



# 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: October 3, 2016

Re: Public Hearing – Henderson Branch Sewer Extension – Supplemental Information

## Executive Summary

Public Hearing for the Henderson Branch Sewer Extension Project. The proposed sanitary sewer system improvement project includes the design and construction of approximately 8,600 linear feet of gravity sewer that would ultimately serve the entire 1300 acre Henderson Branch watershed and an additional 800 acres of property adjacent to the watershed. The construction estimate for this project is \$4,300,000 and will be funded by a combination of sewer bond funds (\$2,600,000), Sewer Utility enterprise revenue funds (\$1,071,953) and contributions from the Boone County Regional Sewer District (\$628,047). A Public Hearing was conducted on July 5, 2016 and tabled until the October 3, 2016 Council meeting pending additional information being provided by staff.

## Discussion

In 1973, Black and Veatch completed a Sewer Master Plan for the City of Columbia. The main objective of the plan was to identify an area for watershed protection. In order to protect human health and the environment the recommendations included creating a regional sanitary sewer collection and treatment system and reducing sewer treatment discharge points within the identified watershed protection area. The identification of a watershed protection area in the plan qualified the City to be eligible for Federal and State grants for sewer improvements. The City's Regional Wastewater Treatment Plant and trunk sewers were constructed in the late 1970s and early 1980s. The majority of the funding was provided through United States Environmental Protection Agency (EPA) construction grants to serve as a regional facility for protection of the watershed. Up to 90 percent of the funding for the Perche Creek, Hinkson Creek and Bear Creek outfall sewers was provided through these grants. The construction of the outfall sewers and the City's Regional Wastewater Treatment Plant greatly improved water quality of the local streams.

In 2007, the Council adopted an updated Sewer Master Plan that defined a new watershed protection area or service area. This plan continued with the concept of regionalization for protection of the watersheds. The attached Utility Service Territory map shows the location of this sewer service area in relation to the city limits, other utility service areas and the Columbia Imagined Urban Service Area. As shown in the map, the approved Master Plan service area for the City's Regional Wastewater Treatment Plant covers a much larger area than the current city limits and the urban service area. More than 100 sewer treatment facilities have been removed from service and connected to the City's Regional Wastewater Treatment Plant since it was constructed and placed in service in 1983.



# City of Columbia

701 East Broadway, Columbia, Missouri 65201

The Sewer Master Plan approved by Council in 2007 included the Henderson Branch Sewer Extension as a future project which continues the EPA endorsed concept of regionalizing sewer collection and treatment for the protection of human health and the environment. The project consists of extending public sewer from the existing Perche Creek Interceptor sewer to a point just north of the I-70 and US-40 interchange, as shown on the attached drawing. Construction includes installation of approximately 8,600 linear feet of 24" - 30" diameter sewer. This sewer would ultimately serve the entire 1300 acre Henderson Branch watershed and an additional area of approximately 800 acres adjacent to this watershed. The construction of this initial project would allow for the elimination of at least two existing sewage treatment facilities that discharge a total of approximately 17,500 gallons of effluent per day into Henderson Branch. Removing these point discharges will result in improved water quality for both Henderson Branch and Perche Creeks. This project would allow future development to have access to a regional public sewer system, eliminating the need for additional small treatment works. In addition, as the sewer is further extended into the watershed, additional existing treatment facilities can be removed from service. This project was included as a proposed bond funded project in the ballot issued approved by voters in the November 2013.

The Council requested additional information during the Public Hearing on July 5, 2016. Each request is addressed individually below:

- The cost breakdown for the Henderson Branch Sewer Extension:
  - Estimated construction cost is \$4,300,000. The breakdown is:
    - Sewer Bonds \$2,600,000
    - Sewer Utility enterprise revenue funds \$1,071,953
    - Boone County Regional Sewer District Contribution \$628,047
  - The City has requested the Boone County Regional Sewer District (BCRSD) consider increasing their contribution due to the increased anticipated cost of the project to fund a 27% of the total cost, or \$1,161,000.
- Columbia Regional Wastewater Treatment Plant capacity and the impacts of this extension on the available capacity.
  - The Columbia Regional Wastewater Treatment Plant is currently permitted for 20.6 million gallons per day. The permit for the plant is currently in the renewal process and the new permit is anticipated to include a capacity of 25.2 million gallons per day. The Henderson Branch extension is anticipated to contribute an additional load of approximately 17,500 gallons per day upon completion of the extension and connection of the initial customers. Thus, the resultant increase in flow to the City's Regional Wastewater Treatment Plant will be approximately 0.1% of the average daily flow, which is negligible to plant operations. The attached "Initial Properties Potentially Served by the Henderson Branch Extension" is a map that shows the properties that could initially be connected to the Henderson Sewer Extension that generates the 17,500 gallons per day. Also attached is the "BCRSD Midway Connection Agreement Map" from the agreement with the BCRSD, which shows all the property that could



# City of Columbia

701 East Broadway, Columbia, Missouri 65201

ultimately be connected to the sewer system over time and the service territory boundaries. The extension is designed to ultimately convey up to 9 million gallons per day based on complete development of all the properties. However, it will be decades before the watershed is completely developed. The Sewer Master Plan estimates a total system capacity need of 28 million gallons per day by 2030. Placing this into perspective with existing collection system facilities, the Hinkson Trunk Sewer and Perche Truck Sewer currently have the capacity to convey in excess of 100 million gallons per day to the City's Regional Wastewater Treatment Plant. The Hinkson and Perche sewers were constructed in the late 1970s and early 1980s and current average daily flow is only 15 to 16 million gallons per day, less than 20% of their ultimate capacity. The Henderson Branch extension is not anticipated to place a burden on the City's Regional Wastewater Treatment Plant that would result in the need for expansion beyond what is already anticipated in the Master Plan.

- The legislative history was thought to be incomplete.
  - An updated legislative history is included with this memo.
- Potential issues with the quality of the wastewater discharged from Midway USA.
  - Midway USA is a retail business currently connected to a small wastewater treatment facility owned and operated by BCRSD that ultimately discharges to Henderson Branch. The existing sewage is typical sewage produced by any retail establishment. There is not any existing business identified in this area that has a potential to cause pass through or interference in the treatment plant. In the event there is a business that would have a discharge that could result in pass through, interference, or is a categorical industry as defined by current ordinance, the industry would be required to be permitted under the City's existing pretreatment program. This program has been approved by the Missouri Department of Natural Resources and is a requirement of the operating permit issued to the City.
- The anticipated revenue from sewer connection fees and other revenue sources for other utilities.
  - Sewer Utility:
    - Revenue:
      - Midway USA will remain a customer of the BCRSD. The treatment facility that serves Midway USA is owned and operated by the BCRSD. This facility would be removed from service and connected to the Henderson Branch Sewer. The BCRSD will be the City's customer. There will be no connection fees associated with intercepting the BCRSD facility in accordance with the Council approved agreement with the BCRSD. The annual revenue for sewer service is anticipated to be approximately \$3,644.97 and would be paid to the City by the BCRSD. (Based on 2-1" meters, 2-1.5" meters and a monthly volume of 86.7ccf.)



# City of Columbia

701 East Broadway, Columbia, Missouri 65201

- Annual Revenue \$3644.97
- Bechtold Properties
  - Connection fee \$64,000.00
  - Annual revenue \$20,475.48 (Based on 1-3" meter, 2-2" meters and monthly volume of 561.5 ccf)
- ANR Campus
  - Connection fee \$10,000.00
  - Annual revenue \$1170.87 (based on 1- 1.5" meter and monthly volume of 16.7 ccf)
- Other properties in the area could also connect to the system. This includes five homes and the golf course property. Basing the fees on a 5/8" meter and average monthly use of 5 ccf.
  - Connection fees \$12,000.00
  - Annual revenue would \$1,689.12
- Sewer Utility Revenue Totals
  - Connection fees total \$86,000.00
  - Annual revenue totals \$26,980.44
- Expenses:
  - The current three year rolling average of maintenance costs for the sewer collection system is \$0.995 per foot. This corresponds to an annual cost of \$8,557.00 for this extension. However, actual maintenance costs will not be realized for at least five years as routine cleaning of the sewer will not be necessary for at least five years and likely longer.
  - The current three year rolling average for wastewater treatment is \$.0012 per gallon. Based on an average discharge of 17,500 gallons per day the annual treatment cost will be approximately \$7,665.00.
- Total Annual Expense for the first five years \$7,665.00
- Storm Water Utility:

The annual storm water revenues generated if all the above properties annex into the city would be as follows:

  - Revenue:
    - Midway USA \$4,498.44 (\$374.87 per month, 595030 square feet impervious area)
    - Bechtold Properties \$10,067.28 (\$838.94 per month, 1331657 square feet impervious area)
    - ANR Campus \$797.16 (\$66.43 per month, 105439 square feet impervious area)
    - MFL Golf LLC \$1028.76 (\$85.73 per month, 136087 square feet impervious area)
    - Five single family homes \$79.80 (\$1.33 per home per month)



# City of Columbia

701 East Broadway, Columbia, Missouri 65201

- Total Annual Revenue: \$16,471.44
- Expenses
  - At this time there would be no expenses for the Storm Water Utility since all existing stormwater facilities are either privately owned and maintained or are MoDOT facilities.
- Solid Waste Utility:
  - Revenue
    - If these above properties all annex into the City, they will be required to begin using City Solid Waste within two years of annexation, only if they produce garbage (food waste). Some of these facilities do not generate food waste and the use of the City's Solid Waste Utility is optional for these businesses. If City service is used for all, the anticipated revenue based on current rates would be approximately \$2000.00 per month or \$24,000.00 per year.
  - Expenses
    - The additional expense to serve these initial properties would only be the extra fuel and wear on equipment to drive the 4 miles to Midway and back, approximately three times a week. Based on fuel being approximately \$3.50 per gallon the expense would be approximately \$900.00 per year.
- Water and Electric:

The City does not provide water or electric service to this area.
- General Fund Department and Divisions:

The total estimated annual revenue generated from sales tax, gross receipts tax and property tax for the areas which could initially annex and connect to the sewer is estimated to be approximately \$480,000.00.

There will not be any expense due to street maintenance, parks, etc. as the annexation would not result in any City maintained facility other than the sanitary sewer. No public parks currently exist in the area and all existing rights of way are owned by MoDOT. The only general fund departments that could incur expense are Police and Fire. Initially, the actual true cost of the coverage of this area for Police and Fire is minimal due to the fact that there will not be any additional cost incurred over normal daily operations besides some additional fuel and wear and tear on equipment since no additional equipment or personnel are proposed specifically to cover annexation in this area.

Conceptually, there is a cost to Police and Fire, this conceptual cost has been calculated in two ways: a cost per incident and a cost per run.



# City of Columbia

701 East Broadway, Columbia, Missouri 65201

- Cost per incident: An overall 'Cost per Incident' evaluation divides the current budget of the department by the current number of yearly calls in order to calculate the cost allocated to each call. While this approach takes into account the full cost of department operations (training, benefits, overhead, etc...) it is also misleading in the sense that each additional call would actually drive down the 'cost per incident'. Therefore it is not an effective measure.
  - Conceptual Cost per Incident for Fire services: During FY2015, the approved budget was \$17,182,916 and the number of incidents was 11,435, resulting in a cost per incident of \$1503 per call. Over the last three years there was an average of 90 incidents for fire services in the proposed annexed area. As a result, the conceptual cost per incident for fire services for this area is \$135,270 per year.
  - Conceptual Cost per Incident for Police services: During FY2015, the approved budget was \$21,311,583 and the number of calls for service was 76,539 resulting in a cost of \$278.44 per call for service. Over the last three years there was an average of 330 incidents per year for police services in the proposed annexed area. As a result, the conceptual cost per incident for police services for this area is \$91,885 per year.
  - Total annual cost to serve the initially annexed area using the cost per incident analysis is estimated to be \$227,155.
- Cost per run: A 'Cost Per Run' evaluation looks at what a single run would cost in terms of vehicle maintenance, salaries and benefits of those likely to be involved (single crew), and fuel and then multiplying that by the anticipated call volume for the initially annexed area. This also is not a true calculation of cost as those costs are already established and would be paid regardless of the annexation.
  - Conceptual Cost per Run for Fire services: Currently, the cost of salary and benefits for a standard 3 person-single company would be approximately \$88 per hour and the average duration of a call is 30 minutes. Rough estimate of fuel/maintenance per hour would be \$3 per mile. Calculated from the nearest fire station, the total cost per run of each round trip would be \$423. Over the last three years there was an average of 90 incidents for fire services in the proposed initial annexed area. As a result, the conceptual cost per run for fire services for this area is \$38,070 per year.
  - Conceptual Cost per Run for Police Services: Currently, the cost of salary, benefits, equipment, fuel, training, etc. for a single officer in a police vehicle is approximately \$48.07 per hour. The average duration of a call for service (including travel time, dealing with the call, administrative duties and paperwork, etc.) will be estimated at 3 hours. A cost per run is estimated \$144.21. Over the last three years there was an average of 330 incidents per year for police



services in the proposed annexed area. As a result, the conceptual cost per run for police services for this area is \$47,589 per year.

- Total annual cost to serve the initially annexed area using the cost per run analysis is estimated to be \$85,659.

Based on the estimated revenues and costs, between \$252,845 and \$394,341 of net additional revenue will be available annually for the general fund.

## Fiscal Impact

Short-Term Impact: The total construction cost of the Henderson Branch Sewer Extension is estimated to be \$4,300,000. The BCRSD will provide funding in the amount of \$628,047.00, \$2,600,000.00 will be funded from Sewer Bonds and \$1,071,953.00 will be funded by Sewer Utility enterprise revenue funds.

Long-Term Impact: The annual maintenance cost for the sanitary sewer collection system has averaged \$0.995 per foot based on the past three year average. This corresponds to an annual cost of approximately \$8,557.00 for collection system maintenance however, this cost will not be incurred during the first five years. The treatment costs have averaged \$0.0012 per gallon the past three years this corresponds to an initial annual cost of \$7665 for treatment.

## Vision & Strategic Plan Impact

### Vision Impacts:

Primary Impact: Environment, Secondary Impact: Economic Development, Tertiary Impact: Development

### Strategic Plan Impacts:

Primary Impact: Infrastructure, Secondary Impact: Economy, Tertiary Impact: Not Applicable

### Comprehensive Plan Impacts:

Primary Impact: Environmental Management, Secondary Impact: Infrastructure, Tertiary Impact: Economic Development

## Legislative History

Date	Action
10/03/16	Public Hearing for the Henderson Branch Sewer Extension Project
07/05/2016	Public Hearing for the Henderson Branch Sewer Extension Project
06/06/2016	(R60-16) Setting a Public Hearing for the Henderson Branch Sewer



# City of Columbia

701 East Broadway, Columbia, Missouri 65201

	Extension Project
08/17/2015	(B232-15) Amending the General Cooperative Agreement with Boone County Regional Sewer District
08/03/2015	(R125-15) Engineering Services Agreement with HDR Engineering for the Henderson Branch Sewer Extension Project
03/16/2015	(Ord22383) Authorizing the issuance of Sewerage System Revenue Bonds, Series 2015, in the aggregate principal amount on not to exceed \$20,500.00
03/02/2015	(R11-15A) Authorizing the offering for sale of not to exceed \$20,500.00 principal amount of Sewage System Revenue Bonds, Series 2015, of the City of Columbia, Missouri.
07/21/2014	(R125-14) Transferring funds to offset expenditures relating to the November 2013 Special Bond Election for sanitary sewer improvements.
01/21/2014	(Ord21742) Declaring the results of the Special Election held in the City of Columbia, Missouri on November 5, 2013.
08/05/2013	(Ord 21760) calling a special election on whether to issue the Sewer System Revenue Bonds in the amount of \$32,340,000 for constructing, improving, repairing, rehabilitating, replacing, equipping, expanding, and extending the city-owned sewerage system.
07/01/2013	Pre-Council Meeting – General Obligation Bond Projects – Infrastructure Ballot Presentation
05/20/2013	Pre-Council Meeting – November Storm Water / Sewer Ballot Issue – Sewer Utility Presentation – Storm Sales Tax Presentation
01/01/2007	Public Hearing – Sewer Master Plan
12/04/2006	(R262-06) Setting a Public Hearing to consider adopting the Sewer Utility Master Plan



# City of Columbia

701 East Broadway, Columbia, Missouri 65201

## Suggested Council Action

Staff recommends tabling of this issue until November 7<sup>th</sup> to allow for a decision by the full City Council and to provide additional time to finalize other agreements related to the project.