Designation: D 4581 – 86 (Reapproved 2001)

An American National Standard

Standard Guide for Measurement of Morphologic Characteristics of Surface Water Bodies[1]

This standard is issued under the fixed designation D 4581; 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 describes the methods used for defining the morphologic characteristics of surface water bodies. This guide references manuals that provide various rationale and procedures necessary to conduct a morphologic survey.

1.2 The references were written for specific agency use and may not be applicable in all cases **(1–6)**.[2]

1.3 The values stated in inch-pound units are to be regarded as the standard. The SI units in parentheses are provided for information only.

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.*

2. Referenced Documents

2.1 *ASTM Standards:*

D 1129 Terminology Relating to Water[3]

3. Terminology

3.1 *Definitions*—For definitions of terms used in this guide, refer to Terminology D 1129.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *large water bodies*—water areas large enough to require use of electronic horizontal positioning devices.

3.2.2 *morphologic surveys*—surveys made to determine shape, depth, and volume of water bodies; also density, distribution, and volume of sediment and characteristics of watersheds contributing to the water body.

3.2.3 *small water bodies*—water areas that can be surveyed using stretched cables or visual triangulation for horizontal positioning.

4. Summary of Guide

4.1 This standard provides guidance for conducting measurements and assembly of data into a standard format that facilitates comparative analysis of water body morphology on a national basis.

5. Significance and Use

5.1 No other standards presently exist for the survey of water body morphologic characteristics. The techniques described in the references represent the present state-of-art and contain sufficient information to inform geologists and engineers of the kinds of information to be gathered and the techniques to be used.

5.2 The major categories of methodologies described in the references are: sounding, positioning, land surveys, sediment properties, sediment sampling techniques, photogrammetric methods, calculating volume and area, morphologic base data, weighted sediment dry weight, reservoir operations, equipment, and reporting results.

5.3 The references are intended as operational manuals and do not describe experimental design.

6. Procedure

6.1 The references provide detailed information and procedures as follows:

6.1.1 *Field Investigations*—Section 3, Chapter 7 of the *SCS National Engineering Handbook* describes field investigations and survey techniques **((1))**. Pages 1 to 31 specifically describe equipment, methods, notekeeping, computations, and reports for small water bodies.

6.1.2 *Sedimentation Surveys*—Specifications were prepared by the Soil Conservation Service to allow contracting for services to perform reservoir sedimentation surveys on small water bodies **(2)**. These specifications are intended to meet SCS needs and should be used by others only as a guide in preparing their own material.

6.1.3 *Methods for Water-Data Acquisition*—Descriptions of various techniques for measuring sediment are contained in Ref **(3)**. The section on reservoir surveys provides guidance about the kinds of work to be done and features to be

[1] This guide is under the jurisdiction of ASTM Committee D-19 on Water and is the direct responsibility of Subcommittee D19.07 on Sediments, Geomorphology, and Open-Channel Flow.

Current edition approved April 25, 1986. Published November 1986.

[2] The boldface numbers in parentheses refer to the list of references at the end of this guide.

[3] *Annual Book of ASTM Standards*, Vol 11.01.

Copyright © ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959, United States.