



CITY COUNCIL

AGENDA REQUEST

AGENDA OF:	02-19-13	AGENDA REQUEST NO:	III-H
INITIATED BY:	TIMOTHY JAHN, P.E., SENIOR ENGINEER <i>TWJ</i>	RESPONSIBLE DEPARTMENT:	ENGINEERING
PRESENTED BY:	ROB VALENZUELA, P.E., CFM ASSISTANT CITY ENGINEER	DIRECTOR:	CHRISTOPHER STEUBING, P.E., CFM, CITY ENGINEER <i>CLS</i>
		ADDITIONAL DIRECTOR (S):	SUELLEN STAGGS, <i>SS</i> DIRECTOR OF WATER UTILITIES

SUBJECT / PROCEEDING: **WWTP NUTRIENT REMOVAL, LOADING CAPACITY & DISSOLVED OXYGEN STUDY – CIP WW1304
AUTHORIZE ENGINEERING CONTRACT WITH AECOM**

EXHIBITS: **CONTRACT WITH AECOM**

CLEARANCES	APPROVAL
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LEGAL:	MARY POWELL, CITY ATTORNEY <i>MP</i>	ASSISTANT CITY MANAGER:	KAREN DALY <i>Kd</i>
PURCHASING:	TODD REED, CPPB PURCHASING MANAGER <i>(P)</i>	ASSISTANT CITY MANAGER:	N/A
BUDGET:	BRYAN GUINN, <i>BG</i> ASSISTANT DIRECTOR OF BUDGET & RESEARCH	CITY MANAGER:	ALLEN BOGARD <i>Kd</i> /FOR AB

BUDGET

EXPENDITURE REQUIRED: \$	100,000
CURRENT BUDGET: \$	100,000
ADDITIONAL FUNDING: \$	N/A

RECOMMENDED ACTION

Authorize the execution of an engineering contract with AECOM to perform a combined evaluation for the North and South Wastewater Treatment Plants related to TCEQ nutrient removal regulations, impacts to increased solids loading, and delivery of dissolved oxygen in a maximum amount of \$100,000 from CIP Project WW1304.

EXECUTIVE SUMMARY

The Texas Commission on Environmental Quality (TCEQ) has pending regulations related to nutrient removal for wastewater treatment plants (WWTPs) that may impact the City's North and South WWTPs. If approved, the regulations will require removal of phosphorus from the treated effluent discharge, although the removal levels and the list of impacted streams are still under TCEQ evaluation. Phosphorus is a naturally occurring nutrient that is a potential cause for excessive algae growth in streams and lakes. An engineering evaluation will need to be performed to determine what improvements, if any, are needed at both WWTPs.

In addition, due to mandated low flow devices such as washing machines, shower heads, toilets, etc., flows to the North and South WWTPs have been flat over the past few years although the City has seen growth in wastewater connections. Due to this trend, an increase in solids loading to each of the WWTPs will need to be evaluated and recommendations provided to ensure the TCEQ discharge permits are kept in compliance.

Another evaluation to be performed at both WWTPs is to study the delivery of dissolved oxygen to the WWTPs treatment system. The current delivery systems at both WWTPs are not as efficient as originally installed due to age and equipment performance. The study will include investigating the existing systems and will provide recommendations for an automated, more effective dissolved oxygen delivery system.

Based on the firm's experience with similar projects, AECOM was selected for the engineering evaluation for this project based on interviews out of four firms selected from the City's library of pre-qualified firms and in accordance with the City policy. The engineering evaluation scope of work for the project will include the following services:

- Data collection and evaluation
- TCEQ coordination
- Solids loading study
- Dissolved oxygen study
- Nutrient removal study
- Final report development with recommendations

There is currently \$100,000 budgeted in CIP WW1304. AECOM has agreed to perform the combined engineering evaluation for the North and South WWTPs for \$100,000. Once the Notice to Proceed is given, the engineering evaluation will take about six months to complete.

The Engineering and Water Utilities Departments recommend that the City Council authorize the execution of an engineering contract with AECOM to perform a combined evaluation for the North and South WWTPs related to TCEQ nutrient removal regulations, impacts to increased solids loading, and delivery of dissolved oxygen in a maximum amount of \$100,000 from CIP Project WW1304.

EXHIBITS

CITY OF SUGAR LAND
STANDARD CONTRACT FOR GENERAL SERVICES
Over \$50K - Form Revised 5/17/10

I. General Information and Terms.

Contractor's Name and Address: AECOM
5757 Woodway Drive
Suite 101 West
Houston, TX 77057

Description of Services: Evaluation of Improvements to North and South
Wastewater Treatment Plants

Maximum Contract Amount: \$100,000

Effective Date: On the latest date of the dates executed by both parties.

Termination Date: (See III C)

Contract Parts: This Contract consists of the following parts:

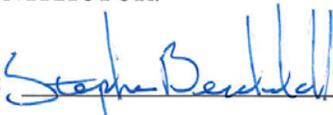
- I. General Information and Terms
- II. Signatures
- III. Standard Contractual Provisions
- IV. Additional Terms or Conditions
- V. Additional Contract Documents

II. Signatures. By signing below, the parties agree to the terms of this Contract:

CITY OF SUGAR LAND

CONTRACTOR:

City Manager or Assistant City Manager

By: 

Date: _____

Date: 1.30.2013

Reviewed for Legal Compliance:





AECOM
5757 Woodway Drive
Suite 101 West
Houston, Texas 77057
www.aecom.com

713 780 4100 tel
713 278 4650 fax

January 15, 2013

Timothy W. Jahn, P.E.
Senior Engineer
City of Sugar Land
2700 Town Center Blvd N
Sugar Land, TX 77479

Re: North / South WWTP Engineering Evaluation Proposal

Dear Mr. Jahn:

AECOM Technical Services, Inc. (AECOM) is pleased to submit this proposal to provide professional engineering services for the preparation of the Feasibility Study for future improvements to the North and South Wastewater Treatment Plants (WWTPs) for the City of Sugar Land (City).

The purpose of the Feasibility Study is to evaluate improvements to the North and South WWTPs to meet two primary objectives: 1) Improve operational efficiency of the WWTPs and 2) maintain compliance with current and future potential Texas Pollutant Discharge Elimination System (TPDES) permit requirements. The following describes the scope of services to be performed, schedule of completion, and basis of compensation.

SCOPE OF SERVICES

Task 1: Data Collection and Evaluation

AECOM will participate in a Project Kick-Off Meeting with the City. AECOM has also budgeted to participate in four (4) additional City progress meetings. AECOM will also review all data furnished by the City to perform the Feasibility Study. AECOM will review the record drawings provided for both North and South WWTPs. It is assumed that sufficient drawings exist to gather all required data on unit process sizes. AECOM will not perform any field surveying as part of this scope of work.

A site visit investigation will be performed to verify record drawings as to general arrangement of visible features, gather nameplate data of equipment, and interview wastewater operators regarding the operation of the WWTPs.

AECOM will review all flow and quality data furnished by the City to perform study. Any data gaps will be identified. The City of Sugar Land 2012 Wastewater Master Plan will also be reviewed for pertinent data. AECOM will develop sampling plans to obtain additional data necessary (such as phosphorous) to complete study. Samples will be collected by City or Contract Operator. AECOM will review sample data collected. AECOM will not perform any sampling activities as part of this scope of work.



Task 2: TCEQ Coordination

AECOM will have informal discussions with regulators regarding future permit modifications. Anticipated nutrient removal discharge criteria and timeline will be requested from TCEQ. AECOM will additionally request stream modeling to be performed by TCEQ on the North and South WWTP receiving streams to determine whether any additional effluent limit modifications will occur. AECOM will review the stream model results. Discussion results will be documented by AECOM and provided to the City in a memorandum format.

Task 3: Solids Loading Study

A solids loading study will be performed at both WWTPs. The City's population projections and recent population, flow and loading data, will be used to determine the anticipated future loads (i.e. BOD, NH₃-N, & TSS) and concentrations that both plants will experience based upon population growth and flow projections. Population growth projections will be taken from the Master Plan and are assumed to be the most accurate. The existing treatment capacity of major unit process within each WWTP will be determined according to basin sizes and flow and process data. The major process units to be evaluated include: headworks, aeration basins, clarifiers, chlorine contact basins, thickeners, digesters and belt filter press. The unit processes will then be evaluated for treatment capacity based on anticipated future solids loading growth to the WWTPs. Conceptual alternatives (maximum of three) for improvements to increase treatment capacity as necessary will be developed. Rough order-of-magnitude costs for each conceptual alternative will also be provided. These costs will be provided by May 2013 to assist with CIP planning. It is assumed that hydraulics are not a concern at either WWTP. AECOM will not perform a hydraulic analysis of each WWTP under this task.

Task 4: Dissolved Oxygen Control Study

A study to evaluate the feasibility of installing an automatic control system for dissolved oxygen (DO) control will be performed at both WWTPs. AECOM will use the future flow and load projections developed in Task 3 to evaluate the operation of the current aeration system (including coarse bubble diffusers and blowers at North WWTP and aerators at South WWTP). The base condition will first be evaluated as part of a life cycle cost analysis to determine the baseline costs of manual aeration operations. Conceptual alternatives (maximum of three) for automatic control at each WWTP will then be developed including post-aeration blowers, and analysis of fine bubble versus coarse bubble diffusers. The life cycle costs for these alternatives will be prepared and compared to the base condition. The payback period for these alternatives will be evaluated to recommend the most feasible alternative. The rough-order of magnitude construction costs for each alternative will be provided by May 2013 to assist with CIP planning.

Task 5: Nutrient Removal Study

A nutrient removal study will be performed at both WWTPs. The current treatment capabilities of existing unit processes will be evaluated for phosphorous removal capabilities at both the North and South WWTP. The removal will be compared to anticipated phosphorous limits in a future TPDES permit. If either WWTP is unable to meet anticipated future limits, then conceptual alternatives (maximum of three) will be developed for additional nutrient removal capabilities. Rough order-of-magnitude costs for each conceptual alternative will also be provided. These costs will be provided by May 2013 to assist with CIP planning.

Task 6: Draft Report Development

The results of each study performed in Tasks 2, 3, 4, & 5 will be summarized in a Draft Feasibility Study report. The report will be internally reviewed prior to submittal to City. Five (5) hard copy (with electronic copy inserted in the cover) will be provided.



Task 7: Final Report Development

AECOM will participate in a report review meeting with the City. AECOM will review and respond to comments from draft report. Comments will be incorporated into final report. The report will be internally reviewed prior to submittal to City. Six (6) hard copy (with electronic copy inserted in the cover) will be provided.

DOCUMENTS AND INFORMATION TO BE PROVIDED BY THE CITY OF SUGAR LAND

The following documents and information are requested to be provided by the City to assist AECOM in the Feasibility Study effort.

1. Record drawings of existing North and South WWTPs
2. Copy of existing TPDES permits for North and South WWTPs
3. Historical average and peak wet weather flow data for North and South WWTPs
4. Analytical data (including but not limited to BOD/COD, TSS, ammonia, phosphorous, and dissolved oxygen) influent and effluent data for North and South WWTPs
5. Pretreatment flow and loading data for major industrial flow or load contributions.
6. Results of sampling plans conducted for any missing analytical data
7. Electricity price for North and South WWTPs
8. Copy of City of Sugar Land 2012 Wastewater Master Plan
9. Facilitate site access as needed

WORK NOT INCLUDED IN THIS PROPOSAL

The following work items are not included in this proposal. Separate proposals will be submitted to perform the following tasks upon request.

- Field surveying at the North or South WWTP
- Field sampling or testing at the North or South WWTP
- Hydraulic analysis of the North or South WWTP
- Engineering services related to Preliminary Engineering, Final Design, or Construction Phase Services are not included in this scope of work.
- Geotechnical services for soil borings/logs for recommended improvements to WWTPs.
- Special meetings and/or public meetings as arranged by the City of Sugar Land to present the recommendations, including preparation and reproduction of special exhibits necessary for these presentations

SCHEDULE OF COMPLETION

AECOM proposes to complete the preparation of the draft Feasibility Study report within 6 months after receipt of the written Notice to Proceed. A draft schedule appears in Attachment A.



BASIS OF COMPENSATION

The detailed budget breakdown for this proposal is provided in Attachment B. We are requesting total engineering fees on a lump sum basis in the amount of \$100,000.

If you have any questions or comments, please contact me at 713-267-3266 or Keith O'Connor at 713-267-3135.

Sincerely,

AECOM

Stephen G. Berckenhoff, P.E.
Vice President

AECOM

Keith O'Connor, P.E.
Project Manager

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Attachments:

- Attachment A – Proposed Project Schedule
- Attachment B – Proposed Labor Cost Budget