

Riverside Watershed Assessment

Introduction

Material presented in the following summary documents current stormwater management and flooding issues for the Riverside Watershed. Information presented is based on a review of available information related to current conditions in the drainage basin. No comprehensive analysis of stormwater management and flooding issues in the watershed has been performed in the last 20 years.

Watershed Description

Description and Land Use

The Riverside watershed is located in the northern part of the City of Rockford on the east side of the Rock River. The watershed drains approximately 4,623 acres at its mouth. Roughly 20% of the watershed is located within the City of Rockford. The remaining 80% of the watershed extends into the Village of Loves Park and unincorporated Winnebago County. The watershed is large and steep, with the stream entering the Rock River north of the commercial center of the City.

Watershed Statistics: Riverside	
Total Area:	4,623 ac.
Total Area within City:	976 ac.
% of City within Watershed:	2.5%
Other Stakeholders:	Loves Park
No. of Detention Facilities	28
No. of Outfalls	1

The Riverside watershed is about 90% developed, with the City of Rockford area within the watershed being 100% developed with mostly residential. The whole watershed has a combination of commercial/retail and residential development with two large lakes and a quarry. There is agricultural development far to the east, along with a large park in the higher elevation area to the northeast.

Topography and Soils

The topography of the Riverside watershed is typical of the long, narrow watersheds within the eastern part of the City of Rockford. Ground elevations within the watershed range from about 875 feet NAVD near Pierce Lake to about 700 feet NAVD near the ditch's confluence with the Rock River.

Soils within the Riverside watershed consist primarily of type B soils, with thin pockets of type D soils surrounding the creek bed. Type B soils are soils with moderately low runoff potential when thoroughly wet. Water can be transmitted through these soils without impediment. Type B soils typically have less than 20 percent clay, and between 50 and 90 percent sand with a loamy sand or sandy loam textures. These soils have moderately fine to moderately coarse textures. Type D soils are characterized by properties that restrict water movement through the soil. Type D soils typically have greater than 40 percent clay, less than 50 percent sand, and have clayey textures. They have high runoff potential when thoroughly wet.¹⁶ The predominance of type B soils in the Riverside watershed should facilitate infiltration of rainfall in pervious areas, thereby contributing to lower runoff volumes and rates than in basins with less pervious soil types.

Primary Receiving Stream

Ditch No. 3 and the Main Ditch are the primary receiving streams for the Riverside watershed. Ditch No. 3 is approximately 6,800 feet (1.3 mi.) long and exists in its man-made state. It has a stream bed elevation of 737 feet (NAVD) at its confluence with the Main Drainage Ditch, and 763 feet (NAVD) at its origin. Main Drainage Ditch is approximately 22,700 feet (4.3 mi.) long and exists in it's manmade state. It has a stream bed elevation of 700 feet (NAVD) at its mouth, and 824 feet (NAVD) at its origin. Both ditches are relatively steep, with an average fall of 23 feet per mile. The Ditches' respective Flood Profiles were extracted from the 2006 Flood Insurance Study for Winnebago County and Incorporated Areas.

There are no impoundments along Ditch No. 3 or the Main Drainage Ditch.

There are no USGS gauging stations along Ditch No. 3 or the Main Drainage Ditch.

Readily available flow data for the Riverside watershed is presently limited to calculated flood flows published in the Flood Insurance Study for Winnebago County and Incorporated Areas are summarized in Table RI-1 below. It is important to note that these flows are based on analyses performed more than 30 years ago and likely do not reflect current conditions in the watershed.

¹⁶ Burke, Christopher and Thomas Burke. HERPICC Stormwater Drainage Manual. West Lafayette, Indiana: Purdue Research Foundation, 1994.

Table Riv-1
FLOOD INSURANCE STUDY FLOWS (1976)
RIVERSIDE WATERSHED, ROCKFORD, ILLINOIS

Cross Section Location	50-year Flow		100-year Flow	
	Flow (cfs)	Flow (cfs/acre)	Flow (cfs)	Flow (cfs/acre)
Ditch No. 3 At confluence w/ Main Drainage Ditch	440	0.529	500	1.108
Ditch No. 3 Upstream of North Flood Diversion	780	0.601	960	1.364
Main Drainage Ditch At Confluence with Rock River	2640	0.573	2950	0.640
Main Drainage Ditch At 2 nd Ave.	2560	0.571	2850	0.636
Main Drainage Ditch At River Lane	2320	0.503	2550	0.553
Main Drainage Ditch At Loves Park Drive	2030	0.453	2200	0.491
Main Drainage Ditch At Browns Pkwy.	1790	0.423	1900	0.450
Main Drainage Ditch At Material Drive	1300	0.333	1310	0.336
Main Drainage Ditch At Flood Diversion	1280	0.690	1580	0.851

Source: Flood Insurance Study, Winnebago County and Incorporated Areas, Federal Emergency Management Agency. 2006. Flows based on 1976 analysis.

Given the character of the watershed, flooding within Riverside is of a flashy nature. Localized flooding along the creek is aggravated by the number of vegetative debris and trees along the stream channel. As shown in Figure Riv-1, the floodplain along Riverside is relatively narrow over most of the length of the stream. Areas where the mapped floodplain appears to include developed properties does not include anywhere within the City boundaries. However, it is worth noting there is a very wide floodway area west of Browns Road, all the way to the River in Loves Park, which looks to affect a large swath of commercial and residential development.

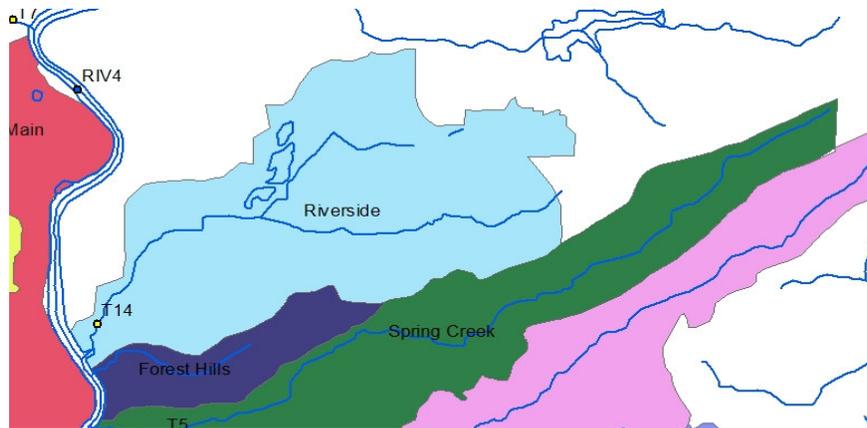
Records maintained by the Federal Emergency Management Agency (FEMA), indicate that one letter of map revision (LOMRs) has been issued for development projects in the Riverside

watershed during the past 30 years. Table Riv-2 included at the end of this narrative provides a listing of approved LOMRs.

Water Quality and NPDES Discharges

SCORE has one surface water monitoring site in the Riverside watershed, in Loves Park. Site, T14, is located on the Main Drainage Ditch and is the location of fecal coliform collection and field measurements. Table Riv-2 provides metadata for this site. Figure Riv-3 shows the location of the sampling site.

**Figure Riv-3
 WATER QUALITY SAMPLING SITES
 RIVERSIDE WATERSHED, ROCKFORD, ILLINOIS**



**Table Riv-2
 SAMPLING SITES
 RIVERSIDE WATERSHED, ROCKFORD, ILLINOIS**

Station	Location	Station Type	Number of Samples (2003-2008)	Parameters Measured
T14	Loves Park Ditch	Coliform	31	DO, pH, Temp, Conductivity, Fecal Coliform

Field water quality measurements at T14 show that Loves Park Ditch is in compliance with General Use Water Quality Standards for pH and DO. The highest mean and median DO concentrations are at T14. Much of this stream has been channelized and lined with concrete. The riparian canopy has been removed.

The median fecal coliform concentration at T14 is similar to the median concentrations found in T1 and T2, North Kent Creek and South Kent Creek, respectively. North Kent Creek and South Kent Creek were placed on the Illinois impaired waters list for fecal coliform in 2006. The median fecal coliform concentration at T14 is, however, much lower than the median concentration found at Keith Creek (T3 and T4).

There are no NPDES-permitted point sources within the watershed.

Runoff from industrial sites is a potential pollutant source for receiving waters. Table Riv-3 lists two industrial sites within the Riverside watershed.

Table Riv-3
INDUSTRIAL SITES LOCATED WITHIN THE RIVERSIDE WATERSHED
ROCKFORD, ILLINOIS

Name	Street	Land Use Code (LUC)	LUC Description
Auto Access	Riverside Blvd.	5000	Wholesalers and Retail Outlets
Alpine Fireside Health Center	Alpine Rd.	8061	Nursing Homes

Existing Drainage Network

Drainage within the portion of City of Rockford within the Riverside watershed (in the southern part) occurs through storm sewers. The southern portion of the Riverside watershed is drained by extensive networks of storm sewers as shown in Figure Riv-2. Drainage in the non-Rockford areas of Riverside is unknown.

Figure Riv-2 also shows the general location of identified detention basins and storm sewer outfalls within the Riverside watershed. The Riverside watershed has 30 identified detention facilities including the regional Spring Lake impoundment. These facilities are distributed through the central and northeastern part of the watershed. The 1 identified storm sewer outfall within the watershed is located on Forest Hills Road.

Available Data Resources

Previous Drainage Studies

A review of available data identified no recent, comprehensive studies of drainage issues within the Riverside watershed.

Historic Flow Data

No source of historic flow data has been identified for the Riverside watershed.

Historic Water Quality Data

No source of historic water quality data has been identified for the Riverside watershed.
(pending input from David Pott)

Other

Floodplain and Floodway:

Flood Insurance Study: Winnebago County and Incorporated Areas, (FEMA, 2006)

Soil Characteristics:

“Soil Survey Geographic (SSURGO) database for Winnebago County, Illinois.”

Fort Worth: U.S. Department of Agriculture, Natural Resources Conservation Service, 2007.

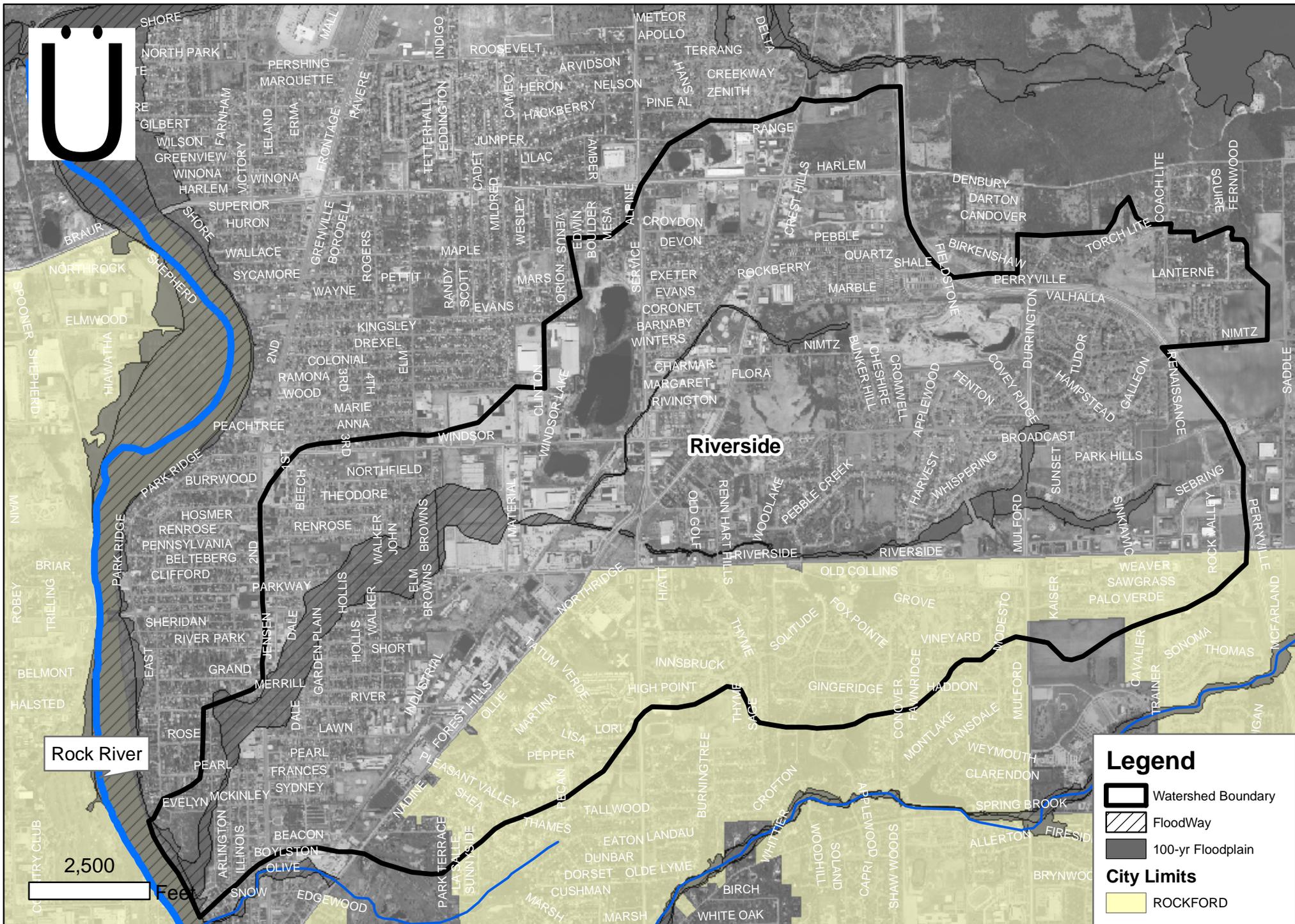
URL:<<http://SoilDataMart.nrcs.usda.gov/>>

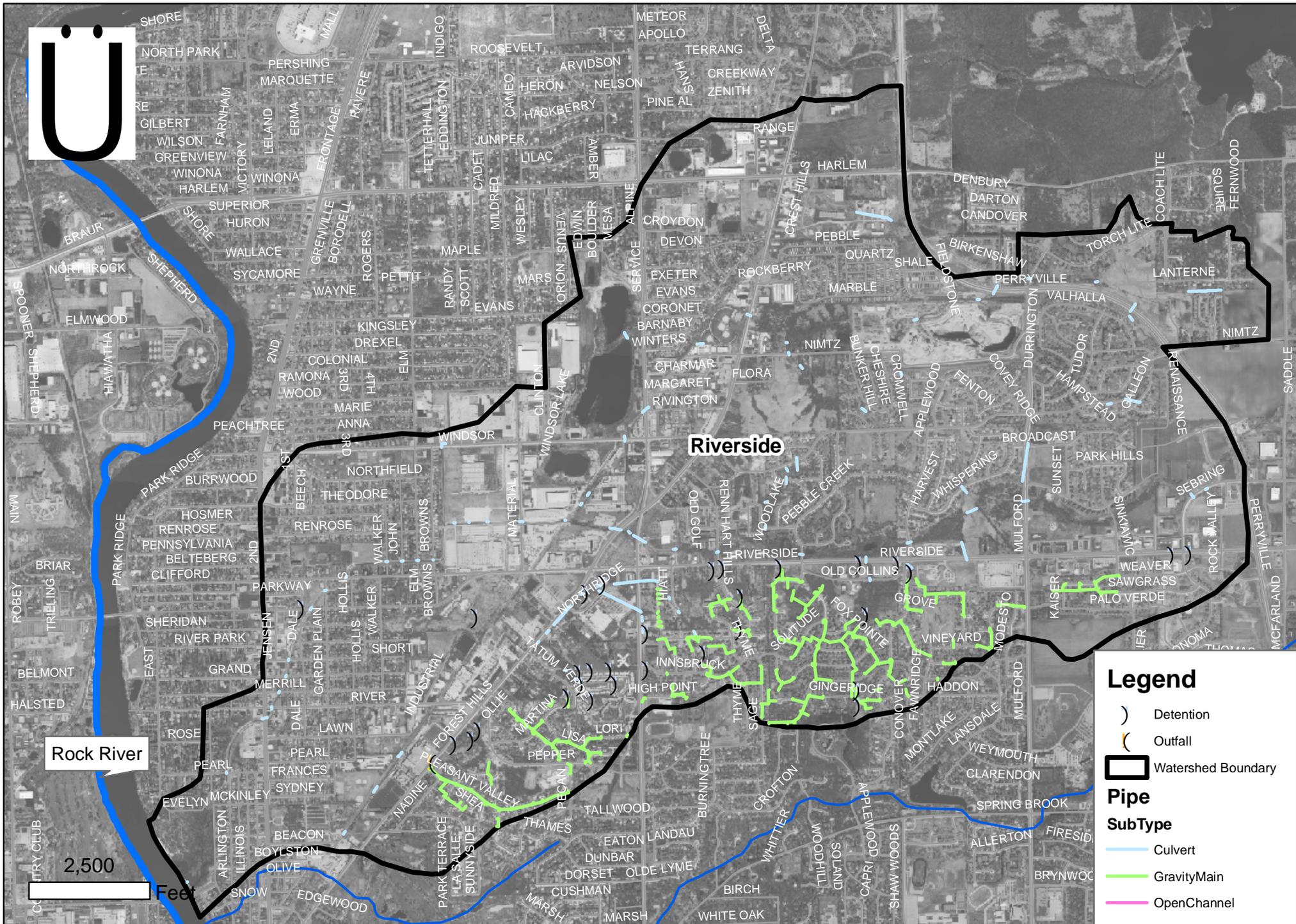
Drainage Issues

There is little known about the flooding issues in this part of the City. The City of Rockford stormwater managers receive little to no flooding complaints from their residents. The Village of Loves Park probably has a better idea of the flooding behaviors of Ditch No. 3 and the Main Ditch, and overall watershed stormwater control issues.

Table Riv-4
SUMMARY LISTING – LETTERS OF MAP CHANGE
RIVERSIDE WATERSHED, ROCKFORD, ILLINOIS

Flooding Source	Community	Date Issued	Type
Main Drainage Ditch and Ditch No. 3	City of Loves Park	1/14/2005	LOMR





Legend

-) Detention
- ⤵ Outfall
- ▭ Watershed Boundary

Pipe

SubType

- Culvert
- GravityMain
- OpenChannel



Figure Riv - 2

Riverside Outfalls, Detention and Storm Sewer
 City of Rockford, Illinois
 Current Data as of Autumn 2008