

2.01 WATER DISTRIBUTION SYSTEM INSPECTION AND MAINTENANCE POLICY

A. PURPOSE

This policy is intended to guide effective and efficient maintenance of the City's public water distribution system. Procedures identified in this policy are intended to maintain the water supply system to provide safe and reliable water service to customers. This policy takes into consideration public safety, the City's budget and personnel, environmental factors, and the cost of implementation. The Public Works Department is responsible for managing the construction, operation and maintenance of the public water distribution system.

B. SYSTEMS MAPPING AND INVENTORY DATA

The City Public Works Department operates approximately 240 miles of public water mains, 5 water supply wells, 2,119 gate valves and 3 water storage reservoirs within the public water distribution system. The City maintains an official water distribution system map within the City's geographic information system. The GIS Technician is responsible for annual updates to the system map based on water system construction and replacement work that occurs during the preceding year.

C. SYSTEM INSPECTION AND MAINTENANCE

1. WATERMAINS

Water leak detection is performed on approximately 1/5 of the City's watermains each year. This work is conducted to locate and repair leaks in the system. Watermain breaks and leaks occur within public water distribution systems from time to time. Watermain breaks are typically repaired on the day they occur. If a watermain leak occurs in the evening, holiday or weekend, the Utilities Division will determine if the repair can be conducted on the following business day during daylight hours.

Due to the time sensitive nature and disruption associated with watermain repairs, the City uses a primary utility repair contractor to repair watermain breaks and leaks on a time-and-expense basis. The Utilities Division will notify residents of main break repairs and will operate the valves to turn the water on and off during repair work. For watermain breaks in the winter months, the final repair of street pavement, curb and boulevard turf may be delayed until the following summer construction season. Boulevard turf repair is typically completed using seed and mulch.

2. WATER HYDRANTS

Water hydrants are flushed annually to purge discolored (manganese and oxidized iron material) water from the distribution system. This process provides for the inspection of each hydrant to identify repair needs. Any defects or operational issues are documented. Hydrant repairs are completed on a routine basis by City Utilities Division personnel or by contractors. A notice of planned hydrant flushing is placed on the City website and in the monthly utility bill. Some residents may receive rusty water during hydrant flushing, which could stain laundry. The

above notices include a request that residents check the water before doing laundry during flushing operations.

3. CONTROL VALVES

Inventory data pertaining to water distribution system control valves are stored on the City's GIS system. This inventory data includes the location of all control valves, unique identification number, and any special operational or maintenance issues. All control valves located throughout the water distribution system are inspected and exercised on a four-year cycle. Any defects or operational issues are documented in the water valve database. Non-emergency valve repairs are typically completed in conjunction with annual street improvement projects.

4. MUNICIPAL SUPPLY WELLS

Water supply wells that are being used within the active operation matrix are inspected each workday. These well inspections include operation of the well, chemical usage at each well site, monitoring of noise and vibration, review of well run times, general check of programmable logic controller, alarm system checks, general housekeeping and security/lockup of well building or enclosure structure. Annual well inspections are also performed by the Minnesota Department of Health. Active supply wells are continually monitored using the City's Supervisory Control and Data Acquisition (SCADA) system.

Well rehabilitation work is performed on a routine basis to minimize the occurrence of malfunctions. Water supply wells are rehabilitated on an 8-year rotating cycle. Well rehabilitation projects include the removal of the motor, vertical shaft and pump for visual inspection by a licensed well contractor. Defective or deteriorated parts are replaced prior to reinstallation. Pump motors are inspected and repaired by a qualified contractor. The Utilities Division Manager will determine if accumulated sediment needs to be removed from the well cavity (often referred to as bailing) prior to reinstallation of the well. The cost of this rehabilitation work is included in the annual Water Utility operating budget.

5. WATER STORAGE RESERVOIRS

Annual condition inspections are performed on water storage reservoirs by Utilities Division staff. Annual Inspections include the following items:

- Water surface and overflow intake are visually inspected (from top hatch only).
- Access hatches are secured and locked.
- Manways and ladder cages are secured and locked.
- Top vent screens are clean and secure.
- Electrical boxes and components are secure and locked.

- Visible defects of paint coating systems are documented.
- Vegetation and weeds are clear from tank base.
- Climbing and safety devices are secure.
- Security lighting (where applicable) is operational.

Detailed inspections of the exterior and interior of water storage tanks are performed on a 5-year cycle by an engineering consultant. The purpose of these detailed inspections is to document structural and paint coating defects. Routine maintenance on water storage reservoirs typically occurs based upon the engineering consultant's recommendations.

D. RECORDS AND DOCUMENTATION

Inspection and maintenance records for the water distribution system are recorded and documented on the electronic recordkeeping system using geographic information system software. The Utilities Division Manager is responsible for supervising the records and documentation for the water distribution system.

E. LIMITATIONS

While the City fully intends to meet the guidelines established in this policy, there may be times when this is not feasible. Issues including, but not limited to, budget constraints, critical equipment failure, or weather and other emergencies may prevent the City from meeting the guidelines established herein. The Utilities Manager may override provisions established within this policy.

2.02 SANITARY SEWER INSPECTION AND MAINTENANCE POLICY

A. PURPOSE

This policy is intended to guide effective and efficient maintenance of the City's public sanitary sewer system. Procedures identified in this policy are intended to maintain the sanitary sewer system to prevent sewer backups and to extend the life of the system. This policy takes into consideration public safety, the City's budget and personnel, environmental factors, and the cost of implementation. The Public Works Department is responsible for managing the construction, operation and maintenance of the public sanitary sewer system.

B. SYSTEMS MAPPING AND INVENTORY DATA

The City operates approximately 81 miles of public sanitary sewer mains, 1821 manhole structures and 1 sanitary sewer lift station within its public sanitary sewer system. The City maintains an official sanitary sewer system map within the City's geographic information system. The GIS Technician is responsible for annual updates to the system map based on sanitary sewer construction and replacement work that occurs during the preceding year.

C. SYSTEM INSPECTION AND MAINTENANCE

Components of the sanitary sewer system are inspected and maintained on a routine basis to provide proper operation and conveyance capacity. The Utilities Division Manager is responsible for supervising inspection and maintenance activities for the sanitary sewer system.

1. SEWER MAIN PIPES

The City inspects the sanitary sewer mains by television camera. Television inspection is done to determine the condition of the sanitary sewer mains and identify defects including cracks, fractures, separation, or broken segments. Sanitary sewer mains located on a street where a street maintenance project is planned will be inspected before and after such a project. Television inspection may also be used to inspect the system where there are possible problems, including areas containing VCP sewer pipes. Approximately 1/6 of the sanitary sewer system mains are televised each year. Sanitary sewer sections identified with significant structural defects or inflow/infiltration are scheduled for rehabilitation. The City uses Cured-in-Place Pipe (CIPP) rehabilitation and excavation/replacement methods for repairing sanitary sewers based on specific site conditions. Sanitary sewer mains in a new development must be televised before said mains are turned over to the City.

The City performs routine maintenance on approximately 1/3 of sanitary sewer mains each year. Routine maintenance includes sewer cleaning and root cutting. Sewer cleaning is performed to remove debris, sediment, and roots that can accumulate within the sanitary sewer system. When roots are identified in the sanitary sewer mains, they are cut. Routine sewer cleaning is scheduled on a rotational cycle, with special emphasis on identified fat/oil/grease (FOG) areas and areas with a history of partial blockage as determined by the

Utilities Division Manager. Work is typically completed using City-owned sewer jetting and vacuum equipment.

2. MANHOLES

The City inspects manhole structures during television inspections and sewer cleaning operations. Maintenance personnel check the following items during maintenance operations: casting condition, adjustment rings for condition and infiltration, structure walls for cracks and infiltration, debris on benches, and debris or blockage of inverts. Manhole structures identified with defects are cleaned or repaired as necessary to prevent inflow, infiltration, or corrosion.

3. LIFT STATIONS

The City performs regular inspections of its lift station, alarm system, and electrical components. Weekly lift station inspections include manual operation of each pump, monitoring of noise and vibration, review of pump run times, general check of programmable logic controller, and security/lockup of station control panel. Monthly inspections include weekly check items plus visual inspection of wet wells, cleaning and testing of transducers/flight balls, review of set points, and testing of alarm systems. Annual inspections include maintenance on the check valves and inspection of pumps by outside vendor. The interior of wet wells are cleaned on a routine cycle based on the land use within the service area.

Lift station operations are continuously monitored through the City's SCADA system. The SCADA system includes alarm protocols that notify Utility Division personnel by automated telephone contact. Repairs and maintenance of the SCADA system is provided by the City's system integration consultant. The system integration company is available on-call to respond to controller and data communication problems 24 hours per day.

D. RECORDS AND DOCUMENTATION

Sanitary sewer television inspections, sewer cleaning maintenance activities, and manhole structure repairs are recorded and documented on the City's electronic sanitary sewer record keeping system using geographic information system software. This program allows for efficient electronic retrieval of maintenance records by Utilities Division personnel. Lift station inspections and maintenance records are stored within the Utilities Supervisor's office and Laser fiche. The Utilities Division Manager oversees the records and documentation for the sanitary sewer system.

E. LIMITATIONS

While the City fully intends to meet the guidelines established in this policy, there may be times when this is not feasible. Issues including, but not limited to, budget constraints, critical equipment failure, or weather and other emergencies may prevent the City from meeting the guidelines established herein. The Public Works Director or Utilities Division Manager may override provisions established within this policy.

2.03 WATER AND SANITARY SEWER SERVICE MAINTENANCE AND REPAIR POLICY

A. PURPOSE

The purpose of this policy is to establish and maintain uniform procedures concerning maintenance and repair of sanitary sewer services and water services within the City of Northfield. Regulations pertaining to water and sewer services are provided in the City Code of Ordinances, Section 82.

B. DEFINITIONS

The following definitions are hereby established specifically for the purposes of this policy.

Curb Stop. The underground valve located along the water service that is used to terminate water supply to a property or premises.

Curb Stop Box. The port, riser and associated assembly used for access to the underground Curb Stop from the ground surface.

Public Street Right-of-Way. That portion of the surface, air space above the surface, and the area below the surface of any public street, highway, avenue, sidewalk or trail within the City that is owned by, or under control of, the City, or dedicated or otherwise conveyed to the City for general public use by pedestrian or vehicular traffic. The boundary of public street right-of-way is delineated in recorded subdivision plats or legally described in recorded public street easements.

Sanitary Sewer Service and Sewer Line. The segment of sanitary sewer pipe that conveys wastewater from a building structure to the public sanitary sewer main.

Sewer Service Lead. That portion of a sanitary sewer service located within public street right-of-way.

Street Main. Public water distribution infrastructure pipelines and sanitary sewer conveyance infrastructure pipelines (hereinafter *Public Water Main* and *Public Sanitary Sewer Main* respectively) meeting the following criteria: installed pursuant to an agreement with the City; owned and operated by the City; serving or intending to serve more than one property; and located within public street right-of-way or public utility easement.

Water Service and Water Service Line. The segment of water pipe that conveys potable water from a public water main to a building structure.

Water Service Lead. That portion of a water service located within public street right-of-way.

C. SANITARY SEWER SERVICE MAINTENANCE

Sanitary sewer services require routine monitoring, inspection and maintenance to maintain proper conveyance capacity and prevent sewer obstructions. Common causes of sewer service obstructions include, but are not limited to, root intrusion, debris entering the service, pipe sags, pipe joint failure, pipe fractures, grease and oil accumulation, sediment accumulation and flushing of over-sized objects. The City does not have sufficient access to the interior of private properties to conduct routine maintenance, inspection and monitoring of sanitary sewer services.

The property owner, occupant or user of the premises served is responsible to conduct routine inspection, maintenance and monitoring, including root cutting and cleaning, of the sanitary sewer service extending from the premises to the public sewer main. The property owner, occupant or user of the premises served is also responsible for promptly notifying the Public Works Department-Utilities Division if they are experiencing any sanitary sewer backups.

D. SANITARY SEWER SERVICE REPAIRS

1. SERVICES WITHIN THE PUBLIC STREET RIGHT-OF-WAY

The following practices are established for sanitary sewer services connecting directly to public sanitary sewer mains located within the public street right-of-way. After the initial connection has been made to the sewer lead; the property owner, occupant, or user of the premises served shall be liable for all repairs required to any sanitary sewer service necessary for connection of the premises to the sewer lead. For repairs involving excavation of the sanitary sewer service, the City shall conduct repairs to the portion of sanitary sewer service located within the public street right-of-way. The property owner is liable for damage to the sanitary sewer service within the public street right-of-way that is a direct result of conducting cleaning or root cutting of the sanitary sewer service.

2. SERVICES OUTSIDE OF THE PUBLIC STREET RIGHT-OF-WAY

The following practices are established for sanitary sewer services connecting directly to public sanitary sewer mains located within public easement but outside of public street right-of-way. The property owner, occupant, or user of the premises served shall be liable for all repairs required to any sanitary sewer service necessary for connection of the premises to the public sanitary sewer main including repairs to the clean out and service connection fitting, and restoration of streets and ground surfaces.

E. WATER SERVICE MAINTENANCE AND REPAIR

1. SERVICES WITHIN THE PUBLIC STREET RIGHT-OF-WAY

The following practices are established for water services connecting directly to public water mains located within the public street right-of-way. After the initial connection has been made to the water service lead, the property owner, occupant, or user of the premises served shall be liable for all repairs required to any water service line necessary for connection of the premises to one foot on the street side of the curb stop, including the curb stop. For repairs

involving excavation of the water service, the City shall conduct repairs to the portion of water service located within the public street right-of-way.

2. SERVICES OUTSIDE OF THE PUBLIC STREET RIGHT-OF-WAY

The following practices are established for water services connecting directly to water mains located within public easement but outside of public street right-of-way. The property owner, occupant or user of the premises served shall be liable for all repairs required to any water service necessary for connection of the premises to the public water main including repairs to the curb stop, curb stop box, and service connection fitting, corporation stop and restoration of streets and ground surfaces.

Adopted by City Council: Resolution

2.04 WATER METER INSTALLATION AND REPAIR POLICY

A. PURPOSE

The purpose of this policy is to maintain uniform definitions and procedures concerning installation and repair of water meters within the City of Northfield. Regulations pertaining to water meters in the City of Northfield are provided in the City Code of Ordinances, Section 82.

B. FURNISHING WATER METERS

Water meters installed on the City's public water supply system are furnished by the City. Water meters for new installations (i.e. new homes or buildings) are purchased from the City. Replacement meters are furnished at no additional cost, except that whenever a meter has been damaged due to negligence on the part of persons other than the employees of the City, the customer shall reimburse the City for the expense of repairing or replacing the meter.

C. WATER METER TYPE

The City uses specific models of water meters to provide uniformity and interoperability for water meter reading operations and provide for an efficient data management process. The City furnishes water meters that are equipped with automated meter reading data transmitting capability for commercial, industrial and institutional properties as well as residential properties located within new subdivisions under development. Water meters with exterior registers may be used for replacement meters on residential properties. Specifications for new water meters are maintained by the Utilities Manager.

D. WATER METER INSTALLATION

All water meter installations shall conform to the requirements of the Minnesota State Plumbing Code, the City of Northfield Code of Ordinances, and the meter manufacturer's specifications. The following additional installation standards shall apply to water meter installations:

1. The water meter shall be placed at least 12 inches above the floor slab and rigidly supported to prevent vibration.
2. The water meter shall be placed in a location allowing access to and removal of the water meter by Public Works staff.
3. The radio transmitter shall be installed in accordance with the manufacturer's recommendations and standards established by the Utilities Division Manager.
4. Outside registers or exterior data transmitters shall be easily accessible to meter reading personnel. Outside register or exterior data transmitters shall be at a height of at least 36 inches and no more than 60 inches above the finished grade of the ground surface. The connection

wire shall be provided with its own hole when passing through any exterior wall, interior wall, or floor joist of the building.

5. The installation of a water meter bypass assembly shall require specific written authorization by the Utilities Division Manager prior to installation. A water meter bypass assembly will not be allowed for most standard service installations. Exceptions may include, but are not limited to, hospitals, nursing homes, large school facilities or medical care facilities in continual operation 24 hours per day.

E. WATER METER REPAIR

The City Code of Ordinances Section 82 establishes the requirements for the operation and repair of water meters. Most water meters function for many years without the need for repair. In some cases, water meters may stop functioning properly or data communication problems arise that prevent water consumption data from being collected for billing purposes.

The City provides for repair of water meters at no additional cost to customers subject to the conditions described in City Ordinance Section 82. When notified of the need to repair a water meter, most customers cooperate and schedule an appointment to allow Public Works staff to access the property and repair the meter. In some cases, a customer may not respond to the City's request to access the property to repair the meter. The following procedure is followed to respond to water meter repairs:

1. A water meter repair door hanger will be left at the premises of the customer. The door hanger shall provide clear direction that the customer must contact the City to schedule an appointment for the meter repair.
2. If the customer does not contact the City within 10 days following mailing of the first door hanger, a second notice shall be left at the premises of the customer. The second door hanger shall contain similar information contained in the first door hanger.
3. If the customer does not contact the City within 10 days following the second door hanger described above, a third notice shall be mailed to the customer. The third notice shall include a specified date when the water service may be terminated to the property if the water meter is not repaired. The Utilities Manager shall establish a water service termination date.
4. The Utilities Manager may proceed with water service termination based on professional judgment of the situation if the customer does not respond to the third notice to schedule repair of the water meter by the established deadline. The Utilities Manager shall notify the Public Works Director, City Administrator and City Council prior to proceeding with water service termination under this policy.

The procedures outlined above do not apply to water service terminations in response to emergency situations, delinquent utility payments or other processes related to vacant

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properties. While the City fully intends to meet the guidelines established in this policy, the Public Works Director or Utilities Manager may authorize immediate water service terminations that may reasonably be determined necessary to protect the integrity of the public water distribution system or sanitary sewer system.

Adopted by City Council: Resolution