
KNOXVILLE, TENNESSEE
PART 2 NPDES
STORM WATER
PERMIT APPLICATION



MAY 1993

CAMP DRESSER & MCKEE INC.

CDM

*environmental engineers, scientists,
planners & management consultants*

SIGNATURE and CERTIFICATION

STORMWATER PERMIT APPLICATION
MUNICIPAL PART 2 SUPPLEMENT

FOR: CITY OF KNOXVILLE, TENNESSEE

Federal regulations, 40 CFR 122.22 (a) (3) and 122.22 (d), require the application for a NPDES permit to be signed and certified as follows:

For a municipality, State, Federal, or other public facility, by either a principal executive officer or ranking elected official.

"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 evaluated the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering 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."

xxxxxxx xxxxxxxx	5-13-93
_____ Victor H. Ashe Mayor	_____ Date
xxxxxxx xxxxxxxx	5-11-93
_____ Samuel L. Parnell, Jr., P.E. Director of Engineering	_____ Date
xxxxxxx xxxxxxxx	5-13-93
_____ Thomas A. Varlan Law Director	_____ Date
xxxxxxx xxxxxxxx	5-13-93
_____ Randolph B. Vineyard Finance Director	_____ Date

TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
1.0 GENERAL INFORMATION	1-1
2.0 LEGAL AUTHORITY	
2.1 Introduction	2-1
2.2 State Enabling Authority	2-2
2.2.1 General Powers of Municipalities	2-2
2.2.2 Tennessee Water Quality Control Act of 1977	2-3
2.2.3 Proposed Senate Bill No. 68; House Bill 56	2-4
2.3 City Charter and Ordinances	2-4
2.3.1 City Charter	2-4
2.3.2 Engineering Ordinances	2-5
2.3.3 Planning Ordinances	2-7
2.4 Proposed Ordinance	2-9
2.5 Implementation Schedule for Stormwater Ordinances	2-10
3.0 SOURCE IDENTIFICATION	
3.1 Introduction	3-1
3.2 Update Outfall Database	3-1
3.3 Identification of Industrial Facilities	3-1
3.3.1 Facilities with NPDES Stormwater Permits	3-2
3.3.2 Facilities on the EPA "FINDS" Database	3-2
3.3.3 Facilities on the EPA Group Stormwater Permit List	3-2
4.0 CHARACTERIZATION DATA	
4.1 Introduction	4-1
4.2 Quantitative Data from Representative Outfalls	4-3
4.3 Annual Pollutant Loads and Event Mean Concentrations	4-3
4.3.1 Methodology	4-14
4.3.2 Annual Loading and EMC Estimates	4-27

4.4	Schedule for Estimates of Seasonal Pollutant Loads	4-37
4.5	Proposed Monitoring Program	4-37
4.5.1	Implementation Schedule	4-38
4.5.5	Staffing Requirements	4-38
5.0	PROPOSED COMPREHENSIVE MANAGEMENT PROGRAM	
5.1	Introduction and Overview	5-1
5.2	Management Program for Residential and Commercial Areas	5-2
5.2.1	Regulatory Requirements	5-3
5.2.2	Maintenance Activities for Structural Controls	5-5
5.2.3	Planning Procedures for New or Redeveloped Areas	5-12
5.2.4	Maintenance Activities for Public Roads, Streets, and Highways	5-15
5.2.5	Evaluation of Flood Management Projects	5-16
5.2.6	Monitoring of Solid Waste Facilities	5-17
5.2.7	Management Program for Pesticides, Herbicides, and Fertilizer	5-18
5.2.8	Stormwater Management Program Staffing Requirements	5-19
5.3	Management Program for Illicit Discharges and Improper Disposal	5-20
5.3.1	Introduction	5-20
5.3.2	Regulatory Requirements	5-21
5.3.3	Ordinance Implementation and Enforcement	5-24
5.3.4	On-Going Field Screening Program	5-26
5.3.5	Investigation of Storm Sewer System	5-40
5.3.6	Spills Response Program	5-46
5.3.7	Reporting of Illicit Discharges and Water Quality Impacts	5-49
5.3.8	Management and Disposal of Used Oil and Toxic Materials	5-52
5.3.9	Control Program To Limit Infiltration From Sanitary Sewers	5-54
5.3.10	Staffing Requirements	5-55
5.4	Management Program For Industrial Facilities	5-55
5.4.1	Introduction	5-55
5.4.2	Regulatory Requirements	5-56
5.4.3	Inspection Priorities and Procedures	5-58
5.4.4	Description of Monitoring Program	5-66

5.5	Management Program For Construction Sites	5-68
5.5.1	Introduction	5-68
5.5.2	Regulatory Requirements	5-68
5.5.3	Procedures for Site Planning	5-70
5.5.4	Description of Best Management Practices	5-74
5.5.5	Inspection and Enforcement of Controls	5-80
5.5.6	Education and Training of Construction Site Operators	5-84
5.5.7	Staffing Requirements	5-86
6.0	ASSESSMENT OF CONTROLS	
6.1	Estimated Pollutant Load Reductions	6-1
6.1.1	Nonstructural Controls	6-1
6.1.2	Structural Controls	6-1
6.2	Controls for O&M Practices for Streets	6-3
6.3	Controls for Flood Management Projects	6-3
6.4	Program for Pesticide, Herbicide, and Fertilizer	6-4
6.5	Program for Illicit Discharges and Improper Disposal	6-4
6.6	Program for Industrial Facilities	6-6
6.7	Program for Construction Sites	6-6
6.8	Known Impact of Stormwater Controls on Groundwater	6-7
7.0	FISCAL ANALYSIS	
7.1	Regulatory Requirements	7-1
7.2	Fiscal Analysis	7-1
7.2.1	Salaries	7-3
7.2.2	Equipment	7-3
7.2.3	Contract Services	7-4
7.2.4	Capital Improvements	7-4
7.3	Funding Sources	7-5

LIST OF TABLES

<u>Table Number</u>	<u>Table Name</u>	<u>Page</u>
1-1	General Information	1-3
3-1	NPDES Permitted Industrial Facilities	3-3
3-2	Industrial Facilities with Notice of Intent for Individual Stormwater Permit Applications	3-4
3-3	Knoxville EPA FINDS Report	3-5
3-4	Industrial Facilities on EPA List for Group Stormwater Permit Applications	3-11
4-1	Wet Weather Monitoring Results	4-4
4-2	WMM Land Use Conversion and EMC Sources	4-16
4-3	Summary Land Use and Runoff Coefficients	4-17
4-4	Mean EMCs used in Watershed Management Model	4-19
4-5	Comparison of TVA and Knoxville EMCs	4-22
4-6	Coefficients of Variation	4-25
4-7	High/Low EMCs Estimates	4-26
4-8	WMM Output Summary	4-29
4-9	Water Quality Monitoring Program Summary	4-40
5-1	Summary of Proposed Residential and Commercial Areas Management Program	5-4
5-2	Summary of Stormwater Drainage System Maintenance Fiscal Year 1991-1992	5-7
5-3	Summary of Proposed Illicit Connection and Improper Disposal Management Program	5-22
5-4	Summary of Observations for Field Screening Sites	5-28

5-5	Field Screening Sites which May Merit Further Investigation for Potential Illegal Dumping	5-33
5-6	Summary of Proposed Industrial Facilities Management Program	5-57
5-7	Summary of Proposed Construction Site Management Program	5-69
5-8	Comparison of BMP Controls Described in Erosion and Sediment Control Handbooks	5-78
6-1	Removal Rates for Structural BMPs	6-2
7-1	5-Year Program Summary	7-2

LIST OF FIGURES

<u>Figure Number</u>	<u>Figure Name</u>	<u>Page</u>
5-1	NPDES Stormwater Permit Application Field Screening Data Form	5-36
5-2	NPDES Stormwater Permit Application Field Screening Potential Illicit Connection Inspection	5-44
5-3	Industrial Compliance Inspection	5-59
5-4	Industrial Stormwater Facility Inspection Checklist	5-64