Stormwater Management Program

&

2019 Annual Discharge Monitoring Report

By Kevin Morlan

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Introduction and Description

The 2019 Discharge Monitoring Report is given in a format in conjunction with the NDR04-0000 permit. Presented sequentially to follow the permit elements, the report begins with general requirements and progresses through the six Minimum Control Measures. Highlighted or example documentation is provided at the end of each section as appropriate. A growing number of resources are digital or linked to AutoCAD/GIS, which is available for audit upon request.

The **Fargo MS4 Compliance Summary** is a matrix of Part V of the NDR04. This table illustrates compliance responses spanning each control measure and the MS4 Program overall in abridged exhibits. Please see each separate measure for topic specific criteria responses.

Evaluation and Assessment
Evaluation, assessment and effectiveness of goals, projects and BMPs is conducted annually. Fargo's MS4 Program meets compliance goals set locally and by the state NDR04 permit requirements. Results of these measures and recommended changes are consolidated on a summary sheet (MS4 Compliance Summary) at the end of this section.

MS4 Program Map
Fargo perpetually maintains a state of the art geographic information system (GIS) and AutoCAD file/mapping program of the complete infrastructure system (permit items IV.E.a-f). This platform calculates (maps) all property areas and components of the municipal systems. This map is available for viewing at the office but is unavailable for outside access due to security concerns.

MS4 Operated Facilities
Fargo Wastewater and Solid Waste entities operate under separate stormwater permits. Please contact each department for their specific permit requirements.

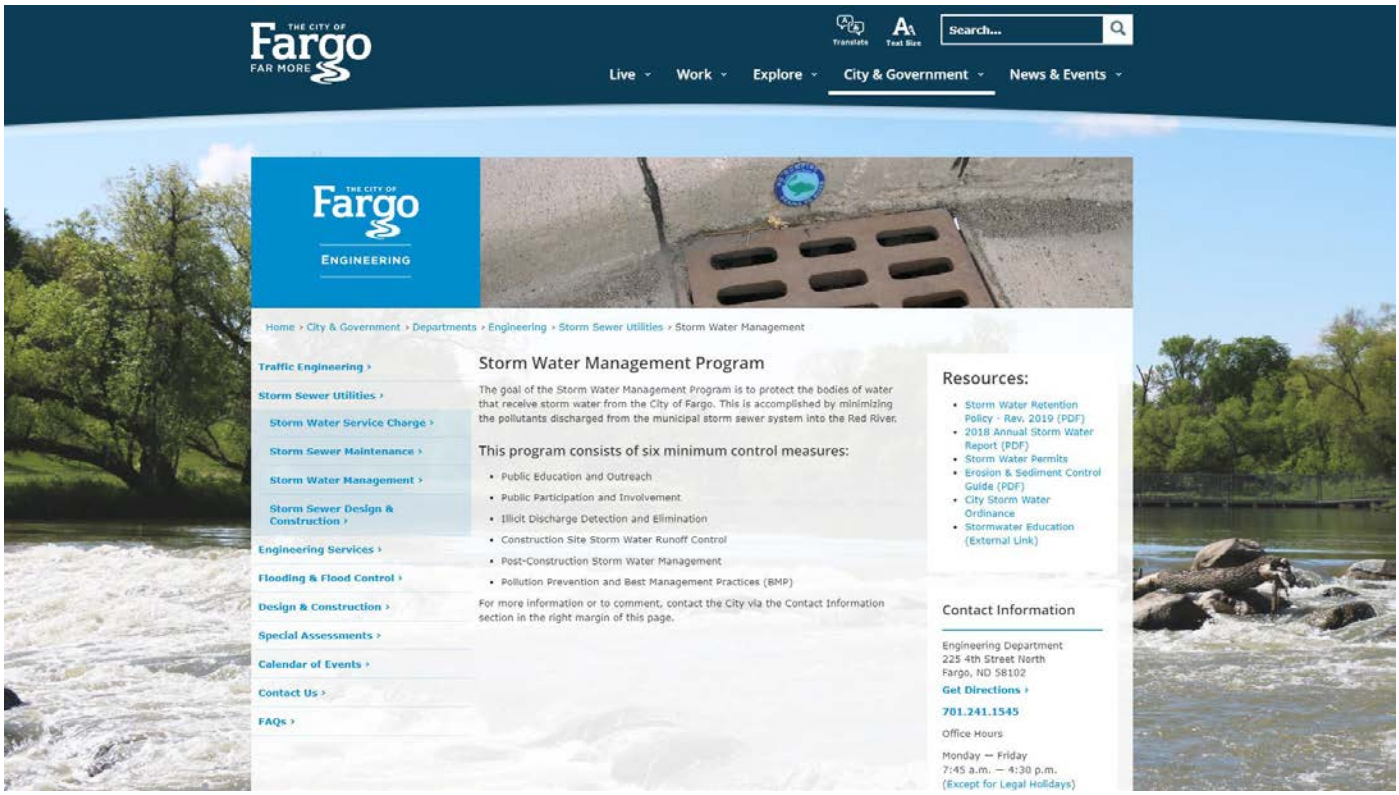
Pollution Assessment (Identified pollutants)
Fargo has identified pollutants and specifically lists them in Chapter 37 (Stormwater Ordinance). Essentially the ordinance lists obvious water degrading agents or practices but, it also implies that any action or process that diminishes water quality is a violation. Stopping or reducing negative discharge is the goal of not only the regulation, it is the essence of the entire stormwater program.

Reduction/removal of these pollutants is accomplished by structural (retention, detention ponds, grit chambers, etc.) and non-structural (prescribed discharge rates, compliance practices, etc.) BMPs.

Ordinance Identified Pollutants (Group / Definition)

Dumping of 37-0102.(33A)	Vegetative materials, including grass clippings & tree branches, Earth fill, Rocks Concrete Chunks or Metal, Demolition or construction materials, or structures.
Disposal /Misuse 37-0102.(33C)	Materials that would degrade the quality of waters within the system, including, but not limited to Chemicals (fertilizers, herbicides, pesticides, etc.) or chemical disposal or misuse of, Petroleum based products (gasoline, oil, fuels, solvents, paints, etc.).
Sediment Migration 37-0102.(33.D)	Erosion and sediment originating from a property and deposited onto city streets, private properties or into the storm water conveyance system Failure to clean/remove - tracked sediment by the end of each work day, or as needed to prevent or minimize the transport (33.E)

Public Availability
This report is made available to the public online at:
fargond.gov/city-government/departments/engineering/storm-sewer-utilities/storm-water-management .
The MS4 program and related operational documents are available upon request during business hours.



Shared Program Agreements with other MS4s
The City of Fargo and North Dakota State University have an agreement that the city performs construction permitting and inspection on campus. NDSU is responsible for all other reporting elements in the permit.

Fargo MS4 Compliance Summary

	(NDR04-V.c.1) Permit Status Compliance: BMP Assessment & Evaluation	(NDR04.V.c.2, 3) Measurable Goals Compliance, Progress, Completed	City of Fargo MS4 Compliance Summary	(NDR04-V.c.5) Future Planned Activities	(NDR04-V.c.6) Changes to BMP or Measurable Goals	(NDR04-V.c.7,8) Responsible Entity	(NDR04-V.c.9) Violations Issued	Reviewed	
MS4 Program Overall	Complies, BMPs adequate	All MCM Goals meet compliance and were completed.	Fargo's MS4 Program is effective in addressing & reducing non-compliant discharges.	Additional studies, new reporting capabilities may enhance or expand goals.	No changes are planned for 2020 beyond the studies.	Fargo Storm Sewer Utility	266 (Excludes Environmental Health and Wastewater Treatment Departments)	1-14-20	*See individual Minimum control Measures for detailed information and supporting documentation.*
MCM-1 & 2	Complies	Completed	Effective	Maintain As-is	No Changes	SSU		1-14-20	
MCM-3	Complies	Completed	Effective	Maintain As-is	No Changes	SSU		2-3-20	*Most information in the report is available online www.FargoND.gov/city-government/departments/engineering/storm-sewer-utilitie/stormwatermanagement*
MCM-4	Complies	Completed	Effective	Maintain As-is	No Changes	SSU		2-3-20	
MCM-5	Complies	Completed	Effective	Maintain As-is	No Changes	SSU		2-18-20	
MCM-6	Complies	Completed.	Effective	Maintain As-is	No Changes	SSU		2-20-20	*Pleae direct any questions/comments to stormwater@FargoND.gov*
								3-10-20	

MCM 1 & 2

Stormwater Education Program

Involvement

Outreach

Participation

Minimum Control Measures 1 & 2

Fargo's Stormwater Education Program

In summary the MS4 Permit, Minimum Control Measures (MCM) 1 & 2, require the city to provide education, outreach, and public participation and involvement opportunities. We must specifically address construction and post-construction pollution prevention, illicit discharges and methods to reduce negative discharges, while conducting our municipal operations. Additionally, we must develop a method to quantify our educational effectiveness and provide a method to adjust the programming.

Our education program integrates the requirements prescribed under these MCMs. Collectively, the Fargo Stormwater Education Program uses a "based" learning approach to educate, inform and involve people concerning Stormwater's impact on water quality. Although water quality is not a new concept today, polluting agents and practices might not be obvious in people's minds. Our program helps inform the public about water polluting practices and what they can do to reduce or eliminate them. Learning and participation is focused toward target audiences and utilizes a variety of activities, projects, methods and mediums to educate and inform people about stormwater and water quality.

We have specifically designated construction, municipal maintenance operations and the "public" as our target audiences. The targets were selected based on perceived need, impact potential, MS4 requirements and the ability to deliver programming. Learning delivery to these segments is scheduled and consists of direct or implied, activities, projects or techniques. For instance, consider that soil migration is of primary concern at a construction site yet, it also occurs at a flower bed. Where a construction site has specific Best Management Practices (BMPs) that must be utilized, an implied concept of awareness (that soils migrate) may be adequate to the flower bed scenario. Education may be a simple billboard message (Inquiry Based) or specific technical training (Problem Based), may be required depending on the audience or practice.

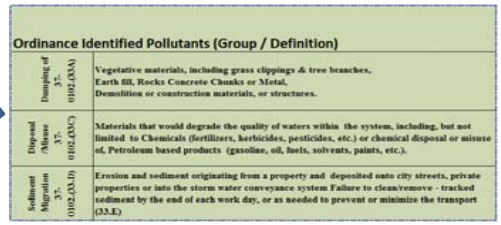
How we measure the education program's effectiveness is yet another challenge. Quantification is one method. We simply count people participating in training seminars, providing feedback or the number of projects delivered (fact sheet or other), violations issued, sediment or trash removed etc. The following pages highlight our program's architecture, complete with illustration tables, graphics, images and examples of the actual materials utilized in the delivery of the program. The final section is focused on program performance measures (evaluation) and adjustment methodology.

MCM I&2 Education, Outreach & Involvement

Audience	Pollutant (Group)	Goals	Activity	Message	Implementation	Entity
Construction	33 A C D	Acquired Skill/ Behavior Change	On-site Evaluation Classroom Instruction	Specific construction related: BMP to reduce soil & trash migration, chemicals/lubricants and other negative impacts.	Annually Targeted Patrol	Fargo
General Public	33 A & C	Awareness	Classroom Instruction River Keeper Programming Fact Sheet/Newsletter Demonstrations Bill Board	Your actions impacts Stormwater. Reduce Wq degrading practices. Illicit “prohibited” Discharges	Annually Opportunity Targeted	River Keepers
Municipal Operations	33 A C D	Acquired Skill	Training Video Presentation	Muni operation impacts Stormwater. Water Quality degrading observations Illicit “prohibited” Discharges	Annually	Fargo

MCM 1&2 Strategy Primer

TARGET AUDIENCE	TARGET POLLUTANT (Group)	EDUCATIONAL GOALS	ACTIVITIES / MESSAGES	MEDIUM (To Distribute)	PROGRAM ACTIVITY PLAN (Implementation) Responsibility	Schedule	PERFORMANCE MEASURES	ADJUSTMENT METHOD	Reviewed	Program Modification Recommendations
Construction Industry	33 A, C & D	Acquired skill Behavior change	Problem-based learning Construction impacts stormwater quality Technical instruction - Classroom or similar - Site evaluation - 1 on 1 coaching	SSU 2nd party	SSU	Annual, Continuous during construction season	Participation count Permit/violation report Complaint log Staff referral Maintenance record	Yearly program review, direct contact, verbal interaction with partners, other agencies and facilitators, etc.	January 16, 2020	Continue to improve annual spring Stormwater Conference
General Public	33 A & C	Increased awareness	Inquiry-based learning Water quality topics Messaging (printed) Demonstration (projects)	Billboard, core partner, direct mail, fact sheet, Facebook, newsletter, Twitter, website	SSU	Perpetual, seasonal	Participation count, complaint, staff referral, maintenance record	Yearly program review, direct contact, verbal interaction with partners, other agencies and facilitators, etc.	January 16, 2020	
Municipal Operations	33 A, C & D	Acquired skill	Project-based learning Muni-operations impact stormwater quality Training, observation, BMP	Presentation, lecture, video, Q/A	SSU	Annual rotating basis, some departments may also provide in-house training	Participation count, complaint, staff referral, maintenance record	Yearly program review, direct contact, verbal interaction with partners, other agencies and facilitators, etc.	January 16, 2020	Continue accurate reporting and recording between Public Works Superintendent and SSU Staff



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Be Flood & Stormwater Aware

2019

For information on Flood contact The Engineering Department Call 701.241.1545 send an email to floodplain@FargoND.gov or search online www.FargoND.gov

- Floodplain, mapping & photos
- FIRM interpretation, property location
- Elevation Certificate & LOMC archive
- Historic flood photos & records
- Levee/protection level information

Build Responsibly - Floodplain Permits are required to develop in the floodplain.

Your first stop for all development and building projects begins with the Inspections (Building Permits) Department

Emergency Information
During an emergency listen for sirens and on-air announcements from local media sources.

CodeRED
To join call 701.476.4068 or go online to www.FargoND.gov/codered

Flood Insurance

Know your flood risk.
Talk with your insurance agent about Flood Insurance.

Floodplains - Did you know that these are natural riverine features? Search online to learn more.

Never cross a flooded street, turn around and find another route.

Stormwater REGs.
Rainwater drains directly into the river untreated but did you know there are local regulations dedicated to protecting our waters?

Chapter 37 of the Fargo Municipal Code governs surface water runoff, including discharges from construction sites. The ordinance specifically restricts dumping anything that degrades water quality into the storm utility system. This includes grass clippings and pet waste.

Surface water (rain & snow) is storm water and governed by Fargo's Stormwater Program also known as Municipal Separate Storm Sewer System (MS4).

Fargo is a MS4 Permitee to learn more about our Stormwater Program go online at www.FargoND.gov
Email Stormwater@FargoND.gov
or call 701.241.1545

Topics
- Draining a swimming pooL
- Erosion & Sediment Control (ESC) Permit
- Site Inspection – Inquiry or Complaint
- Stripped land requirements
- Storm sewer system
- Suspect illicit discharge

Sump Pump Program 701 241 7867

We take suggestions. If you have a comment or idea on how to better improve our community's Flood or Stormwater programs please comment by emailing floodplain@FargoND.gov or stormwater@FargoND.gov.

For more information on flood:
www.FEMA.gov
www.Floodsmart.gov

For more information on Stormwater:
www.EPA.gov

Fargo's Storm Sewer Utility Staff

Our staff conducts related environmental education and outreach learning activities along with other city staff, core partners and related entities. The concept of water quality in stormwater discharge is the goal of the education, involvement and participation programming.

Facilitators

- The City of Fargo Storm Sewer Utility (SSU) is responsible for the Stormwater Program's administration.
- Contributors include city departments: environmental health, solid waste, public works and wastewater treatment.
- Fargo River Keepers is a core partner promoting stormwater/ecology education to the general public. Classroom instruction, lab activities and public involvement/participation projects comprise their basic curriculum.
- Other entities delivering similar educational programming include: Red River Basin Commission, local watershed districts, Cass County Soil Conservation, Audubon Dakota etc.

Example of contribution by other facilitators

The City of Fargo recycling coordinator delivers programming themed toward the concept that recycling reduces environmental impact and promotes water quality.

Pollutants and Best Management Practices

Fargo has identified pollutants and specifically lists them in Chapter 37 (Stormwater Ordinance). The ordinance lists obvious water degrading agents or practices but, it also implies that any action or process that diminishes water quality is a violation. Stopping or reducing negative discharge is the goal of not only the regulation, it is the essence of the entire stormwater program.

Knowing or identifying a pollutant is the first important aspect of our stormwater program. The second most important item is simply stopping or reducing the effect of the pollutant before it reaches a storm sewer inlet and eventually the river. This stopping or reducing (whatever it might be) is called a Best Management Practice or BMP. It could be a mat or fiber roll between the street and a stripped construction site or stopping watering before any sediment/dirt from a flowerbed is carried into the street gutter.

2019 Public Education – Solid Waste Department

Jan

- Plastic Bag Recycling Challenge presented to 200 5th grade students
- Presented on the state of recycling in the City of Fargo at the Solid Waste Advisory Committee Meeting in Clay County, MN
- Recycling presentation to 25 employees of Southeast Human Services, Fargo ND

Feb

- Earth Day Poster contest presentation at Jefferson Elementary
- Collected plastic bags from 4 elementary schools for the plastic bag recycling challenge

Mar

- Collected plastic bags from 4 elementary schools for the plastic bag recycling challenge
- Selected Earth Day poster contest winner for a billboard in Fargo

April

- Earth Day Press Conference
- Poster contest award presentation at Jefferson Elementary and pizza with the Mayor for the winning class
- Lunch and Learn at the Microsoft Campus with 40 attendees
- Recycling presentation at Kennedy Elementary for 100 students
- Recycling presentation at the YMCA daycare for 42 children
- Planted succulents at Washington Elementary for Earth Day with 65 students
- Recycling presentation at South High – Environmental Club with 15 attendees

May

- Met with Microsoft staff on recycling options
- Met with Essentia Health Hospital on recycling options

Jun

July

- Met with 8 downtown businesses individually to educate owners/staff on ALL in ONE Recycling

Aug

- Gave a tour of the Solid Waste Facility and landfill to a home daycare, 10 children
- Recycling presentation to 60 children at the Children's Montessori School

Sep

- Attended and worked the recycling education booth at the Water Festival in Moorhead, 320 students attended

Oct

- Recycling presentation at Discovery Middle School for 25 students and staff

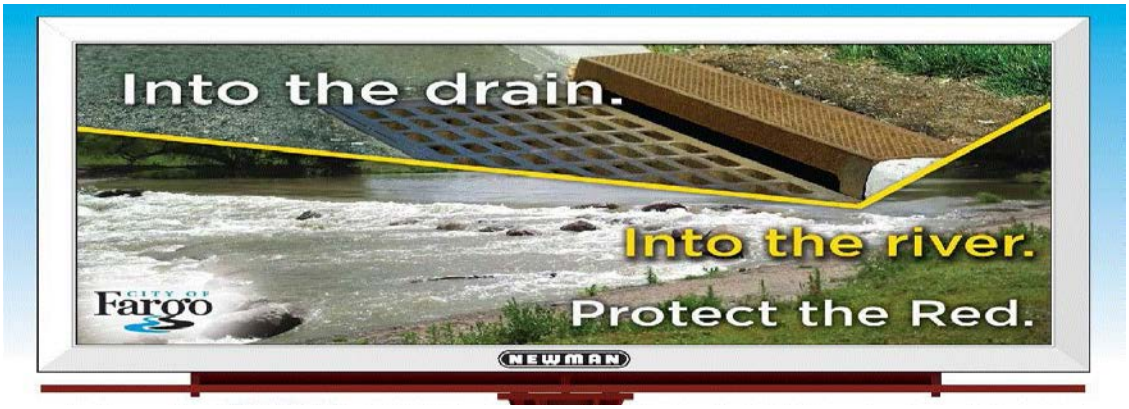
Nov

- Presented Reduce, Reuse and Recycle curriculum to 160 3rd graders within the Fargo Public Schools

Dec

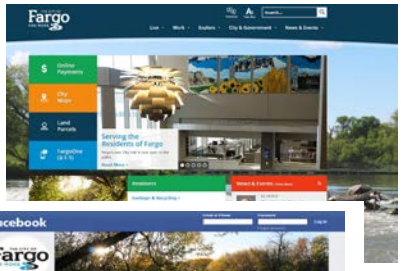
Activities and Methods used to deliver our program

Mass Marketing

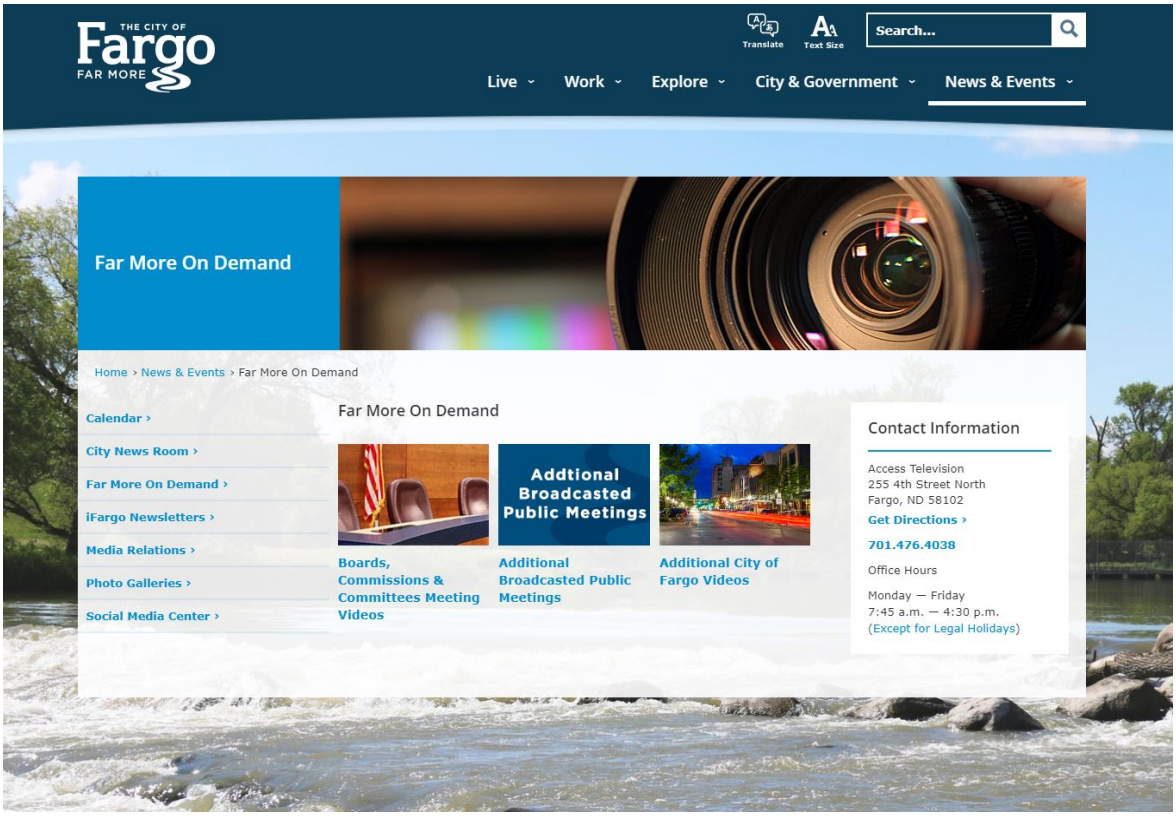


Digital Media

- Website www.FargoND.gov
- Twitter
- Facebook



Far More On Demand



Direct Mail & Factsheets

Demonstration Projects

Living Lab
The Fargo Project
River Friendly House and Yard Management

Core Partners

River Keepers delivers water ecology education, and provides volunteer opportunities for the general public. Their mission is to advocate sustainable use of the Red River of the North, primarily within the Fargo-Moorhead area promoting a renewed vision. River Keepers is dedicated to educating our community by increasing local watershed knowledge through active engagement.

River Keepers Activities

Activities include the annual Red River Water Festival, backpack program, geocache, interpretive signs, storm drain marking program and river friendly house and yard management ect. Fargo SSU staff participates with River Keepers in various activities annually.

The Red River Water Festival sponsored by River Keepers is a very popular annual ecology program for area fourth grade students. This learning event brings students to the river, where they learn and participate in water quality concepts. SSU staff participates with teaching and providing funding.

- **Dates:** The Red River Water Festival is scheduled for September 17-20, 23.
- **Location:** Hjemkomst Center, 202 1st Avenue North in Moorhead.
- **Check In:** Please check in upon arrival so we know you are there and can direct you to the right location and/or connect you with the presenter you will be assisting. River Keepers staff will be around the snack bar area in the Hjemkomst Center. Walk through the front doors on the south side and it is straight ahead.
- **Weather:** **The outside activities will be held outside whether it is a sunny day or a rainy cooler fall day. Please dress in layers, come prepared for the weather. Invaders! assistants, River Crime Lab assistants, Incredible Journey assistants and timers will be outside.**
- **Dress:** Jeans or shorts are acceptable. Please wear shirts appropriate for 4th grade students.
- **Lunch:** We will provide volunteers with lunch between sessions Tuesday - Thursday. Friday and Monday will be light snacks. Lunch and snacks will be served in the snack bar area inside the Hjemkomst Center.
- **Students:** There are 2113 students from 99 classes coming from 32 schools in Lake Park-Audubon, Dilworth, Glyndon Felton, Barnesville, Moorhead, Fargo, and West Fargo.

If you have any further questions about the Red River Water Festival, call me at 701-356-8915 or e-mail me at kimberly@riverkeepers.org. If you need to get a hold of me the week of the water festival, my cell phone number is 701-429-1915.

Thanks again,

Kim Morris
Project Coordinator

Committees

- **Conservation**
- **Forestry Advisory**

Feedback

FargoOne

stormwater@FargoND.gov

Community Feedback

The opportunity to provide feedback, comment or other on stormwater topics is communicated in various activities and projects. Community feedback is managed citywide on a unified basis through a number of portals including office visits, mail, telephone, website, email, Engage Fargo and FargoOne to name a few**.**

Performance Measures

How do we evaluate the effectiveness of our MCM 1 & 2 programming since quantification is so difficult to apply? Some of the methods are listed below, others must be intrinsically interpreted by staff. An increase of incident reports by the public in 2019 is directly related to the increase of awareness of these degrading pollutants.

- Counting (attendance, address mailings, contact log, complaint log, frequency of Learning opportunities, etc.)
- Feedback from electronic reporting portals (email, FargoOne, etc.)
- Inter-department communication (increased - trash, sweeping, pipe cleaning, etc.)
- 2019 awareness incident reports

Program adjustments

Annually, (usually in the first two months of the year) all MCM programming is analyzed. Constructive input from the program's targeted sectors is evaluated by the Fargo Storm Sewer Utility staff. Changes are (additions or deletions) incorporated and executed the following season.

Current program is deemed adequate and no changes are recommended for 2020.
MCM 1 & 2 contributions will be maintained at the existing level.

WHAT IS A STORM DRAIN?

Storm drains are the grated openings in the street that collect water from rain and melting snow to minimize street flooding.

As stormwater flows along streets, it collects trash, leaves, grass clippings, pet waste, car fuels and other pollutants into storm drains.

Pesticides, paints, antifreeze, and other used motor oil can end up in the storm drains when people dispose of them improperly. This is an illicit discharge and is against city ordinances.

WHAT IS THE PROBLEM?

Have you ever wondered where water goes after it 'disappears' into a storm drain? Stormwater in Fargo-Moorhead is not treated at a wastewater plant, but is discharged directly into the Red River or Sheyenne River through outfall pipes. Runoff carries contaminant and debris picked up along the way, polluting our surface and groundwater, which are often drinking water sources.

WHAT CAN YOU DO?

- Volunteer to mark storm drains to teach others about stormwater
- Prevent pollution by keeping contaminants out of storm drains
- Follow the No Dumping Drains to River message and do your part to help protect our water
- Sign up your volunteer group to mark storm drains by contacting River Keepers

CONTACT US

River Keepers
kimberly@riverkeepers.org
701.356.8915
riverkeepers.org
1120 28th Ave. N., Ste. B
Fargo, ND 58102

ADDITIONAL INFORMATION

riverkeepers.org
FargoND.gov
cityofmoorhead.com
westfargond.gov

STORM DRAIN MARKING PROGRAM

A volunteer program to protect the Red River by linking human actions to pollution problems.

THE CITY OF Fargo
FAR MORE

MOORHEAD
MINNESOTA

City of WEST FARGO

Learn · Sustain · Enjoy
RIVER KEEPERS

PREPARATION

1. Discuss the storm drain marking program with your youth group, school class, civic organization, family, neighborhood group or friends. It is recommended that participants be at least 10 years old.

2. Select a date for marking. The pavement must be dry.

3. Choose a time of day and length of time available to do the project. Two hours is the recommended length.

4. Select a neighborhood to mark and a location to meet.

5. Figure out the number of participants.

6. Recruit supervisors. One supervisor is recommended for every 4-8 youth volunteers, depending on the age.

7. Plan an alternative date in case of rain.

8. Contact River Keepers to set up the project, which includes supplies and training.

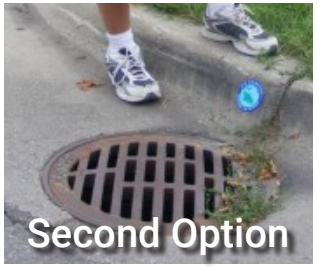
DAY OF PROJECT

Put on safety vests.

Break into groups - two people to mark the curb, two people to distribute door hangers.

CURB MARKING TEAM

1. Decide where to put the marker.
   * Surface must be flat, dry, and make contact with the whole marker.
   * The preferred placement is on top of the curb.



   * The second option is on the face of the curb.
   * If the curb is not possible, the street right next to the curb and storm drain is the last option.

2. Sweep the area where the marker will be placed so it is free of any loose debris.

3. Peel backing paper off one side of the adhesive disk.

4. Place storm drain marker evenly on top of the adhesive disk.

5. Remove backing paper on other side of the adhesive disk.

6. Apply to cleaned area. It is important that the entire edge of the marker is sealed to the curb or street.

7. Step or place pressure on the storm drain marker to make sure the adhesive sticks.

DOOR HANGER TEAM

- Walk on sidewalks, stay off of the grass.

- Do NOT put door hangers in mailboxes.

- Place door hanger on the door that looks most used. Do NOT open the door.

- Do NOT leave a door hanger if it will blow away.

FOLLOW-UP

- Indicate streets marked on maps provided.

- Document how many volunteers participated and how many hours were volunteered.

- Return maps and extra storm drain marking supplies.

- Congratulate yourselves...you deserve it!

RiverKeepersFM
fmriverkeepers
RiverKeepersofFM

riverkeepers.org
Christine@riverkeepers.org
701.235.2895

OUR MISSION:
"Advocating for safe and sustainable use of the Red River of the North."

MCM 3

Illicit Discharge Detection and Elimination Program (IDDE)

MCM 3 – Illicit Discharge Detection and Elimination (IDDE) Program

Dumping water quality, degrading (Illicit Discharge) substances or bypassing the sanitary system is illegal. The Red and Sheyenne Rivers are the source of the city's water supply, so It should be obvious that protection of our drinking water is a critical mission. In response to that charge, the city has created a detection and elimination program commonly known in the stormwater world as the IDDE Program.

Fargo's IDDE Program uses the same design as many other MS4 entities. Public education/ involvement/awareness along with training municipal staff are key components of the program. Specifically, the IDDE Program's focus is on the discovery, containment and elimination (mitigation) of water degrading practices. There are a number of rules and procedures available in the city to address non-conforming discharges.

In addition to state and federal regulation, Chapter 37 of the Fargo Municipal Code defines non-conforming and allowable discharge that can enter our Storm Sewer Utility. Additionally, construction and land disturbing activities are addressed as well. Dumping any adverse substance in any form is a violation. Fargo's Stormwater Management Program under supervision of the Fargo City Engineer administers enforcement along with the full support of other city departments.

Illegal discharge reports

Illegal discharge reports communicated by other staff or the public follow the standard operating procedure format. Administration is by the department responsible for a particular operational segment. For example, reports involving a restaurant dumping grease into the sewer or on the ground is referred to Fargo Cass Public Health – food inspection division. Suspect illegal non-functioning storm sewer connection or infiltration routes to public works for remedy or testing. All hazardous material exposure incidents are directed to the Fargo Fire Department's HASMAT Team. Each of these departments would take the lead command of operations and the Storm Sewer Utility Department reverts to a support role.

Routine Municipal Operations

Non-conforming material is an everyday maintenance issue for Fargo's Public Works (FPW) operations group. Operational staff is the field staff, defined by job description directed toward maintenance tasks of the city. Department staff varying from garbage pickup to snowplow route operators who are out patrolling the city constantly. All staff are trained to report operational inconsistencies including illicit discharge due to spill or other circumstance.

Education, outreach and involvement

Education and outreach on this topic is conducted in concert with MCM 1 & 2.
In all contact situations the perpetrator is appropriately educated concerning mitigation resolution along with any penalties assessed. Factsheets or violations are also used to educate the public and business operations on illegal dumping and other storm water conflict situations. Directed informational topic pieces like a fact sheet or letter is customarily sent to a geographic or similar group of people if a primary perpetrator can not be identified. City staff is also trained for IDDE specific exposure in conjunction with MCM 6 (municipal maintenance operations).

Fargo IDDE Program Components

- Chapter 37 (Stormwater Ordinance available on line www.FargoND.gov/auditors)
- Illicit discharge detection & elimination standard operating procedure
- Illicit discharge detection & elimination Work Order
- Educational Support Material
- Notice of Violation
- Drainage Complaint Log

Quantification, appropriateness and program recommendations

There are multiple incidents of illicit discharges reported annually to various departments. Each department mounted a suitable response and if appropriate performed necessary mitigation action to reduce future replication. Documentation of such incidents is perpetually maintained in department records. This system is highly functional, with no operational changes recommended.

Illicit Discharge Detection and Elimination (IDDE)

Standard Operating Procedure for IDDE

Staff assess the site situation and determines the best course of action. Staff's goal is to respond to a report of an illicit discharge in a timely manner, aid in its termination and enable remediation.

Field staff is trained how to spot an illicit discharge and report it for further investigation.

Site Investigation

Assess the situation –

- Visual inspection of the site.
  - If life or property is at immediate risk call 911
  - If it can be done safely, stop the source of the spill
  - Take pictures/notes: location, size, colors, odors, type of material, etc.
  - Make contact with property owner/manager and direct to mitigate.
  - Contact appropriate department that oversees segment

Contacts

- Fargo Fire Department 911 (non-emergency 241-1540)
- Environmental Health 476-6729
- Street Department 241-1453
- Waste Water Treatment Plant 241-1445

Enforcement

- Issue Notice of Violation or Administrative Order to the violating party
- City also may charge owner for contractor/department site clean -up
- Non-compliance or post mitigation effort may be referred to city prosecutor

Report Log

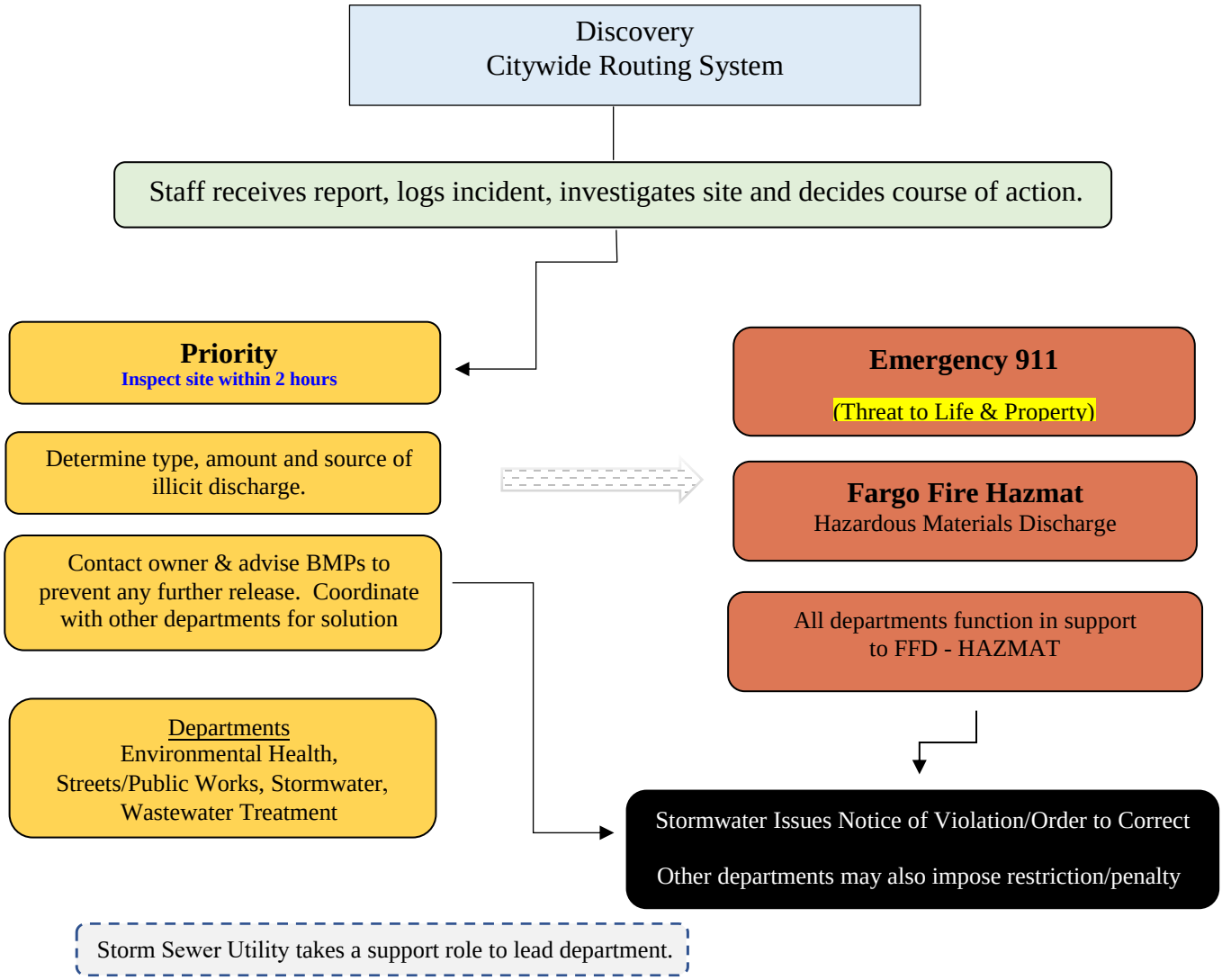
Keep a log for illicit discharges, response and mitigation.

Post remediation inspection

Perform site inspection to ensure mediation/mitigation was conducted.

Illicit Discharge Detection and Elimination (IDDE)

Standard Operating Procedure
(NDR04, Part IV.F.3c)
Typical procedures but others may apply.



Site re-inspection conducted post response.

- If no or insufficient mitigation is accomplished, administrative order to correct is issued.
- Municipal Court

MCM 4

Construction Program

THE CITY OF Fargo

FAR MORE

MCM 4 – Construction Site Program

The construction program's goal is to reduce pollutant discharge due to construction/development activity. Our program administered principally by the Fargo Storm Sewer Utility Department (SSU) under the authority of the Fargo City Engineer (Chapter 37 of the Fargo Municipal Code). The Engineering Department contributes significantly to the program with site plan review for both public and private commercial development and has overall responsibility for public sector construction.

Below is a description of the program's basic functions and methods of operation. Located at the end of this section are support documentation examples, evaluation and future consideration.

ESC Permitting System

All new building sites and land disturbing activities that have a potential to discharge sediment off a site are now automatically issued an **Erosion and Sediment Control Permit** (ESC Permit) (37.0301). This process now begins at the inspections department when applying for a building permit. The purpose of the permit is to provide site identification, point of contact information and a formal record. The official "tracking" system (LAMA) is maintained daily by SSU staff. This system has archive capability with a search-by address/document number function; it covers both commercial and residential construction sites.

ESC Permit

Commercial permitted sites must also undergo the engineering department's site plan review process which contains a stormwater review element.

Homebuilders (residential) of one and two unit buildings are permitted but subscribe to the department's **Stormwater Guide** verses site plan submittal (37.0302). These construction sites are patrolled on a regular basis as determined by the stormwater inspector for site conforming conditions. Discrepancy observation can be resolved with personnel on site or through the notice of violation procedure. (See patrol & enforcement)

Site plan review (submittal) "*One and two residential buildings are exempt"*

A construction site plan is required for development under Chapter 37. The ESC Permit application requires operators of commercial sites to submit a site plan (SWPPP) with all related BMPs and water quality & retention addressed including type and location on the site. The siteplan review requirement is part of the Land Development Code (LDC) and includes identification of permanent stormwater BMPs. Engineering evaluates all infrastructure connections and conflicting site conditions. Non-conforming scenarios notated and the plan returned for correction. This practice called "site plan review" ensures compliance with the LDC, stormwater requirements of the North Dakota Department of Health NDPDES construction permit (NDR10-0000), MS4 discharge permits and Chapter 37 of the Fargo Municipal Code.

Additionally SSU staff reviews plan sheets prior to issuance of an ESC Permit. This review concentrates on the plan's **temporary physical placement** of BMPs including:

- **Conforming inlet protection**
- **Dewatering**
- **Perimeter control**
- **Stockpile locations**
- **Tracking management (egress/ingress)**
- **Unique BMP proposals**
- **Concrete and similar washout treatments (grindings and mortar)**

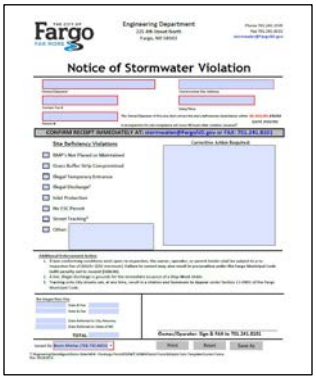
Commercial Compliance Inspection

Commercial sites undergo a SSU staff evaluation (on a percentage or complaint basis) once construction gets underway. Here the inspector compares the plan with the site condition and converses with the superintendent about any particular nuances associated with the site. The discussion also elaborates the need to document BMP site changes on the SWPPP.

Patrol and Enforcement

SSU staff uses the permit system for permit verification, developing compliance patrol routes and overall enforcement composition. Construction sites, patrolled on a rotating daily basis may be addressed via personal interaction with a site operator, phone call or issuance of a Notice of Violation / Order to Correct (NOV). Infractions have a 48-hour correction period with the exception of a live discharge, which requires immediate response. Each site must conform to the criteria of Chapter 37 for construction site **condition/pollutants**: (refer to the statistical section of this MCM for annual and historical data.

- **BMPs**
- **ESC Permit**
- **Entrance**
- **Grass buffer**
- **Inlet protection**
- **Illegal Discharge (Illicit)**
- **Street tracking**
- **Other**


Fargo

Engineering Department

Notice of Stormwater Violation

Citizen Contact, Complaints and Contribution's Log

Public contact episodes are logged at several interface portals including: Fargo one, city email accounts, Facebook and Twitter which are each directed to appropriate departments. The digital media has its own historical tracking element and SSU maintains records in the department database. Public input is evaluated and topics of merit are communicated back to the site operator via comment or official infraction notice.

Written Procedures

The SSU department has established written procedures for site inspections, issuance of Notice of Violation (enforcement), siteplan review and the receipt-process-consideration of public input. Please refer to these documents in the supporting documentation at the end of this segment.

Stabilization Requirements

The requirement for construction stabilization is established by definition in Chapter 37. Examples of the stabilization requirement are cited below. Please refer to the actual ordinance for more information.

- "**Temporary protection**" means short-term methods employed to prevent erosion. Examples of such protection are straw, mulch, erosion control blankets, wood chips, and erosion netting. 37.10203.50

- "**Stabilize**" means the exposed ground surface has been covered by appropriate materials such as mulch, staked sod, riprap, wood fiber blanket, or other material that prevents erosion from occurring. Grass seeding alone is not stabilization. 37.0102.39

- "**Stabilized**" means the exposed ground surface after it has been covered by sod, erosion control blanket, riprap, pavement or other material that prevents erosion. Simply sowing grass seed is not considered stabilization. Ground surfaces may be temporarily or permanently stabilized (also see Final Stabilization).

- "**Erosion control**" means methods employed to prevent erosion. Examples include soil stabilization practices, horizontal slope grading, temporary or permanent cover, and construction phasing.

- "**Sediment control**" means the methods employed to prevent sediment from leaving the development site. Examples of sediment control practices include, but are not limited to silt fences, sediment traps, earth dikes, drainage swales, check dams, sub-surface drains, pipe slope drains, storm drain inlet protection and temporary or permanent sediment basins. 37.0102.37

- "**Final stabilization**" means that disturbing activities at the site have been completed and a uniform perennial vegetative cover with a density of 70 percent of the native cover for unimproved areas and areas not covered by permanent structures, or equivalent permanent stabilization measures (such as the use of riprap, gabions, or geotextiles) have been employed. 37.10203.40

CONSTRUCTION INDUSTRY EDUCATION AND INFORMATION

The City of Fargo Stormwater Program partners with Fargo-Moorhead Homebuilders Association to develop rules, policy guidance and training. The association is comprised of commercial/residential builders, material, service suppliers and related businesses (developers, relators, etc.) SSU staff regularly contributes to the partnership with newsletter articles, presentations or submissions of new technology.

SSU also communicates directly with contractors via digital **email** links. Reminders, requirements and changes are communicated to an ever-changing roster of contractors. Email lists are compiled from the permit contact database to ensure effective information dissemination.

Fact sheets are used to convey stormwater messaging to ancillary business such as lawn care, delivery firms, etc. The information presented may be specific or broad based, depending on the target audience.

Finally, staff conducts **specialty education presentations** upon request. Including preparatory and secondary classroom lectures, PowerPoint presentation and informational outreach, etc.

See all the construction education related programming under MCM 1 & 2.

Cooperating Partners

The program also works via a cooperative agreement with NDSU (another MS4) for their construction erosion and sediment control permitting and enforcement programming. SSU staff verifies necessary permitting and enforces the same stormwater regulations on campus and throughout the entire city. Public works monitors interface connections and maintenance issues between the two systems.

Statistical Data

A statistical dataset is maintained on the construction program. This report provides annual and previous years' data for trend analysis and program performance. A current copy of the report is included at the end of this segment.

MCM 4 Future Goals

SSU Staff provided Fargo's third annual spring stormwater conference for construction in 2019. The goal in 2020 is to attract more interest from the private sector for this as an annual event in an effort to educate local builders and contractors right around the start up of a new construction season.

MARCH 13, 2019
CITY OF FARGO STORMWATER BREAKFAST SEMINAR

3rd Annual Stormwater Event

The City of Fargo & West Fargo are once again teaming up with Brock White for this year's 3rd Annual Stormwater seminar for construction contractors, builders, and developers. This event will be held at the Fargo Cass Public Health building (Oak Room). The seminar will go over local MS4 policy for Fargo and West Fargo from storm sewer utility staff. Fargo's truck regulatory officer will go over local policy on over dimensional and load securement. Brock White will be reviewing available erosion and sediment control materials common to homebuilders and excavators to meet the requirements. Kory Bonnell with WSB & Associates will also be presenting. Kory specializes in compliance strategies within the private sector.

Time:
7:30 AM – 12:00 PM
Location:
1240 25th St S Fargo ND
Fargo Cass Public Health
(Oak Room)

Breakfast will be provided by Brock White at 7:30 AM

Local MS4 Policy Presentations for Fargo & West Fargo

Fargo Truck Regulatory Over dimensional & Load Securement

Environmental Compliance Specialist at WSB & Associates Kory Bonnell

Brock White Geo/Erosion Control Product Manager Greg Halvorson

CITY OF FARGO
225 4 St N
Fargo ND, 58102
701-241-1545

Construction Permit &
Violation Report
2019

Fargo's NPDES construction site pollution control program (MCM 4) addresses potential pollution discharging from a construction or disturbed land site and has been in existence since 2006. The program concentrates on discharges due to water runoff, wind or vehicle tracking. Sediment, garbage, washout areas, dewatering and stockpiles and access are controlled. This year's annual report again provides feedback on the effectiveness of our control measures.

PERMITS

In 2019 permits dropped dramatically from the year previous and violations rose slightly. The mix of operators remained largely the same with some flux in the supervisory positions. Disappointingly BMPs still remain the largest infraction - see the violations section.

A new automated permitting system (LAMA) was implemented in August. This new system triggers an Erosion & Sediment Control permit at the inspections department during the approval process for a building permit. The new system is still evolving as we learn more tips and tools but will allow SSU personell to track and manage our construction site runoff program with ease.

Revenue generated from permit and associated fees remains but a small percentage of the program's total operating cost.

Permits	Issued	$ Revenue	Violations	$ Fees	Violations to Permits	Specific Infraction	Inspectors	$ Total Revenue
2019	305	$6,100	266	$1,140	87%	337	KJM/SO	$7,240
2018	389	$8,894	246	$1,140	63%	323	KJM/DN	$10,034
2017	424	$9,345	263	$840	62%	313	KJM/BN	$10,185
2016	510	$11,717	278	$540	55%	367	KJM/JCL	$12,257
2015	496	$11,282	478	$2,640	96%	691	JP/TS/KM	$13,922
2014	434	$10,162	428	$3,240	99%	765	Josh P	$13,402
2013	585	$13,393	243	$1,740	42%	455	Josh P	$15,133
2012	458	$11,648	307	$1,740	67%	563	Josh P	$13,388
2011	395	$8,936	190	$572	48%	408	Josh/Mark	$9,508
2010	362	$7,917	229	$390	63%	463	Joe	$8,307
2009	362	$7,496	295	$300	81%	477	Craig	$7,796
2008	428	$10,785	304	$3,240	71%	575	Mike	$14,025
2007	489	$11,636	331	$2,880	68%	1,166	John	$14,516
2006	367	$7,460	36	-	10%	36	Steve	$7,460
2005	0	$0	0	-	0	0	0	-

Violations

Decreases in violations during 2019 align once again with less permits issued. BMP as an infraction annually tops the list of infractions because it is a more ambiguous (catch-all) term. All infractions not specifically denoted independently are grouped into BMP.

There are several facets to the tracking issue including material delivery, staff (parking & tool off-load), construction equipment, etc. Compounding these elements is the ever shrinking lot sizes which muddles traditional construction practices (maneuverability).

Violations

Year	NOVs Issued	BMP	Grass Buffer	Illegal Entrance	Illegal Discharge	Inlet Protection	Permit	Tracking	Total
2019	266	213	10	47	2	17	9	34	337
2018	246	84	4	77	3	35	35	68	323
2017	263	131	32	19	4	20	19	83	313
2016	278	124	6	47	4	23	13	120	367
2015	478	330	2	62	2	27	47	175	691
2014	428	233	2	67	4	74	37	188	765
2013	243	123	24	76	14	22	67	71	455
2012	307	155	14	155	7	34	119	50	563
2011	190	110	11	51	2	32	44	125	408
2010	229	175	18	66	3	35	56	76	463
2009	295	175	16	93	2	43	38	64	477
2008	304	197	8	130	16	34	44	121	575
2007	351	291	152	340	8	38	178	65	1166
2006	36	-	-	-	-	-	-	-	36
2005	-	-	-	-	-	-	-	-	-

Profiling

Contractor	Permits	Violations	Leading Infractions	% violations to permit
Thomsen Homes	59	56		94.9%
Jordahl Custom Homes	38	56	BMP maintenance	147.4%
Brookstone Property	19	6	Street Tracking	31.6%
Dabbert Custom Homes	17	2	Illegal Entrance	11.8%
Heritage Homes	13	12		92.3%
J & L Construction	12	0		0.0%
Krueger Construction	10	14		140.0%
Titan Homes	8	3		37.5%
Plecity Kowalski Construction	8	1		12.5%
	184	150		
Top 9 permit holders account for	60% of permits and 56% of all violations			

Year	ESC Permits issued	Permit Revenue	% Violation to Permits	Violations issued	Specific infraction								Total	Re-inspection Fee
					BMP	Grass Buffer	Entrance	Discharge	Inlet	Permit	Tracking	Other		
2019	305	$ 6,100	87%	266	213	10	47	2	17	9	34	5	337	$960
2018	389	$ 8,894	63%	246	84	4	77	3	35	35	68	17	323	$1,140
2017	424	$ 9,345	62%	263	131	32	19	4	20	19	83	5	313	$840
2016	510	$ 11,717	55%	278	124	6	47	4	23	13	120	30	367	$540
2015	496	$ 11,282	96%	478	330	2	62	2	27	47	175	46	691	$2,640
2014	434	$ 10,162	99%	428	233	2	67	4	74	37	188	160	765	$3,240
2013	585	$ 13,393	42%	243	123	24	76	14	22	67	71	58	455	$1,740
2012	458	$ 11,648	67%	307	155	14	155	7	34	119	50	29	563	$1,740
2011	395	$ 8,936	48%	190	110	11	51	2	32	44	125	33	408	$572
2010	362	$ 7,917	63%	229	175	18	66	3	35	56	76	34	463	$390
2009	362	$ 7,496	81%	295	175	16	93	2	43	38	64	46	477	$300
2008	428	$ 10,785	71%	304	197	8	130	16	34	44	121	25	575	$3,240
2007	489	$ 11,636	68%	331	291	152	340	8	38	178	65	94	1166	$2,880
2006	367	$ 7,460	10%	36	3	3	3	3	3	15	3	3	36	$0
2005	0	$ -		0	0	0	0	0	0	0	0	0	0	$0
Average	429													

	J	F	M	A	M	J	J	A	S	O	N	D			
													Total	3Q	2Q
2019	2	1	7	42	56	51	33	28	21	43	19	2	305	241	159
2018	6	4	14	64	79	34	21	46	52	45	17	7	389	320	201
2017	4	3	43	66	62	53	43	33	31	57	21	8	424	338	231
2016	6	14	56	105	75	50	42	40	48	50	19	5	510	436	306
2015	7	4	21	68	36	60	49	49	81	62	49	10	496	375	196
2014	3	4	16	54	48	60	57	44	71	52	18	7	434	357	185
2013	6	4	23	65	88	60	84	95	66	62	23	9	585	491	246
2012	8	2	30	62	50	50	62	45	57	54	25	13	458	366	202
2011	6	5	32	71	54	39	28	39	52	43	21	5	395	326	207
2010	3	3	52	55	44	42	25	42	32	39	22	3	362	298	199
2009	1	0	0	36	55	56	46	60	45	34	26	3	362	299	148
2008	2	2	4	65	39	49	103	66	30	49	12	7	428	360	161
2007	6	17	40	58	53	44	71	46	67	49	36	2	489	402	218
2006	0	0	29	34	39	54	68	37	21	57	27	1	367	282	156
Ave	4	5	26	60	56	50	52	48	48	50	24	6			
												Average	429	349	201

Program record

Go to Previous Years

Violations	Total	BMP	Grass Buff	Ent	Discharge	Inlet	Permit	Track	Other	RIF	Infractions
2019	266	213	10	47	2	17	9	34	5	$960	337
2018	246	84	4	77	3	35	35	68	17	$1,140	323
2017	263	131	32	19	4	20	19	83	5	$840	313
2016	278	124	6	47	4	23	13	120	30	$540	367
2015	478	330	2	62	2	27	47	175	46	$2,640	691
2014	428	233	2	67	4	74	37	188	160	$3,240	765
2013	243	123	24	76	14	22	67	71	58	$1,740	455
2012	307	155	14	155	7	34	119	50	29	$1,740	563
2011	190	110	11	51	2	32	44	125	33	$572	408
2010	229	175	18	66	3	35	56	76	34	$390	463
2009	295	175	16	93	2	43	38	64	46	$420	477
2008	304	197	8	130	16	34	44	121	25	$3,240	575
2007	351	291	152	340	8	38	178	65	94	$2,760	1166
2006	36		Begin 3-1-06		-	-	-	-	-	$0	36
	471	298	37	139	6	36	80	84	44	AVERAGE	496

2015
2014
2013
2012
2011
2010
2009
2008
2007
2006

MCM 5

Post Construction Program

THE CITY OF Fargo

FAR MORE

MCM 5 – Post-construction Stormwater Management

The City of Fargo has developed, implemented, and enforces a post-construction, pollution reduction program for new and redevelopment projects within its jurisdiction. This includes projects that disturb one or more acres and smaller projects that are part of a larger common plan of development. These "specific requirements" meet or exceed state mandated levels outlined in Appendix 1 of the North Dakota MS4 Permit - NDR04.

Chapter 37 Stormwater Management (regulatory method)

Chapter 37 of the Fargo Municipal Code establishes criteria for the post-construction stormwater program. Our program sets specific control requirements for the runoff rate and water quality treatment per site, for all development projects including those less than one acre.

Program Outline

- Storm Policy sets specific stormwater guidelines and has computation tables
- Construction/development applications must submit site plans for review/approval with stormwater features: locations, volume and runoff calculations, BMP and maintenance issues.
- Projects area evaluated on a per site basis under the site plan review process (see below).
- All previously undeveloped properties and subdivisions are required to provide a Storm Water Management Plan (plan) for the subject area.
- Submission and approval of the plan is required prior to plat approval.
- Failure to comply with the requirements of a site plan review results in a no build situation.

Site Plan Review Process

During the site plan review process, (a requirement set forth in the Land Development Code (LDC)) engineering evaluates all infrastructure connections and conflicting site conditions, including permanent stormwater BMP's. Non-conforming scenarios are notated and the plan returned for correction. This practice called "site plan review" ensures compliance with the LDC, stormwater requirements of the North Dakota Department of Health NDPDES construction permit (NDR10-0000) and MS4 discharge permits and Chapter 37 of the Fargo Municipal Code.

This process verifies the post construction aspect for permanent stormwater treatment. Each site plan submittal is reviewed via a check-off list for conforming release rates, detention volumes, pipe sizing, etc. Permanent detention features allow options to applicants regarding detention by providing large-scale (regional) retention. A Stormwater Management Report prepared by a Professional Engineer registered in the state of North Dakota, indicating compliance with the discharge rate is required for all developments. Detention/retention volume requirements will be established by the discharge limitation.

City of Fargo

Policy on Storm Water Discharge and Treatment Requirements

Authority and Purpose

The City of Fargo operates a Municipal Separate Storm Sewer System (MS4) under authority of the North Dakota Department of Health Permit NDR04-0000 (Discharge Permit), and City of Fargo Code of Ordinances, Chapters 17 and 37. In compliance with this authority, Fargo has developed this Storm Water Policy (storm water policy). This policy establishes standards for storm water discharges and quality treatment for all development within City jurisdiction.

Intent of the Policy

The intent of this policy is to provide guidance to those persons working with the City's storm water management ordinance and to establish uniform, simplified standards that work within the framework of the City's storm water infrastructure.

Target Audience

This policy is applicable to all development (ref Code of Ordinances, Chapter 37, Paragraph 37-0102 7.) falling under the jurisdiction of the City of Fargo.

Storm Water Management Plan

All previously undeveloped properties and subdivisions are required to provide a Storm Water Management Plan (plan) for the subject area. Submission and approval of the plan is required prior to plat approval. Plan requirements are discussed in **Appendix A**.

Storm Water Discharge Requirement/Limit

The maximum storm water discharge rate shall be as defined in **Appendix B** and shall fit into the following categories:

1. Newly Platted Ag Conversion
2. Re-plat of current parcel 1 acre in size or greater (Common Development Criteria Enforced)
3. Re-development of existing parcel of 1 acre in size or greater
4. Existing Parking Lot: Maintenance repair or overlay
5. Existing Parking Lot reconstruction
6. Previously Platted Parcels less than one acre that are part of a common development

A Storm Water Management Report, prepared by a Professional Engineer registered in the State of North Dakota, indicating compliance with the discharge rate is required for all developments. Detention/retention volume requirements will be established by the discharge limitation.

Water Quality Treatment

Water quality treatment is required for all new developments or re-plats one (1) acre in size or larger, common developments collectively one acre or larger, and on existing parking lots receiving full re-construction. Requirements are specified in **Appendix C**.

Storm Water Detention, Retention, and Discharge Pond Design

Appendix D outlines the requirements for pond design within developments.

Fargo Storm Sewer System

Area = 50 square miles
Miles of Pipe = 501
Inlets = 11,033
Manholes = 9,185
Legal drains = 6
Storm Lift Stations = 80

APPENDIX A:

STORM WATER CONCEPTUAL PLAN

1. All newly platted Ag Conversion properties, new lot Subdivisions within a larger common development, and infill projects within a larger platted development equal to or greater than 1.0 acre in size are required to have a storm water management plan that includes those Best Management Practices (BMPs) required for the Addition or Subdivision to meet storm water quality and quantity requirements. Approval of the regional storm water management plan is considered part of the plat approval process.

2. Existing parking lot projects that involve only spot repairs, surface treatments or added surfacing of existing surfaced lots under 1 acre threshold will be exempt from the storm water discharge requirements.

3. Existing parking lot projects that involve reconstruction shall be required to add storm water inlets to convey water into the City storm water system and shall comply with storm water treatment requirements.

4. Previously platted lots less than one acre, that are part of a larger common development, will be required to have a storm water management plan when the lot is developed. This storm water management plan shall analyze the impact the addition of this newly improved lot will have on the overall storm water features of the common development. As a minimum, these lots shall drain to a common inlet that is connected to the City storm water system, while meeting the allowable release rate and water quality requirements.

5. Article 37-0201 of the City of Fargo Code of Ordinances states: “An owner must submit to the City Engineer a plan for storm water management and control including detention and retention facilities. The plan shall be submitted, and approval obtained from the City Engineer prior to the owner (a) obtaining approval of an application for a plat, pursuant to Section 20-0907 of the Land Development Code of the City, or (b) engaging in any land disturbing activity.

   The plan may include “in the discretion of the City Engineer, arrangements for further planning and implementation of permanent facilities for storm water management and control by subsequent owners of the property being platted or by the current owner at a later time.” Delay in producing the storm water plan will be considered when extenuating circumstances dictate but will generally not be allowed.

6. The storm water management plan, at a minimum, shall consist of:

   (1) A Storm Water Management Plan Report prepared using a "Storm Water Modeling System" that provides a modeling report similar in nature to "HydroCad". The report shall document the assumptions, methodologies, and analysis used in arriving at the selected storm water management solution. The report must be "global" in that it looks at the entire area to be developed as well as any impacts to the site created by neighboring areas. The report shall be conceptual in nature and include (1) a narrative describing the existing site conditions, proposed site conditions, types and locations of storm water BMPs proposed to be used, as well as (2) the model calculations for the post-development 2, 10, and 100-year storm events as identified under the most current NOAA Atlas 14 release storm event for Fargo.

   (2) Conceptual plan drawings and topographic maps noting all items covered in the report.

   (3) Conceptual Operations and Maintenance (O&M) plan for the system covering all requirements for keeping the system operating as planned.

   (4) The above-noted items shall be stamped and signed by a Professional Engineer registered in the State of North Dakota.

   (5) A regional storm water plan can use any combinations of BMPs, selected by the owner and their engineer, enabling the property to meet the storm water quantity and quality requirements. The plan may utilize regional or "on-site" detention/retention and water quality facilities however, per the Fargo Comprehensive Plan; the City desires to see storm water facilities constructed as regional amenities whenever possible. If a regional facility is used, the pond shall be located to facilitate capture of as much site storm water as possible prior to discharge into the City storm water system.

   (6) The submitted conceptual storm water plan will be reviewed by the City's Engineering Department. The Engineering Department will evaluate the storm water plan and communicate change requirements or recommendations to the owner and their engineer. Changes made to the storm water plan prior to plat approval will be considered part of the original plan. If the plan is very complex, it may be brought before the City Commission for discussion and/or public comment prior to approval.

   (7) If a subdivided property is covered by a previously approved storm water plan, the previously approved plan shall be reviewed to determine if the subdivided property is still in compliance. A letter from a North Dakota Registered Professional Engineer can accomplish this.

(8) The approved plan will exist for the life of the subject property including any changes approved by the City Engineering Department. The final approved plan will be included with the amenities plan

(9) The plan may require dedication of storm water or access easements or additional right-of-way for the construction of storm water conveyance and/or storage facilities.

(10) The plan must ensure the subject area conforms to the site specific performance requirements noted in Appendices B and C of this policy.

APPENDIX B:

SITE DEVELOPMENT - STORM WATER DISCHARGE REQUIREMENTS

1. The discharge rate for storm water discharging from any site, greater than 3 acres in size, into any drain system within City jurisdiction, shall be limited to 1 cfs/acre. For parcels between 1 and 3 acres the maximum discharge shall be per the following table:

Parcel Size (Acres)	Release Rate (cfs)
1.0	2.00
1.1	2.05
1.2	2.10
1.3	2.15
1.4	2.20
1.5	2.25
1.6	2.30
1.7	2.35
1.8	2.40
1.9	2.45
2.0	2.50
2.1	2.55
2.2	2.60
2.3	2.65
2.4	2.70
2.5	2.75
2.6	2.80
2.7	2.85
2.8	2.90
2.9	2.95
3.0	3.00

This table shall apply to all projects covered under this policy except existing parking lots where the parking lot is just receiving maintenance work. However, existing parking lots that are being reconstructed shall include the collection of site storm water into a catch basin that is then connected to the existing City storm sewer system if available and shall meet the water quality requirements. Existing parking lots described here shall not be required to provide storm water detention.

2. A storm water report, prepared using a "Storm water Modeling System" that provides a modeling report similar in nature to "HydroCad", is required for all developments one acre in size or greater or if part of a larger common development that is 1 acre or larger. The report must include hydrographs depicting flows into and out of all detention/retention facilities and note all flows into the City storm sewer system. In addition to the report, all site plans for sites requiring storm water infrastructure must include:
    - a summary table of post-construction flows for the 2, 10, and 100 year storm, as identified under the most current NOAA Atlas 14 release storm event for Fargo
    - a detail drawing of the outlet structure indicating maximum water elevations for the 2, 10, and 100 year storms, and
    - a written description of the proposed water quality treatment method

3. All sites except existing parking are required to comply with the State Water Quality Design Considerations. Water Quality Design Consideration information is included as **Appendix C** to this policy.

4. The discharge rate noted above will drive detention requirements for a particular site. Dry or wet ponds, oversized pipe, underground storm water storage facilities, or other methods can be used to achieve required storage volumes.

   If a "regional" detention system, as opposed to site-specific ponds, is chosen for the development area, all water shall be routed to the regional pond prior to discharge into the City system. The original, storm water conceptual plan (ref Appendix A) must address the conveyance of storm water from all parcels in the development to the regional detention facility.

   If the City of Fargo storm water utility system provides conveyance to the regional facility, the 1.0 CFS/acre criteria shall be used unless otherwise planned for - if the owner requires larger flows to the regional facility, this must be considered/negotiated during the development of the regional storm water plan.

5. Discharge or overland flow of storm water onto a neighboring property shall not be allowed unless included in the regional plan (see Appendix A) and facilitated through the designation of required easements, dedications, or other methods allowing such conveyance.

6. For those properties lying within the limits of, and meeting the design criteria for, a previously approved Regional Storm Water Plan (Appendix A), and approved regional site plan, no additional measures are required. The satisfaction of storm water requirements shall be noted on the site plan for the subject property. This verification of compliance shall cite the plan under which the subject property was previously approved and include as notes any pertinent storm water information applicable to the site plan. A revised/updated storm water report may be required to verify compliance.

7. Construction of “rain gardens”, “grassy swales”, and other methods of achieving water quality are encouraged and will be evaluated on a case-by-case basis.

8. Criteria for construction of regional detention facilities is discussed in **Appendix D**.

9. Each plan set submittal requiring retention/detention shall include a storm system table identifying:

    - Lot size (acreage and square feet)
    - % impervious area
    - Required retention/detention volume (100 year storm event)
    - Supplied retention/detention volume (100 year storm event)
    - Water quality method being proposed including manufacturers data
    - Release rate allowable (cfs)
    - Release rate actual (cfs)

APPENDIX C:

MS4 REQUIREMENTS

The following information is taken directly from page 21 of the current North Dakota NDR04-0000 MS4 Permit, dated April 1, 2016.

Water Quality

A water quality treatment system is required in developments as defined under Appendix B Storm Water Discharge Requirements. The system at a minimum must meet the standards specified below.

The post-construction controls for managing water quality for reducing pollutants carried in the first flush of storm water runoff are outlined below.

The design considerations for treating a water quality volume for common post-construction controls are as follows:

Control	Water Quality Design Consideration
Wet Detention Ponds	Water Quality Volume (Vwq) = 1800 cu-ft per impervious acre draining to the pond. The drawdown time for the Vwq should be a minimum of 12 hours.
Dry Detention Ponds (w/Extended Detention)	Extended Detention / Water Quality Volume (Vwqed) = 1800 cu-ft per impervious acre draining to pond. The drawdown time for the Vwqed should be a minimum of 24 hours and not more than 72 hours.
Infiltration	Water Quality Volume (Vwq) = 0.5 inches from impervious area. The volume captured in rain gardens, or passed through biofilters with under drains, would be grouped with infiltration for water quality treatment.
Flow-Through Treatment Devices	Size devices to treat the first 0.5 inches of runoff from impervious area.
Redevelopment / Retrofit	Incorporate water quality criteria by reducing impervious surface area and implementing controls to treat the first 0.5 inches of runoff from impervious areas.

The water quality criteria apply to on-site or regional systems for post-construction storm water management. The water quality considerations do not replace or substitute for water quantity or floodplain management for development. The water quality features may be incorporated into the design of structures for flow control; or water quality control may be achieved with separate features. Flow-Through Treatment devices such as "Defenders ™" shall provide as a minimum 80 percent removal of sediment with a particle size distribution equivalent to the standard OK-110 at a feed concentration of 300 mg/L.

If it is impractical to meet the water quality criteria, alternative practices may be used (e.g., grassed swales, smaller ponds, or grit chambers). If a combination of practices is used, the water quality volume is accounted for on a percentage basis. Low impact development and/or green infrastructure practices may be used as an alternative to post-construction controls.

The selection and design of post-construction controls must consider clogging or obstructions, freeze- thaw cycles, effects on slope stability and groundwater, and the ability to effectively maintain the control. Design post-construction controls for ease of inspection and maintenance access (e.g., a stabilized access that allows equipment to enter a pond).

Recommended resources for planning and designing controls for urban storm water runoff are:
"North Dakota Storm Water Criteria Manual"
https://www.dot.nd.gov/manuals/design/designmanual/designmanual.htm

The property owner is responsible to operate and maintain the water quality device in accordance with the manufacturer's recommendations. The property owner shall maintain records of maintenance of the water quality device and shall prepare an annual inspection report. These records are to be maintained with the property owner and shall be made available to City if requested.

APPENDIX D:

STORM WATER DETENTION, RETENTION, AND DISCHARGE POND DESIGN

The following information shall apply to Standard Regional Pond Design. The City may take ownership of a storm water pond that is designed according to the following criteria.

Design Requirements:

- Pond design shall be in conformance with the Current NDPDES permit.
- Minimum pond design shall be a 100-year rain event based upon the then current NOAA Atlas 14 published data for Fargo and shall include one (1) foot free board. All design modeling shall be done using HydroCad or equal commercially available modeling software. The proposer shall provide to the City a hardcopy Drainage Report signed by a ND Professional Engineer and shall provide an electronic copy of the complete design drainage model.
- Drainage and pond modeling shall include 2 year, 10 year, and 100 year 24 hour rainfall events as part of the analysis model.
- To qualify as a "Regional Pond" for purposes of City ownership and maintenance the minimum pond size for a **"Dry Pond" shall be 7.5 acre-feet** with a minimum bottom width of 100' and the minimum pond size for a **"Wet Pond" shall be 15 acre-feet** with an average bottom width of 100'. However, the City will review on a case-by-case basis whether a pond qualifies as a "Regional Pond" for purposes of City maintenance if its size is smaller than the minimum size identified.
- Pond design shall include 15 feet minimum of level ground from the top of back slope of the pond to the property line.
- Dry Pond-slopes shall be 5:1 or flatter up to 15 foot of vertical depth, 6:1 or flatter if 15 foot of vertical depth or greater, 1.5% grade in pond bottom to low flow channel and 0.4% grade from pond inlet to pond outlet with channel liner and 1% grade from pond inlet to pond outlet without channel liner. Dry ponds do not require a safety bench and slope protection armoring if less than or equal to 10 feet deep. Dry ponds do require a safety bench and slope protection armoring if greater than 10 feet deep. Dry ponds do require a sloped pond bottom and an underdrain system sufficient to maintain a "dry" state.
- Wet Pond-slopes shall be 6:1 or flatter up to 15 foot depth. If the designer wishes, the pond to be deeper than 15 foot a geotechnical evaluation of the pond slope stability is required. If the pond backs up to residential homes or legal drains, a geotechnical evaluation of the pond slope stability is also required. The pond shall be designed with safety features such as edge plantings to deter entrance to ponds and a safety ledge or

bench at pond perimeter 1 foot to 2 foot below normal water level and extend out 10 feet before continuing on slope.

- Slope protection on wet ponds shall be installed to one foot below safety bench or 1 foot above and 1 foot below normal water level whichever is greater. The slope protection shall be riprap or turf reinforcement with seeding. The remainder of exposed slopes shall be turf reinforcement and seeded. Rip Rap shall meet City of Fargo standards and NDDOT standards.
- No fountains or bubblers shall be allowed within City owned regional wet ponds. All pond aesthetic features such as shape, side slopes, and vegetation that are proposed shall be identified on the plans and match the land area requirements identified in the Zoning Ordinance and project development master plan.
- A City owned "Regional Pond" should have sufficient right of way access for routine and special maintenance as determined by the City Engineer.
- The pond drawdown time criteria is outlined in Appendix C.
- The pond design shall include a control outlet structure with emergency over flow design. The over flow structure shall include provisions to prevent overflows from affecting adjoining properties. The out flow and over flow structure shall be designed to prevent plugging, be easily accessible to maintenance personnel, and shall require minimal maintenance. Maximum out flow to a City storm sewer shall be as defined in Appendix B. The release rate may be less depending on meeting water quality standards as defined in Appendix C. However, the minimum outlet orifice size shall be 3 inches and shall have a screen ahead of the orifice to prevent plugging.
- For ponds to be accepted by the City for maintenance and operation as a "Regional Pond" the features in general shall not result in unusual and/or costly future operation and maintenance as determined by the City Engineer. Bridges and box culverts if required shall meet the design criteria of the regulating authority and shall meet State and Federal safety standards.
- Ditches, swales, and channels may be designed for a variety of capacities depending on the protection required. When ditches serve as a primary water surface collector in the upper part of a drainage basin, they shall be designed per NDCC 89-14-01 except that as a minimum, shall convey the 10-year storm event without ponding in the roadway or adjacent private property. The City Engineer will ultimately decide if ditches, swales, or channels are allowed in lieu of conventional underground piping.
- The City of Fargo Storm Water Service Charge policy identifies credits that may be achieved through building of detention or retention ponds larger than as determined by this policy. Developers and designers are encouraged to familiarize themselves with the current Storm Water "Determination and Review Policy" for storm water fees. The following details shall provide minimum standards for pond design.

City of Fargo Summary of Storm Sewers in Use

Total: January 1, 2020

	Total Installed	Total In use
Manholes	9,980	9,053
Inlets	13,020	11,033
PVC Edge Drain	1,832,584 LF	1,832,514 LF
Lift Stations/Pump Stations	80	80
Miles of Pipe	495 miles	501 miles
Regional Ponds		95
Private Ponds		284
Outfalls		43

MULTI-USE PATH
CATEGORY

GOLD STAR WINNER

Location:
Fargo, ND

Project Owner:
City of Fargo

Contractor:
All Finish Concrete

Concrete Supplier:
Kost Materials

BISON MEADOWS PHASE I

Bison Meadows is a bustling, new development located in south Fargo. This development is designed with families in mind. Bison Meadows lends its way to help its residents stay active with a neighborhood park and extensive concrete trails for walking, running or biking.

The concrete trail circles around this community and connects residents to various restaurants, grocery stores, up and coming shops, medical offices and even daycare providers. The location allows for quick trips out of the house to complete daily errands within walking distance.

All Finish Concrete, working with ready-mix concrete suppler Kost Materials, placed more than 1,800 cubic yards of concrete to complete this 1 ¾ mile long multi-use path. The steel reinforced concrete slab required more than 7,400 pieces of 20' rebar.

As with many multi-use paths, access by concrete trucks was a challenge during construction. All Finish needed to utilize several alternate placement methods in order to complete the job. In many instances the use of a concrete pump truck with up to 150' of hose was necessary to reach some remote locations. In other cases, access was gained by using a telebelt for placement. And in some instances, a skid steer with a 1-yard bucket was utilized to transfer concrete from the mixer trucks to the placement location.

The result of using concrete for to construct this multi-use path provides a smooth, durable, low maintenance and long-lasting pavement that will be utilized and enjoyed by generations to come.

MCM 6

Municipal Operations

Public Works Maintenance Operations

All Public stormwater features are inspected on a rotational basis annually for function, maintenance or repair by the public works/engineering departments. Those inspections resulting in major repair are forwarded to the engineering department for evaluation. Ponds and basins are inspected during maintenance activities, lined channels are cleaned and inspected annually, outfalls (and lift stations) are inspected both fall and spring.

This department also conducts a street sweeping program on a continuous basis during non-winter months. Salt storage/fueling operations are covered and not exposed to precipitation. Salt application management continues to use technology to minimize usage. See specific MS4 requirement comments below.

Training

Stormwater training is provided to appropriate city departments and their staff on a rotating basis. SSU curriculum compliments existing department training with a stormwater validation. Most departments have their own unique training for tasks on discipline specific topics that become uniformed operational standards. Recognize, respond and report are common themes in municipal operations. Remarkably, much of their "operational" training is stormwater connected. Some examples of the "common interface" are highlighted below along with SSU educational programming for the significant operational areas of the city.

Conveying the notion "include sound stormwater practice" into our everyday operations is beneficial to us all.

Operations, lDDE Training and Awareness

The stormwater "illicit discharge" is not a new concept to operations. Maintenance operations has traditionally focused on prevention and response to incidents that detract from facility design or function standards. Below are examples of operational scenarios that are also stormwater Best Management Practice (BMP).

- If a vehicle crashed into a drainage ditch, staff discovers it, communicates the incident to a supervisor and it gets removed (under an operational directive). Cleanup is a typical duty of operations, but it is also part of the stormwater concept of IDDE. Emphasizing the need to reduce the discharge of fluids and other contaminants from such situations personifies the stormwater educational goal.
- Non-conforming sewer connections, discharges, etc., discovery, awareness, and remediation is a routine operational task. Stormwater training merely serves as a reminder to continue good operational drill because it doubles as good stormwater practice.
- Material spills training in a department's safety protocol also has a direct correlation to stormwater. Protect the employee, pairs as a stormwater BMP by the training emphasis to follow manufacturer's instructions on the use of maintenance chemicals (mixing and application).

Mowing Operations

Consider the practicality of mower discharges placed back onto the turf, an acknowledged stormwater BMP. Yet, operational execution validates that collecting, hauling and dumping the clippings imposes added work and cost which effectively eliminates the option from consideration. Following that same premise, discharging clippings into the gutter only to later retrieve the same clippings from a capacity diminished, conveyance features is illogical. Given the absoluteness of such a fact, stormwater training simply needs to accentuate a correlation.

Snow Removal Operations

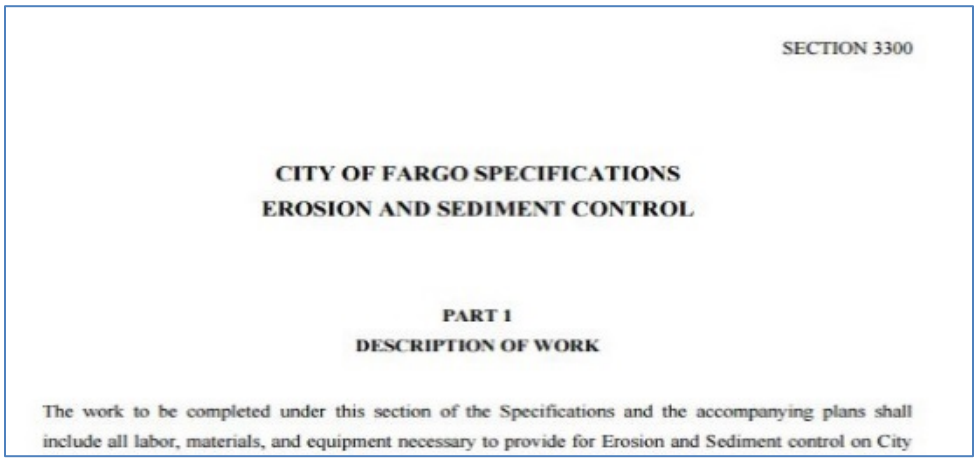
Snow removal occurs on a 24/7 basis following prescribed procedures and routes. Snow is hauled to an approved dump site citywide (Mapped). These snow dump sites all have adequate grass buffers that function as BMPs and are inspected twice each season (fall & spring). Department training on the most efficient routes, dumpsite perimeter control and area limits, the stormwater education aspect is also fulfilled.

Snow Dump Inspections

Location	Date	Time	Stormwater Conveyance	Report of Findings (condition of site)	Action to be taken	Additional Comments
12 Ave/55 St N	5/16/2019	2:30 PM	City Storm Sewer System	Fair - Good	dry out clean debris, there is a large sized snow pile still present	None
12 Ave/55 St N	10/25/2019	1:20 PM	City Storm Sewer System	Very Good	None	Asphault millings have been graded site is wet because of recent rains
6251 36 St S	5/16/2019	3:08 PM	City Storm Sewer System	Very Good	None	Site is also stockpiling asphault millings
6251 36 St S	10/25/2019	12:51 PM	City Storm Sewer System	Very Good	Monitor clay stockpile directly to south to be used for 2020 development	Asphault millings stockpile. Clay stockpile to south is stabelized
3837 38 St S	5/16/2019	3:00 PM	City Storm Sewer System	Very Good	Needs to dry out and clean debris	One large snow pile
3837 38 St S	10/25/2019	1:03 PM	City Storm Sewer System	Very Good	None	Asphault millings have been graded
45 St & 3 Ave N	5/16/2019	2:35 PM	City Storm Sewer System	Very Good	Site needs to dry out and be cleaned of debris	Still has medium size snow piles and a drainage issue reported to public works
45 St & 3 Ave N	10/25/2019	1:15 PM	City Storm Sewer System	Very good	None	Asphault millings have been added
450 34 St S	5/16/2019	2:44 PM	County Drain, Storm sewer system	Very Good	Still very wet. Needs to dry out and be cleaned of debris	Some minimal grading has been reported to public works
450 34 St S	10/25/2019	1:31 PM	County Drain, Storm sewer system	Very Good	None	Site is wet from recent rains but it is stabelized

Land Disturbance Projects

Land disturbing activity abides by Section 3300 of the City of Fargo Standard Specification criteria for stormwater management and erosion control.



SECTION 3300

CITY OF FARGO SPECIFICATIONS
EROSION AND SEDIMENT CONTROL

PART 1
DESCRIPTION OF WORK

The work to be completed under this section of the Specifications and the accompanying plans shall include all labor, materials, and equipment necessary to provide for Erosion and Sediment control on City

Storm Sewer Conveyance Maintenance Operations

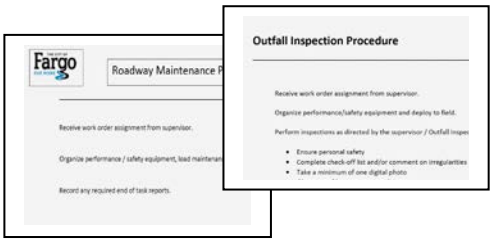
Storm sewer maintenance continues perpetually on a rotational or as required basis. The supervisor schedules inspections and directs maintenance work orders. Public works maintenance platform includes inspection (camera) minor repairs, surface sweeping, pipe jetting, mowing, open channel  sediment removal and prescribed lift station O & M work.

Roadway Maintenance Operations

Roadway maintenance activities consist of a sweeping program and minor repairs (mill/seal, mud jacking, pothole, etc).

Standard Operating Procedures, Guides and Policies (Written)

See written procedure examples for maintenance at the end of this section.



Sewer By-Pass Procedure

Log discovery / notice and direct to appropriate department / staff

Receive work order assignment from dispatcher / supervisor.

Organize performance / safety equipment and deploy to field.

Site Assessment

- Ensure personal safety
- Assess / problem / scope of repair

Notify affected departments / staff

- Environmental Health 476-6729
- Public Works 241-1453
- Stormwater 241-1545
- Wastewater Treatment Plant (immediately report any sanitary discharge) 241-1545
- Water Filtration Plant 241-1469

Public Safety

- Take action to assure public safety / traffic control / Public Notice

Perform Work

- Discharge to a like facility if possible
- Set-up emergency pumping operation
- Take action to reduce downstream affect
- Document with photos, notes

Post Action

- Log on location map / site & discharge point(s)
- Note suggestions for mitigation

Procedure implementation/revision date

_____

Supervisor _____

Roadway Maintenance Procedure

Receive work order assignment from supervisor.

Organize performance / safety equipment, load maintenance materials and deploy.

Direct clipping discharges back onto lawn and away from storm water conveyances.

Follow manufacturer's instructions for all chemical use.

Record any required end of task reports.

Procedure date _____

Supervisor _____

Outfall Inspection Procedure

Receive work order assignment from supervisor.

Organize performance/safety equipment and deploy to field.

Perform inspections as directed by the supervisor / Outfall Inspection Form:

- Ensure personal safety
- Complete check-off list and/or comment on irregularities
- Take a minimum of one digital photo
- Observe up/down stream conditions
- Mark and cordon-off all confirmed or suspect pipe separation locations to a safe level
- If Illicit Discharge is observed, follow IDDE Procedure/notify supervisor/document
- Submit completed forms to supervisor
- Maintenance required tracking sheet delivered to engineering for repairs

Trace-back (suspect flow, IDDE, aggregate materials, etc.,) as directed by supervisor

- Isolate location via ascending manhole inspection
- Use direct method (smoke, dye, etc.) to detect origination/source
- Contain, stop discharge and notify owner/occupant to attain conformance
- Obtain/restore compliance

Procedure implementation/revision date _____

Supervisor _____

Park & Course Maintenance

Be aware of and minimize water runoff (discharge) into the storm sewer system. Use Best Management Practices (BMP's) to prevent or minimize the identified pollutants (below) from entering the storm sewer system.

Ordinance Identified Pollutants (Group / Definition)	
Dumping of 37-0102.(33A)	Vegetative materials, including grass clippings & tree branches, Earth fill, Rocks Concrete Chunks or Metal, Demolition or construction materials, or structures.
Disposal /Misuse 37-0102.(33C)	Materials that would degrade the quality of waters within the system, including, but not limited to Chemicals (fertilizers, herbicides, pesticides, etc.) or chemical disposal or misuse of, Petroleum based products (gasoline, oil, fuels, solvents, paints, etc.).
Sediment Migration 37-0102.(33.D)	Erosion and sediment originating from a property and deposited onto city streets, private properties or into the storm water conveyance system Failure to clean/remove - tracked sediment by the end of each work day, or as needed to prevent or minimize the transport (33.E)

Receive work order assignment from supervisor.

Read and follow manufacturer's instructions on mixing and application for all fertilizer, herbicide and pesticide maintenance operations. Discus any concerns with supervisor including post operation cleaning and container disposal.

Organize performance / safety equipment, load maintenance materials and deploy.

Record any required end of task reports.

Procedure date _____

Supervisor _____

Roadway Maintenance Procedure

Receive work order assignment from supervisor.

Organize performance / safety equipment, load maintenance materials and deploy.

Record any required end of task reports.

Procedure date _____

Supervisor _____

EditDate	Asset ID	Location	Inspector(s)	Pipe Separation	Trash Rack	Rip Rap	Comments on Condition of Pipe Separation, Trash Rack, and Rip Rap	Overall Outfall Rating	x	y
8/16/2019 11:53	STFES0001246	901 41st ave no	Dg	yes	no	no	It seperation 18 ft by 11 ft by 6 ft deep	poor	-96.79162724	46.93528309
8/1/2019 18:19	STFES0000302	3702 10th st north	DG	no	no	yes	Rip Rap filled with silt	fair	-96.79155934	46.92719752
8/15/2019 19:54	STFES0001247	37th ave no and broadway	DG	no	no	yes	Good	excellent	-96.78640183	46.92544795
8/15/2019 19:55	STFES0000301	Kandi Lane no and Broadway	DG	no	yes	yes	Good	excellent	-96.78551364	46.92433518
8/19/2019 17:41	STFES0001264	Trollwood	DG	no	no	yes	Apron broke up	fair	-96.77865937	46.92614716
8/15/2019 17:10	STFES0000008	19 GOLF COURSE AVE N	DG	yes	yes	yes	First hole by outfall is 8 ft by 6 ft and 5 ft deep second hole is 6 ft by 4 ft and 3 ft deep	poor	-96.76571665	46.92735849
8/16/2019 18:35	STFES0000299	32nd ave & Eagle st north	DG	yes	no	yes	Big sink hole 5 ft by 3 ft and 3 ft deep	poor	-96.7621364	46.91983472
8/7/2019 15:43	STFES0000298	29 th ave & North Oaks	DG	no	no	yes		excellent	-96.76965206	46.91542479
8/19/2019 20:43	STFES0001248	28th Ave. N & Maple St. N	DG	no	yes	yes		excellent	-96.77002178	46.91341871
8/15/2019 19:56	STFES0001090	Lift #73	DG	no	yes	yes	Good	excellent	-96.7656665	46.91503529
8/15/2019 19:57	STFES0001088	120 North Woodcrest Dr	DG	no	no	yes	Good	excellent	-96.76702643	46.91215077
8/7/2019 16:10	STFES0000296	Park lane & N Woodcrest	DG	no	no	yes	Very little rip rap	excellent	-96.76412151	46.9113395
8/16/2019 18:34	STFES0000295	204 South Woodcrest N	DG	yes	no	yes	3 sink holes in area of 13 ft by 10 ft and 6 ft deep	poor	-96.76463914	46.9077406
8/16/2019 18:34	STFES0000294	Behind VA Hospital	DG	yes	no	yes	Sink Hole 6 ft by 4 ft and 2 ft deep	poor	-96.77106707	46.90666349
8/16/2019 11:49	STFES0001004	Lift # 26 Woodland Dr N	DG	yes	yes	yes	Sink hole	poor	-96.77395629	46.9033411
8/7/2019 18:15	STFES0000003	15 th ave & Elm St	DG	no	no	yes	Apron crack	excellent	-96.77651039	46.8973999
8/19/2019 20:39	STFES0001262	Between 14th & 15th Ave on Elm St. N	DG	no	no	yes	Good	excellent	-96.77670857	46.89519457
8/16/2019 11:48	STFES0000288	14 th ave & Elm St	DG	yes	no	yes	Separation being fixed	poor	-96.77631591	46.89439361
8/15/2019 19:59	STFES0000001	11 th ave & Elm St	DG	no	no	yes	Good	excellent	-96.77487928	46.88850646
8/19/2019 20:41	STFES0001249	North River Road & 9th Ave. N	DG	no	yes	yes	Good	excellent	-96.77548952	46.88566828
8/16/2019 18:33	STFES0000287	South Terrace & Ash St N	DG	yes	no	yes	Bad separation and big hole 8 ft by 8 ft and 5 ft deep	poor	-96.77163695	46.88138739
8/19/2019 20:40	STFES0001250	2nd St N and Liftstation # 23	DG	no	yes	yes	Good	excellent	-96.78145261	46.87850152
8/8/2019 13:07	STFES0001138	Main ave & 2 nd St	DG	no	yes	yes		excellent	-96.78035064	46.87263258
8/19/2019 20:40	STFES0001251	Lift station #18 & 2nd St. S	DG	no	yes	yes	Good	excellent	-96.78206721	46.87177274
8/19/2019 20:39	STVALVE0000090	6th Ave. & 3rd St. S	DG	no	no	no	In good condition, no rip rap	fair	-96.78094955	46.86852149
8/19/2019 20:39	STVALVE0000091	10th Ave. & 4th St. S	DG	no	no	yes	Good	excellent	-96.78343763	46.86437976
8/15/2019 20:03	STFES0001087	12 th ave & 4 th St S	DG	no	yes	yes	Good	excellent	-96.78464717	46.86239086
8/19/2019 20:38	STVALVE0000094	16th Ave. & Linden Dr S	DG	yes	no	yes	2 separations 5 ft apart	poor	-96.78570685	46.85509058
8/19/2019 20:38	STVALVE0000095	17th Ave. & Linden Dr S	DG	no	yes	yes	Good	excellent	-96.78576073	46.854691
8/16/2019 15:26	STFES0000285	18 th ave & lindenwood Dr S	DG	no	yes	yes	Good	excellent	-96.78564257	46.85298307
8/19/2019 20:38	STVALVE0000098	21st Ave. & 5th St. S	DG	yes	yes	yes	Pipe Separation 6 ft by 3 ft and 3 ft deep	poor	-96.78164919	46.84709972
8/19/2019 20:38	STVALVE0000099	26th Ave. & South Country Club Dr	DG	yes	yes	no	6 ft by 3 ft and 5 ft deep Looks like the whole bank is sliding	poor	-96.78828297	46.84030409
8/16/2019 17:37	STFES0001114	501 southwood Dr	DG	no	no	yes	Good	fair	-96.78824418	46.83341874
8/16/2019 17:38	STFES0000595	30 th ave & 11 th St S	DG	no	yes	yes	Good	excellent	-96.79354383	46.83443702
8/16/2019 17:39	STFES0000284	32 Nd ave & 11 th St S lift station # 27	DG	no	yes	yes	Good	excellent	-96.79465766	46.83287009
8/16/2019 18:07	STFES0001252	3512 River Dr S	DG	no	yes	yes	Good	excellent	-96.79389846	46.82660461
8/19/2019 20:37	STVALVE0000186	52nd Ave. & South University Drive	DG	no	no	yes	Good	excellent	-96.8034323	46.80410697
8/19/2019 12:26	STFES0000261	64 th Ave & HWY 81	DG	no	yes	yes	Good	excellent	-96.80052995	46.78892474
8/19/2019 12:26	STFES0001025	58 th Ave & HWY 81	DG	no	yes	yes	Good	excellent	-96.8022027	46.79805718

poor
fair
excellent

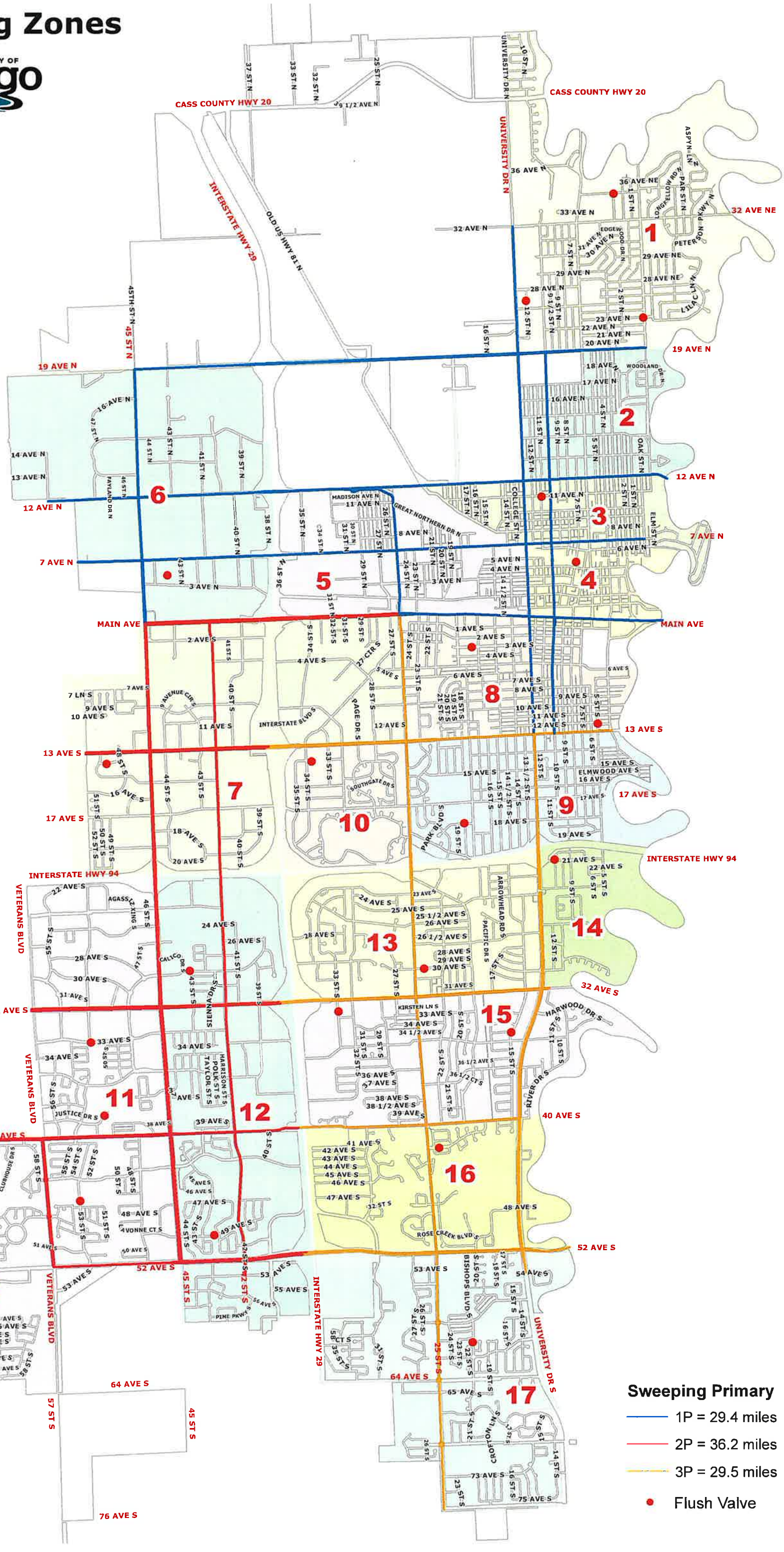
DRAIN CLEANING 2019

Drain Location	Date Cleaned		#of Loads	Total Wieght in Ton's	WO#
Drain #10	8/19/2019 - 919/2019		16	170	19479
Drain #3	8/14/2019 - 8/19/2019		11	105	19284
Drain #40	9/26/2019		13	118	19718
Osgood	8/21/2019		1	14	19307
Amber Valley	8/22/2019		1	6	19362
41st St & 30th Ave S.	8/22/2019		1	1	19366
23rd Ave & 26th St S.	8/30/2019		1	3	19367
North Oaks	9/16/2019		1	4	19409
Drain #27 (Ulteig ENG.)	9/25/2019		9	88	19319
34th St North OF 7th Ave N.	8/19/2019		1	12	19402
Action 7th Ave & 36th St N.	8/19/2019		1	4	19397
Pepsi Drain	9/16/2019		1	4	19460
48th St & 15th Ave S. (Scheel's)	9/16/2019		1	3	19396
Aggregate Dr.	9/17/2019		1	1	19394
Big Top Bingo Pond	8/30/2019		1	1	19395
Luther Ford Holding Pond	8/30/2019		1	2	19365
4495 53rd St S. West Side	8/28/2019		1	3	19315
Drain #40 (Fisheye)	9/19/2019		3	25	19462
6700 BLK of 25th St S. (East Side Davies)	8/30/2019		1	1	19364
		TOTAL	**66**	**565**	

small bucket

Sweeping Zones

THE CITY OF Fargo
FAR MORE



Sweeping Primary

- 1P = 29.4 miles
- 2P = 36.2 miles
- 3P = 29.5 miles
- Flush Valve

CITY OF Fargo

2018/2019

When Not to Use Liquids
Wind Speed is Greater than 15 mph and Blowing Snow is Present.
During a Freezing Rain or Rain Event.
When Ice is Already Present on Road Surface

Application Rates for Salt, IceSlicer and Sand/Salt:

Pavement Temperature at Product Application	Pavement Temperature Condition	Pavement Surface Conditon	Application Rate		Product
			Pounds Per Lane Mile	*Liquid Pre-Wet at Spinner* (80/20 Brine/AMP)	
Above 32° F	Temp. is Steady or Rising (No Blowing Snow)	Frost	54	NA	100 Brine
22° F to 32° F	Temp. is Steady or Rising (No Blowing Snow)	Frost	54	NA	90/5 Brine-AMP
22° F to 32° F	Temp. is Steady	Light Compaction/Ice	200	Yes	Salt
22° F to 32° F	Temp. is Steady	Mild Compaction/Ice	300	Yes	Salt
22° F to 32° F	Falling Temps.	Compaction/Ice	200	Yes	Salt / Ice Slicer Blend
15° F to 22° F	Temp. is Steady	Light Compaction/Ice	200	Yes	Salt
15° F to 22° F	Temp. is Steady	Mild Compaction/Ice	400	Yes	Salt
15° F to 22° F	Falling Temps.	Compaction/Ice	200	Yes	Salt / Ice Slicer Blend
0° F to 15° F	Temp. is Steady	Light Compaction/Ice	200	Yes	Salt / Ice Slicer Blend
0° F to 15° F	Temp. is Steady	Mild Compaction/Ice	300	Yes	Salt / Ice Slicer Blend
-5° F to 15° F	Falling Temps.	Compaction/Ice	400	Yes	100% Ice Slicer
Below -5° F	NA	NA	800	Yes	80% Sand / 20% Salt Mix

Chemical Dilution Guidelines:

Precipitation Type	Precipitation Rate		
	Light	Medium	Heavy
Powder Snow	Low	Low	Medium
Ordinary Snow	Low	Medium	High
Wet/Heavy Snow	Low	Medium	High
Rain	Low	Medium	High
Freezing Rain	Low	Medium	High
Sleet	Low	Medium	High
Frost & Black Ice	Low	NA	NA
None (end of Storm)	Low	Low	Low

City of Fargo Anti-Ice Application Guidelines:

PAVEMENT	APPLICATION OPERATION			
Surface Temperature	Pavement Surface Conditions	Weather Conditions	*Application Action*	*Gallons Per Lane Mile*
Above 32° F, (Temp. is Steady or Rising)	Dry	Clear	Apply Salt Brine	54
20° - 32° F,	Dry	Clear	Apply Blend 95% Salt Brine 5% AMP	54
20° - 32° F,	Dry	Light Snow/Wind Speed < 15 mph With No BS	Apply Blend 95% Salt Brine 5% AMP	54
20° - 32° F,	Dry	Light Snow/Wind Speed > 15 mph With Visible BS	Do not Apply Liquids	0
14° - 20° F,	Dry	Clear	Apply Blend 92.5% Salt Brine 7.5% AMP	54
14° - 20° F,	Dry	Light Snow/Wind Speed < 15 mph With No BS	Apply Blend 92.5% Salt Brine 7.5% AMP	54
14° - 20° F,	Dry	Light Snow/Wind Speed > 15 mph With Visible BS	Do not Apply Liquids	0
0° - 14° F,	Dry	Clear	Apply Blend 90% Salt Brine 10% AMP	54
0° - 14° F,	Dry	Light Snow/Wind Speed < 15 mph With No BS	Apply Blend 90% Salt Brine 10% AMP	54
0° - 14° F,	Dry	Light Snow/Wind Speed > 15 mph With Visible BS	Do not Apply Liquids	0
Below 0° F,	Dry	Clear	Do not Apply Liquids	0