

**Stormwater
Management
Program**

**&
2020 Annual Discharge Monitoring Report**

By Kevin Morlan



Introduction and Description

The 2020 Discharge Monitoring Report is given in a format in conjunction with the NDR04-0000 permit. Presented sequentially to follow the permit elements, the report begins with general requirements and progresses through the six Minimum Control Measures. Highlighted or example documentation is provided at the end of each section as appropriate. A growing number of resources are digital or linked to AutoCAD/GIS, which is available for audit upon request.

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

Evaluation and Assessment

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

MS4 Program Map

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

MS4 Operated Facilities

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

Pollution Assessment (Identified pollutants)

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

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

Ordinance Identified Pollutants (Group / Definition)

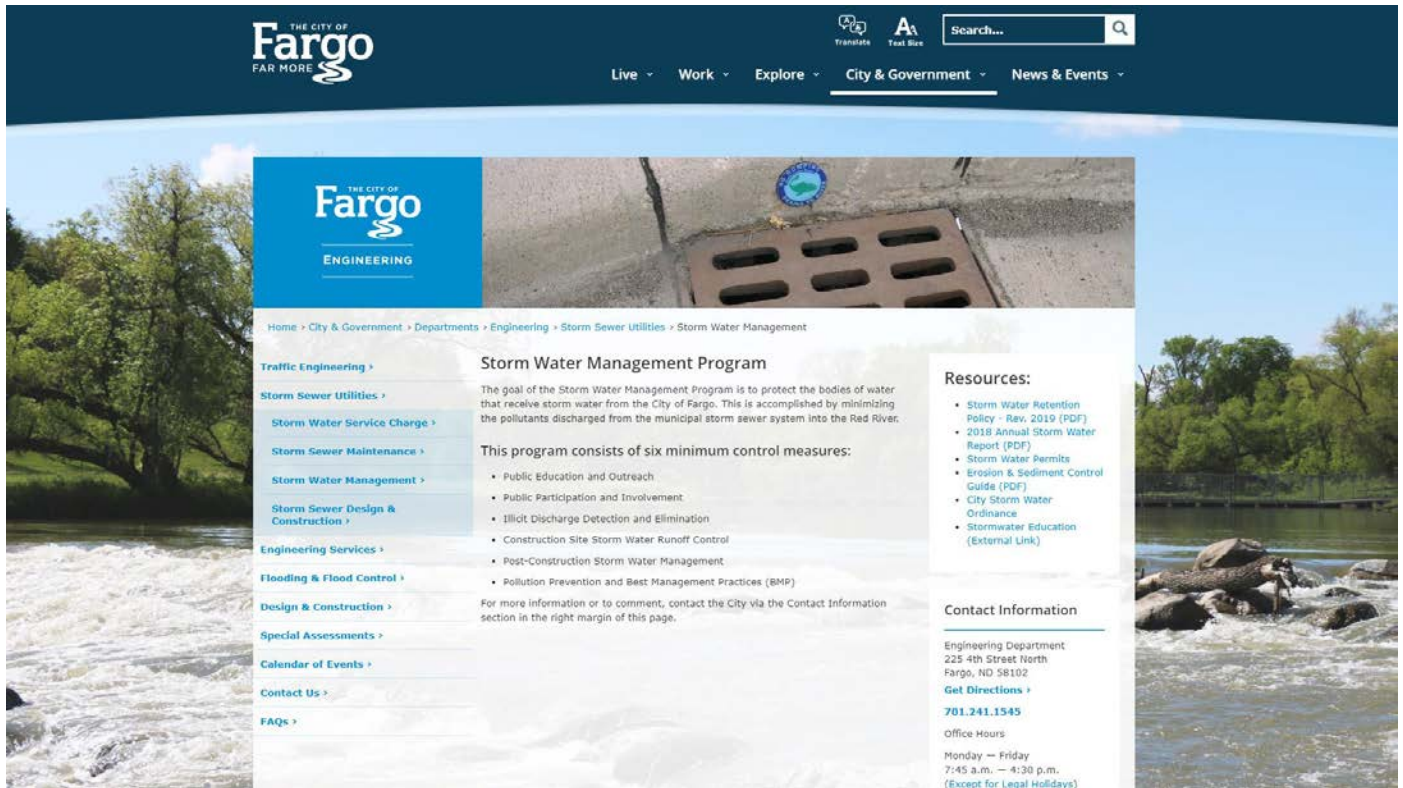
Dumping of 37- 0102.(33A)	Vegetative materials, including grass clippings & tree branches, Earth fill, Rocks Concrete Chunks or Metal, Demolition or construction materials, or structures.
Disposal /Misuse 37- 0102.(33C)	Materials that would degrade the quality of waters within the system, including,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

Public Availability

This report is made available to the public online at:

FargoND.gov/city-government/departments/engineering/storm-sewer-utilities/storm-water-management .

The MS4 program and related operational documents are available upon request during business hours.



Shared Program Agreements with other MS4s

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

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General requirements support material

Minimum Control Measure 1 (MCM-1)

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Minimum Control Measure 6 (MCM-6)

MCM 1 & 2

Stormwater Education Program

Involvement

Outreach

Participation



Minimum Control Measures 1 & 2

Fargo's Stormwater Education Program

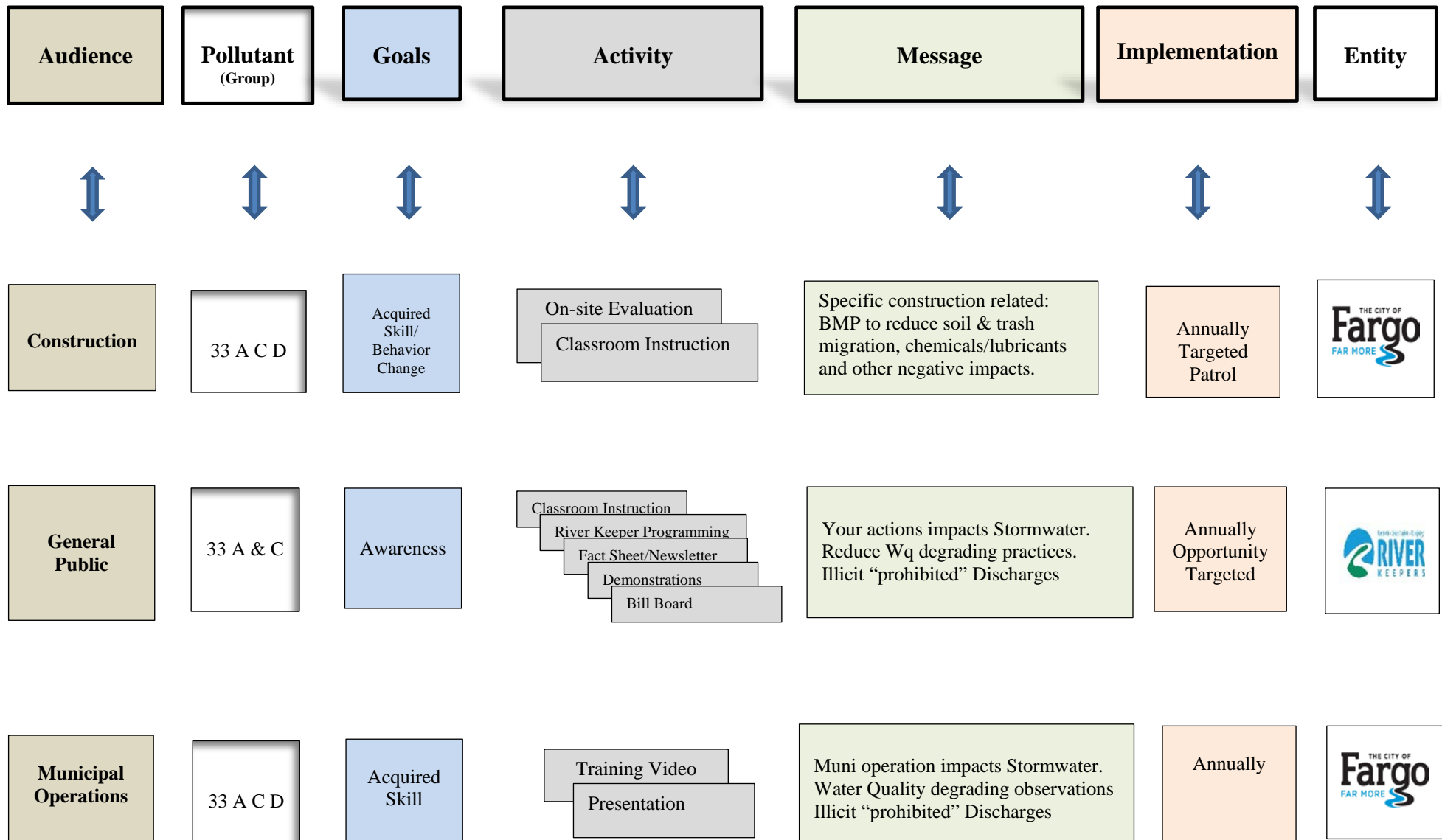
In summary the MS4 Permit, Minimum Control Measures (MCM) 1 & 2, require the city to provide education, outreach, public participation and involvement opportunities. We must specifically address construction and post-construction pollution prevention, illicit discharges and methods to reduce negative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

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

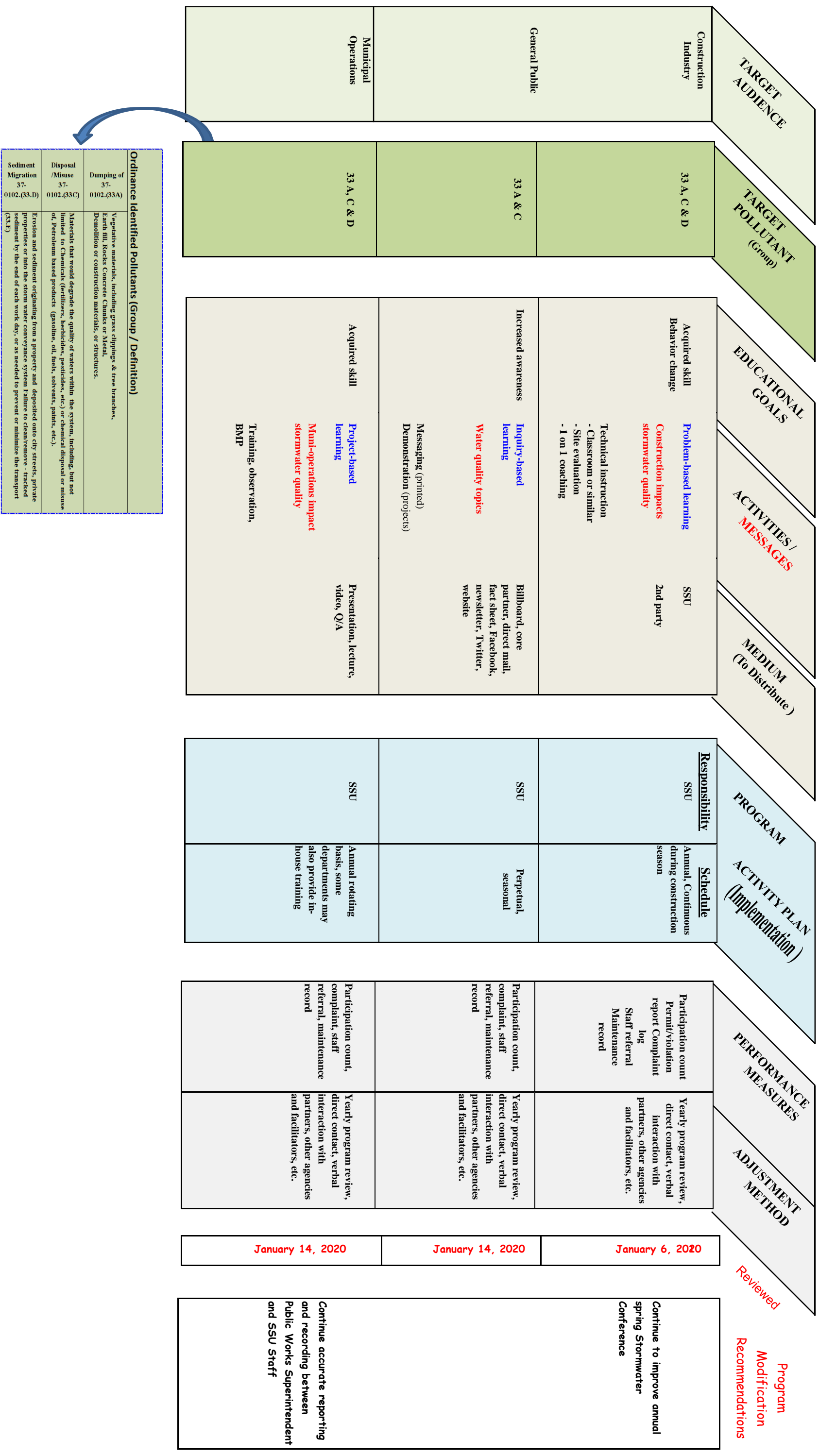
We have specifically designated construction, municipal maintenance operations and the “public” as our target audiences. The targets were selected based on perceived need, impact potential, MS4 requirements and the ability to deliver programming. Learning delivery to these segments is scheduled and consists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

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

MCM I&2 Education, Outreach & Involvement



MCM 1&2 Strategy Primer



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

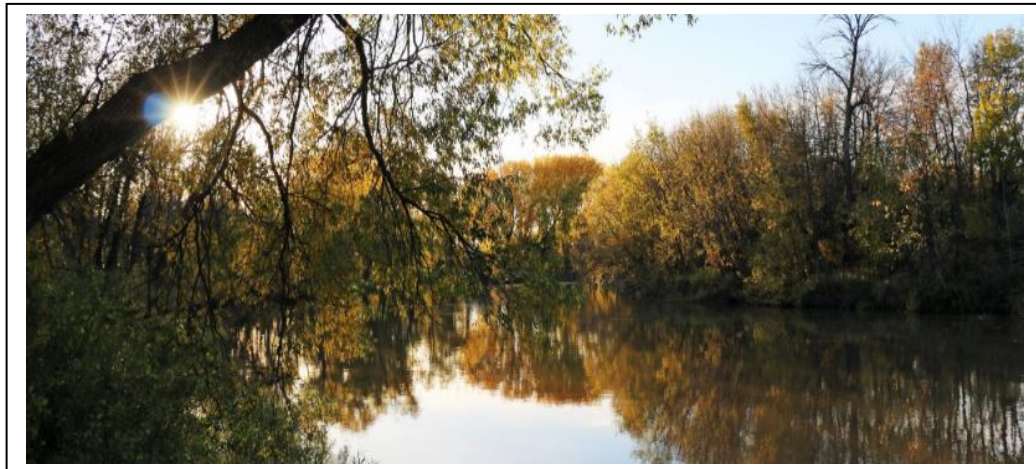
For more information on Stormwater:
www.EPA.gov

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, solid waste, public works and wastewater treatment.
- Fargo River Keepers is a core partner promoting stormwater/ecology education to the general public. Classroom instruction, lab activities and public involvement/participation projects comprise their basic curriculum.
- Other entities delivering similar educational programming include: Red River Basin Commission, local watershed districts, Cass County Soil Conservation, Audubon Dakota etc.



Example of contribution by other facilitators

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



Pollutants and Best Management Practices

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

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

2020 Recycling Coordinator Public Education

January

- Multiple meetings with staff, students and Student Council members to implement a school wide recycling program at Longfellow Elementary and a school wide recycling challenge
- Met with Essentia Health kitchen staff to educate and train employees on their new All-in-One Recycling program

February

- Presented our Reduce, Reuse and Recycle curriculum to 350 students at Longfellow Elementary in partnership with the Environmental Club at North High

March

- Covid prevented any further public education/meetings/gatherings

October

- Produced “How-To” Recycling videos in conjunction with Minnkota recycling – shared on City of Fargo social media outlets

November

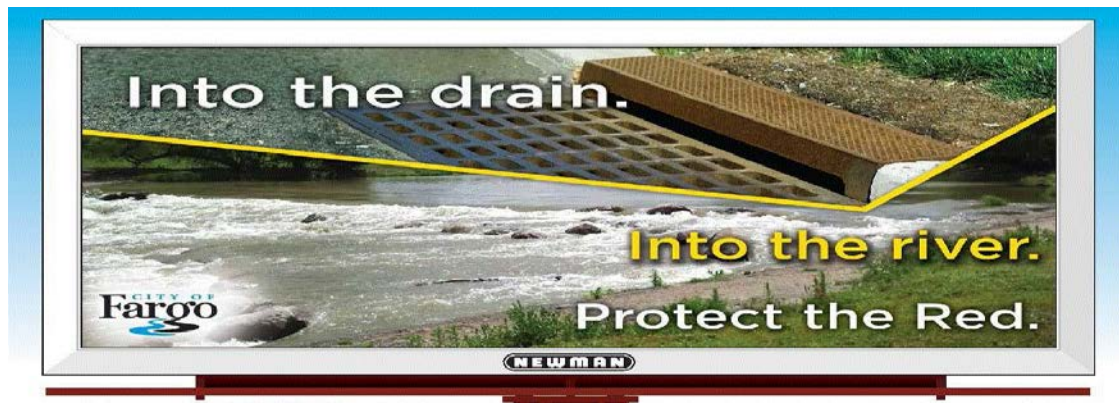
- Got no milk program with Minnkota to benefit Fargo Public Schools
- Zoom meeting with 2nd grade class at Washington Elementary on recycling and helped implement a cardboard recycling program

December

- Prepping transfer station for the new Residential Transfer Station Program

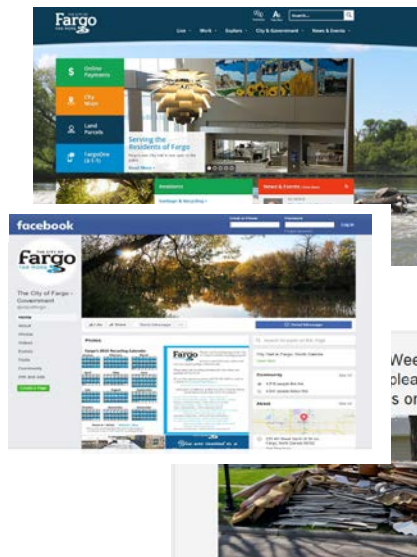
Activities and Methods used to deliver our program

Mass Marketing

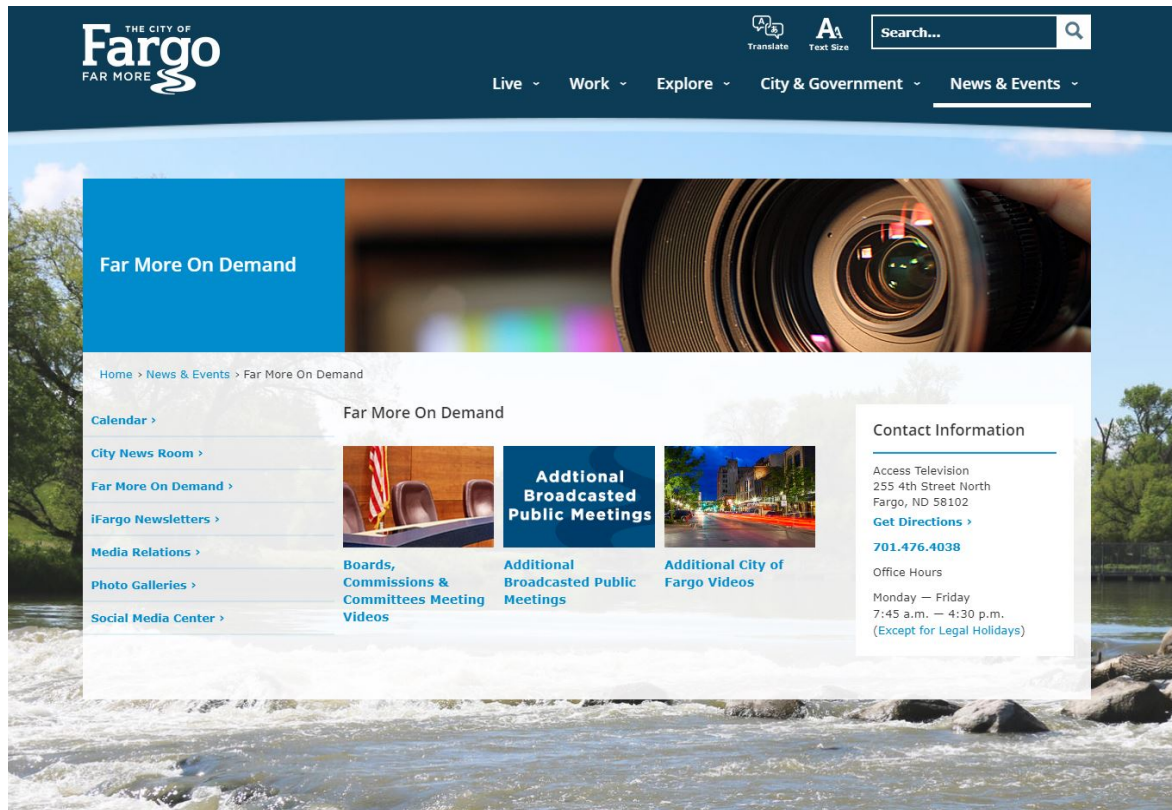


Digital Media

- Website www.FargoND.gov
- Twitter
- Facebook



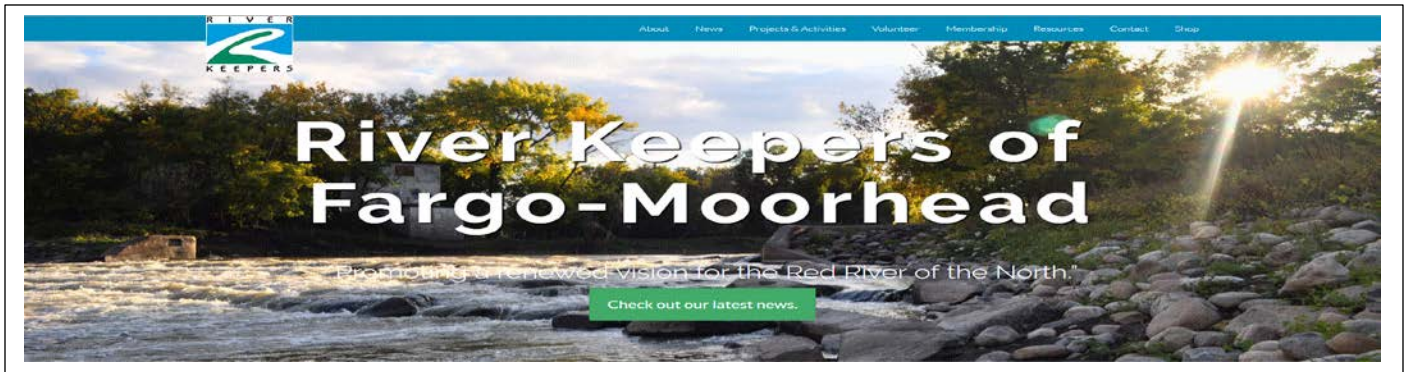
Far More On Demand



Direct Mail & Factsheets



Core Partners



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

River Keepers Activities

Activities include the annual Red River Water Festival, backpack program, geocache, interpretive signs, storm drain marking program and river friendly house and yard management ect. Fargo SSU staff participates with River Keepers in various activities annually. Some activities in 2020 did have to reformat due to Covid-19.

Due to Covid-19 the Red River Water Festival was cancelled, however, selected materials were distributed to teachers around the area for the option to continue the education. This event 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.



Committees

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

Feedback



Community Feedback

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

Performance Measures

How do we evaluate the effectiveness of our MCM 1 & 2 programming since quantification is so difficult to apply? Some of the methods are listed below, others must be intrinsically interpreted by staff. An increase of incident reports by the public in 2020 is directly related to the increase of awareness of these degrading pollutants.

- Counting (attendance, address mailings, contact log, complaint log, frequency of Learning opportunities, etc.)
- Feedback from electronic reporting portals (email, FargoOne, etc.)
- Inter-department communication (increased - trash, sweeping, pipe cleaning, etc.)
- 2020 awareness incident reports

Program adjustments

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

Current program is deemed adequate and no changes are recommended for 2021. MCM 1 & 2 contributions will be maintained at the existing level.

2020 Fargo River Keepers Stormwater Outreach Report

Storm Drain Marking Program

- Map indicating areas marked, number of catch basins marked, dates, and number of volunteers that assisted:
 - Reconfigured steps to make this a Covid-19 safe volunteer activity.
 - 6/1/2020, Around West Gate Park, 3 volunteers, 18 volunteer hours,
 - 6/1/2020, Island Park, 1 volunteer, 6 volunteer hours, 76 storm drains marked
 - 6/4/2020, Near Pizza Ranch off 45th ST, 1 volunteer, 3 volunteer hours, 71 storm drains marked
 - 6/17/2020, Near Stonebridge #1 Park, 1 volunteer, 3 volunteer hours, 42 storm drains marked
 - 6/22/2020, Near Lemke Park, 2 volunteers, 3 volunteer hours, 39 storm drains marked
 - 6/30/2020, near Woodhaven South Pond, 2 volunteers, 4 volunteer hours, 68 storm drains marked
 - 7/12/2020, near McKinley Park, 6 volunteers, 8 volunteer hours, 62 storm drains marked
 - 7/25/2020, Brunsdale Park, 2 volunteers, 10 volunteer hours, 84 storm drains marked
 - 8/23/20, NDSU, 2 volunteers, 3 volunteer hours, 44 storm drains marked
 - 8/24/20, 8/25/20, and 8/29/20, Deer Creek Park, 2 volunteers, 4 volunteer hours, 50 storm drains marked
 - 9/11/2020, Jeff Johnson Soccer Complex, 14 volunteers, 4 volunteer hours, 23 storm drains marked
 - 9/19/20, Woodhaven North Pond, 4 volunteers, 4 volunteer hours, 23 storm drains marked
 - 9/21/20, Trollwood Park, 14 volunteers, 21 volunteer hours, 25 storm drains marked
 - 9/25/20 and 9/29/20, Caroline Ruby Vetter Duck Pond, 1 volunteer, 3.5 volunteer hours, 39 storm drains marked
 - 9/29/20, Longfellow Park, 2 volunteers, 4 volunteer hours, 23 storm drains marked
 - 9/29/20 and 10/5/20, Woodbury Park, 5 volunteers, 5 volunteer hours, 35 storm drains marked
 - 11/5/2020 and 11/6/2020, South High School, 2 volunteers, 14 volunteer hours, 220 storm drains marked
 - 11/6/2020 Elephant Park and Holm Park, 8 volunteers, 18 volunteer hours, 93 storm drains marked
 - 11/9/2020, Prairiewood Golf Course, 2 volunteers, 4 volunteer hours, 43 storm drains marked
 - Kim Morris will email map sections to Steve Sly and Kevin Morlan.

Red River Water Festival

- Water Festival program listing activities.
 - We emailed teachers resource options which included a variety of ways to assist them in still teaching their water curriculum including videos, online resources, activity books, service-learning opportunities and activities where facilitators could Zoom into their classroom.
- Water Festival dates:
 - Cancelled due to Covid-19.
- Number of students in attendance:
 - 0. However, some teachers have communicated with us regarding specific lessons. One teacher even coordinated a mini water festival at their school because she had attended 19 in the past.
- Copy of selected materials distributed at the event:
 - We've offered teachers a choice for their students of the following Project WET activity books: Red River, Discover Stormwater, and Watershed Protection.

Community Education Events

- River Keepers will conduct at least two formal educational events related to water conservation, pollution prevention and sustainable river use.
- River Keepers will annually provide a report to include.
 - Number of participants at events
 - Date of the events
 - Copies and numbers of educational materials distributed.
 - ⚙ Make Your Own Rain Barrel Workshops
 - Promoted new Make & Paint Workshop for May 5 and May 12. Cancelled due to Covid.
 - Researched and coordinated pick up for 55-gallon barrels.
 - Made Covid-19 safety adjustment to Make Your Own Rain Barrel Workshops on June 10 (7 participants, 8 rain barrels sold) and July 14 (2 participants)
 - 8 Rain barrels sold
 - 2 Rain barrel kits sold
 - 2 barrels sold
 - ⚙ Make Your Own Compost Tumbler Workshops.
 - Scheduled for May 20, June 3.
 - Updated Compost Tumbler Instructions and presentation
 - Received Master Recycler and Composter Certificate at Clay County Solid Waste Advisory Committee
 - Cancelled Compost Tumbler in person workshops. 6 people picked up an already built tumbler and received the presentation.

River Keepers will also schedule and appear at community events with water related educational materials.

- At 6 public presentations we talked about rain barrels, storm drains, and other nonpoint source pollution best management practices.
- Read water book to Glyndon Felton 2nd grade students on February 6, 40 students and adults.
- Pollinator Habitat workshop with Cass County Soil Conservation District and Clay County Soil & Water Conservation District postponed from spring to October 13 via Zoom. 13 of 20 registered participants attended the zoom meeting. All paid participants received the presentation via mail including instructions on how to set up their one on one session.
- Participated in Midwest Kidfest's Grab and Go Event with a scavenger hunt and Enjoy the Red ideas
- Lil' Fisherman's Derby & Clinic Grab and Go Event on June 23.
- Communicating with Community Development Society Conference regarding a potential guided tour on July 13 for conference attendees. Cancelled due to Covid.
- Led a composting activity at the Food and Farm Conference on January 24. 1 volunteer, 1.5 volunteer hours, 5 participants.

Illicit Discharge and Detection

- Dates the outfalls were inspected, condition of outfall and if an illicit discharge was present at time of inspection.
 - September 24 and October 6. 3 volunteers, 10 volunteer hours
 - Pictures of the outfalls we were able to photograph from the River were emailed to Steve Sly and Kevin Morlan.

Trash cleaning

- Dates clean ups were conducted
 - Worked with Fargo Park District to coordinate the following:
 - 4/24/2020, Dike East, 15 pounds of garbage, 3 volunteers, 6 volunteer hours
 - 5/15/2020, 1 volunteer, adopted Trefoil Park
 - 6/5/2020, 3 volunteers, 6 volunteer hours
 - 6/12/2020, 3 volunteers, 6 volunteer hours
 - 7/29/20, 12 Avenue to Oak Grove, 8 pounds of garbage, 8 volunteers, 8 volunteer hours
 - 8/3/20, Oak Grove to Wildflower Grove, 80 pounds of trash, 6 volunteers, 18 volunteer hours
 - On the Water-Clean Up on 9/2/2020. 7 volunteers, 14 volunteer hours.
- Any unusual trash or illegal dump sites observed and reported
 - Communicated with City of Fargo Homeless Outreach Coordinator and Fargo Park District on camps along the river.

WHAT IS A STORM DRAIN?

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

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

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



WHAT IS THE PROBLEM?

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



WHAT CAN YOU DO?

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



CONTACT US

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

ADDITIONAL INFORMATION

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



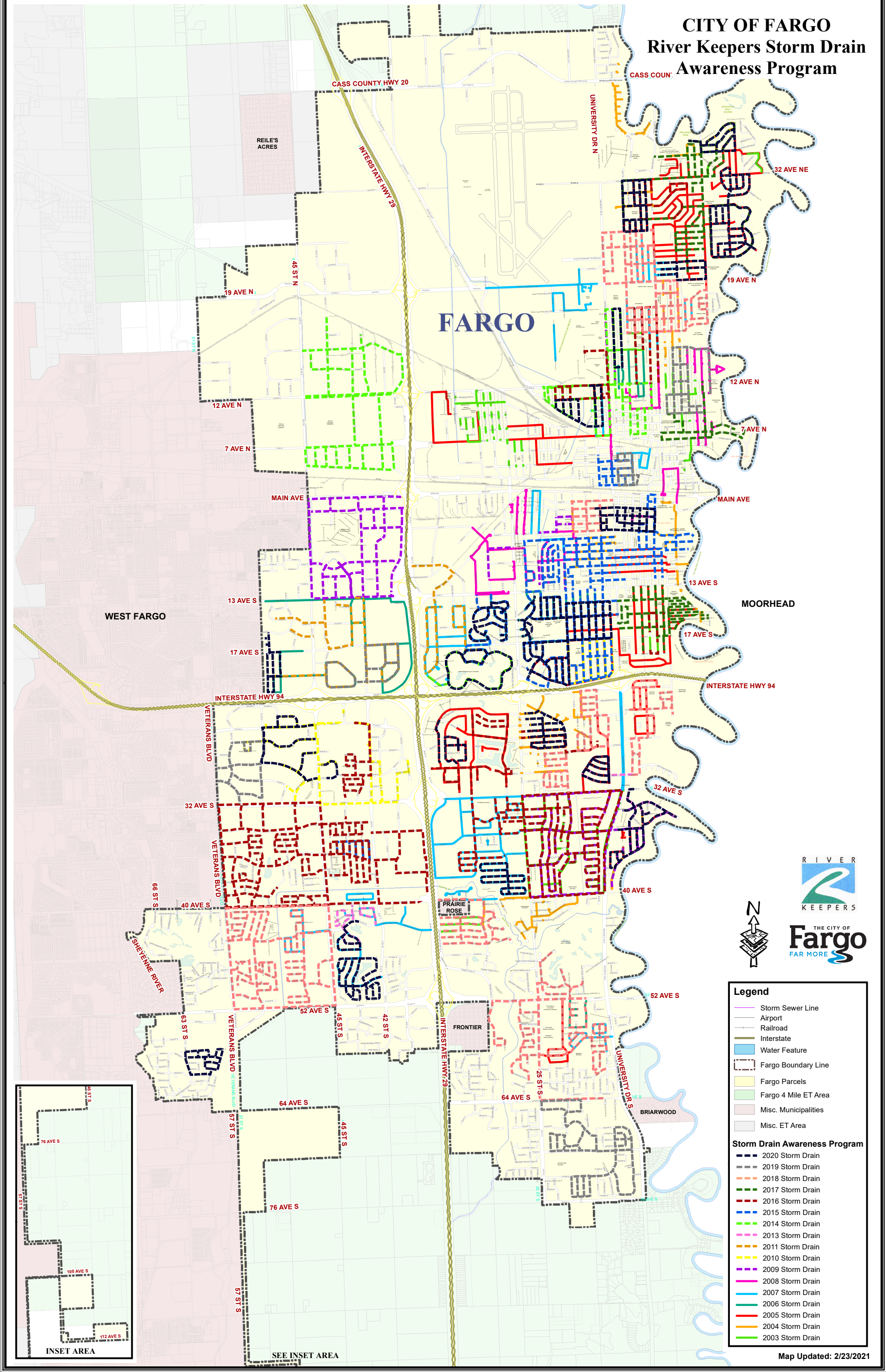
STORM DRAIN MARKING PROGRAM

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

THE CITY OF
Fargo
FAR MORE



CITY OF FARGO
River Keepers Storm Drain
Awareness Program



PREPARATION

1. Discuss the storm drain marking program with your youth group, school class, civic organization, family, neighborhood group or friends. It is recommended that participants be at least 10 years old.
2. Select a date for marking. The pavement must be dry.
3. Choose a time of day and length of time available to do the project. Two hours is the recommended length.
4. Select a neighborhood to mark and a location to meet.
5. Figure out the number of participants.
6. Recruit supervisors. One supervisor is recommended for every 4-8 youth volunteers, depending on the age.
7. Plan an alternative date in case of rain.
8. Contact River Keepers to set up the project, which includes supplies and training.

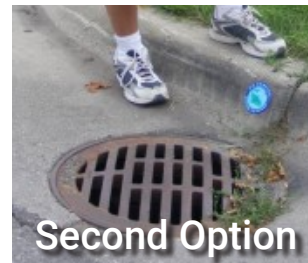
DAY OF PROJECT

Put on safety vests.

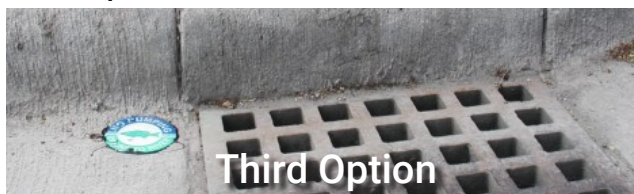
Break into groups - two people to mark the curb, two people to distribute door hangers.

CURB MARKING TEAM

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



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



2. Sweep the area where the marker will be placed so it is free of any loose debris.
3. Peel backing paper off one side of the adhesive disk.
4. Place storm drain marker evenly on top of the adhesive disk.
5. Remove backing paper on other side of the adhesive disk.
6. Apply to cleaned area. It is important that the entire edge of the marker is sealed to the curb or street.
7. Step or place pressure on the storm drain marker to make sure the adhesive sticks.

DOOR HANGER TEAM

- Walk on sidewalks, stay off of the grass.
- Do NOT put door hangers in mailboxes.
- Place door hanger on the door that looks most used. Do NOT open the door.
- Do NOT leave a door hanger if it will blow away.



FOLLOW-UP

- Indicate streets marked on maps provided.
- Document how many volunteers participated and how many hours were volunteered.
- Return maps and extra storm drain marking supplies.
- Congratulate yourselves...you deserve it!

RAIN BARREL BENEFITS

Save

Conserve water, reduce demand for treated tap water, and save money by lowering your monthly bill. A rain barrel can save over 1,000 gallons of water during peak summer months.

Happier Plants

Rainwater is free of the additives (e.g., chlorine and fluoride) in tap water that plants don't need or want. Rainwater is also slightly acidic, helping plants access soil nutrients. If your city restricts watering during times of dry weather, it may be the only way to avoid having your garden wilt. The water stored in a rain barrel can be used to water lawns and gardens either with a traditional hose, soaker hose, or with a watering can.

Building Protection

Control moisture levels around the foundation of buildings.

Flexibility

As water storage needs change, the number of barrels in a system can follow suit.

Reduced Stormwater Runoff

Rain barrels can divert a limited amount of stormwater from roofs, reducing strains on urban streams and storm sewer systems. Water and pollutants that go down a storm drain in the street go directly to the Red River, not to a waste water treatment facility. If stored water will not be used for plants or a lawn, slowly release stored water by allowing it to drain through the lower opening. Attach a hose to direct the water where you want it to flow. Make sure your barrel is empty or lowered enough to capture the maximum amount of water expected with each rain event.

CONTACT US

River Keepers
kimberly@riverkeepers.org
701.356.8915
riverkeepers.org

Clay Soil & Water Conservation District
Amanda.Lewis@clay.mnswcd.org
218.287.2255
claycountymn.gov/272/Soil-Water-Conservation-District

Cass County Soil Conservation District
Amy.Cole@nd.nacdnet.net
701.282.2157 Ext. 3
casscd.org

SUPPORTERS



RAIN BARRELS: Basic Information, Workshops & For Sale



FOR SALE

Assembled Rain Barrel - \$85 \$75 (Seasonally Available)

White 55 gallon used food grade barrel



Rain Barrel Kit - \$35 (Seasonally Available)

- Flexi-Fit Diverter
- 3-piece Hole Saw Set
- Spigot and threaded Rubber Seal
- Fill Hoes and Rubber Seal
- "Do Not Drink This Water" Sticker
- Installation Screws
- Installation Instructions

Barrel - \$30 (Seasonally Available)

- 55-gallon used food grade barrel in blue or white

To buy an assembled rain barrel, hardware kit and/or barrel, or for more information, contact Kimberly: kimberly@riverkeepers.org or 701.356.8915.

EQUIPMENT

An assembled rain barrel requires a hand drill to complete the attachment to the downspout.

Tools required for assembly of the Rain Barrel Kit include safety glasses, safety gloves, drill, Phillips screwdriver, and a barrel.

Orders must be placed by e-mailing or calling River Keepers. Orders will usually be ready for pick-up three days after the order is placed. Usually, the order must be picked up during normal working hours of 8:00 a.m.-5:00 p.m. but if necessary, other arrangements can be made.

Maintenance

Don't use the barrel in the winter to avoid ice damage. Drain the barrel, remove the inlet hose, remove Flex-Fit Diverter and leave all faucets open before freezing weather.



"Everything was exactly right, the plants inside and outside bloomed like they never have before! It was outstanding," said a 2017 Make Your Own Rain Barrel Workshop participant.

MAKE YOUR OWN RAIN BARREL WORKSHOPS

Save money on your water bill and help protect the Red River's water quality by making your own rain barrel!



2020 Workshops

Make and Paint, May 5 & 12, 2020, 6:00-8:00PM

West Fargo

Fee: \$74 (for both days, includes supplies)

June 10, 2020, 6:00-8:00PM

At a Moorhead Park

Fee: \$59 (includes supplies)

July 14, 2020, 6:00-8:00PM

At a Fargo Park

Fee: \$59 (includes supplies)

Cass and Clay County residents may be eligible for partial reimbursement of fee; information will be available upon completion of the workshop.

Come prepared to carry home an empty 55-gallon barrel.

To register: Contact Moorhead Community Education at <https://www.moorheadschoools.org/schools/alternative-schools/community-education/> or call 218.284.3400.

MCM 3

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



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

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

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

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



Illegal discharge reports

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

Routine Municipal Operations

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

Education, outreach and involvement

Education and outreach on this topic is conducted in concert with MCM 1 & 2.

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



Fargo IDDE Program Components

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

Quantification, appropriateness and program recommendations

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



Illicit Discharge Detection and Elimination (IDDE)

Standard Operating Procedure for IDDE

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

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

Site Investigation

Assess the situation –

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

Contacts

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

Enforcement

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

Report Log

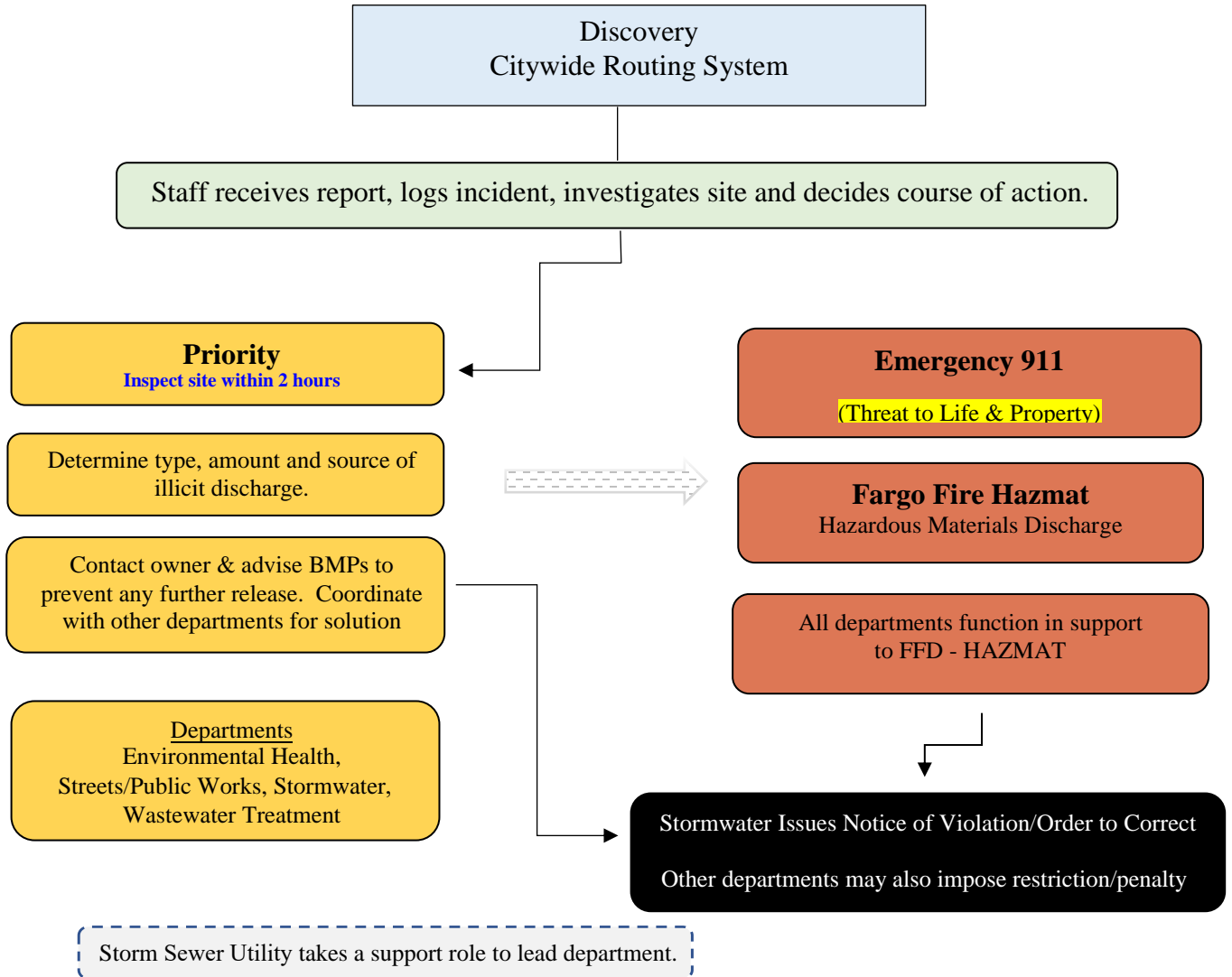
Keep a log for illicit discharges, response and mitigation.

Post remediation inspection

Perform site inspection to ensure mediation/mitigation was conducted.

Illicit Discharge Detection and Elimination (IDDE)

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



Site re-inspection conducted post response.

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



Drainage Complaints & Inquiry
Flood Zone Inquiries

Drainage Complaint & Floodplain Inquiry Log

C = Complaint
D = Drainage complaint
F = Floodplain
S = Stormwater
Z = Violations
\$ = High cost premiums
E = Bldg elevation
EC
I = insurance topic
L = LOMC
M = In/out

2020

AE = in Bldg in SFHA
tctc - too close to call
LE LOMRC Eligible
W/P = portions of the property will be wet
X/WP = structure not / portions of the property will be wet
X = neither structure or property in current or future.

V = verbal NFIP

				Zone	Panel	Response						
Address	Date	Contact Name	Context	D/F/Z	AE	X	Office	Phone	Email	Topic	Comment	
	1/2	New Year										
3415 17 ST S	1/2	Gerald owner				x	783		x		m	sjs
6801 24 ST S	1/2	Ritter realtor			lomr	x	787		x		m	sjs
3628 15 ST S	1/13	Kathy - owner	Premium are now over \$700		905.2		783		x		\$	sjs
1510 34.5 Ave S	1/13	Mary-owner			905.2		783		x		\$ i	sjs
6491 54 Ave S	1/14	Jerry-owner				x	767		x		m	sjs
7387 Eagle PT DR S	1/15	Patrick-realtor			lomc		790		x		m	sjs
1719 67 AVE S	1/17	Shawn-lender			lomc		791			x	m	sjs
1507 28 AVE S	1/21	Phyllis-owner				x	783		x		m	sjs
Fist Flood Prediction issued	1/24	Fargo Forum printed										
53 17 AVE N	1/24	Scott-owner				lomc	594		x		e	sjs
3619 22 ST S	1/24	Keith-owner	new premium \$859		905.7		779		x		i	sjs
2360 65 AVE S	1/28	Kevin-owner			lomc		787		x		m	sjs
1446 6 ST S	1/28	Barbara-owner				x	781		x		m	sjs
5946 66 ST S	1/28	Richard-owner	complex question on SWFH Div			x	767			x		JRB-hydraulic questions and flows into the Sheyenne/SHWFD
2302 Broadway N	1/28	Rita-owner				x	591		x		i	sjs
458 Oakland Ave	1/29	Scott-owner				x	781		x		m	sjs
52 AVE S	1/29	Ben-owner	utility bill question	S					x			rek
1615 15 AVE S	1/29	Brady-owner				X	781		x		i	sjs
3982 33 ST S	1/29	Marilyn-ins agent	in by deck		905.7		779		x		ec	sjs
1940 21 AVE	1/29	Rentor				X	777	x			m,i	sjs
3608 Kennedy AVE S	1/30	Todd-ins agent	just touches garage		905.3		779		x		ec	sjs
1002 41 AVE N	1/30	Paul - owner	map interpretation			X	591		x		m,i	sjs
3901 47 AAVE S	1/30	Christine-ins Agent				LOMR	786		x		m,i	sjs
Hector Trailer CT	1/30	Dean Wieland buyer			905.7		791		x		m,i	jrb - development questions see site notes on gis
Enter Roger's Feb receipts												
4826 University DR S	3/5	Larry-buyer	long discussion on FI		905.6		791		x		m,i	sjs
7215 Madelyn LN S	3/6	Shane - realtor	map not working send LOMC	f	lomc		790		x		m,i	sjs
3831 River DR S	3/6	Roxanne		f	905.6		783		x		l,l,m	sjs
2817 17.5	3/9	Kevin -realtor	deck tctc	f	905.6		779		x		m,i	sjs

FARGO CASS PUBLIC HEALTH
ENVIRONMENTAL HEALTH SERVICES - 2020

[illegible]

Nuisance Complaint Inspections	0	0	0	0	3	0	0	8	0	2	0	0	13
Nuisance Complaint Consultations	1	0	5	0	6	2	1	0	1	1	3	2	22
Pet Store Inspections	0	0	0	0	0	0	0	3	0	0	0	0	3
Pet Store Consultations	1	0	0	0	0	0	0	0	0	0	0	0	1
Schools/Group Homes/Churches Inspections	2	45	0	0	0	0	0	0	0	0	45	0	92
Schools/Group Homes/Churches Consultations	0	0	0	0	0	0	0	0	0	0	0	0	0
Septic Permits/Evaluations	1	5	4	12	27	27	33	18	34	22	24	6	213
Septic Consultations	14	24	30	1	131	64	3	70	118	110	65	34	664
Soft Serve Testing	0	0	0	0	0	23	4	0	0	0	0	0	27
Tanning Inspections	4	4	4	0	0	0	3	0	0	0	0	1	16
Tanning Consultations	3	0	0	0	0	0	0	0	0	0	0	0	3
Total Inspections	139	206	142	306	124	72	148	139	201	102	55	140	1774
Total Consultations	78	73	103	45	243	113	207	140	273	432	349	264	2320
SAMPLES COLLECTED													
Aquatic Facilities Biological Samples	3	0	0	0	58	16	2	1	0	1	0	0	81
Miscellaneous	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Tests	3	0	0	0	58	16	2	1	0	1	0	0	81
Environmental Health Presentations													
City	0	0	0	0	0	0	0	0	0	0	0	0	0
County	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Number Served													

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

ESC Permit

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



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

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

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

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

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

Commercial Compliance Inspection

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

Patrol and Enforcement

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

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

[illegible]

Citizen Contact, Complaints and Contribution's Log

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

Written Procedures

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

Stabilization Requirements

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

- **"Temporary protection"** means short-term methods employed to prevent erosion. Examples of such protection are straw, mulch, erosion control blankets, wood chips, and erosion netting. 37.10203.50
- **"Stabilize"** means the exposed ground surface has been covered by appropriate materials such as mulch, staked sod, riprap, wood fiber blanket, or other material that prevents erosion from occurring. Grass seeding alone is not stabilization. 37.0102.39
- **"Stabilized"** means the exposed ground surface after it has been covered by sod, erosion control blanket, riprap, pavement or other material that prevents erosion. Simply sowing grass seed is not considered stabilization. Ground surfaces may be temporarily or permanently stabilized (also see Final Stabilization).
- **"Erosion control"** means methods employed to prevent erosion. Examples include soil stabilization practices, horizontal slope grading, temporary or permanent cover, and construction phasing.
- **"Sediment control"** means the methods employed to prevent sediment from leaving the development site. Examples of sediment control practices include, but are not limited to silt fences, sediment traps, earth dikes, drainage swales, check dams, sub-surface drains, pipe slope drains, storm drain inlet protection and temporary or permanent sediment basins. 37.0102.37
- **"Final stabilization"** means that disturbing activities at the site have been completed and a uniform perennial vegetative cover with a density of 70 percent of the native cover for unimproved areas and areas not covered by permanent structures, or equivalent permanent stabilization measures (such as the use of riprap, gabions, or geotextiles) have been employed. 37.10203.40

CONSTRUCTION INDUSTRY EDUCATION AND INFORMATION

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

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

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

Finally, staff conducts [specialty education presentations](#) upon request. Including preparatory and secondary classroom lectures, PowerPoint presentation and informational outreach, etc.

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

Cooperating Partners

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



Statistical Data

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

MCM 4 Future Goals

SSU Staff provided Fargo's fourth annual spring stormwater conference for construction in 2020. The goal in 2021, as allowable due to the pandemic, is to continue to attract more interest from the private sector for this as an annual event in an effort to educate local builders and contractors right around the start up of a new construction season.



MARCH 4, 2020 CITY OF FARGO STORMWATER BREAKFAST SEMINAR

4th Annual Stormwater Event

The City of Fargo & West Fargo are once again teaming up with Brock White for this year's 4th 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 changes for Fargo and West Fargo from storm sewer utility staff. Fargo's truck regulatory officer will go over local policy on over dimensional and load securement. Brock White will be reviewing available erosion and sediment control materials common to homebuilders and excavators to meet the requirements. Kory Bonnell with WSB & Associates will also be presenting. Kory specializes in compliance strategies within the private sector.



Time:
7:30 AM – 12:00 PM

Location:
1240 25th St S Fargo ND
Fargo Cass Public Health
(Oak Room)

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

Local MS4 Policy
Presentations for Fargo &
West Fargo

Fargo Truck Regulatory
Over dimensional &
Load Securement

Environmental Compliance
Specialist at WSB &
Associates Kory Bonnell

Brock White
Geo/Erosion Control
Product Manager
Greg Halvorson

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



Construction Permit & Violation Report 2020

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

PERMITS

In 2020 permits increased. The Covid-19 pandemic did not seem to have an effect on the construction industry for both commercial and residential building. Storm sewer utility staff was shorthanded in 2020 which did effect the amount of violations issued. Many infractions were addressed by phone for efficiency. BMPs still remain the largest infraction - see the violations section.

The new automated permitting system (LAMA) implemented in August 2019 has been a success. This new system triggers an Erosion & Sediment Control permit at the inspections department during the approval process for a building permit. The new system is still evolving as we learn more tips and tools but allows SSU personell to track and manage our construction site runoff program with ease.

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

Permits	Issued	\$ Revenue	Violations	\$ Fees	Violations to Permits	Specific Infraction	Inspectors	\$ Total Revenue
2020	403	\$8,060	126	\$120	31%	181	KJM	\$8,180
2019	305	\$6,100	266	\$1,140	87%	337	KJM/SO	\$7,240
2018	389	\$8,894	246	\$1,140	63%	323	KJM/DN	\$10,034
2017	424	\$9,345	263	\$840	62%	313	KJM/BN	\$10,185
2016	510	\$11,717	278	\$540	55%	367	KJM/JCL	\$12,257
2015	496	\$11,282	478	\$2,640	96%	691	JP/TS/KM	\$13,922
2014	434	\$10,162	428	\$3,240	99%	765	Josh P	\$13,402
2013	585	\$13,393	243	\$1,740	42%	455	Josh P	\$15,133
2012	458	\$11,648	307	\$1,740	67%	563	Josh P	\$13,388
2011	395	\$8,936	190	\$572	48%	408	Josh/Mark	\$9,508
2010	362	\$7,917	229	\$390	63%	463	Joe	\$8,307
2009	362	\$7,496	295	\$300	81%	477	Craig	\$7,796
2008	428	\$10,785	304	\$3,240	71%	575	Mike	\$14,025
2007	489	\$11,636	331	\$2,880	68%	1,166	John	\$14,516
2006	367	\$7,460	36	-	10%	36	Steve	\$7,460
2005	0	\$0	0	-	0	0	0	-

Violations

Decreases in violations during 2020 is mostly due to reduced number of staff during the Covid-19 pandemic. BMP as an infraction annually tops the list of infractions because it is a more ambiguous (catch-all) term. All infractions not specifically denoted independently are grouped into BMP.

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

Violations

Year	NOVs Issued	BMP	Grass Buffer	Illegal Entrance	Illegal Discharge	Inlet Protection	Permit	Tracking	Total
2020	126	82	6	30	1	4	0	51	181
2019	266	213	10	47	2	17	9	34	337
2018	246	84	4	77	3	35	35	68	323
2017	263	131	32	19	4	20	19	83	313
2016	278	124	6	47	4	23	13	120	367
2015	478	330	2	62	2	27	47	175	691
2014	428	233	2	67	4	74	37	188	765
2013	243	123	24	76	14	22	67	71	455
2012	307	155	14	155	7	34	119	50	563
2011	190	110	11	51	2	32	44	125	408
2010	229	175	18	66	3	35	56	76	463
2009	295	175	16	93	2	43	38	64	477
2008	304	197	8	130	16	34	44	121	575
2007	351	291	152	340	8	38	178	65	1166
2006	36	-	-	-	-	-	-	-	36
2005	-	-	-	-	-	-	-	-	-

Profiling

Contractor	Permits	Violations	Leading Infractions	% violations to permit
Jordahl Custom Homes	76	15		19.7%
Thomsen Homes	69	39	BMP maintenance	56.5%
Brookstone Property	30	9	Street Tracking	30.0%
Heritage Homes	23	2	Illegal Entrance	8.7%
Dabbert Custom Homes	16	2		12.5%
Designer Homes	16	0		0.0%
Krueger Construction	12	1		8.3%
Plecity Kowalski Construction	11	6		54.5%
J & L Construction	10	0		0.0%
	263	74		
Top 9 permit holders account for	65% of permits and 59% of all violations			

Program record

Violations	Total	BMP	Grass Buf	Ent	Discharge	Inlet	Permit	Track	Other	RIF	Infractions
2020	126	82	6	30	1	4	0	51	7		181
2019	266	213	10	47	2	17	9	34	5	\$960	337
2018	246	84	4	77	3	35	35	68	17	\$1,140	323
2017	263	131	32	19	4	20	19	83	5	\$840	313
2016	278	124	6	47	4	23	13	120	30	\$540	367
2015	478	330	2	62	2	27	47	175	46	\$2,640	691
2014	428	233	2	67	4	74	37	188	160	\$3,240	765
2013	243	123	24	76	14	22	67	71	58	\$1,740	455
2012	307	155	14	155	7	34	119	50	29	\$1,740	563
2011	190	110	11	51	2	32	44	125	33	\$572	408
2010	229	175	18	66	3	35	56	76	34	\$390	463
2009	295	175	16	93	2	43	38	64	46	\$420	477
2008	304	197	8	130	16	34	44	121	25	\$3,240	575
2007	351	291	152	340	8	38	178	65	94	\$2,760	1166
2006	36		Begin 3-1-06		-	-	-	-	-	\$0	36
	286	173	22	90	5	31	50	92	42	AVERAGE	496

City of Fargo

Monthly Permit List Report

Prepared By:

Month/Year: January 1, 2020 - December 31, 2020



Permit Number	Work Class	Address	Establishment	Contractors	Date Issued	Value	Total Fees	Units	Description	Parcel Number	Block Number
2001-0102-ESC		3665 Valley View Dr S		Heritage Homes LLC	1/7/2020	\$ -	\$ 20.00	0	ESC for new home.	01-8568-00170-000	2
2001-0151-ESC		5451 53 Ave S		Century Builders LLC	1/9/2020	\$ -	\$ 20.00	0	ESC Permit	01-8060-00084-000	2
2001-0369-ESC		3652 Cordova Loop S		Heritage Homes LLC	1/22/2020	\$ -	\$ 20.00	0	ESC for new home.	01-8568-00630-000	2
2002-0242-ESC		4895 63 St S		Heritage Homes	2/12/2020	\$ -	\$ 20.00	0	ESC for new home.	01-8559-00280-000	1
2002-0417-ESC		2386 63 Ave S		Eid-Co Buildings, Inc.	2/25/2020	\$ -	\$ 20.00	0	ESC for new home.	01-7810-00930-000	8
2002-0427-ESC		3654 56 St S		Dabbert Custom Homes LLC	2/26/2020	\$ -	\$ 20.00	0	ESC for new home.	01-8568-00440-000	2
2002-0431-ESC		3542 Grandwood Dr N		Heritage Homes LLC	2/26/2020	\$ -	\$ 20.00	0	ESC for new home.	01-8554-00670-000	3
2002-0454-ESC		410 5 St N [Mercantile Parking Ramp]		Kilbourne Construction Management LLC	2/27/2020	\$ -	\$ 20.00	0	ESC Permit	01-1540-01173-000	21
2003-0057-ESC		6091 66 St S		Thomsen Homes LLC	3/3/2020	\$ -	\$ 20.00	0	ESC for new home.	01-8449-00560-000	3
2003-0115-ESC		1537 68 Ave S		Thomsen Homes LLC	3/5/2020	\$ -	\$ 20.00	0	ESC for new home.	01-8659-02330-000	6
2003-0143-ESC		1993 65 Ave S		Thomsen Homes LLC	3/6/2020	\$ -	\$ 20.00	0	ESC for new home.	01-8510-00060-000	2
2003-0154-ESC		4401 23 Ave S		Olaf Anderson Constr	3/9/2020	\$ -	\$ 20.00	0	ESC		
2003-0165-ESC		701 University Dr N [701 collective]		Gast Construction Co., Inc.	3/9/2020	\$ -	\$ 20.00	0	ESC Permit	01-1120-00900-000	7
2003-0176-ESC		510 4 St S [Prairie St. John's Parking Lot]		Alpa Construction	3/9/2020	\$ -	\$ 20.00	0	ESC Permit	01-2550-00010-000	1
2003-0225-ESC		6339 Deer Creek Pkwy S		Corn II LLC	3/11/2020	\$ -	\$ 20.00	0	esc	01-8449-00880-000	4
2003-0243-ESC		1553 68 Ave S		Thomsen Homes LLC	3/12/2020	\$ -	\$ 20.00	0	ESC	01-8659-02310-000	6
2003-0244-ESC		6580 Deer Creek Pkwy S		Jordahl Custom Homes	3/12/2020	\$ -	\$ 20.00	0	ESC	01-8449-07570-000	24
2003-0248-ESC		1540 66 Ave S		Thomsen Homes LLC	3/12/2020	\$ -	\$ 20.00	0	ESC	01-8659-00950-000	3
2003-0249-ESC		6507 54 Ave S		Thomsen Homes LLC	3/12/2020	\$ -	\$ 20.00	0	ESC	01-8671-00430-000	3
2003-0265-ESC		7312 17 St S		Jordahl Custom Homes Inc	3/12/2020	\$ -	\$ 20.00	0	ESC for new home.	01-8632-00010-000	1
2003-0326-ESC		6523 54 Ave S		Thomsen Homes LLC	3/17/2020	\$ -	\$ 20.00	0	ESC for new home.	01-8671-00420-000	3
2003-0343-ESC		1714 75 Ave S		Jordahl Custom Homes Inc	3/17/2020	\$ -	\$ 20.00	0	ESC for new home.	01-8571-00190-000	1
2003-0357-ESC		6650 59 Ave S		Jordahl Custom Homes Inc	3/17/2020	\$ -	\$ 20.00	0	ESC for new home.	01-8449-00370-000	1
2003-0377-ESC		1782 75 Ave S		Jordahl Custom Homes Inc	3/18/2020	\$ -	\$ 20.00	0	ESC for new home.	01-8571-00220-000	1
2003-0456-ESC		6561 54 Ave S		Thomsen Homes LLC	3/20/2020	\$ -	\$ 20.00	0	ESC for new home.	01-8671-00400-000	3
2003-0463-ESC		6206 31 St S		Krueger Construction	3/23/2020	\$ -	\$ 20.00	0	ESC for new home.	01-8550-00010-000	1
2003-0476-ESC		1545 66 Ave S		Thomsen Homes LLC	3/23/2020	\$ -	\$ 20.00	0	ESC for new home.	01-8659-00720-000	2
2003-0486-ESC		7343 18 St S		Jordahl Custom Homes	3/24/2020	\$ -	\$ 20.00	0	ESC for new home.	01-8632-00620-000	3
2003-0487-ESC		7362 21 St S		Jordahl Custom Homes	3/24/2020	\$ -	\$ 20.00	0	ESC for new home.	01-8571-01250-000	4
2003-0500-ESC		6600 57 Ave S		Jordahl Custom Homes	3/24/2020	\$ -	\$ 20.00	0	ESC for new home.	01-8449-01250-000	

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 areas are evaluated on a per site basis under the site plan review process (see below).
- All previously undeveloped properties and subdivisions are required to provide a Storm Water Management Plan (plan) for the subject area.
- Submission and approval of the plan is required prior to plat approval.
- Failure to comply with the requirements of a site plan review results in a no build situation.

Site Plan Review Process

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

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

City of Fargo

Policy on Storm Water Discharge and Treatment Requirements

Authority and Purpose

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

Intent of the Policy

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

Target Audience

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

Storm Water Management Plan

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

Storm Water Discharge Requirement/Limit

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

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

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

Water Quality Treatment

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

Storm Water Detention, Retention, and Discharge Pond Design

Appendix D outlines the requirements for pond design within developments.



Fargo Storm Sewer System

Area = 50 square miles
Miles of Pipe = 506
Inlets = 14,060
Manholes = 10,094
Legal drains = 6
Storm Lift Stations = 80

APPENDIX A:

STORM WATER CONCEPTUAL PLAN

1. All newly platted Ag Conversion properties, new lot Subdivisions within a larger common development, and infill projects within a larger platted development equal to or greater than 1.0 acre in size are required to have a storm water management plan that includes those Best Management Practices (BMPs) required for the Addition or Subdivision to meet storm water quality and quantity requirements. Approval of the regional storm water management plan is considered part of the plat approval process.
2. Existing parking lot projects that involve only spot repairs, surface treatments or added surfacing of existing surfaced lots under 1 acre threshold will be exempt from the storm water discharge requirements.
3. Existing parking lot projects that involve reconstruction shall be required to add storm water inlets to convey water into the City storm water system and shall comply with storm water treatment requirements.
4. Previously platted lots less than one acre, that are part of a larger common development, will be required to have a storm water management plan when the lot is developed. This storm water management plan shall analyze the impact the addition of this newly improved lot will have on the overall storm water features of the common development. As a minimum, these lots shall drain to a common inlet that is connected to the City storm water system, while meeting the allowable release rate and water quality requirements.
5. Article 37-0201 of the City of Fargo Code of Ordinances states: "An owner must submit to the City Engineer a plan for storm water management and control including detention and retention facilities. The plan shall be submitted, and approval obtained from the City Engineer prior to the owner (a) obtaining approval of an application for a plat, pursuant to Section 20-0907 of the Land Development Code of the City, or (b) engaging in any land disturbing activity.

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

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

- (1) A Storm Water Management Plan Report prepared using a "Storm Water Modeling System" that provides a modeling report similar in nature to "HydroCad". The report shall document the assumptions, methodologies, and analysis used in arriving at the selected storm water management solution. The report must be "global" in that it looks at the entire area to be developed as well as any impacts to the site created by neighboring areas. The report shall be conceptual in nature and include (1) a narrative describing the existing site conditions, proposed site conditions, types and locations of storm water BMPs proposed to be used, as well as (2) the model calculations for the post-development 2, 10, and 100-year storm events as identified under the most current NOAA Atlas 14 release storm event for Fargo.
- (2) Conceptual plan drawings and topographic maps noting all items covered in the report.
- (3) Conceptual Operations and Maintenance (O&M) plan for the system covering all requirements for keeping the system operating as planned.
- (4) The above-noted items shall be stamped and signed by a Professional Engineer registered in the State of North Dakota.
- (5) A regional storm water plan can use any combinations of BMPs, selected by the owner and their engineer, enabling the property to meet the storm water quantity and quality requirements. The plan may utilize regional or "on-site" detention/retention and water quality facilities however, per the Fargo Comprehensive Plan; the City desires to see storm water facilities constructed as regional amenities whenever possible. If a regional facility is used, the pond shall be located to facilitate capture of as much site storm water as possible prior to discharge into the City storm water system.
- (6) The submitted conceptual storm water plan will be reviewed by the City's Engineering Department. The Engineering Department will evaluate the storm water plan and communicate change requirements or recommendations to the owner and their engineer. Changes made to the storm water plan prior to plat approval will be considered part of the original plan. If the plan is very complex, it may be brought before the City Commission for discussion and/or public comment prior to approval.
- (7) If a subdivided property is covered by a previously approved storm water plan, the previously approved plan shall be reviewed to determine if the subdivided property is still in compliance. A letter from a North Dakota Registered Professional Engineer can accomplish this.

- (8) The approved plan will exist for the life of the subject property including any changes approved by the City Engineering Department. The final approved plan will be included with the amenities plan
- (9) The plan may require dedication of storm water or access easements or additional right-of-way for the construction of storm water conveyance and/or storage facilities.
- (10) The plan must ensure the subject area conforms to the site specific performance requirements noted in Appendices B and C of this policy.



APPENDIX B:

SITE DEVELOPMENT - STORM WATER DISCHARGE REQUIREMENTS

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

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

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

2. A storm water report, prepared using a “Storm water Modeling System” that provides a modeling report similar in nature to “HydroCad”, is required for all developments one acre in size or greater or if part of a larger common development that is 1 acre or larger. The report must include hydrographs depicting flows into and out of all detention/retention facilities and note all flows into the City storm sewer system. In addition to the report, all site plans for sites requiring storm water infrastructure must include:
 - a summary table of post-construction flows for the 2, 10, and 100 year storm, as identified under the most current NOAA Atlas 14 release storm event for Fargo
 - a detail drawing of the outlet structure indicating maximum water elevations for the 2, 10, and 100 year storms, and
 - a written description of the proposed water quality treatment method
3. All sites except existing parking are required to comply with the State Water Quality Design Considerations. Water Quality Design Consideration information is included as **Appendix C** to this policy.
4. The discharge rate noted above will drive detention requirements for a particular site. Dry or wet ponds, oversized pipe, underground storm water storage facilities, or other methods can be used to achieve required storage volumes.

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

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

5. Discharge or overland flow of storm water onto a neighboring property shall not be allowed unless included in the regional plan (see Appendix A) and facilitated through the designation of required easements, dedications, or other methods allowing such conveyance.
6. For those properties lying within the limits of, and meeting the design criteria for, a previously approved Regional Storm Water Plan (Appendix A), and approved regional site plan, no additional measures are required. The satisfaction of storm water requirements shall be noted on the site plan for the subject property. This verification of compliance shall cite the plan under which the subject property was previously approved and include as notes any pertinent storm water information applicable to the site plan. A revised/updated storm water report may be required to verify compliance.

7. Construction of “rain gardens”, “grassy swales”, and other methods of achieving water quality are encouraged and will be evaluated on a case-by-case basis.
8. Criteria for construction of regional detention facilities is discussed in **Appendix D**.
9. Each plan set submittal requiring retention/detention shall include a storm system table identifying:
 - Lot size (acreage and square feet)
 - % impervious area
 - Required retention/detention volume (100 year storm event)
 - Supplied retention/detention volume (100 year storm event)
 - Water quality method being proposed including manufacturers data
 - Release rate allowable (cfs)
 - Release rate actual (cfs)

APPENDIX C:
MS4 REQUIREMENTS

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

Water Quality

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

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

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

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

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

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

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

Recommended resources for planning and designing controls for urban storm water runoff are:
“North Dakota Storm Water Criteria Manual”

<https://www.dot.nd.gov/manuals/design/designmanual/designmanual.htm>

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

APPENDIX D:
STORM WATER DETENTION, RETENTION, AND DISCHARGE POND DESIGN

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

Design Requirements:

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

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

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

Summary of Storm Sewers In Use

Total Number of Inlets 14,060

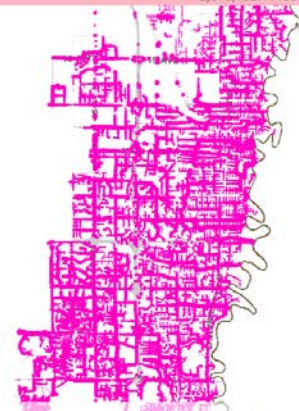
Total Number of Flared End Sections 1,115

Total Storm Sewer Length 506.43 miles
2,673,962.11 feet



XXX	2,965.7 feet
VCR	4,805.3 feet
TRENCH DRAIN	18.9 feet
STEEL	492.8 feet
RCRA	2,275.7 feet

Select from the pie graph above to filter out on map and view footage and miles for material selected.



Dana DeBele

Powered by Esri

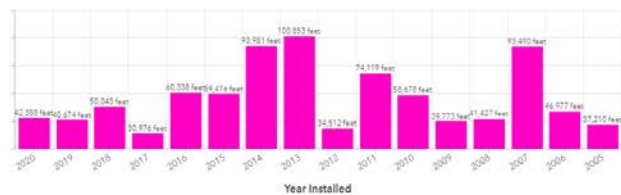
STORM MANHOLES YEAR INSTALLED

Selected 10,094 Manholes

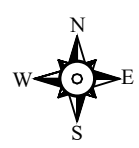
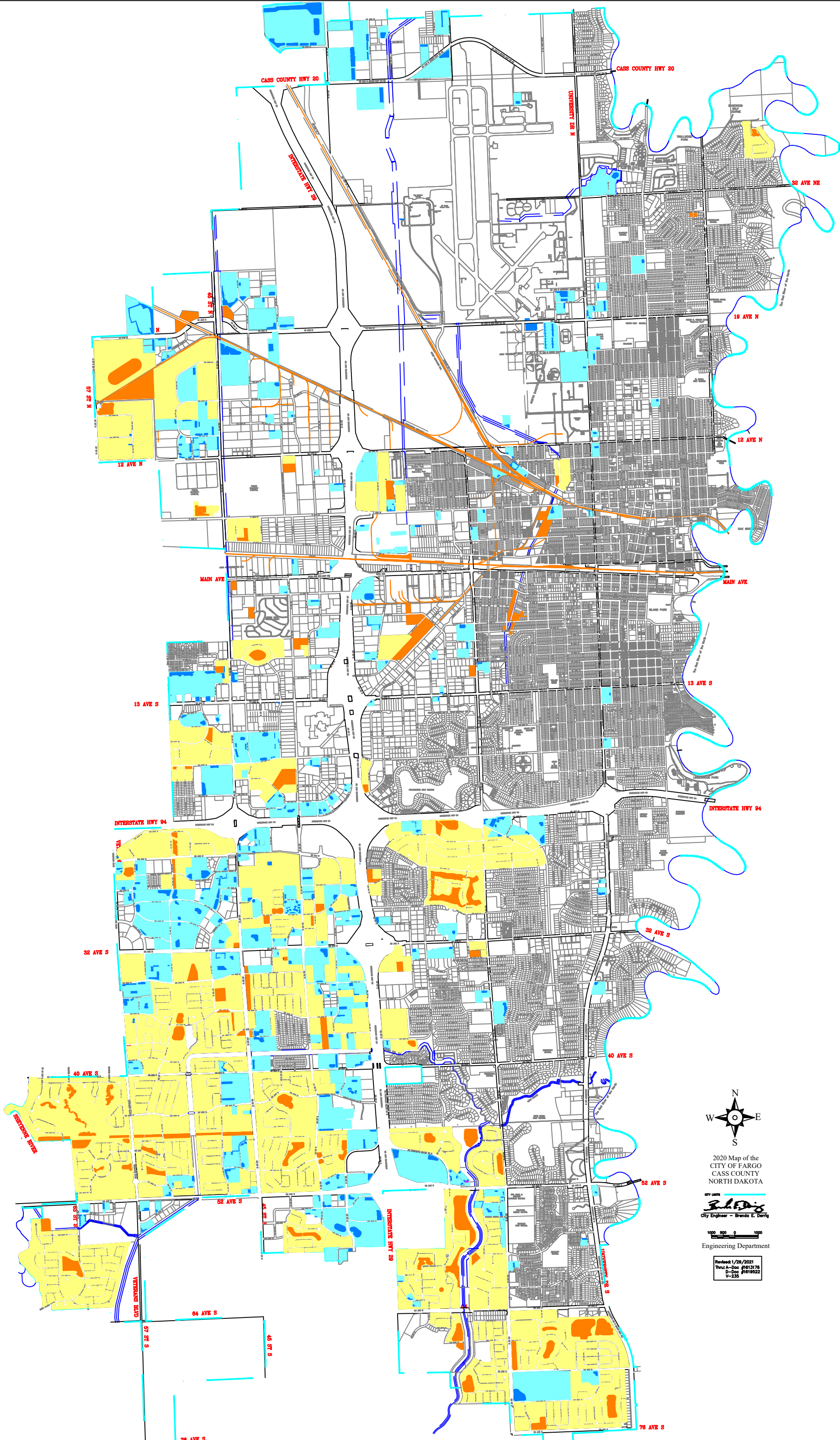


STORM SEWER YEAR INSTALLED

Selected Storm Miles 506.43
Selected Storm Feet 2,673,962.11



Select from the bar graph above to filter out on map and view footage and miles for that year.



2020 Map of the
CITY OF FARGO
CASS COUNTY
NORTH DAKOTA

CITY ENGINEER
Brendo E. Derry
City Engineer - Brendo E. Derry

1000 500 0 500 1000
Engineering Department

Revised: 1/29/2021
Drawn: A-Doc #1613176
D-Doc #1619522
V-235

Scale: 1"= 4000'

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



Site Plan Review Checklist

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

Storm Water Data Report Form

Address:

5600 28th Avenue South

Project:

Uptown & Main (Urban Plains by Brandt Fifth Add'n Area)

Date:

August 12, 2020

Brief Description of Work:

9.58 acre tract including 5 separate parcels

Site Data

	Acres	SF		
Total Site Area:	9.58	417,305		
Total Impervious Area:	8.52	371,131	Percentage:	88.9 %
Total Pervious Area:	1.06	46,174	Percentage:	11.1 %

Allowed 100 Yr Discharge (CFS): 9.6

Actual 100 Yr Discharge (CFS): 9.5

Difference: 0.1 CFS

Required Storage (CF): 96,821

Actual Storage (CF): 97,896

Difference: 1,075 CF

Notes:

1. "Required" storage is V required (per model) for the 100 year event. "Actual" storage is V provided at top of pond elevation.
2. Storage provided in "Stormtech" underground storage system.
3. System covers 9.6 Acres included in "Urban Plains by Brandt Fifth Addition" plat.

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 2020						
Location	Date	Time	Stormwater Conveyance	Report of Findings (condition of site)	Action to be taken	Additional Comments
12 Ave/55 St N	5/20/2020	9:34 AM	City Storm Sewer System	Fair - Good	dry out clean debris, there is a large sized snow pile still present	None
12 Ave/55 St N	11/3/2020	3:11 PM	City Storm Sewer System	Very Good	None	None
6251 36 St S	5/19/2020	2:10 PM	City Storm Sewer System	Very Good	None	Site is also stockpiling asphalt millings
6251 36 St S	11/3/2020	3:39 PM	City Storm Sewer System	Very Good	None	Asphalt millings stockpile. Clay stockpile to south is stabilized
3837 38 St S	5/20/2020	11:10 AM	City Storm Sewer System	Very Good	Needs to dry out and clean debris	One large snow pile
3837 38 St S	11/3/2020	1:03 PM	City Storm Sewer System	Very Good	None	Asphalt millings have been graded
45 St & 3 Ave N	5/20/2020	9:33 AM	City Storm Sewer System	Very Good	Site needs to dry out and be cleaned of debris	Drainage issue from last year corrected by Fargo Public Works
45 St & 3 Ave N	11/3/2020	3:17 PM	City Storm Sewer System	Very good	None	Asphalt millings have been added
450 34 St S	5/26/2020	2:27 PM	County Drain, Storm sewer system	Very Good	Still very wet. Needs to dry out and be cleaned of debris	None
450 34 St S	11/3/2020	3:28 PM	County Drain, Storm sewer system	Very Good	None	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.

<div>SECTION 3300</div> <div>CITY OF FARGO SPECIFICATIONS EROSION AND SEDIMENT CONTROL</div> <div>PART 1 DESCRIPTION OF WORK</div> <div>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</div>
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Storm Sewer Conveyance Maintenance Operations

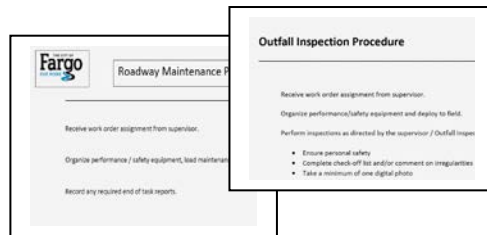
Storm sewer maintenance continues perpetually on a rotational or as required basis. The supervisor schedules inspections and directs maintenance work orders. Public works maintenance platform includes inspection (camera) minor repairs, surface sweeping, pipe jetting, mowing, open channel  sediment removal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

Roadway Maintenance Operations

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

Standard Operating Procedures, Guides and Policies (Written)

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





Sewer By-Pass Procedure

Log discovery / notice and direct to appropriate department / staff

Receive work order assignment from dispatcher / supervisor.

Organize performance / safety equipment and deploy to field.

Site Assessment

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

Notify affected departments / staff

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

Public Safety

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

Perform Work

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

Post Action

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

Procedure implementation/revision date

Supervisor



Roadway Maintenance Procedure

Receive work order assignment from supervisor.

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

Record any required end of task reports.

Procedure date

Supervisor



Outfall Inspection Procedure

Receive work order assignment from supervisor.

Organize performance/safety equipment and deploy to field.

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

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

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

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

Procedure implementation/revision date

Supervisor



Park & Golf 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 _____

Outfall Inspections

Pipe									
Edit Date	Asset ID	Location	Inspector(s)	Separation	Trash Rack	Rip Rap	Comments on Condition of Pipe Separation, Trash Rack, and Rip Rap		
7/6/2020	STFES0001246	901 41st Ave N.	Dg	yes	no	no	separation 18' X11' X 6' deep	poor	Picture #
7/6/2020	STFES0000302	3702 10th St N.	Dg	no	no	yes	Rip Rap filled with silt, could use more rip rap	fair	183, 184, 185
7/6/2020	STFES0001247	37th Ave N. and Broadway	DG	no	no	yes	Good	excellent	186, 187
7/6/2020	STFES0000301	Kandi Lane and Broadway	DG	no	yes	yes	Good	excellent	188, 189
7/6/2020	STFES0001264	Trollwood	Dg	no	no	yes	Apron broke up	fair	190, 191
7/6/2020	STFES0000008	19 GOLF COURSE AVE N. (EDGEWOOD)	DG	yes	yes	yes	first two holes same as last year, third hole is new this year 18" deep	poor	192, 193
7/6/2020	STFES0000299	32nd Ave & Eagle St	DG	yes	no	yes	Big sink hole 5' X 3' X 3' deep	poor	195, 196, 197, 198
7/6/2020	STFES0000298	29th Ave & North Oaks	DG	no	no	yes	Good	excellent	199, 200
7/6/2020	STFES0001248	28th Ave & Maple St.	DG	no	yes	yes	Good	excellent	202
7/6/2020	STFES0001090	Lift #73	DG	no	yes	yes	Good	excellent	203
7/7/2020	STFES0001088	120 North Woodcrest Dr.	DG	no	no	yes	Good	excellent	201
7/7/2020	STFES0000296	Park Lane & North Woodcrest	DG	no	no	yes	Very little rip rap	excellent	204
7/7/2020	STFES0000295	204 South Woodcrest N.	DG	yes	no	yes	HUGE sink hole (3 sink holes in area of 13' X 10' X 6' deep)	poor	205
7/7/2020	STFES0000294	Behind VA Hospital	DG	no	no	yes	Good	excellent	206, 207, 208
7/7/2020	STFES0001004	Lift # 26 Woodland Dr N.	Dg	yes	yes	yes	Sink hole 16" X 24" X 24" deep	fair	209
7/7/2020	STFES0000003	15th Ave & Elm St	DG	no	no	yes	Apron crack	excellent	210, 222, 223
7/7/2020	STFES0001262	Between 14th & 15th Ave on Elm St. N	DG	no	yes	yes	Good	excellent	211
7/7/2020	STFES0000288	14th Ave & Elm St	DG	no	no	yes	Good	excellent	212
7/7/2020	STFES0000001	11th Ave & Elm St	DG	no	no	yes	Good	excellent	213
7/7/2020	STFES0001249	North River Road & 9th Ave	DG	no	yes	yes	Good	excellent	214
7/7/2020	STFES0000287	South Terrace & Ash St N.	DG	yes	no	yes	Bad separation and big hole 8' X 8' X 5' deep	poor	215
7/7/2020	STFES0001250	2nd St N. and Lift station # 23	DG	no	yes	yes	Good	excellent	216, 217
7/7/2020	STFES0001138	Main Ave & 2nd St.	DG	no	yes	yes	Good	excellent	218
7/7/2020	STFES0001251	Lift station #18 & 2nd St. S	DG	no	yes	yes	Good	excellent	219
7/7/2020	STVALVE0000090	6th Ave & 3rd St S.	Dg	no	no	no	In good condition, no rip rap	fair	220
8/25/2020	STVALVE0000091	10th Ave & 4th St S.	DG	no	no	yes	Good	excellent	221
8/25/2020	STFES0001087	12th Ave & 4th St S.	DG	no	yes	yes	Good	excellent	224
8/25/2020	STVALVE0000094	16th Ave & Lindenwood Dr. S.	DG	yes	no	yes	2 separations 5' apart (12' X 5' X 3' deep; 5' X 1' X 1' deep)	poor	225
8/25/2020	STVALVE0000095	17th Ave & Lindenwood Dr. S.	DG	no	yes	yes	Good	excellent	226, 227, 228, 229, 230
8/25/2020	STFES0000285	18th Ave & Lindenwood Dr. S.	DG	no	yes	yes	Good	excellent	231
8/25/2020	STVALVE0000098	21st Ave & 5th St S.	DG	yes	yes	yes	Pipe Separation 6' X 4' X 5' deep	poor	232
8/25/2020	STVALVE0000099	26th Ave & South Country Club Dr.	DG	yes	yes	no	6' X 3' X 5' deep (Looks like the whole bank is sliding)	poor	233, 234
8/25/2020	STFES0001114	501 Southwood Dr.	Dg	no	no	yes	Good	fair	235, 236
8/25/2020	STFES0000595	30th Ave & 11th St S.	DG	no	yes	yes	Good	excellent	238
8/25/2020	STFES0000284	32nd Ave & 11th St S. lift station #27	DG	no	yes	yes	Good	excellent	239
8/25/2020	STFES0001252	3512 River Dr S.	DG	no	yes	yes	Good	excellent	240
8/25/2020	STVALVE0000186	52nd Ave & South University Drive	DG	no	no	yes	Good	excellent	241
8/25/2020	STFES0001025	58th Ave & S. U.	DG	no	yes	yes	Good	excellent	242
8/25/2020	STFES0000261	64th Ave & S. U.	DG	no	yes	yes	Good	excellent	243
8/25/2020	STFES0001268	Oxbow	DG	no	no	yes	Good	excellent	244

*Overall Outfall Rating Excellent

*Overall Outfall Rating Fair

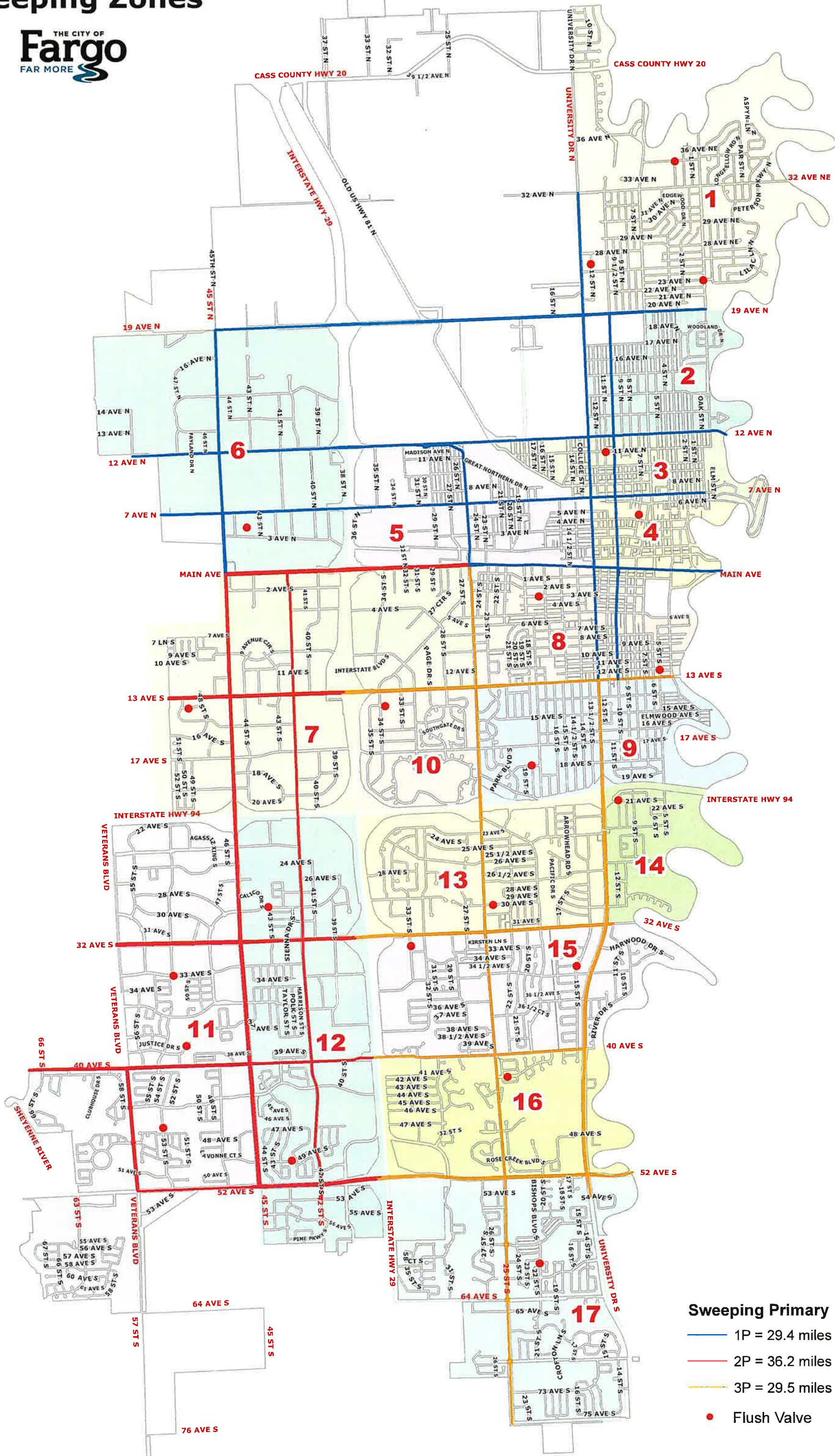
*Overall Outfall Rating Poor

DRAIN CLEANING 2020

<u>Drain Location</u>	<u>Date Cleaned</u>	<u>#of Loads</u>	<u>Total Weight in Ton's</u>	<u>WO#</u>
Drain #10	7/21/2020 - 7/28/2020	21	75	25223
Drain #3	7/13/2020 - 7/23/2020	14	103.23	24711
Drain #40	8/13/2020 - 8/18/2020	23	188.7	25376
Osgood	7/31/2020	1	4.59	24818
Amber Valley	7/31/2020	1	4	24820
41st St & 30th Ave S. (SW & NE)	7/31/2020	4	15.38	24819
23rd Ave & 26th St S.	7/31/2020	1	3	25036
North Oaks	8/4/2020	1	6	25181
Drain #27 (Ulteig ENG.)	7/31/2020 - 8/7/2020	7	58.76	25377
34th St North OF 7th Ave N.	8/4/2020	1	5	24780
Action 7th Ave & 36th St N.	8/4/2020	1	2	24775
Pepsi Drain	8/18/2020	1	12.8	25182
48th St & 15th Ave S. (Scheel's)	8/4/2020	1	2	25183
Aggregate Dr.	8/4/2020	1	1	25224
Big Top Bingo Pond	8/4/2020	1	1	25038
Luther Ford Holding Pond	8/3/2020	1	2	25035
4495 53rd St S. West Side	7/29/2020	1	1.5	24929
Drain #40 (Fisheye)	7/28/2020 - 8/4/2020	4	26	25225
25th St S. 6700 BLK (East Side Davies)	8/3/2020	1	1	25034
TOTAL		86	512.96	

small bucket

Sweeping Zones



Collected Debris Material By Zone

Sweeping 2020

<u>Zone</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>	<u>17</u>	<u>1P</u>	<u>2P</u>	<u>3P</u>	<u>total</u>
Tunnage per	263.	125	162.	57	219.	463	254	256	80	74	200.	207.	136.	51.0	154.	74.8	174.	146.	125.	116.	3338.

Refer to Sweeping Zone Map for locations.



2020/2021

Application Rates for Salt, IceSlicer and Sand/Salt:

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

Pavement Temperature at Product Application	Pavement Temperature Condition	Pavement Surface Conditon	Application Rate		Product
			Gallons/ Pounds Per Lane Mile	Liquid Pre-Wet at Spinner (80/20 Brine/AMP)	
Above 32° F	Temp. is Steady or Rising (No Blowing Snow)	Frost	54	NA	100% Brine
22° F to 32° F	Temp. is Steady or Rising (No Blowing Snow)	Frost	54	NA	90% / 10% 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	50% Salt / 50% Ice Slicer Blend
15° F to 22° F	Temp. is Steady	Light Compaction/Ice	200	Yes	50% Salt / 50% Ice Slicer Blend
15° F to 22° F	Temp. is Steady	Mild Compaction/Ice	300	Yes	50% Salt / 50% Ice Slicer Blend
15° F to 22° F	Falling Temps.	Compaction/Ice	400	Yes	50% Salt / 50% Ice Slicer Blend
0° F to 15° F	Temp. is Steady	Light Compaction/Ice	300	Yes	50% Salt / 50% Ice Slicer Blend
0° F to 15° F	Temp. is Steady	Mild Compaction/Ice	400	Yes	50% Salt / 50% Ice Slicer Blend
-5° F to 15° F	Falling Temps.	Compaction/Ice	400	Yes	50% Salt / 50% Ice Slicer Blend
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	Mediu
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
Above 32° F, (Temp. is Steady or	Dry	Clear	Apply Salt Brine	54
20° - 32° F,	Dry	Clear	Apply Blend 95% Salt	54
20° - 32° F,	Dry	Light Snow/Wind Speed < 15 mph With No BS	Apply Blend 95% Salt	54
20° - 32° F,	Dry	Light Snow/Wind Speed > 15 mph With Visible	Do not Apply Liquids	0
14° - 20° F,	Dry	Clear	Apply Blend 90% Salt	54
14° - 20° F,	Dry	Light Snow/Wind Speed < 15 mph With No BS	Apply Blend 90% Salt	54
14° - 20° F,	Dry	Light Snow/Wind Speed > 15 mph With Visible	Do not Apply Liquids	0
0° - 14° F,	Dry	Clear	Apply Blend 90% Salt	54
0° - 14° F,	Dry	Light Snow/Wind Speed < 15 mph With No BS	Apply Blend 90% Salt	54
0° - 14° F,	Dry	Light Snow/Wind Speed > 15 mph With Visible	Do not Apply Liquids	0
Below 0° F,	Dry	Clear	Do not Apply Liquids	0