# Storm Water Pollution Prevention Plan

For

Residential Subdivision Development

Evergreen Meadows 2nd Addition

Including City of Moorhead Engineering Projects

06-A6-6 Evergreen Meadows 2nd Underground Utilities

06-A2-6 Evergreen Meadows 2nd Street Improvements

Project Location

West of County Highway 7

Between 40th Ave S and 50th Ave S

NE ¼ of Section 27, Township 139 N, Range 48 W

Prepared June 2006

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SINGLE FAMILY RESIDENTIAL CONSTRUCTION EROSION/SEDIMENT CONTROL STANDARDS

MINNESOTA GENERAL STORM WATER PERMIT FOR CONSTRUCTION ACTIVITY (MN R100001)

INSPECTION LOG

## 1. Introduction

a. Description of Storm Water Prevention Plan (SWPPP) The purpose of this SWPPP is to provide the following:

i. Define the characteristics of the site and the type of construction that will occur.
ii. Describe the site plan for the planned construction.
iii. Describe practices to be implemented to control erosion and prevent the release of pollutants into storm water.
iv. Establish an implementation schedule that ensures the effectiveness of planned practices to reduce erosion, sediment and pollutant levels in storm water discharged from the site.
v. Describe the final stabilization practices and maintenance responsibilities allowing for termination of this permit.

b. SWPPP Content

i. Identification of the SWPPP coordinator and description of duties.
ii. Identification of the storm water pollution prevention team that will assist in implementing the SWPPP during construction.
iii. Description of existing site conditions including existing land use and any nearby Waters of The State.
iv. Identification of the receiving water body for runoff from this project.
v. Identification of drainage area and potential storm water contaminants.
vi. Description of storm water management controls and BMPs necessary to prevent or reduce erosion, sediment and pollutants in storm water discharge from this site.
vii. Description of project monitoring and how BMPs will be coordinated with construction activities.
viii. Implementation schedule and provisions for amendments to the plan.

## 2. SWPPP Coordinator and Duties

The City of Moorhead will make Application for General Storm Water Permit for Construction Activity (MN R100001) and be listed as "Owner" for the purposes of permit application. The City will continue that role until the Underground Utilities and Street Paving Projects are complete. During that period "Permit Transfer Modifications" will be submitted to assign "Contractor" responsibilities as co-permittee for the appropriate project work.

Following completion of street paving, installation and acceptance of the grass filter strips adjacent to the curb lines, the City will complete a "Permit Transfer Modification" transferring the "Owner" designation and responsibilities to the Developer during housing construction. At that time, the City and its Contractor's will no longer be responsible for the permit or best management practices in place.

The City will retain ownership and maintenance responsibility for any storm water structures constructed as part of the project.

The responsibility for BMP maintenance of filter strips and inlet protection will be Developer's until the area meets the 70 percent cover required of the NPDES permit. The developer will be responsible to submit "Subdivision Registration" forms to the MPCA and terminating his responsibilities as project owner per the terms of the permit.

A construction site SWPPP Erosion Control (EC) Supervisor will be provided by the respective Underground Utility and Street Paving Contractors during construction activities and until their responsibilities have been transferred or terminated under terms of the MPCA permit. The EC Supervisor will be identified by name at the pre-construction conference, and a contact cell phone number will be made available. If the EC Supervisor is unable to perform the required duties due to illness, vacation or some other unforeseen event, and EC Supervisor designated shall be responsible for all parts of this document.

The EC supervisor will address issues that arise during construction that impact the waters of the State of Minnesota. The Supervisor will notify the proper regulatory officials as listed below.

| **Agency** | **Permit** | **Name** | **Phone #** |
|---|---|---|---|
| State Duty Officer | MPCA | | 800-422-0798 |
| MPCA Detroit Lakes | MPCA | Joyce Cieluch | 218-847-1519 |
| City of Moorhead Project Eng | | Thomas Trowbridge | 299-9390 |
| City of Moorhead Storm Water | | Andrea Crabtree | 299-5386 |

It will be the responsibility of the respective Contractor's EC Supervisor to implement the SWPPP during construction and maintain a quality control program. This includes BMPs undertaken by previous Contractors as part of the SWPPP. The EC Supervisor will:

a. Oversee maintenance practices identified as BMPs in the SWPPP.
b. Implement SWPPP and BMP training for all parties involved in the construction.
c. Inspect or monitor activities related to the SWPPP as needed.
d. Identify additional potential sources of pollutants not included in the SWPPP and take appropriate action to add them to the plan.
e. Ensure that any changes made to construction plans are consistent with the goals of the SWPPP.
f. To aid in the implementation of the SWPPP, random site visits will occur by the design team as well as an inspector on-site.

**3. Facility Description**

a. Site Location

The project is located south of the intersection of County Highway 7 and 40$^{th}$ Ave S in the NE ¼ of Section 27, Township 139N, Range 48W.

Figure 1 (Attached at the end of this document) is a US Quad Map showing the project location.

Figure 2 (Attached at the end of this document) is an area map showing the project location.

b. Construction Type

This is a residential subdivision construction project. Sanitary and storm water sewer systems will be installed. Streets with curb and gutter will be constructed and paved. Homes and driveways will be constructed.

c. Existing Site Conditions

- Land Use/Zoning

The existing area is former farmland that has been annexed into the City of Moorhead. The area was initially zoned TZ, Transition District, which is intended to provide interim zoning regulations until development occurs. Evergreen Meadows Second Addition has been rezoned R1 for Single Family Residential development (one service per lot).

- Soil and Groundwater Conditions

According to the Clay County Soil Survey, the predominant soil type in the project area is the Bearden silty clay loam, with smaller areas of Colvin silty clay loam. These soils generally have moderately poor to poor drainage, shallow seasonal high water tables and low strength. For these reasons, they are considered poor material for constructing roads and are unsuitable fill for basements. Typically, these soils present a high risk of corrosion to uncoated steel pipe, and low risk of corrosion to concrete. A total of 3 soil borings were performed by Midwest Testing Laboratory in March of 2006. These borings indicate that there is water bearing silt layer with fat clay layers above and below the silt. The silt layer varies from 7' to 15' below the surface and averages approximately 6' in depth. Construction of a pond is feasible, but the design should accommodate practices to deal with the water bearing silt layer.

- Public Access/Streets

The proposed development has access to 40$^{th}$ Avenue South to the north and 40$^{th}$ Street South to the east. The City is constructing an extension of 40$^{th}$ Avenue South that will provide improved access when completed (expected to finish in 2006). The County would be responsible for any upgrades to 40$^{th}$ Street South (CSAH 7). Any future improvements to 40$^{th}$ Avenue and 40$^{th}$ Street will follow the standards for collector streets. All other streets in the project area are local streets.

d. Site Plan

Figure 3 are site plan sheets showing project boundaries, existing roadways, proposed roadways, ditches, storm system inlets, proposed erosion and sediment control measures.

The proposed new subdivision is 18.25 acres with and impervious area of approximately 8 acres.

Soils excavated from the proposed project will be placed back on the site. All exposed soils disturbed within 200 feet of any ditch, pond or curb and gutter system will receive temporary or permanent stabilization seeding as soon as possible.

e. Storm Water Drainage Characteristics

The property is generally level, with an elevation of approximately 911 feet. The proposed 40th Street South and 40th Avenue South improvements will include storm sewer piping along with a pumping station. The first of two detention ponds has been built with the second pond to be constructed. These ponds have been sized to receive stormwater from Evergreen Meadows First and Second Additions along with other future development. The ponds discharge via a pump station and force main to the ditch along CSAH 7.

Six-inch drain tile will be installed behind the curb on both sides of the street and connected to the storm sewer system. This will protect the streets by removing subsurface moisture, and will provide residents with an underground outlet for sump pumps.

## 4. Potential Sources of Storm Water Contamination

The purpose of this section is to identify pollutants that could impact storm water during and after construction of this project.

a. Significant Materials Inventory

Pollutants that result from clearing, grading, excavation, and road building materials and have the potential to be present in storm water runoff are listed in the following table. The table includes information regarding material type, chemical and physical description and specific regulated storm water pollutants associated with each material.

| SIGNIFICANT MATERIALS INVENTORY | | | | |
|---|---|---|---|---|
| **Material/Chemical** | **Physical Description** | **Storm Water Pollutants** | **Location** | **Process for Containment** |
| Pesticides (insecticides, fungicides, herbicides, rodenticides | Various colored to colorless liquids, powders, pellets or grains | Chlorinated hydrocarbons, organophosphates, carbamates and arsenic | Herbicides used for noxious weed control | Certified applicator |
| Permanent Seeding Fertilizer | Liquid or solid grains, nitrogen and phosphorus | Nitrogen, phosphorus, organic substrate | Permanent cover - newly seeded areas | Organic base, slow release forms only, tied up in compost |
| Temporary Seeding Fertilizer | Liquid or solid grains, nitrogen and | Nitrogen, phosphorus, organic substrate | Rapid stabilization areas, topsoil | Managed application, certified installers, |

| | | | | |
|---|---|---|---|---|
| | phosphorus | | berms, stockpiles | quick cover plant materials |
| Cleaning Solvents | Colorless, blue or yellow-green liquid | Perchloroethylene, methylene chloride, trichloroethylene, petroleum distillates | No equipment cleaning allowed in project limits | Tarps, monitor weather for rain and wind |
| Wastewater from construction | Equipment washing rinse water | Water soil, oil, grease and solids | Equipment washing not allowed in project limits | N/A |
| Asphalt | Black solid | Oil, petroleum distillates | Streets, roofing | Excess material to be removed for project limits |
| Concrete | White solid | Limestone, sand | Railroad tracks, culverts, curb and gutter, driveways, home foundations, masonry | Designated wash areas or complete haul removal |
| Glue, adhesives | White or yellow liquid | Polymers, epoxies | Expansion joints, home construction | Empty container management |
| Gypsum board | White solid or powder | Calcium carbonate | Home construction | Good house keeping during construction |
| Joint compound, wall and ceiling texture | White-grey paste or powder | Silica, calcium carbonate | Home construction | Good house keeping during construction |
| Paints | Various colored liquids | Metal oxides, Stoddard solvent, talc calcium carbonate, arsenic | Roadway striping, home construction | Empty container management |
| Curing compounds | Creamy white liquid | Naphtha | Curb and gutter | Follow manufacturers recommendations |
| Wood preservatives | Clear amber or dark brown liquids | Stoddard solvent, petroleum distillates, arsenic, copper, chromium | Timber pads, railroad tracks, home construction | Oil absorbing diapers, trained personnel |
| Hydraulic oil/fluids | Brown oily petroleum hydrocarbon | Mineral oil | Random leaks broken hoses | Oil absorbing diapers, trained personnel |
| Gasoline | Colorless pale brown or pink liquids | Petroleum hydrocarbon, benzene, ethyl benzene, toluene, xylene, MTBE | Secondary containment | Oil absorbing diapers, trained personnel |
| Diesel fuel | Clear blue-green to yellow liquids | Petroleum distillates, oil & grease, naphthalene, xylene | Secondary containment | Oil absorbing diapers, trained personnel |
| Kerosene | Pale yellow liquid petroleum hydrocarbon | Coal oil, petroleum distillates | Secondary containment | Oil absorbing diapers, trained personnel |
| Anti-freeze/coolant | Clear green/yellow liquids | Ethylene glycol, propylene glycol | Random leaks and broken hoses | Trained personnel |
| Soil erosion | Solid particles | Soil, sediment | Project limits | Prevention and Stabilization measures within prescribed periods |

b. Potential Locations for Storm Water Contamination

The following areas were identified and evaluated as potential sources of storm water contamination:

- Storm System Inlets
- Curb & Gutter
- Access Roads
- Adjacent Agricultural Land
- Material Storage
- Individual Home Construction Lots
- Construction Soil Stock Piles

**5. Storm Water Pollution Prevention Controls**

The purpose of this section is to identify the types of temporary and permanent erosion and sediment controls that will be used for this project. The following controls will provide soil stabilization for disturbed areas and structural controls to prevent erosion, divert runoff and remove sediment.

a. Temporary Erosion and Sediment Control During Underground Utility Installation Phase

A list of stabilization procedures has been developed and locations where they are needed are shown on the project plan sheets "Erosion & Pollution Control Plan (Sheet 10)", "Storm Sewer Layout (Sheet 6)", "Erosion & Pollution Control Details (Sheet 11)" and "Storm Sewer Details (Sheet 3)". Specifically the Contractor will provide the following:

- Prior to work commencing on the project, a wood chop or rock construction entrance will be installed on 39th Street South (as shown on Plan Sheet 10). This will be maintained throughout the construction project.
- Haul routes during construction are restricted to County Road 7 and 41st Ave S.
- Haul routes shall be swept at least once per week during construction.
- At the end of each day the Contractor shall remove material that has been tracked onto adjacent paved roads.
- At the beginning of the project activity the Contractor will install silt fence as shown on the Erosion & Pollution Control Plan (Sheet 10).
- Topsoil has been stripped from most of the lots and placed in stockpiles each stockpile area shall have a silt fence or wattle (sediment log) installed encircling the stockpile. Note the temporary topsoil stockpile will not need protection if the material will be stored for less than 7 days.
- All storm sewer inlets will receive Type A or B inlet protection.
- A concrete truck washout area shall be constructed, designated and maintained.
- As shown on the project plans all rear-yard inlets will be protected (Plan Sheet 10).

b. Temporary Erosion and Sediment Control During Curb, Gutter, Paving and Grading Phase

A tabulated list of stabilization procedures has been developed and locations where they are needed are shown on the project plan sheets "Erosion & Pollution Control (Sheet 12)", "Erosion & Pollution Control Details (Sheet 13)". In addition the measures listed above in Temporary Erosion and Sediment Control During Underground Utility Installation Phase must also be maintained during this phase of the project. During this phase of the project additional erosion and sediment control measures will be required as follows:

- Haul routes during construction are restricted to County Road 7 and 41st Ave S.
- A concrete truck washout area must be prepared, signed and enforced.
- After curbs are installed catch basin inlets within the curb line will receive Type C inlet protection. Until that time Type A or B inlet protection must be maintained.
- Maintain rear-yard inlet protection during grading and seeding operations.
- Haul routes shall be swept at least once per week during construction.
- The temporary topsoil stockpile shall be placed in the right of way at a minimum of 6".
- Daily removal of tracked sediments is required from any paved areas.
- After paving is completed, rear-yards and boulevard right-of-ways shall be seeded, mulched or receive fiber blankets per specifications and plan sheets.

c. Temporary Erosion and Sediment Control During Home Building Phase

During the home building phase the Developer and Lot Owner/Contractor have responsibility to maintain any erosion and sediment control measures put in place during previous phases. In addition they must comply with the Single Family Residential Construction Erosion/Sediment Control Standards by doing the following:

- If the above area has been disturbed or is absent of grass, a silt fence or wattle (sediment logs) must be installed along the curb line.
- A construction entrance must be installed and maintained throughout the home building phase, or until the driveway is installed if the construction entrance is located where the driveway will be installed.
- Soil stockpiles must receive either silt fence or wattles (sediment logs) to capture erosion and sediment runoff.
- If storm water drains from the lot under construction onto adjacent property, then the lot perimeter must receive silt fence or wattles (sediment logs) to capture any sediments eroding from the construction site.
- During home building good house keeping measures must be implemented to keep garbage, building materials and any hazardous substances from leaving the construction site.
- At the time of final grading for lawn installation the boulevard right-of-way must receive approved erosion and sediment controls within 5 days of completing grading work.

The following soil exposure condition table* will be used during all phases of construction, including stockpiles of clay and topsoil.

| Type or Condition of Slope | Areas of Inactivity --Working Days Until Area Must be Stabilized |
|---|---|
| Steeper than 3:1 | 7 days |
| 10:1 to 3:1 | 14 days |
| Flatter than 10:1 | 21 days |
| Ditch within 200 feet of "Water of the State" | Begin within 24 hours of ditch connection to "Water of the State" – stabilization must be completed within 5 working days |

*This is the maximum time that an area within 200 feet of a "Water of the State" can remain exposed without a vegetative cover. **The term "Waters of the State" also includes curbs, gutters, storm system inlets and temporary or permanent ditches that are directly connected to a "Water of the State".** The above as defined by MN NPDES/SDS General Storm Water Permit for Construction Activity MN R100001.

Site Control Measures and Best Management Practices for all phases of construction:

1. Keep excavation and soil disturbing activities such as grading to a minimum.
2. Install silt fence or wattles (sediment logs) around all clay and topsoil stockpiles.
3. Retain existing vegetation when possible.
4. Silt fences and wattles (sediment logs) need to be cleaned, replaced or supplemented when they reach 1/3 capacity (1/3 of height). These actions must occur within 24 hours of discovery or as soon as field conditions allow access to the site.
5. Maintain construction entrances so that sediments are not tracked onto streets. Sweep any sediment tracked onto streets within 24 hours of discovery. This includes construction entrances to individual lots where home building is underway. Sweepers that "fling" material into the air rather picking up material will not be allowed.
6. Have materials on-site to contain and cleanup any contaminants leaked onto the ground during construction.
7. Cover or store materials (particularly fuels) so that they are not at risk to contaminate the project area during rainfall or storm water flow.
8. Water will be used for dust control on this project.
9. Good housekeeping measures are to be implemented to eliminate materials, materials packaging and other litter from leaving the project area. This is especially important during home construction.
10. Inlet protection will remain in place until 70 percent of the lots are sold and stabilized. Care will be taken to avoid disturbing protected inlets.

11. Grass filter strips will be maintained adjacent to the curb line on all undeveloped lots.
12. Care will be taken to avoid disturbing BMPs in place such as silt fence or grass filter strips along the curb lines during home construction. A single rocked or gravel construction entrance will be designated and maintained into each lot under construction.
13. De-watering of trenches or basins must be done in a manner that does not cause erosion, scour or deposit sediment in curbs, gutters, storm system inlets and temporary or permanent ditches that are directly connected to a "Water of the State". The discharge must be dispersed over rock riprap, sand bags, plastic sheeting or other accepted energy dissipating measures. Use of a temporary sediment basin is preferred.
14. Specify and allow concrete truck washout only in designated area.

d. Permanent Erosion Control

A new sediment control pond will be used to meet water quantity and quality standards.

e. Coordination of Best Management Practices (BMPs) During Construction

Structural BMPs will be coordinated with construction activities so that BMPs are in place prior to soil disruption. The following BMPs will be coordinated with construction activity.

i. Silt fence or wattles (sediment logs) around the soil stockpiles will be installed prior to stockpiling material with seeding of the grass filter strip completed immediately following completion of stockpiling.
ii. Access roads will be stabilized prior to construction to prevent tracking sediment from the project area.
iii. Inlets will be protected per specifications as they are constructed. Existing inlets will be protected prior to disruption of any soil in the project area.
iv. All BMPs will be maintained in place until project area is stabilized.
v. Once grading in an area has ceased, temporary or permanent stabilization/seeding will occur per the timetable outlined above.

f. Certification of Compliance with Federal and State Regulations

This SWPPP reflects the requirements of NPDES for storm water management and erosion and sediment control for construction. To ensure compliance, this plan was prepared in accordance with the University of Minnesota Design Training Certification Program, MnDOT specifications used in the project plans and specifications and the Memorandum of Understanding between MnDOT and MPCA.

## 6. Maintenance of BMPs and Inspection Procedures

a. Inspections

Visual inspection of all cleared and graded areas within the project site will be performed daily. Inspections will also be performed within 24 hours after a rainfall event greater than 0.5 inches.

Formal written inspections will be performed weekly in accordance with the NPDES permit on the form provided by the Owner. The EC Supervisor or his/her documented designated storm water team members will conduct the weekly inspections. **Copies of the written weekly inspections must be submitted along with the monthly pay request. No payments will be made without submitting copies of the inspection records.**

Records of each inspection and maintenance activity shall include:

a. Date and time of inspection.
b. Name of person conducting inspection.
c. Findings of inspections, including recommendations for corrective actions.
d. Corrective actions undertaken (including dates, times and party completing maintenance activity).
e. Date and amount of all rainfall amounts greater than 0.5 inches in 24 hours.
f. If construction activities or design modifications are made to the site plan, which could impact storm water, this SWPPP will be amended appropriately. The amended SWPPP will have a description of the new activities that contribute to the increased pollutant loading and the planned source control measures.
g. Where parts of the project area have undergone final stabilization, those parts may have inspections reduced to once per month. Areas not yet stabilized will still need weekly inspection.
h. Where work has been suspended due to frozen ground the required inspections and maintenance must take place as soon as runoff occurs at the site or prior to resuming construction, which ever comes first.
i. Erosion prevention and sedimentation control BMPs implemented on this project must be inspected to ensure integrity and effectiveness. Non-functional BMPs must be repaired, replaced, or supplemented with functional BMPs.

b. BMP Maintenance

Each respective Contractor is responsible for maintaining all BMPs during construction of underground utilities and installation of curb, gutter and paving. The appropriate Contractor is responsible for establishment and maintenance of stabilized grass filter strips adjacent to curb lines and outlined in the particular project plans & specifications and meeting the requirements of the NPDES permit.

After grass filter strips installed adjacent to the curb lines have been established and accepted by the City, the City will complete a "Permit Transfer Modification" transferring the "Owner and Contractor" designation and responsibilities to the Developer during housing construction. The City will at that time end the responsibility of the City and its Contractor regarding the project area. The City will retain ownership and maintenance of the storm water structures constructed as part of the project.

The responsibility for BMP maintenance of filter strips and inlet protection will be Developer's until the area meets the 70 percent cover requirement of the NPDES permit. The Developer will bury or remove accumulated concrete truck wash out site at the end of home construction activity and restore the wash out area. The developer will be responsible for informing the individual lot owners/home builders of their responsibility to submit "Subdivision Registration" forms to the MPCA an terminating his/her responsibilities as project owner per the terms of the permit (after all the lots are sold).