Storm Water Pollution Prevention Plan
For
Residential Subdivision Development
Allyson Parkway 5th Addition

Including City of Moorhead Engineering Projects
05-A6-6 Allyson Parkway 5th Addition Underground Utilities
05-A2-12 Allyson Parkway 5th Addition Street Paving

Project Location
West of Hwy 75 South
North of 46th Avenue South
NW ¼ of Section 29, Township 139N, Range 48W

Prepared May 2005

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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" and "Contractor" 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 sedimentation basins and 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 be responsible for informing the individual lot owners/home builders of their responsibility to submit "Subdivision Registration" forms to 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. 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		Andy Bradshaw	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 west of Hwy 75 and north of 46th Avenue South in the NW ¼ of Section 29, Township 139N, and 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. An existing permanent storm water sedimentation pond will be used to treat storm water from the proposed subdivision.

c. Existing Site Conditions (from Feasibility Study April 2005, Tom Trowbridge)

i. 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 area platted as Allyson Parkway 5th Addition has been rezoned for low density housing. The adjacent properties to the north, west and south have been developed as low-density housing. To the east, the property is zoned TZ, and is anticipated to develop as a future church site.

ii. Soil and Groundwater Conditions

According to the Clay County Soil Survey, the soil types in the project area are classified as Fargo, Bearden and Hegne silty clays. These soils are generally considered to be poorly drained, and have apparent seasonal high water tables within 3 feet of the ground surface. The soils have low strength and are susceptible to frost action, making them poor material for use in road construction. Also, the soils are not considered suitable for buildings with full basements because of the frost action and wetness. Typically, these soils present a high risk of corrosion to uncoated steel pipe, and a low risk of corrosion to concrete.

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, and pond location for the 10.7-acre development. The ultimate estimated impervious area for the development is 4 acres.

(From Feasibility Study April 2005, Tom Trowbridge)

The proposed improvements will extend 6th Street from 44th Avenue to 46th Avenue South. The improvements also include the construction of Allyson Circle from 44th Avenue to a cul-de-sac, and 45th Avenue from Allyson Circle to another cul-de-sac.

The streets will be constructed consistent with the design requirements of other local streets. These design standards include a 36-foot wide street with surmountable concrete curb and gutter. The cul-de-sacs will have radii of 45 feet to the back of the curb. The initial typical section will consist of 6 inches of bituminous surfacing and 6 inches of aggregate base constructed over geotextile reinforcement with a 12-inch compacted subcut. Approximately 5 years after the initial street improvements, a final 1.5-inch bituminous surfacing course will be placed under a separate contract. This final bituminous overlay is not included in the scope of this report.

A bike path will be extended along the north side of 46th Avenue from approximately 4th Street to 6th Street. The typical bike path will be 8 feet wide with 4 inches of bituminous on 6 inches of aggregate base.

Concrete sidewalk will be installed along both sides of all streets up to the bulbs of cul-de-sacs in accordance with the City Code. The installation of sidewalks will be completed at a future date, as described in the Developer's Agreement. The cost of the sidewalk improvements is not included in the scope of this report.

The projected impervious area of new subdivision is 5.25 acres. The existing storm water pond for this subdivision drains into the City storm sewer system, then to the Red River of the North.

Excess topsoils excavated from the proposed project will be placed in a windrow on the front portion of each lot. A topsoil windrow will also be placed at the rear of lots 13 and 14. All exposed soils disturbed within 200 feet of any ditch, pond or curb and gutter system will receive temporary stabilization, or temporary/permanent seeding as soon as possible.

e. Storm Water Drainage Characteristics (from Feasibility Study April 2005, Tom Trowbridge)

The property is generally level, ranging in elevation from 903 to 906 feet. Historically, the drainage area included approximately 160 acres south of CR 76, and runoff was directed northwesterly through a drainage swale that ran through the 2nd and 4th Additions to the Red River of the North. The previous Allyson Parkway developments replaced the drainage swale with underground storm sewer improvements to a detention pond in the northwest corner of the planning area. In accordance with the Master Plan, the storm sewer and detention pond were designed to handle the fully developed condition for that part of the original drainage area located north of CR 76. The agricultural drainage from the south was diverted away from the Allyson additions by the 46th Avenue South Outlet Project in the summer of 2000. There are existing 18-inch storm sewers on 44th Avenue at Allyson Circle and 6th Street South that have been stubbed out to serve the proposed development.

As described previously, the trunk storm sewer and detention pond improvements from previous phases of Allyson Parkway were designed to include capacity for future development south to CR 76 and east to TH 75.

The trunk storm sewer system was designed for a 2-year design storm event. In accordance with the Master Plan, 18-inch lateral sewers will be extended down Allyson Circle and 6th Street.

6-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, road and home 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

SIGNIFICANT MATERIALS INVENTORY CONTINUED				
Material/Chemical	**Physical Description**	**Storm Water Pollutants**	**Location**	**Process for Containment**
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 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:

a. Storm System Inlets
b. Curb & Gutter
c. Access Roads

d. Adjacent Agricultural Land
e. Material Storage
f. Individual Home Construction Lots
g. 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 tabulated list of stabilization procedures has been developed and locations where they are needed are shown on the project plan sheets "Erosion Control Plan (Sheet 5)", "Erosion Control Details Sheet (Sheet 12)" and "Storm Sewer Detail Sheet (Sheet 15)". Specifically the Contractor will provide the following:

- Prior to work commencing on the project, rock construction entrances will be installed south of 44th Avenue South, at the intersections of 6th Street South and Allyson Court. A third rock construction entrance will be installed just north of 46th Avenue South, and west of 6th Street South (as shown on Plan Sheet 5). These will be maintained throughout the underground phase of construction.
- Haul routes during construction are restricted to those shown on Page 4 of the Plan Sheets for Underground Utilities.
- Haul routes (designated on Plan Sheet 4) shall be swept at least once per week during construction.
- Daily removal of tracked sediments is required from 44th Avenue South, and 6th Street South adjacent to the construction entrance. Daily removal of tracked sediments is also required on any paved portion of the haul route on 46th Avenue South, from the construction entrance to HWY 75.
- Prior to construction commencing, silt fence shall be placed along the back lots 1-7 between 44th Avenue South, and 46th Avenue South. A second silt fence will be installed south of the topsoil stockpile located along 6th Street South, (both as shown on Plan Sheet 5).
- A concrete truck washout area shall be constructed, designated and maintained just north of 46th Avenue South, and west of 6th Street South, (as shown on Plan Sheet 5).
- All storm sewer inlets will receive Type A or B inlet protection.
- Inlets not in the street right-of-way may require temporary seeding.

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 Control Plan (Sheet 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:

- Prior to work commencing on the project, rock construction entrances were installed south of 44th Avenue South, at the intersections of 6th Street South and Allyson Court. A third rock construction entrance was installed just north of 46th Avenue South, and west of 6th Street South (as shown on Plan Sheet 5). These will be maintained throughout the paving phase of construction. They may be removed at the time paving is completed.
- A concrete truck washout area shall be constructed, designated and maintained just north of 46th Avenue South, and west of 6th Street South, (as shown on Plan Sheet 5).
- After curbs are installed catch basin inlets within the curb lines 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 during construction are restricted to those shown on Page 2 of the Plan Sheets for Paving Plan.
- Haul routes (designated on Plan Sheet 2) shall be swept at least once per week during construction.
- Daily removal of tracked sediments is required from 44th Avenue South, and 6th Street South adjacent to the construction entrance. Daily removal of tracked sediments is also required on any paved portion of the haul route on 46th Avenue South, from the construction entrance to HWY 75.
- After paving is completed, designated rear-yards and all boulevards (street right-of-ways) shall be seeded, mulched or receive fiber blankets per specifications and Plan Sheet 3.

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:

- Install construction fencing to protect the boulevard right-of-way area that has been seeded.
- If the above area has been disturbed or is absent of grass, a silt fence or wattle (sediment logs) and the above construction fencing 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 and the adjacent lot has been graded, sodded or seeded, 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 received 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 seed with mulch filter strips between the topsoil stockpiles and curb.
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 by the end of each workday. 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 adjacent lots are permanently 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 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

An 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 and sold to residents.

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 at 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 the project area is stabilized.
v. Once grading in an area has ceased, temporary or permanent stabilization/seeding will occur per the timetable outlined above.
vi. Any ditch bottoms created or disturbed are to be seeded followed by sediment logs and erosion control fabric within 24 hours of grading completion.

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 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 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.

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 as outlined in the particular project plans & specifications and meeting the requirements of the NPDES permit.

At the end of curb, gutter and paving construction the Contractor is responsible for cleaning the storm inlets of any sediment deposited.

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 Contractors regarding the project area. The City will retain ownership and maintenance responsibility for any sedimentation basins and 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 at the 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 MPCA and terminating his responsibilities as project owner per the terms of the permit (after all the lots are sold).