Public Works Department

Summary Report on Planned Capital Improvements

Storm Water and Sanitary Sewer

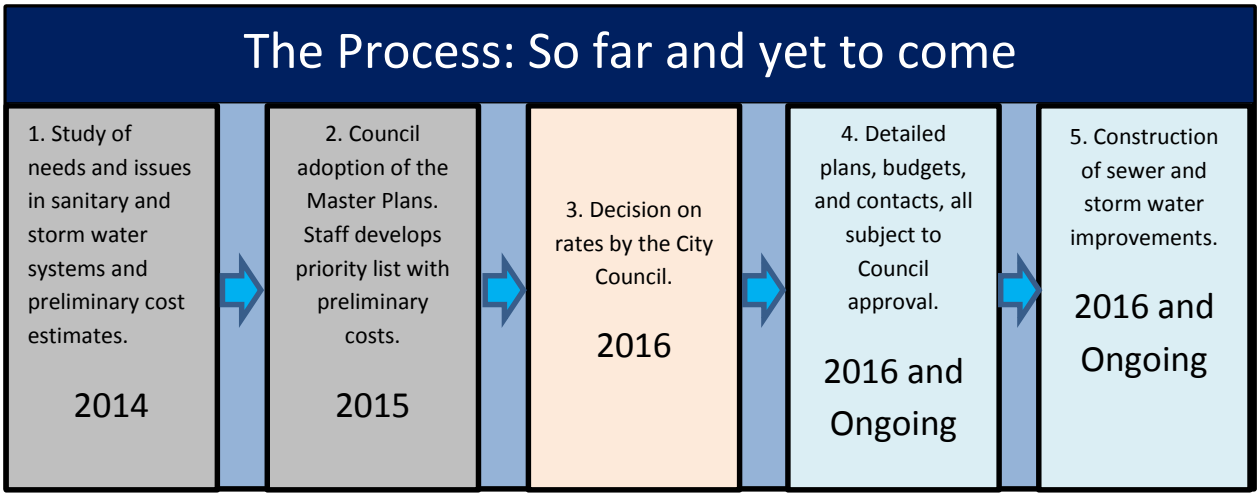
Introduction

Public Works has assembled this summary report to highlight major capital improvements that would become possible with rate plan adjustments currently being finalized by Raftelis and staff.

The report primarily gives narrative details on capital projects of $500,000 or greater for the first five years of the plan. The report limited the narrative descriptions by cost ($500,000 or greater) in the interest of brevity. This summary report is divided into three parts.

- Part 1: Sanitary Sewer Projects.
- Part 2: Storm Water Projects.
- Part 3: Combined Sewer Overflow Elimination Projects.

Please note that the costs are preliminary. Getting more exact costs requires engineering design, and design work cannot go forward until a funding source is identified.



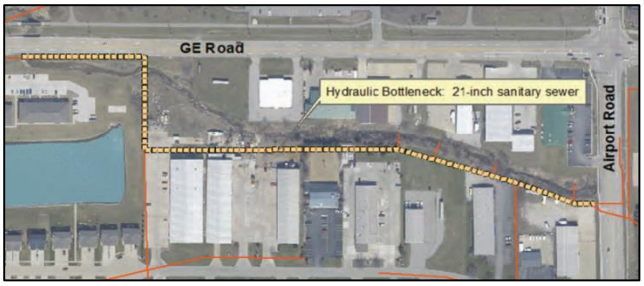
Part I: Sanitary Sewer Projects

CCTV Inspection, Manhole Inspection and Manhole and Sewer Main Lining
Ongoing programs address two key issues: Aging sewers in the core of the city and inflow and infiltration (I/I) of groundwater and stormwater into east-side sanitary sewers.

- Multi-year sewer CCTV Evaluations: **$400,000 per year**. Digital camera footage is analyzed to detect problems and plan corrections. CCTV inspection of public sewer mains will take place in target areas that are experiencing I/I, deterioration, and street maintenance or resurfacing.
- Manhole inspections: **$90,000 per year**. Leaking and defective manholes are a common source of I/I.
- Sewer and manhole lining: **$2 million to $2.5 million per year**. In core areas, old sewers can be rehabilitated with spot repairs and lining – at considerably lesser costs than sewer main replacement. On the east side, lining is being used to reduce I/I, and effectiveness will be analyzed from a test area.

Wet Weather Storage Project (10 MG Tank)
$10 million
The East Side Interceptor sewer experiences elevated flows during wet weather (generally exceeding 2-3 inches of rainfall) due to inflow and infiltration of stormwater and groundwater into the sanitary sewer mains. This strains capacity of the Southeast Wastewater Treatment Plant. Of three methods analyzed for dealing with this problem, the most cost-efficient and long-term method is storage (via tank). The advantages of this project are that there are comparably low capital costs, there are many readily available sites for the construction of the tank, and there also is opportunity to provide daily flow smoothing for the treatment plant.

Hawthorne Collector Sewer Upgrade
Long-Term Total Cost $1.4 million
The southern branch of a primary east-side sewer (the "Hawthorne Collector") lacks sufficient size and, therefore, capacity. This creates a bottleneck west of Airport Road. The diameter of the sewer fluctuates from 30



inches down to 21 inches. The 21-inch sewer is substantially undersized. Options are under review to increase capacity of the Hawthorne Collector Sewer.

Sanitary Pump Station SCADA (Supervisory Control and Data Acquisition) System
$550,000

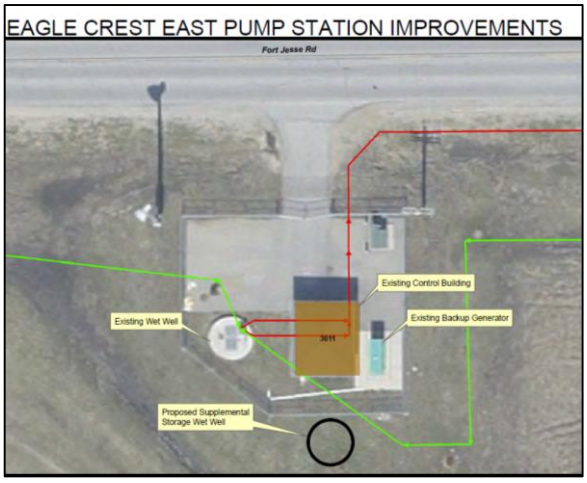
Sanitary pump stations pump sewage throughout underground pipes to wastewater treatment facilities throughout the entire metropolitan area. Currently, there are 16 pump stations spread throughout the area, but their operating systems and procedures are not standardized. Additionally, certain parts of the pumps need to be upgraded to meet state and federal standards. The city will develop the guiding standards for the existing facilities for the interconnection through a SCADA system. A standard for the software needed to program and maintain the programmable control equipment will be developed. Thus, the reliability and consistency of the pump station system will increase.

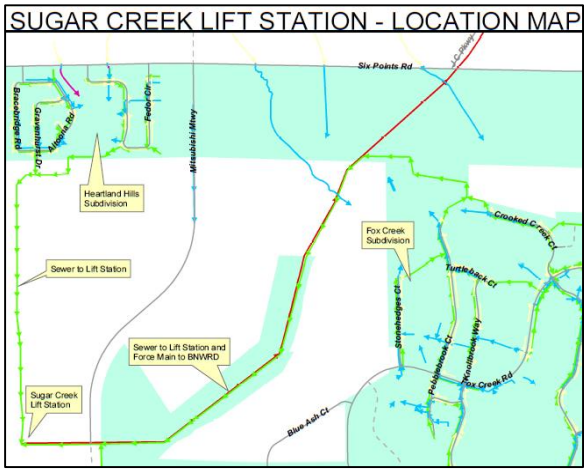
The Grove on Kickapoo Creek Subdivision Sewer Oversizing Construction
$1.8 million

As a result of an Annexation Agreement, which was approved on September 26, 2005, the City is obligated to pay for oversizing sewers larger than what is required to serve the current subdivision demand for future development of the Grove on Kickapoo Creek Subdivision.

Lift Stations & Force Main Evaluation – Construction
$1 million

The Sugar Creek and Eagle Crest East Lift Stations and associated force mains were constructed in the mid- to late-1990s. The pumps and related components in the stations are old and even obsolete, and repair parts are often difficult to obtain. If a pump fails, it often takes about 4 to 6 months for repairs. Failure of multiple pumps or components could result in sewer backup in basements or surface sewage discharge. This project involves evaluating the existing lift stations and force mains, design of new components or systems, and construction of the new facilities.





Part II: Storm Water Projects

FY 2018 Rowe Drive Drainage Way Improvements Design
$1 million

Design and construction of improvements to the Rowe Drive Drainage Channel, a tributary to Sugar Creek, entails rehabbing this Sugar Creek tributary. Early plans advocate installation of underground piping to convey water during low flow. The sides of the channel would be stabilized and vegetated to prevent erosion during high-flow periods. Construction would occur along 2,700 feet of channel, from Towanda Avenue to Veterans Parkway.

Pond Inspection and Maintenance Program (Public and Private Ponds)
$2.2 million during the first 5 years.

The program entails systematic inspection and maintenance of 73 City-owned detention ponds. Maintenance includes items such as sediment removal and shoreline repair/stabilization. The program also entails inspection of detention ponds that are part of the storm water system but are owned by private interests such as a homeowners association. Corrections are the owners' responsibility. There are more than 300 such ponds, 81 of which exceed a half-acre in size. Private ponds have great impact on City infrastructure. Initially, Public Works would spend $500,000 to $600,000 annually. After five years of work, the program can be scaled back to every other year.

Floodplain/Floodway Encroachment Program
$656,250 during the first 5 years

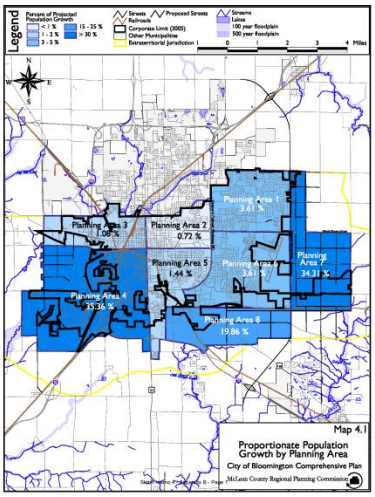
Encroachments include buildings, fences, walls and other features that were built in floodways and floodplains. These manmade elements can impede water flow and worsen damage during flood periods. The Master Plans advocate working with property owners to identify these encroachments and to assist in relocating them when possible and retrofitting structures if they cannot be easily relocated. Further, the Master Plans suggest reexamining the flood plain designations; some land no longer qualifies as flood plain and can be opened for development. Like the pond inspection program, spending is higher initially and tapers once substantial progress is completed.

Urban Channel Retrofits and Urban Stream Repairs
$4.9 million during the first 5 years

Urban channels are straighter than rural channels, and they have less room for meandering because of development. Straighter channels run faster during heavy flow periods, and that lends itself to erosion on the sides of the channels. Site-specific solutions must be developed, and the City has identified numerous locations that require work. Among potential

solutions are construction of riffles to slow the water (pictured), use of rock on the shoreline, tiering the side of channel to provide a natural high-flow bank, and underground piping (low-flow pipe).

Stream Bank Stabilization (Planning Areas 4, 7, and 8)
$1.5 Million during the first 5 years



Areas 4, 7 and 8 are in southwest, southeast, and south Bloomington, respectively, and correspond to improvements along Sugar Creek, a tributary to Little Kickapoo, and Little Kickapoo. In some cases, private property will be or already is affected by storm water issues, such as erosion. Site-specific measures are needed in these areas not only to correct problems related to existing conditions but also in anticipation of future growth.

Sewer Separation Projects
$850,000 during the first 5 years

Sewer separation generally means ending use of a combined sewer by building additional infrastructure. The combined sewer often becomes a dedicated storm sewer and a parallel dedicated sanitary sewer is built. At times, it is vice versa. Another means is to divert storm water into channels and away from sewer inlets.

Stormwater Detention Facilities (Ponds 1 and 2)
$1.5 million during the first 5 years

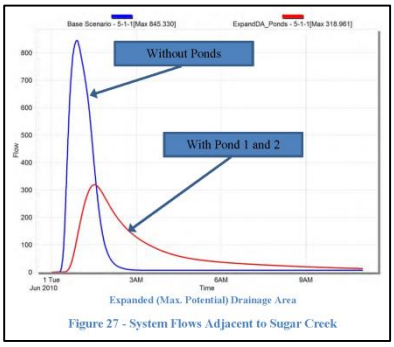


Figure 27 - System Flows Adjacent to Sugar Creek

The City could add capacity to the Oakland sewershed (and reduce flood risk) by building two storm detention ponds and a storm water channel connecting the ponds. Sewer capacity would be gained by keeping storm water out of combined sewers.

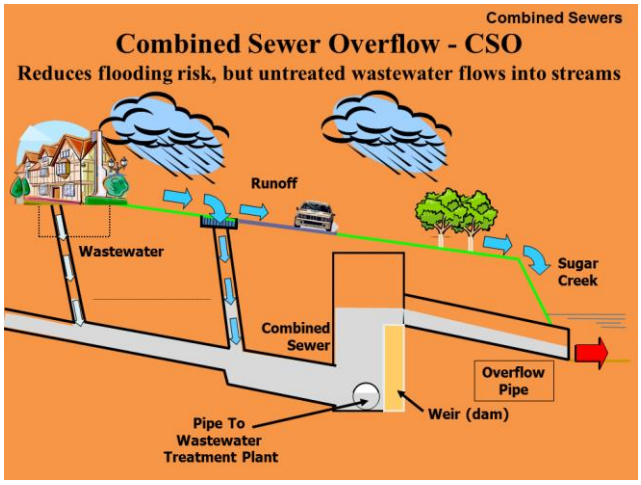
Pond 1 would be south of the Bloomington Public Library. Pond 2 would be at a NICOR facility south of Holton Homes. Combined with a conveyance channel along the Constitution Trail connecting the two ponds, this storm water separation will divert an estimated 200 million gallons of storm water per year from the west-side sewage treatment facility. The project over 10 years would cost approximately $3.4 million, according to preliminary estimates.

Part III: Combined Sewer Overflow Elimination Projects

Locust Colton CSO Elimination

- ⇒ **Phase 2, $1.2 million from storm water; $1.2 million from sanitary sewer.**
- ⇒ **Phase 3, $980,000 from storm water; $980,000 from sanitary sewer.**

By design, combined sewers carry both storm water and wastewater. Also by design, the combined sewers empty, untreated, into streams during high precipitation periods when the sewer capacity nears maximum. A discharge into streams is called a combined sewer overflow (CSO).



By federal mandate, all CSOs must be eliminated, and Bloomington is gradually working toward that end. The Locust Colton CSO Elimination is the City's largest CSO-related undertaking.

Because it relates to both sanitary sewer and storm water, the costs for Locust Colton CSO projects are divided equally between the two corresponding funds. Water main replacement, done simultaneously through the block-by-block infrastructure strategy, is paid through water revenue.

Locust Colton Phase I Construction occurred in 2011 and 2012. Subsequent phases have been delayed because the City's Storm Water Fund cannot sustain the project without a rate increase.

Valley Sewer (Maizefield) Combined Sewer Overflow (CSO) Elimination
$800,000 from storm water; $800,000 from sanitary sewer

In a separate CSO elimination project, the City must close a CSO location near Maizefield Avenue and McGregor Street. An option under study is to build a dedicated storm water sewer along McGregor Street to tie in to another dedicated storm sewer. This could reduce enough storm flow into a combined sewer to eliminate CSO events at the Maizefield-McGregor CSO location.