

CARLETON FARMS LANDFILL LANDFILL GAS TREATMENT SYSTEM PREVENTATIVE MAINTENANCE PLAN

Sumpter Energy Associates (SEA) operates the landfill gas to energy plant located at Carleton Farms Landfill (CFL), in Sumpter Township, Michigan. CFL is subject to the United States Environmental Protection Agency (USEPA), New Source Performance Standards (NSPS) Subpart WWW. The landfill gas is treated prior to combustion in the engines that generate electricity. The treatment system is owned by CFL, and is operated by SEA.

The following equipment are components of the treatment system:

1. Condensate/liquid knockout sump
2. Blowers for compressing the landfill gas
3. Air to Gas Cooler which cools the compressed gas
4. Primary and Final Pall filter to remove residual liquid and particulate

The following equipment and process components will be monitored by CFL each day that operators are onsite to verify that the system is operating properly. The information collected will be recorded on the attached form.

Condensate/Liquid Knockout Sump: The primary and final filters typically operate without noticeable condensate accumulation (no water is typically indicated to be present in the vessels). Noticeable water (condensate) accumulation is an indication that the upstream landfill gas de-watering equipment may have malfunctioned.

If condensate accumulation in the knockout vessels is greater than 75% (based on the water level indicated on chamber sight glass), the electricity generation processes will be shutdown to avoid condensate carryover through the subsequent components of the gas treatment system. An investigation of the equipment will be performed and corrective actions implemented.

Blower Discharge Pressure: The pressure at the discharge of the blower is measured with an analog pressure gauge. The landfill gas blower should be operated so that the minimum pressure observed on the discharge side of the equipment is at least three (3) pounds per square inch gauge (psig). Blower discharge pressures less than three (3) psig are an indication of problems with the gas compression system.

If the blower discharge pressure is less than three (3) psig, an investigation of the equipment will be performed and corrective actions implemented.

Pall Filter Differential Pressure: The pressure drop across each of the Pall filters is measured with a pressure differential switch. Large differential pressures (dP) indicate that the filters are wet or loaded with particulate matter and should be replaced. The dP at the primary Pall filter (vacuum side of blower) should be equal to or less than 40 inches of water. The dP at the final Pall filter (pressure side of blower and downstream of the gas cooler) should be equal to or less than 40 inches of water. If the pressure drop across the coalescing filters is greater than the specified values, the associated filter will be replaced.

The replacement filters will be of comparable design for critical air or gas service applications where high-efficiency removal of oil or water droplets and particulate solids is required. The filters are rated for particulate matter removal to 0.3 microns(μm).

Air-to-Gas Cooler Outlet Temperature: The temperature of the gas (fuel) at the outlet of the air-to-gas cooler is measured with an analog temperature gauge. The air-to-gas cooler is used to reduce the temperature of the fuel (which becomes elevated during the compression process). Outlet gas temperatures greater than 140°F are an indication of problems with the operation of the air-to-gas cooler.

If the outlet temperature of the air-to-gas cooler is greater than 140°F, an investigation of the equipment will be performed and corrective actions implemented.

Week Beginning: _____

**CARLETON FARMS LANDFILL
 LANDFILL GAS TREATMENT SYSTEM
 PREVENTATIVE MAINTENANCE PLAN
 MONITORING AND RECORDKEEPING DOCUMENTATION**

Daily Operating Parameters:

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Is condensate accumulation in the knockout vessel greater than 75% at the sight glass?							
Is blower discharge pressure at least 3 psig?							
Is the primary Pall filter dP less than 40" H₂O?							
Is the outlet gas temperature greater than 140°F?							

Weekly Preventative Maintenance Performed:

Supervisor Review: _____ Date: _____