NDSU Storm Water Pollution Prevention Program
Public Awareness Meeting

March 15, 2006
SWPPP Awareness Meeting

- Storm Water—What’s the Issue?
- Reasons for Concern
- Conceptions and Misconceptions
- Framework of the NDSU SWPPP
- Practical Examples
- Opportunity for Input
Storm Water Runoff Definition

Storm water runoff occurs when precipitation from rain or snowmelt flows over the ground. Impervious surfaces like parking lots, driveways, sidewalks, and streets prevent storm water from naturally soaking into the ground.
Is Storm Water Runoff an Issue?

Storm water picks up debris, chemicals, dirt and other pollutants and ultimately will flow into a lake, stream, wetland, river, etc.
The Effects of Pollution

Polluted Runoff Adverse Impact Examples
– Drinking Water Sources
– Household Waste
– Nutrient Excess
– Sediment
– Bacteria
– Debris
Reasons for Our Concern

• Federal Regulations
• State Permitting
• “It’s the right thing to do...”
  – Maintains Watershed Integrity
  – Ensures Longevity to Life of Receiving Streams
Federal/State Regulations

• Clean Water Act (CWA) of 1972
  – Prohibits the discharge of any pollutant from a point source into a U.S. body of water unless that discharge is authorized by a NPDES permit
  – Phase I—1990 Large industries and MS4s
  – Phase II—1999 All MS4s (pop. < 100,000)
• Present permit cycle 2003-2007
Federal/State Regulations
Phase II Timeline

• Date and Deadline
  – December 8, 1999—Phase II Rule Published
  – December 9, 2002—General Permits Issued
  – March 10, 2003—Permit Application Due
  – March 10, 2008—First Five Year Cycle, Permit Fully Implemented (December 31, 2007)
Conceptions/Misconceptions

Misconception: Storm water runoff is natural and harmless because it consists of just rainwater.

Where the Logic Fails: The rain is not to blame for the problems caused by storm water runoff. Indeed, rainfall is natural and harmless, but the pollution that contaminates it during its journey over roads, parking lots, buildings and other urban structures is not.
Conceptions/Misconceptions

Misconception: Urban storm water discharges cause no significant harm to our lakes, rivers and oceans.

Where the Logic Fails: Urban storm water is one of the most significant sources of pollution in our nation’s rivers, lakes and estuaries.
Conceptions/Misconceptions

Misconception:
Industrial sources pose a much greater pollution threat than urban storm water discharges.

Where the Logic Fails:
Storm water runoff rivals or exceeds discharges from factories and sewage plants as a source of pollution throughout the United States.
Conceptions/Misconceptions

Misconception:
Local governments cannot afford to pay the astronomical rates to implement even minimal measures to control pollution from storm water runoff.

Where the Logic Fails:
Storm water management is not free, but neither is its price tag astronomical. Many workable and effective storm water management measures are affordable and within the bounds of existing municipal budgets.
Conceptions/Misconceptions

Misconception:
No real technical or management solutions exist to solve storm water problems.

Where the Logic Fails:
Because humans create urban storm water pollution, humans can reduce or prevent it through responsible, efficient urban design, public works, pollution prevention, and homeowner practices.
The Phase II Rule defined the Storm Water Management Program as consisting of six Minimum Control Measures (MCMs), each of which had associated Best Management Practices (BMPs).
An MCM is a portion of the Storm Water Pollution Prevention Program dealing with a specific goal, i.e. public education, or construction site issues.

A BMP is a specific method used to prevent or control storm water runoff and the discharge of pollutants, including sediment, into local water bodies.
Hierarchy of Phase II Rule

NDPDES Phase II General Permit NDR04-0000

MCM 1 Education & Outreach
- Varied BMPs (5)

MCM 2 Public Participation
- Varied BMPs (4)

MCM 3 Illicit Discharge Elimination
- Varied BMPs (4)

MCM 4 Construction Storm Water Control
- Varied BMPs (8)

MCM 5 Post Const. Storm Water Management
- Varied BMPs (6)

MCM 6 Pollution Prevention & Housekeeping
- Varied BMPs (12)
Phase II Rule / SWPPP Basics

SWPPP—Contains Six Distinct MCMs

1. Public Education and Outreach
2. Public Participation and Involvement
3. Illicit Discharge Detection and Elimination
4. Construction Site Runoff Control
5. Post Construction Runoff Control
6. Pollution Prevention & Good Housekeeping
NDSU SWPPP MCM 1 BMPs

1. Public Education and Outreach
   – Storm Water Related Public Education Program
   – Classroom Presentation Programs
   – Household Hazardous Waste Collection Program
   – Partnership Outreach Through Public Education
   – Annual Public Meeting
NDSU SWPPP MCM 2 BMPs

2. Public Participation and Involvement
   – Annual Campus-wide Student Litter Cleanup Program
   – Student Adopt-A-Parking Lot Campaign
   – University Information Line
   – Plans for Public Input and Opinion/Public Information Meeting
NDSU SWPPP MCM 3 BMPs

3. Illicit Discharge Detection and Elimination
   – Storm Water Conveyance Map
   – Illicit Discharge Detection, Identification and Elimination Program
   – Illicit Discharge Detection and Enforcement Program
   – Educational Outreach Program
NDSU SWPPP MCM 4 BMPs

4. Construction Site (CS) Runoff Control
   – Regulatory Mechanisms for Erosion Control
   – Erosion Controls for Construction Site Operators
   – Requirements for CS Operators Waste Control
   – Construction Site Plan Reviews
   – CS Inspection and Enforcement Procedures
   – Information Submitted by Public
   – Educational Outreach Program
   – Operation of a Construction Site
NDSU SWPPP MCM 5 BMPs

5. Post Construction Runoff Control
   – Storm Water Detention Requirements
   – Vegetative Practices Program
   – Long-Term BMP Inspection and Maintenance
   – Regulatory Mechanisms for Post Construction Runoff Control
   – Design Standards Program
   – Educational Outreach Program
NDSU SWPPP MCM 6 BMPs

6. Pollution Prevention/Good Housekeeping
   – Parking Lot and Street-Cleaning
   – Storm Water Conveyance System Cleaning
   – Vehicle Maintenance Facility/Procedures
   – Illegal Dumping Control
   – Hazardous Materials and Used Oil Programs
   – Road Sand Application / Snow Removal
   – Educational Outreach
## Minimum Control Measure 1 - PUBLIC EDUCATION AND OUTREACH

<table>
<thead>
<tr>
<th>SWPPP SECTION</th>
<th>BMP DESCRIPTION</th>
<th>GOALS EXPECTED DURING THE 2004 PERMIT YEAR</th>
<th>GOALS ACCOMPLISHED DURING THE 2004 PERMIT YEAR</th>
<th>ASSESS BMP APPROPRIATENESS</th>
<th>BMP MODIFICATIONS OR DEVIATIONS FROM PREVIOUS YEAR’S GOALS</th>
<th>PUBLIC INPUT RECEIVED OR IMPLEMENTED DURING THE 2004 PERMIT YEAR</th>
<th>GOALS EXPECTED DURING THE 2005 PERMIT YEAR</th>
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</thead>
<tbody>
<tr>
<td>1.III.A</td>
<td>STORM WATER RELATED PUBLIC EDUCATION PROGRAM</td>
<td>FURTHER DEPLOY STORM WATER WEBPAGES FOR NDSU OSEH WEBSITE ADDRESSING ISSUES IDENTIFIED IN YEAR 1; DEVELOP A STORM WATER EDUCATIONAL MESSAGE USING OTHER RESOURCES</td>
<td>WORK IN PROGRESS</td>
<td>BMP IS SUITED FOR THE INTENDED PURPOSE.</td>
<td>DEVELOP THE STORM WATER RELATED INFORMATION TO INCLUDE IN CLASSROOM PRESENTATIONS</td>
<td>CONTINUE TO INVESTIGATE PARTNERSHIPS WITH OTHER NON-CITY ENTITIES</td>
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<td>1.III.B</td>
<td>CLASSROOM PRESENTATION PROGRAMS</td>
<td>DEVELOP THE STORM WATER RELATED INFORMATION TO INCLUDE IN CLASSROOM PRESENTATIONS</td>
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<tr>
<td>1.III.C</td>
<td>HOUSEHOLD HAZARDOUS WASTE COLLECTION PROGRAM</td>
<td>DEVELOP THE HOUSEHOLD HAZARDOUS WASTE COLLECTION INFORMATION PROGRAM TO CONSIDER WITH THE CITY OF FARGO</td>
<td>CONTINUED INVESTIGATION</td>
<td>BMP IS SUITED FOR THE INTENDED PURPOSE.</td>
<td>DEVELOP THE HOUSEHOLD WASTE COLLECTION INFORMATION PROGRAM TO CONSIDER WITH THE CITY OF FARGO.</td>
<td>CONTINUE TO INVESTIGATE PARTNERSHIPS WITH OTHER NON-CITY ENTITIES</td>
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<tr>
<td>1.III.D</td>
<td>PARTNERSHIP OUTREACH THROUGH PUBLIC EDUCATION</td>
<td>CONTINUE TO INVESTIGATE PARTNERSHIPS WITH OTHER NON-CITY ENTITIES</td>
<td>JOINED STUDENT ENVIRONMENTAL GROUP SEAC, STUDENT ENVIRONMENTAL ADVISORY COUNCIL AS AN ADVISOR.</td>
<td>BMP IS SUITED FOR THE INTENDED PURPOSE.</td>
<td>CONTINUE TO INVESTIGATE PARTNERSHIPS WITH OTHER NON-CITY ENTITIES</td>
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<tr>
<td>1.III.E</td>
<td>ANNUAL PUBLIC MEETING</td>
<td>REVISE MEETING DATE RECEIVE ACOOMPLISHMENTS BY END OF MARCH 2005. SUBMIT ANNUAL REPORT TO PRIMACY</td>
<td>ANNUAL PUBLIC MEETINGS HELD ON MARCH 10 AND 11, 2005 MEMORIAL UNION CENTURY THEATER 11:00-2:00</td>
<td>BMP IS SUITED FOR THE INTENDED PURPOSE.</td>
<td>REVISE MEETING DATE RECEIVE ACOOMPLISHMENTS BY END OF MARCH 2005. SUBMIT ANNUAL REPORT TO PRIMACY</td>
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### Notes
- WORK IN PROGRESS
- BMP IS SUITED FOR THE INTENDED PURPOSE.
Practical Examples of BMPs for Storm Water Pollution Control

- Recycling & Education
- Lawn Care & Landscaping
- Septic Systems
- Pet Waste
- Auto Care
- Commercial Endeavors
- Agricultural Practice
Storm Water Pollution Solutions

Recycling & Disposal
Properly dispose or recycle household products, such as insecticidal, pesticides, paint, solvents, and used motor oil and other auto fluids. Don’t pour them onto the ground or into the storm drains.
**Storm Water Pollution Solutions**

*Education*

Education is essential to changing people’s behavior. Signs and markers near storm drains warn residents that pollutants entering the drains will be carried untreated into a local water body.
Storm Water Pollution Solutions

*Lawn Care*
Excess fertilizers and pesticides applied to lawns and gardens wash off and pollute streams. In addition, yard clippings and leaves can wash into storm drains and contribute nutrients and organic matter to streams.
Storm Water Pollution Solutions

Residential Landscaping
Planning options exist for storm water retention and detention.
Storm Water Pollution Solutions

*Septic Systems*
Leaking and poorly maintained septic systems release nutrients and pathogens (bacteria and viruses) that can be picked up by storm water and discharged into nearby water bodies.
Storm Water Pollution Solutions

**Pet Waste**

Pet waste can be a major source of bacteria and excess nutrients in local waters.
Auto Care

Washing your car and degreasing auto parts at home can send detergents and other contaminants through the storm sewer system. Dumping automotive fluids into storm drains has the same result as dumping the materials directly into a water body.
Storm Water Pollution Solutions

Commercial Endeavors

Uncovered fueling stations allow spills to be washed into storm drains. Cars waiting to be repaired can leak fuel, oil and other harmful fluids that can be picked up by storm water.
Storm Water Pollution Solutions

**Agriculture**

Lack of vegetation on stream banks can lead to erosion. Overgrazed pastures can also contribute excessive amounts of sediment to local water bodies.

Excess fertilizers and pesticides can poison aquatic animals and lead to algae blooms. Livestock in streams can contaminate waterways.
Storm Water Pollution Solutions

Construction

Erosion controls that aren’t maintained can cause excessive amounts of sediment and debris to be carried into the storm water system. Construction vehicles can leak fuel, oil and other harmful fluids that can ultimately be deposited in local water bodies.
Practical Examples of Storm Water Pollution Control

- Construction Industry
  - Protect Natural Features
  - Vegetative Buffers
  - Site Stabilization
  - Storm Drain Inlet Protection
  - Dirt Stockpiles
  - Slopes
  - Construction Entrances
  - Construction Phasing
  - Silt Fencing
Protect Natural Features

- Minimize clearing.
- Minimize the amount of exposed soil.
- Identify and protect areas where existing vegetation, such as trees, will not be disturbed by construction activity.
- Protect streams, stream buffers, wild woodlands, wetlands, or other sensitive areas from any disturbance or construction activity by fencing or otherwise clearly marking these areas.
Protect Natural Features

Bad

Good
Vegetative Buffers

- Protect and install vegetative buffers along water bodies to slow and filter storm water runoff.
- Maintain buffers by mowing or replanting periodically to ensure their effectiveness.
Vegetative Buffers

Bad

Good
Site Stabilization

- Vegetate, mulch, or otherwise stabilize all exposed areas as soon as land alterations have been completed.
Site Stabilization

Bad

Good
Storm Drain Inlet Protection

• Use rock or other appropriate material to cover the storm drain inlet to filter out trash and debris.
• Make sure the rock size is appropriate (usually 1 to 2 inches in diameter).
• If you use inlet filters, maintain them regularly.
Storm Drain Inlet Protection

Bad

Good
Dirt Stockpiles

- Cover or seed all dirt stockpiles
Dirt Stockpiles

Bad

Good
Slopes

- Rough grade or terrace slopes.
- Break up long slopes with sediment barriers, or under drain, or divert storm water away from slopes.
Slopes

Bad

Good
Construction Entrances

- Remove mud and dirt from the tires of construction vehicles before they enter a paved roadway.
- Properly size entrance BMPs for all anticipated vehicles.
- Make sure that the construction entrance does not become buried in soil.
Construction Entrances

Bad

Good
Construction Phasing

• Sequence construction activities so that the soil is not exposed for long periods of time.
• Schedule or limit grading to small areas.
• Install key sediment control practices before site grading begins.
• Schedule site stabilization activities, such as landscaping, to be completed immediately after the land has been graded to its final contour.
Construction Phasing

Bad

Good
Silt Fencing

- Inspect and maintain silt fences after each rainstorm.
- Make sure the bottom of the silt fence is buried in the ground.
- Securely attach the material to the stakes.
- Don’t place silt fences in the middle of a waterway or use them as a check dam.
- Make sure storm water is not flowing around the silt fence.
Silt Fencing

Bad

Good
Silting Example, Mandan, ND
# NDSU Storm Water Committee

<table>
<thead>
<tr>
<th>Name</th>
<th>Department</th>
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<tbody>
<tr>
<td>Bob Barclay</td>
<td>Facilities Management</td>
</tr>
<tr>
<td>Malcolm Butler</td>
<td>Biological Sciences</td>
</tr>
<tr>
<td>Mike Borr</td>
<td>University Police and Safety Office</td>
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<tr>
<td>Gerald Erickson</td>
<td>AES Main Station Fargo</td>
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<tr>
<td>Bruce Frantz</td>
<td>Facilities Management</td>
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<td>LeRoy Grosz</td>
<td>Facilities Management</td>
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<tr>
<td>Wei Lin</td>
<td>Civil/Industrial Engineering</td>
</tr>
<tr>
<td>Kevin Matheson</td>
<td>AES Administration</td>
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Opportunity for Input...
Comments/Questions ??