

Georgia Department of Natural Resources

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MEMORANDUM

To: Land Protection Branch
From: Mark Smith *MS*
Subject: Groundwater Sampling Guidelines (Update)

This memorandum provides the recommendations regarding the development of groundwater sampling guidelines. This memorandum supersedes my previous memorandum dated May 30, 2008.

These guidelines are intended to aid current and new compliance officers in program-wide consistency regarding the many popular options currently available for groundwater sampling. Specifically, this memo contains my recommendations concerning the use of Region 4 EPA guidance as the basis of the proposed groundwater sampling policy. This memorandum also provides a discussion regarding the acceptability of various sampling and purging techniques.

New Region 4 Guidance

The Science and Ecosystem Support Division (SESD) of the Region 4 EPA has recently comprised a new series of Operating Procedures (OPs, February 5, 2007, and revisions). Among other things, these documents provide guidelines for collecting best representative groundwater samples. The basis of this groundwater sampling policy should be the procedures outlined in the "Groundwater Sampling" and "Pump Operation" OPs. Any deviations from the OPs, such as the use of alternative methods not specifically mentioned in the OPs could be acceptable, should they be approved by the EPD consulting geologist, and only be used in instances where it can be demonstrated that the data is representative. A request to use alternate sampling techniques should be answered with the following comment:

"We strongly discourage the use of _____ sampling method(s); however they may be voluntarily used in conjunction with low-flow sampling methods, outlined in the Region 4 EPA Science and Ecosystem Support Division Operating Procedures (OPs, _____ most recent date _____), to establish a site-specific correlation to low-flow sampling methods. If, after a period of _____ (*time period determined by compliance officer based on number of annual sampling events*), _____ method(s) are shown to be representative of site conditions in side-by-side comparisons using low-flow sampling methods in each well, the EPD will consider allowing the use of _____ methods for collection of groundwater samples at that site for general sampling purposes. However, this method of sampling may not be used to certify a site to a clean-up standard or for site delineation."

The new SESD OPs are meant as a guideline and certain deviations, such as the example mentioned above, will be allowed on a case-by-case basis; however, these documents also represent the best,

most up-to-date guidelines for groundwater sampling available in the EPA Region 4 area. When making recommendations to consultants, PRPs, or the general public, the new OP documents should be the first and foremost reference for current groundwater sampling methods.

Groundwater Sampling Using Bailers

As noted in the SESD OPs, bailers are not disallowed for use in groundwater sampling; however, their use is discouraged. As a policy we should always recommend that groundwater samples be collected using the SESD OPs, and pursuant to the documents we should discourage the use of bailers for both purging and sampling. Our Program response to questions regarding bailers should be, "USEPA Region 4 discourages their use for both purging and sampling (Section 3.2.2 of the SESD OP, Groundwater Sampling # SESDPROC-301-R0)." If the consultant or PRP still wishes to use bailers at the site, the use of bailers to purge and/or sample may be considered acceptable on a case-by-case basis at the discretion of the compliance officer. However, our response to any groundwater data collected with a bailer should be the following written comment:

"The use of bailers for purging and sampling monitoring wells is discouraged by the Region 4 EPA Science and Ecosystem Support Division Operating Procedures (OPs, most recent date). For future groundwater sampling at the site, please use a low-flow method outlined in the *Groundwater Sampling OP*."

Sampling Deep Monitoring Wells

For deep wells, the new SESD OPs allow for groundwater to be purged and sampled using either a bladder pump or a RediFlo2® submersible pump (which is a type of Grunfos® pump with variable speed options). Both types of pumps are readily available. It is recommended that deep wells always be purged and sampled in accordance with the OPs using these devices. The use of bailers for purging and sampling deep wells should be discouraged on the basis that their use is discouraged in the OPs. Responses to any groundwater data from a deep well collected with a bailer should be the same as that noted above.

Low-Flow/Low-Volume Sampling

While low-flow/low-volume sampling is not recommended by the SESD guidance, this type of sampling will be accepted on a case-by-case basis under the judgment of the compliance officer and consulting EPD geologist. The following comment should be used to address low-flow/low-volume sampling at the site:

"Pursuant to the "Groundwater Sampling" SESD OP, EPD prefers groundwater sampling methods that require a minimum of three well volumes to be purged; however, low-flow/low-volume sampling (micro-purging) is allowed on a site-specific basis. The following guidelines should be strictly followed when using low-flow/low-volume sampling at the site:

- a. Detailed information regarding groundwater sampling equipment and procedures should be provided for each sampling event. Information should include type of pump and tubing used to purge the monitoring wells and a detailed description of the sampling method (examples, "straw method" for VOCs and vacuum jug method for SVOCs).
- b. For low-volume sampling, the pump should *always* be carefully placed mid-way

in the wetted screened interval with minimum disturbance to the well. The depth of the pump intake should be noted on the field form for each monitoring well.

- c. Water level measurements should be periodically collected and recorded along with field parameters to ensure minimal drawdown, and that the rate of water withdrawal does not exceed the recharge rate of the well.
- d. The amount of water purged between analyses of field parameters (pH, specific conductance, dissolved oxygen, temperature, and oxidation reduction potential) should be adequate to assess any trends that may be occurring in the field parameters.
- e. Field parameters listed above should be used to show stability of the purge water. Stability of the purge water should be indicated by parameters showing no increasing or decreasing trends for three successive readings in a row.
- f. The final turbidity reading should be below 10 NTUs."

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