

STORM WATER MANAGEMENT PLAN

FOR THE

CITY OF ROLLA

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ROLLA, MISSOURI

WATER PROTECTION PROGRAM

June, 2013

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Section 1 - Permit Area Characteristics

1.1 City of Rolla Description

Situated midway between Springfield and St. Louis on Interstate 44 (Figure 1-1.), Rolla has a 2010 population of 19,559 and is county seat of Phelps County. General Operating Permit Number MO-R040033 covers the approximate 12.02 square miles of land located within the corporate limits of Rolla, Missouri.



Figure 1.1 - Missouri Cities

Rolla is a third class city that operates under the Council-Mayor-Administrator form of government. The elected body consists of Mayor and twelve city council members responsible for the creation of ordinances and policies. The Mayor is elected for a four-year term and council members for two-year terms. Six of the twelve city council members are elected every other year. The city council hires a City Administrator who is responsible for citywide operations, including the city-owned Rolla National Airport.

1.2 Land Use Characteristics

Land use information is an important factor in determining the amount of storm water generated within a city and ultimately affects the volume of storm water runoff and its characteristics. Careful examination of land use will often times provide important clues to sources of illicit discharge or assist in correctly sizing storm water collection facilities.

Not surprisingly, Rolla exhibits a land use pattern typical of smaller municipalities. Residential land represents over 36% of the land area (*Table 1-1*). The central core is composed of a dense mixture of commercial, institutional and small lot residential uses. Lower density housing radiates outward from the center representing initial growth bands following WWII. Arterial corridors are composed primarily of lineal commercial swaths.

Rolla Land Use Acreage, 1996-2004

	<u>1996 acres*</u>	<u>% Total</u>	<u>2004 acres</u>	<u>% Total</u>	<u>Typical Ratios</u>
Residential	1,424	34.8 %	1,717	36.2 %	35-39%
Single-family	1,250	30.6	1,408	29.7	35-41
Duplex 2-family	40	1.0	56	1.2	N/A
Multi-family	134	3.2	253	5.3	N/A
Commercial/Office	485	11.9	523	11.0	5-7
Manufacturing	123	3.0	169	3.6	7-10
Parkland (Public & Private)	356	8.7	459	9.7	10-18
Public/Institutional	649	15.9	672	14.1	12-15
Right-Of-Way	1,051	25.7	1,205	25.4	20-26
Total Developed	4,088	100.0	4,745	100.0	
Undeveloped	2,952	(41.9%)	2,682	(36.1%)	
Total Acres	7,040		7,427		

* The land use figures for 1996 include the Southside Annexation Area of 1,352 acres.
Source: City of Rolla Community Development Department, Public Works Department, Revised Southside Annexation Plan of Intent, American Planning Association "PAS Memo, 1992".

Table 1-1. – Existing Land Use

The "Rolla 2020 Comprehensive Plan Update" developed by the City of Rolla Community Development Department, was passed by Ordinance January 17, 2006. According to the document, future land use (*Table 1-2*.) will exhibit the following characteristics:

"Rolla's developed area will increase by 1,492.7 acres by 2020, or 93 acres on average over fifteen years, if the population and housing projection rates occur as anticipated. Housing and transportation needs will consume the largest proportion of the newly

developed parts of the City at 975.7 acres or almost 65.4 percent of the total increase in land use.

Public and institutional uses that include all public property (except publicly-owned parkland) and private institutional uses such as churches, schools, nursing homes, and privately owned recreation areas will require a total of 190.4 additional acres. Commercial and industrial land needs will be satisfied over the next 15 years with an estimate 196.4 acres or 12.3 acres on average.”

Rolla Land Use Projections Summary, 2005-2020 (acres)

	<u>2005-2010</u>	<u>2010-2015</u>	<u>2015-2020</u>	<u>Total</u>	<u>Avg./yr.</u>
Residential	241.6	208.5	199.7	649.8	40.6
<i>Single-Family</i>	<i>115.4</i>	<i>107.3</i>	<i>102.9</i>	<i>325.6</i>	<i>20.4</i>
<i>Two-Family</i>	<i>22.2</i>	<i>20.7</i>	<i>20.0</i>	<i>62.9</i>	<i>3.9</i>
<i>Multi-Family</i>	<i>104.0</i>	<i>80.5</i>	<i>76.8</i>	<i>261.3</i>	<i>16.3</i>
Commercial/Off.	52.4	44.5	51.5	148.4	9.3
Manufacturing	17.0	14.4	16.6	48.0	3.0
Public/Institutional	67.4	57.0	66.0	190.4	11.9
Parkland	46.1	39.0	45.1	130.2	8.1
Right-Of-Way	115.3	97.6	113.0	325.9	20.4
Total	539.8	461.0	491.9	1,492.7	93.0

Source: City of Rolla Community Development Department.

Table 1-2. – Future Land Use

1.3 Topography and Physical Characteristics

Rolla is nestled in the Plateau Section of the Ozark Highlands and features rugged uplands with diverse topographic, geologic, soil and hydrologic conditions. The municipality proper sees an approximate 360 foot drop in elevation from its high point of ±1210' located on the northeast corner of town to the low point of ±850' on the Interstate 44 corridor at the east city limits line. The majority of the city has a slope of 8% or less with smaller outlying areas having slopes of 35% or greater (*Appendix A, Page A-1*).

The area is underlain with carbonate rock, particularly gray dolomite. Surface soils are typically thick and classified as residual, being formed by the weathering of the parent material. These are usually red-brown in color with chert gravel deposits and clay. Stream valley soils typically consist of alluvial deposits composed primarily of sandy gravel.

1.4 Climate

Rolla's climate has been categorized as both humid subtropical and humid continental. Humid subtropical is characterized by hot, humid summers and mild to cool winters and is typical of the American South. Humid continental climates are typified by large seasonal temperature differences, well-distributed precipitation year round, summer rainfalls occurring in thunderstorms and high humidity levels.

Rolla's average annual temperature is 55.2°F with an annual average high of 65.6°F and an average annual low of 44.9°F. The warmest month is typically July with an average high of 89°F and an average low of 68°F; the coolest month is January with an average high of 39°F and an average low of 20°F. Average annual precipitation for Rolla is 44.5 inches. January typically receives the lowest average monthly rainfall at 2.2 inches, while May receives the most at 4.8 inches.

1.5 Local Watersheds and Water Bodies

While Rolla has no river channels within its corporate boundaries, it does contain over 13 miles of streams. Rolla is home to six distinct drainage basins (*Table 1-3.*) that receive runoff from the surrounding land; Burgher Branch, Deible Creek, Dutro Carter Creek, Spring Creek, Love Creek and Little Beaver Creek (*Appendix A, Page A-2*). From here, these six streams discharge to the Gasconade River and the Dry Fork and Little Piney Creeks in Phelps County (*Appendix A, Page A-3*).

Table 1-3. Watershed Drainage Basin Areas		
Stream	Acres	Square Miles
Burgher Branch	3,174	4.96
Deible Creek	1,417	2.21
Dutro Carter Creek	2,096	3.28
Little Beaver Creek	1,076	1.68
Love Creek	571	0.89
Spring Creek	1,118	1.75

Table 1-3. – Watershed Drainage Basin Areas

1.6 Storm Water Conveyance System

The City of Rolla's storm water conveyance system is separate from the sanitary sewer system and consists of a variety of structures, both manmade and natural. These include curb and gutter, storm drains and pipes, box culverts, detention and retention basins, ditches and streams to name a few.

Rolla currently has over 63 miles of storm sewer pipe with over 5,250 curb inlets, junction boxes, storm manholes and area inlets (*Appendix A, page A-4*). Pipe materials include reinforced concrete, high density polyethylene, corrugated metal pipe and polyvinyl chloride (PVC) to name a few and range in size from 10" to 84". There are 502 storm sewer pipe outfall locations scattered throughout town and eight storm water outlets (*Table 1-4.*) to local waterways:

Stormwater Outlet NO	1/4	1/4	Section	Township	Range	County	LAT	LONG	Receiving Stream
1	SE	NW	17	37N	7W	Phelps	37°56'00"	91°42'45"	Little Dry Fork
2	SW	SE	29	38N	7W	Phelps	37°59'00"	91°42'48"	Bourbeuse
3	SW	NE	29	38N	7W	Phelps	37°59'25"	91°42'48"	Little Prairie Lake
4	NE	NE	30	38N	7W	Phelps	37°59'30"	91°43'32"	Lanes Fork
5	NW	NE	35	38N	8W	Phelps	37°58'50"	91°46'24"	Spring Creek
6	NW	NE	10	37N	8W	Phelps	37°56'44"	91°48'11"	Little Beaver Creek
7	SW	SW	10	37N	8W	Phelps	37°56'17"	91°48'7"	Blue's Pond
8	NW	NW	14	37N	8W	Phelps	37°56'2"	91°46'35"	Little Beaver Creek

Table 1-4. – Storm Water Outlet Table

1.7 Sanitary Sewer Conveyance System

The City of Rolla's sanitary sewer conveyance system consists of a variety of structures, including sewer lines and laterals, manholes, force mains and lift stations, and sewage treatment facilities (*Appendix A, page A-5*).

Over 3,400 sanitary sewer manholes and 132 miles of sewer line are located within the city limits of Rolla as well as 9 lift stations and 4 miles of force main. Sanitary sewer lines range in size from 6" to 42", with the majority being 8" in diameter. Pipe materials include cured in place, clay, ductile iron, polyvinylchloride (PVC), reinforced concrete pipe (RCP) and truss pipe. The predominant materials are PVC and clay.

The City of Rolla is served by three wastewater treatment facilities. Vichy Road Treatment Plant is located approximately .3 miles from the city limits on the north side of town and serves approximately 8% of the population. The Southwest Treatment Plant is located a little over a half mile from the city limits and serves the community of Doolittle as well as 4% of the customers on the southwest side of Rolla. The Southeast Treatment Plant, the largest of the three facilities, is located roughly .7 miles from the city limits and serves the remaining 88% of the city's sanitary sewer customers.

With exception of a half dozen isolated, large agricultural tracts of property, all septic systems have been removed from within the city limits. The remaining six properties are situated far enough from existing sewer lines to make it economically unfeasible to provide sanitary sewer service at this time.

1.8 Water Quality and TMDLs

Rolla currently has four water bodies that are on the State's List of Impaired Waters, as required by Section 303(d) of the Clean Water Act (CWA). Frisco Lake, a.k.a. Schuman Lake, is impaired for atmospheric deposition of mercury found in fish tissue and is classified as detrimental to aquatic life. The remaining three water bodies are streams that suffer from low dissolved oxygen. For two of the streams, Dutro Carter Creek and Little Dry Fork, the source can be traced back to the Southeast Wastewater Treatment Facility. For the third, Burgher Branch, the source is unknown but can most likely be attributed to non-point source pollutants. All three are detrimental to aquatic life.

According to the Total Maximum Daily Load (TMDL) Development Schedule issued by the Missouri Department of Natural Resources (*Table 1-5.*), Frisco Lake is scheduled for TMDL determination in 2015. The remaining water bodies are scheduled for 2016.

Table 1-5. - Impaired Water Bodies						
<i>Year</i>	<i>Water Body Name</i>	<i>MDNR Proposed Impairment Size</i>	<i>Size Units</i>	<i>Pollutant</i>	<i>Source</i>	<i>TMDL year</i>
2006	Burgher Branch	2.0	Mi.	Oxygen, Dissolved	Source Unknown	2016
2006	Dutro Carter Cr.	1.5	Mi.	Oxygen, Dissolved	Rolla SE WWTP	2016
2002	Frisco Lake	5.0	Ac.	Mercury in Fish Tissue	Atmospheric Deposition	2015
2006	Little Dry Fk.	5.0	Mi.	Oxygen, Dissolved	Rolla SE WWTP	2016

Table 1-5. – Impaired Water Bodies

Section 2 - Program Management

2.1 Regulatory Background

The federal Clean Water Act (CWA) of 1972 established regulations to control industrial and municipal wastewater discharges making it unlawful to discharge pollutants from a point source without acquiring a permit. In 1987, Congress amended the Clean Water Act with the Water Quality Act (WQA) which outlined strategies to meet the water quality standards through a nationwide comprehensive program to be implemented in two phases.

The regulation of polluted discharges from urban runoff produced by municipalities became a primary goal. Municipal Separate Storm Sewer Systems (MS4) community designations were devised under the National Pollutant Discharge Elimination System (NPDES) program. NPDES requires municipalities that discharge pollutants into waters of the United States to obtain a permit.

Larger metropolitan areas were the first to be regulated as Phase I communities. Typically these were communities with a population greater than 100,000 inhabitants. In 1999, the EPA began the second portion of the program, requiring smaller communities to be permitted under a "General Operating Permit".

The City of Rolla is a Phase II Small MS4 covered by a general permit that regulates multiple facilities within a specific category and authorizes the discharge of urban runoff. The Missouri Department of Natural Resources, in compliance with the Missouri Clean Water Law (chapter 644 R.S. Mo. as amended) and the Federal Water Pollution Control Act (Public Law 92-500, 92nd Congress), issued the original General Operating Permit No. MO-R040033 to the City of Rolla on March 10, 2003.

The City's operating permit requires the implementation of a Storm Water Management Plan (SWMP). The SWMP is to be evaluated and updated on a continuing basis and must be consistent with provisions as outlined in 40 CFR 122.34. The city's second permit will expire on June 12, 2013, at which time a new application, updated SWMP and five-year plan will be submitted for renewal.

The program management portion of the City of Rolla SWMP serves as a foundation for the remainder of the requirements of the MS4 General Operating Permit. Without a structured, coordinated effort within and across departments, the SWMP would fall short of meeting its requirements. This section outlines the administrative structure of the program including departmental responsibilities, storm water program staff, relevant stakeholders, coordination and scheduling efforts, and prioritization of resources.

2.2 SWMP Revisions and Rationale

In 2003, the City of Rolla submitted its first Storm Water Management Plan (SWMP). The document, developed by in house staff with the assistance of the Storm Water Management Adhoc Committee, focused primarily on flooding, both its causes and effects. This included developing possible solutions to decrease storm water runoff while increasing the quality. While an effort was made to cover all the permit requirements, the document lacked a clear outline of the process needed to achieve compliance. The program, still in its infancy, lacked

management and coordination, did not establish measurable goals and did not provide a clear methodology for evaluating the effectiveness of the program.

The City of Rolla developed its second SWMP in 2008. However it continued to lack the same key elements as the original document. Due to unforeseen events, a change in staff responsible for production of the document meant additional training was required.

Application for the 2013 general operating permit has therefore included the development of a new SWMP that includes a program management aspect, measurable goals, schedules for evaluation of the program, the development of a Storm Water Program Management Team, and better coordination of the program.

During the upcoming permit cycle, this document will serve as a new roadmap to permit compliance. It will be evaluated prior to the submittal of each annual report. The "SWMP Revisions and Rationale" will contain summarized information for all changes made to the SWMP on a year-by-year basis and will provide a dynamic image of the effectiveness of Rolla's Storm Water Management Program.

2.3 Local Implementation Plan

As per requirements of Section 4.1 of the General Operating Permit, the *"permittee shall develop, implement, and enforce a Storm Water Management Program and plan (SWMP) designed to reduce the discharge of pollutants from the permittee's regulated small MS4"*. This statement is the basis for the City of Rolla's Local Implementation Plan (LIP) describing how the City of Rolla MS4 Permit components within its jurisdiction.

The City of Rolla's LIP includes the following sections and Minimum Control Measures (MCM's):

- * **Program Management (Section 2)** provides an overview of Rolla's permit program, including legal authority, storm water program organizational structure, relevant departmental responsibilities, enforcement policies and procedures, funding resources, information management and training coordination and methods.
- * **Public Education and Outreach on Storm Water Impacts MCM I (Section 3)** describes the City of Rolla's efforts to educate the public on their role in reducing pollutants in urban runoff. This section includes target pollutant sources and audiences, outreach strategies, measurable goals and plans to evaluate the success of the program.
- * **Public Involvement and Participation MCM II (Section 3)** presents the City of Rolla's efforts to educate the public on their role in reducing pollutants in urban runoff. This section includes target participatory audiences, available and future activities, involvement strategies, measurable goals and plans to evaluate the success of the program.
- * **Illicit Discharge Detection and Elimination MCM III (Section 3)** details procedures for detecting and eliminating illicit discharge in the regulated MS4. This control measure includes mapping of all pertinent infrastructure, prioritizing problem areas, developing enforcement authority through ordinances, determination of appropriate Best Management Practices (BMP's) and program evaluation and assessment with quantifiable goals for future efforts.
- * **Construction Site Storm Water Runoff Control MCM IV (Section 3)** focuses on the city's implementation of BMP's designed to reduce construction site runoff and pollutants. The section includes procedures for

inspections, plan review, citizen complaints, regulatory mechanisms and enforcement procedures, measurable goals and plans to evaluate the success of the program.

- * **Post Construction Storm Water Management in New Development and Redevelopment MCMV (Section 3)** provides an overview of the City of Rolla's efforts to improve the long-term quality of storm water runoff through "low impact" development methods and procedures to evaluate the success of the program.
- * **Pollution Prevention and Good Housekeeping for Municipal Operations MCMVI (Section 3)** details the city's efforts to examine and alter their own actions to reduce storm water pollutants from municipal operations, including training, installation of BMP's, implementation of measurable goals and an evaluation of the program's success.

2.4 External Organizational Structure

The City of Rolla operates under the Council-Mayor-Administrator form of government (*Figure 2-1*). The elected body consists of Mayor and twelve city council members, with the Mayor serving a four-year term and council members for two-year terms. Other elected positions include the Municipal Court Judge and Prosecuting Attorney. In combination with the City Counselor and court employees, these individuals are representative of the Municipal Court system (*Table 2-1*).

The Mayor appoints and City Council approves members to each of the fourteen different committees that exist under the leadership of the City of Rolla. These committees are responsible for such duties as supervision of the city library or certification of prospective police officers to approval or rejection of new subdivisions and planning related issues. Membership on a committee is strictly voluntary.

The City Administrator, hired by the City Council, is responsible for citywide operations. The Administrator manages city operations through supervision of eight individual divisions and the Rolla National Airport. Each division is directed by a department head who reports directly to the Administrator.

Table 2-1. City of Rolla Administration		
Title	Name	Contact Number
Mayor	William S Jenks, III	573-426-6948
City Administrator	John Butz	573-426-6948
Executive Secretary	Millie Street	573-426-6941
City Clerk	Carol Daniels	573-426-6942
Communications Director	Scott Grahl	573-426-6943
City Counselor	J. Kent Robinson	573-341-2266
Municipal Court Judge	James Crump	573-364-7190
Prosecuting Attorney	Jeff Stoltz	573-364-3526

Table 2-1. – City of Rolla Administration

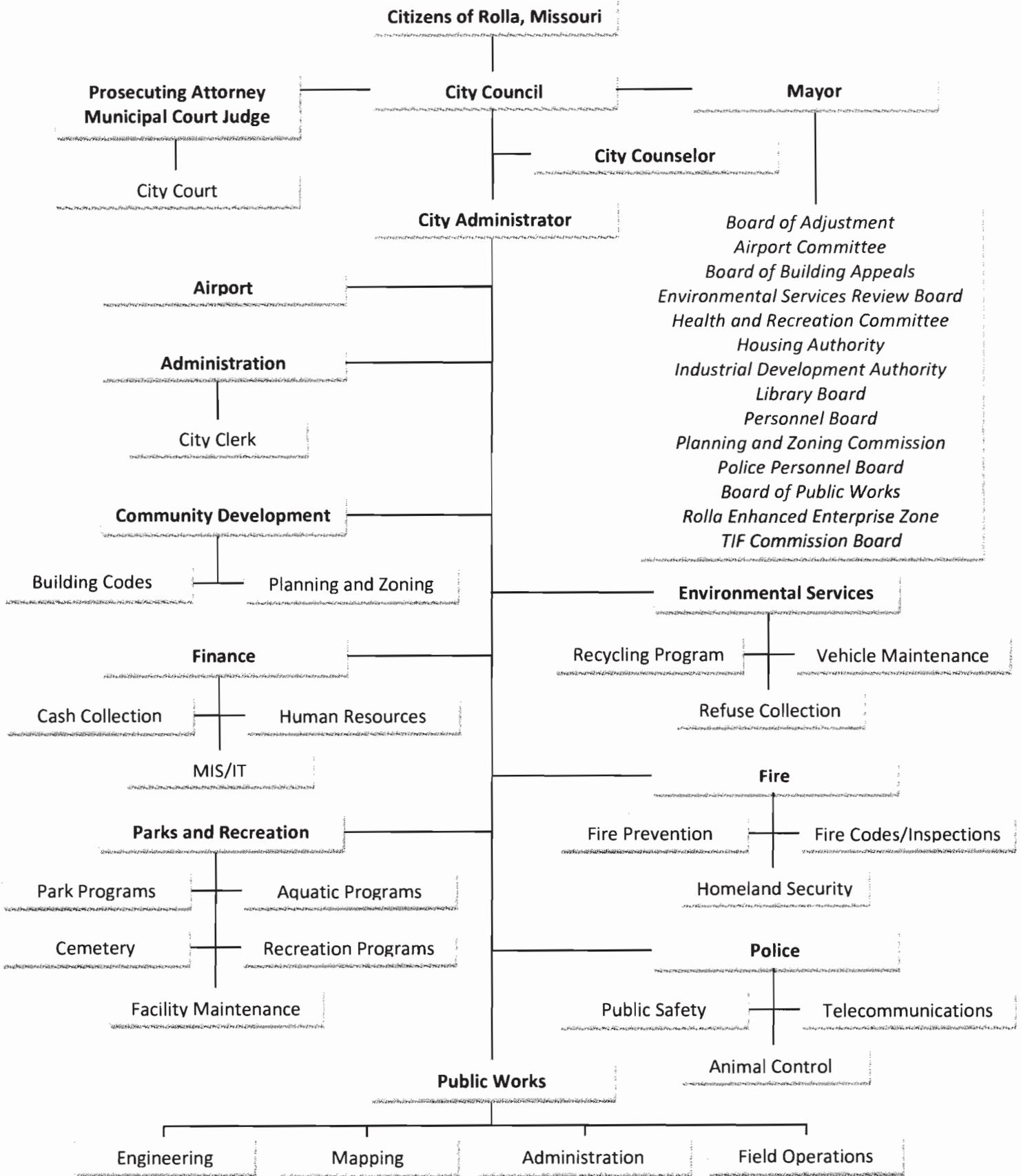


Figure 2-1. – City of Rolla External Organizational Chart

2.5 Internal Organizational Structure

Eight separate departments coordinate their efforts to ensure the city operates smoothly. Each has its own role in the Storm Water Management Plan, whether it be coordinating departmental training efforts, ordinance enforcement for illicit discharge, or staffing an educational booth at a local festival.

Table 2-2. City of Rolla Storm Water Program Management Team				
Title	Name	Department	Contact Number	Responsibility
Community Development Director	John Petersen	Community Development	573-364-5333	Oversees Community Development Department including subdivision development and redevelopment, planning and zoning, and economic development.
Building Codes Administrator	Steve Flowers	Community Development	573-364-5333	Oversees personnel responsible for enforcing local building codes including new building construction, renovations and demolition.
Environmental Services Director	Brady Wilson	Environmental Services	573-364-6693	Oversees Environmental Services Department including solid waste collection, recycling, yard waste pick up and composting, hazardous waste disposal, vehicle maintenance and budgeting.
Fire Department Training Officer	Ron Smith	Fire Department	573-364-3989	Oversees training of Fire Department personnel in hazardous materials storage, hazardous spill cleanup, materials inventories and performs public outreach on same.
Parks Superintendent	Stan Busch	Parks and Recreation	573-341-2386	Oversees field operations of the Parks and Recreation Department including maintenance of buildings and grounds
Public Works Director	Steve Hargis	Public Works	573-364-8659	Oversees the Public Works Department including supervision of all divisions, departmental budgeting and resource scheduling
Assistant Public Works Director	Gary Heavin	Public Works	573-364-8659	Oversees field operations of the Public Works Department including maintenance of streets, wastewater and storm sewer systems
Project Coordinator, Storm Water Management	Anne McClay	Public Works	573-426-6955	Manages storm water program including land disturbance permits, MS4 annual reports and permit renewal, SWMP implementation and updates, MCM implementation, and USACE permitting.
Airport Manager	Darrin Bacon	Airport (Administration)	573-299-4498	Manages implementation of SWMPPP BMP's, performs inspections and sampling, provides data to Public Works (PWD) for incorporation into reports, serves as main airport contact, maintains open communication with PWD.

Table 2-2. – City of Rolla Storm Water Program Management Team

Six of the eight departments play a significantly greater role in the SWMP by contributing directly to the development and implementation of the six Minimum Control Measures (Table 2-2.). Personnel from these departments, namely Community Development, Environmental Services, Fire, Parks and Recreation, Airport and Public Works, form the Storm Water Program Management Team.

2.5.1 Community Development

The Community Development Department is responsible for the preparation of the Comprehensive Plan and related elements, including research and statistical analysis. Staff advises and supports the Planning and Zoning Commission, Board of Adjustment, Board of Building Appeals, and City Council on rezoning requests, subdivision plats, annexations, variances, building code interpretations and other development requests within the City. The department is also



responsible for enforcement of the City's building codes/nuisance ordinances with the issuance of building permits, development inspections, and nuisance abatements. Department staff assists with affordable housing programs, neighborhood and downtown revitalization efforts, comprehensive redevelopment initiatives and managing the Rolla Enterprise Zone. On a storm water management level, the department is tasked with promoting low impact development strategies, increased incorporation of "green space", redevelopment of existing structures, coordination of subdivision review committee meetings, and initializing the land disturbance permitting process, to name a few. The department will be tasked with, at a minimum, greater input on small construction site storm water runoff control, increased promotion of low impact development methods, review of development guidelines as related to storm water quality, and issuance of land development permits.

2.5.2 Environmental Services

The Environmental Services Department consists of the Sanitation, Recycling and Vehicle Maintenance divisions. Sanitation is responsible for all regular municipal refuse pick-up service for both residential and commercial customers. The division provides weekly citywide curbside collection of refuse, recyclables and yard wastes as



well as special pickups of appliances and other large or unusual items. Recycling offers weekly curbside recycling and a drop-off site that accepts various types of plastic, glass, paper, aluminum and tin cans, and cardboard. Processing of these materials takes place on site with the end product being sold on the open market. Approximately 3,000 tons of waste per year has been removed from the landfill and returned to usable

consumer forms through the efforts of this division. Vehicle Maintenance services vehicles and equipment from all city departments. As part of the SWMP, the department will be tasked with, at a minimum, continued disposal of normal household waste as well as recyclables, electronics, household hazardous waste, yard waste, construction debris, special curbside pick-ups and intermittent "special" waste pick-ups. The department has an extensive "good housekeeping policy" in place and is active in educating the public.

2.5.3 Fire and Rescue

The City of Rolla Fire & Rescue has 33 full time personnel that receive ongoing in-house training as well as state certified and federally recognized Hazardous Materials Training. As part of their response, personnel are trained to recognize and address each spill in the proper manner such as recognizing small and large spills. Training includes how to handle spills that have the potential to enter the waterway. In spills that do enter the waterway, the department has a verifiable reporting track record with the Missouri Department of Natural Resources and considers MDNR to be an extension and resource of their team. The department also has on hand the needed supplies to handle most everyday spill incidents within the City of Rolla. In addition, the City of Rolla Fire & Rescue is a Homeland Security All Hazards Regional Response Team which receives monthly training.



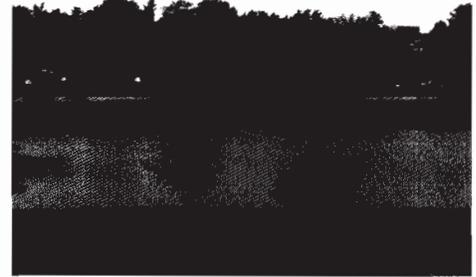
As part of the SWMP, this department will be tasked with, at a minimum, hazardous spill response, air quality monitoring, illicit discharge detection, a formalized spill response manual, employee training and maintenance of a citywide Tier Two Emergency and Hazardous Chemical Inventory. This department also has an extensive “good housekeeping policy” in place and is active in educating the public.

2.5.4 Parks and Recreation

The Parks and Recreation Department manages over 310 acres of land divided into 34 parks including small neighborhood parks to the 85 plus acre Ber Juan Park, which includes a softball/baseball complex, tennis courts, lake and the City’s Recreation Centre and outdoor pool facilities. The department also administers the 40-acre Rolla Cemetery, incorporated into the city in 1861. Additional responsibilities include coordination of the recreation program and concession operations at the outdoor facilities, maintenance of city athletic fields and courts, upkeep of 7.75 miles of trails and operation of two maintenance sheds.

The outdoor pool facility, known as the Splash Zone Aquatic Center, operates under general permit MO-G760056 (*Appendix B*) regulating the discharge of filter backwash and pool drainage from swimming pools and lined ponds which use chlorine as a sanitizer. Responsibility for meeting all effluent limitations and monitoring requirements are handled by the Parks and Recreation Department.

As part of the SWMP, the department will be tasked with, at a minimum, evaluating and reducing current usage of landscaping chemicals including fertilizers, pesticides and herbicides, actively promoting the reduction of pet waste in park facilities, pollution prevention as part of building maintenance, training of full-time personnel and seasonal employees in storm water pollution prevention, and development of an operations and maintenance program and manual for storm water pollution prevention in park facilities.



2.5.5 Rolla National Airport



Rolla National Airport is home base for 52 single and multi-engine planes and serves as an important transportation hub for many large local businesses and government organizations. The airport averages over 22,000 operations on a yearly basis. Available services include fuel sales, hangar and tie-down rental provided by the City, as well as hangar rental and flight instruction services provided by private businesses at the site.

Under its classification as an industrial site, the Missouri Department of Natural Resources has issued General Operating Permit Number MO-R80F001 (*Appendix B*) covering the 1,215 plus acres of land owned by the City of Rolla and known as the Rolla National Airport. The operating permit requires the implementation of a Storm Water Management and Pollution Prevention Plan (SWPPP). City of Rolla Department of Public Works staff has prepared a document which will serve as guidance for the prevention of pollutant discharges into the waterways of the United States that will be evaluated and updated on a continuing basis as site conditions change.

The program management portion of the City of Rolla’s Rolla National Airport SWPPP serves as a foundation for the administrative portions of the permit, including organizational structure, contact information, departmental responsibilities, coordination efforts and scheduling.

As part of the SWMP, the department will be tasked with, at a minimum, adherence to and maintenance of the SWPPP and training of employees in storm water pollution prevention.

2.5.6 Public Works

The Public Works Department serves as the “umbrella” organization responsible for facilitating the administration of the SWMP, and as such warrants a separate section in the SWMP document. All SWMP tasks not previously assigned to another department will be conducted by Public Works, including program management. This department is also responsible for management of the SWMP document itself.

2.6 SWMP Administration by Public Works

Public Works is divided into three separate divisions; administration, engineering, and field operations (Figure 2-2.), and employs 43 individuals. Field Operations has by far the largest number of Public Works employees and consists of four divisions: wastewater, streets, overlays and contracts, and locates and inspections.

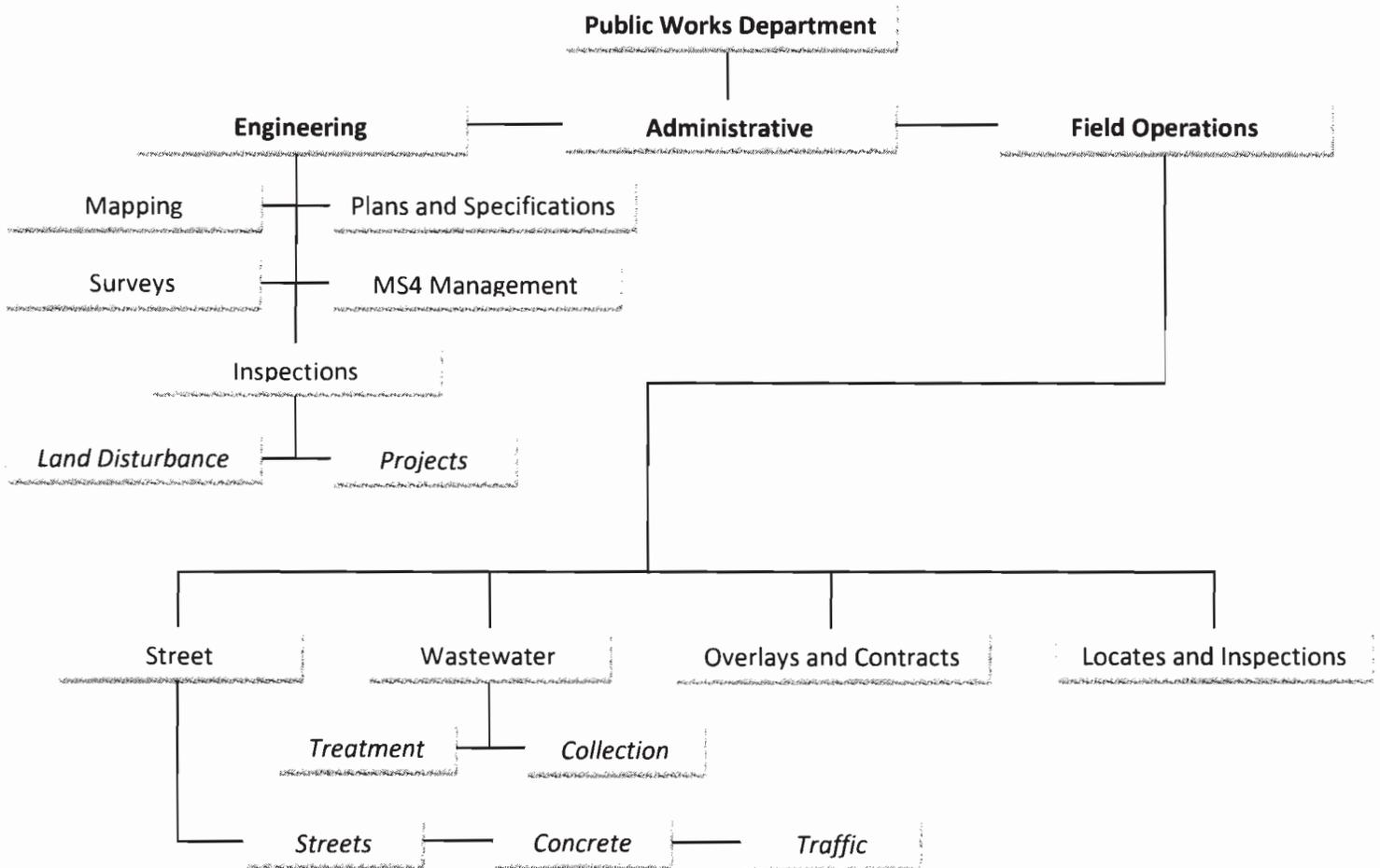


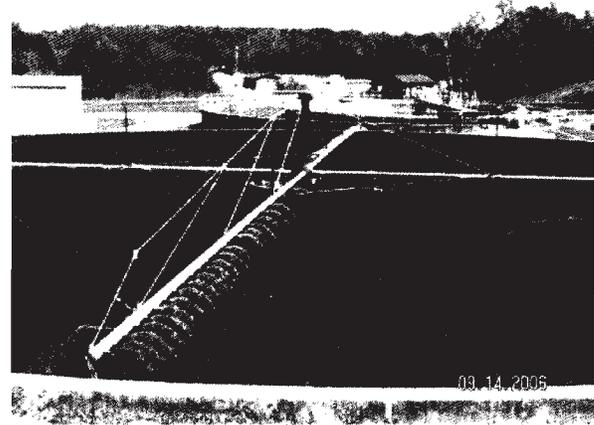
Figure 2-2. – Public Works Organizational Chart

2.6.1 Field Operations

The **Wastewater Division** is subdivided into two primary areas, collection and treatment. The division is staffed with twelve individuals who perform various operation and maintenance activities at the treatment plants as well as cleaning and televising our sewage collection system.

Seven members are assigned to the treatment operations of the division. Treatment of wastewater takes place at three separate locations, the Southeast Wastewater Treatment Plant which currently handles roughly three quarters of Rolla's 4.2 million gallons of sanitary sewer flow per day, the Vichy Road Wastewater Treatment Plant and the Southwest Wastewater Treatment Plant located on Martin Springs Drive. Each treatment plant operates under a separate permit; #MO-0047023, #MO-0047031, and #MO-0050632 (*Appendix B*).

Five members are assigned to the collection system maintenance and operations section of the Wastewater Division. They manage over 130 miles of sanitary sewer lines throughout the Rolla community. This division is also responsible for inspecting sewer taps and connections for any new sewer service in the city. In addition to serving the residents of Rolla, the division also serves several areas just outside the city limits and a portion of the City of Doolittle. The collection division is integral to both the detection and elimination of illicit discharge. Crew members have an established schedule of televising, root cutting and cleaning.



The **Street Division** is comprised of 19 individuals who are assigned to operate and maintain our approximate 110-mile street and alley system. Street Division is subdivided into three primary areas: streets, concrete construction and traffic.

The Street Crew consists of 14 individuals responsible for various construction activities, pavement repair, earthwork, right-of-way maintenance, street sweeping, creek cleaning, ditch maintenance, snow removal, and maintenance and operation activities on the drainage system such as installation of storm pipes and inlets and the construction of detention facilities.

Three crew members are tasked with concrete construction activities throughout the city. Work consists primarily of the construction or repair of concrete curb and sidewalks as well as ADA retrofits. Two employees are responsible for operations and maintenance of traffic signage, signals and pavement markings.



The Street Division is paramount to the success of the SWMP. They are tasked with erosion control on all city construction activities, operations and maintenance of the storm sewer system and hydrologic features, maintenance of parking facilities, and many of the municipal good housekeeping measures. Aside from their routine duties, they are also responsible for implementation of many of the city programs, such as construction of filtration strips and urban reforestation efforts.

Overlays and Contracts is comprised one individual assigned to schedule and manage street improvement projects, asphalt overlays and city contracts for rock and asphalt. Much of the position encompasses inspections and coordination of field crews. The **Locates and Inspections** portion of Public Works activities is shared by several employees on an as needed basis. Inspections may include driveway aprons, sidewalks, sanitary sewer taps and storm sewer concerns.

2.6.2 Engineering

The **Engineering Division** of Public Works provides administration, engineering, planning, and supervision for projects undertaken by the Public Works Department, and performs many of these functions for various other agencies within city government. Whether in-house planning and design, coordination of outside engineering firms and contractors, or construction surveying and inspection, the Engineering Division has a hand in nearly every activity involving the City's facilities and infrastructure. Engineering staff is responsible for establishing priorities for work to be performed, preparing budgets, plans, contract documents, specifications, and quality control for Public Works projects. Engineering projects include streets, sewer collection, storm sewer management, and subdivision development review. Engineering services are also provided on a regular basis to Community Development, Environmental Services, Rolla National Airport, Parks Department, and Rolla Municipal Utilities. Engineering is subdivided into two primary subsections, engineering and mapping. The division is staffed with seven full time employees and is tasked with the majority of the activities associated with the SWMP.

Mapping is composed of two employees who are responsible for the development, operation and maintenance of the city's Geographic Information System (GIS). The GIS currently contains information for all city infrastructure as well as planning and zoning overlays. Staff members can easily manipulate data to develop stormwater related maps, hazardous spill scenarios, and industrial hotspots, to name a few. Maps made by this section are the basis for compliance in many portions of the permit.

Engineering has five employees whose duties include the remainder of the division's responsibilities. This section performs the majority of the SWMP related activities, including general operating permit applications, annual reporting, SWMP development, project development, land disturbance inspections and program

management. Design work completed by this section falls under the blanket Land Disturbance Permit #MO-R100047 (*Appendix B*) and must include a SWPPP.

2.6.3 Administration

The **Administrative Division** of Public Works provides administration, engineering, planning, and supervision for projects undertaken by the Public Works Department. The division is staffed with three full time employees, including the Public Works Director, and is responsible for final approval of SWMP related programs and projects, as well as budgeting, program approval and financial considerations.

Table 2-3. Public Works Storm Water Contacts				
Title	Name	Division	Contact Number	Responsibility
Public Works Director	Steve Hargis	Public Works	573-364-8659	Oversees the Public Works Department including supervision of all divisions, departmental budgeting and resource scheduling
Assistant Public Works Director	Gary Heavin	Public Works	573-364-8659	Oversees field operations of the Public Works Department including maintenance of streets, wastewater and storm sewer systems
Project Coordinator, Storm Water Management	Anne McClay	Engineering	573-426-6955	Manages storm water program including land disturbance permits, MS4 annual reports and permit renewal, SWMP implementation and updates, MCM implementation, and USACE permitting.
Project Coordinator	Everett Briggs	Engineering	573-364-3989	Reviews subdivision plans and regulations; reviews consultant storm water design calculations
Project Coordinator, GIS Administrator	Dave Forshee	Mapping	573-364-8659	Manages GIS based mapping system;
Street Supervisor	Dave Phelps	Street	573-364-3989	Reviews subdivision plans; storm water design
Wastewater Supervisor	Allen McNece	Wastewater	573-364-8659	Oversees field operations of the Public Works Department including maintenance of streets, wastewater and storm sewer systems
Sewer Supervisor	Dennis Cook	Wastewater	573-426-6955	Manages storm water program including land disturbance permits, MS4 annual reports and permit renewal, SWMP implementation and updates, MCM implementation, and USACE permitting.

Table 2-3. – Public Works Storm Water Contacts

2.7 Interagency Contacts

The City of Rolla has jurisdiction over storm water related activities within the corporate limits of Rolla with the exception of organizations of higher stature on the political hierarchy, i.e. county, state and federal agencies. City personnel interact frequently with contact members in these organizations and have built a strong working relationship with each. Cooperative efforts in the past have led to several low impact development projects as well as the exchange of techniques and ideas.

Three of the five agencies hold MS4 permits and are bound by their own set of requirements. Where requirements overlap or conflict, the agencies have worked together to resolve any issues.

Future plans include a more coordinated program for cooperative efforts between the agencies. This will include, at a minimum, yearly meetings with organizational representatives (*Table 2-4.*).

Table 2-3. Additional Storm Water Contacts

Jurisdiction	Name	Contact Number	Responsibility
Rolla Public Schools	Aaron Zalis	573-458-0100	Superintendent, Rolla Public School District
Missouri Science and Technology	Ted Ruth	573-341-4252	Director, Design and Construction Management
Missouri Department of Transportation	Preston Kramer	573-368-2567	Area Engineer, Central Missouri District
Missouri Department of Natural Resources	Tim Bull	573-368-7322	Environmental Specialist, Southeast Regional Office
Phelps County Highway Department	Walter Snelson	573-364-3864	Superintendent, Phelps County Highway Department

Table 2-4. – Additional Storm Water Contacts

2.8 Interdepartmental Coordination

Over the next five years, the focus of the SWMP will be strengthening the program management portion of the plan as well as developing a better method of tracking measurable goals. Strong interdepartmental coordination and cooperation by City personnel is essential to the successful implementation of a comprehensive MS4 program. Each department, division and employee must be aware of their role in the SWMP as well as the responsibilities of other employees. The Stormwater Management Plan Team hereafter referred to as “The Team”, will be responsible for coordinating this effort.

The Team will strive to develop ways to integrate the SWMP responsibilities across departments using its limited staff and financial resources. This will require a commitment from other departments to accept responsibility for portions of the stormwater management program and to assist other departments when possible. Additional responsibilities may be delegated to departments on an as needed basis.

The next permit cycle will see an increase in training as well as a more concrete tracking method. Training will occur in all departments and will cover all aspects of the SWMP. Each department will receive training for its respective Team member who will then be responsible for conducting training in their own department. The Team will meet quarterly and prior to the submittal of the annual report and/or permit application. Should it become necessary to meet more frequently, communication can be made through phone or email. Each department will be responsible for submitting any required testing, monitoring, or measurable goal tracking to the SWMP coordinator. Each team member will receive a copy of the SWMP as well as continued updates to the Plan.

2.9 Ongoing Activities

Several activities relevant to the City of Rolla’s general operating permit are performed on a regular basis:

2.9.1 Permit Reporting Requirements

The City of Rolla is required to submit an annual report to the Missouri Department of Natural Resources detailing the status of the stormwater program. In addition, a new permit application is submitted every five

years that includes a plan for program implementation over the next five year permit cycle, revisions to the SWMP, and findings of the current permit cycle.

2.9.2 General Land Disturbance Permit Reporting Requirements

The City of Rolla is required to submit quarterly report to the Missouri Department of Natural Resources detailing the status of the city's general land disturbance permit highlighting any active jobsites located within the corporate limits. In addition, a new permit application is submitted every five years that includes a Storm Water Pollution Prevention Plan (SWPPP) for all active construction sites.

2.9.3 Wastewater Discharge Permit Reporting Requirements

The City of Rolla is required to submit water quality testing reports to the Missouri Department of Natural Resources detailing the status of the city's operating permits for all three wastewater treatment facilities. Wastewater staff is responsible for testing and reporting. In addition, sanitary sewer overflow (SSO) incidences are reported to MDNR.

2.9.4 Rolla National Airport Stormwater Pollution Prevention Plan

The City of Rolla is required to develop, implement and maintain a Storm Water Pollution Prevention Plan (SWPPP) for all activity at the Rolla National Airport facility.

2.9.5 Splash Zone Aquatic Center Operating Permit Reporting Requirements

The City of Rolla is required to submit water quality testing reports to the Missouri Department of Natural Resources detailing the status of the city's operating permit for the Splash Zone Aquatic Center. Parks and Recreation staff is responsible for testing and reporting.

2.9.6 Inflow and Infiltration Reduction Program

The City of Rolla submitted a formal Bypass Elimination Plan in April, 2012 to the Missouri Department of Natural Resources. The plan includes a systematic ten year basin by basin inflow and infiltration reduction and collection system rehabilitation program of which the first year has been completed.

2.9.7 Southeast Wastewater Treatment Plant Upgrades

The City of Rolla is in the process of making upgrades to its Southeast Wastewater Treatment facility. Improvements include the installation of a UV disinfection system that will treat all discharges from the plant, a feasibility study on the development of reed beds for sludge treatment and the construction of a new \$300,000 state of the art laboratory.

Section 3 – Local Implementation Plan

3.1.1 Organization

This work plan is organized by six separate SWMP measures; Public Outreach and Education, Public Participation and Involvement, Illicit Discharge Detection and Elimination, Construction Site Runoff Control, Post-Construction Site Runoff Control, and Pollution Prevention and Good Housekeeping Measures. The Program Management portion of the work plan can be found in Section 2.

Each minimum control measure is accompanied by a tabular worksheet (*Appendix C*) to be used as a method to track the implementation of program activities. For maximum accuracy, these tables should be updated as activities occur.

3.1.2 Goals

Goals identified in this document were developed using the requirements as set forth in the City of Rolla's general state operating permit and its attached Standard Conditions, pursuant to the Federal Clean Water Pollution Control Act and the Missouri Clean Water Law. They describe the intended results the City hopes to achieve by the end of the five year plan included as part of the City of Rolla Storm Water Management Plan. Years for completion of the goals are 2013-2018.

3.1.3 Overview and Permit Requirements

The overview and permit requirements sections will provide additional details about the goal for each Minimum Control Measure and why it is being addressed by the SWMP.

3.1.4 Current Activities and BMPs

For each Minimum Control Measure, a summary of some of the more effective Best Management Practices and activities will be presented. These activities have been developed and employed over the last two permit cycles and have proven to be successful methods in achieving the task set forth in the "goals" portion of the Implementation Plan.

3.1.5 Planned Activities and BMPs

Activities and BMPs listed in this section are the strategies the city will use to meet the goals outlined in this SWMP. Each strategy may have several different programs or tasks assigned to it. Additionally, each task or program will define who, what, when or where the activity will occur and will include a method to quantify the results.

3.1.6 Benchmarks

The benchmark portion of the implementation plan will allow for a concise year by year summary of some of the more effective BMPs implemented or performed. This will also provide an opportunity to highlight important concerns, briefly note progress on tracking, and discuss evaluation findings.

3.2 Minimum Control Measure #1 – Public Outreach and Education (POE)

3.2.1 POE Goal

To implement a public education program to distribute educational materials to the community as well as conduct outreach activities about the impacts of stormwater discharges on water bodies. This measure will include steps the public can take to reduce their impact on pollutants in stormwater discharge.

3.2.2 POE Overview and Permit Requirements

A quality education program is always the “first line of attack” when working to improve stormwater quality. An informed and knowledgeable community is vital to the success of any stormwater management program. Activities under MCM #1 address these concerns by implementing Best Management Practices (BMPs) that support a variety of educational opportunities.

Greater support will develop as the community begins to understand the necessity of the city’s permit requirements. Education leads to greater compliance. As an individual begins to understand his or her responsibility and that of the community in the overall effectiveness of the program, they begin to make modifications in their behavior. The cumulative effect that these changes in behavior have on stormwater quality is the ultimate goal of outreach and education.

Elements that are required by the general operating permit that have not been implemented or have been unsuccessful will be the focus over the next five years. Established BMP’s will continue to be utilized and monitored annually.

3.2.3 Current POE Activities and Best Management Practices (BMPs)

1. Developed an ongoing program with the local Venture Crew to install stainless steel storm drain markers on over 4,300 storm sewer inlets throughout town. The program has an extensive public relations aspect to it, allowing the City of Rolla to educate the public on non-point source pollution.
2. Presented storm water education booths at local events including the bi-annual Public Works Day Celebration, the annual Earth Day Celebration, and local organizational meetings including 4-H and Venture Crew.
3. Developed an ongoing urban reforestation program that to date has seen the planting of 150 trees throughout town. Stormwater quality and reduction in quantity has been the focal point of the program and its presentation to the public.
4. In partnership with local organizations, co-sponsored the “Healthy Yards for Clear Streams” program designed to educate individuals about alternative stormwater friendly methods of landscaping.
5. Conducted a variety of educational and technical training workshops and “town hall” meetings for staff, contractors, developers, citizens and City Council members, with topics including storm water ordinance, storm water design guide, and land disturbance permit requirements.

6. Established Environmental Services Departments Pollution Prevention Program including a website, public service announcements, paid ads, brochures and public speaking engagements serving a seven county area.
7. Purchased an Enviroscape portable 3D watershed model and developed a mobile education program available free of charge to all entities. Education topics include nonpoint source versus point source pollution, watershed basics, and reforestation benefits.
8. Storm water pollution prevention materials presented via local cable television channel, City's website and blogspot, Facebook page, local newspaper, mass mailings and brochures.
9. Ongoing household hazardous waste, e-waste, and yard waste disposal program.
10. Implemented a pet waste ordinance and installation of pet waste signs throughout city owned facilities.

3.2.4 POE Planned Activities and BMP's

1. Develop a formalized documented outreach strategy to be used in conjunction with public participation activities. The strategy will include target pollutants, target audiences, effective use of available media, and sustainability of the strategy.
2. Continue the existing storm drain marker program with completion of installation on all inlets within the city limits.
3. Continue the urban reforestation effort with a minimum of 50 trees planted per year.
4. In collaboration with local volunteer organizations, landscaping companies, contractors and government agencies, hold a free Storm Water Festival.
5. Presentation of storm drain marker program to surrounding communities that have expressed an interest in developing a similar program. This component should include a formal implementation manual that may be left with the communities for future reference.
6. Install storm water brochure distribution kiosk. Track the number of brochures disseminated to the public per year.
7. Develop an illegal dumping campaign. This shall include the formal presentation of the "Clean Stream Initiative" designed to educate citizens on the illegality of dumping in local streams. The program will include the installation of signage developed specifically for this purpose along local streams.
8. Develop educational materials tailored to target audiences, including industry, commercial facilities, businesses utilizing petroleum based and hazardous chemicals, and homeowners.
9. Develop educational materials tailored to target pollutants.
10. Develop educational materials tailored to various methods the homeowner can utilize to reduce stormwater pollutants, including the use of alternative eco-friendly landscaping methods, the installation of rain barrels, and yard waste pickup.
11. Institute an advisory committee comprised of city personnel, citizens and other stakeholders to provide input for this MCM as well as the SWMP.
12. More actively involve other city departments in the education of the public through workshops, flyers and distribution. Each department will focus on pollutants prevalent in their job function.
13. Install pet waste stations in 34 city parks and measure use by number of waste bags disposed.
14. Collaborate with other MS4 communities to develop appropriate methods of measuring the effectiveness of outreach strategies.

15. Review and evaluate annually each BMP for its effectiveness immediately prior to submission of the annual report.

Progress will be measured using MCM#1 BMP Tables found in Appendix C.

3.2.5 POE Benchmarks

This section to be completed prior to each annual report and should reflect major accomplishments in public outreach and education during the reporting period.

3.3 Minimum Control Measure #2 – Public Participation and Involvement (PPI)

3.3.1 PPI Goal

To implement a public involvement/participation program that involves the public in the development and oversight of the SWMP policies and procedures and complies with State and local public notice requirements.

3.3.2 PPI Overview and Permit Requirements

Having an involved citizenry increases the likelihood for success in a community's stormwater management program. The public can provide valuable input on everything from research and development to implementation and financing.

By becoming a stakeholder, an individual has a vested interest in the final outcome of the plan. This can be achieved by creating targeted audiences, designing activities that are geared toward these specific groups, and soliciting public contribution to both. Activities under MCM #2 address these requirements.

Elements that are required by the general operating permit that have not been implemented or have been unsuccessful will be the focus over the next five years. Established BMP's will continue to be utilized and monitored annually.

3.3.3 Current PPI Activities and Best Management Practices (BMPs)

1. Developed an ongoing program with the local Venture Crew to install stainless steel storm drain markers on over 4,300 storm sewer inlets throughout town. The program has an extensive public relations aspect to it, allowing the City of Rolla to educate the public on non-point source pollution.
2. Rolla Stream Team #4173, composed of high school biology students, routinely gather to clean Duro Carter Creek, one of the larger tributaries in Rolla.
3. Designed and ordered signs and began development of a program entitled "Clean Stream Initiative" to engage residents in the upkeep of local streams. The signs include a list of pollutants as well as a hotline number to report illegal dumping.
4. In partnership with local organizations, co-sponsored the "Healthy Yards for Clear Streams" program designed to educate individuals about alternative stormwater friendly methods of landscaping.
5. Conducted a variety of educational workshops and "town hall" meetings for staff, contractors, citizens and City Council members.
6. Services offered by the Environmental Services Department, often free of charge, include household hazardous waste drop-off, e-waste recycling, yard waste pick-up and drop-off, construction and demolition debris removal, annual special trash pick-up, annual tire and appliance disposal and a new program to dispose of used medications.
7. Purchased an Enviroscape portable 3D watershed model and development of a mobile education program available free of charge to all entities. Education topics include nonpoint source versus point source pollution, watershed basics, and reforestation benefits.

8. Hosted a stream bank bio-stabilization seminar with an attendance of 60 plus volunteers that offered participants ways to protect their local streams by using local stone and native plantings.
9. Co-sponsored the "Healthy Yards for Clear Streams" seminar to educate participants in eco-friendly methods of landscaping.
10. Implemented the Reforest Rolla program that allows residents to assist in urban reforestation efforts, free of charge.

3.3.4 PPI Planned Activities and BMP's

1. Involve the public in the development and submittal of the city's SWMP by coordinating with other government agencies, providing hotlines, conducting citizen surveys and providing public access to the City of Rolla's SWMP in hardcopy format in the municipal building and electronic format on the city's website.
2. Develop and engage target audiences for involvement as stakeholders in the city's stormwater program. Participants will include all age, race and income levels, volunteer groups, businesses and developers, consultants, and other government agencies located within the city limits.
3. Design and implement a "Stormwater Steward" program that will allow interested parties to play an active role in the health of the local stormwater discharge.
4. Develop a volunteer water quality monitoring program in coordination with local Stream Team groups.
5. Implement a riparian restoration element in conjunction with the Reforest Rolla program to educate citizens on proper maintenance of stream banks to reduce erosion and pollutants.
6. Begin an "Adopt-A-Storm Drain" program that will allow residents to assist in maintenance of the storm sewer inlets.
7. Implement a volunteer educator program that will include individuals with varying professional backgrounds, ages, socio-economic backgrounds, and interests.
8. Develop "Citizen Watch" groups that will focus primarily on specific neighborhoods or stream watersheds.
9. Actively solicit participants in the "Adopt-A-Creek" program. The program has been in place for more than ten years but has had little participation.
10. Review and evaluate annually each BMP for its effectiveness immediately prior to submission of the annual report.

Progress will be measured using MCM#2 BMP Tables found in Appendix C.

3.3.5 PPI Benchmarks

This section to be completed prior to each annual report and should reflect major accomplishments in public participation and involvement during the reporting period.

3.4 Minimum Control Measure #3 – Illicit Discharge Detection and Elimination (IDDE)

3.4.1 IDDE Goal

To develop a program that will allow for the identification and investigation of illicit and non-storm water discharge into the city's regulated MS4. The program shall include implementation methods and enforcement authority necessary to eliminate these discharges.

3.4.2 IDDE Overview and Permit Requirements

Illicit discharge consists of any material other than storm water that culminates in the waterways of the United States. Typically, though not always, the pollutants enter the system through the storm drain. Though exceptions are provided for such discharges as air conditioner condensate, fire fighting activities and dye testing, illicit discharges are prohibited under state and local laws.

Unlike wastewater which receives treatment before being released, storm water and illicit discharges receive no treatment, allowing such pollutants as pathogens, nutrients and toxins to flow directly into waterways. The most effective means of preventing this from occurring is to educate the individuals responsible for the pollutants, enforce ordinances and control spills before they become illicit discharge.

Activities under MCM #3 address a variety of pollutants commonly found in urban runoff using several different techniques to achieve the desired result. Most of the program framework is in place and has been quite successful. Those elements that have not been implemented or have been unsuccessful will be the focus over the next five years. In addition, established BMP's will continue to be utilized and monitored annually.

3.4.3 Current IDDE Activities and Best Management Practices (BMPs)

1. Implemented a GIS based storm sewer map containing inlets, pipes, box culverts, detention ponds, pipe outfalls, streams, flood plain information and receiving waters. Data has been located utilizing both GPS data and aerial photography as well as a field reconnaissance and visual inspection (see Appendix A).
2. Adopted and implemented Ordinance 3500, Chapter 15 of the Rolla City Code, entitled "Storm Water and Flood Control". This ordinance, along with additional existing chapters of Rolla City Code, addressed illicit and non-storm water discharge violations and enforcement authority. Included in the ordinance were prohibited discharge standards, wastewater discharge permits, compliance orders and administrative penalties (see Appendix B).
3. Developed a comprehensive mapping system capable of combining data to analyze specific stormwater scenarios. Features useful in detecting and eliminating illicit discharge have been incorporated into the system, which is available to all city personnel as well as the general public. Data includes everything from sanitary sewer overflow locations to private laterals to photographs of storm sewer outfalls. Data is updated annually at a minimum and more frequently for time sensitive features.
4. Inspections for illicit discharge historically have been based on random visits, complaints, and scheduled visits. Follow-up of the remedial action is done to ensure the correction has been made. As a result, illicit

discharges have been corrected in a shorter period of time. Notifying businesses and landowners of violations and working with them to establish Best Management Practices has significantly reduced the number of repeat violators.

5. Working with staff, consultants and the Missouri Department of Natural Resources, an evaluation of the city's wastewater system focused on inflow and infiltration. In addition, staff began using flow meters as part of the Sanitary Sewer Evaluation Study (SSES) to allow for quantitative analysis of storm water runoff.
6. Citizen based illicit discharge complaints have been the catalyst for the development of several new programs. The Clean Stream Initiative, provided for the installation of "No Dumping" signs along local streams and are provided free of charge for those requesting them. The Storm Drain Marker Program is an ongoing program that should result in a decrease in illicit discharge by educating the public on the effects of dumping in storm sewer inlets.

3.4.4 IDDE Goal Strategy

1. Maintain an up-to-date storm sewer system map by continually incorporating features, facilities and development that contribute to illicit discharge or have a beneficial effect on the reduction of pollutants. New features will include mapped Environmental Incident Detail (spill data) reports, Tier Two Emergency and Hazardous Chemical Inventory Data, target businesses likely to contribute to illicit discharge, "hot spots", and the incorporation of past records for illicit discharge.
2. Develop an outreach program designed to educate businesses and property owners deemed potential illicit dischargers based on data mapped in tasks completed for this strategy.
3. Review existing ordinances for illicit discharge to increase their effectiveness. Priority attention will be given to ensuring that an enforcement escalation process is in place. Each ordinance will be revised, amended and updated as needed by Storm Water Management Team members.
4. Develop and implement a plan for dry-weather screening of storm sewer outfalls that will detect possible illicit discharge. The initial portion of the program will consist of the development of a procedural manual, design of inspection forms and the division of the city into four inspection areas. Staff will inspect one area or 25% of the outfalls annually as well as those discharge points that exhibited possible pollutants during the previous year. Each year will include an evaluation on the effectiveness of the strategies progress.
5. Develop a policies and procedures manual for detecting illicit discharges to include the location of priority areas, tracing possible sources, removal of sources, and education of entities contributing the illicit discharge.
6. Conduct an in-depth evaluation of the City of Rolla's program for illicit discharge detection and elimination. Assessment shall be conducted by members of the Storm Water Program Management Team.
7. Develop an inventory, inspection form and schedule for industries and commercial enterprises within the corporate limits that may contribute pollutants via storm water.
8. Continue performing previously established annual BMP's that assist in the detection, reduction or elimination of illicit discharges, illegal dumping and spill containment. Items include inspections of storm water related facilities (i.e. box culverts, detention ponds, creek crossings), staff training and waste collection services.

Progress will be measured using MCM#3 BMP Tables found in Appendix C.

3.4.5 IDDE Benchmarks

This section to be completed prior to each annual report and should reflect major accomplishments in the reduction of illicit discharge detection and elimination during the reporting period.

3.5 Minimum Control Measure #4 – Construction Site Runoff Control (CSRC)

3.5.1 CSRC Goal

To control erosion, sediment and pollutant discharges and other water quality impacts from all construction activities. This shall include sites resulting in a land disturbance of one acre or more as well as the use of Best Management Practices on smaller construction sites.

3.5.2 CSRC Overview and Permit Requirements

The discharge of runoff from construction sites not only has the capacity to cause erosion but contributes to the level of pollutants in storm sewer systems and local water bodies. Sediment carried in suspension in the runoff increases the total suspended solids (TSS's) and frequently transports metals and mercury bound to the soil particles. Construction site waste such as concrete wash water, floatable litter and debris, slurry and toxic building materials amplify the problem.

Activities under MCM #4 address these concerns by implementing a program that reduces storm water discharges and pollutants utilizing a combination of methods. Regulatory mechanisms, construction site Best Management Practices (BMPs), pre-construction plan reviews, job site inspection's, enforceable sanctions and education have successfully been combined to form the City of Rolla's CSRC program.

Elements that are required by the general operating permit that have not been implemented or have been unsuccessful will be the focus over the next five years. Established BMP's will continue to be utilized and monitored annually. Progress will be measured using MCM#4 BMP Tables found in Appendix C.

3.5.3 Current CSRC Activities and Best Management Practices (BMPs)

1. Codified storm water regulatory ordinance. In April of 2002, Rolla City Council passed Ordinance 3500, establishing a new Chapter 15 of the General Ordinances of the City of Rolla, Missouri relating to storm water and flood control. The ordinance outlines requirements for erosion and sediment control, pre-construction plan review, and inspection and enforcement authority (see *Appendix B*).
2. Implemented a Land Disturbance Permitting process that, despite less than ideal conditions for development, saw the issuance of 90 permits since its inception in 2003.
3. Developed an erosion control Best Management Practices manual and brochure that continues to be distributed with the land disturbance permit.
4. Utilized land disturbance inspection process, including inspection form development, site scheduling, prioritization methods for more complex and problematic sites and SWPPP requirements.
5. Established enforcement actions from "Notice of Violation" letters and "Stop Work" orders to civil penalties and administrative fines. To date, the Notice of Violation letter has been sufficient to alleviate non-compliance issues.
6. Managed and tracked land disturbance permit information through an electronic filing system. Data is tracked through the GIS, spreadsheets, databases and an organized digital filing system and updated monthly at a minimum.

7. Trained municipal employees in construction site runoff and erosion control methods.

3.5.4 CSRC Planned Activities and BMP's

1. An extensive review of the existing Chapter 15 "Stormwater and Flood Control" ordinance will determine the effectiveness of this regulatory mechanism. Particular attention will be focused on permits language, escalating enforcement measures, construction site waste regulations, enhancements to inspection authority, length of permit validity, fee schedules, exemptions and development of requirements for small construction sites.
2. Review of the existing "Erosion Control Stormwater Protection Guide" and the "Erosion Control/Stormwater Handout" to ensure all BMPs are effective at reducing erosion and sediment transportation.
3. Develop a handout to be dispersed with building permits to outline BMPs to be used on small construction sites.
4. Create a formal procedural manual for review of pre-construction items for Development Review Committee and land disturbance permit issuance.
5. Investigate the feasibility of required contractor training and certification for issuance of the land disturbance permit.
6. Develop a formalized enforcement procedure for stormwater pollution complaints from the public. Include extensive coverage of the topic through various types of media.
7. Review and updates to existing land disturbance inspection procedures.
8. Staff, developer, contractor and citizen training.
9. Continuation of all annually occurring BMPs

Progress will be measured using MCM#4 BMP Tables found in *Appendix C*.

3.5.5 CSRC Benchmarks

This section to be completed prior to each annual report and should reflect major accomplishments in the reduction of illicit discharge detection and elimination during the reporting period.

3.6 Minimum Control Measure #5 – Post-Construction Runoff Control (PCRC)

3.6.1 PCRC Goal

To develop a program that will address the long term quality of storm water runoff from new development and redevelopment by utilizing designs and practices that provide for water quality treatment on site. These practices should strive for reasonably mimicking pre-construction runoff quality the maximum extent practicable.

3.6.2 PCRC Overview and Permit Requirements

Development alters the landscape by increasing impermeable surfaces, compacting soil, and introducing pollutants into the storm sewer system. These characteristics mean an increase in the quantity of runoff and a reduction in the quality of the discharge.

As development occurs, vegetation must be removed; the same vegetation that filters pollutants, slows erosion and runoff velocity, and provides shade that supports varying ecosystems. Activities under MCM #5 address these issues by implementing BMP's that either preserve or restore vegetation, stream buffers, permeable surfaces and promote onsite treatment of stormwater discharge.

Elements that are required by the general operating permit that have not been implemented or have been unsuccessful will be the focus over the next five years. Established BMP's will continue to be utilized and monitored annually. Progress will be measured using MCM#5 BMP Tables found in Appendix C.

3.6.3 Current PCRC Activities and Best Management Practices (BMPs)

1. Promoted a "Redevelopment Policy" that allows for the conversion of existing commercial buildings in the downtown area to residential zoning.
2. Made changes to subdivision and zoning policies that allow for "cluster" subdivision and low-density residential development, allowing the city to work with developers to accommodate variations in normal subdivision regulations (see Appendix B).
3. Reviewed all new subdivisions and plats by the Development Review Committee, including conveyance adequacy, possible detention requirements, park land and low impact BMP's.
4. Acquired parks, open space and stream buffers throughout town.
5. Acquired land for and construction of 10 flood control facilities that were in part responsible for the removal of 200 homes from the 100 year flood zone.
6. Adopted an official Stormwater Design Manual that sets forth performance standards focused on controlling stormwater runoff impacts.
7. Formed several public/private partnerships to either install or retrofit parking facilities with structural BMP's in the form on filtration strips.
8. Trained municipal employees in low impact development methods.

9. Established a roof drain ordinance that prohibits direct connection of drains from new construction to curb and gutter or storm sewer system (see Appendix B).
10. Developed and implemented an urban reforestation program that has included riparian reforestation and the planting of over 125 free trees within the city limits.

3.6.4 PCRC Planned Activities and BMP's

1. Develop a strategy for the development and implementation of structural and non-structural BMP's in new and existing development.
2. Continued urban reforestation efforts with an emphasis on riparian reforestation to improve water quality.
3. Develop a Post Construction Runoff Control BMP manual for distribution to consultants, developers and contractors.
4. Explore incentives for developers, contractors and homeowners for the implementation of low impact BMP's.
5. Review, revise and codify changes to existing ordinances dealing with low impact development.
6. Develop a formalized program for maintenance of existing and future structural BMP's.
7. Create a formal procedural manual for review of post construction items for Development Review Committee and land disturbance permit issuance.
8. Continue to foster public/private partnerships that promote the use of low-impact development methodology.
9. Increased BMP training for staff, developers and contractors.
10. Continuation of annually occurring BMPs.
11. Extensive evaluation of the existing program, its effectiveness and implementable changes to increase the success.

Progress will be measured using MCM#5 BMP Tables found in Appendix C.

3.6.5 PCRC Benchmarks

This section to be completed prior to each annual report and should reflect major accomplishments in the reduction of illicit discharge detection and elimination during the reporting period.

3.6 Minimum Control Measure #6 – Pollution Prevention/Good Housekeeping for Municipal Operations (PPMO)

3.7.1 PPMO Goal

To develop and implement an operation and maintenance program that includes a training component and has the ultimate goal of preventing or reducing pollutant runoff from municipal operations.

3.7.2 PPMO Overview and Permit Requirements

In theory, before a regulated municipality can expect businesses and residents to follow the requirements of the NPDES permit, it should examine and subsequently alter its own behavior to ensure that it is doing everything possible to reduce the amount and type of pollutants produced by municipal operations. Effective storm water management should start with municipal employees.

Activities under MCM #6 address these concerns by implementing a program that stresses inspections and maintenance, proper disposal practices, improved flood plain management and frequent training of municipal employees. The SWMP document itself is a major component of this minimum control measure and provides an evaluation, assessment and reporting tool that assist's municipalities in their pollution prevention efforts.

Elements that are required by the general operating permit that have not been implemented or have been unsuccessful will be the focus over the next five years. Established BMP's will continue to be utilized and monitored annually. Progress will be measured using MCM#6 BMP Tables found in Appendix C.

3.7.3 Current PPMO Activities and Best Management Practices (BMPs)

1. Established routine inspection and maintenance schedules that include but are not limited to creek cleaning, creek crossings, detention ponds, box culverts, street sweeping, sanitary sewer lines and manholes, right-of-way and municipal parking lot cleaning.
2. Mapped the city's storm sewer and sanitary sewer system completed allowing staff to more effectively monitor pollutant sources and discharges.
3. Used BMPs and SWPPPs on ALL city construction projects.
4. Relocated all bulk oil and antifreeze containers from individual shops to a centralized location at city vehicle maintenance facility for proper storage and disposal.
5. Designated one full-time employee dedicated to the cleaning of city streets. The schedule has been developed ensuring all streets are cleaned on a routine basis utilizing a heavy-duty closed loop regenerative air street sweeper with vacuum, raker bar and water assist.
6. Replaced traditional de-icing materials with a beet-juice/sand/sawdust mixture.
7. Migrated to the use of biostabilization methods for stream bank stabilization, utilizing only naturally occurring materials.

8. Implemented an ordinance prohibiting the placement and/or disposal of yard waste to city streets. City staff monitors streets for violations as well as receiving taking from citizens. All violators are sent a letter of warning highlighting the ordinance number and legal ramifications.
9. Implemented an agreement with the South Central Correctional Center located in Licking, Missouri whereby inmates work for the department under a "Supervised Institutional Work Release Program". Eight inmates are employed year round to assist in creek maintenances, mowing, brush removal and creek cleaning.
10. Designed and constructed several filtration strips in parking facilities throughout the city, resulting in numerous public/private partnerships and an increase in public awareness.
11. Developed and implemented an aggressive program to eliminate inflow and infiltration by utilizing varying methods of repair and/or replacement of existing lines.
12. Conducted training of municipal employees in the implementation of the respective SWPPPs.

3.7.4 PPMO Planned Activities and BMP's

1. Develop a comprehensive list of all municipal operations impacted by the SWMP. The inventory will include all industrial facilities subject to NPDES permits (see Appendix D).
2. Develop a formalized storm sewer facility Operations and Maintenance manual. Implement the procedures in the plan, assess effectiveness and update as necessary.
3. Continue citywide effort to reduce inflow and infiltration through various methods, including the repair and replacement of problem lines and the use of cured-in place pipe.
4. Implement controls to reduce or eliminate the discharge of pollutants from municipal parking lots, maintenance and storage facilities, vehicle maintenance operations and outdoor storage.
5. Conduct employee training focused on the prevention and reduction of stormwater pollution from municipal activities.
6. Track disposal of waste from municipal operations.
7. Develop a SWPPP for each municipal facility. Include a prioritized list for more frequent inspections based on potential pollutants.
8. Develop and implement a spill prevention and control plan for municipal operations.
9. Develop a formalized Spill Response Plan appropriate for both municipal and public use.
10. Evaluate existing flood management structures for water quality considerations 42616.
11. Select employees from each operation to serve as a core team responsible for the implementation and management of their respective SWPPP.
12. Develop BMPs for ditch cleaning, sidewalk repair, asphalt patching, curb and gutter repair, street striping, sign painting and maintaining dirt and gravel roads to prevent erosion and dust control.
13. Develop and implement an Operations and Maintenance manual for city Parks and Recreation Department.
14. Form a partnership with Rolla Municipal Utilities that will allow for training of employees in pollution prevention and the use of BMPs in daily operations of the water utility.
15. Continuation of annually occurring BMPs.

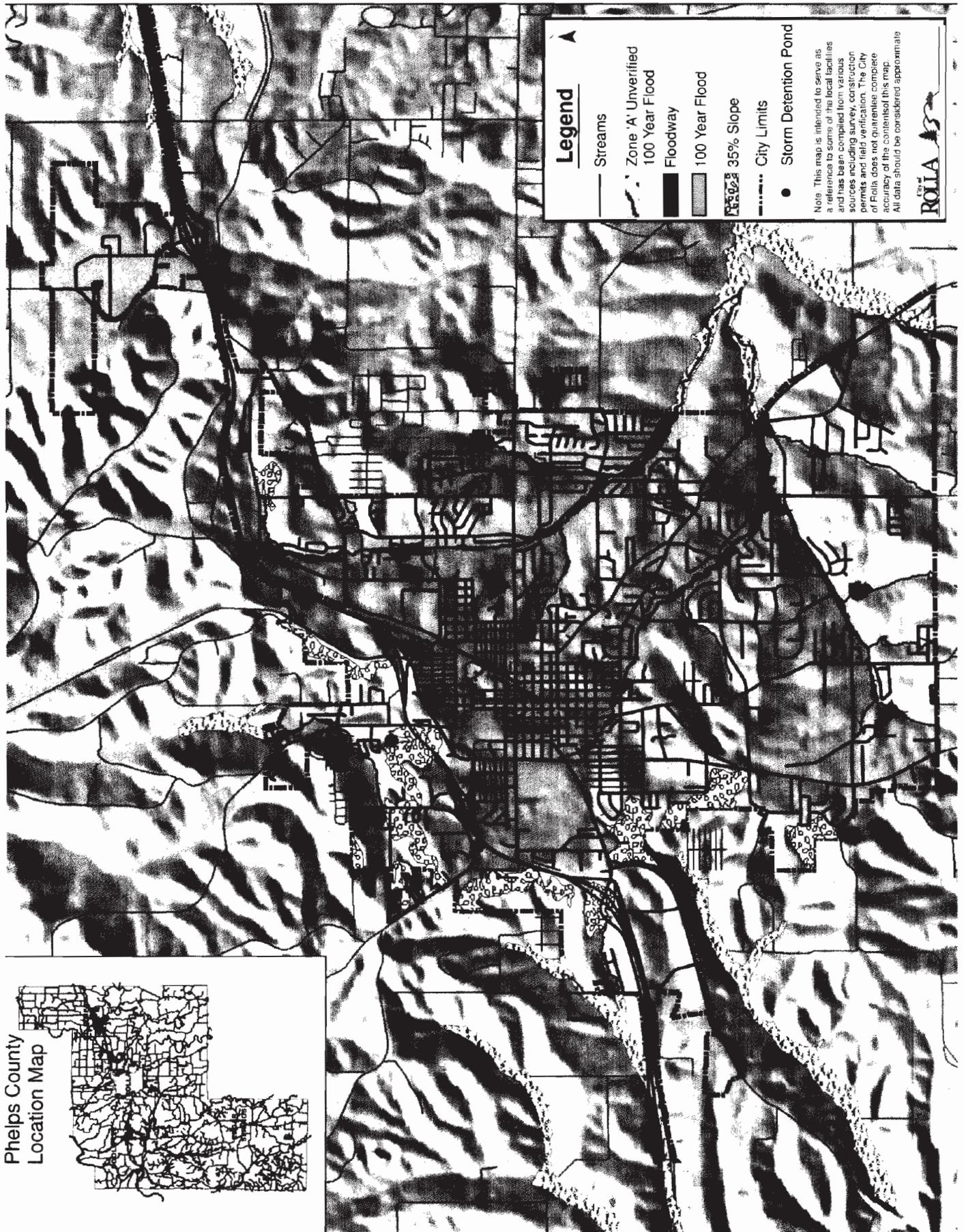
Progress will be measured using MCM#6 BMP Tables found in Appendix C.

3.7.5 PPMO Benchmarks

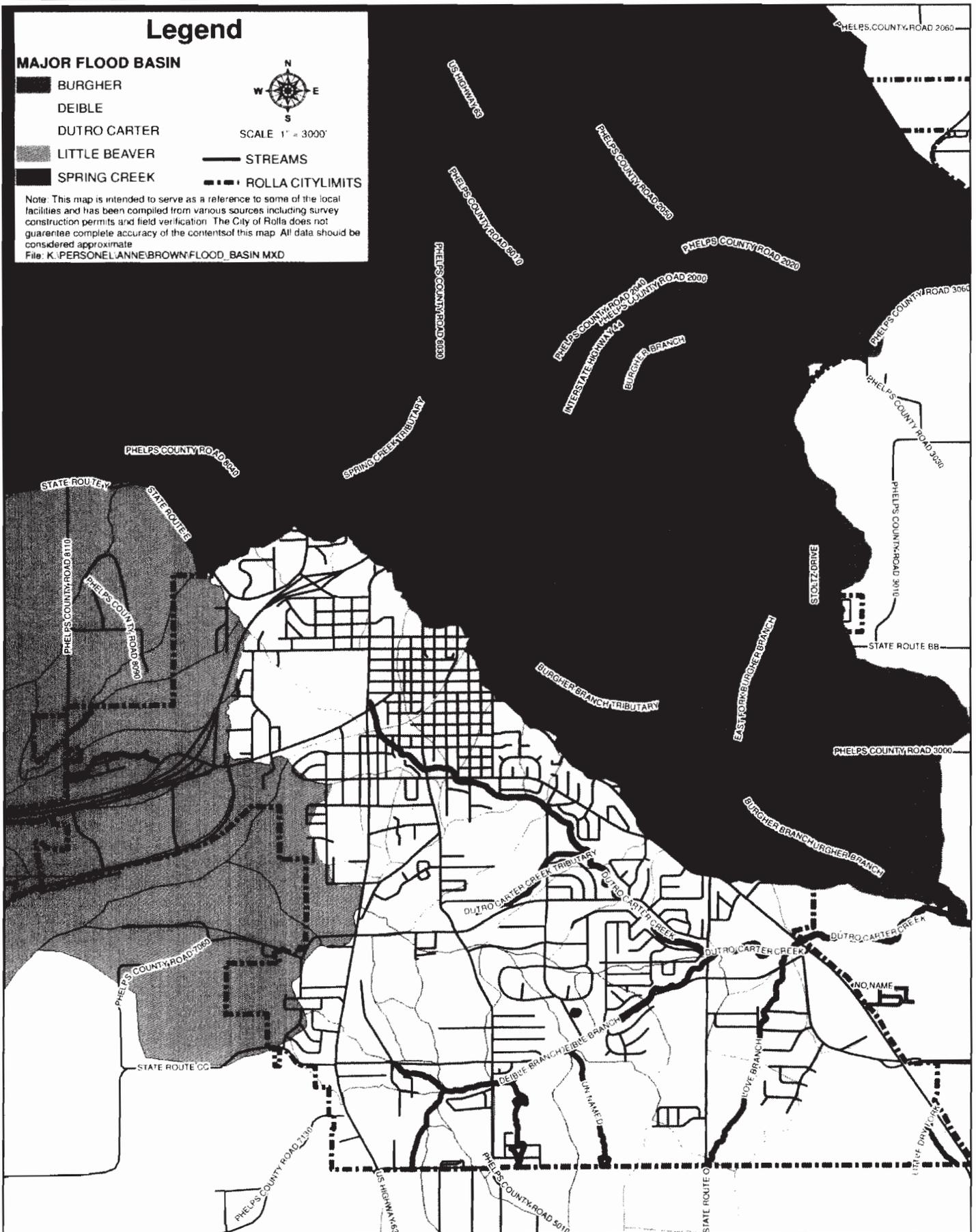
This section to be completed prior to each annual report and should reflect major accomplishments in the reduction of illicit discharge detection and elimination during the reporting period.

Appendix A

Maps



Topography and Physical Characteristics

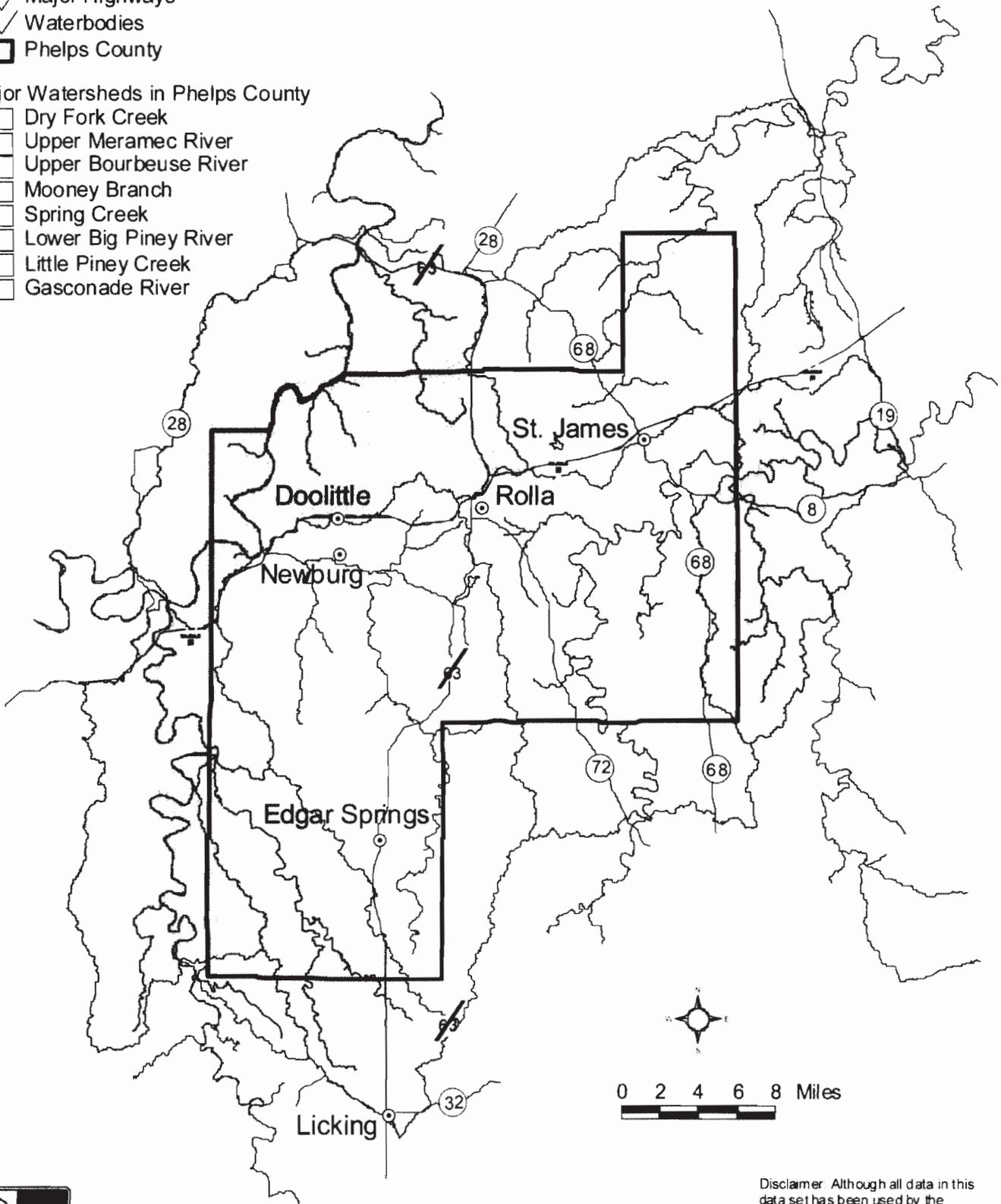


Rolla Watersheds

- Towns
- ≡ Major Highways
- ≡ Waterbodies
- Phelps County

Major Watersheds in Phelps County

- Dry Fork Creek
- Upper Meramec River
- Upper Bourbeuse River
- Mooney Branch
- Spring Creek
- Lower Big Piney River
- Little Piney Creek
- Gasconade River



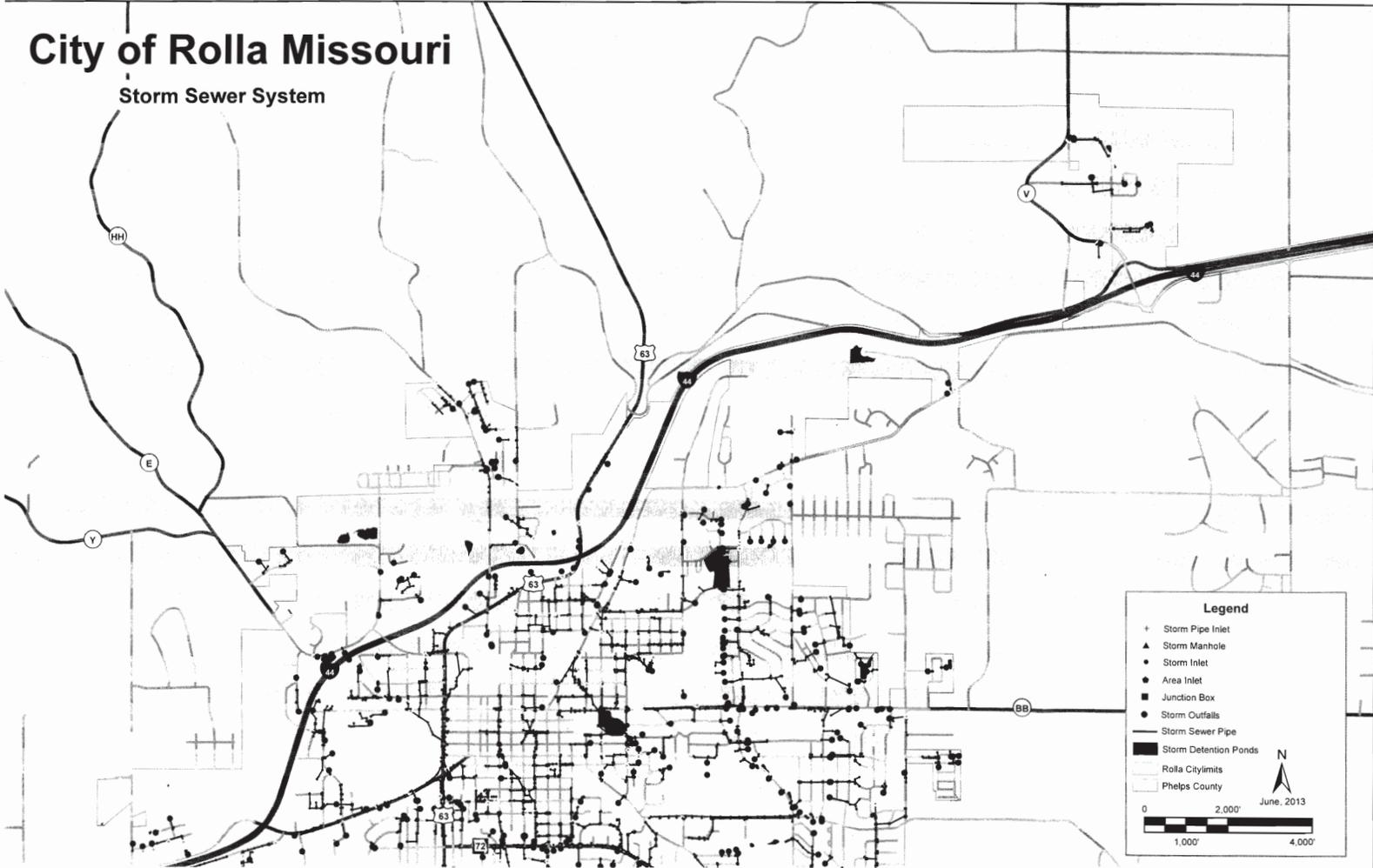
Missouri Department of Natural Resources
 Water Pollution Control Program
 February 2003

Disclaimer: Although all data in this data set has been used by the Missouri Department of Natural Resources, no warranty expressed or implied is made by the MODNR regarding the utility or accuracy of these data, nor shall the act of distribution constitute any such warranty.

See following 2 pages

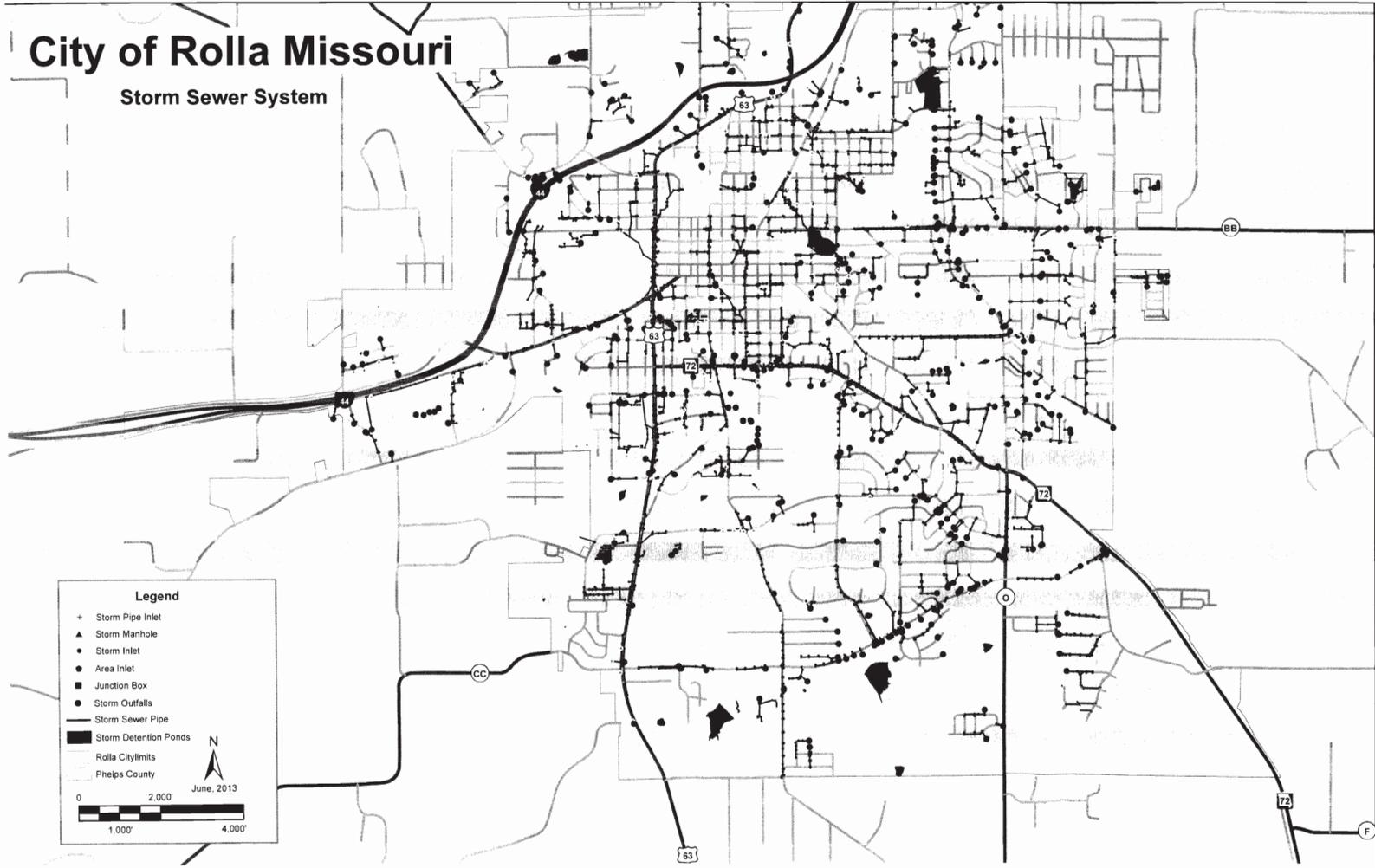
City of Rolla Missouri

Storm Sewer System



City of Rolla Missouri

Storm Sewer System



Legend

- + Storm Pipe Inlet
- ▲ Storm Manhole
- Storm Inlet
- Area Inlet
- Junction Box
- Storm Outfalls

— Storm Sewer Pipe

■ Storm Detention Ponds

--- Rolla Citylimits

— Phelps County

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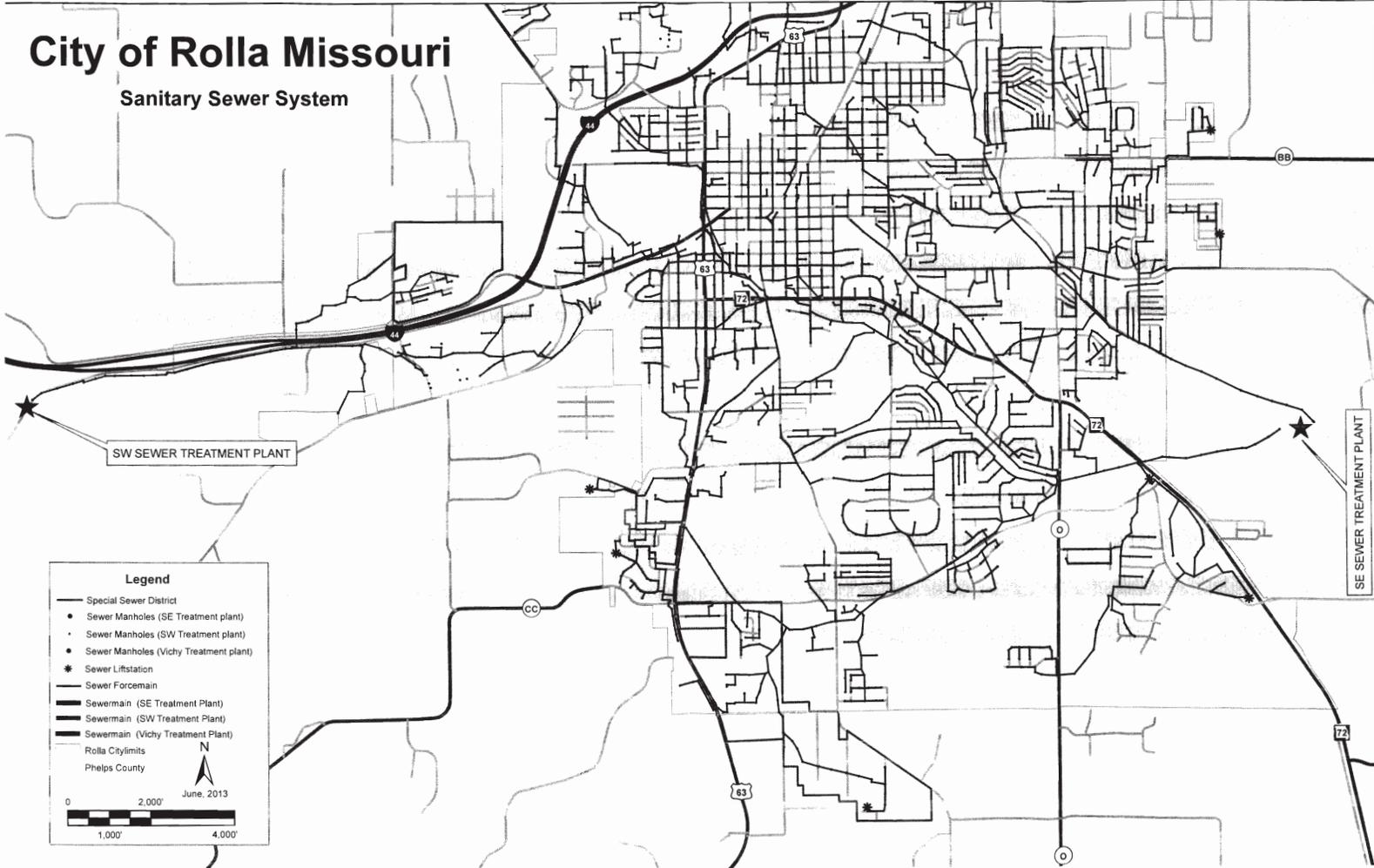
June, 2013



See following 2 pages

City of Rolla Missouri

Sanitary Sewer System



Legend

- Special Sewer District
- Sewer Manholes (SE Treatment plant)
- Sewer Manholes (SW Treatment plant)
- Sewer Manholes (Vichy Treatment plant)
- Sewer Liftstation
- Sewer Forcemain
- Sewermain (SE Treatment Plant)
- Sewermain (SW Treatment Plant)
- Sewermain (Vichy Treatment Plant)
- Rolla Citylimits
- Phelps County



June, 2013

Appendix B

Missouri State Operating Permits

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION



MISSOURI STATE OPERATING PERMIT

In compliance with the Missouri Clean Water Law, (Chapter 644 R.S. Mo. as amended, hereinafter, the Law), and the Federal Water Pollution Control Act (Public Law 92-500, 92nd Congress) as amended.

Permit No. MO-0047023

Owner: City of Rolla
Address: P.O. Box 979, Rolla MO 65402

Continuing Authority: City of Rolla
Address: P.O. Box 979, Rolla MO 65402

Facility Name: Rolla Southwest WWTF
Facility Address: 14655 County Road 7100, Rolla MO 65402

Legal Description: NE¼, NW¼, Sec. 17, T37N, R08W, Phelps County
UTM Coordinates: X= 602357, Y= 4199328
Receiving Stream: Little Beaver Creek (C) (01529)
First Classified Stream and ID: Little Beaver Creek (C) (01529)
USGS Basin & Sub-watershed No.: (10290203-010004)

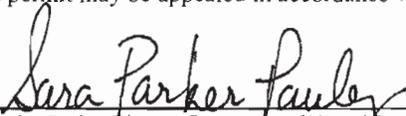
is authorized to discharge from the facility described herein, in accordance with the effluent limitations and monitoring requirements as set forth herein:

FACILITY DESCRIPTION

See page 2

This permit authorizes only wastewater discharges under the Missouri Clean Water Law and the National Pollutant Discharge Elimination System; it does not apply to other regulated areas. This permit may be appealed in accordance with Section 644.051.6 of the Law.

March 11, 2011 April 15, 2011
Effective Date


Sara Parker Pauley, Director, Department of Natural Resources

March 10, 2016
Expiration Date


John Madras, Director, Water Protection Program

FACILITY DESCRIPTION continued

Outfall #001 - POTW - SIC # 4952 - **Certified "B" Operator Required**

Facility description – One oxidation ditch, two clarifiers, ultraviolet disinfection, sludge lagoon and sludge is land applied.

Design population equivalent is 10,000

Design flow is 1 MGD

Actual flow is .241 MGD

Design sludge production is 100 dry tons/year.

DOWNSTREAM MONITORING POINT SM1

Legal Description: NW ¼, Sec. 17, T37N, R8W Phelps County

UTM Coordinates: Easting 602479.535, Northing 4199343.027

Receiving Stream: Little Beaver Creek (C) 01529

First Classified Stream and ID: Little Beaver Creek (C) 01529

USGS Basin & Sub-watershed No. 10290203-010004

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES

MISSOURI CLEAN WATER COMMISSION



MISSOURI STATE OPERATING PERMIT

In compliance with the Missouri Clean Water Law, (Chapter 644 R.S. Mo. as amended, hereinafter, the Law), and the Federal Water Pollution Control Act (Public Law 92-500, 92nd Congress) as amended.

Permit No. MO-0047031

Owner: City of Rolla
Address: P.O. Box 979, Rolla, MO 65402

Continuing Authority: Same as above
Address: Same as above

Facility Name: Rolla, Vichy Road WWTP
Address: 11751 County Road 8030, Rolla, MO 65401

Legal Description: NW ¼, NE ¼, Sec. 35, T38N, R8W, Phelps County

Receiving Stream: Unnamed Tributary of Spring Creek (U)
First Classified Stream and ID: Spring Creek (P)(01534)
USGS Basin & Sub-watershed No.: (10290203 - 020003)

is authorized to discharge from the facility described herein, in accordance with the effluent limitations and monitoring requirements as set forth herein:

FACILITY DESCRIPTION

Outfall #001 – POTW- SIC #4952
Contact Stabilization/aerobic digester/trickling filter/
sludge storage basin/sludge is land applied.
Design population equivalent is 4,000.
Design flow is 400,000 gallons per day.
Actual flow is 300,000 gallons per day.
Design sludge production is 100 dry tons/year.

Outfall #002 – POTW – SIC #4952
Infiltration and Inflow Clarifier.
Design flow is 3 million gallons per day.

This permit authorizes only wastewater discharges under the Missouri Clean Water Law and the National Pollutant Discharge Elimination System; it does not apply to other regulated areas. This permit may be appealed in accordance with Section 644.051.6 of the Law.

August 25, 2006 September 15, 2006
Effective Date Revised Date


Doyle Childers, Director, Department of Natural Resources
Executive Secretary, Clean Water Commission

August 24, 2011
Expiration Date
MO 780.0941 (10-93)


Edw. J. Garbraith, Director of Staff, Clean Water Commission

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES

MISSOURI CLEAN WATER COMMISSION



MISSOURI STATE OPERATING PERMIT

In compliance with the Missouri Clean Water Law, (Chapter 644 R.S. Mo. as amended, hereinafter, the Law), and the Federal Water Pollution Control Act (Public Law 92-500, 92nd Congress) as amended.

Permit No. MO-0050652

Owner: City of Rolla
Address: P.O. Box 979, Rolla, MO 65402

Continuing Authority: Same as above
Address: Same as above

Facility Name: Rolla Southeast Treatment Plant
Facility Address: 1801 Highway 72 East, Rolla, MO 65401

Legal Description: SE ¼, NE ¼, Sec. 18, T37N, R7W, Phelps County
UTM Coordinates: X=611958, Y=4199021

Receiving Stream: Unnamed tributary to Dutro Carter Creek (U)
First Classified Stream and ID: Dutro Carter Creek (P) (01865) 303 (d)
USGS Basin & Sub-watershed No.: Ozark/Meramec (07140102-0108)

is authorized to discharge from the facility described herein, in accordance with the effluent limitations and monitoring requirements as set forth herein:

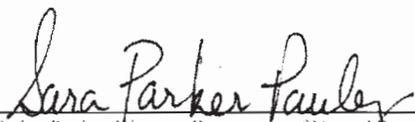
FACILITY DESCRIPTION

See Page 2

This permit authorizes only wastewater discharges under the Missouri Clean Water Law and the National Pollutant Discharge Elimination System; it does not apply to other regulated areas. This permit may be appealed in accordance with Section 644.051.6 of the Law.

May 1, 2013

Effective Date


Sara Parker Pauley, Director, Department of Natural Resources

April 30, 2018

Expiration Date


John Madros, Director, Water Protection Program

FACILITY DESCRIPTION (continued):

Outfall #001 - Municipal Wastewater Treatment Plant- SIC #4952

The use or operation of this facility shall be by or under the supervision of a **Certified "B" Operator**

Bar Screen/Grit removal/Trickling Filter/Sand Filter/Activated Sludge/Clarifiers/Aerobic Digestion/Oxidation Ditch/Sludge is Land Applied.

Final effluent limitations will be met through the following process flow: Flow from the East and West Plants are combined immediately downstream of the East Plant Oxidation Ditch. A Flow Splitter would allow plant process water to be split equally between two Secondary Clarifiers. Clarifier effluent would be routed to an Ultraviolet Disinfection Process prior to its discharge from the facility at Outfall #001

Design population equivalent is 47,650.

Design flow is 4.765 MGD.

Actual flow is 3.2 MGD.

Design sludge production is 739 dry tons/year.

Actual sludge production is 425.03 dry tons/year.

Legal Description: SE ¼, NE ¼, Section 18, T37N, R7W, Phelps County

UTM Coordinates: X=626055, Y=41755006

Receiving Stream: Unnamed tributary to Dutro Carter Creek (U)

First Classified Stream and ID: Dutro Carter Creek (P) (1865) 303 (d)

USGS Basin & Sub-watershed No.: (07140102-0108)

Outfall(s) #002 & #003 – Discharges from these outfalls are no longer authorized, and shall be subject to 40 CFR 122.41(m) and reported according to 40 CFR 122.41(m)(3)(i) & (ii).

SM1 – Instream Monitoring point

The sampling point is located approximately 1 mile downstream from outfall #001, at the intersection of Co. Rd. 3000 and Little Dry Fork.

Legal Description: NW¼, NW¼, Section 17, T37N, R7W, Phelps County

UTM Coordinates: X=613100, Y=4199540

Receiving Stream: Little Dry Fork (P)

First Classified Stream and ID: Little Dry Fork (1863)

USGS Basin & Sub-watershed No.: (07140102-0108)

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION



140021 SWIMMING PERMITTING PROJECT
GENERAL PERMIT

In compliance with the Missouri Clean Water Law, (Chapter 644 R.S. Mo. as amended, hereinafter, the Law), and the Federal Water Pollution Control Act (Public Law 92-500, 92nd Congress) as amended.

Permit No.: MOG760056
Owner: Rolla, City of
Owner's Address: PO BOX 979, , Rolla, MO 65402
Continuing Authority: Same as Owner
Continuing Authority's Address: MO
Facility Name: Splash Zone Aquatic Center
Facility Address: 1400 N. Holloway, , Rolla, MO 65401
Legal Description: SE1/4, SW1/4, Sec 1, T37N, R8W, Phelps County
Latitude/Longitude: +3757122/-09145340
Receiving Stream: Tributary to Burgher Br (U)
First Classified Stream and ID: Burgher Br. (C) 1865
USGS Basin & Sub-watershed ID: (07140102-10007)

Is authorized to discharge from the facility described herein, in accordance with the effluent limitations and monitoring requirements set forth herein.

FACILITY DESCRIPTION

All Outfalls – SIC codes 7997 & 7999

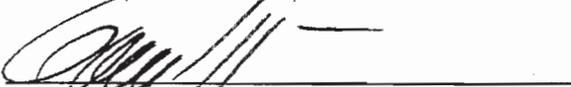
Discharge of filter backwash and pool drainage from swimming pools and lined ponds which use chlorine as a sanitizer.

This permit authorizes only wastewater, including storm waters, discharges under the Missouri Clean Water Law, and the National Pollution Discharge Elimination System. It does not apply to other regulated areas. This permit may be appealed in accordance with Section 644.051.6 of the Law.

April 10, 2009 June 5, 2009
Effective Date Issued Date

April 9, 2014
Expiration Date


Mark A. Tompkins, Director, Department of Natural Resources


Gary T. Gimey, P.E., Director, Southeast Regional Office

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION



MISSOURI STATE OPERATING PERMIT WATER POLLUTION CONTROL PROGRAM

General Operating Permit

In compliance with the Missouri Clean Water Law, (chapter 644 R.S. Mo. as amended, hereinafter, the Law), and the Federal Water Pollution Control Act (Public Law 92-500, 92nd Congress) as amended,

Permit No.: MO-R040033

Owner: City of Rolla
Address: 901 N. Elm
Rolla, MO 65402

Continuing Authority: Same

Facility Name: Rolla Small MS4
Facility Address: 901 N. Elm,
Rolla, MO 65402

Legal Description: See Page 2

Latitude Longitude: See Page 2

Receiving Stream: See Page 2

First Classified Stream- ID#: See Page 2

USGS # and Sub Watershed #: See Page 2

is authorized to discharge from the facility described herein, in accordance with the effluent limitations and monitoring requirements as set forth herein.

FACILITY DESCRIPTION All Outfalls, SIC 9511

Discharges from Regulated Small Municipal Separate Storm Sewer Systems

This permit authorizes only wastewater, including storm waters, discharges under the Missouri Clean Water Law and the National Pollutant Discharge Elimination System, it does not apply to other regulated areas. This permit may be appealed in accordance with Section 644.051.6 of the Law

June 13, 2008

Effective date

June 20, 2008

Issue date

Doyle Childers, Director, Department of Natural Resources
Executive Secretary, Clean Water Commission

June 12, 2013

Expiration date

MO 780-1481 (7-94)

Edward Galbraith
Director of Staff, Clean Water Commission

Outfall Number: 1

Legal Description: SW 1/4, NW 1/4, Sec. 17, T37N, R7W, Phelps
County

Latitude - Longitude: 3755594 - 09143307

Receiving Stream: Burgher Branch Creek (C)

First Classified Stream - ID #: Burgher - 1865
Branch Creek
(C)

USGS # and Sub Watershed #: 07140102 - 10007

Outfall Number: 2

Legal Description: SE 1/4, SW 1/4, Sec. 29, T38N, R7W, Phelps
County

Latitude - Longitude: 3758499 - 09143039

Receiving Stream: Unnamed Tributary to Borbeuse River (U)

First Classified Stream - ID #: Borbeuse - 2049
River (C)

USGS # and Sub Watershed #: 07140103 - 20001

Outfall Number: 3

Legal Description: SW 1/4, NE 1/4, Sec. 29, T38N, R7W, Phelps
County

Latitude - Longitude: 3759241 - 09142471

Receiving Stream: Unnamed Tributary to Cox Branch Creek (U)

First Classified Stream - ID #: Cox Branch - 3559
Creek (C)

USGS # and Sub Watershed #: 07140103 - 20001

Outfall Number: 4

Legal Description: NE 1/4, NE 1/4, Sec. 30, T38N, R7W, Phelps
County

Latitude - Longitude: 3759306 - 09143314

Receiving Stream: Unnamed Tributary to Lanes Fork Creek (U)

First Classified Stream - ID #: Lanes Fork - 2048
Creek (C)

USGS # and Sub Watershed #: 07140103 - 20002

Outfall Number: 5

Legal Description: NW 1/4, SE 1/4, Sec. 35, T38N, R8W, Phelps
County

Latitude - Longitude: 3758221 - 09146283

Receiving Stream: Unnamed Tributary to Spring Creek (U)

First Classified Stream - ID #: Spring Creek - 1534
(P)

USGS # and Sub Watershed #: 10290203 - 20003

Outfall Number: 6

Legal Description: SW 1/4, NW 1/4, Sec. 10, T37N, R8W, Phelps
County

Latitude - Longitude: 3756436 - 09148129

Receiving Stream: Unnamed Tributary to Lower Beaver Creek (U)

First Classified Stream - ID #: Lower Beaver - 1529
Creek (C)

USGS # and Sub Watershed #: 10290203 - 10004

Outfall Number: 7

Legal Description: SW 1/4, SW 1/4, Sec. 10, T37N, R8W, Phelps
County

Latitude - Longitude: 3756160 - 09148079

Receiving Stream: Unnamed Tributary to Lower Beaver Creek (U)

First Classified Stream - ID #: Lower Beaver - 7369
Creek (C)

USGS # and Sub Watershed #: 10290203 - 10004

Outfall Number: 8

Legal Description: SW 1/4, NW 1/4, Sec. 14, T37N, R8W, Phelps
County

Latitude - Longitude: 3755598 - 09146556

Receiving Stream: Unnamed Tributary to Lower Beaver Creek (U)

First Classified Stream - ID #: Tributary to - 2951
Lower Beaver
Creek (C)

USGS # and Sub Watershed #: 10290203 - 10004

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
BUREAU OF WATER QUALITY CONTROL



MISSOURI STATE OPERATING PERMIT

General Operating Permit

This permit is issued under the authority of the Missouri State Water Pollution Control Act, Chapter 644, RSMo, and the Missouri State Water Pollution Control Regulations, Chapter 201, RSMo.

Permit No: MOR100047
City of Rolla
PO BOX 979
901 North Elm Street
Rolla, MO 65402

City of Rolla
P.O. Box 979
901 North Elm St.
Rolla, MO 65402

City of Rolla
PO BOX 979
901 North Elm St
ROLLA, MO 65402

NE 1/4, Sec. 11, T37N, R8W, Phelps County
607998.920/4201072.397
Various City Wide (U)
Dutro Carter Cr. (C) 3570.00
07140102 - 0108

is authorized to discharge from the facility described herein, in accordance with the effluent limitations and monitoring requirements as set forth herein.

FACILITY DESCRIPTION: All Outfalls SIC #1629

All Outfalls - Construction or land disturbance activity (e.g., clearing, grubbing, excavating, grading and other activity that results in the destruction of the root zone and/or land disturbance activity that is reasonably certain to cause pollution of waters of the state)

This permit is subject to the following conditions: (1) This permit is issued under the authority of the Missouri State Water Pollution Control Act, Chapter 644, RSMo, and the Missouri State Water Pollution Control Regulations, Chapter 201, RSMo. (2) This permit is issued under the authority of the Missouri State Water Pollution Control Act, Chapter 644, RSMo, and the Missouri State Water Pollution Control Regulations, Chapter 201, RSMo. (3) This permit is issued under the authority of the Missouri State Water Pollution Control Act, Chapter 644, RSMo, and the Missouri State Water Pollution Control Regulations, Chapter 201, RSMo.

May 31, 2012

Issue Date

Sara Parker Pauley
Sara Parker Pauley, Director
Department of Natural Resources

Sara Parker Pauley

May 30, 2017

Expiration Date

John Madros
John Madros
Director, Water Protection Program

John Madros

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION



MISSOURI STATE OPERATING PERMIT

General Operating Permit

In compliance with the Missouri Clean Water Law, (chapter 644 R.S. Mo as amended, hereinafter, the Law), and the Federal Water Pollution Control Act (Public Law 92-500, 92nd Congress) as amended,

Permit No: MOR80F001
Owner: CITY OF ROLLA
Address: PO BOX 979
ROLLA, MO 65401

Continuing Authority: CITY OF ROLLA
PO BOX 979
ROLLA, MO 65401

Facility Name: ROLLA NATIONAL AIRPORT
Facility Address: JUNCT. HWY 63 AND 68
VICHY, MO 65580

Legal Description: NW 1/4, SW 1/4, Sec. 01, T39N, R08W, Maries County
UTM Coordinates: 608307.767/4221539.732
Receiving Stream: TRIB DRY FORK (U)
First Classified Stream - ID#: Dry Fk. Cr. (C) 2041.00
USGS# and Sub Watershed#: 07140103 - 0101

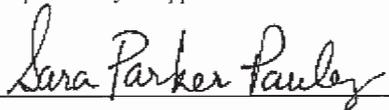
is authorized to discharge from the facility described herein, in accordance with the effluent limitations and monitoring requirements as set forth herein.

FACILITY DESCRIPTION All Outfalls SIC #4581

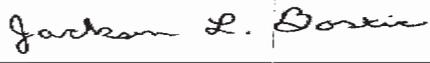
All Outfalls - Stormwater runoff from airports that use de-icers or conduct uncovered vehicle or aircraft maintenance, washing, or fueling.

This permit authorizes only wastewater, including storm water, discharges under the Missouri Clean Water Law and the National Pollutant Discharge Elimination System, it does not apply to other regulated areas. This permit may be appealed in accordance with RSMo Section 644.051.6 and 621.250, 10 CSR 20-6.020, and 10 CSR 20-1.020.

December 14, 2012
Issue Date


Sara Parker Pauley, Director
Department of Natural Resources

October 04, 2017
Expiration Date


Jackson Bostic
Regional Director, Southeast Regional Office

Appendix C

Measurable Goal Tracking

PEO-BMP #1 – Develop a formalized documented outreach strategy to be used in conjunction with public participation activities.

Task #1.1.1:	Form committee to determine current and future outreach needs.		
Responsible Parties:	SWMP Team		
Tracking Measure:	Meet a minimum of four times per year.	Target completion year:	2013-2018
% Complete:			
<i>Details regarding progress:</i>			
Task #1.1.2:	Develop formal outreach strategy, to be reviewed and revised yearly.		
Responsible Parties:	SWMP Team		
Tracking Measure:	Complete 100% of formal document and review/revise.	Target completion year:	2013-2018
% Complete:			
<i>Details regarding progress:</i>			

PEO-BMP #1 – Identify specific pollutants for targeted education efforts.

Task #1.1.1:	Focus education efforts on non-point source pollutants.			
Responsible Parties:	Stormwater Coordinator			
Tracking Measure:	Track number of targeted pollutants and number of educational materials dispersed.	Target completion year:	2014	% Complete:
<i>Details regarding progress:</i>				
Task #1.1.2:	Focus education efforts on point source pollutants.			
Responsible Parties:	Stormwater Coordinator			
Tracking Measure:	Track number of targeted pollutants and number of educational materials dispersed.	Target completion year:	2015	% Complete:
<i>Details regarding progress:</i>				
Task #1.1.3:	Focus education efforts on illegal dumping.			
Responsible Parties:	Stormwater Coordinator, Environmental Services Director			
Tracking Measure:	Track number of educational materials developed/dispersed and increase in waste stream.	Target completion year:	2016	% Complete:
<i>Details regarding progress:</i>				
Task #1.1.4:	Focus education efforts on "Clean Stream Initiative".			
Responsible Parties:	Stormwater Coordinator			
Tracking Measure:	Track number of educational materials dispersed signs installed and number of violations.	Target completion year:	2016	% Complete:
<i>Details regarding progress:</i>				
Task #1.1.5:	Focus education efforts on yard waste as a pollutant.			
Responsible Parties:	Stormwater Coordinator, Environmental Services Director			
Tracking Measure:	Track number of educational materials dispersed and increase in yard waste drop-off.	Target completion year:	2014	% Complete:
<i>Details regarding progress:</i>				
Task #1.1.6:	Evaluate efforts of the previous four years to determine effectiveness of existing education and areas requiring new or additional attention.			
Responsible Parties:	SWMP Team			
Tracking Measure:	Track effectiveness through number of violations and materials dispersed.	Target completion year:	2013-2018	% Complete:
<i>Details regarding progress:</i>				

PEO-BMP #2 – Produce educational materials targeted towards audiences responsible for the largest impact on stormwater pollutants.

Task #1.2.1	Produce educational materials targeting industrial based businesses.			
<i>Responsible Parties:</i>	Stormwater Coordinator			
<i>Tracking Measure:</i>	Track by number of materials dispersed/number of businesses	<i>Target completion year:</i>	2014	<i>% Complete:</i>
<i>Details regarding progress:</i>				
Task #1.2.2	Produce educational materials targeting concrete facilities, landscaping companies and nurseries.			
<i>Responsible Parties:</i>	Stormwater Coordinator			
<i>Tracking Measure:</i>	Track by number of materials dispersed/number of businesses	<i>Target completion year:</i>	2015	<i>% Complete:</i>
<i>Details regarding progress:</i>				
Task #1.2.3	Produce educational materials targeting commercial facilities and car washes.			
<i>Responsible Parties:</i>	Stormwater Coordinator			
<i>Tracking Measure:</i>	Track by number of materials dispersed/number of businesses	<i>Target completion year:</i>	2016	<i>% Complete:</i>
<i>Details regarding progress:</i>				
Task #1.2.4	Produce educational materials targeting facilities dealing with gasoline, fuels, oils, anti-freeze and hazardous materials.			
<i>Responsible Parties:</i>	Stormwater Coordinator			
<i>Tracking Measure:</i>	Track by number of materials dispersed/number of businesses	<i>Target completion year:</i>	2017	<i>% Complete:</i>
<i>Details regarding progress:</i>				
Task #1.2.5	Evaluate effectiveness of previous four years. Determine if additional target audiences are to be included in new permit cycle.			
<i>Responsible Parties:</i>	SWMP Team			
<i>Tracking Measure:</i>	Track number of materials dispersed and number of violations.	<i>Target completion year:</i>	2013-2018	<i>% Complete:</i>
<i>Details regarding progress:</i>				

PEO-BMP #3 - Develop materials for distribution to households and individuals tailored to methods they can use to reduce storm water pollutants.

Task #1.3.1	Develop educational materials for distribution as an offshoot of the Healthy Yards for Clear Streams program.			
<i>Responsible Parties:</i>	Stormwater Coordinator, Master Naturalists			
<i>Tracking Measure:</i>	Track number of educational materials dispersed.	<i>Target completion year:</i>	2015	<i>% Complete:</i>
<i>Details regarding progress:</i>				
Task #1.3.2	Develop and disperse materials on the use and construction of native rain gardens.			
<i>Responsible Parties:</i>	Stormwater Coordinator, Master Gardeners			
<i>Tracking Measure:</i>	Track number of educational materials dispersed.	<i>Target completion year:</i>	2016	<i>% Complete:</i>
<i>Details regarding progress:</i>				
Task #1.3.3	Develop and disperse materials on the proper disposal of yard waste.			
<i>Responsible Parties:</i>	Stormwater Coordinator, Environmental Services Director			
<i>Tracking Measure:</i>	Track number of educational materials dispersed.	<i>Target completion year:</i>	2014	<i>% Complete:</i>
<i>Details regarding progress:</i>				
Task #1.3.4	Develop and disperse materials on the proper disposal of household hazardous waste.			
<i>Responsible Parties:</i>	Stormwater Coordinator, Environmental Services Director			
<i>Tracking Measure:</i>	Track number of educational materials dispersed.	<i>Target completion year:</i>	2014	<i>% Complete:</i>
<i>Details regarding progress:</i>				
Task #1.3.5	Evaluate effectiveness of previous four years. Determine if additional pollutant reduction methods are to be included in new permit cycle.			
<i>Responsible Parties:</i>	SWMP Team			
<i>Tracking Measure:</i>	Track number of materials dispersed and behavioral modifications.	<i>Target completion year:</i>	2013-2018	<i>% Complete:</i>
<i>Details regarding progress:</i>				

PEO-BMP #4 – Develop activities and continue programs designed to engage individuals and groups in the SWMP.

Task #1.4.1	Continue ongoing Storm Drain Marker program.			
Responsible Parties:	Stormwater Coordinator, Venture Crew #84			
Tracking Measure:	Complete 100% of marker installation throughout the City of Rolla.	Target completion year:	2015	% Complete:
<i>Details regarding progress:</i>				
Task #1.4.2	Continue urban reforestation efforts with local volunteer groups.			
Responsible Parties:	Stormwater Coordinator			
Tracking Measure:	Plant a minimum of 50 trees per year.	Target completion year:	2013-2018	% Complete:
<i>Details regarding progress:</i>				
Task #1.4.3	Present a Storm Water Days event in collaboration with local volunteer organizations, landscapers, contractors, etc.			
Responsible Parties:	Stormwater Coordinator			
Tracking Measure:	Have an attendance of a minimum of 150 individuals, excluding presenters.	Target completion year:	2014	% Complete:
<i>Details regarding progress:</i>				
Task #1.4.4	Continue stream cleanups with local volunteer organizations.			
Responsible Parties:	Stormwater Coordinator, Parks and Recreation Director			
Tracking Measure:	Track lineal feet of streams cleaned per year.	Target completion year:	2013-2018	% Complete:
<i>Details regarding progress:</i>				
Task #1.4.5	Develop a strategy for a neighborhood based program for stormwater pollution reduction.			
Responsible Parties:	Stormwater Coordinator, Public Works Director			
Tracking Measure:	Complete development of strategy.	Target completion year:	2017	% Complete:
<i>Details regarding progress:</i>				
Task #1.4.6	Evaluate effectiveness of previous four years.			
Responsible Parties:	SWMP Team			
Tracking Measure:	Complete written evaluation of program efforts.	Target completion year:	2013-2018	% Complete:
<i>Details regarding progress:</i>				

PEO-BMP #5 - Develop formalized outreach strategy by utilizing a variety of media.

Task #1.5.1	Air stormwater pollutant ads on local cable Channel 16.			
Responsible Parties:	Stormwater Coordinator			
Tracking Measure:	Make a minimum of 8,000 impressions per year.	Target completion year:	2013-2018	% Complete:
<i>Details regarding progress:</i>				
Task #1.5.2	Develop utility bill insert to be mailed quarterly.			
Responsible Parties:	Stormwater Coordinator			
Tracking Measure:	Make a minimum of 20,000 impressions per year.	Target completion year:	2013-2018	% Complete:
<i>Details regarding progress:</i>				
Task #1.5.3	Run articles on the city's website, blogspot, and facebook page.			
Responsible Parties:	Stormwater Coordinator			
Tracking Measure:	Make a minimum of 150 impressions per year.	Target completion year:	2013-2018	% Complete:
<i>Details regarding progress:</i>				
Task #1.5.4	Fill brochure distribution kiosk with stormwater related materials.			
Responsible Parties:	Stormwater Coordinator			
Tracking Measure:	Disperse 60 brochures per year at a minimum.	Target completion year:	2013-2018	% Complete:
<i>Details regarding progress:</i>				
Task #1.5.5	Present "Mayors Talk" on stormwater topics through the local newspaper and radio stations			
Responsible Parties:	Stormwater Coordinator, Mayor			
Tracking Measure:	Make a minimum of 3 radio spots, 33,000 newspaper impressions per year.	Target completion year:	2013-2018	% Complete:
<i>Details regarding progress:</i>				
Task #1.5.6	Develop stormwater related recreational guides for target group "trail users".			
Responsible Parties:	Stormwater Coordinator			
Tracking Measure:	Make a minimum of 150 impressions per year.	Target completion year:	2014-2018	% Complete:
<i>Details regarding progress:</i>				

Task #1.5.7	Develop a public education task force consisting of local volunteers.		
Responsible Parties:	Stormwater Coordinator		
Tracking Measure:	Receive a commitment from 15 to 20 individuals to serve on committee.	Target completion year:	2015 % Complete:
Details regarding progress:			
Task #1.5.8	Develop educational programs targeting school children ages K-8		
Responsible Parties:	Stormwater Coordinator, Environmental Services Director		
Tracking Measure:	Complete 100% development of programs.	Target completion year:	2013-2015 % Complete:
Details regarding progress:			
Task #1.5.9	Install tributary signage along the 13 miles of local streams.		
Responsible Parties:	Stormwater Coordinator, Public Works Director		
Tracking Measure:	Install 50 signs at a minimum.	Target completion year:	2015 % Complete:
Details regarding progress:			
Task #1.5.10	Develop a poster program that focuses on stormwater pollution issues.		
Responsible Parties:	Stormwater Coordinator		
Tracking Measure:	Post, at a minimum, 80 posters per year.	Target completion year:	2016 % Complete:
Details regarding progress:			
Task #1.5.11	Air "After the Storm" on local cable public access channel.		
Responsible Parties:	Stormwater Coordinator		
Tracking Measure:	Make a minimum of 4,000 per year.	Target completion year:	2013-2015 % Complete:
Details regarding progress:			
Task #1.5.12	Institute an advisory committee for input on SWMP.		
Responsible Parties:	Stormwater Coordinator, Public Works Director		
Tracking Measure:	Meet a minimum of six times per year.	Target completion year:	2014 % Complete:
Details regarding progress:			
Task #1.5.13	Evaluate effectiveness of program as a whole.		
Responsible Parties:	SWMP Team		
Tracking Measure:	Complete written evaluation of program efforts.	Target completion year:	2013-2015 % Complete:
Details regarding progress:			

PEO-AR-BMP #1 – Stormwater based informational meetings

<i>Year 1 (2013-2014):</i>	No. meetings per year:		Total number in attendance:	
<i>Year 2 (2014-2015):</i>	No. meetings per year:		Total number in attendance:	
<i>Year 3 (2015-2016):</i>	No. meetings per year:		Total number in attendance:	
<i>Year 4 (2016-2017):</i>	No. meetings per year:		Total number in attendance:	
<i>Year 5 (2017-2018):</i>	No. meetings per year:		Total number in attendance:	

PEO-AR-BMP #2 – Presentations utilizing the Enviroscope watershed model.

<i>Year 1 (2013-2014):</i>	No. of presentations:		Total number in attendance:	
<i>Year 2 (2014-2015):</i>	No. of presentations:		Total number in attendance:	
<i>Year 3 (2015-2016):</i>	No. of presentations:		Total number in attendance:	
<i>Year 4 (2016-2017):</i>	No. of presentations:		Total number in attendance:	
<i>Year 5 (2017-2018):</i>	No. of presentations:		Total number in attendance:	

PEO-AR-BMP #3 – Attend and present information at local events.

<i>Year 1 (2013-2014):</i>	No. of events:		Total number in attendance:	
<i>Year 2 (2014-2015):</i>	No. of events:		Total number in attendance:	
<i>Year 3 (2015-2016):</i>	No. of events:		Total number in attendance:	
<i>Year 4 (2016-2017):</i>	No. of events:		Total number in attendance:	
<i>Year 5 (2017-2018):</i>	No. of events:		Total number in attendance:	

PEO-AR-BMP #4 – Attend and present information at local events.

<i>Year 1 (2013-2014):</i>	No. of events:		Total number in attendance:	
<i>Year 2 (2014-2015):</i>	No. of events:		Total number in attendance:	
<i>Year 3 (2015-2016):</i>	No. of events:		Total number in attendance:	
<i>Year 4 (2016-2017):</i>	No. of events:		Total number in attendance:	
<i>Year 5 (2017-2018):</i>	No. of events:		Total number in attendance:	

PEO-AR-BMP #5 – Continuation of Reforest Rolla program.

<i>Year 1 (2013-2014):</i>	No. of trees planted (spring):		No. of trees planted (fall):	
<i>Year 2 (2014-2015):</i>	No. of trees planted (spring):		No. of trees planted (fall):	
<i>Year 3 (2015-2016):</i>	No. of trees planted (spring):		No. of trees planted (fall):	
<i>Year 4 (2016-2017):</i>	No. of trees planted (spring):		No. of trees planted (fall):	
<i>Year 5 (2017-2018):</i>	No. of trees planted (spring):		No. of trees planted (fall):	

PPI-BMP #1 – Involve the public in the development and submittal of the SWMP document.

Task #1.1.1:	Make available to the public both hardcopy versions and web based electronic versions of the SWMP.		
Responsible Parties:	Stormwater Coordinator, IT Technician		
Tracking Measure:	Print and post SWMP.	Target completion year:	2013 % Complete:
<i>Details regarding progress:</i>			
Task #1.1.2:	Coordinate efforts with other government agencies located within the municipality.		
Responsible Parties:	Stormwater Coordinator, Public Works Director, Federal, State and County Officials		
Tracking Measure:	Track number of meetings and number of attendees.	Target completion year:	2013-2018 % Complete:
<i>Details regarding progress:</i>			
Task #1.1.3:	Conduct citizen awareness survey.		
Responsible Parties:	Stormwater Coordinator		
Tracking Measure:	Track number of returned surveys.	Target completion year:	2014, 2017 % Complete:
<i>Details regarding progress:</i>			
Task #1.1.4:	Develop both illegal dumping and stormwater hotlines.		
Responsible Parties:	Stormwater Coordinator, Environmental Services Director		
Tracking Measure:	Post to website and print copies for distribution. Track number of copies dispersed.	Target completion year:	2013 % Complete:
<i>Details regarding progress:</i>			
Task #1.1.5:	Evaluate the effectiveness of BMP's.		
Responsible Parties:	SWMP Team		
Tracking Measure:	Evaluate effectiveness of BMP's.	Target completion year:	2013-2018 % Complete:
<i>Details regarding progress:</i>			

PPI-BMP #2 – Develop target audiences for involvement as stakeholders in the stormwater program.

Task #1.2.1	Develop a target audience from children and young adults to become stakeholders in the stormwater program.			
Responsible Parties:	Stormwater Coordinator, Public Works Director			
Tracking Measure:	Track by number of materials dispersed/number of individuals.	Target completion year:	2015	% Complete:
<i>Details regarding progress:</i>				
Task #1.2.2	Develop a target audience from low-income neighborhoods to become stakeholders in the stormwater program.			
Responsible Parties:	Stormwater Coordinator, Public Works Director			
Tracking Measure:	Track by number of materials dispersed/number of businesses	Target completion year:	2016	% Complete:
<i>Details regarding progress:</i>				
Task #1.2.3	Develop a target audience from environmental groups, campus organizations and local consultants to become stakeholders in the stormwater program.			
Responsible Parties:	Stormwater Coordinator, Public Works Director			
Tracking Measure:	Track by number of materials dispersed/number of individuals.	Target completion year:	2014	% Complete:
<i>Details regarding progress:</i>				
Task #1.2.4	Develop a target audience from homeowners and renters, trade associations, contractors and developers to become stakeholders in the stormwater program.			
Responsible Parties:	Stormwater Coordinator, Public Works Director, Building Codes Official			
Tracking Measure:	Track by number of materials dispersed/number of homes/number of businesses.	Target completion year:	2017	% Complete:
<i>Details regarding progress:</i>				
Task #1.2.5	Develop a target audience from commercial and industrial operations to become stakeholders in the stormwater program.			
Responsible Parties:	Stormwater Coordinator, Public Works Director			
Tracking Measure:	Track by number of materials dispersed/number of businesses	Target completion year:	2013-2018	% Complete:
<i>Details regarding progress:</i>				
Task #1.2.5	Develop a target audience from government agencies to become stakeholders in the stormwater program.			
Responsible Parties:	SWMP Team			
Tracking Measure:	Track number of materials dispersed and number of agencies involved.	Target completion year:	2013-2018	% Complete:
<i>Details regarding progress:</i>				

PPI-BMP #3 - Develop and continue existing activities suitable for public involvement in the program.

Task #1.3.1	Develop a "Stormwater Steward" program and formal handbook.			
Responsible Parties:	Stormwater Coordinator, Master Naturalists			
Tracking Measure:	Track number of educational materials dispersed, meetings and attendees.	Target completion year:	2014	% Complete:
<i>Details regarding progress:</i>				
Task #1.3.2	Develop "Volunteer Water Quality Monitoring" program and formal handbook.			
Responsible Parties:	Stormwater Coordinator, Master Gardeners			
Tracking Measure:	Track number of educational materials dispersed, meetings and attendees.	Target completion year:	2015	% Complete:
<i>Details regarding progress:</i>				
Task #1.3.3	Develop citizen watch groups and formal handbooks.			
Responsible Parties:	Stormwater Coordinator, Public Works Director			
Tracking Measure:	Track number of educational materials dispersed, number of groups formed.	Target completion year:	2016	% Complete:
<i>Details regarding progress:</i>				
Task #1.3.4	Develop an "Adopt-A-Storm Drain" program and formal handbook.			
Responsible Parties:	Stormwater Coordinator			
Tracking Measure:	Track number materials dispersed, participants and drains adopted.	Target completion year:	2014	% Complete:
<i>Details regarding progress:</i>				
Task #1.3.5	Develop a Volunteer Educator program and formal handbook.			
Responsible Parties:	Stormwater Coordinator			
Tracking Measure:	Track number of materials dispersed, participants and venues.	Target completion year:	2017	% Complete:
<i>Details regarding progress:</i>				

PPI-AR-BMP #1 – Adopt-a-Street/Adopt-a-Stream program participants.

<i>Year 1 (2013-2014):</i>	No. meetings per year:		Total number in attendance:	
<i>Year 2 (2014-2015):</i>	No. meetings per year:		Total number in attendance:	
<i>Year 3 (2015-2016):</i>	No. meetings per year:		Total number in attendance:	
<i>Year 4 (2016-2017):</i>	No. meetings per year:		Total number in attendance:	
<i>Year 5 (2017-2018):</i>	No. meetings per year:		Total number in attendance:	

PPI-AR-BMP #2 – Presentations utilizing the Enviroscope watershed model.

<i>Year 1 (2013-2014):</i>	No. of presentations:		Total number in attendance:	
<i>Year 2 (2014-2015):</i>	No. of presentations:		Total number in attendance:	
<i>Year 3 (2015-2016):</i>	No. of presentations:		Total number in attendance:	
<i>Year 4 (2016-2017):</i>	No. of presentations:		Total number in attendance:	
<i>Year 5 (2017-2018):</i>	No. of presentations:		Total number in attendance:	

PPI-AR-BMP #3 – Install stainless steel storm drain markers.

<i>Year 1 (2013-2014):</i>	No. of events:		Total number in attendance:	
<i>Year 2 (2014-2015):</i>	No. of events:		Total number in attendance:	
<i>Year 3 (2015-2016):</i>	No. of events:		Total number in attendance:	
<i>Year 4 (2016-2017):</i>	No. of events:		Total number in attendance:	
<i>Year 5 (2017-2018):</i>	No. of events:		Total number in attendance:	

PPI-AR-BMP #4 – Stream Team cleanup.

<i>Year 1 (2013-2014):</i>	No. of events:		Total number in attendance:	
<i>Year 2 (2014-2015):</i>	No. of events:		Total number in attendance:	
<i>Year 3 (2015-2016):</i>	No. of events:		Total number in attendance:	
<i>Year 4 (2016-2017):</i>	No. of events:		Total number in attendance:	
<i>Year 5 (2017-2018):</i>	No. of events:		Total number in attendance:	

PPI-AR-BMP #5 – Continuation of Reforest Rolla program.

<i>Year 1 (2013-2014):</i>	No. of trees planted (spring):		No. of trees planted (fall):	
<i>Year 2 (2014-2015):</i>	No. of trees planted (spring):		No. of trees planted (fall):	
<i>Year 3 (2015-2016):</i>	No. of trees planted (spring):		No. of trees planted (fall):	
<i>Year 4 (2016-2017):</i>	No. of trees planted (spring):		No. of trees planted (fall):	
<i>Year 5 (2017-2018):</i>	No. of trees planted (spring):		No. of trees planted (fall):	

PPI-AR-BMP #5 – Riparian restoration program.

<i>Year 1 (2013-2014):</i>	No. of homeowners contacted:		No. of trees planted :	
<i>Year 2 (2014-2015):</i>	No. of homeowners contacted:		No. of trees planted :	
<i>Year 3 (2015-2016):</i>	No. of homeowners contacted:		No. of trees planted :	
<i>Year 4 (2016-2017):</i>	No. of homeowners contacted:		No. of trees planted :	
<i>Year 5 (2017-2018):</i>	No. of homeowners contacted:		No. of trees planted :	

IDDE-BMP #1 - Enhance existing City of Rolla Geographic Information System (GIS) by incorporating data pertinent to the detection and elimination of illicit discharge.

Task #1.1.1: Map historic spill data into GIS and develop update schedule to incorporate future incidents. Evaluate effectiveness at submittal of annual report.

Responsible Parties: Stormwater Coordinator, GIS Administrator, Assistant Fire Chief

Tracking Measure: Track number of spills mapped. **Target completion year:** 2014 **% Complete:**

Details regarding progress:

Task #1.1.2: Map Tier Two hazardous materials data into GIS and develop update schedule. Evaluate effectiveness at submittal of annual report.

Responsible Parties: Stormwater Coordinator, GIS Administrator, Assistant Fire Chief

Tracking Measure: Track number of businesses with Tier Two data and number mapped **Target completion year:** 2014 **% Complete:**

Details regarding progress:

Task #1.1.3: Incorporate all illicit discharge records, complaints, sso's and violations into GIS. Evaluate effectiveness at submittal of annual report.

Responsible Parties: Stormwater Coordinator, GIS Administrator, Assistant Fire Chief, Sewer Foreman

Tracking Measure: Track number of records mapped. **Target completion year:** 2015 **% Complete:**

Details regarding progress:

Task #1.1.4: Develop comprehensive coverage of illicit discharge "hot spots" based on site activity. Evaluate effectiveness at submittal of annual report.

Responsible Parties: Stormwater Coordinator, GIS Administrator

Tracking Measure: Track number of features mapped. **Target completion year:** 2016 **% Complete:**

Details regarding progress:

Task #1.1.5: Using previous year's data, identify target audiences for outreach materials. Evaluate effectiveness at submittal of annual report.

Responsible Parties: Stormwater Coordinator, GIS Administrator

Tracking Measure: Track number and type of outreach materials disbursed. **Target completion year:** 2013-2018 **% Complete:**

Details regarding progress:

IDDE-BMP #2 - Review language and effectiveness of existing ordinances prohibiting illicit discharge. Revise, amend and update as needed.

Task #1.2.1	Review "Stormwater and Flood Control" and "General Provisions" of City Ordinances. Revise, amend and update as needed. Evaluate effectiveness.			
Responsible Parties:	Stormwater Coordinator, Public Works Director, Assistant Public Works Director, City Attorney, City Administrator			
Tracking Measure:	Review by all responsible parties with amended verbiage completed.	Target completion year:	2013	% Complete:

Details regarding progress:

Task #1.2.2	Review "Sewers and Water" of City Ordinances. Revise, amend and update as needed. Evaluate effectiveness.			
Responsible Parties:	Stormwater Coordinator, Public Works Director, Assistant Public Works Director, City Attorney, City Administrator			
Tracking Measure:	Review by all responsible parties with amended verbiage completed.	Target completion year:	2014	% Complete:

Details regarding progress:

Task #1.2.3	Review "Health and Sanitation" and "Garbage, Trash and Refuse" of City Ordinances. Revise, amend and update as needed. Evaluate effectiveness.			
Responsible Parties:	Stormwater Coordinator, Public Works Director, Assistant Public Works Director, City Attorney, City Administrator			
Tracking Measure:	Review by all responsible parties with amended verbiage completed.	Target completion year:	2015	% Complete:

Details regarding progress:

Task #1.2.4	Review "Nuisances" and "Offenses" of City Ordinances. Revise, amend and update as needed. Evaluate effectiveness.			
Responsible Parties:	Stormwater Coordinator, Public Works Director, Assistant Public Works Director, City Attorney, City Administrator			
Tracking Measure:	Review by all responsible parties with amended verbiage completed.	Target completion year:	2016	% Complete:

Details regarding progress:

Task #1.2.5	Review "Industrial Development" and "Urban Renewal and Buildings" of City Ordinances. Revise, amend and update as needed. Evaluate effectiveness. Review previous five years for effectiveness.			
Responsible Parties:	Stormwater Coordinator, Public Works Director, Assistant Public Works Director, City Attorney, City Administrator			
Tracking Measure:	Review by all responsible parties with amended verbiage completed.	Target completion year:	2017	% Complete:

Details regarding progress:

IDDE-BMP #3 - Develop procedures for detecting and eliminating illicit discharge.

Task #1.3.1	(4.2.3.1.3.1) Develop procedures for locating priority areas. Evaluate effectiveness at submittal of annual report.		
Responsible Parties:	SWMP Team		
Tracking Measure:	Complete 100% of procedure development.	Target completion year:	2014 % Complete:
<i>Details regarding progress:</i>			
Task #1.3.2	(4.2.3.1.3.2) Develop procedures for tracing sources of illicit discharge. Evaluate effectiveness at submittal of annual report.		
Responsible Parties:	SWMP Team		
Tracking Measure:	Complete 100% of procedure development.	Target completion year:	2015 % Complete:
<i>Details regarding progress:</i>			
Task #1.3.3	(4.2.3.1.3.3) Develop procedures for removing sources of illicit discharge. Evaluate effectiveness at submittal of annual report.		
Responsible Parties:	SWMP Team		
Tracking Measure:	Complete 100% of procedure development.	Target completion year:	2016 % Complete:
<i>Details regarding progress:</i>			
Task #1.3.4	(4.2.3.1.3.4) Evaluate, revise and amend existing enforcement measures. Evaluate effectiveness at submittal of annual report.		
Responsible Parties:	SWMP Team		
Tracking Measure:	Complete 100% of procedure development.	Target completion year:	2014 % Complete:
<i>Details regarding progress:</i>			
Task #1.3.5	*(4.2.3.1.3.6) Procedure for evaluation and assessment of Measure 4.2.3.1.3. Evaluate effectiveness at submittal of annual report.		
Responsible Parties:	SWMP Team		
Tracking Measure:	Complete written evaluation of program efforts.	Target completion year:	2015 % Complete:
<i>Details regarding progress:</i>			

*Note: Target Effort for 4.2.3.1.3.5 shall be outlined in Minimum Control Measure 1 – Public Outreach and Education

IDDE-AR-BMP #1 - Grease trap inspections (quarterly) *attach additional sheets for inspections of establishments with repeat offenses

Year 1 (2013-2014):	No. inspected:		Date:		No. inspected:		Date:	
	No. inspected:		Date:		No. inspected:		Date:	
Year 2 (2014-2015):	No. inspected:		Date:		No. inspected:		Date:	
	No. inspected:		Date:		No. inspected:		Date:	
Year 3 (2015-2016):	No. inspected:		Date:		No. inspected:		Date:	
	No. inspected:		Date:		No. inspected:		Date:	
Year 4 (2016-2017):	No. inspected:		Date:		No. inspected:		Date:	
	No. inspected:		Date:		No. inspected:		Date:	
Year 5 (2017-2018):	No. inspected:		Date:		No. inspected:		Date:	
	No. inspected:		Date:		No. inspected:		Date:	

IDDE-AR-BMP #2 - Inspect off road sewer lines (monthly) *lineal feet of sewer line

Month	January	February	March	April	May	June	July	August	September	October	November	December
Year 1 (2013-2014):												
Year 2 (2014-2015):												
Year 3 (2015-2016):												
Year 4 (2016-2017):												
Year 5 (2017-2018):												

IDDE-AR-BMP #3 - Televis 10% (69,464 lf) of sanitary sewer lines per year (694,637 lf total)

Year 1 (2013-2014):	Lineal feet televised:		Date completed:	
Year 2 (2014-2015):	Lineal feet televised:		Date completed:	
Year 3 (2015-2016):	Lineal feet televised:		Date completed:	
Year 4 (2016-2017):	Lineal feet televised:		Date completed:	
Year 5 (2017-2018):	Lineal feet televised:		Date completed:	

IDDE-AR-BMP #4 - Sanitary sewer line cleaning (bi-annually) and lines requiring more frequent cleaning.

Year 1 (2013-2014):	No. cleaned:		No. cleaned:	
	No. of frequently cleaned lines:			
Year 2 (2014-2015):	No. cleaned:		No. cleaned:	
	No. of frequently cleaned lines:			
Year 3 (2015-2016):	No. cleaned:		No. cleaned:	
	No. of frequently cleaned lines:			
Year 4 (2016-2017):	No. cleaned:		No. cleaned:	
	No. of frequently cleaned lines:			
Year 5 (2017-2018):	No. cleaned:		No. cleaned:	
	No. of frequently cleaned lines:			

IDDE-AR-BMP #5 - Staff training on illicit discharge.

Year 1 (2013-2014):	Date:	Number in attendance:	Training by:
	Training topic:		
Year 2 (2014-2015):	Date:	Number in attendance:	Training by:
	Training topic:		
Year 3 (2015-2016):	Date:	Number in attendance:	Training by:
	Training topic:		
Year 4 (2016-2017):	Date:	Number in attendance:	Training by:
	Training topic:		
Year 5 (2017-2018):	Date:	Number in attendance:	Training by:
	Training topic:		

IDDE-AR-BMP #6 - Reported trash nuisances.

Year 1 (2013-2014):	Number per annum:	See attached spreadsheet.
Year 2 (2014-2015):	Number per annum:	See attached spreadsheet.
Year 3 (2015-2016):	Number per annum:	See attached spreadsheet.
Year 4 (2016-2017):	Number per annum:	See attached spreadsheet.
Year 5 (2017-2018):	Number per annum:	See attached spreadsheet.

CR-BMP #1 - Review regulatory mechanism to ensure its effectiveness in preventing construction site runoff.

TASK #1.1.1	Review existing ordinance for effectiveness. Select sections to be revised. Determine sections to be added.		
<i>Responsible Parties:</i>	Stormwater Coordinator, Public Works Director, Assistant Public Works Director, Public Works staff		
<i>Tracking Measure:</i>	Track changes made to ordinance.	<i>Target completion year:</i>	2014 % Complete:
<i>Details regarding progress:</i>			
TASK #1.1.2	Review sanctions and enforcement escalation procedures. Revise ordinance to reflect new, more rigorous guidelines.		
<i>Responsible Parties:</i>	Stormwater Coordinator, Public Works Director, Assistant Public Works Director, Public Works staff, City Attorney		
<i>Tracking Measure:</i>	Track changes made to ordinance.	<i>Target completion year:</i>	2014 % Complete:
<i>Details regarding progress:</i>			
TASK #1.1.3	Develop ordinance regulating construction site runoff from small construction sites and sites less than one acre in size.		
<i>Responsible Parties:</i>	Stormwater Coordinator, Public Works Director, Assistant Public Works Director, Building Codes Administrator, Public Works staff		
<i>Tracking Measure:</i>	Track changes made to ordinance.	<i>Target completion year:</i>	2014 % Complete:
<i>Details regarding progress:</i>			
TASK #1.1.4	Develop sanctions and enforcement escalation procedures for small construction sites and sites less than one acre in size.		
<i>Responsible Parties:</i>	Stormwater Coordinator, Public Works Director, Assistant Public Works Director, Building Codes Administrator, Public Works staff, City Attorney		
<i>Tracking Measure:</i>	Track changes made to ordinance.	<i>Target completion year:</i>	2014 % Complete:
<i>Details regarding progress:</i>			
TASK #1.1.5	Evaluate the effectiveness of the ordinance and changes made to the regulatory mechanism. Revise as needed.		
<i>Responsible Parties:</i>	SWMP Team		
<i>Tracking Measure:</i>	Track changes made to BMP to increase effectiveness.	<i>Target completion year:</i>	2013-2018 % Complete:
<i>Details regarding progress:</i>			

CR-BMP #2 - Enhance requirements for the control of construction-site waste.

TASK #1.2.1	Review existing ordinance for measures and sanctions controlling construction-site waste. Revise, amend and update as needed.			
<i>Responsible Parties:</i>	Stormwater Coordinator, Public Works Director			
<i>Tracking Measure:</i>	Track changes made to ordinance.	<i>Target completion year:</i>	2014	<i>% Complete:</i>
<i>Details regarding progress:</i>				
TASK #1.2.2	Review existing BMP manual for standards for the control of construction-site waste. Revise, update and disperse as needed.			
<i>Responsible Parties:</i>	Stormwater Coordinator			
<i>Tracking Measure:</i>	Track changes made to BMP manual.	<i>Target completion year:</i>	2014	<i>% Complete:</i>
<i>Details regarding progress:</i>				
TASK #1.2.3	Develop BMP brochure for the control of construction-site waste on small construction sites.			
<i>Responsible Parties:</i>	Stormwater Coordinator			
<i>Tracking Measure:</i>	Track development of BMP brochure for construction-site waste.	<i>Target completion year:</i>	2014	<i>% Complete:</i>
<i>Details regarding progress:</i>				
TASK #1.2.4	Disperse BMP brochure to contractors and developers through Community Development Department as part of building permit process.			
<i>Responsible Parties:</i>	Stormwater Coordinator, Public Works Director, Assistant Public Works Director, Building Codes Administrator			
<i>Tracking Measure:</i>	Track number of brochures dispersed with building permits.	<i>Target completion year:</i>	2014	<i>% Complete:</i>
<i>Details regarding progress:</i>				
TASK #1.2.2	Evaluate the effectiveness of the ordinance and BMP brochure. Revise as needed.			
<i>Responsible Parties:</i>	SWMP Team			
<i>Tracking Measure:</i>	Track effectiveness of BMP by monitoring violations.	<i>Target completion year:</i>	2015	<i>% Complete:</i>
<i>Details regarding progress:</i>				

CR-BMP #3 - Develop formalized pre-construction site plan review process.

TASK #1.3.1	Review existing Development Review Committee procedures for pre-development/construction site plan review. Amend as needed.			
Responsible Parties:	Stormwater Coordinator, Public Works Director, Assistant Public Works Director, Community Development Director, Public Works staff			
Tracking Measure:	Track amendments made to existing review procedures.	Target completion year:	2015	% Complete:
<i>Details regarding progress:</i>				
TASK #1.3.2	Formalize pre-construction site plan review procedure for Land Disturbance Permit issuance. Amend as needed.			
Responsible Parties:	Stormwater Coordinator, Public Works Director, Assistant Public Works Director, Community Development Director, Public Works staff			
Tracking Measure:	Track development of formalized procedure.	Target completion year:	2015	% Complete:
<i>Details regarding progress:</i>				
TASK #1.3.2	Train Building Codes and Community Development personnel in the review of small construction site plans for potential water quality impacts.			
Responsible Parties:	Stormwater Coordinator, Assistant Public Works Director			
Tracking Measure:	Track training sessions and number of participants.	Target completion year:	2014	% Complete:
<i>Details regarding progress:</i>				
TASK #1.3.3	Investigate feasibility of contractor/developer requisite certification for land disturbance application.			
Responsible Parties:	Stormwater Coordinator, Public Works Director, Assistant Public Works Director, Public Works staff			
Tracking Measure:	Track meetings to discuss BMP feasibility.	Target completion year:	2016	% Complete:
<i>Details regarding progress:</i>				

CR-BMP #4 - Develop "Pollution Hotline" flyer to be dispersed through all city departments.

TASK #1.4.1	Develop "Pollution Hotline" flyer. Disperse through each city department and city functions.			
<i>Responsible Parties:</i>	Stormwater Coordinator			
<i>Tracking Measure:</i>	Track number of flyers distributed.	<i>Target completion year:</i>	2014	<i>% Complete:</i>
<i>Details regarding progress:</i>				
TASK #1.4.2	Develop formalized enforcement procedure for stormwater pollution complaints from the public.			
<i>Responsible Parties:</i>	Stormwater Coordinator			
<i>Tracking Measure:</i>	Track development of formalized enforcement document.	<i>Target completion year:</i>	2015	<i>% Complete:</i>
<i>Details regarding progress:</i>				
TASK #1.4.3	Distribute flyer through various media, including blog spot, city website, utility mailers, television and radio.			
<i>Responsible Parties:</i>	Stormwater Coordinator, Communications Director			
<i>Tracking Measure:</i>	Track number of flyers distributed per media type.	<i>Target completion year:</i>	2013-2018	<i>% Complete:</i>
<i>Details regarding progress:</i>				
TASK #1.4.4	Evaluate effectiveness of BMP.			
<i>Responsible Parties:</i>	SWMP Team			
<i>Tracking Measure:</i>	Track number of pollution complaints received.	<i>Target completion year:</i>	2013-2018	<i>% Complete:</i>
<i>Details regarding progress:</i>				

CR-BMP #1 - Review regulatory mechanism to ensure its effectiveness in preventing construction site runoff.

TASK #1.1.1	Review existing ordinance for effectiveness. Select sections to be revised. Determine sections to be added.			
<i>Responsible Parties:</i>	Stormwater Coordinator, Public Works Director, Assistant Public Works Director, Public Works staff			
<i>Tracking Measure:</i>	Track changes made to ordinance.	<i>Target completion year:</i>	2014	<i>% Complete:</i>
<i>Details regarding progress:</i>				
TASK #1.1.2	Review sanctions and enforcement escalation procedures. Revise ordinance to reflect new, more rigorous guidelines.			
<i>Responsible Parties:</i>	Stormwater Coordinator, Public Works Director, Assistant Public Works Director, Public Works staff, City Attorney			
<i>Tracking Measure:</i>	Track changes made to ordinance.	<i>Target completion year:</i>	2014	<i>% Complete:</i>
<i>Details regarding progress:</i>				
TASK #1.1.3	Develop ordinance regulating construction site runoff from small construction sites and sites less than one acre in size.			
<i>Responsible Parties:</i>	Stormwater Coordinator, Public Works Director, Assistant Public Works Director, Building Codes Administrator, Public Works staff			
<i>Tracking Measure:</i>	Track changes made to ordinance.	<i>Target completion year:</i>	2014	<i>% Complete:</i>
<i>Details regarding progress:</i>				
TASK #1.1.4	Develop sanctions and enforcement escalation procedures for small construction sites and sites less than one acre in size.			
<i>Responsible Parties:</i>	Stormwater Coordinator, Public Works Director, Assistant Public Works Director, Building Codes Administrator, Public Works staff, City Attorney			
<i>Tracking Measure:</i>	Track changes made to ordinance.	<i>Target completion year:</i>	2014	<i>% Complete:</i>
<i>Details regarding progress:</i>				
TASK #1.1.5	Evaluate the effectiveness of the ordinance and changes made to the regulatory mechanism. Revise as needed.			
<i>Responsible Parties:</i>	SWMP Team			
<i>Tracking Measure:</i>	Track changes made to BMP to increase effectiveness.	<i>Target completion year:</i>	2013-2018	<i>% Complete:</i>
<i>Details regarding progress:</i>				

CR-BMP #2 - Enhance requirements for the control of construction-site waste.

TASK #1.2.1	Review existing ordinance for measures and sanctions controlling construction-site waste. Revise, amend and update as needed.			
<i>Responsible Parties:</i>	Stormwater Coordinator, Public Works Director			
<i>Tracking Measure:</i>	Track changes made to ordinance.	<i>Target completion year:</i>	2014	<i>% Complete:</i>
<i>Details regarding progress:</i>				
TASK #1.2.2	Review existing BMP manual for standards for the control of construction-site waste. Revise, update and disperse as needed.			
<i>Responsible Parties:</i>	Stormwater Coordinator			
<i>Tracking Measure:</i>	Track changes made to BMP manual.	<i>Target completion year:</i>	2014	<i>% Complete:</i>
<i>Details regarding progress:</i>				
TASK #1.2.3	Develop BMP brochure for the control of construction-site waste on small construction sites.			
<i>Responsible Parties:</i>	Stormwater Coordinator			
<i>Tracking Measure:</i>	Track development of BMP brochure for construction-site waste.	<i>Target completion year:</i>	2014	<i>% Complete:</i>
<i>Details regarding progress:</i>				
TASK #1.2.4	Disperse BMP brochure to contractors and developers through Community Development Department as part of building permit process.			
<i>Responsible Parties:</i>	Stormwater Coordinator, Public Works Director, Assistant Public Works Director, Building Codes Administrator			
<i>Tracking Measure:</i>	Track number of brochures dispersed with building permits.	<i>Target completion year:</i>	2014	<i>% Complete:</i>
<i>Details regarding progress:</i>				
TASK #1.2.2	Evaluate the effectiveness of the ordinance and BMP brochure. Revise as needed.			
<i>Responsible Parties:</i>	SWMP Team			
<i>Tracking Measure:</i>	Track effectiveness of BMP by monitoring violations.	<i>Target completion year:</i>	2015	<i>% Complete:</i>
<i>Details regarding progress:</i>				

CR-BMP #3 - Develop formalized pre-construction site plan review process.

TASK #1.3.1	Review existing Development Review Committee procedures for pre-development/construction site plan review. Amend as needed.			
Responsible Parties:	Stormwater Coordinator, Public Works Director, Assistant Public Works Director, Community Development Director, Public Works staff			
Tracking Measure:	Track amendments made to existing review procedures.	Target completion year:	2015	% Complete:
<i>Details regarding progress:</i>				
TASK #1.3.2	Formalize pre-construction site plan review procedure for Land Disturbance Permit issuance. Amend as needed.			
Responsible Parties:	Stormwater Coordinator, Public Works Director, Assistant Public Works Director, Community Development Director, Public Works staff			
Tracking Measure:	Track development of formalized procedure.	Target completion year:	2015	% Complete:
<i>Details regarding progress:</i>				
TASK #1.3.2	Train Building Codes and Community Development personnel in the review of small construction site plans for potential water quality impacts.			
Responsible Parties:	Stormwater Coordinator, Assistant Public Works Director			
Tracking Measure:	Track training sessions and number of participants.	Target completion year:	2014	% Complete:
<i>Details regarding progress:</i>				
TASK #1.3.3	Investigate feasibility of contractor/developer requisite certification for land disturbance application.			
Responsible Parties:	Stormwater Coordinator, Public Works Director, Assistant Public Works Director, Public Works staff			
Tracking Measure:	Track meetings to discuss BMP feasibility.	Target completion year:	2016	% Complete:
<i>Details regarding progress:</i>				

CR-BMP #4 - Develop "Pollution Hotline" flyer to be dispersed through all city departments.

TASK #1.4.1	Develop "Pollution Hotline" flyer. Disperse through each city department and city functions.			
<i>Responsible Parties:</i>	Stormwater Coordinator			
<i>Tracking Measure:</i>	Track number of flyers distributed.	<i>Target completion year:</i>	2014	<i>% Complete:</i>
<i>Details regarding progress:</i>				
TASK #1.4.2	Develop formalized enforcement procedure for stormwater pollution complaints from the public.			
<i>Responsible Parties:</i>	Stormwater Coordinator			
<i>Tracking Measure:</i>	Track development of formalized enforcement document.	<i>Target completion year:</i>	2015	<i>% Complete:</i>
<i>Details regarding progress:</i>				
TASK #1.4.3	Distribute flyer through various media, including blog spot, city website, utility mailers, television and radio.			
<i>Responsible Parties:</i>	Stormwater Coordinator, Communications Director			
<i>Tracking Measure:</i>	Track number of flyers distributed per media type.	<i>Target completion year:</i>	2013-2018	<i>% Complete:</i>
<i>Details regarding progress:</i>				
TASK #1.4.4	Evaluate effectiveness of BMP.			
<i>Responsible Parties:</i>	SWMP Team			
<i>Tracking Measure:</i>	Track number of pollution complaints received.	<i>Target completion year:</i>	2013-2018	<i>% Complete:</i>
<i>Details regarding progress:</i>				

CR-BMP #5 - Enhance construction site inspection and enforcement control measures.

TASK #1.5.1	Review existing inspection forms, prioritization methods and construction-site inspection schedules for effectiveness.			
<i>Responsible Parties:</i>	Stormwater Coordinator, Public Works Director, Assistant Public Works Director, Public Works staff			
<i>Tracking Measure:</i>	Track changes made to inspection form.	<i>Target completion year:</i>	2014	<i>% Complete:</i>
<i>Details regarding progress:</i>				
TASK #1.5.2	Update BMP manual with better methods of runoff control in areas of concentrated flow.			
<i>Responsible Parties:</i>	Stormwater Coordinator, Public Works staff			
<i>Tracking Measure:</i>	Track various changes made to manual.	<i>Target completion year:</i>	2015	<i>% Complete:</i>
<i>Details regarding progress:</i>				
TASK #1.5.3	Develop inspection form to be used when conducting small construction site inspections.			
<i>Responsible Parties:</i>	Stormwater Coordinator, Building Codes Administrator			
<i>Tracking Measure:</i>	Track development of inspection form.	<i>Target completion year:</i>	2014	<i>% Complete:</i>
<i>Details regarding progress:</i>				
TASK #1.5.4	Develop informational letter for mass mailing to contractors/developers detailing inspection and enforcement procedures for small construction sites.			
<i>Responsible Parties:</i>	Stormwater Coordinator			
<i>Tracking Measure:</i>	Track number of letters mailed.	<i>Target completion year:</i>	2014	<i>% Complete:</i>
<i>Details regarding progress:</i>				
TASK #1.5.5	Establish local supplier of erosion control materials to assist contractors/developers in compliance efforts.			
<i>Responsible Parties:</i>	Stormwater Coordinator			
<i>Tracking Measure:</i>	Track number of new establishments supplying material .	<i>Target completion year:</i>	2016	<i>% Complete:</i>
<i>Details regarding progress:</i>				

CR-BMP #6 - Enhance construction site inspection and enforcement control measures.

TASK #1.6.1	Develop formal manual outlining sanction and enforcement mechanisms for non-compliance on large and small construction sites.			
<i>Responsible Parties:</i>	Stormwater Coordinator			
<i>Tracking Measure:</i>	Track development of manual.	<i>Target completion year:</i>	2016	<i>% Complete:</i>
<i>Details regarding progress:</i>				

CR-AR-BMP #1 - Municipal construction land disturbance inspections.

Year 1 (2013-2014):	Number of sites per annum:	Number of sites over 1 acre:	Number of inspections conducted:
	Dates quarterly reports submitted to DNR:		
Year 2 (2014-2015):	Number of sites per annum:	Number of sites over 1 acre:	Number of inspections conducted:
	Dates quarterly reports submitted to DNR:		
Year 3 (2015-2016):	Number of sites per annum:	Number of sites over 1 acre:	Number of inspections conducted:
	Dates quarterly reports submitted to DNR:		
Year 4 (2016-2017):	Number of sites per annum:	Number of sites over 1 acre:	Number of inspections conducted:
	Dates quarterly reports submitted to DNR:		
Year 5 (2017-2018):	Number of sites per annum:	Number of sites over 1 acre:	Number of inspections conducted:
	Dates quarterly reports submitted to DNR:		

CR-AR-BMP #2 – Land disturbance inspections for construction sites one acre and over.

Year 1 (2013-2014):	Number of sites per annum:	Number of inspections conducted:	Number of rainfall event inspections:
	Number of prioritized sites:	Frequency of inspections for prioritized sites:	
	Number of violation letters:	Number of "stop work" orders:	Amount of fines collected:
Year 2 (2014-2015):	Number of sites per annum:	Number of inspections conducted:	Number of rainfall event inspections:
	Number of prioritized sites:	Frequency of inspections for prioritized sites:	
	Number of violation letters:	Number of "stop work" orders:	Amount of fines collected:
Year 3 (2015-2016):	Number of sites per annum:	Number of inspections conducted:	Number of rainfall event inspections:
	Number of prioritized sites:	Frequency of inspections for prioritized sites:	
	Number of violation letters:	Number of "stop work" orders:	Amount of fines collected:
Year 4 (2016-2017):	Number of sites per annum:	Number of inspections conducted:	Number of rainfall event inspections:
	Number of prioritized sites:	Frequency of inspections for prioritized sites:	
	Number of violation letters:	Number of "stop work" orders:	Amount of fines collected:
Year 5 (2017-2018):	Number of sites per annum:	Number of inspections conducted:	Number of rainfall event inspections:
	Number of prioritized sites:	Frequency of inspections for prioritized sites:	
	Number of violation letters:	Number of "stop work" orders:	Amount of fines collected:

CR-AR-BMP #3 – Issuance of Land Disturbance Permits.

Year 1 (2013-2014):	Number of permits issued:		Amount of fees collected:	
Year 2 (2014-2015):	Number of permits issued:		Amount of fees collected:	
Year 3 (2015-2016):	Number of permits issued:		Amount of fees collected:	
Year 4 (2016-2017):	Number of permits issued:		Amount of fees collected:	
Year 5 (2017-2018):	Number of permits issued:		Amount of fees collected:	

CR-AR-BMP #4 – Runoff control inspections for small construction sites less than one acre.

Year 1 (2013-2014):	Number of inspections:		Number of violations:		Number call backs:		Number of "stop work" orders:	
Year 2 (2014-2015):	Number of inspections:		Number of violations:		Number call backs:		Number of "stop work" orders:	
Year 3 (2015-2016):	Number of inspections:		Number of violations:		Number call backs:		Number of "stop work" orders:	
Year 4 (2016-2017):	Number of inspections:		Number of violations:		Number call backs:		Number of "stop work" orders:	
Year 5 (2017-2018):	Number of inspections:		Number of violations:		Number call backs:		Number of "stop work" orders:	

CR-AR-BMP #5 – Construction site runoff control training for municipal employees.

Year 1 (2013-2014):	Training method:		Name of training material:		Date:		Number of attendees:	
Year 2 (2014-2015):	Training method:		Name of training material:		Date:		Number of attendees:	
Year 3 (2015-2016):	Training method:		Name of training material:		Date:		Number of attendees:	
Year 4 (2016-2017):	Training method:		Name of training material:		Date:		Number of attendees:	
Year 5 (2017-2018):	Training method:		Name of training material:		Date:		Number of attendees:	

- Add more lines if required.

CR-AR-BMP #6 – Training of contractor/developer during Land Disturbance Permit application process (quarterly).

Year 1 (2013-2014):	Number trained 1 st ¼ :		Number trained 2 nd ¼ :		Number trained 3 rd ¼ :		Number trained 4 th ¼ :	
Year 2 (2014-2015):	Number trained 1 st ¼ :		Number trained 2 nd ¼ :		Number trained 3 rd ¼ :		Number trained 4 th ¼ :	
Year 3 (2015-2016):	Number trained 1 st ¼ :		Number trained 2 nd ¼ :		Number trained 3 rd ¼ :		Number trained 4 th ¼ :	
Year 4 (2016-2017):	Number trained 1 st ¼ :		Number trained 2 nd ¼ :		Number trained 3 rd ¼ :		Number trained 4 th ¼ :	
Year 5 (2017-2018):	Number trained 1 st ¼ :		Number trained 2 nd ¼ :		Number trained 3 rd ¼ :		Number trained 4 th ¼ :	

CR-AR-BMP #7 – Review of Construction Site Runoff Control program by Storm Water Management Plan team.

Year 1 (2013-2014):	Date:		Number in attendance:		Number trained 3 rd ¼ :		Number trained 4 th ¼ :	
Year 2 (2014-2015):	Date:		Number in attendance:		Number trained 3 rd ¼ :		Number trained 4 th ¼ :	
Year 3 (2015-2016):	Date:		Number in attendance:		Number trained 3 rd ¼ :		Number trained 4 th ¼ :	
Year 4 (2016-2017):	Date:		Number in attendance:		Number trained 3 rd ¼ :		Number trained 4 th ¼ :	
Year 5 (2017-2018):	Date:		Number in attendance:		Number trained 3 rd ¼ :		Number trained 4 th ¼ :	

PCRC-BMP #1 – Develop formal strategy for development and implementation of BMPs in new and existing development.

TASK #1.1.1	Review existing practices for use of BMPs in new development.			
<i>Responsible Parties:</i>	Stormwater Coordinator, Public Works Director, Community Development Director			
<i>Tracking Measure:</i>	Complete 100% of review.	<i>Target completion year:</i>	2015	<i>% Complete:</i>
<i>Details regarding progress:</i>				
TASK #1.1.2	Review existing practices for use of BMPs in existing development and redevelopment.			
<i>Responsible Parties:</i>	Stormwater Coordinator, Public Works Director, Community Development Director			
<i>Tracking Measure:</i>	Complete 100% of review.	<i>Target completion year:</i>	2016	<i>% Complete:</i>
<i>Details regarding progress:</i>				
TASK #1.1.3	Develop formal strategy for use of BMPs in new development.			
<i>Responsible Parties:</i>	Stormwater Coordinator, Public Works Director, Community Development Director			
<i>Tracking Measure:</i>	Complete 100% of strategy development.	<i>Target completion year:</i>	2015	<i>% Complete:</i>
<i>Details regarding progress:</i>				
TASK #1.1.4	Develop formal strategy for use of BMPs in existing development and redevelopment.			
<i>Responsible Parties:</i>	Stormwater Coordinator, Public Works Director, Community Development Director			
<i>Tracking Measure:</i>	Complete 100% of strategy development.	<i>Target completion year:</i>	2016	<i>% Complete:</i>
<i>Details regarding progress:</i>				

PCRC-BMP #2 – Review and revise existing ordinance to address post construction runoff from new development and redevelopment.

TASK #1.2.1	Review and revise existing ordinance to address post construction runoff from new development and redevelopment.			
<i>Responsible Parties:</i>	Stormwater Coordinator, Public Works Director, Community Development Director			
<i>Tracking Measure:</i>	Codify revisions to existing ordinance.	<i>Target completion year:</i>	2014	<i>% Complete:</i>
<i>Details regarding progress:</i>				

PCRC-BMP #3 - Develop a plan to ensure adequate long-term operation and maintenance of BMPs.

TASK #1.3.1	Inventory existing structural and non-structural BMPs and develop a GIS based coverage.			
<i>Responsible Parties:</i>	Stormwater Coordinator, GIS Administrator			
<i>Tracking Measure:</i>	Track number of features mapped.	<i>Target completion year:</i>	2014	<i>% Complete:</i>
<i>Details regarding progress:</i>				
TASK #1.3.2	Develop formal inspection schedule for existing structural and non-structural BMPs. Include any private entities involved.			
<i>Responsible Parties:</i>	Stormwater Coordinator, Public Works Director, GIS Administrator, Street Superintendent			
<i>Tracking Measure:</i>	Complete inspection form.	<i>Target completion year:</i>	2015	<i>% Complete:</i>
<i>Details regarding progress:</i>				
TASK #1.3.2	Develop formal maintenance schedule for existing structural and non-structural BMPs. Include any private entities involved.			
<i>Responsible Parties:</i>	Stormwater Coordinator, Public Works Director, GIS Administrator, Street Superintendent			
<i>Tracking Measure:</i>	Complete formal written maintenance schedule.	<i>Target completion year:</i>	2015	<i>% Complete:</i>
<i>Details regarding progress:</i>				
TASK #1.3.3	Evaluate past effectiveness of existing inspection and maintenance schedules.			
<i>Responsible Parties:</i>	SWMP Team			
<i>Tracking Measure:</i>	Complete 100% of evaluation.	<i>Target completion year:</i>	2013-2018	<i>% Complete:</i>
<i>Details regarding progress:</i>				

PCRC-BMP #4 – Specify priority areas for use of program BMPs.

TASK #1.4.1	Develop priority areas for the use of structural and non-structural BMPs.			
<i>Responsible Parties:</i>	Stormwater Coordinator			
<i>Tracking Measure:</i>	Track number and acreage of priority areas.	<i>Target completion year:</i>	2014	<i>% Complete:</i>
<i>Details regarding progress:</i>				

PCRC-BMP #5 – Educate developers and the public about project designs that minimize water quality impacts.

TASK #1.5.1	Develop and implement a schedule to educate developers and contractors about low-impact project design.			
<i>Responsible Parties:</i>	Stormwater Coordinator			
<i>Tracking Measure:</i>	Track number of training sessions per year (minimum one per year).	<i>Target completion year:</i>	2015	<i>% Complete:</i>
<i>Details regarding progress:</i>				
TASK #1.5.2	Develop and implement a schedule to educate the public about low-impact project design.			
<i>Responsible Parties:</i>	Stormwater Coordinator			
<i>Tracking Measure:</i>	Track number of training sessions per year (minimum one per year).	<i>Target completion year:</i>	2016	<i>% Complete:</i>
<i>Details regarding progress:</i>				
TASK #1.5.3	Explore incentives for developers, contractors and homeowners for the use of low-impact BMPs.			
<i>Responsible Parties:</i>	Stormwater Coordinator, Building Codes Administrator			
<i>Tracking Measure:</i>	Complete formal written document presenting findings.	<i>Target completion year:</i>	2015	<i>% Complete:</i>
<i>Details regarding progress:</i>				

PCRC-BMP #6 – Develop formal manuals targeting structural BMPs in new development and redevelopment.

TASK #1.6.1	Design and implement formal manual targeting structural BMPs.			
<i>Responsible Parties:</i>	Stormwater Coordinator, Public Works Director, Assistant Public Works Director, Public Works staff			
<i>Tracking Measure:</i>	Complete formal written manual.	<i>Target completion year:</i>	2016	<i>% Complete:</i>
<i>Details regarding progress:</i>				
TASK #1.6.2	Design and implement formal manual targeting structural BMPs specifically for redevelopment.			
<i>Responsible Parties:</i>	Stormwater Coordinator			
<i>Tracking Measure:</i>	Complete formal written manual.	<i>Target completion year:</i>	2017	<i>% Complete:</i>
<i>Details regarding progress:</i>				

PCRC AR-BMP #1 – Review all incoming subdivision plats and re-plats.

Year 1 (2013-2014):	Number of plats reviewed:		Number of re-plats reviewed:	
Year 2 (2014-2015):	Number of plats reviewed:		Number of re-plats reviewed:	
Year 3 (2015-2016):	Number of plats reviewed:		Number of re-plats reviewed:	
Year 4 (2016-2017):	Number of plats reviewed:		Number of re-plats reviewed:	
Year 5 (2017-2018):	Number of plats reviewed:		Number of re-plats reviewed:	

PCRC AR-BMP #2 – Acquisition of park land, open space and stream buffers.

Year 1 (2013-2014):	Acres of park land, open space, or stream buffer purchased:	
Year 2 (2014-2015):	Acres of park land, open space, or stream buffer purchased:	
Year 3 (2015-2016):	Acres of park land, open space, or stream buffer purchased:	
Year 4 (2016-2017):	Acres of park land, open space, or stream buffer purchased:	
Year 5 (2017-2018):	Acres of park land, open space, or stream buffer purchased:	

PCRC AR-BMP #3 – Installation of low-impact structural BMPs.

Year 1 (2013-2014):	Number of low-impact structural BMPs installed:	
Year 2 (2014-2015):	Number of low-impact structural BMPs installed:	
Year 3 (2015-2016):	Number of low-impact structural BMPs installed:	
Year 4 (2016-2017):	Number of low-impact structural BMPs installed:	
Year 5 (2017-2018):	Number of low-impact structural BMPs installed:	

PCRC AR-BMP #3 – Installation of low-impact non-structural BMPs.

Year 1 (2013-2014):	Number of low-impact non-structural BMPs installed:	
Year 2 (2014-2015):	Number of low-impact non-structural BMPs installed:	
Year 3 (2015-2016):	Number of low-impact non-structural BMPs installed:	
Year 4 (2016-2017):	Number of low-impact non-structural BMPs installed:	
Year 5 (2017-2018):	Number of low-impact non-structural BMPs installed:	

PCRC AR-BMP #4 - Staff training on post construction runoff control and low impact development methods.

Year 1 (2013-2014):	Date:		Number in attendance:		Training by:	
	Training topic:					
Year 2 (2014-2015):	Date:		Number in attendance:		Training by:	
	Training topic:					
Year 3 (2015-2016):	Date:		Number in attendance:		Training by:	
	Training topic:					
Year 4 (2016-2017):	Date:		Number in attendance:		Training by:	
	Training topic:					
Year 5 (2017-2018):	Date:		Number in attendance:		Training by:	
	Training topic:					

PCRC AR-BMP #5 – Continuation of Reforest Rolla program.

Year 1 (2013-2014):	No. of trees planted (spring):		No. of trees planted (fall):	
Year 2 (2014-2015):	No. of trees planted (spring):		No. of trees planted (fall):	
Year 3 (2015-2016):	No. of trees planted (spring):		No. of trees planted (fall):	
Year 4 (2016-2017):	No. of trees planted (spring):		No. of trees planted (fall):	
Year 5 (2017-2018):	No. of trees planted (spring):		No. of trees planted (fall):	

PPMO-BMP #1 – Develop formal manual containing information for all municipal operations and maintenance impacted by NPDES permit.

TASK #1.1.1	Inventory all existing municipal operations, to include franchise utilities. Develop manual containing gathered information.		
Responsible Parties:	Stormwater Coordinator, Public Works mapping staff		
Tracking Measure:	Track number of facilities documented.	Target completion year:	2014
Details regarding progress:			
TASK #1.1.2	Inventory all existing municipal parking facilities. Add to existing manual containing municipal operations data.		
Responsible Parties:	Stormwater Coordinator, Public Works mapping staff		
Tracking Measure:	Track number of facilities documented.	Target completion year:	2015
Details regarding progress:			
TASK #1.1.5	Evaluate the effectiveness of the BMP and revise as needed.		
Responsible Parties:	SWMP Team		
Tracking Measure:	Complete written evaluation of program efforts.	Target completion year:	2013-2018
Details regarding progress:			

PPMO-BMP #2 – Develop centralized formal maintenance and inspection manual.

TASK #1.2.1	Inventory existing municipal activities requiring maintenance and inspections.		
Responsible Parties:	Stormwater Coordinator, Public Works Director, Assistant Public Works Director, Street Superintendent, Sewer Foreman		
Tracking Measure:	Track number of activities documented.	Target completion year:	2015
Details regarding progress:			
TASK #1.2.2	Develop and implement formal storm sewer facility operations and maintenance manual.		
Responsible Parties:	Stormwater Coordinator, Public Works Director, Assistant Public Works Director, Street Superintendent, Sewer Foreman		
Tracking Measure:	Complete 100% of formal O&M manual.	Target completion year:	2016
Details regarding progress:			
TASK #1.2.3	Develop and implement formal inflow and infiltration inspection and repair schedule as it relates to the SWMP.		
Responsible Parties:	Stormwater Coordinator, Public Works Director, Assistant Public Works Director, Street Superintendent, Sewer Foreman		
Tracking Measure:	Document number of repairs and inspections made.	Target completion year:	2016

<i>Details regarding progress:</i>				
TASK #1.2.4	Develop and implement formal spill prevention and control manual for municipal operations.			
<i>Responsible Parties:</i>	Stormwater Coordinator, Public Works Director, Assistant Public Works Director, Building Codes Administrator, Fire and Parks Departments			
<i>Tracking Measure:</i>	Complete 100% of formal document.	<i>Target completion year:</i>	2014	<i>% Complete:</i>
<i>Details regarding progress:</i>				
TASK #1.2.5	Develop and implement formal operations and maintenance manual for Parks and Recreation.			
<i>Responsible Parties:</i>	Stormwater Coordinator, Public Works Director, Assistant Public Works Director, Parks Department representatives			
<i>Tracking Measure:</i>	Complete 100% of formal O&M manual.	<i>Target completion year:</i>	2015	<i>% Complete:</i>
<i>Details regarding progress:</i>				
TASK #1.2.6	Evaluate the effectiveness of the BMP and revise as needed.			
<i>Responsible Parties:</i>	Stormwater Coordinator, Public Works Director, Assistant Public Works Director, Building Codes Administrator, Fire and Parks Departments			
<i>Tracking Measure:</i>	Complete written evaluation of program efforts.	<i>Target completion year:</i>	2013-2018	<i>% Complete:</i>
<i>Details regarding progress:</i>				

PPMO-BMP #3 - Develop SWPPP for municipal operations infrastructure.

TASK #1.3.1	Develop and implement SWPPPs for all municipal operations.			
<i>Responsible Parties:</i>	SWMP Team			
<i>Tracking Measure:</i>	Document number of SWPPPs developed.	<i>Target completion year:</i>	2015	<i>% Complete:</i>
<i>Details regarding progress:</i>				
TASK #1.3.2	Develop and implement SWPPPs for municipal parking facilities.			
<i>Responsible Parties:</i>	Stormwater Coordinator, Public Works Director, Assistant Public Works Director			
<i>Tracking Measure:</i>	Document number of SWPPPs developed.	<i>Target completion year:</i>	2016	<i>% Complete:</i>
<i>Details regarding progress:</i>				
TASK #1.3.2	Train departmental representatives in the implementation and management of their respective SWPPP.			

<i>Responsible Parties:</i>	SWMP Team				
<i>Tracking Measure:</i>	Track number of training sessions and number of participants.	<i>Target completion year:</i>	2016	<i>% Complete:</i>	
<i>Details regarding progress:</i>					
TASK #1.3.3	Partner with Rolla Municipal Utilities in developing a SWPPP for use in daily activities.				
<i>Responsible Parties:</i>	Stormwater Coordinator, Public Works Director, Assistant Public Works Director, Rolla Municipal Utilities representative				
<i>Tracking Measure:</i>	Document number of BMPs developed.	<i>Target completion year:</i>	2017	<i>% Complete:</i>	
<i>Details regarding progress:</i>					
TASK #1.3.4	Evaluate the effectiveness of the BMP and revise as needed.				
<i>Responsible Parties:</i>	SWMP Team				
<i>Tracking Measure:</i>	Complete written evaluation of program efforts.	<i>Target completion year:</i>	2013-2018	<i>% Complete:</i>	
<i>Details regarding progress:</i>					

PPMO-BMP #4 - Develop centralized tracking system for disposal of waste from jurisdiction.

TASK #1.4.1	Develop "Pollution Hotline" flyer. Disperse through each city department and city functions.				
<i>Responsible Parties:</i>	SWMP Team				
<i>Tracking Measure:</i>	Track number of documents dispersed.	<i>Target completion year:</i>	2014	<i>% Complete:</i>	
<i>Details regarding progress:</i>					
TASK #1.4.2	Develop formalized enforcement procedure for stormwater pollution complaints from the public.				
<i>Responsible Parties:</i>	SWMP Team				
<i>Tracking Measure:</i>	Track completion of formal enforcement procedure and number of complaints.	<i>Target completion year:</i>	2015	<i>% Complete:</i>	
<i>Details regarding progress:</i>					
TASK #1.4.3	Distribute flyer through various media, including blog spot, city website, utility mailers, television and radio.				
<i>Responsible Parties:</i>	Stormwater Coordinator				
<i>Tracking Measure:</i>	Track number of impressions made.	<i>Target completion year:</i>	2013-2018	<i>% Complete:</i>	
<i>Details regarding progress:</i>					

TASK #1.4.4	Continue tracking the disposal of municipal waste using the existing date from Environmental Services Department.			
<i>Responsible Parties:</i>	Stormwater Coordinator, Environmental Services Director			
<i>Tracking Measure:</i>	Track tons of waste removed from the waste stream.	<i>Target completion year:</i>	2013-2018	<i>% Complete:</i>
<i>Details regarding progress:</i>				
TASK #1.4.5	Evaluate the effectiveness of the BMP and revise as needed.			
<i>Responsible Parties:</i>	SWMP Team			
<i>Tracking Measure:</i>	Complete written evaluation of program efforts.	<i>Target completion year:</i>	2013-2018	<i>% Complete:</i>
<i>Details regarding progress:</i>				

PPMO-BMP #5 – Employee training in implementation of SWPPP.

TASK #1.5.1	Departmental training for implementation of SWPPP conducted by Storm Water Management Plan team member.			
<i>Responsible Parties:</i>	SWMP Team			
<i>Tracking Measure:</i>	Track number of training sessions and number of participants.	<i>Target completion year:</i>	2013-2018	<i>% Complete:</i>
<i>Details regarding progress:</i>				
TASK #1.5.2	Evaluate the effectiveness of the BMP and revise as needed.			
<i>Responsible Parties:</i>	SWMP Team			
<i>Tracking Measure:</i>	Complete written evaluation of program efforts.	<i>Target completion year:</i>	2013-2018	<i>% Complete:</i>
<i>Details regarding progress:</i>				

PPMO AR-BMP #1 - Creek cleaning and visual inspection (bi-annually)

Year 1 (2013-2014):	Number cleaned:		Date:	
	Number cleaned:		Date:	
Year 2 (2014-2015):	Number cleaned:		Date:	
	Number cleaned:		Date:	
Year 3 (2015-2016):	Number cleaned:		Date:	
	Number cleaned:		Date:	
Year 4 (2016-2017):	Number cleaned:		Date:	
	Number cleaned:		Date:	
Year 5 (2017-2018):	Number cleaned:		Date:	
	Number cleaned:		Date:	

PPMO AR-BMP #2 - Creek crossing inspection (quarterly)

Year 1 (2013-2014):	No. inspected:		Date:		No. inspected:		Date:	
	No. inspected:		Date:		No. inspected:		Date:	
Year 2 (2014-2015):	No. inspected:		Date:		No. inspected:		Date:	
	No. inspected:		Date:		No. inspected:		Date:	
Year 3 (2015-2016):	No. inspected:		Date:		No. inspected:		Date:	
	No. inspected:		Date:		No. inspected:		Date:	
Year 4 (2016-2017):	No. inspected:		Date:		No. inspected:		Date:	
	No. inspected:		Date:		No. inspected:		Date:	
Year 5 (2017-2018):	No. inspected:		Date:		No. inspected:		Date:	
	No. inspected:		Date:		No. inspected:		Date:	

PPMO AR-BMP #3 - Detention pond inspection (quarterly) *attach additional sheets for inspections following major rainfall events

Year 1 (2013-2014):	No. inspected:		Date:		No. inspected:		Date:	
	No. inspected:		Date:		No. inspected:		Date:	
Year 2 (2014-2015):	No. inspected:		Date:		No. inspected:		Date:	
	No. inspected:		Date:		No. inspected:		Date:	
Year 3 (2015-2016):	No. inspected:		Date:		No. inspected:		Date:	
	No. inspected:		Date:		No. inspected:		Date:	
Year 4 (2016-2017):	No. inspected:		Date:		No. inspected:		Date:	
	No. inspected:		Date:		No. inspected:		Date:	
Year 5 (2017-2018):	No. inspected:		Date:		No. inspected:		Date:	
	No. inspected:		Date:		No. inspected:		Date:	

PPMO AR-BMP #4 - Inspect box culvert three times per year.

Year 1 (2013-2014):	No. inspected:		No. inspected:		No. inspected:	
	Date:		Date:		Date:	
Year 2 (2014-2015):	No. inspected:		No. inspected:		No. inspected:	
	Date:		Date:		Date:	
Year 3 (2015-2016):	No. inspected:		No. inspected:		No. inspected:	
	Date:		Date:		Date:	
Year 4 (2016-2017):	No. inspected:		No. inspected:		No. inspected:	
	Date:		Date:		Date:	
Year 5 (2017-2018):	No. inspected:		No. inspected:		No. inspected:	
	Date:		Date:		Date:	

PPMO AR-BMP #5 - Household hazardous waste drop-offs.

Year 1 (2013-2014):	Number per annum:		See attached certificates for item breakdowns.
Year 2 (2014-2015):	Number per annum:		See attached certificates for item breakdowns.
Year 3 (2015-2016):	Number per annum:		See attached certificates for item breakdowns.
Year 4 (2016-2017):	Number per annum:		See attached certificates for item breakdowns.
Year 5 (2017-2018):	Number per annum:		See attached certificates for item breakdowns.

PPMO AR-BMP #6 - Special refuse pick-ups.

Year 1 (2013-2014):	Total number per annum:		See attached table for breakdowns.
Year 2 (2014-2015):	Total number per annum:		See attached table for breakdowns.
Year 3 (2015-2016):	Total number per annum:		See attached table for breakdowns.
Year 4 (2016-2017):	Total number per annum:		See attached table for breakdowns.
Year 5 (2017-2018):	Total number per annum:		See attached table for breakdowns.

PPMO AR-BMP #7 - Paper shredding.

Year 1 (2013-2014):	Hours per annum:		See attached spreadsheet.
Year 2 (2014-2015):	Hours per annum:		See attached spreadsheet.
Year 3 (2015-2016):	Hours per annum:		See attached spreadsheet.
Year 4 (2016-2017):	Hours per annum:		See attached spreadsheet.
Year 5 (2017-2018):	Hours per annum:		See attached spreadsheet.

PPMO AR-BMP #8 - Refuse pick-up.

Year 1 (2013-2014):	Tons of refuse collected per annum:		See attached spreadsheet.
Year 2 (2014-2015):	Tons of refuse collected per annum:		See attached spreadsheet.
Year 3 (2015-2016):	Tons of refuse collected per annum:		See attached spreadsheet.
Year 4 (2016-2017):	Tons of refuse collected per annum:		See attached spreadsheet.
Year 5 (2017-2018):	Tons of refuse collected per annum:		See attached spreadsheet.

PPMO AR-BMP #9 – Street sweeping.

Year 1 (2013-2014):	Tons of refuse collected per annum:		See attached spreadsheet.
Year 2 (2014-2015):	Tons of refuse collected per annum:		See attached spreadsheet.
Year 3 (2015-2016):	Tons of refuse collected per annum:		See attached spreadsheet.
Year 4 (2016-2017):	Tons of refuse collected per annum:		See attached spreadsheet.
Year 5 (2017-2018):	Tons of refuse collected per annum:		See attached spreadsheet.

PPMO AR-BMP #10 – Public parking lot maintenance.

Year 1 (2013-2014):	Tons of refuse collected per annum:		See attached spreadsheet.
Year 2 (2014-2015):	Tons of refuse collected per annum:		See attached spreadsheet.
Year 3 (2015-2016):	Tons of refuse collected per annum:		See attached spreadsheet.
Year 4 (2016-2017):	Tons of refuse collected per annum:		See attached spreadsheet.
Year 5 (2017-2018):	Tons of refuse collected per annum:		See attached spreadsheet.

PPMO AR-BMP #8 – Beet juice as deicing additive.

Year 1 (2013-2014):	Tons of refuse collected per annum:		See attached spreadsheet.
Year 2 (2014-2015):	Tons of refuse collected per annum:		See attached spreadsheet.
Year 3 (2015-2016):	Tons of refuse collected per annum:		See attached spreadsheet.
Year 4 (2016-2017):	Tons of refuse collected per annum:		See attached spreadsheet.
Year 5 (2017-2018):	Tons of refuse collected per annum:		See attached spreadsheet.

PPMO AR-BMP #9 - Staff training on pollution prevention and municipal housekeeping measures.

Year 1 (2013-2014):	Date:		Number in attendance:		Training by:	
	Training topic:					
Year 2 (2014-2015):	Date:		Number in attendance:		Training by:	
	Training topic:					
Year 3 (2015-2016):	Date:		Number in attendance:		Training by:	
	Training topic:					
Year 4 (2016-2017):	Date:		Number in attendance:		Training by:	
	Training topic:					
Year 5 (2017-2018):	Date:		Number in attendance:		Training by:	
	Training topic:					

Appendix D

Chapter 15 Storm Water and Flood Control Ordinance

**CITY
OF
ROLLA, MISSOURI**

**STORMWATER & FLOOD
CONTROL**

**CHAPTER 15
CITY ORDINANCE**

**PUBLIC WORKS DEPARTMENT
901 NORTH ELM
P.O. BOX 979
ROLLA, MO 65402**

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Article I - General

Sec. 15-1. Statutory Authorization.

The Legislature of the State of Missouri has in Chapter 89 delegated the responsibility to local governmental units to adopt regulations designed to promote the public health, safety, and general welfare of its citizenry. Therefore, the City Council of the City of Rolla, Missouri, does ordain the following Ordinance. (Ord. 2517; Ord. 3500, §2)

Sec. 15-2. Interpretation and Purpose.

It is hereby determined that land development projects and associated increases in impervious cover alter the hydrologic response of local watersheds and increase stormwater runoff rates and volumes, flooding, stream channel erosion, and sediment transport and deposition.

The purpose of this Chapter is to establish minimum stormwater improvement requirements and controls to safeguard persons, protect property, and prevent damage to the environment in watersheds within the City of Rolla. This Chapter seeks to meet that purpose through the following objectives:

- (a) By requiring the implementation of both an on-site stormwater conveyance system and stormwater detention;
- (b) Minimize increases in stormwater runoff from any development in order to reduce flooding, siltation and stream bank erosion and maintain the integrity of stream channels;

(c) Minimize the total annual volume of surface water runoff which flows from any specific site during and following development to not exceed the pre-development hydrologic regime to the maximum extent practicable;

(d) Prohibit illicit connections and illegal discharges to the municipal storm sewer system;

(e) Provide for the protection of stream systems through the establishment of stream buffers;

(f) Minimize public and private losses due to flood conditions in specific areas. (Ord. 2517; Ord. 3500, §2)

Sec. 15-3. Definitions.

For the purpose of this Chapter, the following terms, phrases, words, and their derivatives shall have the meaning herein given. When not inconsistent with the context, words used in the present tense include the future, words in the plural number include the singular number, and words in the singular number include the plural number.

(1) Accelerated Erosion: Erosion caused by development activities that exceeds the natural processes by which the surface of the land is worn away by the action of water, wind, or chemical action.

(2) Active Stream Channel: The area of the stream channel that is subject to frequent flows (at least the peak flow from a 2-year design storm) and that includes the portion of the channel below the floodplain.

(3) Actual Start of Construction: Different from "start of construction"; the first placement of permanent construction of a structure on a site, such as the pouring of slab or footings, the installation of piles, the construction of columns, or any work beyond the stage of excavation or the placement of a manufactured home on a foundation. For a substantial improvement, the actual start of construction means the first alteration of any wall, ceiling, floor, or other structural part of a building, whether or not that alteration affects the external dimensions of the building.

(4) Actuarial or Risk Premium Rates: Those rates established by the Public Works Director pursuant to individual City studies and investigations which are undertaken to provide flood insurance in accordance with Section 1307 of the National Flood Disaster Protection Act of 1973 and the accepted actuarial principles. "Risk premium rates" include provisions for operating costs and allowances.

(5) Administrator means the Federal Insurance Administrator.

(6) Agency means the Federal Emergency Management Agency (FEMA).

(7) Appeal: A request for a review of the Public Works Director's interpretation of any provision of this Chapter or a request for a variance.

(8) Appurtenant Structure or Accessory Structure: A structure that is on the same parcel of property as the principle structure to be insured and the use of which is incidental to the use of the principal structure.

(9) Area of Special Flood Hazard or Special Flood Hazard Area: The land in the flood plain within the City of Rolla subject to a one (1) percent or greater chance of flooding in any given year.

(10) Authorized Enforcement Agency: Employees or designees of the City of Rolla Public Works Department.

(11) Base Flood or 100-year Flood: The flood having a one (1) percent chance of being equaled or exceeded in any given year.

(12) Basement: Any area of the structure having its floor subgrade (below ground level) on all sides.

(13) Best Management Practices (BMPs): Schedules of activities, prohibitions of practices, general good house keeping practices, pollution prevention and educational practices, maintenance procedures and other management practices to prevent or reduce the discharge of pollutants directly or indirectly to stormwater, receiving waters or stormwater conveyance systems. BMPs also include treatment practices, operating procedures, and practices to control site runoff, spillage or leaks, sludge or water disposal, or drainage from raw materials storage.

(14) Buffer: A vegetated area, including trees, shrubs, and herbaceous vegetation, that exists or is established to protect a stream system, lake, or reservoir. Alteration of this natural area is strictly limited.

(15) Building: Any structure, either temporary or permanent, having walls and a roof, designed for the shelter of any person, animal, or property, and occupying more than one hundred (100) square feet of area.

(16) Chief Executive Officer or Chief Elected Official means the official of the community who is charged with the authority to implement and administer laws, ordinances, and regulations for that community.

(17) Community means any State or area or political subdivision thereof, which has authority to adopt and enforce floodplain management regulations for the areas within its jurisdiction.

(18) Channel: A natural or artificial watercourse with a definite bed and banks that conducts continuously or periodically flowing water.

(19) City of Rolla: The incorporated municipality given the name of "Rolla" located in the State of Missouri in Phelps County and the governing body within the said district boundaries. Also referred to as "City".

(20) Clean Water Act: The federal Water Pollution Control Act (33 U.S.C. § 1251 et seq.), and any subsequent amendments thereto.

(21) Clearing: Any activity that removes the vegetative surface cover.

(22) Construction Activity: Activities subject to NPDES Construction Permits. These include construction projects resulting in land disturbance of one (1) acre or more. Such activities include but are not limited to clearing and grubbing, grading, excavating, and demolition.

(23) Dedication: The deliberate appropriation of property by its owner for general public use.

(24) Design Storm: The duration and return frequency of the storm event used to determine the design capacity, or analyze the existing capacity, of a storm sewer system and/or detention facility. A design storm shall be approximately the same in duration as the time of concentration, but shall not be less than fifteen (15) minutes or greater than twenty four (24) hours.

(25) Detention Facility: A detention basin or alternative structure designed for the purpose of temporary storage of stream flow or surface runoff and gradual release of stored water at controlled rates.

(26) Detention: The temporary storage of storm runoff in a stormwater facility with the goals of controlling peak discharge rates and providing gravity settling of pollutants.

(27) Developer: A person who undertakes land disturbance activities.

(28) Development: Any man-made change to improved or unimproved real estate, including, but not limited to buildings or other structures, mining, dredging, filling, grading, paving, excavation, drilling operations or storage of equipment or materials

- (a) The improvement of property for any purpose involving building;
- (b) Subdivision or the division of a tract or parcel of land into two or more parcels;
- (c) The combination of any two or more lots, tracts, or parcels of property for any purpose;
- (d) The preparation of land for any of the above purposes.

(29) Drainage Easement: A legal right granted by a landowner to a grantee allowing the use of private land for stormwater conveyance and/or detention systems.

(30) Drainage Way: Any channel that conveys surface runoff throughout the site.

(31) Elevated Building means for insurance purposes, a non-basement building which has its lowest elevated floor raised above ground level by foundations, walls, shear walls, posts, piers, pilings, or columns.

(32) Eligible Community or Participating Community means a community for which the Administrator has authorized the sale of flood insurance under the National Flood Insurance Program (NFIP).

(33) Erosion and Sediment Control Plan: A set of plans prepared by or under the direction of a registered professional engineer to be used to control sediment and indicating the specific measures and sequencing for erosion control on a development site during and after construction.

(34) Erosion Control: A measure that prevents erosion.

(35) Existing Construction: For the purposes of determining rates, structures for which the "start of construction" commenced before the effective date of the FIRM or before January 1, 1975, for FIRMs effective before that date. "Existing construction" may be referred to as "existing structures."

(36) Existing Manufactured Home Park or Subdivision: A manufactured home park or subdivision for which the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including, at a minimum, the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads) is completed before the effective date of the floodplain management regulations adopted by the City of Rolla.

(37) Expansion to an Existing Manufactured Home Park or Subdivision: The preparation of additional sites by the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads).

(38) Fee in Lieu: A payment of money in place of meeting all or part of the stormwater performance standards required by this Chapter.

(39) Flood Boundary and Floodway Map (FBFM): An official map of the City on which the Public Works Director has delineated both special flood hazard areas and the designated regulatory floodway.

(40) Flood Elevation Determination: A determination by the Public Works Director of the water surface elevations of the base flood, that is, the flood level that has a one (1) percent or greater chance of occurrence in any given year.

(41) Flood Elevation Study: An examination, evaluation and determination of flood hazards.

(42) Flood Fringe: The area outside the floodway encroachment lines, but still subject to inundation by the regulatory flood.

(43) Flood Hazard Boundary Map (FHBM): An official map of the City, issued by the Public Works Director, where the boundaries of the flood areas having special flood hazards have been designated as (unnumbered or numbered) A zones.

(44) Flood Insurance Rate Map (FIRM): An official map of the City, on which the Public Works Director has delineated both the special flood hazard areas and the risk premium zones applicable to the City of Rolla.

(45) Flood Insurance Study (FIS): An examination, evaluation and determination of flood hazards and, if appropriate, corresponding water surface elevations.

(46) Flood or Flooding: A general and temporary condition of partial or complete inundation of normally dry land areas from:

- (1) The overflow of inland waters and/or
- (2) The unusual and rapid accumulation or runoff of surface waters from any source.

(47) Floodplain Management Regulations: Zoning ordinances, subdivision regulations, building codes, health regulations, special purpose ordinances (such as floodplain and grading ordinances) and other applications of police power. The term describes such state or local regulations, in any combination thereof that provide standards for the purpose of flood damage prevention and reduction.

(48) Floodplain Management: The operation of an overall program of corrective and preventive measures for reducing flood damage, including but not limited to emergency preparedness plans, flood control works, and floodplain management regulations.

(49) Floodplain or Flood-prone Area: Any land area susceptible to being inundated by water from any source (see "flood").

(50) Flood proofing: Any combination of structural and nonstructural additions, changes, or adjustments to structures that reduce or eliminate flood damage to real estate or improved real property, water and sanitary facilities, or structures and their contents.

(51) Floodway Encroachment Lines: The lines marking the limits of floodways on Federal, State and local floodplain maps.

(52) Floodway Fringe: That area of the flood plain, outside of the floodway that on the average is likely to be flooded once every one hundred (100) years (i.e., that has a one percent chance of flood occurrence in any one year).

(53) Floodway or Regulatory Floodway: The channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one (1) foot.

(54) Freeboard: A factor of safety usually expressed in feet above a flood level for purposes of floodplain management. "Freeboard" tends to compensate for the many unknown factors that could contribute to flood heights greater than the height calculated for a selected size flood and floodway conditions, such as bridge openings and the hydrological effect of urbanization of the watershed.

(55) Functionally Dependent Use: A use that cannot perform its intended purpose unless it is located or carried out in close proximity to water. This term includes only docking facilities and facilities that are necessary for the loading and unloading of cargo or passengers, but does not include long-term storage or related manufacturing facilities.

(56) Grading: Excavation or fill of material, including the resulting conditions thereof.

(57) Hazardous Materials: Any material, including any substance, waste, or combination thereof, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may cause, or significantly contribute to, a substantial present or potential hazard to human health, safety, property, or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.

(58) Highest Adjacent Grade: The highest natural elevation of the ground surface prior to construction next to the proposed walls of a structure.

(59) Historic Structure: Any structure that is (a) listed individually in the National Register of Historic Places (a listing maintained by the Department of Interior) or preliminarily determined by the Secretary of the Interior as meeting the requirements for individual listing on the National Register; (b) certified or preliminarily determined by the Secretary of the Interior as contributing to the historical significance of a registered historic district or a district preliminarily determined by the Secretary to qualify as a registered historic district; (c) individually listed on a state inventory of historic places in states with historic preservation programs which have been approved by the Secretary of the Interior; or (d) individually listed on a local inventory of historic places in communities with historic preservation programs that have been certified either (1) by an approved state program as determined by the Secretary of the Interior or (2) directly by the Secretary of the Interior in states without approved programs.

(60) Hydrologic Soil Group (HSG): A Natural Resource Conservation Service classification system in which soils are categorized into four runoff potential groups. The groups range from A soils, with high permeability and little runoff production, to D soils, which have low permeability rates and produce much more runoff.

(61) **Illegal Discharge:** Any direct or indirect non-stormwater discharge to the storm drain system.

(62) **Illicit Connections:** An illicit connection is defined as either of the following:

- (a) Any drain or conveyance, whether on the surface or subsurface, which allows an illegal discharge to enter the storm drain system including but not limited to any conveyances which allow any non-stormwater discharge including sewage, process wastewater, and wash water to enter the storm drain system and any connections to the storm drain system from indoor drains and sinks, regardless of whether said drain or connection had been previously allowed, permitted, or approved by the City of Rolla;
- (b) Any drain or conveyance connected from a commercial or industrial land use to the storm drain system which has not been documented in plans, maps, or equivalent records and approved by the City of Rolla.

(63) **Impervious Cover:** Those surfaces that cannot effectively infiltrate rainfall (e.g., building rooftops, pavement, sidewalks, driveways, etc).

(64) **Industrial Activity:** Activities subject to NPDES Industrial Permits as defined in 40 CFR, Section 122.26 (b) (14).

(65) **Industrial Stormwater Permit:** A National Pollutant Discharge Elimination System permit issued to a commercial industry or group of industries which regulates the pollutant levels associated with industrial stormwater discharges or specifies on-site pollution control strategies.

(66) **Infiltration:** The process of percolating stormwater into the subsoil.

(67) **Land Development Permit:** A permit issued by the City of Rolla for the construction or alteration of ground improvements and structures for the control of erosion, runoff and grading.

(68) **Land Disturbance Activity:** Any activity which changes the volume or peak flow discharge rate of rainfall runoff from the land surface. This may include the grading, digging, culling, scraping, or excavating of soil, placement of fill materials, paving, construction, substantial removal of vegetation, or any activity which bares soil or rock or involves the diversion or piping of any natural or man-made watercourse.

(69) **Landowner:** The legal or beneficial owner of land, including those holding the right to purchase or lease the land, or any other person holding proprietary rights in the land.

(70) **Lowest Floor:** The lowest floor of the lowest enclosed area, including basement. An unfinished or flood-resistant enclosure, usable solely for parking of vehicles, building access, or storage, in an area other than a basement area, is not considered a building's lowest floor, provided that such enclosure is not built so as to render the

structure in violation of the applicable flood proofing design requirements of this Chapter.

(71) **Manufactured Home:** A structure, transportable in one or more sections, which is built on a permanent chassis and is designed for use with or without a permanent foundation when connected to the required utilities. The term “manufactured home” does not include a “recreational vehicle.”

(72) **Manufactured Home Park or Subdivision** means a parcel (or contiguous parcels) of land divided into two or more manufactured home lots for rent or sale.

(73) **Map** means the Flood Hazard Boundary Map (FHBM) or the Flood Insurance Rate Map (FIRM) for a community issued by the Federal Emergency Management Agency (FEMA).

(74) **Market Value or Fair Market Value** means an estimate of what is fair, economic, just and equitable value under normal local market conditions.

(75) **Mean Sea Level** means, for purposes of the National Flood Insurance Program (NFIP), the National Geodetic Vertical Datum (NGVD) of 1929 or other datum, to which base flood elevations shown on a community’s Flood Insurance Rate Map (FIRM) are referenced.

(76) **NFIP:** The National Flood Insurance Program (NFIP).

(77) **National Pollutant Discharge Elimination System (NPDES) Stormwater Discharge Permit:** A permit issued by EPA (or by a State under authority delegated pursuant to 33 USC § 1342(b)) that authorizes the discharge of pollutants to waters of the United States, whether the permit is applicable on an individual, group, or general area-wide basis.

(78) **New Construction:** For the purposes of determining insurance rates, structures for which the “start of construction” commenced on or after the effective date of an initial FIRM or after December 31, 1974, whichever is later, and includes any subsequent improvements to such structures. For floodplain management purposes, “new construction” means structures for which the “start of construction” commenced on or after the effective date of the floodplain management regulations adopted by the City and includes any subsequent improvements to such structures.

(79) **New Manufactured Home Park or Subdivision:** A manufactured home park or subdivision for which the construction of facilities for servicing the lot on which the manufactured homes are to be affixed (including at a minimum, the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads) is completed on or after the effective date of floodplain management regulations adopted by the City.

(80) Nonpoint Source Pollution: Pollution from any source other than from any discernible, confined, and discrete conveyances, and shall include, but not be limited to, pollutants from agricultural, silvicultural, mining, construction, subsurface disposal and urban runoff sources.

(81) Non-Stormwater Discharge: Any discharge to the storm drain system that is not composed entirely of stormwater.

(82) Off-Site Facility: A stormwater improvement facility located outside the subject property boundary described in the land development permit application.

(83) One Hundred Year Floodplain: The area of land adjacent to a stream that is subject to inundation during a storm event that has a recurrence interval of 100 years.

(84) On-Site Facility: A stormwater improvement facility located within the subject property boundary described in the land development permit application.

(85) Perimeter Control: A barrier that prevents sediment from leaving a site by filtering sediment-laden runoff or diverting it to a sediment trap or basin.

(86) Permanent Construction: Does not include land preparation, such as clearing, grading and filling; nor does it include the installation of streets and/or walkways; nor does it include excavation for a basement, footings, piers, or foundations or the erection of temporary forms; nor does it include the installation on the property of accessory buildings, such as garages or sheds not occupied as dwelling units or not part of the main structure.

(87) Person: Any individual, association, organization, partnership, firm, corporation or other entity recognized by law and acting as either the owner or as the owner's agent.

(88) Phasing: Clearing a parcel of land in distinct phases, with the stabilization of each phase completed before the clearing of the next.

(89) Pollutant: Anything which causes or contributes to pollution. Pollutants may include, but are not limited to: paints, varnishes, and solvents; oil and other automotive fluids; non-hazardous liquid and solid wastes and yard wastes; refuse, rubbish, garbage, litter, or other discarded or abandoned objects, ordnance, and accumulations, so that same may cause or contribute to pollution; floatables; pesticides, herbicides, and fertilizers; hazardous substances and wastes; sewage, fecal coliform and pathogens; dissolved and particulate metals; animal wastes; wastes and residues that result from constructing a building or structure; and noxious or offensive matter of any kind.

(90) Pollution: Any contamination or alteration of the physical, chemical, or biological properties of any waters that will render the waters harmful or detrimental to:

- (a) Public health, safety, or welfare;

- (b) Domestic, commercial, industrial, agricultural, recreational, or other legitimate beneficial uses;
- (c) Livestock, wild animals, or birds;
- (d) Fish or other aquatic life.

(91) Premises: Any building, lot, parcel of land, or portion of land whether improved or unimproved including adjacent sidewalks and parking strips.

(92) Principally Above Ground: At least fifty-one (51) percent of the actual cash value of the structure, less land value, is above ground.

(93) Recreational Vehicle: A vehicle which is (a) built on a single chassis; (b) four hundred (400) square feet or less when measured at the largest horizontal projections; (c) designed to be self-propelled or permanently towable by a light-duty truck; and (d) designed primarily not for use as a permanent dwelling but as temporary living quarters for recreational, camping, travel, or seasonal use.

(94) Redevelopment: Any construction, alteration or improvement exceeding one (1) acre in areas where existing land use is high density commercial, industrial, institutional or multifamily residential.

(95) Remedy A Violation means to bring a structure or other development into compliance with Federal, State, or local floodplain management regulations; or, if this is not possible, to reduce the impacts of its noncompliance.

(96) Risk Premium Rates means those rates established by the Administrator pursuant to individual community studies and investigations which are undertaken to provide flood insurance in accordance with Section 1307 of the National Flood Disaster Protection Act of 1973 and the accepted actuarial principles. Risk premium rates include provisions for operating costs and allowances.

(97) Sediment Control: Measures that prevent eroded sediment from leaving the site.

(98) Site: A parcel of land or a contiguous combination thereof, where grading work is performed as a single unified operation.

(99) Special Hazard Area: An area having special flood hazards and shown on an FHBM, FIRM or FBFM as zones (unnumbered or numbered) A and AE.

(100) Stabilization: The use of practices that prevent exposed soil from eroding.

(101) Start of Construction: The first land-disturbing activity associated with a development, including land preparation such as clearing, grading, and filling; installation of streets and walkways; excavation for basements, footings, piers, or foundations; erection of temporary forms and installation of accessory buildings such as garages. Includes substantial improvement, and means the date the land development

permit was issued, provided the actual start of construction, repair, reconstruction, placement, or other improvement was within one hundred eighty (180) days of the permit date.

(102) State Coordinating Agency: That agency of the state government, or other office designated by the governor of the state or by state statute at the request of the Public Works Director to assist in the implementation of the National Flood Insurance Program (NFIP) in that state.

(103) Stop Work Order: An order issued which requires that all construction activity on a site be stopped.

(104) Storm Drainage System: Publicly-owned facilities by which stormwater is collected and/or conveyed, including but not limited to any roads with drainage systems, municipal streets, gutters, curbs, inlets, piped storm drains, pumping facilities, retention and detention basins, natural and human-made or altered drainage channels, reservoirs, and other drainage structures.

(105) Stormwater Improvements: The use of structural or non-structural practices that are designed to reduce stormwater runoff pollutant loads, discharge volumes, and/or peak flow discharge rates.

(106) Stormwater Pollution Prevention Plan: A document which describes the Best Management Practices and activities to be implemented by a person or business to identify sources of pollution or contamination at a site and the actions to eliminate or reduce pollutant discharges to Stormwater, Stormwater Conveyance Systems, and/or Receiving Waters to the Maximum Extent Practicable.

(107) Stormwater Retrofit: A stormwater improvement system designed for an existing development site that previously had either no stormwater improvement system in place or a system inadequate to meet the requirements of the site.

(108) Stormwater Runoff: Flow on the surface of the ground, resulting from precipitation.

(109) Stormwater Treatment Practices (STPs): Measures, either structural or nonstructural, that are determined to be the most effective, practical means of preventing or reducing point source or nonpoint source pollution inputs to stormwater runoff and water bodies.

(110) Stormwater: Any surface flow, runoff, and drainage consisting entirely of water from any form of natural precipitation, and resulting from such precipitation.

(111) Stream Channel: Perennial and intermittent watercourses identified through site inspection and U.S. Geological Survey (USGS) maps. Perennial streams are those which are depicted on a USGS map with a solid blue line. Intermittent streams are those which are depicted on a USGS map with a dotted blue line.

(112) Stream System: A stream channel together with the 100-year floodplain.

(113) Structure or Building: For floodplain management purposes, a walled and roofed building, including a gas or liquid storage tank, that is principally above ground, as well as a manufactured home. "Structure" for insurance purposes, means a walled and roofed building, other than a gas or liquid storage tank that is principally above ground and affixed to a permanent site, as well as a manufactured home on a permanent foundation. For the latter purpose, the term includes a building while in the course of construction, alteration or repair, but does not include building materials or supplies intended for use in such construction, alteration or repair, unless such materials or supplies are within an enclosed building on the premises.

(114) Substantial Damage: Damage of any origin sustained by a structure whereby the cost of restoring the structure to its before damaged condition would equal or exceed fifty (50) percent of the market value of the structure before the damage occurred.

(115) Substantial Improvement: Any reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds fifty (50) percent of the market value of the structure before the "start of construction" of the improvement. This term includes structures which have incurred "substantial damage", regardless of the actual repair work performed. The term does not, however, include either:

- (a) Any project for improvement of a structure to correct existing violations of state or local health, sanitary or safety code specifications which have been identified by the local code enforcement official and which are the minimum necessary to assure safe living conditions; or
- (b) Any alteration of a "historic structure", provided that the alteration will not preclude the structure's continued designation as a "historic structure".

(116) Time of Concentration: The time it takes for water to travel from the hydraulically most distant point in the contributing drainage area to the point of interest.

(117) Variance: A grant of relief by the City from the terms of a floodplain management regulation. Flood insurance requirements remain in place for any varied use or structure and cannot be varied by the City.

(118) Violation: The failure of a structure or other development to be fully compliant with the City's floodplain management regulations. A structure or other development without the elevation certificate, other certifications, or other evidence of compliance required by this Chapter is presumed to be in violation until such time as that documentation is provided.

(119) Wastewater: Any water or other liquid, other than uncontaminated stormwater, discharged from a facility.

(120) Water Pollution Hazard: A land use or activity that causes a relatively high risk of potential water pollution.

(121) Water Surface Elevation: Means the height, in relation to the National Geodetic Vertical Datum (NGVD) of 1929 (or other datum where specified) of floods of various magnitudes and frequencies in the floodplain.

(122) Watercourse: A permanent or intermittent stream or other body of water, either natural or man-made, which gathers or carries surface water; including, but not limited to lakes, ponds, rivers, streams, and bodies of water delineated by the City of Rolla.

(123) Waterway: A channel that directs surface runoff to a watercourse or to the public storm drain.

(124) Wetlands: Those areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

(Ord. 2517; Ord. 2820; Ord. 3500, §2; Ord. 3846 §1)

Sec. 15-4. Authority and Scope.

Therefore, the City of Rolla establishes this set of stormwater quality and quantity policies which are:

(a) Applicable to all surface waters to provide reasonable guidance for the regulation of stormwater runoff for the purpose of protecting local water resources from degradation;

(b) Applicable to any person, firm, corporation, business or unit of government proposing to develop land or disturb the ground through construction activities within the City of Rolla.

This Chapter shall be applicable to:

(a) All subdivision or site plan applications submitted after the date of passage of this Chapter by the City of Rolla;

(b) All water entering the storm sewer system generated on any developed and undeveloped lands unless explicitly exempted by an authorized enforcement agency.

In addition, all plans must be reviewed by the Public Works Director to ensure that post construction runoff levels are consistent with any local and regional watershed plans. (Ord. 2517; Ord. 3500, §2)

Sec. 15-5. Compatibility with Other Permit and Ordinance Requirements.

This Chapter is not intended to interfere with, abrogate, or annul any other ordinance, rule or regulation, statute, or other provision of law. Nor is this Chapter intended to repeal, abrogate or impair any existing easements, covenants, or deed restrictions. The requirements of this Chapter should be considered minimum requirements, and where any provision of this Chapter imposes restrictions different from those imposed by any other ordinance, rule or regulation, or other provision of law, whichever provisions are more restrictive or impose higher protective standards for human health or the environment shall be considered to take precedence. (Ord. 2517; Ord. 3500, §2)

Sec. 15-6. Severability.

If the provisions of any article, section, subsection, paragraph, subdivision or clause of this Chapter shall be judged invalid by a court of competent jurisdiction, such order of judgment shall not affect or invalidate the remainder of any article, section, subsection, paragraph, subdivision or clause of this Chapter. (Ord. 2517; Ord. 3500, §2)

Sec. 15-7. Permit Procedures and Requirements.

A land disturbance permit shall be obtained for all development that will disturb one or more acres or disturb less than one acre when part of a larger common plan of development or sale that will disturb a cumulative total of one or more acres over the life of the project.

No land owner or land operator shall receive any of the building or land development permits required for land disturbance activities without first meeting the requirements of this Chapter prior to commencing the proposed activity. Application for a land development permit shall be made on forms furnished by the Public Works Director. No person, firm, corporation, business or unit of government shall initiate any development or substantial improvement; disturb any ground, remove site vegetation, or cause the same to be done without first obtaining a separate permit for each development as defined in this Chapter.

A land development permit shall be obtained before construction or development begins within any area of special flood hazard as established in Article VI, Section 15-95. Unless otherwise excepted by this Chapter, a permit application must be accompanied by the following in order that the permit application be considered:

(a) A stormwater improvement plan prepared to meet the requirements of Article II, Article IV, and Article V of this Chapter;

(b) An erosion and sediment control plan for any land disturbing activity that would require the uncovering of one (1) or more acres and is prepared to meet the requirements of Article III of this Chapter;

(c) Documents prepared to meet the requirements of Article VI of this Chapter showing provisions for flood hazard reduction;

(d) A non-refundable permit review fee shall be made payable to the City of Rolla according to the following fee schedule:

Zoning classification Permit fee

R-R \$200 plus \$20 per acre

R-1, R-2 \$200 plus \$50 per acre

R-3, C-0, C-1, C-2, C-3, M-1, M2 \$600 plus \$150 per acre

(e) The permit review fee schedule outlined in Section 15-7(d) is based on a customary review process between the consultants employed by the developer/owner and the City. The City may impose additional charges for the review of excessive submittals due to inadequate project design.

No permit is required for the following activities:

(a) Any emergency activity that is immediately necessary for the protection of life, property, or natural resources;

(b) Existing nursery and agricultural operations conducted as a permitted main or accessory use. (Ord. 2517; Ord. 3500, §2)

Sec. 15-8. Review and Approval.

(a) Applications for land development permits shall be filed with the City of Rolla during regular business hours. Permit applications shall include the following: two copies of the stormwater improvement plan, two copies of the erosion and sediment control plan, two copies of the flood hazard reduction documents and the required review fee as established in Section 15-7.

(b) Within thirty (30) business days of the receipt of a completed permit application, including all documents as required by this Chapter, the City of Rolla shall, in writing, approve or disapprove the application and accompanying construction plans.

(c) If the permit application, stormwater improvement plan, or erosion and sediment control plan are disapproved, the developer may revise the plans or agreement. If additional information is submitted, the City of Rolla shall have thirty (30) business days from the date the additional information is received to inform the developer that the plan is either approved or disapproved.

(d) If the permit application and the final stormwater improvement plan and erosion and sediment control plan are approved by the City of Rolla, all appropriate City of Rolla land development permits shall be issued. (Ord. 2517; Ord. 3500, §2)

Sec. 15-9. Required Improvement and Security.

(a) Prior to the approval of the final stormwater improvement plan and erosion and sediment control plan, the owner shall have installed or shall have furnished adequate performance security for the ultimate construction and installation of said improvement plans and shall have executed such an agreement contract to the City of Rolla for satisfactory completion of such improvements.

(b) In lieu of immediate construction improvements, the developer may file a surety or cash bond with the Public Works Director on a form approved by the Public Works Director and with a surety company having a rating of A + 4A or higher. On a development of substantial size, the Public Works Director may accept a bond for less than the entire development if the owner provides written assurances that all building construction will be confined to lots for which all adjacent improvements are covered in the performance bond. (Ord. 2517; Ord. 3500, §2)

Sec. 15-10. Release or Reduction of Security.

(a) The release or reduction of required surety bonds, escrow agreement or other security agreement shall be in accordance with the following:

(b) The Public Works Director may release or reduce said bond or agreements when he has determined that all or a portion of the required improvements have been satisfactorily completed and are free of any liens or other encumbrances. (Ord. 2517; Ord. 3500, §2)

Sec. 15-11. Inspection.

(a) Regular inspections of the stormwater improvement system construction and the erosion and sediment control measures shall be conducted by the staff of the City of Rolla Public Works Department.

(b) If any violations are found, the property owner shall be notified in writing of the nature of the violation and the required corrective actions necessary. No work shall proceed until all violations are corrected and all work previously completed has received approval by the City of Rolla.

(c) A final field inspection by the City of Rolla Public Works Department is required upon completion of the stormwater improvement system and erosion and sediment control plan, before the release of any performance securities can occur. The final field inspection shall be performed in the presence of the owner. The owner shall be notified in writing of any deficiencies discovered during the final inspection and shall be given a

reasonable period of time to correct deficiencies. Upon correction of the noted deficiencies, the owner shall notify the City of Rolla and schedule a follow-up inspection. (Ord. 2517; Ord. 3500, §2)

Sec. 15-12. Required Submittals and Review Procedure.

(a) Required Submittals: To facilitate the review of plans before approval for construction, a registered professional engineer shall submit with the plans all the necessary data, maps, computations, and check lists set forth in this Chapter in support of the designs and plans. All stormwater improvement plans and erosion and sediment control plans shall be in accordance with the Stormwater Design Standards set forth by the City of Rolla.

(b) Review Procedure: On completion of the review, one set of plans or a letter with comments with requested revisions and notations will be returned to the registered professional engineer for revision of the original drawings. Additional sets of plans for further review or final approval will then be requested. (Ord. 2517; Ord. 3500, §2)

Sec. 15-13. Enforcement and Penalties.

(a) Violations: Any activity that is commenced or is conducted contrary to this Chapter, may be restrained by injunction or otherwise abated in a manner provided by law.

(b) Notice of Violation: When the City of Rolla determines that an activity is not being carried out in accordance with the requirements of this Chapter, it shall issue a written notice of violation to the owner of the property.

(c) Stop Work Orders: Persons receiving a notice of violation will be required to halt all construction activities. This "stop work order" will be in effect until the City of Rolla confirms that the development activity is in compliance and the violation has been satisfactorily addressed. Failure to address a notice of violation in a timely manner can result in civil, criminal, or monetary penalties in accordance with the enforcement measures authorized in this Chapter.

(d) Restoration of Lands: Any violator may be required to restore land to its undisturbed condition. In the event that restoration is not undertaken within a reasonable time after notice, the City of Rolla may take necessary corrective action, the cost of which shall become a lien upon the property until paid. (Ord. 2517; Ord. 3500, §2)

Secs. 15-14 to 15-19. Reserved.

Article II - Stormwater Conveyance and Detention

Sec. 15-20. Introduction.

Stormwater runoff and soil erosion can be controlled and minimized through the regulation of stormwater runoff from development sites. Proper management of stormwater runoff will minimize damage to public and private property, reduce the effects of development on land, control stream channel erosion, reduce local flooding, and maintain after development, as nearly as possible, the pre-development runoff characteristics. (Ord. 3500, §2)

Sec. 15-21. Purpose.

The purpose of this Article is to establish general requirements and principles for the design and construction of stormwater conveyance systems and detention facilities within the City of Rolla. (Ord. 3500, §2)

Sec. 15-22. Required Submittals.

The Stormwater Improvement plan shall include the following information:

- (a) A schedule estimating the dates of completion of construction for all storm drainage facilities shown on the plan;
- (b) All necessary construction specifications;
- (c) Basic design criteria including the rainfall intensity, percentage of imperviousness, runoff coefficients for each tributary basin area in the drainage area, time of concentration, peak flow rates, and any other pertinent design criteria;
- (d) A vicinity map;
- (e) Key map of the entire project to scale, showing easements, sewer lines and facilities, both existing and to be constructed;
- (f) A drainage area map showing the ridge line of the area tributary to each inlet, sewer, and channel section in the system. The map shall be labeled with or accompanied by a table summarizing the basic design criteria. The established elevations, gradients and contours of the finished graded surfaces and streets shall be shown in support of the inlet drainage area lines and indicated directions of flow;
- (g) A subdivision plat, dimensioned and substantially complete and ready for filing;
- (h) Recorder of Deeds book and page from Phelps County Recorder of Deeds for existing recorded easements when not part of a recorded subdivision plat;
- (i) All existing and proposed easements and rights-of-way;

(j) Plans and profiles of each storm drain, showing location, size, design flow, flow line elevations, gradients and materials; boring information and rock elevations along the proposed storm drain anywhere applicable; location, depths and sizes of adjacent or crossing sewer lines and utilities; and special construction requirements such as concrete cradle or encasement, backfill, size and class of pipe. Typical cross sections of swales, ditches or open channels;

(k) Summary design information for each component of the stormwater conveyance system;

(l) All elevations shall be based upon U.S.G.S. datum with location of the benchmark indicated on the plans. Acceptable benchmarks include those established by the City of Rolla, Missouri Department of Transportation and the United States Geological Survey;

(m) Details of special structures, channel improvements, culverts, transitions, headwalls, aprons and junction chambers, all adequately detailed and dimensioned, including placement of steel in reinforced concrete structures;

(n) The location of all utilities anticipated to be encountered during construction shall be shown. Plans must be submitted to all utility companies for verification of conflicts. Storm and sanitary sewers shall be located to comply with State laws and regulations governing such placement;

(o) Location of all existing and proposed building facilities with minimum floor elevations where buildings could be impacted by flood waters and location of all existing and proposed utilities on the site;

(p) For design of detention facilities, calculations of peak runoff flows shall be provided for all areas which are tributary to the location of the proposed detention facility for both existing conditions and conditions after the planned development of the site. The information shall include the acreage of all areas contributing flow to the site and the present land use by acreage of those areas. (Ord. 3500, §2)

Sec. 15-23. Design Requirements for Stormwater Improvements.

(a) The improvements shall be in accordance with the City of Rolla Stormwater Design Standards and must be prepared by a registered professional engineer.

(b) These stormwater improvements should seek to utilize pervious areas for stormwater treatment and to infiltrate stormwater runoff from driveways, sidewalks, rooftops, parking lots, and landscaped areas to the maximum extent practicable.

(c) These stormwater improvements shall maintain the peak rate of surface water runoff which flows from any specific site during and following development so that the peak rate of runoff will not exceed the pre-project conditions to the maximum extent

practicable. The effects of the proposed development on stormwater discharge to downstream locations shall be determined and:

(1) Sufficient information showing locations of downstream watercourses, channels, sewers, culverts, structures and adjoining land shall be provided;

(2) The need for special storm drainage easement requirements to locations downstream of the proposed development and/or downstream drainage modifications or protection shall be evaluated.

(d) The design capacity for all stormwater conveyance systems and detention facilities shall meet the following specifications:

(1) All stormwater conveyance systems shall be designed to accommodate peak flows from a 10-year design storm;

(2) All detention facilities shall be designed to detain the runoff from design storms up to and including a 25-year design storm. Such facilities shall be designed to release the retained surface water runoff such that the peak rate of runoff from the tract after development shall not exceed the peak rate of runoff from the tract prior to development for the 2, 10 and 25-year design storms.

(3) Detention facilities should be designed to accommodate peak retention with at least one foot of freeboard.

(e) Stormwater improvements shall be designed and implemented such that all buildings and other structures shall be protected from the flood waters of a 100-year design storm. The stormwater improvement system shall also pass the flood waters of a 100-year design storm without damage to either the conveyance system or the detention facilities.

(f) Open channels shall be located in drainage easements sufficiently wide to accommodate a 100-year design storm and shall be designed and constructed in such a manner as to provide easy maintenance of the channel and side slopes and to prevent erosion from the design flows. If the channel extends between buildings, consideration must be given to adequate protective measures, such as paving the channel invert and side slopes, bank protection or fencing. Open channels in residential areas shall generally be located along the rear or side lot lines.

(g) Where storm drainage along the side lot lines of residential property is to be in conduit, the conduit shall extend to a point at least forty (40) feet to the rear of the front building line or ten (10) feet beyond the rear line of the structure, whichever is greater. A surface swale shall be provided over this area to contain at least a 100-year storm. At the point of intersection with the open channel, some type of facility shall be provided to disperse flow and minimize erosion.

(h) Where culverts are placed under roadways, they shall extend to at least the limits of the right-of-way or the toe of the roadway embankment, whichever is greater, and proper measures shall be taken to prevent erosion. Embankments shall be protected to prevent erosion against a 100-year storm.

(i) Curb inlets shall be installed at or near intersections where they are deemed necessary for the safety of pedestrian and vehicular traffic. No curb inlet shall be located within a crosswalk.

(j) All detention facilities shall include an emergency or overflow spillway which will pass excess flows greater than those of the 25-year design storm. The emergency spillway shall be designed to safely pass the flow resulting from the 100-year design storm without damage to the basin.

Modifications to the stormwater improvement plan shall be processed and approved or disapproved in the same manner as Section 15-8 of this Chapter. (Ord. 3500, §2)

Sec. 15-24. Stormwater Design Standards.

All storm water conveyance, detention and erosion control design shall meet the provisions of this Chapter and shall comply with the latest revision of The Stormwater Design Standards for the City of Rolla filed in the office of the Director of Public Works. (Ord. 3500, §2)

Sec. 15-25. Waivers to Stormwater Improvement Requirements.

(a) Waivers for Providing Stormwater Conveyance Systems: Every developer shall provide for an on-site stormwater conveyance system. No waivers shall be approved.

(b) Substitutions for Providing Stormwater Detention: Every developer shall provide for stormwater detention unless the City determines that detention may not be appropriate for the development. In cases where the City determines that detention is not appropriate, the developer shall be required to substitute cash payments in lieu of stormwater detention requirements. The minimum requirements for stormwater detention may be waived in whole upon request of the developer, provided that all of the following conditions apply:

(1) It can be demonstrated that the proposed development is not likely to impair attainment of the objectives of this Chapter.

(2) The proposed development is equal to or less than twenty (20) acres for residential development and/or 1 acre for commercial or industrial development; OR the proposed development is projected to have an increase in peak stormwater runoff for a 10-year design storm of no more than five (5) cfs; OR if the City of Rolla determines that an off-site regional detention facility would be favorable to the proposed on-site detention

facility. At the request of the City, submittal of hydraulic analyses comparing on-site and off-site options for detention may be required.

(3) Provisions are made to manage stormwater detention by an existing or future proposed off-site regional facility. The off-site regional facility is required to be adequately sized to provide a level of stormwater control that is equal to or greater than that which would be afforded by on-site local detention and has a legally obligated entity responsible for long-term operation and maintenance of the detention facility. (Ord. 3500, §2)

Sec. 15-26. Fee in Lieu of Stormwater Detention Facilities.

(a) Where the City of Rolla determines not to require stormwater detention, the developer shall be required to pay a fee in lieu of on-site stormwater detention. This fee shall be based on an increase in the peak stormwater flow from the development in question.

(b) For subdivisions zoned R-R, R-1 and R-2, this fee shall be in the amount of five hundred dollars (\$500) for each acre of property in the development, with a minimum payment of five hundred dollars (\$500). For subdivisions zoned R-3, C-0, C-1, C-2, C-3, M-1 and M-2, this fee shall be in the amount of one thousand five hundred dollars (\$1500) for each acre of property in the development, with a minimum payment of one thousand five hundred dollars (\$1500).

(c) All of the monetary contributions shall be credited to the City of Rolla's Stormwater Improvement Fund, and shall be made by the developer prior to the issuance of any land development permit for the development. (Ord. 3500, §2)

Secs. 15-27 to 15-37. Reserved.

Article III - Erosion and Sediment Control

Sec. 15-38. Introduction.

During the construction process, soil is highly vulnerable to erosion by wind and water. Eroded soil endangers water resources by reducing water quality and causing the siltation of aquatic habitat for fish and other desirable species. Eroded soil also necessitates repair of sewers and ditches and the dredging of lakes. In addition, clearing and grading during construction cause the loss of native vegetation necessary for terrestrial and aquatic habitat. (Ord. 3500, §2)

Sec. 15-39. Purpose.

The purpose of this Article is to establish general requirements and principles for the design and construction of erosion and sediment control measures within the City of Rolla. (Ord. 3500, §2)

Sec. 15-40. General Performance Criteria for Erosion and Sediment Control.

The Erosion and Sediment Control Plan shall include the following:

(a) A natural resources map identifying soils, forest cover, and resources protected under other chapters of this Code. This map should be at a scale no smaller than 1"=100'.

(b) A sequence of construction of the development site, including stripping and clearing; rough grading; construction of utilities, infrastructure, and buildings; and final grading and landscaping. Sequencing shall identify the expected date on which clearing will begin, the estimated duration of exposure of cleared areas, areas of clearing, installation of temporary erosion and sediment control measures, and establishment of permanent vegetation.

(c) All erosion and sediment control measures necessary to meet the objectives of this Chapter throughout all phases of construction and after completion of development of the site. Depending upon the complexity of the project, the drafting of intermediate plans may be required at the close of each season.

(d) Seeding mixtures and rates, types of sod, method of seedbed preparation, expected seeding dates, type and rate of lime and fertilizer application, and kind and quantity of mulching for both temporary and permanent vegetative control measures.

(e) During construction, provisions shall be made for the storage of all construction-site waste material so that contaminants from such waste material will not be leached into the storm drainage system. All construction-site waste shall be properly disposed of within fifteen (15) days after the close of construction.

(f) Provisions for maintenance of control facilities, including easements.

Modifications to the erosion and sediment control plan shall be processed and approved or disapproved in the same manner as Section 15-8 of this Chapter. (Ord. 3500, §2)

Sec. 15-41. Design Requirements for Erosion and Sediment Control Plans.

(a) Grading, erosion control practices, sediment control practices and waterway crossings shall meet the design criteria set forth in the most recent version of "Protecting Water Quality"‡ and shall be adequate to prevent transportation of sediment from the site to the satisfaction of the City. Cut and fill slopes shall be no greater than 3:1, except as approved by the City to meet other community or environmental objectives.

(b) Clearing and grading of natural resources shall not be permitted, except when in compliance with all other chapters of this Code and current requirements of the U.S. Army Corps of Engineers. Clearing techniques that retain natural vegetation and drainage patterns, as described in "Protecting Water Quality" shall be used until all sediment control devices have been installed and have been stabilized.

(1) Phasing shall be recommended on all sites disturbing greater than thirty (30) acres, with the size of each phase to be established at plan review and as approved by the City of Rolla.

(2) Clearing, except that necessary to establish sediment control devices, shall not begin until all sediment control devices have been installed and have been established.

(c) Erosion control requirements shall include the following:

(1) Soil stabilization shall be completed within thirty (30) days of clearing or inactivity in construction;

(2) If seeding or another vegetative erosion control method is used, it shall become established within thirty days or the City of Rolla may require the site to be reseeded or a non vegetative option employed;

(3) Special techniques that meet the design criteria outlined in "Protecting Water Quality" on steep slopes or in drainage ways shall be used to ensure stabilization;

(4) Soil stockpiles must be stabilized or covered at the end of each workday to prevent erosion;

(5) The entire site must be stabilized, using a heavy mulch layer or another method that does not require germination to control erosion, at the close of the construction season;

(6) Techniques shall be employed to prevent the blowing of dust or sediment from the site;

(7) Techniques that divert upland runoff past disturbed slopes shall be employed.

(d) Sediment control suggestions shall include:

(1) Settling basins, sediment traps, and perimeter controls;

(2) Settling basins that are designed in a manner that allows adaptation to provide long-term stormwater management;

(3) Protection for adjacent properties by the use of a vegetated buffer strip in combination with perimeter controls.

(e) Waterway and watercourse protection requirements shall include:

(1) A temporary stream crossing installed and approved by the City of Rolla if a wet watercourse will be crossed regularly during construction;

(2) Stabilization of the watercourse channel before, during, and after any in-channel work;

(3) All on-site stormwater conveyance channels designed according to the criteria outlined in the City of Rolla Stormwater Design Standards;

(4) Stabilization adequate to prevent erosion located at the outlets of all pipes and paved channels.

(f) Construction site access requirements shall include:

(1) Temporary access road provided at all sites;

(2) Other measures required by the City of Rolla in order to ensure that construction vehicles do not track sediment onto public streets or be washed into storm drains. (Ord. 3500, §2)

Secs. 15-42 to 15-52. Reserved.

Article IV - Illicit Storm Sewer Connections and Illegal Discharges

Sec. 15-53. Purpose.

The purpose of this Article is to establish general requirements and principles for the maintenance and control of illicit storm sewer connections and illegal discharges into the municipal storm sewer system within the City of Rolla. (Ord. 3500, §2)

Sec. 15-54. Ultimate Responsibility.

The standards set forth herein and promulgated pursuant to this Chapter are minimum standards; therefore this Chapter does not intend nor imply that compliance by any person will ensure that there will be no contamination, pollution, nor unauthorized discharge of pollutants. (Ord. 3500, §2)

Sec. 15-55. Discharge Prohibitions.

(a) Prohibition of Illegal Discharges: No person shall discharge or cause to be discharged into the municipal storm drain system or watercourses any materials,

including but not limited to pollutants or waters containing any pollutants that cause or contribute to a violation of applicable water quality standards, other than stormwater.

The commencement, conduct or continuance of any illegal discharge to the storm drain system is prohibited except as described as follows:

- (1) The following discharges are exempt from discharge prohibitions established by this Chapter: water line flushing or other potable water sources, landscape irrigation or lawn watering, diverted stream flows, rising ground water, ground water infiltration to storm drains, uncontaminated pumped ground water, foundation or footing drains (not including active groundwater dewatering systems), crawl space pumps, air conditioning condensation, springs, non-commercial washing of vehicles, natural riparian habitat or wet-land flows, swimming pools (if dechlorinated - typically less than one PPM chlorine), fire fighting activities, and any other water source not containing Pollutants.
- (2) Discharges specified in writing by the City of Rolla as being necessary to protect public health and safety.
- (3) Dye testing is an allowable discharge, but requires a written notification to the City of Rolla prior to the time of the test.
- (4) The prohibition shall not apply to any non-stormwater discharge permitted under an NPDES permit, waiver, or waste discharge order issued to the discharger and administered under the authority of the Federal Environmental Protection Agency, provided that the discharger is in full compliance with all requirements of the permit, waiver, or order and other applicable laws and regulations, and provided that written approval has been granted for any discharge to the storm drain system.

(b) Prohibition of Illicit Connections

- (1) The construction, use, maintenance or continued existence of illicit connections to the storm drain system is prohibited.
- (2) This prohibition expressly includes, without limitation, illicit connections made in the past, regardless of whether the connection was permissible under law or practices applicable or prevailing at the time of connection.
- (3) A person is considered to be in violation of this Chapter if the person connects a line conveying sewage to the municipal storm sewer system, or allows such a connection to continue. (Ord. 3500, §2)

(c) Roof Drain Connections

- (1) For all new construction, roof drains shall not be connected to streets, sanitary or storm sewers, or roadside ditches. Roof drains shall discharge to infiltration areas or vegetative Best Management Practices (BMP's) where practicable.

Sec. 15-56. Industrial or Construction Activity Discharges.

Any person subject to an industrial or construction activity NPDES stormwater discharge permit shall comply with all provisions of such permit. Proof of compliance with said permit may be required in a form acceptable to the City of Rolla prior to allowing of discharges to the municipal storm sewer system. (Ord. 3500, §2)

Sec. 15-57. Access to Facilities for the Purpose of Monitoring Discharges.

This section applies to all facilities that have stormwater discharges associated with industrial activity, including construction activity.

(a) The City of Rolla shall be permitted to enter and inspect facilities subject to regulation under this Chapter as often as necessary to determine compliance with this Chapter.

(b) The City of Rolla shall have the right to set up on any permitted facility such devices as are necessary to conduct monitoring and/or sampling of the facility's stormwater discharge.

(c) Any temporary or permanent obstruction to safe and easy access to the facility to be inspected and/or sampled shall be promptly removed by the operator at the written or oral request of the City of Rolla and shall not be replaced. The costs of clearing such access shall be borne by the operator.

(d) Unreasonable delays in allowing the City of Rolla access to a permitted facility is a violation of a stormwater discharge permit and of this Chapter. A person who is the operator of a facility with a NPDES permit to discharge stormwater associated with industrial activity commits an offense if the person denies the City of Rolla reasonable access to the permitted facility for the purpose of conducting any activity authorized or required by this Chapter.

(e) If the City of Rolla has been refused access to any part of the premises from which stormwater is discharged, and he/she is able to demonstrate probable cause to believe that there may be a violation of this Chapter, or that there is a need to inspect and/or sample as part of a routine inspection and sampling program designed to verify compliance with this Chapter or any order issued hereunder, or to protect the overall public health, safety, and welfare of the community, then the City of Rolla may seek issuance of a search warrant from any court of competent jurisdiction. (Ord. 3500, §2)

Sec. 15-58. Requirement to Prevent, Control, and Reduce Stormwater Pollutants by the Use of Best Management Practices.

The City of Rolla Public Works Department has adopted requirements identifying Best Management Practices for any activity, operation, or facility that may cause or contribute to pollution or contamination of stormwater, the storm drain system, or waters of the U.S. (See Section 15-40 and Section 15-41 of this Chapter on Erosion and Sediment Control requirements). The owner or operator of a commercial or industrial

establishment shall provide, at their own expense, reasonable protection from accidental discharge of prohibited materials or other wastes into the municipal storm drain system or watercourses through the use of these structural and non-structural BMPs. Further, any person responsible for a property or premise, which is, or may be, the source of an illegal discharge, may be required to implement, at said person's expense, additional structural and non-structural BMPs to prevent the further discharge of pollutants to the municipal storm sewer system. Compliance with all terms and conditions of a valid NPDES permit authorizing the discharge of stormwater associated with industrial activity, to the extent practicable, shall be deemed compliant with the provisions of this Section. These BMPs shall be part of a Stormwater Pollution Prevention Plan (SWPPP) as necessary for compliance with requirements of the NPDES permit for a regulated industry. (Ord. 3500, §2)

Sec. 15-59. Watercourse Protection.

Every person owning property through which a watercourse passes, or such person's lessee, shall keep and maintain that part of the watercourse within the property free of trash, debris, yard waste, excessive vegetation and other obstacles that would pollute, contaminate, or significantly retard the flow of water through the watercourse. In addition, the owner or lessee shall maintain existing privately owned structures within or adjacent to a watercourse, so that such structures will not become a hazard to the use, function, or physical integrity of the watercourse, as specified in Article V. Stream Buffers. (Ord. 3500, §2)

Sec. 15-60. Notification of Spills.

Notwithstanding other requirements of law, as soon as any person responsible for a facility or operation, or responsible for emergency response for a facility or operation has information of any known or suspected release of materials which are resulting or may result in illegal discharges or pollutants discharging into stormwater, the storm drain system, or water of the U.S., said person shall take all necessary steps to ensure the discovery, containment, and cleanup of such release. In the event of such a release of hazardous materials said person shall immediately notify the City of Rolla Police Department of the occurrence via emergency dispatch services. In the event of a release of non-hazardous materials, said person shall notify the City of Rolla in person or by phone or facsimile no later than the next business day. Notifications in person or by phone shall be confirmed by written notice addressed and mailed to the City of Rolla within three (3) business days of the phone notice. If the discharge of prohibited materials emanates from a commercial or industrial establishment, the owner or operator of such establishment shall also retain an on-site written record of the discharge and the actions taken to prevent its recurrence. Such records shall be retained for at least three years. (Ord. 3500, §2)

Sec. 15-61. Enforcement.

Whenever the City of Rolla finds that a person, firm, corporation or business has violated a prohibition or failed to meet a requirement of this Chapter, the City of Rolla may order compliance by written notice of violation to the responsible person. Such notice shall require without limitation:

- (a) The performance of monitoring, analyses, and reporting;
- (b) The elimination of illicit connections or illegal discharges;
- (c) That violating discharges, practices, or operations shall cease and desist;
- (d) The abatement or remediation of stormwater pollution or contamination hazards and the restoration of any affected property;
- (e) Payment of a fine to cover administrative and remediation costs; and
- (f) The implementation of source control or treatment BMPs.

If abatement of a violation and/or restoration of affected property is required, the notice shall set forth a deadline within which such remediation or restoration must be completed. If the person notified as provided in this Section shall fail, neglect or refuse to comply with the same within the time specified in such notice, the designated officer shall report the same to the council of the city. Thereupon the council shall call and have a full and adequate hearing upon the matter, giving the affected parties at least fourteen days written notice of the hearing. At such hearing any party may be represented by counsel, and all parties shall have an opportunity to be heard.

After the hearing, if the evidence supports a finding based upon competent and substantial evidence that a violation exists, that the person having an interest was notified, and that the person failed to remediate or restore, the city council shall issue an order based upon its findings of fact to its designated officer to proceed to remediate or restore by a designated governmental agency or a contractor and the expense thereof and fine shall be charged to the violator. (Ord. 3500, §2)

Secs. 15-62 to 15-72. Reserved.

Article V - Stream Buffers

Sec. 15-73. Introduction.

Buffers adjacent to stream systems provide numerous environmental protection and resource management benefits that can include the following:

- (a) Restoring and maintaining the chemical, physical, and biological integrity of the water resources by removing pollutants delivered from urban stormwater, reducing erosion and sediment entering the stream, and stabilizing stream banks;
- (b) Providing infiltration of stormwater runoff;
- (c) Maintaining base flow of streams;
- (d) Contributing the organic matter that is a source of food and energy for the aquatic ecosystem;
- (e) Providing tree canopy to shade streams and promote desirable aquatic organisms;
- (f) Providing riparian wildlife habitat;
- (g) Furnishing scenic value and recreational opportunity.

It is the desire of the City of Rolla to protect and maintain the native vegetation in riparian and wetland areas by implementing specifications for the establishment, protection, and maintenance of vegetation along all stream systems within our jurisdictional authority. (Ord. 3500, §2)

Sec. 15-74. Purpose.

The purpose of this Chapter is to establish minimal acceptable requirements for the design and maintenance of buffers to protect streams and floodplains within the City of Rolla; to protect the water quality of watercourses, reservoirs, lakes, and other significant water resources within the City of Rolla; to protect riparian and aquatic ecosystems within the City of Rolla; and to provide for the environmentally sound use of land resources within the City of Rolla. (Ord. 3500, §2)

Sec. 15-75. Authority and Scope.

- (a) This Chapter shall apply to all proposed development except for that development which meets waiver or variance criteria as outlined in Section 15-80 of this Chapter.
- (b) This Chapter shall apply to all timber harvesting activities, except those timber harvesting operations which are implementing a forest management plan that has been deemed to be in compliance with the regulations of the buffer Ordinance and has received approval from the Missouri Department of Conservation.
- (c) This Chapter shall apply to surface mining operations except that the design standards shall not apply to active surface mining operations that are operating in compliance with an approved state or federal surface mining permit issued by the appropriate governing agency.

(d) Article V of this Chapter shall not apply to agricultural operations that are covered by an approved Natural Resources Conservation Service (NRCS) conservation plan that includes the application of BMPs.

(e) Article V of this Chapter may not apply to areas that are zoned R-R in accordance with the City of Rolla Zoning Ordinance.

(f) Article V of this Chapter shall not apply to streams with a tributary drainage area of less than one hundred (100) acres.

(g) This Chapter shall apply to all parcels of land, structures, and activities that are causing or contributing to:

(1) Pollution, including nonpoint source pollution, of the waters within the City of Rolla;

(2) Erosion or sedimentation of stream channels;

(3) Degradation of aquatic or riparian habitat. (Ord. 3500, §2)

Sec. 15-76. General Plan Requirements for Stream Buffers.

(a) In accordance with Section 15-77 of this Chapter, a stream buffer plan approved by the City of Rolla is required for all development, forest harvesting operations, surface mining operations, and agricultural operations.

(b) The stream buffer plan shall set forth an informative, conceptual, and schematic representation of the proposed activity by means of maps, graphs, charts, or other written or drawn documents so as to enable the City an opportunity to make a reasonably informed decision regarding the proposed activity.

(c) The stream buffer plan shall contain the following information:

(1) A location or vicinity map;

(2) Maps which include at a scale no smaller than 1" = 100':

(A) Field-delineated and surveyed streams, springs, seeps, bodies of water, and wetlands (include a minimum of 200 feet into adjacent properties);

(B) Field delineated stream buffers;

(C) Limits of the 100-year flood inundation area;

(3) Hydric soils mapped in accordance with the NRCS soil survey of the site area. Steep slopes greater than fifteen (15) percent for areas adjacent to and within two hundred (200) feet of streams or other water bodies;

(4) A description of existing vegetation within the stream buffer.

(d) The stream buffer plan shall be submitted in conjunction with the required stormwater improvement plan and erosion and sediment control plan for any development, and the stream buffer should be clearly delineated on the final grading plan. (Ord. 3500, §2)

Sec. 15-77. Design Standards for Stream Buffers.

(a) A stream buffer for a stream system shall consist of a vegetated strip of land extending along both sides of a stream and its adjacent wetlands, floodplains, or slopes. The buffer width shall be adjusted to include contiguous sensitive areas, such as steep slopes or erodible soils, where development or disturbance may adversely affect water quality, streams, wetlands, or other water bodies.

(b) The stream buffer shall begin at the edge of the stream bank of the active channel.

(c) The required width for all stream buffers (i.e., the base width) shall be a minimum of fifty (50) feet, centered on the centerline of the channel (See Figure 15-1), with the requirement to expand the buffer depending on:

(1) Percent Slope: The stream buffer width shall be modified if steep slopes are within close proximity to the stream and drain into the stream system. In those cases, the stream buffer width may be adjusted;

Percent Slope Width of Buffer

15% - 17% add 10 feet

18% - 20% add 20 feet

21% - 23% add 30 feet

24% - 25% add 40 feet

(2) 100-year Floodplain: Stream buffers shall be extended to encompass the entire 100-year floodplain and a zone with a minimum width of ten (10) feet beyond each edge of the floodplain;

(3) Wetlands or Critical Areas: When wetland or critical areas extend beyond the edge of the required buffer width, the buffer shall be adjusted so that the buffer consists of the extent of the wetland plus a twenty (20) foot zone extending beyond the wetland edge.

Figure 15 - 1. Stream Buffer Schematic. Minimum buffer measured from centerline of stream.

(d) The following land uses and/or activities are designated as potential water pollution hazards and must be set back from any active stream channel or water body by at least the distance indicated below:

Storage of hazardous substances 100 feet

Aboveground or underground petroleum storage facilities 100 feet

Drainfields from onsite sewage disposal and treatment systems (i.e., septic systems) 50 feet

Raised septic systems 100 feet

Solid waste landfills 300 feet

Junkyards 100 feet

Confined animal feedlot operations 250 feet

Subsurface discharges from a wastewater treatment plant 100 feet

Land application of biosolids 100 feet

(Ord. 3500, §2)

15-78. Buffer Management and Maintenance.

(a) Management of Resources: The stream buffer, including wetlands and floodplains, shall be managed to enhance and maximize the unique value of these resources. Management includes specific limitations on alteration of the natural conditions of these resources. The following practices and activities are restricted within the active channel and buffer area, except with approval by the City of Rolla.

(1) Clearing of existing vegetation;

(2) Soil disturbance by grading, stripping, or other practices;

(3) Filling or dumping of any material including, but not limited to yard waste and demolition debris;

(4) Drainage by ditching, underdrains, or other systems;

(5) Use, storage, or application of pesticides;

(6) Storage or operation of motorized vehicles, except for maintenance and emergency use approved by the City of Rolla.

(b) Permitted Structures, Practices and Activities: The following structures, practices, and activities are permitted in the stream buffer, with specific design or maintenance features, subject to the review of the City of Rolla.

(1) Roads, bridges, paths, and utilities:

(A) An analysis needs to be conducted to ensure that no economically feasible alternative is available;

(B) The right-of-way should be the minimum width needed to allow for maintenance access and installation;

(C) The angle of the crossing shall be perpendicular to the stream or buffer to minimize clearing requirements;

(D) The minimum number of road crossings should be used within each subdivision, and no more than one fairway crossing is allowed for every three hundred (300) feet of buffer.

(2) Stormwater improvements:

(A) An analysis needs to be conducted to ensure that no economically feasible alternative is available and that the project either is necessary for flood control or significantly improves the water quality or habitat in the stream;

(B) When constructing stormwater improvement facilities, the area cleared will be limited to the area required for construction and adequate maintenance access;

(C) Material dredged or otherwise removed from a stream buffer during necessary construction shall be stored outside the buffer.

(3) Stream restoration projects, facilities, and activities approved by the City of Rolla are permitted within the stream buffer;

(4) Water quality monitoring and stream gauging are permitted within the stream buffer, as approved by the City of Rolla;

(5) Individual trees within the stream buffer that are in danger of falling, causing damage to dwellings or other structures, or causing blockage of the stream may be removed;

(6) Other timber cutting techniques approved by the City of Rolla may be undertaken within the stream buffer under the advice and guidance of the City if necessary to preserve the forest from extensive pest infestation, disease infestation, or threat from fire.

(c) Plan Preparation: All plans prepared for recording and all right-of-way plans shall clearly:

(1) Show the extent of any stream buffer on the subject property;

(2) Label the stream buffer;

(3) Provide a note to reference any stream buffer stating: "There shall be no clearing, grading, construction or disturbance of vegetation except as permitted by the City."

(d) Ownership: All stream buffer areas shall be dedicated to the City of Rolla. The City shall be responsible to reimburse the owner/developer of the property for the value of the undeveloped land that is dedicated to the City.

(e) Maintenance: All stream buffer areas shall be maintained by the City of Rolla. The City of Rolla shall inspect the buffer as required and immediately following severe storms for evidence of sediment deposition, erosion, or concentrated flow in channels and corrective actions taken to ensure the integrity and functions of the stream buffer.

Stream buffer areas may be allowed to grow into their vegetative target state naturally, but methods to enhance the successional process such as active reforestation may be used when deemed necessary by the City of Rolla to ensure the preservation and propagation of the buffer area. Stream buffer areas may also be enhanced through reforestation or other growth techniques as a form of mitigation for achieving buffer preservation requirements.

(f) Dedication of Lands: An offer of dedication of a stream buffer area to the City of Rolla shall not be interpreted to mean that this automatically conveys to the general public the right of access to this area. (Ord. 3500, §2)

Sec. 15-79. Enforcement and Penalties.

The City of Rolla is authorized and empowered to enforce the requirements of this Chapter in accordance with the procedures of this Section and the procedures set for in Article I, Section 15-13.

(a) Any person who violates any provision of this Chapter may be liable for any cost or expenses incurred as a result thereof by the City of Rolla.

(b) Penalties that may be assessed for those deemed to be in violation may include the following:

(1) A civil penalty in the form of a fine not more than five hundred dollars (\$500.00) for each violation. Every day that such violation(s) continue will be considered a separate offense.

(2) A criminal penalty in the form of a fine of not more than five hundred dollars (\$500.00) for each violation, imprisonment for not more than ninety (90) days, or both. Every day that such violation(s) continue will be considered a separate offense.

(3) Anyone who knowingly makes any false statements in any application, record, or plan required by this Chapter shall upon conviction be punished by a fine of not more than five hundred dollars (\$500.00) for each violation, imprisonment for not more than thirty (30) days, or both.

(c) In addition to any other sanctions listed in this Chapter, a person who fails to comply with the provisions of Article V of this Chapter shall be liable to the City in a civil action for damages in an amount equal to the cost of restoring the buffer. Damages that are recovered in accordance with this action shall be used for the restoration of the damaged buffer system. (Ord. 3500, §2)

Sec. 15-80. Waivers and Variances for Article V.

(a) This Chapter shall apply to all proposed development except for activities that were completed prior to the effective date of this Chapter and had received the following:

(1) A valid, unexpired permit in accordance with development regulations;

(2) A current, executed public works agreement;

(3) A valid, unexpired land development permit;

(4) A waiver in accordance with current development regulations.

(b) The City of Rolla may grant a variance for the following:

(1) Those projects or activities for which it can be demonstrated that strict compliance with this Chapter would result in a practical difficulty or extreme financial hardship;

(2) Those projects or activities serving a public need where no feasible alternative is available;

(3) The repair and maintenance of public improvements where avoidance and minimization of adverse impacts to wetlands and associated aquatic ecosystems have been addressed.

(c) A waiver for development may also be granted, if deemed appropriate by the City. The buffer width may be reduced at some points as long as the average width of the buffer meets the minimum requirement. This averaging of the buffer may be used to allow for the presence of an existing structure or to recover a lost lot, as long as the active stream channel is not disturbed by the reduction and no new structures are built within the 100-year floodplain.

(d) The developer shall submit a written request for a variance to the City. The application shall include specific reasons justifying the variance and any other information necessary to evaluate the proposed variance request. The City may require an alternative analysis that clearly demonstrates that no other feasible alternatives exist and that minimal impact will occur as a result of the project or development.

(e) In granting a request for a variance, the City may require site design, landscape planting, fencing, signs, and water quality best management practices to reduce adverse impacts on water quality, streams, wetlands, and floodplains. (Ord. 3500, §2)

Secs. 15-81 to 15-91. Reserved.

Article VI - Flood Control

Sec. 15-92. Introduction.

The flood hazard areas of the City of Rolla are subject to periodic inundation which results in loss of life, property, health and safety hazards, disruption of commerce and governmental services, extraordinary public expenditures for flood protection and relief, and impairment of the tax base, all of which adversely affect the public health, safety and general welfare.

These flood losses are caused by the cumulative effect of obstructions in flood plains causing increases in flood heights and velocities, and by the occupancy in flood hazard areas by uses vulnerable to floods or hazards to other lands which are inadequately elevated, flood-proofed, or otherwise unprotected from flood damages.

The Flood Insurance Study (FIS) that is the basis of this Chapter uses a standard engineering method of analyzing flood hazards which consist of a series of interrelated steps.

(a) Selection of a base flood that is based upon engineering calculations which permit a consideration of such flood factors as its expected frequency of occurrence, the area inundated, and the depth of inundation. The base flood selected for this Chapter is representative of large floods which are characteristic of what can be expected to occur on the particular streams subject to this Chapter. It is in the general order of a flood which could be expected to have a one percent chance of occurrence in any one year as delineated on the FIS, and illustrative materials for Phelps County, Missouri, dated February 20, 2008 as amended, and any future revisions thereto.

(b) Calculation of water surface profiles are based on a standard hydraulic engineering analysis of the capacity of the stream channel and overbank areas to convey the regulatory flood.

(c) Computation of a floodway required to convey this flood without increasing flood heights more than one (1) foot at any point. (Ord. 3500, §2; Ord. 3846, §1)

Sec. 15-93. Purpose.

It is the purpose of this Chapter to promote the public health, safety and general welfare and to minimize those losses described in Section 15-92 to establish or maintain the City's eligibility for participation in the National Flood Insurance Program (NFIP) as defined in 44 Code of Federal Regulations (CFR) 59.22(a)(3); and to meet the requirements of 44 CFR 60.3(d) by applying the provisions of this Chapter to:

- (a) To protect human life and health;
- (b) To minimize expenditure of public money for costly flood control projects;
- (c) To minimize the need for rescue efforts associated with flooding and generally undertaken at the expense of the general public;
- (d) Restrict or prohibit uses that are dangerous to health, safety, or property in times of flooding or cause undue increases in flood heights or velocities;
- (e) Require uses vulnerable to floods, including public facilities that serve such uses, be provided with flood protection at the time of initial construction; and
- (f) Protect individuals from buying lands that are unsuited for the intended development purposes due to the flood hazard.
- (g) To minimize prolonged business interruptions;
- (h) To minimize damage to public facilities and utilities such as water and gas mains, electric, telephone and sewer lines, streets and bridges located in flood plains;
- (i) To help maintain a stable tax base by providing for the sound use and development of flood-prone areas in such a manner as to minimize future flood blight areas;
- (j) To insure that those who occupy the areas of special flood hazard assume responsibility for their actions. (Ord. 3500, §2)

Sec. 15-94. Scope.

This Chapter shall apply to all lands within the jurisdiction of the City of Rolla, identified as numbered and unnumbered A zones and AE zones, on the Flood Insurance Rate Map (FIRM) and Flood Boundary and Floodway Map (FBFM) Phelps County FIRM Panels 29161C0232D, 29161C0233D, 29161C0234D, 29161C0241D, 29161C0242D, 29161C0250D, 29161C0251D, 29161C0252D, 29161C0253D, C29161C0261D, 29161C0275D dated February 20, 2008 as amended, and any future revisions thereto.

In all areas covered by this Chapter, no development shall be permitted except through the issuance of a floodplain development permit, granted by the City of Rolla under such safeguards and restrictions as the City of Rolla may reasonably impose for the promotion and maintenance of the general welfare, health of the inhabitants of the community, and as specifically noted in Section 15-102 through Section 15-106. (Ord. 3500, §2; Ord. 3846, §1)

Sec. 15-95. Basis for Establishing Areas of Special Flood Hazard.

The areas of special flood hazard identified by FEMA through a scientific and engineering report entitled "The Flood Insurance Study for the City of Rolla, Missouri, Phelps County", dated February 20, 2008 with accompanying FIRMs (and Flood Boundary and Floodway Maps) with any revision thereto are hereby adopted by reference and declared to be a part of this Chapter. (Ord. 3500, §2; Ord. 3846, §1)

Sec. 15-96. Interpretation.

In the interpretation and application of this Chapter, all provisions shall be:

- (a) Considered as minimum requirements;
- (b) Liberally construed in favor of the governing body; and
- (c) Deemed neither to limit nor repeal any other powers granted under State statutes. (Ord. 3500, §2)

Sec. 15-97. Warning and Disclaimer of Liability.

The degree of flood protection required by this Chapter is considered reasonable for regulatory purposes and is based on scientific and engineering considerations. Larger floods can and will occur on rare occasions. Flood heights may be increased by man-made or natural causes. This Chapter does not imply that land outside the areas of special flood hazards or uses permitted within such areas will be free from flooding or flood damages. This Chapter shall not create liability on the part of the City of Rolla or by any officer or employee thereof for any flood damages that result from reliance on this Chapter or any administrative decision lawfully made there under. (Ord. 3500, §2)

Sec. 15-98. Floodplain Development Permit.

To obtain a floodplain development permit, the developer shall first file with the City an application in writing on a form furnished for that purpose. Every floodplain development permit application shall:

- (a) Describe the land on which the proposed work is to be done by lot, block and tract, house and street address, or similar description that will readily identify and specifically locate the proposed structure or work;

- (b) Identify and describe the work to be covered by the floodplain development permit;
- (c) Indicate the use or occupancy for which the proposed work is intended;
- (d) Indicate the assessed value of the structure and the fair market value of the improvement;
- (e) Specify whether development is located in designated flood fringe or floodway;
- (f) Identify the existing base flood elevation and the elevation of the proposed development;
- (g) Give such other information as reasonably may be required by the Public Works Director;
- (h) Be accompanied by plans and specifications for proposed construction; and
- (i) Be signed by the permittee or his authorized agent who may be required to submit evidence to indicate such authority. (Ord. 3500, §2)

Sec. 15-99. Designation of the Local Administrator.

The Public Works Director is hereby appointed to administer and implement the provisions of this Chapter, by granting or denying development permit applications in accordance with its provisions. (Ord. 3500, §2)

Sec. 15-100. Duties and Responsibilities of the Public Works Director.

Duties of the Public Works Director shall include, but not be limited to:

- (a) Review of all applications for floodplain development permits to assure that sites are reasonably safe from flooding and that the floodplain development permit requirements of this Chapter have been satisfied;
- (b) Review of all floodplain development permits for proposed development to assure that all necessary permits have been obtained from those Federal, State, or local governmental agencies from which prior approval is required by Federal, State or local law;
- (c) Review all subdivision proposals and other proposed new development, including manufactured home parks or subdivisions, to determine whether such proposals will be reasonably safe from flooding;
- (d) Issue floodplain development permits for all approved applications;

(e) Verify and maintain a record and maintain record of the actual elevation (in relation to mean sea level) of the lowest floor, including basement of all new or substantially improved structures;

(f) Verify and maintain a record, and maintain record of the actual elevation (in relation to mean sea level) to which the new or substantially improved non-residential structures have been flood proofed;

(g) When flood proofing techniques are utilized for a particular non-residential structure the Public Works Director shall require certification from a registered professional engineer or architect;

(h) property owners/developers to notify the Missouri State Emergency Management Agency (MoSEMA) prior to any alteration or relocation of a floodway, and require the property owner/developer to furnish evidence of such notification to FEMA;

(i) Assure that maintenance is provided within the altered or relocated portion of said watercourse so that the flood carrying capacity is not diminished; (Ord. 3500, §2; Ord. 3846, §1)

Sec. 15-101. Variance Procedures for Article VI.

(a) The board of adjustment as established by the City of Rolla shall hear and decide appeals and requests for variances from the requirements of this Chapter.

(b) Where an application for a floodplain development permit or request for a variance from the floodplain management regulations is denied by the floodplain administrator, the developer may apply for such floodplain development permit or variance directly to the Appeal Board, as defined in Section 15-101.

(c) The board of adjustment shall hear and decide appeals when it is alleged that there is an error in any requirement, decision, or determination made by the floodplain administrator in the enforcement or administration of this Chapter.

(d) Any person aggrieved by the decision of the board of adjustment or any taxpayer may appeal such decision to the Circuit Court as provided in the Missouri statutes.

(e) In passing upon such applications, the board of adjustment shall consider all technical evaluations, all relevant factors, standards specified in other sections of this Chapter, and the following criteria:

(1) The danger to life and property due to flooding or erosion damage;

(2) The danger that materials may be swept onto other lands to the injury of others;

- (3) The susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the individual owner;
- (4) The importance of the services provided by the proposed facility to the City;
- (5) The necessity to the facility of a waterfront location, where applicable;
- (6) The availability of alternative locations, not subject to flooding or erosion damage, for the proposed use;
- (7) The compatibility of the proposed use with existing and anticipated development;
- (8) The relationship of the proposed use to the comprehensive plan and flood plain management program for that area;
- (9) The safety of access to the property in times of flood for ordinary and emergency vehicles;
- (10) The expected heights, velocity, duration, rate of rise and sediment transport of the flood waters, if applicable, expected at the site; and,
- (11) The costs of providing governmental services during and after flood conditions, including maintenance and repair of public utilities and facilities such as sewer, gas, electrical, and water systems, streets and bridges.

(f) Conditions for Approving Floodplain Management Variances:

- (1) Generally, variances may be issued for new construction and substantial improvements to be erected on a lot on one-half acre or less in size contiguous to and surrounded by lots with existing structures constructed below the base flood level, providing items (b - f) below, have been fully considered. As the lot size increases beyond the one-half acre, the technical justification required for issuing the variance increases.
- (2) Variances may be issued for the reconstruction, rehabilitation or restoration of structures listed on the National Register of Historic Places, the State Inventory of Historic Places or the local inventory of historic places upon determination provided the proposed activity will not preclude the structure's continued historic designation.
- (3) Variances shall not be issued within any designated floodway if any increase in flood levels during the base flood discharge would result.
- (4) Variances shall only be issued upon a determination that the variance is the minimum necessary, considering the flood hazard, to afford relief.
- (5) Variances shall only be issued upon:

(A) A showing of good and sufficient cause;

(B) A determination that failure to grant the variance could result in exceptional hardship to the developer; and

(C) A determination that the granting of a variance will not result in increased flood heights, additional threats to public safety, extraordinary public expense, create nuisances, cause fraud on or victimization of the public, or conflict with existing local laws or ordinances.

(6) The City shall notify the developer in writing, over the signature of the Public Works Director, that:

(A) The issuance of a variance to construct a structure below base flood level will result in increased premium rates for flood insurance up to amounts as high as twenty-five dollars (\$25.00) for one hundred dollars (\$100.00) of insurance coverage; and

(B) Such construction below the base flood level increases risks to life and property. Such notification shall be maintained with the record of all variance actions as required by this Chapter.

(g) Conditions of Approving Variances for Accessory Structures: Any variance granted for an accessory structure shall be decided individually based on a case by case analysis of the building's unique circumstances. Variances granted shall meet the following conditions as well as those criteria and conditions set forth in Section 15-102 (e) and (f) of this Chapter.

In order to minimize flood damages during the 100-year flood and the threat to public health and safety, the following conditions shall be included for any variance issued for accessory structures that are constructed at-grade and wet-floodproofed:

(1) Use of the accessory structures must be solely for parking and limited storage purposes in zone A only as identified on the City's FIRM.

(2) For any new or substantially damaged accessory structures, the exterior and interior building components and elements (i.e., foundation, wall framing, exterior and interior finishes, flooring, etc.) below the base flood elevation, must be built with flood-resistant materials in accordance with Section 15-102 (d) (2) of this Chapter.

(3) The accessory structures must be adequately anchored to prevent flotation, collapse, or lateral movement of the structure in accordance with Section 15-102(d1) of this Chapter. All of the building's structural components must be capable of resisting specific flood-related forces including hydrostatic, buoyancy, and hydrodynamic and debris impact forces.

(4) Any mechanical, electrical, or other utility equipment must be located above the base flood elevation or flood proofed so that they are contained within a watertight, flood proofed enclosure that is capable of resisting damage during flood conditions in accordance with Section 15-102 (d) (4) of this Chapter.

(5) The accessory structures must meet all NFIP opening requirements. The NFIP requires that enclosure or foundation walls, subject to the 100-year flood, contain openings that will permit the automatic entry and exit of floodwaters in accordance with Section 15-104 (c) (2) of this Chapter.

(6) The accessory structures must comply with the floodplain management floodway encroachment provisions of Section 15-105 (b) of this Chapter. No variances may be issued for accessory structures within any designated floodway, if any increase in flood levels would result during the 100-year flood.

(7) Equipment, machinery, or other contents must be protected from any flood damage.

(8) No disaster relief assistance under any program administered by any Federal agency shall be paid for any repair or restoration costs of the accessory structures.

(9) The City of Rolla shall notify the developer in writing over the signature of the Public Works Director that:

(A) The issuance of a variance to construct a structure below base flood level will result in increased premium rates for flood insurance up to amounts as high as twenty-five dollars (\$25.00) for one hundred dollars (\$100.00) of insurance coverage; and

(B) Such construction below the base flood level increases risks to life and property. Such notification shall be maintained with the record of all variance actions as required by this Chapter.

(10) Wet-flood proofing construction techniques must be reviewed and approved by the City and registered professional engineer or architect prior to the issuance of any floodplain development permit for construction. (Ord. 3500, §2)

Sec. 15-102. General Design Standards.

(a) No permit for floodplain development shall be granted for new construction, substantial-improvements, and other improvements, including the placement of manufactured homes, within any numbered or unnumbered A zones and AE zones, unless the conditions of this section are satisfied.

(b) All areas identified as unnumbered A zones on the FIRM are subject to inundation of the 100-year flood; however, the base flood elevation is not provided. Development within unnumbered A zones is subject to all provisions of this Chapter. If FIS data is not

available, the City shall obtain, review, and reasonably utilize any base flood elevation or floodway data currently available from Federal, State, or other sources.

(c) Until a floodway is designated, no new construction, substantial improvements, or other development, including fill, shall be permitted within any numbered A zone or AE zone on the FIRM, unless it is demonstrated that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the water surface elevation of the base flood more than one (1) foot at any point within the City.

(d) All new construction, subdivision proposals, substantial-improvements, prefabricated structures, placement of manufactured homes, and other developments shall require:

(1) Design or adequate anchorage to prevent flotation, collapse, or lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy;

(2) Construction with materials resistant to flood damage;

(3) Utilization of methods and practices that minimize flood damages;

(4) All electrical, heating, ventilation, plumbing, air-conditioning equipment, and other service facilities be designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding;

(5) New or replacement water supply systems and/or sanitary sewage systems be designed to minimize or eliminate infiltration of flood waters into the systems and discharges from the systems into flood waters, and on-site waste disposal systems be located so as to avoid impairment or contamination; and

(6) Subdivision proposals and other proposed new development, including manufactured home parks or subdivisions, located within special flood hazard areas are required to assure that:

(A) All such proposals are consistent with the need to minimize flood damage;

(B) All public utilities and facilities, such as sewer, gas, electrical, and water systems are located and constructed to minimize or eliminate flood damage;

(C) Adequate drainage is provided so as to reduce exposure to flood hazards; and

(D) All proposals for development, including proposals for manufactured home parks and subdivisions, of five (5) acres or fifty (50) lots, whichever is lesser, include within such proposals base flood elevation data.

(e) Storage, material, and equipment:

(1) The storage or processing of materials within the special flood hazard area that are in time of flooding buoyant, flammable, explosive, or could be injurious to human, animal, or plant life is prohibited.

(2) Storage of other material or equipment may be allowed if not subject to major damage by floods, if firmly anchored to prevent flotation, or if readily removable from the area within the time available after a flood warning.

(f) Accessory structures, used solely for parking and limited storage purposes, not attached to any other structure on the site, of limited investment value, and not larger than four hundred (400) square feet, may be constructed at-grade and wet-floodproofed provided there is no human habitation or occupancy of the structure; the structure is of single-wall design; a variance has been granted from the standard floodplain management requirements of this Chapter; and a floodplain development permit has been issued. (Ord. 3500, §2)

Sec. 15-103. Standards for Proposed Development.

All proposals for residential subdivision development (including manufactured home parks) and other proposed new developments (including nonresidential) shall:

(a) Be consistent with the need to minimize flood damage;

(b) Have public utilities and facilities such as sewer, gas, electrical and water systems located and constructed to minimize flood damage;

(c) Have adequate drainage provided to reduce exposure to flood hazards;

(d) Provide base flood elevation data for the proposed developments which are greater than either fifty (50) lots or five (5) acres. (Ord. 3500, §2)

Sec. 15-104. Standards for Structures.

In all areas identified as numbered and unnumbered A zones and AE zones, where base flood elevation data have been provided, as set forth in Section 15-102 (b), the following provisions are required:

(a) Residential Construction: New construction or substantial improvement of any residential structures, including manufactured homes, shall have the lowest floor, including basement, elevated to one (1) foot above base flood elevation.

(b) New construction or substantial improvement of any commercial, industrial or other non-residential structures, including manufactured homes shall either have the lowest floor, including basement, elevated to one (1) foot above the level of the base flood elevation or, together with attendant utility and sanitary facilities, be flood proofed so that below such a level the structure is watertight with walls substantially impermeable

to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy. A registered professional engineer or architect shall certify that the standards of this subsection are satisfied. Such certification shall be provided to the Public Works Director, as set forth in Section 15-100 (g).

(c) New Construction and Substantial Improvements: That fully enclosed areas below the lowest floor that are subject to flooding shall be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwaters. Designs for meeting this requirement must either be certified by a registered professional engineer or architect or meet or exceed the following minimum criteria:

- (1) A minimum of two (2) openings having a total net area of not less than one (1) square inch for every square foot of enclosed area subject to flooding shall be provided; and
- (2) The bottom of all openings shall be no higher than one foot above grade. Openings may be equipped with screens, louvers, valves, or other coverings or devices provided that they permit the automatic entry and exit of floodwaters.

(d) Manufactured Homes:

(1) All manufactured homes to be placed within all unnumbered and numbered A zones and AE zones, on the City's FIRM shall be required to be installed using methods and practices that minimize flood damage. For the purposes of this requirement, manufactured homes must be elevated and anchored to resist flotation, collapse, or lateral movement. Methods of anchoring may include, but are not limited to, use of over-the-top or frame ties to ground anchors.

(2) Require manufactured homes that are placed or substantially improved within unnumbered or numbered A zones and AE zones, on the City's FIRM on sites:

- (A) Outside of manufactured home park or subdivision;
- (B) In a new manufactured home park or subdivision;
- (C) In an expansion to and existing manufactured home park or subdivision; or
- (D) In an existing manufactured home park or subdivision on which a manufactured home has incurred substantial damage as the result of a flood,

Be elevated on a permanent foundation such that the lowest floor of the manufactured home is elevated to one (1) foot above the base flood elevation and be securely attached to an adequately anchored foundation system to resist flotation, collapse, and lateral movement.

(3) Require that manufactured homes to be placed or substantially improved on sites in an existing manufactured home park or subdivision within all unnumbered and

numbered A zones and AE zones, on the City's FIRM, that are not subject to the provisions of Section 15-104 (d) of this Chapter, be elevated so that either:

- (A) The lowest floor of the manufactured home is at one (1) foot above the base flood level; or
- (B) The manufactured home chassis is supported by reinforced piers or other foundation elements of at least equivalent strength that are no less than thirty-six (36) inches in height above grade and be securely attached to an adequately anchored foundation system to resist flotation, collapse, and lateral movement. (Ord. 3500, §2; Ord. 3846, §1)

Sec. 15-105. Floodways.

Located within areas of special flood hazard established in Section 15-94 are areas designated as floodways. Since the floodway is an extremely hazardous area due to the velocity of flood waters which carry debris, potential projectiles and erosion potential, the following provision shall apply:

(a) The City shall select and adopt a regulatory floodway based on the principle that the area chosen for the regulatory floodway must be designed to carry the waters of the base flood without increasing the water surface elevation of that flood more than one (1) foot at any point.

(b) The City shall prohibit encroachments, including fill, new construction, substantial improvements and other developments unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the proposed encroachment would not result in any increase in flood levels within the City during occurrence of the base flood discharge.

(c) If Section 15-105 (b) is satisfied, all new construction and substantial improvements shall comply with all applicable flood hazard reduction provisions of this Article.

(d) In unnumbered A zones, the City shall obtain, review and reasonably utilize any base elevation or flood data currently available through Federal, State or other sources or Section 15-102 (b) of this Chapter in meeting the standards of this Section. (Ord. 3500, §2)

Sec. 15-106. Recreational Vehicles.

Require that recreational vehicles placed on sites within all unnumbered and numbered A zones and AE zones on the City's FIRM either:

(a) Be on the site for fewer than one hundred eighty (180) consecutive days, or

(b) Be fully licensed and ready for highway use; or

(c) Meet the permitting, elevation, and the anchoring requirements for manufactured homes of this Chapter. (Ord. 3500, §2)

Sec. 15-107. Penalties.

(a) No development located within the special flood hazard areas of this City shall be extended, converted, or structurally altered without full compliance with the terms of this Chapter and other applicable regulations.

(b) Violation of the provisions of this Chapter or failure to comply with any of its requirements (including violations of conditions and safeguards established in connection with granting of variances) shall constitute a misdemeanor. Any person who violates this Chapter or fails to comply with any of its requirements shall upon conviction thereof be fined not more than five hundred dollars (\$500.00) or imprisoned for not more than thirty (30) days, or both, and in addition shall pay all costs and expenses involved in the case. Each day such violation continues shall be considered a separate offense.

(c) Nothing herein contained shall prevent the City of Rolla or other appropriate authority from taking such other lawful action as is necessary to prevent or remedy such violation. (Ord. 3500, §2)

Sec. 15-108. Amendments.

(a) The regulations, restrictions, and boundaries set forth in this Chapter may from time to time be amended, supplemented, changed or repealed to reflect any and all changes in the National Flood Disaster Protection Act of 1973, provided, however, that no such action may be taken until after a public hearing in relation thereto, at which parties in interest and citizens shall have an opportunity to be heard. Notice of the time and place of such hearing shall be published in a newspaper of general circulation in the City of Rolla.

(b) At least fifteen (15) days shall elapse between the date of this publication and the public hearing. A copy of such amendments will be provided to the Region VII office of FEMA. The regulations of this Chapter are in compliance with the National Flood Insurance Program Regulations. (Ord. 3500, §2)

Secs. 15-109 to 15-119. Reserved.

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