

Forest Hills Watershed Assessment

Introduction

Material presented in the following summary documents current stormwater management and flooding issues for the Forest Hills 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 Forest Hills watershed is located in the farthest northern part of the City of Rockford on the east side of the Rock River. The watershed drains approximately 850 acres at its mouth. Roughly 75% of the watershed is located within the City of Rockford. The remaining 25% of the watershed extends into the Village of Loves Park and unincorporated Winnebago County. The watershed area drains into the South Ditch and is short and narrow. The Ditch enters the Rock River north of the City boundaries.

Watershed Statistics: Forest Hills	
Total Area:	842 ac.
Total Area within City:	633 ac.
% of City within Watershed:	1.6%
Other Stakeholders:	Loves Park
No. of Detention Facilities	1
No. of Outfalls	2

The Forest Hills watershed is roughly 100% developed. Development is residential, with a school and Forest Hills Country Club.

Topography and Soils

The topography of the Forest Hills 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 730 feet NAVD near Andover Street to about 700 feet NAVD near the creek's confluence with the Rock River.

Soils within the Forest Hills watershed consist primarily of type B soils, with type A soils at the West end, near the Rock River, and type C soils around the ditch in the East. 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 A soils have a high infiltration rate even when very wet. They consist of well-drained sands and gravels, and have less than 10% clay. The runoff potential is low, as water absorbs quickly into these soils. Type C soils, on the other hand, have moderately high runoff potential when wet. Soils in this category have slow infiltration rates and consist of moderately fine textured soils, often with a layer that stops downward movement. These soils can contain anywhere from 20 to 40% clay.³ The predominance of type B soils in the Forest Hills 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. However, in the far northeast portion of the watershed, it should be noted the more impervious type C soils can aid water runoff, thus cause flooding effects.

Primary Receiving Stream

The South Ditch is the primary receiving stream for the Forest Hills watershed. The ditch is approximately 3,400 feet (0.64 mi.) long and exists in a man-made state with four concrete culverts installed to aid flow. South Ditch has a stream bed elevation of 701 feet (NAVD) at its mouth, and 729 feet (NAVD) at its origin. Overall the creek is relatively steep, with an average slope of 40 feet per mile, but has flat slopes predominantly in the central Ditch run. The profile of the stream is shown in the South Ditch Flood Profile extracted from the 2006 Flood Insurance Study for Winnebago County and Incorporated Areas.

There are no impoundments of the South Ditch within the watershed.

There are no USGS gauging stations in the Forest Hills watershed.

Readily available flow data for the Forest Hills watershed is presently limited to calculated flood flows published in the Flood Insurance Study for Winnebago County and Incorporated Areas are summarized in Table FH-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.

³ Burke, Christopher and Thomas Burke. HERPICC Stormwater Drainage Manual. West Lafayette, Indiana: Purdue Research Foundation, 1994.

Table FH-1
FLOOD INSURANCE STUDY FLOWS (1976)
FOREST HILLS WATERSHED, ROCKFORD, ILLINOIS

Cross Section Location	50-year Flow		100-year Flow	
	Flow (cfs)	Flow (cfs/acre)	Flow (cfs)	Flow (cfs/acre)
At confluence w/ Rock River	620	0.881	770	1.094

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 Forest Hills is rare. As shown in Figure FH-1, the floodplain along South Ditch is narrow and is actually only directly upstream of the mouth. Areas where the mapped floodplain appears to include developed properties include:

- Olive St. and N. 2nd St.

Records maintained by the Federal Emergency Management Agency (FEMA), indicate that no letters of map revision (LOMRs) have been issued for development projects in the Forest Hills watershed during the past 30 years.

Water Quality and NPDES Discharges

South Ditch is a man-made ditch fed by surface runoff. An increase in urban development causes high rates of urban runoff which may be comprised of low quality water. There is no aquatic life, and sedimentation has occurred in certain portions of the ditch, mostly around the culverts.

No National Pollutant Discharge Elimination System (NPDES) point sources have been identified within the Forest Hills watershed.

Existing Drainage Network

Drainage within the Forest Hills watershed occurs through a combination of surface drainage and storm sewers. In the more recently developed northeastern part of the watershed, there is a network of gravity storm sewers as shown in Figure FH-1. The southwestern and central portions of the Forest Hills watershed are drained purely by surface runoff into the Ditch. These differences in drainage mechanisms are analogous with the respective development in these sections of the watershed.

Figure FH-2 also shows the general location of identified detention basins and storm sewer outfalls within the Forest Hills watershed. The Forest Hills watershed has very few identified detention facilities. The 2 identified storm sewer outfalls within the watershed are located generally around Alpine Road.

Available Data Resources

Previous Drainage Studies

A review of available data identified no recent, comprehensive studies of drainage issues within the Forest Hills watershed. There are no previous drainage studies that included consideration of the watershed.

Historic Flow Data

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

Historic Water Quality Data

No source of historic water quality data has been identified for the Forest Hills 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.”

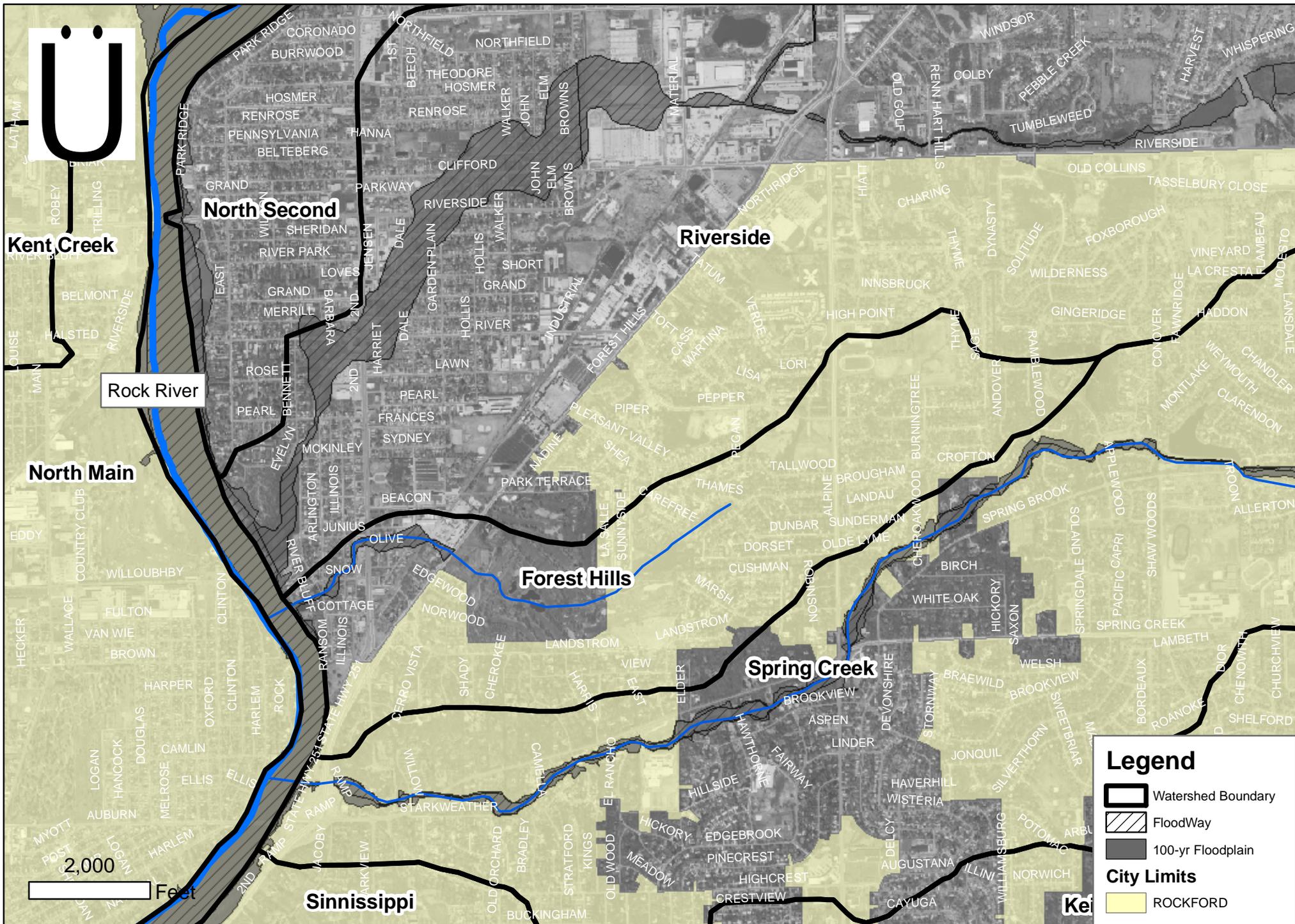
Fort Worth: U.S. Department of Agriculture, Natural Resources Conservation Service, 2007.

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

Drainage Issues

There are no significant stormwater management/flood control problems in the Forest Hills Watershed. Due to the relatively complete build-out of the watershed and lack of any flooding complaints, it is a sensible conclusion that the watershed has adequate drainage, and there are no impending large stormwater control issues.

It is important for the City to identify areas of maintenance on the South Ditch to maintain adequate flow capacities for peak wet weather flows. Also, due to residential runoff, water quality in the Ditch may be degraded and require monitoring.



Forest Hills Watershed Flooding Issues

City of Rockford, Illinois
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Figure FH - 1

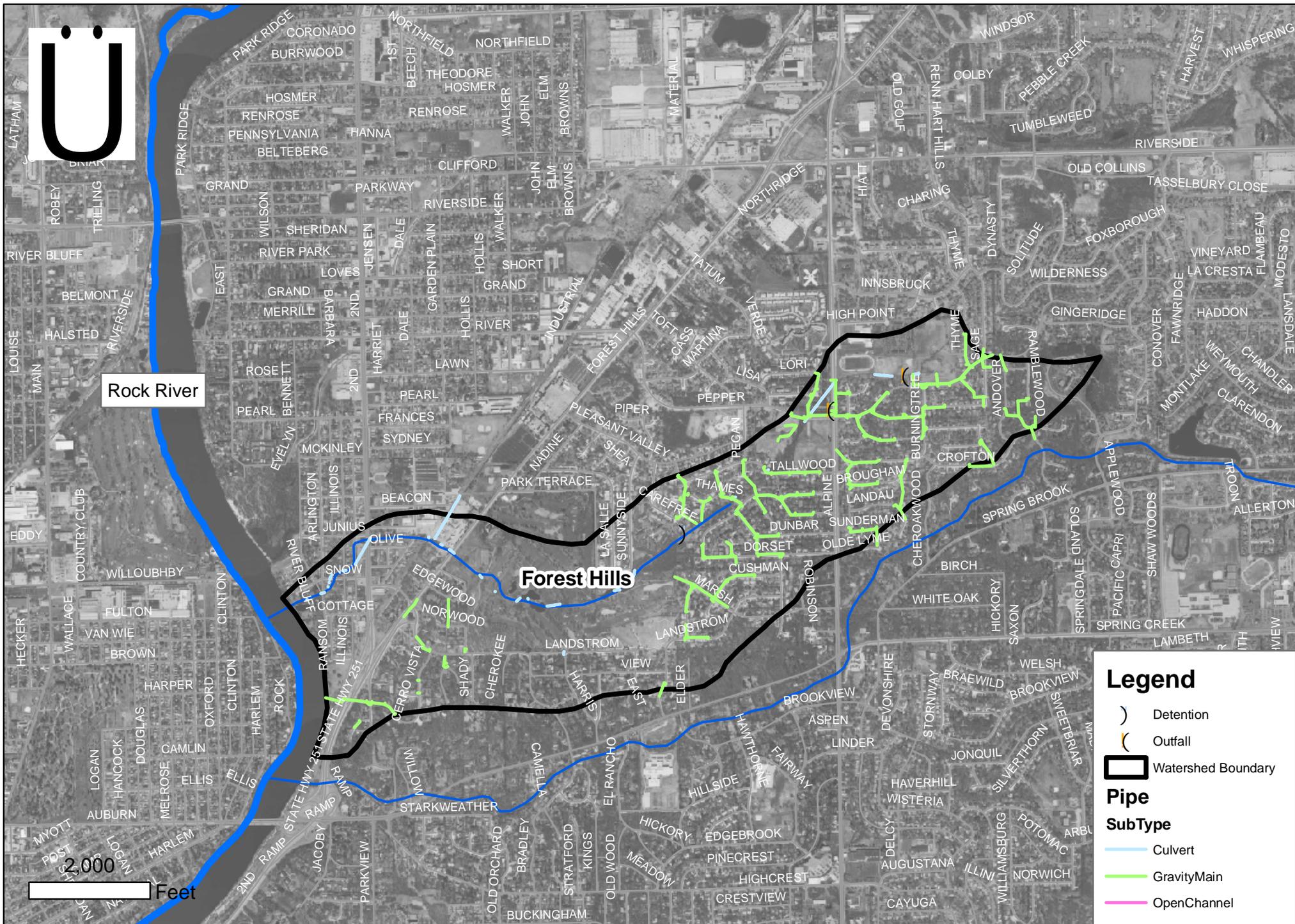


Figure FH - 2