ODOR MANAGEMENT PLAN

Bridgeton Landfill
13570 St. Charles Rock Road
Bridgeton, Missouri

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1.0 INTRODUCTION

1.1 BACKGROUND

The Bridgeton Landfill (the landfill or the Site) is located on a 214-acre parcel, of which approximately 52 acres has been permitted for municipal solid waste disposal under the conditions of Permit #118912 held by Bridgeton Landfill, LLC ("Bridgeton Landfill"). In accordance with the permit, waste was placed in former limestone quarries which were reportedly about 240 feet deep. The landfill ceased accepting waste at the end of 2004.

1.2 PURPOSE OF THE ODOR MANAGEMENT PLAN

This Odor Management Plan is intended to become an integrated part of daily operations at the Bridgeton Landfill so as to effect diligent identification and remediation of odors generated by the Bridgeton Landfill.

2.0 ODOR MONITORING

This odor monitoring program has been designed to provide guidance in the identification and documentation of odors through the utilization of self-inspections and odor complaint investigations. In addition, this program outlines the general methods by which odor sources can be identified and resolved.

2.1 IDENTIFYING THE PRESENCE OF ODOR

The first step in the process of controlling odors is to determine if odors are present. These two methods of identifying odors and how they are implemented as part of this Odor Management Plan are discussed in the following sections.

Routine Employee Observations

When any on-site facility employee detects an odor that has sufficient intensity or volume that it could lead to detection off-site, it will be reported to an Environmental Specialist or the Environmental Manager who will investigate to determine the source. The investigator will then assign the proper staff to restore the source area to normal operation to eliminate the odor source. Such on-site investigation, reporting, and remediation are inherent components of the site's standard operating procedures.

Self-Inspection

The primary objective of this method is to identify and mitigate odors from the facility before the odors can result in off-site migration. This is accomplished through the use of regular self-inspections. The self-inspection will be performed at random times with daily and weekly variability until meaningful trend data is collected in order to ensure that trending data is not biased by a pattern in self-inspection. This schedule will then be modified over time in order to include periods of highest historic off-site odor complaints when trending analysis of complaint data allows for the identification of patterns for off-site odor migration potential.

Self-inspection at the facility will be performed on a twice daily basis at minimum. The inspection will be performed by the Site environmental management staff or their designees. The inspection will consist of one or more of these individuals touring the facility perimeter along a pre-planned and consistent route (Figure 2). The focus of this inspection is limited specifically to the tasks detailed in this plan.

Detected odors will be classified with the scale defined by the Nasal Ranger® Field Olfactometer Operations Manual (Attachment 1). This method with accompanying instrument utilizes a "Dilution-to-Threshold" approach where a combination of carbon filtration and unfiltered air pass through the instrument based upon the test value selected on the instrument. These values are separated by 100% carbon filtered air from one another on the device, ensuring a "blank" sample in the progression through the scale. The exact methodology that will be applied is outlined in the previously mentioned Operations Manual (Attachment 1).

In addition to the Nasal Ranger® odors will be classified using the standardized terminology outlined in the St. Croix Odor Parameters Overview (Attachment 2).

The results of the daily odor inspection will be documented in an electronic database via tablet computer. This data shall be completed and maintained as part of the Site Operating Record (SOR). Any odors identified through self-inspection will be mitigated in accordance with the guidance for mitigation provided in the Operations, Maintenance, and Monitoring Plan. The process of self inspection will be as follows:

- Originating from The Bridgeton Landfill, LLC office at 13570 St. Charles Rock Road the inspecting party will drive the designated route from Figure 2 in a clockwise direction.
- This drive shall be performed with windows down (weather dependent) at a slow rate of speed.
- At each of the thirteen (13) designated locations the inspecting party will stop (where safe and in compliance with all traffic laws), turn off the vehicle engine, exit the vehicle, and record any odor observations on the Daily Odor Self-Inspection Form.
- If an odor is documented the investigator will be responsible for tracking back to the source of the odor. If the odor source is determined to be the Bridgeton Landfill the investigator will then request the necessary repair or mitigation. All significant off-site odors (odors evaluated to be >7 on the Nasal Ranger® scale) originating from the Bridgeton Landfill are to have the source and corrective action applied documented.

Odor Complaint Investigation

One of our goals as a company is to be a good neighbor and a contributor to the local community. All real-time odor complaints received will be investigated as soon as is practical within the confines of proper safety protocols and site logistics. A real-time odor complaint is defined as a complaint filed within two hours of the observation time and prior to any significant change in meteorological conditions. The goal of the investigation will be to determine if an odor originates from the landfill site and, if so, to determine the specific source and cause of the odor, and then to remediate the odor. Upon receipt of an odor complaint, the following actions will be taken:

- The complaint will be investigated by the Site environmental management staff.
- The investigation will be documented in a customized electronic database via tablet and will apply the same odor ranking scale as the self-inspection.

- If a complaint is verified (the Bridgeton Landfill investigator confirms that an odor is present and that the landfill cannot be ruled out as a source), the investigator will be responsible for tracking back to the source of the odor, requesting the necessary repair or mitigation, and documenting that the mitigation has occurred.

All off-site odor complaints will be logged in order to provide data for trending analysis of odor complaints in order to better schedule self-inspections and understand potential site problems.

Complaints that are received greater than one hour after the specified time, prior to a significant change in meteorological conditions, or on a different date will be investigated as non-real-time complaints. Non-real-time complaints and real-time complaints received during periods when real-time investigation can not be conducted for safety or site logistics restrictions should still be investigated through a combination of most recent inspection data, weather data, and site work schedules in order to determine if the odor could possibly have originated from the Bridgeton Landfill.

Equipment for Odor Inspection and Investigation

The transmission of odor depends on a number of variables including atmospheric conditions. As a result, an on-site weather station compliant with the EPA Ambient Monitoring Guidelines for Prevention of Significant Deterioration (PSD) (EPA-450/4-87-007) will be employed to track wind direction, windspeed, humidity, precipitation, and other factors that can impact odor transmission. Data from both inspections and investigations will be recorded via tablet computers equipped with custom built software. This software will automatically log latitude and longitude from the tablet computer's built in GPS device and weather data from the nearest public meteorological station, most likely to be Lambert International Airport. The combination of two different weather station data sets and accurate latitude and longitude data will greatly enhance the mapping and analysis of odor sources.

2.2 IDENTIFYING THE SOURCE OF ODOR

Once the presence of odor is identified through either self-inspection or through investigation of an odor complaint, the source of the odor needs to be identified and coded based on the odor

descriptors selected during the self-inspection. The source of an odor may not be readily identifiable. If the source of the odor is not obvious and cannot be traced immediately to an issue or activity at the facility, the following steps may be used to identify the source of the odor:

- Use data from the on-site weather station. Determine the wind direction, speed, and barometer reading at the time the odor was identified.
- Collect daily facility inspection data from the Site's environmental technician staff.
- Using an aerial photograph or plan of the facility, draw a vector in the same direction as the wind, and intersect the location where the odor was identified. If the vector crosses the facility and the facility is in an upwind position compared to the location where the odor was identified, then determine the facility features and activities that lie along the vector. Compare the identified odor to any potential odor sources along the vector path and then inspect these potential odor sources in the field to identify the source.
- Collaborate with Site environmental technician staff to prioritize repair and remediation efforts on potential sources of off-site odor.
- Perform a follow up self-inspection of the previously impacted areas to verify successful elimination of off-site odors. If not eliminated, repeat this process at varying times of the day, under varying operational conditions, and with varying wind directions until the source of the odor is identified and repaired or remediated.

2.3 ODOR MANAGEMENT

Odor management and landfill gas management are inter-related. Odor management, for purposes of this Plan, will be the temporary measures employed during any work activity at the site that might generate odors such as excavation, significant well maintenance, etc.

Odor Management During Excavation

Any or all of the following may be used to manage odors during excavations into waste material:

- Minimize aerial extent of excavation to the extent required to maintain safe working conditions.
- If necessary, install a portable odor control unit near the excavation site, and install a 1,500 gallon water tank on a suitable pad.

- Use odor control neutralizers at a suitable concentration during the excavation and backfilling process. The concentration can be adjusted as necessary to achieve acceptable neutralization and to more fully neutralize aggressive odors.
- Adjust concentrations and nozzle spacing as necessary during the activities to neutralize the odors.
- During the backfill process, the neutralization process can be discontinued once more permanent landfill gas extraction methods are employed in this area; otherwise maintain neutralization until backfill is completed.

Odor Control During Transportation of Excavated Wastes

Any or all of the following may be used to manage odors during transportation of excavated waste material:

- In most cases, excavated wastes will be placed in a roll-off container or dump truck to transport to the Bridgeton transfer station. The container or dump truck will be tarped following placement of waste.
- The waste may be covered with an odor control product in the container used for transport, when applicable. If wastes require mixing, then a product can be applied following mixing if odors persist from these waste materials. The producer must be applied to completely cover the wastes with a thin coating.

Odor Management During Gas Emission Activities

Any or all of the following may be used to manage odors during activities that cause gas emissions:

- The wind location will be monitored during the course of the work to determine if odor modification (neutralizers) should be utilized.
- Install a portable odor control system downwind of the work area.
- Use an odor control neutralizer at a suitable concentration during the excavation and backfilling process. The concentration can be adjusted as necessary to achieve acceptable neutralization and to more fully modify aggressive odors.

2.4 REQUIRED DOCUMENTATION

In order to successfully measure the effectiveness of odor remediation, trend the causes of odors, document complaint follow-up, and focus our efforts on the best possible solutions for odor management, it is necessary to create and maintain proper documentation. This documentation should consist of an electronic database for odor self-inspections and odor complaint investigations, odor mitigation efforts, and the transference of this data into the Site Operating Record.

Electronic Database

In order to optimally track and analyze odor self-inspection and complaint investigation data these tasks will be performed through use of a tablet computer. Data will be logged in the field through a forced choice procedure to ensure uniformity in documentation. This data set will be designed with a compatible format to allow for export of the data into Microsoft Excel® or similar data management software.

Odor Mitigation Efforts

When off-site odors necessitate the implementation of the odor mitigation and control practices outlined in section 2.3 of this plan the effectiveness of these methods will be evaluated and documented for use by the management staff in determining the effectiveness of each method.

In the event that a mitigation method is attempted and found to be ineffective, another mitigation method must be attempted and/or outside experts must be contacted until the facility is successful in controlling odor. The decision-making process in choosing a method to control odor should also be documented. In documenting mitigation efforts, the following information must be recorded:

- The reasoning used in selecting the mitigation process.
- The manner and extent to which the mitigation efforts are made.
- The results of the mitigation effort.

Recording these details may be done through memorandum to the Site Operating Record (SOR).

Site Operating Record

Whenever the daily odor self-inspection or odor complaint investigation is performed, the appropriate document should be completed and maintained on site as part of the SOR. In addition to maintaining these documents in the SOR, all efforts to mitigate odors must be documented in detail. It is important to document all efforts taken to mitigate odors whether or not there have been complaints from the public. The SOR is available for MDNR review per request.

2.5 TERM OF MONITORING

Bridgeton Landfill will perform the odor monitoring program for a period of six months upon acceptance of this Plan. Every 90 days thereafter the Environmental Manager and MDNR will review the results of monitoring and consider modification or discontinuation of the program if actionable results are no longer obtained.