

SUBMISSION INSTRUCTIONS NO. 16

COMPLETING AN ASSESSMENT OF CORRECTIVE MEASURES (ACM)
FOR REGULATED
SANITARY, CDD, AND INDUSTRIAL LANDFILLS

Developed by

Virginia Department of Environmental Quality
Office of Waste Permitting
Groundwater
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Submission Instructions No.16 – The Assessment of Corrective Measures Study

1.0 APPLICABILITY OF INSTRUCTIONS

These instructions are applicable to all solid waste facilities conducting groundwater monitoring under the requirements contained in the Virginia Solid Waste Management Regulations (VSWMR), promulgated by the Virginia Waste Management Board, December 21st, 1988, as amended.

2.0 INTENT OF INSTRUCTIONS

If, after statistical analysis, it has been determined that one or more Appendix 5.1 constituents are detected at statistically significant levels above the established groundwater protection standard (GPS), the Permittee shall submit to the Director an Assessment of Corrective Measures (ACM) Report, or a Proposal for Presumptive Remedy (PPR).

The submission of such material is required within 180 days of the GPS exceedance determination [9 VAC 20-80-310.A.1]. As allowed under 9 VAC 20-80-310.A.4, a Permittee may choose to submit a Proposal for Presumptive Remedy in lieu of conducting an Assessment of Corrective Measures. While there is overlap of technical content contained in both report types (i.e., 9 VAC 20-80-310.A.4.a(1 & 2)), these Submission Instructions have not been designed to address the content expected within a Proposal for Presumptive Remedy (refer to Submission Instructions #18 for further detail on Presumptive Remedy submissions).

The ACM is a detailed investigation into the nature, extent, associated risk, and alternatives for clean-up dealing with a documented release from a solid waste management unit. Completion of the ACM entails two separate but related actions. The VSWMR specify that prior to submitting the ACM report required under 9 VAC 20-80-310.A.1, the Permittee shall determine the “nature & extent” of the release. The function of the NES is to provide sufficient site-specific data through which an assessment of site-specific corrective measures can be completed [9 VAC 20-80-250.D.6.g(1); Appendix 5.6.D.10.b]. Content of the NES is further discussed in Submission Instructions No. 15.

These instructions have been developed to assist the Permittee in developing an ACM that provides the type of data likely to support the choice of a site specific Corrective Action Plan (CAP).

The content of these instructions has been modeled, in part, after several existing references including:

- RCRA Correction Action Plan (Final) [EPA 520-R-94-004],
- Corrective Measures for Releases to Groundwater from Solid Waste Management Units [EPA 530-SW-88-020],
- Corrective Action: Technologies and Applications [EPA 625-4-89-020]
- A Comparison of the RCRA Corrective Action and CERCLA Remedial Action Processes [DOE/EH-0365],
- RCRA Corrective Action & CERCLA Remedial Action Reference Guide [DOE/EH-0001],
- “Draft” Handbook of Groundwater Policies for RCRA Corrective Action [EPA 530-D-00-001].

Since many of these references were developed for RCRA Subtitle C and/or NPL facilities, the Department has used them as a means of identifying data types and

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comparative technologies that have previously proven successful in completing ACM investigations. It is important to note that other data or reporting requirements contained in the sources listed above, which are not deemed applicable to the activities required under 9 VAC 20-80-310, have not been made part of these instructions.

These instructions have been developed as guidance, not a rule. They have not gone through public comment. They may be altered to fit facility-specific conditions where needed. These submission instructions are an outline of the minimum technical content that should be addressed within the ACM.

3.0 BENEFITS OF INSTRUCTIONS

The Department believes developing ACM submission guidelines will:

- provide the minimum technical content of an ACM report,
- decrease internal Department review time, and
- assist the regulated community with preparing technically complete documents.

The intent of standardizing the submissions is to reduce the time span between detection of constituents at statistically significant levels above the established GPS, and the final implementation of a site specific Corrective Action Plan.

4.0 REPORT FORMAT

While the technical findings of an NES are used for the completion of the ACM report, the VSWMR (9 VAC 20-80-250.D.6.g, Appendix 5.6.D.10.b, or 9 VAC 20-80-310) do not require that the two document types (NES & ACM) be combined as a single submission. The NES may be submitted as a stand alone technical document using Submissions Instructions No.15 as guidance.

In cases where the NES is submitted as part of the ACM, the headings may be altered to fit the format of the ACM presented in these Submission Instructions.

At a minimum, the ACM report shall address each of the topics noted in these instructions and except as noted above and should follow the section format outlined in Table I of these instructions. The sections listed herein shall be considered standard technical content. Please note that ACM report submissions that do not contain the technical content outlined here may be judged incomplete during technical review.

The Department notes that there may be some instances where a facility's technical data may require additional sections beyond those listed in these submission instructions as a means of more fully characterizing the technical data available and conclusions derived from that data. These instructions set no limit on the number or content of additional report sections as long as the information included directly pertains to that required of an ACM report.

The administrative and technical content to provide for each section of the ACM report is briefly described on the following pages.

Cover Page – Provide the following information:

- Landfill Name
- Landfill location (County Name only)

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- DEQ Permit #
- 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 of the ACM report.

Table of Contents – Specify the order and organization of the report sections as outlined in Table 1 of these instructions.

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

- Date of initial GPS exceedance
- Locations of impacted site wells
- Description of the extent of the impacted groundwater (defined during the NES)
- Discussion of remedial alternatives
- Discussion of public hearing results/comments received

Introduction – Discuss, in general terms, how the work performed pertaining to the ACM serves to:

- Characterize the environmental setting of the facility
- Evaluate the nature and the vertical and horizontal extent of the release of landfill constituents to groundwater (NES),
- Individually assess the effectiveness of several possible remedial alternatives for the release(s) identified on site
- Collect data sufficient to characterize the risk posed by the release to human and other environmental receptors

Data gathered during the NES must be sufficient to support the completion of the ACM. The Permittee should indicate the ACM report was submitted in a format consistent with these submission instructions and applicable reference(s) in the VSWMR. The report should describe any limitations (company specific language), as well as definitions for any technical or laboratory terminology used in the report.

Site Description – This topic should be covered in detail in the NES. Therefore, for ACM's submitted under separate cover, there should only be a brief summary of the site location, monitoring well network, and hydrologic conditions affecting contaminant migration.

(1) Physical Setting Information

- Identify facility on USGS 7 ½-minute topographic map
- Include a copy of the topographic map as a Figure
- Describe general site topography and surface drainage
- Identify adjoining land use types

(2) Aquifer Recognition

- Identify the nature of the uppermost aquifer (i.e., overburden, saprolite, bedrock)

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- Identify the nature of the groundwater table (i.e., confined, semi-confined, unconfined). If the aquifer is of a karst nature, describe the influence of conduit flow (and any structural control on the development of such conduits) on contaminant migration direction
- Define general depth to groundwater on site
- Include a Potentiometric map as a Figure

(3) Monitoring Well Network

- Identify all upgradient and downgradient monitoring wells within the Assessment or Phase 2 compliance network, and note which wells show impacts to groundwater above respective groundwater protection standards
- Identify each well on a facility site plan drawing, included as a Figure
- Delineate or otherwise discuss the extent of the release

For ACM's which contain an NES, the NES should follow the format presented in Submission Instructions #15.

Groundwater Protection Standards – Provide a discussion of the prior Appendix 5.1 constituents that have been detected (table format preferred). Highlight those constituents that have exceeded GPS.

Assessment of Risk - Discuss the results of the site-specific risk assessment. The discussion should include a notation of potential risk receptors, potential migration pathways, the toxicity of the groundwater constituents that exceed GPS, and any other information required to complete the assessment of risk to receptors.

Discuss the possible contribution of landfill gas migration on any volatile organic compounds found outside the waste mass. Note whether the facility has a gas extraction system in place and whether or not the levels of organic constituents noted in historical groundwater data have changed since installation of the gas control system. Discuss (in cases where no offsite wells have been tested) the relative risk for offsite impact from groundwater containing compounds at concentrations above their respective GPS.

Discussion of Remedial Technologies – Provide, for each technology presented in the ACM, a detailed evaluation of how the technology will meet each of the technical criteria listed below. These technical criteria are considered to be baseline criteria that would meet the final cleanup goals at the facility (see selected remedies 9 VAC 20-80-310.B.2).

A Permittee may add other site specific concerns as needed. The content of the evaluation may be gathered from site specific information, EPA technical documents, peer-reviewed journal publications, prior case-studies, or other such technical sources, as long as those sources are referenced in the ACM. The evaluation may be presented in table format, or summary text.

Performance Criteria

- Ability to achieve clean-up standards at the point of compliance
- Compatibility with actual on-site environmental conditions
- Long-term reliability (based on case studies or past experience)

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- Length of time required before final clean-up goals are expected to be met
- Protectiveness of Human Health & Environment (HHE)
- Remedy impacts to safety of site personnel
- Remedy impacts to other media (air, soils, etc.)
- Type of “residuals” generated as a result of remediation

Implementation Criteria

- Ease of implementation (based on case studies or past experience)
- State, local, public health or environmental requirements for obtaining additional permits/approvals
- Anticipated length of start-up time
- Ability to obtain community acceptance

Operational Cost

- Start-up cost (i.e., construction, equipment, labor, permits, etc.)
- Normal operational cost, per year (i.e., routine operations, sampling, lab work, disposal, administrative oversight, etc)
- O&M costs (replacement parts, labor)

For comparative purposes, the ACM may be designed to use modifiers such as “good”, “fair”, “poor”; or “high”, “medium”, or “low” when discussing the technical criteria listed above.

ACM Public Participation – Provide a summary of the results of the public meeting held to discuss the “draft” results of the ACM. This section, at a minimum, shall contain the following information (9 VAC 20-80-310.A.5):

- Name of the newspaper in which the public meeting was advertised
- Dates on which the advertisement was published
- Name of the location in which the “draft” ACM was placed for public review
- Dates of both the beginning and end of the 30-day public comment period
- Date, time, and place in which the public meeting was held

The Appendix of the ACM should contain a transcript of the public meeting, and copies of the written responses to any public comments received during the public comment period.

Conclusions - Provide a brief summary of the following information: description of the extent of the impacted groundwater as defined during the NES, discussion of remedial alternatives, and discussion of public meeting results/comments received

References - List all published materials referred to during the ACM process.

Figures – Provide at a minimum copies of the:

- USGS 7 ½-minute topographic map showing the site location
- Potentiometric surface contours and groundwater flow direction map with arrows showing flow direction for those sites with an aquifer type other than fractured bedrock.
- Site Plan drawing showing the plume boundaries for each separate constituent found above its GPS.

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Appendices – The applicant should provide copies of the following:

- Public Meeting Transcript
- Public Comment Received
- Responses to public comments

5.0 SUBMISSION TIMELINES

The VSWMR require that an ACM be initiated within 90 days of determining a GPS exceedance. 9 VAC 20-80-310.A.1 allows 180 days to elapse between determining a GPS exceedance and submitting a completed ACM which includes the delineation of the nature and extent of the groundwater release.

6.0 EXTENSIONS FOR SUBMISSIONS

9 VAC 20-80-310.A.1 allows a Permittee to request an extension to the 180-day ACM / PPR submission timeline, and gives the Director the authority to grant such a request for good cause. Good cause is undefined by the regulations and the decision to grant extensions will be made on a case by case basis, based on the technical information supplied by the Permittee. The most justifiable reason for requesting an extension would be if the initial results of the NES (which has no strict submission deadline) indicate the need to install additional NES wells to characterize the release. Such action would delay completion of the NES, and therefore push back the public participation period, and date of ACM completion. The Permittee should notify the Department as soon as possible if initial results of the NES indicate further site activities will be required.

7.0 DEPARTMENT REVIEW

Neither 40 CFR 258.56 or, 9 VAC 20-80-310, require the Department to issue “approval” to the findings of the ACM. However, the Department retains the right to review the ACM to ensure that the technical actions undertaken have been sufficient to meet the performance standards of 9 VAC 20-80-310.A.3 & 5.

Where no deficiencies in technical content of the ACM are noted, the Department will instruct the Permittee to continue with the selection of remedy, and initiation of a Corrective Action Plan (CAP). If technical deficiencies are noted, the Department may request modifications to the ACM, or may request that the technical comments be addressed as part of the CAP.

8.0 SELECTION OF REMEDY

9 VAC 20-80-310.A does not require that the ACM submitted actually contain a selection of remedy. 9 VAC 20-80-310.B.1 requires that a remedy be chosen based on the results of the completed ACM. 40 CFR 258.57 requires that an owner/operator notify the state director within 14-days of selecting a remedy.

To meet the requirements of the VSWMR, and remain consistent with 40 CFR 258.57, the Department suggests that the selected remedy accompany the ACM as a cover letter attachment, or be submitted as a stand-alone document after Department review of the ACM has been completed, but prior to the formal submission of a Corrective Action Plan.

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