

COMMONWEALTH OF VIRGINIA
Department of Environmental Quality

Subject: Division of Land Protection and Revitalization Guidance Memo
LPR-SW-SI-16
SUBMISSION INSTRUCTIONS FOR AN ASSESSMENT OF CORRECTIVE MEASURES FOR
GROUNDWATER AT SOLID WASTE LANDFILLS

To: Regional Land Protection and Revitalization Program Managers

From: Jeffery A. Steers *Jeffery A Steers*
Director, Division of Land Protection and Revitalization

Date: January 31, 2012

Copies: Regional Directors

Summary

This guidance provides owner/operators of regulated solid waste management facilities with an overview of the information applicable to assessing potential remedial actions at solid waste landfill sites with groundwater releases above groundwater protection standards in accordance with 9 VAC 20-81-260.C.1 of the Virginia Solid Waste Management Regulations (VSWMR).

Electronic Copy

An electronic copy of this guidance applicable to regulated solid waste sites is available on DEQ's website at <http://www.deq.virginia.gov/waste/guidance.html>.

Contact Information

Please contact the groundwater program coordinator, Mr. Geoff Christe at (804) 698-4283 or via email geoff.christe@deq.virginia.gov with any questions regarding the development or application of this guidance.

Disclaimer

This document is provided as guidance and, as such, sets forth standard operating procedures for the agency. However, it does not mandate any particular method nor does it prohibit any alternative method. If alternative proposals are made, such proposals should be reviewed and accepted or denied based on their technical adequacy and compliance with appropriate laws and regulations.



Submission Instruction

Assessment of Corrective Measures for Groundwater at Solid Waste Landfills

Virginia DEQ - Division of Land
Protection & Revitalization
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Richmond, VA 23219

APPLICABILITY

This Submission Instruction (SI) is applicable to all solid waste management facilities conducting groundwater monitoring under the requirements of the Virginia Solid Waste Management Regulations (VSWMR), originally promulgated by the Virginia Waste Management Board December 21st, 1988; as amended. These SI have been designed in a manner consistent with the regulatory language in Amendment 7 of the VSWMR, effective March 16th 2011 and they supersede SI previously issued by the Department in July of 2003 as SI#16.

DEVELOPMENT

These SI have been developed to assist an owner/operator in the preparation of an Assessment of Corrective Measures (ACM). The SI reference technical information contained in EPA's 1993 *Solid Waste Disposal Facility Criteria Technical Manual* [EPA 530-R-93-017], and EPA's *preamble* to the Subtitle D rule found in the Federal Register. These SI provide an outline of the suggested minimum technical content that should be included within an ACM submitted to the Agency for review. It is ultimately the responsibility of the Permittee to include all the data or information necessary to sufficiently support each of the conclusions presented in the ACM.

These SI have not been developed as Department rule or policy. They have not gone through public comment. They do not supersede any regulatory requirement found in the VSWMR. Their use is not mandated under the current VSWMR. The Department recognizes that these SI may need to be altered to fit facility-specific geologic or hydrologic conditions that cannot be adequately accounted for in the SI. It is expected that the final content of any ACM submitted to the Department will likely include one or more site-specific considerations.

All SI are considered 'living' documents which will be updated or revised as needed. Comments or suggestions for future SI revisions can be submitted at any time to the attention of the Solid Waste *Groundwater Program Coordinator* at the address listed on the cover of this SI.

LIMITATIONS/DISCLAIMER

These SI may contain references to EPA's commentary on groundwater remediation in its preamble to the Subtitle D regulations and its 1993 Subtitle D regulation guidance. EPA's preamble contains its expanded interpretation of the technical content in the 40 CFR 258 statute and addresses the response to public comment received during the draft regulation process. Although EPA's preamble language is referenced within the SI, preamble language is not a binding part of a law/statute and it can neither enlarge the scope of a statute's applicability nor

confer powers to the regulatory authority not already expressly contained within the language of the statute. At the same time, if there is a question of the intent or meaning behind any portion of the Subtitle D statute text and the preamble addresses the question, the content of the preamble cannot be ignored if it addresses the ambiguity raised. The Subtitle D regulatory guidance developed by EPA expands further upon the content of the preamble, but has the same limitations in that guidance cannot be used to infer requirements that are not expressly part of the Subtitle D statute.

TECHNICAL CONSIDERATIONS

Performance Standards

When assessing potential remedial options for addressing a groundwater contaminant plume, an owner/operator must choose a remedy that meets the four requirements defined under *9 VAC 20-81-260.C.3.c.(1)* regarding protection of human health and the environment, attainment of the groundwater protection standard(s), source control, and management of investigatively-derived wastes. The Department will not give approval to any remedy selected if that remedy has not been demonstrated in the ACM to have the practical capability of meeting these common performance standards. This stance is consistent with EPA's 1993 Subtitle D guidance (pg. 295) which noted that:

"The technology proposed as a cleanup measure should be the best available technology, given the practical capability of the owner or operator.", and

"The technologies identified should be reliable, based on their previous performance."

EPA (pg. 296) also noted that the choice of an appropriate groundwater treatment method will require:

"... the experience of a qualified professional and will necessitate a literature review of the best available treatment technologies."

Content Requirements

EPA, in its Subtitle D rule, established the timeframe under which the ACM process must begin [*40 CFR 258.56.(a)*]. This timeframe was adopted by the

Commonwealth and is currently found in the VSWMR under 9 VAC 20-81-260.C.1.c.

Prior to beginning the ACM process, an owner/operator must complete the plume delineation process noted by EPA in its 1993 Subtitle D guidance (pg 292):

"To effectively assess corrective measures, the lateral and vertical extent of contamination must be known."

The Department refers owner/operators to Submission Instruction #15 which provides guidance on the plume delineation actions required under 9 VAC 20-81-260.C.1.a, commonly known as a 'Nature and Extent' study,

The VSWMR do not define whether the plume delineation results should be submitted as a separate document, or as part of the ACM submittal. If the results define the plume as remaining within the permitted facility boundary, the Department feels it is appropriate to submit the results as part of the ACM. If the plume has migrated off site, the results are better presented in a stand-alone document.

Once plume delineation actions have been successfully completed, a technical review of potential groundwater remedies must be screened against four general criteria defined by EPA.

- How long will it take to construct/implement/complete the chosen remedy [9 VAC 20-81-260.C.3.a.(2)]? This question is especially pertinent at those sites where the plume is already migrated off site or is impacting an environmental receptor. Estimation of the remedy completion date can be based on past case studies in similar settings and/or an analysis of the current trends in groundwater quality identified from sampling on site.
- Considering the performance, reliability, and implementation ease of the remedy, will it be able to achieve the groundwater protection standard(s), prevent cross-media impact, and control the exposure to any residual contamination [9 VAC 20-81-260.C.3.a.(1)]? As noted by EPA, this review should be based, to the greatest extent possible, on existing case studies. If these existing studies are not found applicable to the site, then a pilot study may be required to gain the screening data required. An owner/operator should not select a remedy for application that has no reasonable chance at being effective on site.
- Does the remedy require other institutional requirements as part of its

implementation, that may affect its implementation timing [9 VAC 20-81-260.C.a.(4)]. This will most commonly affect sites proposing the use of groundwater pump and treat systems that may require either an air or surface effluent discharge permit. The condition may also be applicable to sites which may have to remediate surface water impacts and obtain surface water or wetlands permits prior to remedy implementation. Such non solid waste permitting requirements must be factored into the timing needed for remedy implementation.

- Has the cost of the preferred remedy been considered prior to its selection [9 VAC 20-81-260.C.a.(3)]. This cost analysis should include all applicable construction, permitting, operations & maintenance, sampling, analytical, and reporting requirements anticipated during the lifetime of the remediation efforts. It is important to note that under the Subtitle D rule, EPA gave no allowance for waiving or abandoning remediation efforts simply as a result of cost [40 CFR 258.57.(e)] as noted in the Subtitle D preamble (56 FR 51089):

“EPA does not believe however, that cost should be a determinative factor in assessing remedial remedies when they do not achieve the same level of protection.”

In other words, it would not be found acceptable to select a less-expensive remedy when it could be demonstrated that such a remedy would be less protective of environmental receptors than compared to a more expensive remedy. The purpose of the cost assessment is simply to allow the owner/operator to budget the necessary funds over the expected life of the remedial program. Of note, both EPA and the Commonwealth additionally require landfill owner/operators [see 40 CFR 258.73] post financial assurance for the selected remedy for the expected length of the corrective action period.

Public Participation Requirements

With respect to ensuring the public has a role in remedy selection, EPA, in the Subtitle D preamble (56 FR 51088), noted that:

“... the public should be actively involved in the evaluation of corrective measures.”, and “... today’s final rule requires the owner or operator to discuss potential remedies at a public meeting prior to the selection of a remedy.”

The Department has defined the requirements of this public meeting in the VSWMR under *9 VAC 20-81-260.C.4*. The main aspects of the public meeting process include:

- A defined time line for the advertisement and content of a newspaper notice [*C.4.(a)*].
- Definition of the length of the public comment period [*C.4.a.(1)*].
- Allowance for public review of the draft ACM document [*C.4.(b)*].
- Schedule requirements for the public meeting [*C.4.(c)*].

Because EPA defined the corrective measures public meeting as one being organized by the owner/operator, there is no requirement that the Department attend or be represented at the meeting. However, the results of the public meeting should be included in the final ACM submission, along with any formal responses to public comment received by the owner/operator during the public comment period.

SUBMISSION FORMAT

Once all phases of ACM development have been completed, the document can be submitted to the Department for review. The submission must be a stand-alone technical document that is certified by a qualified groundwater professional and submitted in a timeframe meeting the requirements of *9 VAC 20-81-260.C.1.f*.

For the sake of consistency and to ensure an expeditious review, the information (technical content) of the ACM should be arranged in the order presented below. The sections discussed herein shall be considered standard technical content. Submissions that do not provide the standard technical content outlined herein are more likely to be found to be incomplete and requiring revision during the Department's technical review process. The Department also notes that there may be some site-specific instances where a facility's technical data may require additional information beyond that listed in these SI as a means of more fully characterizing the technical data available and conclusions derived thereof. These instructions set no limits on the quantity of 'additional' content as long as the information included directly pertains to that required of the conclusion presented in the document.

Cover Page – Provide the following information:

- Landfill Name and Permit #
- Landfill location

- DEQ Region
- Name & Address of the Consultant
- Name & Address of the Permittee
- Date report submitted

Signature Page – This page should contain the signature & seal of a qualified groundwater professional certifying the content & findings of the presumptive remedy.

Table of Contents – Specify the order and organization of the report sections.

Executive Summary – Provide a brief summary of the following technical findings of the ACM:

- Date of initial GPS exceedance
- General location of all GPS exceeding wells
- Description of exceeding constituent(s)
- Plume delineation summary, including any historical trends in CoCs
- Risk assessment summary
- Public meeting results

Introduction – Discuss the physical setting of the site. Describe adjacent land use, including the use of any private groundwater wells. Discuss the characteristics of the onsite aquifer. Discuss the compliance well network noting the wells responsible for triggering the plume delineation and remedy assessment work. The section should describe any limitations, as well as definitions for any technical or laboratory terminology used in the report.

Nature and Extent Study – If not submitted under separate cover, the ACM should describe the constituent(s) which triggered the need to perform plume delineation, a discussion of any new wells installed onsite to characterize the release and the sampling results obtained from those wells, noting, and if applicable, any apparent trends in constituent concentration data downgradient of the waste mass. The physical characteristics of the constituent(s) of concern (water solubility, density, biodegradability, etc.) should be included. If the NES has been submitted separately, this section should simply refer the reader to the previously submitted document.

Assessment of Corrective Measures Discussion – Describe the results of the comparative review of different remedial options.

Public Meeting – Provide a summary of the public meeting actions held to advertised the draft results of the ACM including, if applicable, any formal responses to public comment received during the process.

Figures – Provide at a minimum copies of the:

- USGS 7 1/2-minute topographic map - showing the site location.
- Recent aerial image covering the site and surrounding properties to document adjoining land use.
- Site Plan - to include topographic contours, permanent structures, surface water features, a bar scale, north arrow, facility boundary, waste management unit boundary, and all monitoring wells or sampling points relevant to the submittal.
- Groundwater potentiometric map.
- Groundwater plume map (both vertical and horizontal delineations).
- Constituent specific, groundwater trend graphics.
- Optional figures - may include copies of published geologic maps, US Department of Agriculture soils maps, geologic cross-sections, etc.

Appendices – Provide at a minimum, copies of the following:

- Boring logs for any newly installed NES wells/borings.
- Field Sampling Sheets.
- Chain of Custody Records.
- Laboratory Analytical Results for the initial suspect event and any verification events or ASD related sampling events.

SUBMISSION TIMELINES

The ACM must be submitted under the 180 day timeframe established under 9 VAC 20-81-260.C.1.f. The submittal date triggers off the date the Department is notified of the initial exceedance of a groundwater protection standard. The Permittee may petition the Director to extend the deadline for ACM submittal if based on good cause [9 VAC 20-81-260.C.1.g], as long as the request is received in a manner that allows the Director to render a decision on the extension request prior to the close of the normal submission timeframe.

Any revisions to the ACM to address the Department's technical review comments shall be submitted in a manner consistent with the time-frames defined in the Department's technical review letter.

REFERENCES CITED

USEPA, 1991. Solid Waste Disposal Facility Criteria; Final Rule, Federal Register, vol.56, no.196, p.50978-51119.

USEPA, 1993. Solid Waste Disposal Facility Criteria – Technical Manual, Office of Solid Waste and Emergency Response, EPA/530/R93/017, 349p.