ANSI/AWWA **G485-20**

(Revision of ANSI/AWWA G485-18)

AWWA Management Standard

Potable Reuse Program Operation and Management

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American Water Works Association

Approved American National Standard ANSI

STANDARD Since 1881

AWWA Management Standard

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Contents

All AWWA standards follow the general format indicated subsequently. Some variations from this format may be found in a particular standard.

Foreword

This foreword is for information only and is not a part of ANSI/AWWA G485.

I. Introduction.

I.A. *Background.* The AWWA utility management standards are designed to serve water, wastewater, and reuse utilities—hereafter referred to as the *water sector*—and their customers, owners, service providers, and government regulators. The standards developed under the program are generally intended to improve a utility's overall operations and service. One aspect of the standards program is an effort to establish formal management and operations guidelines. These guidelines identify appropriate practices and procedures, the implementation of which will promote effective and efficient utility operations and contribute to protection of public health, public safety, and the environment.

AWWA's standards process has been used for more than 110 years to produce American National Standards Institute (ANSI)-approved standards for materials and processes that are used by the water sector. These standards are recognized worldwide and have been adopted by many utilities and organizations. Likewise, this performance standard is developed using the same ANSI-recognized formal process. Volunteer standards committees establish standard practices in a uniform and appropriate format.

Formal standards committees have been and continue to be formed to address the individual standard practices for the diverse areas of water, wastewater, and reuse utility operations. A formal standards committee was created in November 2014 to develop this standard for direct potable reuse (DPR) program operation and management. This standard is the outcome of the Direct Potable Reuse Standards Committee.

There are two forms of planned potable reuse: direct potable reuse (DPR), in which advanced treated water is introduced at various locations into an existing water supply system; and indirect potable reuse (IPR), in which treated wastewater is introduced into an environmental buffer (e.g., a groundwater aquifer or surface water reservoir, lake, or river) before the blended water is introduced into a water supply system. This standard describes management and operations guidelines for both potable reuse programs.

DPR has two distinct forms: (1) advanced treated water is produced in an advanced water treatment facility and is introduced into the raw water supply immediately upstream of a drinking water treatment facility; and (2) an advanced water treatment facility delivers treated water directly to a public water system's treated water conveyance

or distribution system. DPR projects require a high level of review as the available response time for any treatment upset is relatively short.

I.B. *History*. Recognizing that meeting future water needs requires innovative management strategies today, the AWWA Standards Council authorized the development of a management standard on DPR program operation and management in 2014. The first edition of this standard was ANSI/AWWA G485-18, Direct Potable Reuse Program Operation and Management, and covered only DPR. It was approved by the AWWA Board of Directors on Jan. 20, 2018. This edition adds IPR into the standard and was renamed Potable Reuse Program Operation and Management. This edition of the standard was approved by the AWWA Board of Directors on Oct. 2[illegible] 2020.

I.C. *Acceptance*. In May 1985, the US Environmental Protection Agency (USEPA) entered into a cooperative agreement with a consortium led by NSF International (NSF) to develop voluntary third-party consensus standards and a certification program for direct and indirect drinking water additives. Other members of the original consortium included the Water Research Foundation (formerly AwwaRF) and the Conference of State Health and Environmental Managers (COSHEM). AWWA and the Association of State Drinking Water Administrators (ASDWA) joined later.

In the United States, authority to regulate products for use in, or in contact with, drinking water rests with individual states.* Local agencies may choose to impose requirements more stringent than those required by the state. To evaluate the health effects of products and drinking water additives from such products, state and local agencies may use various references including

1. Specific policies of the state or local agency.

2. Two standards developed under the direction of NSF,† NSF/ANSI‡/CAN§ 60, Drinking Water Treatment Chemicals—Health Effects, and NSF/ANSI/CAN 61, Drinking Water System Components—Health Effects.

3. Other references, including AWWA standards, *Food Chemicals Codex*, *Water Chemicals Codex,*¶ and other standards considered appropriate by the state or local agency.

* Persons outside the United States should contact the appropriate authority having jurisdiction.
† NSF International, 789 N. Dixboro Road, Ann Arbor, MI 48105.
‡ American National Standards Institute, 25 West 43rd Street, Fourth Floor, New York, NY 10036.
§ Standards Council of Canada, 55 Metcalfe Street, Suite 600, Ottawa, ON K1P 6L5 Canada.
¶ Both publications available from National Academy of Sciences, 500 Fifth Street, NW, Washington, DC 20001.

Various certification organizations may be involved in certifying products in accordance with NSF/ANSI/CAN 61. Individual states or local agencies have authority to accept or accredit certification organizations within their jurisdiction. Accreditation of certification organizations may vary from jurisdiction to jurisdiction.

Annex A, "Toxicology Review and Evaluation Procedures," to NSF/ANSI/CAN 61 does not stipulate a maximum allowable level (MAL) of a contaminant for substances not regulated by a USEPA final maximum contaminant level (MCL). The MALs of an unspecified list of "unregulated contaminants" are based on toxicity testing guidelines (noncarcinogens) and risk characterization methodology (carcinogens). Use of Annex A procedures may not always be identical, depending on the certifier.

ANSI/AWWA G485 does not address additives requirements. Users of this standard should consult the appropriate or local agency having jurisdiction in order to

1. Determine additives requirements, including applicable standards.
2. Determine the status of certifications by parties offering to certify products for contact with, or treatment of, drinking water.
3. Determine current information on product certification.

II. Special Issues.

II.A. *Regulatory Considerations.* At the time of publication of this standard, there are no federal statutes or regulations that specifically identify or address potable reuse. As a result, purveyors must work with their state regulators to obtain approval for a potable reuse facility.* The specific regulatory process will vary from state to state. However, potable reuse facilities must comply with all existing applicable wastewater, recycled/reclaimed/reuse water, and drinking water regulations.

II.B. *Pathogen and Chemical Control.* Treatment performance and monitoring include the wastewater treatment facility, the advanced water treatment facility, and any downstream water treatment facilities. Potable reuse systems must meet all applicable Safe Drinking Water Act (SDWA) requirements including source control and provide protection from pathogens, chemical constituents, and contaminants of emerging concern that may pose risks to public health.

* Texas established the following regulations for quality, design, and operational requirements of water reuse projects: 30 TAC Chapter 210; 30 TAC Chapter 321, Subchapter P; Texas Water Code §5.102, §5.103, §26.011, §26.0271, and §26.121. California, in compliance with Water Code Section 13563, issued the following report: "Investigation of the Feasibility of Developing Uniform Water Recycling Criteria for Direct Potable Reuse," December 2016.

III. Use of This Standard. It is the responsibility of the user of an AWWA standard to determine that the products and provisions described in that standard are suitable for use in the particular application being considered.

III.A. *Options and Alternatives.* The user should consider the following when developing a potable reuse water program:

1. Standard used—that is, AWWA G485, Potable Reuse Program Operation and Management, of latest revision.

2. Clean Water Act (CWA), SDWA, and details of other federal, state or provincial, and local requirements (Sec. 4.1.1).

3. Whether compliance with NSF/ANSI/CAN 61, Drinking Water System Components—Health Effects, is required (Sec. 4.1.1).

4. Whether compliance with NSF/ANSI/CAN 60, Drinking Water Treatment Chemicals—Health Effects, is required (Sec. 4.1.1).

IV. Major Revisions. Major changes in this revision include the following:

1. Title changed to remove "Direct" from Potable Reuse. Addition of Indirect Potable Reuse (IPR) to the scope (Sec. 1.1) and IPR considerations added throughout the standard.

2. Updates to the definitions of advanced water treatment, DPR, environmental buffer, IPR, potable reuse, and source water control. (Section 3).

3. Regulatory requirements (Sec. 4.1) have been updated to include references to National Environmental Policy Act (NEPA), CWA, US Army Corps of Engineers (USACE), and Underground Injection Control (UIC) Regulations.

4. A section on environmental buffer has been added for IPR applications (Sec. 4.3.4.2).

5. A section on nutrient removal considerations related to the environmental buffer has been added for IPR applications (Sec 4.7.2).

6. A section outlining critical environmental and health issues for all potable reuse programs has been added (Sec. 4.7.3).

7. A section on operator training and certification for combined treatment processes has been added (Sec. 5.1.2.1).

V. Comments. If you have any comments or questions about this standard, please call AWWA Engineering and Technical Services at 303.794.7711; FAX at 303.795.7603; write to the department at 6666 West Quincy Avenue, Denver, CO 80235-3098, or e-mail at standards@awwa.org.

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American Water Works Association
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Potable Reuse Program Operation and Management

SECTION 1: GENERAL

Sec. 1.1 Scope

This standard describes the critical requirements for the effective operation and management of a potable reuse water program, including both direct potable reuse (DPR) and indirect potable reuse (IPR).

Sec. 1.2 Purpose

The purpose of this standard is to define the critical requirements for the effective operation and management of a potable reuse water program.

Sec. 1.3 Application

This standard can be referenced in the evaluation of a potable reuse program operation and management. The stipulations of this standard apply when this document has been referenced and only to the operation and management of a potable reuse program.