

Municipal Solid Waste Landfill Gas Collection and Control System

Startup, Shutdown, and Malfunction Plan

Prepared in accordance with the:

**National Emission Standards for Hazardous Air Pollutants
40 C.F.R. §63.6(e)(3)**

Prepared for:

Facility: C&C Expanded Sanitary Landfill, LLC

Address: 14800 P Drive North
Marshall, MI 489068

Date: January 16, 2003

This document identifies the procedures for conducting startups, shutdowns or addressing malfunctions of the municipal solid waste landfill gas collection and control system in a timely and safe manner.

Revision: 4
Revision Date: 04/05/16



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1 INTRODUCTION

1.1 Purpose

The purpose of this plan is to fulfill the obligations set forth in the NESHAP for Municipal Solid Waste Landfills (40 CFR 63 Subpart AAAA) and to provide site personnel with a flexible plan to minimize emissions of hazardous air pollutants during startups, shutdowns or malfunctions. This document identifies the procedures for conducting startups, shutdowns or addressing malfunctions of the gas collection and control equipment or processes subject to this plan in a timely and safe manner. In addition, specific record-keeping and reporting procedures are described.

1.2 Excluded Sources

In order to properly document that the site personnel have followed the plan as required, a single form to document all start-up, shutdown, and malfunction (SSM) events has been prepared in a checklist format. Except as specifically excluded below, all components of the gas collection and control system as well as the continuous monitoring system for the control device(s) are to follow the SSM Plan:

The following items are excluded from this SSM Plan:

1. Exceedances at Individual Wells for Pressure, Oxygen or Nitrogen, Temperature.
2. Surface Emissions Monitoring Exceedances (readings 500 ppm or greater).
3. Portable and/or Intermittent Field Monitoring Equipment (i.e., GEM500, FID).
4. Shutdowns of the flare which are followed by successful re-start sequences. This is done automatically, and is part of the control device's normal operating procedures.
5. Temporary (less than five days) closure of control valves within the landfill gas collection system in order to isolate portion of the system for troubleshooting or maintenance.

1.3 Record Keeping and Reporting

Completed SSM forms must be kept in the site files for use in the semi-annual SSM Plan Report. Semi-annual SSM Plan reports will be submitted in accordance with Michigan Renewable Operating Permit Number MI-ROP-N2896-2011a.

This **Startup, Shutdown and Malfunction Plan** must be revised if the procedures described herein do not address or adequately address any startup or shutdown procedure or malfunction that occurs. Revisions to the plan must be discussed in the semi-annual SSM Plan Report.

A copy of the original plan and all revisions must be kept at the facility for at least five (5) years.

2 FACILITY DESCRIPTION

2.1 Facility Description

The C&C Expanded Sanitary Landfill, LLC. (C&C) is an existing affected source under 40 CFR 63 Subpart AAAA. C&C is an active landfill occupying approximately 223 acres. The landfill has installed and currently operates a Gas Collection and Control System (GCCS) at the facility. Landfill gas (LFG) is extracted from the landfill and conveyed to an enclosed flare or a gas-to-energy facility.

FMG-C&C Energy, LCC. (FMG) utilizes the LFG at a gas to energy facility for the production of electricity. FMG is a separate corporate entity, which has contracted with C&C to use the gas generated from the landfill in its landfill gas to energy facility. The gas to energy facility consists of a gas treatment system, internal engines, and a turbine.

One utility flare is used at the facility as back-up control devices to the gas to energy facility. The flare is owned and operated by C&C.

FMG owns and operates the landfill gas to energy plant at the facility. The internal combustion engines and turbine at the gas to energy plant operate continuously. The number of engines and turbines in operation at any one time is variable, and dependent on landfill gas flow and quality, demand and limit of outputs to the electrical grid, scheduled overhauls, or other routine maintenance.

2.2 Treatment System

FMG owns, operates and has permitted the landfill gas treatment system used to treat landfill gas prior to use in the internal combustion engines and turbine. The treatment system process prior to entering the plant for either the engines or the turbine involves: a compressor followed by an air cooler, a heat exchanger, a chiller that uses a refrigerant, a 10 micro coalescent filter. Due to the high pressure conditions in the treatment system, the chiller is only run intermittently. If the treatment system is not operational, the engines and/or turbine are not operational.

The operation of the treatment system is not covered by this SSM Plan.

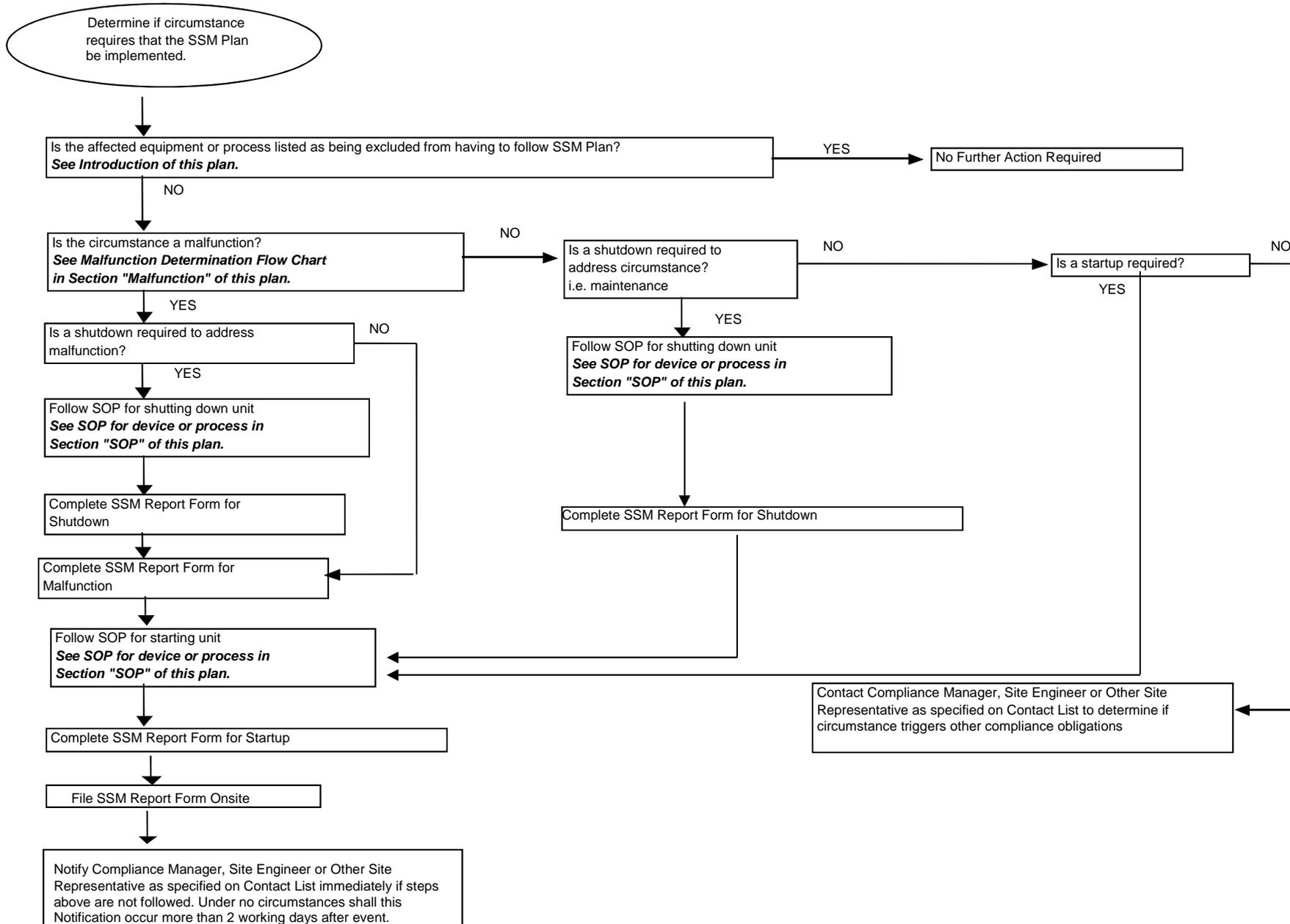
3 INITIAL ANNUAL/ANNUAL REPORT REQUIREMENTS

3.1 GCCS Operator Responsibilities

All persons or parties undertaking the operations or maintenance of the GCCS must adhere to procedures outlined in this SSM Plan as well as the standard operating procedures (SOP) for any start-up, shutdown, or malfunction defined in Section 4.0 of this plan. The following flow chart outlines the procedures to follow when the GCCS is not fully operational.

Startup, Shutdown, Malfunction Plan – Gas Collection and Control System Operator Responsibilities

All persons or parties undertaking the operations or maintenance of the gas collection and control system must adhere to the following procedures.



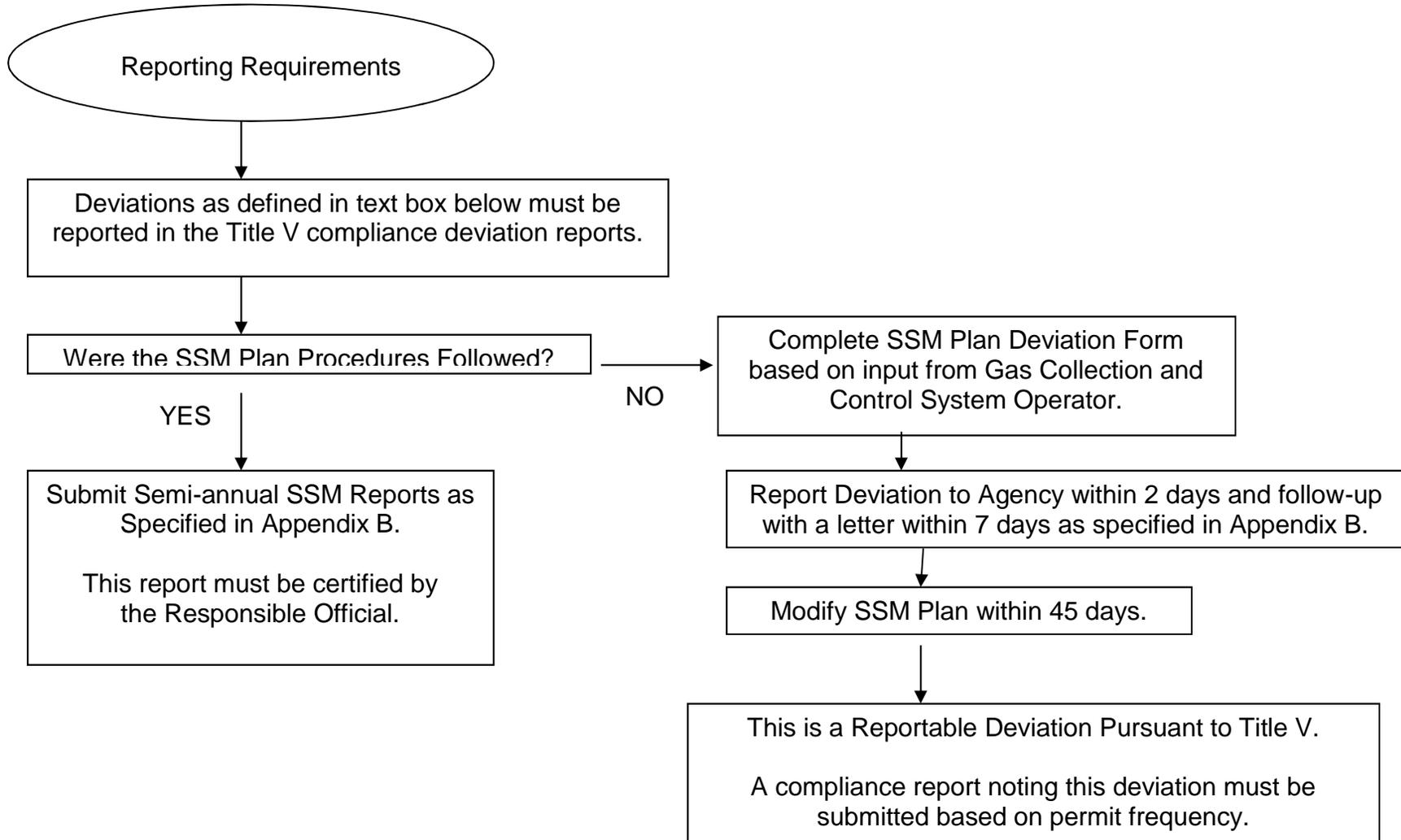
3.2 Compliance Manager/ Site Engineer Responsibilities

All persons or parties undertaking the reporting of deviations from the SMM Plan or the Title V permit must adhere to procedures outlined in this SSM Plan. The following flow chart outlines how to identify when reporting is necessary and procedures for reporting of deviations from the SSM Plan.

Startup, Shutdown, Malfunction Plan –

Compliance Manager/ Site Engineer Responsibilities

All persons or parties undertaking the reporting of deviations must adhere to the following procedures.



A **Deviation** Occurs When::

1. The control device operation parameter boundaries described in 40 CFR 60.758(c)(1) are exceeded, or
2. 1 hour or more of the hours during a 3-hour block averaging period does not constitute a valid hour of data. A valid hour of data must have measured values for at least three-13 minute monitoring periods within the hour, or
3. An SSM Plan is not developed, implemented, or maintained on site.

(40 CFR 63.1965)

3.3 CONTACTS

The following person(s) should be contacted (in order of priority) for any events requiring the implementation of the SSM plan. If unable to reach a person, contact next person on list:

	Title	Company	Office Phone No.
1	LFG Operations Manager	SCS	260-479-0737
2	Landfill Operations Manager	C & C Landfill	269-781-9742
3	Environmental Office	C & C Landfill	248-333-8654

The following person(s) should be contacted (in order of priority) if the SSM plan was not followed, the event resulted in the continued release of landfill gas to the air, or the event was not a malfunction, startup or shutdown as specified in the plan. If unable to reach a person, contact next person on list:

	Title	Company	Office Phone No.
1	Landfill Operations Manager	C & C Landfill	269-781-9742
2	Area Environmental Affairs	C & C Landfill	317-452-3032
3	Responsible Official	C & C Landfill	616-437-8412

4 STANDARD OPERATING PROCEDURES

4.1 Start-up SOP

A **Startup** means the setting in operation of an affected source or portion of an affected source for any purpose. (§63.2)

Standard Operating Procedure: Start-up

1. Ensure that there are no unsafe conditions present.
2. Contact Plant Operator in charge.
3. Ensure that the system is ready to start by one or more of the following:
 - a. Valves are in correct operating position.
 - b. Levels, pressures, temperatures are within normal starting range.
 - c. Alarms are cleared.
 - d. Power is on and available to control panel and energized equipment.
 - e. Emergency Stop is de-energized.
4. Initiate start sequence.
5. Observe that system achieves normal operating ranges for levels, pressures, and temperatures.
6. Refer to Operations and Maintenance Manuals if necessary.

4.2 Shutdown SOP

A **Shutdown** means the cessation of an affected source or portion of an affected source or portion of an affected source for any purpose. (§63.2)

Standard Operating Procedure: Shutdown

1. Ensure that there are no unsafe conditions present.
2. Contact Plant Operator in charge.
3. Initiate shutdown sequence by one or more of the following:
 - a. Press Emergency Stop if necessary.
 - b. Close On/ Off switch(es) or Push On/ Off button(s).
 - c. Close adjacent valves if necessary.
4. Observe that system achieves normal shutdown ranges for levels, pressures, and temperatures.
5. Refer to Operations and Maintenance Manuals if necessary.

4.3 Malfunction SOP

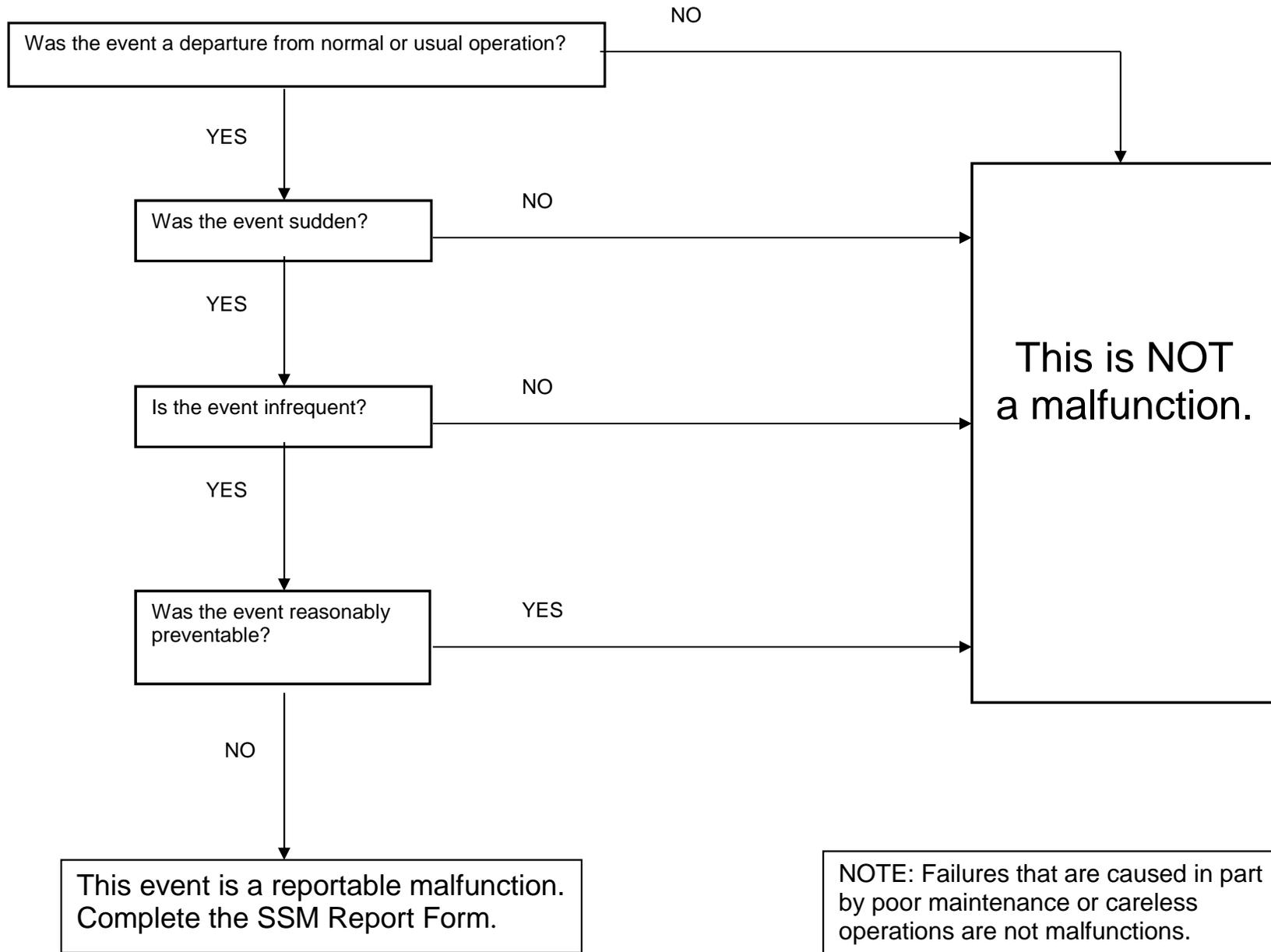
A **Malfunction** means any sudden, infrequent, and not reasonably preventable failure of air pollution control and monitoring equipment, process equipment, or a process to operate in a normal or unusual manner which causes, or has the potential to cause, the emission limitations in an applicable standard to be exceeded. Failures that are caused in part by poor maintenance or careless operation are not malfunctions. (§63.2, revised 5/30/03)

Standard Operating Procedure: Malfunction

1. Minimize/stop emission of landfill gas (if present).
2. Determine cause of malfunction.
3. Fix the malfunction.
4. Complete Section 1 and Section 2 of SMM Form. Duration is the time it takes from discovery of malfunction to Step 3 above (unless continuous monitoring records indicate malfunction started earlier).
5. Refer to the Operations and Maintenance Manuals if necessary.

The following flow chart is useful in identifying which events are considered reportable malfunctions. If an event is not considered a reportable malfunction, it may still be considered a reportable deviation per the facility's Renewable Operating Permit.

Is this event a malfunction?



4.4 SSM Form

All reportable start-up, shutdown, and malfunction events must be documented. The following SSM Report Form is recommended. Section 1 must be completed for all events. Section 2 must also be completed for malfunction events. The back of the form contains event codes. If the proper event code is not available, use event code 99 and describe the event. When completed, the form must be signed and dated. A copy of this form must be kept on file for all events for at least five years. The SSM Report Forms will be used to assist in the preparation of the semi annual SSM Plan reports.

Startup/Shutdown/Malfunction Report Form

Section 1 - All Events

Type of Event	Military Time		Duration (hours)	Event Code (see back of form)	SOP* Followed?	
	Date/Time Start	Date/Time End			Yes	No**
<input type="checkbox"/> Startup						
<input type="checkbox"/> Shutdown						
<input type="checkbox"/> Malfunction					Complete Section 2 Below	

Date Form Filled Out: _____ Signature: _____

* Standard Operating Procedure (SOP) for Flare Startups (Manual & Automatic) and Shutdowns are provided in SSM Plan

If SOP in SSM Plan was not followed, **notify personnel on "Contact List".

Section 2 - Malfunction Events Only

		<input checked="" type="checkbox"/> Check one of the following for each step:	
Step	Corrective Action Procedures for All Malfunctions	Procedure completed	Procedure Not Applicable
1.	Determine if landfill gas is being released to the air (can you smell landfill gas, or measure/detect gas flow?).	<input type="checkbox"/>	
2.	If landfill gas is being released to the air, notify personnel on "Contact List".	<input type="checkbox"/>	<input type="checkbox"/>
3.	Determine if the malfunction is causing an unsafe operating condition (air entering landfill or piping, smoking, vibration, or other problem), which may harm people, the environment or the landfill gas control equipment.	<input type="checkbox"/>	
4.	If unsafe operating condition exists, or landfill gas is being released to the air, stop (if possible) landfill gas flow .	<input type="checkbox"/>	<input type="checkbox"/>
5.	If Control device or other system component is shutdown, follow Shutdown SOP and Complete Section 1 - "Shutdown".	<input type="checkbox"/>	<input type="checkbox"/>
6.	Determine if other personnel/resource (qualified technician, electrician, consultant or other) are needed for malfunction diagnosis.	<input type="checkbox"/>	
7.	If additional personnel needed, notify qualified personnel: a. Record contact name, date and time: _____ b. Contact site representative with information recorded in #7.a.	<input type="checkbox"/>	<input type="checkbox"/>
8.	Start malfunction diagnosis.	<input type="checkbox"/>	
9.	Determine if other resources are needed to fix the malfunction (qualified technician, electrician, contractor, on-site resources, manufacturer's representative, or other).	<input type="checkbox"/>	
10.	If additional resources needed, contact qualified resource: a. Record contact name, date and time: _____ b. Contact site representative with information recorded in #10.a.	<input type="checkbox"/>	<input type="checkbox"/>
11.	Fix the malfunction.	<input type="checkbox"/>	
12.	Once the malfunction is fixed, re-start the system per SOP if it had been shut down, and record start-up times and dates in boxes in Section 1 of this form.	<input type="checkbox"/>	<input type="checkbox"/>
13.	Record date that malfunction occurred, date that malfunction was repaired, and total time that system was out of service in boxes in Section 1 of this form.	<input type="checkbox"/>	
14.	Sign this form and place it in the Start-up, Shutdown, Malfunction file.	<input type="checkbox"/>	
15.	If the procedures listed above were not followed, notify personnel on "Contact List" .	<input type="checkbox"/>	<input type="checkbox"/>

EVENT CODES



For Start-ups and Shutdowns:

Startup: *The setting in operation of an affected source or portion of an affected source for any purpose.*

Shutdown: *The cessation of operation of an affected source or portion of any source for any purpose.*

<u>Code</u>	<u>Event</u>
1	Maintenance
2	Suspected Collection System Malfunction
3	Suspected Control Device Malfunction
4	Suspected Continuous Monitoring System Malfunction (Temperature/Flow/Other)
5	Training
6	Gas System Construction/Expansion
7	Suspected Treatment System Malfunction
99	Other (Describe) _____

For Malfunctions:

Malfunction: *Any sudden, infrequent and not reasonably preventable failure of air pollution control equipment, process equipment, or a process to operate in a normal or usual manner. Failures that are caused in part by poor maintenance or careless operation are not malfunctions.*

10	Automatic shutdown of control device by designed protective systems
11	Auto-dialer callout
12	Shutdown alarms that result in the device not shutting down
13	Unalarmed shutdown
14	Control device smoking
15	Inspection identified malfunction
16	Loss of power - utility down
17	Loss of power - unknown
18	Damaged Well, Header or Lateral Piping
19	Leaks at wellheads, valves, flanges, test ports, seals, couplings, etc.
20	Condensate knock-out problems
21	Collection piping blockages
22	Problems due to settlement
23	Loss of phase
24	Blower overload condition
25	Blower bearing failure
26	Broken belts (if belt-drive) or broken coupling (if direct-drive) in blower
27	Continuous Monitoring System Malfunction - Thermocouple
28	Continuous Monitoring System Malfunction - UV Scanner
29	Continuous Monitoring System Malfunction - Flow Monitor
30	Continuous Monitoring System Malfunction - Flow Recorder
31	Continuous Monitoring System Malfunction - Temperature Recorder
32	Act of God (i.e., lightning, wind, etc.)
99	Other (Describe) _____

APPENDIX A
SSM PLAN REVISION HISTORY

SSM Plan Revision History

This SSM Plan will be amended if equipment or processes are added that are not covered under the plan or will be revised within 45 days of non-conforming events if the procedures described herein do not adequately address any malfunction or start-up/shutdown events that occur at the facility. A copy of the original plan and all revisions/addendums will be kept on file at the facility for at least five (5) years.

Date of Revision	Reason For Revision
10/28/2009	Updating facility name, permit number, phone numbers, on-site equipment, equipment covered by this plan.
06/30/2010	Updating phone numbers, logos, and SSM form.
06/30/2014	Updated facility description and phone numbers.
04/05/2016	Updated phone numbers

APPENDIX B
**GENERAL NESHAP RECORD KEEPING
AND REPORTING REQUIREMENTS**

Recordkeeping Requirements of the Landfill NESHAP

1. Keep current SSM plan on site
2. Keep previous versions of revised SSM plans for five years
3. Maintain records of the following for each SSM event:
 - a. Occurrence and duration of start-up, shutdown or malfunction of operation (i.e. process equipment)
 - b. Occurrence and duration of each malfunction of the required air pollution control and monitoring equipment
 - c. All required maintenance performed on the air pollution control and monitoring equipment
4. Actions taken during SSM events, when such actions are different from those specified in the SSM plan
5. Demonstration of conformance of SSM events with site's SSM plan (information needed to demonstrate conformance with the SSM plan may take form of a checklist)
6. Each period during which a CMS is malfunctioning or inoperative
7. All required measurements needed to demonstrate compliance with a relevant standard (i.e. temperature and flow measurements)
8. All results of performance tests, CMS performance evaluations, and opacity and visible emissions observations
9. All CMS calibration checks
10. All adjustments and maintenance performed on CMS
11. Any information demonstrating whether a source is meeting the requirements for a waiver of recordkeeping or reporting requirements

Semiannual SSM Plan Reports

(Must be submitted by within 30 days of end of period or in accordance the facility's Title V permit.)

1. Letter report containing the name, title, and signature of the owner or operator or other responsible official who is certifying its accuracy.
2. If actions taken during an SSM event are consistent with procedures specified in the SSM plan, the owner/operator shall state this in the report.
3. If actions taken during an SSM event are not consistent with procedures specified in the SSM plan, but source did not exceed any applicable emissions limitation in the relevant emissions standard, then the semiannual report must include the following:
 - a. Number of malfunctions
 - b. Duration of malfunctions
 - c. Description of malfunctions
4. If the SSM plan was revised during the reporting period, to reflect changes in equipment or procedures at the affected source, this must be reported in the semiannual report.

Immediate Notification Reports

(Triggered if actions taken during an SSM event were not consistent with procedures specified in the SSM plan, AND the source exceeds the relevant emissions standard)

1. Record the actions taken for the event.
2. Report such actions to the Department within 2 working days after commencing actions inconsistent with the plan.
3. Follow up verbal report by a letter within 7 working days after the end of the event, in accordance with 40 CFR 63.10(d)(5).
4. Revise the SSM plan within 45 days of the non-conforming event.

APPENDIX C

SAMPLE NESHAP REPORT LETTERS AND NOTIFICATION FORMS

Startup, Shutdown, and Malfunction Plan Deviation Report

Facility: _____

Date Form Completed: _____

Unit ID: _____

Event: *check the appropriate box.*

Startup

Shutdown

Malfunction

Date: _____

Time: _____

Duration: _____

Provide detailed explanation of the circumstance of the startup, shutdown, malfunction:

Provide description of corrective action:

Describe the reasons the Startup, Shutdown, Malfunction Plan was not adequate:

Describe proposed revisions to the Startup, Shutdown, Malfunction Plan:

Were any excess emissions and/ or parameter monitoring exceedances believed to have occurred during the event? *check the appropriate box.*

Yes

No

Name: _____

Title: _____

Signature: _____

Sample Semiannual Report Letter
(All SSM Events in Compliance with the SSM Plan)

Date

Air Agency Address

RE: Semiannual Startup, Shutdown, Malfunction (SSM) Plan Report
XXXXXX Landfill
Facility Title V Operating Permit No.
Reporting Period: _____ to _____

Dear _____:

The XXXXXX Landfill is subject to the National Emissions Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills (Landfill NESHAP – 40 CFR 63 Subpart AAAA). The NESHAP requires that a report be submitted on a semiannual basis, a report be submitted to the Administrator discussing the facility’s compliance with the procedures in their SSM Plan, during SSM events (40 CFR 63.10(d)(5)).

The actions taken at the facility during all SSM events, for the reporting period listed above, were consistent with the procedures listed in the SSM Plan at the facility.

During the reporting period listed above, there (were/were not any) revisions made to the SSM Plan at the facility. (If changes were made, state why – revised to reflect new equipment, new contact numbers, etc.).

If you have any questions regarding this Semiannual SSM Plan Report, please contact me at (List Phone Number).

Sincerely,

XXXXXXXXXXXXXXXXXXXX
(NAME OF COMPANY/TITLE HERE)

Attachment: MDEQ C-001 Form

(ATTACH A COMPLETED MDEQ C-001 FORM TO THIS REPORT)

Sample Semiannual Report Letter
(One or more SSM Events NOT in Compliance with the SSM Plan)

Date

Air Agency Address

RE: Semiannual Startup, Shutdown, Malfunction (SSM) Plan Report
XXXXXXXXXX Landfill
Facility Title V Operating Permit No.
Reporting Period: _____ to _____

Dear _____:

The Facility Name Landfill is subject to the National Emissions Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills (Landfill NESHAP – 40 CFR 63 Subpart AAAA). The NESHAP requires that a report be submitted on a semiannual basis, a report be submitted to the Administrator discussing the facility's compliance with the procedures in their SSM Plan, during SSM events (40 CFR 63.10(d)(5)).

The actions taken at the facility during one or more SSM events, for the reporting period listed above, were not consistent with the procedures listed in the SSM Plan at the facility. However, the source did not exceed any of the emissions limitations in the Landfill NESHAP during these events. The attached table lists the information that must be submitted in the Semiannual SSM Plan Report in this instance.

During the reporting period listed above, there were ____ revisions made to the SSM Plan at the facility. (If changes were made, state why – revised to reflect new procedures to address non conforming event (mandatory), new equipment, new contact numbers, etc.).

If you have any questions regarding this Semiannual SSM Plan Report, please contact me at (List Phone Number).

Sincerely,

XXXXXXXXXX

(NAME OF COMPANY/TITLE HERE)

Attachment: Description of all Malfunction Events
MDEQ C-001

(ATTACH A COMPLETED MDEQ C-001 FORM TO THIS REPORT)

**Sample Immediate Notification Letter
(SSM Events NOT in Compliance with the SSM Plan, and Facility
Experienced Excess Emissions)**

Date

Air Agency Address

RE: XXXXXXXXX Landfill
Facility Title V Operating Permit No.
40 CFR 63 Subpart AAAAA – Landfill NESHAP
Immediate Notification Report: Non-conforming SSM Event

Dear _____:

The XXXXXXXX Landfill is subject to the National Emissions Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills (Landfill NESHAP – 40 CFR 63 Subpart AAAAA). 40 CFR 63.10(d)(5) of the NESHAP requires that if actions taken at the facility during a startup, shutdown or malfunction (SSM) event are not consistent with the facility's SSM Plan, and the event results in excess emissions, the Agency must be notified verbally within 2 working days after the actions are taken. A letter must be written within 7 days of the event.

Please consider this letter as the required written report for the SSM event that occurred at the facility on (list date). As required by the NESHAP, a verbal notification was made to (give name of agency, person talked to) on (list date).

In accordance with the NESHAP, the following information is required in the letter report for this event:

Record the actions taken for the event: Describe what occurred, what was done, and how it differed from the SSM plan actions.

Describe excess emissions: Discuss the type of emission, and where it came from

Revise the SSM plan within 45 days of the non-conforming event:

Give a date by which the SSM plan will be revised.

If you have any questions regarding this Immediate Notification Report, please contact me at (List Phone Number).

Sincerely,

XXXXXXXXXX
(NAME OF COMPANY HERE)

Attachment: MDEQ C-001

(ATTACH A COMPLETED MDEQ C-001 TO THIS REPORT)

APPENDIX D
LANDFILL NESHAP REGULATIONS

APPENDIX E
STATE SPECIFIC SSM REQUIREMENTS

**THERE WERE NO STATE SPECIFIC REQUIREMENTS AT THE
TIME THIS SSM PLAN WAS DEVELOPED.**