

**Stormwater
Management
Program**

&

2018 Annual Discharge Monitoring Report

By Kevin Morlan



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Introduction and Description

The 2018 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.

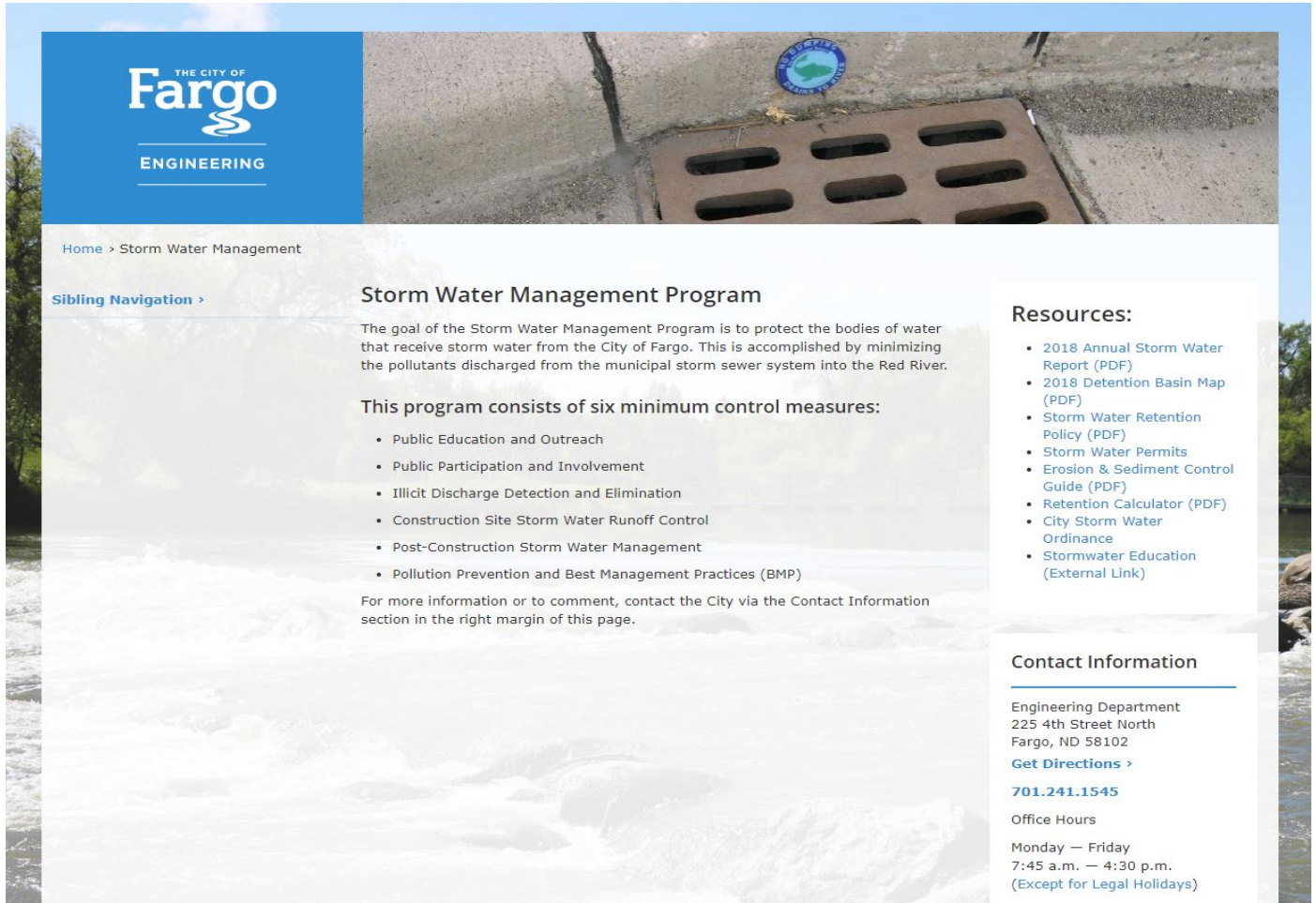
Ordinance Identified Pollutants (Group / Definition)

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.



THE CITY OF Fargo
ENGINEERING

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Storm Water Management Program

The goal of the Storm Water Management Program is to protect the bodies of water that receive storm water from the City of Fargo. This is accomplished by minimizing the pollutants discharged from the municipal storm sewer system into the Red River.

This program consists of six minimum control measures:

- Public Education and Outreach
- Public Participation and Involvement
- Illicit Discharge Detection and Elimination
- Construction Site Storm Water Runoff Control
- Post-Construction Storm Water Management
- Pollution Prevention and Best Management Practices (BMP)

For more information or to comment, contact the City via the Contact Information section in the right margin of this page.

Resources:

- [2018 Annual Storm Water Report \(PDF\)](#)
- [2018 Detention Basin Map \(PDF\)](#)
- [Storm Water Retention Policy \(PDF\)](#)
- [Storm Water Permits](#)
- [Erosion & Sediment Control Guide \(PDF\)](#)
- [Retention Calculator \(PDF\)](#)
- [City Storm Water Ordinance](#)
- [Stormwater Education \(External Link\)](#)

Contact Information

Engineering Department
225 4th Street North
Fargo, ND 58102
[Get Directions >](#)
701.241.1545
Office Hours
Monday — Friday
7:45 a.m. — 4:30 p.m.
(Except for Legal Holidays)

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 2018 beyond the studies.	Fargo Storm Sewer Utility	1-14-19	See individual Minimum control Measures for detailed information and supporting documentation.
MCM-1 & 2	Complies	Completed	Effective	Maintain As-is	No Changes	SSU	1-16-19	Most information in the report is available online www.fargond.gov/engineering/stormwatermanagement
MCM-3	Complies	Completed	Effective	Maintain As-is	No Changes	SSU	1-18-19	
MCM-4	Complies	Completed	Effective	Maintain As-is	No Changes	SSU	1-21-19	
MCM-5	Complies	Completed	Effective	Maintain As-is	No Changes	SSU	1-24-19	
MCM-6	Complies	Completed.	Effective	Maintain As-is	No Changes	SSU	1-29-19	
							2-5-19	

246
(Excludes Environmental Health and Wastewater Treatment Departments)

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.

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 Permittee 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

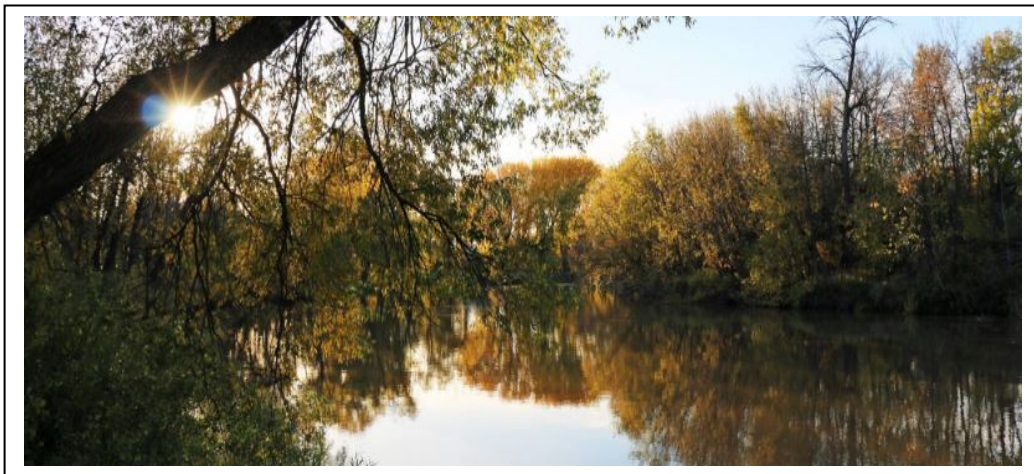
For more information on Stormwater:
www.EPA.gov

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, Public Works, Solid Waste, 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 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.



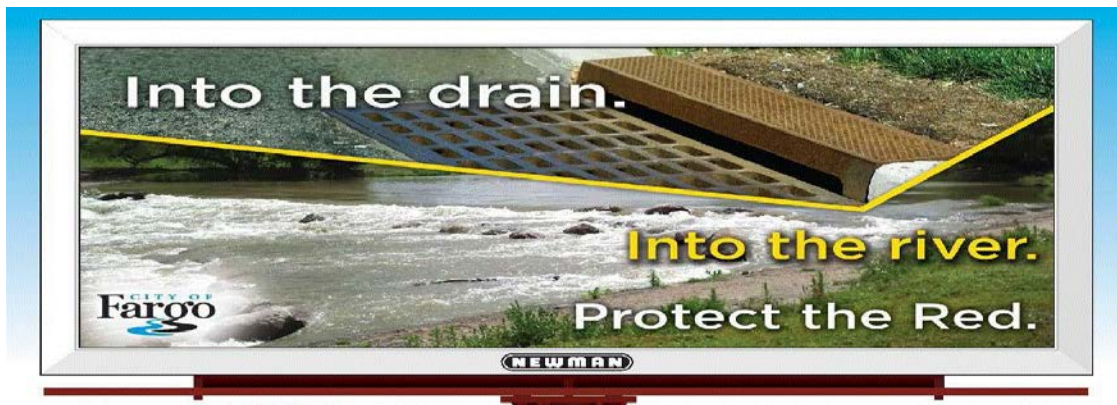
Pollutants and Best Management Practices

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's education 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 action (stopping/reducing) or 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 irrigation before any sediment/dirt from a flowerbed is carried into the street gutter.

Activities and Methods used to deliver our program

Mass Marketing



Digital Media

- Website www.fargond.gov
- Twitter
- Facebook



Newsletters



Protect our Waters
River Keepers

The rivers, lakes and streams we use for water supplies and recreation are easily impacted by human activities. Organic materials such as grass clippings, tree trimmings, leaves and other plant material pollute the water with wastes, pesticides and fertilizers. Yard, garden and pet waste dumped into or piled near waterways or their drain areas, has a negative impact on our water.

How you can help

- ✓Sweep yard waste and fertilizers off driveways, sidewalks and roads and properly manage.
- ✓Take yard waste to a neighborhood compost collection site or waste at a site away from water.
- ✓Pick up after pets.
- ✓Apply fertilizer and lawn care sparingly and according to instructions.
- ✓Use compost for fertilizer rather than inorganic chemical fertilizers.
- ✓Never dump anything down storm drains in gutters, streets, ditches or other areas that drain into a storm sewer or water body.
- ✓Use mulching lawn mower for grass and leaves.

*Environmental agencies and partners worked to develop this brochure.

Yard waste disposal information

Yard waste will not be collected from October 30. All yard waste (including grass, garden trimmings, excess fruits and vegetables) must be taken by the resident to a recycling or composted in your backyard. At the centers, large green containers are available for yard waste and small containers are available for bags and boxes that are used to haul the waste.

Household Hazardous Facility is open year-round

Household hazardous waste (oil, paint, antifreeze, pesticides, aerosols, etc.), hazardous materials (e.g., paints, thinners, stains, varnishes, etc.), and household hazardous waste (e.g., aerosols, antifreeze, oil, paint, etc.) are accepted at the facility. The facility also accepts household hazardous waste products (e.g., aerosols, antifreeze, oil, paint, etc.).

All in one recycling

The City of Fargo is introducing ALL in ONE recycling in July 2017. ALL in ONE recycling allows residents to deposit all of their recycling in ONE BIN. No more separating. It's never BIN easier!

For more information or, if you choose to opt out of the program, call 701.476.4087.

The cost will be \$3.00 per month and ALL in ONE recycling replaces the current sorted curbside blue bin collection. Residents participating will have a 96-gallon recycling container delivered to their home in June 2017. Collection will remain the same with recycling picked up every other week on your

Impacts on stormwater discharges + Steps the public can take to reduce pollutants from runoff

of 7th Avenue. Fargo residents hazardous waste to our facility charge during regular business hours. The HWY facility also accepts (cover, monitor and access) as well as on television per resident per month. The City of Fargo does not pick-up electronics or household hazardous waste products during Cleanup Week.

Year-round facility hours are as follows:
Mondays and Tuesdays - 9 a.m. to 5 p.m.
Wednesdays - 9 a.m. to 6 p.m.
Thursdays and Fridays - 9 a.m. to 5 p.m.
Second Saturdays of each month - 9 a.m. to noon.
 Businesses can call 701.281.8915 to schedule an appointment to drop off waste at the facility.

ALL in ONE recycling It's never BIN easier!

Direct Mail & Factsheets

ENGINEERING DEPARTMENT
1601 Broadway
Fargo, North Dakota 58103
Phone: 701.281.3333
Fax: 701.281.6909
2016.04.28.0018

RE: Administrative compliance order to remedy non-compliance storm water discharge.

Dear Sir:

This letter is to notify you that you have been cited for a discharge of storm water (SWD) from your property, which is a violation of the Fargo Storm Water Ordinance. This ordinance is located in Chapter 17 of the Fargo Municipal Code. The ordinance requires that you must obtain a permit to discharge storm water from your property.

Approximately 100,000 gallons of storm water are being discharged from your property into the city's storm sewer system. This discharge is causing significant damage to the city's storm sewer system and is a violation of the Fargo Storm Water Ordinance. There are mitigation options available that you must complete within the next 30 days to remedy this discharge.

We are available to meet with you on-site to discuss the corrective options. Please contact Steve by 476-4542 or request to set a meeting time.

Steve
Steve Smith, PE, CMA
Civil Engineer
Steve Smith 701.281.3333

Fargo Be Flood & Stormwater Aware

For information on Flood Watch, The Engineering Department Call 701.281.3333 and email us at stormwater@fargo.gov

Emergency 24-hour phone: 701.281.3333

Emergency 24-hour fax: 701.281.6909

Emergency 24-hour email: stormwater@fargo.gov

Emergency 24-hour website: www.fargo.gov

Emergency 24-hour text: 701.281.3333

Emergency 24-hour app: www.fargo.gov

Emergency 24-hour social media: www.fargo.gov

Emergency 24-hour sign: www.fargo.gov

Emergency 24-hour poster: www.fargo.gov

Emergency 24-hour brochure: www.fargo.gov

Emergency 24-hour flyer: www.fargo.gov

Emergency 24-hour card: www.fargo.gov

Emergency 24-hour sticker: www.fargo.gov

Emergency 24-hour magnet: www.fargo.gov

Emergency 24-hour keychain: www.fargo.gov

Emergency 24-hour pen: www.fargo.gov

Emergency 24-hour notebook: www.fargo.gov

Emergency 24-hour calendar: www.fargo.gov

Emergency 24-hour mousepad: www.fargo.gov

Emergency 24-hour t-shirt: www.fargo.gov

Emergency 24-hour hat: www.fargo.gov

Emergency 24-hour bag: www.fargo.gov

Emergency 24-hour backpack: www.fargo.gov

Emergency 24-hour lunchbox: www.fargo.gov

Emergency 24-hour cooler: www.fargo.gov

Emergency 24-hour umbrella: www.fargo.gov

Emergency 24-hour raincoat: www.fargo.gov

Emergency 24-hour boots: www.fargo.gov

Emergency 24-hour gloves: www.fargo.gov

Emergency 24-hour goggles: www.fargo.gov

Emergency 24-hour mask: www.fargo.gov

Emergency 24-hour scarf: www.fargo.gov

Emergency 24-hour hat: www.fargo.gov

Emergency 24-hour jacket: www.fargo.gov

Emergency 24-hour pants: www.fargo.gov

Emergency 24-hour shirt: www.fargo.gov

Emergency 24-hour socks: www.fargo.gov

Emergency 24-hour underwear: www.fargo.gov

Emergency 24-hour pajamas: www.fargo.gov

Emergency 24-hour towel: www.fargo.gov

Emergency 24-hour blanket: www.fargo.gov

Emergency 24-hour sheet: www.fargo.gov

Emergency 24-hour pillow: www.fargo.gov

Emergency 24-hour mattress: www.fargo.gov

Emergency 24-hour bed: www.fargo.gov

Emergency 24-hour room: www.fargo.gov

Emergency 24-hour house: www.fargo.gov

Emergency 24-hour city: www.fargo.gov

Emergency 24-hour state: www.fargo.gov

Emergency 24-hour country: www.fargo.gov

Emergency 24-hour world: www.fargo.gov

Distributed Stormwater Education Materials

Stormwater Pollution: Information for Homeowners

The City of Fargo is committed to keeping its waterways and stormwater systems clean. The most effective way to reduce stormwater pollution is to prevent it from entering the stormwater system in the first place. Stormwater is not treated, so anything that enters the stormwater system can end up in our waterways. The City of Fargo has a number of resources available to help you reduce stormwater pollution from your property.

Best Management Practices (BMPs)

There are a number of BMPs that you can use to reduce stormwater pollution from your property. These include:

- **Regular maintenance** of your roof, gutters, and downspouts.
- **Proper disposal** of household hazardous waste.
- **Proper disposal** of oil, paint, and other household chemicals.
- **Proper disposal** of tires, appliances, and other bulky items.
- **Proper disposal** of yard waste.
- **Proper disposal** of pet waste.
- **Proper disposal** of food waste.
- **Proper disposal** of pharmaceuticals.
- **Proper disposal** of electronics.
- **Proper disposal** of toys.
- **Proper disposal** of furniture.
- **Proper disposal** of other household items.

Other resources

- **Stormwater Pollution Prevention System (SWPPP)** - A plan that describes how you will manage stormwater runoff from your property.
- **Stormwater Pollution Prevention Manual** - A manual that provides detailed information on how to develop and implement a SWPPP.
- **Stormwater Pollution Prevention Checklist** - A checklist that provides a list of items to check for when developing and implementing a SWPPP.
- **Stormwater Pollution Prevention Training** - Training sessions that provide information on how to develop and implement a SWPPP.
- **Stormwater Pollution Prevention Consulting** - Consulting services that provide assistance in developing and implementing a SWPPP.

For more information on stormwater pollution, please contact the City of Fargo at 701.281.3333 or visit our website at www.fargo.gov.

Demonstration Projects

Community Gardens
The Fargo Project
Xeriscaping



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 etc. Fargo SSU staff participates with River Keepers in various annual activities.

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.





What is a water festival?

It's fun and educational and free! A youth water festival is an educational, fun-filled learning opportunity which increases a student's awareness and knowledge of water.



Students use a transparency tube to learn about water quality.

The objective of the festival is to enable students to learn how to gather information needed to make informed decisions about water use and protection, increasing their awareness and appreciation of water resources in our area.

Classes participate in an opening presentation and several 20 minute hands-on presentations. Presentations include information and interactive activities on

a variety of topics such as watersheds, non-point source pollution, water properties, and water quality. Classes have an option to spend an extra 1/2 day at the festival to participate in water activities outside near the Red River.

The festival is targeted to 4th grade students in the Buffalo-Red Watershed District and the Southeast Cass Water Resource District.

There is a resource area with information about water for teachers to take back to the classroom. Each student receives a bag of water related goodies.

When and where is the water festival?

The Red River Water Festival is usually held at the end of September. There is a morning session from 9:00 - 11:30 a.m. and an afternoon session from 11:45 - 2:15 p.m. The festival is held at the Hjem-komst Center, 202 1st Avenue North in Moorhead.



Students attend an opening session.

Sponsorships or inkind donations are needed for:

- ◆ activity supplies
- ◆ student and teacher resources
- ◆ printing
- ◆ volunteer lunch
- ◆ bus transportation
- ◆ coordination

Awards:

- ◆ Minnesota Environmental Initiative Awards Finalist in May 2006.
- ◆ Outstanding Program Award from the Red River Basin Commission in January 2003.

Current partners:

- ◆ ND Project WET
- ◆ AE2S
- ◆ International Water Institute
- ◆ River Watch
- ◆ ND Water Education Association
- ◆ City of Fargo
- ◆ City of Moorhead
- ◆ U.S. Fish & Wildlife Service
- ◆ Cass Soil Conservation District
- ◆ Fargo Park District
- ◆ Fargo Public School District
- ◆ NDSU
- ◆ 4-H
- ◆ Concordia College
- ◆ Barnesville High School
- ◆ Buffalo-Red River Watershed District
- ◆ Southeast Cass Water Resource District
- ◆ And others



Students learn about water treatment by making a mini-water plant.

For more information, contact:

River Keepers
 1120 28th Ave. N., Ste., B Fargo, ND
 701-235-2895
info@riverkeepers.org
www.riverkeepers.org

Committees

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

Feedback



Community Feedback

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

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.

- 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.)
- 2018 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 (additions or deletions) are incorporated and executed the following season.

Current program is deemed adequate and no changes are recommended for 2019. 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 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 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!



To sign up YOUR volunteer group to mark storm drains, contact:

R I V E R



K E E P E R S

(701) 356-8915
kimberly@riverkeepers.org
1120 28th Ave. N., Ste. B
Fargo, ND 58102

For more information:

www.riverkeepers.org
www.cityoffargo.com
www.cityofmoorhead.com

**Thank you for helping
protect the
Red River Valley's
drinking water supply!**

Storm Drain Marking Program

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

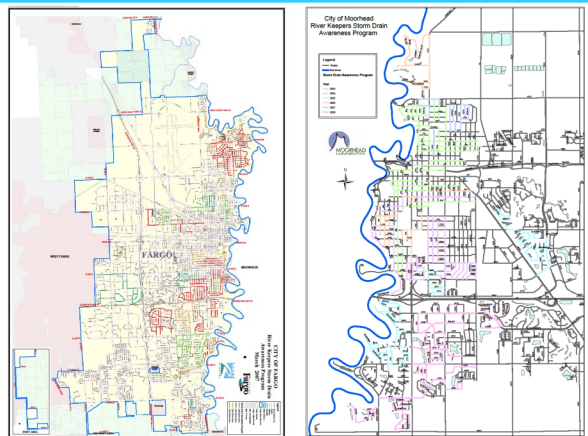


Sponsors:



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. Decide on time of day and length of time available to do the project. Two hours is the recommended length.
4. Decide on 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 a back up date in case of rain.
8. Contact River Keepers to set up project which includes supplies and training.



The Cities of Fargo and Moorhead report the number of marked drains, volunteers and volunteer hours to the U.S. Environmental Protection Agency.

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 the 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.

Curb Marking Team Continued:

4. Apply adhesive disk to cleaned area.
5. Remove backing paper once adhesive disk is in place.
6. Place storm drain marker on top of the adhesive disk. It is important that the entire edge of the marker is sealed to the curb.
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.

POTENTIAL PROBLEM	SOLUTION
MOTOR OIL Motor oil is banned from Moorhead and North Dakota landfills. 1 quart of motor oil can contaminate 200,000 gallons of water more than 30 people drink in a lifetime. It can also clog pipes and aquifers, pollute streams.	Store used oil in a sealed labeled container (do not mix with other products and label it as used oil) and bring it to either Fargo or Moorhead. (See City of Fargo or Moorhead Hazardous Waste (HWM) Facilities).
ANTIFREEZE Antifreeze is toxic. Because it comes, moves, and is absorbed by plants, landfills and waterways also contain highly mobile form of nitrogen, such as lead and benzene that pose environmental hazards.	If your household is connected to a municipal sewer system, you can flush used antifreeze down the sink. Never flush if you have septic in system or pour it down a storm drain.
YARD WASTE Yard wastes such as grass clippings, mulch and yard trimmings, leaves and shrubs. Yard waste does not belong in drains, sewers, storm drains, manholes, or existing treatment facilities.	Yard wastes cannot be disposed of in local landfills. Compost yard waste at home, have your neighbor or your lawn (mowing) or contact the City of Moorhead. Contact the City of Moorhead, Compost Site (218) 208-4465. (www.citymoorhead.com) or take to one of Fargo's composting sites. (www.cityofargo.com/water)
DISCART Salt used for deicing sidewalks and streets is harmful to plants, especially grasses, lawns, shrubs and vegetation. Some oil-based paints can harm trees and plants.	Shovel salts and deicers promptly before snow is compacted into lawns. Use salt, grit, or calcium magnesium chloride instead of rock salt chloride. If you use salt, use it sparingly.
PAINT Many paint products can harm people, wildlife and the environment when burned, not or disposed of improperly. Some oil-based paints can harm trees and plants and hazardous vapors.	Donate good used paint to neighbors or community groups, oil-based paints may bring them or oil-based paints to the City of Fargo as City of Fargo's HWM facilities during their hours of operation. (April thru October)
LAWN CHEMICALS Insecticides and herbicides used by runoff from lawns and gardens to storm drains can kill or damage the health of reproduction of aquatic plants, insects or fish. Herbicides in fertilizer can cause algae blooms and plant growth that make the water unsuitable for recreation and reduce oxygen levels.	Get a soil test before applying fertilizers to make sure it's needed and then use the appropriate amount sparingly every year. -Never spread chemicals across stormwater channels. -Sweep up spills. -Check every chemical before a rain. -Use Phosphorus free fertilizer.

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!

MCM 3

**Illicit Discharge Detection and
Elimination Program
(IDDE)**



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

Degrading water quality by dumping any 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 practice or incident. 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 a standard operating procedure format. Administration initiates 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 connections 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 of operations and Storm Sewer Utilities reverts to a support role.

Routine Municipal Operations

Non-conforming material is an everyday maintenance issue for Fargo's Public Works (FPW) operations. Operational staff is the field staff, defined by job description directed toward maintenance tasks of the city. Staff varying from garbage pickup to snowplow operators 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.cityoffargo.com/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)

Notice of Violation/Order to Correct



Engineering Department
225 4th Street North
Fargo, ND 58102

Phone 701.241.1545
Fax 241.8101
stormwater@fargond.gov

Notice of Stormwater Violation and Order to Correct

Fargo Municipal Code 37-0-102

OWNER / OPERATOR

SITE ADDRESS

CONTACT FAX #

Date / Time

Immediate Action Required

DEFICIENCIES - VIOLATIONS

- Illegal discharge**
- Other >>>>>**

CORRECTIVE ACTION REQUIRED

Issued by

Additional Enforcement Action

Summons to Appear under section 11-0901 of the Fargo Municipal Code.

Enforcement Action

_____ Date referred to City Attorney

_____ Date referred to State of ND

>>> Owner / Operator - Sign and email to stormwater@fargond.gov



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.

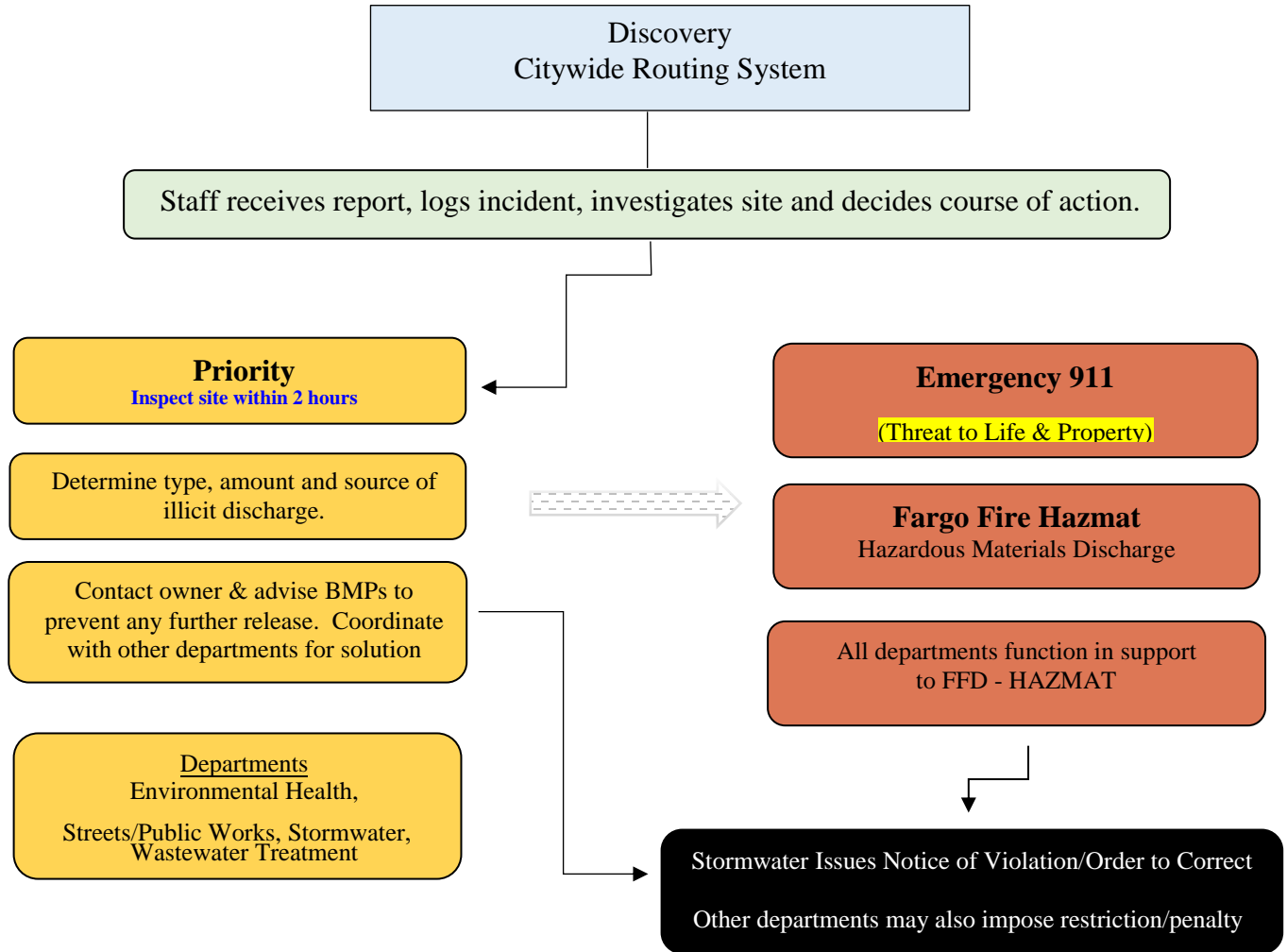
Post remediation inspection

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.



Stormwater takes a support role to lead department.

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



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 land disturbing activities in excess of 5,000 square feet or that has a potential to discharge sediment off a site must apply for an **Erosion and Sediment Control Permit** (ESC Permit) (37.0301). The purpose of the permit is to provide site identification, point of contact information and a formal record. This official "tracking" system is maintained daily by SSU staff on a spreadsheet with links to violations and related actions. This system has archive capability with a search-by address/document number function; it covers both commercial and residential construction sites.

ESC Permit

Commercial sites must permit and submit an ESC site plan. Commercial submissions must also undergo the engineering department's site plan review process which contains a stormwater review element.

A screenshot of a web-based application form titled "ESC PERMIT" from the City of Fargo. The form includes various input fields for project details, permit information, and applicant information. The Fargo logo is visible in the top left corner.

Homebuilders (residential) of one and two unit buildings must permit 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 "siteplan 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 plan.

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**



Citizen Contact, Complaints and Contribution's Log

Public contact episodes are logged at several interface portals including: Fargoone, city email accounts, Facebook and Twitter are 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 **email** links. Reminders, communicated to an ever-Email lists are compiled from ensure effective information



directly with contractors via digital requirements and changes are changing roster of contractors. the permit contact database to 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 second annual spring stormwater conference in 2018. The goal in 2019 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.

Spring Stormwater Reminders

by Chelsea Diederich, Communications Coordinator

The weather is warming up which means snow is melting and spring is right around the corner. The HBA of F-M has gathered up tips from Fargo, Moorhead and West Fargo to keep you up-to-date on the latest stormwater tips.

S

FARGO

Kevin Morlan

Stormwater Inspector

The city of Fargo engineering department is gearing up for this year's construction season! We will be sending out our mass notice to deploy all best management practices by email to all area builders, contractors, and developers as the spring thaw takes place. At that point, storm sewer utility staff will begin patrolling all permitted areas for compliance. You are required to file an Erosion & Sediment Control Permit before any land disturbing activity of more than 5,000 square feet occurs. The permit form can be filed at the city of Fargo engineering department. There is also an editable form online at www.fargond.gov that can be emailed to stormwater@fargond.gov.

We would like to remind all contractors that vehicle track out and proper BMP placement are our two largest infractions. The city of Fargo requires excessive tracking to be addressed as needed throughout the day, as well as at the end of each working day to minimize the impacts to the storm sewer system and ensure safe roadways. All construction materials should stay clear of the right of way to allow BMPs to function properly. Also remember to follow all parking regulations and spring road restrictions.

R

City of Fargo

ENGINEERING

Floodplain - Stormwater

MARCH 29, 2018 CITY OF FARGO STORMWATER BREAKFAST SEMINAR

2nd Annual Stormwater Event

The City of Fargo has teamed up with The City of West Fargo and Brock White for this year's 2nd 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. Jennifer Hildebrand with WSB & Associates will also be presenting. Jennifer 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

Environmental
Compliance manager at
WSB & Associates, Inc.
Jennifer Hildebrand

Brock White
Geo/Erosion Control
Product Manager
Greg Halvorson

CITY OF FARGO
200 3rd St N
Fargo ND, 58102
701-241-1545



Construction Permit &
Violation Report
2018

Fargo's NPDES construction site pollution control program (MCMC 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 2018 permits dropped from the year previous as did the violations but very 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.

The success rate for permit issuance is excellent implying a general acceptance by operators.

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
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 2018 align once again with less permits issued. BMP as an infraction annually tops the list because it is a more ambiguous (catch-all) term. All infractions not specifically denoted independently are grouped into BMP.

Analysis of the BMP category resulted in a 75% increase in illegal entrance infractions. Statistically within the past 9 years when illegal entrance infractions are increased, track-out infractions have decreased. Targeting the proper installation of a temporary construction entrance was a goal for 2018. Track-out is the nagging problem.

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). We will continue to target proper construction entrances and increase enforcement on winter stabilization.

Violations

Year	NOVs Issued	BMP	Grass Buffer	Illegal Entrance	Illegal Discharge	Inlet Protection	Permit	Tracking	Total
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
Jordahl Custom Homes	85	47		55.3%
Thomsen Homes	83	45	BMP maintenance	54.2%
Krueger Construction	14	9	Street Tracking	64.3%
Heritage Homes	13	3	Illegal Entrance	23.1%
Dabbert Custom Homes	12	5		41.7%
J & L Construction	10	3		30.0%
Platinum Homes	10	2		20.0%
Adams Development	9	1		11.1%
Brekke	6	1		16.7%
	242	116		
Top 9 permit holders account for	62% of permits and 47% 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		
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	633													

	J	F	M	A	M	J	J	A	S	O	N	D	Total	3Q	2Q
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	4.2	4.1	24.7	56.8	50.6	51.4	59.3	52.3	52.2	50.1	25.9	6			

MCM 5

Post Construction Program



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).
- Policy has impervious surface maximum levels
- 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. Conversely, those sites at 65 % impervious surface are restricted to on-site water quality treatment.

Civil Plan Review Checklist

Project:
Address:
Zoning:

Date:
Reviewer:
Civil Engineer:

Category	Item	Resource	Comments
----------	------	----------	----------

Plans	Does the title/cover sheet clearly indicate project location?	<input type="checkbox"/>	Submittal
	Does the title/cover sheet clearly denote the project name?	<input type="checkbox"/>	Submittal
	Does the title/cover sheet clearly denote the date of the plan?	<input type="checkbox"/>	Submittal
	Does the title/cover sheet contain an index of plan sheets?	<input type="checkbox"/>	Submittal
	Does the title/cover sheet include the appropriate project stamp and signature block(s)?	<input type="checkbox"/>	Submittal
	Does the title/cover sheet include contact addresses and telephone numbers?	<input type="checkbox"/>	Submittal
	Do all sheets include legends that include all items shown on each particular sheet?	<input type="checkbox"/>	Submittal

Property/Site	Is there a site plan or survey sheet depicting the site as it currently exists?	<input type="checkbox"/>	Submittal
	Are all property lines properly shown on the plans?	<input type="checkbox"/>	Submittal
	Are all easements properly shown on the plans?	<input type="checkbox"/>	GIS Map
	Are there encroachment issues?	<input type="checkbox"/>	Submittal
	If easement encroachment, is there a variance, agreement, or change allowing the encroachment?	<input type="checkbox"/>	
	Is there a vacation of a street or alleyway?	<input type="checkbox"/>	
	Is there an Amenities Plan? Does it adequately address on-site amenities? Check both Engineering and Planning.	<input type="checkbox"/>	Section 20-0907
	Is there a need for shared access, utility, or pond agreements or easements?	<input type="checkbox"/>	
	Are all existing under and above ground utilities clearly and accurately indicated?	<input type="checkbox"/>	Submittal
If work is being done in the City RoW, is there a Traffic Control Plan ?	<input type="checkbox"/>	Submittal	

Demolition	Is there a Demolition Plan?	<input type="checkbox"/>	Submittal
	Has plan addressed any potential demolition within the City's right-of way?	<input type="checkbox"/>	Submittal
	Are there existing utilities requiring removal?	<input type="checkbox"/>	Submittal
	Does the plan indicate utility demolition back to the respective main?	<input type="checkbox"/>	Submittal

Flooding	Check 41 ft Water Surface Elevation Inundation Area (WSEIA) + 1.2 feet	<input type="checkbox"/>	GIS Map
	Check FEMA Base Flood Elevation (BFE) + 2.0 feet	<input type="checkbox"/>	GIS Map
	What is the Finished Floor (FF) elevation? Is it at or above the required elevation?	<input type="checkbox"/>	Submittal
	Are all new primary structures at or above the required elevation?	<input type="checkbox"/>	Submittal
	Are any of the buildings auxiliary buildings that can be lower (BFE + 1.0 ft)?	<input type="checkbox"/>	Submittal
	Is there a LOMR-F plan, to potentially remove the proposed structure(s) from existing FEMA 100 yr floodplain?	<input type="checkbox"/>	Submittal
Is the elevation 15 feet from structures at BFE or above (check pond slopes)?	<input type="checkbox"/>	Submittal	

Waterways	Do the plans include watercourse, MDZ, and LDZ setbacks, if appropriate?	<input type="checkbox"/>	Submittal
	Is the site within the Minimal or Limited Disturbance Zone Setback (MDZS or LDZS)?	<input type="checkbox"/>	Section 20-0508

Utilities	Is there a Utility Plan?	<input type="checkbox"/>	Submittal
Water	Does the water supply connect to the City system?	<input type="checkbox"/>	Submittal
	If not, is proper documentation for not connecting indicated?	<input type="checkbox"/>	
	If larger than 2 inch, is the service c-900 PVC?	<input type="checkbox"/>	Submittal
	If 2 inch or smaller, is the service copper?	<input type="checkbox"/>	Submittal
	If placement under paving is required, is it installed via boring?	<input type="checkbox"/>	Submittal
	Are the mains looped?	<input type="checkbox"/>	Submittal
	If not looped, are hydrants installed at the ends of isolated runs (for flushing purposes)?	<input type="checkbox"/>	Submittal
	Do valves allow for adequate isolation?	<input type="checkbox"/>	Submittal
	Are separate services installed for domestic use and fire use, when required?	<input type="checkbox"/>	Submittal
	Is there a note stating "Contractor shall coordinate with Mains & Hydrants Department" for wet tapping operations?	<input type="checkbox"/>	Submittal
	Ensure water does not conflict with other underground utilities.	<input type="checkbox"/>	Submittal
Sanitary	Is the sanitary system connected to the City of Fargo system?	<input type="checkbox"/>	Submittal
	If not tied into the City system, is proper documentation for not connecting indicated?	<input type="checkbox"/>	
	What type of pipe (SDR-26 Service Lines) is used? Does it meet City standards?	<input type="checkbox"/>	
	Do grades meet minimum requirements?	<input type="checkbox"/>	P 9, Eng Design Guide
	Do floor drains in garages connect to the sanitary system?	<input type="checkbox"/>	Submittal
	For 8" and larger mains, are required manholes installed? For services, are Cleanouts installed where needed?	<input type="checkbox"/>	Submittal
Ensure sanitary sewer does not conflict with other underground utilities.	<input type="checkbox"/>	Submittal	
Storm Sewer and Grading	Is there a Grading Plan?	<input type="checkbox"/>	Submittal
	Does the grading plan clearly indicate (arrows and/or elevations) where all site storm water flows?	<input type="checkbox"/>	Submittal
	Does the stormwater system connect to the City of Fargo system?	<input type="checkbox"/>	Section 20-0608
	If not tied into the City system, is proper documentation for not connecting indicated?	<input type="checkbox"/>	
	Is the pipe the correct size and type?	<input type="checkbox"/>	Spec Section 1500
	is the pipe at the correct grade? Does it flow correctly?	<input type="checkbox"/>	Spec Section 1500
	Are inlets and manholes appropriately located? Are they spaced appropriately?	<input type="checkbox"/>	Spec Section 1500
	Is Reinforced Concrete Pipe (RCP) used in the City Right-of-Way?	<input type="checkbox"/>	
	If boring under the street may use C900 pipe with adequate depth	<input type="checkbox"/>	
	Are maximum recommended pond slopes (4:1) exceeded?	<input type="checkbox"/>	Submittal
	Are pond outlet structures located outside the 10' Utility easement?	<input type="checkbox"/>	Submittal
Ensure storm sewer does not conflict with other underground utilities.	<input type="checkbox"/>	Submittal	
Storm water	Are HydroCAD (or similar) stormwater model results for the 2, 10, and 100 yr storm events included in the submittal?	<input type="checkbox"/>	Submittal
	Is regional detention available?	<input type="checkbox"/>	Regional Det map
	Does site imperviousness meet the regional detention capacity?	<input type="checkbox"/>	
	Is on-site storm water detention required?	<input type="checkbox"/>	Detention Policy
	Do detention volumes and discharge rates meet requirements?	<input type="checkbox"/>	Detention Policy
	Is there a 24 -72 hour drawdown period for the 2 year event? Or, is there a "Defender" device?	<input type="checkbox"/>	State water quality
ESC	Is there an Erosion and Sediment Control Plan?	<input type="checkbox"/>	Submittal
	Does the Erosion and Sediment Control (ESC) plan include all necessary ESC measures?	<input type="checkbox"/>	Submittal
	Does the Erosion and Sediment Control plan include all the appropriate and necessary details?	<input type="checkbox"/>	Submittal

Paving

- Is there a Paving Plan?
- Does the paving plan clearly indicate paving types and locations?
- Do the paving sections match with existing, if applicable?
- Do the paved areas meet the City's minimum geometric standards?
- Do driveway widths, placement (spacing), and thickness meet requirements?
- Are off-street parking requirements met?
- Is street access appropriate for the pavement functional classification (arterial, collector, local)?
- Does visibility at corners meet the minimum requirement?
- Does the type of curb match the roadway classification?
- Do patches match existing pavement sections?
- Are parking stall widths and turning spaces appropriate?
- Do turning lanes match future City improvements plans?

- Submittal
- Submittal
- Submittal
- Section 20-0611
-
- Section 20-0701
- Section 20-0702
- Section 20-0706
-
- Submittal
-
-

Defer to Planning

Sidewalks

- Are sidewalks appropriately provided?
- Is there a sidewalk detail that meets City standards?
- Is there a min 2 % slope between the sidewalk and curb?
- Are ADA requirements met? Ensure detectable panels are installed only at streets - not at driveways

- Section 20-0609
-
-
-

Streetlights

- Are there any streetlights affected by the plan?

- Submittal

Rehab Work

- Is there a potential for storm and sanitary cross-connection? If, so ensure seperation.
- Evaluate sanitary connections - could this be improved?
- Evaluate water connections - could this be improved?
- Evaluate storm water connections - could this be improved?

-
-
-
-

Regional retention

SSU encourages developers to provide regional, rather than local, retention. These facilities are generally larger, more easily maintained and generally more cost effective to build. Regional classification or “area-wide” retention serves multiple properties. Generally, regional ponds are publically-owned facilities but may be privately built depending on the planning agreement. See the current map for all pond location online www.fargond.gov (search storm pond map).

Strategies for Structural and Non-structural BMPs

Fargo collaborates with other communities to exchange ideas on effective stormwater management. This includes development of both structural/non-structural BMPs, quantity and quality components, stream restoration (hydrologic and biological), hybrid stormwater models for future growth planning. These cooperative exchanges include such topics as:

- Sharing plans / modeling data
- Site visits
- Budget and funding
- Failure and success examples

Operation, Maintenance and Inspection (Chapter 37-02.03)

All facilities shall be designed for future maintenance. Permanent stormwater system BMPs are required to be designated on a Record Drawing (final plan set) and sealed by a state licensed engineer (37-02.05). This as-built document is the responsibility of the owner, as is maintenance of the facility. The City Engineer retains inspection and compliance authority.

Policy on Storm Water Retention City of Fargo

The City of Fargo has developed a storm water master plan. A major part of that plan will address the need to control storm water runoff from developed and developing areas. Storm water retention will be required for all new development and should be included as part of the developer's master plan. Storm water retention will also be required for new sites in existing developments.

Local retention is classified as a retention pond or facilities that provide storm water retention on an individual property or site. Local retention facilities are constructed and maintained by the individual property owner.

Regional retention is generally larger facilities, easily maintained and generally, more cost effective to build. The City of Fargo believes that regional retention provides the most effective method to control localized runoff. The City of Fargo encourages developers to provide regional, rather than local, retention. Regional or area wide retention are classified as publicly constructed retention ponds installed to serve multiple properties or ponds privately built to City Standards within an individual development not exceeding a quarter-section of land and meeting the requirements listed below.

Image of online calculator

Retention Requirements for Sites Under 25 acres

$Q=120 \cdot A^{.55 \cdot 1.2}$

Total Acres	Percent Impervious	V - 10 yr Cubic ft Retention	V - 100 yr Cubic ft Retention	Allowable Realease Rate(10)	Allowable Release Rate (100)
<input style="width: 100%; height: 20px; background-color: yellow;" type="text"/>	<input style="width: 100%; height: 20px; background-color: yellow;" type="text"/>	<input style="width: 100%; height: 20px;" type="text"/>	<input style="width: 100%; height: 20px;" type="text"/>	<input style="width: 100%; height: 20px;" type="text"/>	<input style="width: 100%; height: 20px;" type="text"/>

Retention Requirements for Sites 25 - 100 acres

Total Acres	Percent Impervious	V - 10 yr Cubic ft Retention	V - 100 yr Cubic ft Retention	Allowable Realease Rate(10)	Allowable Release Rate (100)
<input style="width: 100%; height: 20px; background-color: yellow;" type="text"/>	<input style="width: 100%; height: 20px; background-color: yellow;" type="text"/>	<input style="width: 100%; height: 20px;" type="text"/>	<input style="width: 100%; height: 20px;" type="text"/>	<input style="width: 100%; height: 20px;" type="text"/>	<input style="width: 100%; height: 20px;" type="text"/>

Retention Requirements for Sites Greater than 100 acres

Total Acres	Percent Impervious	V - 10 yr Cubic ft Retention	V - 100 yr Cubic ft Retention	Allowable Realease Rate(10)	Allowable Release Rate (100)
<input style="width: 100%; height: 20px; background-color: yellow;" type="text"/>	<input style="width: 100%; height: 20px; background-color: yellow;" type="text"/>	<input style="width: 100%; height: 20px;" type="text"/>	<input style="width: 100%; height: 20px;" type="text"/>	<input style="width: 100%; height: 20px;" type="text"/>	<input style="width: 100%; height: 20px;" type="text"/>

Notes:
 At 25 acres the methods are roughly equivalent, both in retention requirements and the allowable discharges
 At 160 acres (with a C-factor of 0.6), this method provides for approximately 20 Acre-feet of storage
 If sites exceed a C-factor of 0.6, they would be required to provide on-site retention on all sites whether regional retention facilities are provided or not
 Minnesota Drainage outflow with modified 100 year retention requirements of + 0.2% per acre of drainage basin

Enter your information into the yellow boxes

Listed below are the retention requirements for development:

1. For sites under 1 acre:

It is not practical to require retention on very small sites. On-site or individual retention will not be required; however, retention is required on a regional basis. Regional retention is based on the acreage being developed and shall meet the requirements shown below.

2. For all sites between 1 acre and less than 2 ½ acres:

On-site retention is not required for sites with less than or equal to 65% imperviousness, however retention is required on a regional basis

On-site retention is required for sites with greater than 65% imperviousness

Retention based on equation method- 10 year and 100 year requirements

Discharge is two stage; 10-year allowable and 100-year allowable

Note: On-site retention requirements will be waived if regional retention is provided.

3. For developments or sites greater than 2 ½ acres and less than 25 acres:

On-site retention is required for all lots.

Retention based on equation method- 10 year and 100 year requirements

Discharge is two-stage - 10 year allowable and 100-year allowable

Note: On-site retention requirements can be waived if regional retention is provided and storm water discharge can be delivered to the regional retention facility without impacting existing drainage conditions.

This can be accomplished if the site is in close proximity to the regional facility

This can be accomplished by providing increased capacity of mainline storm sewers between the site and the regional facility.

If the runoff coefficient is greater than the design coefficient of the regional retention, on-site storage providing the volume difference between the two methods will be required, with the discharge pipe size limited to the 100-year pre-developed standard

4. Sites and developments greater than 25 acres:

Retention is generally required for all developments or sites in this category unless regional retention is provided.

Retention based on modified equation method

(Retention requirements are increased by requiring 0.2% additional capacity for every acre in the drainage area)

Discharge calculated by the large basin equation method; two-stage, 10-year and 100-year allowable

If regional retention is provided, and if the runoff coefficient is greater than the design coefficient of the regional retention, on-site storage providing the volume difference between the two methods will be required with the discharge pipe size limited to 1 cfs/ac for the 100 yr design & rainfall event. For most proposed projects <25 Ac.

Attached are data tables illustrating the required retention and allowable discharge equations and various typical development requirements.

Retention Requirement Formulas **3/19/2001**

Retention is required to limit the 10 year and 100-year allowable site discharge to pre-developed conditions. The site is required to hold or retain the difference between their allowable pre-developed condition and their actual fully developed condition. This is required for both the 10-year and the 100-year condition. Once the 10-year retention capacity conditions have been met, discharge is allowed to increase up to the 100-year pre-developed condition. During this time, in major storm events, the retention ponds will continue to fill until they reach the 100-year retention requirements.

The retention formulas are intended to approximate the results that are obtained using the TR-55 method. The formula method is easier to use and check and provides for consistent application of the retention policy. The equation method for retention and discharge are used for sites less than 25 acres. Above 25 acres, the retention formula is still used, however adjustments are made to reflect historical rainfalls and the reduced allowable discharge. This adjustment provides for a 0.2% increase in storage per acre once the drainage basin exceeds the 25-acre size. Allowable discharge is calculated by the large basin method, which is a modification of the MNDOT method commonly used in Minnesota counties. These allowable discharges are also two stage discharge conditions. The actual formulas are as follows:



Fargo Storm Sewer System

Area = 50 square miles
Miles of Pipe = 494
Inlets = 10,795
Legal drains = 6
Storm Lift Stations = 79

Areas 25 acres or less

Detention volume required

$$V=KA \quad (\text{Volume} = \text{Runoff coefficient} * \text{Area})$$

V is in acre-feet of storage required

K is the runoff coefficient (calculated below)

A is area in acres

Runoff coefficient calculations

$$K_{10}=(0.95 I - 1.90)/1000$$

$$K_{100}=(1.78 I - 0.002 I^2) - 3.56/1000$$

Where I = % of imperviousness

Allowable release rates

$$Q_{10} = 0.5 * A$$

$$Q_{100} = 1.0 * A$$

Q is in cubic feet per second (cfs)

A is in acres

Areas greater than 25 acres

Detention volume required

$V=KA * (1+(A*.002))$ (Volume = Runoff coefficient * Area * 0.2% per acre)

V is in acre-feet of storage required

K is the runoff coefficient (calculated below)

A is area in acres

Runoff coefficient calculations

$$K_{10}=(0.95 I - 1.90)/1000$$

$$K_{100}=(1.78 I - 0.002 I^2) - 3.56/1000$$

Where I = % of imperviousness

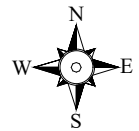
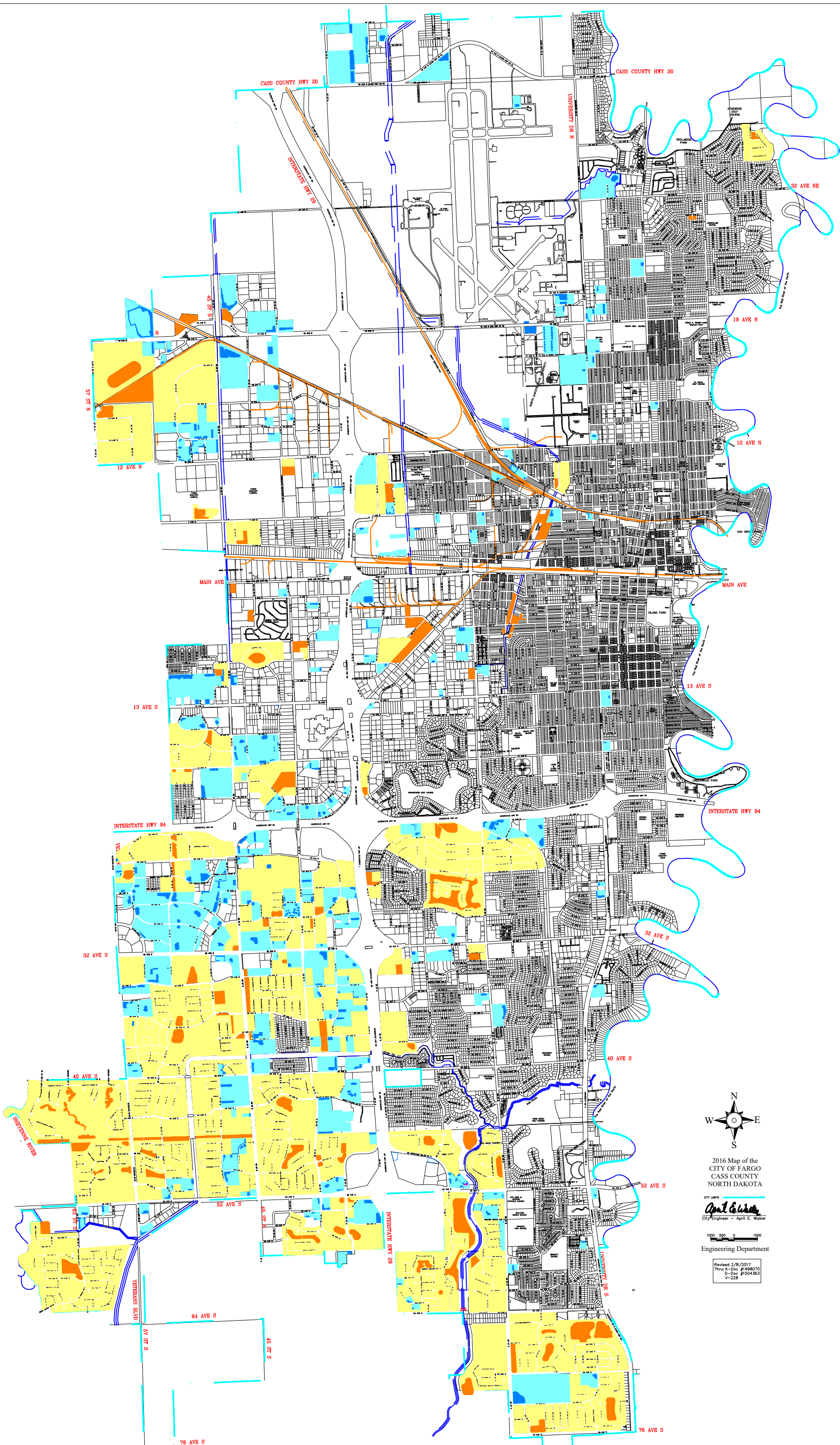
Allowable release rates

$$Q_{10} = (120*(A/640)^{0.55} * 0.71$$

$$Q_{100} = (120*(A/640)^{0.55} * 1.21$$

Q is in cubic feet per second (cfs)

A is in acres



2016 Map of the
CITY OF FARGO
CASS COUNTY
NORTH DAKOTA

CITY LIMITS
April E. Walker
City Engineer - April E. Walker

1000 500 0 1000
Engineering Department

Revised: 3/8/2017
Thru: A-Dec #1498070
D-Dec #1504363
V-228

Scale: 1"= 4000'

Regional Detention Basins Regional Benefiting Property **Detention Basins** Private Detention Basins Private Benefiting Property

January 2019



City of Fargo Summary of Storm Sewers in Use

Total: January 1, 2019

	Total Installed	Total In use
Manholes	9,820	9,053
Inlets	12,734	10,795
PVC Edge Drain	1,760,023 Ft	1,759,953 Ft
Lift Stations/Pump Stations	84	79
Miles of Pipe	487 miles	494 miles
Regional Ponds		95
Private Ponds		284
Outfalls		43

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, IDDE 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	5/8/2018	3:12 AM	City Storm Sewer System	Fair - Good	dry out clean debris, there is small to medium sized snow piles yet	New 2017 - This site is getting more asphalt millings added and better stabilization
12 Ave/55 St N	11/1/2018	9:00 AM	City Storm Sewer System	Good	None	Still spreading more asphalt millings
6251 36 St S	5/8/2018	NA	City Storm Sewer System	Very Good	None	Site is also stockpiling asphalt millings
6251 36 St S	10/31/2018	2:05 PM	City Storm Sewer System	Very Good	None	Looks to be completed with asphalt millings spread and stockpiled
3837 38 St S	5/8/2018	12:26 PM	City Storm Sewer System	Very Good	Needs to dry out and clean debris	One large snow pile
3837 38 St S	10/31/2018	2:20 PM	City Storm Sewer System	Very Good	None	Asphalt millings have been added
45 St & 3 Ave N	5/8/2018	10:46 AM	City Storm Sewer System	Very Good	Site needs to dry out and be cleaned of debris	Still has small piles of snow
45 St & 3 Ave N	10/31/2018	11:05 AM	City Storm Sewer System	Very good	None	Asphalt millings have been added
450 34 St S	5/8/2018	11:03 AM	County Drain, Storm sewer system	Very Good	Still very wet. Needs to dry out and be cleaned of debris	Still has small piles of snow
450 34 St S	10/31/2018	10:56 AM	County Drain, Storm sewer system	Very Good	None	

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
<p>CITY OF FARGO SPECIFICATIONS EROSION AND SEDIMENT CONTROL</p> <p>PART I DESCRIPTION OF WORK</p>
<p>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</p>

Storm Sewer Conveyance Maintenance Operations

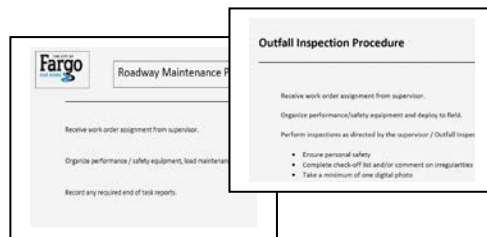
Storm sewer maintenance continues perpetually on a rotational or as required basis. The supervisor schedules inspections and directs maintenance work orders. Public works maintenance platform includes inspection (camera) minor repairs, surface sweeping, pipe jetting, mowing, open channel  sediment removal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





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
- Maintain trash rack
- 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
- Maintain wet well (clean, pump, etc.)
- 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. Discuss 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 _____



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 _____

DRAIN CLEANING 2018

<u>Drain Location</u>	<u>Date Cleaned</u>	<u>#of Loads</u>	<u>Total Wieght in Ton's</u>	<u>WO#</u>
Drain #10	8/8/2018	18	180.32	13926
Drain #3	7/25/2018 - 7/27/2018	12	99.8	13710
Drain #40	8/3/2018 - 8/22/2018	19	173.15	14572
Osgood	7/31/2018	1	7.27	13980
Amber Valley	8/1/2018	1	3.85	14088
41st St & 30th Ave S.	8/1/2018	1	4	14075
23rd Ave & 26th St S.	8/1/2018	1	5	14076
North Oaks	8/3/2018	2	14.84	13953
Drain #27 (Ulteig ENG.)	7/30/2018 - 7/31/2018	7	62.37	13582
34th St North OF 7th Ave N.	8/2/2018	1	6	13954
Action 7th Ave & 36th St N.	8/2/2018	1	4	13927
Pepsi Drain	8/9/2018	1	6	14109
48th St & 15th Ave S. (Scheel's)	8/2/2018	1	2	14154
Aggregate Dr.	8/2/2018	1	2	13955
Big Top Bingo Pond	8/2/2018	1	1	13956
Luther Ford Holding Pond	8/1/2018	1	4	13584
4495 53rd St S. West Side	7/31/2018	1	4.85	13979
Drain #40 (Fisheye)	8/3/2018 - 8/9/2018	2.5	19	14152
6700 BLK of 25th St S. (East Side Davies)	8/1/2018	1	2	14077
		TOTAL	73.5	601.45

2018 Outfall Inspection Report

Location	Date	Inspector(s)	Separation Y/N	Trash Rack Y/N	Rip Rap Y/N	Comments / Condition of Trash Rack & Rip Rap	Picture #
901 41st Ave N.	6/14/2018	Gahner Thoennes	Yes	No	No	4 1/2' X 4' X 3 1/2' Deep Sink Hole	1 & 2
3702 10th St N.	6/14/2018	Gahner Thoennes	No	No	Very Little	OK	3
37th Ave N. & Broadway	6/14/2018	Gahner Thoennes	No	No	Yes	OK	4
Kandi Lane N. & Broadway	6/14/2018	Gahner Thoennes	No	Yes	Yes	OK	5
Trollwood	6/14/2018	Gahner Thoennes	No	No	sliding away	Trash Rack in bad shape, rip rap sliding away from apron, apron OK.	6
Edgewood Golf Course	6/14/2018	Gahner Thoennes	Yes	No	Yes really bad	(One Cave in is 5' X 2' X 32" Deep) the other is (7' X 8' X 6' Deep) Rip Rap Sliding away from the apron; Bad Condition	7, 8, 9
32nd Ave & Eagle St N.	6/14/2018	Gahner Thoennes	Yes	No	Yes	3 1/2' X 18" X 1' Deep Sink Hole	10, 11
29th Ave & North Oaks	6/14/2018	Gahner Thoennes	No	No	No	Concrete Bottom and Apron (Good Condition)	12
28th Ave N. & Maple St	6/14/2018	Gahner Thoennes	No	Yes	No	Concrete Bottom and Apron (Good Condition)	13
Lift # 73	6/14/2018	Gahner Thoennes	No	Yes	Yes	Good Condition	14
120 North Woodcrest Dr.	6/14/2018	Gahner Thoennes	No	No	Yes	Good Condition	15
North Woodcrest & Park Lane	6/14/2018	Gahner Thoennes	No	No	Yes	Good Condition	16
204 South Woodcrest Dr. N.	6/14/2018	Gahner Thoennes	Yes	No	Yes	Sink Hole 1/2 way in-between outfall and manhole; 8' X 5' X 8' Deep (Bad Condition)	17,18
Behind VA Hospital	6/14/2018	Gahner Thoennes	No	No	Poor	Fair Condition	19
Lift # 26 Woodland Dr. N.	7/16/2018	Gahner Thoennes	No	Yes	Yes	Good Condition	22
15th Ave N. & Elm St	7/16/2018	Gahner Thoennes	No	No	Yes	Apron Cracked Up (Fair Condition)	23
Elm St between 14th & 15th Ave N	7/16/2018	Gahner Thoennes	No	No	Yes	Good Condition	24

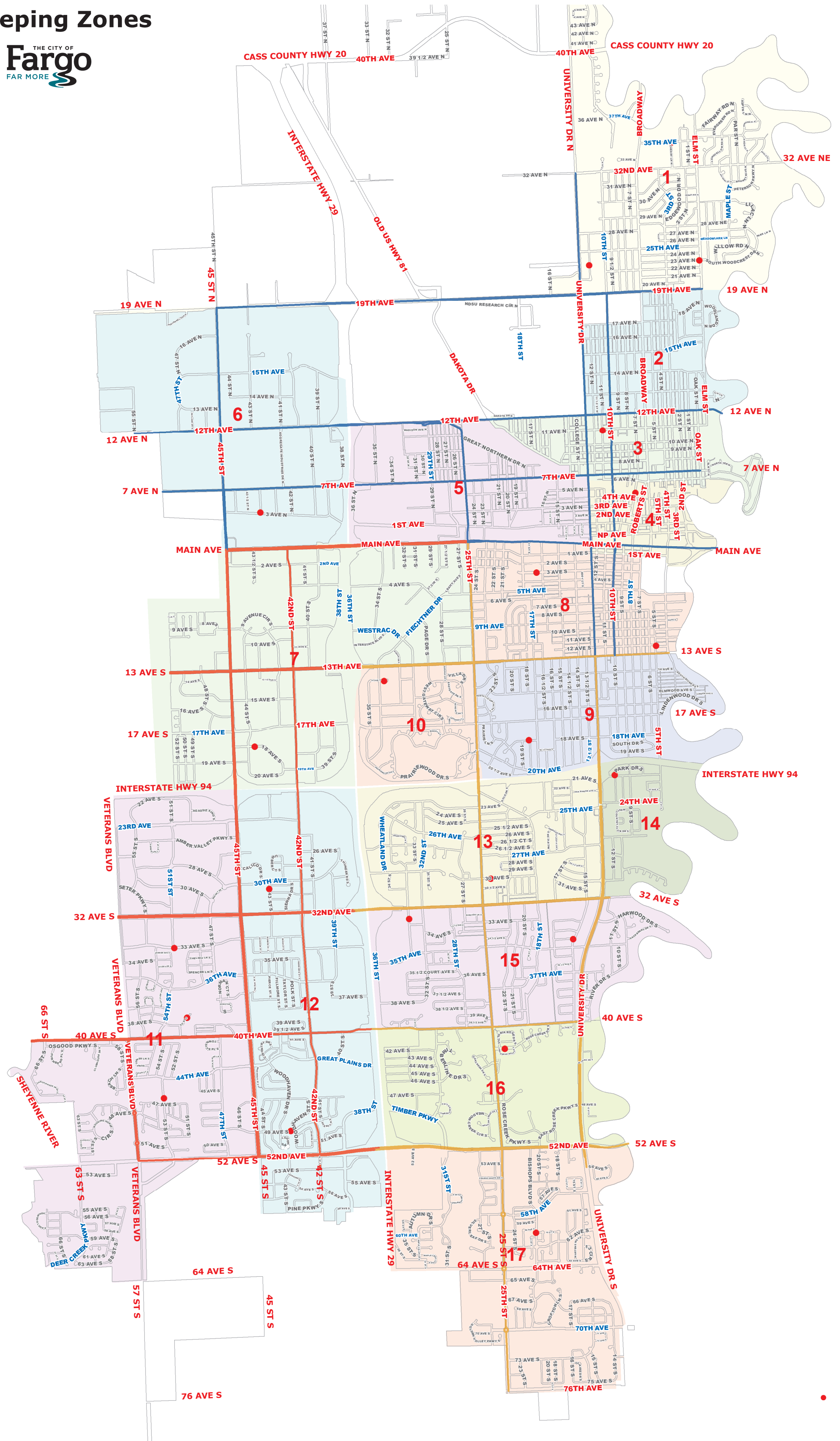
2018 Outfall Inspection Report

Location	Date	Inspector(s)	Pipe	Trash	Rip Rap	Comments / Condition of Trash Rack & Rip Rap	Picture #
			Separation Y/N	Rack Y/N	Y/N		
14th Ave N. & Elm St	7/16/2018	Gahner Thoennes	Yes	No	Yes	Overall condition Bad, 2' X 4' X 3' Deep Sink Hole	25, 26
11th Ave N. & Elm St	7/16/2018	Gahner Thoennes	No	No	Yes	Fair Condition	27
North River Rd & 9th Ave N.	7/16/2018	Gahner Thoennes	No	Yes	Yes	OK	28
South Terrace & Ash St N.	7/16/2018	Gahner Thoennes	Yes	No	Yes	5' X 6' X 5 1/2' Deep Sink Hole, snow fence around hole	29, 30
Storm Lift #23	7/16/2018	Gahner Thoennes	No	Yes	Yes	OK	31
Main Ave & 2nd St N.	7/16/2018	Gahner Thoennes	No	No	No	OK	32
Lift Station # 18 2nd St N.	7/16/2018	Gahner Thoennes	No	Yes	Yes	Good Condition	33
6th Ave & 3rd St S.	7/16/2018	Gahner Thoennes	No	No	No	Good Condition	34
10th Ave & 4th St S.	7/16/2018	Gahner Thoennes	No	No	No	Good Condition	35
12th Ave & 4th St S.	7/16/2018	Gahner Thoennes	No	Yes	Yes	Good Condition	36
16th Ave & Lindenwood Dr. S.	7/17/2018	Gahner Thoennes	Yes	No	Yes	2- Sink Holes (1' X 1' X 3' deep) ; 2nd hole (6" wide 1' long 4' deep) Fair Condition	37,38,39, 40,41
17th Ave & Lindenwood Dr.	7/17/2018	Gahner Thoennes	No	Yes	Yes	OK	42
18th Ave & Lindenwood Dr.	7/17/2018	Gahner Thoennes	No	Yes	Yes	OK	43
21st Ave & 5th St S.	7/17/2018	Gahner Thoennes	No	Yes	No	OK	44
26th Ave & South Country Club Dr.	7/17/2018	Gahner Thoennes	Yes	Yes	No	Bad Separation (2' X 4 1/2' X 5' Deep) 30' from outfall	45, 46
501 Southwood Dr.	7/17/2018	Gahner Thoennes	No	No	Yes	OK	47
30th Ave & 11th St S.	7/17/2018	Gahner Thoennes	No	Yes	Yes	OK	48

Sweeping 2018

Zones	Number of Times Swept Per Year	Total Tonnage Per Zone
1	8	234.04
2	8	158.7
3	8	147.2
4	22	60
5	7	167.5
6	8	283
7	7	263
8	9	219.65
9	8	123.1
10	7	78.98
11	6	232.31
12	5	222.7
13	5	75.01
14	5	42.88
15	5	144.69
16	5	58.61
17	5	101.2
1P	12	351.75
2P	3	143.54
3P	3	121.15
Alley's	3	70.77
	Total Tonnage City Wide	3299.78

Sweeping Zones



● Flush Valve

FLUSH VALVES 2018

North Side Flush Valves

Cherry Lane & 35th Ave. N
2220 12th St. N
23rd Ave. & Elm St. N
11th Ave. & 11th St. N
1st Ave. & 8th St. N
4300 3rd Ave. N

South Side Flush Valves

4340 18th Ave. S
14th Ave. S & East of 34th St. S
1621 3rd Ave. S
12th Ave. & 5th St. S
18th Ave. & 18th St. S
Park Drive & 21st Ave. S
2300 Blk of 30th Ave. S
3231 33rd St. S
34 1/2 Ave. & 15th St. S
Rosecreek Drive East of 25th St. S
21st St. & Bennet Court S
49th Ave. & Woodhaven St. S
3083 43rd St. S
51st St. & 33rd Ave. S
38th Ave. & 50th St. S
4498 53rd St. S

**FARGO CASS PUBLIC HEALTH
ENVIRONMENTAL HEALTH SERVICES - 2018**

COMPLAINTS	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	YTD TOTAL
Animals/Insects	0	1	5	6	4	3	1	4	2	2	0	1	29
Aquatic Facilities	0	0	0	0	0	0	0	0	0	0	0	0	0
Child Care Facilities	0	0	0	0	0	0	0	0	0	0	0	0	0
Food Complaints	1	3	4	5	4	1	4	11	2	6	1	0	42
Garbage	0	1	5	1	4	2	0	3	3	0	1	0	20
Junk/Debris	0	2	1	1	3	4	3	3	2	1	1	0	21
Other	0	1	1	1	6	1	1	3	5	2	1	1	23
Public/Private Drinking Water	0	0	0	0	0	0	0	2	0	0	0	0	2
Tall Grass/ Weeds/ Stagnant Water	0	0	0	0	143	217	157	79	24	6	1	0	627
Violations Received	1	8	16	15	164	228	166	104	38	17	5	2	764
Complaints Received	1	8	16	15	158	228	163	105	38	16	5	2	755
INSPECTIONS/CONSULTATIONS													
Aquatic Inspections	32	19	19	5	11	13	16	13	14	11	31	18	202
Aquatic Consultations	1	12	1	4	13	2	3	3	6	4	5	0	54
Aquatic Onsite Testing Inspection	299	284	279	332	330	341	329	319	287	291	309	286	3686
Aquatic Onsite Retest	0	0	0	0	4	0	0	0	0	0	0	0	4
Body Art Inspections	1	4	9	4	3	0	2	2	22	7	5	2	61
Body Art Consultations	6	6	11	15	10	8	6	8	15	3	0	0	88
Child Care Inspections	3	7	9	8	12	5	13	11	9	8	4	2	91
Child Care Consultations	1	1	1	12	16	9	10	11	10	10	5	1	87
Food/Alcohol Inspections	34	45	94	194	257	207	181	154	162	124	306	286	2044
Food/Alcohol Consultations	43	44	50	101	81	85	77	79	70	45	23	25	723
Grocery/Meat/Bakery Inspections	11	12	16	54	44	31	26	32	34	24	50	30	364
Grocery/Meat/Bakery Consultations	7	3	5	7	5	5	2	8	5	2	1	0	50
Lodging Inspections	8	3	11	2	5	2	0	0	2	3	15	10	61
Lodging Consultations	0	1	2	2	2	6	0	0	1	0	0	0	14
Miscellaneous Inspections	1	0	0	0	4	3	0	2	0	1	0	0	11
Miscellaneous Consultations	16	6	8	11	19	20	49	22	17	38	44	6	256
Mobile Home Inspections	0	0	0	6	0	0	0	0	0	0	0	0	6
Mobile Home Consultations	0	0	0	0	1	0	0	0	0	0	0	0	1
Nuisance Complaint Inspections	0	3	4	5	51	52	26	168	52	8	1	0	370
Nuisance Complaint Consultations	4	3	6	7	66	44	6	23	25	11	0	4	199
Pet Store Inspections	0	0	0	0	0	0	0	0	0	0	5	0	5
Pet Store Consultations	0	0	0	0	0	0	0	0	0	0	0	0	0
Schools/Group Homes/Churches Inspections	18	22	54	81	55	21	28	41	51	40	47	21	479
Schools/Group Homes/Churches Consultations	5	1	3	16	17	8	6	5	4	0	0	0	65
Septic Permits/Evaluations	1	1	1	3	11	7	24	23	29	29	14	0	143
Septic Consultations	14	35	37	38	93	80	98	84	47	59	50	0	635



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 Condition	Application Rate		Product
			Pounds Per Lane Mile	Liquid Pre-Wet at Spinner (80/20 Brine/AMP)	
Above 32° F	Temp. is Steady or Rising <i>(No Blowing Snow)</i>	Frost	54	NA	100 Brine
22° F to 32° F	Temp. is Steady or Rising <i>(No Blowing Snow)</i>	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