Appendix 10-1

Updated Content for
Ohio-Kentucky-Indiana Regional Council of Governments

2006 State Water Quality Management Plan

OKI Updates to Ohio's Water Quality Management (WQM) Plan – June 2005

Plan Element
MUNICIPAL AND INDUSTRIAL WASTE TREATMENT 130.6 (c) (3)

WQM Plan Content

The locations of continuous and intermittent point sources are identified in the basin chapters. Continuous point discharge locations, including both municipal and industrial, are shown on Plate XI-1 and on the 1984 *Primary Sewerage System Map* prepared by OKI. Major wasteloads are presented in the basin chapters along with estimates of loads from all major sources. Industrial wasteloads, National Pollutant Discharge Elimination System (NPDES) requirements, and some recommendations for industrial wasteload reductions based on water quality assessment are also identified in the basin chapters.

Recommendations for decommissioning, upgrading, expanding, and constructing municipal wastewater treatment plants are presented for each FPA in Chapter XI, are shown graphically in Plate XI-1, and are indicated in the recommended wasteload allocations in the basin chapters. Treatment needs for 24 facility planning areas (FPAs) are further analyzed in separate reports that were developed by OKI as "preliminary facility plans." OKI then conducted related *Facility Planning Area Evaluations* in 1984 for Millville and McGonigle, two small communities in Butler County; reports of the same name review these two areas' existing problems and present control recommendations and alternatives.

Pollution problems associated with the lack of adequate sewage treatment facilities were identified and alternatives studied for two communities in *An Assessment of the Wastewater Treatment Needs of the Hunter Area in Warren County, Ohio (1986)* and *An Assessment of the Wastewater Treatment Needs of Kings Mills in Warren County, Ohio (1986).*

The report *Status of Wastewater Treatment Facilities and Facility Planning Areas in Butler, Clermont, Hamilton and Warren Counties, Ohio (1998, revised 1999)* assesses the need for centralized wastewater treatment in 42 facility planning areas covering OKI's four Ohio counties. This report includes tables on wastewater treatment plants with NPDES permits, 1995 population and 2020 population projections for FPAs, and a four-county map showing the discharge points of wastewater treatment plants, their basic status, onsite wastewater treatment system concentrations, areas with sewage service and facility planning area boundaries. The four-county map accompanying this report was subsequently revised to reflect amendments to facility planning area boundaries adopted in 2001, 2003, and 2004.

An updated series of maps and attribute tables was created in OKI's Arc-GIS system in 2004 and 2005 to show the discharge points of wastewater treatment plants with NPDES permits and areas where centralized sewer service is being provided in OKI's four Ohio counties.

Ohio EPA continues to prepare reports that provide baseline data on water quality and can be used for setting stream use designations and effluent limitations. These include *Biological and Water Quality Study of Sevenmile Creek (1992); Biological and Habitat Investigation of Greater Cincinnati Area Streams: The Impacts of Interceptor Sewer Line Construction and Maintenance (1992); Biological and Water Quality Study of Mill Creek and Tributaries (1993); Biological and Water Quality Study of the Middle and Lower Great Miami River and Selected Tributaries (1995);* and the *Biological and Water Quality Study of the Little Miami River Basin (1998).*

The U.S. Geological Survey has also prepared a very comprehensive *National Water Quality Assessment of the Great Miami and Little Miami Basins*, which provides a wealth of base data for planning purposes. The NAWQA was several years in the making, and resulted in publication of the following reports: *Occurrence and Distribution of Fish Species in the Great and Little Miami River Basins, Ohio and Indiana, Pre-1900 to 1998 (published in 1999); Environmental Setting and Effects on Water Quality in the Great and Little Miami River Basins, Ohio and Indiana (2000); Nitrogen and Phosphorus in Streams of the Great Miami River Basin, Ohio, 1998-2000 (published 2003); Trace Elements and Synthetic Organic Compounds in Streambed Sediment and Fish Tissue in the Great and Little Miami River Basins, Ohio and Indiana, 1990-98 (published 2003);* and *Water Quality in the Great and Little Miami River Basins, Ohio and Indiana, 1999-2001 (published 2004).*

OKI Updates to Ohio's Water Quality Management (WQM) Plan – June 2005

Plan Element
NONPOINT SOURCE MANAGEMENT AND CONTROL 130.6 (c) (4)

WQM Plan Content

The Regional Water Quality Management Plan describes existing and projected land uses, and estimates urban and rural runoff loads by drainage area and their water quality impacts in the basin chapters. Rural acreage needing treatment to reduce soil loss to allowable levels is estimated by type of land use by drainage area in the original 1977 WQM Plan.

Management techniques for both urban and rural nonpoint sources are described in Chapter V. The OKI report *1979 Continuing Water Quality Management Planning* includes a section on *Control Source Problems* that identifies the best management practices (BMPs) needed in drainage areas with water quality problems that are agriculturally related, and provides a basis for BMP selection, including BMP costs and benefits.

Additional assessments of rural sources of pollution, with an emphasis on local conservation agency perspectives and prioritization of problem areas, are provided in OKI's 1979 report on *Ranking of Agricultural Nonpoint Source Problem Areas* and in OKI's 1983 report on *Priority Areas for Nonpoint Source Control*.

"A plan of action" for four of these priority watersheds, identifying specific problems and control procedures, is contained within individual *Nonpoint Source Profile reports for Seven Mile Creek, Reeders Run, Moores Fork, and Popular Creek*, prepared by OKI in 1984. Watershed investigation of nonpoint source pollution contributions to streams was documented in OKI's 1986 report *Seven Mile Creek – Target Water Body Profile*.

Profile information on nonpoint source problems in a suburban area is developed in OKI's 1983 report, *Assessing Water Pollution Controls for Sharon Woods Lake*. The condition of Winton Lake was documented in OKI's 1986 report *Winton Lake – An Analysis of Pollution Sources* and 1989 report *Phase I Study of Winton Lake in Hamilton County, Ohio*. The Stonelick Lake watershed was examined in OKI's 1986 report *Stonelick Lake – An Analysis of Pollution Sources* and OKI's 1991 report *Watershed Investigation into Water Pollution Sources of Stonelick Lake, Clermont County, Ohio and Addendum*.

The Mill Creek Watershed Management Plan was prepared by OKI in 1995 to address nonpoint sources in the OKI region's most urbanized stream, and included a map entitled *Mill Creek Watershed, Butler and Hamilton Counties, Ohio* which has been the

basis for subsequent work by OKI and others such as the Mill Creek Watershed Council of Communities to improve water quality in the creek.

To support control of erosion from construction processes, alternative control measures and a model ordinance are discussed in OKI's 1978 report, *Guide to Controlling Sediment from Construction Activities*. OKI's 1984 report, *Rural Erosion Control Programs*, documents the efforts of local governments in southwestern Ohio to use ordinances for reducing construction-related sediment.

Managerial and technical alternatives for reducing pollution from on-site systems are discussed in OKI's 1978 report *On-Site Wastewater Treatment Systems*. Existing management of on-site systems is assessed in OKI's 1984 report, *Evaluating On-Site Wastewater Treatment Programs: A Survey of County Health Agencies*, which also summarizes local health officials' perspectives on the strengths and weaknesses of their on-site management activities. Two on-site system regulation programs are described in OKI's 1997 report *Tools for Groundwater Management*, which describes innovative efforts that contribute to nonpoint source management and control.

Onsite wastewater treatment status and needs are described in OKI reports entitled *On-site Wastewater Treatment and Disposal Systems in Warren County, Ohio (1986)* and *Assessment of On-site Wastewater Treatment Systems in Clermont County, Ohio (1987).* Soils unsuitable for onsite septic tank systems in unsewered areas were delineated by OKI on *Maps of Soil Suitability for Onsite Septic Tank-Leach Field Wastewater Treatment Systems in Butler, Clermont, Hamilton, and Warren Counties (1987).*

Data from the *Ohio Nonpoint Source Stream Assessment* were used by OKI to create a *Stream Database for Butler, Clermont, Hamilton, and Warren Counties, Ohio* in 1987 and watershed maps in 1989. *The Homeowners Conservation Guide* was prepared by OKI to educate property owners on an array of topics related to nonpoint source pollution in 1990 and was subsequently updated and expanded in a second edition in 1998.

OKI has demonstrated a variety of nonpoint source management and control measures through the implementation of projects funded under Section 319 of the Clean Water Act. The *Indian Creek Watershed Bank Stabilization Project* undertaken from 1996-1998 used cedar tree revetments, streambank re-grading, riparian trees to establish a filter strip, and willow posts to deal with severe bank erosion on this Butler County stream, and has been visited by conservation staff from several localities and states. OKI prepared the *Final Report on the Indian Creek Watershed Bank Stabilization Project* in 1998.

OKI's Mill Creek Watershed Stormwater Quality Management Project undertaken from 2002-2004 created a five-acre constructed wetland in the Mill Creek headwaters

through a public/private sector partnership and installed oil and grit separators at a large manufacturing site and at a county maintenance garage. In addition, the monitoring element of this Mill Creek project involved the first Quality Assurance Project Plan by a non-profit organization that was approved by U.S. EPA and used by others as template. The *Final Report on the Mill Creek Watershed Stormwater Quality Management Project* prepared by OKI in 2004 demonstrated the benefits of the project on stream quality.

OKI has also demonstrated nonpoint source management and control measures through the implementation of projects under the riparian corridor restoration component of the Clean Ohio Conservation Fund. The Beaver Run Riparian Corridor Restoration Project undertaken in 2003 involved introducing coir logs and matting, reintroducing of native plant species, and bush honeysuckle eradication to reduce erosion, as well as a plunge pool to slow water flow, reduce erosion, and increase channel capacity for stormwater runoff to Beaver Run, a Mill Creek tributary in the City of Springdale. The *West Fork Mill Creek Restoration Project* installed in 2003 also involved using coir matting, reintroducing native plant species, and bush honeysuckle eradication to reduce erosion and restore riparian corridor along this stream in suburban Colerain Township.

The *Mill Creek TMDL Nonpoint Source Load Reduction Report* was prepared in 2003 by the Mill Creek Watershed Council with member organizations such as OKI; OKI staff was a major contributor of information and analysis to the report. In a similar fashion OKI provided substantial data and information sources to the U.S. Army Corps of Engineers for the preparation of two reports published in 2005: *Mill Creek, Ohio Flood Damage Reduction Project, General Reevaluation Report*; and the *Final Environmental Impact Statement* for this general reevaluaton report.

OKI's Arc-GIS capability has enabled the creation of many maps and geo-referenced spatial data that are useful to watershed and water quality management planning, such as a *Natural Systems Inventory* from 2004 that includes database layers on waterways, wetlands, aquifers, greenspaces, land use, elevation, slope, major soil groups, and hydrologic unit codes; a *Todd's Fork Watershed* map from 2004; a *Lower Little Miami Watershed* map from 2004; a *Mill Creek Watershed* map from 2004; and a *Lower Great Miami* watershed map from 2005.

OKI Updates to Ohio's Water Quality Management (WQM) Plan – June 2005

Plan Element
MANAGEMENT AGENCIES 130.6 (c) (5)

WQM Plan Content

All agencies with managerial responsibilities for water pollution control are identified in Chapter XII of the original plan, which includes descriptions of agency responsibilities. OKI's report *1979 Continuing Water Quality Management Planning* includes a section on *Assess Agricultural Agencies* that describes the management structure and responsibilities and local technical and financial capability for implementing projects under the Rural Clean Water Program. More information on the management resources of local conservation agencies is provided in OKI's 1984 report, *Assessing Local Agricultural Implementation of Nonpoint Source Control Measures*.

Arrangements for coordinating water quality management and planning are described in more detail in several OKI WQM Plan updates that are intended to provide convenient reference documents for management agencies: *WQM Plan Update (published April 1984, summarizing June 1977 to October 1983); WQM Plan Update Summary (published October 1985, summarizing November 1983 to September 1985); WQM Plan Update Summary (published May 1990, summarizing October 1985 to July 1989); WQM Plan Update Summary (published May 1991, summarizing August 1989 to November 1990); WQM Plan Update Summary (published April 1992, summarizing November 1990 to March 1992); WQM Plan Update Summary (published August 1993, summarizing April 1992 to August 1993);* and *WQM Plan Update Summary (published June 2005, summarizing September 1993 to June 2005).*

Facility planning area (FPA) revisions and designated management agency (DMA) revisions are described in formal amendments adopted since the plan's publication. A four-county map of *Wastewater Treatment Facilities and Facility Planning Areas in Butler, Clermont, Hamilton, and Warren Counties, Ohio* initially created in 1998 has been updated to reflect amendments to FPA boundaries adopted in 2001, 2003, and 2004.

OKI Updates to Ohio's Water Quality Management (WQM) Plan – June 2005

Plan Element
IMPLEMENTATION MEASURES 130.6 (c) (6)

WQM Plan Content

The statutory basis, revenue sources and authorities of regulatory agencies, the responsibilities of all agencies with water quality management roles and recommendations for legislation with regulatory provisions are presented in Chapter XII. The implementation statements signed by designated management agencies and OKI's 1979 report *A Process for Water Quality Management* provide additional information.

Control alternatives for all types of sources were assessed for their environmental impacts in the basin chapters of the original 1977 WQM Plan. Additional assessment was prepared in OKI's 1977 report*, Environmental Assessment of the Regional Water Quality Management Plan*. General physical characteristics are described in Chapter II and the basin chapters.

Issues affecting plan implementation are described in more detail in several OKI WQM Plan updates: *WQM Plan Update (published April 1984, summarizing June 1977 to October 1983); WQM Plan Update Summary (published October 1985, summarizing November 1983 to September 1985); WQM Plan Update Summary (published May 1990, summarizing October 1985 to July 1989); WQM Plan Update Summary (published May 1991, summarizing August 1989 to November 1990); WQM Plan Update Summary (published April 1992, summarizing November 1990 to March 1992); WQM Plan Update Summary (published August 1993, summarizing April 1992 to August 1993);* and *WQM Plan Update Summary (published June 2005, summarizing September 1993 to June 2005).*

The report *Inventory of OKI's Water Quality Management Projects (1990)* summarized reports and projects and described how each product up to that point had been used.

NPDES permit numbers for both publicly owned and industrial point sources are identified in basin chapters of the original WQM Plan (the permits identify the dates by which discharge requirements are to be met). OKI's report *Status of Wastewater Treatment Facilities and Facility Planning Areas in Butler, Clermont, Hamilton and Warren Counties, Ohio (1998, revised 1999)* contains more recent information on the permit status of publicly owned point sources, and lists their permit numbers when available. Attribute tables about publicly owned treatment works and their NPDES permits and a related database in OKI's geographic information system were initiated in 2004 and 2005 to provide the most recent information and to enable periodic updates of it.

OKI Updates to Ohio's Water Quality Management (WQM) Plan – June 2005

Plan Element
DREDGE OR FILL PROGRAMS 130.6 (c) (7)

WQM Plan Content

None

OKI Updates to Ohio's Water Quality Management (WQM) Plan – June 2005

Plan Element
BASIN PLANS 130.6 (c) (8)

WQM Plan Content

None

OKI Updates to Ohio's Water Quality Management (WQM) Plan – June 2005

Plan Element
GROUND WATER 130.6 (c) (9)

WQM Plan Content

Residual waste disposal practices, alternatives and types of potential problems are discussed in OKI's 1978 report *Land Application of Residual Solids from Wastewater Treatment Plants.* The 1984 report *Field Testing a Method for Projecting Wastewater Treatment Residuals* outlines a general methodology for estimating current and future quantities of sludge and describes how the method was refined and validated.

OKI planning for groundwater protection began in 1988 with the *Petition for Sole Source Aquifer Designation of the Great Miami Buried Valley Aquifer System in Butler, Clermont, Hamilton and Warren Counties, Ohio*. The petition was successful and U.S. EPA granted Sole Source Aquifer Designation to this aquifer system in July of 1988.

The OKI report *Status of Groundwater Monitoring in Butler, Clermont, Hamilton, and Warren Counties, Ohio (1988)* included a map of ambient groundwater quality monitoring sites run by public agencies or water supply systems, a summary of monitoring data, and recommendations for developing a regional monitoring program. OKI added to its planning data with the report *Survey of Industrial Groundwater Usage and Data in Butler, Clermont, Hamilton and Warren Counties (1990)*, developed to obtain a clearer picture of groundwater dependence in the region and to improve the hydrogeological information available for mapping the aquifer system. OKI's report *Selected Data for the Great Miami Buried Valley Aquifer System in Butler, Clermont, Hamilton, and Warren Counties, Ohio (1990)* provided peak level data for up to 44 water quality parameters measured over the previous five to ten years at 160 monitoring sites.

In 1989 OKI established a mechanism for coordination of future groundwater planning efforts in the region with the publication of *A Planning Framework to Protect and Manage Ground Water in Butler, Clermont, Hamilton and Warren Counties, Ohio.* To deal with management needs for groundwater data in the region, OKI prepared a *Recommendations Report for a Ground Water Resources Information Management System for Southwestern Ohio* in 1989.

Data on potential threats to groundwater were researched and presented in several OKI reports including: *Potential Sources of Groundwater Pollution in Butler, Clermont, Hamilton and Warren Counties, Ohio (1988),* which identified and mapped nine types of potential pollution sources and their proximity to aquifers and water supply intakes; and *Index of Potential Sources of Groundwater Pollution in Butler, Clermont, Hamilton and Warren Counties, Ohio (1992*), which provided summary information for almost a

thousand sites overlying the aquifer system, indexed by fourteen potential pollution source categories and by municipality or township, and which mapped public water supply wells, ambient monitoring sites, and industrial groundwater usage sites. A 1993 *Addendum to Index of Potential Sources of Groundwater Pollution in Butler, Clermont, Hamilton and Warren Counties, Ohio* expanded the scope of the 1992 report, added three new categories of potential pollution sources, and updated the county level maps for all categories of potential pollution sources inventoried to that point.

OKI initially mapped land use over the aquifer system in Butler, Clermont, Hamilton, and Warren Counties, Ohio in 1989, as described in a report entitled *Methodology for Mapping Land Use Over the Aquifers in Butler, Clermont, Hamilton, and Warren Counties,* which included thirteen different types of land use grouped into three broad categories designated as most, moderately, or least intensive to indicate their generalized potential for groundwater contamination. As OKI acquired more sophisticated mapping capability, this work was updated in a series of maps showing seven land use categories, public well locations, and industrial well locations, as described in the report *Methods for Mapping Land Use Overlying the Great Miami Buried Valley Aquifer System in Butler, Clermont, Hamilton, and Warren Counties, Ohio (2000)*, accompanied by a four-county map and individual county maps.

OKI's 1994 report*, Land Use Authorities for Protecting Groundwater in Butler, Clermont, Hamilton, and Warren Counties, Ohio* summarizes the findings of a survey of local land use controls over the Great Miami Buried Valley Aquifer System, and includes county maps and a matrix of existing regulatory authorities to protect groundwater. OKI's *Tools for Groundwater Management (1997)* serves as a guide to local ordinances, regulations, and procedures in OKI's four Ohio counties that merit attention for wellhead and aquifer protection planning, and includes an annotated bibliography of regional, state, and federal sources of pertinent information.

OKI's 1999 map series *Zoning Authorities in Butler, Clermont, Hamilton, and Warren Counties, Ohio* shows which units of local government have authority to control zoning over the Great Miami Buried Valley Aquifer System, as an aid to wellhead and aquifer protection planning. The OKI report *Matrix of Local Sources of Information for Potential Pollution Source Inventories (2000)* was also developed as a planning tool for wellhead protection efforts with local governments.

OKI initially digitized areas with public water service in a 1997 mapping effort covering Butler, Clermont, Hamilton, and Warren Counties, Ohio. An updated series of maps and attribute tables was created in OKI's Arc-GIS system in 2004 and 2005 to show areas with public water supply in OKI's four Ohio counties and to provide data about the community water systems serving them.