TASK ORDER 3-17 SWR

ENGINEERING SERVICES FOR CITY OF KEY WEST WASTEWATER COLLECTION SYSTEM GIS DATABASE DEVELOPMENT

This TASK ORDER 3-17 SWR is issued under the terms and conditions of the MASTER AGREEMENT TO FURNISH GENERAL ENGINEERING SERVICES TO THE CITY OF KEY WEST ("AGREEMENT") between the City of Key West ("CITY") and CH2M HILL Engineers, Inc. ("ENGINEER") executed on November 19, 2012, which is incorporated herein by this reference.

A. SCOPE OF SERVICES

Specific services which the ENGINEER agrees to furnish are summarized on the attached statement entitled TASK ORDER 3-17 SWR, "SCOPE OF SERVICES." The "Scope of Services" defines the work effort anticipated for the Task order.

This Task Order, when executed, shall be incorporated in and shall become an integral part of the November 19, 2012, Master Agreement.

B. TIME OF COMPLETION

Work under this Task order will begin immediately following acceptance and completed expeditiously subject to coordination with the City of Key West staff. Conceptual Project Delivery Schedule is included as attachment B, entitled DELIVERY SCHEDULE.

C. COMPENSATION

Compensation for the labor portions of TASK ORDER 3-17 SWR, compensation for Sub consultant fees, all expenses, and the labor portion of Task A, Task B, and Task C will be on a Cost Reimbursable-Per Diem basis as stipulated in Article 5, Paragraph 5.1.2 of the AGREEMENT. The estimated compensation is included as attachment A, entitled COMPENSATION.

D. ACCEPTANCE

By signature, the parties each accept the provisions of this TASK ORDER 3-17 SWR, and authorize the ENGINEER to proceed at the direction of the CITY's representative in accordance with the "SCOPE OF SERVICES." Start date for this project will be no later than ten (10) days after execution of this authorization.

For CH2M HILL, Consultants Inc.

By: _____
Sirpa H. Hall, P.E.
Senior Business Vice President

_____
Sean McCoy, P.E.
Key West Project Manager

For CITY OF KEY WEST

By: _____
Jim Scholl
City Manager

Dated the _____ day of _____, 20__

ATTEST: _____

TASK ORDER 3-17 SWR

ENGINEERING SERVICES FOR CITY OF KEY WEST
WASTEWATER COLLECTION SYSTEM GIS DATABASE DEVELOPMENT

SCOPE OF SERVICES

Project Description

The City of Key West owns and operates approximately 40 miles of sanitary sewer, both gravity and force main, which collect and convey wastewater flows to the Richard A. Heyman Environmental Protection Facility for treatment. To support operation, maintenance, and planning of the existing collection system, the CITY proposes to retain the ENGINEER to provide engineering services to develop a GIS database of the wastewater collection system. The GIS database will include an inventory, based on record drawings and field survey, of key collection system features such as gravity sewers, force mains, force main isolation valves, manholes, and pump stations. The GIS database will include links to collection system records.

Purpose

The CITY has requested that the ENGINEER provide engineering services for the development of a GIS database of the CITY's wastewater collection system.

Scope of Services

Task A – Data Collection

This task is comprised of activities related to data collection in support of the development of the wastewater collection system GIS database and identification of key data gaps.

Subtask A.1 – Collection of Available Data

A Kick-Off meeting between the CITY and ENGINEER will discuss and identify the CITY's goals regarding the collection system GIS database, including the type of features to be inventoried, the desired feature attributes, and the linkage of CITY records and other supplemental documentation to inventoried collection system features in GIS. (The meeting scope and budget are addressed under Task C.)

Information gathered from the Kick-Off meeting will be used by the ENGINEER to develop and submit to the CITY a list of requested background and other project data in the form of a Data Request Technical Memorandum (TM). The list of requested data will include items such as the following:

- Available GIS Data as specified in the requested data list (e.g. sewer networks, topographic features, contours, parcel boundaries, project boundaries, street centerlines, land cover, imagery, and elevation models).

- Sanitary sewer system mapping and as-built plan sets in paper or digital formats. The preference is to receive digital files (e.g. CADD drawings, PDF, feature classes or shapefiles).

Deliverables

- Kickoff meeting agenda and minutes shall be submitted digitally as .pdf
- *Data Request TM* (submitted digitally as final), pdf

Task B – Wastewater Collection System GIS Database

This task is comprised of activities related to the development of the wastewater collection system GIS database. This task is divided into four subtasks that correspond to logical review milestones for the CITY.

Subtask B.1 Data Format Conversion

From information gathered during the Kick-Off meeting, the ENGINEER will develop a GIS needs and data summary TM which will serve to: identify requirements for SubTask B.4 and a GIS database and/or other digital solution that can achieve the CITY's goals within the budgetary allowance; and summarize information collected and produced in Subtask B.1.

The ENGINEER will review, scan, convert, and georeference pertinent data and collection system records received from the CITY under Task A. Scanning of documents received in Task A may be conducted directly by the ENGINEER or may require the ENGINEER to retain a professional firm to scan documents.

Deliverables

- GIS Needs and Data Summary TM submitted digitally as final in .pdf
- Any hardcopy data and As-built plan sets that are scanned for geo-referencing shall be submitted in digital format

Subtask B.2 – Skeleton Wastewater Collection System GIS Inventory Database

The ENGINEER will create an ESRI geodatabase (version 10.4.1), and populate a skeleton wastewater collection system network in GIS from data received in TASK A. The GIS database will include such features as gravity sewers, force mains, force main isolation valves, manholes, and pump stations. The ENGINEER will submit a proposed database schema document for CITY approval prior to database development. The ENGINEER will revise the GIS database schema per comments received from the CITY.

The ENGINEER will populate the database with information as the ENGINEER deems sufficient to create a skeleton wastewater collection system. The inventory entered into the GIS database will be developed from a combination of existing data including: shapefiles, survey data, and as-built data. Additionally, the database may include links to collection system records scanned, georeferenced, and/or field survey documents or a comparable functionality may be provided (i.e.: attachments). The ENGINEER will submit a draft skeleton wastewater collection system network geodatabase for CITY review. The ENGINEER will address CITY comments and revise the skeleton wastewater collection system as deemed necessary.

The ENGINEER will formulate a recommended digital solution, and will present this conceptual sample to the CITY at a meeting to demonstrate the proposed approach. CITY comments will be incorporated and the recommendation revised as needed. The ENGINEER will generate a brief summary of the proposed solution incorporating CITY comments and needs. An additional teleconference demonstration may be required. Subtask B.4 describes the work to be performed. (Meeting scope and budget addressed under Task C.)

The ENGINEER will evaluate the available data; determine the GIS feature data needs to achieve the CITY's stated goals; identify critical gaps in the existing GIS data to meet these goals; and develop a plan for filling critical gaps. Critical data gaps will be addressed using field survey techniques (refer to Subtask B.3).

Deliverables

- ESRI geodatabase (version 10.4.1) proposed schema document
- Draft and Final skeleton wastewater collection system network geodatabase
- Sample demonstration of a recommended digital solution
- Brief summary document on the recommended solution with CITY's comments incorporated, pdf

Subtask B.3 – Field Survey (Allowance)

The ENGINEER will perform a field survey of wastewater collection system where necessary to fill data gaps per the scope of work developed under Subtask B.2. As part of the plan to address critical data gaps, the ENGINEER may retain a professional land surveyor to perform the field survey of the collection system. As an alternative, to address limited budget, the ENGINEER may recommend that the field survey be performed directly by the ENGINEER using GPS equipment.

The ENGINEER will submit a document summarizing the scope of survey and level of effort (*Field Survey Scope and Level of Effort TM*) to the CITY for review and approval prior to initiating the inventory survey. The TM will include items such as: spatial accuracy requirements and relevant attributes as agreed upon in the database schema.

Deliverables

- *Field Survey Scope and Level of Effort TM*
- Field survey of wastewater collection system scope and level of effort *TM* (submitted digitally)

Subtask B.4 – GIS Database Refinement and Digital Solution

The ENGINEER will incorporate the inventory produced in Subtask B.3 into the skeleton wastewater collection system network geodatabase developed in Subtask B.2. The ENGINEER will submit a draft final skeleton wastewater collection system network geodatabase for CITY review. The ENGINEER will address CITY comments and revise the skeleton wastewater collection system as deemed necessary.

The ENGINEER will provide a digital solution that allows display of GIS features and/or links ancillary reference documents (e.g. record drawings or other record files) of the

information developed within this Task Order. The ENGINEER will submit a draft solution to the CITY for review and comment. The ENGINEER will revise the digital solution per comments received from the CITY and submit a final digital solution.

There is a high level of uncertainty associated with the development of this digital solution as the CITY's needs and available resources are unknown, and will not be identified until after the completion of Tasks A and B1. The actual costs and requirements for the digital solution are undetermined. As a result of this uncertainty, CH2M ArcGIS Online (AGOL) resources and/or CITY resources may be utilized. The CITY will be responsible for all purchasing costs associated with building an AGOL organization, an ESRI enterprise system, or other costs associated with software or hardware purchase. Maintenance costs of the digital solution is not included under this task order.

Deliverables

- Draft digital solution and wastewater collection system GIS inventory geodatabase.
- Final digital solution and wastewater collection system GIS inventory geodatabase

Task C – Project Meetings

ENGINEER will attend the following two formal project meetings (these meetings are mentioned in above tasks) in person and two formal project meetings by conference call with the CITY:

1. Project Kickoff/GIS Needs Assessment
    a. It is assumed the Project Manager and Project Planner will attend in person
2. Review of Data Collection (Teleconference)
    a. It is assumed the Project Manager will attend in person, and the Project Planner will join by telephone
3. Review of Proposed GIS Database Approach (Teleconference)
    a. It is assumed the Project Manager will attend in person, and the Project Planner will join by telephone
4. GIS Database Results
    a. It is assumed the Project Manager and Project Planner will attend in person

Periodic status update meetings will be scheduled as necessary and will be held by conference call.

Deliverables

- Agenda, Draft, and final meeting summaries for four key meetings with CITY (submitted digitally)

Assumptions

The following assumptions were used in the development of this Task order

- Level of effort specified in this Task Order is predicated on an estimated 40 22" by 36" plan sets with 15 pages each, an estimated 40 plan sets in digital CAD or GIS format, and an approximate 40 square miles of waste water assets.
- The CITY is responsible for all purchasing and maintenance costs associated with building an ArcGIS Online (AGOL) organization, an ESRI enterprise system, or other costs associated with software or hardware purchase. Data hosted using CH2M AGOL organization resources will be available online for up to 6 months after which the City will need to procure additional resources or maintenance contracts.
- The compensation identified for Subtasks B.3 is an allowance based on very limited information and is subject to change upon development of the detailed scope of work and level of effort for these subtasks.
- Work under this Task Order will be completed in calendar year 2017.
- The geographic extent of the data inventory is limited to the main island of Key West and does not include Stock Island. Survey work can be performed for a budget equal to or less than the allowance amount.
- No confined entry will be conducted by the ENGINEER's field team members.
- Florida Department of Emergency Management LiDAR maps, ESRI aerial imagery or other base map will be used as a reference.
- This Task Order does not include any maintenance of traffic.
- Key personnel from ENGINEER's project team will attend two in-person meetings with the CITY and two teleconferences. It is assumed that up to three informal status update meetings may be scheduled and that these meetings will be held by conference call.

Obligations of the CITY

To assist meeting schedule and budget estimates contained in this proposal, the CITY will provide the following:

- Provide requested data promptly (within 10 working days of receipt of request).
- Prompt review and comment on all deliverables (within 10 working days of receipt).
- Attendance of key personnel at meetings as requested.
- Facilitate access to any required facilities.
- Facilitate maintenance of traffic where necessary.

Additional Services

The ENGINEER will, as directed, provide additional services that are related to the project but not included within this Scope of Services. These and other services can be provided, if desired by the CITY, as an amendment to the Task Order. Work will begin for the Additional Services after receipt of a written notice to proceed from the CITY. Additional services may include, but are not limited to, the following:

- Development of a wastewater collection system hydraulic operating model.
- Additional data collection, including field survey.
- Incorporation of additional feature attributes and/or GIS functionality.

Compensation

The estimated compensation for TASK ORDER 3-17 SWR, is shown on attachment A entitled TASK ORDER 3-17 SWR, COMPENSATION.

Delivery Schedule

The Conceptual Project Delivery Schedule for TASK ORDER 3-17 SWR, is shown on attachment B entitled DELIVERY SCHEDULE. This schedule is based on a Notice to Proceed (NTP) date issued by the CITY. It is estimated that this Task Order will take 38 weeks to complete once NTP is issued.

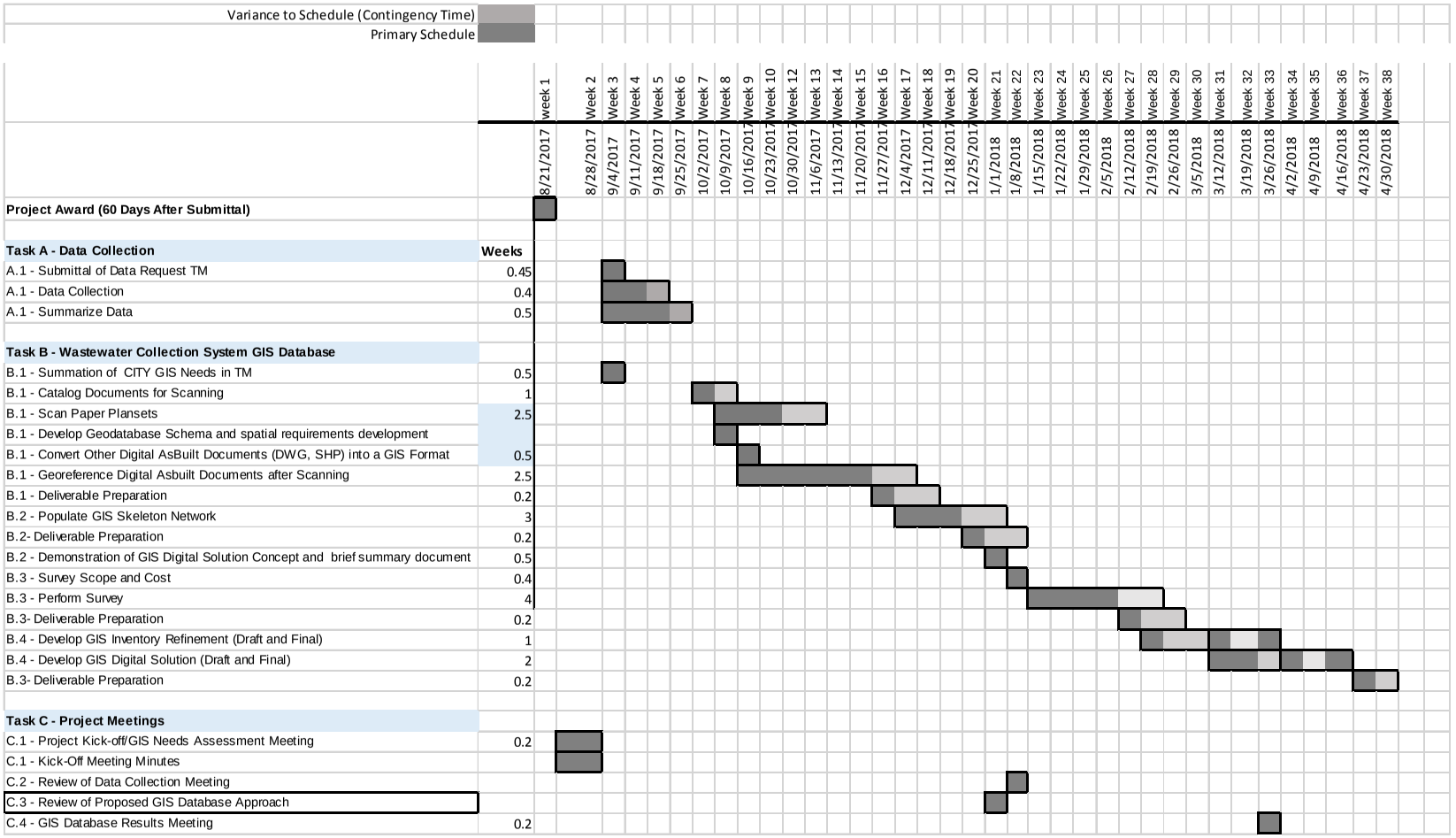
Attachment A

Compensation

Staff	ST/SPM	PM/ES	PE	AE	Technician 6	Technician 4			
Hourly Rate	$170.00	$157.00	$135.00	$120.00	$118.00	$101.00			
Task A - Data Collection							**Total Hours**	**Total Labor**	**Expenses / Subconsultant Fee**
A.1 - Submittal of Data Request TM	0	6	18	0	0	0	24	$3,372.00	$ -
A.1 - Data Collection	0	0	16	0	0	0	16	$2,160.00	$ -
A.1 - Summarize Data	1	8	20	0	8	8	45	$5,878.00	$ -
	1	**14**	**54**	**0**	**8**	**8**	**85**	**$11,410.00**	$ -
	$ 170.00	**$ 2,198.00**	**$ 7,290.00**	**$ -**	**$ 944.00**	**$ 808.00**			
Task B - Wastewater Collection System GIS Database									
B.1 - Summation of CITY GIS Needs and Data Summary in TM	0	8	40	0	0	0	48	$6,656.00	
B.1 - Catalog Documents for Scanning	0	8	40	0	16	64	128	$15,008.00	
B.1 - Scan Paper Plansets	0	0	40	0	75	75	190	$21,825.00	
B.1 - Develop Geodatabase Schema and spatial requirements development	4	16	44	0	0	0	64	$9,132.00	
B.1 - Convert Other Digital AsBuilt Documents (DWG, SHP) into a GIS Format	0	0	16	0	0	30	46	$5,190.00	
B.1 - Georeference Digital Asbuilt Documents after Scanning	0	8	20	0	0	100	128	$14,056.00	
B.1 - Deliverable Preparation	1	4	8	0	0	0	13	$1,878.00	
B.2 - Populate GIS Skeleton Network	0	12	80	0	0	120	212	$24,804.00	
B.2- Deliverable Preparation	1	4	8	0	0	0	13	$1,878.00	
B.2 - Demonstration of GIS Digital Solution Concept and Summary of Solution	0	4	40	0	0	0	44	$6,028.00	
B.3 - Survey Scope and Cost	0	8	16	0	0	0	24	$3,416.00	$100,000.00
B.3 - Perform Survey	0	0	16	0	0	0	16	$2,160.00	
B.3- Deliverable Preparation	1	4	8	0	0	0	13	$1,878.00	
B.4 - Develop GIS Inventory Refinement (Draft and Final)	1	0	20	0	0	40	61	$6,910.00	
B.4 - Develop GIS Digital Solution (Draft and Final)	3	16	80	0	0	0	99	$13,822.00	
B.3- Deliverable Preparation	1	4	8	0	0	0	13	$1,878.00	
B.1 Expenses							0	$0.00	$5,500.00
	12	**96**	**484**	**0**	**91**	**429**	**1112**	**$136,519.00**	**$105,500.00**
	$ 2,040.00	**$15,072.00**	**$65,340.00**	**$ -**	**$ 10,738.00**	**$ 43,329.00**			
Task C - Project Meetings									
C.1 - Project Kick-off/GIS Needs Assessment Meeting	0	6	21	0	0	0	27	$3,777.00	
C.1 - Kick-Off Meeting Minutes	0	2	4	0	0	0	6	$854.00	
C.2 - Review of Data Collection Meeting	0	4	8	0	0	0	12	$1,708.00	
C.3 - Review of Proposed GIS Database Approach	0	4	8	0	0	0	12	$1,708.00	
C.4 - GIS Database Results Meeting	0	12	24	0	0	0	36	$5,124.00	
C.1 and C.4 Expenses	0	0	0	0	0	0	0	$0.00	$5,000.00
	0	**28**	**65**	**0**	**0**	**0**	**93**	**$13,171.00**	**$5,000.00**
	$ -	**$ 4,396.00**	**$ 8,775.00**	**$ -**	**$ -**	**$ -**			
						TO 3-17 SubTotal	1290	$161,100.00	$ 110,500.00
						TO 3-17 Total Cost	**$271,600.00**		

Attachment B

Delivery Schedule



Project Award (60 Days After Submittal)	
Task A - Data Collection	**Weeks**
A.1 - Submittal of Data Request TM	0.45
A.1 - Data Collection	0.4
A.1 - Summarize Data	0.5
Task B - Wastewater Collection System GIS Database	
B.1 - Summation of CITY GIS Needs in TM	0.5
B.1 - Catalog Documents for Scanning	1
B.1 - Scan Paper Plansets	2.5
B.1 - Develop Geodatabase Schema and spatial requirements development	
B.1 - Convert Other Digital AsBuilt Documents (DWG, SHP) into a GIS Format	0.5
B.1 - Georeference Digital Asbuilt Documents after Scanning	2.5
B.1 - Deliverable Preparation	0.2
B.2 - Populate GIS Skeleton Network	3
B.2- Deliverable Preparation	0.2
B.2 - Demonstration of GIS Digital Solution Concept and brief summary document	0.5
B.3 - Survey Scope and Cost	0.4
B.3 - Perform Survey	4
B.3- Deliverable Preparation	0.2
B.4 - Develop GIS Inventory Refinement (Draft and Final)	1
B.4 - Develop GIS Digital Solution (Draft and Final)	2
B.3- Deliverable Preparation	0.2
Task C - Project Meetings	
C.1 - Project Kick-off/GIS Needs Assessment Meeting	0.2
C.1 - Kick-Off Meeting Minutes	
C.2 - Review of Data Collection Meeting	
C.3 - Review of Proposed GIS Database Approach	
C.4 - GIS Database Results Meeting	0.2