City of Columbia

701 East Broadway, Columbia, Missouri 65201

Department Source: City Utilities - Sewer/Stormwater
To: City Council
From: City Manager & Staff
Council Meeting Date: May 2, 2016
Re: REPORT – Project Tracker 4096 – Re-route Hinkson Sewer Line

Executive Summary

Previously the Council has requested a description of what would be involved to reroute the sewer project to avoid crossing Hinkson Creek and how much space the project needs to be constructed and information on post project tree remediation. Included below is a brief description of the project scope, design process, information on stream crossings and width of excavation and restoration.

Discussion

UPPER HINKSON CREEK SEWER EXTENSION – PHASE 1

GENERAL SCOPE:

The Upper Hinkson Creek Sewer Extension Phase I project will provide an extension of sanitary sewer along Hinkson Creek from just south of Vandiver Drive to near the north boundary of the City's landfill. Sewers will also be constructed to eliminate the need for the pump station at the landfill and, as an alternate, eliminate the Ewing Industrial Park pump station. This project consists of approximately 23,105 feet of 36 inch sewer, 4,251 feet of 24 inch sewer, 3,045 feet of 18 inch sewer, 90 manholes and the associated excavation, grading and restoration. The project was identified in the 2004 Facilities Planning Report and was included in the 2008 bond package approved by voters in April, 2008. The estimated construction cost for this project is $7,500,000 and financing is through the bonds approved in the April, 2008 election. The majority of the area initially served by this sewer extension was annexed into the city in 1969. In addition to this area, there are approximately 30 lagoons or other on-site treatment systems that could eventually be connected to this sewer, eliminating point source discharges to local waterways which drain through the city. Elimination of these discharges should result in an improvement to the water quality of Hinkson Creek and its tributaries in this area and downstream.

DESIGN PROCESS:

The design process started with a Preliminary Engineering Report and Phasing Evaluation. This project was planned to serve the Route B employment and industrial corridor and will also provide gravity sewer service to the City of Columbia Landfill and Material Recovery Facility and the Solid Waste Administration Building soon to be constructed. This sewer extension will provide the core infrastructure necessary to meet the sewer needs for existing and future industries; eliminate point sources discharges; eliminate existing wastewater

pump stations and, provide service availability for new industries and other developments. The extension will allow for diverting some flows from the Bear Creek Sewer Interceptor System in the future should it determined to be in the best operating interest of the system. This preliminary study looked at several alternate methods to serve the area and different phasing operations to provide the service in steps.

When the final route and scope was decided, the Engineer started the Final Design phase. In the final design phase the entire length of the site was walked by staff and consulting engineers to look at many issues to come up with the best and most economical route.

Many of the following factors were taken into consideration to minimize impact:

- Cultivated farm ground and farmer's activities.
- Wooded areas.
- Hinkson Creek and tributaries.
- Cultural resources and historic preservation areas.
- Endangered species which could be impacted, Indiana Bats, for example.
- Water quality from construction activities and soil erosion.
- Roads and traffic.
- Existing utilities.

The final route was carefully selected balancing the above issues to minimize impacts, as well as, keeping costs reasonable.

STREAM CROSSINGS:

The number of Hinkson Creek stream crossings was kept to a minimum. Topography generally dictates the requirements for crossing the stream. Gravity sewer is generally located in the floodplain adjacent to Hinkson Creek. Hinkson Creek meanders and the changes in direction are usually caused by bluffs or other rocky ground at a much higher elevation than the flood plain area. Avoiding these higher areas require crossing the stream. The alternative is to trench through bluffs and/or hills. In some cases this would require trenches as much as 100 feet in total depth (height) be cut through the higher ground in order to stay on one side of the stream. Trenches of this depth would require a very wide excavation which would have to remain unfilled to allow for future maintenance. While this is possible, it would create huge destruction of the existing land. It would look similar to the blasted rock bluffs along major highways. It also would not eliminate the need for stream crossings as properties on both sides of the stream will need to be served in the future. The construction of the stream crossings will result in only temporary impacts to Hinkson Creek. This alignment has been walked by the design engineer and city staff to identify the best locations for the crossings. The crossings are typically located in riffle areas which are the more stable areas of the creek. Failure to install the crossings in stable stream areas could result in detrimental impacts to the creek in the future. These stream crossings are necessary, and it is preferred the city install the crossings at appropriate locations now rather than wait for the crossings to be installed at the time of property development in the future.

WIDTH OF EXCAVATION AND RESTORATION:

Generally, the width of the construction area totals 130 feet. The 130 foot width of the construction area is provided to allow the contractor adequate room to safely and efficiently install the sewer. In general, this sewer is 18 to 20 foot deep. An excavation of this depth requires a trench width, at the top of the trench, up to 42 feet wide to provide adequate safety for the workers. This is based on shoring being used for the bottom 8 foot of excavation and sloping or benching the remainder of the trench according to industry standards to provide for worker safety. In addition, in another area to the side of the trench a minimum of 42 feet wide is necessary to store the excavated material without requiring the material to be moved multiple times. A path is also required to allow adequate room for the contractor to haul in pipe and manholes, granular material for bedding the pipe and moving equipment and personnel in and out of the construction area. When the project approaches a stream crossing the width of the construction area is reduced to 80 feet. This reduction is possible due to the depth of sewer being reduced at the stream crossings, requiring less area for excavation and soil storage. This reduction reduces tree removal along the stream bank which helps to minimize adversely affecting stream bank stability. The stream crossings will be restored with rock rip rap to stabilize them as quickly as possible after the pipe is installed. The other excavated areas will be final graded and stabilized with seed and mulch as soon as possible. In agricultural fields, the topsoil will be removed and stockpiled so the field can be restored as close to existing conditions as possible. The project currently does not provide for planting trees in areas where trees are removed. The trees will generally repopulate naturally very quickly and will be allowed to grow in the outer edges of the disturbed area. However, trees growing over the sewer line can negatively impact the ability to access the sewers for maintenance purposes and is not desirable.

Fiscal Impact

Short-Term Impact: N/A
Long-Term Impact: N/A

Vision & Strategic Plan Impact

Vision Impacts:
Primary Impact: Development, Secondary Impact: Community Facilities & Services, Tertiary Impact: Not Applicable

Strategic Plan Impacts:
Primary Impact: Economy, Secondary Impact: Infrastructure, Tertiary Impact: Not Applicable

Comprehensive Plan Impacts:
Primary Impact: Economic Development, Secondary Impact: Infrastructure, Tertiary Impact: Land Use & Growth Management

Legislative History

Date	Action
11/16/2015	(Ord. 22644) Determining it is in the public interest to construct the Upper Hinkson Creek Outfall Sewer Extension Phase 1 Project.
09/03/2014	(Ord. 22197) Authorizing an agreement with John W. and Carol Ann Alspaugh for the grant of easement for construction of the Upper Hinkson Creek Outfall Sewer Extension Phase 1 project.
05/06/2014	(R89-14) Authorizing Amendment No. 1 to the agreement with Allstate Consultants, LLC for the design and construction of the Upper Hinkson Creek Outfall Sewer Extension Phase I Project.
02/21/2012	(Ord. 21239) Authorizing a contract for sale of real estate with Anthony Lopez, Successor Trustee of the Lopez Living Trust, for Upper Hinkson Creek Outfall Sewer Extension Phase I.
02/22/2011	(Ord. 20884) Declaring the need to acquire easements necessary to construct the Upper Hinkson Creek Outfall Sewer Extension Phase I Project.
08/03/2010	(R144-10) Declaring the necessity for construction of sanitary sewer improvements for the Upper Hinkson Creek Outfall Sewer Extension Phase I Project; setting a public hearing.
04/07/2009	(R74-09) Authorizing an agreement with Allstate Consultants LLC for the design and construction of the Upper Hinkson Creek Outfall Sewer Extension Phase I Project.

Suggested Council Action

This report is for informational purposes.