



City of Duluth, the New UDC and Stormwater

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**City of Duluth - Public Works
Project Engineer, Utilities - Stormwater**

Stormwater Challenges

- Topography (proximity to lake)
- High Quality Streams (proximity to lake)
- Rock – Exposed and Shallow Bedrock
- Tight Cohesive Soils
- Wetlands
- Lake Superior / St. Louis River
- Cold Winters and Spring Melts
- Groundwater and Seeps
- Sump Pumps – (created water issues)
- Regulatory Changes – MS4 Permit, UDC, DNR



Clean Water Act

- Water Quality legislation since 1948 (WPCA)
- Clean Water Act of 1972
 - Point source discharges
- Strengthened in 1977
- Began targeting non-point in 1987

Required Permits - National Pollution Discharge Elimination System NPDES



Clean Water Act

- Early 1990's Phase 1 NPDES
 - Large Urban Areas
- 2003 Phase 2 MS4
 - Small and Medium cities
 - Institutions
 - Universities
- 2006 MS4 Permit
- Upcoming 2011 MS4 Permit

The MS4 permit addresses 6 minimum measures specified by the Federal Government and expanded and defined by the state. (64 defined BMPs) They are:

- Public Education
- Public Involvement
- Illicit Discharges
- **Construction Site Runoff Controls**
- **Post Construction Runoff Controls**
- Good Housekeeping Measures



MS4 - BMPs

Minimum Control Measure 4: CONSTRUCTION SITE STORMWATER RUNOFF CONTROL

Key to Unique BMP ID Numbers	Required BMP Title	Permit Reference
4a-1	Ordinance or other Regulatory Mechanism	V.G.4.a
4b-1	Construction Site Implementation of Erosion and Sediment Control BMPs	V.G.4.b
4c-1	Waste Controls for Construction Site Operators	V.G.4.c
4d-1	Procedure for Site Plan Review	V.G.4.d
4e-1	Establishment of Procedures for the Receipt and Consideration of Reports of Stormwater Noncompliance	V.G.4.e
4f-1	Establishment of Procedures for Site Inspections and Enforcement	V.G.4.f

Construction Site Stormwater Runoff Control

- Develop a program to address runoff from construction.
 - Erosion and sediment control ordinance
 - BMP's for construction site operators
 - Construction site waste control (truck wash out, chemicals, litter etc.)
 - Site plan review procedures looking at water quality impacts.



Post construction stormwater management in new development and redevelopment

- Ensure long term operation and maintenance of BMPs (can't dig 'em and leave 'em)
- Strategies including structural and non-structural BMPs



MS4 Requirements Implemented Through Duluth's UDC

- **UDC Section 50-18.1.E Storm Water Management and Erosion Control**
- **Goals and Purpose**
- The federal Clean Water Act (CWA) requires that municipal storm water discharges be authorized under the National Pollution Discharge Elimination System (NPDES). The city is allowed to discharge its storm water under coverage provided by a CWA Municipal Separate Storm Sewer System General Permit (MS4 Permit). As part of the requirements of the permit, the city is required to develop a Storm Water Pollution Prevention Program (MS4 Program) with specific goals requiring:
 - Non-degradation of all city waters;
 - Restrictions to special designated waters in the city, including: (a) Lake Superior (which is an MPCA designated Outstanding Value Resource Water with both restricted discharge and impaired water designations); (b) St. Louis River (which is an MPCA designated impaired water and area of concern; and (c) 16 trout streams designated by the DNR.
- The goals described in the city's MS4 Program pertaining to illicit discharge detection and elimination, construction-site runoff controls, and post-construction runoff treatment are incorporated into this Chapter by reference.
- The purpose of this Section 50-18.1.E is to establish regulations to comply with the federal CWA and the city's MS4 Permit and to achieve the goals stated in the city's MS4 Program

NRO-Erosion and Sediment Control

Table 50-18.1.E-1: Temporary Erosion and Sediment Controls				
Land Area Disturbed ▶ Development Plan Measures Required ▼	≤ 3,000 sq. ft. [1]	> 3,000 and ≤ 10,000 sq. ft. [2]	> 10,000 sq. ft. and < 1 acre	≥ 1 acre
Temporary erosion and sediment controls to prevent any off-site migration of sediment	✓			
Site specific Erosion and Sediment Control Plan (ESCP) and ESCP Permit from city engineer		✓	✓	
Site specific Storm Water Pollution Prevention Plan (SWPPP) meeting MPCA NPDES Permit requirements for Construction Activity				✓
MPCA NPDES/State Disposal System Construction Storm Water Permit				✓
MS4 Statement of Compliance from city engineer			✓	✓

[1] If the city engineer determines that the proposed development is in a vulnerable area and may cause the degradation of the waters connected to the city's storm water system, then the provisions applicable to land disturbance areas between 3,000 and 10,000 sq. ft. shall apply.
 [2] If land disturbed is within a mapped shorelands zone, an MS4 Statement of Compliance from the city engineer is also required.

NRO – Stormwater Management

Table 50-18.1.E-2: Permanent Water Quality and Discharge Rate Controls
 [See additional requirements for land in shorelands below]

Development Plan Measures required ▼	Total New Impervious Area Created or the Impervious Area Redeveloped ^{[1][2]}		
	≤ 3,000 sq. ft.	> 3,000 sq. ft. and < 1 acre ^[3]	≥ 1 acre ^[4]
Water quality treatment	NONE	✓	✓
Runoff rate controls		✓	✓
Drainage report		✓	✓
Site specific SWPPP			✓
MS4 Statement of Compliance from city engineer		✓	✓

[1] The total area is the sum of both the new and redeveloped impervious areas that are part of the common plan of development or sale.

[2] A pavement resurfacing or pavement rehabilitation project is exempt where: (a) no new impervious surface is created; and (b) no change to configuration of the site occurs; and (c) no change to land-use occurs.

[3] An individual one-family or two-family residence (that is not part of a common plan of development) with less than 10,000 sq. ft. of disturbed area and less than 7,500 sq. ft. of new impervious area is exempt.

[4] If the site contains an existing impervious surface area greater than 1 acre, the drainage report must include an evaluation of the feasibility of 50% total suspended solids removal on an annual basis across the entire site.

Stormwater Peak Discharge Rates

(Development Type and Location)

•Table 50.18.1.E-4: Discharge Rate Limits		
Location ► Type of Activity ▼	Post-Development Peak Flow Rates at Each Discharge Point Shall Not Exceed	
	Zone A -- Above Bluff Line	Zone B -- Below Bluff Line
New Development	75% of predevelopment peak flow rates for 10 and 100 year events; and 90% of predevelopment peak flow rate for 2 year event	Predevelopment peak flow rates for all storm events
Redevelopment	Predevelopment peak flow rates for all storm events	Predevelopment peak flow rates for all storm events

NRO – Stormwater Treatment

(Development Type and Size)

Table 50-18.1.E-3: Treatment Requirements		
Development Type	New and Existing Impervious surface	Required Treatment
New	< 1 acre	The first 1-in. Water Quality Volume (WQV) of rainfall or 80% Total Suspended Solids (TSS) removal ^[1]
New	> 1 acre	The first 1-in. WQV of rainfall ^[1]
Redevelopment	< 1 acre	10% reduction in impervious surface or 50% TSS removal
Redevelopment	> 1 acre	50% TSS removal
[1] Refer to additional requirements under Section 3(e)(iii) Pollutant Removal		

Additional Requirements



CITY OF DULUTH, MINNESOTA
PUBLIC WORKS & UTILITIES DEPARTMENT
ENGINEERING DIVISION

Engineering Guidelines

for
Professional Engineering Services
and
Developments

Updated September 14, 2010

- Preliminary Design Submittal
- Drainage Report Content and Format
- Infiltration/Filtration Worksheet
- SWPPP if > 1 acre
- Engineering Design Standards within R.O.W.
- MN Plumbing Code for Private Storm Sewer Infrastructure
- Record Drawings

NRO - Maps



NRO – Shoreland Standards

(Development Type and Location)

Table 50-18.1.D-1: Minimum Shoreland Area Standards			
Standards	General Development Waters ^[1]	Natural Environmental Waters	Coldwater River
Minimum setbacks from Ordinary High Water Level or highest known water level, whichever is higher			
<i>Residential structures</i>	75 ft.	150 ft.	200 ft.
<i>Public, institutional, and civic; commercial; and industrial structures</i>	200 ft.	200 ft.	200 ft.
<i>Commercial, mixed use, & industrial structures in the harbor, shown in Figure 50-18.1.-3</i>	25 ft.	N/A	N/A
<i>Impervious surfaces</i>	50 ft.	75 ft.	100 ft.
Lowest floor elevation above Ordinary High Water Level or highest known water level, whichever is higher	3 ft.		
Width of naturally vegetative buffer	50 ft.		
<p>[1] All Lake Superior shoreland is classified as general development waters.</p> <p>[2] 0 ft. setback for grain elevators, cranes, loading bins, and other equipment necessary for loading and unloading, including impervious surface necessary to support these activities.</p> <p>[3] Public trails no more than 10 ft. wide may be constructed within these setbacks, provided that a minimum amount of natural vegetation is removed and provided that permits are obtained from the DNR and MPCA, if required.</p>			

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- **Public Involvement**
- **Illicit Discharges**
- Construction Site Runoff Controls
- Post Construction Runoff Controls
- **Good Housekeeping Measures**



Example BMP, Content and Format

City of Duluth BMP 110

MS4 Name: CITY OF DULUTH

Minimum Control Measure: 1-PUBLIC EDUCATION AND OUTREACH

Unique BMP Identification Number: 1F BMP 110 adapted from 2003 SWPPP BMP 110

*BMP Title: General Surface Water Protection Education for City Staff
*BMP Description: Target Audience City Staff Description The City of Duluth recognizes that it is important that all City staff have an awareness of the importance of protecting the Cities natural water bodies from pollutants. Educational material and information will be provided to staff on a regular basis so that all City employees serve as outreach for the City's water protection program.
*Measurable Goals: <ul style="list-style-type: none">• Provide information brochure for staff – Stormwater –it is not just rain• Prepare internal press release in Garfield Gazette for staff• (4 times a year)• Prepare information for City meetings
*Timeline/Implementation Schedule: <ul style="list-style-type: none">• Brochure provided yearly• E-mail information – on-going• Write up in Garfield Gazette – six per year• Use of Stormwater DVD for staff training with field staff yearly.
Specific Components and Notes: <ul style="list-style-type: none">• Stormwater Pollution prevention DVD• Stormwater- it is not just rain• Information PowerPoint presentation• City Education Program.
*Responsible Party for this BMP: Name: Chris Kleist Department: Public Works and Utilities Phone: 218-730-4063 E-mail: ckleist@duluthmn.gov

**Indicates a REQUIRED field. Failure to complete any required field will result in rejection of the application due to incompleteness.*

Public Education and Outreach

- Distribute educational materials to community about impact of stormwater discharges and steps to reduce pollution.
- Develop an education program for six minimum control measures.
- Regional Stormwater Protection Team

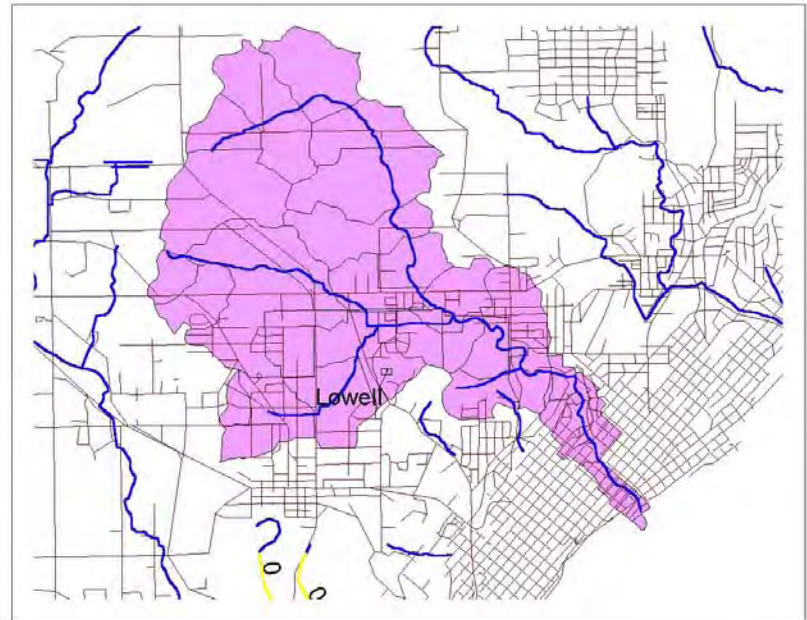


Public Participation and Involvement

- Get public input and opinion on SWPPP
 - Allow a reasonable opportunity to speak
 - Set up procedures to consider spoken and written input
- Encourage public to take an interest in maintaining water quality
- Consider comments

Illicit Discharge Detection and Elimination

- Develop a storm sewer map including ponds, lakes, streams in system, structural devices, pipes and conveyances.
- Prohibit non stormwater discharges.
- Develop a program to detect illegal discharges.
- Inform all groups about the hazards of illegal discharges.



Pollution prevention and good housekeeping

- Implement a program of BMPS within the operation including appropriate training:
 - Operate and maintain system
 - Annually inspect all structural pollution controls
 - Inspect 20% of outfalls yearly
 - Respond to inspection results
 - Summarize results in annual report with dates of inspections and dates of actions
 - Keep records and adjust program accordingly



Areas covered by Best Management Practices

- Vehicle maintenance & cleaning
- Vehicle inspection
- Hazardous materials management
- Hazardous materials training
- Construction site erosion control
- Control of dumping to creeks and streams
- Vehicle washing
- Hazardous spill response
- Storm sewer cleaning
- Deicing material storage
- Stream cleaning
- Removal of icing problems
- Sediment disposal
- Outfall inspection
- Inspection of control devices
- Use of fertilizers
- Training in fertilizer & pesticides
- Landscape maintenance
- Pet waste control
- Street cleaning
- Patching
- Illicit discharge detection
- Dumping



Questions and Comments

Thank You