Council Agenda Report

From: Matt Thompson, Wastewater Resources Manager

Subject: Update of Wastewater Collection System Master Plan

Date: July 17, 2018

Facts

1. The City owns and operates 140 miles of sewer pipelines and 14 sewage lift stations. This system collects wastewater from throughout the City and conveys it to the City's wastewater treatment plant.
2. To prevent sewage spills and protect public health and the environment, this wastewater collection system must be sized and have adequate capacity for wastewater flows from both existing and planned development, as well as increased flows that occur during the wet season.
3. To accomplish this, the City has a Wastewater Collection System Master Plan. The City must occasionally update the Master Plan. An update includes preparation of a computerized hydraulic model of the system and careful analysis to determine where capacity deficiencies may exist. Plans are made to fix those deficiencies at the appropriate time. This work is done by specialized professional engineers.
4. The list of projects resulting from the Master Plan becomes the basis of the City's wastewater capital improvement program.
5. The City last updated its Master Plan in 2007. The City has completed most of the sewer projects called for in the 2007 Plan. As the City prepares to serve new development and to study sewer rates in 2019, the time has come to update the Master Plan again.
6. Staff solicited proposals from professional engineering firms that are known to do this type of work. After vetting the proposals, staff found that Water Systems Consulting (WSC) of San Luis Obispo is most qualified.
7. WSC's proposed scope of work and fee are attached. In short, WSC will complete a full update of the Master Plan in 12 months for a fee of $149,865.

Options

1. Take no action;
2. Approve WSC for update of the Wastewater Collection System Master Plan, for the amount of $149,865, and authorize the City Manager to enter a professional services agreement;
3. Amend or modify Option 2.

Analysis and Conclusions

The City's existing Wastewater Collection System Master Plan is now 11 years old. Some of the new development currently pending may differ slightly from what was assumed when the Master Plan was last updated in 2007. Incorporating our latest knowledge of development patterns and locations into the hydraulic model will help determine whether and where there are capacity deficiencies in the sewer system. This will help the City to proactively address the deficiencies and remain ready for new development.

The City's sewer system is also aging. Some existing sewer lines are now over 100 years old. Many segments have damage associated with age such as cracked pipes, offset joints, and heavy root intrusion. Even with a full maintenance program, regular rehabilitation and replacement of some parts of the system is necessary. So the proposed Master Plan Update will differ slightly from the updates completed in 1993 and 2007. This update will include an infrastructure renewal strategy. The firm selected to complete the work will review the City's extensive database of sewer system condition. They will recommend a simple strategy (e.g., replace X lineal feet of sewers per year) to keep up with rehabilitation and replacement needs. This will help the City to properly budget for rehabilitation and replacement projects.

Water Systems Consulting (WSC) of San Luis Obispo is well qualified and in the best position to update the City's Wastewater Collection System Master Plan. Staff at WSC have for many years maintained a working knowledge of the City's wastewater collection system. WSC recently completed an update of the City's Water System Master Plan, which is directly related and enables them to complete the wastewater collection system analytical work efficiently. WSC also recently completed a master plan and infrastructure renewal strategy for the City of San Luis Obispo, which was well-received. Water-related planning work like this is WSC's niche.

Fiscal Impact

The recently adopted City Budget for Fiscal Years 18/19 and 19/20 includes $150,000 for update of the Wastewater Collection System Master Plan. The proposed expenditure will come from the Sewer Fund and will not adversely affect the fund. The capital improvement project list that will result from this Master Plan Update will form the basis of a sewer rate study in 2019. Completion of this update will help maintain the long-term fiscal health of the Sewer Fund.

Recommendation

Approve the attached Resolution No. 18-XXX, to approve Water Systems Consulting Inc. for update of the Wastewater Collection System Master Plan, for the amount of $149,865, and authorize the City Manager to enter a professional services agreement.

Attachments

1. Resolution No. 18-XXX
2. WSC's Scope of Work and fee for update of the Wastewater Collection System Master Plan.

RESOLUTION NO. 18-XXX

RESOLUTION OF THE CITY COUNCIL OF THE CITY OF EL PASO DE ROBLES
APPROVING WATER SYSTEMS CONSULTING INC. FOR
UPDATE OF WASTEWATER COLLECTION SYSTEM MASTER PLAN

WHEREAS, to prevent sewage spills and protect public health and the environment, the City's wastewater collection system must be sized and have adequate capacity for wastewater flows from both existing and planned development, as well as increased flows that occur during the wet season; and

WHEREAS, to accomplish this, the City must occasionally update its Wastewater Collection System Master Plan; and

WHEREAS, the City last updated its Master Plan in 2007. The City has completed most of the sewer projects called for in the 2007 Plan. As the City prepares to serve new development and to study sewer rates in 2019, the time has come to update the Wastewater Collection System Master Plan again; and

WHEREAS, City staff solicited proposals from professional engineering firms that are known to do this type of work. After vetting the proposals, staff found that Water Systems Consulting Inc. of San Luis Obispo is most qualified.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF EL PASO DE ROBLES DOES HEREBY RESOLVE AS FOLLOWS:

Section 1. All of the above recitals are true and correct and incorporated herein by reference.

Section 2. The City Council hereby approves Water Systems Consulting Inc. for update of the City's wastewater collection system master plan, according to the scope of work attached hereto as Exhibit A, and incorporated herein by reference, for an amount of $149,865, and authorizes the City Manager to execute a professional services agreement, subject to any minor, technical, or non-substantive changes as approved by the City Manager and the City Attorney.

APPROVED this 17th day of July, 2018, by the following vote:

AYES:
NOES:
ABSENT:
ABSTAIN:

Steven W. Martin, Mayor

ATTEST:

Kristen L. Buxkemper, Deputy City Clerk

WSC
WATER SYSTEMS CONSULTING, INC.

6/27/2018

Mr. Matt Thompson
City of Paso Robles
1000 Spring Street
Paso Robles, CA 93446
Delivered via Email

SUBJECT: PROPOSAL TO PROVIDE PROFESSIONAL ENGINEERING SERVICES FOR THE WASTEWATER COLLECTIONS SYSTEM RENEWAL STRATEGY AND MASTER PLAN

Dear Matt,

We are pleased to provide this proposal to prepare a Wastewater Collections System Renewal Strategy and Master Plan for the City of Paso Robles (City). The proposed scope of work is attached. The scope includes the development of a hydraulic model of the City collection system, identification of potential capacity constraints, review of general collection system age, establishment of near and long-term rehabilitation needs, and a feasibility assessment of stormwater capture. WSC proposes to use these tools, in coordination with City staff's knowledge of the system, to develop a renewal strategy and prioritized list of capital improvement projects. WSC understands that the City would like to include recommendations from the master plan in the upcoming 2019 budget, and will strive to complete a draft list of projects by the end of October 2018 for inclusion in preliminary budgeting documents.

We welcome the opportunity to discuss our proposal with you in more detail, and to answer any questions you may have. Feel free to contact Josh at (805) 457-8833 ext. 107 or Adam at (805) 457-8833 ext. 202. You can also email us at jreynolds@wsc-inc.com or arianda@wsc-inc.com

Thank you again for this opportunity, we look forward to your response.

Sincerely,

Water Systems Consulting, Inc.

Joshua Reynolds, PE
Project Manager

Adam Rianda, PE
Project Engineer

TASK 0.0 PROJECT MANAGEMENT & COORDINATION

0.1 Project Administration

- Provide project administration and coordination, and prepare project schedule and update as-required based upon actual progress and the City's direction. Prepare monthly progress reports.

0.2 Quality Assurance/Quality Control (QA/QC)

- Provide comprehensive quality control reviews of deliverables by WSC senior technical staff prior to submittal to the City for review. Anticipated deliverables are described in the corresponding tasks.

0.3 Routine Status Calls

- Host routine status calls between WSC's project manager and the City's project manager. Calls will focus on next steps, identification of action items, acknowledging information needs, discussion of project schedule, and other routine project management needs. Calls should last less than half an hour and will occur every other week at time and a day to be determined. The Project schedule and budget assumes 18 routine status calls. Detailed agendas and notes will not always be prepared, it will depend on the evolving needs of the project.

0.4 Kickoff Meeting

- Plan, organize and conduct one Kickoff Meeting. The purpose of the Kickoff Meeting will be to: (1) establish roles and responsibilities; (2) review scope, schedule and deliverables; (3) review available data and establish data needs; and (4) review master plan update requirements and methodology. The budget is based on one two-hour meeting attended by two WSC staff.

0.5 Preliminary System Improvements Meeting

- Plan, organize and conduct a Preliminary System Improvements Meeting. The purpose of the meeting will be to review the findings of the system analysis and identify potential system improvements to address the deficiencies. The budget is based on one two-hour meeting attended by two WSC staff.

0.6 Draft Master Plan Review Meeting

- Plan, organize and conduct a Draft Master Plan Review Meeting. The purpose of this meeting will be to obtain and review the District's comments on the Draft Master Plan. The budget is based on one two-hour meeting attended by two WSC staff.

0.7 Final Master Plan Review Meeting

- Plan, organize and conduct a Final Master Plan Review Meeting. The purpose of this meeting will be to review the Final Master Plan. The budget is based on one one-hour meeting attended by two WSC staff.

Deliverables: Electronic copies of agenda and meeting materials at least two working days prior to the meeting. Electronic copies of meeting notes with decisions and action items within five working days following the meeting.

TASK 1.0 DATA COLLECTION AND MODELING APPROACH

1.1 Data Request

- Prepare a data request to be submitted to the City which outlines WSC's preliminary assessment of the required data. Expected data sources include (some of these have already been obtained by WSC):
  - ✓ GIS files showing the current service area and the existing sewer infrastructure from InfraMap (pipes, manholes, cleanouts, pump stations).
  - ✓ Storm drain data for evaluating rainwater harvesting.
  - ✓ GIS land use data for flow assignment (parcels, existing land use, future zoning, tributary basins).
  - ✓ The City's 2007 SewerCAD files to extract rim and invert elevations that may not be available in InfraMap.
  - ✓ Sewer as-built drawings.
  - ✓ The 2007 Wastewater Collections System Master Plan.
  - ✓ The City of Paso Robles General Plan.
  - ✓ The City's current Sanitary Sewer Management Plan (SSMP).
  - ✓ Pump station information including pump sizes, wet well dimensions, and control settings.
  - ✓ Historical flow and/or volume data for the 14 sewage lift stations from the wastewater collections SCADA system.
  - ✓ Wastewater treatment plant inflow data from the treatment plant SCADA system.
  - ✓ Water usage data for the purpose of estimating sanitary wastewater production from different parts of the study area.
  - ✓ Information about planned development projects or potential expansions of the service area.
  - ✓ Topographic data for the City service area.
  - ✓ City Engineering Standards.
  - ✓ Rainfall data for evaluating stormwater harvesting.
  - ✓ Additional information identified by the City or WSC.

1.2 Data Review

- Review the compiled data sets and prepare a tabular summary of outstanding data needs.

1.3 City Staff Interviews

- Interview the City's wastewater collections operation and maintenance staff to determine where there are known capacity deficiencies and high maintenance areas within the collection system.

- Facilitate a two-hour workshop with collection system operations staff. Review a map of the system showing any previously identified issues highlighted by the City staff or identified during the data review. Discuss factors contributing to these issues, and identify any additional issues related to the existing collection system.

1.4 Import MH Elevations Into City GIS

- Extract manhole rim and invert elevation and pipe slope information from the 2007 SewerCAD model and connect the 2007 data to the City's current GIS dataset. Initial comparison of the datasets indicates there is spatial variability between the 2007 SewerCAD data and the current City GIS data. Data intersects of variable distances will be used to link the 2007 SewerCAD data to the current City GIS. However, the initial comparison indicates there will be 300 to 400 manholes that are orphaned in the automated process. WSC will update the manhole data manually for these manholes and the connecting pipes.

- There are an additional 746 manholes in the current GIS dataset compared to the 2007 Sewer model, so the GIS linked record drawings will be reviewed to extract slope and invert elevation information for these manholes and the connecting pipes.

Figure 1. Comparison of 2007 Sewer Model with Current GIS

1.5 Field Survey

- Conduct field survey to determine manhole and pipe invert and rim elevations not included in the City's GIS geogeodatabase, 2007 SewerCAD model, or sewer as-built drawings. The number of manholes that need to be surveyed is not known at this time, and will require detailed review of the databases and preliminary model runs to establish number of manholes requiring survey. WSC will coordinate with the City to prioritize the field survey work, and will use our "sewer flattening" process to analyze the model with missing data to identify manholes that will not require surveying. The sewer flattening process works by assigning a minimum pipe slope (usually about a 1/10th of the City's standard minimum allowable slope) to manholes with unknown invert elevations. Pipelines that have adequate capacity at that flattened slope will be de-prioritized for surveying.

- Budget is based on 4 days for the survey crew to survey the manholes identified. The survey crew will only require City staff assistance for traffic control in high traffic areas. The number of manholes that can be surveyed within the allowed time will depend on numerous variables including traffic flow, proximity of manholes to each other, need for set up and take down of traffic control, local control availability, tree cover, and other items that can slow down surveying production. WSC estimates the surveyor can survey between 18 and 30 manholes each day for a total of 72 to 120 manholes to be surveyed within the allocated budget.
- WSC's GIS team will manipulate the field collected manhole invert and rim elevations in GIS by linking the inverts with the associated pipes in GIS. The manipulated data can then be exported as a shapefile and easily imported into the City's geodatabase for inclusion in the hydraulic model.

1.6 Modeling Approach Technical Memorandum

- Based on review of the data, prepare a Modeling Approach Technical Memorandum (TM) with the following information:
  - ✓ The model will be prepared in Bentley's SewerGEMS software.
  - ✓ The recommended approach for importing infrastructure into the model and keeping the model up-to-date.
  - ✓ The sources to be used for infrastructure data (pipe material, date of installation, and diameter; manhole rim and invert elevations; pump sizes and settings; wet well volumes) and flow assignment parameters.
  - ✓ The recommended approach for assigning sanitary flows and wet weather infiltration and inflow to the model.
  - ✓ The data available for calibration to dry weather and wet weather conditions.
- Submit the draft TM to City for review and comment. WSC will review the City's comments and incorporate any changes into the modeling approach section of the draft master plan.

1.7 Task 1 Assumptions

- The City will provide GIS linked record drawings for manual update of the MH and pipe data not included in the 2007 SewerCAD model.
- The City will provide storm drain data for up to 4 locations to evaluate harvesting options.
- The City will provide lift station run-time data to aid in model calibration.
- Additional flow monitoring may be recommended, and is not included in this proposal.

Deliverables: Itemized data request; Modeling Approach Technical Memorandum.

TASK 2.0 SYSTEM CONDITION REVIEW

2.1 Lift Station Visits

- Coordinate with the City to visit each of the fourteen sewage lift stations. Collect data at each station to be used in the hydraulic model and for condition assessment of the lift stations. Rank components of the lift stations using an objective numeric ranking criteria to be developed in coordination with the City. Condition ranking criteria is expected to include an assessment of condition, approximate remaining life, and suitability for the intended application.

2.2 Maintenance Program Review

- Review the City's approach for planning, scheduling, and performing maintenance of gravity sewers.

2.3 Pipeline Remaining Useful Life Evaluation

- Using pipeline installation dates from the City GIS dataset, WSC will prepare remaining useful life curves for the collection system pipelines. The remaining useful life curves will help the City establish near and long-term pipeline rehabilitation budgets based on expected asset lifetimes and replacement needs. The analysis will not include pipeline specific rehabilitation recommendations, as that will require coordination with other data sets maintained by the City (such as CCTV data, cleaning frequency, maintenance issues, etc.) and is expected to be performed on a routine basis by the City outside the scope of this Master Plan Update.

2.4 System Condition Technical Memorandum

- Summarize the findings of the sub-tasks above in a Technical Memorandum. Include recommendations identified for system operations, maintenance, or condition assessment. Submit the draft TM to the City for review and comment. WSC will review the City's comments and incorporate changes into the system condition section of the draft master plan.

2.5 Task 2 Assumptions

- The City will facilitate the lift station site visits including opening vaults, wet wells, dry wells, and electrical cabinets as needed to perform visual observations.

Deliverable: System Condition Technical Memorandum

TASK 3.0 MODEL DEVELOPMENT AND CALIBRATION

3.1 Sewer Infrastructure

- Import the rim and invert elevations from the 2007 SewerCAD model into the latest GIS geodatabase, a discussed in Task 1.4.
- Import the GIS files into a new hydraulic model of City's collection system.
- Populate the model with pump and wet well information at each lift station.
- Review the network connectivity and make corrections as needed.

3.2 Existing Flow Assignment and Wastewater Generation Factor Calculation

- Define tributary areas for each manhole. These tributary areas will identify where each parcel is expected to contribute its sanitary wastewater flow to the collection system.

- Estimate sanitary wastewater production from each parcel, and assign the dry weather flows to the appropriate manhole. Parcel specific loading will be based on the City's 2014 Water Master Plan Update water meter analysis performed by WSC, and will be updated with water meter data for the 5-year period prior to the Collection System Master Plan Update (e.g. 2013, 2014, 2015, 2016, 2017, and part of 2018).
- Develop wastewater generation factors (i.e. percentage of water consumed that enters the sewer system) for each land use zone to convert customer water demands to sewer loading. This process is intended to update land use based wastewater generation factors as prepared for the Airport Area Sewer Expansion.
- Create a model scenario to represent current dry weather flows.
- Assign a set of peaking factors to estimate peak dry weather flows, and peak wet weather flows. Peaking factors will be estimated using WWTP flow data.

3.3 Future Flow Projections

- Use planning documents provided by the City to develop a forecast of future wastewater flows. Use the City's Master Parcel Table, specific plans, and the Future Development List to estimate future wastewater generation. As appropriate for currently developed areas, WSC will use an infill factor to scale up sanitary flows for future conditions. Wastewater flow will be based on proposed or existing land use and the land use specific wastewater generation factors developed in Task 3.2.
- Incorporate the future flow projections and service expansions presented in the Airport Area Sewer Expansion Conceptual Design Project.
- Estimate total wastewater production within the service area for existing conditions and two additional future timeframes.

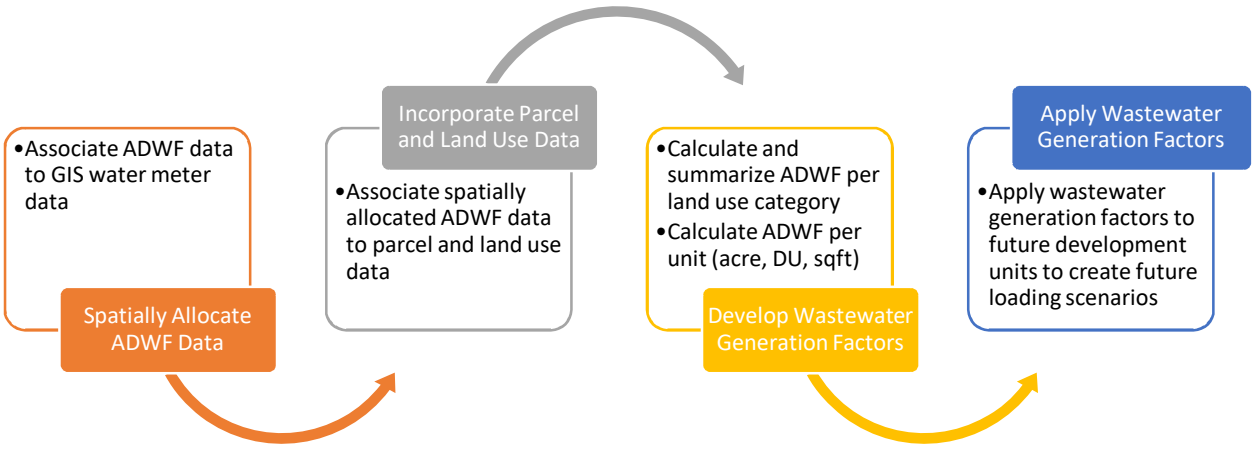

Figure 2. Proposed Model Loading Process

3.4 Wet Weather Flow Assignment

- Assign wet weather flow assignment factors to the tributary areas in the model.
- Create a model scenario to represent current wet weather flows.

3.5 Model Calibration

- Create model scenarios in the updated hydraulic model to simulate conditions during periods when flow monitoring data are available. Compare the model-predicted flows to the observed flows. Adjust the flow assignment factors within a reasonable range of values to improve the agreement between the model results and the observed flows.

3.6 Task 3 Assumptions

- The City will provide a list of parcels on septic systems (if any).
- The process and land use based wastewater generation factors prepared by WSC for the Airport Area Sewer Expansion Conceptual Design will be used as the basis for updating flows for the Collection System Master Plan. The wastewater generation factors will be reviewed and updated as needed based on current water and sewer flow data and land uses.
- The City will provide an up to date Master Parcel List and Future Development List and other supporting land use documents to allow application of land use based wastewater generation factors.
- Without additional collection system flow monitoring, I/I and Peak Wet Weather Flow patterns will be derived from the 2007 Sewer Collection System Master Plan work.
- Templeton CSD is disconnecting from the City sewer system in late 2018 or early 2019 and therefore future loading scenarios will exclude wastewater flow from Templeton CSD.

TASK 4.0 SYSTEM ANALYSIS

4.1 Collection System Capacity Evaluation

- Define a set of criteria to be used in evaluating the hydraulic capacity of the wastewater infrastructure. These criteria are expected to include:
  - ✓ Allowable depth/diameter ratios (variable with pipe diameter)
  - ✓ Surcharging allowances for certain areas during peak wet weather flow
  - ✓ Gravity main flow velocity
  - ✓ Lift station capacities
  - ✓ Forcemain velocity
  - ✓ Lift station cycle time
- Develop model scenarios to simulate current and future flow conditions under the current system configuration and a configuration including expansions as needed to serve proposed developments.

- Calculate the capacity of each lift station using pump curves and forcemain configuration. Prepare system curve and pump curve exhibits for each lift station. Compare calculated lift station capacity to nominal capacity and projected peak flow for existing and future flow scenarios. Make recommendations to correct deficiencies in the pumps, wet wells and forcemains. Special attention will be given to Lift Station 2 since the City expects significant flow changes at that lift station.
- Identify areas where capacity constraints are predicted to occur. When appropriate, make recommendations for installation of flow monitoring and reporting manhole covers.
- Develop a model scenario to evaluate system improvements where capacity constraints are identified.

4.2 Lift Station Elimination Evaluation

- Utilize spatial, topographic, and collection system data provided by the City to identify potential opportunities to eliminate sewage lift stations by constructing new gravity sewer mains, in turn reducing long term operation and maintenance costs.
- Develop model scenarios to evaluate the proposed system modifications.

4.3 City Engineering Standards Assessment

- Review the City's Engineering Standards as they pertain to the design and construction of sanitary sewers to determine if the standards could be contributing to capacity deficiencies or operation and maintenance difficulties. Provide recommended modifications to the Engineering Standards, if identified during review.

4.4 Development of Recommended Improvements

- Develop a set of improvement projects to address the identified operational constraints and potential hydraulic deficiencies under current and future flows.
- Develop an estimated capital cost for each recommended improvement.

Deliverable: List of recommended improvement projects and estimated costs

TASK 5.0 EVALUATE POTENTIAL FOR STORMWATER HARVESTING

- Identify up to 4 strategic locations to install stormwater capture systems. Locations will be evaluated based on the size of the drainage capture area, proximity to the sewer collection system, and collection system capacity.
- Calculate stormwater capture flow rates from average rainfall records, size of the drainage areas, land use, and soil types. Discuss potential for capture of incidental non-stormwater. Coordinate with City to estimate volume of incidental non-stormwater from City data.
- Develop a model scenario to evaluate the collection systems capacity to receive the stormwater.
- Evaluate benefits of stormwater harvesting on sewer cleaning and maintenance, treatment plant operations, and recycled water yield.
- Present the cost/benefit evaluation for the City's consideration.

Deliverable: Draft and Final Stormwater Harvesting TM

TASK 6.0 RENEWAL STRATEGY AND MASTER PLAN DOCUMENTS

6.1 Renewal Strategy

- Based on the work performed in Task 2.0, prepare a system renewal strategy to establish expected annual capital expenditures over the next 20 years to replace or rehabilitate aging assets. The renewal strategy will include two or three options for annual expenditure on pipelines based on pipe age and remaining useful life. The renewal of lift stations based on asset age and observed condition will be included. The renewal strategy will be coordinated with the capacity evaluations such that assets slated for replacement or upgrade to meet capacity constraints will not be double counted.

6.2 Wastewater Collections System Master Plan and Renewal Strategy

- Develop an updated master plan document. The work in previous tasks will be described in chapters of the master plan. It is expected that potential chapters will include
  - ✓ Introduction
  - ✓ Existing system description, including infrastructure condition and operations
  - ✓ Current and future flows
  - ✓ Hydraulic capacity evaluation of gravity sewers and lift stations
  - ✓ Recommended improvement projects to address capacity-based deficiencies
  - ✓ Recommended approach for rehabilitation and replacement of aging infrastructure
- Submit a Draft Wastewater Collection System Master Plan and Renewal Strategy for City review.
- Develop a Final Wastewater Collection System Master Plan and Renewal Strategy that incorporates City review comments.
- Compile and submit electronic SewerGEMS hydraulic model files to the City.

6.3 Capital Improvement Plan

- Identify the highest-priority recommendations from the master plan.
- Assemble the high-priority recommendations into a recommended CIP for the next 15 years.
- Group annual projects based on priority and targeted annual collection system capital expenditure needs.

Deliverables: Draft and Final Master Plan and Capital Improvement Plan. Hydraulic model files.

Deliverables Summary

Task	Deliverable	Format / Copies
0	Meeting Agendas and Minutes	PDF files via email.
0	Progress Reports	One hardcopy every month
0	Project Schedule	Hardcopies of base schedule provided at Kickoff Meeting. PDFs emailed for any updates
1	Data Request	PDF files via email.
1	Modeling Approach Technical Memorandum	PDF files via email.
2	System Condition Technical Memorandum	PDF files via email.
4	Recommended Improvements and Estimated Cost	PDF files via email.
5	Draft and Final Stormwater Harvesting TM	PDF files via email.
6	Draft and Final Master Plan	3 hardcopies and PDF files via email.
6	Capital Improvement Plan	PDF files via email.
6	Hydraulic Model Files	Electronic

Fee Proposal

WSC proposes to perform the scope of work outlined above for a time and materials, not to exceed fee of $149,865, in accordance with the following fee proposal.

Schedule

WSC proposes to perform the scope of work outlined above in the following schedule.

Cost Proposal
6/27/2018

WSC
WATER SYSTEMS CONSULTING, INC.

Task No.	Task Description	WSC											MBS	ALL FIRMS
		Project Manager (Senior Eng. V)	QA/QC (Senior Eng. V)	Associate Planner II	Staff Engineer II	Assistant Engineer	Clerical/Admin	Engineering Intern	WSC Labor Hours	WSC Labor Fee	Expenses	WSC Fee	Labor Fee	Total Fee
		Joshua Reynolds	Jeroen Olthof	Spencer Waterman	Adam Rianda	Adam Donald	Kay Merrill	Aaron Morland						
	Billing rates, $/hr	*$260*	*$260*	*$185*	*$155*	*$135*	*$120*	*$115*						
0	**Project Management & Coordination**													
0.1	Project Administration	6			12		12		**30**	**$ 4,860**	**$ 200**	**$ 5,060**		**$ 5,060**
0.2	QA/QC		24						**24**	**$ 6,240**	**$ 200**	**$ 6,440**		**$ 6,440**
0.3	Routine Status Calls	12			12				**24**	**$ 4,980**	**$ 200**	**$ 5,180**		**$ 5,180**
0.4	Kickoff Meeting	3			4				**7**	**$ 1,400**	**$ -**	**$ 1,400**		**$ 1,400**
0.5	Preliminary System Improvements Meeting	3			4				**7**	**$ 1,400**	**$ -**	**$ 1,400**		**$ 1,400**
0.6	Draft Master Plan Review Meeting	3			4				**7**	**$ 1,400**	**$ -**	**$ 1,400**		**$ 1,400**
0.7	Final Master Plan Review Meeting	2			3				**5**	**$ 985**	**$ -**	**$ 985**		**$ 985**
	SUBTOTAL	**29**	**24**	**0**	**39**	**0**	**12**	**0**	**104**	**$ 21,265**	**$ 600**	**$ 21,865**	**$ -**	**$ 21,865**
1	**Data Collection and Modeling Approach**													
1.1	Data Request	2		2	4				**8**	**$ 1,510**	**$ 100**	**$ 1,610**		**$ 1,610**
1.2	Data Review	2		2	6				**10**	**$ 1,820**	**$ 100**	**$ 1,920**		**$ 1,920**
1.3	City Staff Interviews	3			6				**9**	**$ 1,710**	**$ 100**	**$ 1,810**		**$ 1,810**
1.4	Import MH Elevations into City GIS	2			8			122	**132**	**$ 15,790**	**$ 600**	**$ 16,390**		**$ 16,390**
1.5	Field Survey				8				**8**	**$ 1,240**	**$ -**	**$ 1,240**	$ 13,800	**$ 15,040**
1.6	Modeling Approach Technical Memorandum	4		4	16				**24**	**$ 4,260**	**$ 100**	**$ 4,360**		**$ 4,360**
	SUBTOTAL	**13**	**0**	**8**	**48**	**0**	**0**	**122**	**191**	**$ 26,330**	**$ 1,000**	**$ 27,330**	**$ 13,800**	**$ 41,130**
2	**System Condition Review**													
2.1	Lift Station Visits	16			24				**40**	**$ 7,880**	**$ 300**	**$ 8,180**		**$ 8,180**
2.2	Maintenance Program Review	1			4				**5**	**$ 880**	**$ -**	**$ 880**		**$ 880**
2.3	Pipeline Remaining Useful Life Evaluation				2	12			**14**	**$ 1,930**	**$ 100**	**$ 2,030**		**$ 2,030**
2.4	System Condition Technical Memorandum	1			12	4			**17**	**$ 2,660**	**$ 100**	**$ 2,760**		**$ 2,760**
	SUBTOTAL	**18**	**0**	**0**	**42**	**16**	**0**	**0**	**76**	**$ 13,350**	**$ 500**	**$ 13,850**	**$ -**	**$ 13,850**
3	**Model Development and Calibration**													
3.1	Sewer Infrastructure	1			24				**25**	**$ 3,980**	**$ 100**	**$ 4,080**		**$ 4,080**
3.2	Existing Flow Assignment and WW Factor Calculation	2			16	6			**24**	**$ 3,810**	**$ 100**	**$ 3,910**		**$ 3,910**
3.3	Future Flow Projections	2			12	8			**22**	**$ 3,460**	**$ 100**	**$ 3,560**		**$ 3,560**
3.4	Wet Weather Flow Assignment	1			12				**13**	**$ 2,120**	**$ 100**	**$ 2,220**		**$ 2,220**
3.5	Model Calibration	2			8				**10**	**$ 1,760**	**$ 100**	**$ 1,860**		**$ 1,860**
	SUBTOTAL	**8**	**0**	**0**	**72**	**14**	**0**	**0**	**94**	**$ 15,130**	**$ 500**	**$ 15,630**	**$ -**	**$ 15,630**
4	**System Analysis**													
4.1	Collection System Capacity Evaluation	4			24				**28**	**$ 4,760**	**$ 200**	**$ 4,960**		**$ 4,960**
4.2	Lift Station Elimination Evaluation	4			10	24			**38**	**$ 5,830**	**$ 200**	**$ 6,030**		**$ 6,030**
4.3	City Engineering Standards Assessment	4			12				**16**	**$ 2,900**	**$ 100**	**$ 3,000**		**$ 3,000**
4.4	Development of Recommended Improvements	4			12	16			**32**	**$ 5,060**	**$ 200**	**$ 5,260**		**$ 5,260**
	SUBTOTAL	**16**	**0**	**0**	**58**	**40**	**0**	**0**	**114**	**$ 18,550**	**$ 700**	**$ 19,250**	**$ -**	**$ 19,250**
5	**Evaluate Potential for Stormwater Harvesting**													
5.1	Evaluate Potential for Stormwater Harvesting	4			48	12			**64**	**$ 10,100**	**$ 400**	**$ 10,500**		**$ 10,500**
	SUBTOTAL	**4**	**0**	**0**	**48**	**12**	**0**	**0**	**64**	**$ 10,100**	**$ 400**	**$ 10,500**	**$ -**	**$ 10,500**
6	**Renewal Strategy and Master Plan Documents**													
6.1	Renewal Strategy	2			20	4			**26**	**$ 4,160**	**$ 100**	**$ 4,260**		**$ 4,260**
6.2	Wastewater Collections System Master Plan	6		8	72	12			**98**	**$ 15,820**	**$ 600**	**$ 16,420**		**$ 16,420**
6.3	Capital Improvement Plan	4			16	24			**44**	**$ 6,760**	**$ 200**	**$ 6,960**		**$ 6,960**
	SUBTOTAL	**12**	**0**	**8**	**108**	**40**	**0**	**0**	**168**	**$ 26,740**	**$ 900**	**$ 27,640**	**$ -**	**$ 27,640**
	COLUMN TOTALS	**100**	**24**	**16**	**415**	**122**	**12**	**122**	**811**	**$ 131,465**	**$ 4,600**	**$ 136,065**	**$ 13,800**	**$ 149,865**