Appendices

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4. Ground Water Protection Plan
5. Septic System Management Plan
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13. Specific Waste Guidance
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15. In-Stream Permits and Notification Forms
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Appendix 1. Regulation Summary

Appendix 1. Regulations Summary

Env Area	Activity, Program or Permit	Citation	Title	Website
Air Quality	Open burning	401 KAR 63:005.	Open burning	http://www.lrc.state.ky.us/kar/TITLE401.HTM
Air Quality	Operations that Generate Dust	401 KAR 63:010	Fugitive Emissions	http://www.lrc.state.ky.us/kar/TITLE401.HTM
Emergencies	DOT Reporting requirements for spills	49 CFR 171.15 – 171.16	Title 49 Transportation, Part 171- General Information, Regulations and Definitions	http://www.gpoaccess.gov/ecfr/
Emergencies	DOT Reporting requirements for spills	49 CFR 172	Title 49 Transportation, Part 172 - Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, And Training Requirements	http://www.gpoaccess.gov/ecfr/
Emergencies	Report oil spills of 25 gallons or more	KRS 224.01-400	Reportable quantities and release notification requirements for hazardous substances, pollutants, or contaminants hazardous substances, pollutants, or contaminants	http://www.lrc.state.ky.us/krs/titles.htm
Emergencies	Spills and Emergencies	40 CFR 302	Part 302-Designation, Reportable Quantities, And Notification	http://www.gpoaccess.gov/ecfr/index.html
EPCRA	Participation on local emergency commission	42 U.S.C. 11001; KRS 39E	Title 42 - The Public Health And Welfare, Chapter 116 - Emergency Planning And Community Right-To-Know, Subchapter I - Emergency Planning And Notification Section 11001. Establishment Of State Commissions, Planning Districts, And Local Committees	http://assembler.law.cornell.edu/uscode/html/uscode42/usc_sec_42_00011001----000-.html
EPCRA	Tier II Form and Fee	106 KAR 1:081	Title 106 - Department of Military Affairs, Chapter 1:081. Kentucky Emergency Response Commission fee system requirements	http://www.lrc.state.ky.us/kar/106/001/081.htm
GWPP	Groundwater Protection Plan	401 KAR 5:037	Groundwater protection plans	http://www.lrc.state.ky.us/kar/401/005/037.htm
Highway Maintenance	Dead Animal Pickup	301 KAR 3:120	Commercial Nuisance Wildlife Control	http://lrc.ky.gov/kar/301/003/120reg.htm
KPDES	BMP Plan Requirements	401 KAR 5:065	KPDES permit conditions	http://www.lrc.state.ky.us/kar/TITLE401.HTM

Appendix 1. Regulations Summary

Env Area	Activity, Program or Permit	Citation	Title	Website
KPDES	Definition of Pollution	KRS 224.01-010(35)	Definitions for chapter	http://www.lrc.state.ky.us/krs/titles.htm
KPDES	KPDES	401 KAR 5:002	General permit procedure exemptions	http://www.lrc.state.ky.us/kar/TITLE401.HTM
KPDES	KPDES	401 KAR 5:031	Surface Water Standards	http://www.lrc.state.ky.us/kar/TITLE401.HTM
KPDES	KPDES	401 KAR 5:050-5:080,	KPDES Effluent Standards	http://www.lrc.state.ky.us/kar/TITLE401.HTM
KPDES	KPDES Discharge Authorization	401 KAR 5:055	Scope and applicability of the KPDES Program	http://www.lrc.state.ky.us/kar/TITLE401.HTM
KPDES	KPDES Permit	KRS 224.70-120	Permit to discharge pollutants into waters -- Fees	http://www.lrc.state.ky.us/krs/titles.htm
KPDES	KPDES Permit	401 KAR 5:070	Provisions of the KPDES permit	
KPDES	List of Hazardous Pollutants	33 U.S.C. 1321 Section 311	Title 33 - Federal Water Pollution Control Act (i.e., Clean Water Act), Section 311- Oil and Hazardous Substance Liability	http://www.epa.gov/region5/water/pdf/ecwa_t3.pdf
KPDES	Reduce BMP Pollutants	KRS 224.07-110	Civil liability of persons polluting waters -- State may sue	http://www.lrc.state.ky.us/krs/titles.htm
KPDES	Required detection limits for KPDES Permits	40 CFR 136	Title 40- Protection of Environment,Part 136 - Guidelines Establishing Test Procedures for the Analysis of Pollutants	http://www.gpoaccess.gov/cfr/index.html
KPDES	Subsection (a)1 for toxic pollutant definitions	33 U.S.C. 1317 Section 307	Title 33 - Federal Water Pollution Control Act (i.e., Clean Water Act), Section 307 - Toxic and Pretreatment Effluent Standards	http://www.epa.gov/region5/water/pdf/ecwa_t3.pdf
MSDS	MSDS Sheet Requirements	29 CFR 1910.1200	Labor, Occupational Safety and Health Standards, Subpart Z-Toxic and Hazardous Substances, Hazard Communication	http://www.gpoaccess.gov/ecfr/

Appendix 1. Regulations Summary

Env Area	Activity, Program or Permit	Citation	Title	Website
Oil	Standards for used oil generators	401 KAR 44:020	Title 401- Natural Resources And Environmental Protection Cabinet Department For Environmental Protection, Chapter 44 Standards for the Management of Used Oil	http://www.lrc.state.ky.us/kar/TITLE401.HTM
Pesticides	Pesticide Containers – Waste Mgt Unit	401 KAR 47 & 48	Chapter 47: Solid Waste Facilities and Chapter 48: Standards for Solid Waste Facilities	http://www.lrc.state.ky.us/kar/TITLE401.HTM
Pesticides	Pesticide Management	7 U.S.C. 6	Title 7—Agriculture, Chapter 6--Insecticides And Environmental Pesticide Control	http://assembler.law.cornell.edu/uscode/html/uscode07/usc_sup_01_7_10_6.html
SPCC	Oil Contingency Planning requirements	40 CFR 109	Title 40 - Protection of Environment, Part 109 Criteria for State, Local and Regional Oil Removal Contingency Plans	http://www.gpoaccess.gov/cfr/index.html
SPCC	Requirements to prepare and implement SPCC plan	40 CFR 112	Title 40 - Protection of Environment, Part 112 - Oil Pollution Prevention	http://www.gpoaccess.gov/cfr/index.html
Streams	Administrative Procedures for permits for work in and around streams	33 CFR 209	Navigation and Navigable Waters, Administrative Procedure	http://www.gpoaccess.gov/ecfr/
Streams	Definition of Waters of the US	33 CFR 328	Title 33 - Navigation and Navigable Waters, Part 328 - Definition of Waters of the US	http://www.gpoaccess.gov/ecfr/
Streams	Enforcement of permits for work in and around streams	33 CFR 326	Title 33 - Navigation and Navigable Waters, Part 326- Enforcement	http://www.gpoaccess.gov/ecfr/
Streams	In-Stream Permit	KRS 224.16-050	Issuance of federal permits by cabinet	http://www.lrc.state.ky.us/krs/titles.htm
Streams	National Wild and Scenic Rivers	P.L. 90-542	National Wild and Scenic Rivers Act	http://www.nps.gov/rivers/wsract.html
Streams	Natural Heritage Program	400 KAR 2	Title 400- Natural Resources And Environmental Protection Cabinet, Chapter 2 Nature Preserves Commission	http://www.lrc.state.ky.us/kar/TITLE400.HTM
Streams	Permits for work in and around streams	33 CFR 325	Title 33 - Navigation and Navigable Waters, Part 135 - Processing of Department of the Army Permits	http://www.gpoaccess.gov/ecfr/

Appendix 1. Regulations Summary

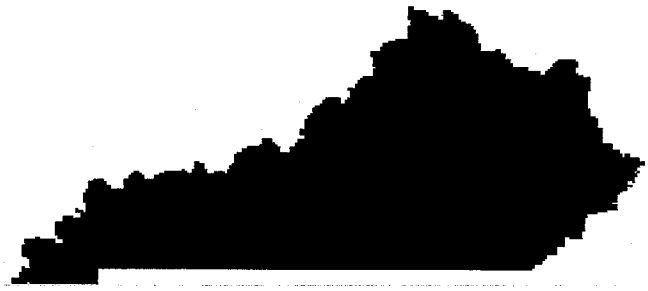
Env Area	Activity, Program or Permit	Citation	Title	Website
Streams	Special Use Waters	401 KAR 4:100	Title 401- Natural Resources And Environmental Protection Cabinet Department For Environmental Protection, Chapter 4, Section 100 - Wild River Boundaries	http://www.lrc.state.ky.us/kar/TITLE401.HTM
Streams	Special Use Waters	401 KAR 5:026	Designation of Uses of Surface Waters	http://www.lrc.state.ky.us/kar/TITLE401.HTM
Streams	Special Use Waters	401 KAR 5:030	Antidegradation Policy Implementation Methodology	http://www.lrc.state.ky.us/kar/TITLE401.HTM
Streams	Stream Construction Criteria	401 KAR 4:060	Title 401- Natural Resources And Environmental Protection Cabinet Department For Environmental Protection, Chapter 4, Section 060 - Stream construction criteria	http://www.lrc.state.ky.us/kar/TITLE401.HTM
Waste	Handling Bulk Liquids	401 KAR 34:190.	Tanks	http://www.lrc.state.ky.us/kar/TITLE401.HTM
Waste, Haz	Hazardous Waste	401 KAR 31:040	Listed Hazardous Compounds	http://www.lrc.state.ky.us/kar/TITLE401.HTM
Waste, Haz	Hazardous Waste Regulations	401 KAR 30-38	Title 401- Natural Resources And Environmental Protection Cabinet Department For Environmental Protection, Chapters 30 - 38	http://www.lrc.state.ky.us/kar/TITLE401.HTM
Waste, Haz	RCRA	40 U.S.C. 82 Section 6901	Title 42--The Public Health And Welfare, Chapter 82--Solid Waste Disposal, Subchapter I--General Provisions, Sec. 6901. Congressional Findings	http://www.madcon.com/law_lib/rcra/rcra_code.txt
Waste, Haz	Section 5 Tox Concentrations	401 KAR 31:030	Characteristics of hazardous waste	http://www.lrc.state.ky.us/kar/TITLE401.HTM
Waste, Haz	Threshold Planning Quantities for Extremely Haz Substances	40 CFR 355	Title 40- Protection of Environment, Part 355 - Emergency Planning and Notification	http://www.gpoaccess.gov/cfr/index.html
Waste, Haz	Waste Management Asphalt Cleaning Haz Waste Exclusion	401 KAR 31:010	General Provisions for Hazardous Wastes	http://www.lrc.state.ky.us/kar/TITLE401.HTM
Waste, Oil	Used oil must made available for recycling	40 CFR 279	Title 40- Protection of Environment, Part 279 - Standards for the Management of Used Oil	http://www.gpoaccess.gov/cfr/index.html

Appendix 1. Regulations Summary

Env Area	Activity, Program or Permit	Citation	Title	Website
Waste, Oil	Waste Oil	401 KAR 44:080.	Standards for use as a dust suppressant and disposal of used oil	
Waste, Tires	Tire Registration	KRS 224.50-852	Waste tire program -- Administrative regulations	http://www.lrc.state.ky.us/krs/titles.htm
Waste, Universal	Universal Wastes	401 KAR 32 and 36:070	Chapter 32 Standards Applicable to Generators of Hazardous Waste and 401 KAR 36:070. Spent lead-acid batteries being reclaimed	http://www.lrc.state.ky.us/kar/TITLE401.HTM
Waste, Universal	Universal Wastes	401 KAR 43	Title 401- Natural Resources And Environmental Protection Cabinet Department For Environmental Protection, Chapter 43 Standards for Special Collection System Wastes	http://www.lrc.state.ky.us/kar/TITLE401.HTM

Appendix 2. Facility Stormwater Best Management Practices Plan

KPDES



KENTUCKY POLLUTANT DISCHARGE ELIMINATION SYSTEM

PERMIT

PERMIT NO.: KYG500000

GENERAL KPDES PERMIT FOR STORM WATER POINT SOURCES FROM HIGHWAY MAINTENANCE AND EQUIPMENT FACILITIES

In compliance with the provisions of the Kentucky Revised Statutes Chapter 224 and pursuant to 401 KAR 5:055, Section 5, the following discharges are authorized:

New or existing point sources involving highway maintenance and equipment facilities within the Commonwealth of Kentucky that are required to have a permit pursuant 401 KAR 5:055, Section 1 and KRS 224.16-050.

Specifically excluded from authorization under this permit are discharges that:

1. Are subject to current KPDES individual permits; or
2. Are subject to any promulgated effluent guideline or standard; or
3. Are otherwise specifically designated by the Director as a significant contributor of pollution more appropriately regulated by an individual permit; or
4. Are to receiving streams listed as Outstanding Resource Waters or High Quality Waters.

The receiving waters for the discharge(s) authorized by this permit are located within the political boundaries of the Commonwealth of Kentucky. Such authorization is in accordance with effluent limitations and other conditions set forth in PARTS I, II, and III hereof.

This permit consists of this cover sheet, PART I 2 pages, PART II 1 page, PART III 2 pages, and PART IV 3 pages.

This permit shall become effective on APR 1 2003

This permit and the authorization to discharge shall expire at midnight

MAR 3 1 2008

1/24/03
Date Signed

Jeffrey W. Pratt, Director
Division of Water

Robert W. Logan
Commissioner

DEPARTMENT FOR ENVIRONMENTAL PROTECTION
Division of Water, Frankfort Office Park, 14 Reilly Road, Frankfort, Kentucky 40601

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the term of this permit, the permittee is authorized to discharge storm water runoff.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
	kg/day (lbs/day)		Other Units (Specify)			
	Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.	Measurement Frequency	Sample Type
Flow, m^3/day (MGD)	Report	Report	N/A	N/A	1/Quarter	Estimate
Total Suspended Solids	N/A	N/A	Report	Report	1/Quarter	Grab
Oil & Grease	N/A	N/A	10 mg/l	15 mg/l	1/Quarter	Grab
Chlorides*	N/A	N/A	N/A	1200 mg/l	1/Quarter	Grab

The pH of the effluent shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 1/Quarter by grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: nearest accessible point after final treatment, but prior to actual discharge or mixing with receiving waters.

* Samples shall be taken only if bulk road salt is stored at the facility.

B. Schedule of Compliance

The permittee shall achieve compliance with all requirements on the effective date of this permit.

PART II

STANDARD CONDITIONS FOR KPDES PERMIT

A. Definitions

1. Calendar Day
Any consecutive 24-hour period.

2. Daily Maximum
The highest concentration of a pollutant discharged during a calendar day.

3. Director
The Director of the Kentucky Division of Water.

4. Division
The Division of Water.

5. Facility or Activity
Any KPDES point source, or any other facility or activity, including land or appurtenances thereto, that is subject to regulation under the KPDES program.

6. Grab Sample
A single sample portion collected over a period of time not exceeding fifteen (15) minutes. The grab sample shall be collected at the time period(s) most representative of the total discharge.

7. Estimate Flow Measurement
Flow measurement of storm water runoff may be based on the rational method.

8. Monthly Average
The sum of all daily discharge concentrations measured during a calendar month divided by the number of daily discharges measured (i.e., the arithmetic mean of the daily concentration values).

9. Point Source
A confined, discernible, and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, fissure, or container from which pollutants are or may be discharged.

B. General Conditions

The permittee is advised that all KPDES permit conditions in KPDES Regulation 401 KAR 5:065, Section 1 will apply to all discharges authorized by this permit.

This permit has been issued under the provisions of KRS Chapter 224 and regulations promulgated pursuant thereto. Issuance of this permit does not relieve the permittee from the responsibility of obtaining any other permits or licenses required by this Cabinet and other state, federal, and local agencies.

It is the responsibility of the permittee to demonstrate compliance with permit parameter limitations by utilization of sufficiently sensitive analytical methods.

PART III

OTHER REQUIREMENTS

A. Reporting of Monitoring Results

Monitoring results obtained during each quarter must be summarized and reported on a preprinted Discharge Monitoring Report (DMR) Form that will be mailed to you. Each quarter's completed DMR must be mailed to the Division of Water at the address listed below (with a copy to the appropriate Regional Office) postmarked no later than the 28th day of the month following the completed quarter.

Kentucky Division of Water
KPDES Branch
Inventory and Data Management Section
14 Reilly Road
Frankfort, Kentucky 40601

A copy of the completed DMRs shall also be submitted to the appropriate Division of Water Regional Office and must be postmarked no later than the 28th day of the month following the completed quarter. A list of Division of Water Regional Offices and the counties that they serve is included as Attachment A.

B. Records Retention

The permittee shall retain records of all monitoring information including: sampling dates and times, sampling methods used, persons obtaining samples or measurements, analyses dates and times, persons performing analyses, and results of analyses and measurements. Records shall be maintained for at least three (3) years or longer if there is unresolved litigation or if requested by the Division of Water. These records may be retained at KYTC District Offices. However, within 48 hours of notice by the KDOW, these records shall be compiled and be made available at the individual facilities.

C. Reopener Clause

This permit shall be modified, or alternatively revoked and reissued, to comply with any applicable effluent standard or limitation issued or approved under 401 KAR 5:050 through 5:080 and KRS 224.70-120 if the effluent standard or limitation so issued or approved:

1. Contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or

2. Controls any pollutant not limited in the permit.

The permit as modified or reissued under this paragraph shall also contain any other requirements of KRS Chapter 224 when applicable.

D. Individual Permits

1. Any permittee authorized by this permit may request to be excluded from the coverage of this general permit by applying for an individual permit. The permittee shall submit the appropriate KPDES application forms together with the reasons supporting the request to the Division of Water.

2. When an individual KPDES permit is issued to a permittee otherwise subject to this general permit, the applicability of this permit to that owner or permittee is automatically terminated on the effective date of the individual permit.

3. Facilities that discharge into a surface water which has been classified as a High Quality or Outstanding Resource Water will be required to submit an application for an individual KPDES permit in accordance with Part 1.D.b of the fact sheet.

E. Detection Limits

The permittee shall be deemed to be in compliance with any permit limitation which is below the detection limit of the pollutant if the permittee records that the discharge level of the pollutant in question is below the detection limit as required by 40 CFR Part 136.

F. Construction

No water and/or wastewater treatment facility shall be constructed, including additions or modifications to existing treatment facilities, without having received approval from the Division. Additional information concerning necessary permits/approvals for construction projects may be obtained from:

Kentucky Division of Water
KPDES Branch
Inventory and Data Management Section
14 Reilly Road
Frankfort, Kentucky 40601
(502) 564-3410

PART IV

BEST MANAGEMENT PRACTICES

SECTION A. GENERAL CONDITIONS

1. Applicability

These conditions apply to all permittees who use, manufacture, store, handle, or discharge any pollutant listed as: (1) toxic under Section 307(a)(1) of the Clean Water Act; (2) oil, as defined in Section 311(a)(1) of the Act; (3) any pollutant listed as hazardous under Section 311 of the Act; (4) is defined as a pollutant pursuant to KRS 224.01-010(35) and who have ancillary manufacturing operations which could result in (1) the release of a hazardous substance, pollutant, or contaminant, or (2) an environmental emergency, as defined in KRS 224.01-400, as amended, or any regulation promulgated pursuant thereto (hereinafter, the "BMP pollutants"). These operations include material storage areas; plant site runoff; in-plant transfer, process and material handling areas; loading and unloading operations, and sludge and waste disposal areas.

2. BMP Plan

The permittee shall develop and implement a Best Management Practices (BMP) plan consistent with 401 KAR 5:065, Section 2(10) pursuant to KRS 224.70-110, which prevents or minimizes the potential for the release of "BMP pollutants" from ancillary activities through plant site runoff; spillage or leaks, sludge or waste disposal; or drainage from raw material storage. A Best Management Practices (BMP) plan will be prepared by the permittee unless the permittee can demonstrate through the submission of a BMP outline that the elements and intent of the BMP have been fulfilled through the use of existing plans such as the Spill Prevention Control and Countermeasure (SPCC) plans, contingency plans, and other applicable documents.

3. Implementation

If this is the first time for the BMP requirement, the plan shall be developed and submitted to the Division of Water within 90 days of the effective date of the permit. Implementation shall be within 180 days of that submission. For permit renewals, the plan in effect at the time of permit reissuance shall remain in effect. Modifications to the plan as a result of ineffectiveness or plan changes to the facility shall be submitted to the Division of Water and implemented as soon as possible.

4. General Requirements

The BMP plan shall:

a. Be documented in narrative form, and shall include any necessary plot plans, drawings, or maps.

b. Establish specific objectives for the control of toxic and hazardous pollutants.

(1) Each facility component or system shall be examined for its potential for causing a release of "BMP pollutants" due to equipment failure, improper operation, natural phenomena such as rain or snowfall, etc.

(2) Where experience indicates a reasonable potential for equipment failure (e.g., a tank overflow or leakage), natural condition (e.g., precipitation), or other circumstances which could result in a release of "BMP pollutants," the plan should include a prediction of the direction, rate of flow and total quantity of the pollutants which could be released from the facility as result of each condition or circumstance.

c. Establish specific best management practices to meet the objectives identified under paragraph b of this section, addressing each component or system capable of causing a release of "BMP pollutants."

d. Include any special conditions established in part b of this section.

e. Be reviewed by plant engineering staff and the plant manager.

5. Specific Requirements

The plan shall be consistent with the general guidance contained in the publication entitled "NPDES Best Management Practices Guidance Document" and shall include the following baseline BMPs as a minimum.

a. BMP Committee
b. Reporting of BMP Incidents
c. Risk Identification and Assessment
d. Employee Training
e. Inspections and Records
f. Preventive Maintenance
g. Good Housekeeping
h. Materials Compatibility
i. Security
j. Materials Inventory

6. SPCC Plans

The BMP plan may reflect requirements for Spill Prevention Control and Countermeasure (SPCC) plans under Section 311 of the Act and 40 CFR Part 151, and may incorporate any part of such plans into the BMP plan by reference.

7. Hazardous Waste Management

The permittee shall assure the proper management of solids and hazardous waste in accordance with the regulations promulgated under the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1978 (RCRA) (40 U.S.C. 6901 et seq.) Management practices required under RCRA regulations shall be referenced in the BMP plan.

8. Documentation

The permittee shall maintain a description of the BMP plan at the facility and shall make the plan available upon request to NREPC personnel. Initial copies and modifications thereof shall be sent to the following addresses when required by Section 3:

Division of Water
Regional Field Offices
See ATTACHMENT A for Addresses

Kentucky Natural Resources and
Environmental Protection Cabinet
Dept. for Environmental Protection
Division of Water/KPDES Branch
14 Reilly Road, Frankfort Office Park
Frankfort, Kentucky 40601

9. BMP Plan Modification

The permittee shall amend the BMP plan whenever there is a change in the facility or change in the operation of the facility which materially increases the potential for the ancillary activities to result in the release of "BMP pollutants."

10. Modification for Ineffectiveness

If the BMP plan proves to be ineffective in achieving the general objective of preventing the release of "BMP pollutants," then the specific objectives and requirements under paragraphs b and c of Section 4, the permit, and/or the BMP plan shall be subject to modification to incorporate revised BMP requirements. If at any time following the issuance of this permit the BMP plan is found to be inadequate pursuant to a state or federal site inspection or plan review, the plan shall be modified to incorporate such changes necessary to resolve the concerns.

SECTION B. SPECIFIC CONDITIONS

Periodically Discharged Wastewaters Not Specifically Covered by Effluent Conditions
The permittee shall include in this BMP plan procedures and controls necessary for the handling of periodically discharged wastewaters such as intake screen backwash, meter calibration, fire protection, hydrostatic testing water, water associated with demolition projects, etc.

Attachment A

Regional Office Listing

Bowling Green Regional Office
1508 Westen Avenue
Bowling Green, Kentucky 42104
(270) 746-7475 Fax (270) 746-7865

Allen	Grayson	Simpson
Barren	Hart	Warren
Butler	Logan	
Edmonson	Ohio	

London Regional Office
875 South Main Street
London, Kentucky 40741
(606) 878-0157 Fax (606) 877-9091

Bell	Knox	Owsley
Clay	Laurel	Rockcastle
Harlan	Leslie	Whitley
Jackson	McCreary	

Columbia Regional Office
102 Burkesville Street
Columbia, Kentucky 42728
(270) 384-4734 Fax (270) 384-5199

Adair	LaRue	Pulaski
Boyle	Lincoln	Russell
Casey	Marion	Taylor
Clinton	Metcalfe	Washington
Cumberland	Monroe	Wayne
Green	Nelson	

Louisville Regional Office
9116 Leesgate Road
Louisville, Kentucky 40222-5084
(502) 425-4671 Fax (502) 425-4471

Breckinridge	Meade
Bullitt	Oldham
Hardin	Shelby
Jefferson	Spencer

Florence Regional Office
8020 Veterans Memorial Drive, Suite 110
Florence, Kentucky 41042
(859) 525-4923 Fax (859) 525-4157

Boone	Gallatin	Owen
Bracken	Grant	Pendleton
Campbell	Henry	Trimble
Carroll	Kenton	

Madisonville Regional Office
Madisonville State Office Building
625 Hospital Drive
Madisonville, Kentucky 42431-1683
(270) 824-7529 Fax (270) 824-7070

Caldwell	Hancock	Muhlenberg
Christian	Henderson	Todd
Crittenden	Hopkins	Union
Daviess	McLean	Webster

Frankfort Regional Office
643 Teton Trail, Suite B
Frankfort, Kentucky 40601
(502) 564-3358 Fax (502) 564-5043

Anderson	Franklin	Mercer	Scott
Bourbon	Garrard	Montgomery	Woodford
Clark	Harrison	Nicholas	
Estill	Jessamine	Powell	
Fayette	Madison	Robertson	

Morehead Regional Office
200 Christy Creek Road, Suite 2
Morehead, Kentucky 40351
(606) 784-6635 Fax (606) 784-4544

Bath	Fleming	Mason
Boyd	Greenup	Menifee
Carter	Lawrence	Morgan
Elliott	Lewis	Rowan

Hazard Regional Office
233 Birch Street, Suite 1
Hazard, Kentucky 41701
(606) 435-6022 Fax (606) 435-6025

Breathitt	Knott	Magoffin	Pike
Floyd	Lee	Martin	Wolfe
Johnson	Letcher	Perry	

Paducah Regional Office
4500 Clarks River Road
Paducah, Kentucky 42003
(270) 898-8468 Fax (270) 898-8640

Ballard	Fulton	Livingston	Marshall
Calloway	Graves	Lyon	Trigg
Carlisle	Hickman	McCracken	

HENRY C. LIST
SECRETARY

PAUL E. PATTON
GOVERNOR

COMMONWEALTH OF KENTUCKY
NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION
FRANKFORT OFFICE PARK
14 REILLY RD
FRANKFORT KY 40601

FACT SHEET

GENERAL KPDES PERMIT FOR STORM WATER POINT SOURCES FROM HIGHWAY MAINTENANCE AND EQUIPMENT FACILITIES

KPDES No.: KYG500000 **Date:** January 15, 2003

1. COVERAGE UNDER THIS PERMIT

A. Permit Coverage Area

This permit covers all areas of the Commonwealth of Kentucky.

B. Discharges Eligible for Coverage

This permit covers all new and existing storm water discharges from highway maintenance and equipment facilities, except those identified in Part 1.C.

C. Limitations on Coverage

The following highway maintenance and equipment facilities storm water discharges are not authorized by this permit:

1. Discharges that are subject to an existing individual KPDES permit or are issued a permit in accordance with Part 1.D.b. Such discharges may be authorized under this permit after an existing permit expires, provided the existing permit did not establish more strict numeric limitations.

2. Discharges that the Director has determined to be, or may reasonably be, expected to be contributing to a violation of a water quality standard.

3. Storm water discharges that would adversely effect a listed endangered or threatened species or its critical habitat or discharges to high quality waters.

4. Discharges that may contain spent solvents from equipment degreasing and servicing.

5. Discharges of storm water from the areas that are used to store electrical equipment and transformers that may contain PCBs.

6. Discharges that may contain wastewater from cleaning up of pesticides, fertilizers, and paint preparation.

vb

D. Authorization

1. The highway maintenance and equipment facilities must submit a Notice of Intent (NOI) in accordance with the requirements of Part 2.A to be authorized to discharge under this general permit.

   a. Unless notified by the Director to the contrary, facilities that submit such notification are authorized to discharge their storm water under the terms and conditions of this permit upon receipt of written notification of coverage from the Division.

   b. The Director may deny coverage under this permit and require submittal of an application for an individual KPDES permit based on a review of the NOI and/or other information.

2. GENERAL PERMIT COVERAGE REQUIREMENTS

A. NOI Submittal

1. New or existing unpermitted facilities/dischargers desiring to discharge storm water runoff must submit an NOI prior to the commencement of the activity at the facility. Existing permitted facilities shall submit an NOI prior to an application for reissuance of an expiring individual permit becoming due. See attached NOI.

2. When the ownership of a facility with a wastewater discharge covered by this permit changes, the new owner or operator of the facility must submit an NOI in accordance with the requirements of this permit at least 48 hours prior to the change.

3. Signed copies of the NOI and an attached USGS topographical map with the discharge location marked must be submitted to the following address:

Kentucky Division of Water
KPDES Branch
Inventory and Data Management Section
14 Reilly Road
Frankfort Office Park
Frankfort, Kentucky 40601

B. Renotification

Upon reissuance of a new general permit, the permittee is not required to notify the Director of his intent to be covered by the new general permit.

C. Notice of Termination

In the event of elimination of all storm water discharges authorized by this permit, the owner or operator of the facility must submit a Notice of Termination (NOT) in order to terminate coverage under this permit and nullify its requirements. The NOT is to be sent to the address listed above. See attached NOT.

3. PROPOSED LIMITATIONS

Storm Water Runoffs from Highway Maintenance and Equipment Facilities.

Description of Discharge	Effluent Characteristics	Proposed Limits Monthly Average	Proposed Limits Daily Maximum	Applicable Water Quality Criteria and/or Effluent Guidelines
Storm water runoff from the asphalt millings, limestone gravel, salt and cold mix stockpiles	Flow (MGD)	Report	Report	401 KAR 5:065, Section 2(8)
	Total Suspended Solids	Report	Report	401 KAR 5:065, Section 2(8)
	Oil & Grease	10 mg/l	15 mg/l	401 KAR 5:080, Section 1(2)(c)2
	Chlorides	N/A	1200 mg/l	401 KAR 5:031, Section 4(1)(h)5
	pH (standard units)	within range of 6-9		401 KAR 5:031, Section 4(1)(b)

4. METHODOLOGY USED IN DETERMINING LIMITATIONS

A. Justification of Limits for Storm Water Discharges

Flow and Total Suspended Solids
The monitoring requirements for these parameters are consistent with 401 KAR 5:065, Section 2(8)

Oil & Grease
The limitations for this parameter are based on the Permit Writer's "Best Professional Judgement" (BPJ) of the "Best Conventional Pollutant Control Technology" (BCT) consistent with 401 KAR 5:080, Section 1(2)(c)2, pursuant to KRS 224.70-100, 224.10-100, and 224.70-110.

pH
The limitations for this parameter are consistent with 401 KAR 5:031, Section 4, pursuant to KRS 224.70-100, 224.10-100, and 224.70-110.

Chlorides
The limitations for this parameter are consistent with 401 KAR 5:031, Section 4(1)(h)(5), pursuant to KRS 224.70-100 and 224.70-110.

Best Management Practices (BMP) Plan:

The requirements for a BMP plan is consistent with the requirements of 401 KAR 5:065, Section 2(10).

B. Monitoring Requirements

Parameter	Frequency	Sample Type
Flow	1/Quarter	Instantaneous
Total Suspended Solids	1/Quarter	Grab
Oil & Grease	1/Quarter	Grab
Chlorides	1/Quarter	Grab
pH	1/Quarter	Grab

5. COMPLIANCE SCHEDULE FOR ATTAINING EFFLUENT LIMITATIONS

The permittee shall attain compliance with the permit conditions upon notification of coverage under this general permit.

6. PERMIT DURATION

Five (5) years.

7. THE PERMIT INFORMATION

The application, draft permit, fact sheet, public notice, comments received, and additional information is available from the Division of Water at 14 Reilly Road, Frankfort Office Park, Frankfort, Kentucky 40601.

8. REFERENCES AND CITED DOCUMENTS

All material and documents referenced or cited in this fact sheet are a part of the permit information as described in above and are readily available at the Division of Water Central Office. Information regarding these materials may be obtained from the person listed below.

9. CONTACT

For further information contact the individual identified on the Public Notice or the Permit Writer - Mahmoud Sartipi at (502) 564-2225, extension 446 or e-mail Mahmoud.Sartipi@mail.state.ky.us.

10. PUBLIC NOTICE INFORMATION

Please refer to the attached Public Notice for details regarding the procedures for a final permit decision, deadline for comments, and other information required by KAR 5:075, Section 4(2)(e).

KPDES FORM NOI-HWY	Kentucky Pollutant Discharge Elimination System (KPDES) KYG500000 Notice of Intent (NOI) for Wastewater Discharges Associated with Highway Maintenance and Equipment Facilities

I. Purpose of Notice (Check One)

☐ Coverage of new discharge
☐ Coverage of previously permitted discharge - Previous Permit Number:
☒ Modification of previously submitted NOI - Permit Number: KYG500___
☐ Converting Individual Permit to General Permit - Indicate Individual Permit Number:

II. Facility Operator Information (Mailing Address)

Name	KTC District	**Phone No:**	
Address			
City, State, Zip Code			

III. Facility/Site Location Information

Facility Name					
Location Address					
City, State, Zip Code					
County		**Latitude (d/m/s)**		**Longitude (d/m/s)**	
Contact Name		**Contact Phone No.**			

IV. Discharge Description

Outfalls (list)	Stormwater (SW) or Floor Drain (FLR)	Latitude (d/m/s)	Longitude (d/m/s)
SW1	SW		

Receiving Water Body	Clarks Run
Are there existing quantitative data?	**Yes** ☐ **If Yes, submit with this form.** **No** ☒

NOTE: Your discharge should not contain spent solvents from equipment degreasing and servicing, or wastewater from cleaning up of pesticides, fertilizers and paint preparation, nor may you discharge from the areas that are used to store electrical equipment and transformers that contain PCB's.

V. DISCHARGE MONITORING REPORTS (DMR's)

General permit holders are required to submit DMR's to the Division on a regular basis. This section should identify where preprinted DMR's are to be sent. Complete only if different than the address shown in Section III.

Name	Kentucky Transportation Cabinet, Division of Environmental Analysis, W5-022
Address	200 Mero Street
City, State, Zip Code	Frankfort, KY 40622

VI. WHERE TO SUBMIT

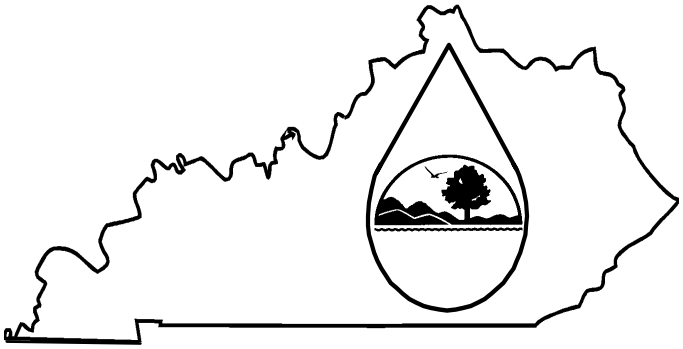
Signed copies of this form and an attached USGS topographical map with the facility site and discharge location marked must be submitted to**: Section Supervisor, Inventory & Data Management Section, KPDES Branch, Division of Water, 14 Reilly Road, Frankfort, KY 40601.**

Questions: call the KPDES Branch, Industrial Section, at (502) 564-3410.

(over)

VII. CERTIFICATION			
I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.			
Printed or Typed Name	**_____, P. E., Chief District Engineer**		
Signature		**Date**	

KPDES FORM NOT-SW



Kentucky Pollutant Discharge Elimination System (KPDES)

NOTICE OF TERMINATION (NOT)
of Coverage Under the KPDES General Permit for Storm Water Discharges Associated with Industrial Activity

Submission of this Notice of Termination constitutes notice that the party identified in Section II of this form is no longer authorized to discharge storm water associated with industrial activity under the KPDES program.

ALL NECESSARY INFORMATION MUST BE PROVIDED ON THIS FORM.
(Please see instructions on back before completing this form.)

I. PERMIT INFORMATION
KPDES Storm Water General Permit Number: KYG500___
Check here if you are no longer the Operator of the Facility: ☐
Check here if the Storm Water Discharge is Being Terminated: ☒
II. FACILITY OPERATOR INFORMATION
Name: Kentucky Department of Highways, District __
Address:
City/State/Zip Code:
Telephone Number:
III. FACILITY/SITE LOCATION INFORMATION
Name:
Address:
City/State/Zip Code:

Certification: I certify under penalty of law that all storm water discharges associated with industrial activity from the identified facility that are authorized by a KPDES general permit have been eliminated or that I am no longer the operator of the facility or construction site. I understand that by submitting this Notice of Termination, I am no longer authorized to discharge storm water associated with industrial activity under this general permit, and that discharging pollutants in storm water associated with industrial activity of waters of the Commonwealth is unlawful under the Clean Water Act and Kentucky Regulations where the discharge is not authorized by a KPDES permit. I also understand that the submittal of this Notice of Termination does not release an operator from liability for any violations of this permit or the Kentucky Revised Statutes.

NAME (Print or Type) _____ P. E.	TITLE Chief District Engineer
SIGNATURE	DATE

INSTRUCTIONS
NOTICE OF TERMINATION (NOT) OF COVERAGE UNDER THE KPDES GENERAL PERMIT FOR STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY

Who May File a Notice of Termination (NOT) Form
Permittees who are presently covered under the Kentucky Pollutant Discharge Elimination System (KPDES) General Permit for Storm Water Discharges Associated with Industrial Activity may submit a Notice of Termination (NOT) form when their facilities no longer have any storm water discharges associated with industrial activity as defined in the storm water regulations at 40 CFR 122.26 (b)(14), or when they are no longer the operator of the facilities.

For construction activities, elimination of all storm water discharges associated with industrial activity occurs when disturbed soils at the construction site have been finally stabilized and temporary erosion and sediment control measures have been removed or will be removed at an appropriate time, or that all storm water discharges associated with industrial activity from the construction site that are authorized by a KPDES general permit have otherwise been eliminated. Final stabilization means that all soil-disturbing activities at the site have been completed, and that a uniform perennial vegetative cover with a density of 70% of the cover for unpaved areas and areas not covered by permanent structures has been established, or equivalent permanent stabilization measures (such as the use of riprap, gabions, or geotextiles have been employed.

Where to File NOT Form
Send this form to the following address:

Section Supervisor
Inventory & Data Management Section
KPDES Branch, Division of Water
14 Reilly Road, Frankfort Office Park
Frankfort, KY 40601

Completing the Form
Type or print legibly in the appropriate areas and according to the instructions given for each section. If you have questions about this form, call the Storm Water Contact, Industrial Section, at (502) 564-3410.

Section I - Permit Information
Enter the existing KPDES Storm Water General Permit number assigned to the facility or site identified in Section III. If you do not know the permit number, **call the Storm Water Contact, Industrial Section at (502) 564-3410.**

Indicate your reason for submitting this Notice of Termination by checking the appropriate box:

If there has been a change of operator and you are no longer the operator of the facility or site identified in Section III, check the corresponding box.

If all storm water discharges at the facility or site identified in Section III have been terminated, check the corresponding box.

Section II - Facility Operator Information
Give the legal name of the person, firm, public organization, or any other entity that operates the facility or site described in this application. The name of the operator may or may not be the same name as the facility. The operator of the facility is the legal entity which controls the facility's operation, rather than the plant or site manager. Do not use a colloquial name. Enter the complete address and telephone number of the operator.

Section III - Facility/Site Location Information
Enter the facility's or site's official or legal name and complete address, including city, state and ZIP code. If the facility lacks a street address, indicate the state, the latitude and longitude of the facility to the nearest 15 seconds, or the quater, section, township, and range (to the nearest quarter section) of the approximate center of the site.

Section IV - Certification
Federal statutes provide for severe penalties for submitting false information on this application form. Federal regulations require this application to be signed as follows:

For a corporation: by a responsible corporate officer, which means: (i) president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision making functions, or (ii) the manager of one or more manufacturing, production or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25 million (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

For a partnership or sole proprietorship: by a general partner or the proprietor; or

For a municipality, State, Federal, or other public facility: by either a principal executive

Stormwater Best Management Practices Plan

for

District 5 -
Poplar Level – Lot No: 392
4334 Poplar Level Road
Louisville, Kentucky 40213

Last Updated: _____

Plan Prepared By:

_____
_____
_____

Contents:

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Appendix A – KPDES Permit

[Guidance Note: **AFTER** Template has been completed and guidance text removed, change the page numbers above to match actual section locations.]

[Guidance Note: This example plan has been prepared to be used as a template. It contains guidance text that is meant to give the person(s) preparing the site-specific plan information about what information is needed for the section, special considerations to made and/or how the information should be presented. The guidance text is shaded in Gray, started with the words "Guidance Note" and bound by Brackets. There are also blanks left in the regular text for basic information or data to be inserted by the person(s) preparing the plan. These areas are highlighted in yellow. When all tables, figures, prompts, notes and questions have been addressed, then the guidance notes can be deleted.]

1. PURPOSE AND OBJECTIVES

The purpose of this Plan is to document in a narrative form, including all necessary plot plans, drawings, etc. necessary to be consistent with 401 KAR 5:065, Section 2(10) pursuant to KRS 224.70-110, which prevents or minimizes the potential release of "BMP Pollutants" from ancillary activities through the plant site runoff; spillage or leaks, sludge or waste disposals; or drainage of raw material storage. This is being developed as part of the implementation of Kentucky Pollutant Discharge Elimination System (KPDES) General Permit No: KYG500000 as administered by the Kentucky Department For Environmental Protection, Division of Water (KDOW), April 1, 2003.

Pollutants of concern as demonstrated through effluent limitations and monitoring requirements are:

- Flow (as a reporting measure only)
- Total Suspended Solids
- Oil and Grease
- Chlorides (for facilities storing bulk road salt)
- pH

2. FACILITY DESCRIPTION

This facility is located at 4334 Poplar Level Road in Louisville (Jefferson County), Kentucky. It is approximately _____ acres with entrances on the ___ and ___ boundaries. See **Figure 1 – Facility Map** for a layout of the property. The primary purpose of this facility is the storage of materials and equipment necessary for the operation and maintenance of the state highways in the area. **Table 1** presents describes the activities / operations that may be sources of BMP pollutants for this facility.

Table 1 - Potential Stormwater Pollutant Sources and Quantities

Potential Source Listing	***Location (Map Reference #)***	***Potential Quantity of Loss***
Total Suspended Solids:		
Dense Grade Aggregate (DGA) storage	Area A	Minor Fines
Floor Drain outlet	Area B	Moderate
Exposed Parking	Area C	Gravel: Minor Fines Paved: Minimal Fines
Sand Stockpile	Area D	Moderate Particulate
Soil Stockpile	Area E	Minor to Extreme
Asphalt Milling Stockpile	Area F	Minor Fines
Vehicle Tracking	Area G	Minor to Moderate Particulate
Other potential source	Area R	Description
Oil and Grease:		
Cold mix storage	Area H	Minor
Cold mix production	Area I	Moderate
Materials Transfer / Loading and Unloading Points	Area J	Minimal
Vehicle Storage and Parking Areas	Area K	Negligible
Uncovered Vehicle Wash Areas	Area L	Negligible
Floor Drain outlet	Area B	Minimal
Other potential source	Area S	Description
Chlorides:		
Bulk Salt Storage Area	Area M	Moderate to High
Liquid Calcium Storage	Area N	Moderate to High
Brine Production and Storage Area	Area P	Minimal
Vehicle Cleaning	Area Q	Minimal
Floor Drain outlet	Area B	Moderate
Other potential source	Area T	Description

[Guidance Note: The table above should be modified to include all other potential stormwater pollution sources (**even those not already listed**) that are identified through a site walk and assessment by (at least) the Facility Superintendent, Division of Operations Manager's representative, Division of Operations Field Engineer and District Maintenance Engineer. Each source should have a unique letter. If the same type source is located in

several places at the facility, then it should be shown on the map using the same letter followed by a letter. In example, there are two piles of sand located at different ends of the facility. The map should show a **D1** on one of the piles and **D2** on the other.]

Outfall Location
An assessment of the facility was performed to identify the hydraulic outfalls of the facility that were isolated from mixing with off-site stormwater runoff. These points are identified on **Figure 1 – Facility Map** with the **SW#** designations. The "#" indicating multiple outfalls.

Flow Path of Potential Pollutants
As visual assessment was performed to identify the most likely flow paths of potential "BMP Pollutant" sources. The anticipated flow paths, including passage through BMPs is illustrated on **Figure 1 – Facility Map.**

BMPs Utilized
As described in the remainder of this document, as the site was assessed and BMPs were selected to manage the pollutant risks identified. The non-structural BMPs that are applied on this site are described in Section 9. The structural BMPs are identified on **Figure 1 – Facility Map** with the designations described below. The "#" indicating multiple BMPs of this type are utilize on the site.

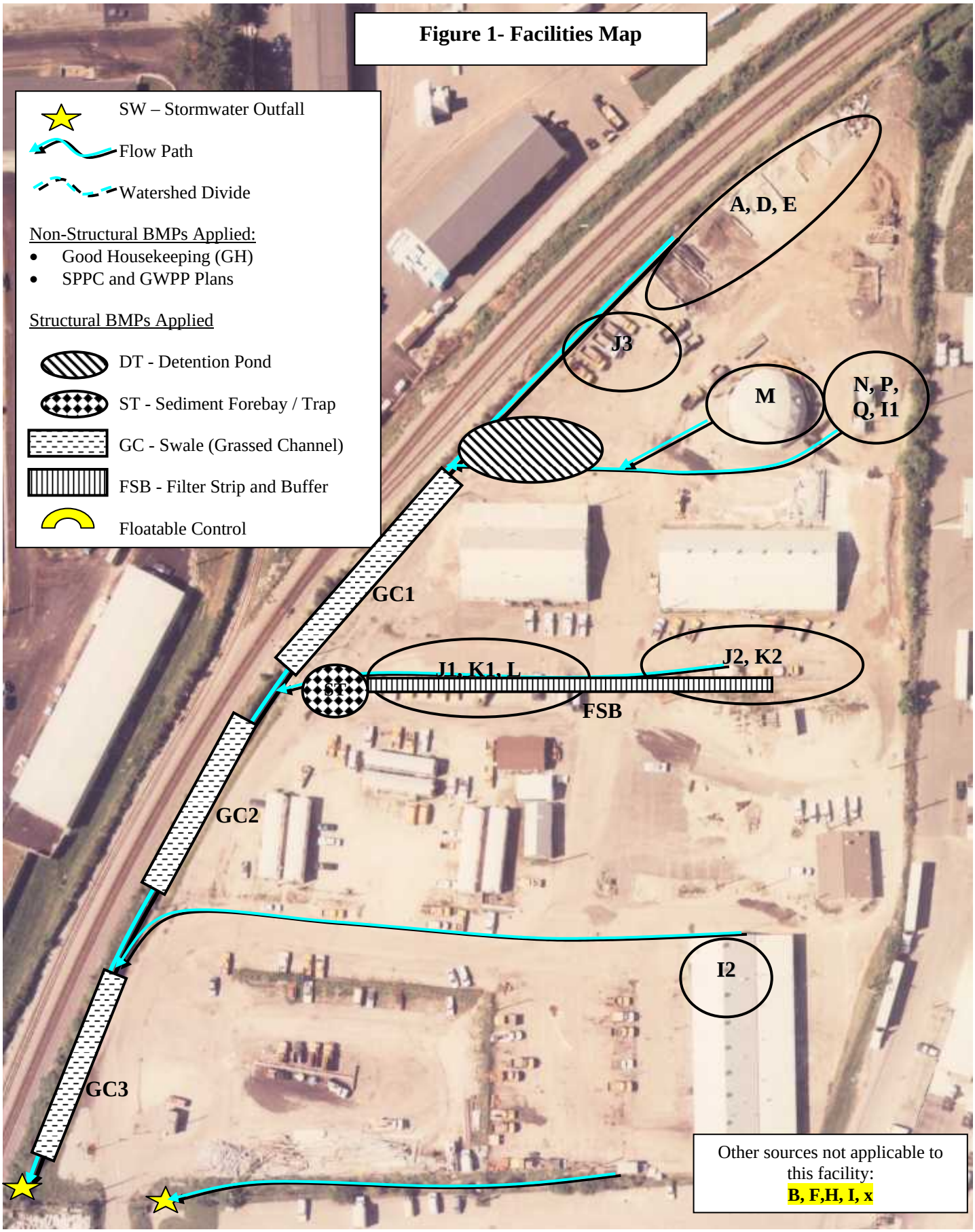
Structural BMPs - Facility Map Designations
GC# - Swale (Grassed Channel)
FC# - Floatable Control
FSB# - Filter Strip and Buffer
DT# - Detention Pond
ST# - Sediment Forebay / Trap
SW# - Stormwater Outfall

[Guidance Note: the Figure 1- Facility Map needs to include the following notations for sources, BMPs and outfall. Flow paths are also to be included, but can be show without a designation.

The PLAN shown in the figure is to represent the FUTURE CONDITIONS. The photographs are from 1995-1997 and may not show current conditions. Contact Division of Environmental Analysis if the aerial photo is not usable because site conditions have changes significantly. A legend has been set up with symbols/objects that can be copy (ctrl-C) and pasted (ctrl-V) onto the digital aerial photograph available on the KYTC server. It is important that the legend text remain. It can be moved around the page so that it does not cover important areas of the photograph.

Alternatively, Microstaion drawings or other methods can be used. The goal is to create map that is understandable to the facility staff and the state regulators.]

Figure 1- Facilities Map



3. BMP COMMITTEE AND SELECTION PROCESS

The stormwater BMPs for this facility were selected through an assessment performed by (or provided input from) a committee of the following people.

- Facility Superintendent
- Division of Operations Manager's representative
- Division of Operations Field Engineer
- District Maintenance Engineer
- District Maintenance Superintendent
- Division of Environmental Analysis (representative for KPDES compliance)

The committee was used to:

- identify potential pollutant sources
- locate flow paths to site outfalls
- develop a BMP strategy to address sources that could potentially jeopardize the effluent limitations applied through the KPDES general stormwater permit.

The results of this process are documented throughout this document, including the information provided on the **Figure 1 - Facility Site Map.**

4. REPORTING INCIDENTS

As discussed in Section 7, a Discharge Monitoring Report (**DMR**) must be completed and delivered to the Kentucky Division of Water (KDOW). The data to be included in the DMR are monthly grab samples for Total Suspended Solids, Oil and Grease, Chlorides and pH at the site outfall(s) as well as estimated flow discharge for the storm event.

Emergency or Potential for Exceeding Permitted Limits

In the event of a release of release of a BMP pollutant of concern at the facility that 1) could result in a hazardous condition or 2) the release of the pollutant from the site at level that may exceed the permitted discharge effluent limitations the following actions should be taken.

The Facility Superintendent shall be notified immediately and the following steps shall be taken:

a. <u>Assessment of Hazard</u>

   i. Upon notification of a petroleum-related spill, the first responder will determine the hazard potential of a spill response by determining at least the following factors:
      - The substance spilled and its hazard potential
      - The amount of the spill and the extent of spreading
      - The source of the leakage/spill

   ii. If a spill is determined to be of such a magnitude that it cannot be safely and effectively controlled by facility personnel, then the Facility Superintendent shall promptly notify outside emergency response agencies to implement control and cleanup.

b. <u>Securing Spill Response Equipment</u>

i. Upon determining the hazard potential for the planned response action, the Facility Superintendent shall direct those who will respond to the spill to obtain the appropriate response equipment and personal protective equipment (PPE).

c. Containment and Elimination of Spill Source

i. Upon obtaining the proper spill response tools and personal protective equipment (PPE) as necessary, the spill responder(s) shall first attempt to contain the spill to prevent its entry into a storm sewer, ditch, or any other conveyance that eventually discharges to the waters of the United States.

ii. At the same time as containment is being performed or as soon as possible after the containment, the spill responder(s) shall attempt to seal or otherwise stop the source of the spill. Common methods of eliminating a spill source include:

1. closing valves
2. leak stopping compound for pinhole leaks
3. drum overpacks
4. deactivating pumps
5. diverting flow to another pathway as long as this pathway does not allow the spill to enter a navigable water course.

d. Spill Cleanup

i. Once the spill is contained and the source eliminated, the spill responder(s) shall collect the spilled material by the appropriate manner and place the material into secure containers.

ii. The area or surface in contact with the spilled material shall be decontaminated by an appropriate method that is permissible under local, state, and federal laws. The specific method used will depend upon the substance, the availability of permitted sewer discharge to a Publicly owned Treatment Works (POTW), regulatory standards applicable to hazardous and toxic wastes, and other factors. The responder will select the appropriate decontamination method after determining the applicable facts and by conferring either with the regulators or an expert in the subject of spill response.

iii. All spill material and debris management will fully complies with applicable local, state, and federal laws regarding recycling or disposal of wastes. The preferred method is to recycle or reclaim materials from spills in an effort to minimize waste generation. Where this is not feasible or allowed, then disposal will be carried out in accordance with applicable local, state, or federal rules.

5. RISK IDENTIFICATION AND ASSESSMENT

An assessment was performed to identify the risk that permit BMP pollutants would leave the site in quantities that would exceed the permit discharge effluent limitations. This assessment is documented in **Figure 1 – Facility Site Map** and is summarized in **Table 1 – Potential Stormwater Pollutant Sources and Quantities,** as presented in Section 1.

This assessment included developing a facility map, or using an aerial photograph of the site, performing a site walk to identify easily and less apparent potential pollutant sources. The easily apparent potential pollutant sources were identified through and inventory of materials stored and visual survey of work areas. Looking for signs of pollutant transport on the site, such as visual observation of sheen, stains and structural changes to infrastructure (such as channel erosion and/or corrosion of pipes) were techniques used to identify the less apparent potential pollutant sources.

6. EMPLOYEE TRAINING

General information training is to be given to all facility employees so that they may be informed about the new site feature. At a minimum this will performed in annually in staff meeting discussions. The basic intent of this portion of training is to inform the facility employees of the site's stormwater BMPs, why it was done and what to do (or not do) to protect it. New employees should also participate in a training session upon hire. A copy of the BMP Plan will be kept in a conspicuous location where all employees may review it, whether for normal activities or for emergency and spill response.

More focused training (Structural) shall be performed for staff who are in charge of operation activities such as inspections, maintenance and monitoring. This training will be initiated through preparatory training session to be performed prior to construction of any new stormwater BMPs. The intent of this training session is to provide the people who will be "in charge" of the new BMPs to see and appreciate the site changes that are being made and why they are being done. This session should provide the details necessary for long-term operation and maintenance of the BMP(s).

Materials/discussion will include:

- Inspection checklist
- Inspection schedule
- Anticipated maintenance schedule
- Maintenance procedure checklist
- Contact information for accumulated waste disposal
- Monitoring procedure checklist
- Contact information for additional questions

A copy of the BMP Plan will be kept in a conspicuous location where all employees may review it, whether for normal activities or for emergency and spill response.

Follow-up training for structural controls will be performed once every three months for the first 12- to 18-months and annually thereafter or when there have been changes made to the site BMPs or maintenance expectations. A copy of the BMP Plan will be kept in a conspicuous location where all employees may review it, whether for normal activities or for emergency and spill response.

Training sessions (non-structural), similar to those described for structural controls above will be performed once every three months for the first 12- to 18-months and annually

thereafter or when there have been changes made to the site BMPs. A copy of the BMP Plan will be kept in a conspicuous location where all employees may review it, whether for normal activities or for emergency and spill response.

7. INSPECTIONS AND RECORDS

Through the course of daily site walk / assessment, the Facility Superintendent shall perform or oversee the inspection of all structural BMPs and through other visual observations non-structural BMPs. At least once a month a more detailed inspection of structural BMPs will be. Inspection records will be maintained for a minimum of three years.

8. PREVENTATIVE MAINTENANCE

Preventative maintenance will be performed for each structural control to ensure good working order and that permit discharge effluent limitations are not being exceeded, to the maximum extent practicable. The following preventative maintenance activities will be performed (by type of BMP).

Swale (Grassed Channel) - GC

A swale is a wide flat-bottomed grassed channel. Swales are an alternative that works well for linear locations, but are somewhat less effective than ponds and sediment traps. They are most effective when used in conjunction with a filter strip.

Floatable Control - FC

Floatable control is a management practice applied to many other BMPs when oil and grease is still a problem. It may involve installation of absorbent socks, filters or other materials to collect floating oil and grease. In other cases, floating booms, baffles or screens are used to collect the oil and grease much like an oil/water or grit separator.

Filter Strip and Buffer - FSB

A filter strip or buffer is a grassed area that treats sheet flow and is placed parallel to the contributing surface such as parking lot or roadway. They “treats” stormwater runoff by utilizing vegetation to slow the velocity of runoff allowing the removal of sediment and other pollutants through filtering and settling.

Detention Pond - DT

A detention/retention pond is an excavated area where runoff is collected and pollutants can settle or be absorbed. A detention pond releases to surface drainage while a retention pond relies on groundwater infiltration. Ponds are likely to significantly reduce a wide range of pollutants.

Sediment Forebay / Trap - ST

Sediment trap is a small excavated or bermed area where runoff from a small tributary area is detained and sediment can settle. This management practice is likely to significantly reduce sediment and floatable materials.

[Guidance note:
Remove the above text for BMPs that are not used at this facility.]

9. GOOD HOUSEKEEPING

Good housekeeping practices will be performed as part of the effort to ensure that permit discharge effluent limitations are not being exceeded, to the maximum extent practicable. These non-structural BMPs will focus on following procedures for:

- Containing/locating potential pollutant sources (especially bulk storage materials) to areas that are served by structural BMPs 2)
- appropriately responding to spills and other accidental on-site placement (that does not conform to establish procedures) of BMP Pollutants
- appropriately responding to spills and other accidental off-site release of BMP Pollutants that would be directed by Spill Prevention Control and Countermeasures (SPCC) or Groundwater Pollution Protection (GWPP) plans.

The following Good Housekeeping activities will be performed (by type of BMP).

Materials Handling, Transfer, Loading, Unloading and Wash out
Prevent or reduce the discharge of pollutants to stormwater from outdoor loading/ unloading and storage of materials by enclosing or covering materials, installing secondary containment, and preventing stormwater run-on.

Vehicle Cleaning
Prevent or reduce the discharge of pollutants to stormwater from vehicle and equipment cleaning by washing in designated, contained areas only and eliminating discharges to the storm drain by infiltrating or recycling the wash water.

Vehicle Tracking
Reducing or eliminating the tracking of sediment off-site may be achieved by using a stabilized access way for vehicles. This is not expected at all facility entrances/exits, but in areas where trucks may be traveling over exposed soil, such as an area used for bulk soil storage or on-site grading.

Grading and Soils Management
Work on-site that includes extensive grading and soil exposure shall be conducted in areas serviced by appropriate BMPs. In areas with existing BMPs, flows from the exposed work areas shall be diverted to the BMPs and away from off site waterways to reduce the amount of sediment discharged by the site. If BMPs are unavailable, temporary BMPs shall be established to minimize the amount of sediment release as a result of the facility activities.

[Guidance note:
Remove the above text for BMPs that are not used at this facility.]

10. MATERIALS COMPATIBILITY

Materials, BMPs and potential pollutant sources were evaluated for materials compatibility. It was determined that there are no hazardous, health and safety or other relevant issues that have not already been address through other plans, training and procedures, such as the

availability of material safety data sheets (MSDS) that need to be addressed in this Plan. The assessment did not identify any compatibility issues that are of a concern for this BMP plan.

11. SECURITY

The following security measures have been implemented at the facility for protection against equipment tampering, trespassing, vandalism, or accidental release.

Table 2 – Security Measures:

Security Measure Description (do not provide detailed information)
Perimeter Fences
Guard posted at entrance
Security camera
Facility lighting
List where keys are stored and who has keys.
Fencing around detention / retention pond(s)
Other security measure
Other security measure
Other security measure

[Guidance Note: Delete and modify the information in the table above to make accurate for the facility.]

12. MATERIALS INVENTORY

A materials inventory was performed through the site risk identification and assessment. The materials that are relevant to this BMP Plan are identified in **Table 1 - Potential Stormwater Pollutant Sources and Quantities** and **Figure 1 - Facility Map**.

13. SPCC and GWPP PLANS

The BMP Plan was developed and will be implemented consistent will Spill Prevention Control and Countermeasures (SPCC) and Groundwater Pollution Protection (GWPP) plans for this facility. In cases where the plans are duplicative or in excess of the other, the most stringent activity will be applied.

14. MODIFICATIONS

The BMP plan will be modified as the site or operating conditions, that are not anticipated, change over time. Furthermore, the Plan will be changed if it is determined that the BMP Plan is be ineffective as demonstrated in monitoring data.

The Facility Superintendent will assess if there have been any changes to the site that would require changes to the BMP Plan on at least once every three months for the first 12- to 18-months of the plan implementation. After it is clear that the BMP Plan is effective and BMPs are being operated properly, then assessments will be limited to annual site walks.

As the BMP Plan is changed, appropriate personnel and the Divisions of Operations and Department of Environmental Analysis and the KDOW will be notified and/or involved.

Stormwater Best Management Practices (BMP) TOOLKIT

for Use in Developing
Stormwater Best Management Practices Plans

March 2003

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Appendix – Example Plan

Appendix - BMP Fact Sheets

Non-Structural Source Control BMPs:

- Good Housekeeping / Containment
- SPCC and GWPP Plans

Structural BMPs

- Swale (Grassed Channel)
- Floatable Control
- Filter Strip and Buffer
- Detention / Retention Pond
- Sediment Forebay / Trap

1) INTRODUCTION AND PURPOSE

The Kentucky Transportation Cabinet (KYTC) is required to develop a Stormwater Management **B**est **M**anagement **P**ractices (BMP) Plan for each of the Highway Maintenance and Equipment Facilities. This is required as part of the implementation of **K**entucky **P**ollutant **D**ischarge **E**limination **S**ystem (KPDES) General Permit No: KYG500000 as administered by the **K**entucky Department for Environmental Protection, **D**ivision **o**f **W**ater (KDOW), effective April 1, 2003. A site-specific plan must be **developed** for each facility by **June 29**, **2003** and that plan must be **implemented** (including any construction) by **December 25, 2003**.

In essence, a BMP Plan is a flexible plan by which site-specific potential pollution sources are identified and structural or non-structural measures, or controls, known as BMPs are designed, implemented, maintained, and monitored to minimize negative impacts on the surrounding environment. Stormwater BMPs can take many forms at a KYTC Highway Maintenance and Equipment Facility. Some practices may be self-evident, while others may be subtle changes in employee routines and habits. However, there are some practices that require decisive planning, implementation and follow-up, inspection, and maintenance. Addressing and documenting those issues is the purpose of the BMP plan.

The pollutants of concern for the permit include oil and grease (fuels and petroleum products in general), chlorides and sediment. These products are widely used and can be spilled/leaked/dumped on the ground where they can wash into waterways. These pollutants originate from a variety of activities including materials storage, equipment maintenance, and other daily operations activities at the facility. Sources include leakage during normal vehicle use, hydraulic line failure, spills during fueling, and inappropriate disposal of drained fluids. These products can cause harm to plant and animal life prompting their inclusion in the permit. KYTC is required to manage these pollutants on-site and monitor to determine the effectiveness of that management. By taking an **activities inventory**, KYTC can identify **potential pollutant sources** and then **select** and **implement/construct** appropriate **BMPs** to address these sources.

The remainder of this document provides insight into developing a BMP Plan. The following steps will be used to develop the BMP Plan for KYTC Highway Maintenance and Equipment Facilities.

1) **Assess the Site**
2) **Identify Feasible BMPs** (Selection / Plan Design)
3) **BMP Implementation / Construction**
4) **Update / Change BMP Plan**

2) ASSESSING THE SITE

This section provides insight into assessing the site for potential pollution sources in preparation for selecting feasible BMPs (next section). The basic steps for assessing the site are:

1) Develop Potential Pollution Source Map
2) Locate Site Outfalls and Flow Paths

Develop Potential Pollution Source Map

This map is a critical component to the BMP plan. The site plan/map provides a visual description of the BMP Plan. It should in itself provide sufficient detail to give the informed employee the information to fully implement the plan without having to continuously review the narrative.

While there are a number of similarities, each KYTC lot is unique. Therefore, an understanding of the pollution risks is essential for selecting and implementing BMPs. Defining these risks requires review of the characteristics of the site. Once these pollution risks are defined, BMPs can be selected and implemented.

PERFORMING A SITE WALK IS CRITICAL IN DEVELOPING THE POTENTIAL POLLUTION SOURCE MAP.

The site walk should be made with the assistance of a site map (or recent aerial photograph) that is detailed enough to provide the basic location of:

- Buildings
- Driveways
- Roads
- Fences / entrances / exits
- Material storage sheds / bins /tanks / areas
- Parking areas
- Special or regularly used areas (i.e. wash pad, degreasing rack, etc.)

While not required, it would be helpful to the BMP selection and design process if the map or photograph be at a known and consistent scale.

With this site map in hand the site walk can begin. The example plan, discussed in Section 6, provides a list of activities or areas that have already been identified as potential pollutant sources. This list should be used as a starting point, as there may be other activities or areas on the specific site that should be included, but were not considered. Just because it was, or is, not already listed does not mean that it will not cause a problem at a site outfall causing KYTC to be in violation of the permit it has with KDOW. Because these sources are predefined and easy to find, they will be defined as “easily apparent” potential pollutant sources. When they have been identified, other “less apparent sources” should be searched for.

To identify the "less apparent sources", every area of the site should be walked to identify signs of previous stormwater pollution problems. This may include, but is not limited to:

- Oil sheen in standing water
- Oil stains on pavement, culverts or ditches
- Calcium or salt (white) stains on pavement, culverts and ditches
- Corroded culverts (bottom of corrugated metal pipe)
- Accumulated sediment (silt or clay) in culverts or ditches
- Eroded channels
- Eroded (rills or gullies) bulk stored materials

When these and/or any other indication(s) of a potential pollutant source(s) have been identified, then cause needs to be identified by tracing uphill. This is done to make sure that the "less apparent" sources are also included in the BMP Plan.

Locate Site Outfalls and Flow Paths

The following should be carefully considered when making the site walk and searching for outfalls and flow paths.

- Natural terrain and slope – Note the lowest points / outfalls and crests that divide the site
- Location of concentrated flows, storm drains, **originating on-site**
- Location of concentrated flows, storm drains, and streams **originating off-site**.

At a minimum the lowest and highest point(s) of the site should be identified. These constitute the drainage divides and will guide the identification of flow paths from the potential pollution sources through BMPs and eventually site outfall(s). Given the list of potential pollution sources, walk down the flow path to its respective outfall. Note each of these paths on the map taking special note of any BMPs or infrastructure (ponds, culverts, ditches, catch basins, etc.).

When completed with the initial site walk, the site map should indicate or include the following:

- Define areas where various operations activities have a likely risk of causing a runoff or pollutant discharge.
- Locations where stormwater enters and exits the site. Include both sheet and channel flow.
- Identify sensitive areas such as wetlands, springs, sinkholes, floodplains, floodways or buffers that must be protected.
- Drainage infrastructure (pipes, ditches, catch basins, etc.)
- Identify each outfall location (point where drainage leaves the property or mixes with off-site drainage).
- Identify each potential pollution source.
- Identify the flow path from each potential pollution source to an outfall (and through any existing BMPs).

When the Potential Pollution Source Map has been developed including indications of outfalls and flow paths, then feasible BMPs can be identified.

3) IDENTIFY FEASIBLE BMPs

This section provides insight into selecting feasible BMPs in preparation for implementing / constructing BMPs (next section). The basic steps for selecting feasible BMPs are:

1) Review "Tool Box " of Fact Sheets
2) Identify Site Constraints / Opportunities
3) Develop Concept and Final Design
4) Identify Inspection Activities
5) Identify Maintenance Activities
6) Identify Monitoring Activities

Review "Tool Box " of Fact Sheets

The appendix to this document contains a series of facts sheets on BMPs that have been selected and customized for use by KYTC at the Highway Maintenance and Equipment Facilities. This does not include all the BMPs that could be used to manage stormwater quality on KYTC or similar sites. However, they were selected and customized with the intent of providing information that would be useful and usable for the facility staff.

The non-structural BMPs include approaches to stormwater quality management that involve changes to daily procedures and activities of the facility staff. This may be as simple as an activity as checking that the drain on a secondary containment pit is closed OR it should be temporarily opened to allow "clean" collected rainwater to drain.

The structural BMPs include approaches to stormwater quality that can be constructed by KYTC staff using readily available equipment and supplies. For the most part, grading, stabilization (seeding) and some light construction (minor concrete or woodworking) are all that will be required.

Identify Site Constraints / Opportunities

Every site will have a unique set of circumstances that drive the selection of BMPs. These circumstances represent either constraints or opportunities. These may include, but are not limited to:

- Utilities - BUD Internal !!!
- Limited or plenty of space
- Plenty or no flat areas
- Numerous or no off-site drainage
- Well or poorly draining soils
- Widely dispersed or highly concentrated areas of potential sources
- A single or numerous site outfalls

Above all other constraints, be sure you do not have underground or overhead utilities that can be damaged or disrupted.

One of the most common constraints will be space. While it can not be used as an automatic excuse for not implementing an effective plan, it should be noted and well documented that a

all reasonable efforts were made to use the BMPs in the appendix, but not enough space was available. Depending on the results of previous stormwater quality monitoring and potential pollution sources, the conclusion that there is not enough space will likely require that smaller much more expensive structural BMPs be constructed/installed on site. Therefore, it is in the best interest of KYTC that every effort be made to innovatively rearrange site activities or drainage to accommodate the application of the BMPs identified in the Appendix.

Develop Concept and Final Design

For most sites, there will be no single BMP that is capable of addressing all the long-term stormwater quality problems. Instead, a multi-level strategy that incorporates source controls, a series of on-site treatment controls may be necessary. Moreover, a multi-level strategy is generally most desired because it most often focuses/reduces maintenance activities and provides a higher level of confidence in overall performance. I**t is anticipated that a blend of structural and non-structural controls will be applied at all sites**.

It is preferred to integrate new BMPs into existing site features. This often takes the form of a modified detention pond and/or modified outlet structure so that it functions as a sediment trap (or pond that holds the sediment loads or contains the pollutants to acceptable levels). Other measures include, but are not limited to, protecting / reinforcing selected (not all) catch basins to trap sediment or using areas that will not be disturbed such as buffers and filter strips.

The following should be considered in the conceptual design process.

- Is there a detention/retention pond for that can be modified?
- Most BMPs can be incorporated into ponds with modest grading and/or outlet structure changes.
- Are there already relatively flat ditches/channels that can be graded for vegetated swales/filters? These may include driveway or parking lot median vegetated areas.
- Are there opportunities to consolidate or relocate bulk storage materials to an area that is served by an existing pond or a new sediment trap?
- Are there areas of vegetation that can be used as buffers or filter strips before entering a drainage system?

These questions should prompt the rationale for developing a general or conceptual BMP plan. The conceptual plan should include the overall location and type of BMPs to be used and anticipated pollutant sources to be addressed. This can be usually be done with basic notes on the *Potential Pollution Source Map.* This is presented in the example plan (See Section 6).

The final design process should be guided by applying the design principles provided by the specific BMPs fact sheet in the Appendix. In addition, Section 7 provides a series of reference documents that may be consulted for more detailed discussion and/or alternative design approaches.

Identify Inspection and Maintenance Activities

It is critical that the BMPs be inspected on a regular basis and that the facility staff understand what is to be inspected and why it is important. It is also critical that the BMPs be maintained on a regular basis and that the facility staff understand what the maintenance activities are and why they are important. Inspection and maintenance procedures for BMPs are often not well thought out and not effectively carried out. Often one or both sets of procedures are overlooked because responsible personnel have not been identified. These procedures need to be developed in realistic terms and with expectations so they can be thoroughly explained to appropriate personnel. Ideally, a BMP Committee will be directed/lead by the Facility Superintendent. The team should be used as a mechanism to discuss and train all personnel in detail on the BMP Plan. The Facility Superintendent should then oversee that routine inspections are properly performed and inform the committee of any changes in operations that may affect the BMP Plan.

Inspections should be performed and documented at frequencies indicated for specific BMPs. Maintenance issues identified by inspections should be resolved within a week or less, depending on the severity of the potential pollutant impact. BMPs that are found to be insufficient should be augmented or replaced with other BMPs that can more effectively manage the pollutant of concern. As an example, a detention pond is being overwhelmed with sediment to the point that it can not contain the sediment and may cause flooding problems or it will be release to the outfall. It likely needs to be cleaned out (excavated) to an effective depth.

A documented schedule is also necessary. **There should be a posted schedule of inspection and maintenance activities** and it should at least be identified in some manner, as in employee training.

Identify Monitoring Activities

The KDOW permit prompting the BMP Plan requires periodic site monitoring. It is critical that facility staff understand the monitoring activities to be performed and how the BMPs play a role in that monitoring. Depending on the BMP type, a specific location will be established for collecting sample(s) of storm runoff for field and/or laboratory analysis. These locations are described in the BMP fact sheets. Other procedures are presented in other documents including the Spill Prevention Control and Countermeasures (SPCC) Plan and the Groundwater Protection Plan (GWPP).

4) BMP IMPLEMENTATION / CONSTRUCTION

This section provides insight into the process of implementing or constructing BMPs. While the specific requirements are presented in fact sheets in the Appendix, the process and important considerations are discussed below. The basic steps for implementing or constructing BMPs are:

1) Construct Structural BMPs
2) Train Staff on Inspection, Maintenance and Monitoring of Structural BMPs
3) Train Staff on Non-Structural BMPs
4) Supervise and Assess BMP Operation and Implementation

Construct Structural BMPs

After the BMP Plan has been prepared and approved by the BMP Committee construction / implementation may proceed. For the most part, structural BMPs will require some amount of construction. This may be as complex as a completely new BMP, like a detention pond, or as simple as constructing a level spreader in a shallow ditch to make it a stormwater quality swale. After construction is complete the facility staff will need to operate and/or maintain the BMP.

The BMPs in the Appendix were selected with the intent that they could be installed by facility or district staff using existing equipment and supplies. Thus limiting, while not completely excluding, the need to go outside of KYTC to implement the BMP plan. However, note that to ensure that BMPs are adequately implemented / constructed, it is important that the work crews which install the measures are experienced, adequately trained personnel or are overseen by experienced, adequately trained personnel. Improperly implementing / constructing some BMPs can result in little or no positive effect and may actually intensify the pollution impact that they are intended to minimize.

Train Staff on Inspection, Maintenance and Monitoring of Structural BMPs

Apart from an effective design, **TRAINING IS THE MOST IMPORTANT PART OF IMPLEMENTING A BMP**. This is true for structural and non-structural controls.

General information training should be given to all facility employees so that they may be informed about the new site feature. This may be as simple as a brief discussion about the new BMP in a staff meeting. The basic intent is to inform the facility employees that something on the site has changed and why it was done and what to do (or not do) to protect it. Discussions may range from instructions not to use the area for parking or bulk materials storage anymore to warnings about anticipated changes in water depths. Regardless of the details of the discussion, it should be done at least annually.

More focused training should be given to staff who are in charge of operation activities such as inspections, maintenance and monitoring. This training typically takes around four to eight hours, depending on the number and complexity of the BMPs in the plan. A preparatory training session should be performed after the BMP plan has been prepared but prior to construction. This provides the people who will be “in charge” of the new BMPs to see and appreciate the site changes that are being made and why they are being done. This

will also provide a more solid basis for the training session just after construction. This session should provide all the details necessary for long-term operation of the BMP. This should include an:

- Inspection checklist
- Inspection schedule
- Anticipated maintenance schedule
- Maintenance procedure checklist
- Contact information for accumulated waste disposal
- Monitoring procedure checklist
- Contact information for additional questions

Follow-up training for structural controls should be performed ***once every three months for the first 12- to 18-months***. This should be done in coordination with the monitoring program results to ensure that the BMP plan is ***effective in meeting the permit requirements***. In this way, if the monitoring data shows that the BMPs are not effective then the plan can be changed and staff can be trained or involved in developing effective solutions. After it is clear that the BMP plan is effective and BMPs are being operated properly, then refresher training can be limited to annual briefings.

New employees should also participate in a training session upon hire.

Train Staff on Non-Structural BMPs
Non-structural BMPs are initiated through training facility staff. Apart from effective selection, **TRAINING IS THE MOST IMPORTANT PART OF IMPLEMENTING A BMP**. This is especially true for non-structural controls.

For non-structural practices like "Good Housekeeping", it is important that they are implemented by integrating them into daily, weekly and monthly routines of the facility staff. It is important that all key employees are aware of the plan and that it is accessible to all employees. A copy of the BMP Plan should be kept in a conspicuous location where all employees may review it, whether for normal activities or for emergency and spill response.

Training sessions, similar to those described for structural controls above, should be performed for non-structural controls. This should at least include sessions performed once every three months for the first 12- to 18-months and annually thereafter.

Supervise and Assess BMP Operation and Implementation
After starting both the structural and non-structural practices it is critical that the Facility Superintendent makes sure that the BMPs are being maintained/implemented properly and that they are effective (as will be discussed in Section 5 – Update/Change BMP Plan). The role of the Faciltiy Superintendent is essentially to constantly reassess the BMPs and the BMP plan.

5) UPDATE / CHANGE the BMP PLAN

Inevitably, there are site or operating conditions that are not anticipated or change over time. Furthermore, despite every effort, the BMP Plan may be ineffective as demonstrated in monitoring data. The ultimate goal is to limit the release of potential pollutants into the surrounding environment. However, it is important to note that the **basic purpose** of developing the BMP Plan is to improve storm discharges from the site that **meet the limitations imposed by the stormwater quality permit.** If the monitoring data show that the limits are not being achieved, then the **PLAN SHOULD BE MODIFIED.** Assessment of the monitoring data should be done with the assistance of the Department of Environmental Analysis.

Changes to the site may be significant or very simple. This may include the type and location of equipment stored on-site OR the additional storage of bulk materials like asphalt millings. This requires flexibility in implementing the BMP Plan. However, this flexibility should not in any way jeopardize the overall goal or purpose of the plan. Furthermore, ***just because there is a BMP Plan does not mean that the problem is solved.*** If the BMP(s) is no longer capable of effectively preventing stormwater pollution, then the BMP Plan should be modified or replaced by more intensive practices. If the plan can not be followed fairly rigorously or is ineffective, then it should be rewritten to accommodate the needed changes while still meeting the monitored storm discharge limitations of the stormwater quality permit.

The Facility Superintendent should assess if there have been any changes to the site that would require changes to the BMP Plan on at least ***once every three months for the first 12- to 18-months***. This should be done in coordination with the monitoring program results to ensure that the BMP plan is ***effective in meeting the permit requirements***. In this way, if the monitoring data shows that the BMPs are not effective then the plan can be changed and staff can be trained or involved in developing effective solutions. After it is clear that the BMP Plan is effective and BMPs are being operated properly, then assessments can be limited to annual site walks.

As the BMP Plan is changed, appropriate personnel and the Divisions of Operations and Department of Environmental Analysis should be notified and/or involved.

6) EXAMPLE PLAN

An example plan was prepared to be used as a template. It contains guidance text that is meant to give the person(s) preparing the site-specific plan information about what information is needed for the section, special considerations to be made and/or how the information should be presented. There are also blanks left in the regular text for basic information or data to be inserted by the person(s) preparing the plan.

The purpose of this example plan is to help facility staff quickly go through the process of documenting in a narrative form, including all necessary plot plans, drawings, etc., necessary to be consistent with stormwater quality permit requirements. The ability to rapidly yet thoroughly develop the plan is important when noting that the permit is effective April 1, 2003, that a site-specific plan must be **developed** for each facility by **June 29**, **2003,** and that plan must be **implemented** (including any construction) by **December 25, 2003**.

The stormwater quality permit requires that the plan include the following sections.

- **BMP Committee** – Describing the group of people and process used to develop and monitor the BMP Plan.
- **Reporting Incidents** – Describing how facility staff should report problems associated with pollutant releases or BMP operational issues.
- **Risk Identification and Assessment** – Describing how potential pollutant sources were identified and new sources being considered.
- **Employee Training** – Describing the process of ensuring that the facility staff are aware and appropriately operating / implementing the BMP Plan.
- **Inspections and Records** – Describing how the BMP Plan activities are to be documented for assessment and compliance purposes.
- **Preventative Maintenance** – Describing specific non-structural control activities to limit or prevent new pollutant sources from developing.
- **Good Housekeeping** – Describing specific non-structural control activities to manage known potential pollutant sources from being an actual source.
- **Materials Compatibility** – Describing procedures used to prevent the mixing, combination or otherwise use of materials that would contribute to a stormwater pollution problem.
- **Security** – Describing measures taken to protect the BMPs from intentional or inadvertent damage.
- **Materials Inventory** – Describing the process and results taken to fully appreciate what on-site materials that may have stormwater pollution impacts for consideration in the BMP plan development.

7) REFERENCES AND OTHER GUIDANCE DOCUMENTS

The following documents were used as reference guides in preparing this document and the example BMP Plan. These documents may be useful as additional guidance for preparing and implementing effective BMP Plans.

Best Management Practices for Construction Activities – Kentucky, Division of Conservation of Water, NPEPC.

California Storm Water Best Management Practice Handbooks, California SWQTF, 1993.

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Preliminary Data Summary of Urban Storm Water Best Management Practices, U.S. Environmental Protection Agency, 821-R-99-012, August 1999.

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Stormwater Management Manual, Volume 2 – Procedures **and** ***Volume 4 – Best Management Practices***, Metropolitan Government of Nashville and Davidson County, Tennessee, Department of Public Works, Engineering Division, March 2000.

Urban Runoff Quality Management – WEF Manual of Practice No. 23 / ASCE Manual and Report on Engineering Practice No. 87, Roesner, L.A., et.al., 1998.

Users Manual 1.06: Watershed Management Model, Rouge River National Wet Weather National Demonstration Project for the U.S. Environmental Protection Agency. August 1998.

Best Management Practices (BMP)

Sediment Forebay / Trap

ST

Sediment trap is a small excavated or bermed area where runoff from a small tributary area is detained and sediment can settle. This management practice is likely to significantly reduce sediment and floatable materials.

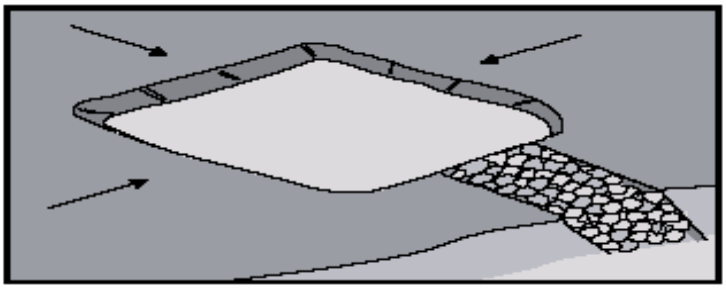


Figure: Sediment trap schematic

Source: Volume 4 Best Management Practices: Stormwater Management Manual, Metropolitan Government of Nashville and Davidson County March 2000.

Low	Medium	High
○	◎	●

Material or Pollutant Removal Efficiency	
Sediment	●
Chlorides	◎
Oil & Grease	◎
O & M Frequency	◎
Inspection Frequency	◎
Capital Cost	◎
Maintenance Costs	◎

Site Characteristics and Limits	
Minimum Dimension	• Stand alone: 180 cu yd / acre of drainage area • Pond Forebay: 10% of pond volume
Land Requirement	• Trap area must be 2 to 5% of contributing drainage area for best settling results • area less than 5 acres
Uses	• Cold mix asphalt facilities • Fleet maintenance • Wash facilities
Other Comments	• A fallback from a water quality detention pond when space is not available. • Outlet structure usually rock filter or simple weir (not piped)

Applicability and Selection Criteria

- Most effectively used just upstream of a detention pond. This focuses maintenance, especially sediment removal on the smaller forebay/trap rather than on the larger detention pond.
- The sediment trap is applicable for drainage areas less than 5 acres.
- Used just downstream of a bulk materials storage pile or bin (sand, gravel, soil, etc.)
- Typical used for locations where sediment-laden runoff may enter a high traffic area, exit the site or enter a drainage system.
- Used in place of detention ponds, only when the contributing drainage area is divided into smaller subareas contributing to each trap or space limitations make using a pond impossible.
- Sediment traps are selected due to their removal efficiency, capital costs plus operation and maintenance costs. They are an alternative to larger detention ponds, but are less effective.
- A trap and pond are very similar. In essence, a pond is larger (and deeper) and must have an outlet structure passing through a dam-like embankment, while a trap is smaller (and shallow) and may have a much more simple outlet structure.

Limitations

- Traps/forebays require more **frequent** but much easier **maintenance** (sediment removal) than ponds.
- If **upstream erosion** is not properly controlled, traps can be maintenance intensive with respect to sediment removal, nuisance odors, and insects (i.e., mosquitoes), etc.
- Traps/forebays require a slight differential elevation between inlets and outlets and thus, may be **limited by terrain**.
- Traps are only effective with a tributary area of up to **5 acres**.
- Traps can not be located in **live streams**.
- The traps only remove medium and large particles requiring **very strict good housekeeping** measures upstream.

General Design Criteria

- A shallow trap/forebay with large surface area performs better than a deep pond with the same volume. Design to minimize short-circuiting by including energy dissipaters on inlets, shape the pond with at least a 3:1 length to width ratio, and locate the inlets as far away from the outlet as possible. It should be noted that a **length to width ratio** of up to 7:1 is preferred.
- Do not locate on or near **steep slopes**.
- Embankment **freeboard** of at least 2 feet (0.61 m).
- **Side slopes** of at least 4:1 (H:V) (unless vertical retaining walls are used) for dedicated access to the basin bottom for maintenance vehicles.
- **Skimmers** – Facilities that have a potential source of oil and grease contamination should include a skimmer, or absorbent to prevent discharged from the facility and assist in the performance monitoring program.
- **Safety** must be a foremost consideration. This usually takes place in the grading, fencing, landscaping, pipe cover, grating and signage. The most important design feature affecting safety during operation is grading. The contours of the pond should be designed to eliminate "drop-offs". In some cases, there is not sufficient room for grading of this type and the trap may require a perimeter fence.
- A **monitoring** station should be developed on the most downstream accessible point of the outlet structure (usually on the "dry" side of an embankment or at the outlet culvert). See Monitoring discussion below.

Volume Sizing

Water quality objectives direct that the **trap volume functioning alone** is selected to capture the first one-inch of runoff volume over the tributary area plus one-third volume for sediment storage. Example, if pond serves 1-acre then the volume should be 1-acre.inch or 3,630 ft^3 or 134yd^3 plus one third for sediment storage for a TOTAL volume of approximately **4,840 ft^3** or **180 yd^3**. If the facility is working as a forebay then should be about 10 to 25% of the total volume determined for the pond**.**

Outlet Structure Design

The outlet structure of the trap/forebay is important for dewatering purposes. Proper hydraulic design of the outlet is critical to achieving good performance. While more expensive and the same orifice (culvert) or v-notch weir outlet structures design process used in detention ponds can be used. However, the generally much more shallow and smaller forebay/trap can use the following for an outlet structure.

- a lateral sill with rooted wetland vegetation (forebay only)
- A triangular shaped filter dike or check dam (trap or forebay)

- rock-filled gabions or retaining wall (trap or forebay)
- or a horizontal rock filter placed laterally across the exit/ entrance to pond (trap or forebay under three (3)- feet deep)
- A crushed stone outlet section of the embankment at the low point of the trap. This provides a non-erosive spillway outlet for flood flows and the bottom section provides a means of dewatering the trap between rainfall events.

Because the forebay/trap is much smaller than a pond it is assumed that the outlet structure is also designed to pass larger flood control storms. However, tit should be noted that this also means that it be sturdy enough to withstand higher flow stress and erosive velocities. In most cases, this requires that any **stone based outlet structure** by backed by oversized rip rap or other structurally firm base.

Operation and Maintenance

- **Check outlet** regularly for clogging and remove any debris.
- Check banks and bottom of surface basin for **erosion** and correct as necessary.
- **Remove sediment** when accumulation reaches 6-inches below lowest point of outlet structure, is 1/3 full, or if resuspension is observed or probable.
- Any vegetation needs to be **mowed, trimmed or harvested** as appropriate, grassy areas frequently mowed and repairs made to signage and any fencing.
- Maintenance crews must have **access** to the site for proper maintenance. Traps/forebays that are not designed with access for maintenance crews often become more of a nuisance than a beneficial part of a stormwater management program.

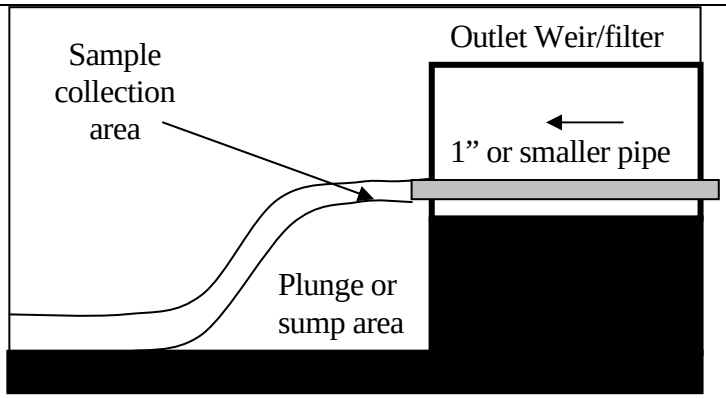
Sediment Removal

- A primary function of stormwater quality traps/forebays is to collect sediments. The sediment accumulation rate is dependant on a number of factors including contributing area, grading and bulk materials storage activities upstream, etc. The sediment contents should be identified before it is removed and disposed off-site.

- Some sediment may contain contaminants of which requires special disposal procedures. If there is any uncertainty about what the sediment contains or it is known to contain contaminants, then KDOW should be consulted and their disposal recommendations followed. Some sediment collected may be innocuous (free of pollutants other than “clean” soil) and can be used as fill material, cover or land spreading on-site. It is important that this material not be placed in a way that will promote or allow resuspension in storm runoff. The sediment should not be placed within the high water level area of the pond, other BMP, creek, waterway, buffer, runoff conveyance device, or other infrastructure.

Monitoring

The outlet structure should be designed/equipped with a sample collection sump/pit or plunge pool. The objective is to have location where water can be collected as it flows over a weir, sharp edge or other means so that the entire contents can be collected without adding or subtracting materials being transported on the structure bottom.



See "*Stormwarter Best Management Practices (BMP) ToolKit*" for list of reference and guidance materials that may be useful in preparing and implementing effective BMPs.

Inspection and Maintenance Checklist – Sediment Trap / Forebay

Completed Or Satisfactory

- ❑ Inspect at least quarterly (preferably before quarterly monitoring requirements) and after each extreme storm event.
- ❑ Are the skimmer devices, and inlet and outlet structures free of trash and debris?
- ❑ Is(are) absorbent material(s) still located in the normal flow of discharge water?
- ❑ Does the oil skimmer or absorbent material need to be replaced?
- ❑ Remove sediments if 1/3 full or they are within 6-inches of an orifice plate or weir.
- ❑ Are there any areas of side slope erosion, sluffing or other stability problems?
- ❑ Is there any erosion at the outlet structure? If yes, stabilization is require to protect embankment.
- ❑ Are there weeds, cattails or other vegetation growing in the bottom?
- ❑ Are there any sheens, stains or signs of corrosion on the downstream / "dry side" of the pond outlet structure? If yes, contact Facility Superintendent and Division of Environmental Analysis.
- ❑ Is the monitoring sump free and clear of trash and debris?

Best Management Practices (BMP)

Swale (Grassed Channel)

GC

A swale is a wide flat-bottomed grassed channel. Swales are an alternative that works well for linear locations, but are somewhat less effective than ponds and sediment traps. They are most effective when used in conjunction with a filter strip.

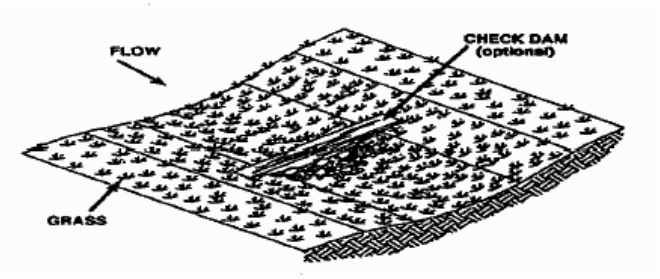


Figure: Swale Schematic

Source: Volume 4 Best Management Practices: Stormwater Management Manual, Metropolitan Government of Nashville and Davidson County March 2000.

Low	Medium	High
○	◎	●

Material or Pollutant Removal Efficiency	
Sediment	●
Chlorides	◎
Oil & Grease	●
O & M Frequency	◎
Inspection Frequency	○
Capital Cost	○
Maintenance Costs	○

General Description	
Applicability and Use	• Works well in conjunction with Filter Strips and Buffers (FSB). • Miniswales may be used in landscaping plans • Limited to treating a few acres.
General Sizing Criteria	• Maximum bottom width of 8 ft unless level spreaders are installed frequently (every 50 feet). • Minimum length of a swale is 100-feet unless level spreaders are used at least every 50 feet • Maximum length w/o level spreader is 80 feet. • Longitudinal slope 5% or less.
Other Considerations	• Flow spreader and energy dissipater at the entrance • Long with well placed level spreaders swales can function nearly equivalent to detention ponds

Applicability - Effectiveness - Selection Criteria - Limitations

- Swales are likely to provide a significant reduction in sediment, oil and grease and partial reductions floatable materials.
- Landscaped swales can be used around, but are not limited to, parking lots, facility structures, work areas, and roadways.
- The swales will provide pretreatment and if available, can provide conveyance to larger secondary or primary stormwater management systems.
- Roadside swales can be provided to “treat” flow from site roads (paved, gravel, or exposed areas) before discharge off-site. Using swales as pretreatment can be used to reduce the size / increase the effectiveness of other downstream BMPs.
- Swale become ineffective when undersized or when runoff is allowed to concentrate or erode.
- Cannot be placed on steep slopes.
- Proper maintenance required to maintain health and density of vegetation.

Best Management Practices (BMP)

Swale (Grassed Channel)

GC

General Design Criteria

- **Level spreaders** are used to periodically cut across the channel bottom ensuring that flow is flat and level. They may be constructed of wood, metal or concrete.
- The bottom must be wider to maintain low flow velocities and to keep the depth of the water below the height of the vegetation up to a particular design event.
- Landscaped swales would typically be 0.5 to 1.0 foot (0.15 to 0.3 m) deep and should have side slopes no steeper than 4:1 (H:V), with side slopes of 6:1 (H:V) preferred.
- Swales should not receive low from a curbed areas without the use of a filter strip and longitudinal level spreaders.
- Cross-section of the swale must be level and that its longitudinal slope is even. A slope will result in concentrated flow and channelization.
- **Technical Design Requirements**
  - The design process should determine the width of a water quality swale using Manning's Equation with at least a 1-inch storm event. It should also be capable of carrying larger flood control events. An n value of 0.20 to 0.24 is recommended
  - Residence time for "maximized" captured runoff should be at least 5 minutes. Use a runoff coefficient of C=1.0 assuming complete runoff and no infiltration.
  - The maximum velocity should be no more than 0.9 ft/sec.
  - Maximum bottom width of 8-ft unless level spreaders are installed frequently (every 50 feet).
  - Average depth of flow should be no more than 1.0 in. and maximum depth should be no more than 3 in. (75 mm) for grass or approximately 2 in. below the height of the shortest plant species, if wetland plants are used.
  - Minimum length of a swale is 100-feet unless level spreaders are used at least every 50 feet or as necessary to prevent flow channelizations.
  - Maximum length without a level spreader is 80 feet.
  - The longitudinal slope must not exceed 5%.
  - Use a flow spreader and energy dissipator at the entrance of a swale.

See "*Stormwarter Best Management Practices (BMP) ToolKit*" for list of reference and guidance materials that may be useful in preparing and implementing effective BMPs.

Inspection and Maintenance Checklist – Swales (Grassed Channels)

- ❑ Inspect at least quarterly (preferably before quarterly monitoring requirements) and after each extreme storm event for signs of erosion, vegetation loss, and channelization of the flow.
- ❑ Is the grass mowed when it reaches a height of 8 inches and mowed no shorter than 3 inches?
- ❑ Are all level spreaders even (level) and free of debris?
- ❑ Remove sediment by hand with a flat-bottomed shovel during dry periods. (Remove only the amount of sediment necessary, leaving as much of the vegetation in place as possible. Re-seed or plug any damaged turf or vegetation.)
- ❑ Is(are) absorbent material(s) still located in the normal flow on the downstream side of level spreaders?
- ❑ Does the oil skimmer or absorbent material need to be replaced?
- ❑ Are there any sheens or stains? If yes, contact Facility Superintendent and Division of Environmental Analysis.
- ❑ Is the monitoring sump free and clear of trash and debris?

Best Management Practices (BMP)

Filter Strip and Buffer

FSB

A filter strip or buffer is a **grassed area** that treats sheet flow and is placed parallel to the contributing surface such as parking lot or roadway. They "treats" stormwater runoff by utilizing vegetation to slow the velocity of runoff allowing the removal of sediment and other pollutants through filtering and settling.

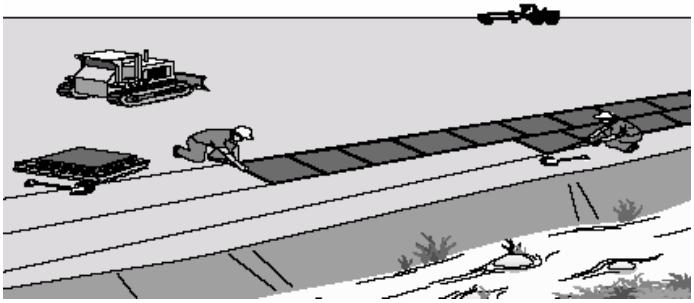


Figure: Filter Strip and Buffer

Source: Volume 4 Best Management Practices: Stormwater Management Manual, Metropolitan Government of Nashville and Davidson County March 2000.

Low	Medium	High
○	◎	●

Material or Pollutant Removal Efficiency	
Sediment	●
Chlorides	○
Oil & Grease	◎
O & M Frequency	○
Inspection Frequency	○
Capital Cost	○
Maintenance Costs	○

General Description	
Applicability and Use	• Along roadways and parking lots • Prior to discharge to swales • Around bulk materials storage areas • Does not receive concentrated (piped or channel) flow
General Sizing Criteria	• Roadways and parking lots: 10- feet prefer at least 25-feet. • Around bulk material storage: 30 to 50-feet • Less than 2% slope
Other Comments	• Grass should be maintained between 3 and 8-inches. • Need to be mowed and maintained with good vegetation growth • Should not receive significant vehicle traffic

See "*Stormwarter Best Management Practices (BMP) ToolKit*" for list of reference and guidance materials that may be useful in preparing and implementing effective filter strips and buffers.

Inspection and Maintenance Checklist – Filter Strips and Buffers

- ❑ Inspect at least quarterly (preferably before quarterly monitoring requirements) and after each extreme storm event for signs of erosion, vegetation loss, and channelization of the flow.
- ❑ Maintenance shall consist of mowing, weeding, and ensuring sufficient irrigation to sustain vegetation.
- ❑ Repair eroded or damaged areas as needed to sustain vegetation.
- ❑ Is the grass mowed when it reaches a height of 8 inches and mowed no shorter than 3 inches?
- ❑ Are there any sheens or stains? If yes, contact Facility Superintendent and Division of Environmental Analysis.
- ❑ Is the monitoring sump free and clear of trash and debris?

Best Management Practices (BMP)

Good Housekeeping / Containment

GH

Good housekeeping / containment are measures implemented to prevent or reduce the amount of pollutants discharged from the site as a result of regular facility operations. Good housekeeping consists of measures to educate employees on ways to keep potential stormwater pollutants including sediment, oil and grease and chlorides from getting into the drainage system.

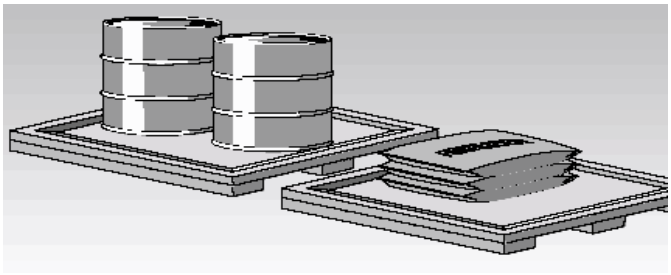


Figure: Materials Containment and Storage

Source: Volume 4 Best Management Practices: Stormwater Management Manual. Metropolitan Government of Nashville and Davidson County March 2000.

Low	Medium	High
○	◎	●

Material or Pollutant Prevention Efficiency	
Sediment	●
Chlorides	●
Oil & Grease	●
O & M Frequency	●
Inspection Frequency	●
Capital Cost	○
Maintenance Costs	◎

Good housekeeping Activities	
Materials Handling, Transfer, Loading, Unloading and Washout	• Material Delivery Practices • Material Storage Areas & Practices • Liquid calcium truck clean out • Used raod salt truck cleanout
Vehicle Washing and Rinsing	• Wash vehicles under cover • Rinsing permitted outside – draining to BMPs
Vehicle Tracking	• Stabilize vehicle access way • Tire mud/sediment stays on-site
Grading and Soils Management	• Limit disturbed areas • BMPs to reduce sediment Discharges
Employee Education Requirements	• General information - everybody • Focused follow-up - selected staff • Review SPCC Plan • Review GWPP Plan

Approach

Good housekeeping practices will be performed as part of the effort to ensure that permit discharge effluent limitations are not being exceeded, to the maximum extent practicable. These non-structural BMPs will focus on following procedures for:

- **Containing/locating potential pollutant sources** (especially bulk storage materials) to areas that are served by structural BMPs
- Appropriately responding to spills and other accidental on-site placement (that does not conform to establish procedures) of BMP Pollutants
- Appropriately responding to spills and other accidental off-site release of BMP Pollutants that would be directed by Spill Prevention Control and Countermeasures (SPCC) or Groundwater Pollution Protection (GWPP) plans.

The following Good Housekeeping activities will be performed / employees trained in (by type of BMP).

1. Materials Handling, Transfer, Loading, Unloading and Washout
2. Vehicle Washing and Rinsing
3. Vehicle Tracking
4. Grading and Soils Management

Materials Handling, Transfer, Loading, Unloading and Washout (including Liquid Calcium Spreader Truck)

Prevent or reduce the discharge of pollutants to stormwater from outdoor loading/ unloading and storage of materials by enclosing or covering materials, installing secondary containment, and preventing stormwater run-on.

The loading/unloading of materials usually takes place outside. Loading or unloading of materials occurs in two ways: materials in containers or direct liquid transfer.

- Materials spilled,
- leaked or lost during loading/unloading

The most important factors in preventing these constituents from entering stormwater is:

- Limit exposure of material to rainfall.
- Prevent stormwater run-on.
- Check equipment regularly for leaks.
- Contain spills during transfer operations.

Loading or unloading of liquids should occur under cover/barn so that any spills can be more easily cleaned up.

Material Delivery Practices

- Park tank trucks or delivery vehicles so that spills or leaks can be contained with **drip pans** under hoses or other secondary containment.
- **Cover** the loading/unloading docks to reduce exposure of materials to rain.
- Design loading/unloading area to prevent **stormwater run-on**:
  - With diversion grading, berming or swales, and
  - Position roof downspouts to direct stormwater away from loading/unloading areas.
- Look for **dust or fumes** during loading or unloading operations.
- When loading and unloading tank trucks to above and below ground storage tanks, the following procedures should be used:
  - The area where the transfer takes place should be paved.
  - Transfer area should be designed to prevent run-on of stormwater from adjacent areas. Sloping the pad and using a curb, like a speed bump, around the uphill side of the transfer area should reduce run-on.
  - Transfer area should be designed to prevent runoff of spilled liquids from the area. Sloping the area to a drain should prevent runoff. The drain should be connected to a **dead-end sump** or to the sanitary sewer if given approval by the local sewer authority. A positive control valve should be installed on the drain.

Material Storage Areas and Practices (including bulk material piles)

- Designate storage areas at the project site with **conspicuous signs** and employee training.
- **Store materials indoors** within existing structures or sheds when available.
- Have proper storage instructions posted at all times in an open and conspicuous location.
- Locate the storage area **away from the storm drain system** and watercourses.
- Prevent spills or leakage of liquid materials from contaminating soil or soaking into the ground by placing storage areas on **impervious surfaces**.
- Provide **curbs or dikes** around the perimeter of material storage areas to prevent run-on from adjacent areas as well as runoff of stormwater from the material storage areas.
- Keep ample supply of appropriate **spill clean up material** near storage areas.

Deicing Equipment (Salt and Liquid Calcium Spreader Trucks)

- Liquid calcium spreader trucks with excess materials should only empty their contents back into the liquid calcium holding tank. Excess materials should not be pumped into ditches, waterways or any other locations that may result in the eventual release of the material off-site.
- Salt spreader trucks with excess material should only empty their contents back into the salt storage bin/shed/dome/pile. Excess materials should not be placed into ditches, waterways or any other locations that may result in the eventual release of the material off-site.
- Strict procedures described above for materials transfer should also be followed.

Vehicle Cleaning (Washing and Rinsing)

Prevent or reduce the discharge of pollutants to stormwater from vehicle and equipment cleaning by washing in designated, contained areas only and eliminating discharges to the storm drain by infiltrating or recycling the wash water.

- For on-site washing (with soap), use designated, covered areas equipped with sanitary sewer facilities to prevent wash water entering stormwater infrastructure, creeks, rivers, and other water bodies
- If on-site covered areas are unavailable, rinse (no soap used) areas must be situated so that water flows are collected into a BMPs for subsequent "treatment". The **outside rinsing area** shall have the following characteristics:
  - Located away from storm drain inlets, drainage facilities, or watercourses;
  - Paved with concrete or asphalt, or stabilized with an aggregate base;
  - Configured wash area with a sump to allow collection and disposal of wash water;
  - Discharge wash water (with soap) to a sanitary or process waste sewer (where permitted), or to a dead end sump**. Wash waters shall not be discharged to storm drains or watercourses.**
- DO NOT use solvents to clean vehicles/equipment on site.
- The local sewer / Publicly Owned Treatment Works (POTW) authority may require pretreatment and monitoring of wash water discharges to the sanitary sewer and should be consulted first.

Vehicle Tracking

Reducing or eliminating the tracking of sediment off-site may be achieved by using a stabilized access way for vehicles. This is not expected at all facility entrances/exits, but in areas where trucks may be traveling over exposed soil, such as an area used for bulk soil storage or on-site grading.

- Reducing trackout of sediments and other pollutants onto paved roads helps prevent deposition of sediments into local storm drains and production of airborne dust. A stabilized access way is a **pad of stone aggregate**, that may be enhanced with an **underlain filter cloth**, Limiting Vehicle Tracking significantly reduces the amount of sediment (dust, mud) tracked off-site.

- A stabilized facility access way should be used at **unpaved areas** where sediment tracking occurs from the facility onto paved or public roads.

- The access way must be properly graded to prevent runoff from leaving the area. Sediment barriers, such as swales with check dams, must be provided to prevent sediments from entering into the stormwater sewer system, ditch, or waterway.
- Stones should be 2-3 inch (5.1-7.6 cm) crushed, washed, and well graded rock to at least a 6-inch (15.2) depth.
- Length should be 100-foot (30.5 m) minimum, and 20-foot (6.1 m) minimum width.
- If necessary, install tire-washing station (water spicket and hose) that staff can use to remove mud and dirt from vehicle tires and undercarriages to prevent these materials from being deposited onto off site.
    - If a wash rack is necessary, it shall be designed for anticipated traffic loads and drain to a detention pond or swale.
    - If a swale is required, then it shall be of sufficient grade, width, and depth to carry the wash runoff.
    - The swale shall convey the runoff from the wash area to a sediment-trapping device.
- Require that all employees, drivers, subcontractors, and others that leave the area with mud-caked tires and/or undercarriages use the stabilized access way.

Grading and Soils Management

Work on-site that includes extensive grading and soil exposure shall be conducted in areas serviced by appropriate BMPs. In areas with existing BMPs, flows from the exposed work areas shall be diverted to the BMPs and away from off site waterways to reduce the amount of sediment discharged by the site. If BMPs are unavailable, temporary BMPs shall be established to minimize the amount of sediment release as a result of the facility activities.

- To the maximum extent practicable, work conducted on-site that results in the exposure of soils shall be conducted in areas serviced by existing BMPs
- If existing BMPs are unavailable, appropriate BMPs shall be installed to control the amount of erosion from the exposed soils and the sediment leaving the work area. Appropriate measures may include, but are not limited to:
    - Silt fence
    - Sediment traps
    - Swale (grassed channel)
- For all on-site work, the extent of site disturbance shall be limited to the maximum extent practicable. Methods for limiting site disturbance may include, but are not limited to:
    - Preservation of existing vegetation
    - Protect exposed topsoil with stabilization techniques such as mulching, nets & blankets, plastic sheeting, and/or temporary seeding.

See "*Stormwarter Best Management Practices (BMP) ToolKit*" for list of reference and guidance materials that may be useful in preparing and implementing effective BMPs.

Inspection and Maintenance Checklist – Good Housekeeping

Completed Or Satisfactory

- ❑ Have all employees and new hires been trained in the site's application of Good Housekeeping practices?
- ❑ Are there dirt on roadways or sediment accumulated in drainage ditches that may indicate that vehicles tracking are tracking mud and sediment off-site or to areas onsite not served by a BMP?
- ❑ Are there black stains on roadways, parking lots or in drainage ditches that may indicate that there is oil and grease being transported to an area not served by a BMP?
- ❑ Are there white stains on roadways, parking lots or in drainage ditches that may indicate that there is salt, brine or liquid calcium is being transported to an area not served by a BMP?
- ❑ Are the Spill Prevention Control and Countermeasures (SPCC) procedures being applied by all staff as necessary?
  - ❑ Have staff been trained in SPCC?
  - ❑ Has annual SPCC refresher training been performed?
- ❑ Are the Groundwater Pollution Prevention (GWPP) plans procedures being applied by all staff as necessary?
  - ❑ Have staff been trained in GWPP?
  - ❑ Has annual GWPP refresher training been performed?
- ❑ Are materials loading and unloading areas covered or secondary containment provided?
  - ❑ Are all containment valves, flaps, etc. closed?
  - ❑ Does the containment pit have clean stormwater that can be released?
  - ❑ Are there any sheens, stains or signs of corrosion? If yes, contact Facility Superintendent and Division of Environmental Analyses.
- ❑ Are there indications that the excess material from the liquid calcium spreader trucks has been emptied anywhere other than the liquid calcium storage tank?
- ❑ Are spill clean up kits and other materials complete and fully stocked?
- ❑ Check loading and unloading equipment regularly for leaks, including valves, pumps, flanges, and connections.

Inspection and Maintenance Checklist – Good Housekeeping (cont.)

Completed Or Satisfactory

- ❑ Inspect bulk materials storage areas before and after rainfall events, and at least weekly during other times.
- ❑ When bulk materials (such as sand, gravel, soil, asphalt till, etc.) are brought on-site are they deposited in designated areas that are served by a stormwater BMP?
- ❑ Are all bulk material storage piles contained in their bins or areas protected with berm, dikes, or sediment control BMP?
- ❑ Is there any soil grading or storage of sand, gravel or soil in areas not served y a sediment BMP?
- ❑ Are there any materials (other than bulk storage piles) stored outside that should not?
- ❑ Does a vehicle tracking access way require top dressing with additional stone? (add gravel material when soil subgrade becomes visible or top is very muddy)
- ❑ Are there any signs or have there been any vehicles washed outside designed areas (that do not drain to a sanitary sewer)?

Best Management Practices (BMP)

Detention Ponds

DT

A detention pond is an excavated area where runoff is collected and pollutants can settle or be absorbed. A detention pond releases to surface drainage while a retention pond relies on groundwater infiltration. Ponds are likely to significantly reduce a wide range of soluble and particulate pollutants.

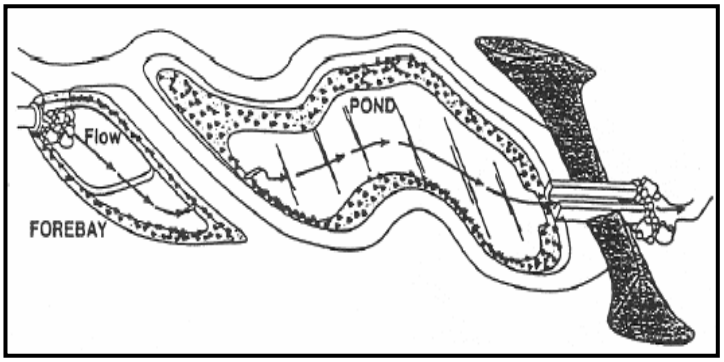


Figure: Pond schematic

Source: Volume 4 Best Management Practices: Stormwater Management Manual, Metropolitan Government of Nashville and Davidson County March 2000.

Low	Medium	High
○	◎	●

Material or Pollutant Removal Efficiency	
Sediment	●
Chlorides	◎
Oil & Grease	◎
O & M Frequency	◎
Inspection Frequency	◎
Capital Cost	◎
Maintenance Costs	◎

General Description	
General Sizing	• 180 cu yd / acre of drainage area • Minimum volume 900 cu. yd • 3 – 8-feet deep • 3-7:1 length to width • Calculations needed for outlet and overflow bypass needed
Land Requirements	• disturbed area greater than 5 acres • 3 to 5% of contributing drainage area • size can be reduced if used with other BMPs in series
Areas Used	• Cold mix asphalt facilities • Fleet maintenance • Vehicle Wash facilities • Bulk materials storage piles / bins
Other Comments	• Should be off-line • Extra fencing may be needed for safety

Applicability - Selection - Criteria Limitations

- Dry ponds require more **frequent maintenance** (sediment removal) than wet ponds.
- Inability to vegetate banks and bottom may result in erosion and **pollutant resuspension**.
- Require a **large surface area** (0.5 to 3% of the contributing drainage area) to provide sufficient pond volume for settling of sediment.
- If **upstream erosion** is not properly controlled, dry detention ponds can be maintenance intensive with respect to sediment removal, nuisance odors, and insects (i.e., mosquitoes), etc.
- Dry detention ponds require a differential elevation between inlets and outlets and thus, may be **limited by terrain**.

General Design Criteria

- These systems should be designed by a **licensed professional** civil engineer.
- A shallow pond with large surface area performs better than a deep pond with the same volume. Design to minimize short-circuiting by including energy dissipaters on inlets, shape the pond with at least a 3:1 length to width ratio, and locate the inlets as far away from the outlet as possible. It should

be noted that a **length to width ratio** of up to 7:1 is preferred. The inlet and outlet can be placed at the same end if baffling is installed to direct the water to the opposite end before returning to the outlet. If topography requires the pond to have an irregular shape, the pond area and volume should be increased to compensate for the dead spaces.

- Place **energy dissipaters** at the entrance to minimize bottom erosion and resuspension.
- Do not locate on or near **steep slopes**.
- Embankment **freeboard** of at least 2 feet (0.61 m).
- **Side slopes** of at least 4:1 (H:V) (unless vertical retaining walls are used) for dedicated access to the basin bottom for maintenance vehicles.
- With a riser structure, include an anti-vortex device and a debris barrier.
- Include a **forebay** to facilitate/limit/focus maintenance (shift 10% the pond volume to a forebay)
- With earthen walls, place an **antiseep collar** (or collars) around the outlet pipe.
- Provide overflow **bypass** or pass through capabilities for 100-year storm such as an emergency overflow weir. The outlet (if a riser pipe) should incorporate an **antivortex device** if the facility is large (large storms must safely pass through or around the pond).
- **Safety** must be a foremost consideration. The most important design feature affecting safety during a pond's operation is grading. The contours of the pond should be designed to eliminate "drop-offs". In some cases, there is not sufficient room for grading of this type and the pond may require a perimeter fence.
- A **monitoring** station should be developed on the most downstream accessible point of the outlet structure (usually on the "dry" side of an embankment or at the outlet culvert). See Monitoring discussion below.

Pond Volume Sizing

Water quality objectives direct that the **pond volume** is selected to capture the first one-inch of runoff volume over the tributary area plus one-third volume for sediment storage. This volume is to be drawn down / released over a **72-hour** period. Example, if pond serves 1-acre then the volume should be 1-acre.inch or 3,630 ft^3 or 134yd^3 plus one third for sediment storage for a TOTAL volume of approximately **4,840 ft^3** or **180 yd^3**. Given that ponds will only be used for areas of 5-acres or more, the minimum pond volume is **900 yd^3.**

About 10 to 25% of the volume determined in the above procedure should be devoted to a **forebay.** The forebay can be distinguished from the remainder of the pond by one of several means:

- a lateral sill with rooted wetland vegetation
- two ponds in series, differential pool depth
- rock-filled gabions or retaining wall
- or a horizontal rock filter placed laterally across the pond.

Outlet Structure Design

The outlet structure of the pond is important for dewatering purposes. Proper hydraulic design of the outlet is critical to achieving good performance of the detention basin. The two most common outlet problems that occur are:

1) the capacity of the outlet is too great resulting in partial filling of the basin and less than designed for draw down time
2) the outlet clogs because it is not adequately protected against trash and debris.

To avoid these problems, two alternative outlet types are recommended for use:

- V-notch weir (preferred as it is less likely to clog)

- Single orifice (without perforated riser as the ponds will be small/single-event– not for flood control)

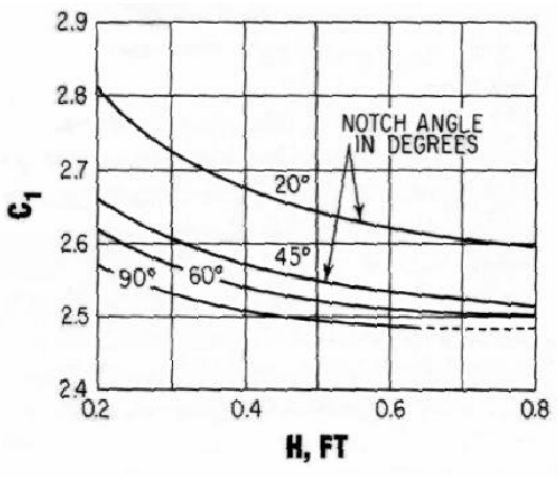
These approaches are presented below. However, it should be noted that if the pond is being retrofit from a flood control pond then the outlet structure(s) should be designed and reviewed by a licensed professional civil engineer with consideration of local flood control regulations and on-site water quality objectives.

Flow Control Using a "V" Notch Weir

The outlet control "V" notch weir should be sized using the following formula (Merritt et.al., 1996).

$Q = C_1 H^{5/2} \tan(\theta/2)$

Where:
θ = notch angle
H = head or depth of water over weir, (ft)
C_1 = discharge coefficient (see side figure)



The notch angle should be 20 degrees or more. If calculations show that a notch angle of less than 20 degrees is appropriate, then the outlet should be designed as a uniform width notch. This will generally necessitate some sort of floatables control such as a skimmer on the outlet or trash rack on the inlet.

Flow Control Using a Single Orifice

The outlet control orifice should be sized using the following equation (GKY, 1989).

$$a = \frac{2A(H-H_o)^{0.5}}{3600CT(2g)^{0.5}} = \frac{(7x10^{-5})A(H-H_o)^{0.5}}{CT}$$

where:
a = area of orifice (ft^2)
A = average surface area of the pond (ft^2)
c = orifice coefficient
T = drawdown time of full pond (hrs.)
g = gravity (32.2 ft/sec^2)
H = elevation when the pond is full (ft)
H_o = final elevation when pond is empty (ft)

With a drawdown time of 40 hours the equation becomes:

$$a = \frac{(1.75x10^{-6})A(H-H_o)^{0.5}}{C}$$

Care must be taken in the selection of "c": 0.60 is most often recommended and used. However, based on actual tests GKY (1989) recommends the following:

c = 0.66 for thin materials, that is, the thickness is equal to or less than orifice diameter
c = 0.80 when the material is thicker than the orifice diameter

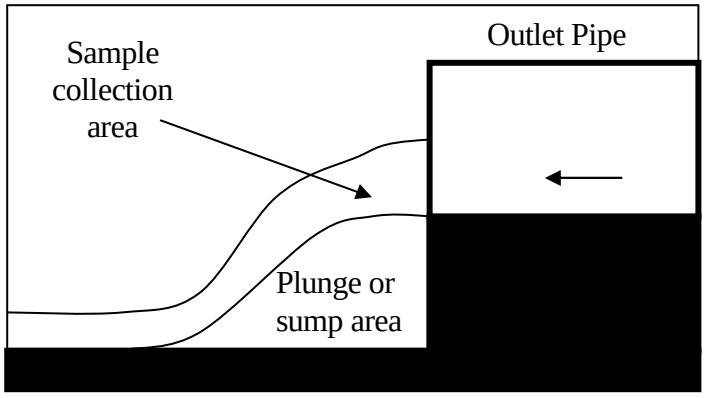
Drilling the orifice into an outlet structure that is made of concrete can result in considerable impact on the coefficient, as does the beveling of the edge. The experiments by GKY (1989) were with sharp edged orifices.

Emergency Overflow Structure Design
A stable emergency spillway must be installed to safely convey stormwater runoff for events larger than the first 1-inch.

Monitoring

The overall objective implementing BMPs at the transportation cabinet facilities is to support the successful implementation of a stormwater permit containing discharge effluent limitations. In order to determine of the facility is complying with the discharge effluent limitations water samples are taken from the site outfalls for analysis. In many cases, it is expected that detention ponds will be located at or near the site outfall(s), thereby being the point of sample collection. Given the sampling protocols to be used, the outlet structure must be designed with this consideration.

The outlet structure should be designed/equipped with a sample collection sump/pit or plunge pool. The objective is to have location where water can be collected as it flows over a weir, sharp edge or other means so that the entire contents can be collected without adding or subtracting materials being transported on the structure bottom.



See "*Stormwarter Best Management Practices (BMP) ToolKit*" for list of reference and guidance materials that may be useful in preparing and implementing effective BMPs.

Inspection and Maintenance Checklist – Detention Ponds

Completed Or Satisfactory	
❑	Inspect at least quarterly (preferably before quarterly monitoring requirements) and after each extreme storm event.
❑	Are the skimmer devices, and inlet and outlet structures free of trash and debris?
❑	Is(are) absorbent material(s) still located in the normal flow of discharge water?
❑	Does the oil skimmer or absorbent material need to be replaced?
❑	The facility should be cleaned of accumulated debris and trash.
❑	The banks of surface ponds should be checked and areas of erosion repaired.
❑	Remove sediments if they are within 18-inches (45.7 cm) of an orifice plate or weir.
❑	Do maintenance crews have access to the pond for proper maintenance? Are there any obstructions or materials that would prevent mowing or clearing the outlet structure?
❑	Does the sediment contain contaminants which requires special disposal procedures? If there is any uncertainty about what the sediment contains contact the Division of Environmental Analysis.
❑	Are there any areas of side slope erosion, sluffing or other stability problems?
❑	Is there any erosion at the outlet structure? If yes, stabilization is require to protect embankment.
❑	Is there any sediment accumulated inside the outlet pipe? If yes, pond must be clear of excess sediment.
❑	Is the emergency overflow bypass weir free and clear of debris?
❑	Is signage and fencing in good condition and properly closed?
❑	Does the grass need to be mowed (is it between 3 and 8-inches in the low flow areas)?
❑	Are there weeds, cattails or other vegetation growing in the bottom of pond?
❑	Are there any sheens, stains or signs of corrosion on the downstream / “dry side” of the pond outlet structure? If yes, contact Facility Superintendent and Division of Environmental Analysis.
❑	Is the monitoring sump free and clear of trash and debris?

Appendix 3. Facility Guide for Stormwater Sampling and Reporting

Kentucky Transportation Cabinet

Facility

Guidance Manual for

K.P.D.E.S. Sampling, Monitoring and Reporting

for

Storm Water Run-off

For discharges covered by the general KPDES Permit:

KYG500000

Prepared by:

The Division of Environmental Analysis
Kentucky Transportation Cabinet

March 2005

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Facility KPDES Sampling Guide

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Storm Water Sampling Report/Chain-of-Custody Record
Weather Log
pH Meter calibration and measurement log

I. Introduction

The Transportation Cabinet is responsible for building, operating and maintaining most of Kentucky's public roads and highways. To carry out this task, KYTC operates a system of maintenance, traffic and equipment facilities located throughout the state. Special environmental permits have been issued to these facilities that provide that water leaving the property is to be in compliance with Kentucky's clean water laws. These permits are known as the Kentucky Pollution Discharge Elimination System (KPDES) permits. They establish conditions which regulate nearly all storm water run-off from our facilities.

This guidance document addresses the tasks to be performed by personnel on site who will keep weather logs, collect samples and measure pH. This assignment is considered to be the most important step in the sequence of compliance actions required to be performed. If the recording of rain data and sampling is not accomplished correctly, nothing can be done to recreate the information needed to demonstrate a facility's permit compliance.

The personnel that are to make the on site observations and collect samples must:

- Maintain records of rainfall and sampling activities.
- Collect samples of the water for laboratory testing.
- Measure pH of the sample of each discharge.
- Make **and record** observations about conditions on the lot that may affect the quality of the discharges.
- Deliver samples to the laboratory in accordance with environmental coordinator instructions.
- Forward information to District Office Environmental Coordinator.
- Keep supplies on hand to support sampling activities.

II. Preparation of the Sampling Points

The following steps are to be taken before the storm-sampling event to be properly prepared to collect the samples and data needed.

1. The District Office Environmental Coordinators should assist with establishing the sampling point(s).

2. The sampling location must be prepared to accommodate the sampling containers and be where the flow is somewhat turbulent and well mixed. Modifications to the site may be needed to prepare it so the sample containers can be properly filled. This has to be done **before** run-off can be sampled. The guidance for collecting a grab sample is to place the container in the flowing water and let it fill with water from just below the surface in the flow channel. Any solids disturbed by the sampling container during sampling should not enter with the sample being collected. The actual container that will be sent

to the laboratory must be used for the sample collection, so the fill site must accommodate those containers.

3. Mark each sampling location with its ID when there are multiple discharge points to be sampled.

4. Rain gauges are to be installed at each permitted facility. Proper measurement of rainfall is important. It needs to be in a place that is convenient to the personnel making observations and representative of the rain falling at the facility. However, be sure to keep the gauge far enough away from buildings, trees, overhangs, equipment, walls and other obstructions, allow for an accurate measurement and acceptable data.

III. Equipment

You will need the following equipment or supplies to collect and document the samples and transport them to the laboratory:

1. Weather log, Storm Water Run-off sampling forms, pH meter calibration, and measurement log.

2. Baking Soda to neutralize accidental acid spills.

3. Rain Gauge. The gauge needs to read to the one-tenth inch and be capable of measuring at least five inches of rainfall. There are two types that are acceptable. These are the Rain-Wise® tipping bucket electronic gauge or the Tru-Chek® rectangular plastic gauge.

4. pH Test Kit. The accepted methods for measuring pH require the use of a pH meter.

5. Storm water sample containers, one set, in a shipping cooler, for each discharge point:

   - Large mouth, glass sample container and H_2SO_4 (sulfuric acid) preservative, color coded **yellow**—for testing oil and grease
   - One plastic container with no preservative—for testing suspended solids and chlorides

6. Provide a clean container for a sample to use to measure pH. This can be a paper cup or small (1/2 pint) canning jar with a screw on lid.

7. Refrigerator, and ice.

Note: Sample containers and coolers, items 5 above, are to be obtained from the laboratory that analyzes the collected samples. District Coordinators should arrange for their delivery.

IV. Pre Sampling

The following steps are to be taken before the storm event or floor drain discharges occur.

1. Be sure you understand and can operate the pH measuring equipment.

2. Be sure you have all of the sampling equipment, containers, and reporting forms on hand. Check the sample kits from the laboratory. Be sure containers did not leak; are not broken, and that the labels are filled out correctly.

3. Preservative acids have been placed in the sample containers.

   Special safety notes for handling the acids:

   - **If acid gets on the skin, clothing or in the eyes, flush it with plenty of clean water.**
   - **Get medical attention if needed.**
   - **Clean up any spilled acid and neutralize it with baking soda.**

V. Weather Logs

The weather log is a key part of the storm water sampling procedure. The log provides information needed about the rainfall for permit compliance. The basic information needed on the weather log for the storm water-sampling program is:

- The amount of rain that falls each workday or week-end/holiday period.
- The time the rain event started.
- The time that samples were taken.
- Notes about lot conditions and events that may affect the quality of the run off.

The observer is to do the following:

- Read the rain gauge once each day and record the amount of accumulated rain. For consistency, the gauge should be read the first thing each morning. If no rain has accumulated, verify that the gauge is empty and enter this observation in the daily weather log.

- For weekends (including extended weekends or holidays), taking the reading on the following first work day is sufficient. You do not need to record when it rained during week end or holiday periods.

- Rain gauge readings are to be taken the same time of every work day, even if it is raining.

- **Empty the rain gauge every time you take a reading.**

- When samples are actually taken for an appropriate storm event, record this in the "Remarks" column of the weather log. The time samples are taken is to be recorded on the weather log.

A rain event that meets sampling criteria may not occur during the winter months of January through March. It is permissible to use snow melt run off when it does not rain in these months. For these events, the weather log must include a record of the amount of snow accumulation. The guidance on sampling criteria during winter is that, if there is no run-off from a rain storm, a sample should be taken when a snowfall of at least one inch accumulation melts and runs off.

VI. Sampling Procedure

STORM WATER RUN-OFF SAMPLING

WHEN TO SAMPLE:

Samples may be taken any time in the reporting period that meet the criteria for sampling. The criteria for sampling are:

- A new reporting period has begun and acceptable samples have not been collected.
- There is rain that will be at least 0.10 inch.
- Samples are to be collected at the time that is most representative of the total discharge. This means, after the initial flow has started, a sample should be taken. As a rule of thumb, samples should be collected between 30 minutes and an hour after run off has started from a rain event.
- Facilities that have retention ponds may have to adjust the time when a sample is taken. The ponds can delay the outflow from the beginning of a rainstorm. Ponds should be discharging when they are sampled. The sample should be taken during peak flows from the pond.

IF THE CONDITIONS FOR SAMPLING ARE MET:

- Make a note of the time the rain for this storm started on your weather log.
- Get your sample containers ready for collection. Add the time and date to the sample jar labels before sampling. This is difficult to do after the labels are wet. Be sure the containers for each point have the proper discharge noted on them!

IT IS TIME TO GO OUT IN THE RAIN AND SAMPLE:

To actually collect the samples remove the lid from the glass or plastic container and dip the jar in the mid-stream just below the surface. Let water run in slowly so as not to lose any preservative acid. Exercise care to keep excess solids out of the sample. Bottom sediment that is disturbed during sample collection must not mix with the sample or enter the sample container. **Note: do not use any kind of dipper or sampling container other than that provided by the laboratory and do not transfer water from one container to another.** Repeat the procedure for each container. After the containers are filled, screw lids on firmly. Be sure you can identify which containers were used for each sampling location. *Note that by being prepared, the amount of time in the weather is limited to merely collecting the samples for each discharge and returning to an inside work area.*

***AFTER SAMPLES HAVE BEEN COLLECTED**:*

Once you have completed the outside work, there are a few things to do to prepare the sample for the laboratory and document the sampling:

- Be sure the labels have been completed with the information about sample collection and the **date and time** samples were taken is on the individual container.

- Measure and record the pH on the storm water field sampling form. Follow the procedures for measuring pH found in a separate section of this guide.

- Fill out a Storm Water Run-off Sampling report form (See appendix) . **Note your general observations about the conditions of the lot where water comes from for each sampling point. These observations are to include notes about various factors such as salt that is not covered, areas of soil recently disturbed, bare soil areas, oils, etc. that can be contributing to contamination of the run-off.**

- Place the samples on ice or in a refrigerator. The coolers and samples must be pre cooled before shipping. Over night in a refrigerator or with ice in the cooler is needed for this.

- The ice must be renewed before shipping. Be sure a fresh supply of ice is in the cooler before taking it to the shipping company.

- Ice needs to be in protective bags to keep melt water off of the labels, etc.

- Contact the environmental coordinator and review the sampling event. The sampled storm must be at least 0.10 inches of rainfall to be acceptable for the permit data. The initial part of storms are to be sampled (after 30 minutes and before an hour of run off). The coordinator will authorize sending samples to the laboratory. Samples should be sent to laboratory within three days or as instructed by the environmental coordinator.

VII. Using the pH meter – Calibration and measuring pH

Directions for use of the Oakton pHTestr 2

New meters and meters that have been in storage for extended time:

- If necessary, remove plastic strips between batteries and contacts.

- To condition a new electrode, immerse electrode in electrode storage solution, buffer solution or tap water for at least 30 minutes before use. DO NOT use de-ionized water.

Calibration:

Calibration should be done every day that the Testr is used. A record of the calibration and test results is to be made on the pH meter calibration and measurement log and on the storm water field sampling form.

1. Prepare the calibration kit by filling the three containers with each of the three buffers, pH 4.01, pH 7.00 and pH 10.01.

2. Switch the unit on (ON?OFF button)
3. Dip the electrode ½" to 1" into the first buffer. The meter can be calibrated in any order of pH buffer.
4. Press CAL button to enter calibrate mode. 'CA' flashes on the display. Then, a pH value close to the buffer value will flash repeatedly.
5. After at least 30 seconds (about 30 flashes) press the HOLD/CON button to confirm calibration. The display will show 'CO' and then switch to the buffer value reading.
6. Write this reading on the pH meter calibration log.
7. Rinse the meter in distilled water.
8. Repeat steps 3 through 7 for the other buffers.
9. The calibration pH for each buffer is to be within +/- 0.1 pH of the buffer being used to calibrate the meter. If the calibration pH is more that 4.1, 7.1 or 10.1 or is less than 5.9, 6.9 or 9.9, repeat the calibration process. Meters that are stored for long periods may take several calibrations to be within these limits. If a meter does not calibrate within the +/- 0.1 pH, note this on the calibration log and on the sample form. Meters that fail need to be replaced. The District Environmental Coordinator can accomplish this.
10. The meter is ready to measure pH of the sample after it calibrates within +/- 0.1 pH of each standard.
11. Rinse the electrode in distilled water before measuring the pH of the storm run off water sample.

Calibration Troubleshooting, some common mistakes:

- Failure to press the HOLD/CON button to confirm calibration (step 5 above).
- Pressing the CAL button will resume measuring mode but <u>will not enter the calibration value</u>. Be sure to press the HOLD/CON button as part of the calibration sequence.
- Not enough sampling time – The Testr needs 30 seconds or more time in the sample to reach a stable calibration point. Wait at least 30 seconds before pressing the HOLD/CON button.
- Failure to re-hydrate the electrode – A dry electrode will give fluctuating readings, causing errors – moisten the electrode by soaking it in pH 4.01 buffer for 5 minutes.
- Poor buffer solution – replace the solution with new buffer. Buffer solutions have an expiration date.
- Accepting calibrations that are outside of allowable standards of +/- 0.1 pH. Meters need to be re-calibrated until they are in standard or it is decided they will not calibrate.

PH Testing:

12. Remove the cap from the electrode. Switch the unit on (ON/OFF button).
13. Dip the electrode ½" to 1" into the sample test solution. Stir once and let the reading stabilize.
14. Note the pH or press the HOLD/CON button to freeze the reading. After the reading is recorded, pressing the HOLD/CON button again releases the meter to make additional measurements.
15. Press the ON/OFF button to turn off the meter. The meter will automatically shut off after 8.5 minutes with no activity.

Instrument maintenance:

16. Rinse the electrode with tap water before putting it into storage.
17. Keep a small piece of paper or sponge in the electrode cap – moistened with clean water – and close cap over the electrode.
18. Periodic soaks in warm pH 4 buffer will remove contaminants.
19. Upon reactivation, the dry probe can be remoisten by letting is set in pH 4 buffer for a period of 5 minutes.

Clean up and Storage

The calibration buffers may be kept for use again in the calibration kit. Just close the containers with the caps provided.

If the sample had visible oil in it, the whole kit may need special cleaning. Contact the environmental coordinator for further guidance if the meter is contaminated or does not work.

20. The probe must be kept moist. A small piece of paper towel placed in the protective cap and dampened with clean water will accomplish this. **Be careful. The glass probe is delicate and too much towel can cause the glass to break.** Check the meter once each month and add clean water to keep it moist.

21. Replacement batteries, buffer solutions and meter probes should be obtained from the environmental coordinators.

VIII. Delivering Samples to the Laboratory

There are a few requirements to follow to ensure the integrity of the samples are maintained:

- Samples must be cooled before shipping. Put them in a refrigerator over night or put ice in the cooler over night before shipping.

- There must be a record that identifies the sequence of persons responsible for the samples from the time they were collected until they are relinquished at the laboratory. This record is called a "chain-of-custody". The sampling report form was also designed to serve as this record. **The original form must go with the samples to the laboratory.** Each KYTC person who is responsible for the transport of the samples is to sign the form in the order of their acceptance of the samples. A laboratory representative will sign the form signifying receipt of the samples.

Samples may be transported to the laboratory using a delivery service like the post office or UPS. When such a service is used, shipping papers will suffice for record of delivery to the laboratory.

IX. Records

The official records for this program may be maintained at the District Office. They must be retained for three years. The records that are to be maintained at the facility are:

- A copy of the KPDES Permit
- A copy of the BMP Plan
- The weather logs
- A copy of the sampling field sheet
- The pH Meter Calibration and measurement log.

Records maintained at the district office will include:

- Laboratory Results
- Discharge Monitoring Reports
- Correspondence

If the Division of Water asks to see official records at the facility, we have 48 hours to have them there.

In addition to the records for KPDES, records for your ground water protection plans must be maintained. These records include:

- Your Ground Water Protection Plan GWPP.
- Records that show employees have been trained about the GWPP.
- Records that show inspections conducted for compliance with the GWPP

The GWPP records are to be retained for six years. The plans are to be re-certified every three years.

KyTC KPDES
Storm Water Sampling Report/Chain-of-Custody Record

District_____ Facility_____ KPDES No._____

Sampling Record

Date samples were taken: _____

Discharge:	SWD-001	SWD-002	SWD-003	SWD-004
Time sample collected				
pH reading				

Measure pH within 2 hours of collecting samples!
Person who collected samples: _____

pH Meter Calibration Reading pH 4.0 _____, pH 7.0 _____, pH 10.0 _____

Time pH Meter Calibrated_____(am/pm) pH Measured by_____

Time pH Measured_____(am/pm)

Storm Data

Amount of precipitation in **24 hours**: _____ inches of ❑ rain or ❑ snow**.**

Date and time rain started for the storm being sampled _____ .

Observations about the lot or sampling_____
_____
_____
_____
_____
_____

Superintendents's signature: _____

Sample Custody Information

Relinquished by	Date Time	Received by	Date Time
Relinquished by	Date Time	Received by	Date Time
Relinquished by	Date Time	Received by	Date Time

Refresh ice in cooler before relinquishing to a delivery service. Use next day delivery.

This form is to be retained for a period of three (3) years. It is to be kept with the KPDES permit records.
This form was last revised April 2003.

KyTC KPDES Permit
Weather Log
Month_____ Year_____

District Facility KPDES Permit No.

Day	Rain information		Empty gauge each time it is read. Record when samples are taken. Note anything that may affect the discharge. **New month?, check the pH meter and re-moisten the cap.**
	Reading	Time	
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			
31			

This form is to be retained for a period of three (3) years. It is to be kept with the KPDES permit records.
This form was last revised April 2003.

KyTC – KPDES Permit
pH Meter calibration and measurement log

Facility: **Lot Number:** **KPDES Permit Number:**

		Calibration (+/- 0.1 pH unit)			Sample results			
Date	Time	PH 4.0	PH 7.0	PH 10.0	1	2	3	pH Meter Operator

This form is to be retained for a period of three (3) years. It is to be kept with the KPDES permit records.
This form was last revised April 2003.

INSTRUCTIONS FOR COMPLETING STORM WATER RUN-OFF SAMPLING REPORT

This form is to be used to record the information about the collection of samples of storm water run off for compliance with KPDES permits. Samples are to be taken once each three months. This form is to be completed and sent with the samples to the laboratory.

Enter the District, Facility and KPDES Permit number.

Enter the date that samples were taken.

Enter the time each sample is collected.

Calibrate the pH meter and measure pH on each sample. PH must be measured within two hours after a sample is collected. Enter the calibration pHs on the form with the time the meter was calibrated. Enter the pH measured for each sample in the table.

The name of person who took the samples is to be recorded.

The name of the person who measures pH is to be recorded even if this is the same person who took the samples!

Observations are to include the conditions of the area that run-off comes from for each discharge sampled. This is to include notes about exposed salt, oils and exposed materials that can generate contaminates. Any remarks about the samples should be made when sampling conditions are not normal.

Superintendent should check the information on this form and sign it. This information will be used to report conditions on the lot and corrective measures taken, if any.

Be sure samples are pre-cooled. Putting them in the refrigerator over night with the cooler should do this. If a refrigerator is not available put the samples on ice over night. Be sure a fresh amount of ice is in the shipping cooler at the time it is given to the transport to the laboratory. Use next day delivery.

The first relinquished by entry must be by the person who took the samples! Sign in the relinquished by box, then enter the date and time.

The person taking the sample must sign in the received by box when the samples are accepted.

The Transportation Cabinet employees who transport the samples to the laboratory, courier, or shipping company are to sign this section in the order of their responsibility for the samples. The date and time each person relinquishes and accepts the samples are to be entered on the form.

NOTE: Samples should be kept cool after collection and logging. They should be sent to the laboratory within 3 days after sampling.

Instructions for Weather Log

A weather log is a key part of your storm water sampling procedure. From the log you will provide information needed by the person that will fill out the Discharge Monitoring Report (DMR). The basic information needed on the weather log for the storm water sampling program is:

- The amount of rain that falls each day or each weekend period.
- For storms that are sampled, note the date and time the rain started.
- Note the time when samples are taken.
- Observations that relate to the quality of the lot run off.

Keeping the log will require that the observer do the following:

- Read the rain gauge just once each day and record the amount of accumulated rain. For consistency, the gauge should be read the first thing each morning. If no rain has accumulated, verify that the gauge is empty and enter this observation in the daily weather log.

- For weekends (including extended weekends or holidays), taking the reading on the following first work day is sufficient.

- Rain gauge readings are to be taken even while it is raining.

- **Empty the rain gauge every time you take a reading.**

- When samples are actually taken for an appropriate storm event, record this in the "Remarks" column.

Include a record of snow accumulation. The guidance on sampling criteria during winter is that, if there is no run-off from a rain storm, the sample should be taken when a snowfall of at least one inch accumulation melts and runs off. Rain gauges should be protected from freezing in the winter.

INSTRUCTIONS FOR pH METER CALIBRATION

Calibration:

Calibration should be done every day that the Testr is used. A record of the calibration and test results is to be made on the pH meter calibration and measurement log and on the storm water field sampling form.

1. Prepare the calibration kit by filling the three containers with each of the three buffers, pH 4.01, pH 7.00 and pH 10.01.
2. Switch the unit on (ON?OFF button)
3. Dip the electrode ½" to 1" into the first buffer. The meter can be calibrated in any order of pH buffer.
4. Press CAL button to enter calibrate mode. 'CA' flashes on the display. Then, a pH value close to the buffer value will flash repeatedly.
5. After at least 30 seconds (about 30 flashes) press the HOLD/CON button to confirm calibration. The display will show 'CO' and then switch to the buffer value reading.
6. Write this reading on the pH meter calibration log.
7. Rinse the meter in distilled water.
8. Repeat steps 3 through 7 for the other buffers.
9. The calibration pH for each buffer is to be within +/- 0.1 pH of the buffer being used to calibrate the meter. If the calibration pH is more that 4.1, 7.1 or 10.1 or is less than 5.9, 6.9 or 9.9, repeat the calibration process. Meters that are stored for long periods may take several calibrations to be within these limits. If a meter does not calibrate within the +/- 0.1 pH, note this on the calibration log and on the sample form. Meters that fail need to be replaced. The District Environmental Coordinator can accomplish this.
10. The meter is ready to measure pH of the sample after it calibrates within +/- 0.1 pH of each standard.
11. Rinse the electrode in distilled water before measuring the pH of the storm run off water sample.

PH Testing:

12. Remove the cap from the electrode. Switch the unit on (ON/OFF button).
13. Dip the electrode ½" to 1" into the sample test solution. Stir once and let the reading stabilize.
14. Note the pH or press the HOLD/CON button to freeze the reading. After the reading is recorded, pressing the HOLD/CON button again releases the meter to make additional measurements.
15. Press the ON/OFF button to turn off the meter. The meter will automatically shut off after 8.5 minutes with no activity.

Instrument maintenance:

16. Rinse the electrode with tap water before putting it into storage.
17. Keep a small piece of paper or sponge in the electrode cap – moistened with clean water – and close cap over the electrode.
18. Periodic soaks in warm pH 4 buffer will remove contaminants.
19. Upon reactivation, the dry probe can be remoisten by letting is set in pH 4 buffer for a period of 5 minutes.
20. The probe must be kept moist. A small piece of paper towel placed in the protective cap and dampened with clean water will accomplish this. **Be careful. The glass probe is delicate and too much towel can cause the glass to break.** Check the meter once each month and add clean water to keep it moist.
21. Replacement batteries, buffer solutions and meter probes should be obtained from the district environmental coordinators.

Appendix 4. Ground Water Protection Plan

Appendix 4. Facility Ground Water Protection Plan

Instructions
The Environmental Handbook contains all the elements needed to meet the Ground Water Protection Plan requirements that apply to KyTC Facilities. Since different activities may be carried out at each type of facility, the checklist below must be completed to identify which fact sheets apply, thus making this GWPP site-specific.

Make a copy of the blank form for future use and complete the information below. Use additional sheets as needed for notes. Sign and date the bottom and retain in the Environmental Handbook binder for your records. Complete plan again every 3 years or if conditions at the facility change. See PREPARING A GROUNDWATER PROTECTION PLAN, April 2004, or the most current update, to complete the required information. Retain this document, training and inspection records for six (6) years.

SECTION A. GENERAL INFORMATION

Facility Name_____, Facility Lot # SO - _____ - _____ - _____
District County # P/S Lot #

Facility Address_____

Mailing Address (if different from above)_____

County_____**Telephone Number**_____

Function(s) covered by this plan: ❑ Highway Maintenance, ❑ Equipment Repair Garage # _____, ❑ Traffic, ❑ Agronomy, ❑ Bridge Crew, ❑ Other _____

Name and Title of Person Completing This Form_____

Name and Title of Person Responsible for Implementing this GWPP_____

Latitude (degrees, minutes, seconds) _____**Longitude (degrees, minutes, seconds)** _____

Attach a Topographic Map: Only a United States Geological Survey topographic map will be accepted. Copy the 8 1/2 x 11 inch section of the map that contains the location of your facility. Do not enlarge or reduce the size of the map. If that section does not have the name of the topographic quadrangle, please write it on the map. Mark your facility location with an X.

If you have internet access, topographic maps can be obtained from Topozone.com. Be sure to use the following: View Scale: 1:50,000; Coordinate Format: D/M/S; Coordinate Datum: WGS84/NAD83. If you have questions about navigating Topozone, or need to know other sources for topographic maps, contact Pat Keefe at (502) 564-6120 for directions.

SECTION B. ACTIVITIES THAT HAVE THE POTENTIAL TO POLLUTE GROUNDWATER

Fact Sheet	Fact Sheet Title	Applicable to Facility (Y/N)	All Fact Sheet Practices are Implemented (Y/N)	If all fact sheet practices are not currently being implemented, explain here, including anticipated completion date. Attach additional sheets as needed.
2.1.1	Cleaning Asphalt Tools and Equipment			
2.1.2	Roadside Litter And Street Sweeping			
2.2.1	Vegetation Management			
2.2.2	Pesticide Delivery, Storage and Handling			
2.2.3	Fertilizer Storage and Application			
2.4.1	Storing and Loading Road Salts			
2.4.2	Generating Salt Brine			

Fact Sheet	Fact Sheet Title	Applicable to Facility (Y/N)	All Fact Sheet Practices are Implemented (Y/N)	If all fact sheet practices are not currently being implemented, explain here, including anticipated completion date. Attach additional sheets as needed.
2.4.3	Storing and Loading Liquid De-Icers			
2.4.4	Equipment Preparation and Maintenance (Snow & Ice)			
2.4.6	Post Storm and Post Season Cleanup			
3.1	Facilities Pride			
3.2	Floor Drains and Oil-Water Separators			
3.3	Hydraulic Lifts			
3.4	On-Site Sewage Disposal System (Septic System)			
3.5	Underground Storage Tanks (Complete Table 2 if applicable)			
3.6	Above Ground Storage Tanks (Complete Table 2 if applicable)			
3.7	Loading and Unloading Tank Trucks			
3.8	Handling Bulk Liquids			

Fact Sheet	Fact Sheet Title	Applicable to Facility (Y/N)	All Fact Sheet Practices are Implemented (Y/N)	If all fact sheet practices are not currently being implemented, explain here, including anticipated completion date. Attach additional sheets as needed.
3.9	Sand Blasting of Equipment			
3.10	Pressure Washers and Steam Cleaners			
3.11	Vehicle and Equipment Cleaning and Maintenance			
3.12	Parts Washers			
3.13	Used Oil Burners			
3.14	Ground Water Protection Plan Exclusions			
3.15	KPDES BMP Plan			
3.16	Bulk Dry Materials Storage			
4.1	Solid Waste			
4.2	Hazardous Wastes			

Fact Sheet	Fact Sheet Title	Applicable to Facility (Y/N)	All Fact Sheet Practices are Implemented (Y/N)	If all fact sheet practices are not currently being implemented, explain here, including anticipated completion date. Attach additional sheets as needed.
4.4.3	Used Oil and Oil Filters			
5.1	Hazardous and Non-hazardous Spills			
5.2	Petroleum Spills			

Table 2: Storage Tank Summary

Tank #	AST / UST	Capacity (Gallons)	Contents	Secondary Containment Materials (floor & berm, or none)

SECTION C. PRACTICES SELECTED TO PROTECT GROUNDWATER FROM POLLUTION

Practices selected to protect ground water from pollution are provided in each fact sheet.

SECTION D. IMPLEMENTATION SCHEDULE

Unless otherwise noted in the table above, all practices are being implemented.

SECTION E. EMPLOYEE TRAINING

The employee training schedule is provided on each fact sheet and is summarized in Appendix 8. Training records are maintained in Appendix 8.

SECTION F. INSPECTION SCHEDULE

A Checklist is provided with each fact sheet. Periodic inspection checklist forms are to be developed from fact sheets that apply to this ground water protection plan for this facility facility. These periodic inspection checklists are to be implemented by the District Inspection records are maintained in Appendix 7.

SECTION G. CERTIFICATION STATEMENT

I _____ certify that this Groundwater Protection Plan complies with the requirements
(Type or Print Name)

of 401 KAR 5:037. I have read the terms of the plan and will implement its provisions.

_____ _____

Signature Date

SECTION H. REVIEW LOCATION FOR GROUNDWATER PROTECTION PLAN

The public may review this plan by contacting the District Office of the Transportation Cabinet. This plan must be recertified every 3 years, or whenever a change of activity requires recertification.

Appendix 5. Septic System Management Plan

Natural Resources and
Environmental Protection Cabinet

Generic Groundwater Protection Plan:
Residential Septic Systems

HOMEOWNER'S SEPTIC SYSTEM GUIDE AND RECORD KEEPING FOLDER

The purpose of 401 KAR 5:037 and this groundwater protection plan is to prevent groundwater pollution. Understanding how your septic system works and following good operation and maintenance practices are the keys to preventing groundwater pollution.

This folder provides you with that information. By carefully reading it and following the guidelines, you will not only protect groundwater, but also should receive many years of trouble-free service from your system.

FOR YOUR RECORDS

Keeping records will enable you to better protect and maintain your septic system. In case you sell your house, your records will show a prospective buyer that your system has been properly maintained.

What to keep?

1. Maintenance Log: Date, what was done and reason for the maintenance (Example: measure sludge and scum layers, pump the tank).

2. Inspection Log: Date, what you observed upon walking over the septic system (Example: any unpleasant odors, soggy soil, lush green grass over the lateral lines, surfacing wastewater).

3. Site Drawing: Show accurately the layout of the system on your lot. Include exact distances of each portion of the system from at least two (2) fixed reference points (corner of house, garage, large trees, property line markers).

4. Any permits or receipts.

5. Residential Address _____
_____

Septic system type:

_____ Septic tank - drainfield
_____ Septic tank - constructed wetland - drainfield
_____ Septic tank - leaching chambers
_____ Septic tank - low pressure pipe
_____ Septic tank - sewage lagoon - drainfield
_____ Septic tank - gravelless pipe

Sketch System Layout Here

System Inspection Log

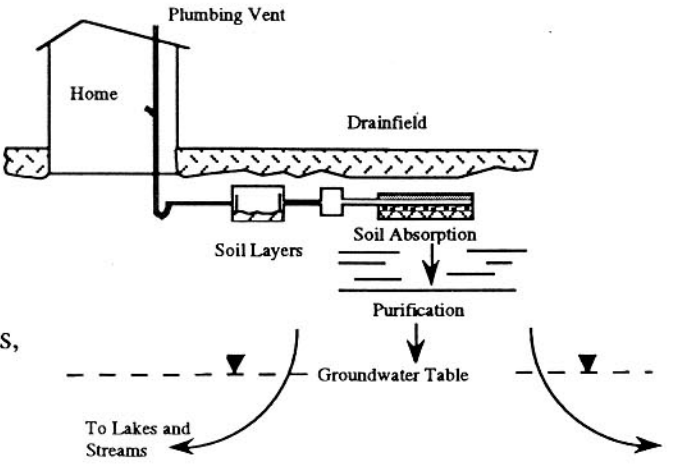
DATE	DESCRIPTION

System Maintenance Log

DATE	DESCRIPTION

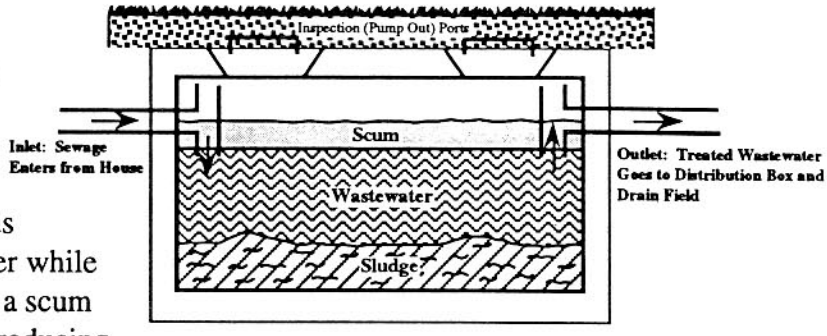
SYSTEM DESCRIPTION

A septic system uses natural processes to treat and dispose of the wastewater in your home. It typically consists of a septic tank and a drainfield (also called a leachfield, lateral field, or subsurface soil absorption beds/trenches). The system accepts both "blackwater" (toilet wastes) and "greywater" (wastes from the kitchen sink, bath tub/showers, and laundry). Water that should not be discharged to the system includes water from foundation or footing drains, roof gutters, and other "clear" water.



Basic System

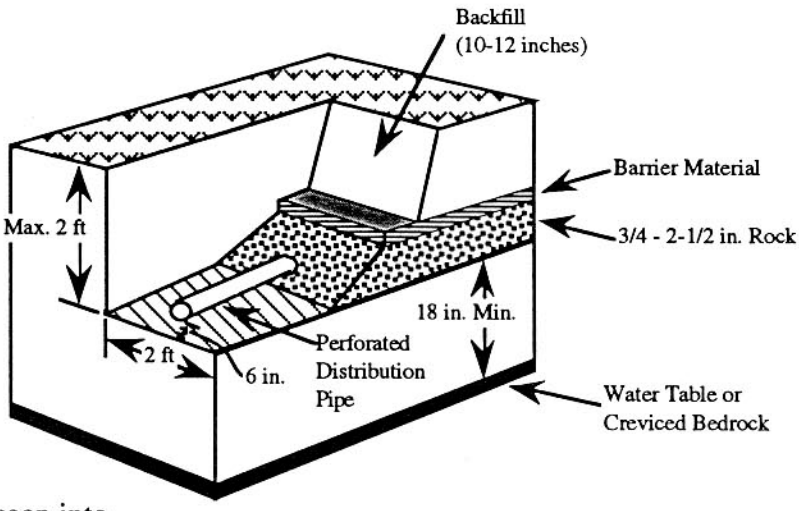
SEPTIC TANK



Septic Tank Cross-Section

The septic tank provides the first step in treatment by separating the solids from the liquids. The wastewater is retained in the tank for 24 hours or more. During this time the heavier solids settle to the bottom to form a sludge layer while the lighter solids float to the top to form a scum layer. Bacteria break down the solids, producing carbon dioxide, hydrogen sulfide, and other gases in the process. These gases are vented through the plumbing vent on your house roof. Since the bacteria reduce only about 40 percent of the sludge and scum volume, the tank must be pumped regularly (approximately every three to five years) to remove the accumulated solids. If the tank fills with sludge and scum, the solids will overflow into the drainfield and quickly clog the soil, resulting in system failure.

THE DRAINFIELD



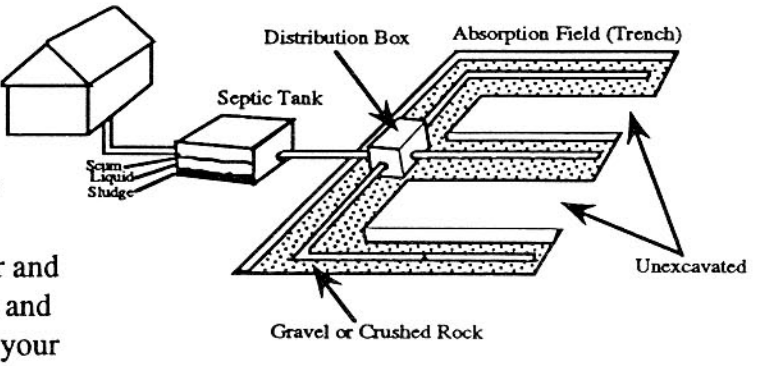
Conventional Rock Drainfield Trench Cross-Section

The drainfield provides the final treatment of the wastewater and disposes of it through groundwater recharge. The typical drainfield is composed of trenches or beds which are shallow, level excavations installed one to one and a half feet above the groundwater table. Each trench contains a perforated distribution pipe through which wastewater drains into the gravel. The water is stored in the gravel until it can seep into unsaturated soil underlying and adjacent to the trench. As the wastewater moves slowly through the gravel and soil, many of the disease-causing bacteria and viruses are filtered out, or adsorbed and held by the soil particles until they die.

Where soils do not permit a drainfield to adequately treat septic tank effluent, an additional or alternative treatment system must be used in conjunction with the drainfield. Alternative systems primarily used in Kentucky are constructed wetlands and sewage lagoons. These alternative systems have their own operation and maintenance guidelines. If you would like information about these guidelines, contact the Groundwater Branch.

TAKING CARE OF YOUR SYSTEM

Your septic system represents a significant investment worth protecting. The old adage "An ounce of prevention is worth a pound of cure" is so true when it comes to the care of your septic system. If you follow the operation and maintenance guidelines given below, your system will function better and last longer, and you will avoid the nightmare and expense of a failed system. Most important, your system will not be polluting groundwater.



Conventional Septic System

DO

- Conserve water to reduce the amount of wastewater that must be treated and disposed.
- Repair any leaking faucets and toilets.
- Discharge only biodegradable wastes into system.
- Divert down spouts and other surface water away from your drainfield.
- Keep your septic tank cover accessible for tank inspections and pumping.
- Have your septic tank pumped regularly and checked for leaks and cracks.
- Call a professional when you have problems.
- Compost your garbage or put it in the trash.

DON'T

- Use a garbage grinder.
- Flush sanitary napkins, tampons, disposable diapers, condoms and other non-biodegradable products into your system.
- Dump solvents, oil, paints, thinners, disinfectants, pesticides or poisons down the drain. These materials can disrupt the treatment process and contaminate the groundwater.
- Dig in your drainfield or build anything over it.
- Plant anything over your drainfield except grass.
- Drive over your drainfield or compact the soil in any way.

If you have a question or need additional information, contact:

Groundwater Branch
Kentucky Division of Water
Natural Resources and Environmental
Protection Cabinet
14 Reilly Road
Frankfort, Kentucky 40601
(502) 564-3410

Environmental Management Branch
Division of Public Health Protection
and Safety
Cabinet for Health Services
275 E. Main Street, HS 2E-B
Frankfort KY 40601
(502)564-4856

Check List
for
Evaluating Your Septic System

1 Find and mark the location of the septic system, You should map this information in the space provided in your Groundwater Protection Plan: "Homeowner's Septic System Guide and Record Keeping Folder."

2 When was the septic tank last pumped?

_____

3 If the tank was last pumped over three years ago, or if you have recently moved into the house and don't know when the tank was last pumped, contact a septic tank pumper. Have him service the tank and check the baffles.

4 Do toilets flush slowly and does water drain slowly from sinks and tubs, or does either "gurgle"?

Yes ☐ No ☐

5 Is there any standing water, soggy ground, or smelly liquid in or near the drainfield?

Yes ☐ No ☐

6 Does the ground slope toward the septic system?

Yes ☐ No ☐

7 Are your septic tank and drainfield less than 100 feet from a lake, stream, or pond?

Yes ☐ No ☐

8 Are water-loving trees such as willows, sycamores, birches, or water maples growing within 10 feet of the septic tank?

Yes ☐ No ☐

9 Are there any areas over the septic tank or drainfield where people have frequently driven their cars or trucks?

Yes ☐ No ☐

10 Have any additions been made to the house since the present septic system was installed?

Yes ☐ No ☐

11 Do you have dripping faucets or a toilet that runs continuously or gradually loses water from its tank?

Yes ☐ No ☐

12 Do you put cigarette butts, coffee grounds, cooking fats, disposable diapers, facial tissue, wet-strength towels, or other non-biodegradeble materials into your septic tank?

Yes ☐ No ☐

If you have answered YES to one or more of questions 4 - 12, the septic system may not be functioning correctly. Call your local health department, or seek other professional help. Should repair of the system be necessary, be sure to engage the services of a professional who has a groundwater protection plan on file. If you have any questions, contact the Groundwater Branch, Division of Water, 14 Reilly Road, Frankfort, KY 40601 (telephone 502/564-3410) or the Environmental Management Branch, Division of Environmental Health and Community Safety, 275 E. Main St., Frankfort, KY 40601 (telephone 502/564-4856).

Appendix 6. Facility Spill Prevention Countermeasures and Control Plan

Kentucky Transportation Cabinet
Spill Prevention Control and Countermeasures Plan Template

112.1 Applicability and General Requirements

The Kentucky Transportation Cabinet (KTC) owns numerous facilities around the State. The (District name and number), is located at (address) in (city), Kentucky, (zip code). The site consists of -acres. Ongoing activities at this facility include (describe what activities take place at this location, i.e. vehicle maintenance, sign shop, etc.).

Because the facility has aboveground storage capacity in excess of 1,320 gallons of petroleum products, it is subject to the requirements of 40 CFR Part 112, which mandates the preparation and implementation of a Spill Prevention, Control, and Countermeasure (SPCC) Plan. The purpose of the SPCC Plan is to establish procedures, methods, and equipment to prevent and/or mitigate the discharge of oil from non-transportation-related onshore and offshore facilities into or upon the navigable waters of the United States. This plan has been prepared in accordance with sound engineering practices. A copy of the regulation is in Appendix 1.

112.3 Implementation

(A facility in operation on or before August 16, 2002 must implement this Plan as soon as possible, but not later than August 18, 2002. KTC should select a date for implementation of all measures included in the Plan.)

112.5 Amendment of SPCC PLAN

The SPCC plan must be amended when there is a change in facility design, construction, operation, or maintenance that materially affects the potential for a discharge as described in 40 CFR Part 112(b). Examples of changes that may require amendment of the plan include but are not limited to: commissioning or decommissioning containers; replacement, reconstruction or movement of containers; reconstruction, replacement, or installation of piping systems; construction or demolition that might alter secondary containment structures; changes of product or service; or revision of standard operation or maintenance procedures at a facility. Amendments must be made within six months and implementation as soon as possible but no later than six months following the preparation of the amendment.

A complete review and evaluation of the SPCC plan must be performed at least once every five years from the date of the last review. As a result of the review, the District will amend the plan within six months of the review to include more effective prevention and control technology if the technology has been field proven at the time of the review and will significantly reduce the likelihood of a discharge as described in 40 CFR Part 112(b). The District will document the review and evaluation, and sign a statement as to whether the District will amend the plan. Appendix 2 contains the statement to be signed after the five-year review.

112.7(a)(3) Facility Characteristics / Description of Facility

(Describe the physical layout of the property, and include a facility diagram. Figure 1 can be the facility diagram. It can be hand drawn or CADD, doesn't matter. The diagram must show the location and contents of each container subject to the regulation. Can refer to a Table as referenced in the next section listing the products. Show underground storage tanks also. Containers subject to the regulation include mobile and stationary petroleum containers of 55-gallons and greater in size. For mobile containers, if they are stored in a certain area, mark that area on the diagram.)

112.7(a)(3)(i) Above Ground Storage Tanks

(A list of the storage capacity of the container, type of oil in each container, and secondary containment for each container. Can include the capacity of the secondary containment. This can be in a narrative form or a Table. An example Table 1 is attached.)

112.7(a)(3)(ii) Discharge Prevention Measures

(Encompasses secondary containment and other discharge prevention measures. Include procedures for routine handling of products, such as loading and unloading, VCR's, etc.)

Example language:
As described above, the aboveground storage tanks, drums and containers that are located in the building all have secondary containment, capable of containing 100% of the tank contents. Additionally, all tanks and drums are located in a corner of the building where no vehicle traffic takes place. There are no forklifts or tow motors currently in use within the building. Spill kits are present in the drum storage and handling areas, and in the event of a major spill, shall be used to contain and recover spilled materials.

Additionally, the stationary tanks located outside have secondary containment equal to 110% of the tank contents.

Monthly inspections will check the condition of the tanks, valves, and piping of each tank (include overhead pipes if any), along with the drainpipes.

Loading and unloading procedures have also been developed to prevent discharges from the transfer of petroleum products and are found in 112.7(h).

Mobile containers are usually parked ___(describe location)_____ where there is (describe secondary containment or drainage, etc)_____ to contain a spill from the vehicles.

112.7(a)(3)(iii) Discharge Controls

(Means spill controls and secondary containment. Describe secondary containment or drainage controls around the containers, and other structures, equipment, and procedures for the control of a discharge. Can also refer to Table 1 for information about secondary containment structures.)

Some example language to include: Procedures to control a discharge include shutting off the power supply to the tank, turning off any valves to the tank, and using booms or socks to contain the material.

112.7(a)(3)(iv) Countermeasures for Discovery, Notification, Response, and Cleanup

(The facility's and contractor's capabilities for discharge discovery, response and cleanup. Includes personnel, equipment, and contractor.)

Example language:
District employees will be the first responders to all oil spills at the facility. Upon discovery of a discharge of oil the first step will be to stop the flow through closing of valves, turning off power, or using sorbent materials for the containment of the spill. Contacting other employees for assistance is also important. In all instances the District Operations Manager (this is the main person you want notified) should be notified.

The following is an inventory of spill response equipment, which is kept on site in the event of a spill or leak of petroleum products. (List materials on site such as oil dry, booms, socks, pads, spill kits, shovels, brooms, etc.). Spill cleanup equipment is located (where? in which buildings? and near what equipment?).

112.7(a)(3)(v) Disposal of Recovered Material

(Methods of disposal, may include recycling)

All spill material and debris will be managed in a manner that fully complies with applicable local, state, and federal laws regarding recycling or disposal of wastes.

112.7(a)(3)(vi) Contact List

(Who to contact in the event of a spill inside and outside KTC. Usually the same as contact list required per OSHA's emergency response plans with the addition of ERT, EPA, and a cleanup contractor. A table works well so it can be posted by all phones. An example is attached in Table 2. If a cleanup contractor is listed it should be one the facility has an agreement with for response that ensures availability of personnel and equipment within appropriate response times. Formal written agreements are not needed, but if one exists it must be addressed in the plan.)

Example language: A contact list for appropriate District personnel, contractors and government agencies is in Table 2. In the event of a spill or discharge as described in 112. 1(b), i.e. discharge oil in any quantity that may be harmful, or a gasoline or diesel fuel spill per the state of Kentucky regulations, the appropriate persons and agencies on the contact list shall be called.

112.7(a)(4) Spill Reporting Information

(Provide information and procedures for a person reporting a discharge to relate appropriate information. The example language below includes all required information. A form is a good

way to make sure all data is gathered. An example form is in Table 3, attached. The information below also includes when written reports are required.)

Example language:
To assist in the reporting of a discharge described in 112.1(b), the appropriated information shall be collected and recorded on the Spill Notification Data Sheet in Table 3. The information to be collected and written on the form should accurately describe the discharge occurrence. The District Manager or designee should fill out this form. Information to be recorded includes the exact address or location and phone number of the facility; the date and time of the discharge; the type of material discharged; estimates of the total quantity discharged; estimates of the quantity discharged as described in 112.1(b); the source of the discharge; a description of all affected media; the cause of the discharge; any damages or injuries caused by the discharge; actions being used to stop, remove, and mitigate the effects of the discharge; whether an evacuation may be needed; and the names of individuals and/or organizations who have also been contacted.

Whenever the facility has discharged more than 1000 gallons of oil in a single discharge as described in 112.1(b), or discharged more than 42 gallons of oil in each of two discharges occurring within any twelve month period the following information must be sent to EPA Region 4 within 60 days:

- Name of the facility;
- Name(s) of the owner or operator of the facility;
- Location of the facility;
- Maximum storage or handling capacity of the facility and normal daily throughput;
- The corrective actions and/or countermeasures taken, including an adequate description of equipment repairs and/or replacements;
- An adequate description of the facility, including maps, flow diagrams, and topographical maps;
- The cause of such discharge as described in 112.1(b), including a failure analysis of system or subsystem in which the failure occurred;
- Additional preventive measures Rumpke has taken or contemplated to minimize the possibility of recurrence;

Such other information as the Regional Administrator may reasonably require pertinent to the Plan or discharge.

A copy of the report will also be sent to the KDEP, Division of Water, 14 Reilly Road, Frankfort, Kentucky 40601.

112.7(a)(5) Emergency Procedures

(Procedures to be used when a discharge occurs. KTC may already have emergency response procedures to use here.)

Example language:
In the event of a release of release of oil at the facility the District Manager shall be notified immediately and the following steps shall be taken:

I. Assessment of Hazard

1. Upon notification of a petroleum-related spill, the first responder will determine the hazard potential of a spill response by determining at least the following factors:
   - The substance spilled and its hazard potential
   - The amount of the spill and the extent of spreading
   - The source of the leakage/spill
2. If a spill is determined to be of such a magnitude that it cannot be safely and effectively controlled by facility personnel, then the District Manager shall promptly notify outside emergency response agencies to implement control and cleanup.

II. Securing Spill Response Equipment

1. Upon determining the hazard potential for the planned response action, the District Manager shall direct those who will respond to the spill to obtain the appropriate response equipment and personal protective equipment. A list of the spill response and personal protective equipment for this facility is provided in Section 112.7(a)(3)(iv).

III. Containment and Elimination of Spill Source

1. Upon obtaining the proper spill response tools and PPE, the spill responder(s) shall first attempt to contain the spill so as to prevent its entry into a storm sewer, a ditch, or any conveyance that eventually discharges to the waters of the United States.
2. At the same time as containment is being performed or as soon as possible after the containment, the spill responder(s) shall attempt to seal or otherwise stop the source of the spill. Common methods of eliminating a spill source include closing valves, leak stopping compound for pinhole leaks, drum overpacks, deactivating pumps, and diverting flow to another pathway as long as this pathway does not allow the spill to enter a navigable water course.

IV. Spill Cleanup

1. Once the spill is contained and the source eliminated, the spill responder(s) shall collect the spilled material by the appropriate manner and place the material into secure containers.
2. The area or surface in contact with the spilled material shall be decontaminated by an appropriate method that is permissible under local, state, and federal laws. The specific method used will depend upon the substance; the availability of permitted sewer discharge to a POTW, regulatory standards applicable to hazardous and toxic wastes, and other factors. The responder will select the appropriate decontamination method after determining the applicable facts and by conferring either with the regulators or an expert in the subject of spill response.

3. All spill material and debris will be managed in a manner that fully complies with applicable local, state, and federal laws regarding recycling or disposal of wastes. The preferred method is to recycle or reclaim materials from spills in an effort to minimize waste generation. Where this is not feasible or allowed, then disposal will be carried out in accordance with applicable local, state, or federal rules.

112.7(b) Fault Analysis

(This is information concerning the potential consequences of equipment failure. The plan must only discuss potential failure situations that might result in a discharge, not any failure situation. Where experience dictates a reasonable potential for equipment failure, i.e. loading or unloading, tank overflow, rupture, leakage, include a prediction of the direction, rate of flow, and total quantity of oil which could be discharged from the facility as a result of each type of major equipment failure. Experience means experience from the facility or the industry in general. Address a major equipment failure, one that could cause a discharge as described in 112.1(b) not minor possibilities. Spill pathways depends on the geographic characteristics of the facility and possibility for discharge. Focus on the obvious. Can refer to facility diagram for flow directions.)

112.7(c) Containment

(Provide appropriate containment or diversionary structures or equipment to prevent a discharge as described in 112(b). Must be capable of containing oil, and constructed so the any discharge will not escape the containment system before cleanup occurs. At a minimum, must use one of the following dikes, berms, retaining walls, curbing, culverting, gutters or other drainage systems, weirs, booms or other barriers, spill diversion ponds, retention ponds or sorbent materials. If dikes, berms, retaining walls, or anything earthen is used it must be sufficiently impervious to prevent a discharge before cleanup occurs. The same is true for container floors or bottoms. Liners are not required. The plan must address how the secondary containment is designed to meet the requirements. A description of how earthen structures were made sufficiently impervious is required such as removing vegetation, type of material used, repairing excavations

If you determine based on space or geographic constraints, not financial, that secondary containment is not practicable, you must complete the next section. If you can provide secondary containment then skip the next section.)

112.7(d) Contingency Planning

(This section requires the preparation of an Oil Spill Contingency Plan if the requirements of section 112.7(c), 112.7(h)(1), 112.8(c)(2), or 112.8(c)(11) cannot be met. If you determine it is not practicable to comply with the above list, you must clearly explain why the measure is not practicable, and conduct both periodic integrity testing of the containers and periodic integrity and leak testing of the valves and piping, and unless you have filed a response plan per 112.20, provide in your plan an oil spill contingency plan per 40 CFR Part 109 and a written commitment of manpower, equipment, and materials to expeditiously control and remove any quantity of oil discharged that may be harmful.)

112.7(e) Inspections, Tests and Records

(Develop inspection procedures, perform inspections. Keep records of inspections and tests for three years. Inspection form must be signed. Records of tests and inspections can be kept under usual and customary business practices will suffice. Inspections and tests mean schedules, evaluations, examinations, descriptions, inspections, and tests. Records can be kept electronically.)

Example language:
At least once a month an inspection will be made to thoroughly inspect all storage tanks, drums, mobile containers, piping, and containment areas. An inspection form is provided in Appendix 3. If any discrepancies are noted, corrective actions will be taken immediately. Inspection records will be maintained for a minimum of three years.

The District has developed recordkeeping and internal reporting procedures to document the effective implementation of this SPCC Plan. These include procedures for recording and maintaining records of inspections, maintenance activities, employee training, and spills and leaks that have the potential to reach navigable waters.

Reports of spills and leaks that have the potential to reach navigable waters will be maintained with the facility records. Documents to be kept include the Spill Notification Data Sheet (Table 3) as well as a follow-up report describing the incident in detail, the effect on storm water quality, spill response actions taken, and recommended revisions to the plan to prevent a recurrence of the incident.

112.7(f) Personnel Training and Discharge Prevention Procedures

(This section addresses the minimum training requirements. The example language addresses all aspects of the rule in a generic format.)

Example language:
Training in discharge prevention is required of all oil handling personnel. Oil handling personnel include anyone who is involved in the use of and loading and unloading of oil products. At a minimum oil handling personnel shall be trained in the operation and maintenance of equipment to prevent oil discharges, discharge procedures protocols, applicable pollution control laws, rules and regulations, general facility operations, and the contents of the facility SPCC plan. New employees shall be trained if their job involved possible handling of oil. Any employee involved in the transfer of oil will be trained in loading and unloading procedures, response and cleanup, and notification procedures.

A person will be designated at each facility who is accountable for discharge prevention and who reports to facility/Cabinet management.

At least once a year the District will conduct discharge prevention briefings, or training sessions, to assure adequate understanding of the SPCC Plan. The annual briefing must also include known discharges or failures, malfunctions, and any recently developed precautionary measures. Training records will be retained for a minimum of three years.

112.7(g) Security

(The requirements of this section are options provided equivalent environmental protection by some other means of spill prevention, control or countermeasure. You must state reason for nonconformance and describe in detail alternate methods and how you achieve equivalent environmental protection. Requirement of this section include fencing, locking master control valve, locking starter controls on each oil pump in off position when not operating or standby, cap or blank flange the loading/unloading connections, and provide facility lighting.

Fences should be designed to deter vandalism.

Master flow and drain valves and any other valve permitting outward flow from the container have adequate security measures. Manual locks, electronic or automatic locks, or whatever technology allows may be used.

Lock starter control or the building it's located in.

Secure or blank flange loading/unloading connections, quick disconnect fittings can be used. A secure cap is one that can be locked or some other method to deter vandalism.

List where keys are stored and who has keys.)

112.7(h) Tank Truck Loading / Unloading

((1) This applies to loading or unloading of oil from a tank truck or tank car. Secondary containment can be provided by dikes, berms, retaining walls, curbing, culverting, gutters, drainage systems, weirs, booms, other barriers, spill diversion ponds, retention ponds, or sorbent materials. Must provide containment where loading/unloading area does not flow to catch basin or treatment facility. Design containment system to hold maximum capacity of any single compartment of the tank truck.

(2) Some kind of alarm or warning can be provided by interlocked warning light or physical barrier system, warning signs, wheel chocks, vehicle break interlock system to prevent vehicle from departing until complete disconnection is made. This is an option but equivalent environmental protection must be provided.

(3) An inspection of lowermost drains and outlets of delivery trucks prior to filling or departure to prevent a discharge while in transit must be done. Cannot just pass on to vendor, owner's responsibility. This is an option and can provide equivalent environmental protection.

You must state reasons for nonconformance (2) and (3) and describe in detail alternate methods and how you achieve equivalent environmental protection.)

Example of alternate procedures for (2) and (3): Can post them, give to vendors to sign, have employees check each delivery. Vehicle fueling and tank truck unloading has the potential for spills. The following practices are suggested to reduce the potential for a spill:

- Make sure all vehicles are properly braked prior to fueling or unloading
- Keep the tanker trucker truck within the unloading containment zone during unloading of fuel or oil products

- Inspect all connections between the offloading truck and the tanks for leaks and tightness prior to unloading and prior to departure.
- Ascertain product level in tank prior to filling. Fueling or unloading should be constantly monitored. The tank should not be left unattended during any portion of the process.
- Drain the delivery hose of product prior to disconnection from the AST.
- Make sure all valves are closed.
- Upon fuel delivery, the tank installation and the area around the tank will be inspected for signs of product leakage and/or release.
- The driver must inspect his vehicle while still on the site for any discharges. Prevent liquid discharge in transit by inspecting lowermost drains, connections, hoses etc.

112.7(i) Brittle Fracture

(Evaluate "field constructed" tanks whenever tanks undergoes repairs, alterations, reconstruction, or change in service that might affect the risk of a discharge or failure due to brittle fracture or other catastrophe. Evaluate the container for risk of discharge and take appropriate action if necessary. "Field constructed," means a container that is assembled or reassembled outside the factory at the location of its intended use. "Catastrophic failures" are failures that result from events such as lighting strikes, dangerous seismic activity, etc. "Repair" means any work to maintain or restore the container to a condition suitable for safe operation. Repair includes the removal and replacement of material, re-leveling or jacking, repair of flaws, etc. "Alteration" involves cutting, burning, welding, or heating operations that change changes the physical dimensions or configuration of the container.

The requirement of this section is an option provided equivalent environmental protection by some other means of spill prevention, control or countermeasure. You must state reason for nonconformance and describe in detail alternate methods and how you achieve equivalent environmental protection. Does the District have field constructed tanks?)

112.7(j) Conformance with State Rules

(Include in the plan a complete discussion of conformance with applicable requirements of discharge prevention and containment procedures listed in this part or any more stringent State rules, regulations, and guidelines.)

Example language:
Kentucky environmental law, KRS 224.01-400(11), provides that any petroleum or petroleum product release, except diesel fuel, in excess of 25 gallons over a 24-hour period, must be reported. The reportable quantity for diesel fuel is 75 gallons over a 24-hour period. However any release that causes a visible sheen, or that violates any provision of Section 311 of the Clean Water Act must be reported.

Any release falling within the above categories should be reported immediately to the Environmental Response Team (ERT) of the Kentucky Natural Resources Cabinet. The ERT phone number is listed on the Contact List in Table 2 and will be posted throughout the facility.

A written follow up report may be required by the Cabinet, and must be submitted within seven days of the Cabinet's demand. The report must contain the following information: precise location of the release; name, address, and phone number of person in charge at the time of the release, name and address of persons having knowledge of facts surrounding the release; the concentration and quantity of the release; circumstances and causes of the release; efforts taken to control and mitigate the release; any harmful effects of the release; transportation characteristics of the medium or matrix into which the material was released; current or proposed corrective action; and any other information that my assist in the response at the site.

112.8 Specific Requirements for Onshore Facilities

(Onshore facilities must also meet these specific discharge prevention and containment procedures. Your plan may deviate from the requirements of this section except 112.8(c)(2) and 112.8(c)(11), if you provide equivalent environmental protection by some other means of spill prevention, control or countermeasure. You must state reason for nonconformance and describe in detail alternate methods and how you achieve equivalent environmental protection.)

112.8 (b)(1) Facility Drainage / Diked Storage Area Drainage

(The rule prescribes requirements for drainage from diked areas; it does not mandate the use of diked areas. If you use diked areas the rule prescribes minimum requirements for drainage of those facilities. You have to restrain the drainage from diked areas by valves to prevent a discharge into the drainage system or effluent treatment system not designed to control such discharge. Can use pumps or ejectors, but must be manually activated and must inspect the accumulation of water to ensure no oil will be discharged.)

112.8 (b)(2) Diked Storage Areas – Valves Used; Inspection of Retained Stormwater

(Can only use valves of manual, open and closed design for the drainage of diked areas, no flapper type valves. If facility drains to watercourse you must inspect and may drain uncontaminated retained stormwater as provided in (c)(3)(ii), (iii), and (iv) of this section)

112.8 (b)(3) Drainage from Undiked Areas; Areas Subject to Flooding

(Design facility drainage systems from undiked areas with a potential for a discharge to flow into ponds, lagoons, or catchment basins designed to retain oil or return it to the facility. The rules recommend, not require, that ponds, lagoons, catchment basins, or other facility drainage systems with a potential to discharge not be located in areas subject to periodic flooding.)

112.8 (b)(4) Diversion Systems

(If a facility drainage is not engineered as in (b)(3), equip the final discharge of all ditches inside the facility with a diversion system that would retain the oil in the facility in the event of an uncontrolled discharge. The rule applies only to drainage from petroleum areas of the facility. This rule aims to retain within the facility minimal amounts of contaminated water in undiked areas subject to periodic flooding. A diversion system is to retain water.)

112.8 (b)(5) Natural Hydraulic Flow, Pumps

(Where drainage waters are treated in more than one treatment unit and such treatment is continuous, and pump transfer is required, provide two “lift” pumps and permanently install one of the pumps. You must engineer drainage systems to prevent a discharge in case there is an equipment failure or human error at the facility.)

112.8 (c) Bulk Storage Containers

((1) Container material must be compatible with the oil stored in it and the conditions of storage of such as pressure and temperature.

(2) Construct all bulk storage containers so you provide a secondary means of containment designed to hold the entire contents of the largest single tank or container, and to allow sufficient freeboard for precipitation. Dikes, containment curbs, and pits are used for this purpose. Diked areas must be sufficiently impervious to contain the discharged oil. If a pit is used as a form of secondary containment, take measures to mitigate the effects of the pit on birds and wildlife, such as netting, fencing, or other means to keep wildlife away. Also, since a pit can discharge over the top or seep through the ground, don’t use pits where a pit may be a source of discharge. Show freeboard calculations in plan. May also use a drainage trench enclosure that terminates in a catchment basin or holding pond.

(3) Drainage of rainwater. Do not allow drainage of uncontaminated rainwater from the diked area into a storm drain or discharge of an effluent into an open watercourse, lake or pond, bypassing the treatment system unless you (i) normally keep bypass valve sealed closed, (ii) inspect retained rainwater to ensure that its presence will not cause a discharge as described in 112.1(b), (iii) open the bypass valve and reseal it following drainage under responsible supervision, and (iv) keep adequate records of such events, for example any records required of any storm water permits. KPDES records can show compliance with this rule.

(4) Protect completely buried metal tanks installed on or after Jan. 10, 1974 from corrosion by coatings or cathodic protection, and regularly leak test such tanks.

(5) Do not use partially buried or bunkered metal tanks unless you protect them from corrosion by coatings or cathodic protection, and regularly leak test such tanks.

(6) Test each AST for integrity on a regular schedule and whenever material repairs are made. The frequency and type of testing takes into account the container size and design (floating roof, skid mounted, elevated, or partially buried). In addition to monthly visual inspections one of the following methods of integrity testing will be employed: hydrostatic testing, radiographic testing, ultrasonic testing, acoustic emissions testing, or another form of nondestructive shell testing. Inspections will be in accordance with industry standards. “Industry standards” includes a wide variety of organizations that have standards for inspecting welds and metal thickness. Examples are API Standard 653 “Tank Inspection, Repair, Alteration and Reconstruction”, API Recommended Practice 575 “Inspection of Atmospheric and Low-Pressure Tanks” or Steel Tank Institute Standard SP001-00 “Standard for Inspection of In-Service, Shop Fabricated Aboveground Tanks for Storage of Combustible and Flammable Liquids.” Inspect the containers' foundation and supports. Frequently inspect the outside of the container for sign of deterioration, discharges, or accumulation of oil inside diked areas. Maintain records of inspections and tests. Tanks which touch the ground must be evaluated for

integrity. Small shop built containers in which internal corrosion poses minimal risk of failure, where all sides are visible, and that don't touch the ground, can get by with the monthly visual.

(7) Control leakage through defective heating coils by monitoring the steam return and exhaust lines for contamination from internal heating coils that discharge to open watercourse, or pass through settling tank, skimmer, or other separation and retention system.

(8) Engineer or update each container installation to avoid discharges. Provide at least one of the following: (i) high liquid level alarms with audible or visual signal, (ii) high liquid level pump cutoff device to stop flow at a predetermined container level, (iii) communication between container gauges and pumping station, (iv) fast response system for determining the liquid level of each container such as digital computers, telepulse, or direct vision gauges (if use this a person must be present to monitor overall filling of bulk storage container), (v) must test liquid level sensing devises to ensure proper operation.

(9) Observe effluent treatment facilities frequently enough to detect possible system upsets that could cause a discharge.

(10) Clean up of visible oil leaks. Promptly clean up any visible leak or spills found and promptly correct visible discharges that result in loss of oil including seams, gaskets, piping, pumps, valves, rivets, and bolts. Oil will promptly be removed from diked areas.

(11) Position or locate mobile or portable oil storage containers to prevent a discharge. Provide a secondary means of containment such as dike or catchment basin to contain largest single tank plus freeboard to contain precipitation.)

112.8(d) Facility Transfer Operations, Pumping, and Facility Processes

((1) Provide buried piping that is installed after Aug. 16, 2002 with a protective wrapping and coating. Must also provide cathodic protection or otherwise meet requirements of Part 280 of State program. If part of buried pipe becomes exposed for any reason you must inspection for deterioration. If damage found undertake additional examination and corrective action as required.

(2) Cap or blank flange terminal connections when such piping is not in service or in standby for an extended period of time.

(3) Design pipe supports to minimize abrasion and corrosion and allow for expansion and contraction.

(4) Regularly inspect all aboveground valves, piping, and appurtenances. Assess the general condition of such items such as flange joints, valve glands and bodies, expansion joints, catch pans, pipeline supports, locking of valves and metal surfaces. Conduct integrity and leak testing of buried piping at time of installation, modification, construction, relocation or replacement.

(5) Warn all vehicles of the overhead piping to be sure no vehicle will endanger the piping.)

*1.1 TABLE 1 – PETROLEUM MATERIALS LIST FOR DISTRICT 5, LOT NO. 497, SHELBY COUNTY **

Type of Oil	Location	Quantity (gal)	Type of Container	Secondary Containment (1)	Capacity (5)
Diesel Fuel	mobile (3)	90	steel	none	N/A
Gasoline					
Used Oil		300		none	
Motor Oil					
Hydraulic Oil	shop	55	steel drum	none	N/A
Machine Grease		120 # (4)			
Oil Distributor	mobile	1350		none	N/A
Tack Oil (2)	behind shop	?		concrete	?
Trucks	mobile	?	steel	none	N/A

* based on meeting with Shelby Jett and Carl Henry

(1) Secondary containment is required.

(2) Tack oil container is empty with the electricity cut off. Still remains in calculations until demonstration made that the tank is abandoned and won't be used again.

(3) For mobile tanks list what piece of equipment it is.

(4) What size gallon container is this?

(5) Convert feet or inches to gallons.

TABLE 2 – EMERGENCY CONTACTS LIST

District No. _____

District Name _____

Facility Personnel

District Engineer	Office	
	Mobile	
Operations Manager	Office	
	Mobile	

Environmental Analysis

	Office	
	Office Mobile Pager	
Spill Response Contractors		
	Office Emergency No.	

Agency Personnel

Fire Department	Emergency Non-emergency	911
County Local Emergency Planning Committee (LEPC)	Day 24-hr	
Kentucky Emergency Response Team	24-hr Emergency Spill Hotline	(800) 928-2380
National Response Center	24-hr Hotline	(800) 424-8802

TABLE 3 - SPILL NOTIFICATION DATA SHEET

LOCATION	**FACILITY NAME AND NUMBER**		**DATE**	**TIME**	**AM PM**	
	LOCATION ADDRESS		**COUNTY**			
	CITY/STATE/ZIP CODE		**TELEPHONE**			
INCIDENT TYPE	DATE AND TME OF INCIDENT					
	TYPE OF MATERIAL DISCHARGED					
	ESTIMATED QUANTITY OF DISCHARGED MATERIAL					
	SOURCE OF DISCHARGE					
	DESCRIPTION OF AFFECTED MEDIA					
	CAUSE OF THE DISCHARGE					
	ANY DAMAGE OR INJURY					
	ACTIONS USED TO STOP OR REMOVE AND MITIGATE EFFECTS OF THE DISCHARGE					
	EVACUATION NECESSARY					
	☐ **AREA SUPERVISOR NOTIFIED** **DATE TIME**		☐ **DIST. MGR NOTIFIED** **DATE TIME**		☐ **REG MGR. NOTIFIED** **DATE TIME**	
	☐ **ENVIRON. MGR. NOTIFIED** **DATE TIME**		**NAME OF INDIVIDUAL TAKING REPORT**		**DATE TIME**	
Local Fire Dept. Notified	**NAME OF FIRE DEPT.**		**NAME OF INDIVIDUAL TAKING REPORT**	**Rept.#**	**Date**	**Time**
GOVT. AGENCIES NOTIFIED (if applicable)	**NATIONAL RESPONSE CENTER (1-800-424-8802)**		**NAME OF INDIVIDUAL TAKING REPORT**	**Rept #**	**Date**	**Time**
	STATE ERT (1-800-928-2380)		**NAME OF INDIVIDUAL TAKING REPORT**	**Rept #**	**Date**	**Time**
	OTHER – STATE / COUNTY, ETC.		**NAME OF INDIVIDUAL TAKING REPORT**	**Rept #**	**Date**	**Time**
Incident Description, Action Taken, General Comments						
Prepared by		**TITLE**		**DATE**		

District No. _____

District Name _____

APPENDIX 1
COPY OF REGULATION 40 CFR Part 112

APPENDIX 2
STATEMENT FOR PLAN AMENDMENT

This statement is to be signed and kept with the SPCC Plan after the five-year review and evaluation of the Plan.

"I have completed a review and evaluation of the SPCC Plan for the _____(District name)_____ on _____(date)_____ and will / will not amend the Plan as a result."

Signature _____

Print Name _____

Title _____

APPENDIX 3

Site Inspection Form

Date/Time:

Inspector:

Weather Conditions

Inspection Items	**Yes**	**No**	Comments
1. Are there any leaks or spills around any tank or drums?			
2. Leaks at valves, piping, or terminal connections?			
3. Is there any floor dry remaining from a clean up?			
4. Are there any leaks or spills around the oil/water separator?			
5. Vehicle inspections being performed?			
6. Any leaks or spills from the overhead piping, hoses, or guns?			
7. Is there discoloration, residue or other stains on the ground around the facility?			
8. Water in diked areas or secondary containment?			
9. Valves to drains from secondary containment locked?			
10. Training of employees performed annually or when new?			
11. Water in secondary containment have a sheen?			
If so, water cannot be discharged.			
12. Integrity tests required?			
13. Any alterations or change in uses of petroleum tanks?			
If so, plan must be revised.			
14. Has it been five years since the plan was reviewed / revised?			

Additional Comments: _____

_____

_____

_____

Is any action necessary to maintain compliance?

_____ No _____ Yes

Explain action: _____

_____

_____

_____

District No. _____

District Name _____

Certification

This is to certify in accordance with 40 CFR Part 112.3(d) that I am a licensed Professional Engineer and I have reviewed the Spill Prevention, Control, and Countermeasure (SPCC) Plan for _____(District Name)_____ and certify the Plan to be effective to satisfy the requirements of 40 CFR part 112. By means of this certification, I attest:

That I am familiar with the requirements of 40 CFR Part 112,
That I, or my agent, has visited and examined the facility,
That the Plan has been prepared in accordance with good engineering practice, including consideration of applicable industry standards, and with the requirements of 40 CFR part 112,
That procedures for required inspections and testing have been established, and
That the Plan is adequate for the facility.

This certification in no way relieves the owner or operator of a facility of his duty to prepare and fully implement the Plan in accordance with the requirements of this Part.

Certification: _____

Registration No. _____

Date: _____