

BILL NO. S-13-07-12

SPECIAL ORDINANCE NO. S-_____

AN ORDINANCE approving MASTER PLAN
MODELING OPTIMIZATION STUDY - W.O.
#75871 between COMMONWEALTH
ENGINEERS, INC. and the City of Fort Wayne,
Indiana, in connection with the Board of Public
Works.

**NOW, THEREFORE, BE IT ORDAINED BY THE COMMON
COUNCIL OF THE CITY OF FORT WAYNE, INDIANA:**

SECTION 1. That the MASTER PLAN MODELING
OPTIMIZATION STUDY - W.O. #75871 by and between COMMONWEALTH
ENGINEERS, INC. and the City of Fort Wayne, Indiana, in connection with the
Board of Public Works, is hereby ratified, and affirmed and approved in all
respects, respectfully for:

All labor, insurance, material, equipment, tools, power,
transportation, miscellaneous equipment, etc., necessary for
professional engineering services to provide the planning
and modeling assistance services for the master Plan
Modeling Project:

involving a total cost of THREE HUNDRED NINETY-THREE THOUSAND,
TWO HUNDRED TEN AND 00/100 DOLLARS - (\$393,210.00). A copy said
Contract is on file with the Office of the City Clerk and made available for
public inspection, according to law.

SECTION 2. That this Ordinance shall be in full force and effect from and after its passage and any and all necessary approval by the Mayor.

Council Member

APPROVED AS TO FORM AND LEGALITY

Carol Helton, City Attorney

PROFESSIONAL SERVICES AGREEMENT

**MASTER PLAN MODELING OPTIMIZATION STUDY
("PROJECT")**

This Agreement is by and between

CITY OF FORT WAYNE ("CITY")

by and through its

Board of Public Works
City of Fort Wayne
200 East Berry Street, Suite 240
Fort Wayne, IN 46802

and

COMMONWEALTH ENGINEERS, INC. ("ENGINEER")
9604 Coldwater Road, Ste. 203
Fort Wayne, IN 46825
(260) 494-3223

Who agree as follows:

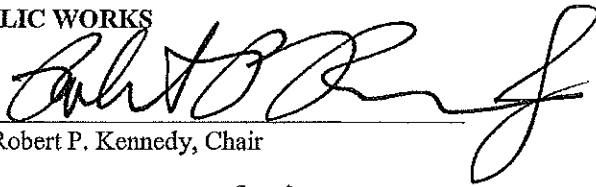
CITY hereby engages ENGINEER to perform the services set forth in Part I - Services ("Services") and ENGINEER agrees to perform the Services for the compensation set forth in Part III - Compensation ("Compensation"). ENGINEER shall be authorized to commence the Services upon execution of this Agreement and written authorization to proceed from CITY. CITY and ENGINEER agree that these signature pages, together with Parts I-IV and attachments referred to therein, constitute the entire Agreement ("Agreement") between them relating to the Project.

APPROVALS

APPROVED FOR CITY

BOARD OF PUBLIC WORKS

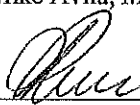
BY:


Robert P. Kennedy, Chair

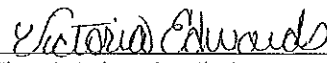
BY:


Mike Avila, Member

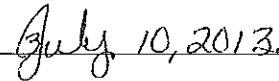
BY:

 
Kumar Menon, Member

ATTEST:

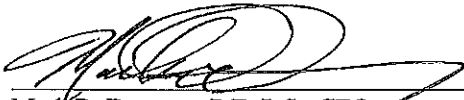

Victoria Edwards, Clerk

DATE:

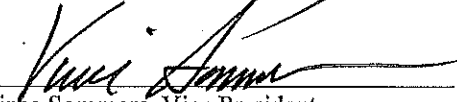

July 10, 2013.

APPROVED FOR ENGINEER

BY:


Mark D. Downey, P.E. L.S., CEO

ATTEST:


Vince Sommers, Vice President

DATE:


7-3-13

PART I

SCOPE OF BASIC ENGINEERING SERVICES

A. GENERAL

ENGINEER shall provide the CITY professional engineering services in all phases of the project to which this scope of services applies. These services will include serving as CITY's professional representative for the Project, providing professional engineering consultation and advice, furnishing civil engineering services and other customary services incidental thereto.

B. PROJECT DESCRIPTION

To help ensure the CITY's rate payers receive the best possible value and cost-effective LTCP and SECAP solution, the CITY plans to complete a Master Plan Modeling effort, combining the LTCP improvement projects and the future proposed projects with multiple alternatives.

The purpose of the Master Plan Modeling Optimization Study is to successfully implement the CITY's mandated LTCP and SSD solutions projects while maximizing/optimizing their benefits to improve the collection system performance and provide capacity for continued economic development. This project will develop an updated 2015-2035 SECAP program and an optimized LTCP and SSD solutions plan.

The objectives of the study are as follows:

- Perform cost optimization of feasible improvement options using the CITY's existing master planning efforts and LTCP, which will include new relief sewers, pump station upgrades, storage facilities, sewer cleaning, infiltration and inflow (I/I) removal, and Real Time Control (RTC) strategies.
- Provide an Optimization Report which describes the least-cost capital improvement plan based on the optimization inputs, and recommends further actions to ensure the best long-term planning strategy is achieved.

The final Optimization Report will describe specific capital improvement projects, as well as a recommended sequencing of projects to achieve the CITY's performance criteria for the planned near-term and long-term projects. This includes meeting the LTCP requirements of no more than four overflow events per year on the St. Mary's and Maumee Rivers and no more than one overflow per year on the St. Joe River by 2025. For improvement options in the separate sanitary system, the proposed improvements should be able to mitigate sanitary sewer discharges (SSDs) for a significant design storm, such as the 5-yr 6-hr design storm or 10-yr 6-hr design storm (to be confirmed with CITY). Allowances will be made for phased implementation of solutions to support development that will occur in the near future and that will not decrease the level of service to existing customers.

C. SCOPE OF WORK

The scope of work will include collection of pertinent data; review of the hydraulic model and preparation of the model for optimization; development of GIS Planning Map; development of a Design Data Summary (DDS) Report; formulation of the optimization model; performance of the optimization runs; development of memoranda/reports; confirmation that the proposed solutions are meeting required level of control from Consent Decree; attendance of project workshops; and proper communication during each step of the process.

General

- The hydraulic modeling will be performed using MIKE URBAN 2012 or EPA SWMM 5 (Build 5.022).
- Optimization will be performed using Optimatics' Optimizer WCS software. This software will be shared between the CITY and ENGINEER. The software will be provided by the CITY.
- OptiCloud Plan will be utilized to perform optimization runs.
- It is assumed that the ENGINEER will undergo upfront training (not-to-exceed approximately 16 hours) to use Optimizer WCS with CITY staff. The cost of said training will not be included in this scope and will be considered incidental to ENGINEER.
- Model updating will follow the CITY's Modeling Standards, current edition.
- Typical 5-year rainfall period and typical year rainfall period will be provided by CITY for use during the study.

- It is assumed that this study will not involve optimization of areas in downtown combined sewer system Subbasins except projects that had been recommended in the Real Time Control Hydraulic Feasibility Assessment Study.
- Optimization will be performed to mitigate SSDs in the separate sanitary sewer system.

The ENGINEER is part of a larger team working integrally for completing this study. The responsibilities of the ENGINEERS are as indicated on the Responsibility Matrix. As the Program Manager, Commonwealth will provide overarching scope, schedule, budget and quality oversight. Table1 below contains a recap of team participation and who is lead.

Table 1 – Responsibility Matrix: Participants with Lead Consultant Denoted with Asterisk*

	Commonwealth	Arcadis	Optimatics
TASK 1 - WORKSHOPS & PROJECT MANAGEMENT			
1.1 Kick-Off Workshop	X*	X	X
1.2 Brainstorming Workshop	X*	X	
1.3 Interim Solution Workshop	X*	X	X
1.4 Draft Final Report Workshop	X*	X	
1.5 Meeting Notes	X*		
1.6 Project Management	X*		X
TASK 2 - DATA COLLECTION & GIS MAPPING			
2.1 Review Data & Develop Draft GIS Planning Map	X	X*	X
2.2 Finalize GIS Map & Improvements Tech Memo	X	X*	
TASK 3 - HYDRAULIC MODEL REVIEW AND PREP.			
3.1 Review Hydraulic Model	X*	X	X
3.2 Update Hydraulic Model	X*	X	X
3.3 Update Loadings	X*	X	X
3.4 Identify System Defs & Rectify Model Instabilities	X	X*	X
3.5 Preparation for Improvement Options	X*	X	X
TASK 4 - DESIGN DATA SUMMARY REPORT			
4.1 Develop Unit Costs	X	X*	X
4.2 Develop Performance Criteria	X	X*	X
4.3 Prepare DDS Report	X	X*	X
4.4 Finalize DDS Report	X	X*	X
TASK 5 – FORM. OPTIMIZER WCS & PRELIM. RUNS			
5.1 Import Hydraulic Model	X		X*
5.2 Import Cost Data	X		X*
5.3 Define Constraints	X		X*
5.4 Define Options	X		X*
5.5 Reference Model to Options and Constraints	X		X*
5.6 Configure RTC Options	X		X*
5.7 Perform Preliminary Runs	X		X*
TASK 6 - INTERIM OPTIMIZATION & SOLUTIONS			
6.1 Perform Interim Optimization Runs	X		X*
6.2 Confirm Level of Control of Interim Solutions	X*		
6.3 Prepare Draft Interim Solutions Tech Memo	X*	X	X
6.4 Finalize Interim Solutions Tech Memo	X*	X	X
TASK 7 - FINAL OPTIMIZATION, STAGING & CIP			
7.1 Update Optimization Runs	X		X*
7.2 Perform Optimization and Sensitivity Analyses	X*		X
7.3 Finalize Preferred Solution	X		X*
7.4 Perform 5 Year Simulations on Preferred Solutions	X*		
7.5 Stage Optimization Improvements	X*	X	
7.6 Develop CIP Breakdown	X*	X	X
TASK 8 - FINAL MASTER PLAN & ANIMATION			
8.1 Prepare Draft Master Plan Report & Draft Animation	X* (Report)	X	X* (Animation)
8.2 Finalize Master Plan Report and Finalize Animation	X* (Report)	X	X* (Animation)

Task 1 - Workshops and Project Management

- 1.1 **Kick-Off Workshop:** Conduct a Kick-Off Workshop with CITY staff to confirm scope, work plan, lines of communication, and schedule. The Kick-Off Workshop will be held during the data collection phase of the study to provide clarity about the required data to be provided by the CITY which includes:
 - The hydraulic model of the existing system (including recently completed and near-term committed projects) in SWMM 5 format;
 - The hydraulic model of the current LTCP solution in SWMM 5 format;
 - Relevant unit cost rates for relief sewer construction, storage, pump station upgrades, cleaning sewers, I/I improvements; new treatment plant costs;
 - CITY-defined future flow/growth projections for various areas of the collection system;
 - Guidance on constructability issues associated with relief sewer alternatives;
 - Details on the site availability for storage facilities;
 - Level of service and regulatory performance criteria;
 - Guidance on allowable surcharge to address basement backups;
 - Guidance on the design storm event expected to be associated with the required CSO containment (presently assumed to be (a) the 21st largest rainfall event in the typical five-year rainfall period from 1993 to 1997, which is the 6/24/1995 rainfall event for CSOs tributary to the Maumee and St Mary's Rivers and (b) the 6th largest rainfall event in the typical five year rainfall period from 1993 to 1997 for CSOs tributary to the St. Joe River.);
 - Guidance on the design storm event expected to be associated with the required SSD containment, such as the 5-yr 6-hr design storm or 10-yr 6-hr rainfall event, etc.;
 - GIS tables/shapefiles/layers/etc. (sewer mains, manholes, pump stations, roads, properties, waterways, etc.);
 - Pertinent background information about the system;
 - Reports from recent planning studies; and
 - Other relevant information.
- 1.2 **Brainstorming Workshop:** Conduct a Brainstorming Workshop with CITY staff to review GIS mapping and brainstorm/confirm improvement options to be modeled and optimized.
- 1.3 **Interim Solution Workshop:** Conduct a Review Workshop with CITY staff to summarize the Interim Solution Technical Memorandum.
- 1.4 **Draft Final Report Workshop:** Conduct a Review Workshop with CITY staff to summarize the Draft Final Report, recommended capital improvements plan (CIP), and optimization animation.
- 1.5 **Meeting Notes:** Complete and distribute all workshop notes within seven (7) days of each meeting.
- 1.6 **Project Management:** Project management including general correspondence, project updates, invoicing, scheduling, budget maintenance, etc.

Task 2 - Data Collection & GIS Mapping of Improvement Options

The collection of Master Planning efforts that are the base for this optimization study have been developed over a ten year period, each with a specific focus. With this project, those individual efforts are being brought together on a common platform. The first step in combining the plans will be to develop a draft Master Planning map that shows all of the documented improvement options using GIS. After the draft GIS Planning Map is developed, a brainstorming workshop as described in Task 1.2 will be held, similar to past workshops that Commonwealth and Arcadis have had with the CITY and were noted to be beneficial with other like planning efforts. The purpose of the Brainstorming Workshop will be to identify areas of concern and improvement options not currently addressed by an existing plan and/or facilities that may be planned but not captured in current documents. Examples of concepts that may be explored during the Brainstorming Workshop include:

- Sediment depth in the major interceptors (i.e. pipe cleaning in the St. Joe Interceptor, North Maumee Interceptor, and Wayne Street Interceptor).
- New growth and acquisition scenarios.
- Utilizing a portion of Polishing Pond 3 for additional CSO storage.

- Real time control (RTC) options involving optimization of 20 MGD Deep Dewatering Pump Station to avoid unnecessary overflows in the CSO Ponds as observed in the Parallel Interceptor Phase II Project and the Treatment Complex Influent Optimization Project.
- CSO Ponds bleedback improvement options.
- Potential connection between the Parallel Interceptor and Wayne Street Interceptor.
- St. Joe Interceptor improvements.
- Options involving the reduction in diameter of Parallel Interceptor. Presently the diameter / storage volume of the Parallel Interceptor is moderately oversized to account for future growth solutions. Discussion will consider whether an improvement option can be more economically implemented that would involve reducing the diameter of the Parallel Interceptor (in whole or part) while still accounting for future growth solutions.

The concepts developed through the Brainstorming Workshop will be developed to the extent necessary to determine additional viable improvement options and will be added to the Final GIS Planning Map. CITY staff would review the concepts and determine which, if any, to incorporate into the optimization.

Specific tasks include:

- 2.1 **Review Data and Develop Draft GIS Planning Map:** Using existing planning reports and documents, develop Draft GIS Planning Map and list of improvement options. Host a Brainstorming Workshop as described in Task 1.2. Deliverables include:
 - Draft GIS Planning Map (furnish one (1) electronic copy and three (3) hard copy maps).
 - Draft list of improvement options (furnish one (1) PDF electronic copy and three (3) hard copies).
- 2.2 **Finalize GIS Planning Map:** Update the GIS Planning Map based on CITY comments and submit a Final list of improvement options, which will serve as a referenced appendix in the Final Report. Deliverables include the following:
 - Final GIS Planning Map (furnish one (1) electronic copy and three (3) hard copy maps).
 - Final list of improvement options (furnish one (1) PDF electronic copy and three (3) hard copies).

Task 3 - Hydraulic Model Review and Preparation

Optimization will be performed using Optimatics' Optimizer WCS, which is compatible with SWMM Version 5.0. Upon project commencement, the CITY will provide the current version of the SWMM 5 collection system hydraulic model (Build 5.022).

- 3.1 **Review Hydraulic Model:** Review the hydraulic model to gain an understanding of overall system hydraulics and the surcharge and overflow locations, and to help determine the range of improvement options to be included in the optimization analysis. Using the 2-yr 6-hr design storm and 5-yr 6-hr design storm (to be confirmed by CITY), identify capacity issues in the collection system, especially in areas prone to sanitary sewer discharges.
- 3.2 **Update Hydraulic Model:** Update hydraulic model using the improvement options from the GIS Planning Map described in Task 2.
- 3.3 **Update Loadings:** Update hydraulic model for future conditions and hydraulic loadings.
- 3.4 **Identify System Deficiencies and Rectify Model Instabilities:** Identify and rectify model instabilities and deficiencies.
- 3.5 **Preparation for Improvement Options:** Refine final improvement options.

Task 4 – Design Data Summary Report

Prepare a Design Data Summary (DDS) Report based on information provided by the CITY and collected during project meetings. The DDS Report will capture the project scope, data on allowable improvement choices, unit costs, hydraulic performance and design criteria, and the optimization methodology. This information will then be used to formulate the optimization model. The DDS Report is essentially an agreement with the CITY stating that the assumptions and input data are correct and will be used for the optimization analyses. Specific tasks include:

- 4.1 **Develop Unit Costs:** Develop unit costs and tables for the Optimatics' Optimizer WCS software.

- 4.2 **Develop Performance Criteria:** Develop performance criteria for the Optimatics' Optimizer WCS software. Costs will be developed for the capital and O&M components of new and upgraded facilities to enable the calculation of project life cycle costs. In addition, the future financing needs of the staged plans will be discussed to consider any aspects that may influence the optimization setup and evaluation of options.
- 4.3 **Prepare Draft DDS Report:** Prepare Draft DDS Report. Deliverable includes:
- o Draft DDS Report (furnish one (1) PDF electronic copy and three (3) hard copies).
- 4.4 **Finalize DDS Report:** Update the DDS Report based on CITY comments and submit a Final DDS Report, which will serve as a referenced appendix in the Final Report. Deliverables include the following:
- o Final DDS Report (furnish one electronic copy and three hard copy maps).
 - o Response Register to CITY comments (furnish one (1) PDF electronic copy and three (3) hard copies).

Task 5 – Formulate Optimizer WCS and Preliminary Runs

The optimization model will be formulated based on the optimization input data defined in the DDS report. The optimization model will be tailored specifically for the allowable planning alternatives, unit cost rates, and performance criteria established for this study. A series of trial optimization runs will be conducted to make sure the model is performing properly. The model formulation and various parameters will be adjusted to ensure the optimization search process proceeds in the most efficient and comprehensive manner. Specific tasks using Optimizer WCS include:

- 5.1 **Import Hydraulic Model:** Import hydraulic model (i.e. SWMM 5 inp file) into Optimizer WCS.
- 5.2 **Import Cost Data:** Import cost data tables into Optimizer WCS.
- 5.3 **Define Constraints:** Define constraints to be applied to the collection system in Optimizer WCS.
- 5.4 **Define Options:** Define improvement options in Optimizer WCS.
- 5.5 **Reference Model to Options & Constraints:** Reference model to options and constraints in Optimizer WCS.
- 5.6 **Configure RTC Options:** Configure Real Time Control (RTC) options in Optimizer WCS.
- 5.7 **Perform Preliminary Runs:** Perform preliminary optimization runs using Optimizer WCS.

Task 6 – Interim Optimization and Interim Solutions Technical Memorandum

A series of interim optimization runs will be performed to identify *two (2) distinct least-cost / best value interim solutions* based on the optimization inputs. Up to *two (2) alternative low-cost solutions* will also be prepared using different decision choices (options) and variations on costs to explore the sensitivities of the solutions. The interim solutions will be presented in the form of one-page system map and will be included in the Interim Solution Technical Memorandum. Preliminary cost estimates for the interim solutions will be provided, along with critical hydraulic data summarized in a tabular format. The solutions will not be refined in every detail, but will satisfy the primary constraints and objectives. An Interim Solution Workshop will be held to present the interim optimization and discuss the results with the CITY. The workshop will provide feedback on the solutions and identify opportunities to further refine the solution. Specific tasks include:

- 6.1 **Perform Interim Optimization Runs:** Perform staged interim optimization runs using three (3) design storms, as listed below (in an order to be determined). It is anticipated that certain improvement solutions (or at least locations and minimum sizes) will be fixed before commencing analysis of the subsequent storm event.
- o SSD Improvement Options – use a significant rainfall event such as the 5-yr 6-hr design storm or 10-yr 6-hr design storm (to be confirmed with CITY).
 - o CSO Improvement Options Tributary to the St. Joe River – use the 6th largest rainfall event in the typical five-year period from 1993 to 1997.
 - o CSO Improvement Options Tributary to the Maumee and St. Mary's Rivers – use the 21st largest rainfall event in the typical five year period from 1993 to 1997 (i.e. expected to be the 6/24/1995 event).

The interim optimization analyses will be completed using the rainfall events corresponding to the critical levels of control listed above. To confirm that the interim solutions are in compliance with the required level of control (i.e. ≤ 4 overflow events in a typical year on the St. Mary's and Maumee Rivers; ≤ 1 overflow event in a typical year on the St. Joe River; SSDs containing a significant rainfall event such as the 5-yr 6-hr design storm or 10-yr 6-hr design storm - to be confirmed with CITY), the two (2) interim solutions will be simulated using (a) the 1993 to 1995 rainfall period to assess annual CSO overflow events and volumes and (b) the 5-yr 6-hr design storm or 10-yr 6-hr design storm. The reasoning behind this task is to confirm that the system is meeting the level of control early enough in the optimization process in order to make adequate adjustments *before* selecting final preferred option.

6.2 Confirm Level of Control of Interim Solutions: Using the two (2) distinct interim solution models, simulate (a) the typical five year rainfall period (i.e. 1993 to 1997), (b) the untruncated typical year rainfall period, and (c) the 5-yr 6-hr design storm or 10-yr 6-hr design storm (to be confirmed with CITY) using EPA SWMM 5. Compile tables showing an annual breakdown of CSO volumes and events on an annual basis. The tables will be incorporated into the Interim Solution Technical Memorandum. Deliverable includes the following:

- o Summary tables (furnish one (1) electronic copy and three (3) hard copies).
- o EPA SWMM 5 model files.

6.3 Prepare Draft Interim Solution Technical Memorandum: Deliverable includes:

- o Draft Interim Solution Technical Memorandum (furnish one (1) PDF electronic copy and three (3) hard copies).

6.4 Finalize Interim Solution Technical Memorandum: Update the Interim Solution Technical Memorandum based on CITY comments and submit a Final Interim Solution Technical Memorandum, which will serve as a referenced appendix in the Final Report. Deliverable includes the following:

- o Final Interim Solution Technical Memorandum (furnish one (1) PDF electronic copy and three hard (3) copies).

Task 7 – Final Optimization, Staging, and Capital Improvement Prioritization (CIP)

Using feedback from the Interim Optimization and Interim Solutions Technical Memorandum, the *two (2) distinct optimization solutions* identified in Task 6 will be further refined. In addition, the preferred SWMM 5 model will be re-run in SWMM 5 (not Optimizer WCS) to determine which combination of capital improvements should be constructed in the first approximately 5-10 year planning cycle, to optimize capacity throughout the interceptor system within the available budget for that planning period. Long-term improvements should be proposed to address the future needs of the CITY's collection system for a 20-year planning period. Specific tasks include:

7.1 Update Optimization Runs: Update Optimization Runs and refine two (2) distinct solutions using Optimizer WCS.

7.2 Perform Scenarios and Sensitivity Runs: Perform optimization analyses and perform up to two (2) sensitivity analyses using the three (3) design storms listed in Task 6.1 using Optimizer WCS.

7.3 Finalize Preferred Solution: Finalize preferred solution using Optimizer WCS.

The optimization analyses will be completed using the rainfall events corresponding to the critical levels of control listed in Task 6.1. In an effort to confirm that the preferred solutions is in compliance with the required level of control (i.e. ≤ 4 overflow events in a typical year on the St. Mary's and Maumee Rivers; ≤ 1 overflow event in a typical year on the St. Joe River; SSDs containing a significant rainfall event such as the 15-yr 6-hr design storm or 10-yr 6-hr design storm), the preferred solution will be simulated using (a) the 1993 to 1995 rainfall period and (b) the 5-yr 6-hr design storm or 10-yr 6-hr design storm - to be confirmed with CITY. The reasoning behind this task is to confirm that the preferred solution is meeting the necessary level of control required in the Consent Decree.

7.4 Confirm Level of Control of Preferred Solutions: Using the preferred solution model, simulate the model using (a) the typical five year rainfall period (i.e. 1993 to 1997) (b) the untruncated typical year rainfall period, and (c) the 5-yr 6-hr design storm or 10-yr 6-hr design storm (to be confirmed with CITY) using EPA SWMM 5. Compile tables showing an annual breakdown of CSO volumes and events on an annual basis. The tables will be incorporated into the Final Report. Deliverable includes the following:

- o Summary tables (furnish one (1) electronic copy and three (3) hard copies).
- o EPA SWMM 5 model files.

7.5 **Stage Optimization Runs:** Stage optimization improvement options using SWMM 5. Assume up to three stages.

7.6 **Develop Capital Improvement Prioritization Breakdown.**

Task 8 – Final Master Plan Report & Optimization Animation

The results of the optimization runs, CIP analysis, and five-year model run will be presented in a Final Optimization Report which summarizes the design and cost of the preferred solution. Detailed solution cost summaries, figures, and GIS layers of the final optimization solutions will be provided. In addition, an optimization animation will be developed for the CITY which shows the thousands of alternative solution configurations trialed in a single optimization analysis. The animation will provide a “glass box” perspective of the optimization run to provide the CITY and its stakeholders with confidence that an exhaustive analysis of the improvement options has been undertaken. The animation will provide a useful tool for the CITY to demonstrate the highly defensible process undertaken using optimization to develop the LTCP.

8.1 **Prepare Draft Master Plan Report & Draft Animation:** Assemble and submit a Draft Final Master Plan Report and Draft Animation. Deliverables includes the following:

- Draft Master Plan Report (furnish one (1) PDF electronic copy and three (3) hard copies).
- Draft Animation.
- All remaining EPA SWMM 5 files and Optimizer WCS files.

8.2 **Finalize Master Plan Report & Animation:** Update the Master Plan Report and Draft Animation based on CITY comments and submit a Final Master Plan Report and Final Animation File. Deliverables include the following:

- Final Master Plan Report (furnish one (1) PDF electronic copy and three (3) hard copies).
- Final Animation.
- Response Register to CITY comments (furnish one (1) PDF electronic copy and three (3) hard copies).

C. SCHEDULE

The Project will be completed per the below schedule. This schedule is based on receiving a “Notice to Proceed” by August 12, 2013 and receiving prompt review and approvals from CITY agencies and PROGRAM MANAGER.

SCHEDULE

DATE

NTP

August 12, 2013

Completion of the Model Analysis and Reporting Work

June 30, 2014

PART II

CITY'S RESPONSIBILITIES

CITY shall, at its expense, do the following in a timely manner so as not to delay the services:

A. INFORMATION REPORTS/CITY UTILITY MAPS/AERIAL MAPS/CONTOUR MAPS

Make available to ENGINEER reports, studies, regulatory decisions and similar information relating to the Services that ENGINEER may rely upon without independent verification unless specifically identified as requiring such verification.

Provide ENGINEER with a maximum of two (2) copies each of existing CITY utility maps, aerial maps and contour maps that are readily available in the Citizens Square Building.

The CITY will provide ENGINEER with geographical information system (GIS) shapefiles, record drawings, and operation information in support of the modeling efforts.

The CITY staff will provide assistance with modeling and optimization tasks outside the scope of work.

The CITY will be contracting directly with Arcadis for relevant scoped work, and all administrative tasks pertaining to Arcadis' contract will be performed by the CITY.

The CITY will provide ENGINEER with the Optimatics' Optimizer WCS software.

B. REPRESENTATIVE

Designate a representative for the project who shall have the authority to transmit instructions, receive information, interpret and define CITY's requirements and make decisions with respect to the Services. The CITY representative for this Agreement will be Wendy Reust, P.E.

C. DECISIONS

Provide all criteria and full information as to CITY's requirements for the Services and make timely decisions on matters relating to the Services.

D. PROPERTY OWNER NOTIFICATION

Property owner survey notification letters will be prepared and mailed by the CITY.

PART III

COMPENSATION

A. COMPENSATION

Compensation for services performed in accordance with Part I – Scope of Basic Engineering Services of this Agreement will be based on hours actually spent and expenses actually incurred with a not-to-exceed engineering fee of \$ 393,210 as summarized in attached Attachment 1.

ENGINEER's costs will be based on the hours incurred to complete the project times the hourly rates of the various personnel, per Attachment 2 – Hourly Rate Schedule. All Reimbursable costs incurred for the project will be invoiced at cost.

Payment for outside consulting and/or professional services such as Geotechnical, Utility Locates, Registered Land Surveyor for easement preparation, or Legal Services performed by a Subconsultant at actual cost to ENGINEER plus 10 percent for administrative costs. The ENGINEER will obtain written CITY approval before authorizing these services.

B. BILLING AND PAYMENT

1. Timing/Format

- a. ENGINEER shall invoice CITY monthly for Services completed at the time of billing. Such invoices shall be prepared in a form and supported by documentation as CITY may reasonably require.
- b. CITY shall pay ENGINEER within 30 days of receipt of approved invoice.

2. Billing Records

ENGINEER shall maintain accounting records of its costs in accordance with generally accepted accounting practices. Access to such records will be provided during normal business hours with reasonable notice during the term of this Agreement and for 3 years after completion.

PART IV STANDARD TERMS AND CONDITIONS

1. **STANDARD OF CARE.** Services shall be performed in accordance with the standard of professional practice ordinarily exercised by the applicable profession at the time and within the locality where the services are performed. No warranty or guarantee, express or implied, are provided, including warranties or guarantees contained in any uniform commercial code.

2. **CHANGE OF SCOPE.** The scope of Services set forth in this Agreement is based on facts known at the time of execution of this Agreement, including, if applicable, information supplied by ENGINEER and CITY. ENGINEER will promptly notify CITY of any perceived changes of scope in writing and the parties shall negotiate modifications to this Agreement.

3. **SAFETY.** ENGINEER shall establish and maintain programs and procedures for the safety of its employees. ENGINEER specifically disclaims any authority or responsibility for general job site safety and safety of persons other than ENGINEER employees.

4. **DELAYS.** If events beyond the control of ENGINEER, including, but not limited to, fire, flood, explosion, riot, strike, war, process shutdown, act of God or the public enemy, and act or regulation of any government agency, result in delay to any schedule established in this Agreement, such schedule shall be extended for a period equal to the delay. In the event such delay exceeds 90 days, ENGINEER will be entitled to an equitable adjustment in compensation.

5. **TERMINATION/SUSPENSION.** Either party may terminate this Agreement upon 30 days written notice to the other party in the event of substantial failure by the other party to perform in accordance with its obligations under this Agreement through no fault of the terminating party. CITY shall pay ENGINEER for all Services, including profit relating thereto, rendered prior to termination, plus any expenses of termination.

ENGINEER or CITY, for purposes of convenience, may at any time by written notice terminate the services under this Agreement. In the event of such termination, ENGINEER shall be paid for all authorized services rendered prior to termination including reasonable profit and expenses relating thereto.

6. **REUSE OF PROJECT DELIVERABLES.** Reuse of any documents or other deliverables, including electronic media, pertaining to the Project by CITY for any purpose other than that for which such documents or deliverables were originally prepared, or alternation of such documents or deliverables without written verification or adaptation by ENGINEER for the specific purpose intended, shall be at CITY's sole risk.

7. **OPINIONS OF CONSTRUCTION COST.** Any opinion of construction costs prepared by ENGINEER is supplied for the general guidance of the CITY only. Since ENGINEER has no control over competitive bidding or market conditions, ENGINEER cannot guarantee the accuracy of such opinions as compared to contract bids or actual costs to CITY.

8. **RELATIONSHIP WITH CONTRACTORS.** ENGINEER shall serve as CITY's professional representative for the Services, and may make recommendations to CITY concerning actions relating to CITY's contractors, but ENGINEER specifically disclaims any authority to direct or supervise the means, methods, techniques, sequences or procedures of construction selected by CITY's contractors.

9. **MODIFICATION.** This Agreement, upon execution by both parties hereto, can be modified only by a written instrument signed by both parties.

10. **PROPRIETARY INFORMATION.** Information relating to the Project, unless in the public domain, shall be kept confidential by ENGINEER and shall not be made available to third parties without written consent of CITY.

11. **INSURANCE.** ENGINEER shall maintain in full force and effect during the performance of the Services the following insurance coverage; provided, however, that if a High Risk Insurance Attachment is attached hereto, the requirements of the High Risk Insurance Attachment shall be substituted in lieu of the following requirements;

- a) Worker's Compensation per statutory requirements
- b) General Liability \$1,000,000 minimum per occurrence/ \$1,000,000 aggregate (if the value of the projects exceeds \$10,000,000 then this shall be \$5,000,000 aggregate).
- c) Automobile Liability \$1,000,000 per occurrence
- d) Products Liability \$1,000,000 per occurrence
- e) Completed Operations Liability \$1,000,000 minimum per occurrence

The Certificate of Insurance must show the City of Fort Wayne, its Divisions and Subsidiaries as an Additional Insured and a Certificate

Holder, with 30 days notification of cancellation or non-renewal. All Certificates of Insurance should be sent to the following address:
City of Fort Wayne Purchasing Department
200 East Berry St., Suite #480
Fort Wayne, IN 46802

12. **INDEMNITIES.** To the fullest extent permitted by law, ENGINEER shall indemnify and save harmless the City from and against loss, liability, and damages sustained by CITY, its agents, employees, and representatives by reason of injury or death to persons or damage to tangible property to the extent caused directly by the negligent errors or omissions of ENGINEER, its agents or employees.

13. **LIMITATIONS OF LIABILITY.** Each party's liability to the other for any loss, cost, claim, liability, damage, or expense (including attorneys' fees) relating to or arising out of any negligent act or omission in its performance of obligations arising out of this Agreement, shall be limited to the amount of direct damage actually incurred. Absent gross negligence or knowing and willful misconduct which causes a loss, neither party shall be liable to the other for any indirect, special or consequential damage of any kind whatsoever.

14. **ASSIGNMENT.** The rights and obligations of this Agreement cannot be assigned by either party without written permission of the other party. This Agreement shall be binding upon and insure to the benefit of any permitted assigns.

15. **ACCESS.** CITY shall provide ENGINEER safe access to any premises necessary for ENGINEER to provide the Services.

16. **PREVAILING PARTY LITIGATION COSTS.** In the event any actions are brought to enforce this Agreement, the prevailing party shall be entitled to collect its litigation costs from the other party.

17. **NO WAIVER.** No waiver by either party of any default by the other party in the performance of any particular section of this Agreement shall invalidate another section of this Agreement or operate as a waiver of any future default, whether like or different in character.

18. **SEVERABILITY.** The various term, provisions and covenants herein contained shall be deemed to be separate and severable, and the invalidity or unenforceability of any of them shall not affect or impair the validity or enforceability of the remainder.

19. **AUTHORITY.** The persons signing this Agreement warrant that they have the authority to sign as, or on behalf of, the part for whom they are signing.

20. **STATUTE OF LIMITATION.** To the fullest extent permitted by law, parties agree that, except for claims for indemnification, the time period for bringing claims regarding ENGINEER's performance under this Agreement shall expire one year after Project Completion.

21. **CONSENT DECREE NOTIFICATION.** ENGINEER shall perform, or cause others to perform, all services undertaken in connection with this Agreement in a good and workman-like manner and in conformance with the terms of the Consent Decree entered in the U.S District Court on April 1, 2008 by the United States and State of Indiana. ENGINEER acknowledges that it has been provided a complete copy of the Consent Decree which can be viewed at:

<http://www.cityoffortwayne.org/utilities/clean-river-team/32-consent-decree-.html>

22. **DOCUMENT RETENTION.** Notwithstanding any other provision of this Agreement, ENGINEER agrees to preserve all non-identical copies of all documents, records and other information (whether in physical or electronic form) within ENGINEER's possession or control and which relate, in any manner, to the performance of the services undertaken in connection with this Agreement for a period of 1 year after the completion contemplated by the Agreement (the "Retention Period"). Prior to the end of the Retention Period, or at any earlier time if requested by the City, ENGINEER shall provide the City with complete copies of such documents, records and other information at no cost to the City. The copies shall be provided to the City on CD or DVD media, and individual files shall be in Adobe PDF format. The individual files shall be contained in a ZIP formatted file, and the filename of the ZIP shall include the name of the project and the ENGINEER. No part of any file shall be encrypted or protected from copying. Such copies shall be accompanied by a verified written statement from the ENGINEER attesting that it has provided the City with complete copies of all documents, records and other information which relates to the services contemplated by the Agreement.

ATTACHMENT #1

SUMMARY SHEET

SCOPE OF BASIC ENGINEERING SERVICES FEE PROPOSAL

Project Management, Workshops, Data Collection, GIS Mapping and Opti-Cloud Plan

For Services outlined in Tasks 1 through 2 a not to exceed fee of: **\$115,587**

Hydraulic Model Review and Preparation, Formulate Optimizer WCS and Preliminary Runs

For Services outlined in Tasks 3 through 5 a not to exceed fee of: **\$134,992**

Interim and Final Optimization Solutions, Staging and CIP

For Services outlined in Tasks 6 through 7 a not to exceed fee of: **\$111,848**

Final Master Planning and Animation

For Services outlined in Task 8 a not to exceed fee of: **\$ 30,783**

TOTAL NOT TO EXCEED FEE: **\$393,210**

ATTACHMENT 2

EMPLOYEE BILLING RATE SCHEDULE

COMMONWEALTH ENGINEERS, INC.
STANDARD HOURLY RATES AND REIMBURSABLE EXPENSES SCHEDULE
July 1, 2013 – June 30, 2014

Billing Class	Rate Per Hour	Billing Class	Rate Per Hour
Principal III	\$ 254.74	Environmental Compliance Manager	\$ 114.04
Principal II	\$ 233.74		
Principal I	\$ 197.81	Resident Project Representative IV	\$ 99.90
		Resident Project Representative III	\$ 88.14
Project Manager IV	\$ 211.41	Resident Project Representative II	\$ 79.57
Project Manager III	\$ 197.81	Resident Project Representative I	\$ 70.97
Project Manager II	\$ 161.32		
Project Manager I	\$ 145.22	Clerical III	\$ 77.58
		Clerical II	\$ 62.14
Project Engineer IV	\$ 163.66	Clerical I	\$ 48.67
Project Engineer III	\$ 130.48		
Project Engineer II	\$ 122.42	Reproduction Processor	\$ 60.75
Project Engineer I	\$ 113.53	Trainee	\$ 40.73
Engineering Intern III	\$ 100.35	CADD Specialist IV	\$ 96.05
Engineering Intern II	\$ 88.80	CADD Specialist III	\$ 86.87
Engineering Intern I	\$ 76.75	CADD Specialist II	\$ 77.70
		CADD Specialist I	\$ 56.23
Designer IV	\$ 125.24		
Designer III	\$ 106.42	IT Manager	\$ 127.83
Designer II	\$ 97.88	Multimedia Coordinator	\$ 110.72
Designer I	\$ 81.91		
Grants Manager	\$ 121.60	Surveyor	\$ 88.33

Reimbursable Expenses

Travel from the office shall be at the then currently approved rate by the U.S. Internal Revenue Service. As of July 1, 2013 the current rate is \$0.565 per mile.

- b. City employment of "Member of Immediate Family" (defined herein as: spouse, parent, child or sibling) including contractual employment for services in the previous 3 years. Yes _____ No. x
- c. Relationship to Member of Immediate Family holding elective City office currently or in the previous 3 years. Yes _____ No. x
- d. Relationship to Member of Immediate Family holding appointive City office currently or in the the previous 3 years Yes _____ No x

Section 3. DISCLOSURE OF OTHER CONTRACT AND PROCUREMENT RELATED INFORMATION

- a. Does Vendor have current contracts (including leases) with the City? Yes x No _____.
- b. If "Yes", identify each current contract with descriptive information including purchase order or contract reference number, contract date and City contact using space below (attach additional pages as necessary).
See Attachment "B"

- c. Does Vendor have pending contracts (including leases), bids, proposals, or other pending procurement relationship with the City? Yes x No. _____
06/27/13 - Proposal submitted to Mr. David Skinner on the Rothman
Interceptor Smoke Testing project.

If "Yes", identify each pending matter with descriptive information including bid or project number, contract date and City contact using space below (attach additional pages as necessary).

Section 4. CERTIFICATION OF DISCLOSURES

In connection with the disclosures contained in Sections 1, 2 and 3 Vendor hereby certifies that, except as described in attached Schedule A:

- a. Vendor (or its parent) has not, within the five (5) year period preceding the date of this Disclosure Statement, been debarred, suspended, proposed for debarment declared ineligible or voluntarily excluded from any transactions by any federal, state or local unit of government;
- b. No officer or director of Vendor (or its parent) or individual listed in Section 1a. is presently indicted for or otherwise criminally or civilly charged by a governmental entity (federal, state or local) with commission of any offense;
- c. Vendor (or its parent) has not, within the five (5) year period preceding the date of this Disclosure Statement, had one or more public transactions (federal, state or local) terminated for cause or default;
- d. No officer or director of Vendor (or its parent) or individual listed in Section 1a. has, within the five (5) year period preceding the date of this Disclosure Statement, been convicted, adjudged guilty, or found liable in any criminal or civil action instituted by the City, the federal or state government or any other

unit of local government; and

- e. Neither Vendor, nor its parent, nor any affiliated entity of Vendor, or any of their respective officers, directors, or individuals listed in Section 1a. Is barred from contracting with any unit of any federal, state or local government as a result of engaging in or being convicted of: (i) bid-rigging; (ii) bid-rotating; or (iii) any similar federal or state offense that contains the same elements as the offense of bid-rigging or bid-rotating.

The disclosures contained Sections 1, 2 and 3 and the foregoing Certifications are submitted by

<u>Commonwealth Engineers, Inc.</u>	<u>7256 Company Dr, Indpls, IN 46237</u>
(Name of Vendor)	Address
	<u>(317) 888-1177</u>
	Telephone
	<u>adryer@contactcei.com</u>
	E-Mail Address

The Individual authorized to sign on behalf of Vendor represents that he/she: (a) is fully informed regarding the matters pertaining to Vendor and its business; (b) has adequate knowledge to make the above representations and disclosures concerning Vendor; and (c) certifies that the foregoing representations and disclosures are true and accurate to the best of his/her knowledge and belief.

Name (Printed) <u>Ann E. Dryer</u>	Title <u>Comptroller</u>
Signature <u><i>Ann E. Dryer</i></u>	Date <u>07/08/13</u>

NOTE: FAILURE TO COMPLETE AND RETURN THIS FORM WITH YOUR DOCUMENTATION MAY RESULT IN YOUR CONTRACT, OFFER, BID OR PROPOSAL BEING DISQUALIFIED FROM CONSIDERATION.

Attachment "A"

Section 1 – Disclosure of Financial Interest in Vendor.

(i) Equity ownership exceeding 5% - See Below.

Name	Address	Type of Equity Ownership	% of Ownership
Mark D. Downey	7256 Company Drive, Indianapolis, IN 46237	Stock	19.44%
Mark M. Sullivan	7256 Company Drive, Indianapolis, IN 46237	Stock	13.88%
Albert C. Stong	7256 Company Drive, Indianapolis, IN 46237	Stock	13.88%
Donald B. Larson	7256 Company Drive, Indianapolis, IN 46237	Stock	8.33%
Vincent S. Sommers	7256 Company Drive, Indianapolis, IN 46237	Stock	8.33%
Roger M. Kottlowski	7256 Company Drive, Indianapolis, IN 46237	Stock	5.56%
Benjamin H. Adams	9604 Coldwater Rd Suite 203, Fort Wayne, IN 46825	Stock	5.56%
David A. Hynes	101 Plaza East Blvd Suite 200, Evansville, IN 47715	Stock	5.56%
Eric T. Parsley	101 Plaza East Blvd Suite 200, Evansville, IN 47715	Stock	5.56%
Patrick W. Zaharako	7256 Company Drive, Indianapolis, IN 46237	Stock	5.56%
Brian M. Desharnais	9604 Coldwater Rd Suite 203, Fort Wayne, IN 46825	Stock	5.56%

Attachment "B"

Section 3 – Disclosure of Other Contract & Procurement Related Information

(b) If "Yes", identify each current contract with descriptive information including purchase order or contract reference number, contract date, and City contact - See Below.

Project Name	Purchase Order#	PO Date	City Contact
Ewing Street East-West Storm Sewer Extensions (D12007)	12905011-000	02/10/12	Kelly Bajic
Combined Sewage Ponds Improvements – Sweetwater (S12045)	12905062-000	06/05/12	Zach Schortgen
	13905030-000	04/01/13	Zach Schortgen
Swift Interceptor Relief Sewer Phase III (S13000)	13905016-000	03/04/13	Nathan Baggett

Commonwealth Engineers, Inc.
(Vendor Name)

1. FINANCIAL INTERESTS;
2. POTENTIAL CONFLICTS OF INTERESTS;
3. CURRENT AND PENDING CONTRACTS OR
PROCUREMENTS

- b. City employment of "Member of Immediate Family"
(defined herein as: spouse, parent, child or sibling) including
contractual employment for services in the previous 3 years. Yes _____ No. x
- c. Relationship to Member of Immediate Family holding elective
City office currently or in the previous 3 years. Yes _____ No. x
- d. Relationship to Member of Immediate Family holding appointive
City office currently or in the the previous 3 years Yes _____ No x

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relationship with the City? Yes x No. _____
06/27/13 - Proposal submitted to Mr. David Skinner on the Rothman
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as described in attached Schedule A:

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Disclosure Statement, been debarred, suspended, proposed for debarment declared
ineligible or voluntarily excluded from any transactions by any federal, state or local unit of
government;
- b. No officer or director of Vendor (or its parent) or individual listed in Section 1a. is presently indicted for
or otherwise criminally or civilly charged by a governmental entity (federal, state or local) with
commission of any offense;
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(5) year period preceding the date of this Disclosure Statement, been convicted, adjudged guilty, or
found liable in any criminal or civil action instituted by the City, the federal or state government or any other

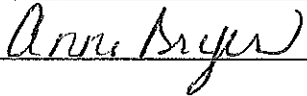
unit of local government; and

- e. Neither Vendor, nor its parent, nor any affiliated entity of Vendor, or any of their respective officers, directors, or individuals listed in Section 1a. is barred from contracting with any unit of any federal, state or local government as a result of engaging in or being convicted of: (i) bid-rigging; (ii) bid-rotating; or (iii) any similar federal or state offense that contains the same elements as the offense of bid-rigging or bid-rotating.

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Name (Printed) <u>Ann E. Dryer</u>	Title <u>Comptroller</u>
Signature <u></u>	Date <u>07/08/13</u>

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	13905030-000	04/01/13	Zach Schortgen
Swift Interceptor Relief Sewer Phase III (S13000)	13905016-000	03/04/13	Nathan Baggett

Interoffice Memo

Date: **July 15, 2013**
To: Common Council Members
From: Wendy Reust, Program Manager, City Utilities Engineering
RE: **Contract Title: Master Plan Modeling Optimization Study
W.O. #75871**

Consultant Selected: Commonwealth Engineers, Inc.

Contract Value: \$393,210.00

The consultant shall provide: Professional engineering services to provide the planning and modeling assistance services for the Master Plan Modeling Project.

Project Description: The City of Fort Wayne (City) has completed several wastewater collection system Master Planning efforts over the past decade. These documents have been used to develop and update the Wastewater Capital Improvement Plan (CIP) budgets. As with any planning document, they need to be periodically refreshed and updated. In addition to timing reasons, since some of the original planning work was performed the system-wide hydraulic model has been recalibrated and improved.

There are a large number of scenarios and planning alternatives available for analysis in this study. Traditional "what-if" scenario modeling is able to handle only a relatively small number of scenarios and focuses on hydraulics first, after which the cost of the successful solution is determined. With its powerful search engine and evolutionary search technique, the optimization software evaluates hydraulic performance and total solution cost simultaneously, resulting in hydraulically-viable, least-cost solutions. The structured search technique identifies the best mix of capital and operational improvements which satisfy the required levels of service at the lowest cost.

The planning solution cost achieved using the optimization software is often less than the capital works plan identified by traditional analysis methods. The resulting savings from an optimization study represent a significant Return on Investment (ROI) when considering the cost of the optimization study versus the potential savings in capital and/or operational works.

Implications of not being approved: Successful Utility Management requires plans to be updated to ensure compliance with regulatory requirements and help maintain economic development in our community. We believe Modeling Optimization provides an opportunity to find some of the best value solutions and if not used the Wastewater CIP may result in higher project costs and costs to our customers.

If Prior Approval is being Requested, Justify: n/a

Selection and Approval Process: The consultant was selected through the RFQ (Request for Qualifications) process based on their prior experiences and qualifications. The RFQ announcement was sent to approximately 146 firms, and 7 firms submitted a statement of qualifications. Utilities Engineering reviewed the qualifications of all interested firms and established an On-Call List of Consultants to provide On-call hydraulic modeling support. A request for proposals was then developed for this project and was sent to all On-Call Consultants. All of the 4 Consultants from the On-Call List submitted proposals and a scoring matrix was used to score all firms based on the RFQ and RFP scores. RFP scoring was based on project team, past project performance, project understanding and proposed cost submittals. The City then short listed the on-call consultants to two firms. These two firms were asked to submit their best and final proposal to complete the work. Using this procedure, Utilities Engineering chose Commonwealth Engineering for this project and also finds their not-to-exceed fee to be the best value. The Board of Public Works approved the contract on July 9, 2013.

Funding: The Professional Services Agreement (PSA) will be funded by Sewer Revenue.

Council Introduction Date: July 23, 2013

CC: BOW
Matthew Wirtz
Diane Brown
Chrono
File