Storm Water Management Plan

Missouri Department of Transportation

Permit covers: 2013-2018

Submitted by: Kathy Harvey, State Design Engineer
May 2, 2013
Revised June 27, 2013

INTRODUCTION

The Missouri Department of Transportation (MoDOT) developed its first Storm Water Management Plan (SWMP) in July 2006.

The SWMP summarizes MoDOT's intentions to reduce the amount of pollution in storm water runoff from MoDOT's road system by addressing the six categories of concern listed in the MS4 General permit. These categories are as follows:

Public Education and Outreach

Public Involvement and Participation

Illicit Discharge Detection and Elimination

Construction Site Runoff Control

Post-Construction Site Runoff Control

Pollution Prevention/Good House Keeping

As circumstances change, new solutions may be necessary to better control pollution in storm water that flows onto or away from MoDOT's road system. This plan is a continuation in which new and innovative ideas and solutions can be developed in the years to come to protect the water quality of the state's waterways.

MODOT INFORMATION

Name of Responsible Public Entity:	Missouri Department of Transportation	
Size of System:	Interstate Highways	1,379 miles
	Primary Routes	6,704 miles
	Supplementary Routes	25,610 miles
Geographical Extent:	All Missouri counties and St Louis City	
Watershed:	All major watersheds in the state	

MoDOT is identified as the continuing authority within MoDOT right of way and properties owned by MoDOT.

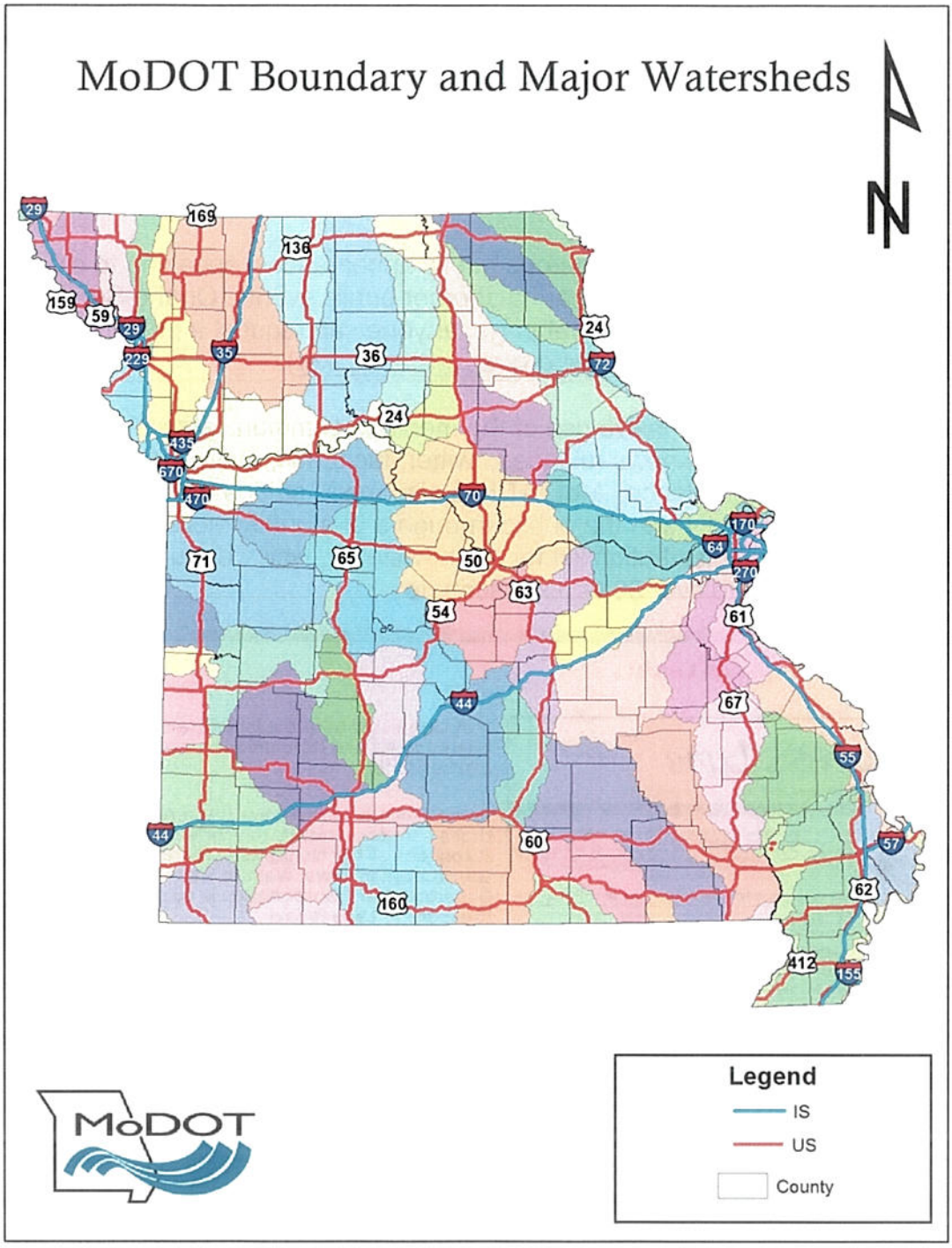

Exhibit 1: Map showing state of Missouri, major highways and major watersheds (HUC 8).

PUBLIC EDUCATION AND OUTREACH

Through the planning and design phase of its projects, MoDOT holds hundreds of public meetings and hearings around the state each year. While they are primarily held to solicit public opinion on a specific project, those meetings also serve as an excellent way for MoDOT officials to personally respond, one-on-one, to citizen concerns. Surveys have shown that nearly 82 percent of those who attend are satisfied with how their questions/comments were handled.

MoDOT officials also make numerous public appearances, speaking to civic groups, schools, clubs and appearing at other public events. On the Services webpage of the MoDOT home webpage, anyone can request a public speaker by topic or region (http://www.modot.org/requestaspeaker).

MoDOT also makes extensive use of the media to communicate with the public. These contacts include news releases, twitter, facebook, radio, e-mail, telephone and written correspondence. MoDOT has also made strides toward communicating directly with the public through a bi-monthly electronic newsletter, *ExpressLane*. The distribution list for the newsletter, which debuted in October 2005, has climbed to over 38,000 subscribers.

Figure 1: ***ExpressLane*** **bi-monthly publication.**

MoDOT has also made a commitment to making its Web site – www.modot.mo.gov – an outreach tool and information repository for its customers. Approximately 180,000 persons per month visit the site, with 20 percent of those customers returning more than once. The percentage of repeat visitors has been climbing steadily since MoDOT began tracking the activity in January of 2005 and added interactive features like the Traveler Information map.

Figure 2: MoDOT "Programs and Services" webpage.

Action: MoDOT will educate the public on storm water issues as it relates to operation and maintenance of the state's highway system through public meetings, public events, website and use of media. MoDOT will continue the same level of effort to reach as many persons as in the previous year through all of the above mechanisms, and will use some of these outreach tools to explain storm water quality issues.

Measurable Goals: MoDOT will use outreach through its website and other media.

- MoDOT will track how many visitors have used our storm water webpage each year and continually update the page with the best available information on MoDOT's role as an MS4.
- MoDOT will report yearly how many visitors have used/submitted the Report a Stormwater Concern form and how many of those were related to MoDOT right-of-way.

Measurable Goals: Create materials to disseminate at public events and public meetings.

- In 2013, MoDOT's Stormwater Brochure was available at public meetings and events. MoDOT will track how many are disseminated each year.
- In 2013, MoDOT's Stormwater tattoo was available at Earth Day and the State Fair. MoDOT will track how many are distributed each year.
- MoDOT will continue to participate in events such as Earth Day and the State Fair. MoDOT will track participation in these events.

PUBLIC INVOLVEMENT AND PARTICIPATION

MoDOT is committed to involving the public, local officials, transportation stakeholders and other interested parties in the process of evaluating needs, selecting projects and defining the work to be done. The department goes beyond federal guidelines to create a transportation system that is safe, efficient and enjoyable. A transparent planning process helps minimize the impact a project could otherwise have on the natural, social and economic environments.

MoDOT's commitment to involving the public in the transportation decision-making process and to reaching out to its customers about its programs and projects is in keeping with the department's mission: "...to provide a world-class transportation experience that delights our customers and promotes a prosperous Missouri."

Public involvement and outreach also support MoDOT's values that are measured through a series of tangible results that are the key component of *The Tracker*, MoDOT's performance-based system that is documented quarterly. *Tracker* is focused on the customer and measures MoDOT's performance in giving customers what they want, such as "provide outstanding customer service;" and "use resources wisely," just to name a few.

Some of those values are:

MoDOT will ...

- Be Safe,
- Be Accountable,
- Be Respectful,
- Be Inclusive,
- Be Bold,
- Be Better, and
- Be One Team

So we can be a great organization.

To reach out to the public, and to be responsive to its needs, MoDOT uses many tools and techniques. Each of these is implemented on statewide and local levels through the department's community relations offices at the Central Office in Jefferson City and the department's 7 district offices. A customer service center is also maintained at each location.

MoDOT tracks the number of customers who contact MoDOT via email, telephone or letter.

Action: Through the above mechanisms, MoDOT will collect and respond to public comments on water quality issues related to storm water management as it relates to expansion or operation and maintenance of the state's highway system.

MoDOT will continue a program to facilitate the public reporting of illicit discharges, including dumping, by providing a venue for the public to submit concerns to MoDOT.

Measurable Goals: MoDOT will report yearly how many visitors have submitted the Report a Stormwater Concern form and how many of those were related to MoDOT right-of-way or facilities from the website and from the phone app.

Central Office

Trees for Tomorrow

by Holly Denner

Thousands of trees will be planted in Missouri this year, thanks to a partnership between MoDOT and the Missouri Department of Conservation.

The partnership is called Trees for Tomorrow, and through it MoDOT will purchase 250,000 trees that the Department of Conservation distributes to youth groups and schools for planting on public and private property.

This is the sixth year MoDOT has partnered with Conservation for the program, helping to fulfill our commitment to protect and conserve Missouri's natural resources. While it is sometimes necessary to remove trees as part of bridge and road construction, the department is committed to replacing the trees we have to remove. Since we are limited in the number of new trees we can plant on MoDOT right of way, this program puts the tree replacement into the hands of the experts.

The trees also come at a great value to taxpayers. According to the Department of Conservation, a typical forestry planting project can cost about $35 per tree. At a cost of $75,000, this partnership comes in at a much lower cost and has the added benefit of an educational component for the students.

At a news conference on Sept. 24, students at Pioneer Trail Elementary School planted a redbud tree they named "Buddy."

more than 2.5 million trees have been provided throughout the state through Trees for Tomorrow. The program also funds the Department of Conservation's longstanding annual program to provide a tree seedling to fourth graders statewide in celebration of Arbor Day. Free tree seedlings are also provided at other Arbor Day and Earth Day events around the state.

Trees for Tomorrow

Deputy Director Tom Draper from the Department of Conservation and MoDOT Director Kevin Keith sign the partnership agreements during the Trees for Tomorrow news conference in Jefferson City.

Figure 3: October 4, 2012 *Connections* publication for Central Office.

Measurable Goals: MoDOT will continue to promote public awareness campaigns including the No More Trash Bash, Trees for Tomorrow, adopt a highway and sponsor a highway programs. MoDOT will report annually how many of these types of events were carried out.

Measureable Goals: MoDOT will continue to participate in watershed activities when appropriate including the Hinkson Creek Collaborative Adaptive Meeting Team and others as requested. MoDOT will report annually how many events were participated in.

Measureable Goals: MoDOT will participate as necessary in any TMDL implementation schedule that involves a pollutant that MoDOT has the potential to contribute.

ILLICIT DISCHARGE DETECTION AND ELIMINATION (IDDE)

MoDOT has a program to educate MoDOT employees regarding proper management and disposal of toxic materials discovered on the right of way.

Outfalls

Nearly every MoDOT highway includes one or two drainage ditches that carry runoff water to the nearest down gradient water body at the location of a crossroad culvert or bridge. In some cases the parallel MoDOT ditch may discharge to a drainage swale that simply flows away from the right of way in the direction of a nearby water body. If a typical one-mile section of a MoDOT highway involves three hydrologic conveyance structures (pipe or bridge), then the average number of "storm water outfalls" (points where storm water is flowing from a parallel road ditch into a pipe or water feature that flows under a bridge) would be approximately 12 per mile. Thus MoDOT's Municipal Separate Storm Sewer System (MS4) would include approximately 400,000 outfalls. While MS4s are usually required to identify and map "storm water outfalls," such a task would be daunting and resource exhaustive or of questionable value for a DOT.

MoDOT has used resources available, GIS data, to provide a UTM point at every intersection of MoDOT's roadway layer and the streams and rivers layers statewide. This GIS effort has provided over 25,791 data points statewide. For each data point, it can be assumed that there are 4 outfalls bringing the total to over 103,000 outfalls (Exhibit 2). This is an approximate estimation using best available tools and does not constitute all outfalls. UTM locations of these can be provided upon request.

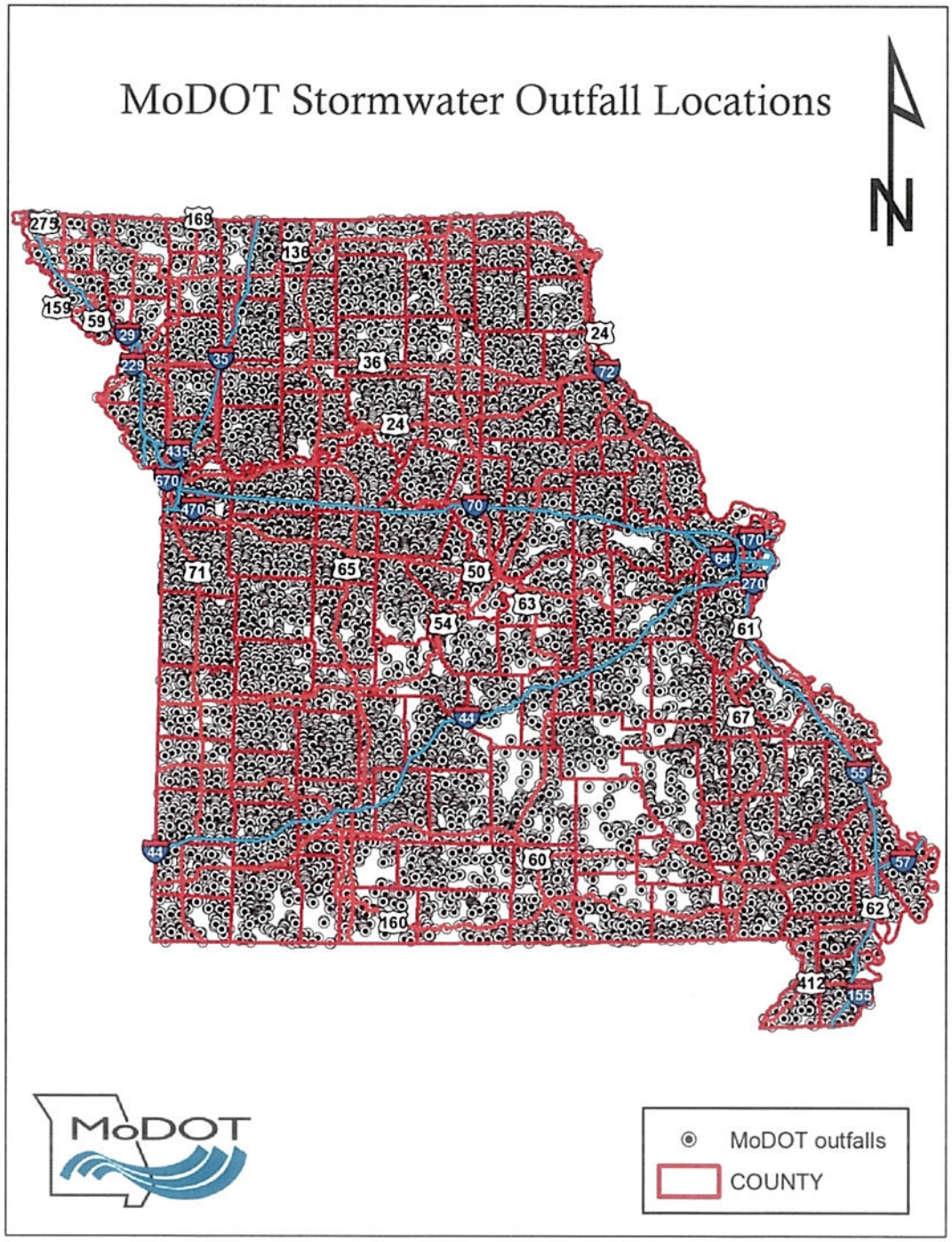

Exhibit 2: MoDOT Outfalls using GIS data.

For new construction, all project plans show the location of these outfalls. Persons who are interested in the locations of specific storm water outfalls may request individual project plans from the appropriate district office or from MoDOT's Central office in Jefferson City. "As-constructed" plans for existing facilities, many of which may be on microfilm, may also be obtained from district offices or the MoDOT Central office.

Discovery of IDDE's

MoDOT currently has a program in place to monitor illicit discharges but does not possess the legal authority under state law to prevent illicit discharges and improper disposal of waste or wastewater. Case law has, in fact, established precedent in this area. Unpermitted discharges are referred to the appropriate regulatory authority for follow-up. MoDOT will perform a preliminary investigation of any illicit discharges, to the extent allowed by MoDOT's authority, prior to notifying the existing regulatory authority.

127.25.8.3.1 Industrial and Domestic Waste Waters on Right of Way

Sewage and waste shall be disposed of by discharging into a sewer system regulated pursuant to chapter 644, RSMo, or shall be disposed of by discharging into an on-site sewage disposal system operated as defined by rules promulgated pursuant to sections 701.025 to 701.059, RSMo. Any person installing on-site sewage disposal systems shall be registered to do so by the Missouri Department of Health and Senior Services.

Private homeowners are regulated by the Missouri Department of Health and Senior Services. The Missouri Department of Health and Senior Services is to be contacted when wastewater discharge from private homeowners is found on right of way. If a property owner requires assistance in containing effluent, they should be directed to the Department of Health for assistance.

Commercial businesses and industries are regulated by MDNR. When wastewater discharge from a regulated entity is discovered on MoDOT right of way, the Environmental Specialist will contact MDNR to determine if the commercial business or industry has a valid operating permit issued by MDNR to discharge effluent.

The Environmental Specialist will request MDNR to take whatever legal action necessary concerning any business or industry that does not have a valid permit from MDNR to discharge effluent to the highway right of way.

For additional information see EPG 127.25.3.1 Rest Area Lagoon, EPG 127.25.8.3 Sewage Disposal System, and EPG 127.25.8.3.2 System Attachments by Others.

Reason for Policy: RSMo. 701

Effective Dates: 6/1/99

Revision Dates: 12/27/12

127.25.8.3.2 System Attachments by Others

Figure 4: Engineering Policy Guide 127.25.8.3.1.

MoDOT's policy, under the Engineering Policy Guide (EPG) 127.25.8.3.1, outlines how discoveries of illegal effluents will be handled. MoDOT typically contacts the local departments of health when the presence of wastewater from single-family residences appears to be a health or water quality concern deserving regulatory intervention.

Public reporting of the presence of illicit discharges or water quality impacts associated with storm water discharges is possible by contacting any of MoDOT's Customer Service Centers, Central Office, or MoDOT's website including the Report a Stormwater Concern form.

Trash as an IDDE

MoDOT has an Adopt-A-Highway program, where volunteer groups periodically pick up the trash and debris along the sides of state highways. See MCM 2, Public Involvement and Participation, for details.

Figure 5: Street sweeping and bridge washing.

Other Occasional, Non-Stormwater Discharges

Bridge washing, cleaning and flushing is a relatively common non-stormwater discharge that occurs when necessary for construction and maintenance activites. Preventative maintenance can extend the life of a bridge by retarding the rate of deterioration of bridge components. Spraying of water on bridges is also used to remove inactive bird nests. MoDOT is currently working on guidance for this activity in regards to spread of zebra mussls and rock snot. All state and federal requirements are met when accomplishing this task (EPG: 771.2 Bridge Cleaning and Flushing).

Action: MoDOT will continue a program to facilitate the public reporting of illicit discharges, including dumping, by providing a venue for the public to submit concerns to MoDOT. Hazardous material spills will be reported within 24 hours upon discovery. Reporting will be made to the Missouri Department of Natural Resources (MDNR) Environmental Emergency Response (EER) – 573-634-2436 – in accordance with MoDOT procedures and Missouri RSMo 260.500 through 260.555.

> **Measurable Goal:** Illicit discharge reports will be tracked and mapped using information obtained through the website reporting form, corresponding App, and by MoDOT staff.
>
> **Measurable Goal:** Illicit discharge reports will be tracked and mapped using information obtained from the Environmental Emergency Response Team.

Action: MoDOT will educate and cross-train maintenance staff to assist with identification of illicit discharges that discharge into the MoDOT drainage system on MoDOT right of way.

> **Measurable Goal**: MoDOT will educate staff on identification of illicit discharges that discharge into the MoDOT drainage system at least once annually.

Measurable Goal: MoDOT will update the EPG to define Illicit discharge and identify the process of elimination.

Measurable Goal: Develop a statewide online training module for MoDOT personnel that explains illicit discharges and the proper sequence of reporting illicit discharges by the end of the permit cycle.

Permit application addition 7/25/13 ----------

Action: MoDOT is working with the Bridge Division and Maintenance Division to come up with an inspection schedule that coincides with biannual bridge inspections, annual mowing inspections, and frequent culvert and ditch inspections after rain events.

Measurable Goal: Develop aspects of the existing system to proactively inspect for illicit discharges.

Measurable Goal: Develop maps based on existing bridges and multi-cell box culverts for the inspection schedule.

Action: MoDOT plans to better align with other state DOTs in changing the coverage area from statewide to occurring where there are other MS4s. This is consistent with the intent of the permit as being a "municipal" permit.

Measurable Goal: Continue to work with MDNR to modify our permit coverage area.

Measurable Goal: Focus on other areas that are MS4s for compliance with MCM.

CONSTRUCTION SITE RUNOFF CONTROL

Storm water Permits

Provisions of the federal Clean Water Act and related state rules and regulations require storm water permits where construction activities disturb greater than one acre over the life of a project as part of a common plan or sale. MoDOT has a general permit, obtained from the Missouri Department of Natural Resources (MDNR), which allows road construction activities and the associated land disturbance. The permit stipulates that MoDOT will follow certain erosion and sediment control guidelines and install temporary erosion control measures. Locally sponsored federal aid projects that are performed on MoDOT right of way and are using MoDOT's land disturbance permit are required to comply with MoDOT Standard Specifications, and therefore, must follow the Storm Water Pollution Prevention Plan (SWPPP). Cities, counties and other government

entities may already possess their own National Pollutant Discharge Elimination System (NPDES) permit and, in that case, must comply with their own SWPPP.

Design Considerations

MoDOT has provided a few guidelines for the development of erosion and sediment control plans. First the designer is responsible for the plans and therefore should develop the plan during the design phase. The designer shall also study and inspect the future construction site and plans to determine what areas have potential erosion hazards. Once this information has been reviewed and all necessary data is obtained, the following recommended guidelines should be followed:

- Determine limits of clearing and grading.
- Divide the site into drainage areas.
- Divert clean runoff around the construction area.
- Erosion and sediment control shall be used whenever possible to reduce erosion at the site and prevent offsite damage.

As part of the storm water control measures, the contractor shall take certain management measures into consideration when preparing a work schedule. Such contractor measures include, but are not limited to:

- Install appropriate perimeter erosion control measures prior to grading.
- Sequence and stage construction so that no area remains exposed for unnecessarily long periods of time, and disturbed areas should be stabilized before other areas are disturbed.
- Stabilization Best Management Practices (BMPs) should be implemented as soon as practical after grading.
- Develop and carry out a regular maintenance schedule for erosion and sediment control practices.
- Utilize spill prevention and containment measures at storage sites.
- Develop and follow a plan for regular collection and disposal of waste material as well as designate a site for disposal.
- Designate the responsibility for implementing and maintaining the erosion and sediment control measures to one person.

Erosion, sediment and pollution control and storm water management will be a priority discussion point at all appropriate project pre-construction conferences. Monitoring and inspection of the features of the erosion control plans will be carried out and documented by the resident engineer and contractor for the construction project. Any items of concern regarding BMPs should be brought to the attention of the contractor for immediate correction.

Construction Requirements

The engineer will limit the surface area of erodible earth material exposed by clearing and grubbing, or excavation, borrow and fill operations, and may direct the contractor to provide immediate permanent or temporary erosion control measures to prevent contamination of adjacent streams or other watercourses, wetlands, lakes, ponds and other water impoundments.

The contractor shall be required to incorporate all permanent erosion control measures into the project at the earliest practicable time. Temporary erosion control measures shall be used to correct conditions that develop during construction which were not foreseen during the design stage. Temporary erosion control shall also be used when needed prior to installation of permanent erosion control measures or when needed temporarily to control erosion that develops during normal construction practices, but are not associated with permanent control measures on the project.

Clearing and grubbing operations shall be scheduled and performed so that grading operations and temporary and permanent erosion control measures will follow immediately thereafter. The surface area of erodible earth material exposed at one time by clearing and grubbing, by excavating, by fill or by borrow, shall be minimized to prevent runoff. The engineer may limit the total acreage of erodible earth material to be exposed at one time as determined by an analysis of project conditions. In such cases the engineer will identify specific BMPs and controls that have been, or will be installed in order to exceed the specified maximum disturbed acreage threshold.

Unless otherwise approved, construction operations in rivers, streams, wetlands and impoundments shall be restricted to those areas which must be entered for the construction of temporary or permanent structures. Rivers, streams, wetlands and impoundments shall be promptly cleared of all false work, piling, debris or other obstructions placed therein or caused by the construction operations. Frequent fording of live streams or wetlands with construction equipment is not permitted.

Site-specific erosion and sediment controls above and beyond MoDOT standard specifications shall be discussed with the contractor at a preconstruction conference. Special conditions may be developed which can include limitations on the amount of surface area that can remain unprotected at one time or special water quality or stream protection requirements.

In the event of a conflict between these requirements and pollution control laws, rules, or regulations of other federal, state or local agencies, the more restrictive laws, rules or regulations shall apply.

Control Measures (SWPPP)

MoDOT has prepared a Storm Water Pollution Prevention Plan (SWPPP) that has been provided to all construction offices as part of each construction contract. The SWPPP describes several BMPs that may be used to control runoff from land disturbance activities of one acre or more. The following BMPs may be used together or separately in order to ensure that contaminants do not leave MoDOT right of way.

Temporary Controls

Temporary water pollution control measures are required on all contracts awarded by MoDOT. The contractor shall exercise best management practices throughout the project to ensure that contaminants do no leave MoDOT right-a-way. Construction of permanent drainage facilities and other activities, which may contribute to the control of siltation, shall be accomplished at the earliest practicable time. This work shall consist of furnishing, installing, maintaining and removing temporary control measures as shown on erosion control plans or as ordered by the engineer. The control of water pollutants will be accomplished through the use of berms, slope drains, ditch checks, sediment basins, seeding and mulching, straw bales, silt fences and other erosion control devices or methods. Pollutants such as chemicals, fuels, lubricants, bitumens, raw sewage or other harmful materials shall not be discharged from the project. No work shall be started until the erosion control timetable and methods of operation have been approved.

Temporary erosion and sediment control measures shall be coordinated with permanent erosion control measures to assure economical, effective and continuous erosion control. Temporary erosion and sediment controls shall be kept in place and maintained until revegetation has occurred to an extent sufficient to prohibit the formation of gullies by runoff. The engineer shall routinely inspect the condition of erosion controls and shall notify the contractor immediately if any controls are found to be in disrepair or are not functioning at the desired level of effectiveness. Inspection records and directives to the contractor shall be noted in the inspector's Project Records, which shall be available for review by Missouri Department of Natural Resources (MDNR) upon request. Temporary Measures include:

Temporary Berms (Type A, Type B, Type C)
Temporary Slope Drains
Ditch Checks (Type 1, Type 2)
Sediment Traps
Temporary Seeding
Temporary Mulching
Straw Bales
Silt Fence
Surface Roughening
Mulching and Crimping

Brush Piles
Sediment Basins

Permanent Controls

The contractor shall be required to incorporate all permanent erosion control measures into the project at the earliest practicable time. Permanent Measures include:

Sediment Basins
Sediment traps
Permanent Seed and Mulch
Type C Berms
Rock Blanket
Rock Ditch Checks

Erosion and Sediment Containment Inspections

Erosion Control Inspection Records and an inspection report log are required for projects with one acre or more of total land disturbance. All disturbed areas and installed Best Management Practice items (BMPs) are inspected for proper location, installation, operation and maintenance. Points of storm water egress are inspected for evidence of erosion or sedimentation.

Reports are required within seven calendar days of a previous inspection or within 48 hours of any reportable precipitation event (1/2" over 24 hours).

The report is to be signed by the MoDOT representative who performed the inspection. Information required on the form includes:

1) Contract/Job identification number;
2) County and Route location;
3) Name of MoDOT inspector completing report;
4) Date of inspection;
5) Areas requiring installation of new BMPs;
6) Existing BMPs requiring corrective action;
7) Corrective actions taken on previously listed deficiencies;
8) Areas where land disturbance operations have temporarily or permanently ceased.

The inspection report is signed by the resident engineer or by the person performing the inspection if authorized to do so. The contractor's Erosion Control Supervisor receives a copy of each week's report for prompt corrective action, if necessary.

Audits and Training

MoDOT has assigned one employee the responsibility of performing statewide audits of construction sites to ensure that SWPPPs are being followed to the extent that off-site contamination does not occur. The individual usually will visit every construction site at least once per year and meet with MoDOT resident engineers, inspectors or contractors to evaluate the land disturbance elements of the project.

MoDOT shall continue to require training for construction inspectors, resident engineers and other personnel. It is anticipated that such training shall continue through the annual Environmental Compliance class, currently held routinely at each of the seven MoDOT districts. The Environmental Compliance class has also been delivered and is available to contractors and other private or public organizations as requested. Training may also occur on a less formal basis as deemed necessary by MoDOT.

Contractor Compliance

MoDOT has the authority to stop work on any construction job when the contractor does not perform work in compliance with contract provisions. In cases where the contractor is causing water quality problems, or creates conditions with the potential to contaminate waters of the state, the engineer will take appropriate disciplinary action to ensure proper control measures are in place. Actions possible include: issuance of an Order Record (this is a non-compliance notification that negatively affects a contractor's performance rating; a poor rating could result in removal from the list of MoDOT approved contractors), suspension of payments to the contractor, or suspension of work on the project.

Contractors are evaluated on project performance each year. One of the elements of the Performance Rating system involves erosion control compliance. Low ratings may cause disciplinary action to be taken against poorly performing contractors. Disciplinary actions range from being placed in a probationary status to disqualification from bidding on MoDOT construction contracts for a period of three years.

Protection of Streams, Lakes, Ponds, and Reservoirs

In compliance with the Missouri Clean Water Law (Section 644.051), neither MoDOT nor MoDOT's contractors shall pollute any waters of the state, or place, cause, or permit to be placed any water contaminant in a location where it is reasonably certain to cause pollution of any waters of the state. Also, they shall not discharge water contaminants into any waters of the state, which reduce the quality of these waters below the state's water quality standards. These water quality standards include the following (MO10 CSR 20-7):

(a) Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses.

(b) Waters shall be free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses.

(c) Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses.

(d) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal or aquatic life.

(e) Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community.

(f) Waters shall be free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste as defined in Missouri's Solid Waste Law, section 260.200, RSMo, except as the use of such materials is specifically permitted pursuant to section 260.200–260.247.

MoDOT personnel or contractors performing work for MoDOT shall comply with these and any other federal, state and local laws and regulations that serve to control pollution of the environment. To ensure that these general criteria are met, the following guidelines will be observed:

1) Machinery shall be kept out of the waterway as much as possible.

2) Fuel, lubricants, debris and other water contaminants shall not be stored in areas that are subject to flooding or contact with water (such as adjacent to stream banks) or where contaminated runoff from the storage areas can enter waters of the state.

3) Refueling and maintenance (e.g., oil changing) of machinery shall not take place in, or directly alongside, any water body.

4) Clearing of vegetation/trees shall be kept to the minimum required to accomplish the activity.

5) Riparian areas and banks shall be restored to a stable condition through recontouring and revegetation of the area, as necessary, as soon as possible (normally within three working days of final contouring).

6) Work shall be conducted during periods of low flow whenever possible.

7) Wetland areas shall be avoided to the greatest extent practical.

8) Work shall conform to all conditions that are part of the United States Army Corps of Engineers (USACOE) Section 404 permit and the ancillary MDNR Section 401 Water Quality Certification.

Action: Continue to comply with provisions of NPDES "land disturbance" permit.

Action: Continue training of MoDOT personnel through an annual Environmental Compliance class.

Measurable Goal: Conduct classes and train MoDOT employees who deal with construction erosion annually.

Action: Perform statewide audits of construction sites to ensure that specifications and SWPPP are being followed.

Measurable Goal: Evaluate erosion control elements of 90% of all land disturbance sites that involve 1 acre or more of land disturbance. Environmental Assistance Visits conducted by MDNR will be accepted as an evaluation.

Action: Continue Performance Rating.

Measurable Goal: Utilize the existing system to notify contractors when erosion control elements of the project are less than desirable as determined by elements of the SWPPP.

POST-CONSTRUCTION SITE RUNOFF CONTROL

Developers are informed that if their project will involve disturbance of one acre or more of ground surface, then they will most likely require an NPDES permit from MDNR. Before MoDOT issues an entry or access permit to perform work on MoDOT right of way, the developer must provide proof that they have obtained the appropriate permit from MDNR, or some type of proof that the activity is exempt from MDNR's NPDES requirements.

MoDOT will consider additional New Development and Redevelopment Program requirements as MoDOT projects are initiated. The evaluation shall consider comprehensive planning procedures and controls to reduce the discharge of pollutants after construction is complete, from areas of new highway development and significant redevelopment and associated drainages. The program will consider non-highway facilities that would prevent or minimize water quality impacts. This program does not apply to maintenance activities that do not change storm water impacts to state waters.

MoDOT shall continue to implement a program that ensures that new highway projects and significant highway modifications are reviewed for the need to include permanent storm water BMPs, and the results from that review

implemented. As part of the program, MoDOT will define as "significant," highway modifications that disturb greater than or equal to one acre of existing vegetation.

MoDOT shall select and implement BMPs whenever applicable for those projects that have the potential to discharge storm water conveying pollutants of concern into sensitive waters. "Sensitive waters" primarily include those waters that are listed on MDNR's most recent 303(d) list or a total maximum daily load (TMDL) has been developed that limits the amount of the specified pollutant that is likely to be present in discharges from MoDOT.

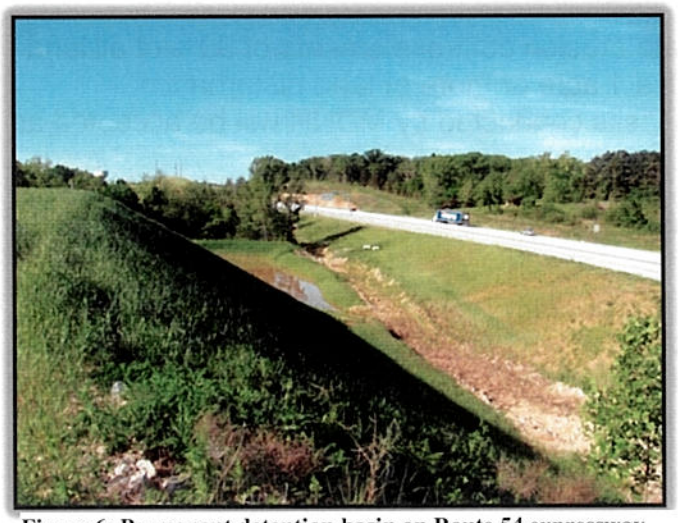

Figure 6: Permanent detention basin on Route 54 expressway.

MoDOT is working towards a formal program for incorporation of water quality elements into developments or significant redevelopments. No statewide policy exists regarding permanent water quality structural and source controls. Water quality facilities associated with new highway development and redevelopment are incorporated into the design upon request of the resource agencies and MoDOT.

There are no policies, procedures or regulations that address water quality impacts from operating highways. Compliance with any physically connected city's New Development criteria will be done on a courtesy basis if possible considering budget, timing, and statutory constraints.

MoDOT will evaluate existing mechanisms that ensure long-term maintenance and operation of permanent BMPs and determine whether a need exists to improve the current mechanisms. If it is determined that changes are needed to MoDOT's existing policies that ensure long-term maintenance and operation of permanent BMPs, MoDOT will identify and consider alternatives for improving the existing practices and/or developing additional mechanisms. If necessary, MoDOT will select and implement the preferred alternative mechanism to ensure the long-term maintenance and operation of permanent water quality BMPs.

Under EPG 748.1.2 Hydraulic Impacts of Roadway, MoDOT mimics pre-construction runoff qulity in all new development and to the MEP in redevelopment projects by evaluating how significant an increase is for a project regarding peak flows and therefore mitigation through detention storage or other various measures.

748.1.2 Hydrologic Impacts of Roadway

Development such as a highway project can affect the hydrologic characteristics of a watershed. Such development typically increases the amount of impervious area within the watershed, and may also decrease the time of concentration of the watershed. Both of these effects tend to increase both the volume and peak rate of runoff from the watershed. The magnitude of this increase is generally dependent on the ratio of the developed area (pavement and right of way in the case of highway projects) to the total watershed drainage area. When the developed area is a large percentage of the total drainage area, the impacts can be significant. The degree of hydrologic impact shall be subjectively evaluated for all highway projects; when the impacts are estimated to be of concern, a detailed analysis shall be performed. Significant increases in peak flow rates shall be mitigated through the use of detention storage or other appropriate measures.

Figure 7: EPG 748.1.2

Action: Create a Stormwater Team to develop policy regarding post-construction bmps.

> **Measurable Goal:** Team created with personnel from Design, Maintenance, and Construction.

Action: Consider post-construction BMPs where needed and report the number constructed.

> **Measurable Goal:** The number of post-construction bmps should increase as the number of new construction projects increase. Reported annually.

Action: MoDOT will develop a feasibility checklist or flow chart to evaluate the needs of post-construction bmps on projects.

> **Measurable Goal:** By permit year 3 MoDOT will develop a process to evaluate the needs and feasibility of post-construction bmps. (Moved up 1 year)

> **Measurable Goal:** By permit year 4 MoDOT will develop a policy in the EPG that address post-construction bmps. (Moved up 1 year)

Action: MoDOT will incorporate TMDL reviews and consider post-construction BMPs for 303(d)-listed waters and in TMDL-listed watersheds into all RES reviews.

Measurable Goal: By permit year 2 MoDOT will have established a comprehensive review procedure of projects for stormwater issues. TMDLs that are digitized and the most recent 303d list will be used to review projects. MoDOT will review project impacts to these waterways starting in year 2.

Pollution Prevention/Good House Keeping

Roadway maintenance activities conducted by district maintenance forces, that impact storm water quality include: snow and ice control on state and interstate highways, roadway surface maintenance, roadside facility maintenance, roadway appearance, miscellaneous MoDOT facilities, and tunnel maintenance.

Cities and counties perform the maintenance work on some state roadways for MoDOT. This is accomplished through a formal maintenance agreement signed by the Missouri Highways and Transportation Commission and the city or county. The maintenance agreements contain standard requirements that the city or county maintain the facilities in accordance with Commission-approved standards.

The following manuals are to be used for maintenance of roadway facilities. Most manuals can be found in the Engineering Policy Guide:

1. Maintenance Division Policy Manual – EPG 171: Maintenance Policy and Operations.
2. Roadside Vegetation Management Manual – EPG 171.6.4: Vegetation Management.
3. Herbicide Manual – EPG 821: Herbicides and Roadsides.
4. Maintenance Function Planning Guidelines – EPG 822: Maintenance Planning Guidelines for Mowing Operations.
5. Preventive Maintenance Guidelines for Bridges – EPG 171.7 Bridge Maintenance.
6. Operator's Guide for Anti-Icing – EPG 133: Snow and Ice Control.
7. Missouri Standard Specifications for Highway Construction.

Structure Maintenance

MODOT drainage facilities such as detention ponds, storm drains, inlets and catch basins are inspected on an as-needed basis. In all areas a close inspection of problematic storm drain inlets (selected inlets known to flood) occurs during rainstorms or if complaints are received to ensure proper operation. Documentation pertaining to the inspections is limited and may normally contain only the date and time of the inspection. Each district currently inspects water drainage facilities (retention ponds and other structures) on an as-needed basis to ensure that the facility operates as designed. The frequency of inspection can vary depending on the design of the structures.

Currently, MODOT has not located all of its structural controls. Location of major structural controls (primarily large detention basins) will be stored in a database and may be identified in a GIS system as part of the implementation of the permit.

The District Maintenance Engineer (or his designee) or the State Bridge Maintenance Engineer approves improvements to channels, and any addition of riprap immediately adjacent to the roadway or structure. All work to improve channels that requires additional environmental clearance must be cleared with the Design Division Environmental Unit and the proper permits obtained.

Ditches

All open ditches are to be maintained to preserve their full depth and cross section. Surplus material from ditch cleaning is used in other tasks such as widening shoulders and fills, repairing erosion and filling wash outs. Where appropriate or necessary, maintenance occurs on ditches and waterways as needed.

Street Sweeping

Mechanical sweeping of sand, dirt and debris from paved surfaces, shoulders, curbs and gutters and median barriers is performed to assure roadway drainage. Sweeping maintains the environmental and aesthetic quality of the roadway, and is accomplished for safety concerns. Sweeping is MoDOT's responsibility on Interstate Highways, National Highway System Routes and Commission-owned roadways within the state highway system unless covered by a maintenance agreement.

Snow and Ice Control

One of MoDOT's high priorities is the removal of snow from state highways. Anti-icing operations to prevent the formation or development of packed and bonded snow or bonded ice to the pavement surface is the first priority on continuous treatment routes during a winter weather event. Snow and ice control operations begin as soon as weather conditions warrant and continue on a 24-hour-per-day basis until all major highways and all minor highways are returned to a wet or dry condition and all minor highways are open to two-way traffic. The removal of snow and ice from the roadway and the application of abrasives or de-icing products take precedence over all other maintenance work. MoDOT's Operator's Guide For Anti-icing and the snow-and-ice section of the Maintenance Policy Manual are both used to clarify the department's official procedure (EPG 133: Snow and Ice Control).

All abrasives and de-icers are to be applied in accordance with the Operator's Guide For Anti-icing and the snow-and-ice section of the Maintenance Policy Manual. These directives include the following:

- Chemicals and stockpiles of treated abrasives are to be stored in a manner to prevent loss of material and minimize damage to state or private property.
- All bulk salt shall be stored inside covered storage structures.
- Asphalt pads are installed under and in front of storage facilities.
- Mixed materials shall be covered when not in use and between storm events.

Required maintenance practices which have a side benefit to water quality include:

- Application of only the amount of salt or salt/abrasive mix material necessary to provide safe driving.
- Use of clean snow and ice control abrasives (sand or 3/8 crushed aggregate) that contain only 0-10 percent passing a No. 10 sieve.
- Use of snow and ice control chips only when needed to provide traction.
- Sweeping or flushing of the bridges as soon as possible after a storm event.

MoDOT uses a database to track information on how much winter abrasives, calcium chloride, or sodium chloride was applied in the different maintenance areas during a snowfall event. This information is contained in the Winter Events Database Report.

Roadside Management

MoDOT's roadside management program keeps the roadsides safe and attractive. The program establishes and maintains appropriate vegetation to control erosion and limits undesirable vegetation. Specific guidance updated in 2012 is provided in the Roadside Vegetation Management Manual (http://epg.modot.org/files/a/ae/822_2012.pdf). This includes herbicides, fertilization, mowing, brush control and litter removal.

Mowing Operations

Mechanical and chemical vegetation management is done to maintain sight distance, improve aesthetics and control undesirable vegetation. At a minimum, mowing occurs to a distance of at least one mower width from the edge of the traveled way per the guidance contained in the Roadside Vegetation Manual (http://epg.modot.org/files/a/ae/822_2012.pdf).

Roadside Facilities

Drainage facilities within the rights of way owned by MoDOT include cattle passes, collection ditches, shoulder drains, side ditches, under drains, outlet ditches, contour ditches and culverts (includes structures that span 20 feet or less). These facilities are maintained to be able to handle runoff from rainfall events. Maintenance includes removing trash, debris and sediment that has collected in the facility. All drainage facilities statewide are inspected periodically; minor defects are repaired as necessary; and major defects are reported to the Maintenance Superintendent responsible for that geographic area. Natural watercourses and streams that pass within the right of way are kept clean so water can flow freely.

Any slope associated with roadside facilities is maintained to keep erosion to a minimum. The only required modification to this program is the review of the Federal Highway Administration's document dealing with bridge runoff, for potential additions to MoDOT's Preventive Maintenance Guidelines for Bridges (EPG 171.7.1 Bridge Maintenance).

Herbicide Program

MoDOT uses a variety of techniques to manage roadside vegetation. Herbicides provide effective and efficient vegetation control. Specific guidance for herbicide use is provided in MoDOT's Herbicide Manual. Operators and their supervisors are required to read and follow the label. Only non-restricted herbicides are used. Employees are encouraged to obtain and maintain a public operator's license certified by the Missouri Department of Agriculture. Detailed recordkeeping is required. Spray equipment is clean, in good operating order and properly maintained. Operators are instructed to not apply herbicides to standing, running or open water. Only approved aquatic herbicides are used to control undesirable vegetation in or near water. Care is taken to avoid drift, run-off, leaching and spills.

Figure 8: Mat made from recycled tires.

In 2012 The Missouri departments of Transportation and Natural Resources have joined together in a trial project to use mats made from recycled tires to control weeds that grow around highway sign posts. The mats, funded by a grant from the Department of Natural Resources, are designed to hinder vegetation growth, thus reducing the amount of herbicides needed to control weeds.

Fewer weeds at the base of sign posts will enable MoDOT crews to reduce the amount of more labor-intensive mowing and trimming they have to perform, all while keeping the used tires from going to landfills. News Release.

Procedures to Prevent, Contain and Respond to Spills

Procedures to prevent, contain and respond to spills are found in MoDOT's Guide to Hazardous Material Spill Response on State Highways. All vehicles carrying hazardous materials must be identified by the distinct diamond shaped symbol. The following are guidelines taken from MoDOT's Guide to Hazardous Material Spill Response on State Highways:

- Avoid contact with and breathing vapors of the spilled material.
- No smoking allowed in the spill area.

- If a state waterway is involved in the spill the Missouri Department of Natural Resources must be contacted along with the MoDOT District Hazardous Materials Spill Coordinator.
- Obtain facts and information on the spill for the emergency team and maintenance supervisor.
- Call the Missouri State Highway Patrol for help and notify the maintenance supervisor.
- Coordinate with emergency response personnel.
- An "Incident Commander" should coordinate with other agencies and handle direct reporting of the spill.
- Use appropriate traffic control to isolate the spill area from public contact.
- Wait for instructions and do not clean up the spill or contaminated area.
- If private property or waterways are threatened, containment of spill should be coordinated with Missouri Department of Natural Resources, Missouri State Highway Patrol and the appropriate maintenance supervisor.

Spill Prevention and Response Procedures at Maintenance Facilities

MoDOT has implemented Spill Prevention Control and Countermeasure (SPCC) plans at maintenance facilities to prevent petroleum or hazardous material spills from occurring, and to perform safe, efficient and timely response in the event of a spill or leak. In accordance with United States Environmental Protection Agency (EPA) petroleum or hazardous material pollution prevention regulations (40 CFR 112), MoDOT must prepare and implement an SPCC plan for facilities that could reasonably be expected to discharge petroleum or hazardous material into or upon navigable waters or adjoining shorelines; that meet one of the following conditions:

Above-ground petroleum or hazardous material storage capacity exceeds 1,320 gallons; or

Underground petroleum or hazardous material storage capacity exceeds 42,000 gallons, unless the underground tanks are subject to all of the technical requirements of 40 CFR 280 or a state program approved under 40 CFR 281. (Missouri's approved program is Department of Natural Resources, 10 CSR 20 - 10 Rules for Underground Storage Facilities.)

As defined by 40 CFR Part 112, petroleum or hazardous material includes all grades of motor oil, hydraulic oil, lube oil, fuel oil, gasoline and diesel, automatic transmission fluid (ATF), used oil and transformer mineral oil. The definition of petroleum or hazardous material also includes non-petroleum oils such as animal or vegetable oils and synthetic oils.

Action: Educate maintenance staff and MoDOT general staff. Evaluate the effectiveness of housekeeping activities and identify those processes and/or procedures that are impacting waters of the state.

> **Measurable Goal:** Hazardous Waste SPCC training and NEPA training every other year. Continue dialogue with the Environmental Steering Committee to evaluate the effectiveness of housekeeping processes and procedures. Develop and test new housekeeping processes and procedures to add to current available resources and techniques.

Action: MoDOT will work to develop online training modules.

> **Measurable Goal:** MoDOT will develop modules in year 5 of permit cycle.