SITE-SPECIFIC TREATMENT

SYSTEM MONITORING PLAN (TSMP)

BLUE WATER RENEWABLES, LLC

6779 Smiths Creek Road

Smiths Creek, Michigan 48193

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DTE Energy Resources, LLC

SITE-SPECIFIC TREATMENT SYSTEM MONITORING PLAN
LANDFILL GAS TREATMENT SYSTEM
BLUE WATER RENEWABLES, LLC
SMITHS CREEK, MI

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1.0 INTRODUCTION

1.1 Background

This site-specific treatment system monitoring (TSMP) was prepared to satisfy the requirements of the National Emissions Standards for Hazardous Air Pollutants (NESHAP) for municipal solid waste (MSW) landfills (40 CFR Part 63, subparts A and AAAA), more specifically Title 40 Code of Federal Regulations Part 63.1983(b)(5(ii). The purpose of the NESHAP is to prevent excess emissions of hazardous air pollutants (HAPs) during operation of the landfill gas collection system (LFGCS) and associated monitoring equipment. This Plan was specifically prepared for Blue Water Renewables, LLC (BLU) located at 6779 Smiths Creek Road, Smiths Creek, Michigan. The facility accepts landfill gas (LFG) from the Smiths Creek Landfill located at the same address.

This TSMP identifies site-specific filtration, de-watering and compression equipment at the BLU facility. This equipment is detailed herein. The TSMP further identifies appropriate monitoring parameters and acceptable operating ranges for these parameters. Finally, the TSMP identifies monitoring frequencies, corrective actions and recordkeeping/reporting requirements to satisfy the NESHAP requirements.

1.2 Site-Specific Components

The BLU facility performs the gas treatment of the landfill gas (LFG) in the process flow order of compression, de-watering, and then filtration. These site-specific processes include compression, de-watering and filtration.

1.3 Excluded Components

The following items are not included in the requirements of the NESHAP or this TSMP:

- Applicability of TSMP requirements for the Smiths Creek Landfill backup flare and associated blower skid is solely the responsibility of Smiths Creek Landfill and is not covered in this TSMP.

- Any equipment downstream of the final compression, de-watering and filtration system is not subject to the requirements of the NESHAP as only gas collection and control systems (GCCS) and associated treatment systems (i.e. compression, de-watering and filtration components).

2.0 COMPRESSION SYSTEM

The compression system at BLU occurs first in the flow of the LFG through the treatment system. The TSMP provides monitoring procedures and recordkeeping to ensure the proper operation of this system.

2.1 Site-Specific Compression Identification

LFG enters gas blower skid from a common header with compression provided via a multi-stage blower. This compression allows for proper combustion in the beneficial use devices following the treatment system.

2.2 Compression Monitoring Parameters and Acceptable Ranges

LFG compression at BLU is monitored continuously via PLC data in the control room. Compression levels below 2 psig to the combustion engines is unacceptable.

Proper compression is a necessity for proper operation of the combustion engines. Compression of gas less than 2 psig at the engine will cause an automatic shutdown of the engine. Landfill gas after engines shutdown is routed to the landfill owned destruction devices.

3.0 DE-WATERING SYSTEM

The de-watering system for the BLU facility follows the compression system in the LFG flow. The TSMP provides monitoring procedures and recordkeeping to ensure the proper operation of this system

3.1 Site-Specific De-Watering Identification

Initial de-watering of the raw LFG from the Smiths Creek Landfill occurs prior to the BLU compression system. LFG is routed through an inlet knockout tank which removes some condensate before entering the gas blower skid. Further moisture is removed by an aftercooler knockout tank. The condensate removed by these knockouts feed to a knockout pump. This pumps the condensate back to the Smiths Creek Landfill leachate/condensate treatment systems. The condensate flow is monitored by an hour meter.

3.2 De-Watering Monitoring Parameters and Acceptable Ranges

De-watering is best monitored by the knockout pump hour meter. The meter is checked and recorded weekly to ensure proper de-watering. Flow less than 10 gallons per week on average would indicate an issue with the system. Normal flow rates are much higher than this depending on the season and recent precipitation.

4.0 FILTRATION SYSTEM

Filtration of the LFG at the BLU facility is the final step in the gas treatment system. Again, the filtered gas ensures proper combustion for beneficial reuse of the LFG and protects downstream systems.

4.1 Site-Specific Filtration Identification

After de-watering the LFG is routed through the final coalescing filter. The coalescing filter feeds condensate to a mid-mainline knockout sump. The proper operation of the filter is confirmed by differential pressure less than 2 psid. After this point the LFG has completed the gas treatment process as defined by the NSPS and is acceptable for beneficial reuse.

4.2 Filtration Monitoring Parameters and Acceptable Ranges

Filtration is best monitored by the coalescer differential pressure. The differential pressure is checked and recorded weekly to ensure proper filtration. Differential pressure greater than 2 psid would indicate an issue with the system.

5.0 MONITORING ROLES, FREQUENCIES AND RECORDKEEPING

The TSMP should be kept as a record and made available to the US EPA or MI EGLE as requested. An example recordkeeping form containing the required recordkeeping information is included in Appendix A. Specific monitoring, monitoring frequency, roles and methods of monitoring/recordkeeping is outlined in the table below.

TSMP Component	Parameter Monitored	Minimum Monitoring Frequency	Acceptable Range	Range Justification	Recordkeeping Method	Responsible Role
Compression	Compressor Outlet Pressure	Weekly	>2 psig	Turbine Minimum Pressure To Avoid Flame Out	Technician Rounds	Facility Technician
De-Watering	Moisture Collection	Weekly	>10 Gallons Per Week	Initial Knockout and Aftercooler Knockout tanks Dewatering	Technician Rounds	Facility Technician
Filtration	Moisture Collection	Weekly	<2 psid	Filtration and moisture removing	Technician Rounds	Facility Technician

6.0 MODIFICATIONS

The TSMP must be periodically modified to reflect changes in the equipment, operations, or procedures. Revisions or modifications to the Plan do not constitute Title V air permit revisions. Previous versions of the TSMP should be available for inspection by the US EPA or the MI EGLE for five (5) years after the revisions are made. In order to track revisions or modifications to the plan, a summary table of revisions is included in Appendix B.

APPENDIX A

BLUE WATER RENEWABLES, LLC

TSMP Example Recordkeeping Form

Engine/Generator Performance Readings	Normal Value	#1 Engine	#2 Engine
Main Breaker KW to Edison	1280 - 3200		
Main Breaker Amps			
Main Breaker Volts	40590 - 45100		
Engine KW Set @	1250 - 1630		
Generator Amps			
Generator Volts	3827 - 4493		
Engine Hours			
Correction Factor (100 Prefered)	96 - 104		
Fuel Quality (Heating Value)	48-60		
Engine Fuel Temp. (deg F)	50 - 140		
Inlet AC Air Temp (deg F)	165 Max		
Manfd Air Press (PSI)			
Air Fuel Ratio	7.5 - 8.5		
Manfd Air Flow (SCFM)			
Fuel Flow (SCFM)			
Engine Oil Pressure (PSI)	55 - 85		
Engine Oil Diff. Pressure (PSI)	18 max		
Engine Oil Temp.(deg.F)	218 max		
Throttle Pos (%)	45 - 65		
Coolant Temp.(deg.F)	235 Max		
Turbo Temp. Out (L)	1140 Max		
Turbo Temp. In (L)	1100 - 1310		
Turbo Temp. Delta (L)	200 - 350		
Turbo Temp. Out (R)	1140 Max		
Turbo Temp. In (R)	1100 - 1310		
Turbo Temp. Delta (R)	200 - 350		
Battery Charger, Volts	25 - 28		
Battery Charger, Amps			
Crank Case Press. or Vacuum	-0.05 to -0.5		
Engine Oil Level	Mid Site Glass		
Day Tank Makeup Oil Level	1/4 - 3/4		
Oil Counter			
New Oil Tank Level			
AC Surge Tank Level	1/4 - 3/4		
Eng Radiator Surge Tank Level	1/4 - 3/4		
Coalescer Differential Pressure	2 psid max		

Blower 301 Skid		Blower Skid
Fuel Delivery Press.	2 PSIg	
% Methane (Ch4)	44 - 60	
% Balance		
% Oxygen (O2)		
% H2O		
Fuel Skid Inlet Vaccum (in. wc)	54" Max	
Fuel Skid Inlet Temp. (deg F)	130 Max	
KOP Cond Level (in.)	8" Max	
BLR 301 Vibration (IN/SEC)	0.25	
Cooler In Temp.	170 Max	
Cooler Out Temp	50 to 130	
Fuel To Engines Flow (SCFM)		
Flare 1 Flow (SCFM)		
Flare 2 Flow (SCFM)		
Flare Temp.		
Ambient Temp.		

Additional Comments

APPENDIX B

BLUE WATER RENEWABLES, LLC

Summary of TSMP Revisions

APPENDIX B

Summary of TSMP Revisions

Name of Person Revising Plan	Date of Revision	Page Number(s) Revised	Reason for Revision
Rob Sanch	07/29/2021	Ubiquitous	TSMP creation.