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Standard Guide for Documenting a Groundwater Sampling Event[1]

This standard is issued under the fixed designation D6089; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope*

1.1 This guide covers what and how information should be recorded in the field when sampling a groundwater monitoring well. Following these recommendations will provide adequate documentation in most monitoring programs. In some situations, it may be necessary to record additional or different information, or both, to thoroughly document the sampling event. In other cases, it may not be necessary to record all of the information recommended in this guide. The level of documentation will be based on site-specific conditions and regulatory requirements.

1.2 This guide is limited to written documentation of a groundwater sampling event. Other methods of documentation (that is, electronic and audiovisual) can be used but are not addressed in this guide. The specific activities addressed in this guide include documentation of static water level measurement, monitoring well purging, monitoring well sampling, field measurements, groundwater sample preparation, and groundwater sample shipment.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate ~~safety~~ safety, health, and ~~health~~environmental practices and determine the applicability of regulatory limitations prior to use.*

1.4 *This guide offers an organized collection of information or a series of options and does not recommend a specific course of action. This document cannot replace education or experience and should be used in conjunction with professional judgment. Not all aspects of this guide may be applicable in all circumstances. This ASTM standard is not intended to represent or replace the standard of care by which the adequacy of a given professional service must be judged, nor should this document be applied without consideration of a project's many unique aspects. The word "Standard" in the title of this document means only that the document has been approved through the ASTM consensus process.*

1.5 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

D3740 Practice for Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction

D5088 Practice for Decontamination of Field Equipment Used at Waste Sites

D5608 Practices for Decontamination of Sampling and Non Sample Contacting Equipment Used at Low Level Radioactive Waste Sites

D5903 Guide for Planning and Preparing for a Groundwater Sampling Event

3. Terminology

3.1 *Definitions*—For definitions of terms used in this guide, refer to Terminology D653.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *chain of custody*—the process of maintaining accountability of the samples for the purpose of identifying potential breaches in sample integrity.

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[1] This guide is under the jurisdiction of ASTM Committee D18 on Soil and Rock and is the direct responsibility of Subcommittee D18.21 on Groundwater and Vadose Zone Investigations.

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[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

***A Summary of Changes section appears at the end of this standard**

3.2.2 *chain of custody record*—a record of all individuals who possess the samples from the time of collection until analysis.

4. Significance and Use

4.1 When sampling groundwater monitoring wells, it is very important to thoroughly document all field activities. Sufficient field data should be retained to allow one to reconstruct the procedures and conditions that may have affected the integrity of a sample. The field data generated are vital to the interpretation of the chemical data obtained from laboratory analyses of samples. Field data and observations may also be useful to analytical laboratory personnel.

4.2 Due to the changing nature of regulations and other information, users are advised to thoroughly research requirements related to packaging and shipping prior to initiating a sampling event.

NOTE 1—The sampling of an individual groundwater monitoring well should be repeated as closely as possible each time the monitoring well is sampled. This reduces the variability of the chemical parameters due to sampling variability which is the desired result. The intent is to detect the change in chemistry by repeating the sampling protocol at each individual well. This does not mean that all the wells are sampled the same way, nor does it prohibit changes in the sampling protocol, provided they are planned and documented.

NOTE 2—The quality of the results produced by this standard is dependent on the competence of personnel performing it, and the suitability of the equipment and facilities used. Agencies that meet the criteria of Practice D3740 are generally considered capable of competent and objective testing/sampling/inspection/etc. Users of this standard are cautioned that compliance with Practice D3740 does not in itself assure reliable results. Reliable results depend on many factors; Practice D3740 provides a means of evaluating some of those factors.

5. Documentation Methods

5.1 Field records should be generated by a member of the sampling team. It is important to record procedures used and measurements immediately after they have been accomplished and are fresh in the memory. In general, notes should not be taken after returning from the field.

5.2 The format of the documentation is discretionary, but should be consistent from well to well and in accordance with regulatory requirements. Forms are often used for consistency and to reduce the chance of failing to record needed information. It may be desirable for records to be entered with indelible ink in a hard cover, stitch-bound book for credibility in litigation.

6. Documentation Content

6.1 *General:*
6.1.1 Record the facility or site name, or both, and the well identification.
6.1.2 Record the weather conditions.
6.1.3 Record the names of all sampling team members.
6.1.4 Record any instrument calibration details to include instrument identification and date and time of last calibration.
6.1.5 Note any changes in the physical condition of the well.
6.1.6 Note changes in land use or physical conditions of the site.
6.1.7 Record wellhead observations and measurements (for example, odor, organic vapor measurements).
6.1.8 Record any quality control samples collected or prepared in the field.
6.1.9 Describe decontamination procedures for non-dedicated equipment (See Practice D5088, D5903 and D5608).
6.1.10 Record any deviations from the sampling and analysis plan.

6.2 *Static Water Level Measurement:*
6.2.1 Record the depth to water in the well from a reference point of known elevation. Optimally, there will be a mark or notch on the well casing to indicate the exact reference point.
6.2.2 Record the reference point from which the measurement was taken (that is, ground surface, top of well casing, top of protective casing).
6.2.3 Document the presence and estimated thickness of an immiscible layer.
6.2.4 Record the total depth of the well from either historical records or actual measurement.
6.2.5 Record the units of the measurement (that is, feet or metres).
6.2.6 Record the method or equipment (include serial number) used for measuring the depth to water in the well.
6.2.7 Record the date and time that the water level is measured.
6.2.8 Record any other relevant information (for example, were any nearby wells being pumped).

6.3 *Monitoring Well Purging:*
6.3.1 Briefly describe the purging method used.
6.3.2 Record the calculated purge volume (if applicable).
6.3.3 Record the volume of water removed from the well. Indicate if the well was purged to dryness.
6.3.4 Record all measurements taken during purging (that is, water levels, indicator parameter levels, organic vapor monitoring data).
6.3.5 Record the pumping rate, if known.
6.3.6 Record the type of equipment used to purge the well. Include the materials of construction of the equipment used.
6.3.7 Record the length of time spent purging the well.