



LoveCentralVA
P.O Box 238
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April 24, 2020

Mr. David Paylor, Director
Virginia Department of Environmental Quality
Post Office Box 1105
Richmond, Virginia 23218

Dear Mr. Paylor:

On behalf of the members of the non-profit corporation, Love Central Virginia, Inc., which operates under the name Cumberland County Landfill Alert (CCLA), I am submitting these comments regarding the unsuitability of the site proposed by Green Ridge Recycling and Disposal LLC for the construction and operation of a mega-landfill in Cumberland County.

The proposed location of the landfill just off U.S. Route 60 near the border with Powhatan County is particularly unsuitable for several reasons, which I will detail below. Va. Code § 10.1-1408.4 provides that the Director of the Department of Environmental Quality (DEQ) must determine that the proposed site is suitable for a landfill. The Director must do so before the applicant files Part B of its application. 9VAC20-81-450(c)(4). I urge you to determine that the proposed site is unsuitable for a mega-landfill.

I. The U.S. Geological Survey and the Virginia Department of Health have reported that the area in which the landfill would be located is 100% susceptible to groundwater contamination.

In 2008, the U.S. Geological Survey, in cooperation with the Virginia Department of Health, published a report, *Aquifer Susceptibility in Virginia, 1998-2000*, concluding that the area in which Green Ridge proposes to construct and operate a landfill is 100% susceptible to groundwater contamination over a 50-year period. The U.S. Environmental Protection Agency has stated the “even the best liner and leachate collection systems will ultimately fail due to natural deterioration.” 53 Fed. Reg. 33345. The effect of these two, interrelated conclusions is to make the proposed site unacceptable for the location of a landfill.

Cumberland County is a relatively poor community situated more than 40 miles southwest of the City of Richmond and approximately 30 miles from its nearest urban locality, Chesterfield

County. Cumberland County is predominantly rural and has only very limited central water service, which was installed for the Courthouse area in response to the contamination of groundwater there as a consequence of toxic leachate from the County's Madison sanitary landfill located in the Courthouse area.¹ That landfill had been closed in 1995. Most of the residents of the County are dependent on private wells for their potable water needs. The County is financially and practically incapable of providing water to the residents in the vicinity of the proposed landfill because of the County's restricted ability to fund such service and the inordinate cost of providing service to such a dispersed population.

The risk to the residents of the area of contamination of their groundwater supply is significant. These residents have no practicable alternative to groundwater from their private wells. The inevitability of contamination of those wells due to the failure of a mega-landfill's liner and leachate collection systems, based upon the conclusions of the USGS, the Virginia Department of Health and EPA, disqualifies the proposed site for the construction and operation of a landfill, especially one of such size.

The location of the Green Ridge mega-landfill in Cumberland County would also pose an unacceptable risk to ground and surface water to the north, particularly to Muddy Creek and wells in that area because of the likelihood of failure of the facility's liner and leachate collection system. These water systems are hydrologically linked to the James River, which is the principal source of drinking water for the Richmond region. For the foregoing reasons, I request that you determine that the proposed site is unsuitable for a mega-landfill.

II. The Virginia Department of Mines, Minerals and Energy and the U.S. Geological Survey have concluded that earthquake epicenters in the Central Virginia Seismic Zone do not align with identified faults.

Cumberland County is situated within the Central Virginia Seismic Zone, which experiences on average six earthquakes per year, of which one is severe enough to be felt at the earth's surface. A magnitude 5.8 earthquake occurred in this zone near Mineral, Va. approximately 40 miles northeast of the proposed site on August 23, 2011.² The impact of that earthquake was experienced as far away as southeastern Canada and caused damage to the Washington Monument, among many other distant structures.³ An earthquake of that magnitude was not anticipated and has been studied extensively by numerous scientists since its occurrence.⁴

¹ Draper Aden Assoc., Cumberland County Madison Sanitary Landfill Groundwater Monitoring Program: Presumptive Remedy (2011) (on file at the County).

² <http://earthquake.usgs.gov/earthquakes/recenteqsww/Quakes/se082311a.htm>; <https://www.dmme.virginia.gov>.

³ Ruane & Aratani, "Earthquake damage to Washington Monument was very rare occurrence," *Washington Post* (8/23/2011).

⁴ See, e.g., McNamara *et al.*, "The Mw 5.8 Virginia earthquakes of August 2011 and aftershock sequence: Constraints on earthquake source parameters and fault geometry," 104 *Bull. Of the Seismological Soc'y of Amer.* 40 (2014). See generally Va. Tech Seismological Observatory website: <http://magma.geos.vt.edu>.

Earthquakes in this zone, unlike earthquakes in California, “usually occur at depths anywhere from three to fifteen miles and it is not always possible to associate a specific earthquake with a specific fault.”⁵ Since 1977, more than 195 earthquakes have been detected as originating beneath Virginia.⁶

Solid waste landfills can be adversely affected by seismic activity.⁷ The tension in a landfill liner rises significantly during an earthquake and can cause tearing of the liner.⁸ The top of the landfill may crack, and methane collection systems can be compromised.⁹ There is a risk of landfill collapse during the shaking of an earthquake, which would result in the contamination of adjacent groundwater.¹⁰ Seismic waves and liquefaction of soil accompanying an earthquake can cause instability in a landfill that results in leachate and methane gas leaks.¹¹

To address the risks to landfills associated with earthquakes, EPA has promulgated regulations applicable to the Green Ridge proposal. 40 CFR Part 258, subtitle D. Those requirements provide that new landfills usually should not be sited within 200 feet of a known fault that has exhibited movement during the last 11,000 years. 40 CFR §258.13(a). Because of the inability to identify where earthquakes are likely to occur within the Central Virginia Seismic Zone by reference to fault lines, there is a risk of locating a landfill anywhere within this zone.¹² Siting the Green Ridge mega-landfill in this zone, therefore, poses unacceptable risks that should disqualify the proposed site.

A consultant’s report to EPA recommended that “caution is warranted in concluding unconditionally that landfills will perform well in earthquakes and investigations and analyses are required to demonstrate that landfills are properly designed to resist the effects of strong ground motions and liquefaction.”¹³ That report also concluded that when knowledge and understanding of the seismology of a particular zone are affected by recent developments (such as the August 23, 2011, earthquake near Mineral, Va.), a site-specific analysis is warranted.¹⁴

⁵ <https://www.dmme.virginia.gov/DGMR/earthquakes.shtml>.

⁶ *Id.*

⁷ Kavazanjian, Matasovic & Bachus, “Evaluation of MSW properties for seismic analysis” in *Geoenvironment 2000* (Geotechnical Publication No 46 1999). The volume, composition, weight, water content, shear parameters and degree of compaction of the waste deposited in a landfill, as well as the width and depth of the waste and the weight of the landfill cover, are factors to be considered in analyzing the stability of the facility under the stress of ground motion. See www.researchgate.net/publication/278288633_Seismic_Responses_of_Landfills.

⁸ Thusyanthan, Madabhushi & Singh, “Tension in Geomembranes on Landfill Slopes Under Static and Earthquake Loading—Centrifuge Study,” 25 *Geotextiles and Geomembranes* 78 (2007).

⁹ Matasovic & Kavazanjian, “Seismic Response of a Composite Landfill Cover,” 132 *J. Geotechnical Geoenvironmental Engineering* 448 (2006).

¹⁰ Krinitzsky, Hynes & Franklin, “Earthquake Safety Evaluation of Sanitary Landfills,” 46(2) *Engineering Geology* 143 (1997).

¹¹ www.americancityandcounty/1995/04/01/shake-rattle-hold-landfill-stability-in-seismic-regions/ (“40% of the U.S. is actually at risk for significant seismic events.”).

¹² <https://www.dmme.virginia.gov/DGMR/earthquakes.shtml>.

¹³ G. Richardson, E. Kavazanjian, Jr. & N. Matasovic, *RCRA Subtitle D (258) Seismic Design Guidance for Municipal Solid Waste Landfill Facilities* (1995) at 3.

¹⁴ *Id.* at 25.

The risks to local groundwater supply adjacent to the proposed landfill in the event that seismic activity causes failure of the liner and leachate collection systems in the future makes the proposed site inappropriate for that use. For that reason, the Director should determine that the site proposed for the Green ridge facility is unsuitable. At a minimum, DEQ should require a site-specific analysis of the risks associated with locating a landfill in the Central Virginia Seismic Zone before making the determination required by Va. Code § 10.1-1408.4 of the suitability of the site for the proposed Green Ridge facility.

III. Siting a mega-landfill that would be immediately adjacent to a National and Virginia Historic Place and that would adversely affect other historic sites would be unacceptable.

The U.S. Department of Interior has designated Pine Grove School, which is immediately across Pinegrove Road from the proposed Green Ridge facility, as a National Historic Place. The Virginia Department of Historic Resources has added Pine Grove School to the Virginia Landmarks Register. The construction and operation of a mega-landfill will have a significant, adverse effect of Pine Grove School, including realignment of Pinegrove Road, increased traffic, noise, dust, odor, visual impacts and the general incompatibility of a landfill adjacent to a historic resource.

The Virginia Department of Historic Resources has noted, and Green Ridge has acknowledged, that there are several other known historic resources within or adjacent to its 1,200-acre site.¹⁵ Several may be eligible for designation on the National Register of Historic Places.

The significant effect of the siting of a mega-landfill on these historic resources would be unacceptable and cannot be mitigated. For this reason, I request that you determine that the proposed site is unsuitable for a landfill.

IV. The siting of a mega-landfill in a relatively poor locality with a minority population that is a higher percentage than the national and Virginia percentages would violate the Commonwealth's environmental justice policy.

Cumberland County is among the poorest localities in the Commonwealth.¹⁶ The County also has a percentage of African American residents that is higher than the percentage of African Americans residing statewide. Either of these factors would qualify the County for consideration under the Commonwealth's environmental justice policy, which was formally adopted at the veto session of the Virginia General Assembly on April 22, 2020. HB 704, SB 406 (Chapter of the 2020 Acts of Assembly of these identical bills not yet published).

¹⁵ Letter of August 16, 2019, from Roger W. Kirchen, Director of DHR's Division of Review and Compliance, to Ms. Lynn Klappich of Draper Aden Associates.

¹⁶ See generally A. Wallmeyer, *The Extremes of Virginia: Two Commonwealths, Separated and Unequal* (2016).

The injustice of subjecting the residents of Cumberland County to the adverse effects of a mega-landfill that would receive most of its waste from other localities makes the location of that facility Cumberland County unsuitable. Waste that would be deposited in the proposed landfill will originate from localities as far away as 500 miles. Most of those exporting localities are wealthier and enjoy environmental regulations that are more rigorous than those applicable to the pending Green Ridge application. When the liner and leachate collection systems of the Green Ridge facility fail, as EPA has stated they ultimately will, the County residents will be profoundly affected. The damage to their groundwater supply would be devastating.

The fundamental unfairness of allowing relatively wealthier communities to transport their solid waste to a community that has a percentage of minority residents that exceeds that of Virginia as a whole and that is relatively less wealthy than the exporting communities cannot be ignored. For this reason alone, you should determine that the proposed site is unsuitable.

V. The location of the proposed mega-landfill on a two-lane highway presents risks that make the site unsuitable because of the increased truck traffic it would generate.

The entrance to the proposed Green Ridge mega-landfill would be off U.S. Route 60, which is a two-lane highway from just west of its intersection with U.S. Route 522 in Powhatan County to the landfill entrance and a two-lane highway west of its intersection with U.S. Route 45 near the Cumberland County Courthouse area and beyond that intersection to U.S. Route 15 and U.S. Route 24, which may be routes used to transport waste from a proposed Appomattox County transfer station to the Green Ridge mega-landfill. U.S. Route 522, U.S. Route 15 and U.S. Route 24 are two-lane highways. Each highway would likely experience increased truck traffic if the Green Ridge proposal is approved. If waste is transported over U.S. Route 522, the safety risk is enhanced because of the lack of adequate shoulders on that narrow highway.

The Powhatan County Board of Supervisors has opposed the Green Ridge proposed mega-landfill because of the adverse impact on the County's highways of an increase of as many as 500 trips per day by large trucks hauling waste to the proposed mega-landfill. That number of trips may be understated for a particular day because the facility will be limited to a weekly average of 5,000 tons per day, which means that on a particular day, the amount of waste could exceed 5,000 tons and require more than 500 trips. The Virginia Department of Transportation is currently conducting a study of the Route 60 Corridor.¹⁷

Green Ridge has apparently assumed that all transport of waste to its mega-landfill would be by tractor-trailer. If the transport of waste to the facility is handled by a mix of tractor-trailers and smaller vehicles, the number of vehicles involved would likely be higher than the Green Ridge estimate.

¹⁷ www.virginiadot.org/projects/richmond/route-60-corridor.asp.

VI. The 1,200-acre Green Ridge site contains twenty-two graves that the applicant does not propose to relocate, that should not be relocated and that should not be adversely affected by the construction and operation of a mega-landfill.

The applicant's consultant identified twenty-two graves of African Americans located within the Green Ridge site. The consultant acknowledges that the graves likely have historic significance. Relocation of the graves by Green Ridge, which its consultant recommends against, is unwarranted because there is no "more suitable repository" because of their historical significance. Va. Code § 57-38.1. They are plainly an essential part of the history of the area, which included the community of freed slaves and their descendants who resided there and continue to identify with Pine Grove School as the heart of that community.

If the Green Ridge facility is constructed and becomes operational, appropriate access to these graves by the interested community and its oversight of the maintenance of the graves would be difficult to assure. Since Green Ridge acquired the site, it has imposed unreasonable burden on access to the graves, which the community has requested pursuant to Va. Code § 57-27.1.

The members whom I represent are opposed to relocation of the graves in any event. More to the point, we request your determination that the proposed location of the mega-landfill would be unsuitable because of its unacceptable impact on the historic graves within the site and to the community to which those graves are linked.

Conclusion

Each of the foregoing reasons for concluding that the proposed site for the Green Ridge Recycling and Disposal Facility is sufficient to warrant a determination that the site is unsuitable for the use described in Part A of the application. In combination, these reasons present an overwhelming case for such a determination. Therefore, I request that the DEQ Director determine pursuant to Va. Code § 10.1-1408.4 that the location identified by the application for the mega-landfill is unsuitable for that purpose.

Respectfully submitted,
Love Central Virginia, Inc.

Elizabeth J Myers (sgnd)
Elizabeth J. Myers, Chairperson

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