



1202 Musser Street  
Muscatine, IA 52761-1645  
(563) 263-2752  
Fax (563) 263-3720

---

**WATER POLLUTION CONTROL**

**MEMORANDUM**

To: Gregg Mandsager, City Administrator

CC: Nancy Lueck, Finance Director  
Fran Donelson,

From: Jon Koch, WPCP Director

Date: March 17, 2016

Re: Biogas Phase 2 Feasibility Agreement for High Strength Waste Project

**INTRODUCTION:** The Phase 2 Feasibility Study is ready to proceed now that the High Strength Waste Receiving Project funding has been approved. Stanley Consultants, Inc. has proposed a Supplemental Agreement for this study at a cost of \$31, 080.00. \$30,000 was budgeted for this study. Several areas of scope have been reduced to bring the price of this study closer to the budgeted amount.

**BACKGROUND:** The Phase 2 study will follow up initial screening concepts for a High Strength Waste Receiving Station with the intention of producing a biogas that can be sold as renewable fuel or used to produce power. This Phase 2 study will include a “wasteshed” analysis that will identify waste producers seeking an alternative disposal of waste. This analysis will give a better indication of how much gas can be produced and the return on investment for further developing the biogas utilization project. Currently identified wastes and the need for FOG (Fats, Oils and Grease) disposal has allowed the project to proceed before this study was finalized, but additional waste streams and a more defined cost analysis of gas conversion and CNG potential is needed for future budgeting obligations.

**RECOMMENDATION/RATIONALE:** Staff recommends proceeding with the Biogas Phase 2 Feasibility Supplemental Agreement with Stanley Consultants, Inc. at a cost of \$31,080.00.



## SUPPLEMENTAL AGREEMENT NO. 1

This Supplemental Agreement, made and entered into by and between STANLEY CONSULTANTS, INC. (Consultant) and CITY OF MUSCATINE, IOWA (Client) amends their agreement of April 18, 2014 for Consultant to provide services to the Client for the Muscatine WWTP HSW Project, as follows:

### Scope of Services

Phase 1 Screening Study performed under the original agreement identified concepts for the High Strength Waste (HSW) receiving and processing facilities. The HSW project allows the City to receive HSW and utilize its existing anaerobic digesters to convert the HSW to renewable biogas fuel.

Client now wants to develop additional information for decisions concerning how to best use the biogas through the Phase 2 Feasibility Study.

### **BASIC SERVICES**

The Phase 2 study will include the following:

1. Perform a high level HSW desktop 'wasteshed' analysis develop potential quantities of Iowa-sourced HSW that are within 60 miles of Muscatine. Identify 12 leading substrate or renewable natural gas (RNG) providers with input from Client. Wasteshed analysis will include high and low HSW capture rates and potential biogas quantities.
2. Project high and low potential biogas production levels based on 1) use of the two newest anaerobic digesters 2) additional digestion volume comparable to existing 'older' digesters.
3. Prepare gas treatment concept for use of gas in direct-fire furnaces, co-generation equipment, bio-CNG system, or direct pipeline injection.
4. Evaluate the feasibility of compressed gas storage for better balancing seasonal gas production and demands.
5. Prepare cost analysis consisting of following:
  - a. Estimated capital cost for gas treatment, compressed gas storage, and bio-CNG system.
  - b. Estimated capital cost for conveyance work to use scrubbed biogas at direct fire furnace locations and gas-fired generator for co-generation.
  - c. Estimated administrative and annual O&M costs associated with the HSW receiving facilities provided by Client.
  - d. Estimated annual costs for gas treatment.
  - e. Estimated annual costs for bio-CNG, direct-fire furnaces, and gas fired generation equipment.
  - f. Overall 20 year life cycle cost incorporating capital and annual costs for even basis of comparison.
6. Prepare analysis of direct pipeline injection costs and return with renewable fuel/greenhouse gas credits.
7. Prepare analysis of bio-CNG for vehicle use with 2 or 4 station time fill system including costs and return with renewable fuel/greenhouse gas credits.
8. Prepare written summary of renewable fuels credit programs (RECS/LCFS/RFS) including range and budget estimates of credit values and estimated costs for cost of utilizing credits such as registration, marketing, management, and quality/audits.
9. Incorporate the results of a high level fleet conversion cost analysis for bio-CNG performed by others:
  - a. City fleet numbers including number of garbage trucks and buses, and annual city vehicle miles with separate breakouts for garbage collection trucks and buses.
  - b. Estimated conversion cost per garbage truck and per bus.
  - c. Cost analysis showing cost effectiveness, savings or costs, and rate or return.
10. Incorporate tipping fee information and write up from Client.
11. Prepare written report summarizing the results.

**ADDITIONAL SERVICES**

1. Survey of potential waste providers identified in wasteshed study.
2. Evaluation of wastes from potential waste providers for biodegradability and biogas potential.
3. Sampling and analysis of wastes from potential waste providers.
4. Older digester refurbishment costs.
5. Heating system refurbishment costs.
6. Temperature Phased Digestion conversion study.
7. Subconsultant site visits.

**Time of Beginning and Completion**

Anticipated schedule is March 2016 to June 2016.

**Fees and Payments****1. Compensation for Basic Services:**

Client shall compensate Consultant a Lump Sum amount of Thirty-One Thousand Eighty Dollars (\$31,080.00) for Basic Services described in this Supplemental Agreement.

**2. Compensation for Additional Services:**

Additional Services performed by the Consultant at Client's direction, shall be compensated on an Hourly basis for Direct Labor, Plus Reimbursable Expenses in accordance with the attached current "Hourly Fees and Charges 2016-2017" (Form BC\_C 16-17).

Except as specifically amended by this Supplemental Agreement, all the terms and conditions of the original Agreement dated April 18, 2014 shall remain in full force and effect.

IN WITNESS WHEREOF, the parties have caused this Supplemental Agreement to be executed on the date below indicated.

**STANLEY CONSULTANTS, INC.****CITY OF MUSCATINE, IOWA**

By: \_\_\_\_\_  
Mike Veal, Group Manager

By: \_\_\_\_\_

Date: \_\_\_\_\_

Date: \_\_\_\_\_

Attest:

Attest:

By: \_\_\_\_\_  
Jay Brady

By: \_\_\_\_\_