COMMONWEALTH OF VIRGINIA

Department of Environmental Quality

Subject: Division of Land Protection and Revitalization Guidance Memo
LPR-SW-01-2012
INTERPRETATIVE GUIDANCE FOR GROUNDWATER WELL REPLACEMENT ACTIONS AT SOLID WASTE LANDFILLS

To: Regional Land Protection and Revitalization Program Managers

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

Date: February 3, 2012

Copies: Regional Directors

Summary

This guidance provides owner/operators of regulated solid waste management facilities with an overview of the options available when replacing non-performing groundwater monitoring wells at landfill sites monitoring in accordance with 9 VAC 20-81-250.B or C 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.

I - APPLICABILITY

This Guidance is applicable to all solid waste management facilities conducting groundwater monitoring under the requirements of the Virginia Solid Waste Management Regulations (VSWMR), promulgated by the Virginia Waste Management Board December 21st, 1988; as amended. It has been designed in a manner consistent with the regulatory language and the definitions of minor versus major permit modifications in Amendment 7 of the VSWMR, effective March 16th 2011.

II - DEVELOPMENT

This Guidance has been developed to assist an owner/operator in the programmatic options available when replacing non-performing, landfill-related, groundwater monitoring wells as a result of physical damage, inability to provide sufficient groundwater for sampling, or some other non-performance issue. General information on monitoring well location, installation, design and construction may be found in EPA's 1986 and 1993 RCRA guidance documents listed in the References section of this guidance.

III – LIMITATIONS / DISCLAIMER

This Guidance has not been developed as Department rule or policy and it has not gone through public comment. It does not supersede any regulatory requirement found in the VSWMR. Use of this guidance is not mandated under the VSWMR.

IV - TECHNICAL CONSIDERATIONS

Regulatory requirements regarding groundwater monitoring wells are described under *9 VAC 20-81-250.A.3.a.* One of these requirements is that each well must be able to yield sufficient quantities of groundwater for sampling and analysis purposes from the uppermost aquifer such that the sample:

- Represents the quality of background groundwater that has not been affected by a release from the landfill; and

- Represents the quality of groundwater at the disposal unit boundary.

The VSWMR require that downgradient monitoring wells be installed at the disposal unit boundary (or some other approved alternate point of compliance) in a manner that ensures detection of groundwater contamination in the uppermost aquifer. If physical obstacles preclude installation of groundwater monitoring wells at the disposal unit boundary, the downgradient monitoring wells may be installed at the closest practicable distance hydraulically downgradient from the boundary in locations that ensure detection of groundwater contamination in the uppermost aquifer.

When monitoring wells on a landfill site cannot meet the regulatory function noted above, the well(s) must be replaced in order for the site to remain in compliance with the Regulation and, in many cases, the facility's Permit conditions. Replacement of permitted wells is governed by the Permit Modification provisions described under *9 VAC 20-81-600.F.* The replacement action can be considered owner/operator initiated, which requires a 14-day Department notification prior to the change being put into affect (*9 VAC 20-81-600.F.1*), only if the need for the replacement action is triggered by …:

- well damage, or
- inoperation, and additionally …

the owner/operator ensures that the replacement well will be installed…:

- in the same location as the original well,
- to the same design specifications, and
- finished to the same depth as the original well.

This Guidance covers wells being replaced under the above-described circumstances. Monitoring wells that an owner/operator wishes to replace for a reason other than damage or non-performance may be addressed under two allowances not discussed in detail in this Guidance but briefly outlined as follows. Wells being moved away from the waste mass may be addressed under the Alternate Point of Compliance variance option defined under *9 VAC 20-81-740* and discussed in greater detail in separate Department Submission Instruction guidance available from the Virginia 'Townhall' website. Monitoring wells targeted for replacement that will still be situated adjacent to the waste mass, may be addressed via the minor modification process outlined under *9 VAC 20-81-600.F.2* as long as prior Department approval is obtained (see *9 VAC 20-81-600.F.2.c*).

14-day Department notification clarification

Although the well replacement actions described in this Guidance are deemed owner/operated initiated actions under Amendment 7 of the VSWMR, thus requiring no prior Department pre-approval; the VSWMR still require the Department be notified 14-days prior to the change being put into effect. The '*change*' in this case, is the replacement of the non-performing well and the modification of the facility groundwater monitoring plan (which describes the well network in place at the facility). The Department expects to receive notification no less than 14-days in advance of the planned replacement well installation with the notification containing a site map illustrating the well to be replaced and the reason for the planned action.

It is important to note that nothing in the VSWMR prevents the Department from commenting on the proposed action if a concern is recognized with the proposed action. Monitoring well installation is typically a costly action for an owner/operator and proceeding forward with such action should be avoided until any Department concerns are further discussed between the owner/operator, the environmental consultant, and the appropriate Regional Office groundwater staff.

Location Clarification

With respect to the concept of "*same location*", it is unreasonable to assume that a well which has been damaged or is inoperable because of performance issues or location in a high traffic/risk area will be re-installed in the same location as the non-performing well. The Department understands that some position alteration will likely take place. For the purposes of '*same*' location as inferred under *9 VAC 20-81-600.F*, if the new well is to be located within 25 feet of the inoperable well, such that it will ultimately be shown on the site plan in a location which is indistinguishable from the position of the original non-performing well, then its position will be considered the same with respect to 600.F.

Design Specification Clarification

With respect to "*same design specifications*", the new well should be installed using the same installation method as the original well, contain the same screened length and should be completed using the same (or equivalent) construction materials. All wells utilized for monitoring in the Solid Waste program should be constructed to RCRA TEGD specifications (EPA, 1986). Any variation to the original design would require Department pre-approval prior to replacement well installation. A special comment is noted for screen length. EPA guidance notes that screen length should be 10 feet, unless site specific circumstances require something greater (up to 20 feet). If the inoperable well had a screen length outside of these EPA RCRA guidelines, the new replacement well should be installed with a screen length meeting EPA RCRA guidelines.

Depth Clarification

With respect to the concept of "*same depth*", the Department offers the following clarifications. If the well is not performing as a result of a lowering of the groundwater table, the Department does not expect the replacement well to be installed to the same depth as the original well as the issue of non-performance will likely once again occur. By Regulation all wells must be screened within the uppermost aquifer which is the regulatory point of compliance (*9 VAC 20-81-250.A.2.a*). The act of increasing the depth of the replacement well, as long as it remains within the regulatory point of compliance, utilizes a RCRA consistent screened length, and is not set at a depth so deep that it cannot fulfill the performance requirement of *9 VAC 20-81-250.A.3.a.(2)*:

> "*The downgradient monitoring system shall be installed at the disposal unit boundary in a manner that ensures detection of groundwater contamination in the uppermost aquifer …*".

… will be considered an action that does not require Department pre-approval unless voluntarily requested.

If however, the well is not performing as a result of some form of external or internal physical damage, then the Department expects the replacement well to be installed to the same depth as the original well as the issue causing the non-performance is not hydrology related (i.e., caused by changes in the aquifer).

A special comment is provided for wells that were originally screened across the static water table. In some areas of the Commonwealth, such wells are strongly affected by changes in the water table. At some times of the year the water table may reside above the screened interval and at other times the water table may lie near the base of the screened interval. During these low stands in water table, soil pore space gases (oxygen or potentially LFG) may enter the well screen, come into contact with the water collected in the casing, and cause oxidation and precipitation of colloidal metals contained in the groundwater or introduce VOCs. In addition, during periods when the groundwater table rises through the well screen, the groundwater may pick up metals formerly precipitated along the capillary fringe zone leading to non-representative total metals results in the resulting groundwater sample. Wells affected by such groundwater table variations may be considered non-performing by the Department because they could fail to yield samples truly representative of the natural aquifer conditions. Replacement of such wells, by increasing the depth of the screened interval to isolate it from the effects of water table elevation changes, without a change in horizontal location, would be a non pre-approval action covered by this Guidance.

V – SUBMISSION REQUIREMENTS

Once monitoring well replacement has been completed on site, the well installation paperwork requirements of *9 VAC 20-81-250.A.3.g* must be completed within the timeframes defined in the VSWMR and accompanied by the required signature/certification. This will require the accurate location and elevation survey of the new well(s) as outlined in Groundwater Monitoring Plan Submission Instructions, and an update of the site plan found as part of the Groundwater Monitoring Plan to show the location of the replacement well.

REFERENCES CITED

USEPA 1986, RCRA Ground-water Monitoring Technical Enforcement Guidance Document, Office of Solid and Emergency Response, OSWER 9950.1, 208p.

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