Stormwater Management Plan
City of Carterville, Missouri
Small MS4 Permit # MO-R040085

Prepared for:

City of Carterville
1200 East 1st Street
Carterville, Missouri 64835

ATTN: Dale Davenport
Mayor

HYDRO DIVISION

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August 24, 2010
Project # 74010306

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Public Education and Outreach on Stormwater Impacts
Minimum Control Measure #1

Statement of Minimal Need

There is minimal need for the City of Carterville to implement measures for Public Education and Outreach. The City of Joplin provides educational brochures for Carterville to print and distribute. Carterville shares local media with Joplin and Joplin provides public service announcements, newspaper articles, press releases and other educational opportunities regarding local stormwater issues. Carterville will send out newsletters for public education that include stormwater quality issues and notification of educational opportunities provided by Joplin. A library of stormwater information will be made available at Carterville City Hall and brochures will be distributed to schools, businesses and civic organizations.

Decision Process

Carterville developed their stormwater public education and outreach program in cooperation with other jurisdictions in the region. The target pollutants were identified and prioritized. The actions that impact the target pollutants were identified. The public education program was designed to impact the actions identified.

Target Audiences

During the development of the education program, Carterville identified the sources of stormwater pollutants that needed to be reduced to improve overall water quality. The target audiences were selected because changing their behavior would have a significant stormwater quality impact on the target pollutants. The target audiences for the public education program are:

1. Citizens (Homeowners)
2. Restaurant Owners and Operators
3. Car Wash Owners and Operators
4. Developers and Home Builders
5. Service Station and Oil/Lube Business Owners and Operators
6. Elected Officials
7. City Staff

Target Pollutants

The following is a prioritized list of the leading pollutants, experienced in the permitted area, that are carried by stormwater runoff into water bodies. (1 = having most impact and 10 = having least impact)

1 Suspended Solids
2 Nutrients
3 Pesticides
8 Metals
8 Bacteria
9 Oxygen-Depleting Substances (BOD & other organics)
7 Oil and Grease
5 Salinity (Salt)
4 Priority Toxic Organic Chemicals (Household Hazardous Waste Pesticide/Herbicides)
6 Habitat Alterations
4 Floatables
10 Temperature

Target Pollutant Sources

The target pollutant sources having a major impact on stormwater quality were identified. The following is a list of potential sources of pollutants that are experienced in the permitted area. (1 = Major impact, 2 = Minor impact, 3 = Not an impact)

1 Construction activities (sediment, construction chemicals and debris, solid and sanitary wastes)
1 Overapplication of fertilizer, herbicides, pesticides
2 Improper disposal of paint and household hazardous chemicals
3 Pet waste contamination
1 Improper disposal of waste oil, grease, and gasoline
2 Trash, debris, and illegal dumping
3 Detergents washed into drains
2 Snow removal (salt, sand and snow disposal)
3 Sanitary sewer overflows
3 Infiltration from cracked sanitary sewers
3 Failing septic systems
3 Sewer service connections to storm drainage system
3 Foundation drains connected to storm drainage system
3 Downspouts connected to storm drainage system
2 Spills from roadway accidents or 'fires
3 Connected impervious areas covering large acreages (such as malls, institutions with large parking areas)
3 Stream bank erosion
3 Waste transfer station

Outreach Strategy & Partnerships

Carterville's outreach strategy is to implement a variety of methods to reach a number of different target audiences multiple times. To change behavior, repetition is important. The mechanisms are described in the above statement of minimal need.

Partnerships with other governmental and non-governmental entities will be formed in order to execute the public outreach strategy. The idea is to share information and resources so as to prevent duplication of outreach efforts. The following entities will be assisting with the effort:

1. Other Communities in the Region, especially Joplin
2. County Extension
3. EPA
4. Other: Missouri Southern State College and Local Schools

The estimated number of people targeted to be reached by the public education and outreach strategy is 350 per year.

Person Responsible

The person responsible for overall management and implementation of the permittee's stormwater public education and outreach program is the **MAYOR**. Others may be involved in the execution of each of the individual activities in the program.

Measurable Goals

Carterville selected the measurable goals for each of the BMPs after reviewing EPA & ASCE research on the effectiveness of certain BMPs. The BMPs selected were chosen because of the evidence that they will have a positive impact on the target pollutants identified as a concern for Carterville. The public education and outreach BMPs were also selected because many have been effective methods of communicating with the public for our community. The implementation of the BMPs selected (shown in the above table) will determine the success of the measure on water quality.

Measurable Goals: Public Outreach and Education	2010	2011	2012	2013	2014
1. Distribute Brochures (Ongoing)	X	X	X	X	X
2. Send Out Newsletters (Minimum Yearly)	X	X	X	X	X

Public Involvement and Participation
Minimum Control Measure #2

Permit Requirements

Carterville will comply with State and Local public notice requirements when implementing the public involvement and participation program.

Decision Process

The following is the documentation for Carterville's decision process and rationale statement for the development of a stormwater public involvement and participation program. It documents the overall program and the individual BMPs, measurable goals, and responsible party for the program.

Involving the Public in Developing the Submittal

Carterville has involved the public in the development and submittal of the application and stormwater management program as follows:

1. Held Stakeholder Meeting
2. Held a Public Hearing
3. Posted Public Meeting Announcements

Involving the Public in Program Implementation

Carterville plans to actively involve the public in the development and implementation of the stormwater program through a number of different methods selected because they are existing effective methods used by Carterville or because of EPA guidance documents that list these BMPs as effective public involvement methods.

Target Audiences to Involve in Program

The target audiences for the permittee's public involvement program are:

1. Citizens (Homeowners)
2. Mass Media
3. Local Elected Officials
4. Local Government Agencies
5. Business Leaders

6. Contractors, Home Builders, and Developers
7. Teachers
8. Seniors
9. Civic Organizations

Public Involvement Activities

Carterville plans to involve the public through a series of public meetings or open houses and continued use of the community hotline. The hotline, which is administered by the City of Joplin, is currently available for residents to report any stormwater or illicit discharge concerns they may have.

Person Responsible

The person responsible for the overall management and implementation of the permittee's stormwater public involvement/participation program is the **MAYOR**. Others may be involved in the execution of each of the individual activities in the programs.

Measurable Goals Selection

Carterville selected the measurable goals for each of the BMPs after reviewing EPA & ASCE research on the effectiveness of certain BMPs. The BMPs selected were chosen because of the evidence that they will have a positive impact the target pollutants identified as a concern for Carterville. Some of the public involvement methods selected were also chosen because they have been used effectively by Carterville in the past. The implementation of BMPs selected will determine the success of the measure on water quality.

Measurable Goals: Public Involvement and Participation	2010	2011	2012	2013	2014
1. Community Hotline (Ongoing)	X	X	X	X	X
2. Public Meetings/Open House (Minimum Yearly)	X	X	X	X	X

Illicit Discharge Detection and Elimination
Minimum Control Measure #3

Overview

Carterville will develop, implement and enforce a program to detect and eliminate illicit discharges (as defined in 10 CSR 20-6.200) into their small MS4.

Outfall Map

Carterville has developed mapping showing the storm sewer system and the location of outfalls and the names and location of all waters of the State that receive discharges from those outfalls. The map will be updated each time there is a change in the storm sewer system or the corporate limits of the City of Carterville.

Enforcement

Carterville will effectively prohibit non-stormwater discharges into the city's stormwater system via ordinances and regulations. Each ordinance is enforceable by Carterville with appropriate procedures and consequential actions.

Detection Methods

Carterville will implement a plan using dry-weather and wet-weather field screening to detect and address non-stormwater discharges. Carterville will detect and address illicit discharges to the MS4, including discharges from illegal dumping and spills. Carterville's program will address on-site sewage disposal systems that flow into the MS4.

Informing the Public

Carterville will inform public employees, businesses and the general public of hazards associated with illegal discharges and improper disposal of waste using the following methods:

1. Procedural Training for City Staff
2. Distribute Literature (See also Minimum Control Measure #1)
3. Newsletter (See also Minimum Control Measure #1)

The literature and the newsletter will include the phone number for the community hotline so the public can report any illicit discharge concerns they may have. Carterville will also develop a recycling program for household hazardous waste.

Not Significant Contributors

Carterville has not identified any of the following categories of non-stormwater discharges or flows (i.e. illicit discharges) as significant contributors of pollutants to their small MS4: water line flushing, landscape irrigation, diverted stream flows, rising ground waters, uncontaminated ground water infiltration (as defined in 10 CSR 20-6.200), uncontaminated pumped ground water, discharges from potable water sources, foundation drains, air conditioning condensation, springs, water from crawl space pumps, footing drains, lawn watering, flows from riparian habitats and wetlands, and street wash water (discharges or flows from fire fighting activities are excluded from the effective prohibition against non-stormwater and will only be addressed where they are identified as significant sources of pollutants to waters of the State).

Occasional Incidental Non-Stormwater Discharges

Carterville's illicit discharge ordinance will include a list of other similar occasional incidental non-stormwater discharges (e.g. non-commercial or charity car washes, etc.) that will not be addressed as illicit discharges because they are not reasonably significant sources of pollutants to the MS4. Should these occasional or incidental non-stormwater discharges be identified in the future, those entities responsible for discharging will be prohibited or conditions placed on them so as to minimize their discharge of pollutants.

Decision Process

Carterville will document their decision process for the development of a stormwater illicit discharge detection and elimination program. Carterville's rationale statement addresses both their overall illicit discharge detection and elimination program and the individual BMPs, measurable goals, and responsible persons for their program.

Regulatory Mechanism

Carterville will use the following mechanism to effectively prohibit illicit discharges to the MS4:

1. City Ordinance
2. Inspection

This mechanism was selected because ordinances are commonly used by Carterville to establish laws and set forth the enforcement mechanisms. The ordinance will establish legal authority to:

1. Regulate the contribution of pollutants to the municipal separate storm sewer system (MS4) of stormwater discharges by any use;
2. Prohibit illicit connections and discharges to the MS4;
3. Carry out all inspections, surveillance and monitoring procedures necessary to ensure compliance.

Carterville will develop the ordinance and implement an inspection program in 2010 in order to effectively prohibit illicit discharges to the MS4.

Enforcement

Carterville will set forth in the ordinance enforcement procedures intended to remove the source of the illicit discharge detected. Carterville will ensure compliance with the ordinance through civil penalties.

Removal

Carterville will follow the enforcement mechanisms detailed in the ordinance, including those legal actions described above, to enforce the removal of an identified illicit connection.

Identify Priority Areas

Carterville will use the map identified above and other data to identify priority areas with likelihood of illicit connections.

Responsible Party

The **MAYOR** will be responsible for overall management and implementation of Carterville's stormwater illicit discharge detection and elimination program. Others may be involved in the execution of each of the individual activities in the programs.

Measurable Goals and Program Evaluation

Carterville will evaluate the success of the program based on the number of illicit connections discovered and eliminated.

Carterville selected the measurable goals for each of the BMPs after reviewing EPA & ASCE research on the effectiveness of certain BMPs. The BMPs selected were chosen because of the evidence that they will have a positive impact the target pollutants identified as a concern for Carterville. Some of the methods to detect and eliminate illicit discharges were also chosen because they have been used effectively by Carterville in the past. The implementation of BMPs selected will determine the success of the measure on water quality.

Measurable Goals: Illicit Discharge Detection and Elimination	2010	2011	2012	2013	2014
1. Pass Ordinance	X				
2. Inspection					
a. Dry Weather Field Screening (Every 6 Months and as needed)	X	X	X	X	X
b. Wet Weather Field Screening (Every 6 Months and as needed)	X	X	X	X	X
3. Update Storm Sewer Map (Ongoing, as needed)	X	X	X	X	X
4. Community Hotline (Ongoing)	X	X	X	X	X
5. Household Hazardous Waste Collection/Recycling			X	X	X

Construction Site Stormwater Runoff Control
Minimum Control Measure #4

Permit Requirements

Carterville plans to develop, implement, and enforce a program to reduce pollutants in any stormwater runoff from construction activities that result in disturbance of greater than or equal to one acre. Carterville also plans to reduce pollutants in stormwater runoff from construction activities that disturb an area less than one acre if the site is part of a larger common plan of development or sale.

Decision process

The following is the rationale statement for the development of Carterville's overall construction site stormwater runoff control program. It documents the individual BMPs, measurable goals, and responsible party for their program.

Regulatory Mechanism

Carterville will adopt stormwater regulations that will require the use of erosion and sediment controls on construction sites. Carterville will require construction site operators to implement the appropriate erosion and sediment control Best Management Practices (BMPs).

The regulations will include construction specifications and design standards and will outline the requirements for designers and contractors before, during and after the construction activities. The ordinance adopting these new regulations will provide enforcement measures for those designers and contractors who do not follow the regulations.

Pre-Construction Site Plan Review

Carterville will implement procedures for site plan review, including the review of pre-construction plans, which will look at the potential water quality impacts. Carterville will implement procedures and rationale for those sites that do not require site plan review. The estimated percentage of sites that will have a preconstruction site plan review is 100%.

Site Inspection

Carterville will implement procedures for site inspection and enforcement of erosion and sediment control measures. The sites will be inspected using a priority rating system. The site with the most potential risk to the community will be top on the priority list.

Enforcement

Carterville will ensure compliance with the developed regulations by including an enforcement section detailing the sanctions and enforcement mechanisms. Carterville will use the following sanctions:

1. Fines
2. Permit Denial for Non-Compliance

Public Input on Submittals

Carterville will implement procedures for receipt and consideration of public input on information submitted.

Wastes to Be Controlled

Carterville will require construction site operators to control wastes that may cause adverse impacts to water quality such as:

1. Discarded Building Materials
2. Sediment
3. Litter or Trash
4. Sanitary Waste

Person Responsible

The person responsible for overall management and implementation of the permittee's stormwater public education and outreach program is the **MAYOR.** Others may be involved in the execution of each of the individual activities in the programs.

Measurable Goals

Carterville selected the measurable goals for each of the BMPs after reviewing EPA & ASCE research on the effectiveness of certain BMPs. The BMPs selected were chosen because of the evidence that they will have a positive impact on the target pollutants identified for Carterville. The implementation of BMPs selected will determine the success of the measure on water quality.

Measurable Goals: Construction Site Stormwater Runoff Control	2010	2011	2012	2013	2014
1. Adoption of Stormwater Regulations	X				
2. Pre-Construction Plan Review (Ongoing)	X	X	X	X	X
3. Construction Site Inspection (Ongoing)	X	X	X	X	X

Post-Construction Stormwater Management in New Development and Redevelopment Minimum Control Measure #5

Overview

Carterville will develop a program to address stormwater runoff from new development and redevelopment projects that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale.

Decision process

The following is the rationale statement for the development of a post-construction stormwater management program. It documents the BMPs, measurable goals, and responsible party for the program.

Strategies

Carterville will implement strategies which include a combination of structural and/or non-structural Best Management Practices (BMPs).

Regulatory Procedures

Carterville will implement regulatory procedures that will be specifically tailored for the community, minimize water quality impacts, and attempt to maintain pre-development runoff conditions.

Regulatory Procedures: Non-Structural Best Management Practices (BMPs)

Carterville will implement policies that will help minimize water quality impacts. Policies will include minimizing disturbance of soils and vegetation and encouraging green space in new development and redevelopment.

Regulatory Procedures: Structural Best Management Practices (BMPs)

Stormwater regulations will be adopted that will address post-construction runoff from new development and water quality from redevelopment. Carterville will implement regulatory procedures that will attempt to mimic pre-development runoff conditions for new development and minimize water quality impacts for redevelopment. Carterville will require

detention/retention for all land development on any site having a gross land area of one acre or more, including projects less than one acre that are part of a larger common plan of development or sale, unless waived by the city in accordance with the adopted stormwater regulations. The regulations will include construction specifications and design standards and will outline the requirements for designers and contractors before, during and after the construction activities. The ordinance adopting these regulations will provide enforcement measures for those designers and contractors who do not follow the regulations.

Enforcement Mechanisms

Carterville will ensure compliance with the regulations by way of sanctions and enforcement mechanisms. Carterville has implemented the following sanctions in their ordinance:

1. Fines
2. Permit Denial for Non-Compliance
3. Ordinance

Long-Term Operation & Maintenance

Carterville will require developers and owners to perform the long-term operation and maintenance of their selected BMPs.

Priority Areas

There are no areas identified as a priority for regulatory procedures.

Responsible Party

The person responsible for overall management and implementation of the permittee's stormwater public education and outreach program is the **MAYOR.** Others may be involved in the execution of each of the individual activities in the programs.

Measurable Goals

Carterville selected the measurable goals for each of the BMPs after reviewing EPA & ASCE research on the effectiveness of certain BMPs. The BMPS selected were chosen because of the evidence that they will have a positive impact on the target pollutants identified as a concern for Carterville. The implementation of BMPs selected will determine the success of the measure on water quality.

Measurable Goals: Post-Construction Stormwater Management	2010	2011	2012	2013	2014
1. Adoption of Stormwater Regulations	X				
2. Pre-Construction Plan Review (Ongoing)	X	X	X	X	X

Pollution Prevention/Good Housekeeping for Municipal Operations Minimum Control Measure #6

Statement of Minimal Need

There is minimal need for the City of Carterville to implement measures for Pollution Prevention and Good Housekeeping for Municipal Operations. The City contracts out all maintenance and city services.

Accountability

The City of Carterville will develop a Stormwater Quality Plan that includes Best Management Practices (BMPs) to be followed by all contractors for city services. An ordinance will be adopted that requires all contractors for city services to sign a statement saying they will follow all applicable BMPs included in the Stormwater Quality Plan. The BMPs are to be implemented by the contractor in order to prevent and reduce stormwater pollution.

Right of Way Clean-up

Carterville currently requires property owners to maintain their own right-of way. Newsletters included in Minimum Control Measure #1 will remind owners of this responsibility and encourage frequent litter pick-up to reduce floatables and improve water quality.

Responsible Party

The **MAYOR** will be responsible for overall management and implementation of the pollution prevention and good housekeeping program for Carterville. Others may be involved in the execution of each of the individual activities in the programs.

Measurable Goals

Carterville will evaluate the success of the pollution prevention/good housekeeping minimum control measure by tracking the progress of each measure against the implementation schedule below. Each one of the measures described in this permit was chosen based on its implementability by Carterville staff and impact on water quality.

Measurable Goal: Pollution Prevention/Good Housekeeping	2010	2011	2012	2013	2014
1. Develop Stormwater Quality Plan	X				
2. Pass Ordinance	X				
3. Send Out Newsletters (See Minimum Control Measure #1)	X	X	X	X	X

Commitment to Annual Reporting

The City of Carterville will prepare and submit an annual report by July 28th of each year. The first reporting period under this Stormwater Management Plan will be from January 2010 through June 2010. Subsequent reporting periods will start in July and end in June of the following year.

Contact Information
City of Carterville, MO

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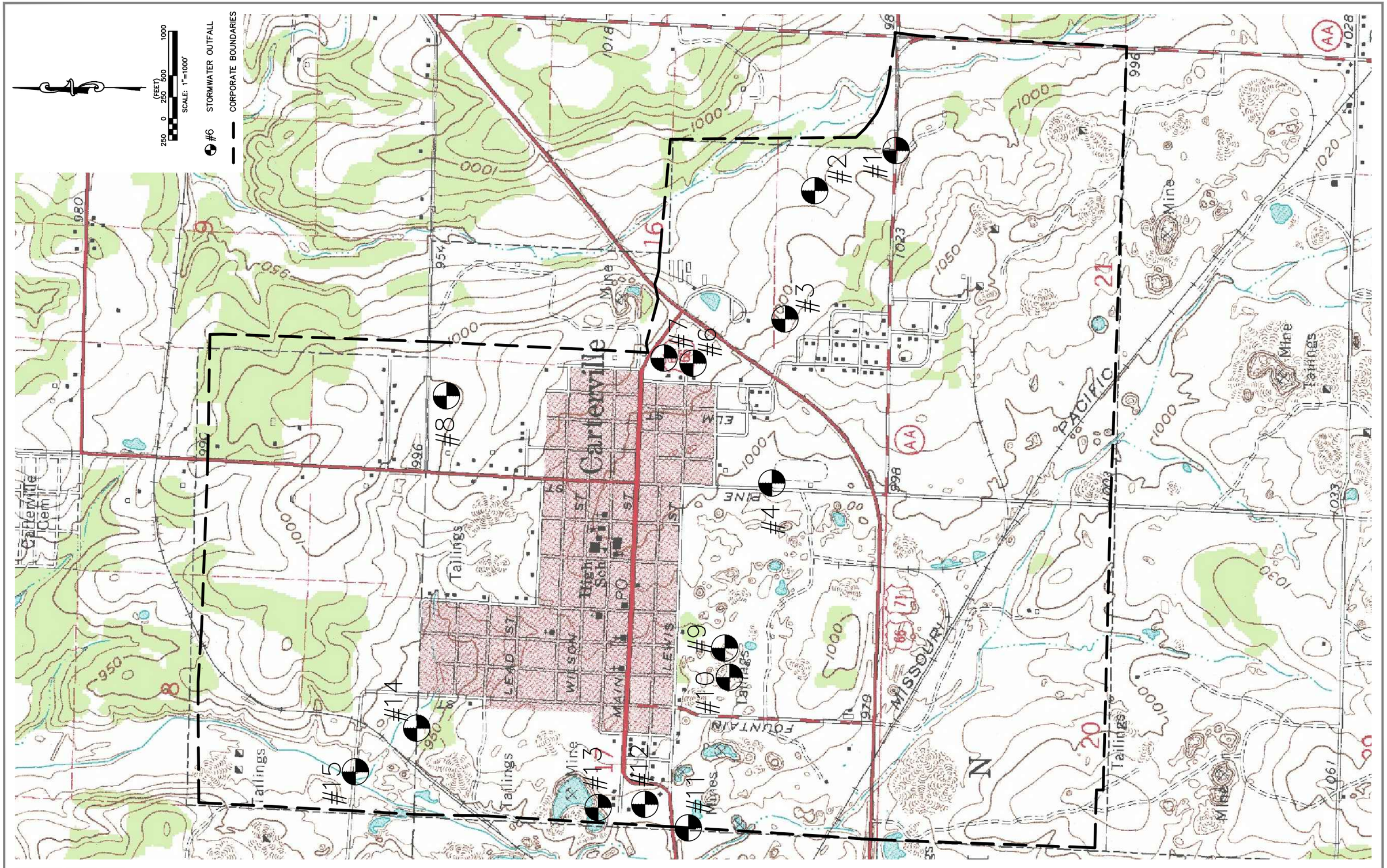
Phone Number:	(417) 673-1341
Fax Number:	(417) 673-5448



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CERTIFICATE OF AUTHORITY
MISSOURI NO. 000427
OKLAHOMA NO. 675

DATE	REVISION

Carterville MS4.dwg

DWN. BY:	sms
CKD. BY:	sms
APPD. BY:	sms
DATE:	2-12-10

Outfall Map
Carterville MS4 Permit
City of Carterville, MO

DWG. NO. 1

Stormwater Outfalls and Receiving Waters
City of Carterville, MO

OUTFALL 001

Legal Description	¼ NE, ¼ NE, Sec 21, T28N, R32W, Jasper County
Longitude: +94°25'28.643"W	Latitude– 37°8'27.39"N
Receiving Water	Unnamed Tributary to Center Creek (U)
1St Classified	Center Creek (P) – 3203 303(d) listed
USGS/ SUB WATERSHED	11070207-160010

OUTFALL 002

Legal Description	¼ NW, ¼ NE, Sec 21, T28N, R32W, Jasper County
Longitude: – 94°25'34.811"W	Latitude: +37°8'27.033"N
Receiving Water	Unnamed Tributary to Center Creek (U)
1St Classified	Center Creek (P) – 3203 303(d) listed
USGS/ SUB WATERSHED	11070207-160010

OUTFALL 003

Legal Description	¼ SE, ¼ SW, Sec 16, T28N, R32W, Jasper County
Longitude: – 94°25'52.871"W	Latitude: +37°8'39.949"N
Receiving Water	Unnamed Tributary to Center Creek (U)
1St Classified	Center Creek (P) – 3203 303(d) listed
USGS/ SUB WATERSHED	11070207-160010

OUTFALL 004

Legal Description	¼ SW, ¼ SW, Sec 16, T28N, R32W, Jasper County
Longitude: – 94°26'16.536"W	Latitude: +37°8'41.357"N
Receiving Water	Unnamed Tributary to Center Creek (U)
1St Classified	Center Creek (P) – 3203 303(d) listed
USGS/ SUB WATERSHED	11070207-160010

OUTFALL 006

Legal Description	¼ NE, ¼ SW, Sec 16, T28N, R32W, Jasper County
Longitude: – 94°25'59.42"W	Latitude: +37°8'50.462"N
Receiving Water	Unnamed Tributary to Center Creek (U)
1St Classified	Center Creek (P) – 3203 303(d) listed
USGS/ SUB WATERSHED	11070207-160010

OUTFALL 007

Legal Description	¼ SE, ¼ NW, Sec 16, T28N, R32W, Jasper County
Longitude: – 94°25'58.778"W	Latitude: +37°8'53.859"N
Receiving Water	Unnamed Tributary to Center Creek (U)
1St Classified	Center Creek (P) – 3203 303(d) listed
USGS/ SUB WATERSHED	11070207-160010

OUTFALL 008

Legal Description	¼ NW, ¼ NW, Sec 16, T28N, R32W, Jasper County
Longitude: – 94°26'4.36"W	Latitude: +37°9'18.505"N
Receiving Water	Unnamed Tributary to Center Creek (U)
1St Classified	Center Creek (P) – 3203 303(d) listed
USGS/ SUB WATERSHED	11070207-160010

OUTFALL 009

Legal Description	¼ NW, ¼ SE, Sec 17, T28N, R32W, Jasper County
Longitude: – 94°26'39.917"W	Latitude: +37°8'46.298"N
Receiving Water	Unnamed Tributary to Center Creek (U)
1St Classified	Center Creek (P) – 3203 303(d) listed
USGS/ SUB WATERSHED	11070207-160010

OUTFALL 010

Legal Description	¼ NE, ¼ SE, Sec 17, T28N, R32W, Jasper County
Longitude: – 94°26'44.142"W	Latitude: +37°8'45.823"N
Receiving Water	Unnamed Tributary to Center Creek (U)
1St Classified	Center Creek (P) – 3203 303(d) listed
USGS/ SUB WATERSHED	11070207-160010

OUTFALL 011

Legal Description	¼ NE, ¼ SW, Sec 17, T28N, R32W, Jasper County
Longitude: – 94°27'5.566"W	Latitude: +37°8'49.939"N
Receiving Water	Unnamed Tributary to Center Creek (U)
1St Classified	Center Creek (P) – 3203 303(d) listed
USGS/ SUB WATERSHED	11070207-160010

OUTFALL 012

Legal Description	¼ SE, ¼ NW, Sec 17, T28N, R32W, Jasper County
Longitude: – 94°27'2.133"W	Latitude: +37°8'54.924"N
Receiving Water	Unnamed Tributary to Center Creek (U)
1St Classified	Center Creek (P) – 3203 303(d) listed
USGS/ SUB WATERSHED	11070207-160010

OUTFALL 013

Legal Description	¼ SE, ¼ NW, Sec 17, T28N, R32W, Jasper County
Longitude: – 94°27'2.236"W	Latitude: +37°9'0.289"N
Receiving Water	Unnamed Tributary to Center Creek (U)
1St Classified	Center Creek (P) – 3203 303(d) listed
USGS/ SUB WATERSHED	11070207-160010

OUTFALL 014

Legal Description	¼ SE, ¼ SW, Sec 8, T28N R32W, Jasper County
Longitude: – 94°26'51.869"W	Latitude: +37°9'21.034"N
Receiving Water	Unnamed Tributary to Center Creek (U)
1St Classified	Center Creek (P) – 3203 303(d) listed
USGS/ SUB WATERSHED	11070207-160010

OUTFALL 015

Legal Description	¼ SE, ¼ SW, Sec 8, T28N, R32W, Jasper County
Longitude: – 94°26'55.885"W	Latitude: +37°9'28.046"N
Receiving Water	Unnamed Tributary to Center Creek (U)
1St Classified	Center Creek (P) – 3203 303(d) listed
USGS/ SUB WATERSHED	11070207-160010