



Standard Guide for Sampling and Analysis of Residential and Commercial Water Supply Wells in Areas of Exploration and Production (E&P) Operations¹

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1. Scope

1.1 This guide presents a methodology for obtaining representative groundwater samples from domestic or commercial water wells that are in proximity to oil and gas exploration and production (E&P) operations. E&P operations include, but are not necessarily limited to, site preparation, drilling, completion, and well stimulation (including hydraulic fracturing), and production activities. The goal is to obtain representative groundwater samples from domestic or commercial water wells that can be used to identify the baseline groundwater quality and any subsequent changes that may be identified. While this guide focuses on baseline sampling in conjunction with oil and gas E&P activities, the principles and practices recommended are based on well-established methods that have been in use for many years in other industrial situations. This guide recommends sampling and analytical testing procedures that can identify various chemical species present including metals, dissolved gases (such as methane), hydrocarbons (and other organic compounds), as well as overall water quality.

1.2 This guide provides information on typical residential and commercial water supply well systems and guidance on developing and implementing a sampling program, including determining sampling locations, suggested purging techniques, selection of potential analyses and laboratory certifications, data management, and integrity. It also includes guidance on personal safety. The information included pertains to baseline sampling before beginning any activities that could present potential risks to local aquifers, periodic sampling during and after such work, and ongoing monitoring relating to known or potential groundwater constituents in the area. This guide does not address policy issues related to frequency or timing of

sampling or sampling distances from the wellhead. In addition, it does not address reporting limits, sample preservation, holding times, laboratory quality control, regulatory action levels, or interpretation of analytical results.

1.3 These guidelines are not intended to replace or supersede regulatory requirements and technical methodology or guidance nor are these guidelines intended for inclusion by reference in regulations. Instances where this guide is in conflict with statutory or regulatory requirements, practitioners shall defer to the latter. These guidelines are intended to assist in developing sampling programs to meet project goals and objectives. However, site-specific conditions, regulatory requirements, site-specific health and safety issues, technical manuals and directives, and program data quality objectives should be evaluated and consulted along with the information contained in this guide for each individual site and sampling program.

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 Users are responsible for investigating and identifying all the legal and regulatory requirements that are applicable for the location where the sampling is being performed.

1.6 *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 and health practices and determine the applicability of regulatory limitations prior to use.*

¹ This test method is under the jurisdiction of ASTM Committee D18 on Soil and Rock and is the direct responsibility of Subcommittee D18.26 on Hydraulic Fracturing.

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