



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 4  
ATLANTA FEDERAL CENTER  
61 FORSYTH STREET  
ATLANTA, GEORGIA 30303-8960

September 6, 2022

Mr. Matt Einsmann, PE  
Environmental Manager  
Republic Services of North Carolina, LLC  
East Carolina Regional Solid Waste Landfill  
1922 Republican Road  
Aulander, North Carolina 27805

Dear Mr. Einsmann:

This is in response to your letter request of November 19, 2021, to the North Carolina Division of Air Quality (NC DAQ) which proposed a landfill-gas higher operating temperature value (HOTV) for one landfill gas (LFG) extraction well (EW-71A) located at the East Carolina Solid Waste Landfill (the Landfill) - Title V Permit #08849T08, in Aulander, North Carolina. This request was forwarded by the NC DAQ to EPA Region 4 on May 13, 2022. Based on the information presented in your request, the landfill is subject to Title 40 CFR Part 63, Subpart AAAA, National Emission Standards for Hazardous Air Pollutants: MSW Landfills.

On June 21, 2021, the U.S. Environmental Protection Agency promulgated the Federal Plan, Title 40, Code of Federal Regulations (CFR), Part 62, Subpart OOO - Federal Plan Requirements for Municipal Solid Waste Landfills that commenced construction on or before July 17, 2014, and have not been modified or reconstructed since July 17, 2014. In the absence of an approved state plan implementing Title 40 CFR Part 60, Subpart Cf, Emission Guidelines and Compliance Times for Municipal Solid Waste Landfills, or an approval transferring delegation of authority to a state to administer the Federal Plan, the EPA is required to act as the Administrator of the Federal Plan. As a result, Subpart OOO also applies to the landfill.

Based on the information you provided, and other information available to the EPA, a well specific LFG HOTV of 137 °F is approved for well (EW-71A) for the purposes of Subpart OOO. Details regarding the basis for our determination are provided in the remainder of this letter.

**Summary of Basis for HOTV Request as Submitted by Company**

“Based on our review of the monitoring data, historical conditions, analyses at surrounding wells, and our experience operating the LFG collection and control system at this site, we offer the following observations as demonstration and supporting data for requesting this HOTV:

- The potential for subsurface fire, combustion, or aerobic conditions is unlikely given the low oxygen levels (generally less than 1 percent by volume) and other LFG composition characteristics. No evidence of subsurface fires, such as burning odors, significantly elevated CO concentrations (greater than 1,000 ppm) in the absence of hydrogen, visible smoke, or discrete

areas of dramatic differential settlement have been observed by either the landfill owner or the LFG system operator in the vicinity of this one well. In addition, technicians working at the site have not noticed any evidence of melted well riser piping or smoke that would indicate the presence of a subsurface fire at this wellhead.

- The historical temperature data recorded at this well is fairly uniform and consistent, which implies the wellfield is well balanced. Although the temperature values often exceed 55°C (131°F), the observed temperatures are considered to be within the range that facilitates thermophilic microbial metabolism and/or other types of chemical or bio-chemical processes that are occurring within the waste mass.
- At certain wellheads, the LFG system operator often throttles back on the wellhead valve and thereby restricts the LFG recovery quantities from this one extraction component in an attempt to maintain compliance with the NSPS temperature threshold. This is contrary to the Facility's objective of maximizing LFG collection rates and enhancing the LFG system's effectiveness. Granting a temperature HOV at this wellhead will enable the operator to potentially increase the LFG flowrates at this well and extract the LFG being produced (acknowledged to be characterized by elevated temperatures) which may spread to other locations if not extracted.
- The Facility will continue to monitor the methane to carbon dioxide ratio at this one wellhead to consistently evaluate subsurface conditions at this well and surrounding wells.
- Without this one well, the LFG system coverage in this portion of the waste mass would not be as comprehensive as other regions of the Landfill.”

### **Requested Higher Operating Value**

EW-71A  $\leq$  150°F

### **EPA's Review of Relevant Subpart OOO and Subpart AAAA Standards**

#### **1) 40 CFR Part 62 Subpart OOO:**

Under 40 CFR § 62.16716(b), owners/operators are required to operate the collection system with negative pressure at each wellhead except during a subsurface fire or increased well temperature. The owner or operator must record instances when positive pressure occurs in efforts to avoid a fire. These records must be submitted with the annual reports as provided in 40 CFR § 62.16724(h)(1).

Under 40 CFR § 62.16716(c), the owner/operator must operate each interior wellhead in the collection system with a landfill gas temperature less than 131 °F. Under 40 CFR § 62.16720(a)(4), the owner or operator must monitor each well monthly for temperature as provided in 40 CFR § 62.16716(c). If a well exceeds the operating parameter for temperature, action must be initiated to correct the exceedance within 5 calendar days. Under 40 CFR § 62.16720(a)(4)(i), if a landfill gas temperature less than 131 °F cannot be achieved within 15 calendar days of the first measurement of landfill gas temperature greater than 131 °F, the owner or operator must conduct a root cause analysis and correct the exceedance as soon as practicable, but no later than 60 days after a landfill gas temperature greater than 131 °F was first measured. The owner or operator must keep records according to 40 CFR § 62.16726(e)(3). Under 40 CFR § 62.16720(a)(4)(ii), if corrective actions

cannot be fully implemented within 60 days following the measurement of landfill gas temperature greater than 131 °F for which the root cause analysis was required, the owner or operator must also conduct a corrective action analysis and develop an implementation schedule to complete the corrective action(s) as soon as practicable, but no more than 120 days following the measurement of landfill gas temperature greater than 131 °F.

Under 40 CFR § 62.16716(c), an owner/operator may establish a HOTV for an LFG extraction well. A HOTV demonstration must be submitted to the Administrator for approval and must include supporting data demonstrating that the elevated temperature neither causes fires nor destroys anaerobic decomposition by killing methanogens. The demonstration must satisfy both criteria to be approved. For the purposes of Subpart OOO, and until a 111(d) municipal solid waste landfill state plan is approved for the state of North Carolina, the EPA is the Administrator of the Federal Plan in North Carolina.

## **2) 40 CFR Part 63 Subpart AAAA**

Under 40 CFR § 63.1935(a), owners or operators of a MSW landfill are subject to Subpart AAAA if the landfill has accepted waste since November 8, 1987, or has additional capacity for waste, and is a major source as defined in 40 CFR § 63.2 of Subpart A, or is an area source landfill that has a design capacity equal to or greater than 2.5 million megagrams (Mg) and 2.5 million cubic meters (m<sup>3</sup>) and has estimated uncontrolled emissions equal to or greater than 50 megagrams per year (Mg/yr) NMOC as calculated according to 40 CFR § 63.1959. Under 40 CFR § 63.1935(a), owners or operators of a MSW landfill are subject to Subpart AAAA if the landfill has accepted waste since November 8, 1987, or has additional capacity for waste, and is a major source as defined in 40 CFR § 63.2 of Subpart A, or is an area source landfill that has a design capacity equal to or greater than 2.5 million megagrams (Mg) and 2.5 million cubic meters (m<sup>3</sup>) and has estimated uncontrolled emissions equal to or greater than 50 megagrams per year (Mg/yr) NMOC as calculated according to 40 CFR § 63.1959.

Under 40 CFR § 63.1935(b), owners or operators are subject to Subpart AAAA if they own or operate an MSW landfill that has accepted waste since November 8, 1987, or has additional capacity for waste deposition, that includes a bioreactor, as defined in § 63.1990, and is a major source as defined in § 63.2 of Subpart A, or is an area source landfill that has a design capacity equal to or greater than 2.5 million Mg and 2.5 million m<sup>3</sup> and that is not permanently closed as of January 16, 2003.

Under 40 CFR § 63.1958(c), beginning no later than September 27, 2021, owners or operators must operate each interior wellhead in the collection system with a landfill gas temperature less than 145 degrees Fahrenheit. However, the owner or operator may request a higher operating temperature value at a particular well. A higher operating temperature value demonstration must be submitted to the Administrator for approval and must include supporting data demonstrating that the elevated parameter neither causes fires nor significantly inhibits anaerobic decomposition by killing methanogens.

### **EPA's Determination**

Subpart OOO specifies standards which determine when an owner/operator may request a HOTV for an interior well. Republic Services of North Carolina has requested a HOTV of 150 °F for EW-71A, but the

EPA is unable to approve the HOTV as requested. Based on a statistical analysis of the data presented in the request, however, the EPA approves a well-specific HOTV of 137 °F. This value is reflective of the well-specific operating temperature based on a 99.9 percent (%) upper confidence level of the data presented in your submission. Since the approved HOTV is 137 °F, which is below the Subpart AAAA operating limit of 145 °F, a determination for the purposes of Subpart AAAA is unnecessary. If future monthly monitoring event(s) data suggest that this HOTV value may be exceeded, using a 99.9% upper confidence level of the well's monitoring data, the Landfill may apply for a revised HOTV based on the data available at that time if the Landfill demonstrates that subsurface fires are not occurring at the Landfill and the proposed HOTVs will not destroy the methanogens. Additionally, the period for this approval is limited to two years from the date of this letter, but the Landfill may submit a revised request for EPA's review before the expiration date of the approval if data suggests HOTV(s) continuation/revisions are necessary, and the standards of 40 CFR § 62.16716(c) are met.

EPA's approval of the HOTV for EW-71A is based upon the following factors:

- 1) You have submitted the request under the provisions of 40 CFR § 63.1958(c), which allows owners/operators to request a HOTV for an interior well. The requirement in 40 CFR § 62.16716(c) also allows owners/operators to request a HOTV for an interior well.
- 2) You have included monitoring event well-specific temperature and methane, carbon dioxide and balance gas concentration data.
- 3) You have included the results of the root cause analyses for this well which were conducted within 60 days of the initial LFG extraction well landfill gas temperature exceedance. The results of the analyses indicate that neither subsurface fires nor destruction of the methanogen bacteria are occurring at this well.
- 4) Methane concentrations in this well is greater than 46% methane.
- 5) CO concentrations have not exceeded 100 ppmv, much less than a concentration of 1,000 ppmv which would be indicative of the presence of a subsurface fire at the landfill.

The review of this HOTV request was coordinated with the EPA Region 4 Enforcement and Compliance Assurance Division, the EPA Office of Air Quality Planning and Standards, and the EPA Office of Enforcement and Compliance Assurance. If you have any questions about the response provided in this letter, please contact Mr. Mark Bloeth of my staff at (404) 562-9013 or by email at [bloeth.mark@epa.gov](mailto:bloeth.mark@epa.gov).

Sincerely,

**CAROLINE  
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Caroline Y. Freeman  
Director  
Air and Radiation Division

cc: Steve Hall (NC DAQ)