Jefferson County

Phase II
Storm Water Management Plan

Permit Renewal
for 2008 - 2013

November 10, 2007

STORM WATER MANAGEMENT PROGRAM (SWMP)

EXECUTIVE SUMMARY

EPA's Phase II (Final Rule) Storm Water Regulations requires nationwide coverage for all operators of Small MS4s (Municipal Separate Storm Sewer System) that are located within the boundaries of a Bureau of the Census-defined "urbanized area" based on the latest decennial Census. The northern portion of Jefferson County and five cities were defined as urbanized from the 2000 census and required to participate in EPA's NPDES (National Pollutant Discharge Elimination System) Phase II.

Operators of regulated small MS4s are required to design their programs to:

Reduce the discharge of pollutants to the "maximum extent practicable" (MEP);
Protect water quality; and
Satisfy the appropriate water quality requirements of the Clean Water Act

The Missouri Code of Regulations for the Department of Natural Resources, Article 10-CSR 20-6.200 - Storm Water Regulations, defines the requirements that apply to participants in the State of Missouri to be in compliance with the EPA Clean Water Act.

Missouri State Operating Permit Water Pollution Control Program issued a General Operating Permit No. MO-R040052 to Jefferson County Small MS4s (6 co-permittees). The permit was issued on August 23, 2003 with an effective date of March 10, 2003. The co-permittees were:

Byrnes Mill, City of
Crystal City, City of
Festus, City of
Herculaneum, City of
Jefferson County
Pevely, City of

In preparation for the mandated EPA NPDES permit, the Jefferson County Clean Water Committee contracted **CH2M**HILL to prepare a Storm Water Management Plan for Jefferson County. The final plan was issued in July 2002. Section 6.3 of this Plan documents the "Recommendations for NPDES Phase II Storm Water Plan". The recommended plan and associated activities for each of the six minimum control measures were adopted as the initial plan and have been used for the first cycle of the permit. A Stormwater Task Force was initiated representing the co-permittees and regular meetings have been held since the inception. Yearly activity reports have been submitted to DNR for their review of the program progress.

The first five year permit cycle will expire on March 9, 2008 and a renewal of the permit for the next five year cycle is required. Missouri DNR Form L - Application for Co-permittee Small MS4 General Permit and Form M - Application for Storm Water Permit Under the General Pemit: Small Municipal Separate Storm Sewer System (MS4) must be

completed and submitted to DNR six months prior to the renewal date (an extension has been granted to Jefferson County and co-permittees until November 10, 2007 for this submittal).

Included with the application is a required Storm Water Management Program (SWMP) for each municipality/area. The application states that "this program must be developed in accordance with the requirements & guidelines specified within the general permit for storm water discharges form MS4 activities. The application will be considered incomplete if the SWMP has not been developed in accordance with the terms of the general permit. A copy of the SWMP must be submitted along with this application."

The initial SWMP for Jefferson County and the co-permittes has been updated to reflect the current status of the program and requirements for the next permit cycle. This information follows this Executive Summary will be used as the program description for the renewal permit.

Individual appendices for each co-permittee are attached to this Plan. Included in the appendix is a description of the municipality and their BMP implementation information for each of the six Measurable Control Measures along with goals and measurement methods. Existing and anticipated enforcement procedures in their municipality to assure compliance with NPDES requirements are discussed. A listing of their outlets with an associated map reflecting these locations is provided.

The appendices are as follows:

Appendix A - Jefferson County
Appendix B - Byrnes Mill
Appendix C - Crystal City
Appendix D - Festus
Appendix E - Herculaneum
Appendix F - Pevely

Jefferson County and co-permittees will submit annual reports during this next permit cycle reflecting accomplishments made towards each of the MCMs. If adjustments or updates are needed to any of the MCMs, they will be reflected in the annual reports.

Jefferson County Phase II Storm Water Management Plan

Prepared by

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Jefferson County and Co-Permittees
Storm Water Management Program (SWMP)

The following outlines actions, BMPs, measurable goals, and timing for each of the six minimum control measures required by NPDES Phase II. Jefferson County's growth and development poses a challenge to reducing the landscape's ability to absorb precipitation and adds pressure for development to occur in floodplains. The following information and procedures will guide Jefferson County governmental entities in responding to storm water issues and will be implemented into ordinances and procedures by the impacted MS4 operators in Jefferson County in order to comply with NPDES Phase II requirements.

Public Education and Outreach

This minimum control measure requires operators of small MS4s to distribute educational materials and perform outreach to inform citizens about the impacts polluted storm water runoff discharges can have on water quality. An informed and knowledgeable community lends greater support to the program, particularly when implementing new funding initiatives or seeking volunteers. As the public becomes more aware of their personal responsibility in storm water pollution reduction and the benefits storm water management provides, they will become more compliant with the program.

The requirements for this program are as follows:

- Implement a public education program to distribute educational materials to the community, or conduct equivalent outreach activities about the impacts of storm water discharges on local water bodies and the steps that can be taken to reduce storm water pollution

- Determine the appropriate BMPs and measurable goals for this minimum control measure

Some recommendations for meeting the requirements of this program are detailed below.

Form Partnerships

Many organizations exist in Jefferson County that can assist with public education and outreach. These organizations and their potential contributions are listed below:

- **Missouri Department of Conservation**—Coordinate with the Department of Conservation for the St. Louis region to access the public distribution information already developed and available from the Department of Conservation. The Department of Conservation has held storm water management workshops in Jefferson County and is likely to continue doing so in the future. A partnership with the Department of Conservation would be a good way to educate the public, local government officials, and developers and to obtain ready-made educational materials for distribution.

- **Missouri Watershed Information Network (MoWIN)**—As part of the University of

http://outreach.missouri.edu/mowin/ contains educational resources for teachers and environmental education information.

- **Jefferson County Soil and Water Conservation District (JCSWD)**—The JCSWD provides schools with outdoor classroom instruction to assist Jefferson County teachers and students in learning how to conserve the county's natural resources. JCSWD also makes information available on many BMPs to the public.

- **The Jefferson County Online INformation Network (JOIN-N)**—JOIN-N is a volunteer community information network that is used by the citizens of Jefferson County to share local community information generated within the county and other information. Cooperation with JOIN-N is a good way to get educational information to the citizens of Jefferson County. A storm water section of the JOIN-N website could be developed that would link to existing websites that describe SWMPs. The website is *join-n.org*.

- **Jefferson County Economic Growth and Development Corporation**—A partnership with the JCGDO could be used to educate those developing homes and businesses in Jefferson County about the benefits of good storm water management and SWMPs. The Soil and Water Conservation District of St. Louis County, Missouri, has developed the "Stream Care Guide: An Owner's Manual for Streamside Landowners" that is being used by Jefferson County as a public education tool.

- **Schools**—Many programs exist to raise environmental awareness in schools, including those found on the MoWIN website listed above. Those existing programs can be used to educate children about pollution prevention practices. Jefferson County presents, on the average, 200 classroom programs on recycling and composting each year.

- **MoDNR**—MoDNR has information available that could be distributed for public education.

- **Storm Water Manager's Resource Center (SMRC)**—The SMRC can be found on the internet at http://www.stormwatercenter.net. It contains model ordinances, pollution prevention information, fact sheets, and other urban watershed information. It is operated by the Center for Watershed Protection.

- **Jefferson Area Community College**—Science programs may be interested in performing some water quality testing or getting involved with Stream Teams or other programs to help the environment while learning.

- **Jefferson County Health Department** –The Health Department is an invaluable resource in reporting any illicit discharge they may find to Jefferson County.

Educational Materials and Strategies

Obtain ready-made brochures and fact sheets from the partner organizations listed above and distribute to the public or distribute county produced educational materials during seminars and display materials in public buildings. Jefferson County Stormwater Management Program has produced and distributed on topics such as:

- Pet Waste
- Pollution Control Practices for Horse Owners,
- Rain Gardens, Automobiles and Our Environment,
- Yard Waste and Our Environment, Cigarette Litter
- The Dozen That Makes A Difference
- Our Living Treasures
- Draining Your Swimming Pool Safely
- Volunteering In Your Community
- Everyone Lives In A Watershed

- Attach ready-made BMP and storm water management information to land development permit applications.

- Work with JOIN-N to link to existing storm water management websites that are designed for public outreach.

- Initiate an inlet stenciling program within subdivisions. This is further described under the "Illicit Discharge" action plan.

- A telephone number where citizens can call to report polluters, report storm water problems, and get information has been established by Jefferson County. A reporting procedure is also available on the web site.

- Use surveys to determine reduction in pollution through storm drain dumps.

- Jefferson County works with the Stream Teams to organize workshops in the field for the general public to learn first hand about the health of the local streams.

Public Involvement

Operators of small MS4s must provide opportunities for citizens to participate in program development and implementation. This includes effectively publicizing public hearings and/or encouraging citizen representatives on watershed advisory boards. This allows for broader public support, shorter implementation schedules (because of fewer public and legal challenges and citizen volunteers), a broader base of expertise and economic benefits, and cross connections to other programs.

The requirements for this program are as follows:

- Comply with applicable state and local public notice requirements
- Determine the appropriate BMPs and measurable goals for this minimum control measure

Implementation Challenges

Often a notice in the local newspaper is the sole notice of public meetings and other opportunities for public involvement. However, large sectors of the population may not read the local newspaper and the audience may be limited. Jefferson County does reach out to the public with additional effective advertising methods that could include:

- Announcements on the community calendar
- Announcements in neighborhood newsletters
- Announcements at civic organization and community group meetings
- Mass mailings
- Website announcements and/or electronic mailing list notifications
- Target advertisement to attract a diverse cross section of stakeholders

These advertising activities are closely coordinated with the public education and outreach minimum control measures.

BMPs

- Hold public meetings to allow citizens to discuss their viewpoints and provide input concerning storm water management policies. Jefferson County does use the opportunity to educate the public about storm water management, and does partner with the Department of Conservation to obtain information and speakers.
- Use volunteers to perform water quality and biological monitoring. The resulting data can be used to determine if pollution reduction goals are being met in a cost-effective manner. Jefferson County does partner with its active Stream Team network to obtain volunteers. The County also utilizes stakeholders to evaluate watershed conditions.
- The Boy Scouts of America have been involved in stenciling storm inlets. This partnership could be expanded and used throughout Jefferson County.
- Organize and use volunteers to locate outfalls and illicit discharge locations. Work with Stream Teams, Boy and Girl Scouts of America, and other organizations to obtain volunteers.
- Use volunteers for community cleanups along local waterways. Again, the Stream Teams is a good partner.
- Jefferson County does encourage citizen groups to call the established telephone number to report pollution and to aid local enforcement authorities in the identification of polluters.
- Jefferson County will prepare watershed plans for its watersheds. Public participation and leadership on the watershed advisory board is required.

Illicit Discharge Elimination

A plan has been developed to detect and eliminate illicit discharges to the storm sewer system. This includes developing a system map and informing the community about hazards associated with illegal discharges and improper disposal of waste.

An illicit discharge, by definition, is anything that is not storm water that is illegally discharged into the storm sewer system. The formal definition of an illicit discharge is any discharge to the MS4 that is not composed entirely of storm water.

Types of illicit discharges include:

- Illegal connections to the storm drain system
- Failing septic systems
- Illegal dumping
- Improper disposal of sewage from recreational practices such as boating or camping

Sources of illicit discharges include:

- Sanitary wastewater
- Effluent from septic tanks
- Car wash wastewaters
- Improperly disposed spills
- Radiator flushing disposal
- Laundry waste waters
- Improper oil disposal
- Improper disposal of auto and household hazardous waste

The result of these illicit discharges is high levels of pollutants, including heavy metals, toxics, oil and grease, solvents, nutrients, viruses, and bacteria entering receiving water bodies, often at high enough levels to significantly degrade water quality and threaten aquatic, wildlife, and human health.

As part of the NPDES Phase II regulations, Jefferson County is required to develop, implement, and enforce an illicit discharge detection and elimination program. Requirements for this program include:

- A storm sewer system map, showing the location of all outfalls and the names and location of all waters of the United States that receive discharges from those outfalls.
- Through an ordinance, or other regulatory mechanism, a prohibition (to the extent allowable under state or local law) on non-storm water discharges into the storm sewer, and appropriate enforcement procedures and actions.
- A plan to detect and address non-storm water discharges, including illegal dumping, into the storm sewer.
- The education of public employees, businesses, and the general public about the hazards associated with illegal discharges and improper disposal of waste.
- The determination of appropriate BMPs and measurable goals for this minimum control measure.

Unless the County identifies them as being significant contributors of pollutants to the storm sewer system, the following categories of non-storm discharges or flows will not be addressed:

- Water line flushing
- Irrigation water
- Landscape irrigation
- Springs
- Diverted stream flows
- Water from basement and crawl space sump pumps
- Rising ground waters
- Footing drains
- Uncontaminated groundwater infiltration
- Lawn watering
- Uncontaminated pumped ground water
- Individual residential car washing
- Discharges from potable water sources
- Flows from riparian habitats and wetlands

- Foundation drains
- Dechlorinated swimming pool discharges
- Air conditioning condensation
- Street wash water

The objective of the illicit discharge detection and elimination program is to have storm sewer operators gain a thorough awareness of their systems, allowing them to determine the types and sources of illicit discharges entering their system and to establish the legal, technical, and educational means needed to eliminate these discharges.

Some suggestions for meeting the requirements of this program are detailed below.

Storm Sewer System Map

The purpose of the storm sewer system map is to have adequate knowledge of the intake, conveyance, and discharge areas of the system. The map is needed to help determine the extent of discharged dry weather flows, the possible sources of the dry weather flows, and the particular waterbodies these flows may be affecting. Jefferson County does have outfall locations identified and mapped in GIS on aerial views of the County. Jefferson County plans to study areas in depth on a watershed basis. Individual storm sewer maps are required with new subdivision submittal plans.

Legal Prohibition and Enforcement

Through Article 10 of the County UDO, Jefferson County has established the prohibition of illicit discharges. The ordinance allows for access to private property in order to perform field tests.

The Plan

The plan for detecting and addressing non-storm water discharges should include five steps, as outlined below.

Locate the Problem Areas. Priority areas should be identified for detailed screening of the system based on the likelihood of illicit connections. Methods for doing this include knowledge of areas with older sanitary sewer lines and/or septic tanks (these areas have higher probability of having illicit connections); public complaints; visual screening; water sampling and flow monitoring at manholes and outfalls during dry weather. The County hopes to be able to use infrared and thermal photography to locate illicit discharges in the future.

Find the Source. Once a problem area or discharge is found, additional efforts are usually needed to determine the source of the problem. Methods include dye or smoke testing in problem areas, tracing the discharge upstream in the storm sewer, employing a certification program that shows that buildings have been checked for illicit connections, implementing an inspection program of existing septic system, and using video to inspect the storm sewers. It is recommended that building and plumbing codes prohibit or be updated to prohibit the discharge of potentially hazardous pollutants to storm drains.

Remove/Correct Illicit Connection. Once the source has been identified, the offending discharger

is notified and directed to correct the problem. Education efforts and working with the discharger are effective in resolving the problem before taking any further action.

Document Actions Taken. As a final step, all actions taken under the plan are documented. This documentation serves to show the regulating agencies that progress is being made to eliminate illicit connections and discharges. The documentation will be included in annual reports and include information such as the number of outfalls screened, any complaints received and corrected, the number of discharges and quantities of flow eliminated, and the number of dye or smoke tests conducted.

Educational Outreach. Outreach to public employees, businesses, property owners, the general community, and elected officials regarding ways to detect and eliminate illicit discharges is an integral part of the program that will help gain support for the storm water program. The County's educational outreach efforts include:

- Developing informative brochures and guidance for specific audiences (e.g., horse owners and small farms).
- Designing a program to publicize and facilitate public reporting of illicit discharges.
- Coordinating volunteers for locating and visually inspecting outfalls or stenciling storm inlets.
- Initiating recycling programs for commonly dumped wastes, such as motor oil, antifreeze, and pesticides.

Land Disturbance Runoff Control

Jefferson County has developed, and will enforce an erosion and sediment control program for construction activities that disturb one or more acres of land. Polluted storm water from construction sites often flows into small MS4s and is discharged into local rivers and streams. Sediment is the main pollutant of concern, but other pollutants include solid and sanitary wastes, phosphorus and nitrogen from fertilizers, pesticides, oil and grease, concrete truck washout, construction chemicals, and construction debris. During a short period of time, construction sites can contribute more sediment to streams than can be deposited naturally over several decades.

The requirements of this program are as follows:

- Have an ordinance or other regulatory mechanism requiring the implementation of proper erosion and sediment controls, and controls for other wastes, on applicable construction sites
- Have procedures for site plan review of construction plans that consider potential water quality impacts
- Have procedures for site inspection and enforcement of control measures
- Have sanctions to ensure compliance (established in the ordinance or other regulatory mechanism)
- Establish procedures for the receipt and consideration of information submitted by the public
- Determine the appropriate BMPs and measurable goals for this minimum control measure

Some recommendations for meeting the requirements of this program are detailed below.

Regulatory Mechanism

The small MS4 operator must regulate polluted land disturbance runoff to the maximum extent practicable and allowable under state and local law. Regulatory mechanisms are required for construction site sediment control and erosion.

Jefferson County—The Subdivision Regulations of Jefferson County, Missouri, require a sediment and erosion control plan for development. Approved methods are sediment or debris basins, silt traps or filters; staked straw bales; and other measures as approved. Jefferson County has prepared Article 10 of the UDO and associated Erosion and Sediment Control/Stormwater Management Design Manual that requires conformance with NPDES Phase II requirements.

Site Plan Review

Proposed site plans need to be reviewed for compliance with erosion and sediment control requirements.

Inspections and Penalties

The regulatory mechanisms for Jefferson County require construction inspections and have penalties for noncompliance.

Information Submitted by the Public

A telephone number was established for public use to report violations of the regulatory mechanisms. This has been done in conjunction with the public education and involvement measures. The County considers the information submitted and uses its own discretion to decide if follow up is necessary. Submitted public information should, at a minimum, be recorded and given to the construction site inspector for possible follow-up.

Post-Construction Storm Water Management

Article 10 of the Jefferson County UDO addresses discharges of post-construction storm water runoff from new development and redevelopment areas. Post-construction storm water runoff impacts are an increase in type and quantity of pollutants in runoff and an increase in runoff quantity delivered to waterbodies during storms. Prior planning and design for the minimization of pollutants in post-construction storm water runoff is the most cost-effective approach to storm water quality management.

The requirements for this program are as follows:

- Develop and implement strategies that include a combination of structural and/or non-structural BMPs
- Have an ordinance or other regulatory mechanism requiring the implementation of post-construction runoff controls to the extent allowable under state or local law

- Ensure adequate long-term O&M of controls
- Determine the appropriate BMPs and measurable goals for this minimum control measure

Some recommendations for meeting the requirements of this program are detailed below.

Planning and Procedures

Unincorporated Jefferson County, and the co-permittee cities should have requirements for post-construction storm water management. Any existing requirements should be reviewed to ensure that the procedures and requirements are appropriate for the geographical area.

Open Space and Cluster Design Standards

The Jefferson County's Unified Development Order (UDO) recognizes cluster design and open space conservation. These reflect alternative forms of development that provide for substantial conservation of sensitive environmental and topographical features through the clustering of lots. This minimizes the impact on the land and provides for efficient use of public services and facilities without increasing the permitted density. This type of development, including stream buffers, is being promoted by Jefferson County in its Article 10 of the UDO.

Other BMPs

The table on the next page contains BMPs that would work well in Jefferson County to control runoff whenever land is developed. These BMPs will be incorporated in Jefferson County's Erosion and Sediment Control/Stormwater Management Design Manual.

Site Runoff Control Alternatives

Technology	Advantages	Disadvantages
Detention ▪ Wet Pond ▪ Dry Pond	▪ Water quality benefits (more with a wet pond) ▪ Can provide some infiltration ▪ Provide downstream protection (flooding, erosion, scour) ▪ Amenity to development if design is attractive or looks natural (usually wet ponds) ▪ Structure longevity	▪ Requires maintenance to prevent clogging ▪ Space requirements (more with wet) ▪ Benefits to the watershed are hard to quantify ▪ Difficult to locate ponds for optimal performance ▪ Throughout the watershed ▪ Limited water quality benefits
Infiltration ▪ Basins ▪ Porous pavement ▪ Trenches ▪ Permeable patios	▪ Maintain pre-development water volumes ▪ Use with detention to control flows ▪ Can put small trenches in parking lots	▪ Space requirements ▪ More maintenance than detention ▪ Long-term maintenance and monitoring
Vegetation BMPs ▪ Drain to grass ▪ Use planters ▪ Runoff spreader with wooded filter strip or vegetated area ▪ Vegetated terraces	▪ Water quality benefits ▪ Attractive ▪ Provide some infiltration	▪ Implementation requires public education
Surface Drainage ▪ Ditches ▪ Swales	▪ Low cost ▪ Attractive, natural look ▪ Provide infiltration and volume reduction	▪ Can easily be filled in and made ineffective ▪ May erode without proper controls ▪ Requires maintenance
Filters	▪ Increase water quality ▪ Can reduce volume ▪ Can work well with steep slopes ▪ Reduce flow	▪ Requires maintenance ▪ High to medium installation cost
Pollution Prevention ▪ Good housekeeping ▪ Site Design ▪ Rooftops drain to grass ▪ Stream buffers ▪ Reforestation	▪ Water quality benefits ▪ Low Cost	▪ Implementation requires public education
Bioretention/Infiltration Device	▪ Low maintenance ▪ Works well with steep grades ▪ Water quality benefits ▪ Reduce flow ▪ Can work for commercial applications ▪ Provides volume reduction ▪ Attractive with flowering plants ▪ Low installation and maintenance cost ▪ Suitable for large lots or whole subdivisions	▪ Requires behavior modification

Pollution Prevention in Municipal Operations

A program that prevents or reduces pollutant runoff from municipal operations is being developed. The program includes municipal staff training on pollution prevention measures and techniques. County departments participating are the Parks Department and Public Works, including the Highway Department, Fleet Department and Facilities Maintenance.

Pollution prevention is a key element of the SWMP. This measure requires the storm sewer operator to examine and subsequently alter their own actions to help ensure a reduction in the amount and type of pollution that:

- Collects on the streets, parking lots, open spaces, and storage and vehicle maintenance areas and is discharged to local waterways; and
- Results from actions such as environmentally damaging land development and flood management practices or poor maintenance of storm sewer systems.

While the main focus of this measure is to improve or protect receiving water quality by altering municipal or facility operations, it can also result in cost savings for the County, since proper and timely maintenance of storm sewer systems can help avoid repair costs from damage caused by age and neglect.

The requirements for this program are as follows:

- Develop and implement an O&M program with the ultimate goal of preventing or reducing pollutant runoff from municipal operations in the storm sewer system.
- Include employee training on how to incorporate pollution prevention/good housekeeping techniques into municipal operations such as park and open space maintenance, fleet and building maintenance, new construction and land disturbances, and storm water system maintenance. Materials for this training are available from the USEPA.
- Determine the appropriate BMPs and measurable goals for this minimum control measure.

The intent of the pollution prevention/good housekeeping program is to ensure that existing municipal operations are performed in ways that will minimize storm water discharge contamination. The following components are recommended when developing the program.

Maintenance Activities, Maintenance Schedules, and Long-term Inspection Procedures

These will be instituted for structural and non-structural controls to reduce floatables and other pollutants discharged from the separate storm sewers. This is a critical component, as typical controls such as grates on outfalls to capture floatables typically need regular cleaning.

Controls for Reducing or Eliminating the Discharge of Pollutants

These will be instituted for areas such as roads and parking lots, maintenance and storage yards (including salt/sand storage and snow disposal areas), and waste transfer stations. These controls could include programs that promote recycling (to reduce litter), minimize pesticide use, and ensure the proper disposal of animal waste.

Procedures for the Proper Disposal of Waste

These will be implemented for waste removed from separate storm sewer systems and areas listed in the bullets above, including accumulated sediments, floatables, vehicle maintenance fluids, fleet wash water, pesticides and fertilizers from landscape maintenance activities, and other debris.

STORM WATER MANAGEMENT PLAN (SWMP)

JEFFERSON COUNTY
EXECUTIVE SUMMARY

Jefferson County was instrumental in preparing material for the initial NPDES Phase II permit. A consultant was used to the develop the requirements and conduct the monthly stormwater task force meeting following permit approval (August 23, 2003) until a permanent stormwater coordinator was hired by the county in June 2004. Since then an administrative assistant and a field inspector/analyst have been hired. The Stormwater Program was authorized using county general funds under the Department of Land Use and Code Enforcement.

The 2006 Jefferson County population was estimated to be 216,469 which is a 9.3% increase over the 2000 population of 198,099. The land area for the county is 656.8 square miles and is bordered by the Mississippi River on the east, St. Louis county on the north, Franklin County on the west, Washington County on the southwest, St. Francois County on the south and St. Genevieve County on the southeast.

The "urbanized area" for Jefferson County is defined as the area north of the township line between Township 41 North and Township 42 North. For the county, sixty-one (61) specific outlets were initially identified as discharge points for the urbanized portion of the county. Included in the sixty-one were discharges of county storm water to the City of Arnold (covered by their own NPDES permit), to the other co-permittees, and four points where the urbanized portion of the county discharges to the non-urban portion of the county.

In validating the outlets for the renewal application, an additional six outlets were identified as being in the urbanized area using the USGS topological quad map obtained from NCRS-EPA as an image file 336486_05. This gives a total of 67 outlets that will be monitored and managed during the next permit cycle.

The non-urbanized portion of the county has 17 outlets that have been identified and initial visual observations will be conducted at these outlets during this renewal period. Jefferson County is in the process of adopting a Unified Development Order that includes Article 10 - Land Disturbance and Stormwater Management. The requirements and enforcement procedures in Article 10 apply to the entire county and are not separated by urban and non-urban areas. If problems are detected in the non-urban area, corrective action will be taken using the same criteria as if it were an urban area.

Article 10 specifies the requirement of stream buffers for stormwater management. The criteria is a 50' buffer from top to bank for stream orders one and two and a 100' buffer for orders three and above.

The following table reflects the miles of stream order three and above for each watershed in Jefferson County.

STREAM ORDER THREE AND ABOVE

Watershed	*Miles*
Upper Meramec	12.1
Lower Big River	12.8
Upper Big River	19.2
Joachim Creek	49.3
Plattin Creek	23.0
Glaize Creek	18.8
Head's Creek	14.8
Belew's Creek	12.0
Lower Meramec River	13.1
Lower Mississippi River	11.9
Sandy Creek	15.6
Rock Creek	12.9
Total	115.5

Jefferson County is a first class non-charter county organized December 8, 1818 and governed by three commissioners. Being non-charter, the county cannot make laws that the state of Missouri statutes do not specifically authorize.

Article 10 of the Unified Development Order addresses both land disturbance activities and stormwater management requirements specified in the NPDES permit. Section 10.010 General (E) states "No person shall engage in any activity that would be in violation of the regulations dictated by the Phase II Storm Water National Pollutant Discharge Elimination System (NPDES) in accordance with the Clean Water Act of 1972."

Within sections of Article 10, the requirements and enforcement measures for illicit discharge detection and elimination, construction site stormwater runoff control, and post construction stormwater management are addressed. This article will be the enforcement means within the county to administer the NPDES program.

Methods of on-going funding for the county stormwater program are being investigated. The probability of obtaining a favorable vote on a tax increase is very low. Therefore, alternative methods will have to be considered.

Jefferson County will continue as the coordinating authority for the renewed NPDES permit. The County will continue to chair the Stormwater Task Force which will continue its bi-monthly meetings and coordinate the submittal of the annual reports.

The County will continue to provide a leading role in developing material and programs to fulfill the requirements for Public Education & Outreach and Public Involvement and Participation. This results will be shared and made available to the co-permittees.

Jefferson Counties BMP implementation information for all six MCMs is attached. The progress made towards these goals will be reported in the annual report. If modifications are needed in future years, they will be addressed in the annual report.

Forms L and M for Jefferson County are included in this Appendix. A list of the 67 outlets and the additional 17 in the non-urban area is included. An overall county map reflecting these locations is also provided. Due to the size of the county, a 1"=2000' scaled overall map is not feasible. Detailed maps have been developed for each outlet using aerial photography and GIS functionality. The details show parcel ownership in the vicinity of the outlet and access roads. Copies of these files can be made available if requested.

BMP Implementation Information

Public Education & Outreach

Permit Year	BMP Goal Selected	Measurement Method	Responsibility
All Years	Have a Storm Water booth at the Jefferson County Fair Participate in 50% of trustee informational meetings scheduled by Planning & Zoning	# of visitors # in attendance	Storm Water Storm Water
2008	Participate in Herculaneum's City event Develop informational fact sheets on Land Disturbance and Illicit Discharge and distribute	# of visitors # sheets distributed	Storm Water Storm Water
2009	Participate in Twin City's (Festus & Crystal City) event Develop informational fact sheets for Building Permit and Developer Guide Modify web page to include on-line report forms	# of visitors # sheets distributed # reports filed	Storm Water Storm Water REJIS, Storm Water
2010	Participate in Pevely's City event Set up an electronic Library with NPDES information and update each year	# of visitors # of items on file	Storm Water Storm Water
2011	Participate in Byrnes Mill's event Develop a School Education Program – How Pollution Affects the Ecosystem of streams	# of visitors # of scheduled school programs given	Storm Water Storm Water
2012	Create Subdivision Rain Garden Program In the future – create a County Wide judging program	# of subdivisions participating # of subdivisions participating	Storm Water Storm Water

Public Involvement and Participation

Permit Year	BMP Goal Selected	Measurement Method	Responsibility
All Years	Continue developing watershed plans for Jefferson County's 32 watersheds and sub watersheds	# of plans in development	Storm Water
2008	Facilitate watershed coalition meetings to continue on-going watershed activities	# of meetings	Storm Water
2009	Initiate storm water stenciling program at subdivision level	# subdivisions involved	Storm Water
2010	Promote visual inspection for Storm Water pollutants and clean-up at subdivision level	# subdivisions involved	Storm Water
2011	Initiate a subdivision-managed program like "Show Me Yards" to encourage LID and natural pollution control.	# of subdivisions and participants	Storm Water
2012	Based upon watershed plans, initiate and obtain funding to begin stream restoration projects	# of projects	Storm Water

Illicit Discharge Detection and Elimination

Permit Year	BMP Goal Selected	Measurement Method	Responsibility
All Years	Visual inspection of all urbanized NPDES Phase II outlets from Jefferson County. Review 100% of site plans submitted to P&/Z for compliance with storm water requirements defined in Article 10 of UDO	# visited outlets # plans received	Storm Water Storm Water
2008	Determine EPA/MoDNR water quality testing requirements & equipment required List and perform visual inspection on 5 miles of stream orders 3 and above in Jefferson County – to include riparian corridors	List of test equipment # miles visited	Storm Water Storm Water
2009	Purchase water quality testing equipment & train and certify 100% of staff to conduct testing. Locate with GIS mapping on-site septic systems List and perform visual inspection on 5 miles of stream orders 3 and above in Jefferson County - to include riparian corridors	# trained # located # miles visited	Storm Water Storm Water Storm Water
2010	Conduct & record water quality testing at all 67 outlets. List and perform visual inspection on 5 miles of stream orders 3 and above in Jefferson County – to include riparian corridors	# outlets tested # miles visited	Storm Water Storm Water
2011	Conduct & record water quality testing of all 67 outlets List and perform visual inspection on 5 miles of stream orders 3 and above in Jefferson County – to include riparian corridors	# outlets tested # miles visited	Storm Water Storm Water
2012	Conduct & record water quality testing of all 67 outlets List and perform visual inspection on 5 miles of stream orders 3 and above in Jefferson County – to include riparian corridors	# outlets tested # miles visited	Storm Water Storm Water

Construction Site Storm Water Runoff Control

Permit Year	BMP Goal Selected	Measurement Method	Responsibility
All Years	Train inspectors (Public Works/Bldg Div) on land disturbance and storm water requirements associated with construction activity in accordance with Article 10	# Trained	Storm Water
2008	Prepare field BMP Manual for inspectors Review and approve Land Disturbance permits and SWPPPs	Manual Prepared # reviewed	Storm Water Storm Water
2009	Prepare requirements manual for developers and construction contractors	Manual Prepared	Storm Water
2010	Train developers of LID procedures applicable in Jefferson County	# Trained	Storm Water
2011	Implement certification (erosion/sediment control) requirement for inspectors	# Certified	Storm Water
2012	Establish sediment discharge monitoring and filtering requirements	Monitoring Established	Storm Water

Post-Construction Storm Water Management

Permit Year	BMP Goal Selected	Measurement Method	Responsibility
All Years	Review proposed subdivision plans for on-going maintenance documentation and requirements in subdivision covenants Educate Pre-Article 10 (PAT) subdivision trustees on the need to budget annually for storm water facilities maintenance	# reviewed # of presentations	Storm Water Storm Water
2008	Present and educate one subdivision association on post-construction storm water facilities that require on-going maintenance	# of subdivisions	Storm Water
2009	Present and educate two subdivision associations on post-construction storm water facilities that require on-going maintenance Prepare material on how to retrofit existing storm water conveyance (include LID)	# of subdivisions Material prepared	Storm Water Storm Water
2010	Present and educate three subdivision associations on post-construction storm water facilities that require on-going maintenance Identify and record in GIS using GPS discharge outlets at 10 existing subdivisions	# of subdivisions # recorded	Storm Water Storm Water
2011	Present and educate three subdivision associations on post - construction storm water facilities that require on-going maintenance Identify and record in GIS using GPS discharge outlets in 10 existing subdivisions	# of subdivisions # recorded	Storm Water Storm Water
2012	Present and educate three subdivision associations on post - construction storm water facilities that require on-going maintenance Identify and record in GIS using GPS discharge outlets in 10 existing subdivisions	# of subdivisions # recorded	Storm Water Storm Water

Pollution Prevention/Good Housekeeping for Municipal Operations – Parks

Permit Year	BMP Goal Selected	Measurement Method	Responsibility
All Years	Park Drainage Inspection: Inspect drainage of all county parks for erosion and proper flow. Herbicide and Athletic Field Liner Application: Reduce usage and select alternative environmentally friendly products when available Chemical storage: Utilize proper storage and disposal of chemicals in the appropriately friendly manner.	# inspected Amount and location used Document disposal and method of disposal	Parks Maintenance Manager Parks Maintenance Manager Parks Maintenance Manager
2008			
2009			
2010			
2011			
2012			

Pollution Prevention/Good Housekeeping For Municipal Operations – Public Works

Permit Year	BMP Goal Selected	Measurement Method	Responsibility
All Years	*HIGHWAY:*		
	Road Sweeping Program: Sweep after winter & prior to pavement striping. Sweep after seal coating roads	# miles swept	Highway Superintendent
	Salt Storage: Store road salt inside buildings. Calibrate salt spreaders as necessary.	log of calibrations	Highway Superintendent
	Lubricants: Store used lubricants in tank within a containment area. Dispose of used lubricants with approved vendor	log of disposals	Highway Superintendent
	Vehicle & Equipment Repairs: Absorbent materials used on spills as opposed to hosing down. Waste materials stored in proper, leak-proof containers. Used tires disposed at approved tire shredder.	log of disposals	Highway Superintendent
	Vehicle & Equipment Washing: Trap oil & sediment before releasing water to storm drain	procedures established	Highway Superintendent
	Vehicle & Equipment Fueling: Store fuels with a containment area; maintain shutoff nozzles and breakaway valves on fuel hoses. Train employees in proper fueling and cleanup procedures.	# of employees trained	Highway Superintendent
	Waste Disposal: Use approved commercial waste hauler and landfill.	log of disposals	Programs Superintendent
	Herbicide Application Program: Use proper type of herbicide (environmentally friendly); track and limit use.	log of usage	Programs Superintendent
	Adopt-A-Road Program on County Roads: Maintain program for adoption/cleanup.	log participants	Facilities Manager
	FACILITIES:		
	Vehicle & Equipment Fueling: Train employees in proper fueling and cleanup procedures. Use commercial sites for fueling.	# of employees trained	Facilities Manager
	Vehicle & Equipment Washing: Off-site commercial sites used for washing	log of sites	Facilities Manager
	Waste Disposal: Use approved commercial waste hauler and landfill. Waste materials stored in proper, leak-proof containers	log of disposals	
	FLEET:		
	Vehicle & Equipment Fueling: Train employees in proper fueling and cleanup procedures. Use commercial sites for fueling.	# of employees trained	Fleet Manager
	Lubricants: Store used lubricants in tank within a containment area. Dispose of used lubricants with approved vendor.	log of disposals	Fleet Manager
	Vehicle & Equipment Repairs: Absorbent materials used on spills as opposed to hosing down. Waste materials stored in proper, leak-proof containers. Used tires disposed at approved tire shredder.	procedures established	Fleet Manager
	Vehicle & Equipment Washing: Trap oil & sediment before releasing water to storm drain	procedures established	Fleet Manager
	Waste Disposal: Use approved commercial waste hauler and landfill.	log of disposals	Fleet Manager
2008	Storm Sewer Inlet Inspection Program: Identify catch basin locations	Map locations	Program Superintendent
2009	Storm Sewer Inlet Inspection Program: Conduct yearly inspections and clean when necessary	Log of inspections	Program Superintendent
2010	Storm Sewer Inlet Inspection Program: Conduct yearly inspections and clean when necessary	Log of inspections	Program Superintendent
2011	Storm Sewer Inlet Inspection Program: Conduct yearly inspections and clean when necessary	Log of inspections	Program Superintendent
2012	Storm Sewer Inlet Inspection Program: Conduct yearly inspections and clean when necessary	Log of inspections	Program Superintendent

LEGAL DESCRIPTION

Outlet #001
NE1/4, NE ¼, Sec. 5, T43N, R4E Jefferson County
Unnamed Tributary to Meramec River (U)
07140102-080001
Meramec River (P), 02185
38°30'5,532"N/90°35'27.793"W

Outlet #002
SUR 1946, T43N, R3E, Jefferson County
Unnamed Tributary to Meramec River (U)
07140102-070004
Meramec River (P), 01841
38°28'8.411"N/90°43'6.254"W

Outlet #003
SUR 1987, T43N, R3E, Jefferson County
Unnamed Tributary to Meramec River (U)
07140102-070004
Meramec River (P), 01841
38°28'16.728"N/90°42'25.756"W

Outlet #004
SUR 1987, T43N, R3E, Jefferson County
Unnamed Tributary to Meramec River (U)
07140102-070004
Meramec River (P), 01841
38°27'48.412"N/90°41.33.539"W

Outlet #005
SUR 1987, T43N, R3E, Jefferson County
Unnamed Tributary to McFall Creek (U)
07140102-070004
Meramec River (P), 01841
38°27'14.289"N/90°41'29.652"W

Outlet #006
SUR 1987, T43N, R3E, Jefferson County
Unnamed Tributary to LaBarque Creek (U)
07140102-070004
Meramec River (P), 01841
38°27.15.187N/90°39'24.997"W

Outlet #007
SUR 1891, T43N, R3E, Jefferson County
Unnamed Tributary to Meramec River (U)
07140102-070004
Meramec River (P), 01841
38°27'35.609"N/90°39'13.481"W

Outlet #008
SW ¼, NE ¼, Sec. 12, T43N, R3E, Jefferson County
Unnamed Tributary to Meramec River (U)
07140102-070004
Meramec River (P), 01841
38°28'52.578"N/90°37'50.773W

Outlet #009
NE ¼, SE ¼, Sec. 12, T43N, R3E, Jefferson County
Unnamed Tributary to Meramec River (U)
7140104-080009
Meramec River (P), 01841
38°28'37.544"N/90°37'42.947"W

Outlet #010
SW ¼, SW ¼, Sec. 19, T43N, R3E, Jefferson County
Unnamed Tributary to Meramec River (U)
07140102-070004
Camp Solidarity Lake (L3), 07373
38°26'55.279"N/90°44'11.576"W

Outlet #011
SW ¼, NW ¼, Sec. 30, T43N, R3E, Jefferson County
Unnamed Tributary to Meramec River (U)
07140102-070004
Meramec River (P), 01841
38°26'30.826"N/90°44'12.221"W

Outlet #012
NW ¼, SW ¼, Sec. 30, T43N, R3E, Jefferson County
Unnamed Tributary to Meramec River (U)
07140102-070004
Meramec River (P), 01841
38°26'9.054"N/90°44'12.635"W

Outlet #013
SW ¼, NW ¼, Sec. 31, T43N, R3E, Jefferson County
Unnamed Tributary to Winch Creek (U)
07140102-070004
Meramec River (P), 01841
38°25'5.492"N/90°44'14.178"W

Outlet #014
SW ¼, SW ¼, Sec. 31, T42N, R3E, Jefferson County
Unnamed Tributary to Winch Creek (U)
07140102-070004
Meramec River (P), 01841
38°24'23.339"N/90°44'20.278"W

Outlet #015
SW ¼, NE ¼, Sec. 13, T42N, R2E, Jefferson County
Unnamed Tributary to Meramec River (U)
07140102-070003
Calvey Creek (C), 02030
38°23'1.303"N/90°44'37.412"W

Outlet #016
SW ¼, NE ¼, Sec. 13, T42N, R2E, Jefferson County
Unnamed Tributary to Meramec River (U)
07140102-070003
Calvey Creek (C), 02030
38°22'32.082"N/90°44'45.123"W

Outlet #017
NE ¼, NW1/4, Sec. 18, T43N, R4E, Jefferson County
Unnamed Tributary to Big River (U)
7140104-080009
Meramec River (P), 02185
38°28'18.046"N/90°37'5.253"W

Outlet #018
NW ¼, NE ¼, Sec. 18, T43N, R4E, Jefferson County
Unnamed Tributary to Meramec River (U)
07140102-080001
Meramec River (P), 02185
38°28'14.535"N/90°36'51.145"W

Outlet #019
NW ¼, SW ¼, Sec. 8, T43N, R4E, Jefferson County
Unnamed Tributary to Meramec River (U)
07140102-080001
Meramec River (P), 02185
38°28'45.876"N/90°36'8.11"W

Outlet #020
SE ¼, SW ¼, Sec. 5, T43N, R4E, Jefferson County
Unnamed Tributary to Meramec River (U)
07140102-080001
Meramec River (P), 02185
38°29'16.084"N/90°35'54.091"W

Outlet #021
SW ¼, NW ¼, Sec. 24, T42N, R2E, Jefferson County
Unnamed Tributary to Calvey Creek (U)
07140102-070003
Calvey Creek (C), 02030
38°22'4.824"n/90°44'50.337"W

Outlet #022
SE ¼, SW ¼, Sec. 36, T42N, R2E, Jefferson County
Unnamed Tributary to Calvey Creek (U)
07140102-070003
Calvey Creek (C), 02030
38°20'7.519"N/90°45'15.673"W

Outlet #023
SE ¼, SW ¼, Sec. 32, T42N, R4E, Jefferson County
Unnamed Tributary to Belew Creek (U)
07140104-080007
Belew Creek (P), 02179
38°19'29.254"N/90°36'9.789"W

Outlet #024
SE ¼, SW ¼, Sec. 32, T42N, R4E, Jefferson County
Unnamed Tributary to Belew Creek (U)
7140104-080007
Belew Creek (P), 02179
38°19'29.366"N/90°36'7.334"W

Outlet #025
SW ¼, SW ¼, Sec. 33, T42N, R4E, Jefferson County
'nnamed Tributary to Belew Creek (U)
07140104-080007
Belew Creek (P), 02179
38°19'28.609"N/90°35'28.047"W

Outlet #026
SE ¼, SE ¼, Sec. 33, T42N, R4E, Jefferson County
Unnamed Tributary to Belew Creek (U)
07140104-080007
Belew Creek (P), 02179
38°19'31.676"N/90°34'18.898"W

Outlet #027
SW ¼, SW ¼, Sec. 34, T42N, R4E, Jefferson County
Unnamed Tributary to Belew Creek (U)
07140104-080007
Belew Creek (P), 02179
38°19'31.683"N/90°34'7.724"W

Outlet #028
SE ¼, SW ¼, Sec. 36, T42N, R4E, Jefferson County
Unnamed Tributary to Sandy Creek (U)
07140101-150005
Lake Lorraine (L3), 07557
38°19'30.917"N/90°31'30.176"W

Outlet #029
NE ¼, NW ¼, Sec. 3, T43N, R4E, Jefferson County
Unnamed Tributary to Antire Creek (U)
07140102-080001
Antire Creek (P), 02188
38°30'4.841"N/90°33'46.565"W

Outlet #030
NW ¼, NW ¼, Sec. 2, T43N, R4E, Jefferson County
Unnamed Tributary to Little Antire Creek (U)
07140102-080001
Antire Creek (P), 02188
38°30'4.945"N/90°32'53.6"W

Outlet #031
NE ¼, NE ¼, Sec. 1, T43N, R4E, Jefferson County
Unnamed Tributary to Williams Creek (U)
07140102-080001
Williams Creek (P), 03594
38°30'4.674"N/90°30'53.603"W

Outlet #032
NE ¼, NW ¼, Sec. 6, T43N, R5E, Jefferson County
nnamed Tributary to Williams Creek (U)
07140102-080002
Williams Creek (P), 03594
38°30'4.289"N/90°30'16.876"W

Outlet #033
SUR 2001, T43N, R5E, Jefferson County
Unnamed Tributary to Fenton Creek (U)
7140102-080003
Fenton Creek (P), 03595
38°30'6.062"N/90°27'43.424"W

Outlet #034
SUR 1987, T43N, R5E, Jefferson County
Unnamed Tributary to Fenton Creek (U)
07140102-080003
Fenton Creek (P), 03595
38°30'4.52"N/90°26'14.169"W

Outlet #035
SUR 3013, T43N, R5E, Jefferson County
Unnamed Tributary to Meramec River (U)
07140102-080004
Meramec River (P), 02183
38°29'2.641"N/90°25'18.621"W

Outlet #036
SUR 3011, T43N, R5E, Jefferson County
Unnamed Tributary to Romance Creek (U)
07140102-080004
Meramec River (P), 02183
38°27'57.297"N/90°25'9.19"W

Outlet #037
SW ¼, SW ¼, Sec. 13, T43N, R5E, Jefferson County
Unnamed Tributary to Meramec River (U)
07140102-080004
Meramec River (P), 02183
38°27'27.505"N/90°24'55.714"W

Outlet #038
SE ¼, NW ¼, Sec. 24, T43N, R5E, Jefferson County
Unnamed Tributary to Meramec River (U)
07140102-080004
Meramec River (P), 02183
38°27'9.204"N/90°24'37.661"W

Outlet #039
NW ¼, NE ¼, Sec. 36, T43N, R5E, Jefferson County
Unnamed Tributary to Pomme Creek (U)
07140102-080004
Pomme Creek (C), 02192
38°25'37.518"N/90°24'25.935"W

Outlet #040
SE ¼, NE ¼, Sec. 36, T43N, R5E, Jefferson County
Unnamed Tributary to Pomme Creek (U)
7140102-080004
Pomme Creek (C), 02192
38°25'20.236"N/90°24'9.186"W

Outlet #041
SE ¼, SW ¼, Sec. 31, T43N, R6E, Jefferson County
Unnamed Tributary to Black Creek (U)
7140101-150001
Rock Creek (P), 01714
38°24'45.307"N/90°24'3.808"W

Outlet #042
SUR 659, T42N, R6E, Jefferson County
Unnamed Tributary to Mississippi River (U)
07140101-190001
Mississippi River (P), 01707
38°21'51.426"N/90°21'38.202"W

Outlet #043
SW ¼, NE ¼, Sec. 29, T42N, R6E, Jefferson County
Unnamed Tributary to Mississippi River (U)
07140101-190001
Mississippi River (P), 01707
38°20'46.125"N/90°22'10.525"W

Outlet #044
SW ¼, SW ¼, Sec. 36, T42N, R5E, Jefferson County
Unnamed Tributary to Eagle Creek (U)
07140101-150002
Mississippi River (P), 01707
38°19'25.738"N/90°25'16.028"W

Outlet #045
SW ¼, SW ¼, Sec. 31, T42N, R6E, Jefferson County
Unnamed Tributary to Eagle Creek (U)
07140101-150002
Mississippi River (P), 01707
38°19'14.972"N/90°23'56.698"W

Outlet #046
NW ¼, NE ¼, Sec. 32, T42N, R6E, Jefferson County
Unnamed Tributary to Glaize Creek (U)
07140101-190001
Mississippi River (P), 01707
38°20'0.74"N/90°22'39.768"W

Outlet #047
SE ¼, SE ¼, Sec. 7, T41N, R6E, Jefferson County
Unnamed Tributary to Mississippi River (U)
07140101-150005
Mississippi River (P), 01707
38°17'42.047"N/90°23'7.839"W

Outlet #048
SE ¼, NW ¼, Sec. 17, T41N, R6E, Jefferson County
Unnamed Tributary to Mississippi River (U)
7140101-150005
Mississippi River (P), 01707
38°17'9.56"N/90°22'36.735"W

Outlet #049
NE ¼, SW ¼, Sec. 17, T41N, R6E, Jefferson County
Unnamed Tributary to Mississippi River (U)
7140101-150005
Mississippi River (P), 01707
38°17'1.135"N/90°22'34.878"W

Outlet #050
NE ¼, NE ¼, Sec. 29, T41N, R6E, Jefferson County
Unnamed Tributary to Joachim Creek (U)
07140101-150005
Mississippi River (P), 01707
38°15'6.672"N/90°22'34.75"W

Outlet #051
SUR 924, T41N, R5E, Jefferson County
Unnamed Tributary to Joachim Creek (U)
07140101-150005
Sandy Creek (C), 01720
38°15'59.608"N/90°24'24.223"W

Outlet #052
SW ¼, SE ¼, Sec. 36, T41N, R5E, Jefferson County
Unnamed Tributary to Joachim Creek (U)
07140101-150005
Joachim Creek (P), 01719
38°14'9.525"N/90°24'47.131"W

Outlet #053
NE ¼, SE ¼, Sec. 35, T41N, R5E, Jefferson County
Unnamed Tributary to Joachim Creek (U)
07140101-150004
Joachim Creek (P), 01719
38°14'27.141"N/90°25'44.956"W

Outlet #054
SUR 1973, T40N, R5E, Jefferson County
Unnamed Tributary to Joachim Creek (U)
07140101-150004
Joachim Creek (P), 01719
38°13'42.331"N/90°25'25.774"W

Outlet #055
NW ¼, NW ¼, Sec. 13, T40N, R5E, Jefferson County
Unnamed Tributary to Buck Creek (U)
07140101-150004
Buck Creek (C), 01727
38°11'58.397"N/90°25'27.893"W

Outlet #056
SUR 1995, T40N, R6E, Jefferson County
Unnamed Tributary to Plattin Creek (U)
7140101-170002
Plattin Creek (P), 01728
38°10'51.402"N/90°23'4.952"W

Outlet #057
SUR 1916, T40N, R6E, Jefferson County
Unnamed Tributary to Plattin Creek (U)
07140101-170002
lattin Creek (P), 01728
38°11'18.142"N/90°23'33.29"W

Outlet #058
SUR 1906, T40N, R6E, Jefferson County
Unnamed Tributary to Plattin Creek (U)
07140101-170002
Plattin Creek (P), 01728
38°11'51.886"N/90°23'19.571"W

Outlet #059
NW ¼, NE ¼, Sec. 9, T40N, R6E, Jefferson County
Unnamed Tributary to Plattin Creek (U)
07140101-170002
Mississippi River (P), 01707
38°13'4.555"N/90°21'35.547"W

Outlet #060
SE ¼, NW ¼, Sec. 32, T41N, R6E, Jefferson County
Unnamed Tributary to Mississippi River (U)
07140101-150005
Mississippi River (P), 01707
38°14'8.774"N/90°22'29.082"W

Outlet #061
E ¼, NW ¼, Sec. 32, T41N, R6E, Jefferson County
Unnamed Tributary to Joachim Creek (U)
07140101-170002
Joachim Creek (P), 01719
38°14'46.231"N/90°22'10.613"W

Outlet #062
NW ¼, NE ¼ Sec 4, T43N, R4E
Unnamed Tributary to Antire Creek (St. Louis Co.)
Antire Creek
38°30'5.074"N/90°34'34.886"W

Outlet #063
NE ¼, NE ¼, Sec 3, T43N, R4E
Unnamed Tributary to Little Antire Creek
Little Antire Creek
38°30'4.501"N/90°33'1.404"W

Outlet #064
US Survey 2009, T42N, R6E
Unnamed Tributary to Mississippi River
Mississippi River
38°21'58.82"N/90°21'29.284"W

Outlet #065
US Survey 2996, T42N, R6E
Glaize Creek
Mississippi River
8°20'4.143"N/90°22;30.924"W

Outlet #066
NE ¼, SE ¼, Sec 32, T42N, R6E
Unnamed Tributary to Mississippi River
Mississippi River
38°19'7.952"N/90°22'33.025"W

Outlet #067
NE1/4, NE ¼, Sec 5, T41N, R6E
Unnamed Tributary to Mississippi River
Mississippi River
38°18'16.362"N/90°22'30.441"W

Outlet #068
NE ¼, SE ¼, Sec 15, T40N, R6E
Selma Creek
Mississippi River
38°11'30.255"N/90°20'22.85"W

Outlet #069
NW ¼, NW ¼, Sec 23, T40N, R6E
Unnamed Tributary to Mississippi River
Mississippi River
3°10'57.113"N/90°19'45.685"W

Outlet #070
SW ¼, SE ¼, Sec 24, T40N, R6E
Unnamed Tributary to Mississippi River
Mississippi River
38°10'23.321"N/90°18'10.925"W

Outlet #071
NW ¼, NW ¼, Sec 4, T39N,R7E
Unnamed Tributary to Mississippi River
Mississippi River
38°8'12.193"N/90°15'55.994"W

Outlet #072
NE ¼, NE ¼, Sec 4, T39N, R7E
Unnamed Tributary to Mississippi River
Mississippi River
38°7'12.204"N/90°15'10.322"W

Outlet #073
SE ¼, SE ¼, Sec 16, T38N, R4E
Unnamed Tributary to Big River
Big River
^8°0'12.49"N/90°35'5.871"W

Outlet #074
SW ¼, SE ¼, Sec 16, T38N, R4E
Unnamed Tributary to Big River
Big River
38°0'13.04"N/90°35'13.056"W

Outlet #75
SE ¼, SE ¼, Sec 17, T38N, R4E
Unnamed Tributary to Big River
Big River
38°0'18.404"N/90°36'7.382"W

Outlet #076
SW ¼, SE ¼, Sec 18, T38N, R4E
Big River
Big River
38°0'25.938"N/90°37'41.141"W

Outlet #077
SE ¼, SE ¼, Sec 31, T 39N, R4E
Unnamed Tributary to Big River
Big River
38°3'25.941"N/90°37'4.105"W

Outlet #078
SW ¼, SW ¼, Sec 32, T39N, R4E
Unnamed Tributary to Big River
Big River
38°3'39.683"N/90°36'47.994"W

Outlet #079
NE ¼, SW ¼, Sec 29, T39N, R4E
Unnamed Tributary to Big River
Big River
38°4'22.104"N/90°36'52.444"W

Outlet #080
NE ¼, SW ¼, Sec 30,T39N, R4E
Unnamed Tributary to Big River
Big River
38°4'27.169"N/90°37'54.891"W

Outlet #081
SW ¼, SW ¼, Sec 24, T39N, R3E
Unnamed Tributary to Big River
Big River
38°5'13.369"N/90°39'22.509"W

Outlet #082
NW ¼, NW ¼, Sec 24, T39N, R3E
Unnamed Tributary to Big River
Big River
38°5'43.188"N/90°39'14.853"W

Outlet #083
NW ¼, SW ¼, Sec 4, T39N, R3E
Big River
Big River
38°8'7.878"N/90°42'47.909"W

Outlet #084
NW ¼, SE ¼, Sec 14, T41N, R2E
Unnamed Tributary to Little Meramec (Franklin County)
Little Meramec River
38°17'23.055"N/90°45'47.725"W

Totals: 67 Urbanized 17 Non-urban

CITY OF
BYRNES MILL, MISSOURI

NPDES PHASE II

STORM WATER MANAGEMANT PLAN

NOVEMBER 9, 2007

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INTRODUCTION

Background. Water pollution degrades surface waters making them unsafe for drinking, fishing, swimming, and other activities. As authorized by the Clean Water Act, the National Pollutant Discharge Elimination System (NPDES) permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States. Point sources are discrete conveyances such as pipes or man-made ditches. Individual homes that are connected to a municipal system, use a septic system, or do not have a surface discharge do not need an NPDES permit; however, industrial, municipal, and other facilities must obtain permits if their discharges go directly to surface waters. In most cases, the NPDES permit program is administered by authorized states. Since its introduction in 1972, the NPDES permit program is responsible for significant improvements to our Nation's water quality.

A number of NPDES permit program areas affect how a municipality handles its sanitary wastewater and stormwater runoff. Properly managed municipal facilities, such as publicly owned treatment works (POTWs), and wastewater systems, such as separate and combined storm sewer systems, play an important role in protecting community health and local water quality. Municipalities rely on assistance from other partners, such as industry, developers, and homeowners, to ensure that they can meet the requirements contained in their municipal NPDES permits. Municipal staffs, who are responsible for meeting NPDES permit obligations, must understand how the NPDES permit program works, who should be involved and educated about the NPDES program, and what information is available to help perform their jobs effectively.

During storms, much water runoff enters the storm system from developed areas. The runoff picks up pollutants originating from motor vehicles and lawns and often carries them to streams and lakes. To address this concern, the EPA enacted new regulations in October 1999, known as the EPA Phase II Storm Water Rule.

These regulations require communities with populations under 100,000 to implement a municipal storm water management program for EPA Phase II minimum measures.

Description of City. Byrnes Mill is on Highway 30, about 11 miles SW of the intersection of Highway 30 and Interstate 270 (Exit #3). The Byrnes Mill City Hall is located at 127 Osage Executive Circle, Byrnes Mill, MO 63051. Byrnes Mill has several miles of frontage on the Big River.

Administration of SWMP. This plan will be administered by our Public Works Director under the direction of the City Administrator with the full consent of the Board of Aldermen.

Ordinance Governing SWMP. When the NPDES Phase II permit is granted, this plan will be executed under a Byrnes Mill City Ordinance.

1. PUBLIC EDUCATION AND OUTREACH – MCM 1

1.1 Purpose. Develop and implement a program to educate the public on impacts of storm water discharges on water bodies and the steps necessary to reduce storm water pollution.

1.2 Educational Materials and Strategies. This information will address many issues including what each resident can do to reduce the pollutant load and what each resident can watch for to identify and stop pollutants entering the system.

1.3 Application Partnership. Because we are partnered with Jefferson County, Missouri with regard to our permit application, we will use brochures and other documentation that is made available through the Storm Water Management Plan of Jefferson County.

1.4 Newsletter. Through our newsletter which is published twice a year, we have already begun with public education by including brochures with the newsletter describing the problems with pollutants and the efforts to improve the cleanliness of our streams.

1.5 MCM 1 Implementation Schedule.

Permit Year	BMP GOAL SELECTED
All Years	Participate in a community event each year. Distribute brochures and education materials through newsletters. One presentation on storm water management at Byrnes Mill City Hall.
Year One	Add storm water management information to the Byrnes Mill website.
Year Two	Develop a storm water check list (fact sheet) for building permits.
Year Three	Continue with all of the above tasks.
Year Four	Continue with all of the above tasks.
Year Five	Continue with all of the above tasks. Conduct a survey to evaluate public awareness and program effectiveness.

1.6 Appropriate Measurable Goal.

The City of Byrnes Mill will implement a public education program to distribute educational materials to the community and conduct equivalent outreach activities about the impacts of Storm Water discharges on water bodies and the steps that the public can take to reduce pollutants in Storm Water runoff, and to better understand and support the City's efforts.

Distribute brochures and education materials through newsletters according to annual timeline.

2. PUBLIC INVOLVEMENT AND EDUCATION – MCM 2

2.1 Purpose. Develop and implement a public participation program to assist in the implementation of the surface water management plan.

2.2 One-on-One Partnerships. We will establish one-on-one partnerships for citizens to participate in monitoring, protecting and restoring the creeks and streams on their property that can be affected by stormwater pollution.

2.3 BMPs. Using Best Management Practices (BMPs) as a guide, we expect to foster citizen participation by developing a task force of concerned and directly affected citizens to help with education and suggestions for improvement.

2.4 MCM 2 Implementation Schedule.

Permit Year	BMP GOAL SELECTED
All Years	Volunteer participation in City-wide cleanups. Administer storm drain marker projects. Coordinate neighborhood and stream cleanups. Encourage residents by way of the newsletter to report any illicit discharges.
Year One	Initiate a storm water management task force for oversight to include local farm owners, builders, businesses, and other residents.
Year Two	Develop a plan to distribute storm water and reduce the rate of discharge.
Year Three	The task force will submit a report on storm water issues to the Board of Aldermen for review and possible ordinance adjustments.
Year Four	Continue as above implementing changes according to on-going evaluations.
Year Five	Continue with as year four.

2.5 Appropriate Measurable Goal.

The newsletter will encourage residents to review Storm Water discharge maps posted at the City Hall and encourage residents to report any undocumented discharges or illicit connections to the Public Works Director.

The Public Works Director will maintain a resident report file.

3. ILLICIT DISCHARGE DETECTION AND ELIMINATION – MCM 3

3.1 Purpose. Develop and implement a program that includes ordinances prohibiting illicit sewer connections or discharges (including dumping), creates sewer maps, and offers public education on the hazards of illicit discharges.

3.2 Identifying Points of Runoff. We have identified eight different points of runoff into the Big River and Bear Creek, the only streams of consequence for Byrnes Mill.

3.2.1 Outlet # #B001
Unnamed Tributary
NW1/4, NW1/4, Sec.26, T43N, R4E
Lat: 38*26'38.519"N Long: 90*32'52.894"W
Receiving Water: Bear Creek

3.2.2 Outlet # #B002
Unnamed Tributary
US Survey 3059, T43N, R4E
Lat: 38*25'19.729"N Long: 90*35.20.515"W
Receiving Water: Big River

3.2.3 Outlet # #B003
Unnamed Tributary
US Survey 3059, T43N, R4E
Lat: 38*25'42.382"N Long: 90*35.18.395"W
Receiving Water: Big River

3.2.4 Outlet # #B004
Unnamed Tributary
US Survey 3059, T43N, R4E
Lat: 38*25'51.753"N Long: 90*35.14.307"W
Receiving Water: Big River

3.2.5 Outlet # #B005
Unnamed Tributary
US Survey 3059, T43N, R4E
Lat: 38*26'16.257"N Long: 90*34'59.595"W
Receiving Water: Big River

3.2.6 Outlet # #B006
Unnamed Tributary
US Survey 3059, T43N, R4E
Lat: 38*26'19.399"N Long: 90*35.8.385"W
Receiving Water: Big River

3.2.7 Outlet # #B007
Unnamed Tributary
US Survey 3059, T43N, R4E
Lat: 38*27'25.114"N Long: 90*35.23.11"W
Receiving Water: Big River

3.2.8 Outlet # #B008
Unnamed Tributary
US Survey 3059, T43N, R4E
Lat: 38*27'25.506"N Long: 90*35.13.053"W
Receiving Water: Big River

3.3 Types and Sources of Illicit Discharges. The types of illicit discharges are either via a direct connection (waste water piping either mistakenly or deliberately connected to storm drains) or indirect connections (infiltration from cracked sanitary systems, spills collected by drain outlets, or paint, used oil or other toxins dumped directly into a drain. The sources of illicit discharges include sanitary wastewater, effluent from septic tanks, car wash wastewaters, improper oil disposal, and others.

3.4 Detection and Correction of Illicit Discharges. The Byrnes Mill staff will be trained to detect and correct illicit discharges by using methods, such as visual screening, water sampling, and others, to locate problem areas. We will use methods such as dye testing, tracing discharges upstream, and others to locate the source of the discharge. Once the source is identified, the offending discharger will be notified and directed to correct the problem. This process for each occurrence will be documented.

3.5 Storm Sewer System Map (attached).

3.6 MCM 3 Implementation Schedule.

Permit Year	BMP GOAL SELECTED
All Years	Visual inspection of all 8 NPDES Phase II identified outflow sites. We will test for settle-able solids using American Environmental Labs or some other testing authority. Review of all construction site plans by P&Z for compliance with stormwater ordinances.
Year One	Survey 50% of the streams in Byrnes Mill for illicit discharge. Distribute an illicit stormwater discharge brochure to 100% of Byrnes Mill industrial customers. Determine EPA/MoDNR water quality testing requirements & equipment required. Conduct & record water quality testing at all 8 outflows to establish a baseline as follows: 1. Visual inspection of all 8 NPDES Phase II identified outflow sites. 2. We will test for settle-able solids using American Environmental Labs or some other testing authority. 3. We will test for dissolved oxygen.
Year Two	Locate and map 50% of all septic systems.
Year Three	Locate and map remaining 50% of all septic systems.
Year Four	Inform citizens with updates from EPA and DNR.
Year Five	Inform citizens with updates from EPA and DNR.

3.7 Appropriate Measurable Goal.

The City of Byrnes will develop, implement and enforce a program to detect and eliminate illicit discharges from our city.

The Public Works Director will maintain a report file which documents illicit discharges that have been detected and the corrective action taken to eliminate the illicit discharge.

4. CONSTRUCTION SITE STORM WATER RUNOFF CONTROL – MCM 4

4.1 Purpose. Develop, implement, and enforce a program to reduce storm water runoff from construction activities on land disturbances of one or more acres. Stormwater runoff from construction activities can have a significant impact on water quality. As stormwater flows over a construction site, it picks up pollutants like sediment, debris, and chemicals. Polluted stormwater runoff can harm or kill fish and other wildlife. Sedimentation can destroy aquatic habitat and high volumes of runoff can cause stream bank erosion. The NPDES Stormwater program requires operators of construction sites one acre or larger (including smaller sites that are part of a larger common plan of development) to obtain authorization to discharge stormwater under an NPDES construction stormwater permit

4.2 Erosion and Sediment Controls for Construction. The City of Byrnes Mill has in its construction requirements the appropriate practices to control erosion and sediment and other waste at the construction site where the use of silt fences and retention ponds are required, as needed.

4.3 MCM 4 Implementation Schedule.

Permit Year	BMP GOAL SELECTED
All Years	Land disturbance permits will be documented by name and area disturbed.
Year One	Prepare information for developers and construction companies on sediment and erosion control.
Year Two	Identify tools and resources for Byrnes Mill to use to improve the implementation of land disturbance programs.
Year Three	Hold a workshop for Byrnes Mill Aldermen, Public Works Director, and City Administrator to review storm water prevention, compliance inspections, together with any program enhancements.
Year Four	Repeat BMP goal as stated in year 3.
Year Five	Repeat BMP goal as stated in year 3

4.4 Appropriate Measurable Goal.

The City of Byrnes Mill will develop, implement, and enforce a program to reduce pollutants in any Storm Water runoff from our city from construction activities that result in a land disturbance of greater than or equal to one acre.

The P&Z Commission will review construction site requirements to ensure that adequate regulations are in place to control erosion and sediment as well as to control other waste such as discarded building materials, concrete truck washout, chemicals, litter, and sanitary waste at the construction site that may cause

adverse impacts to water quality. If any new regulations are needed, P&Z will make recommendations to the Board of Aldermen.

5. POST-CONSTRUCTION SITE STORM WATER MANAGEMENT – MCM 5.

5.1 Purpose. Develop, implement, and enforce a program that addresses storm water runoff from new development and redevelopment, generally using structural and nonstructural best management practices (BMPs).

5.2 Discharges from Post-Construction runoff. There are generally two forms of post-construction runoff that impact our streams. The first is caused by an increase in the type and quantity of pollutants in stormwater runoff. As runoff flows over areas altered by development, it picks up harmful sediment. The second type is caused by an increase in water volume. Increasing impervious surfaces such as driveways, rooftops, parking lots, etc. interrupts the natural cycle of gradual percolation of water through vegetation and soil.

5.3 Use of Non-structural BMPs. Runoff problems can be addressed efficiently with sound planning procedures. Site-based BMPs will be reviewed by P&Z to minimize disturbances.

5.4 Use of Structural BMPs. Stormwater retention and detention BMPs are already part of the Byrnes Mill development requirements. This practice catches stormwater and slowly releases it to the receiving water stream.

5.5 MCM 5 Implementation Schedule.

Permit Year	BMP GOAL SELECTED
All Years	Review building codes adopted by ordinance to ensure up-to-date stormwater management policies are in force.
Year One	Provide stormwater guidelines to P&Z and to Public Works to assist in the review of concept plans as well as development plans.
Year Two	Provide a checklist for developer and construction companies for post-construction site stormwater management.
Year Three	Development and implement at least one new strategy to protect water quality.
Year Four	Develop educational materials explaining the purpose of post-construction storm water management.
Year Five	Development and implement at least one new strategy to protect water quality.

5.6 Appropriate Measurable Goal.

The City of Byrnes Mill will develop, implement, and enforce a program to address Storm Water runoff from new development and redevelopment projects that disturb an area greater than or equal to one acre.

The P&Z Commission will review and propose any new regulations needed to reduce pollutants from post-constructions sites as well as to reduce the volume of water entering our streams as a result of the construction.

6. POLLUTION PREVENTION / GOOD HOUSEKEEPING FOR MUNICIPAL OPERATIONS – MCM 6

6.1 Purpose. Develop and implement a program that considers pollution prevention and good housekeeping measures for maintenance activities, street runoff controls, storm sewer waste disposal, and flood control management projects.

6.2 Controls for Municipal Pollutant Runoff. The Director of Public Works will develop a policy guide and details of BMPS and pollution prevention strategies relating for vehicle maintenance, washing, fueling, salt storage, and other pertinent industrial and non-industrial actions, and what to do in the case of accidents and spills.

6.3 Municipal Staff Training on Prevention Measures. This program will include employee training to prevent and reduce Storm Water pollution from activities such as park and open space maintenance, fleet and building maintenance, road maintenance, and general stormwater system maintenance.

6.4 MCM 6 Implementation Schedule.

Permit Year	BMP GOAL SELECTED
All Years	Conduct training refresher programs for employees to be mindful of stormwater pollutants.
Year One	Develop a list of problem areas, if any, for illegal solid waste disposal and determine action necessary to eliminate the problem.
Year Two	Provide an enclosed shelter for street salt storage. Post pet-waste sign at Byrnes Mill park.
Year Three	Repeat year One.
Year Four	Prepare a document that shows salt usage per year.
Year Five	Repeat Year One.

6 Appropriate Measurable Goal.

The City of Byrnes Mill will 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.

The City will prepare a Policy Guide for disposal of equipment fluids, the housing of street salt, etc. The director of Public Works will conduct annual training of applicable municipal staff on stormwater concerns and pollution prevention policies and document participation.

7. DEFINITIONS

BMPs – best management practices. The primary method to control stormwater discharges is through the use of **best management practices**. Stormwater discharges are generated by runoff from land and impervious areas such as paved streets, parking lots, and building rooftops during rainfall and snow events that often contain pollutants in quantities that could adversely affect water quality. Most stormwater discharges are considered point sources and require coverage by an NPDES permit. The primary method to control stormwater discharges is through the use of **best management practices**.

CLEAN WATER ACT - The Clean Water Act (CWA) is the cornerstone of surface water quality protection in the United States. (The Act does not deal directly with ground water nor with water quantity issues.) The statute employs a variety of regulatory and non-regulatory tools to sharply reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff. These tools are employed to achieve the broader goal of restoring and maintaining the chemical, physical, and biological integrity of the nation's waters so that they can support "the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water."

DISCHARGE – without a qualifier, refers to the discharge of a pollutant.

EPA – Environmental Protection Agency (Also USEPA)

MCM – minimum control measures – refers to any measure, at a minimum, that is used to prevent or reduce the discharge of pollutants to waters of the United States.

MEP – maximum extent practical – is a technology-based discharge standard for MS4s.

MoDNR – Missouri Department of Natural Resources

MS4 – Municipal Separate Storm Sewer System - The regulatory definition of an MS4 (40 CFR 122.26(b)(8)) is "a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains): (i) Owned or operated by a state, city, town, borough, county, parish, district, association, or other public body (created to or pursuant to state law) including special districts under state law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the Clean Water Act that discharges into waters of the United States. (ii) Designed or used for collecting or conveying stormwater; (iii) Which is not a combined sewer; and (iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2."

In practical terms, operators of MS4s can include municipalities and local sewer district, state and federal departments of transportation, public universities, public hospitals, military bases, and correctional facilities. The Stormwater Phase II Rule added federal systems, such as military bases and correctional facilities by including them in the definition of small MS4s.

NON-STRUCTURAL BMPS - Non-structural BMPs are designed to limit the amount of pollutants available in the environment that would potentially end up in stormwater runoff which can be achieved through such things as education, management and development practices. Some examples of non-structural BMPs include ordinances and practices associated with land use and comprehensive site planning.

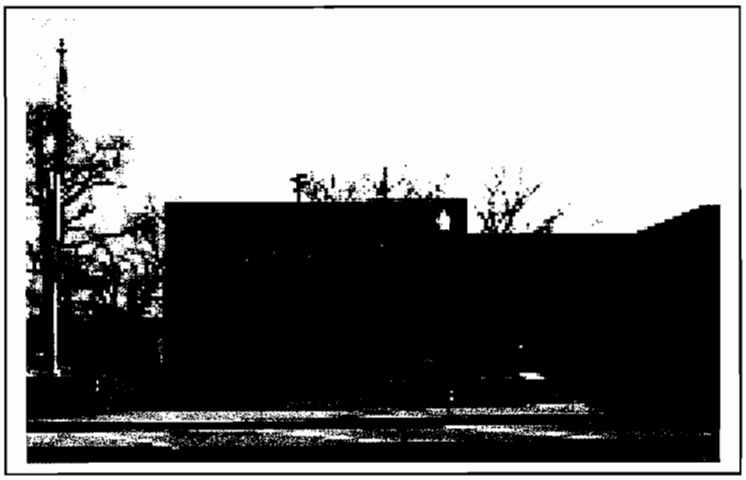
NPDES – National Pollutant Discharge Elimination System

POTW – Public Owned Treatment Works

STRUCTURAL BMP - A device, practice, or method for removing, reducing, retarding, or preventing targeted stormwater runoff constituents, pollutants, and contaminants from reaching receiving waters

SWMP – storm water management plan - refers to a comprehensive program to manage the quality of storm water discharged from the municipal separate storm sewer system.

CITY OF CRYSTAL CITY, MISSOURI



NPDES PHASE II
STORM WATER MANAGEMENT PLAN

NOVEMBER 10, 2007

EXECUTIVE SUMMARY
(City of Crystal City)

The City of Crystal City along with Jefferson County and other city's in the county has participated in the storm water program the last few years.

The 2006 Crystal City population was estimated to be 4,560 which is a 7.4% increase over the 2000 population of 4,247. The land area for Crystal City is 4.1 square miles and is bordered by the Mississippi River to the east, Herculaneum to the north, Festus to the west, and Jefferson County to the south.

Crystal City is a 3rd class city organized in 1803 and is governed by a mayor and eight council members.

Article 10 of the Unified Development Order addresses both land disturbance activities and stormwater management requirements specified in the NPDES permit. Section 10.010 General (E) states " No person shall engage in any activity that would be in violation of the regulations dictated by the Phase II Storm Water National Pollutant Discharge Elimination System (NPDES) in accordance with the Clean Water Act of 1972".

Within sections of Article 10, the requirements delineated in MCM's Three – Illicit Discharge Detection and Elimination, Four – Construction Site Stormwater Runoff Control, and Five – Post Construction Stormwater Management are address. This article will be the enforcement means within the city to administer the NPDES program.

Crystal City will continue to provide materials and programs that fulfill the requirements of Minimum Control Measures (MCM) number one – Public Education & Outreach, number two – Public Involvement and Participation.

The City will continue to cooperate with Jefferson County and other city's in the Stormwater Task Force and continue it's bi-monthly meetings and coordinate the submittal of the annual reports.

Crystal City's BMP implementation information for all six MCM's is attached. The progress made towards these will be reported in the annual report. If modifications are needed in future years, they will be addressed in the annual report.

Forms L and M for Crystal City are included in this Appendix. The list of nine outlets are also included. An overall city map reflecting these locations is also provided. Detailed maps have been developed for each outlet using aerial photography.

City of Crystal City
NPDES Outlets

Outlet #C001
Unnamed Tributary
NW 1/4, NW 1/4, Sec. 32, T41N, R6E, Jefferson County
Lat: 38°16'51.433"N Long: 90°22'46.865"W
Receiving Water: Unnamed Tributary to Joachim Creek

Outlet #C002
Unnamed Tributary
SW1/4, NE 1/4, Sec 32, T41N, R6E, Jefferson County
Lat: 38°14'37.571'N Long: 90°22'38.069"W
Receiving Water: Unnamed Tributary to the Mississippi River

Outlet #C003
Unnamed Tributary
NW1/4, SE 1/4, Sec 32, T41NR6E, Jefferson County
Lat: 38°14'16.601"N Long: 90°22'35.767"W
Receiving Water: Unnamed Tributary to the Mississippi River

Outlet #C004
Unnamed Tributary
US Survey 1906, T40N R64
Lat: 38°13'5.029"N Long: 90°21'35.627"W
Plattin Creek

Outlet #C005
Unnamed Tributary
US Survey 1906, T40N R6E
Lat: 38°12'31.788"N Long: 90°22'59.987"W
Receiving Water: Unnamed Tributary to Plattin Creek

Outlet #C006
Unnamed Tributary
US Survey 1906, T40N R6E
Lat: 38°12'21.749"N Long: 90°23'23.072"W
Receiving Water: Unnamed Tributary to Plattin Creek

Outlet #C007
Unnamed Tributary
US Survey 1906, T40N R6E
Lat: 38°11.50.947"N Long: 90°23'19.323"W
Receiving Water: Unnamed Tributary to Plattin Creek

Outlet #C008
Unnamed Tributary
US Survey 1914, T40N R6E
Lat: 38°11'18.072"N Long: 90°23'16.551"W
Receiving Water: Unnamed Tributary to Plattin Creek

Outlet #C009
Unnamed Tributary
US Survey 1915, T40N R6E
Lat: 38°11'7.384"N Long: 90°23'3.528"W
Plattin Creek

City of Crystal City

BMP Implementation Information

Public Education & Outreach

Permit Year	BMP Goal Selected	Measurement Method	Responsibility
All Years	Participate in a community event each year. Newsletter on yard waste in city streets.	# of visitors # of newsletter's	Storm Water Storm Water
2008	Participate in Herculaneum's event. Develop fact sheets for Land Disturbance, Illicit Discharge & distribute to appropriate people.	# of visitors # sheets distributed	Storm Water Storm Water
2009	Participate in Twin City's event. Develop fact sheets for Building Permit & Developer Guide	# of visitors # sheets distributed	Storm Water Storm Water
2010	Participate in Pevely's event. Establish web page for storm sewers	# of visitors # of items on file	Storm Water Storm Water
2011	Participate in Byrnes Mill's event. Develop a School Education Program – How Pollution Affects the Ecosystem of streams	# of visitors # of scheduled programs given	Storm Water
2012	Maintain web page, continue school education program.		

City of Crystal City

BMP Implementation Information

Public Involvement and Participation

Permit Year	BMP Goal Selected	Measurement Method	Responsibility
All Years	Watershed planning		Storm Water
2008	Establish a Citizen Panel		Storm Water
2009	Storm Water Stenciling Water Quality monitoring at subdivision level	# of drains stenciled. # of volunteers	Storm Water
2010	Establish a Clean Stream program for each wards of the city.	# of participants	Storm Water
2011	Develop a subdivision-managed program to encourage LID & natural pollution control.	# of participants	Storm Water
2012			

City of Crystal City

BMP Implementation Information

Illicit Discharge Detection and Elimination

Permit Year	BMP Goal Selected	Measurement Method	Responsibility
All Years	Inspect all outlets from Crystal City Review plans submitted to P & Z	# of outlets # of plans received	Storm Water Storm Water
2008	Determine EPA / MoDNR water quality testing requirements & equipment required.		Storm Water
2009	Create plan & map all storm water.		Storm Water
2010	Purchase water quality testing equipment to train & certify staff to conduct testing.	# trained	Storm Water
2011	Conduct & record water quality testing of all outlets.	# recorded	Storm Water
2012	Update & have blueprints on all new & old storm sewers.		Storm Water

City of Crystal City

BMP Implementation Information

Construction Site Storm Water Runoff Control

Permit Year	BMP Goal Selected	Measurement Method	Responsibility
All Years	Train Public Works / Bldg. Dept. for land disturbance & storm water associated with construction activity.	# of employee's	Storm Water
2008	Maintain that all employee's keep up with the Storm Water requirements per EPA / MoDNR.	# of employee's	Storm Water
2009	Maintain that all employee's keep up with the Storm Water requirements per EPA / MoDNR.	# of employee's	Storm Water
2010	Maintain that all employee's keep up with the Storm Water requirements per EPA / MoDNR.	# of employee's	Storm Water
2011	Maintain that all employee's keep up with the Storm Water requirements per EPA / MoDNR.	# of employee's	Storm Water
2012	Maintain that all employee's keep up with the Storm Water requirements per EPA / MoDNR.	# of employee's	Storm Water

City of Crystal City

BMP Implementation Information

Post-Construction Storm Water Management

Permit Year	BMP Goal Selected	Measurement Method	Responsibility
All Years	Review proposed subdivision plans for on-going Maintenance documentation & requirements in Subdivisions.	# reviewed	Storm Water
2008	Identify in subdivisions post- construction storm water facilities that require on-going maintenance.		Storm Water
2009	Identify in subdivisions post- construction storm water facilities that require on-going maintenance.		Storm Water
2010	Identify in subdivisions post- construction storm water facilities that require on-going maintenance.		Storm Water
2011	Identify in subdivisions post- construction storm water facilities that require on-going maintenance.		Storm Water
2012	Identify in subdivisions post- construction storm water facilities that require on-going maintenance.		Storm Water

City of Crystal City

BMP Implementation Information

Pollution Prevention / Good Housekeeping For Municipal Operations

Permit Year	BMP Goal Selected	Measurement Method	Responsibility
All Years	Clean all city streets with street sweeper & the pickup of leaves with our leaf machine.	# of employee's	Storm Sewer
2008	Have ordinance's for Illegal Dumping, Pet Waste in Parks, & all above ground fuel tanks are inside a Containment wall area.		Storm Sewer
2009	Continue to use street sweeper, leaf machine, clean out city grates & general maintenance.	# of employee's	Storm Sewer
2010	Continue to use street sweeper, leaf machine, clean out city grates & general maintenance.	# of employee's	Storm Sewer
2011	Continue to use street sweeper, leaf machine, clean out city grates & general maintenance.	# of employee's	Storm Sewer
2012	Continue to use street sweeper, leaf machine, clean out city grates & general maintenance.	# of employee's	Storm Sewer

City of Festus

Phase II
Storm Water Management Plan
Permit Renewal 2008-2013

City of Festus
Summary

The City of Festus was incorporated in 1887. We currently cover around six square miles. The current population is 11,200 with about a 4% growth rate each year.

There are two large creeks within the city limits. To the east is Joachim Creek, and to the west is Plattin Creek. There are seven outfalls in the city with almost every one of them leaving the city to one of the major streams.

The city has adopted a storm water ordinance, a land disturbance permit, subdivision ordinance and a floodplain ordinance. We will be looking at all of these over this permit cycle to see if they are effective or applicable to the goals we have set.

Our plans are to detect and eliminate all illicit discharge this permit cycle from both private and municipal operations.

Currently we issue and enforce a Land Disturbance Permit to all applicable building permits and new subdivision developments with the biggest emphasis on silt control and pre-construction storm water routing. Festus is now looking at new low-impact subdivision design and the latest detention pond concepts. This year, we will also try detention pond planting of shallow root trees to reduce total outflow volume.

Stormwater Outlet and Receiving Water Attachment

F001 SW1/4 NE1/4 Sec.35 Town.41N Range5E
Lat. 38Deg. 14' 37.512" N
Long. 90Deg. 26' 5.508" W

F002 NE1/4 NE1/4 Sec.31 Town.31N Range6E
Lat. 38Deg. 14' 36.019" N
Long. 90Deg. 23' 48.795"W

F003 U.S. Survey 1906 Town.40N Range6E
Lat. 38Deg. 13' 2.776" N
Long. 90Deg. 23' 19.211" W

F004 U.S. Survey 1906 Town. 40N Range 6E
Lat. 38Deg. 12' 42.038" N
Long. 90Deg. 23' 27.142" W

F005 U.S. Survey 1906 Town.38N Range 6E
Lat. 38Deg. 11' 45.993" N
Long. 90Deg. 23' 49.742" W

F006 SW1/4 of NW1/4 Sec.13 Town. 40N Range5E
Lat. 38Deg. 11' 58.996" N
Long. 90Deg. 25' 27.566" W

F007 U.S. Survey 392 Town. 40N Range 5E
Lat. 38Deg. 12' 37.424" N
Long. 90Deg. 25' 31.85" W

OUTLET NUMBER	RECEIVING WATER
F001	Joachim Creek
F002	Unnamed Trib. to Joachim
F003	Unnamed Trib. to Plattin Creek
F004	Unnamed Trib. to Plattin Creek
F005	Unnamed Trib. to Plattin Creek
F006	Unnamed Trib. to Joachim
F007	Unnamed Trib. to Joachim

MCM Implementation Information

Public Education & Outreach

Permit Year	BMP Goal Selected	Measurement Method	Responsibility
All Years	Continue Public Education at Fairs with Jeff. Co. Having Stormwater Ord. Aval. Online. New Household Waste Handout Aval. Online.	Turnout at Education Tent Amount website visited by residents	Festus
2008	Publish and Dis. Householdwaste Handout to all new water turn on Res. in Festus	Amount Distributed	Festus
2009	Mailer to all Festus Res. on Res. Stormwater and Household Waste	Amount Distributed	Festus
2010	Public Meeting with Handouts about Lawn Care and Maintinance with all Lawn Care Companys invited with the Public	Turnout and Amount Dis.	Festus
2011	Set up Waste oil Drop-off Points at City Fac.	Amount collected	Festus
2012	Set up Twice a year Hazard Waste drop-off days for batteries,tires, paints.	Amount collected	Festus

Public Involvement and Participation

Permit Year	BMP Goal Selected	Measurement Method	Responsibility
All Years	Participation of Public Every year with Public Ed. tent at Fairs. Once stenciling program is started continue with different sections of the city each year.	Turnout at Education Tent	Festus, Public
2008	Attending new Sub. meetings when they are turned over from developers to Trustee Board to answer questions and clarify stormwater det. fac. mantinence.	Turnout for Sub. New Trustee Meetings	Festus, Public
2009	Stormwater inlet stenciling program (dump no waste drains to stream) with local groups boy and girlscouts	Amount of Inlets	Festus, Public
2010	While mapping and walking streams involving public in	Inspections	Festus, Public

	illicit discharge detection and reporting		
2011	Advertised Public Hearing on Stormwater and Illicit discharge detection	Turnout for Hearing	Festus, Public
2012	Involving Public in Stream Mapping and seasonal checks for illicit discharges and cleaning (stream team)	Inspections	Festus, Public

Illicit Discharge Detection and Elimination

Permit Year	BMP Goal Selected	Measurement Method	Responsibility
All Years	Continue City program of video and repair of old failing sanitary sewer lines, Once mapping system is implemented mapping all sanitary,stormwater systems within the city.	Amount of Mapping and Repair	Festus
2008	Insp. of all homes with septic systems in the city to check for proper operation,and repair, or hooking onto if aval. city sewer system	Inspections	Festus
2009	Implementing waste oil drop off locations and haz. waste drop off days to cut back on illigal dumping	Amount Collected	Festus
2010	Walking all 1st and 2nd order streams checking for illicit discharge	Inspections	Festus
2011	Electronically mapping and insp. all sanitary sewers in the city for any illicit infiltration	Inspections	Festus
2012	Walking all dry weather creek,s and smaller trib. and checking doc. and repairing Illicit discharge	Inspections	Festus

Construction Site Storm Water Runoff Control

Permit Year	BMP Goal Selected	Measurement Method	Responsibility
All Years	Continue current Land Disturbance Permit App. on all required Building Permits	Enforcing current Ordinance	Festus
2008	Add Inspector to watch over Sub. construction	Inspections	Festus
2009	Add to current sub. ord. run-off control, green space requirements, and distance of construction to creeks	Ordinance	Festus
2010	Introduce Low-Impact Development to Pand Z and City Council to investigate if current sub. ordinance needs to be updated	Poss. ordinance change	Festus
2011	Yearly Insp. of all Sub. detention Fac. Private and Public.	Inspections	Festus
2012	Review of Sub. Ord. and Control measures to see if everything poss. is being done to control Post Const. Stormwater.	Poss. ordinance change	Festus

Post-Construction Storm Water Management

Permit Year	BMP Goal Selected	Measurement Method	Responsibility
All Years	Continue Insp. of stormwater piping and det. ponds	Inspections	Festus
2008	Insp. all curb inlets and stormwater piping and det.ponds prior to developer turning over to homeowner assoc.	Inspections	Festus
2009	Continue insp. of strormwater inlets in sub. checking that homeowners do not change inlet volume or direction of stormwater flow, by landscaping of yards	Inspections	Festus
2010	Investigate poss. ordinance update to hard paving of private parking area's, to alternative materials.	New ordinance	Festus
2011	Distribute Stormwater Lit. to new Sub. Res. and invite to public hearing on Stormwater	Amount distributed	Festus

2012	Evalute BMP,s for post construction and evaluate effectiveness.	Poss. new ord.	Festus

Pollution Prevention/Good Housekeeping For Municipal Operations

Permit Year	BMP Goal Selected	Measurement Method	Responsibility
All Years	Continue City recycle program with trash contractor Educate employees on BMP,s	Amount rec.progam is utilized	Festus
2008	Add more hours to street sweeping program	Review of streets	Festus
2009	Review all salt and cinder stocking facilities and truck clean-out area,s	Creek water testing	Festus
2010	Install pet waste stations in parks	Amount used	Festus
2011	Install filters at truck wash-down areas	Creek water testing	Festus
2012	Review all Mun. oper. to see if all BMP,s are being followed	Internal review	Festus

Appendix E

NPDES – MS4s

Herculaneum Phase II Storm Water Management Plan

Permit Renewal

For 2008 - 2013

5. PUBLIC EDUCATION AND OUTREACH

- Obtain brochures on pollutants and display @ city hall for public distribution
- Staff attends classes to learn pollutants of storm water on a quarterly basis though Jefferson County Storm Water Task Force Committee.
- Teach others of the impacts of pollutants of storm water though annually displays at county fairs and local festivals
- Annual input into city newsletter, which is, distribute to 900 to 1000 residents.
- Annual open meeting for discussion of pollutants.

6. PUBLIC INVOLVEMENT

a. Issue notices of annual clean up of the Riverfront, though existing committees and posting at a minimum of 3 public buildings.
b. Meeting to receive public concerns that are in the area.
c. Provide opportunities for citizens to participate as Representatives of Committee Storm Water Management.
d. Initiate Program that adopts a street or highway.
e. City manpower assist in clean up along properties (example tree limbs and ditches).

7. ILLICIT DISCHARGE

a. Identity out-falls that are greater than 36 inches that leave Herculaneum.
b. Identify community hazards associated with illegal discharge containing (oil, bacteria, viruses, toxic, heavy metal)
c. Inspect systems that are not hooked to City sewer systems, only (2) within the city limits.
d. Annual inspection of all out-falls.
e. Adopt Ordinance save as County Article #10

8. CONSTRUCTION SITE STORMWATER RUN-OFF CONTROL

- Implementing and enforcing erosion control.
- Require erosion control plan at time of submittal/encourage temporary detention to allow sediment to settle.
- All construction sites prior to inspection must have siltration in place.
- Plan to require catch basin and road cleaning quarterly.
- Plan to remove debris and pollutants to reduce impacts on storm water.

9. POST CONSTRUCTION STORMWATER MANAGEMENT NEW DEVELOPMENT

- Reduce time limitations to seed and straw to every dwelling at time of occupancy.
- Adopt a storm water ordinance to address increase of run-ff due to a greater in a previous area.
- Provide list of maintenance procedures to all management facilities.
- Inspect annually storm water facility and notify responsible party for repairs. (Example subdivision detention basin)
- Require a maintenance schedule to allow grass to be maintained in detention areas from the responsible parties.

10. GOOD HOUSEKEEPING

- Identify inadequate dumpster overloading and enforce more frequent pick ups so debris does not spill into the streets, storm drains, etc.
- Bi-annual clean up of drainage culverts.
- Tire re-cycle program one a year pick-up.
- Routine inspection of catch basin to maintain.
- Increase frequency of street cleaning.

Herculaneum Storm Water Management Program

In a long history that officially began when Moses Austin founded the town in 1808, the City of Herculaneum.

Herculaneum was first incorporated as a town on July 27, 1819, however the town never acted upon this incorporation and failed to function as a city. In 1971, some of the civic leaders saw the need to have a city government to help keep the city in progressive growth and provide services for the residents. Committees were formed to promote and achieve the status of an incorporated city and on January 7, 1972 the city was granted that status. The city officially opened for business on September 5, 1972.

As of the last census the City of Herculaneum had a population of 2,805. Since that time there have been several new residential developments. There has also been a growth of new businesses into the City of Herculaneum and plans for future commercial development are in the works.

Stormwater Management program in response to the EPA regulations. The Clean Water Act, EPA has developed a number of water quality regulations. Among them is system that permits discharges to water of the United States This system is known as the National Pollution Discharge Elimination System (NPDES).

Missouri State Operating Permit Water Pollution Control Program issued a General Operating Permit No. MO-R040052 to Jefferson County Small MS4s with the City of Herculanuem as a co-permittee.

The Storm Water NPDES program has been implemented in two phases. Phase I was designed for medium and large Municipal Separate Storm Sewer System (MS4s) and industry, and Phase II is designed to focus on storm water discharges from small MS4s.

Phase II rule will require development of programs in support of six minimum controls. Each Regulated Small MS4 will be required to develop a Storm Water Management plan that incorporates all of the six minimum controls. The following are in our Storm Water Management Program these six minimum controls are listed.

1. Public Education & Outreach
2. Public Involvement and Participation
3. Illicit Discharge Detection and Elimination
4. Construction Site Storm Water Runoff Control
5. Post Construction Storm Water Management
6. Pollution Prevention / Good Housekeeping For Municipal Operations

The City intends to enforcement these measures by adopting an ordinance based on Article #10 of the Jefferson County Unified Development Order.

City of Herculaneum
NPDES Outlets

Outlet #H001
Unnamed Tributary
SUR 266, T41N, R6E, Jefferson County
Lat: 38°16'51.433"N Long: 90°22'46.865"W
Receiving Water: Unnamed Tributary to Mississippi River

Outlet #H002
Joachim Creek
NE 1/4, NE 1/4, Sec. 19, T41N, R6E
Lat: 38°15'39.484"N Long: 90°22'18.267"W
Receiving Warer: Mississippi River

Outlet #H003
Unnamed Tributary
SE 1/4, SW 1/4, Sec. 29, T41N, R6E, Jefferson County
Lat: 38°15'7.703"N Long: 90°35.481"W
Receiving Water: Joachim Creek

Outlet #H004
Unnamed Tributary
SUR 2977, T41N, R6E, Jefferson County
Lat: 38°15'25.106"N Long: 90°23'1.495"W
Receiving Water: Joachim Creek

Outlet #H005
Unnamed Tributary
SUR 2977, T41N, R6E, Jefferson County
Lat: 38°15'54.387"N Long: 90°23'25.578"W
Receiving Water: Joachim Creek

Outlet # H 006
Unnamed Tributary
SUR 2977, T41N, R6E, Jefferson County
Lat: 38°16'5.569"N Long: 90°12.146'W
Receiving Water: Unnamed Tributary

City of Herculaneum Stormwater Management Program (BMP)

Public Education and Outreach

Permit Year	BMP Goal Selected	Measurement Method	Responsibility
All Years	Obtain brochures & educational material distribute at City Hall Offices	Number distributed	City of Herculaneum
2008	Distribute educational materials	Number distributed	City of Herculaneum
2009	Staff attend informational meetings to learn pollutants	Quarterly	City of Herculaneum
2010	In house teaching of others impact of polluted stormwater run-off	Members attend	City of Herculaneum
2011	Educational information input to newsletter	Distribute 900-1,000	City of Herculaneum
2012	Annual open meetings	Number of response	City of Herculaneum

Public Involvement and Participation

Permit Year	BMP Goal Selected	Measurement Method	Responsibility
All Years	Work with volunteers to clean up the City limits	Numbers of participants	City of Herculaneum
2008	Issue notices of Stream Team Clean-Up with City involvement	Participation	City of Herculaneum
2009	Open meeting to receive Public View and Concerns	Numbers of participants	City of Herculaneum
2010	Provide opportuniites for citizens to participate as representatives in Stormwater Committee	Copy of notices issued	City of Herculaneum
2011	Initate the Program Adopt Street or Highway	By program development	City of Herculaneum
2012	Citizen & volunteers report on river and street clean-up	How many participants	City of Herculaneum

City of Herculaneum Stormwater Management Program (BMP)

Illicit Discharge

Permit Year	BMP Goal Selected	Measurement Method	Responsibility
All Years	Identify hazards associated with illegal outfalls		City of Herculaneum
2008	Identify outfalls	Map showing location	City of Herculaneum
2009	Identify hazards associated with illegal discharge	Report	City of Herculaneum
2010	Inspect systems that are located in City limits that are not hooked to City sewers	Report	City of Herculaneum
2011	Map out outfalls annual inspections	Perform Inspections	City of Herculaneum
2012	Adopt ordinance (Article #10 Jefferson County, Mo.)	Adoption	City of Herculaneum

Construction

Permit Year	BMP Goal Selected	Measurement Method	Responsibility
All Years			City of Herculaneum
2008	Implementing and enforcing errosion control with siltration	Inspect	City of Herculaneum
2009	Require errosion control plan at time of submittal of deveopment plans	Show at application before approval	City of Herculaneum
2010	All construction site prior to inspections must have siltration in place	Inspection noted	City of Herculaneum
2011	Catch basin & road cleaning	Report of Completion	City of Herculaneum
2012	Clean up of debris that impacts stormwater	Report	City of Herculaneum

City of Herculaneum Stormwater Management Program (BMP)

Post-Construction Stormwater Management

Permit Year	BMP Goal Selected	Measurement Method	Responsibility
All Years			City of Herculaneum
2008	Reduce time limitation to seeding and strawing to every dwelling occupancy	Change of ordinance	City of Herculaneum
2009	Adopt a stormwater ordinance to address increase of run-offs	Adopt ordinance	City of Herculaneum
2010	Provide guidelines to Planning & Zoning reviews to assist in site plan review for maintenance of facilities	List of procedures	City of Herculaneum
2011	Inspect stormwater basin annually and notify responsible party for repairs or maintenance	Report	City of Herculaneum
2012	Require maintenance schedule to allow grass to be maintained in detention areas	Noted in Sub-division ordinance	City of Herculaneum

Pollution Prevention/Good Housekeeping For Municipal Operations

Permit Year	BMP Goal Selected	Measurement Method	Responsibility
All Years			City of Herculaneum
2008	Review inadequate dumpster for overloading so debris does not spill into streets, stormdrains	Report	City of Herculaneum
2009	Bi-annual clean up of drainage culverts and ditches	Assist in cleanup and report	City of Herculaneum
2010	Involvement in Tire Re-cycle Program once a year pick-up	Report	City of Herculaneum
2011	Routine inspection and maintenance of catchbasins	Report	City of Herculaneum
2012	Increase frequency of street cleanings	Report of cleanings	City of Herculaneum

PHASE II NPDES APPLICATION

PEVELY

MISSOURI

NOVEMBER 2007

BUILDING DEPARTMENT/CODE ENFORCEMENT

City of Pevely

Phase II NPDES Application

2008

NPDES Phase II permit is due and the selected urbanized areas will be required to submit their timetables to enact regulations required by the federal and state governments. Local control of infiltration and pollution of the waterways is a mandated requirement through education, laws, and public involvement. Pevely, in cooperation with the Jefferson County Stormwater Task Force, have set a number of goals in the upcoming years and hope to seek a high amount of public input, involvement, and an increase in awareness.

The areas of education, enforcement, and good housekeeping require much in the way of materials to educate the public to quit current practices that damage the waterways and learn to think in a global sense that will benefit generations to come. Easy to understand educational materials, simple to perform practices, and new habits have to be learned by residents. The city will utilize its website, yearly newsletter to 1800 residents, and develop a curriculum with the elementary school of 500 children to focus attention on responsible BMP's.

In cooperation with Jefferson County, a standardized Land Use Ordinance will be adopted that will have common stringent requirements to follow for residents, developers, and builders. These requirements have been developed through a public hearing process, following the practices required by NPDES, and will include another public hearing process with the local jurisdiction. The laws proposed accordingly are more stringent that what is currently on the books for Pevely.

The Jefferson County EDC has started a sewer tap/lateral line funding program to assist homeowners who have failed septic systems to connect to a qualified sewer district main line, and will be one way to assist those who are unable to afford the costs of a tap on fee to connect to a public sanitary sewer system and remove the discharge problem, while other illicit discharges will be detected in the creeks and streams by physically inspecting the full length of those streams inside the city limits.

As far as good housekeeping, new storage areas will make inroads to our salt and sand infiltration into the creeks. New solid surface areas and protective basins will also help to contain any spills from fuel tanks located on site.

As the interest in the environment increases, so will the awareness of better practices when dealing with silt, oil, salt, dirty water, and other pollutants. Partnering with businesses, schools, property owner associations, and others will help the education process and make residents owners of the laws requiring strict compliance.

CITY OF PEVELY
NPDES PHASE II IMPLEMENTATION SCHEDULE

Public Education & Outreach

Permit Year	BMP Goal Selected	Measurement Method	Responsibility
All Years	Inform public through city newsletter about hazards Continue education information on website about BMP's	Newsletters distributed Site visits	Pevely
2008	Send BMP material to subdivision POA's Distribute BMP material to contractors through building permit process Stencil stormwater inlets to warn about pollution hazard	Publications distributed Inlets stenciled	Pevely
2009	Work with local radio station to create PSA's about BMP's and stormwater measures	Times broadcast	Pevely
2010	Review website information, update and include sign up sheet for participation in stormwater activities	Participant apps	Pevely
2011	Develop school flyers/handouts to teach children good stormwater practices	Flyers handed out	Pevely
2012	Complete stenciling project, review website material, review public education and involvement	Total material distributed	Pevely

Public Involvement and Participation

Permit Year	BMP Goal Selected	Measurement Method	Responsibility
All Years	Participate with Task Force at festivals & fairs Stream clean up include all tributaries in city limits and involve residents along creeks Dedicate agenda item at P&Z meeting for input on BMP's and NPDES	Public Involvement P&Z meetings	Task Force
2008	Invite individual contractors, POA councils, Industry reps to be member of P&Z review of NPDES Assess stream conditions	Participant amount Distance inspected	Pevely
2009	Contact residents along creeks about survey of creeks and invite participation in program to maintain creek banks	Resident participation	Pevely
2010	Invite Pevely Elementary School to participate in clean stream activities at creek adjacent to school.	Student Participation	Pevely
2011	Continue review of streams, creeks for effectiveness	Percentage clean	Pevely
2012	Review public involvement	Percentage of improvement	Pevely

Illicit Discharge Detection and Elimination

Permit Year	BMP Goal Selected	Measurement Method	Responsibility
All Years	Inspect all complaints regarding discharges. Re-inspect for compliance each year. Inspect grease interceptors for compliance Assist EDC Sewer Grant Program locating faulty sewer lateral and obtain grant money	Complaints reported Inspections Grants issued	Pevely Pevely & EDC
2008	Create hazardous waste collections twice a year for residents Adopt Land Use Ordinance similar to Jefferson County and surrounding municipalities Develop stormwater maps displaying source and exit points of discharge Annex neighboring roads to inspect creeks and roadside for stormwater issues and solid waste	Collections performed Ordinance Adoption Map developed Amounts collected	Pevely Pevely & Task Force
2009	Survey along creeks, streams for illegal discharge (sewer, oil, etc.)	Linear feet inspected	Pevely
2010	Check for effectiveness of creek survey for reduction in illicit discharges	Continued violations	Pevely
2011	Review solid waste collections and evaluate if needs to be increased for resident benefit	Collection amount	Pevely
2012	Review for percent of illicit discharge reduction	Percentage reduced	Pevely

Construction Site Storm Water Runoff Control

Permit Year	BMP Goal Selected	Measurement Method	Responsibility
All Years	Inspect all inlets, detention basins, streets, empty lots on regular basis for BMP compliance	Inspections/ Violations	Pevely
2008	Adopt stormwater ordinance developed by county and is consistent with neighboring communities	Adoption	Jefferson County & Pevely
2009	Update stormwater map to include new detention basin discharge points	Map update	Pevely
2010	Review ordinance and check for compliance issue problems. Revise ordinance and create education materials to educate violators Review website ordinances for Land Use Section	Violations Review	Pevely Pevely
2011	Review and adopt Low Impact Design Zoning Section for residential development	Adoption	Pevely
2012	Evaluate program with review of complaints reported and citation issuance by code enforcement	Complaints/ Citations	Pevely

Post-Construction Storm Water Management

Permit Year	BMP Goal Selected	Measurement Method	Responsibility
All Years	BMP's installed and inspected Include BMP's on website for homes, subdivisions, …	Inspections Site visits	Pevely Pevely
2008	Include ordinance requirements during subdivision reviews for compliance Distribute information to POA's and invite to P&Z meetings to develop better regulations	Reviews performed Pamphlets distributed	Pevely Pevely
2009	Inspect street inlets prior to storms and inspect detention basins each year for proper weed control compliance and headwall maintenance	Inspections	Pevely
2010	Adopt parking impervious requirements by giving reductions when using pervious hard surface methods	Ordinance adoption	Pevely
2011	Review code enforcement regulations and determine if they meet NPDES standards	Code adoption	Pevely
2012	Evaluate effectiveness of pre-construction design criteria and its use in the review process	Ordinance revisions	Pevely

Pollution Prevention/Good Housekeeping For Municipal Operations

Permit Year	BMP Goal Selected	Measurement Method	Responsibility
All Years	Cleaning of streets after winter event Training employees Inspect for salt/sand leach around storage bins Continue white good/electronic collection twice a year door to door	52 miles of streets Hours of training Inspections Amount collected	Pevely
2008	Construct new holding area for salt/sand piles on hard surface with cover Begin composting site for limbs, brush and turn into mulch	Creek water testing Cubic yards	Pevely
2009	Develop checklist for facilities – BMP's Increase areas of review	Inspections	Pevely
2010	Install 2 pet waste stations in Parks	Installation Baggies used	Pevely
2011	Install additional pet waste stations in remaining parks	Installation Baggies used	Pevely
2012	Install filters for stormwater inlet at Public Works Facility	Creek water testing	Pevely

PEVELY SINKHOLE REPORT
NPDES Report Phase II

The City of Pevely has two sinkholes that receive stormwater from the neighborhood. There is the small sinkhole at Walnut & 4th Sts., and the big sinkhole behind 518 Elm St.

The big sinkhole captures water from a large watershed that includes the Cha-Bern and Landmark Manor subdivisions, is guided by a ditch that runs south across Pinson Ct. and ends at the sinkhole.

The small sinkhole catches water from Elm St. and the surrounding neighborhood.

Dye tests have been performed with no result identified at the Mississippi River so it must be assumed the water filters into the earth.

We have screened these sinkholes with chain link to keep trash and debris from collecting. Limbs and brush act as natural filters as that type of debris collects in the sinkhole areas. We have had to spread wood chips around the smaller sinkhole to keep the banks and nearby yards from eroding into the cavity.

As part of our good housekeeping chores, we will continue to monitor these sinkholes and attempt to find an economical way to filter the stormwater that naturally flows toward them. They are a part of our stormwater system and do not wish to lose the ability to utilize their use.

10/24/2007
City of Pevely
Building Dept.

PEVELY OULET INSPECTION
NPDES Review Information

Outlet	Location	Section	Latitude	Longitude	Inspected
P001^	**Abbey Road**	SW ¼ of SW ¼ Section 7	38° 17' 43.893" N	90° 23' 7.675" W	
P002^	**Dow North**	US Survey 266	38° 17' 11.148" N	90° 22' 37.367" W	
P003^	**Dow South**	US Survey 266	38° 16' 57.855" N	90° 22' 38.123" W	
P004^	**Herky-Horine Near 61/67**	US Survey 2977	38° 16' 2.639" N	90° 23' 18.538" W	
P005^	**I-55 Raceway East**	US Survey 2977	38° 16' 5.428" N	90° 23' 34.223" W	
P006^	**I-55 Raceway West**	NW ¼ of SW ¼ Section 19	38° 16' 4.397" N	90° 23' 48.081" W	
P007^	**Herky-Horine at Sandy Creek**	SW ¼ of SW ¼ of Section 19	38° 15' 58.455" N	90° 24' 11.407" W	
P008*	**Sandy Creek at Pevely Pointe**	NW ¼ of Sw ¼ of Section 19	38° 16' 6.414" N	90° 24' 23.371" W	
P009*	**Unnamed Tributary at Sandy Creek (Martin Farm)**	US Survey 932	38° 16' 33.779" N	90° 25' 14.389" W	
P0010*	**Southern Heights**	US Survey 932	38° 17' 44.822" N	90° 24' 4.234" W	
P0011*	**Valle Creek Condos**	NW ¼ of NW ¼ of Section 6	38° 18' 55.826" N	90° 24' 4.234" W	
P0012*	**Stonebridge**	SE ¼ of SW ¼ of Section 6	38° 18' 31.97" N	90° 23' 56.069" W	

*Township 41 North, Range 5 East, Jefferson County, Missouri
^Township 41 North, Range 6 East, Jefferson County, Missouri

9/17/2007
City of Pevely
Building Dept.