

3.6 OHIO RIVER

This report is an update to the *WATERS of Jefferson County Report – July 1, 1999 to June 30, 2000*. For additional information on the Ohio River Watershed, refer to the *WATERS of Jefferson County Report – July 1, 1999 to June 30, 2000* located on the CD in Appendix I.

Figure 17. Ohio River Watershed

Exhibit 9 illustrates several features of the Municipal Separate Storm Sewer System (MS4), Combined Sewer Overflow (CSO), and Sanitary Sewer Overflow (SSO) Programs in the Ohio River Watershed.



3.6.1 HISTORY, DEMOGRAPHIC AND COMMUNITY INFORMATION

Refer to the *WATERS of Jefferson County Report – July 1, 1999 to June 30, 2000*.

3.6.2 HYDROLOGY AND FLOODING

There are approximately 5.8 square miles of flood hazard area (area within the 100-year Federal Emergency Management Administration (FEMA) Floodplain) and there are an estimated 1,133 structures located within this floodplain.

Refer to the *WATERS of Jefferson County Report – July 1, 1999 to June 30, 2000*.

3.6.2.1 Flood Prevention Measures

Refer to the *WATERS of Jefferson County Report – July 1, 1999 to June 30, 2000*.

3.6.3 STATUS OF WATER QUALITY

Refer to the *WATERS of Jefferson County Report – July 1, 1999 to June 30, 2000*.

3.6.4 WATER QUALITY IMPACTS

ORSANCO Ohio River Study Update

ORSANCO monitored weather conditions from May through November in 2000. Conditions appropriate for a wet weather survey occurred in August of 2000. On August 8, 2000, the Louisville area received approximately 1.5 inches of rain following an antecedent dry period of over 72 hours. Rainfall began early in the afternoon and continued through late afternoon, with the greatest intensity occurring between 1:00 and 2:00 p.m. Hourly rainfall data was collected from Louisville MSD's rain gauge network. Due to the timing of the rainfall, Ohio River sampling crews were only able to collect bacteria samples from a small portion of the study area in the McAlpine Pool on August 8th. Samples for all parameters were collected over the entire cross-sectional study area (river miles 588 through 630) on the following three days. Samples for all parameters were collected over the entire longitudinal study area (river miles 610 through 660) on the final two days of the survey. The tributary and source sampling programs were not significantly affected by the timing of the rainfall.

A pre-season meeting of the project participants was held on April 19, 2001 in preparation for the 2001 sampling season. All communities were represented at the meeting. All preparations were completed and the Project Team began monitoring weather conditions on May 7, 2001. In an unprecedented start to the sample season, the appropriate weather conditions for a wet weather survey occurred on May 7th. The Louisville area received approximately 1.75 inches of rain following an antecedent dry period of over 72 hours. Rainfall began late in the afternoon and continued through late evening, with the greatest intensity occurring between 8:00 and 9:00 p.m. Hourly rainfall data was collected from Louisville MSD's rain gauge network on the internet. This resource proved extremely valuable in monitoring the storm as it moved through Louisville. Samples were collected at all Ohio River sites, tributary sites and source sites, with the exception of Morris Foreman, which was experiencing a power outage.

Modeling Activities

On November 21, 2000, representatives from the U.S. Geological Survey, J.E. Edinger Associates, Inc., Limno-Tech, Inc. and ORSANCO met to discuss modeling activities associated with the project. The purpose of this meeting was to determine how the output from both the hydrodynamic and land-side pollutant models would serve as input to the ultimate goal of the project, the water quality model. Time frames and data needs were also discussed to confirm that the final report deadline would be met.

The U.S. Geological Survey completed the hydrodynamic model and prepared a report documenting its development and use. The report, titled "Calibration and Validation of a Two-Dimensional Hydrodynamic Model of the Ohio River, Jefferson County, Kentucky," was released in June 2001. Development of the land-side pollutant loading model is nearing completion. MSD provided a large amount of historical discharge information. Efforts to collect discharge information from the Indiana side of the river are currently underway.

Progress on the water quality model includes preliminary calibration and validation of lateral dispersion coefficients using data collected during two dye surveys. The dispersion coefficients will be used to determine the fate and transport of the pollutants being modeled. The model will be structured to allow predictive capabilities for any wet weather parameter that the monitoring data indicate are of concern.

Modeling activities will continue through the collection of the last sample data set.

3.6.4.1 Point Source

Table 42 summarizes point sources in the Ohio River Watershed.

Table 42. Summary of Point Source Regulatory Obligations – Ohio River Watershed

<i>Sanitary Sewer Overflows</i>	<i>Combined Sewer Overflows</i>	<i>Storm Water Outfalls</i>	<i>General Permittees</i>	<i>Significant Industrial Users</i>	<i>Wastewater Treatment Plants</i>
Recurring: 1					MSD Regional: 1
Investigated: 1	57	NA	46	54	MSD Small: 1
Eliminated: 1					Private: 5

SSO fact sheets are located in Appendix V.

3.6.4.2 Non-Point Source

Refer to the *WATERS of Jefferson County Report – July 1, 1999 to June 30, 2000*.

3.6.4.3 Habitat and Biological Quality

Refer to the *WATERS of Jefferson County Report – July 1, 1999 to June 30, 2000*.

3.6.5 TRACKING CHANGES IN WATER QUALITY

Refer to the *WATERS of Jefferson County Report – July 1, 1999 to June 30, 2000*.

3.6.6 MS4 PROGRAM – CO-PERMITTEES

There are six co-permittees in the Ohio River Watershed that are responsible for fulfilling the requirements of the MS4 Permit. The co-permittees include:

- City of Prospect
- City of Shively
- City of Louisville
- Jefferson County

- Kentucky Transportation Cabinet, District Five
- MSD

Following are watershed-specific highlights from the co-permittees' MS4 Programs. Only those permit elements that have highlights are listed. For highlights that are not watershed-specific, refer to the MS4 Programmatic section of the *WATERS Report*. All MS4 Permit activities for each of the co-permittees is detailed in Appendix III.

3.6.6.1 City of Prospect



Refer to the *WATERS of Jefferson County Report – July 1, 1999 to June 30, 2000* for information on the City of Prospect.

There are no watershed-specific MS4 activities to highlight for the City of Prospect during the reporting period.

3.6.6.2 City of Shively

Refer to *WATERS of Jefferson County Report – July 1, 1999 to June 30, 2000* for information on the City of Shively.

There are no watershed-specific MS4 activities to highlight for the City of Prospect during the reporting period.

3.6.6.3 City of Louisville



Refer to the *WATERS of Jefferson County Report – July 1, 1999 to June 30, 2000* for information on the City of Louisville.

Post Construction Controls, Louisville

The City of Louisville increased green space at West Main Street and at the Park Duvall redevelopments. Phase I of the Park Duval redevelopment is almost complete. Phase II is under construction and Phase III is getting ready to start construction.

Good Housekeeping/Pollution Prevention, Louisville

Within the City of Louisville's Business District, a small vacuum truck is responsible for cleaning debris on sidewalks and along curbs.

3.6.6.4 Jefferson County



Refer to the *WATERS of Jefferson County Report – July 1, 1999 to June 30, 2000* for information on Jefferson County.

There are no watershed-specific MS4 activities to highlight for Jefferson County during the reporting period.

3.6.6.5 Kentucky Transportation Cabinet, District Five



Refer to the *WATERS of Jefferson County Report – July 1, 1999 to June 30, 2000* for information on the Kentucky Transportation Cabinet, District Five (KyTC).

There are no watershed-specific MS4 activities to highlight for KyTC during the reporting period.

3.6.6.6 MSD



Refer to the *WATERS of Jefferson County Report – July 1, 1999 to June 30, 2000* for information on MSD.

Post Construction Controls, MSD

Greenways - The Upper River Road Multi-Use Trail is complete. Phase II of the Ohio River Levee Trail is underway and is currently in the planning phase.

MSD's Central Facility - MSD is in the process of updating an existing structure. This structure will be used as MSD's Central Facility and will house MSD's Operation and Maintenance Departments. The update will include multiple storm water Best Management Practices (BMPs).

- The site is approximately 25 acres, of which 19.3 acres is impervious. The current plans are to reduce the amount of imperviousness by constructing vegetated swales, buffer strips, and vegetated islands. The final impervious area should be reduced to approximately 15.7 acres.
- The total roof area of the building is approximately 4.64 acres. Approximately one-half of the roof drains will be outletted to a vegetated area.
- A wet basin containing vegetation will be included to filter parking lot runoff.
- MSD is also considering the use of a Stormceptor® for treating parking lot runoff.

Good Housekeeping/Pollution Prevention, MSD

MSD maintains a composting bin. Yard waste, food scraps and coffee grounds from the Main Office are composted. This compost is used on site.

Monitoring, MSD

MSD completed a stream restoration project on a 300-foot long stretch of Winding Falls Creek in the Winding Falls subdivision. MSD and the Civil and Environmental Engineering and Biology Departments of the University of Louisville monitored geomorphological, habitat, riparian, and aquatic community recovery to evaluate the effectiveness of the stream restoration.

3.6.7 CSO PROGRAM – MSD

CSO Projects

MSD conducted the following projects during the reporting period as part of the Combined Sewer Overflow (CSO) Program.

Southwest Louisville Feasibility Study – Refer to *WATERS – Year Zero Report* for complete project description. In general, activities on the feasibility study have included expansion of the existing CSO XP-SWMM model to include sewers 18-inches and greater in diameter within the study area and re-calibration of the expanded XP-SWMM model. Additionally, within each of the 15 “problem areas,” maximum water surface elevations for the eight reference storms were estimated.

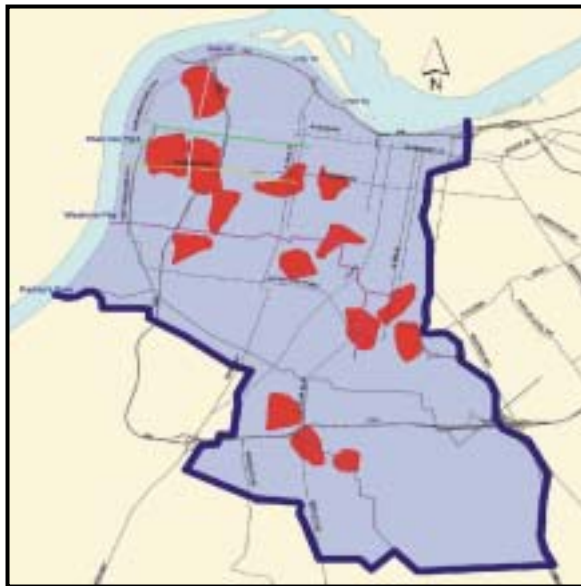
During the last year, the feasibility study has been expanded to include the following:

- Further definition of flooded areas and volumes within the “problem areas”
- Surcharged and flooded manholes for the entire study area
- Quantification of the volume of water leaving the combined sewer system

Future work will include working with the U.S. Army Corps of Engineers to quantify the economic impact and site potential basins and/or modifications to the flood pumping operations.

Real Time Control Strategy Study – As discussed in the CSO Program Section, Phase 2 of the Real Time Control (RTC) Strategy Study was completed in fiscal year 2001. The section also addresses planned RTC activities on a system-wide basis. Refer to *WATERS of*

Figure 18. Identification of 15 “problem areas” for 500-year storm



Jefferson County Report – July 1, 1999 to June 30, 2000 for additional information on the results of the Phase 1 RTC Study.

Upper Dry Run Regional Storage Facility Project – Some of the information contained in this section is the same as previously reported. Refer to *WATERS of Jefferson County Report – July 1, 1999 to June 30, 2000* for additional information on the Upper Dry Run Regional Storage Facility Project. Construction of the project started in March of 2001 and is scheduled to be complete in July 2002. The project was bid for \$4.1 million.

11th and Rowan Sanitary Connections – The purpose of this project is to correct improperly connected Property Service Connections (PSCs) tied to the storm sewer system near the intersection of 11th St. & Rowan St., and the sanitary services located at the 10th St. Flood Pumping Station (FPS). The major tasks of the project include the following:

- Disconnecting the sanitary services of the 10th St FPS.
- Installing an 8-inch sanitary sewer line on 11th St.
- Disconnecting the two existing identified sanitary services on 11th St. from the existing 24-inch storm sewer.
- Reconnecting the two sanitary PSCs on 11th St. to the newly installed 8-inch sanitary line.
- Installing a grinder/lift pump to serve Kentucky Container on Rowan St.
- Connecting the pump to a force main, which will be bored through the floodwall. The force main will empty into the 8-inch sanitary line on 11th St.

Figure 19. 10th St. Flood Pumping Station



Construction was initiated in July 2001 and is scheduled to be completed by the second quarter of fiscal year 2002.

Wheeler Avenue CSO/Flood Control Basin Project – The CSO control portion of the project associated with the concrete basin will not be functional until telemetry is installed to control the sluice gate. Presently, the sluice gate remains open at all times; however, the basin will still function for flood control. The telemetry project was completed in July 2001. A detailed evaluation will be conducted to document the facility's performance. Some of the information contained in this section is the same as previously reported. Re-

fer to *WATERS of Jefferson County Report – July 1, 1999 to June 30, 2000* for additional information.

Main Diversion Structure Improvements – Refer to *WATERS of Jefferson County Report – July 1, 1999 to June 30, 2000* for additional information. MSD is currently implementing certain capital projects related to the Morris Forman Wastewater Treatment Plant (MFWTP) to increase its processing capacity. Once completed, these capital projects will result in the plant being able to process up to a total of 350 MGD through the primary facilities. MSD wants the flexibility to have MFWTP receive as much flow as possible (up to the MFWTP capacity) from the Southern Outfall during wet weather. Calculations indicated that with the current piping configuration the Main Diversion Structure (MDS) could not deliver 350 MGD to the MFWTP.

The proposed Project will provide for raising the overflow level at the outfall of the MDS to elevation 422.0 in order to push more flow to the MFWTP. An inflatable gate will be placed at the overflow from the Main Diversion Structure. The gate will provide the capability to raise the water level to provide sufficient head to provide the 350-MGD flow rate to MFWTP. The gate will also be incorporated into the Real Time Control effort in the future as well as providing an annual overflow volume reduction.

The design for this project is currently underway and is scheduled for completion by March 2002. Construction is scheduled for fiscal year 2003. This project is a component of the MFWTP capital program and is therefore not included in the CSO Program related cost presented at the end of this section.

CSO Planning

CSO Project Planning is reviewed and revised on an annual basis. The following projects are included in the current 5-year plan approved by the MSD Board:

- *CSO General Services – fiscal year 2002*
- *CSO General Services – fiscal year 2003*
- *CSO General Services – fiscal year 2004*

CSO Education

CSO public education activities in the Ohio River Watershed during the reporting period include:

- Implementing a CSO Public Information and Notification Program.
- MSD is exploring opportunities with the local Health Department relative to health advisories when CSOs are discharging.
- MSD is committed to continuing public education efforts relative to the CSO Program.
- CSO Program presentation to Greater Louisville, Inc.

CSO Related Costs

Table 43 summarizes the CSO Program related costs for the reporting period and projected costs for the next three years in Ohio River Watershed.

Table 43. CSO Program Related Cost for July 2000 – June 2004, Ohio River Watershed

CSO Program	July 2000 – June 2001	July 2001 – June 2002	July 2002 – June 2003	July 2003 – June 2004
11 th and Rowan Sanitary Sewer Improvement	\$1,903	\$186,048	\$0	\$0
UDRT Regional Storage Facility	\$1,641,026	\$4,262,842	\$417,133	\$0
MDS Inflatable Gate Project	\$0	\$98,000	\$525,000	\$0
Total	\$1,642,929	\$4,546,890	\$942,133	\$0

3.6.8 SSO PROGRAM – MSD**SSO Projects**

MSD conducted the following project during the reporting period as part of the SSO Program:

Prospect SSES – This project analyzed and investigated 2,060 LF of collection system in the Harrods Creek watershed.

High School Inflow Source Identification Program - The 2001 High School Program inspected 9,681 LF of interceptor finding no pipe or manhole defects in the Ohio River watershed.

SSO Planning

SSO Project Planning is revised constantly based on the results of ongoing investigations and rehabilitation projects. The following projects are included in the current 5-year plan approved by the MSD Board:

- *High School Inflow Source Identification Program – fiscal year 2002*
- *I/I General Services – fiscal year 2002*
- *I/I General Services – fiscal year 2003*
- *I/I General Services – fiscal year 2004*

SSO Education

No specific public meetings were held during the reporting period.

SSO Related Costs

Table 44 summarizes the SSO Program related costs for the reporting period and projected costs for the next three years in the Ohio River Watershed.

Table 44. SSO Program Related Costs for July 2000 to June 2004 – Ohio River Watershed

<i>SSO Program</i>	<i>July 2000 – June 2001</i>	<i>July 2001 – June 2002</i>	<i>July 2002 – June 2003</i>	<i>July 2003 – June 2004</i>
High School Inflow Source Identification Program*	\$215,581	\$0	\$0	\$0
Prospect SSES*	\$143,402	\$0	\$0	\$0
I/I General Services*	\$854,439	\$830,043	\$400,000	\$250,000
<i>Total*</i>	<i>\$1,213,422</i>	<i>\$830,043</i>	<i>\$400,000</i>	<i>\$250,000</i>

*Only portions of these funds were expended in the Ohio River watershed.

EXHIBIT #9

City/Ohio River Watershed

Exhibit #9 may be downloaded at:

<http://www.msdlouky.org/insidemsd/waters/2001/exhibit9.pdf>  (2Mb)