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## Periodic Review Report of Findings

<b>Agency name</b>	Virginia Waste Management Board
<b>Virginia Administrative Code (VAC) citation</b>	9VAC20-81
<b>Regulation title</b>	Solid Waste Management Regulations
<b>Date this document prepared</b>	August 8, 2019

This information is required for executive branch review and the Virginia Registrar of Regulations, pursuant to the Virginia Administrative Process Act (APA), Executive Order 14 (as amended, July 16, 2018), the Regulations for Filing and Publishing Agency Regulations (1 VAC7-10), and the *Virginia Register Form, Style, and Procedure Manual for Publication of Virginia Regulations*.

## Acronyms and Definitions

*Please define all acronyms used in this Report. Also, please define any technical terms that are used in the document that are not also defined in the "Definition" section of the regulations.*

Board- Virginia Waste Management Board

CDD- Construction/demolition/debris

CEM- Certified Emergency Manager

CFR- Code of Federal Regulation

CVSZ- Central Virginia Seismic Zone

DEQ- Department of Environmental Quality

EPA- Environmental Protection Agency

FEMA- Federal Emergency Management Area

HDPE- High-density polyethylene

Leq- the equivalent continuous sound level in decibels, equivalent to the total sound energy measured over a stated period of time and is also known as the time-average sound level (LAT).

NOI- Notice of Intent

PCB- Polychlorinated biphenyl

SWM- solid waste management

USGS- United States Geological Survey

VDOT- Virginia Department of Transportation

VOC's- Volatile organic compounds

## Legal Basis

*Please identify (1) the agency or other promulgating entity, and (2) the state and/or federal legal authority for the regulatory change, including the most relevant citations to the Code of Virginia or Acts of Assembly chapter number(s), if applicable. Your citation must include a specific provision, if any, authorizing the promulgating entity to regulate this specific subject or program, as well as a reference to the agency or promulgating entity's overall regulatory authority.*

Section 10.1-1402 (11) of the Code of Virginia authorizes the Virginia Waste Management Board to promulgate and enforce regulations. Section 10.1-1408.1 of the Code of Virginia requires a permit to be

obtained to conduct nonhazardous solid waste disposal, treatment or storage activities. The Virginia Waste Management Board has adopted this regulation under the authority granted by state law.

The corresponding federal authority for the criteria for municipal solid waste landfills is found at 40 CFR Part 257 and 258.

### Alternatives

*Please describe any viable alternatives for achieving the purpose of the regulation that were considered as part of the periodic review. Include an explanation of why such alternatives were rejected and why this regulation is the least burdensome alternative available for achieving its purpose.*

The Code of Virginia (§10.1-1408.1) requires a permit to be obtained to conduct nonhazardous solid waste disposal, treatment, or storage activities, therefore the option of not requiring permits for a facility conducting nonhazardous solid waste disposal, treatment, or storage activities is not a viable alternative. The regulation is the least burdensome alternative for achieving this purpose.

### Public Comment

*Please summarize all comments received during the public comment period following the publication of the Notice of Periodic Review, and provide the agency response. Ensure to include all comments submitted: including those received on Town Hall, in a public hearing, or submitted directly to the agency or board. Please indicate if an informal advisory group was formed for purposes of assisting in the periodic review.*

An informal advisory group was not formed to assist with conducting the periodic review.

Commenter	Comment
Keith Buch	The proposed Cumberland County Green Ridge Landfill (Mega Fill) plans to use a HDPE 60 mil synthetic liner underlain by a geosynthetic clay membrane. This liner system is called a composite system. This does not afford adequate protection to the 1000 shallow residential drinking water wells within 3 miles of the Mega Fill. Unfortunately, the Solid Waste Management Act only addresses Public Drinking Water Systems in B 3 and not residential drinking water wells. This is a huge oversight that must be addressed. Residential wells must be afforded the same degree of protection as public drinking water systems.
Keith Buch	Recommends legislation be introduced to add residential drinking water wells to the Landfill Siting Review section of the Virginia Solid Waste Management Act. Suggests adding the following language to the Landfill Siting Review: "New Landfills within three miles upgradient of any existing residential drinking water well shall require the installation of at least two synthetic liners under the waste disposal areas and require leachate collection systems to be installed above and below the uppermost liner. No new landfill shall be constructed closer than 2500 feet of an existing residential drinking water well."

Commenter	Comment
Keith Buch	<p>It is widely accepted that host counties to a new landfill (i.e. Cumberland County) as well as adjacent counties within 5 miles of a new landfill such as Powhatan County will have to deal with increased heavy truck traffic as well as potential ground water contamination, odors, litter, noise, and decreased property values. Even though both the host and the adjacent county will both shoulder the burden of dealing with increased heavy truck traffic, potential ground water contamination, odors, litter, noise, and decreased property values only the host community is reimbursed for hosting the new landfill by receiving a receiving a fee from the landfill operator for each ton of waste disposed at the new facility. Cumberland County by hosting the Green Ridge Mega Fill will receive a minimum base fee of \$1.50 per ton of trash and can derive upwards of \$2,700,000 per year in host disposal fees. Adjacent Powhatan County which is 1300 feet from the Mega Fill will receive nothing. In order to minimize this disparate treatment the following proposed legislation that would amend 10.1-1408.1. with the following language: "A county that is not a host to a new landfill receiving municipal solid waste but is within five (5) miles of the new landfill will receive a host fee per ton of waste disposed by the Operator of the new landfill. Beginning with the effective date of this legislation the host fee for adjoining counties to new landfills shall be \$1.50 per ton of waste disposed by the Operator of the new landfill. Beginning on the day the new landfill becomes operational, the adjoining county host fee shall be paid on a monthly basis by the 15th of the month based on the tonnage of waste disposed the previous month. On every yearly anniversary of this legislation the host fee in this legislation shall be increased annually thereafter from the initial \$1.50 per ton based on the Consumer Price Index. The annual increase shall be not more than 3% but no less than 1%. Daily landfill cover will not be considered as waste disposed. This legislation shall apply to all new landfills that have not received a Certificate to Operate from the DEQ on the effective date of this legislation."</p>
Keith Buch	<p>Section 460 Part A Landfill Application only requires the applicant to characterize the upper most aquifer beneath the proposed site and the presence of significant impermeable zones beneath the waste management boundary. The applicant is not required to determine if there is a hydraulic interconnection between the upper and lower aquifers. This potential interconnection is very important because in the case of the proposed Green Ridge Landfill most of the surrounding residential drinking wells are drilled into lower aquifers consisting of fractured bedrock. Section 460 Part A should be amended to require the applicant to characterize the impermeable layer as to if one exists, its areal extent, its thickness, as well as its ability to prevent the migration of contaminants into lower aquifers. The applicant must determine if there is a hydraulic interconnection between the upper aquifer and lower aquifers.</p>

Commenter	Comment
Keith Buch	Green Ridge conducted a public input meeting in Cumberland County on August 28, 2018. Advance notice of the public meeting was published in the Farmville Herald. The Farmville Herald has circulation in the Counties of Cumberland, Buckingham, and Prince Edward as well as the Town of Farmville. The Farmville Herald has no circulation in the County of Powhatan. The critical wording from the Waste Management Regulations is "to seek the comments of the residents of the area where the sanitary landfill or transfer station is to be located". Clearly, the area where the sanitary landfill is to be located includes Western Powhatan County and therefore no attempt was made to seek the input from Powhatan Residents. It is requested that Section 450 be clarified to clearly require an applicant for a new landfill to conduct a public input meeting in the locality where the facility will be located as well as a separate public input meeting in an adjacent locality if that locality is located less than 5 miles from the proposed landfill.
Keith Buch	Concerned with documented leachate build-up problems above the liner at SPSA's Suffolk Landfill and Atlantic Waste Landfill in Waverly, VA. The DEQ must develop a closely monitored leachate reporting system to prevent these unheard of instances of gross leachate mismanagement from occurring in the future. It is recommended that the DEQ develop a monthly leachate reporting system certified by a Vice President of Landfill Operations for a private landfill, a County Manager or Administrator for a County run landfill, or an Executive Director for an Authority Run Landfill. The minimum reporting requirements shall be as follows : A) Thickness of leachate on the liner. B) Volume of leachate in storage tanks. C) Volume of leachate pumped from liner D) Volume of leachate treated in an on-site treatment plant, discharged to a sanitary sewer system, trucked off site, evaporated, or recirculated on-site. E) Operational status of leachate pumping equipment
Keith Buch	Require the Host Agreement to include a standard "Officials Not to Benefit" clause. Suggested language for the clause should be as follows: "High level officials of the County and their relatives shall derive no benefit from the Host Agreement. High Level Officials include present and future members of the Board of Supervisors as well as the County Administrator and Deputy County Administrator plus all County Department Heads inclusive but not limited to County Attorney, Zoning Officer, and Tax Assessor. Benefits include but are not limited to accepting employment, gifts, or gratuities from the landfill, its affiliates and subsidiaries as well as its parent corporations or owning a financing interest in the aforementioned entities. Benefit shall not mean host payments/reimbursements made to the County."
Keith Buch	Require the Host Agreement to include the final height and volume of the proposed landfill.
Keith Buch	Require the Host Agreement to include methods of controlling trespassers from entering the landfill property and disposal areas.
Keith Buch	Require the Host Agreement allow the Landfill Liaison to have the authority to stop an imminent hazard that they observe that could result in substantial property/environmental damage, serious injury, or death. Minimum experience requirements for the Landfill Liaison must be specified.
Keith Buch	Require the Host Agreement to include processes or procedures for settling minor differences that occur between the landfill and the County before they evolve into breaches and default must be specified. The Host Agreement should not rely on litigation to settle breaches and default. In order to avoid protracted litigation the Agreement must rely on Binding Dispute Resolution to settle breaches and default.

Commenter	Comment
Keith Buch	Require the Host Agreement to specifically reference the DEQ Solid Waste Permit, County Zoning Approvals, DEQ Storm-water Permit , DEQ Air permit, VDOT Approval, and Corps of Engineer Section 404 Permit (if applicable) in the Agreement.
Keith Buch	Require the County to employ an independent Virginia Licensed Attorney with a minimum of 20 years experience in solid waste disposal matters to furnish professional advice and counsel to the County regarding the preparation of the Agreement.
Keith Buch	Unfortunately the Cumberland County Board of Supervisors employed no independent professionals with substantial landfill experience to furnish them with advice and counsel relative to the Green Ridge Landfill Rezoning and Conditional Use Permit approvals. As a result of their complete ignorance of landfill matters they approved a landfill that was and is totally unsuitable for its location. This must not be permitted to occur in the future.
Keith Buch	The Solid Waste Management Regulations relative to the NOI must be revised in order to include an additional critical submission. The County must furnish a signed and sealed statement to be included with the NOI submission from an independent Virginia Licensed Professional Engineer with 20 years of landfill design experience that states the following " Having reviewed the documentation furnished to me by the County, having researched publicly available information, and having performed an on-site inspection, the proposed location is suitable for a municipal solid waste landfill."
Keith Buch	<p>Ground water can flow huge distances over a relatively short period of time in fractured bedrock. Most of the public and private sources of water in the general area of the proposed Green Ridge landfill draw their drinking water from fractured bedrock. The New Jersey Department of Environmental Protection has long recognized this hazard and has adopted the below regulation in response to this hazard. It is recommended that the DEQ also adopt this regulation.</p> <p>2) A sanitary landfill located in a geologic area in which the bedrock is at or near the surface and that serves as a direct source for a public community water system, shall, at a minimum, have a containment system consisting of a double composite liner system. The primary and secondary geomembrane liners in the double composite liner system shall be in compressive contact with a clay or admixture liner below the geomembrane liner. A leak detection/collection system shall be located between the primary composite liner and the secondary composite liner.</p>
Keith Buch	<p>Recommended that the below regulation be adopted to protect the James River water users.</p> <p>2) Any new landfill built within 2500 feet of an up stream surface tributary that feeds a Public Water System surface water intake SHALL have the double liner composite system with primary and secondary leachate systems to absolutely minimize contamination. In addition, new landfill leachate holding tanks built within 2500 feet of an up stream surface tributary that feeds a Public Water System surface water intake SHALL have an impermeable secondary containment system that holds 110% capacity of the tanks.</p>

Commenter	Comment
Keith Buch	<p>Most rural Virginians whose homes are located in areas that have underlying bedrock close to the surface (i.e. neighbors of the Proposed Green Ridge Landfill) rely on wells drilled into fractured bedrock as opposed to shallow wells drilled into the overburden above the bedrock. Any landfill groundwater monitoring system must consist of shallow wells in the overburden as well as deeper wells in the bedrock. Current DEQ regulations only require new landfills to develop a shallow aquifer monitoring system and fail to address the deeper bedrock wells. The below recommended regulation addresses this oversight. The below parameters were extracted from New Jersey's Private Well Testing Act that requires mandatory testing before a residential property with a well is sold.</p> <p>2) If bedrock residential drinking water wells exist in the vicinity of the new landfill, the landfill shall implement a groundwater monitoring system that draws ground water samples from an appropriate network of bedrock installed monitoring wells. These wells shall be sample semi-annually by an independent certified laboratory for the following parameters: total coliform, nitrate, iron, manganese, pH, VOC's, lead, arsenic, mercury, Gross Alpha Activity, 1,2,3- Trichloropropane, Ethyl Dibromide, and 1,2-Dibromo-3-chloropropane. The corresponding results shall sent to the DEQ and made available on a public website.</p>
Michael G. Setaro	<p>The proposed liner (60/1000th mil) is the minimum allowed by law and has proven to be totally inadequate due to leakage at another facility. Proposes a much more robust thicker liner be required. This is an additional measure to prevent groundwater from being contaminated.</p>
Michael G. Setaro	<p>Proposes developing a comprehensive data base based on samples of well water from every well within two miles of the proposed multisite mega landfill. This baseline testing should be done before the opening of the landfill. From the results of these tests, a comprehensive baseline for chemical contaminants and or toxins can be developed.</p>
Ralph D. Mullins	<p>Require an initial Detailed Floodplain Study with Base Flood Elevations be completed at the intended site. An Updated Floodplain Study should also be done yearly to ensure the landfill is not in violation.</p>
Ralph D. Mullins	<p>Require the principality approving the land use permit be responsible to initiate the required Detailed Floodplain Study. The principality may apply for reimbursement for money by the Dam Safety and Floodplain Management Grants through the Virginia Department of Conservation &amp; Recreation.</p>
Ralph D. Mullins	<p>Require that the sampling of groundwater and dye tracing study be completed by an Independent Third Party six months prior to the opening of a landfill. This comprehensive test will be a base line for any chemicals, contaminants or toxins for various locations along the groundwater flow. These tests will not be complete until all definite and tangible results have been obtained within a 10 mile radius from a landfill. This proposal ensures the quality of water remains adequate to conserve the values of the floodplain.</p>
Ralph D. Mullins	<p>FEMA is constantly updating flood hazard maps because floodplains can, and do, change over time. However, there is no current directive which discusses a floodplain <i>encroaching</i> upon a landfill site. Suggests revising the landfill siting requirement to "No new landfill shall border within 1000 feet from any designated 100-year floodplain at the time of the application"</p>

Commenter	Comment
Keith Buch	<p>Section 120 contains existing setbacks that must be increased. The existing setbacks may be acceptable for small county owned landfills but not for Mega Fills accepting 3000 tons per day. They must be increased to protect residential wells located in fractured bedrock and to protect streams that feed potable surface water intakes down stream. They must also be increased to improve quality of life for nearby residents. Current regulation states-</p> <p>No disposal unit or leachate storage unit shall be closer than:</p> <ul style="list-style-type: none"> <li>a. 200 feet from any residence, school, daycare center, hospital, nursing home, or recreational park area in existence at the time of application;</li> <li>b. 100 feet from any perennial stream or river;</li> <li>c. 50 feet from the facility boundary;</li> <li>d. 500 feet from any well, spring, or other groundwater source of drinking water in existence at the time of application; and</li> <li>e. 1,000 feet from the nearest edge of the right-of-way of any interstate or primary highway or 500 feet from the nearest edge of the right-of-way of any other highway or city street, except the following: <ul style="list-style-type: none"> <li>(1) Units that are screened by natural objects, plantings, fences, or other means so as to minimize the visibility from the main-traveled way of the highway or city street, or otherwise removed from sight;</li> <li>(2) Units that are located in areas that are zoned for industrial use under authority of state law or in unzoned industrial areas as determined by the Commonwealth Transportation Board; or</li> <li>(3) Units that are not visible from the main-traveled way of the highway or city street.</li> </ul> </li> </ul> <p>For New Mega Fills accepting 3000 or more tons per day the setbacks should be increased as follows:</p> <ul style="list-style-type: none"> <li>a. 500 feet from any residence, school, daycare center, hospital, nursing home, or recreational park area in existence at the time of application;</li> <li>b. 500 feet from any perennial stream or river;</li> <li>c. 200 feet from the facility boundary;</li> <li>d. 2500 feet from any well, spring, or other groundwater source of drinking water in existence at the time of application; and</li> <li>e. 1,000 feet from the nearest edge of the right-of-way of any interstate or primary highway or 500 feet from the nearest edge of the right-of-way of any other highway or city street, except the following: <ul style="list-style-type: none"> <li>(1) Units that are screened by natural objects, plantings, fences, or other means so as to minimize the visibility from the main-traveled way of the highway or city street, or otherwise removed from sight;</li> <li>(2) Units that are located in areas that are zoned for industrial use under authority of state law or in unzoned industrial areas as determined by the Commonwealth Transportation Board; or</li> <li>(3) Units that are not visible from the main-traveled way of the highway or city street.</li> </ul> </li> </ul>
Keith Buch	<p>For new landfills, if the applicant plans to utilize tanker truck/barge/rail car removal of leachate to an off site wastewater treatment facility they must obtain a written commitment from the proposed receiving wastewater treatment plant that the plant has the capacity and ability to treat the annual estimated amount of leachate generated by the landfill. The new landfill shall not receive a certificate to operate until this written commitment is obtained.</p>

Commenter	Comment
Keith Buch	The regulations must be revised to insure that adequate fire response capabilities exist. In order to receive a Certificate to Operate, the landfill shall employ the services of a Certified Emergency Manager (CEM) to assess the capabilities of Fire Departments in the localities in the vicinity of the proposed new landfill and determine if they can effectuate a safe, timely, and effective response to a fire at the landfill. If adequate local community response resources do not exist the CEM shall recommend an appropriate level of response readiness that can be achieved by furnishing additional resources to the local departments and/or by establishing an internal landfill fire response capability. The landfill shall pay for any additional fire resources required by local communities through written agreements with said communities and shall not receive a Certificate to Operate until the agreements are in place. If the landfill chooses to establish an internal fire response capability the resources required to maintain this capability will become an enforceable permit condition.
Keith Buch	Section 460 must be amended to require that the VDOT Adequacy Report specifically address the transportation impact on local school systems with specific emphasis on safety impacts.
Keith Buch	Because of the size and complexity of Mega Fills, a highly experienced and credentialed individual is required to ensure proper construction and operation. Therefore the regulations must be revised to require new landfills in excess of a 3000 ton per day capacity to employ a Class II Certified Landfill Operator with a Virginia Professional Engineers license in either Civil or Environmental Engineering.
Keith Buch	The regulations must be revised to conduct a public hearing preceded by an appropriate comment to allow for citizen input prior the Director's approval of the Part A application (siting criteria). In addition any public hearing or input meeting and associated public comment period as required as part of the permitting process shall be advertised in the local newspaper circulated in the locality where proposed facility will be located AND in the local newspaper circulated within any other locality whose boundary is located within five (5) miles of the proposed facility.
Keith Buch	The Solid Waste Management Regulations must require that all new landfills develop and implement an effective scavenger control strategy including exclusionary fencing, trapping, depredation, harassment, and professional pest controllers. Said strategy shall be memorialized and made a condition of the Landfill's Solid Waste Permit.
Kevin Halligan	Comment pertaining to regulatory requirement stating No new landfill shall be sited in a 100-year floodplain. Given the rise in severe weather patterns and the increase in catastrophic hurricanes, tornadoes and floods associated with Climate Change it should be required that an updated Floodplain analysis be conducted by the appropriate agency in any area that is under consideration for the development of a Municipal Solid Waste Management Facility. Localities are seeing more frequent and more significant levels of flooding and the reliance on dated floodplain studies ignores these events. Accurate and up-to-date data is needed in order to have a full and complete understanding of the true scope and breadth of the present-day floodplain. Any flooding near of at the site of a SWM Landfill puts creeks, streams, rivers, residential wells, and public drinking supplies at risk for contamination."

Commenter	Comment
Kevin Halligan	Regulation states "No disposal unit or leachate storage unit shall be closer than 200 feet from any residence, school, daycare center, hospital, nursing home or recreational park area in existence at the time of application;" This distance is woefully inadequate and needs to be increased significantly. 200 feet is less than the distance from home plate to the centerfield fence on a Little League Baseball field. To expect anyone to live that close to a Landfill that is operating 24 hours a day, 7 days a week is incomprehensible.
Kevin Halligan	Residents living near the landfill boundary will be exposed to the constant sounds produced by heavy machinery as trash is bulldozed, compressed and covered around the clock for 6-7 days a week. Studies have shown that chronic exposure to ambient noise contributes to higher stress levels and that eventually wears the body down causing mental and physical health problems. Noise pollution is a general threat to health and wellness.
Kevin Halligan	Regulations should address a Critical Zone around a Landfill to prevent residents and visitors to the area from being subjected to toxic and harmful gasses and noxious nuisance odors. Using current research data, Odor Buffer Zones should be written into the regulations to achieve this goal. A 2008 study by Veronica Lauren Kent Figueroa demonstrates that effective odor management controls might be addressed by establishing a buffer zone of at least 1400 meters.
Kevin Halligan	When an odor nuisance or hazard is created under normal operating conditions and upon notification from the department, the permittee shall, within 90 days, develop and implement an odor management plan to address odors that may impact citizens beyond the facility boundaries. 90 days is a long time to expect citizens to tolerate noxious odors and curtail their normal activities due to a corporation's violation of clean air standards. Residents have a right to use and enjoy their property for pleasure and recreation without having to adapt to the noxious odors generated by an industrial facility. If a landfill's odors migrate to a homeowner's or business owner's property then that property owner should be compensated for the loss of enjoyment or loss of business that was caused by the Landfill's mismanagement. The landfill owners should be fined each day that residents/business owners are assaulted by noxious odors and the monies collected by such fines distributed among affected property owners. The production and migration of Landfill odors should have real consequences for the owners and operators of landfills.
Kevin Halligan	The procedures for random inspections of incoming loads to detect contain regulated hazardous waste ... or other unauthorized solid waste and ensure that such wastes are not accepted at the landfill. Inspection is presently limited to 1% of all incoming waste and 10% of waste imported from outside of Virginia. Increase percentage of waste inspected to reflect statistical probability models. If only 1% of waste is inspected what percentage of that one percent of inspected waste has been found to have unauthorized waste. Conduct statistical analysis to determine how to capture a higher percentage of unauthorized wastes and adjust percentage of waste inspected to strengthen the Inspection program.

Commenter	Comment
Kevin Halligan	<p>Wastes generated by generators who are conditionally exempt pursuant to 40CFR 261.5 may be managed in Solid Waste Management Facilities.</p> <p>Comment: "40CFR 261.5 states 'that a generator is a conditionally exempt small quantity generator in a calendar month if he generates no more than 100 kilograms (220 pounds) of hazardous waste in that month.' Virginia Regulation 9VAC20-81-90 allows hazardous waste to be deposited in a Solid Waste Management Facility in Virginia so long as the generator generates not more that 220 pounds of hazardous waste. Virginia is one of the country's leading importer of out of state trash. This exemption allows hazardous waste from exporting states to find its way into Virginia's Solid Waste Management Facilities increasing the toxicity of our landfills and posing a greater threat to the health of Virginia citizens. All hazardous waste needs to be regulated especially the hazardous waste sent to Virginia by other states. How many "small quantity or very small quantity generators" of hazardous waste are there in each of the states from which Virginia accepts trash? Mega-Landfills are the norm now. Landfill service areas extend 500 miles or more and include almost half the states in the country. That allows for huge volumes of "conditionally exempt hazardous waste" to cross state lines and be deposited in the Mega-Landfills in Virginia's communities.</p> <p>Waste generated by generators who are conditionally exempt pursuant to 40CFR 261.5 should NOT be managed in Virginia's Solid Waste Management Facilities. Hazardous waste needs to be managed differently than Municipal Solid Waste and Virginia's MSW facilities should not become repositories for the hazardous waste generated by other states. No conditionally exempt hazardous waste pursuant to 40CFR 261.5 should be accepted or deposited in Virginia's Solid Waste Management Facilities.</p>
Keith Buch	<p>Revise regulation to require new landfills that will be accepting 3000 tons per day or more, to have adequate compaction and earth moving equipment <b>immediately available</b> on site if a critical piece of compaction or earth moving equipment becomes inoperable or unavailable due to breakdown or maintenance. The critical equipment that must be immediately available shall include at a minimum a spare steeled wheeled solid waste compactor equivalent to a CAT 826, a spare bulldozer equivalent to a CAT D-8, a spare cover hauling piece of equipment with a minimum of 15 yard capacity, and a spare cover excavator/loader of a minimum of a 3 yard capacity. Spares will not sit idle for weeks at a time as standby equipment but shall be regularly used by rotating them into equipment usage during the week with the net result of each piece of critical equipment sitting idle during certain days of the week. For explanation and clarity of what is meant by spare the following example is given. If two steel wheeled compactors are required to keep up with solid waste flow the landfill operator will be required to have a total of three operational compactors on site with only two in use at any one time. Therefore, the three units would be rotated in and out of use during the week with two operating at any one time. If one were to break down the minimum amount of two compactors will still be immediately available.</p>
Laurie Halligan	<p>"Access to sanitary, CDD, or noncaptive industrial landfills shall be permitted only when an attendant is on duty and only during daylight hours, unless otherwise specified in the landfill permit." This is a regulation that should be strictly enforced, especially when landfills are sited in a residential area where "spot zoning" has been used specifically to allow for a landfill in an area previously zoned agricultural/residential. Residents should not be subject to noise levels from a landfill during the evening and night hours.</p>

Commenter	Comment
Laurie Halligan	Garbage collected during the day should be covered prior to the hours when families are settling in their homes. If trash is collected all day and well into the night, there is not an appropriate amount of time where the trash will be covered to avoid the odor from a landfill. Having a landfill operate 24 hours a day is leaving too much unmonitored time to avoid adhering to regulations.
Francis Ronnau	Include requirement in regulation that "Landfills may not contaminate groundwater outside the solid waste boundary." found in Maine's regulations.
Francis Ronnau	Include requirement in regulation that "All liner systems shall be of double liner construction. The primary liner shall be synthetic and natural material. The secondary liner shall consist of a synthetic material, or a composite of synthetic and natural materials. All natural components of liners must consist of an appropriate thickness of soils or materials having in-place permeability of 1 X 10 to -7 cm/sec or less. All such facilities shall be equipped with leak detection and leachate collection systems capable of detecting and collecting leaks from the primary liner system." found in Vermont's regulations.
Francis Ronnau	Include requirement in regulation that "Classified surface waters, significant sand and gravel aquifers and fractured bedrock aquifers that could be affected by the proposed facility during normal operation or operation or in the event of unforeseen circumstances including the failure of any engineered barriers to ground water flow. The assessment must include a description of ground water flow rates, the direction of ground water flow in both the horizontal and vertical directions, and the degree of dilution or attenuation of any contaminants that may be released from the proposed site and flow toward any classified surface water, significant sand and gravel aquifer or fractured bedrock aquifer, as proven by Dye Test." as found in Maine's regulation.
Francis Ronnau	<p>Include requirement in regulation that "The owner or operator of a facility must ensure the noise (other than that occurring during construction of the facility) resulting from equipment or operations at the facility does not exceed the following energy equivalent sound levels beyond the property line owned or controlled by the owner or operator of the facility at locations authorized for residential purposes.</p> <p>Character of Community within a one-mile radius of facility - Leq Energy Equivalent sound Levels 7 a.m. to 10 p.m. / 10 p.m. to 7 a.m.</p> <p>Rural - 57 decibels (A) / 47 decibels (A) Suburban - 62 decibels (A) / 52 decibels (A) Urban - 67 decibels (A) / 57 decibels (A)</p> <p>If the background sound level exceeds the referenced Leq sound level limit, the Leq sound levels from the facility sources and background sources when combined must not exceed the Leq sound level of the background sources alone by more than three decibels (A). Whereas approximately 2,000 homes are within five miles of the proposed Green Ridge facility, and they intend to operate 24 hours a day, stringent noise restrictions are required." as found in New York's regulations</p>
Francis Ronnau	Include requirement in regulation that "Any new landfill site must include the acquisition and maintenance of a heavily vegetated buffer zone of at least 600 feet (600') between any working face or excavated area and adjacent property. Further, the outer limit of any landfill site must be located at least twelve hundred feet (1,200') from the center line of fresh water rivers." As found in Rhode Island's regulations.

Commenter	Comment
Francis Ronnau	<p>Include requirement in regulation that “The owner or operator of a facility that includes tanks for waste storage must comply with the following requirements:</p> <p>(1) All tanks must:</p> <ul style="list-style-type: none"> <li>(i) Be chemically compatible with the waste being stored;</li> <li>(ii) Be equipped with an overfill prevention system in good working order; and</li> <li>(iii) Have double-walled construction with leak detection.</li> </ul> <p>(2) Above ground tanks must:</p> <ul style="list-style-type: none"> <li>(i) Have and maintain a secondary containment system that is compatible with the waste being stored;</li> <li>(ii) Have a secondary containment system designed and built to contain 110 percent of the volume of all tanks containing hazardous material or potentially hazardous material.</li> <li>(iii) Be located on a stable surface which prevents movement, rolling, or settling.</li> <li>(iv) Have a system to remove storm water from the secondary containment area. Precipitation removal, (rain, snow or ice) must be initiated before 10 percent of the storage capacity is reached.</li> <li>(v) All tanks will be of the closed design, no open top tanks.</li> </ul> <p>(3) Test requirements:</p> <ul style="list-style-type: none"> <li>(i) Tanks must be inspected on no less than a monthly basis when waste is present in the tank, and the interior inspected whenever the tank is empty.</li> <li>(ii) Non-destructive testing of all tanks must be done on 25 percent of each tanks welds and seams every three (3) years.</li> <li>(iii) If the inspection reveals a leak or any other deficiency that would result in failure of the tank, remedial measures must be taken in immediately to eliminate the tank or correct the deficiency.</li> <li>(iv) The overfill protection systems must be inspected monthly when waste is present in the tank.” as found in New York’s regulations.</li> </ul>
Victoria Ronnau	<p>Rural counties, in Virginia, do not have the privilege of municipal water. The state recognizes approximately 20% of the population, 1,714,000 citizens, on private drinking well water and it is estimated more than 13 million households rely on private wells for drinking water in the United States (US Census American Housing Survey 2017). Yet the EPA does not regulate private wells nor does it provide recommend criteria or standards for individual wells. Many states implement stringent siting requirements for new landfills and I strongly recommend the state of Virginia consider stronger regulations to protect the health and safety of drinking water located near landfills.</p>
Victoria Ronnau	<p>Rhode Island requires Water well surveys - A survey of public wells within three miles of the site and private water wells within one mile downgradient and one-quarter mile upgradient of the proposed site must be conducted. An alternative distance may be agreed upon by the Director. Surveys must obtain, where available, the location of wells, which must be shown on a map with their elevation and depth, name of owner, age and usage of the well; geologic unit screened; well construction; static water levels; well yield; actual or perceived water quality; and any other relevant data which can be obtained. Consider requiring this in Virginia.</p>
Victoria Ronnau	<p>Some other states have the following requirement to protect groundwater: No new landfills, within twelve hundred (1,200) feet of any public or private water supply well in existence at the time the zone is established.</p>
Victoria Ronnau	<p>Many states include a mandatory 100 mil. liner, even though the minimum requirement by the EPA is 60 mil.</p>

Commenter	Comment
Victoria Ronnau	<p>Traffic from the proposed volume of imported waste from 500 mile outside Virginia is a threat to the safety of our residents. If County Waste Cumberland County Landfill is approved, the round trip total volume of semi-tractor trailers, importing trash, will put a financial burden on the taxpayers for road repairs and risk the public safety of our citizens driving on the roadways. We should hold to the same safety regulations and standards of our neighboring states.</p> <p>New Jersey implemented this regulation through their Office of Transportation; "Only those solid waste transporters who filed their Disclosure Statements, met the Solid Waste Licensing requirements, and passed an Integrity Review by the New Jersey State Police and Attorney General's Office receive an approval to transport solid waste in New Jersey. Solid Waste Transporters are regulated in the State of New Jersey when they collect and/or dispose of discarded waste from; stores, restaurants, schools, hospitals, private or public buildings etc."</p>
Victoria Ronnau	<p>Maine, Vermont, Massachusetts, New Hampshire, New York and New Jersey require a full criminal investigation on the owners, senior level positions and operators, as part of the application process. Consider including the following New Jersey requirements in Virginia's regulation "In addition to this operational paperwork, every applicant must complete a detailed personal and financial disclosure statement, submit to a fingerprint check, and undergo a background investigation based upon the provisions of the A-901 Law, 13:1E-1 et seq., DEP is granted the power and duty of overall management of the industry. Any business engaged in the collection, transportation and disposal of solid waste must gain DEP approval of an official registration statement. Among other things, DEP is required to evaluate each applicant's level of expertise and competence in the field. Once in receipt of a solid waste license, the licensee must obtain a "certificate of public convenience and necessity." N.J.S.A. 13:1E-126 et seq., which is designed to preclude the participation of persons with known criminal records, habits and/or associations. The law states that no solid waste license shall be approved by DEP if any individual required to be listed in a disclosure statement, or otherwise known to have a "beneficial interest" in the business of the applicant, has been convicted of one or more of 22 enumerated offenses, has been identified as a career criminal offender or has an organized crime affiliation. Scrutiny is given to all owners, managers, officers and other principals and to those generally referred to by the statute as "key employees." These background investigations are assigned to State Police detectives who work in conjunction with supervisory personnel assigned to the Division of Law's A-901 Unit. Finally, successful applicants for solid or hazardous waste transportation licenses are issued official DEP decals that must be affixed to all vehicles collecting and disposing of such waste in landfills and/or at incinerator."</p>
Artour Saakian	<p>Amend 9VAC20-81-120 C 3 b (2) to read "within seismic impact zones." Do not allow any exceptions to construction in these zones. The intention of the regulation (no siting on a fault) is to prevent construction of landfills in areas likely to experience significant ground forces. However, in Virginia, earthquakes do not typically occur on mapped surface fault lines referred to in the regulations. Therefore, the more appropriate standard among currently defined geologic boundaries is the seismic impact zone itself. It is not appropriate to use the locations of mapped faults to assign seismic hazard or risk.</p>

Commenter	Comment
Artour Saakian	Landfill construction materials naturally deteriorate over time. Therefore, demonstrating that all containment structures, including liners, leachate collection systems, and surface water control systems, are designed to resist the maximum horizontal acceleration in lithified earth material for the site at the time of landfill construction is irrelevant as it does not ensure adequate groundwater protection over a period of time during which groundwater contamination starts and continues to occur.
Artour Saakian	The Virginia Aquifer Susceptibility study by USGS in conjunction with Virginia Department of Health – Office of Drinking Water, states the aquifer in the Piedmont region of Virginia is 100% susceptible to contamination given a 0 to 50-year horizon (Aquifer Susceptibility in Virginia). Central Virginia Seismic Zone (CVSZ) is located within the Piedmont region of Virginia. When this scientific finding is combined with EPA statement that "...even the best liner and leachate collection systems will ultimately fail due to natural deterioration..." (EPA statement: Federal Register / Vol. 53, No. 168 Page 33345) it becomes abundantly clear that the groundwater contamination is only a matter of time. Given the hydrological connectivity of groundwater in the James river watershed to the James river, groundwater contamination will inevitably result in contamination spreading to the James River. James River serves as a source of drinking water for millions of Virginia citizens (including Henrico county and the city of Richmond). A 2014 USGS study of leachate contents established based on the study of 19 landfills across the United States found 129 of 202 pharmaceutical (prescription and nonprescription), household, and industrial chemicals in untreated leachate samples. This will cost Virginia taxpayers to treat water for all the additional contaminants found in landfill leachate including VOCs, heavy metals, PFAs a.k.a. "forever chemicals", dioxins including PCBs etc. etc.
Artour Saakian	Amend 9VAC20-81-120 C 3 a (6) to prevent siting of a landfill in any area vulnerable to liquefiable soil. The presence of soil liquefaction, as was observed after the Mineral 2011 earthquake, is problematic for landfill siting for two reasons. One, it can lead to major structural failures under seismic loading and two, it makes prediction, tracking, and mitigation of any leaks difficult.
Artour Saakian	Amend 9VAC20-81-120 to include requirement that New sanitary landfills and expansions of existing landfills, other than those impacting less than 2.0 acres of nontidal wetlands, shall not be constructed in any Resource Protection Areas as defined in 9VAC25-830-80. Resource Protection Areas. The Code of Virginia establishes elsewhere (9VA25-830; Bay Management Regulations) the regulation for protection of lands in addition to wetlands (e.g. riparian forest buffers) in order to protect the Bay and water quality. The requested change is needed to align the regulations guiding the siting of landfills with this requirement to appropriately manage the lands of the Bay watershed.
Artour Saakian	Add requirement of additional buffer space of 1000 feet for landfill construction over 2.0 acres adjacent to resource protection area/wetland/riparian forest, and require demonstration that there is not a practicable alternative elsewhere that is not located in an area that will threaten Resource Protection areas. Landfills create a permanent impervious surface when closed, because an impervious liner is placed on top of the waste to prevent rainwater entering and trees are actively prevented in order to prevent penetration of the liner. Upgradient impervious surfaces in watersheds are well-known to degrade water quality in the accompanying streams and rivers, especially within 500 feet of a riparian forest buffer, but impervious surfaces over 5 miles upstream can negatively impact water quality.

Commenter	Comment
Artour Saakian	<p>No new sanitary landfill area shall be constructed in the areas of high aquifer susceptibility. This includes the following aquifer systems: Appalachian Plateau, Valley and Ridge, Blue Ridge, Piedmont”. Virginia Aquifer Susceptibility study by USGS in conjunction with the Virginia Department of Health – Office of Drinking Water established that Appalachian Plateau, Valley and Ridge, Blue Ridge, and Piedmont aquifer systems are 100% susceptible to contamination given a 0 to 50-year horizon (Aquifer Susceptibility in Virginia). The fact that Central Virginia Seismic Zone (CVSZ) is located within Piedmont region of Virginia further raises the already high risk profile of siting landfills in this region of Virginia. When this scientific finding is combined with EPA statement that “...even the best liner and leachate collection systems will ultimately fail due to natural deterioration...” it becomes abundantly clear that the groundwater contamination is only a matter of time. Given hydrological connectivity of groundwater in the James river watershed (Piedmont region) to the James river, groundwater contamination will inevitably result in contamination spreading to the James river which serves as a drinking water source for millions of Virginia citizens.</p>
Christal L. Schools	<p>Revise 9VAC20-81-210 to remove language in A 2 and add the following additional language: "The liner system must include a primary leachate collection and removal system that is designed to maintain no more than 12 inches of leachate depth (head) above the primary liner, except during 24-hour, 25-year storm events and except in sump areas. The leachate collection and removal system must be designed to function with proper maintenance throughout the active life, post-closure period, and custodial care period of the landfill.</p> <p>a. The primary leachate collection and removal system must be a minimum of two feet thick.</p> <p>b. On slopes less than or equal to 10 percent, the 24 inches of primary leachate collection and removal system must have a hydraulic conductivity of 1.0 centimeter per second or greater. Alternatively, the upper 12 inches of primary leachate collection and removal system may have a hydraulic conductivity of 0.1 centimeter per second or greater if the lower 12 inches has a hydraulic conductivity of 1 centimeter per second or greater.</p> <p>c. On slopes greater than 10 percent, the entire 24 inch thickness of the primary leachate collection and removal system must have a hydraulic conductivity of 0.1 centimeter per second or greater.</p> <p>The liner system must include a secondary leachate collection and removal system placed between the primary and secondary liners with a design capacity of at least 1,000 gallons per acre per day and a maximum detection time of 24 hours using steady state flow calculations in a saturated medium. On slopes less than or equal to 10 percent, the secondary leachate collection and removal system must include a geosynthetic drainage layer and a minimum of 1 foot of soil drainage media with a hydraulic conductivity of 0.1 centimeter per second or greater, and a maximum leachate depth (head) of 1 inch.</p> <p>On all slopes greater than 10 percent, the secondary leachate collection system may be constructed of a geosynthetic drainage layer system designed to meet the hydraulic and mechanical needs of the landfill with a head that does not exceed the thickness of the confined drainage layer."</p> <p>These requirements would provide substantial reduction to the risk posed by landfills to potentially affected water supplies.</p>

Committer	Comment
<p>Timothy Kennell, member Cumberland County Board of Zoning Appeals (BZA) and former member Cumberland County Board of Supervisors, and Keith Oulie, former member Cumberland County Planning Commission and former member Cumberland County BZA</p>	<p>A number of issues are suggested by the fact that out-of-state corporations find the laws of Virginia to be so deficient in relation to other states that it is economically feasible, and in fact more profitable, to transport waste from a 500 air-mile radius to a Virginia site, rather than to deposit the waste into the state of origin.</p>
<p>Timothy Kennell, member Cumberland County Board of Zoning Appeals (BZA) and former member Cumberland County Board of Supervisors, and Keith Oulie, former member Cumberland County Planning Commission and former member Cumberland County BZA</p>	<p>We find it distressing that identical regulations apply to landfills with a 200 acre fill area as well as an 800 acre fill area. How can the same regulations in regard to liner, buffers, water quality monitoring, historic sites, highway design, air quality monitoring, and local property value impact be equal between a 200 acre fill site and an 800 acre fill site?</p>
<p>Timothy Kennell, member Cumberland County Board of Zoning Appeals (BZA) and former member Cumberland County Board of Supervisors, and Keith Oulie, former member Cumberland County Planning Commission and former member Cumberland County BZA</p>	<p>Can it be that regulations in Virginia can be so lax that County Waste (or others) and their consultant engineers, could propose a landfill with the deficiencies of on site and nearby streams, wetlands, floodplains (that have not been revisited by FEMA in over 10 years) and still have confidence that their proposal will be approved? They are confident because our regulations are so obsolete compared to those of the home states in which they operate, that our communities are targeted for facilities that would not be approved in those home states. Virginia should be a leader in setting the standards for public health, safety, and environmental quality, rather than simply accepting mediocrity as an acceptable standard to accommodate out-of-state business.</p>

**Agency response**

These regulations are applicable to all solid waste management facilities within the Commonwealth and are adopted under the authority given to the Waste Management Board by the Code of Virginia. Some commenters suggested changes to the requirements found in the Virginia Waste Management Act (§10.1-1400 et seq. of the Code of Virginia.) The periodic review is of the existing Virginia Solid Waste Management Regulations (9VAC20-81-10 et seq.) and any consideration of amending, repealing, or retaining is limited to the regulation. Changes to the Code of Virginia can only be accomplished through action by the Virginia General Assembly.

The agency received many suggestions for changes to the Virginia Solid Waste Management Regulations pertaining to the siting, design, operation, and monitoring of municipal solid waste landfills,

requirements for host agreements, and public notification requirements. Commenters also referenced requirements from other states' regulations and requested similar requirements be placed into Virginia's regulations. Others submitted comments requesting additional regulation of and requirements on landfills larger than a specified size.

The agency believes the technical changes to the regulations identified in the comments should be further discussed and overall that potential revisions to the regulations should be evaluated. The agency is initiating the process to amend the regulation and will use a Regulatory Advisory Panel to develop amendments to the regulation. Comments received during the periodic review comment period will be provided to the Regulatory Advisory Panel members for review and discussion at their meetings as part of the process to identify amendments to the regulation.

### Effectiveness

*Pursuant to § 2.2-4017, please indicate whether the regulation meets the criteria set out in Executive Order 14 (as amended, July 16, 2018), including why the regulation is (a) necessary for the protection of public health, safety, and welfare, and (b) is clearly written and easily understandable.*

This regulation establishes criteria for nonhazardous solid waste disposal, treatment, or storage activities in Virginia to protect public health, safety, and welfare of citizens. The regulation is a technical regulation and is clearly written and easily understandable for individuals utilizing the regulation.

### Decision

*Please explain the basis for the rulemaking entity's decision (retain the regulation as is without making changes, amend the regulation, or repeal the regulation).*

The regulation is necessary to protect public health, safety, and the welfare of citizens and the agency is undertaking the process to amend the regulation.

### Small Business Impact

*As required by § 2.2-4007.1 E and F of the Code of Virginia, include a discussion of the agency's consideration of: (1) the continued need for the regulation; (2) the nature of complaints or comments received concerning the regulation from the public; (3) the complexity of the regulation; (4) the extent to which the regulation overlaps, duplicates, or conflicts with federal or state law or regulation; and (5) the length of time since the regulation has been evaluated or the degree to which technology, economic conditions, or other factors have changed in the area affected by the regulation. Also, discuss why the agency's decision, consistent with the stated objectives of applicable law, will minimize the economic impact of regulations on small businesses.*

This regulation continues to be needed to protect human health and the environment. This regulation establishes requirements for facilities conducting nonhazardous solid waste disposal, treatment, or storage activities.

The agency received many suggestions for changes to the Virginia Solid Waste Management Regulations pertaining to the siting, design, operation, and monitoring of municipal solid waste landfills, requirements for host agreements, and public notification requirements. Commenters also referenced requirements from other states' regulations and requested similar requirements be placed into Virginia's regulations. Others submitted comments requesting additional regulation of and requirements on landfills larger than a specified size.

The regulation contains technical requirements that must be met to protect human health and the environment. The technical requirements are specific to the type of nonhazardous solid waste being managed.

This regulation contains requirements that are similar to requirements found in 40 CFR Part 257 and 258. Permits are issued by Virginia and a federal permit is not required for the nonhazardous solid waste disposal, treatment, or storage activities. This regulation does not conflict with federal law or regulation.

This regulation was last amended in March 2019 to maintain consistency with federal and state regulations.

The regulation does contain a permit by rule provision for certain activities which provides a streamlined permitting approach. The permit by rule option protects human health and the environment while also minimizing the economic impact the regulation has on facilities including small businesses.

### Family Impact

*Please assess the potential impact of the regulation's impact on the institution of the family and family stability.*

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This regulation does not impact the institution of the family or family stability.