMPs for your SWPPP. For detailed design guidance, refer to one of the guidance documents below or contact a stormwater design engineer.

- MPCA’s *Minnesota Stormwater Manual*:
https://stormwater.pca.state.mn.us/index.php/Main_Page.
- Metropolitan Council’s *Minnesota Urban Small Sites BMP Manual: Stormwater Best Management Practices for Cold Climates* (2001).
www.metrocouncil.org/environment/Watershed/bmp/manual.htm

You should know that if you are going to prepare the SWPPP, you should have received appropriate training (Part III.A.3).

Minimize disturbance

You must plan for and implement appropriate construction phasing to minimize exposed soil at any one time. Schedule clearing, grading, excavating and other land disturbing activities only when you will be actively working on that portion of the project.

Preserve existing vegetation at the site where possible. This includes areas next to streambanks, steep slopes, floodplains, and other sensitive areas. The location of areas not to be disturbed must be delineated (e.g., with flags, stakes, signs, silt fence, etc.) on the development site before work begins.

Permit requirement (Part IV.B.1):

- The Permittee must plan for and implement appropriate construction phasing, vegetative buffer strips, horizontal slope grading, and other construction practices that minimize erosion.

Protect slopes and ditch bottoms (normal wetted perimeters)

Use terracing or soil roughening practices to decrease runoff velocities, trap sediment, and increase infiltration on slopes. Tracking with machinery up and down (perpendicular to the slope) will provide grooves that catch seed and rainfall, reducing runoff and making it more difficult for rills and gullies to form on the slope.

For steep slopes, consider blankets, seeding or hydromulch to stabilize the slope.

Slopes with a grade of 3:1 or more must not have an unbroken slope length greater than 75 feet. Consider benching, staked fiber rolls, or other practices to break up the slope.

Permit requirement (Part IV.B.2-3):

- All exposed soil areas (including stockpiles) must have temporary or permanent cover initiated immediately and be completed no later than 14 calendar days after the construction activity in that portion of the site has temporarily or permanently ceased.

Storm drain inlet protection

Storm drain inlet protection prevents sediment from entering a storm drain by surrounding or covering the inlet with a filtering material. This allows sediment-laden runoff to pond and settle before entering the storm drain.

Several types of filters are commonly used for inlet protection: silt fence, sand bags or block and gravel. The type of filter will depend on inlet type (curb inlet, drop inlet), slope, and amount of flow. Many commercial inlet filters are also available. Some commercial inlet filters are placed in front or on top of an inlet, others are placed inside the inlet and under the grate.



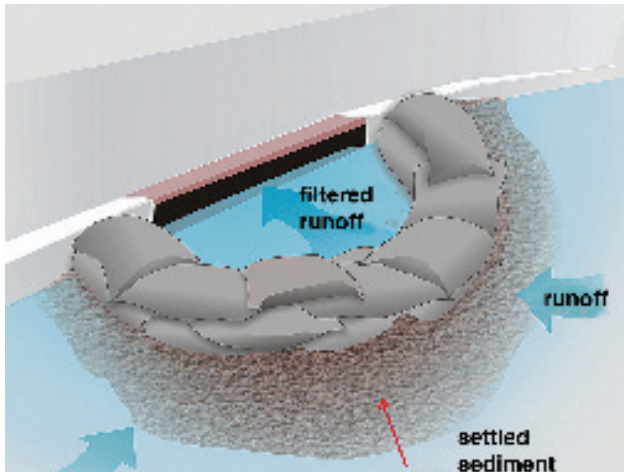


Figure 1. Sand or gravel bags can be used to filter stormwater runoff before entering a catch basin. Commercial products are also available that fit in front of or inside the catch basin.

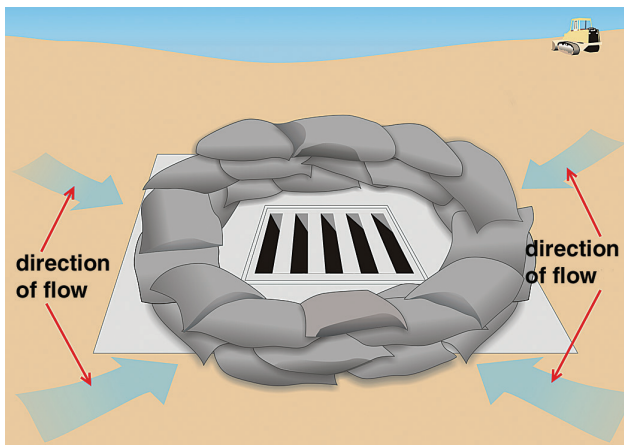


Figure 2. Sand or gravel bags used to protect a drop inlet.

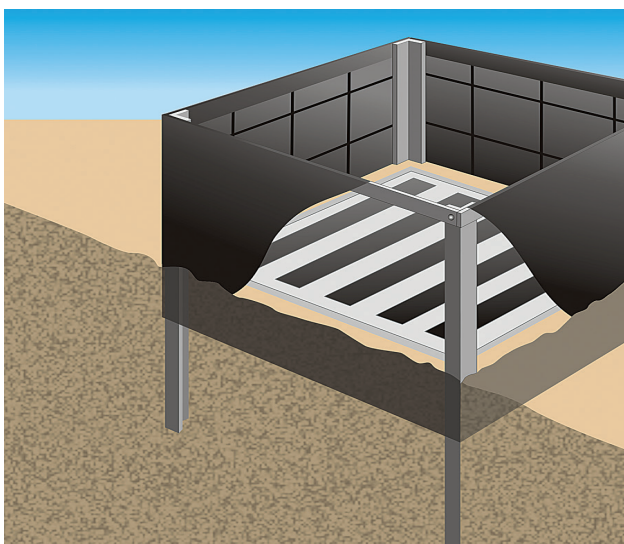


Figure 3. Silt fence can also be used to protect a drop inlet.

Permit requirements:

- All storm drain inlets must be protected by appropriate BMPs during construction until all sources with potential for discharging to the inlet have been stabilized. Inlet protection may be removed for a particular inlet if a specific safety concern has been identified and you have received written correspondence from the jurisdictional authority. (Part IV.C.4)
- All sediment control BMPs must be inspected to ensure integrity and effectiveness. All nonfunctional BMPs must be repaired, replaced, or supplemented with functional BMPs (Part IV.E.5)

Installation tips:

- Install inlet protection as soon as storm drain inlets are installed (or before land disturbance activities begin in areas with existing storm drain systems).
- Protect all inlets that will receive stormwater from your construction project.
- Inlet protection is a secondary BMP. Make sure you have other erosion prevention and sediment control BMPs in place.
- Safety is a consideration when determining the best method to protect an inlet. For example, if two feet of ponded water around an inlet will cause flooding of a nearby roadway, have an overflow at one foot of depth and additional controls at the outlet.

Maintenance:

- Inspect inlets at least weekly and within 24 hours after each rain event of at least .5 inches within a 24-hour period. The next inspection must be conducted within seven days after that.
- Remove accumulated sediment behind the inlet protection and any sediment that enters a storm drain.
- Replace the inlet protection when it becomes damaged.

Stabilized Construction Exit

A rock construction exit can reduce the amount of mud transported onto paved roads by vehicles. The construction exit does this by removing mud from the vehicle tires before the vehicle enters a public road.

In some cases, a wash rack may be used to wash tires and keep driving surfaces mud-free. Wash water must be directed to a suitable settling area and must not be discharged to a stream or storm drain.

Permit requirements:

- Vehicle tracking of sediment from the construction site must be minimized by BMPs such as stone pads, concrete or steel wash racks, or equivalent systems. Street sweeping must be used if such BMPs are not adequate to prevent sediment from being tracked onto the street. (Part IV.C.6)
- Construction site vehicle exit locations must be inspected for evidence of off-site sediment tracking onto paved surfaces. Tracked sediment must be removed from all off-site paved surfaces within 24 hours of discovery, or if applicable, within a shorter time. (Part IV.E.5.d)

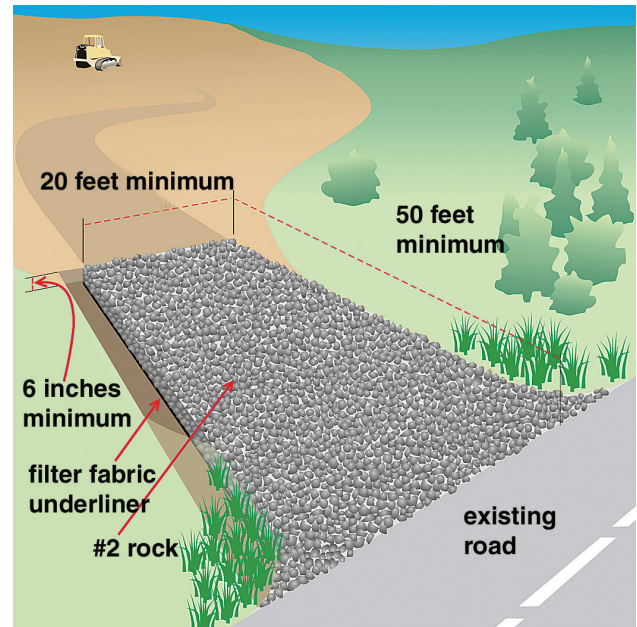


Figure 4. Stabilized construction exit.

Installation tips:

- The exit must be at least 50 feet long (generally the length of two dump trucks), and the exit must be graded so runoff does not enter the adjacent street.
- Place a geotextile fabric under a layer of aggregate at least 6 inches thick. The aggregate must be a minimum of 1 to 3 inches (larger aggregate is better).
- Direct employees to use the designated construction exits.

Maintenance:

- Replenish or replace aggregate if it becomes clogged with sediment.
- Sweep the street regularly.

Silt fence and sediment barriers

Silt fence is a temporary sediment barrier consisting of a geotextile, which is attached to supporting posts trenched into the ground. The purpose of a silt fence is to filter out sediment-laden runoff as it ponds on the uphill side. However, a silt fence is only designed for runoff from small areas, and is not intended to handle flows from large slopes or in areas of concentrated flow.

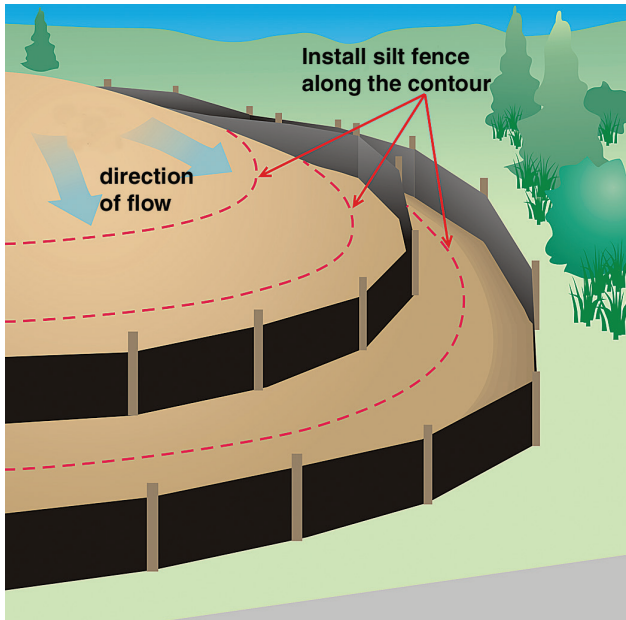


Figure 5. Illustration of silt fences installed along the contour.

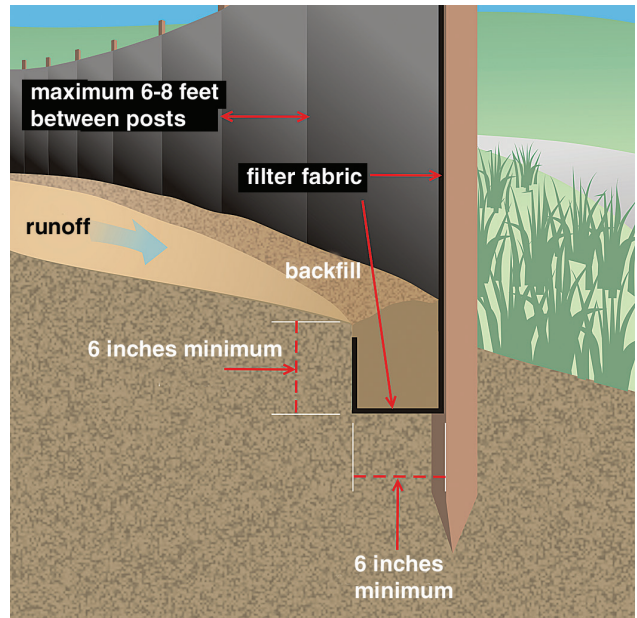


Figure 6. Detail of silt fence installation.



Figure 7. Illustration of "J-hooks" used during silt fence installation.

Permit requirements:

- Sediment control practices must be established on all down-gradient perimeters before any up-gradient land disturbing activities begin. These practices must remain in place until final stabilization has been established (Part IV.C.2).
- All silt fences must be repaired, replaced, or supplemented when they become nonfunctional or the sediment reaches 1/2 of the height of the fence. These repairs must be made within 24 hours of discovery, or as soon as field conditions allow access (Part IV.E.5.a).

Installation tips

DO:

- Install silt fence along the contour of a slope.
- Trench in the silt fence on the uphill side (trench should be six inches deep by six inches wide).
- Install stakes on the downhill side of the fence.
- Curve the end of silt fences up-gradient so that it contains the muddy runoff.

DON'T:

- Install silt fence at the top of hills, or up and down hills.
- Install silt fence in ditches, channels or areas of concentrated flow.
- Use silt fence for areas that drain more than ¼ acre per 100 ft. of fence.
- Rely on silt fence as your only BMP; use it in combination with other practices.

Sediment barriers such as fiber rolls or wattles function similar to silt fence, and many of the same installation tips apply.

Maintenance:

- Remove sediment when it reaches 1/2 of the height of the fence
- Replace the silt fence where it is worn, torn, or otherwise damaged.

Diversion ditches/berms

Diversion ditches or berms direct off-site runoff away from unprotected slopes or direct sediment-laden runoff to a sediment trapping structure. A diversion ditch can be located at the upslope side of a construction site to prevent surface runoff from entering the disturbed area. Ditches or berms on steeper slopes may need to consider erosive velocities. Also, ensure diverted water is released through a stable outlet and does not cause downstream flooding.

Installation tips:

- Divert runoff coming on to your construction site (generally used to protect areas of five acres or less).

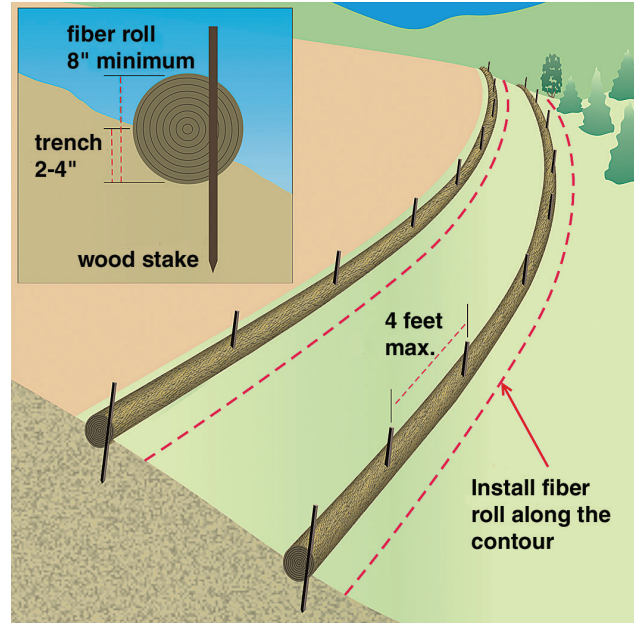


Figure 8. Fiber roll installation and detail.

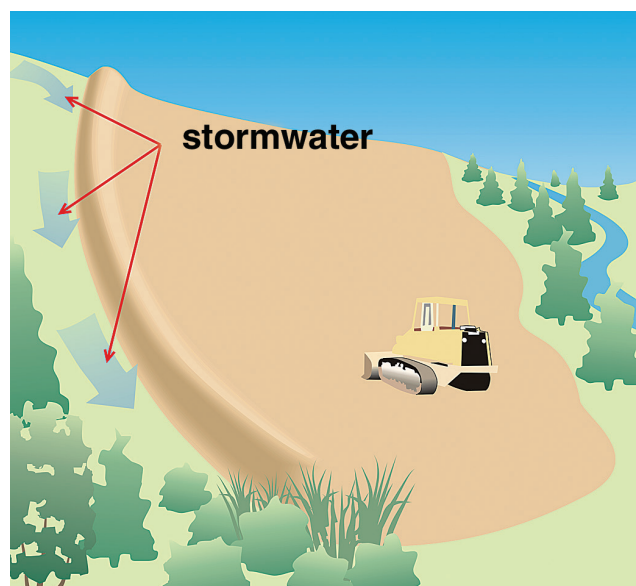


Figure 9. Diversions must be used to divert stormwater away from disturbed areas.

- Clean runoff must be discharged to a stable outlet or channel, sediment-laden water must be diverted to a sediment-trapping structure.

The ditches or swales must be stabilized within 200 lineal feet from the property edge, or from the point of discharge into any surface water. Stabilization of the last 200 lineal feet must be completed within 24 hours after connecting to a surface water.

Stabilization of the remaining portions of any temporary or permanent ditches or swales must be initiated immediately and complete no later than 14 days after connecting to a surface water and construction in that portion of the ditch has temporarily or permanently ceased.

Maintenance:

- Inspect diversions and berms after each rain event (within 24 hours of a .5 inch rain in a 24-hour period), including outlets.
- Remove any accumulated sediment.

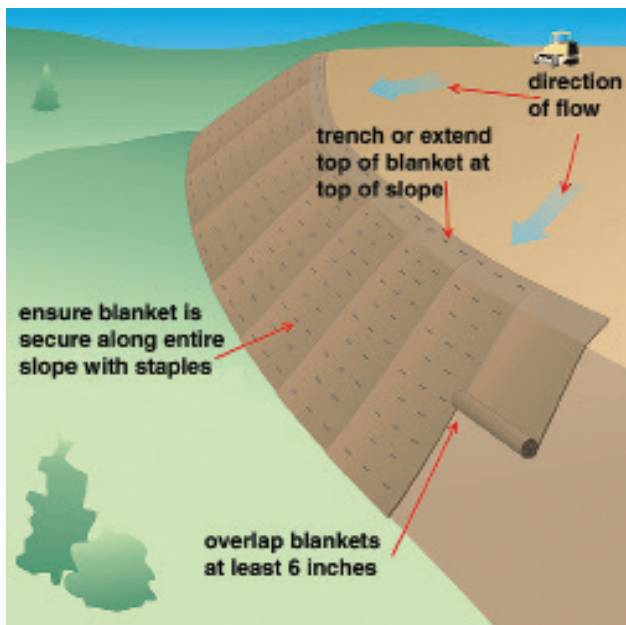


Figure 10. Erosion control blanket.

Mats, mulches, and blankets

Mats, mulches, and blankets are used for temporary stabilization and establishing vegetation of disturbed soils. Mats and blankets are typically used on slopes or channels while mulches are effective in helping to protect the soil surface and foster vegetation.

Installation tips:

- Mats and blankets must be used on slopes steeper than 3:1 and in swales or long channels (mulches are generally not recommended on slopes greater than 3:1).
- Trench the top of the blanket in to prevent runoff from flowing under the blanket.
- Overlap the end of each blanket and mat.
- Staple blankets and mats according to specifications.
- Do not place mulch in areas of concentrated flow.

Maintenance:

- Periodically check for signs of erosion or failure.
- Apply additional mulch or repair blanket/mat if necessary.
- Continue inspections until vegetation is established.

Temporary sediment trap or pond

A temporary sediment trap, pond or basin is a temporary ponding area formed by constructing an earthen embankment with an outlet across a swale. Temporary sediment traps are intended to detain sediment-laden runoff from small, disturbed areas long enough to allow the majority (at least 75%) of the sediment to settle out.

Sediment traps are designed for small areas. The volume of the trap must be at least 1,800 cubic feet per acre of contributing drainage.

Permit requirements:

- See Part III.C of the permit for temporary sediment basin design details.

Installation tips:

- Install the basin in the low point of your construction site.
- Install the basin before land disturbing activities begin.
- Install a gravel outlet following BMP design.
- The basin must not be installed in a main stream.

Maintenance:

- Remove the sediment in the basin when it reaches about 1/2 the design volume.
- Check the outlet for needed maintenance.

Permanent Stormwater System BMPs

Permanent stormwater management BMPs are required when a project will replace vegetation and/or other pervious surfaces with one or more acres of cumulative impervious surface. A water quality volume of one inch of runoff from the new impervious surface must be treated by one of the methods below.

If you are creating one acre or more of new imperious surface, then your SWPPP must describe how you will treat the water quality volume from this area, including design calculations. See Part III.D of the permit for all design requirements.

Infiltration/Filtration

Infiltration/Filtration options include but are not limited to: infiltration basins, infiltration trenches, rainwater gardens, sand filters, organic filters, bioretention areas, enhanced swales, dry storage ponds with underdrain discharge, off-line retention areas and natural depressions.

Vehicles must be kept away from all infiltration areas to avoid compacting the soil.

Infiltration must be used only as appropriate to the site and land uses. Settleable solids, floating materials, oils and grease must be removed from the runoff to the maximum



extent practicable before runoff enters the infiltration/filtration system. Filtration systems must have a reasonable chance of achieving approximately 80% removal of total suspended solids. Use a pretreatment system such as a vegetated filter strip, small sedimentation basin, or water quality inlet before the stormwater discharges to the infiltration or filtration system. Design systems to treat a water quality volume of one inch, and discharge through the soil or filter media in 48 hours or less.

You must evaluate the impact of constructing an infiltration practice on existing hydrologic features (e.g., existing wetlands) and try to maintain pre-existing conditions (e.g., do not breach a perched water table which is supporting a wetland). You must provide a way to visually verify that the system is operating as designed.

Employ appropriate on-site testing consistent with the recommendations found in the Minnesota Stormwater Manual to verify soil type and to ensure a minimum of 3 feet of separation from the seasonally saturated soils (or from bedrock) and the bottom of the proposed infiltration/filtration system.

Do not use infiltration systems when receiving runoff from industrial areas with exposed significant materials or from vehicle fueling and maintenance areas. Refer to the Minnesota Stormwater Manual for discussions on infiltration (www.pca.state.mn.us/water/stormwater/stormwater-manual.html).

Wet Sedimentation Basin

A wet sedimentation basin is a controlled stormwater release structure that is designed to provide settling time for sediment and other particulates before runoff is discharged. A permanent volume of 1800 cubic feet of storage below the outlet pipe for each acre that drains to the basin is required. The depth of the permanent volume must be at least 3 feet but less than 10 feet.

The basin outlet must be designed so that the water quality volume is discharged at no more than 5.66 cubic feet per second per acre of surface area of the pond, and a stabilized emergency overflow must be designed.

Adequate maintenance access must also be provided to the pond.

Installation tips:

- Do not install infiltration systems until the contributing drainage area has been fully stabilized.
- Keep sediment and runoff away from the infiltration system during construction by using diversion berms.
- Provide maintenance access along with a maintenance plan.
- Must have three feet of separation from the seasonally saturated soils (or from bedrock) and the bottom of the proposed infiltration system.
- Keep vehicles away from all infiltration areas to avoid compacting the soil.

Regional Ponds

You may discharge to a regional pond under the following circumstances:

- Discharge is to a constructed pond, and not a natural wetland or waterbody.
- The pond is designed in accordance with the general permit's design requirements for a wet sedimentation basin.
- You must obtain written authorization from the applicable local governmental unit or private entity that owns and maintains the regional pond before applying for the permit (include this in your SWPPP).
- The written authorization must show that the regional pond will discharge the water quality volume at no more than 5.66 cfs per acre of pond surface area.

Combination of Practices

A combination of the above practices may be used to meet the water quality volume treatment requirement. For example, 1/2 inch may be infiltrated and 1/2 inch may be treated through a wet sedimentation basin. The SWPPP must contain documentation (infiltration computer model results or calculations, etc.) identifying the volume that each practice addresses.

Alternative Method

An alternative, innovative treatment system may be proposed to achieve 80% removal of total suspended solids on an annual average basis. If you choose this method, you must submit all calculations, drainage areas, plans and specifications to the MPCA at least 90 days prior to the scheduled start of your construction activity for review. You cannot start construction until you have received an approval letter from the MPCA.

You must also develop a two-year monitoring plan to sample runoff from the proposed alternative treatment method. The plan must include a discussion of the methods that will be used to collect samples, location where samples will be taken (upstream and downstream of the proposed method), frequency of samples (minimum of six events sampled), the lab that will be used to analyze the samples, and quality assurance and quality control methods to be used. The plan must also include a schedule for submitting the monitoring data annually.

Pollution Prevention BMPs

Solid Waste

Provide appropriate containers for solid waste and empty them frequently. If necessary, containers must be covered to prevent wind from blowing the waste around the construction site. Solid waste includes collected sediment, asphalt and concrete millings, floating debris, paper, plastic, fabric, construction and demolition debris and other wastes.



Follow MPCA disposal requirements for all solid waste.

Permit requirement:

- *Solid Waste:* Collected sediment, asphalt and concrete millings, floating debris, paper, plastic, fabric, construction and demolition debris and other wastes must be disposed of properly and must comply with the MPCA disposal requirements (Part IV.F.1).

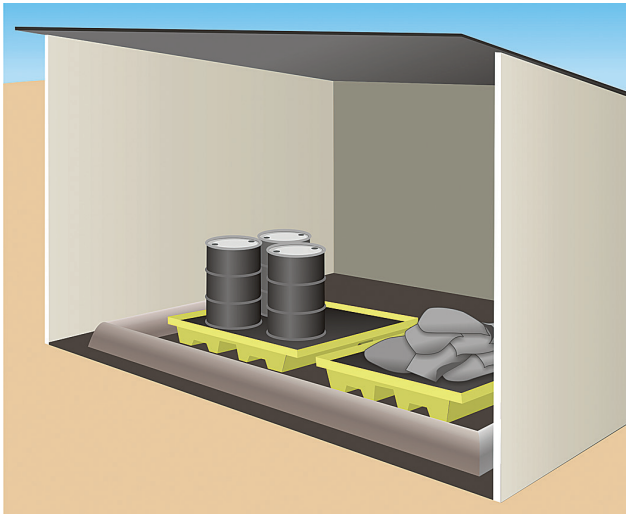


Figure 11. Example of hazardous materials storage (doors removed for illustrative purposes only). Access to hazardous materials must be restricted.

Hazardous Materials

Hazardous materials must be properly stored, and must have secondary containment to prevent spills, leaks or other discharges. These materials must be stored in a shed or building that can be locked to prevent vandalism or unauthorized access. Hazardous materials include oil, gasoline and paint, so ensure that these materials are also properly stored.

Follow MPCA regulations when storing and disposing of hazardous waste. This must include proper labeling of hazardous wastes. Additional information can be found at www.pca.state.mn.us/waste/index.html

Permit requirement:

- *Hazardous Materials:* Oil, gasoline, paint and any hazardous substances must be properly stored, including secondary containment, to prevent spills, leaks or other discharge. Restrict access to storage areas to prevent vandalism. Storage and disposal of hazardous waste must comply with MPCA regulations. (Part IV.F.1)

Vehicle washing

Avoid washing vehicles on the construction site. If washing is necessary, designate a site where the runoff can be contained and properly disposed of, such as an adequately sized sedimentation basin.

Engine degreasing is not permitted on the construction site. Maintenance of vehicles must occur in a properly equipped shop, and not on the construction site.

Permit requirement:

- External washing of trucks and other construction vehicles must be limited to a defined area of the site. Runoff must be contained and waste properly disposed of. No engine degreasing is allowed on site. (Part IV.F.3)

Concrete Washout

The liquid and solid wastes generated by concrete washout operations have to be deposited in leak-proof containers and afterwards, the wastes must be disposed of properly and in compliance with MPCA regulations. The concrete washout needs to be dewatered and then it can be ground and recycled or taken to a demolition landfill. Signs need to be posted of the site(s) where concrete washout operations take place.

Permit requirement:

- *Concrete washout onsite:* All liquid and solid wastes generated by concrete washout operations must be contained in a leak-proof containment facility or impermeable liner. A compacted clay liner that does not allow washout liquids to enter ground water is considered an impermeable liner. The liquid and solid wastes must not contact the ground, and therefore must not be runoff from the concrete washout operations or areas. Liquid and solid wastes must be disposed of properly and in compliance with MPCA regulations. A sign must be installed adjacent to each washout facility to inform concrete equipment operators to utilize the proper facilities. (Part IV.F.4)



Chapter 4

Selected Required Activities During Construction

Inspections and Maintenance

Remember that if you are going to be in charge of inspecting and maintaining the BMPs, you need to have received appropriate training (Part III.A.3.). Conduct routine inspections of the construction site and keep records of these inspections and maintenance performed (Part IV.E). Your SWPPP must identify who is responsible for conducting the inspections. You are required to inspect the construction site:

- Once every 7 days during active construction
- Within 24 hours after a rainfall event greater than 0.5 inches in 24 hours. The next inspection must be conducted within 7 days after this.

In order to conduct inspections after a 0.5-inch rainfall event, you'll need to know how much rain falls on your site. The easiest way to do this is to install a rain gage at or near your construction site. Make sure nothing interferes with rainfall entering the rain gage (like a tree or building). Place the rain gage at the top of a stake or pole, and empty it after each rain event. Keep records of rainfall totals in your SWPPP.

You need to keep records of your inspections with your SWPPP, and your records must include a minimum set of information. The following information is required to be kept in your records:

- Date and time of inspections.
- Name of person conducting inspections.
- Finding of inspections, including corrective actions.
- Corrective actions taken (including dates, times, and party completing maintenance activities).
- Date and amount of all rainfall events greater than 0.5 inches in 24 hours.
- Documentation of changes made to the SWPPP.

Use a camera during your inspections to document activities and any problems observed. Digital cameras can be especially convenient for this purpose.

An example *Maintenance Record* is provided as Attachment B. The MPCA has also developed an inspection log/calendar to assist in recording inspections. The inspection log/calendar can be found on the MPCA's construction stormwater webpage: www.pca.state.mn.us/water/pubs/sw-insplog.pdf.

Parts of the construction site that have undergone final stabilization may be inspected once per month. If work has been suspended due to frozen ground conditions, then required inspections must take place as soon as runoff occurs at the site or prior to resuming construction, whichever comes first.

Records

The permit requires the owner to keep the SWPPP, all changes to it, and inspection and maintenance records at the construction site (Part III.E). You can keep the SWPPP in either a field office, or if a field office is not available, then in an on-site vehicle. An inspector will ask for your SWPPP, so make sure you keep it onsite at all times!

You must also keep the SWPPP and other records on file for three years after submittal of the NOT described in Chapter 5. In addition to the SWPPP, keep copies of any other permits required for the project, records of inspection and maintenance conducted, permanent operation and maintenance agreements that have been implemented, and required calculations for design of the temporary and permanent stormwater management systems.

As part of the SWPPP or with the SWPPP, you should keep training documentation that states the names of the people in charge of developing, implementing, overseeing, revising, and amending the SWPPP and the dates of training, name of instructors and the entity providing training and the content of training courses or workshops.



Chapter 5

What Do I Have to Do When the Construction Project is Finishing?

Final Stabilization

The permit requires final stabilization of the construction site (Part IV.G). Final stabilization entails Sections 1 through 5 or Section 6:

1. Final Stabilization requires that all soil disturbing activities at the site have been completed and all soils are stabilized by any means necessary to prevent soil failure under erosive conditions or by a uniform perennial vegetative cover with a density of 70% over the entire pervious surface area. The density is based on canopy cover at 6" height. This includes sod that is firmly rooted to the underlying soil or direct-seeded herbaceous species that have grown to at least six inches in height. It does not include annual cover crop species such as oats and winter wheat. If soils are too poor to support 70% vegetative cover, the percent cover must be 70% of the native background vegetative cover, or other equivalent means necessary to prevent soil failure under erosive conditions.
2. You must ensure that the permanent stormwater treatment system meets all requirements in Part III, D. This includes but is not limited to, a final clean out of temporary or permanent sedimentation basins that are to be used as permanent water quality management basins and final construction or maintenance of infiltration basins. All sediment must be removed from conveyance systems and ditches must be stabilized with permanent cover.
3. A NOT needs to be submitted to terminate the permit, but before that, all temporary synthetic and structural erosion prevention and sediment control BMPs (such as silt fence) must be removed on the portions of the site for which you are responsible. BMPs designed to decompose on site (such as some compost logs) may be left in place.

4. For residential construction only, individual lots are considered finally stabilized if the structure(s) are finished and temporary erosion protection and downgradient perimeter control has been completed and the residence has been sold to the homeowner. Additionally, you must distribute the MPCA's "Homeowner Fact Sheet" to the homeowner to inform the homeowner of the need for, and benefits of, permanent cover (www.pca.state.mn.us/publications/wq-strm2-07.pdf).
5. If your construction project was on land used for agricultural purposes, final stabilization may be accomplished by returning the disturbed land to its preconstruction agricultural use.
6. You may terminate permit coverage prior to completion of all construction activity if all of the following are met in addition to Sections 2 and 3, and where applicable, Section 4 or Section 5.
 - Construction activity has ceased for at least 90 days
 - At least 90% (by area) of all originally proposed construction activity has been completed and permanent cover has been established on those areas
 - On areas where construction activity is not complete, permanent cover has been established

Notice of Termination

You must submit a NOT by using the NOT/permit modification form to the MPCA to terminate coverage under this permit. The coverage terminates at midnight on the postmark date of on the date an on-line NOT/permit modification form is submitted to the MPCA.

A copy of the notice of termination/permit modification form is available from the MPCA website: www.pca.state.mn.us/water/stormwater/stormwater-c.html.

There are three possible situations where coverage can be terminated.

The first situation arises when you want to terminate the coverage for the entire project, because, either Final Stabilization (Page 28) has been achieved in all portions of the site or because the entire site has been sold; including roads and stormwater infrastructure and coverage has been transferred to another owner (Part II.B.5). In both cases a notice of termination/permit modification form must be submitted within 30 days of either the final stabilization or the sale of the site.

The second situation arises when you want to terminate coverage for a portion of the entire project that you have either sold or have legally transferred to another party and of which you are no longer the owner or operator. In this case, if construction activity is going to continue, you must submit a notice of termination/permit modification form within seven days after the sale or legal transfer of the property. You must sign the notice of termination/permit modification form where appropriate and so does the new owner, who also needs to state contact information. Instructions on filling this form are available from the MPCA website: www.pca.state.mn.us/water/stormwater/stormwater-c.html.



The third situation arises when permit coverage was obtained using the subdivision registration process, in which case you are required to submit a permit termination/ modification within 30 days after achieving final Stabilization (Page 28).

If you use an alternative method for permanent stormwater management (described on Page 21), then you cannot terminate the permit until final stabilization has been achieved on the site and you either have two years of monitoring data submitted to the MPCA showing that the required treatment has been achieved, or the MPCA determines that the alternative method is achieving the required treatment.

Finally, as a reminder, you must keep the SWPPP, inspection and maintenance records, permanent operation and maintenance agreements, and design calculations for at least three years after submitting the NOT/Permit Modification form.



Chapter 6

Resource Listing

The following are selected resources to help you develop and implement an effective SWPPP:

MPCA Stormwater Program

www.pca.state.mn.us/water/stormwater/index.html

Click on the construction stormwater program to get copies of the construction permit, application, and information on special waters, fact sheets, and staff contacts.

MPCA Minnesota Stormwater Manual

www.pca.state.mn.us/water/stormwater/stormwater-manual.html

An electronic copy of the MPCA's *Minnesota Stormwater Manual* v.2. (2008). The first part of the manual is dedicated to the management of stormwater in the context of Minnesota. The second part contains diagrams and formulae, helpful for professionals.

MPCA Stormwater BMP Manual

www.pca.state.mn.us/water/pubs/sw-bmpmanual.html

An electronic copy of MPCA's *Protecting Water Quality in Urban Areas: Best Management Practices for Dealing with Stormwater Runoff from Urban, Suburban and Developing Areas of Minnesota* (2000). Includes information on all types of stormwater control practices.

Metropolitan Council's Urban Small Sites BMP Manual

www.metrocouncil.org/environment/Watershed/bmp/manual.htm

An electronic copy of the *Minnesota Urban Small Sites BMP Manual: Stormwater Best Management Practices for Cold Climates* (2001). This BMP manual provides information on construction and permanent stormwater BMPs.

Minnesota Erosion Control Association

www.mnerosion.org - An organization advancing effective stormwater management and erosion and sediment control techniques and practices.

International Erosion Control Association

www.ieca.org - An association for erosion and sediment control professionals.

Definitions

The following selected definitions are reprinted from MPCA's construction permit. For additional definitions, refer to the permit.

"Best Management Practices"

Erosion prevention 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 the construction permit are described in the current version of *Minnesota Stormwater Manual*. 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, *Stormwater 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).

"Common Plan of Development or Sale"

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.

"Construction activity"

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 stormwater 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 acre or more.

“Erosion Prevention”

Measures employed to prevent erosion including but not limited to: soil stabilization practices, limited grading, mulch, temporary erosion protection or permanent cover, and construction phasing.

“Final Stabilization” means that either:

- a. All soil disturbing activities at the site have been completed and a uniform (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.).
- 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.

“National Pollutant Discharge Elimination System”

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.

“Operator”

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 [I think we are missing something here](#).

“Owner”

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, easement or mineral rights license



holder, the party or individual identified as the lease, easement or mineral rights license holder; or the contracting government agency responsible for the construction activity

“Permittee”

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 the permit.

“Sediment control”

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.

“Stormwater”

Defined under Minn. R. 7077.0105, subp. 41(b), and includes precipitation runoff, stormwater runoff, snow melt runoff, and any other surface runoff and drainage.

“Stormwater Pollution Prevention Plan” (SWPPP)

A plan for stormwater discharge that includes erosion prevention measures, sediment controls and permanent stormwater management systems that, when implemented, will decrease soil erosion on a parcel of land and decrease off-site nonpoint pollution.

“Surface water or waters”

All streams, lakes, ponds, marshes, wetlands, reservoirs, springs, rivers, drainage systems, waterways, watercourses, and irrigation systems whether natural or artificial, public or private.

“Temporary erosion protection”

Methods employed to prevent erosion. Examples of temporary erosion protection include: straw, wood fiber blanket, wood chips, and erosion netting.

“Total Maximum Daily Load”

The federal Clean Water Act requires states to adopt water quality standards to protect the nation’s waters. These standards define how much of a pollutant (Total Maximum Daily Load) can be in a surface and/or ground water while still allowing it to meet its designated uses, such as for drinking water, fishing, swimming, irrigation or industrial purposes. Many of Minnesota’s water resources cannot currently meet their designated uses because of pollution problems from a combination of point and nonpoint sources. TMDL projects are being implemented to address these impaired waters. The list of impaired waters is available at the MPCA website:

www.pca.state.mn.us/water/tmdl/index.html.

“Waters of the state”

Defined in Minn. Stat. § 115.01, subd. 22 as 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.

Attachment A: Construction SWPPP Template

Stormwater Pollution Prevention Plan (SWPPP) Template To comply with the General Stormwater Permit for Construction Activity (MN R100001)

IMPORTANT: Before completing this SWPPP, you must read and understand the requirements in the General Stormwater Permit for Construction Activity (MN R100001) available from MPCA at www.pca.state.mn.us/water/stormwater/index.html. An overview of the permit is available from MPCA at www.pca.state.mn.us/publications/wq-strm2-05.pdf. This SWPPP Template will help you complete information required in Parts III and IV of the permit.

Construction Activity Information	
Project Name	
Project Location	
Briefly describe where construction activity occurs. Include address if available	
City or Township	State, Zip Code MN
Latitude and longitude of approximate centroid of project	
Method of collection of latitude/longitude: GPS Online tool USGS Topographic map	
Scale used	
All cities where construction will occur	



All counties where construction will occur		All townships where construction will occur		
Project Size (number of acres to be disturbed)				
Project Type				
<input type="checkbox"/> Residential		<input type="checkbox"/> Commercial/Industrial		<input type="checkbox"/> Road Construction
<input type="checkbox"/> Residential and Road Construction		<input type="checkbox"/> Other (describe)		
Cumulative Impervious Surface				
Existing area of impervious surface _____ (to the nearest quarter acre)				
Post construction area of impervious surface _____ (to the nearest quarter acre)				
Receiving Waters				
Water Body ID*	Name of Water Body	Type (ditch, pond, wetland, lake, stream, river)	Special Water? (See Stormwater Permit Appendix A)	Impaired Water?*** (See Stormwater Permit Appendix A)
			<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
			<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
			<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
			<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
<p>*Water Body ID might not be available for all water bodies. Use the Special and Impaired Waters Search Tool at: www.pca.state.mn.us/water/stormwater/stormwater-c.html</p> <p>** Impaired water for the following pollutant(s) or stressor(s): phosphorus, turbidity, dissolved oxygen, or biotic impairment</p>				
Dates of Construction				
Construction Start Date			Estimated Completion Date	



Contact Information				
Owner of the Site				
Business of Firm Name				
Last Name	First Name	Title	E-mail	Telephone <i>(include area code)</i>
Mailing Address			City	State Zip Code
Alternate Contact Last Name First Name			E-mail	Telephone <i>(include area code)</i>
Contractor (Person who will oversee implementation of the SWPPP)				
Business of Firm Name				
Last Name	First Name	Title	E-mail	Telephone <i>(include area code)</i>
Mailing Address			City	State Zip Code
Alternate Contact Last Name First Name			E-mail	Telephone <i>(include area code)</i>
Party Responsible for Long Term Operation and Maintenance of the Permanent Stormwater Management System				
Business of Firm Name				
Last Name	First Name	Title	E-mail	Telephone <i>(include area code)</i>
Mailing Address			City	State Zip Code
Alternate Contact Last Name First Name			E-mail	Telephone <i>(include area code)</i>



General Construction Project Information

Describe the construction activity (what will be built, general timeline, etc.)

Describe soil types found at the project.

General site information (III.A)

Describe the location and type of all temporary and permanent erosion prevention and sediment control BMPs. Include the timing for installation and procedures used to establish additional temporary BMPs as necessary. (III.A.4.a)

Attach to this SWPPP a table with the anticipated quantities for the life of the project for all erosion prevention and sediment control BMPs (III. A. 4.b)

Attach to this SWPPP a site map that includes the following features (III.A.3.b – f):

- Existing and final grades, including dividing lines and direction of flow for all pre and post-construction stormwater runoff drainage areas located within the project limits.
- Locations of impervious surfaces and soil types.
- Locations of areas not to be disturbed.
- Location of areas of phased construction
- All surface waters and existing wetlands within 1 mile from the project boundaries that will receive stormwater runoff from the site (identifiable on maps such as USGS 7.5 minute quadrangle maps or equivalent). Where surface waters receiving runoff associated with construction activity will not fit on the plan sheet, they must be identified with an arrow, indicating both direction and distance to the surface water.
- Methods to be used for final stabilization of all exposed soil areas.

Were stormwater mitigation measures required as the result of an environmental, archaeological, or other required local, state, or federal review of the project? If yes, describe how these measures were addressed in the SWPPP. (III.A.6.)



Is the project located in a karst area such that additional measures would be necessary to protect drinking water supply management areas as described in Minn. R. chs. 7050 and 7060? If yes, describe the additional measures to be used. (III.A.7.)

Does the site discharge to a calcareous fen listed in Minn. R. 7050.0180, subp. 6.b.? If yes, a letter of approval from the Minnesota Department of Natural Resources must be obtained prior to application for this permit. (Part I B.6 and Part III.A.8)

Does the site discharge to a water that is listed as impaired for the following pollutant(s) or stressor(s): phosphorus, turbidity, dissolved oxygen or biotic impairment? Use the Special and Impaired Waters Search Tool at: www.pca.state.mn.us/water/stormwater/stormwater-c.html. If no, skip to next box.

Does the Impaired water have an approved TMDL with an Approved Waste Load Allocation for construction activity? If yes:

- List the receiving water, the areas of the site discharging to it, and the pollutant(s) identified in the TMDL
- List the BMPs and any other specific construction stormwater related implementation activities identified in the TMDL.

If the site has a discharge point within one mile of the impaired water and the water flows to the impaired water but no specific BMPs for construction are identified in the TMDL, the additional BMPs in Appendix A (C.1 and C.2) must be added to the SWPPP and implemented. (III.A.7). The additional BMPs only apply to those portions of the project that drain to one of the identified discharge points.

Training (III.A)

Training is required for all permitted projects after February 1, 2010. It must be provided by entities with expertise in erosion prevention, sediment control or permanent stormwater management. Training must be focused on the individual's job duties as they relate to the permit requirements (Part III.A.2). Who must be trained?

- ✓ Individual(s) preparing the SWPPP for the project
- ✓ Individual(s) overseeing the implementation of, revising and amending the SWPPP and individuals performing inspections required by the permit
- ✓ Individuals performing or supervising the installation, maintenance or repair of BMPs

Attach to this SWPPP:

Names of the personnel trained; dates of training; name of instructor(s) and entity providing training; content of training course or workshop (including number of hours of training)

Selection of a Permanent Stormwater Management System (III.C)

Will the project create a new cumulative impervious surface greater than or equal to one acre?

Yes No

If yes, a water quality volume of ½ inch of runoff from this area must be treated before leaving the site or entering surface waters (1 inch if discharging to special waters).

Describe which method will be used to treat runoff from the new impervious surfaces created by the project (III.C):

- Wet sedimentation basin
- Infiltration/Filtration
- Regional ponds
- Combination of practices

Include all calculations and design information for the method selected. See Part III.C of the permit for specific requirements associated with each method.

If it is not feasible to meet the treatment requirement for the water quality volume, describe why. This can include proximity to bedrock or road projects where the lack of right of way precludes the installation of any permanent stormwater management practices. Describe what other treatment, such as grasses swales, smaller ponds, or grit chambers, will be implemented to treat runoff prior to discharge to surface waters. (III.C)

If proposing an alternative method to treat runoff from the new impervious surfaces, describe how this alternative will achieve approximately 80% removal of total suspended solids on an annual average basis (III.C.5). NOTE: If proposing an alternative method, you must submit your SWPPP to MPCA at least 90 days prior to the starting date of the construction activity.

Erosion Prevention Practices (IV.B)

Describe construction phasing, vegetative buffer strips, horizontal slope grading, and other construction practices to minimize erosion. Delineate areas not to be disturbed (e.g., with flags, stakes, signs, silt fence, etc.) before work begins.

Describe temporary erosion protection or permanent cover used for exposed soil. All exposed soil areas must be stabilized as soon as possible but in no case later than 14 days after the construction activity in that portion of the site has temporarily or permanently (part IV.B.2)



For drainage or diversion ditches, describe practices to stabilize the normal wetted perimeter within 200 lineal feet of the property edge or point of discharge to surface water. The remaining portions of the temporary or permanent ditch or swale must be stabilized within 14 days after connecting to surface waters and construction in that portion of the ditch has temporarily or permanently ceased.

Describe other erosion prevention practices (list and describe).

Sediment Control Practices (IV.C)

Describe sediment control practices used to minimize sediments from entering surface waters, including curb and gutter systems and storm drain inlets. At a minimum, these sediment control practices must include:

- Sediment controls for temporary or permanent drainage ditches and sediment basins that are designed as part of a treatment system
- Installation of check dams or other grade control practice to ensure sheet flow and prevent rills (for slope lengths greater than 75 feet with a grade of 3:1 or steeper).
- Sediment control practices on all down gradient perimeters prior to land disturbing activities.
- Storm drain inlet protection for all inlets.
- Silt fencing or other sediment control surrounding temporary soil stockpiles.
- Minimize vehicle tracking of sediments (e.g., stone pads, concrete or steel wash racks, or equivalent systems).
- Street sweeping of tracked sediment.
- Temporary sedimentation basins (see Part III.B).

Dewatering and Basin Draining (IV.D)

Will the project include dewatering or basin draining? Yes No

If yes, describe BMPs used so the discharge does not adversely affect the receiving water or downstream landowners.



Additional BMPs for Special Waters and Discharges to Wetlands (Appendix A, Parts C and D)

Special Waters. Does your project discharge to special waters? Yes No If no, skip to Wetlands section below.

If proximity to bedrock or road projects where the lack of right of way precludes the installation of any of the permanent stormwater management practices, then other treatment such as grassed swales, smaller ponds, or grit chambers is required prior to discharge to surface waters. Describe what other treatment will be provided.

Describe erosion and sediment controls for exposed soil areas with a continuous positive slope to a special waters, and temporary sediment basins for areas that drain 5 or more acres disturbed at one time.

Describe the undisturbed buffer zone to be used (not less than 100 linear feet from the special water).

Describe how the permanent stormwater management system will ensure that the pre and post project runoff rate and volume from the 1, and 2-year 24-hour precipitation events remains the same.

Describe how the permanent stormwater management system will minimize any increase in the temperature of trout stream receiving waters resulting in the 1, and 2-year 24-hour precipitation events.

Wetlands. Does your project discharge stormwater with the potential for significant adverse impacts to a wetland (e.g., conversion of a natural wetland to a stormwater pond)? Yes No

If Yes, describe the wetland mitigation sequence that will be followed in accordance with Part D of Appendix A.



Inspections and Maintenance (IV.E)

Describe procedures to routinely inspect the construction site:

- Once every seven days during active construction and,
- Within 24 hours after a rainfall event greater than 0.5 inches in 24 hours, and within seven days after that.

Inspections must include stabilized areas, erosion prevention and sediment control BMPs, and infiltration areas.

Pollution Prevention Management Measures (IV.F)

Describe practices to properly manage and dispose of solid waste, including trash (IV.F.1)

Describe practices to properly manage hazardous materials (IV.F.2).

Describe practices for external washing of trucks and other construction vehicles (IV.F.3)

Describe how are you going to provide a safe, leak proof, concrete washout on site (IV.F.4):

Describe your spill prevention plan.



Describe measures to address sanitary and septic waste.

Final Stabilization (IV.G)

Describe how you will achieve final stabilization of the site (IV.G).

Records Retention (III.D)

Describe your record retention procedures (must be kept at the site) (III.D). Records must include:

- Copy of SWPPP and any changes
- Training documentation (III.A.2.)
- Inspection and maintenance records
- Permanent operation and maintenance agreements
- Calculations for the design of temporary and permanent stormwater management systems.



Attachment B: Sample Maintenance Records

Inspector	Type of Inspection		Date of Inspection			Rainfall (record all events > 0.5 in)	Time of Inspection			Areas Inspected							Findings and Corrective Actions	
	Routine weekly	24 hrs after rain	Month	Day	Year		Time	AM	PM	Erosion / Sediment Control BMPs	Silt Fences	Sedimentation basins	Drainage ditches and other surface waters	Construction site exits	Infiltration areas	Pollution Prevention Measures	Findings:	Corrective Actions: