

CITY OF GRAIN VALLEY, MISSOURI
NPDES MS4 PHASE-II
STORMWATER MANAGEMENT PLAN



April 2013

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Executive Summary

The City of Grain Valley's NPDES MS4 Phase-II Stormwater Management Plan was developed in response to the requirements of the Environmental Protection Agency's (EPA) National Pollutant Discharge Elimination System (NPDES) for small communities. Whereas Phase-I of the NPDES requirements affected major cities, the Phase-II provisions apply to smaller communities with populations under 100,000 (Grain Valley's population was 12,898 in July of 2011). Municipal Separate Storm Sewer System communities (MS4's) are required to obtain NPDES permits from the Missouri Department of Natural Resources (MDNR) on behalf of the EPA.

The National Pollutant Discharge Elimination System was created by the EPA as part of the original Clean Water Act from the 1970's and its subsequent amendments, to control pollution and keep the nation's waters safe and clean. The NPDES regulations required that MS4 communities be responsible for creating their own Stormwater Management Programs to establish Minimum Control Measures (MCM's) for detecting, monitoring and preventing pollutants from entering local storm sewers and natural waterways. Missouri's NPDES Phase II Stormwater Regulations for small MS4s are contained in 10 CSR 20-6.200. This statute allows three permit options for small MS4 discharges: a general permit, a site specific permit, or a co-permittee option. The six Minimum Control Measures required in a MS4's Stormwater Management Program include:

1. Public Education and Outreach
2. Public Involvement and Participation
3. Illicit Discharge Detection and Elimination
4. Construction Site Runoff Control
5. Post-Construction Runoff Control, and
6. Pollution Prevention and Good Housekeeping for Municipal Operations

The City's Public Works Department is responsible for the operation and maintenance of the public storm sewer systems within its jurisdiction. Grain Valley also operates a municipal sanitary sewer collection grid in most of the developed parts of the City for the treatment of wastewater generated by residential, commercial and industrial activities. Sewer capacity is purchased from the City of Blue Springs Sni-A-Bar Wastewater Treatment Plant.

There are five major creeks flowing through the City including Tributary "A," the Swiney Branch, the Yennie Street Creek and drainage way, the Blue Branch, and the Sni-A-Bar Creek Tributary, all of which drain into the main Sni-A-Bar Creek on the eastern side of the City and ultimately into the Missouri River.

PART I - INTRODUCTION

General Information

Name of the Permittee: City of Grain Valley, Jackson County, Missouri

Type of Entity: Municipality

Population: 12,898 (July 2011)

Total Area (acres): 4.8 sq. miles

Water Supply: Purchased

Wastewater Treatment: City-Operated Treatment Plant

Geologic Setting: West-Central Missouri

Average Annual Rainfall: 41 inches

Watershed: Sni-A-Bar

Mailing Address:

Grain Valley, Missouri

City Hall

711 Main Street

Grain Valley, Missouri 64029

(816) 847-6200

Overview

The City of Grain Valley is located in the west-central region of Missouri east of the Kansas City metropolitan area in Jackson County. The City is predominantly a bedroom community with limited commercial local specialty shops and some light manufacturing plants. There are over 33 miles of enclosed storm sewer lines within the City limits.

Rainfall accumulation flows generally to the northeast along the Sni-A-Bar Creek to eventually collect in the Missouri River. The major receiving waters within the permitted area: Sni-A-Bar Creek Tributary, Blue Branch, Yennie Street, Swiney Branch, and Tributary A. Stormwater runoff is primarily conveyed east along the individual main channels to their confluence with the Sni-A-Bar Creek on the eastern limits of the City. The entire drainage area is approximately 24 square miles and located entirely in Jackson County. The watersheds encompass not only Grain Valley and its area of planned development, but also portions of rural Jackson County and the eastern side of the City of Blue Springs. Currently the Sni-A-Bar Creek is listed as one of Missouri's impaired waters and is listed on the 303(d) list.

Information on Adjacent Waterways:

The Permittee is within 100 feet of: Streams and lakes

The Permittee is not within 100 feet of waters classified as major reservoirs.

The Permittee has some area defined as wetlands as identified by the National Wetland Inventory. (Re. June 4, 2004 Grain Valley Stormwater Master Plan, City of Grain Valley Public Works and Burns & McDonnell Engineering).

Stormwater runoff from the City of Grain Valley does not discharge into a sinkhole.

Definitions

Stormwater: The rainwater not absorbed by parking lots, roads, storm drains, yards, and other properties impervious or not that flows to local creeks and streams during a storm event.

Municipal Separate Storm Sewer System: A stormwater sewer system that is separate from the regular domestic sewage system. The stormwater sewer system discharges directly to a stream without treatment of the rainwater.

MS4: An abbreviated term for the phrase “Municipal Separate Storm Sewer System.”

Regulated MS4: A Municipal Separate Storm Sewer System that is required to obtain a NPDES Permit to discharge stormwater into the waters of the U.S.

MCM: “Minimum Control Measure.”

Minimum Control Measure: One of six categories including Public Information, Public Participation, Illicit Discharges, Construction Site Runoff, Post-Construction Runoff, and Pollution Prevention / Good Housekeeping.

BMP: “Best Management Practice.”

Best Management Practice: A management practice, habit, policy, or ordinance that accomplishes the best results in the six minimum control measures.

NPDES: National; Pollutant Discharge Elimination System.

MARC: Mid-America Regional Council.

SMP: Stormwater Management Plan.

PART II – MINIMUM CONTROL MEASURES

1. Public Education and Outreach (Minimum Control Measure #1)

1.1 Regulatory Requirement

40 CFR 122.34 (b)(1) – Implement a public education program to distribute educational materials to the community of contact, equivalent outreach activities about the impacts of storm water discharges on water bodies and the steps the public can take to reduce pollutants in storm water runoff.

1.2 Overview of Public Education and Outreach

The City intends to increase the education and awareness of its citizens on water quality issues for natural streams and waterways and how to control and minimize stormwater pollution. The City intends to use televised media sources from the Mid-America Regional Council (MARC) as a primary source of public education and outreach. The City will also use its website, cable channel, and publicly posted displays to educate the populace of the importance of stormwater management and protecting the water quality of our natural streams and waterways, and on some of the everyday things people can do to help.

1.3 Sources of Stormwater Pollutants

Education and outreach will seek to inform the public about the following sources of stormwater pollution:

1. Proper handling and disposal of solid wastes
2. Proper handling and disposal of hazardous wastes
3. Proper handling and application of fertilizers, pesticides and herbicides
4. Elimination of illegal dumping of debris, sediment, yard waste, oil and other chemicals into storm drains
5. The purpose of erosion control devices on construction sites
6. The purpose of stormwater detention basins and other runoff control structures
7. Sources and control of bacteria, nutrients and oxygen-depleting substances
8. Habitat alterations for wildlife

1.4 Target Audiences for Public Education and Outreach

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

1. Citizens (Homeowners, residents and non-residents working in the City)
2. Developers and Home Builders
3. Business Owners and Workers
4. School Children
5. Elected Officials
6. City Staff

1.5 Current Education and Outreach Programs

The City of Grain Valley provides public education to residents through participation in MARC’s water quality public education programs. This Best Management Practice (BMP) will allow the City to continue leveraging their membership in MARC to better meet their SWMP goals. Locally, information and articles are distributed using the City's web site, handouts at City Hall, information in the Annual (Drinking) Water Quality Report and through the newspaper. The City also uses MARC as a provider of local radio and television programs and public service announcements, and paper media announcements to benefit the public by educating them about sources of stormwater pollution and the methods that can be taken to control it. The City has worked with the local school district to provide presentations to school children for their education and to implant a future sense of awareness of stormwater pollution issues.

In addition to local efforts, MARC will be doing substantial numbers of radio PSAs, educational displays at community events, giving away items with a NPS pollution reduction message, host workshops and training seminars for businesses and homeowners and provide extensive educational resources via their web site. MARC also performs a water quality attitude survey approximately every other year which provides “measurement” of changes in the Kansas City metropolitan area.

1.6 Public Presentations

The City of Grain Valley has selected public presentations for implementation as part of this Storm Water Management Program. This will allow the message to be tailored to specific audiences. It will be integrated into the program through coordination with various schools, civic organizations, service clubs and other opportunities as they arise. The goal has been to conduct generic presentations for school-age youth and adult audiences when available.

1.7 Public Access Television (Channel7)

The City of Grain Valley has selected posting information on the public access television station for implementation as part of this Storm Water Management Program. This will allow messages to get out to a wider variety and potentially larger volume of people. The measurable goal for implementation of this BMP is to post information to the cable channel at least twice a year. Staff may tailor messages to tie into different education and outreach activities. Future BMP Inspection:

Include Video Presentations on Cable Channel:

Year 1	Year 2	Year 3	Year 4	Year 5
		X		

1.8 Household Hazardous Waste program

The City of Grain Valley has selected continuing the Household Hazardous Waste (HHW) collection program for implementation as part of this Storm Water Management Program. HHW is collected in Grain Valley biannually and in other drop-off locations throughout the Kansas City metropolitan area on a regular basis. The measurable goal for implementation of this BMP is to widely advertise and promote this existing program locally through the City's web site, press releases and informational brochures.

2. Public Involvement in Stormwater Management Program Development (Minimum Control Measure #2)

2.1 Regulatory Requirement

40 CFR 122.34 (b)(2) -At a minimum, comply with state, tribal, and local public notice requirements when implementing a public involvement/participation program. EPA recommends that the public be included in developing, implementing, and reviewing your storm water management program and that the public participation process should make efforts to reach out and engage all economic and ethnic groups.

2.2 Overview of Current Programs for Public Involvement in Stormwater Management Program Development

The City of Grain Valley implements programs to better inform the public and to teach the youth of the community about stormwater runoff and how to protect natural streams and waterways. These programs include working with the local school district, churches, youth groups and with boy and Girl Scout leaders on education and field clean-up operations that members of the community could participate in for direct involvement in protecting our natural water resources from stormwater pollution. Currently, the City of Grain Valley invites public participation and input through the city web site, regular planning and zoning hearings and regular city council meetings. All standard state and local public notice requirements are followed and complied with at these meetings. The City also maintains a permanent recycling program to re-claim reusable paper, plastics, metals and glass and keep them from going to waste in land-fills.

2.3 Selected Best Management Practices (BMPs) for Public Involvement

The City of Grain Valley will comply with state and local public notice requirements when implementing the public involvement/participation program. The public will be included in reviewing and implementing the storm water management program. Specific BMPs for this measure include:

2.3.1 Encourage local public participation in the Mid-America Regional Council's (MARC) water quality programs.

The City of Grain Valley has selected encouragement of local public participation in the MARC water quality programs for implementation as part of this Stormwater Management Program. This BMP will allow the City to leverage their membership in MARC to better meet their SWMP goals. Information on activities citizens and businesses can participate in through the MARC program will be disseminated through public radio stations and television channels. The measurable goal for implementation of this BMP is to have information about participation in MARC sponsored programs available at City Hall, at the local school district, and on the web site while directing the public to this information through press releases.

2.3.2 Invite public input through existing education and outreach programs

The City has invited the public to learn about City operations and stormwater management information at the

annual Public Works Day event. This BMP allows public involvement and participation to be integrated into an existing event with activities throughout the event day. Bi-monthly City Council meetings and discussion of development and redevelopment issues as they relate to stormwater at the Planning and Zoning hearings also invite the public to express their concerns or comments as it relates to stormwater. The existing City web site was expanded to include a public contact page to allow for receipt of stormwater related issues.

2.3.3 Work with community groups to perform stormwater quality related activities.

The City of Grain Valley has worked with selected community groups to perform stormwater quality related activities for implementation of the Stormwater Management Program.

- City staff works annually with the Blue River Watershed Association to teach water quality monitoring through the use of Missouri Stream Team testing kits along local tributaries.
- The City has adopted an adopted a Steam Clean Up program that allows civic groups to check out equipment used to clean trash from neighboring creeks and roadside ditches.
- The City of Grain Valley is an active member of the Jackson County Storm Water Committee which works closely with the Little Blue River Watershed Coalition to help fund stream cleaning events along the Little Blue Rive and other waterways throughout Jackson County.
- Grain Valley is also an active member of the West Branch Sni-A-Bar Creek Watershed Consortium which is a group that promotes the conservation, restoration, protection of the west branch of the Sni-A-Bar creek watershed. This group actively participates in the T.R.U.E. Blue Program which teaches kids chemical testing for water quality from grades 5th through 12th.

2.3.4 Recycling Centers

The City's recycling center at 711 Main Street is open to the public 24 hours every day. The center accepts paper, cardboard, plastics, glass, aluminum and steel. Grass clippings and yard waste are not accepted.

2.3.5 Household Hazardous Waste program

The City of Grain Valley has selected continuing the Household Hazardous Waste (HHW) collection program for implementation as part of this Storm Water Management Program. HHW is collected in Grain Valley biannually and in other drop-off locations throughout the Kansas City metropolitan area on a regular basis. The measurable goal for implementation of this BMP is to widely advertise and promote this existing program locally through the City's web site, press releases and informational brochures.

2.3.6 City Wide Clean Up Event

The City of Grain Valley holds an annual event designed to give residents the opportunity to clean out garages, attics, basements, old appliances or furniture that may otherwise end up alongside roadways, streams, creeks, or ditches. This event attracts hundreds of local residents and cleans over 30 tons of trash each year.

2.3.7 Public Attitude Survey

MARC performs a public attitude survey throughout the Kansas City metropolitan area approximately every two years. The City of Grain Valley will review the results of these surveys as they are made available as part of this Stormwater Management Program.

3. Illicit Discharge Detection and Elimination (Minimum Control Measure #3)

3.1 Regulatory Requirement

40 CFR 122.34 (b)(3) -Develop, implement, and enforce a program to detect and eliminate illicit discharges into your small MS4. Develop a storm sewer system map, showing the location of all outfalls and the names and locations of all water of the U.S. that receive discharges from those outfalls. To the extent allowable under state, tribal or local law, effectively prohibit, through ordinance, or other regulatory mechanism, non-storm water discharges into your storm sewer system and implement appropriate enforcement procedures and actions. Develop and implement a plan to detect and address non-storm water discharges including illegal dumping to your system. Inform public employees, businesses, and the general public of hazards associated with illegal discharges and improper disposal of waste. Address categories listed in 122.34(b)(3)(D)(iii) if you determine they are significant contributors of pollutants to MS4.

3.2 Overview of Illicit Discharge Detection and Elimination Measures

To protect its storm sewers, natural streams and waterways from illicit discharges, the City has created a program to be carried out by the Public Works Department to monitor drainage outlet points within the City limits for evidence of illicit discharge activities. An ordinance against illicit discharge of illegal substances into storm sewers and drainage ways is in effect. The Public Works Department has established a monitoring system to check for illicit discharges at key points within the City's storm sewer and drainage-way system and to determine water quality standards. The City has established a reporting system for ordinary citizens to report to the police and Public Works Department observation of individuals or entities making illicit discharges.

3.3 Program to Detect and Address Illicit Discharges

The City of Grain Valley continues to improve an Illicit Discharge Detection and Elimination program (IDDE) to detect and address non-storm water discharges including illegal dumping into the storm sewer system. This includes work to identify priority areas for investigations, developing a methodology and determining locations for dry weather field screening, beginning dry weather field screening, developing written procedures and techniques to detect sources of illicit discharges, and drafting written enforcement responses.

The City of Grain Valley will evaluate the IDDE program requirements and the resource needed for implementation. The City will visually screen all major outfalls at least once per permit cycle and complete follow up testing and/or monitoring as deemed necessary. City staff will continue their existing practice of performing informal inspections of the storm drainage system as regular maintenance duties are carried out.

3.4 Illicit Discharge Ordinance

The City of Grain Valley has developed an illicit discharge ordinance to effectively prohibit the discharge of non-storm water into the City's storm sewer system. The City also prohibits the discharge of any dust, dirt, leaves, limbs or any refuse matter into sidewalks, streets, alleys and public ways. As most of these are assumed to be connected to the storm drainage system, the current ordinance minimally addresses some illicit discharges. Fines will be imposed upon violators of the ordinance, depending upon the type and quantity of the illicit discharge. The ongoing goal of the ordinance would be to document information about any illicit discharges made into the City's storm sewers, natural streams or waterways, received from the public, follow-up with investigations and make the necessary enforcement actions pursuant to the ordinance.

3.5 Selected Best Management Practices (BMPs) for Illicit Discharge Detection and Elimination

Storm Sewer Map/Aerial Photography: Based on the 2004 City-wide Stormwater Master Plan of Grain Valley by Burns & McDonnell Engineering, the City has developed a storm sewer system map, showing the location of all outfalls and the names and locations of all water of the U.S. that receive discharges from those outfalls. This map is GIS-based and integrates additional GIS data such as aerial photography, contour data, etc., and the City reviews and updates the system map annually.

Update of Priority Areas:

Year 1	Year 2	Year 3	Year 4	Year 5
	X			

3.6 Identification of Priority Areas

The City of Grain Valley has identified industrial, commercial and residential sources as the three categories of potential illicit discharges. The industrial category is a priority because of the higher concentrations of pollutants that may be handled and stored at an industrial site. Commercial areas are a priority because of the potential for high concentrations of vehicle-related pollutants that accumulate from parking and service areas. Some commercial businesses also handle and store larger amounts of potential pollutants outside or near doors (such as service stations, home improvement stores, etc.). Residential areas are priority areas because of the use of lawn and pest control chemicals, pet waste, owner vehicle maintenance (washing and “shade tree” mechanics), and home improvements (painting).

As part of determining priority areas for inspection, Grain Valley works with the City of Blue Springs on providing bi-annual list of all entities holding business licenses in the City that operate with potential industrial waste to better detect illicit discharges if it happens. This list was reviewed and categorized into high, medium and low pollution potential sources based on the probability that the business handles and/or stores various amounts of pollutants. For instance, a service station with large amounts of solvents and petroleum-based residues would be a “higher” potential compared to a doctor’s office with a “lower” potential pollution source.

Update of Priority Areas:

Year 1	Year 2	Year 3	Year 4	Year 5
	X			

While each category has pollutants of concern, each and every outfall from each of these areas would be cumbersome and prohibitive to inspect. As the watershed area continues to increase, the higher the likelihood of finding a significant illicit discharge. Due to this, the City has in place a monitoring program that inspects for illicit discharges at the City's specified discharge points.

3.7 Dry Weather Field Screening

Dry weather field screening is defined as a visual inspection of the location to determine if illicit discharges exist or have occurred in the recent past. If an illicit discharge is present at the time of inspection, the enforcement response plan will be utilized to investigate the source and remove the discharge. If one is not present, the inspector simply documents the condition of the outfall and makes any notes for follow up actions. If an outfall consistently falls in this latter category, the City may choose to discontinue the inspection of this location.

Following the prioritization concepts outlined above, City staff and their stormwater consultant began reviewing the major outfalls listed in the MS4 permit. Larger watersheds were further broken down into sub watersheds, and the contributing areas were reviewed for categorical land use. Typically, the end of a large enclosed storm sewer system above an open channel would be the inspection location where the contributing drainage area would be large enough to be representative of a priority area to be monitored for illicit discharges.

3.8 Written Procedures and Techniques for Detecting Sources of Illicit Discharges

The City has developed written procedures and techniques for detecting and determining the sources of illicit discharges. These can be described in two broad categories as transient discharges and recurring discharges. Transient discharges may be discovered through complaints received from the public or by City employees performing other routine duties. Recurring discharges may be located through dry weather field screening, complaints from neighbors or through discovery by City employees performing other routine duties. Regardless of the method of discovery, the investigation will move forward by tracing the discharge to its point of origin utilizing the GIS map of the stormwater conveyance system. Once the investigator establishes the point of origin, the City will determine if the discharge is an imminent threat to the public's health, safety and welfare. Imminent threats will need to be contained by the appropriate personnel which, depending on the nature of the pollutant, may be the Hazmat team from the Fire Department or the Public Works staff.

Once an emergency response has been handled, the investigator will attempt to determine the responsible party. In some cases, such as dumping, the City may not be able to trace the responsible party. Public education and awareness of residents and businesses in the area may be the only available means of determination for these events. When a responsible party can be determined and the party is willing and able to remediate the problem, the only follow-up action required will be a re-inspection of the outfall after the cleanup. If the responsible party is not willing or able to remediate the problem, the City shall issue a notice of violation outlining the required actions, alternatives and consequences of inaction as set forth in the illicit discharge ordinance.

3.9 Assess and Evaluate the Effectiveness of the IDDE Program

The City of Grain Valley will track the number of dry weather field screening locations inspected each permit year, document the findings with a written inspection report and photographs, and report on these efforts in the annual report. The City will also track the number of investigations following notification from either the public or city staff and the resulting actions taken to remove or eliminate the discharge. The City will document these efforts with written inspection reports and photographs and record them in the City's asset management system.

3.10 Public Education on Illegal Discharges and Improper Disposal

The City of Grain Valley will develop a public education effort to inform public employees, businesses, and the general public of hazards associated with illegal discharges and improper disposal of waste. (This BMP also addresses the minimum control measure for public education). The City of Grain Valley will acquire public education materials and will distribute them to the appropriate target audiences. City employees will be given specific instructions on how to report signs of illicit discharge.

Illegal Discharge Employee Training:

Year 1	Year 2	Year 3	Year 4	Year 5
	X			

3.11 Investigate cross-connection of sanitary and storm sewer systems

The City of Grain Valley will continue to investigate cross-connection of storm and sanitary sewer systems through smoke testing and CCTV inspection. The City will develop a prioritization for investigating cross-connections in conjunction with the environmental wastewater treatment program, and utilize all the available resources for inspection.

3.12 Continue Household Hazardous Waste Collection Program

The City of Grain Valley will continue to encourage its citizens to participate in the Household Hazardous Waste (HHW) collection program. This program currently allows for local drop-off biannually, but citizens may also drive to other communities within the Kansas City metropolitan area for drop-off and disposal at various times of the year. The public education program will further advertise these options for proper disposal of HHW. The City of Grain Valley will document the collection activities and report as applicable on this ongoing program.

3.13 Storm drain marking program

The City of Grain Valley will continue its requirement of stamping concrete for new inlets with “No Dumping – Drains to Stream” as part of their standard details. The City will also work with community groups to install prefabricated markers stating same on existing inlets. The number of new inlets with the stamp and markers installed on existing inlets will be reported on annually.

Repaint entire City Curb Inlets every 3rd Year:

Year 1	Year 2	Year 3	Year 4	Year 5
		X		

3.14 Receipt of information from the public

The City has established a reporting system for ordinary citizens to report to the police and Public Works Department observation of individuals or entities making illicit discharges. Citizens observing suspect activity should call the Grain Valley Police Department (non-emergency line) at 816-847-6250, or the Public Works Department at 816-847-6200. Caller identities shall be kept confidential. Citizens can also contact public works by visiting the City’s web site and email comments or concerns to City employees.

4. Construction Site Storm Water Controls (Minimum Control Measure #4)

4.1 Regulatory Requirement

40 CFR 122.34 (b)(4) -Develop, implement and enforce a program to reduce pollutants in any storm water runoff to your small MS4 from construction activities that result in a land disturbance of greater than or equal to one acre. Program must include: the development and implementation of (at a minimum) and ordinance or other regulatory mechanism to require erosion and sediment controls, as well as sanctions to ensure compliance, requirements for construction site operators to implement appropriated erosion and sediment control BMPs, requirements for construction site operators to control waste at the construction site, procedures for site plan review which incorporate consideration of potential water quality impacts, procedures for receipt and consideration of information submitted by the public.

4.2 Current Programs

The City has created a manual for contractors and developers outlining erosion and sediment control for proper site maintenance before, during and after construction of new developments. Currently, the City has adopted the APWA standards for erosion and sediment control design. The City reviews plan submittals on new developments to check for conformance with APWA and City requirements, and also performs regular inspections of construction sites. The City has the authority to issue a stop work order if the required protection measures are not used or improperly implemented.

4.3 Add Design Criteria, Standard Details and Specifications for BMPs to City Standards

Grain Valley has added design criteria, details and specifications for BMPs to the City's standards for new developments as part of the revised Storm Water Management Program. Some of this goal is already met through the use of the APWA standards, but additional information may need to be developed in order for specific water quality objectives to be met. The City's goal for implementing this BMP is to complete the review of existing design criteria, standard details and specifications as they relate to stormwater best management practices, and incorporate them into the requirements for new construction. The expanded standards should be reviewed annually to ensure that any new or improved technologies or practices are updated or included. A Storm BMP Checklist has been developed for municipal and private development projects that include an extensive list of items to inspect and report for compliance to the approved drawings and storm water pollution prevention plan.

4.4 Erosion Control Plan Review Requirements

Erosion Control Plans for all major construction projects now are required to be phased for pre-construction conditions, interim construction and post-construction conditions. The Pre-construction measures include protective steps taken to stabilize the site and its surroundings from erosion and sediment loss before construction begins. Interim construction measures include the erosion control items and practices implemented

and maintained while the project is actively being built. Post-construction measures are for the permanent restoration and stabilization of all disturbed ground after the project has been completed.

The public works department reviews construction plans for compliance with the current erosion control and BMP standards and issues review comments to developers and their consultants which must be addressed prior to the granting of approval to proceed with construction. Plans must meet the City's guidelines and APWA requirements for new and re-developed projects disturbing more than one acre. The City's objective is to complete these reviews in a timely manner and ensure that selected BMPs and erosion control measures are viable and appropriate for the site.

4.5 Implement Changes to the Current Development Ordinances to Comply with the City's NPDES Permit

The City will make amendments to the development ordinance to specify powers under the current City's Construction Permit that includes fulfilling requirements set out in submitted Storm Water Pollution Prevention Plan (SWPPP) along with penalty actions that can be taken. The Ordinance will also clarify that the DNR land disturbance permitting requirements specifically relate to developments and redevelopments that disturb greater than one acre (currently it's referred to as "major developments"), will continue to be in place and work parallel to the City's Construction Permit. Sites disturbing less than one acre that were part of a greater plan or scale (such as a single lot in a multi-lot subdivision or commercial development) will fall under the current City's Building Permit. Although currently SWPPP's are required for new development sites the City will provide amendments to the development ordinance that will include specific requirements for all construction projects disturbing land to include Stormwater Pollution Prevention Plans (SWPPPs), and for enforcement procedures the City can take for construction projects that are out-of compliance with their approved plans. The ordinance modifications and associated requirements or procedures will require construction site operators to implement appropriate erosion and sediment controls and to control the storage and removal of waste materials at construction sites. The City's procedures will be periodically reviewed and updated to address changes and improved means and methods for controlling erosion and sediments and protecting water quality.

The City of Grain Valley will also receive and review public input for implementation of the expanded erosion control and water quality protection measures as part of their Stormwater Management Program. This BMP coordinates with the Public Involvement in Stormwater Management Program Development (Minimum Control Measure #2 of this Report) and can be integrated into existing activities through receipt of information from the public at the regular Planning and Zoning hearings and from City Council meetings. Additional input can be received less formally from telephone calls, mailed letters/complaints and through the City's web site.

Measurable goals for control measure #4 are as follows:

Construction Permit SWPPP Inclusion in Code:

Year 1	Year 2	Year 3	Year 4	Year 5
X				

Building Permit SWPPP Inclusion in Code:

Year 1	Year 2	Year 3	Year 4	Year 5
	X			

4.6 Standard Procedures for Building Inspectors to Enforce Erosion and Sediment Control Policies

The City has created construction inspection guidelines for building inspectors to enforce erosion and sediment

control measures at construction sites. In the formulation of the City's construction inspection guidelines, inspection guidelines from other municipalities and selected erosion and sediment control sample plans for residential and commercial construction were reviewed and categorized for implementation as part of the construction inspection requirements for the Storm Water Management Program. The City's inspectors will use these documents and the specifications prepared by the APWA on sediment and erosion control, and will work with contractors to ensure the BMPs required by the approved plans are installed properly. Building inspectors shall also cite contractors in violation of the City's erosion protection requirements for failing to take the proper measures to comply with the approved plans. The document used for construction site inspections include the Stormwater Construction Site Inspection Report form and the Final Completion Punch List form. These form outline specifically a sites location, contact information, type of stormwater inspection (Pre, Post, or during a storm event), BMP activity, condition of BMP's, and corrective action if needed. Measurable goals for control measure #4 are as follows:

Inspection Sheet inclusion in Code:

Year 1	Year 2	Year 3	Year 4	Year 5
	X			

Inspection Sheet mandatory violation:

Year 1	Year 2	Year 3	Year 4	Year 5
		X		

The City will also have a component of their general public education program to inform the public about construction site runoff control. This BMP also addresses the minimum control measure for public education. The City will acquire public education materials and distribute them to building inspectors, developers and contractors. Also, City staff will be trained in proper inspection for erosion and sediment control as outline in control measure 6.3.1. This may be accomplished through in-house “brown bag” seminars or through sending key personnel to training like that hosted by the International Erosion Control Association (IECA). It could also be incorporated into their safety programs.

5. Post Construction Storm Water Management for New Development/ Redevelopment (Minimum Control Measure #5)

5.1 Regulatory Requirement

40 CFR 122.34 (b)(5) –Develop, implement and enforce a program to address storm water runoff from new development and redevelopment projects that disturb greater than or equal to one acre, including projects that are less than one acre that are part of a larger common plan of development or sale, that discharge into your small MS4. Develop and implement strategies which include a combination of structural and/or non-structural BMPs appropriate for your community. Use an ordinance or other regulatory mechanism to address post-construction runoff. Ensure adequate long-term operation and maintenance of BMPs.

5.2 Current Programs

The City has established procedures and policies to better control post-construction site runoff from areas of new

development. Currently, the City of Grain Valley has requirements related to detention, open space, and minimization of disturbance to soil/vegetation in Conservation Subdivisions. The City also has a Stormwater Master Plan and a City Comprehensive Plan that give direction to growth.

5.3 Selected BMPs for Post Construction Storm Water Management for New Development / Redevelopment

5.3.1 Stormwater Detention Requirements

The City has reviewed and evaluated the effectiveness of their stormwater detention requirements. Modifications will be made to the existing ordinance to better address more frequently occurring storms with lower discharges which have been known to stress natural stream systems. Other revisions outlined the requirements for development and design standards related to stormwater management. The City ordinances highlight the requirements for adherence to the adopted stormwater management ordinance, on-site detention and retention, and a post construction management plan. The City has adopted the Kansas City APWA Section 5600 Stormwater Design Criteria and, although currently using the Kansas City APWA/MARC Manual of Best Management Practices for Stormwater Quality documents version 2009, will be adopting it by code by year one of this permit cycle.

For new development sites, the City will review and include as part of the current Construction Permit and Building Permit criteria requiring post construction sites to mimic the pre-construction site runoff conditions.

For re-development sites, the City will add clear rules to its ordinance for bringing sites up to higher standards. Although the City currently adheres to APWA 5600 stormwater re-development standards, criteria such as percent of change of impervious area or change of site use will be specified in the Code. Regulations will be tied to making site improvements based of the level of service method as outlined in the Kanas City Chapter of APWA's BMP manual.

APWA BMP manual inclusion in Code:

Year 1	Year 2	Year 3	Year 4	Year 5
X				

Post Construction Site Runoff Condition:

Year 1	Year 2	Year 3	Year 4	Year 5
			X	

Re-Development Code Standards:

Year 1	Year 2	Year 3	Year 4	Year 5
		X		

5.3.2 Stream Buffer Requirements

The City has reviewed and evaluated the effectiveness of their stream buffer requirements. Changes will be made regarding the use of stream buffers as a filtration, infiltration and stabilization Best Management Practices (BMP). The stream buffer shall be measured from the Ordinary High Watermark (OHM), commonly recognized as the boundary between the limits of established vegetation between the upper stream bank and the barren lower limits inside the stream. The stream buffer requirements provided guidance for protection and re-establishment of native vegetation to the maximum extent practicable when riparian areas could not be avoided at roadway.

railway and utility crossings. Timeline for adoption is the first year of this permit cycle.

Stream Buffer inclusion in Code:

Year 1	Year 2	Year 3	Year 4	Year 5
X				

5.3.3 Open Space Requirements

The City of Grain Valley will continue to annually re-evaluate the effectiveness of their open space requirements on development. The City's planning staff will be integrally involved with the decision-making process.

5.3.4 Wetland Protection

The City of Grain Valley will evaluate any current requirements for wetland protection in the Unified Development Ordinance (UDO) and will look for opportunities to improve the protection of these areas. The City cooperates with the Army Corps of Engineers on the regulation and protection of jurisdictional wetlands. The site plan requirements set forth in the APWA standards requires the identification of wetlands on any proposed development plans.

The City currently includes a copy of the Corp of Engineers Wetland Protection map in its GIS system. For sites encroaching onto wetlands, the City currently requires evidence of either an approved 404 permit or verifiable documentation stating the property is clear for construction by the Corp. This requirement will be included as part of the Building Permit Application process.

Wetland Verification inclusion in permit:

Year 1	Year 2	Year 3	Year 4	Year 5
		X		

5.3.5 Ensure ongoing effectiveness of existing and future post-construction structural BMPs

City of Grain Valley has selected ensuring effectiveness of existing and future post-construction structural BMPs for implementation as part of this Storm Water Management Program.

The measurable goals for implementation of this BMP are to:

- Complete an inventory of post-construction structural BMPs and update annually
- Verify ownership and maintenance responsibility for each BMP
- Perform outreach to owners to educate them on requirements (also credited to MCM #1)
- Perform annual inspections of these facilities documenting any enforcement actions annually.

Note: most of the current BMP facilities in the City are privately owned.

In addition, the City of Grain Valley has requirements for owners of BMP's for the ongoing operation and maintenance of their facilities. The City has an enforcement response plan for BMP facilities found to be not in compliance with the requirements. Additionally, the City of Grain Valley will develop a written policy and procedure for the inspection of post-construction best management practices. Generally, it requires bi-annual inspections of the BMPs. All inspections will be documented by year 3 of this permit cycle in the City's asset

management system. The inspection form will outline typical items that the inspector should verify and check based on the type of BMP facility including but not limited to suspended solids.

Future BMP Inspection:

Year 1	Year 2	Year 3	Year 4	Year 5
		X		

5.3.6 Flood Management and Water Quality

The City of Grain Valley has a procedure to ensure new flood management projects are assessed for impacts on water quality and existing projects are assessed for incorporation of additional water quality protection devices or practices. New flood management projects completed by private developers are currently following the MARC BMP Manual which requires the treatment of the water quality storm (aka “first flush”). The review engineer determines whether or not the development plans submitted accomplish this goal. The City of Grain Valley rarely completes new flood management projects. However, in the event that one is scheduled on the capital projects list, the City Engineer will review the plans to determine if the water quality storm has been effectively treated. The City has developed a list of existing flood control projects. Most of these projects are privately owned and there is no enforcement mechanism to require retrofitting unless a redevelopment occurs in the contributing watershed. However, when such a redevelopment occurs, treatment of the water quality storm will be required.

5.3.7 Program Priority Areas

The City of Grain Valley has determined that all areas where new and re-development are likely to occur would be considered priority areas. The closer the site is to a perennial or intermittent stream and/or wetland, the higher the priority. Additionally, large tracts of undeveloped or agricultural land that may become developed in the near future (near the bleeding edge of the more suburban land uses), are of particular concern.

5.3.8 Example BMP Treatment Facility

Best Practices for Stormwater Management in Metropolitan Kansas City
 Leo G. Koehler Constructed Wetland
 34900 E. US 40 Hwy
 Grain Valley, Missouri

Goals: The Leo G. Koehler constructed wetlands area was an environmental reclamation project created by Jackson County, Missouri, to treat runoff from ten acre vehicle maintenance facility and to mitigate excess water caused by peak flows in the tributary adjacent to Sni-A-Bar Creek

Description: The project is located in a bottom-land area adjoining the Leo G. Koehler Vehicle Maintenance Facility, operated by Jackson County. The project is intended to collect stormwater and any pollutants from the facility. Stormwater management, sediment control, pollutant removal by native plants, and improved habitat are expected to be direct results of this project. While the wetland is completed, the plantings have not fully established. Peak performance from the wetland is expected in the next one to three years. The wetland

interacts with the adjacent stream, offering a diversion in high water situations, and providing unique habitats for plants and animals.

Community Benefits & Lessons Learned: The constructed wetland provided the community with better water quality through retention and filtration. The public will also have the opportunity to learn, experience, and explore a passive educational wetland/wet meadow located within the Monkey Mountain Nature Preserve. Populations of small fish, frogs, and a variety of birds have been successfully established at the constructed wetland.

Jackson County contracted with Tetra Tech EM Inc. for the plans and completed the construction work using county equipment and employees. The constructed wetlands project created a beneficial partnership using appropriate expertise when necessary, but performing the work in house when possible.

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

6.1 Regulatory Requirement

40 CFR 122.34 (b)(6) 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.

6.2 Current Programs

The City has established policies, procedures and training methods to reduce the potential for pollution of stormwater by its regular municipal operations. Some of the current programs administered by the City for controlling pollution in municipal operations include:

- Perform nearly all fleet maintenance of administrative, construction and utility vehicles including washing and minor service/repair under cover
- Keep and update maintenance schedules for City vehicles and equipment
- Keep road salt stored under cover to prevent wash-off into streams
- Recycle waste oil through a commercial pickup service or through distribution to local businesses with waste oil heaters
- Pick-up litter from the right-of-way
- Sweep all streets at least twice a year, and more frequently for streets in the business district
- Is responsible for cleaning the parking lots at City Hall and the Community Center
- Requires stormwater pollution prevention measures in all construction projects disturbing greater than one acre
- Has the City's swimming pool discharging to the sanitary sewer
- Uses smoke testing and CCTV inspection of sanitary sewers to identify cross-connection and potential for illicit discharge
- Maintains a list of municipal operations that are relevant to the MS4 program. This list includes: street, sidewalk and parking lot operation and maintenance (including maintenance yards and salt/sand storage); storm sewer operation and maintenance; wastewater treatment; wastewater collection system operation and maintenance; potable water treatment; potable water distribution system operation and maintenance; parks operation and maintenance; maintenance of city buildings and other facilities; fire department field operations; police department field operations; maintenance of the waste transfer station (by contract); and all city vehicle and equipment maintenance.

6.3 Selected BMPs for Municipal Operations

6.3.1 Employee training

The City of Grain Valley has maximized its pollution prevention and control measures related to its current activities especially in regards to fleet maintenance, facilities and parks maintenance, construction activities, road maintenance, etc. Policies and procedures will be documented and expanded wherever necessary. Staff training is accomplished through incorporating stormwater quality topics into monthly safety meetings, along with the distribution of newsletters, workshops, informational brochures, etc. The continued goal for implementation this BMP is the development of training topics and the completion of those topics each permit year.

The City of Grain Valley has developed a policy and procedure for employee training. The policy outlines how employees will receive initial training, ongoing public education, training related to specific standard operating procedures, and training on specialized task (such as inspection and enforcement). Additionally, the policy for training programs will be reviewed bi- annually for evaluation and updating.

Public Works employee training will include documentation or video presentations of spill protection, proper use of equipment, and training related to understanding stormwater runoff. Inspection staff will be briefed and trained in the proper way to interpret SWPPP's and associated plans and specifications as it relates to erosion control and storm drainage engineering drawings. Additions to this training program will continue throughout the permit cycle.

General Public Works Staff Training:

Year 1	Year 2	Year 3	Year 4	Year 5
X	X	X	X	X

Inspection Staff Training:

Year 1	Year 2	Year 3	Year 4	Year 5
X	X	X	X	X

6.3.2 Parks Department

The City of Grain Valley will review the Parks Department operation and maintenance activities and develop, publish and distribute policies and procedures for implementation as part of this Storm Water Management Program. This BMP will assist with the education of employees on expectations for Good Housekeeping in Municipal Operations as it relates to the Parks Department. The measurable goal for implementation of this BMP is to regularly evaluate all areas of Parks operations and maintenance for potential water quality impacts, draft policies and procedures.

6.3.3 Spill Prevention and Response

The City of Grain Valley has reviewed the current policies and procedures for spill prevention and response. Staff has identified areas where potential pollutants are stored and made recommendations for improvements to protect from spills. If necessary, policies and procedures may be developed or revised, to be published and distributed as part of updates for future Storm Water Management Programs. This BMP will assist with the education of employees on expectations for Good Housekeeping in Municipal Operations as it relates to the spill prevention and response. The measurable goal for implementation of this BMP is to evaluate all areas of municipal operations for potential spills and make recommendations for improvements.

6.3.4 Catch Basin Cleaning

The City of Grain Valley has selected catch basin cleaning for implementation as part of this Storm Water Management Program. The measurable goal will be to inspect 20% of catch basins annually and clean each structure as required.

6.3.5 Ongoing programs

The City of Grain Valley will continue and expand pertinent ongoing municipal programs that impact water quality as part of their implementation of this Storm Water Management Program. These activities are ongoing and shall follow established schedules; however, documentation of any possible changes or irregularities shall be completed regularly and reported on annually.

7. General Rationale

7.1 Decision Process

Grain Valley reviewed the General Permit requirements and selected each of the BMPs after reviewing research from notable sources such as the EPA and the Center for Watershed Protection. Programs from other communities were also examined. Various BMPs were selected based on the evidence that they will have a positive impact on targeted pollutants. City staff also examined each BMP for how it could fit into existing activities and mechanisms. Updates of the City's Storm Water Management Plan will be made available for public inspection and comment upon completion.

7.2 Responsible Person

The person responsible for the overall management and implementation of the permittee's stormwater management program shall be the City Engineer. Others responsible parties in the City's Public Works Department will be involved in the execution of each of the individual activities in the program.

7.3 Evaluation

The City of Grain Valley will report annually on the level of achievement toward all measurable goals. Where

applicable, metrics will be documented. Qualitative anecdotal evidence will also be documented where possible. Additionally, the Mid-American Regional Council performs biannual water quality surveys funded through their water quality program membership that can serve as a measurement in the change of the public's attitudes and behaviors.