

AMENDMENT NO. 12 to  
ENGINEERING SERVICES AGREEMENT  
Engineering and Management Services to Obtain  
30% District-Wide Inflow Reduction (Project)  
Executed September 2, 2004

2017 and 2018 Flow Data Evaluation

This Amendment is by and between:

Heart of the Valley Metropolitan Sewerage District (Owner)  
801 Thilmany Road  
Kaukauna, WI 54130

and

Donohue & Associates, Inc. (Donohue)  
3311 Weeden Creek Road  
Sheboygan, WI 53081

Who agree to amend the original Agreement, as follows:

PART I – B. SCOPE OF SERVICES

This amendment is intended to provide services related to the annual evaluation of flow data from HOVMSD and individual communities collected in 2017 and 2018. Basic services to be provided by Donohue under this amendment will be for the authorized services identified as follows:

A. LANDFILL CORRECTION

1. Review landfill flow data available for up to 2 locations.
2. Develop a data collection plan required to develop volumetric analyses and unit hydrographs in response to rainfall.
3. Estimate previous year's landfill flows for up to 2 locations.
4. Remove landfill flows from current year antecedent moisture model analysis.
5. Update preceding six years' antecedent moisture model analyses to remove landfill flows.

B. ANNUAL PERFORMANCE REVIEW

1. Review performance indicators as follows:
  - a. Observations from the wastewater treatment plant.
  - b. Analysis of the clear water components of flow through the antecedent moisture model.

- i. Input valid rainfall data into the existing hydrologic model to evaluate clear water reduction by community for the previous 12 months.
  - ii. Isolate rainfall dependent inflow and infiltration (RDII) from previous 12 months' flow monitoring data.
  - iii. Compare modeled RDII to measured RDII to quantify overall reduction in RDII rates and volumes.
  - iv. Evaluation includes a quality review of the rainfall and flow data. Anomalies in the data will be discussed with the HOVMSD.
  - v. Update the trend-line analysis tracking each community's clear water reduction progress to date and rolling 3-year trend line.
2. Development of clear water components of flow required by the Wisconsin Department of Natural Resources (WDNR) Compliance Maintenance Annual Report.
3. Prepare Progress Report
  - a. Provide HOVMSD with a draft written summary memorandum.
  - b. Attend HOVMSD commission meeting to present the draft information.
  - c. Incorporate commission comments into the final memorandum and presentation.
  - d. Attend a joint HOVMSD and community meeting to present the final memorandum.

#### C. WDNR COORDINATION

1. Prepare brief technical memorandum of proposed model changes.
2. Communicate with DNR staff to get concurrence with proposed model changes.
  - a. Written statement of approval.

#### D. SYSTEM MODEL REVIEW FOR AREAS OF SIGNIFICANT INFLUENCE

1. Review data available.
2. Review collection system area and develop a data collection wish list to develop a more accurate model.

### PART I – C. PROJECT TIMING

This agreement is intended to provide yearly data analysis and reporting. The analysis of the flow and rainfall data will begin after January 1 of each year (January 1, 2018 for the 2017 data). A draft summary of the analysis will be presented to the commissioners at the March commission meeting in 2018 and 2019. The final report will be presented at a joint commission and community meeting in April of each year. Work related to Scope of Services item D will be complete within 60 days of notice to proceed.

### PART II – OWNER RESPONSIBILITIES

1. Provide 2017 and 2018 flow meter and rain gauge data.
2. Provide landfill flow data from the existing landfills in Kaukauna and Little Chute for the period of record. Flow totals shall be on a monthly or smaller time interval.
3. Provide hourly flow data from the existing landfills in Kaukauna and Little Chute for a period of no less than three months in the Summer/Fall of 2017.

PART III – A. COMPENSATION

Compensation as defined in the Scope of Services of this Amendment shall be in accordance with Donohue’s standard charge out rates in effect at the time the Services are performed. Routine expenses will be billed at cost. The cost for these basic Services for the Items as identified in Part I shall not exceed the following amounts identified as follows:

ANNUAL PERFORMANCE REVIEW WITH LANDFILL CORRECTION, DNR COORDINATION & DATA PLAN	
First year (2017) .....	\$55,700
Second year (2018) .....	\$22,100
Total amended amount Not to Exceed .....	\$77,800

APPROVED FOR OWNER

APPROVED FOR DONOHUE

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

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

Printed Name: \_\_\_\_\_

Printed Name: Edward S. Nevers, PE

Title: \_\_\_\_\_

Title: Senior Vice President

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

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

SUMMARY OF MODEL UPDATE ALTERNATIVES

BACKGROUND

In 2008, Donohue teamed with OHM to develop the current hydrologic model of the Heart of the Valley Metropolitan Sewerage District (HOVMSD) collection system, which includes sewer from five communities: Kaukauna, Kimberly, Little Chute, Combined Locks and Darboy. Donohue has utilized the original hydrologic model as a “benchmark” to predict how the system would have responded in 2008-2009 to today’s rainfall. I/I reduction to date has been calculated as the difference between simulated and observed I/I rates and an annual report prepared for distribution to HOVMSD and all member communities. After distribution of the 2016 report, some member communities raised the question of impacts of growing landfill leachate on the I/I analysis and if there was benefit to updating the model.

ALTERNATE DISCUSSION

Landfill Correction: Option B would provide the annual review based on the original model and include additional services to identify potential impacts caused by existing landfill properties within the District.

Advantages	Disadvantages
<ul style="list-style-type: none"> <li>Eliminate leachate flow from I/I analysis resulting in a more accurate representation of the remaining municipal system performance</li> </ul>	<ul style="list-style-type: none"> <li>Current data available is monthly. Additional flow monitoring and data collection is required in order to replicate rainfall flow impacts.</li> </ul>
<ul style="list-style-type: none"> <li>Utilizes current model</li> </ul>	<ul style="list-style-type: none"> <li>Would need to be applied retroactively to maintain I/I analysis historical comparison.</li> </ul>
<ul style="list-style-type: none"> <li>Lower cost</li> </ul>	
Option B Engineering Fee: \$56,700	

Model Rebuild: Option C would involve development of a new model based on current available data including corrections for landfill flows as described in Option B.

Advantages	Disadvantages
<ul style="list-style-type: none"> <li>Eliminate leachate flow from I/I analysis resulting in a more accurate representation of the remaining municipal system performance.</li> </ul>	<ul style="list-style-type: none"> <li>Additional costs to create and calibrate model.</li> </ul>
<ul style="list-style-type: none"> <li>Model would be created with a non-proprietary software.</li> </ul>	
<ul style="list-style-type: none"> <li>Model would generate a new “benchmark” for I/I analysis, representing the current collection system conditions resulting in a more accurate representation of the municipal system performance, improvements and deterioration, moving forward.</li> </ul>	<ul style="list-style-type: none"> <li>Additional flow monitoring and data collection is required in order to replicate rainfall flow impacts.</li> </ul>
<ul style="list-style-type: none"> <li>Can maintain historical comparison, by running the most recent data through both the current model and new model.</li> </ul>	<ul style="list-style-type: none"> <li>Land fill impacts would need to be applied retroactively to maintain I/I analysis historical comparison. (same as Option B)</li> </ul>
<ul style="list-style-type: none"> <li>All hydrology and hydraulics can run on same platform, expediting analysis computations and reducing future evaluation costs.</li> </ul>	
Option C Engineering Fee: \$108,600	
Option C Engineering Fee: \$129,700 (includes DNR coordination & data review)	

Per discussions at the August 8, 2017 HOVMSD Commission Meeting a middle ground alternate was identified as Option B+ and is discussed on the next page.

Landfill Correction, DNR Coordination, Data Collection for Potential Future Model Update: Option B+ would provide the annual review based on the original model and include additional services to identify potential impacts caused by existing landfill properties and also review and development of a needs list of other potential contributors within the District, as well as coordination with Wisconsin Department of Natural Resources (WDNR) regarding concurrence and approval of potential model change regarding I/I compliance plan.

Advantages	Disadvantages
<ul style="list-style-type: none"> <li>Eliminate leachate flow from I/I analysis resulting in a more accurate representation of the remaining municipal system performance</li> </ul>	<ul style="list-style-type: none"> <li>Additional flow monitoring and data collection is required in order to replicate rainfall flow impacts.</li> </ul>
<ul style="list-style-type: none"> <li>Utilizes current model</li> </ul>	<ul style="list-style-type: none"> <li>Land fill impacts would need to be applied retroactively to maintain I/I analysis historical comparison. (same as Option B)</li> </ul>
<ul style="list-style-type: none"> <li>Lower cost</li> <li>Identifies additional potential data collection locations and allows time for additional full year of data collection in 2018 for input into future model update.</li> </ul>	
<ul style="list-style-type: none"> <li>Provides assurance that WDNR will allow model platform change in compliance with approved I/I reduction program.</li> </ul>	<ul style="list-style-type: none"> <li>Additional costs to evaluate system and identify potential flow impact locations.</li> </ul>
<p>Option B+ Engineering Fee: \$77,800</p>	