

Table of Contents

Chapter 1: Introduction and Overview

Addressing Requirements for Water Quality Management Planning.....	Page 1-2
The Plan Update Process.....	Page 1-3

Chapter 2: Water Resources in Southwest Ohio

Introduction and Purpose.....	Page 2-2
Level 1: Region.....	Page 2-3
Level 2: Sub-Region.....	Page 2-3
Figure 2-1: Figure 2-1: Sub-Regions (HUC 4) in Butler, Clermont, Hamilton and Warren Counties.....	Page 2-3
Level 3: Basin.....	Page 2-3
Level 4: Sub-Basin.....	Page 2-3
Table 2-1: Codes and Names for Sub-Basins (HUC 8) in Butler, Clermont, Hamilton and Warren Counties.....	Page 2-4
Figure 2-2: Sub-Basins (HUC 8) in Butler, Clermont, Hamilton and Warren Counties.....	Page 2-4
Level 5: Watershed.....	Page 2-5
Table 2-2: Names for Watersheds (HUC 10) in Butler, Clermont, Hamilton and Warren Counties.....	Page 2-5
Figure 2-3: Watersheds (HUC 10) in Butler, Clermont, Hamilton and Warren Counties.....	Page 2-6
Level 6: Sub-Watershed.....	Page 2-6
Table 2-3: Names for Sub-Watersheds (HUC12) in Butler, Clermont, Hamilton and Warren Counties.....	Page 2-7
Figure 2-4: Sub-Watersheds (HUC12) in Butler, Clermont, Hamilton, and Warren Counties.....	Page 2-8
Natural Characteristics.....	Page 2-9
Geology.....	Page 2-9
Figure 2-5: Ordovician and Silurian Geology.....	Page 2-10
Figure 2-6: Cincinnati Arch.....	Page 2-11
Figure 2-7: Generalized Glacial Geology of the Great and Little Miami River Basins.....	Page 2-13
Figure 2-8: Glacial Map of Ohio.....	Page 2-15
Figure 2-9: Sand and Gravel Mining Locations in Butler, Clermont, Hamilton and Warren Counties.....	Page 2-16
Figure 2-10: Yields of the Unconsolidated Aquifers of Ohio.....	Page 2-17
Ecoregions.....	Page 2-18
Figure 2-11: Level IV Ecoregions in Butler, Clermont, Hamilton and Warren Counties.....	Page 2-20
Physiography.....	Page 2-21
Figure 2-12: Physiographic Regions of Ohio.....	Page 2-23
Soils.....	Page 2-24

Table of Contents

Chapter 2 Continued: Water Resources in Southwest Ohio

Figure 2-13: State Soil Geographic Data Base Map Units for Southwest Ohio.....	Page 2-25
Table 2-4: Most Prevalent Soil Types in Butler, Clermont, Hamilton and Warren Counties.....	Page 2-26
Figure 2-14: Soil Regions in the Great and Little Miami River Basins.....	Page 2-35
Butler County	Page 2-36
Clermont County.....	Page 2-36
Hamilton County.....	Page 2-37
Warren County.....	Page 2-37
Figure 2-15: Soil Regions of Ohio.....	Page 2-38
Soil Region 4 Conclusion from Figure 2-15.....	Page 2-39
Soil Region 7 Conclusion from Figure 2-15.....	Page 2-39
Soil Region 9 Conclusion from Figure 2-15.....	Page 2-39
Figure 2-16: Soil Drainage Classes of Ohio.....	Page 2-40
Slope.....	Page 2-41
Figure 2-17: Slopes in Butler, Clermont, Hamilton and Warren Counties.....	Page 2-42
Flood Prone Areas.....	Page 2-42
Figure 2-18: Flood Hazard Areas in Butler County.....	Page 2-43
Figure 2-19: Flood Hazard Areas in Clermont County.....	Page 2-44
Figure 2-20: Flood Hazard Areas in Hamilton County.....	Page 2-45
Figure 2-21: Flood Hazard Areas in Warren County.....	Page 2-46
Depth to Bedrock and High Water Table.....	Page 2-47
Figure 2-22: Shallow Depth to Bedrock in the OKI Region.....	Page 2-47
Figure 2-23: Shaded Bedrock-Topography Map of Ohio.....	Page 2-48
Figure 2-24: High Water Table Areas in the OKI Region.....	Page 2-49
Prime Farmland.....	Page 2-50
Figure 2-25 Prime Farmlands in Butler, Clermont, Hamilton and Warren Counties.....	Page 2-51
Soil Suitability for On-Site Wastewater Treatment Systems.....	Page 2-52
Vegetative Cover.....	Page 2-52
Figure 2-26: Land Use and Land Cover in Ohio.....	Page 2-53
Figure 2-27: Natural Vegetation of Ohio.....	Page 2-55
Climate.....	Page 2-56
Table 2-5: Normal Precipitation at Kings Mills.....	Page 2-56
Table 2-6: Precipitation Threshold Climatology at Kings Mills*	Page 2-57

Table of Contents

Chapter 2 Continued: Water Resources in Southwest Ohio

Figure 2-28: Mean Monthly Temperature and Precipitation at Selected Weather Service Stations in the Great and Little Miami River Basins.....	Page 2-58
Table 2-7: Precipitation Extremes at Kings Mills*.....	Page 2-59
Streamflow.....	Page 2-59
Table 2-8: Summary of Daily Mean Streamflow.....	Page 2-60
Figure 2-29: Mean Daily Discharge by 5-Year Intervals.....	Page 2-60
Figure 2-30: Annual 7-Day Low Flow for Little Miami River at Milford.....	Page 2-60
Water Uses.....	Page 2-61
Figure 2-31: Great Miami Buried Valley Aquifer System in Butler, Clermont, Hamilton and Warren Counties.....	Page 2-63
Figure 2-32: Designated Sole Source Aquifer in Butler, Clermont, Hamilton and Warren Counties.....	Page 2-64
Table 2-9: Source Water Protection Status of Active Community Water Systems and Non-Transient, Non-Community Water Systems in Butler County.....	Page 2-66
Table 2-10: Source Water Protection Status of Active Community Water Systems in Clermont County.....	Page 2-67
Table 2-11: Source Water Protection Status of Active Community Water Systems and Non-Transient, Non-Community Water Systems in Hamilton County.....	Page 2-68
Table 2-12: Source Water Protection Status of Active Community Water Systems and Non-Transient, Non-Community Water Systems in Warren County.....	Page 2-69
Designations and Assessments of Southwest Ohio's Water Resources.....	Page 2-71
Water Supply.....	Page 2-71
Aquatic Life Habitat.....	Page 2-71
Warmwater.....	Page 2-71
Limited warmwater.....	Page 2-72
Exceptional warmwater.....	Page 2-72
Modified warmwarmer.....	Page 2-73
Seasonal salmonid.....	Page 2-73
Coldwater habitat.....	Page 2-73
Limited resource water.....	Page 2-73
Recreation.....	Page 2-74
Bathing waters.....	Page 2-74
Primary contact.....	Page 2-74
Secondary contact.....	Page 2-75
Primary contact recreation subcategories.....	Page 2-76
Class A primary contact recreation.....	Page 2-76
Class B primary contact recreation.....	Page 2-76

Table of Contents

Chapter 2 Continued: Water Resources in Southwest Ohio

Class C primary contact recreation.....	Page 2-76
Human Health (Fish Contaminants).....	Page 2-77
Table 2-13: Fish Tissue Samplings and Sport Fish Consumption Advisories in Butler, Clermont, Hamilton and Warren Counties.....	Page 2-79
Figure 2-33: Exceptional Warmwater Habitat Watersheds in Butler, Clermont, Hamilton and Warren Counties.....	Page 2-80
Figure 2-34: Class A Primary Contact Streams in Butler, Clermont, Hamilton and Warren Counties.....	Page 2-81
Antidegradation Policy.....	Page 2-82
Table 2-14: Special High Quality Waters in Butler, Clermont, Hamilton and Warren Counties.....	Page 2-82
Total Maximum Daily Loads (TMDLs).....	Page 2-83
Priority Points	Page 2-83
Figure 2-35: Ohio EPA's System for Assigning Up to 20 Priority Points to Impaired Waters.....	Page 2-84
Figure 2-36: Watershed Assessment Scores for Aquatic Life Use in Butler, Clermont, Hamilton and Warren Counties.....	Page 2-86
Table 2-13: Fish Tissue Samplings and Sport Fish Consumption Advisories in Butler, Clermont, Hamilton and Warren Counties.....	Page 2-79
Figure 2-33: Exceptional Warmwater Habitat Watersheds in Butler, Clermont, Hamilton and Warren Counties.....	Page 2-80

Chapter 3: Current and Projected Development

Introduction and Purpose.....	Page 3-2
The Relationship between Development and Water Resources.....	Page 3-2
Table 3-1: Stream Discharge Increases as Land Use Changes from Agricultural Land to Residential Land.....	Page 3-4
Water Quality versus Water Quantity.....	Page 3-6
Point Source Pollution versus Nonpoint Source Pollution.....	Page 3-6
Chemical Standards versus Biological Standards.....	Page 3-6
Designated Uses versus Habitat Conditions.....	Page 3-7
Riparian Habitat versus Aquatic Habitat.....	Page 3-7
Gray Infrastructure versus Green Infrastructure.....	Page 3-8
The Relationship Among Water Quality and Land Use Data and Current Development.....	Page 3-9
Table 3-2: Subwatershed Rating by Percentage of Impervious Cover.....	Page 3-11
Figure 3-1: Center for Watershed Protection's Impervious Cover Model.....	Page 3-12
Impervious Surface Analysis.....	Page 3-12
How OKI Analyzed Impervious Surfaces.....	Page 3-12
Impervious Surface Ratings for Watersheds in Southwest Ohio.....	Page 3-13

Table of Contents

Chapter 3 Continued: Current and Projected Development

Table 3-3: Impervious Surface Ratings for HUC 12 Watersheds.....	Page 3-13
Table 3-4: Impervious Surface Ratings for Butler, Clermont, Hamilton and Warren Counties.....	Page 3-15
Figure 3-2: Impervious Surface Ratings for Watersheds in the Four-County Study Area.....	Page 3-16
Figure 3-3: Impervious Surfaces and Ratings for the Watersheds of Butler County.....	Page 3-17
Figure 3-4: Impervious Surfaces and Ratings for the Watersheds of Clermont County.....	Page 3-18
Figure 3-5: Impervious Surfaces and Ratings for the Watersheds of Hamilton County.....	Page 3-19
Figure 3-6: Impervious Surfaces and Ratings for the Watersheds of Warren County.....	Page 3-20
Conclusions on the Impervious Surface Ratings.....	Page 3-21
The Relationship Between Demographic Data and Water Quality Management Planning.....	Page 3-23
Developing Population Projections for Facility Planning Areas.....	Page 3-23
Table 3-5: County Populations for 2010 and 2040.....	Page 3-24
Facility Planning Area (FPA) Boundary Updates.....	Page 3-25
Overlay Facility Planning Areas.....	Page 3-25
Figure 3-7: Anticipated Growth Areas and Recommended Facility Planning Areas in Butler, Clermont, Hamilton and Warren Counties.....	Page 3-26
Figure 3-8: 2010 Population and 2040 Population Projections for Recommended Facility Planning Areas in Butler, Clermont, Hamilton and Warren Counties.....	Page 3-27

Chapter 4: Management of Onsite Wastewater Treatment Systems

Introduction and Purpose	Page 4-2
Figure 4-1: The Fate of Wastewater Discharged into Septic Systems.....	Page 4-4
Water Quality Impacts of Onsite Wastewater Treatment Systems.....	Page 4-5
Nitrates.....	Page 4-5
Phosphorus.....	Page 4-7
Pathogens.....	Page 4-7
Table 4-1: Survival of Certain Pathogens in Soil and Groundwater (after Salvato, 1992).....	Page 4-9
Table 4-2: Typical Pathogen Survival Times (U.S. EPA, 2002).....	Page 4-9
Table 4-3: Onsite System Effectiveness with Major Types of Pollutants.....	Page 4-10
Onsite System Management.....	Page 4-11
Septic Tank to Soil Absorption Trenches.....	Page 4-11
Figure 4-2: Septic Tank to Soil Absorption Trenches.....	Page 4-11
Figure 4-3: Cutaway View of A Soil Absorption Trench.....	Page 4-11
Figure 4-4: Alternative Aggregate or Chamber Products.....	Page 4-12
Pretreatment to Soil Absorption Trenches.....	Page 4-12
Figure 4-5: Typical Suspended Growth Aerobic Treatment Unit.....	Page 4-13

Table of Contents

Chapter 4 Continued: Management of Onsite Wastewater Treatment Systems

Figure 4-6: Fixed Film Pretreatment Unit.....	Page 4-13
Sand Mounds with Pressure Distribution.....	Page 4-14
Figure 4-7: Sand Mound with Pressure Distribution.....	Page 4-14
Peat Biofilter with Soil Absorption.....	Page 4-15
Figure 4-8: Peat Biofilter with Soil Absorption.....	Page 4-15
Single Pass Intermittent Sand Filter/Bioreactor.....	Page 4-16
Figure 4-9: Single Pass Intermittent Sand Filter/Bioreactor.....	Page 4-17
Septic Tank/Pretreatment to Low Pressure Pipe.....	Page 4-18
Figure 4-10: Septic Tank/Pretreatment to Low Pressure Pipe	Page 4-18
Drip Distribution System.....	Page 4-19
Figure 4-11: Drip Distribution System.....	Page 4-19
Spray Irrigation System.....	Page 4-20
Figure 4-12: Spray Irrigation System.....	Page 4-20
Constructed Wetland.....	Page 4-21
Figure 4-13: Constructed Wetland.....	Page 4-22
Age.....	Page 4-23
Table 4-4: Population Served by Onsite Wastewater Treatment Systems and Sewers in 1975.....	Page 4-24
Design.....	Page 4-24
Table 4-5: Vertical Separation Distances Recommended by Ohio Department of Health.....	Page 4-26
Table 4-6: Steps and Features for Improved Design of Onsite Systems.....	Page 4-28
Siting.....	Page 4-28
Figure 4-14: Landscape Position Features and Absorption Field Siting Potential.....	Page 4-30
Installation.....	Page 4-32
Operation.....	Page 4-33
Maintenance.....	Page 4-34
Table 4-7: Recommended Pumping Frequencies, Based on Tank Size and Number of Users.....	Page 4-34
Repairs and Upgrades or Replacement.....	Page 4-35
Cost.....	Page 4-35
Table 4-8: Households and Populations Outside of Municipal Boundaries Earning Below 200% of the Poverty Level in Butler, Clermont, Hamilton and Warren counties.....	Page 4-36
Regulation.....	Page 4-36
Enforcement.....	Page 4-36
Table 4-9: Percent of Land Area in Three Classes of General Soil Suitability for Onsite System Absorption Fields.....	Page 4-41

Table of Contents

Chapter 4 Continued: Management of Onsite Wastewater Treatment Systems

Figure 4-15: Suitability of Soils for Septic Tank-Leach Field Systems in Butler County.....	Page 4-41
Figure 4-16: Suitability of Soils for Septic Tank-Leach Field Systems in Clermont County.....	Page 4-42
Figure 4-17: Suitability of Soils for Septic Tank-Leach Field Systems in Hamilton County.....	Page 4-43
Figure 4-18: Suitability of Soils for Septic Tank-Leach Field Systems in Warren County.....	Page 4-44
Onsite System Regulation.....	Page 4-45
Table 4-10: Onsite System Policies and Criteria in Ohio.....	Page 4-46
Table 4-11: Onsite System Types and Regulatory Responsibilities in Ohio.....	Page 4-47
Local Regulatory Oversight.....	Page 4-48
Onsite System Failure.....	Page 4-49
Onsite System Challenges from a Water Quality Perspective.....	Page 4-50
Local Resources for Enforcing Onsite System Requirements.....	Page 4-51
Interactions with Septage Haulers, Wastewater Treatment Provides and Government Agencies.....	Page 4-52
Table 4-12: Survey Results of Interim Regulations Adopted by the Health Districts of Butler, Clermont, Hamilton and Warren Counties.....	Page 4-53
Clustered Sewage Service.....	Page 4-53
Table 4-13: Decentralized Wastewater Management Models.....	Page 4-56
Table 4-14: A Framework for Exploring the Management of Onsite and Clustered Wastewater Treatment Systems.....	Page 4-57
Potential Problem Areas.....	Page 4-57
Figure 4-19: Butler County Concentrations of Onsite Wastewater Treatment Systems in Relation to Surface Waters.....	Page 4-59
Figure 4-20: Clermont County Concentrations of Onsite Wastewater Treatment Systems in Relation to Surface Waters.....	Page 4-60
Figure 4-21: Hamilton County Concentrations of Onsite Wastewater Treatment Systems in Relation to Surface Waters.....	Page 4-61
Figure 4-22: Warren County Concentrations of Onsite Wastewater Treatment Systems in Relation to Surface Waters.....	Page 4-62
Recommendations.....	Page 4-66
Recommendations by Ohio Department of Health.....	Page 4-66
Recommendations by Ohio EPA.....	Page 4-68
Recommendations by U.S. EPA.....	Page 4-68
Recommendations by American Planning Association.....	Page 4-69
Recommendations by OKI Regional Council of Governments.....	Page 4-69
OKI's Current Recommendations.....	Page 4-70

Table of Contents

Chapter 5: Management of Nonpoint Sources of Pollution

Introduction and Purpose.....	Page 5-2
Sources and Causes of Nonpoint Source Pollution.....	Page 5-3
Figure 5-1: Watersheds in Butler, Clermont, Hamilton and Warren Counties.....	Page 5-4
Table 5-1: Names for HUC 12 Watersheds in Butler, Clermont, Hamilton and Warren Counties.....	Page 5-5
Nonpoint Source Data and Data Sources.....	Page 5-8
Table 5-2: Contaminated Sediment Loadings to Watersheds in Southwest Ohio.....	Page 5-9
Table 5-3: Ohio Water Bodies in the OKI Region Assessed with Human Health Impairments Due to PCBs.....	Page 5-10
Table 5-4: Ohio Water Bodies in the OKI Region with Historical Data of Human Health Impairments.....	Page 5-10
Table 5-5: Watershed Assessment Units in the OKI Region that are Impaired for Recreation Use.....	Page 5-11
Table 5-6: Swimming Advisory Postings at Inland Lake Public Beaches in the OKI Region (2004-2008).....	Page 5-11
Table 5-7: Summary of Public Drinking Water Supply Assessment Results in the OKI Region for the Nitrate and Pesticide Indicators.....	Page 5-12
Table 5-8: List of Prioritized Impaired Waters in Butler, Clermont, Hamilton and Warren Counties, Ohio....	Page 5-13
Table 5-9: Combined Percentage of Land that is Developed or Farmed with Row Crops in Butler County's Watershed Assessment Units.....	Page 5-16
Table 5-10: Combined Percentage of Land that is Developed or Farmed with Row Crops in Clermont County's Watershed Assessment Units.....	Page 5-17
Table 5-11: Combined Percentage of Land that is Developed or Farmed with Row Crops in Hamilton County's Watershed Assessment Units.....	Page 5-18
Table 5-12: Combined Percentage of Land that is Developed or Farmed with Row Crops in Warren County's Watershed Assessment Units.....	Page 5-19
Table 5-13: Nonpoint Source Impairments to Butler County Watersheds.....	Page 5-24
Table 5-14: Nonpoint Source Impairments to Clermont County Watersheds.....	Page 5-26
Table 5-15: Nonpoint Source Impairments to Hamilton County Watersheds.....	Page 5-29
Table 5-16: Nonpoint Source Impairments to Warren County Watersheds.....	Page 5-31
Impervious Surfaces and Nonpoint Source Pollution.....	Page 5-33
Why OKI Analyzed Impervious Surfaces.....	Page 5-34
How OKI Analyzed Impervious Surfaces.....	Page 5-34
Impervious Surfaces in Relation to Slope.....	Page 5-35
Table 5-17: Impervious Surfaces in Relation to Slopes for 82 Watersheds.....	Page 5-35
Table 5-18: Impervious Surfaces in Relation to Slopes for Butler, Clermont, Hamilton and Warren Counties.....	Page 5-38
Figure 5-2: Impervious Surfaces in Relation to Slopes in Butler County.....	Page 5-39
Figure 5-3: Impervious Surfaces in Relation to Slopes in Clermont County.....	Page 5-40
Figure 5-4: Impervious Surfaces in Relation to Slopes in Hamilton County.....	Page 5-41

Table of Contents

Chapter 5 Continued: Management of Nonpoint Sources of Pollution

Figure 5-5: Impervious Surfaces in Relation to Slopes in Warren County.....	Page 5-42
Impervious Surfaces in Relation to Erodible Soils.....	Page 5-43
Table 5-19: Impervious Surfaces in Relation to Erodible Soils for 82 Watersheds.....	Page 5-43
Table 5-20: Impervious Surfaces in Relation to Erodible Soils for Butler, Clermont, Hamilton and Warren Counties.....	Page 5-46
Figure 5-6: Impervious Surfaces in Relation to Erodible Soils in Butler County.....	Page 5-47
Figure 5-7: Impervious Surfaces in Relation to Erodible Soils in Clermont County.....	Page 5-48
Figure 5-8: Impervious Surfaces in Relation to Erodible Soils in Hamilton County.....	Page 5-49
Figure 5-9: Impervious Surfaces in Relation to Erodible Soils in Warren County.....	Page 5-50
Impervious Surfaces in Relation to Riparian Corridors.....	Page 5-51
Table 5-21: Impervious Surfaces in Relation to Riparian Corridors for 82 Watersheds.....	Page 5-51
Table 5-22: Impervious Surfaces in Relation to Riparian Corridors for Butler, Clermont, Hamilton and Warren Counties.....	Page 5-54
Figure 5-10: Impervious Surfaces in Riparian Corridors, Butler County.....	Page 5-55
Figure 5-11: Impervious Surfaces in Riparian Corridors, Clermont County.....	Page 5-56
Figure 5-12: Impervious Surfaces in Riparian Corridors, Hamilton County.....	Page 5-57
Figure 5-13: Impervious Surfaces in Riparian Corridors, Warren County.....	Page 5-58
Impervious Surfaces in Relation to Aquifer Areas.....	Page 5-59
Table 5-23: Impervious Surfaces in Relation to Aquifer Areas for 82 Watersheds.....	Page 5-59
Table 5-24: Impervious Surfaces in Relation to Aquifer Areas for Butler, Clermont, Hamilton and Warren Counties.....	Page 5-63
Figure 5-14: Impervious Surfaces in Relation to Aquifer Areas in Butler County.....	Page 5-63
Figure 5-15: Impervious Surfaces in Relation to Aquifer Areas in Clermont County.....	Page 5-64
Figure 5-16: Impervious Surfaces in Relation to Aquifer Areas in Hamilton County.....	Page 5-65
Figure 5-17: Impervious Surfaces in Relation to Aquifer Areas in Warren County.....	Page 5-66
Conclusions About Impervious Surface Analysis.....	Page 5-67
Conclusions and Recommendations.....	Page 5-70
Stormwater Management.....	Page 5-73
Table 5-25: Butler County Stormwater Management Matrix Part 1 – MS4 Status and Permit Holder.....	Page 5-75
Table 5-26: Butler County Stormwater Management Matrix Part 2 –Minimum Control Measures.....	Page 5-76
Table 5-27: Butler County Stormwater Management Matrix Part 3 - Percent Impervious, Acres Pervious and Acres Impervious.....	Page 5-79
Table 5-28: Clermont County Stormwater Management Matrix Part 1 –MS4 Status and Permit Holder.....	Page 5-80
Table 5-29: Clermont County Stormwater Management Matrix Part 2 – Minimum Control Measures.....	Page 5-81

Table of Contents

Chapter 5 Continued: Management of Nonpoint Sources of Pollution

Table 5-30: Clermont County Stormwater Management Matrix Part 3 – Percent Impervious, Acres Pervious and Acres Impervious.....	Page 5-87
Table 5-31: Hamilton County Stormwater Management Matrix Part 1 – MS4 Status and Permit Holder.....	Page 5-88
Table 5-32: Hamilton County Stormwater Management Matrix Part 2 – Minimum Control Measures.....	Page 5-89
Table 5-33: Hamilton County Stormwater Management Matrix Part 3 – Percent Impervious, Acres Pervious and Acres Impervious.....	Page 5-92
Table 5-34: Warren County Stormwater Management Matrix Part 1 – MS4 Status and Permit Holder.....	Page 5-93
Table 5-35: Warren County Stormwater Management Matrix Part 2 – Minimum Control Measures.....	Page 5-94
Table 5-36: Warren County Stormwater Management Matrix Part 3 – Percent Impervious, Acres Pervious and Acres Impervious.....	Page 5-96

Chapter 6: Watershed Planning in Southwest Ohio

Introduction and Purpose.....	Page 6-2
The Watershed Groups of Southwest Ohio.....	Page 6-4
East Fork Watershed Collaborative.....	Page 6-5
Friends of the Great Miami.....	Page 6-9
Greenacres Water Quality Project.....	Page 6-12
Little Miami Inc.....	Page 6-18
Little Miami River Partnership.....	Page 6-21
Mill Creek Restoration Project.....	Page 6-25
Mill Creek Watershed Council of Communities.....	Page 6-30
Three Valley Conservation Trust.....	Page 6-36
The Relevance of Total Maximum Daily Loads to Watershed Action Planning.....	Page 6-40
Figure 6-1: The Status of Watershed Action Plans in Southwest Ohio.....	Page 6-41
Figure 6-2: The Status of Watershed Action Plans in Southwest Ohio.....	Page 6-42

Chapter 7: Wastewater Facilities Planning

Federal and State Oversight of Public Wastewater Treatment Plants.....	Page 7-2
OKI's Work with Public Wastewater Facilities for "208" Planning.....	Page 7-3
Figure 7-1 Existing Wastewater Facility Planning Areas in 2009 for Butler, Clermont, Hamilton and Warren Counties.....	Page 7-4
Figure 7-2 Recommended Wastewater Facility Planning Areas In 2011 for Butler, Clermont, Hamilton and Warren Counties, Ohio.....	Page 7-5

Table of Contents

Chapter 7 Continued: Wastewater Facilities Planning

Figure 7-3 Wastewater Treatment Facilities and Sewer Service Areas in 2011 in Butler, Clermont, Hamilton and Warren Counties.....	Page 7-6
Recommended Butler County Wastewater Facility Planning Areas.....	Page 7-7
Dry Fork Whitewater River Facility Planning Area.....	Page 7-8
Elk Creek Facility Planning Area.....	Page 7-10
Fairfield Facility Planning Area.....	Page 7-12
Four Mile Creek Facility Planning Area.....	Page 7-14
City of Hamilton Facility Planning Area.....	Page 7-16
Indian Creek Facility Planning Area.....	Page 7-18
LeSourdsville Facility Planning Area.....	Page 7-20
Middletown Facility Planning Area.....	Page 7-22
Oxford Facility Planning Area.....	Page 7-24
Seven Mile Facility Planning Area.....	Page 7-26
Upper Mill Creek Facility Planning Area.....	Page 7-28
Recommended Clermont County Wastewater Facility Planning Areas.....	Page 7-30
Felicity Facility Planning Area.....	Page 7-31
Horner Run Branch Hill Facility Planning Area.....	Page 7-33
Lower East Fork Facility Planning Area.....	Page 7-35
Middle East Fork Facility Planning Area.....	Page 7-37
Milford Facility Planning Area.....	Page 7-39
New Richmond Facility Planning Area.....	Page 7-41
Nine Ten Mile Facility Planning Area.....	Page 7-43
O'Bannon Creek Facility Planning Area.....	Page 7-45
Stonelick Facility Planning Area.....	Page 7-47
Upper East Fork Facility Planning Area.....	Page 7-49
Williamsburg Facility Planning Area.....	Page 7-51
Recommended Hamilton County Wastewater Facility Planning Areas.....	Page 7-53
Glendale Facility Planning Area.....	Page 7-54
Harrison Facility Planning Area.....	Page 7-56
Little Miami Facility Planning Area.....	Page 7-58
Loveland Facility Planning Area.....	Page 7-60
Mill Creek Facility Planning Area.....	Page 7-63
Muddy Creek Facility Planning Area.....	Page 7-65
Polk Run Sycamore Creek Facility Planning Area.....	Page 7-67

Table of Contents

Chapter 7 Continued: Wastewater Facilities Planning

Taylor Creek Facility Planning Area.....	Page 7-69
Western Hamilton County Facility Planning Area.....	Page 7-71
Whitewater Facility Planning Area.....	Page 7-74
Recommended Warren County Wastewater Facility Planning Areas.....	Page 7-77
Butlerville Facility Planning Area.....	Page 7-78
Caesar Creek Facility Planning Area.....	Page 7-80
Fort Ancient Facility Planning Area.....	Page 7-82
Franklin Facility Planning Area.....	Page 7-84
Lebanon/South Lebanon Facility Planning Area.....	Page 7-86
Lower Little Miami Facility Planning Area.....	Page 7-88
Mason Facility Planning Area.....	Page 7-90
North O'Bannon Creek Facility Planning Area.....	Page 7-92
Southwest Warren County Facility Planning Area.....	Page 7-94
Springboro Facility Planning Area.....	Page 7-97

Chapter 8: Ongoing Areawide Water Quality Management Planning

The Evolution of "208" Planning.....	Page 8-2
The Plan Amendment Process.....	Page 8-2
Steps in Amending the "208" Plan.....	Page 8-3
Information Checklist for "208" Amendment Requests.....	Page 8-3
General Criteria for Evaluating 208 Amendment Requests.....	Page 8-4
Future Planning Activities.....	Page 8-5

Appendix A : Watershed and Large River Assessments

Appendix B: Stream Database

Appendix C: Impervious Surface Analysis