



AGENDA ITEM EXECUTIVE SUMMARY

Agenda Item number: 6.n

Title:

Recommendation to Award Agreement for Engineering Services for CMOM Phase 1 Flow Monitoring

Presenter:

Tim Wilson

Meeting: Government Services Committee

Date: March 27, 2017

Proposed Cost: \$122,708

Budgeted Amount: \$122,000

Not Budgeted:

Executive Summary *(if not budgeted please explain):*

The approach of the EPA approved CMOM Program was to divide the sewer collection system into 12 sub-basins. Each sub-basin was divided into three phases, each phase lasting one year. The first year for this sub-basin consists of infiltration and inflow sewer flow monitoring; the second year of the project would include a sewer system evaluation survey; the final year of the sub-basin would include rehabilitation.

As detailed in the CMOM plan, City Staff is requesting to continue the Flow Monitoring Program in Sub-basin Eastern 2. Sub-basin Eastern 2 was selected as the area this year due to the potential development projects in the area and its location adjacent to the City's Eastern boundary. Along with the CMOM goal of reducing infiltration and inflow, the Flow Monitoring Program this year will also be evaluating the Eastern trunk sewer main to determine capacity for future Development projects.

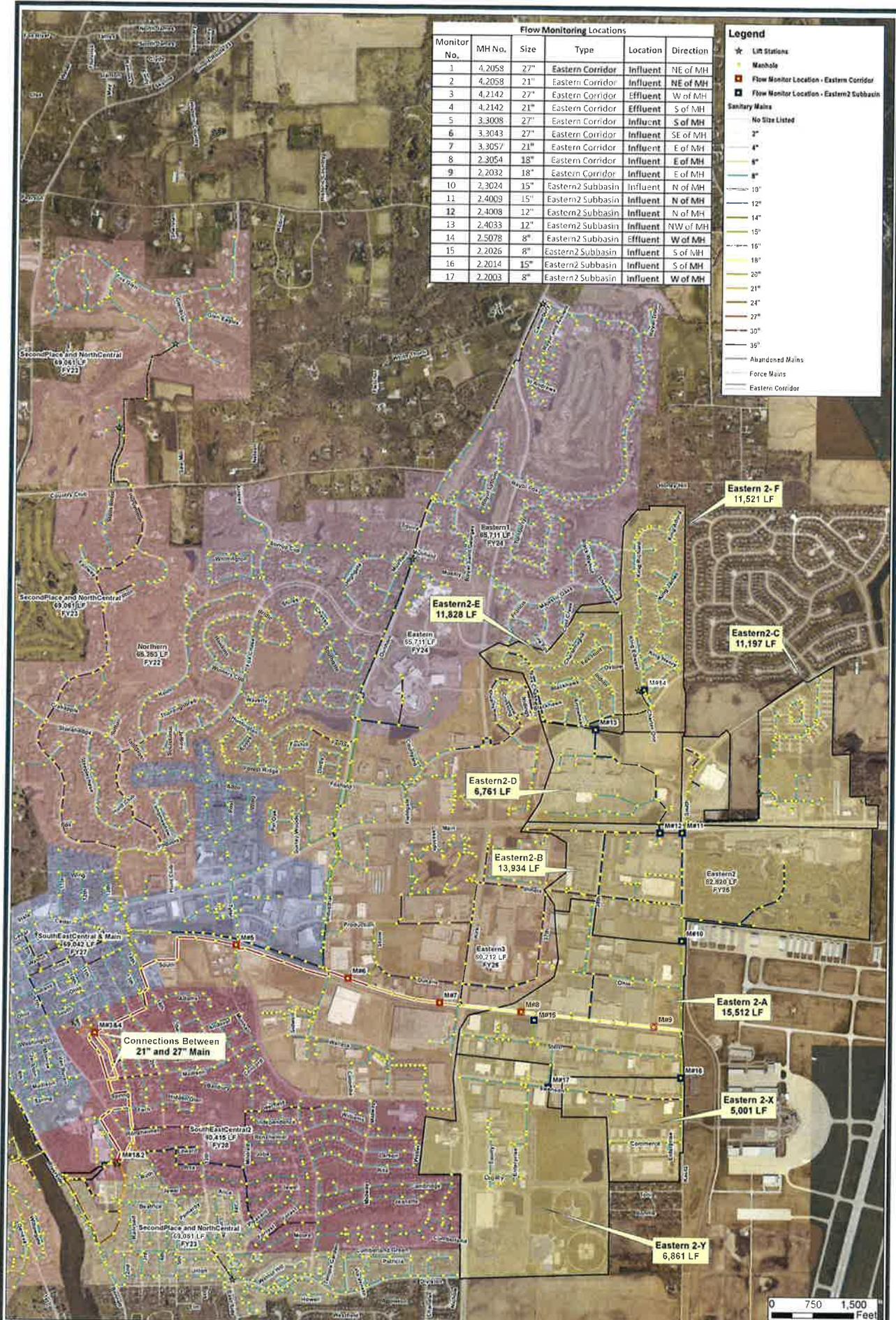
The Sub-basin is generally located between Kingswood Subdivision to the north, City Limits to the east, City Limits to the south, and Kirk Road to the west. Flow monitoring will include 17 flow monitors for an eight week period of time while local weather data is collected. At the completion of Phase I (flow monitoring), recommendations will be made for Phase II, which is the Sewer System Evaluation Survey.

Attachments *(please list):*

* Eastern 2 and Trunk Sewer Main Area Map * EEI Agreement for Consulting Engineering Services for East Interceptor Conveyance Analysis

Recommendation/Suggested Action *(briefly explain):*

Recommendation to award Agreement for Engineering Services for East Interceptor Monitoring Study to Engineering Enterprises Inc. for a not to exceed amount of \$122,708.



| Flow Monitoring Locations | | | | | | |
|---------------------------|--------|------|-------------------|----------|-----------|--|
| Monitor No. | MH No. | Size | Type | Location | Direction | |
| 1 | 4,2058 | 27" | Eastern Corridor | Influent | NE of MH | |
| 2 | 4,2058 | 21" | Eastern Corridor | Influent | NE of MH | |
| 3 | 4,2142 | 27" | Eastern Corridor | Effluent | W of MH | |
| 4 | 4,2142 | 21" | Eastern Corridor | Effluent | S of MH | |
| 5 | 3,3008 | 27" | Eastern Corridor | Influent | S of MH | |
| 6 | 3,3043 | 27" | Eastern Corridor | Influent | SE of MH | |
| 7 | 3,3057 | 21" | Eastern Corridor | Influent | E of MH | |
| 8 | 2,3054 | 18" | Eastern Corridor | Influent | E of MH | |
| 9 | 2,2032 | 18" | Eastern Corridor | Influent | E of MH | |
| 10 | 2,3024 | 15" | Eastern2 Subbasin | Influent | N of MH | |
| 11 | 2,4009 | 15" | Eastern2 Subbasin | Influent | N of MH | |
| 12 | 2,4008 | 12" | Eastern2 Subbasin | Influent | N of MH | |
| 13 | 2,4033 | 12" | Eastern2 Subbasin | Influent | NW of MH | |
| 14 | 2,5078 | 8" | Eastern2 Subbasin | Effluent | W of MH | |
| 15 | 2,2026 | 8" | Eastern2 Subbasin | Influent | S of MH | |
| 16 | 2,2014 | 15" | Eastern2 Subbasin | Influent | S of MH | |
| 17 | 2,2003 | 8" | Eastern2 Subbasin | Influent | W of MH | |

Legend

- ★ Lift Stations
- Manhole
- Flow Monitor Location - Eastern Corridor
- Flow Monitor Location - Eastern2 Subbasin

Sanitary Mains

- No Size Listed
- 2"
- 4"
- 6"
- 8"
- 10"
- 12"
- 14"
- 15"
- 16"
- 18"
- 20"
- 21"
- 24"
- 27"
- 30"
- 36"

— Abandoned Mains
— Force Mains
— Eastern Corridor

Eastern2-E
11,828 LF

Eastern 2-F
11,521 LF

Eastern2-C
11,197 LF

Eastern2-D
6,761 LF

Eastern2-B
13,934 LF

Eastern 2-A
15,512 LF

Eastern 2-X
5,001 LF

Eastern 2-Y
6,861 LF

Connections Between
21" and 27" Main

Engineering Enterprises, Inc.
92 Wheeler Road
Sugar Grove, Illinois 60554
(630) 466-6700
www.eeent.com

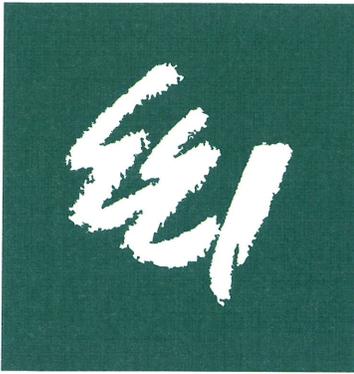
City of St. Charles
2 East Main Street
St. Charles, IL 60174
(630) 377-4400

DATE: 4/30/18
PROJECT NO.:
BY: CLV
PATH: \\188\Public\San Char\2017\813126\2018\CorridorStudy
FILE: EasternCorridorStudy

Capacity Analysis

Exhibit A
Eastern Conveyance Corridor
Area Overview





Revised: April 4, 2018
April 2, 2018

Mr. Timothy Wilson
Public Works Manager - Environmental Services
City of St. Charles
Two East Main Street
St. Charles, IL 60174

**Re: *East Interceptor Conveyance Analysis
City of St. Charles, Kane & DuPage Cos., IL***

Dear Mr. Wilson:

In accordance with our previous discussions, enclosed for your review and consideration are two revised copies of our proposed agreement for the East Interceptor Conveyance Analysis within the City's sanitary sewer network. Flow monitoring and modeling of the East Interceptor, displayed in Exhibit A, will evaluate the existing capacity of the East Interceptor.

As part of the interceptor conveyance analysis, field surveying will be completed to establish the alignment and elevation of the sanitary sewer pipes. The current level of I/I obtained from the flow monitoring will be utilized to evaluate the present level and projected level of I/I peak flows in the sanitary sewer network. EEI will develop a computer model of the sanitary sewer interceptor and then route 10-year and 25-year recurrence interval design storms through the model to evaluate the pipe capacity. If portions of the sanitary sewer network are undersized to carry existing and/or future flows, we will identify the improvements needed to expand the capacity of the network. We also will develop a cost estimate for the improvements.

According to the Inflow and Infiltration Reduction Program (IIRP) created in the 2016 Capacity, Management, Operation and Maintenance (CMOM) plan, the Eastern2 Basin was scheduled to be flow monitored in FY25. EEI is proposing to complete the conveyance analysis of the East Interceptor simultaneously with the flow monitoring and inflow and infiltration (I/I) analysis within the Eastern2 basin to reduce flow monitoring costs. There is a notable amount of upcoming development/ redevelopment that is expected to occur within the Eastern2 Basin, which is tributary to the East Interceptor Sewer. Flow monitoring and analysis of the Eastern2 Basin will provide the City with additional information on the existing capacity of the sanitary sewer network within the Eastern2 Basin. I/I investigations will be completed on the Eastern2 Basin and are meant to delineate problematic areas of the basin that are prime candidates for further sewer system evaluation and appropriate rehabilitation.

Mr. Tim Wilson
Revised: April 4, 2018
April 2, 2018
Page 2

Please recall a goal of the City's IIRP is to cost-effectively identify inflow and infiltration sources and cost-effectively rehabilitate the system to reduce I/I. The program follows a three-phased approach to minimize the amount of expenditures and maximize the amount of I/I that is removed from the system. Phase 1 consists of flow monitoring at multiple locations within a study area. Typically, the flow monitoring results, if there are sufficient rain events during the monitoring period, will identify areas where the I/I can be considered excessive, but it also typically identifies areas where I/I is not an issue. Those areas that have excessive I/I will be further analyzed in Phase 2. Phase 2 consists of sewer system evaluation survey (SSES) field work items, such as smoke testing, manhole inspections and televising sewers, which will identify the location of the defects in the sanitary sewer system. Phase 2 also will identify which areas of the system need to be rehabilitated. Phase 3 is the completion of the planned rehabilitation.

A report summarizing the flow monitoring results and interceptor conveyance analysis will be provided as part of this contract. The report will identify the subbasins that will need to be evaluated within Phase 2 of the I/I program for the Eastern2 Basin.

The attached documents include a detailed scope of services, estimate of level of effort and associated cost, and schedule for each of the work items of the contract. The total cost of the East Interceptor Capacity Analysis is \$122,708.

We look forward to continuing our outstanding partnership with the City and look forward to working with you and members of your staff on this project. Upon approval of this contract, please sign in the attached agreement and submit a copy for our records. If you have any questions or require any additional information, please do not hesitate to contact me.

Respectfully submitted,

ENGINEERING ENTERPRISES, INC.



Jeffrey W. Freeman, P.E., CFM, LEED AP
Vice President

JWF/clv

Enclosures

pc: Peter Suhr – Director of Public Works (Via E-mail)
Chris Adesso – Assistant Director of Public Works, Operations (Via E-mail)
Mike Burnett – Wastewater Division Manager (Via E-mail)
PGW, TWT, STD, DMT, CLV – EEI (Via E-mail)

AGREEMENT FOR CONSULTING ENGINEERING SERVICES FOR EAST INTERCEPTOR CONVEYANCE ANALYSIS

This Agreement, made this _____ day of _____, 2018 by and between the City of St. Charles, Kane and DuPage Counties, Illinois, a municipal corporation of the State of Illinois (hereinafter referred to as the "CITY") and Engineering Enterprises, Inc. of 52 Wheeler Road, Sugar Grove, Illinois, 60554 (hereinafter referred to as the "ENGINEER").

In consideration of the mutual covenants and agreements contained in this Agreement, the CITY and the ENGINEER agree, covenant and bind themselves as follows:

1. Services: ENGINEER agrees to perform for the CITY the Services defined within Attachment A.
2. Direction: The Public Works Manager - Environmental Services, or his written designee, shall act as the CITY'S representative with respect to the Services to be provided by the ENGINEER under this Agreement and shall transmit instructions and receive information with respect to the Consulting Engineering Services.
3. Compensation: The work items, estimated staff time, and projected fees for each work item are summarized within Attachment B. Based on this computation, the CITY agrees to pay the ENGINEER for providing the Services set forth herein on a time and materials basis not to exceed \$122,708.
4. Term: The term of this Agreement shall be active through December 31, 2018 unless otherwise extended through written confirmation by both parties. The work items and phases shall be completed in accordance with the schedule defined within Attachment C.
5. Payment: Engineer shall invoice the CITY on a monthly basis for Services performed and any costs and expenses incurred during the previous thirty (30) day period. The CITY shall pay the ENGINEER within thirty (30) days of receipt of said invoice.
6. Termination: This Agreement may be terminated upon fourteen (14) days written notice of either party. In the event of termination, the ENGINEER shall prepare a final invoice and be due compensation calculated as described in paragraph 3 for all costs incurred through the date of termination.
7. Documents: All related writings, notes, documents, information, files, etc., created, compiled, prepared and/or obtained by the ENGINEER on behalf of the CITY for the Services provided herein shall be used solely for the intended project.
8. Notices: All notices given pursuant to this Agreement shall be sent Certified Mail, postage prepaid, to the parties at the following addresses:

The CITY:

City of St. Charles
Two East Main Street
St. Charles, IL 60174
Attn: Tim Wilson
Public Works Manager -
Environmental Services

The ENGINEER:

Engineering Enterprises, Inc.
52 Wheeler Road
Sugar Grove, IL 60554
Attn: Jeffrey W. Freeman, P.E. CFM, LEED AP
Vice President

9. Waiver: The failure of either party hereto, at any time, to insist upon performance or observation of any term, covenant, agreement or condition contained herein shall not in any manner be constructed as a waiver of any right to enforce any term, covenant, agreement or condition hereto contained.
10. Amendment: No purported oral amendment, change or alteration hereto shall be allowed. Any amendment hereto shall be in writing by the governing body of the CITY and signed by the ENGINEER.
11. Succession: This Agreement shall ensure to the benefit of the parties hereto, their heirs, successors and assigns.

IN WITNESS WHEREOF, we have hereunto signed our names the day and year first above written.

CITY OF ST. CHARLES

ENGINEERING ENTERPRISES, INC.:

Mayor

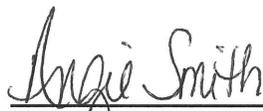


Vice President

ATTEST:

ATTEST:

Title: _____



Administrative Assistant

ATTACHMENT A – SCOPE OF SERVICES
EAST INTERCEPTOR CONVEYANCE ANALYSIS
INFLOW AND INFILTRATION REDUCTION PROGRAM
City of St. Charles, Kane and DuPage Cos., IL

Introduction

The East Interceptor Conveyance Analysis will assist in determining the capacity of the main conveyance corridor from the east side of the City to the East Side Lift Station. Portions of the area tributary to the east interceptor are not fully built out. In addition, redevelopment of parcels within the basin, which could change sanitary sewer flow characteristics within the basin, are expected. Prior to full buildout in this area, it would be useful to assess the current capacity of the sanitary sewer interceptor and project how future buildout will affect the flows. Much of the development that will contribute to the East Interceptor is expected to occur within the Eastern2 Basin whose boundaries are described in the Capacity, Management, Operations, and Maintenance (CMOM) Report Published in February 2016. Because the Eastern2 Basin is directly tributary to the East Interceptor, and much of the upcoming development is projected to occur there, it is recommended to flow monitor this area together with the East Interceptor Conveyance Analysis.

This scope of services includes seventeen (17) flow monitor locations. Nine (9) of the flow monitor locations are within the East Interceptor service area and eight (8) are used to delineate the Eastern2 Basin into smaller subbasins or tributary main. Two rain gauges will also be used to correlate the amount of precipitation within the study area. It is recommended that the 17 flow monitors and two (2) rain gauges remain in service for 8-weeks with the goal of obtaining data from multiple rain events. Finally, the scope of services includes surveying the interceptor sewer to determine rim and invert heights.

The results from the flow monitors, rain gauges, and surveying will be used to provide parameters for modeling existing and future scenarios within the East Interceptor. The parameters will include the projected effects of 10-year and 25-year design storms on the sanitary sewer. Potential rehabilitation techniques will be modeled in order to determine their viability and effect on flow conveyance. All cost and schedule decisions were based off of EEI's best knowledge of the East Interceptor and the Eastern2 Basin to date. An exhibit depicting the study area can be found in the attached Exhibit A.

The results of the flow study and interceptor conveyance analysis will be summarized in a report. The conveyance analysis will analyze the remaining amount of capacity within the east interceptor. The flow monitoring outcomes in this report are intended to be used as a guide for the SSES work that is expected to be completed as part of Phase 2 of the I/I Reduction Program for Basin Eastern2. Additionally, the flow monitoring of the East Interceptor will provide additional inflow and infiltration information for the basins along this main. This I/I information can be used to prioritize future subbasin inflow and infiltration reduction work on the east side of the Fox River.

The proposed work items for this project are as follows:

PROJECT FACILITATION & MEETINGS:

- 0.1 Project Administration
- 0.2 Project Initiation and Progress Meeting (2 Total Meetings)

FLOW MONITORING:

- 1.1 Determine Placement for Flow Monitors Within Study Area
- 1.2 Monitor Flows (Assumes 17 Locations) Within Subbasin For 8 Weeks
- 1.3 Monitor Rainfall (Assumes 2 Locations) Within Subbasin For 8 Weeks
- 1.4 Analyze Flows & Determine I/I Severity By Subbasin

INTERCEPTOR CAPACITY ANALYSIS:

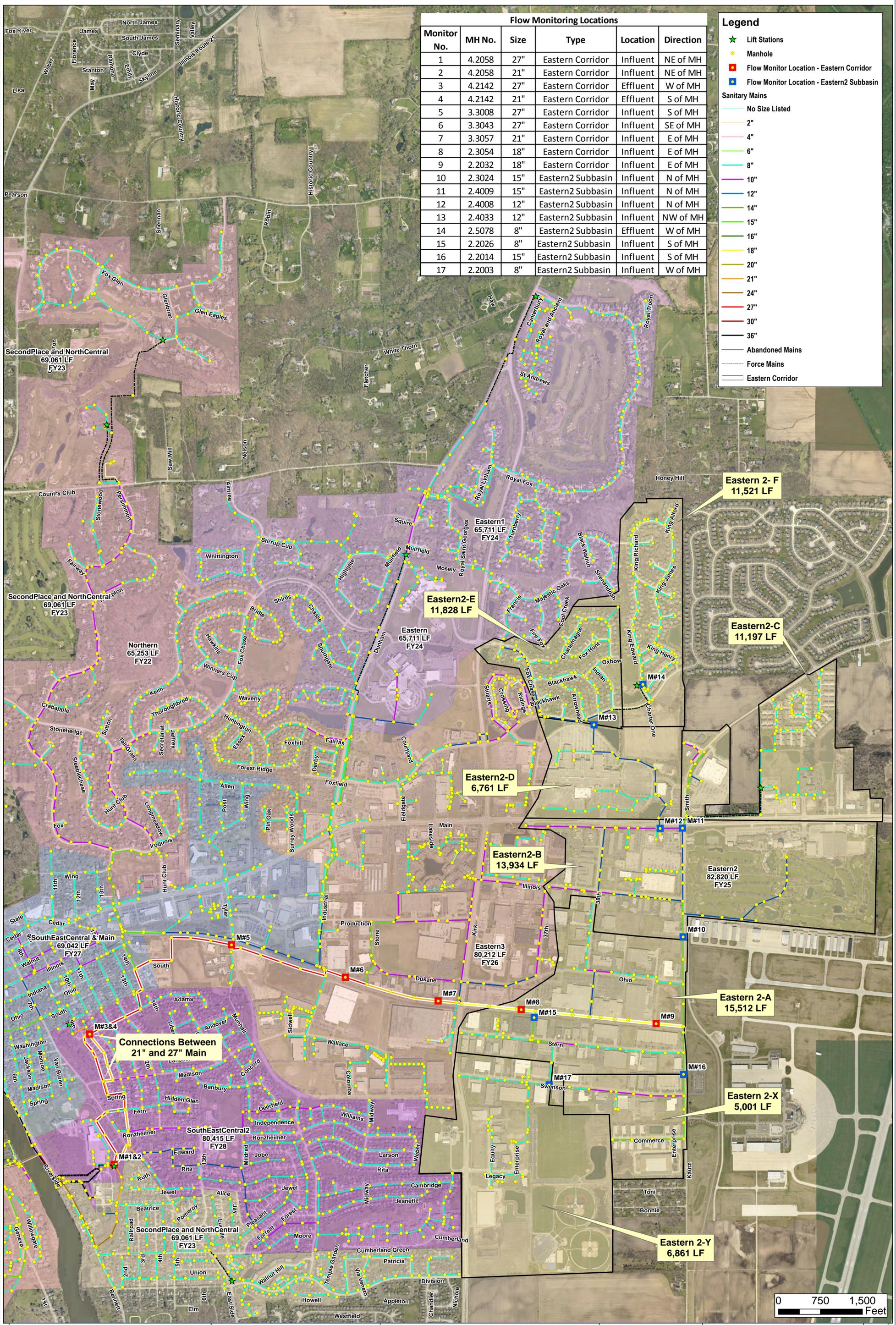
- 2.1 Survey Interceptor Route
- 2.2 Existing Condition Interceptor Modeling
- 2.3 Modified Condition Interceptor Modeling
- 2.4 Interceptor Improvements Cost Estimate

REPORT:

- 3.1 Prepare Draft Flow Monitoring Report
- 3.2 City Draft Report Review
- 3.3 Finalize Report

Additional Services

The above scope summarizes the work items that will be completed for this contract. Additional work items, including additional meetings beyond the progress meeting defined in the above scope, shall be considered outside the scope of the base contract and will be billed in accordance with the Standard Schedule of Charges.



| Flow Monitoring Locations | | | | | | |
|---------------------------|--------|------|-------------------|----------|-----------|--|
| Monitor No. | MH No. | Size | Type | Location | Direction | |
| 1 | 4.2058 | 27" | Eastern Corridor | Influent | NE of MH | |
| 2 | 4.2058 | 21" | Eastern Corridor | Influent | NE of MH | |
| 3 | 4.2142 | 27" | Eastern Corridor | Effluent | W of MH | |
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| 16 | 2.2014 | 15" | Eastern2 Subbasin | Influent | S of MH | |
| 17 | 2.2003 | 8" | Eastern2 Subbasin | Influent | W of MH | |

Legend

- ★ Lift Stations
- Manhole
- Flow Monitor Location - Eastern Corridor
- Flow Monitor Location - Eastern2 Subbasin

Sanitary Mains

- No Size Listed
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- 4"
- 6"
- 8"
- 10"
- 12"
- 14"
- 15"
- 16"
- 18"
- 20"
- 21"
- 24"
- 27"
- 30"
- 36"

- Abandoned Mains
- Force Mains
- Eastern Corridor

Eastern2-E
11,828 LF

Eastern 2- F
11,521 LF

Eastern2-C
11,197 LF

Eastern2-D
6,761 LF

Eastern2-B
13,934 LF

Eastern 2-A
15,512 LF

Eastern 2-X
5,001 LF

Eastern 2-Y
6,861 LF

Connections Between
21" and 27" Main



Engineering Enterprises, Inc.
52 Wheeler Road
Sugar Grove, Illinois 60554
(630) 466-6700
www.eeiweb.com

City of St. Charles
2 East Main Street
St. Charles, IL 60174
(630) 377-4400

DATE: 4/3/2018
PROJECT NO.:
BY: CLV
PATH: H:\GIS\Public\St. Charles\2017\SR1704\EasternCorridorStudy.mxd
FILE: EasternCorridorStudy

Capacity Analysis

Exhibit A
Eastern Conveyance Corridor
Area Overview



Attachment B:
ESTIMATE OF LEVEL OF EFFORT AND ASSOCIATED COST FOR PROFESSIONAL ENGINEERING SERVICES
EAST INTERCEPTOR CONVEYANCE ANALYSIS
INFLOW AND INFILTRATION REDUCTION PROGRAM
CITY OF ST. CHARLES, KANE AND DUPAGE COS., IL

| WORK ITEM NO. | WORK ITEM | ENTITY: | EEI | | | | | | | | | SUB-CONSULTANT | WORK ITEM HOUR SUMM. | COST PER ITEM | |
|--|--|---------------|-----------|------------------------|------------------|-------------------------|----------------|-------------------|----------------------------|-----------------------------|------------------------------|----------------|----------------------|---------------|-----------|
| | | PROJECT ROLE: | PRINCIPAL | SENIOR PROJECT MANAGER | PROJECT ENGINEER | SENIOR PROJECT TECHN. I | PROJECT TECHN. | SURVEYING MANAGER | SENIOR PROJECT SURVEYOR II | *SENIOR PROJECT SURVEYOR II | SENIOR PROJECT TECHNICIAN II | | | | ADMIN. |
| | | HOURLY RATE: | \$197 | \$191 | \$137 | \$137 | \$125 | \$173 | \$160 | \$202 | \$149 | | | | \$70 |
| PROJECT FACILITATION & MEETINGS | | | | | | | | | | | | | | | |
| 0.1 | Project Administration | | 1 | 4 | | | | | | | | | 5 | \$961 | |
| 0.2 | Project Initiation & Progress Meeting (2 Total Meetings) | | 6 | 10 | 8 | | | | | | 1 | | 25 | \$4,258 | |
| Project Facilitation Subtotal: | | | 7 | 14 | 8 | - | - | - | - | | 1 | - | 30 | \$5,219 | |
| FLOW MONITORING | | | | | | | | | | | | | | | |
| 1.1 | Determine Placement for Flow Monitors Within Subbasin | | 1 | 2 | 10 | 5 | | | | | | | | \$2,634 | |
| 1.2 | Monitor Flows (Assumes 17 Locations) Within Subbasin For 8 Weeks | | 1 | 4 | 16 | | | | | | | \$66,000 | 21 | \$69,153 | |
| 1.3 | Monitor Rainfall (Assumes 2 Locations) Within Subbasin For 8 Weeks | | 1 | 2 | 4 | | | | | | | \$2,000 | 7 | \$3,127 | |
| 1.4 | Analyze Flows & Determine I/I Severity By Subbasin | | 2 | 4 | 52 | | | | | | | | 58 | \$8,282 | |
| Flow Monitoring Subtotal: | | | 5 | 12 | 82 | 5 | - | - | - | - | - | \$68,000 | 86 | \$83,196 | |
| INTERCEPTOR CAPACITY ANALYSIS | | | | | | | | | | | | | | | |
| 2.1 | Survey Interceptor Route | | | | 2 | | 2 | | 44 | 8 | | | 56 | \$10,700 | |
| 2.2 | Existing Condition Interceptor Modeling | | 1 | 4 | 30 | | | | | | | | 35 | \$5,071 | |
| 2.3 | Modified Condition Interceptor Modeling | | 1 | 2 | 15 | | | | | | | | 18 | \$2,634 | |
| 2.4 | Interceptor Improvements Cost Estimate | | 1 | 2 | 10 | | | | | | | | 13 | \$1,949 | |
| Interceptor Capacity Analysis | | | 3 | 8 | 57 | - | - | 2 | 44 | 8 | - | - | 122 | \$20,354 | |
| REPORT | | | | | | | | | | | | | | | |
| 3.1 | Prepare Flow Monitoring and Modeling Report | | 2 | 6 | 56 | 8 | | | | | | | 72 | \$10,308 | |
| 3.2 | City Draft Report Review | | 1 | 2 | | | | | | | | | 3 | \$579 | |
| 3.3 | Finalize Report | | 2 | 4 | 10 | 2 | | | | | | | 18 | \$2,802 | |
| Interceptor Capacity Analysis | | | 5 | 12 | 66 | 10 | - | - | - | - | - | \$0 | 93 | \$13,689 | |
| PROJECT TOTAL: | | | 20 | 46 | 213 | 15 | - | 2 | - | 44 | 8 | 1 | \$68,000 | 331 | \$122,458 |

Notes:

*Assumes 1 Man Field Crew with RTS or GPS

| DIRECT EXPENSES | |
|--------------------------|--------------|
| Mileage = | \$50 |
| Printing = | \$200 |
| | |
| | |
| DIRECT EXPENSES = | \$250 |

| LABOR EXPENSES | |
|-------------------------------|------------------|
| Engineering Expenses = | \$41,907 |
| Drafting Expenses = | \$2,055 |
| Surveying Expenses = | \$10,426 |
| Administrative Expenses = | \$70 |
| Subconsultant Expenses = | \$68,000 |
| TOTAL LABOR EXPENSES = | \$122,458 |

| | |
|-------------------------------|------------------|
| TOTAL CONTRACT COSTS = | \$122,708 |
|-------------------------------|------------------|



Standard Schedule of Charges

January 1, 2018

| EMPLOYEE DESIGNATION | CLASSIFICATION | HOURLY RATE |
|---|-----------------------|--------------------|
| Senior Principal | E-4 | \$202.00 |
| Principal | E-3 | \$197.00 |
| Senior Project Manager | E-2 | \$191.00 |
| Project Manager | E-1 | \$173.00 |
| Senior Project Engineer/Planner/Surveyor II | P-6 | \$160.00 |
| Senior Project Engineer/Planner/Surveyor I | P-5 | \$149.00 |
| Project Engineer/Planner/Surveyor | P-4 | \$137.00 |
| Senior Engineer/Planner/Surveyor | P-3 | \$125.00 |
| Engineer/Planner/Surveyor | P-2 | \$114.00 |
| Associate Engineer/Planner/Surveyor | P-1 | \$103.00 |
| Senior Project Technician II | T-6 | \$149.00 |
| Senior Project Technician I | T-5 | \$137.00 |
| Project Technician | T-4 | \$125.00 |
| Senior Technician | T-3 | \$114.00 |
| Technician | T-2 | \$103.00 |
| Associate Technician | T-1 | \$ 90.00 |
| Engineering/Land Surveying Intern | I-1 | \$ 84.00 |
| GIS Technician | G-1 | \$ 72.00 |
| Administrative Assistant | A-3 | \$ 70.00 |

CREW RATES, VEHICLES AND REPROGRAPHICS

| | | |
|---|--|----------|
| 1 Man Field Crew with Standard Survey Equipment | | \$163.00 |
| 2 Man Field Crew with Standard Survey Equipment | | \$254.00 |
| 1 Man Field Crew with RTS or GPS * | | \$202.00 |
| 2 Man Field Crew with RTS or GPS * | | \$293.00 |
| Vehicle for Construction Observation | | \$15.00 |
| In-House Scanning and Reproduction | \$0.25/Sq. Ft. (Black & White) \$1.00/Sq. Ft. (Color) | |
| Reimbursable Direct Costs & Services by Others | Cost + 10% | |

*RTS = Robotic Total Station / GPS = Global Positioning System