



Designation: D5786 – 17

# Standard Practice for (Field Procedure) for Constant Drawdown Tests in Flowing Wells for Determining Hydraulic Properties of Aquifer Systems<sup>1</sup>

This standard is issued under the fixed designation D5786; 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 practice covers the methods for controlling draw-down and measuring discharge rates and head to analyze the hydraulic properties of an aquifer or aquifers.

1.2 This practice is used in conjunction with analytical procedures such as those of Jacob and Lohman (1)/(2),<sup>2</sup> and Hantush (3).

1.3 The appropriate field and analytical procedures for determining hydraulic properties of aquifer systems are selected as described in Guide D4043.

1.4 *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.*

1.5 *This practice offers a set of instructions for performing one or more specific operations. This document cannot replace education or experience and should be used in conjunction with professional judgment. Not all aspects of this practice 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.*

## 2. Referenced Documents

### 2.1 ASTM Standards:<sup>3</sup>

<sup>1</sup> This practice 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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<sup>2</sup> The boldface numbers in parentheses refer to a list of references at the end of this standard.

<sup>3</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

D653 Terminology Relating to Soil, Rock, and Contained Fluids

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

D4043 Guide for Selection of Aquifer Test Method in Determining Hydraulic Properties by Well Techniques

## 3. Terminology

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

## 4. Summary of Practice

4.1 This practice describes the field procedures for conducting an aquifer test on a well that is flowing, that is, the head in the well remains above the top of the well casing. This method involves inducing a constant drawdown and measuring the varying discharge rate from the control well.

## 5. Significance and Use

5.1 Constant drawdown test procedures are used with appropriate analytical procedures to determine transmissivity, hydraulic conductivity, and storage coefficient of aquifers.

NOTE 1—The quality of the result produced by this standard is dependent on the competence of the 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.

## 6. Apparatus

6.1 Various types of equipment can be used to measure the flow rate of the well. The equipment shall be sized so that it does not constrict the flow rate from the well.

6.2 An apparatus shall be placed on the control well discharge line such that the well can be shut in to prevent flow prior to conducting this field procedure and so that the apparatus will not constrict flow from the well when it is allowed to flow.

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