Stormwater Pollution Prevention Plan
For
Horizon Shores 7th Addition
Street & Underground Utilities

City of Moorhead Engineering Project
Engineering No. 09-A6-3
Legal No. A6-3-2009

Project Location
Ridgewood Boulevard & 40th Ave South

Located in the NW ¼ of Section 14,
Township 139N, Range 48W

Prepared August 2009

TABLE OF CONTENTS

1. Introduction

1. Description of Stormwater 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 stormwater.
    iv. Establish an implementation schedule that ensures the effectiveness of planned practices to reduce erosion, sediment and pollutant levels in stormwater discharged from the site.
    v. Describe the final stabilization practices and maintenance responsibilities allowing for termination of this permit.

2. SWPPP Content
    i. Identification of the SWPPP coordinator and description of duties.
    ii. Identification of the stormwater 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 stormwater contaminants.
    vi. Description of stormwater management controls and BMPs necessary to prevent or reduce erosion, sediment and pollutants in stormwater 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 Stormwater 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 Project is complete. During that period permit modifications may be submitted to assign "Contractor" responsibilities as co-permittee for the appropriate project work.

Following completion of street paving, installation and acceptance of grass filter strips adjacent to the curb lines, the City will complete a permit modification transferring the "Owner" and "Contractor" designation and responsibilities to the Developer during residential construction. At that time the City and its Contractor's are no longer responsible for the permit or best management practices in place. The City will retain ownership and maintenance responsibility for any stormwater structures constructed as part of the project. The responsibility

for BMP maintenance of filter strips and inlet protection will be the Developer's until the area meets the 70 percent cover requirement of the NPDES permit.

A construction site SWPPP Erosion Control (EC) Supervisor will be provided by the Contractor during construction activities and until their responsibilities have been transferred or terminated under terms of the MPCA Permit.
The EC Supervisor for will be identified by name at the pre-construction conference, and a contact cell phone number will be made available.

The EC Supervisor will provide the City of Moorhead with the following information as required in the MPCA General Stormwater Permit.

i. Documentation must be in or with the SWPPP or be available within 72 hours upon request.
ii. Names of the personnel associated with this project that are required to be trained per Part III.A.2.a of this permit.
iii. Dates of training and name of instructor(s) and entity providing training.
iv. Content of training course or workshop (including number of hours of training)

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	218-299-9390
City of Moorhead Stormwater		Andrea Crabtree Nayes	218-299-5387

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 in the southeast corner of Ridgewood Boulevard and 40th Ave South, in the NW ¼ of Section 14 within 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 an underground utility and street paving project. Utilities will be installed per plans and specifications. Streets with curb and gutter will be constructed and paved.

c. Existing Site Conditions (Feasibility Study)

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. The properties adjacent to Horizon Shores 7th addition include Horizon Shores 2nd addition to the west, the Horizon Shores regional park and ponds to the south and west, and undeveloped land to the east, north, and south that is expected to develop as commercial and residential property.

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 materials for constructing roads and are unsuitable for full basements. Typically, these soils present a high risk of corrosion to uncoated steel pipe, and a low risk of corrosion to concrete.

Past soil borings performed by Midwest Testing Laboratory have indicated that there are brown and light-gray, loose water-bearing silt layers with fat clay layers. The silt layer varies from 8 ft to 14 ft below the surface and averages approximately 4 ft in depth. The borings also indicate that the estimated ground water level varies from an elevation of 899 to 902, while the existing topography varies from 906 to 908.

Public Access/Streets

The proposed development will have direct access to the collector streets of 40th St S and 24th Ave S at final completion. Internal streets within the sub-division shall be classified as local streets and shall conform to requirements as outlined in the City policy.

d. Site Plan

Figure 3 are plan sheets showing project boundaries, existing roadways, proposed underground utilities, storm system inlets, proposed erosion and sediment control measures for the project.

The proposed new development is 17.5 acres with and impervious area of approximately 5.25 acres. The stormwater will drain into the existing stormwater pond constructed during a previous phase of Horizon Shores.

e. Stormwater Drainage Characteristics

The property is generally level and drains northwesterly with an elevation ranging from 905 to 910. The drainage in this area is conveyed by above ground ditches and underground pipe to the East Regional Detention Pond for treatment of stormwater runoff prior to discharge through Storm Lift # 7 to Buffalo-Red River Watershed District Ditch # 47 than to the Red River of the North. The Red River is listed as an impaired water body, currently there is not a Total Daily Maximum Load (TMDL) implementation plan in place.

4. Potential Sources of Stormwater Contamination

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

a. Significant Materials Inventory

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

SIGNIFICANT MATERIALS INVENTORY				
Material/Chemical	**Physical Description**	**Stormwater 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 phosphorus	Nitrogen, phosphorus, organic substrate	Rapid stabilization areas, topsoil berms, stockpiles	Managed application, certified installers, quick cover plant materials
Cleaning Solvents	Colorless, blue or	Perchloroethylene,	No equipment	Tarps, monitor

	yellow-green liquid	methylene chloride, trichloroethylene, petroleum distillates	cleaning allowed in project limits	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
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
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 Stormwater Contamination

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

a. Storm System Inlets
b. Ditches
c. Curb & Gutter
d. Material Storage
e. Construction Soil Stock Piles
f. Adjacent farm fields
g. Adjacent residential development

5. Stormwater 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

Stabilization procedures have been developed and shown on project Plan Sheet No.3 Erosion Control/Turf Establishment.

Specifically, the Contractor will provide the following:

1. Prior to construction commencing, silt fence shall be placed as shown on the Plan Sheet.
2. Prior to construction commencing construction entrance(s) shall be constructed as plans specify. The construction entrance(s) shall be maintained until paving is completed.
3. A concrete truck washout area shall be constructed, designated and maintained throughout the project.
4. Daily removal of tracked sediments is required on streets adjacent to the project area.
5. Haul Routes shall be swept at least once a week during construction.
    - Haul Routes

      The following City Streets are designated haul routes

      40^{th} St S from 12^{th} Ave S to 24^{th} Ave S

      12^{th} Ave S from SE Main Ave to 40^{th} St S

      34^{th} St S from TH10 to 12^{th} Ave S

      SE Main Ave from 20^{th}/21^{st} St S to I-94

      20^{th}/21^{st} St S from TH 10 to SE Main Ave
6. During construction, Type A, B or C inlet protection will be installed in storm sewer inlets.
7. When ten (10) or more acres of disturbed soil drain to a common location, a temporary sediment basin must be provided prior to the runoff leaving the construction site or entering surface waters. The basins must be designed and constructed to the MPCA General Stormwater permit specifications (Part III.B).
8. Permanent stockpiles of clay or topsoil must be stabilized no later than 14 days.
9. Temporary soil stockpiles must have effective sediment controls, and cannot be placed in surface waters, including stormwater conveyances such as curb and gutter systems, or conduits and ditches unless there is a bypass in place for the stormwater. Temporary stockpiles without significant silt, clay or organic components (e.g., sand) are exempt from stabilization.
10. The normal wetted perimeter of any temporary or permanent drainage ditch or swale that drains water from any portion of the construction site, or diverts water around the site, 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 surface water.

    Stabilization of the remaining portions of any temporary or permanent ditches or swales must be complete within 14 days after connecting to surface water and construction in that portion of the ditch has

temporarily or permanently ceased.

Temporary or permanent ditches or swales that are being used as a sediment containment system (with properly designed rock ditch checks, bio-rolls, silt dikes etc.) do not need to be stabilized. These areas must be stabilized within 24 hours after no longer being used as a sediment containment system. Pipe outlets must be provided with temporary or permanent energy dissipation within 24 hours after connection to surface water.

11. Prior to acceptance of the project by the Owner, the Contractor shall clean sediments from inlets, storm sewer pipes, culverts and ditches.

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

Stabilization procedures have been developed and shown on project Plan Sheet No.3. 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:

1. Temporary topsoil stockpiles shall be used before the permanent topsoil stockpiles.
2. During construction, Type C inlet protection will be installed in storm sewer inlets.
3. The concrete washout area must be maintained during construction. At the end of the project, the Contractor shall remove all concrete. The developer may request that the concrete washout area remain in place for residential construction.
4. After paving is completed, designated rear-yard and all boulevards (street right-of-ways) shall be seeded, mulched or receive fiber blankets per specifications as shown on Plan Sheet No. 3.
5. Prior to acceptance of the project by the Owner, the Contractor shall clean sediments from inlets, storm sewer pipes, culverts and ditches.

c. Temporary Erosion and Sediment Control During Residential Construction Phase

During the residential building phase the Developer and Lot Owner/Contractor have responsibility to maintain any erosion and sediment control measures put in place during pervious phases. In addition they **must** comply with the Residential Erosion Sediment Control Standards and the MPCA General Stormwater Permit for Construction Activity (MN R100001).

1. Any erosion control devices damaged during construction must be repaired or replaced within 24 hours of discovery or when site conditions allow.

2. Each building site must have a designated construction entrance.
3. Daily removal of tracked sediments from the paved streets is required.
4. If dewatering is necessary use a filter bag, sock or a temporary sediment basin.
5. If a regional concrete washout area is not provided than the site must constructed a washout area.
6. Weekly site inspections of BMPs must be performed and documented. The City of Moorhead and the MPCA also require that a site inspection be conducted after every rain event of 0.5 inches or more within a 24 hour period.
7. The permit holder is responsible for erosion control devices year round until the permit is closed. See Residential Standards for Winter Stabilization.
8. Permits

   The lot owner and/or contractor must complete and submit the following permits.

   1. City of Moorhead Erosion/Sediment Control Permit
   2. Minnesota Pollution Control Agency (MPCA) Notice of Termination/ Permit Modification.

   The lot owner and/or contractor must submit a signed copy of the MPCA Notice of Termination/Permit Modification form along with the City of Moorhead's Grading/Sediment Control permit to building codes located in City Hall. The original signed Notice of Termination/Permit Modification form must be submitted to the MPCA. The permits are located on the City of Moorhead's website at www.cityofmoorhead.com.

d. Exposed Soil Areas

All exposed soil areas must be stabilized as soon as possible 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. Temporary stockpiles without significant silt, clay or organic components (e.g., clean aggregate stockpiles, demolition concrete stockpiles, sand stockpiles) and the constructed base components of roads, parking lots and similar surfaces are exempt from this requirement but must comply with Part IV.C.5 of the MPCA General Stormwater Permit for Construction Activity (MN R100001).

e. 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 bio-rolls (sediment logs) around all clay and topsoil stockpiles.
3. Retain existing vegetation when possible.
4. Silt fences and bio-rolls (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. Have materials on-site to contain and cleanup any contaminants leaked onto the ground during construction.
6. Cover or store materials (particularly fuels) so that they are not at risk to contaminate the project area during rainfall or stormwater flow.
7. Have appropriate containers for disposal of construction debris.
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 debris from leaving the project area.
10. Inlet protection will remain in place until 70 percent of the adjacent disturbed soil areas are stabilized. Care will be taken to avoid disturbing protected inlets.
11. 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 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.
12. Specify and allow concrete truck washout only in designated area.

f. Permanent Erosion Control

Stormwater runoff will be directed to the Horizon Shores East Regional Detention Pond. The existing permanent sediment control pond will be used to meet water quantity and quality standards. All lots will be vegetated with permanent cover as homes are built.

g. 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.

ii. Silt fence or bio-rolls (sediment logs) around any soil stockpiles will be installed prior to stockpiling material.
iii. Access roads will be stabilized prior to construction to prevent tracking sediment from the project area.
iv. Existing inlets will be protected prior to disruption of any soil or removal of impervious surfaces in the project area.
v. All BMPs will be maintained in place until the project area is stabilized.
vi. Once grading in an area has ceased, temporary or permanent stabilization will occur no later than 14 days.

h. Certification of Compliance with Federal and State Regulations

This SWPPP reflects the requirements of NPDES for stormwater 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 and recorded on the attached MPCA Sample Maintenance Records Form.

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 stormwater 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 stormwater, 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.

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 are installed adjacent to the curb lines and accepted by the City, the City will complete a Notice of Termination/Permit Modification transferring the "Owner and Contractor" designation and responsibilities to the Developer during residential 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 stormwater structures constructed as part of the project.

The responsibility for BMP maintenance of grass 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 remove the accumulated concrete at the concrete truck washout site at the end of home construction activity and restore the washout area. The developer will be responsible for informing the individual lot owners/home builders of their responsibility to submit forms to the MPCA an terminating his/her responsibilities as project owner per the terms of the permit (after all the lots are sold).