City of Yankton
Storm Water Management Plan

Revised 2015

416 Walnut Street
PO Box 176
Yankton, SD 57078
605-668-5251

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City of Yankton Background

Regulatory Program Information

Phase I of the United States Environmental Protection Agency's (USEPA) municipal storm water program was promulgated in 1990 under the authority of the Clean Water Act (CWA). Phase I relied on the National Pollutant Discharge Elimination System (NPDES) permit coverage to address storm water runoff from medium and large municipal separate storm sewer systems (MS4s), serving populations of 100,000 or greater.

The Storm water Phase II Final Rule (promulgated December 8, 1999) was the next step in the USEPA's efforts to preserve, protect, and improve the nation's water resources from polluted storm water runoff. The Phase II program requires additional operators (small MS4s in urbanized areas) to implement programs and practices to control polluted storm water runoff, through the NPDES permit program. The State of South Dakota Department of Environment and Natural Resources (SD DENR) has primacy for the federal NPDES program and is charged with implementing the program. The program requires Phase II MS4s to develop a Storm water Management Program/Plan (SWMP).

The City of Yankton submitted a Notice of Intent (NOI) as required by the Phase II Storm water Regulations and was issued a General Permit from SD DENR in April 2003.

Location

The City of Yankton is the county seat of Yankton County. The City is located on the north bank of the Missouri River along the South Dakota and Nebraska state line. Portions of the City's MS4 discharge into Marne Creek which subsequently discharges into the Missouri River, in other areas the MS4 discharges directly into the Missouri River.

Drainage Plan

The City of Yankton has implemented an Engineering Design Standard for Drainage Improvements and Erosion Control and published design manual. The City of Yankton has also implemented subdivision drain requirements.

Organization

The City of Yankton's utilizes the commissioner form of government with a city manager. The Yankton Board of City Commissioners is made up of nine Commissioners. Each Commissioner serves a three year term and may be re-elected. The Mayor is appointed by his or her peers at the first meeting in May of each

year. The Mayor may also serve more than one term. A professionally trained City Manager is employed by the Commission.

The Commission appoints a nine member Planning Commission. The Yankton City Planning Commission reviews information and makes recommendations to the City Commission regarding land use, zoning and subdivision issues. The specific purpose of the Planning Commission related to these issues is set forth in South Dakota Codified Law and the Yankton City Code of Ordinances.

The Yankton City Planning Commission is made up of nine members that serve three-year terms each. Terms are staggered so that three member's terms expire each year. The Mayor also appoints a City Commissioner as a representative to the Planning Commission to help forward Planning Commission perspectives on to the City Commission as recommendations are considered through the planning process.

Additionally, there are two Extraterritorial Jurisdiction (ETJ) members that serve when land use issues in the City's ETJ are under review. ETJ members are appointed by the County Commission and include an alternate member to ensure that two members are available when needed.

Ordinances

The City of Yankton's Ordinances that may be impacted by the SWMP are:

- Chapter 10-Garbage and Trash
- Chapter 11-Health and Sanitation
- Chapter 15-Nuisances
- Chapter 17-Planning and Zoning Generally
- Chapter 18-Plumbing
- Chapter 21-Streets and Sidewalks
- Chapter 24-Vegetation
- Chapter 26-Water and Sewers
- Chapter 27-Zoning
- Chapter 28 Zoning- Extra Territorial Jurisdiction

A searchable electronic version of the Code of Ordinances is available at cityofyankton.org.

Management and Responsibility

SWMP responsibility is shared across the Public Works, Community Development, Environmental Services, Emergency Services, and Parks and Recreation Departments.

Construction and Development

The Public Works Department is responsible for the maintenance, design and construction of streets and drainage facilities. They also perform street sweeping, storm drain cleaning, site inspections, and manage the storm drain marking program.

The Community Development Department is responsible for Planning and Zoning related items, Construction Permits, and administration of the SWMP.

Inspection and Enforcement

Inspections are performed by city staff on a complaint or as needed basis. The Building Official has the authority to request all inspection information from the contractor and/or landowner and may issue a Stop Work Order.

Program Funding

The program is funded through the normal budgeting process for all responsibility departments. In most cases, during development the developer is responsible for the implementation of Best Management Practices (BMPs) and the operation and ongoing maintenance of those BMPs.

Outreach and Training

The City provides public outreach and education to citizens through the municipal website, direct mailings to property owners and businesses, and the Missouri River Watershed Festival. Staff attends storm water and erosion control trainings. The Public Works Department Director is a licensed Professional Engineer. In addition, the Building Official is a Certified Floodplain Managers.

Contact Information

Spills and other emergence calls are directed to Emergency Services at 911. Dispatch then coordinates with the Fire Marshal to response to emergencies. General questions are fielded by Public Works, Environmental Services, and/or Community Development staff at 605-668-5251.

Minimum Control Measures

This plan outlines the six minimum control measures as required by the Phase II Regulations. The SWMP is intended to reduce pollutant levels to "maximum extent possible" to protect water quality and comply with the Clean Water Act. The SWMP includes best management practices for the six minimum control measures. Each of the six minimum control measures have measurable goals that are expected to result in reductions in pollutants discharged within the City of Yankton. Pollutants of concern include: oils and greases; litter/trash; yard waste; fertilizer, herbicides, pesticides, and other household chemicals; and aggregates/sediments

Public Education and Outreach

Program Requirement

Distributing educational materials and performing outreach to inform citizens about the impacts polluted storm water runoff discharges can have on water quality.

Current Programs

The City provides educational hands-on educational opportunities as well as print and online resources.

Best Management Practices (BMPs)

Educational Information

A storm water educational brochure has been developed specifically for local businesses. A copy of the brochure will be mailed to all commercial water users in 2015 then distributed to all new commercial water customers when they sign up for service. Information about recycling opportunities, annual citywide clean-up efforts, and storm water protection are distributed with municipal utility billings and promoted in local print and radio media, as well as taking prominent place on the municipal website. The municipal website includes information about storm water protection including the SWMP, reporting information, and other materials related to storm water protection. The building official provides an annual training to the Lewis and Clark Homebuilders Association about storm water pollution prevention and BMPs.

Marking Storm Drain Inlets

The City has implemented a program to mark all storm drain inlets in the community with information to educate citizens about the impacts of illegal dumping in the storm sewer system.

Missouri River Watershed Education Festival

The Annual Missouri River Watershed Education Festival provides students from local schools, members of the general public, community organizations, and businesses with information about the importance of projecting local water resources including the importance of protecting the storm sewer system. The City of Yankton and numerous partners including federal and state agencies, local non-profits, print and broadcast media, and local business and industry hosted the one day event. The event is multifaceted and occurring over a two day period. The education and outreach component occur on one day and the following day a large scale river cleanup effort is held. Some citizens and business may participate in one or both days. Through partnerships with governments, local nonprofits, and local business, including manufacturers, information about efforts to protect sources of water and prevent contamination are shared with students and the general public. Day one of the event is dedicated to booths, presentations, and activities about watershed protection. Partnerships with local print and broadcast media share information about the activities of the festival and allow presenters and participants to share information with non-attendees through onsite radio interviews and print publication stories leading up to and after the event.

Implementation Schedule

BMP	Goal	Completion/Frequency	Responsible Party
Educational Information	Develop informational brochure for businesses.	June 2014	Community Development/Public Works Staff
	Direct mailing brochure to businesses.	Spring 2015	Public Works/Finance/Community Development Staff
	Distribute informational brochure to new commercial water customers.	Each request for new service	Community Development/Finance Staff
	Printed utility bill information recycling opportunities, annual citywide clean-up efforts, and storm water protection.	Annually	Public Works/Finance Staff
	Printed utility bill information annual citywide clean-up	Annually	Public Works/Finance Staff

	efforts.		
	Printed utility bill information storm water protection.	Annually	Public Works/Finance Staff
	Develop storm water informational webpage.	2003	Public Works
	Review and update webpage.	2014 Annually November	Public Works/Community Development
	Create local storm water management guide for builders.	2003	Building Official
	Update and improve the local storm water management guide for builders.	Annually	Building Official
	Building official provides training to Lewis and Clark Homebuilders Association about best management process for single family home and projects less than one acre.	Annually	Building Official
Marking Storm Drain Inlets	Label all storm drain inlets.	2008	Public Works Director
	Inspect storm drain inlets for remarking.	Annually April-October	Public Works Staff
	Research more permanent storm drain marking system.	Summer 2014	Community Development and Public Works Staff
	Implement more permanent storm drain marking system.	Summer 2015	Community Development and Public Works Staff

Missouri River Watershed Education Festival	Coordinate educational festival with local community to educate local businesses and community about storm water protection and pollution prevention.	Annually in May	Public Works Staff

Public Involvement/Participation

Providing opportunities for citizens to participate in program development and implementation, including effectively publicizing public hearings where public comment can be taken.

Program Requirement

Providing opportunities for citizens to participate in program development and implementation, including effectively publicizing public hearings where public comment can be taken.

Current Programs

The City of Yankton Board of Commissioners and the Planning Commission hold public meetings and provide notice of the time, location, and agenda as required by state law. Both the Board of Commissioners and the Planning Commission encourage public comment at each meeting. Members of the community may also contact the storm water hotline number or email staff with comments or concerns. The Storm Water Management Plan is available on the municipal webpage.

Volunteer opportunities exist as a part of the Missouri River Watershed Festival and as a part of the storm drain inlet marking program. Community members also participate in citywide clean-up as well as the regular recycling program.

Best Management Practices (BMPs)

Public Notice Requirement

Notices of all public meetings of the Board of City Commissioners and the Planning Commission are provided for as required by South Dakota Codified Law.

Public Meetings

The Board of City Commissioners meets the second and fourth Mondays of each month. The Planning Commission meets on the second Monday of each month. The agendas are posted at City Hall and the municipal website.

Complaint Hotline

Contact information is provided on the municipal website as well as on all publications and in Public Works announcements.

Marking Storm Drain Inlets

The City encourages local communities groups to engage in storm water pollution prevention by volunteering to help mark storm drain inlets.

Missouri River Clean-Up

The event is multifaceted and occurring over a two day period. The second day encompasses a large scale river cleanup effort. Some citizens and business may participate in one or both days. Public engagement activities occur on the second day, focused on removing debris and contaminates along waterways in the local watershed.

Prescription Drug Collection

Police Department holds annual prescription drug take back program to safely dispose of medications to prevent medications from entering either the storm water sewer system or the sanitary sewer system.

Recycling and Yard Waste Collection

The city provides a fee-based drop off site for used oil, batteries, and tires, as well as free drop off and curbside pickup of plastics, tin and aluminum cans, paper, and cardboard. A composting site was fully operational in 2011. Yard waste may be dropped off free of charge all year at the municipal transfer station. Finished compost is available to residents free of charge. Citywide clean up occurs annually in the spring, and allows residents to dispose of many items free of charge at the transfer station as well as providing curb side pickup of many items not normally allowed during normal collection. Sharps containers and informational flyers are distributed to local pharmacies and the Transfer Station.

Household Hazardous Collection

Animal waste collection waste bags available free of charge to visitors in all parks and on all trails.

Animal Waste Collection

Animal waste collection waste bags available free of charge to visitors in all parks and on all trails.

Implementation Schedule

BMP	Goal	Completion/Frequency	Responsible Party
Public Notice Requirement	Hold public meetings.	2003-Present	City Staff
Public Meetings	Annual update on storm water program issues to Board of Commissioners.	Annually	Community Develop & Public Works Directors
	Planning Commission provides input and feedback on storm water protection issues and reviews SWMP annually.	On-going/Annually	Community Develop & Public Works Directors
Complaint Hotline	Provide a number that citizens can call to report storm water issues.	2003	Public Works
Marking Storm Drain Inlets	Work with community organizations to replace missing and add new storm inlet markings.	Annually from April to October.	Public Works & Community Development Staff
Missouri River Clean-Up	Coordinate clean-up efforts within the watershed.	Annually in May	Public Works Staff
Prescription Drug Collection	Coordinate collection of prescription medications and dispose of collected items properly.	Annually	Police Department
Recycling and Yard Waste Collection	Curbside and drop off recycling program.	On Going	Public Works

	Collection of yard waste and composting site.	2011-On Going	Public Works
	Improve public access to yard waste collection site.	Summer 2014	Public Works
	Determine all local public and private drop-off points that accept used oil and create plan to better engage public.	Summer 2015	Public Works Department staff
	Household hazardous waste collection.	Annually	Public Works Department staff
	Distribution of sharps containers and information.	Annually	Public Works Department staff
Reducing Impact of Wastes on Municipal Property	Provide animal waste collection bags in all parks.	Seasonal-Weekly	Parks and Recreation Staff

Illicit Discharge Detection and Elimination

Program Requirement

Developing and implementing a plan to detect and eliminate illicit discharge to the storm sewer system (includes developing a system map and informing the community about hazards associated with illegal discharges and improper disposal of waste).

Current Programs

The Public Works Department is tasked with maintain transportation infrastructure within the city. Routine activities include patching and repair, street sweeping, snow removal, curb and gutter repair, maintenance of public drainage ways, and other maintenance efforts.

The storm sewer system GIS mapping has been completed and is updated annually. Storm sewer inlet and outfalls are monitored by staff. The Board of Commissioners has also enacted ordinances to address MS4 administration including illicit discharges.

Best Management Practices (BMPs)

Storm Sewer Map

The City has developed a storm sewer map showing the locations of all storm water inlets and outfalls. The map is updated as new and repair infrastructure projects are undertaken.

Illicit Discharge Detection Plan

The city has developed a plan to detect and respond to non-storm water discharges and spills that might enter the MS4. A copy of the plan is included in the appendices.

Contractor Database

A contractor contact information database has been developed for all sites including those less than one acre to be able to quickly contractors about discharge problems as they develop including during non-business hours.

Storm Sewer Outfall Monitoring

Municipal staff routinely monitors storm sewer outfalls for debris and pollutants both during rain events and during dry periods. During dry periods any unusual discharge is investigated and proper containment and abatement measures are taken whenever a pollutant is detected.

Implementation Schedule

BMP	Goal	Completion/Frequency	Responsible Party
Storm Sewer Map	Complete mapping of all inlets and outfalls.	2005	Public Works Staff
	Update map.	New construction and infrastructure repairs	Public Works Staff
Illicit Discharge Detection Plan	Develop written plan.	Spring 2014	Community Development Staff
	Implement plan.	Spring 2014	Municipal Staff
	Dry weather screening of storm water outfalls.	Ongoing	Parks and Recreation Department and Public Works Staff

Contractor Database	Complete collection of contractor contact information of all projects including those less than 1 acre and creation of searchable database.	Summer 2014	Community Development Staff
	Collection of contractor contact information with all newly issued permits.	Ongoing	Community Development Staff
Storm Sewer Outfall Monitoring	Rain event outfall monitoring.	Ongoing	Parks and Recreation Department and Public Works Staff

Construction Site Storm Water Runoff Control

Program Requirement

Developing, implementing, and enforcing an erosion and sediment control program for construction activities that disturb one or more acres of land (controls could include silt fences and temporary storm water detention ponds).

Current Programs

All plats submitted for development require a drainage plan including any needed storm water and erosion controls. Storm water permits are required for all construction and excavation projects that involve digging, grubbing, grading and the removal of plant vegetation that would otherwise prevent wind and storm water erosion to an extent defined by resolution. The City of Yankton requires a property owner, covenant agreement, homeowner association, or other similar agreement that identified a responsible party for the operation and maintenance of BMPs and drainage ways within a development.

Best Management Practices (BMPs)

Plan Review

All development plans are reviewed to determine if the drainage plan is adequate for the proposed development. All municipal road and building project contracts include the requirement to develop a storm water protection plan. Community Development issues storm water permits for single family homes and

projects less than 1 acre. No plat or site plan is approved and no permit issued until the storm water protection measures are defined. Conditions may be placed on the permit in order to protect the MS4.

Project Inspection Procedure

Enforcement to insure the use and maintenance of BMPs at construction locations are addressed by the Code Enforcement/Building Inspectors on building sites and by the Public Works Department on municipal construction projects. Inspection of storm water and erosion controls occur during regular site inspections. These inspections include the operation of the BMPs and the condition of the site including the proper disposal of wastes and trash. Community Development staff regularly monitors the state storm water permit database.

Contractor/Developer Training

The Development of Community Development provides training to the builder community through in yearly in person presentations. Additionally the City of Yankton Storm Water Management Guide has been developed for use by professional contractors and homeowners. Provisions for storm water are discussed with contractors and owners when building permits are issued. A copy of the guide is also provided to contractors and homeowners for projects with potential impact on the MS4. On larger projects, storm water management is addressed by the Building Inspectors at pre-construction meetings and at regularly scheduled construction meetings.

Concrete Washout Sites

Concrete washout locations have been developed by the City of Yankton for the use of the public, and are monitored and maintained regularly. Cleaning occurs at least annually and more often as needed.

Implementation Schedule

BMP	Goal	Completion/Frequency	Responsible Party
Plan Review	Review plans for appropriate controls.	As plans are submitted.	Community Development and Public Works staff
Project Inspection Procedure	Review BMPs and all storm water and erosion controls during regular site inspections requiring corrections when	During regular site inspections.	Community Development and Public Works staff

	necessary.		
Contractor/Developer Training	Review storm water pollution prevention measures and appropriate BMPs with the development community providing Storm Water Management Guide.	Annually	Community Development Staff
	Revise City of Yankton Storm Water Management Guide.	Annually	Community Development Staff
Concrete Washout Sites	Evaluate site usage and determine current locations in need of new washout site.	Annually	Community Development and Public Works Staff
	Inspect existing sites and clean/maintain locations.	Biannually and as needed	Public Works Staff

Post Construction Storm Water Management

Program Requirement

Developing, implementing, and enforcing a program to address discharges of post-construction storm water runoff from new development and redevelopment areas. Applicable controls could include preventative actions such as protecting sensitive areas or the use of structural BMPs.

Current Programs

The City of Yankton manages growth and development through the use of a comprehensive plan, zoning, and other related ordinances including areas within the one mile extraterritorial jurisdiction. A storm water ordinance has been developed and implemented. On-going maintenance of permanent BMPs is defined by ownership and/or other agreements and enforcement by Public Works or Community Development staff.

Best Management Practices (BMPs)

Storm Water Ordinances

The zoning ordinance and comprehensive plan have been developed to ensure that development is guided away from environmentally sensitive areas. No additional building development is expected in the floodplain or near the banks of the Missouri River. The Storm water ordinance was designed to reduce potential degradation of storm water runoff from new development and adopted. With ordinance completed, staff continues to monitor site plans for their potential impact on storm water runoff, concentrating on development in sensitive areas, which are shown on the storm sewer system map.

Inspection Program for Post-Construction BMPs

The City of Yankton will identify and evaluate existing permanent structural and non-structural BMPs located in the MS4. Any BMPs not currently shown on the storm sewer map will be added and regularly inspected.

Implementation Schedule

BMP	Goal	Completion/Frequency	Responsible Party
Storm Water Ordinance	Evaluate existing ordinances and identify any needed revisions.	Annually	All stakeholder departments.
Inspection Program for Post-Construction BMPs	Develop a post-construction BMP inspection program.	Summer 2015	Community Develop and Public Works Staff
	Evaluate, catalog, and map existing BMPs.	Spring 2016	Community Develop and Public Works Staff
	Inspection of post-construction BMPs.	Annually beginning 2017	Community Development and Public Works Staff
Maintenance Plan for Public BMPs	Clearing and cleaning of storm water inlets.	Significant rainfall event	Public Works Staff
	Street sweeping to remove debris.	Continuous April-October	Public Works Staff
	Repair and replacement of storm sewer infrastructure.	Each road construction/rebuild project	Public Works Staff

Pollution Prevention/Good Housekeeping

Program Requirement

Developing and implementing a program with the goal of preventing or reducing pollutant runoff from municipal operations. The program must include staff training on pollution prevention measures and techniques.

Current Programs

Department directors are responsible for providing task specific storm water pollution prevention training opportunities for departmental staff. Staff utilized a variety of BMPs when completing daily tasks including applying fertilizers, washing vehicles, street maintenance and repair, among many others.

Best Management Practices (BMPs)

Municipal Employee Training

Techniques to manage storm water are part of each pre-construction meeting and reviewed during field inspections. Annual training of Public Works staff involved in street repair and maintenance is held covering proper procedures to minimize impact on the MS4 and encourage pollution prevention during daily activities. The Building Official is a Certified Floodplain Manger.

Reducing Impact of Fertilizer, Pesticides, and Yard Waste

Review current practices and make efforts to reduce fertilizer applications along waterways adjacent to municipal property. Fertilizer is hand spread near sensitive areas including along waterways and road rights of way. Park staff that manage and direct the application of herbicides receive certification. A record keeping system is in place for the application of herbicides including dates of application, type, and rates of application. Application manuals have been made available at the park shop. No pesticides are used. Municipal staff lawn mowing procedures call for grass discharged to be directed back towards the property and away from streets and sidewalks. Whenever bagging of clippings is necessary they are disposed at the municipal composting site. Grass clippings and leaves are mulched. If any leaves or clipping enter streets, the policy is to have the street department contacted to sweep. Irrigation systems on municipal property are not used during windy conditions, during daytime hours, or when rain is forecast. Irrigation heads are inspected and adjusted to ensure efficient operation. Agricultural lime is now purchased in bagged form rather than bulk allowing for indoor storage and no exterior stockpiles. Any exterior stockpiles of agricultural lime remaining are located in bunkers in protected areas.

Reducing Impact of Snow Melt Runoff

The Paddle Wheel Point snow stockpile site has been developed. Snow removed from streets is stockpiled on municipal property and allowed to infiltrate through a tall grass natural area to minimize the negative impacts of spring melt and run-off. Annual snow plowing organizational meeting is held to train staff on ways to reduce the impact of snow removal and stockpiling on the MS4. Street maintenance equipment is adjusted and checked routinely during winter months to ensure applicators are not overspreading or over applying appropriate quantities of salt and sand to roadways. Staff utilizes proper equipment including those with guards to limit overspreading to apply ice melt to sidewalks adjacent to public buildings.

Municipal Vehicle Washing Procedures

All departments utilize indoor wash bays connected to the sanitary sewer system or commercial vehicle washes for passenger vehicles. When smaller landscaping and lawn equipment is washed outside, all remaining debris are contained, collected, and disposed.

Reducing Impact of Wastes on Municipal Property

Animal waste collection waste bags available free of charge to visitors in all parks and on all trails. Litter is removed from municipal parks daily during spring, summer, and fall months. Litter and other debris is removed weekly during the spring, summer, and fall from all municipal parking lots.

Hydrant Flushing

Dechlorination tablets are used when flushing fire hydrants before water is allowed to enter the storm sewer system. All appropriate permits are secured.

Municipal Pool Water Removal

Municipal pools (one indoor and one outdoor facility) are dechlorinated and tested before water is allowed to enter the storm sewer system. All appropriate permits are secured.

Maintenance Plan for Public Infrastructure

Inlet grates are inspected and cleared of debris after rainfall events. Storm water inlets were kept clear of plant growth and foreign debris. Storm sewers are inspected prior to all street rebuilding projects and damaged or deteriorated sections are repaired or replaced. Street sweeping is utilized to minimize debris entering the MS4. Street sweeper is operated continuously on a systematic plan to clean all streets as weather allows. Marne Creek is inspected regularly and bank stabilization is undertaken to add riprap or vegetation to banks to provide for erosion control. Following storm events the Marne Creek drainage way is inspected and debris are removed. Low water crossings are cleared of any obstructions.

<u>Implementation Schedule</u>

BMP	Goal	Completion/Frequency	Responsible Party
Municipal Employee Training	Provide staff snow removal training.	Fall-Annually	Public Works Staff
	Provide staff street repair and maintenance training.	Annually	Public Works Staff
	Maintain floodplain manager certification.	Annually	Building Official
Reducing Impact of Fertilizer, Pesticides, and Yard Waste	Utilize BMPs when maintain parks and other public properties.	Seasonal-Annually	Municipal grounds maintenance staff
Reducing Impact of Snow Melt Runoff	Use of Paddlewheel Point snow stockpile site.	Seasonal-Annually	Public Works Staff
	Properly calibrate salt and aggregate spreading equipment.	Seasonal-Annually	All Departments
Municipal Vehicle Washing Procedures	Utilize indoor wash bays or commercial vehicle washes.	On-going	All Departmental Maintenance Staff
	Capture debris from outdoor washing of small maintenance equipment.	On-going	All Departmental Maintenance Staff
	Removal of litter and debris from public parking lots.	Seasonal-Weekly	Community Services & Public Works Staff
Hydrant Flushing	Use of dechlorination process when routinely flushing hydrants.	Seasonally	Environmental Services Staff
	Securing appropriate permits for flushing.	As needed.	Environmental Services Staff
Municipal Pool Water	Use of dechlorination	Annually	Environmental Services

Removal	process and testing when emptying municipal pools.		Staff
	Securing appropriate permits.	Annually	Environmental Services Staff
Maintenance Plan for Public Infrastructure	Clearing and cleaning of storm water inlets.	Significant rainfall event	Public Works Staff
	Street sweeping to remove debris.	Continuous April-October	Public Works Staff
	Repair and replacement of storm sewer infrastructure.	Each road construction/rebuild project	Public Works Staff
	Inspected Marne Creek and bank stabilization undertaken to add riprap or vegetation to banks to provide for erosion control.	On-going	Parks and Recreation Staff
	Following storm events the Marne Creek drainage way is inspected and debris are removed. Low water crossings are cleared of any obstructions.	On-going	Parks and Recreation Staff

APPENDICES

APPENDIX A: Illicit Discharge and Illegal Dumping Procedure

An illicit discharge is anything entering the storm drains or system other than storm water. Illicit discharges include dumping or spilling of materials into the storm drains, culverts, drainage ways or ditches.

Priority areas in the City of Yankton are identified as:

- Locations adjacent to the Marne Creek floodway.
- Locations adjacent to the Missouri River floodway.
- Locations adjacent to the drainage ways and drainage easements.

Identification of dump or discharge

As soon as any person responsible for a facility or operation, or responsible for emergency response for a facility or operation, has information of any known or suspected release of materials which are resulting or may result in illicit discharges or pollutants discharging into storm water, the storm sewer system, or waters of the state, that person shall immediately notify emergency response agencies of the occurrence via emergency dispatch services.

Anyone who notices something that may be considered an illicit discharge should call 605-668-5224 or emergency dispatch to report the problem.

Discharges or dumping that is detected in a location remote from the discharge is traced through the use of sewer video inspection by Environmental Services staff. In dumping cases law enforcement is notified to monitor and investigate potential sources.

Abatement

Spills or discharges occurring on or near roadways are normally located by law enforcement. The City of Yankton Fire Marshal is contacted and makes an assessment of the incident including employing emergency measures to control and abate the spill. All surface contamination is removed from the road right of way and properly disposed under the direction of the Fire Marshal with support from Public Works, Environment Services, and Community Development staff. Subsurface contamination is abated by Public Service and Environmental Service staff including any pumping, jetting, or other cleaning that might be required. Storm sewer outfalls are monitors by Parks and Recreation staff and prevention measures put in place to limit any contamination that might reach the waterways.

Spills occurring on private property are normally abated by the contractor and/or property owner under the direction of the Department of Community Development with support from Public Works and Environment Services staff as needed.

Evaluation

Staff meets following completion of the abatement to evaluate the incident and put measures in place to eliminate or limit the risk of further illicit discharge or dumping. Staff also provides follow up education to the property owner or contractor including specific orders or restrictions that are placed on further construction at the location by the Building Official.

APPENDIX B: Industrial/Commercial Business Guide to Pollution Prevention

To Report Illegal Dumping or Discharges:
Call 668-5251

For Spill Emergencies:
Call Emergency Services at 911

For more information about storm water protection visit these websites:
South Dakota Department of Environment and Natural Resources denr.sd.gov

EPA National Pollutant Discharge Elimination System epa.gov/npdes

City of Yankton
416 Walnut Street
P.O Box 176
Yankton, SD 57078

Storm Water Protection Program

Industrial/Commercial Business
Guide to Pollution Prevention

YANKTON
SOUTH DAKOTA

As a local business owner, you can help keep storm water clean by following the tips in this brochure.

What is storm water?

Storm water runoff occurs when precipitation from rain or snow-melt flows over the ground. Impervious surfaces like driveways, sidewalks, and streets prevent storm water runoff from naturally soaking into the ground.

Why is storm water a concern?

Storm water can pick up debris, chemicals, dirt, and other pollutants and flow into a storm sewer system or directly to a lake, stream, river, wetland, or coastal water. Anything that enters a storm sewer system is discharged untreated into the waterbodies we use for swimming, fishing and providing drinking water.

How can your business help?

Educate your employees and follow these simple practices.

Property maintenance:
- Dirt, oil, and debris that collect in parking lots and paved areas will end up in the storm sewer system and eventually enter local waterbodies. Sweep up litter and debris from sidewalks, driveways and parking lots, especially around storm drains.
- Cover grease storage and dumpsters and keep them clean to avoid leaks.

Fleet vehicles:
- Properly maintain fleet vehicles to prevent oil, gas, and other discharges from being washed into local waterbodies. Use a commercial car wash that treats or recycles its wastewater.
- Dumping automotive fluids into storm drains has the same result as dumping the materials directly into a waterbody.

Lawn care:
- Excess fertilizers and pesticides applied to lawns and gardens wash off and pollute streams. In addition, yard clippings and leaves can wash into storm drains and contribute nutrients and organic matter to streams.
- Don't overwater your lawn. Consider using a soaker hose instead of a sprinkler.
- Use pesticides and fertilizers sparingly. When use is necessary, use these chemicals in the recommended amounts.

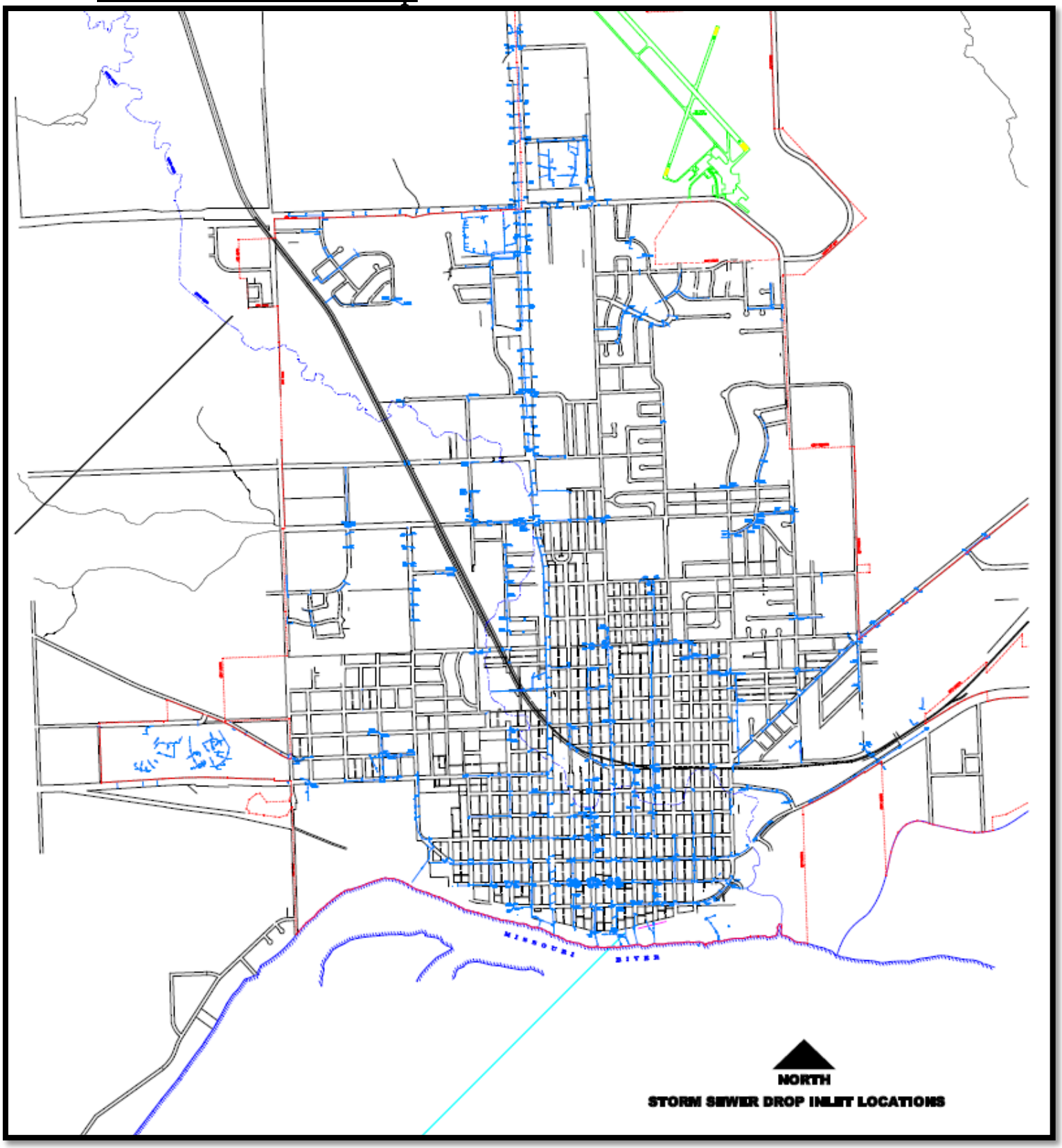
During any construction:
- Divert storm water away from disturbed or exposed areas of the construction site.
- Install silt fences, vehicle mud removal areas, vegetative cover, and other sediment and erosion controls and properly maintain them, especially after rainstorms.
- Prevent soil erosion by minimizing disturbed areas during construction projects, and seed and mulch bare areas as soon as possible.

Contact Us

City of Yankton
416 Walnut Street
Yankton, SD 57078

(605) 668-5251
cityofyankton.org

APPENDIX C: MS4 Map



APPENDIX A: Storm Water Management Guide

CITY OF YANKTON STORM WATER GUIDE

Does your Construction Site Need Storm Water Permit Coverage?

Purpose:

Construction activities produce many different kinds of pollutants which may cause storm water contamination. Grading activities remove grass, rocks, pavement and other protective ground cover resulting in the exposure of underlying soil. Because the soil surface is unprotected, soil and sand particles are easily picked up by wind and/or washed by rain or snow melt. Water carrying these particles eventually reaches a stream, river or lake where it slows down, allowing the particles to fall to the bottom. This process is called sedimentation. Gradually sediment builds up in the stream beds where it impacts fish, aquatic plants and affects the quality of the water. In addition, the construction of buildings and roads may require the use of toxic or hazardous materials such as petroleum products, asphalt, sealants and concrete which may pollute storm water running off the construction site. These types of pollutants often contain small amounts of metals and other toxic materials which may be harmful to humans, plants and fish.

The Purpose of the Storm Water Permitting Program is to Improve Water Quality By Reducing Pollutants in Storm Water Discharges

Notice: This document is not inclusive of the entire Storm Water Permitting Program .

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Definitions:

BMP, Best Management Practices: General good house keeping practices, pollution prevention and educational practices, maintenance procedures, and other management practices to prevent or reduce the discharge of pollutants directly or indirectly to storm water, receiving waters or storm water conveyance systems. BMPs included treatment practices, operating procedures, and practices that control site runoff, dust, spillage, leaks, sludge, water disposal, and drainage from raw materials storage.

MS4, Municipal Separate Storm Sewer System: (The City's Storm Sewer System which conveys untreated storm water)

NOI, Notice of Intent: A Storm Water Permit Application for obtaining coverage under a General Storm Water Permit for construction activities that disturbs one or more acres or is required by a municipal jurisdiction.

NOT, Notice of Termination A form that is required to be submitted when a General Storm Water Permit for constructing activities is no longer required.

Operator: The owner, party, person, general contractor, sub-contractor, or other entity that has operational control over the construction project. The operator is responsible for ensuring compliance with all conditions for the elimination of dust and storm water pollution.

Storm Water: Any surface flow, runoff, and drainage consisting entirely of water from any form of natural precipitation.

SWPPP, Storm Water Pollution Prevention Plan: A document which describes the "Best Management Practices" and activities to be implemented by a person or business to identify sources of pollution or contamination at a site and actions to eliminate or reduce pollutant discharges to a Storm Water Conveyance System.

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What is Storm Water Runoff?

Storm water is water from precipitation that flows across the ground or pavement when it rains or when snow and ice melt. The water seeps into the ground or drains into storm sewers. Storm sewer "inlets" are drains that you see at street corners or at low points on the sides of your streets. Collectively, the draining of these waters is called "storm water runoff" and is a concern to us in on commercial and industrial sites as well as residential neighborhoods because of the potential pollutants it can carry to the natural waterways in the area.

What are the Impacts of Storm Water?

Storm water runoff can be responsible for notable changes in water quality. As development occurs, areas are converted to land uses that typically have increased areas of impervious surfaces, resulting in increased surface runoff rates, volumes, and pollutant loadings.

Phase I of the Clean Water Act (CWA):

In 1990 Congress passed Phase I of the CWA regulating storm water discharges associated with industrial and construction activities. Starting **October 1, 1992**, all operators of storm water discharges from large or medium municipalities where activities disturbed five or more acres of land were required to apply for a National Pollutant Discharge Elimination System Permit.

Phase II of the Clean Water Act:

In December of 1999, The EPA published Phase II of its storm water regulations extending permitting requirements to storm water discharges from construction sites where one or more acres of land is disturbed. *Phase II now requires "Small" municipalities servicing populations of 10,000 people to obtain coverage under the National Pollutant Discharge Elimination System. Phase II of the Storm Water Act went into effect* ***March 10, 2003.***

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March 14, 2005, The Yankton Board of Commissioners officially adopted Phase II of the Clean Water Act as mandated by the South Dakota Department of Environment and Natural Resources. Under this mandate, the City of Yankton now requires certain construction and industrial activities to apply for a "Storm Water Permit" and follow "Best Management Practices" as outlined under the National Pollutant Discharge Elimination System.

Who Must File a Permit: The City of Yankton Department of Public Works now requires permit coverage for the following construction/industrial activities:

Single family dwellings
Residential additions and garages
Multiple family dwellings
Commercial Buildings
Commercial Additions
Commercial parking lots
New Subdivisions

Other construction projects that disturb 5,000 square feet or more of concrete, asphalt or soil.

All construction sites disturbing one or more acres need storm water permit coverage from both the South Dakota Department of Natural Resources and the City of Yankton.

Do I Need to Develop a Storm Water Pollution Prevention Plan (SWPPP)?

The SWPPP is a plan detailing how an operator will manage erosion, dust, sediment and other pollutants that have the potential to enter the storm water conveyance system. Typically, a SWPPP is not required to be submitted with the "*Notice of Intent*" for sites that are under one acre in size. However, a SWPPP must be developed and available on site.

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If I Need Permit Coverage, Where Do I Start?

If your construction project is going to disturb one or more acres of land through clearing, grading, excavating, or stockpiling of fill material *(this includes the acreage of the entire project, even if you are responsible for only a small portion)*, you will need permit coverage with the South Dakota Department of Natural Resources and the City of Yankton.

If your construction activities include any of the following: single family dwellings, residential additions, garages, multi-family dwellings, multi-family additions, commercial buildings, commercial additions, commercial parking lots, new subdivisions and other construction projects that disturb 5,000 square feet or more of concrete, asphalt or soil, you will need permit coverage from the City of Yankton.

If I need permit coverage from the State, who do I contact?

Department of Environment and Natural Resources
Surface Water Quality Program
Joe Foss Building
523 East Capitol
Pierre, SD 57501
Phone 1-800-737-8676
(1-800-SDSTORM)

If I need permit coverage from the City, who do I contact?

Department of Public Works
416 Walnut
Yankton, SD 57078
(605) 668-5251

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Sample Storm Water Permit for the City of Yankton

City of Yankton South Dakota
Department of Public Works
(605) 668-5251
Construction Storm Water Permit Application

Legal Description	Lot No.	Block	Tract
Owner	Mail Address	Zip	Phone No.
Operator or Responsible Contact Person	Mail Address	Zip	Phone No.
Description of Project		Permit Fee:	
Total Area of Land Disturbed From Commencement Through Completion of Construction		Acres	

NOTE: IF LAND DISTURBANCE IS ONE ACRE OR MORE, A NOTICE OF INTENT MUST ALSO BE FILED WITH THE SOUTH DAKOTA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES 15 DAYS PRIOR TO DISTURBING LAND. THE SOUTH DAKOTA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES CAN BE CONTACTED AT (605) 773-3351. WHERE APPLICABLE, A COPY OF THE SOUTH DAKOTA DENR NOTICE OF INTENT MUST ACCOMPANY THIS APPLICATION.

Start Date:	Anticipated Completion Date:

Has a Pollution Prevention Plan been Developed as Required: YES ☐ NO ☐

If No, When Will it be Developed _____

Will "Best Management Practices" Be Used on this Site to Control Dust, Silt, Erosion and Other Pollutants: ☐Yes ☐No

Type of Permit Requested:

☐ Industrial Activity ☐ Grading Activity ☐ Construction Activity

A. Industrial activities:
Standard Industrial Classification (SIC) codes of this facility/activity: (include at least one, and up to four, SIC or 4-digit North American Industry Classification (NAIC) codes which best describe the facility or industrial activity. For example, the SIC Code for a sand/gravel pit is 1442. For construction activities, no codes are required; therefore, indicate N/A (not applicable)

B. Please include a brief description of the activities conducted on this facility or construction site.

C. Existing Environmental Permits:
☐ NPDES (Discharges to Surface Water)
☐ UIC (Underground Injection of Fluids)
☐ RCRA (Hazardous Wastes)
☐ PSD (Air Emissions from Proposed Sources)
☐ Other (Please Specify)

Signature of Operator or Authorized Agent (Date) City of Yankton Authorized Agent (Date)

I certify that I am aware of the terms and conditions of the General Storm Water Permit and I agree to comply with all requirements of Phase II of the Clean Water Act. I further agree to comply with all regulations and amendments as set in Storm Water Ordinance Number 864 as adopted by the City of Yankton.

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Storm Water Permit Fee Schedule For the City of Yankton

Single family dwellings	$ 25.00
Residential additions and garages	$ 10.00
Multiple family dwelling up and including 4 units	$ 75.00
Multiple family dwellings with 5 or more units dwelling units	$ 150.00
Commercial Buildings up to and including 10,000 square feet.	$ 75.00
Commercial buildings 10,001 square feet or larger	$ 150.00
Commercial additions up to and including 5,000 square feet	$ 20.00
Commercial additions 5001 square feet to 10,000 square feet	$ 50.00
Commercial additions 10,001 square feet or larger	$ 75.00
Commercial parking lots 5,000 square feet or larger	$ 50.00
New subdivisions up to and including six lots	$ 75.00
New subdivisions with seven but less than twelve lots	$ 150.00
New subdivisions with twelve or more lots	$ 325.00
Other construction projects that disturb 5,000 square feet or more of concrete, asphalt or soil.	$ 50.00

Exceptions:
Land used for agricultural purposes
Gardening, lawn seeding where the site is less than 10,000 square feet
Residential additions that are 120 square feet or less

Note:
All sites one acre or more are also required to file a "Notice of Intent" with the South Dakota Environment and Natural Resources 15 days prior to disturbing vegetation.

Enforcement Fees:
Where code enforcement action is needed to bring a site into compliance with the Clean Water Act, the following fees will be charged to the "operator" or permit holder:

Program Administrator or his designated agent	$50.00 per hour, $50.00 minimum
Street sweeper	$100.00 per hour, $100.00 minimum
Other equipment or action as needed	Actual Cost

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Sample Storm Water Permit South Dakota DENR

DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

NOTICE OF INTENT (NOI)
to Obtain Coverage Under the SWD General Permit for
Storm Water Discharges Associated with Industrial or Construction Activities

Return to: SD Department of Environment and Natural Resources
Surface Water Quality Program
523 East Capitol Avenue
Pierre, South Dakota 57501-3181
Telephone: (605) 773-3351 or 1-800-SDSTORM

PLEASE PRINT OR TYPE

I. **Applicant/Owner Information:**
Name _____ Phone _____
Responsible Contact Person _____
Street _____
City _____ State _____ Zip Code _____

II. **Facility/Site Information:**
Name _____ Phone _____
Responsible Contact Person _____
Street _____
City _____ State _____ Zip Code _____
Type of Ownership: ☐ Private ☐ Federal ☐ State ☐ Public (Other than Federal or State)

III. **Type of Permit Requested.** Check (X) the appropriate response.
☐ Industrial Activity ☐ Sand/Gravel Mining Activity ☐ Construction Activity

IV. **Pollution Prevention Plan**
A. Has the Pollution Prevention Plan been developed as Required? Yes ☐ No ☐
If No, when will it be developed? _____
Please note: The plan must be developed before any industrial or construction activity begins
B. Please include a brief description of best management practices (pollution control measures) being used at the facility/site:

V. **Facility/Site Location:**
A. Quarter _____ Section _____ Township _____ Range _____
County _____ [If available: Latitude _____ Longitude _____]
B. Site/Project Name: _____
C. What is the total area covered by the site (in acres) _____

FOR DENR USE ONLY
Postmark Date: _____ Permit Number: _____ Date Permitted: _____

Notice of Intent General "Storm Water" Permit Revised: November 13, 2002 Page 1 of 3

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What is a Notice of Termination (NOT)?

After construction activities are completed in an area, it must be permanently stabilized as soon as possible to prevent further soil erosion. When construction activities are complete and final stabilization has been achieved, the permit holder is required to submit a "**Notice of Termination**" indicating that all earth moving activities have ended, and the site has achieved final stabilization as required by the permit. Coverage under the permit must be retained until all disturbed areas have achieved final stabilization as defined in the permit.

Sample Notice of Termination (NOT)


DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

NOTICE OF TERMINATION (NOT)

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What is a Storm Water Pollution Prevention Plan (SWPPP)?

A Storm Water Pollution Prevention Plan, or "SWPPP" serves two main purposes. ***First it provides a site description that identifies sources of "Storm Water Pollution", and second, it identifies appropriate measures that must be implemented to reduce pollutants in storm water discharges in order to ensure compliance with the permit requirements.*** The EPA considers the Storm Water Pollution Prevention Plan to be the "heart" of compliance with the "Notice of Intent" and views an incomplete or inaccurate SWPPP as a significant violation of the permit requirements. The EPA may assess substantial penalties against a builder or developer who does not prepare a SWPPP, or prepares a SWPPP that lacks the specified requirements. Strict compliance with the SWPPP specifications is critical to ensure compliance with the "**Notice of Intent**".

Riprap can be used to stabilize drainageways and outlets to prevent erosion

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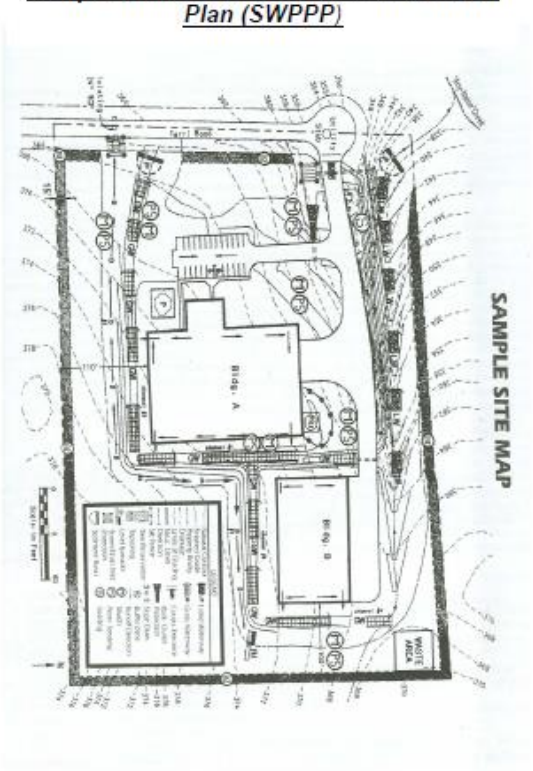
Sample Storm Water Pollution Prevention Plan (SWPPP)



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Storm Water Pollution Prevention Plan

Preserving Existing Vegetation

Wherever possible, preserve existing tree, shrubs, and other vegetation.
To prevent root damage, do not grade, place soil piles, or park vehicles near trees marked for preservation.
Place plastic mesh or snow fence barriers around trees to protect the area below their branches.

Re-vegetation

Seed, sod or mulch bare soil as soon as possible.

Seeding and Mulching

Spread four to six inches of topsoil.
Fertilize according to soil test.
Seed with an appropriate mix for the site.
Rake lightly to cover seed with 1/4" of soil, roll lightly
Mulch with straw.
Anchor mulch by punching two inches into the soil with a dull, weighted disk or by using netting or other measures on steep slopes, or windy areas.
Water gently every day or two to keep soil moist. Less watering is needed once grass is two inches tall.

Sod

Spread five to six inches of topsoil.
Fertilize according to soil test.
Lightly water the soil.
Lay sod. Tamp or roll lightly.

On slopes, lay sod starting at the bottom and work toward the top. Peg each piece down in several places.
Initial watering should wet soil six inches deep (or until water stands 1 inch deep in a straight-sided container. Then water lightly every day or two for two weeks.

If Construction is completed after September 15, seeding or sodding may be delayed. Applying mulch or temporary seed (such as grain rye or winter wheat) is recommended if weather permits. Straw bales or silt fences must be maintained until final seeding or sodding is completed in spring March 1-June 1.

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Storm Water Pollution Prevention Plan

Straw Bale or Silt Fence

Put up before any other work is done.
Install on down slope side(s) of site with ends extended up side slopes a short distance.
Place parallel to the contour of the land to allow water to pond behind fence
Trench four inches deep.
Stake (two stakes per bale or one stake every three feet for silt fence)
Leave no gaps between bales or sections of silt fence
Inspect and repair once a week and after every 1/2 inch rain. Remove sediment if deposits reach half the fence or straw bale height.
Maintain until a lawn is established.

Soil Piles

Locate away from any down slope street, driveway, stream, lake, wetland, ditch or drainage way.
Temporary seed such as annual rye is recommended for topsoil piles.
Surround with straw bales or silt fence.

Gravel Drive

Install a single access drive using 3 to 5 inch aggregate over a geotextile material.
Lay gravel 6 inches deep and 10 feet wide from the foundation to the street.
Use to prevent tracking dirt onto the road by all vehicles.
Maintain throughout construction until driveway is paved.
Park all construction vehicles on the street and off of the site and do not drive across neighboring lots for access to the site.

Sediment Cleanup

By the end of each work day, sweep or scrape up soil tracked onto the road.
By the end of the next work day after a storm, clean up soil washed off-site, and check straw bails and silt fence from damage or sediment buildup.

Downspout Extenders:
Install as soon as gutters and downspouts are completed.
Route water to a grassed or paved area..
Maintain until a lawn is established.

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Inspections and Maintenance:

Am I required to inspect my construction Site?

Inspection and maintenance of vegetation, erosion and sediment control measures must be performed on a regular basis. For example, EPA's Construction General Permit requires the discharger inspect his construction site at least once every seven days or at least once every 14 days and within 24 hours of a storm event which is 1/2 inches or greater. An operator must also look for evidence of pollutants entering the drainage system in material storage areas, and locations where vehicles enter and exit the site, as well as operation of erosion and sediment control devices.

Exposed soils can be temporarily stabilized by driving a tractor over the surface

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What are Best Management Practices?

On-Site Infiltration: Measures such as trenches or basins, can reduce the volume and pollutant loading of storm water discharges from a site. Infiltration structures tend to reduce impacts to an area's natural characteristics. Properly designed infiltration structures can reduce high flows, recharge the groundwater, reduce storm water discharge volumes and inhibit downstream erosion.

Flow Reduction by Vegetation or Natural Depressions: Vegetation or natural depressions can remove pollutants, improve filtration, and reduce erosion. The use of vegetation can protect habitats and enhance the appearance of a site. These measures include grass swales, filter strips as well as trees that are either preserved or planted during construction.

Outfall Velocity Reduction Devices: Include riprap, stone, concrete flow spreaders, silt fence, and bales. They slow the flow of water discharged from a site, reducing erosion.

Retention Structures/Artificial Wetlands: Retention structures are ponds and artificial wetlands that are designed to maintain a permanent pool of water. Properly installed and maintained, these ponds can achieve a high removal rate of sediment. On large projects, they can be very cost effective. These structures rely on settling and biological processes to remove pollutants. Retention ponds can also become wildlife habitats.

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What are Best Management Practices?

Stabilization: Stabilization of exposed soil is one of the best means to minimize erosion and sedimentation, Stabilization refers to covering or maintaining an existing vegetation cover including grass, trees, vines, shrubs etc. Examples of stabilization measures include:

Temporary Seeding: Provides a vegetative cover in area where earth disturbing activities have temporarily ceased, but will resume later in the construction project. Temporary seeding practices have been found to be up to 95% effective in reducing erosion.

Mulching: Is often combined with permanent and temporary seeding. Mulching in conjunction with seeding provides erosion protection prior to the onset of plant growth. Mulching protects newly applied seeds, providing a higher likelihood of successful vegetation. To maintain its effectiveness, mulch should be anchored to resist wind and rain displacement.

Sod Stabilization: Involves establishing long term stands of grass by planting sod on exposed surfaces. Sod is very effective in reducing erosion, however the cost of sod stabilization typically limits its use to situations where quick vegetative cover is desired.

Vegetative Buffer Strips: Vegetative buffer strips are areas where the natural vegetation has been left undisturbed. Vegetative buffer strips can slow runoff at critical locations, decreasing erosion. It is very useful for narrow linear construction projects such as underground utilities or pipelines.

Contouring: Contouring refers to the practice of building with the natural flow of the land. By minimizing changes in the natural contour of the land, existing drainage patterns are preserved as much as possible, reducing erosion.

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What are Best Management Practices?

Structural Practices: *Structural Practices are designed to divert water from flowing on disturbed areas where erosion may occur. Examples of structural practices include:*

Earth Dikes: Earth dikes are temporary berms or ridges of compacted soil that channel water to a desired location.

Drainage Swales: Are channel lined with grass, riprap, asphalt, concrete or other materials. Swales are installed to convey runoff without causing erosion

Sediment Traps: Sediment traps are installed in drainage pathways at storm drain inlets or other discharge points.

Check Dams: Are small temporary dams constructed across a swale or drainage ditch to reduce the velocity of runoff, thereby reducing erosion.

Level Spreader: Level spreaders are outlets for dikes and flow channels consisting of excavated depressions that convert a concentrated runoff into a diffused flow.

Rock Outlet Protection: Rock protection placed at a storm water outlet can reduce the depth and velocity of water to help minimize scouring and down stream erosion.

Subsurface Drain: Subsurface drains transport runoff to an area where the water can be managed effectively. Drains are made of tile, pipe or tubing.

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Best Management Practices
BMPs

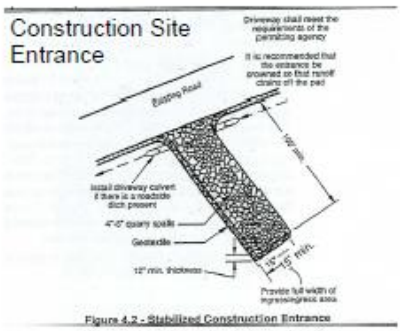

Figure 4.2 - Stabilized Construction Entrance

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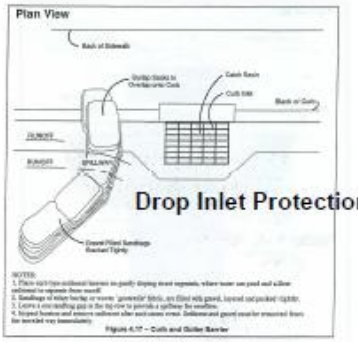
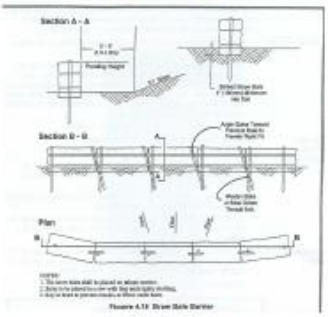
Best Management Practices
BMPs



Straw Bales



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Best Management Practices
BMPs


Diversion dikes can be used to contain storm water onsite


Coarse gravel and cinder blocks are often used to keep sediment and other pollutants out of storm drains

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Best Management Practices
BMPs

Drop Inlet Protection

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Best Management Practices
BMPs

Stabilized construction entrances allow dirt to be removed from tire treads and collected as trucks leave construction sites

Natural vegetation is protected from heavy equipment with safety fencing

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Best Management Practices
BMPs

A grass-lined channel can be used to filter and convey runoff

Drop inlet protection

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