789 N. Dixboro Rd,
Ann Arbor, Michigan
48105-9753 USA

T +1 734 769 8010
E standards@nsf.org
nsf.org

Joint Committee on Wastewater Technologies

August 8, 2025

Proposed revisions to:
NSF/ANSI 40 – Residential Wastewater Treatment Systems (40i62r1)
NSF/ANSI 46 – Evaluation of Components and Devices Used in Wastewater Treatment Systems (46i47r1)
NSF/ANSI 245 – Residential Wastewater Treatment Systems – Nitrogen Reduction (245i39r1)
NSF/ANSI 350 – Onsite Residential and Commercial Water Reuse Treatment Systems (350i83r1)

Revision 2 of NSF/ANSI 40, issue 62, NSF/ANSI 46 issue 47, NSF/ANSI 245 issue 39, and NSF/ANSI 350 issue 83 are being forwarded to the Technical Committee for consideration. Please review the proposal and **submit your ballot by August 29, 2024** via the NSF Online Workspace.

Please review all ballot materials. When adding comments, please include the section number applicable to your comment and add all comments under one comment number whenever possible. If you need additional space, please use the attached blank comment template in the reference documents and upload online via the browse function.

Purpose

The proposed revision will add a statement allowing the use of alternate validated methods with documented equivalent performance.

Background

NSF/ANSI 40, 46 and 245 are very proscriptive in defining the specific analytic methods to be used for sample analysis, often specifying Standard Methods. Over time, alternate and improved techniques have become available as new analytical methodologies and instrumentation emerge, resulting in alternate methods that are often equivalent or superior to those methods specified in the standard. Other NSF Standards, including drinking water standards, allow for the use of alternate analytical test methods when the laboratory is able to determine that the analytical test method is equivalent or superior to the method referenced in the standard. This allows for greater flexibility in test laboratory selection and prevents test labs from being required to maintain accreditation to rarely used test methods at significant cost when already accredited to an equivalent method.

NSF 350 does allow the use of alternate analytical methods, but only when using a

789 N. Dixboro Rd,
Ann Arbor, Michigan
48105-9753 USA

T +1 734 769 8010
E standards@nsf.org
nsf.org

method with the same measurement technique. The requirement to only allow alternate methods using the same measurement technique is overly restrictive and arbitrarily prevents the use of methods using different measurement techniques that are otherwise equivalent.

Please see the revised issue paper in response to multiple comments received on the r1 ballot.

If you have any questions about the technical content of the ballot, you may contact me in care of:

Robert Powitz, Chair, Joint Committee on Wastewater Technology
c/o Shannon McCormick, Joint Committee Secretariat
T +1 734 412 6179
E smccormick@nsf.org

[Note – the recommended changes to the standard which include the current text of the relevant section(s) indicate deletions by use of ~~strikeout~~ and additions by grey highlighting. Rationale Statements are in *italics* and only used to add clarity; these statements will NOT be in the finished publication.]

NSF/ANSI Standard 40
for Wastewater Technology –

Residential Wastewater Treatment Systems

-
-
-

8.4 Analytical descriptions

8.4.1 pH, TSS, BOD5, and CBOD5

The pH, TSS, and BOD5 of the collected influent and the pH, TSS and CBOD5 of the collected effluent 24-h composite samples shall be determined with the appropriate methods in *Standard Methods*[4] or an alternate validated method with documented equivalent performance for each listed parameter. "Equivalent performance" means having the same or better sensitivity, accuracy, and precision over the expected measurement range for the same sample types. "Validated" means that the method was demonstrated to be fit for purpose with sensitivity, accuracy, precision and robustness via a formal validation study or published as a standardized method of analysis. Analytical test methods used shall be documented in the certifier's test report, and the certifier shall document all equivalency assessments and make them available upon request.

Grab samples shall be collected during the morning dosing period for gravity flow systems and during a time of discharge for systems that are pump discharged.

NOTE — *Standards Methods*[Error! Bookmark not defined.] requires pH and temperature to be sampled as grab samples.

8.4.2 Color, odor, oily film, and foam

8.4.2.1 General

-
-
-

NSF/ANSI Standard 46
for Wastewater Technology –

Evaluation of Components and Devices Used in Wastewater Treatment Systems

•
•
•

7 Performance testing and evaluation

Performance testing and evaluation shall be independent of design and construction. However, structural weaknesses, undesirable noise, and other environmental defects and failures during the test shall be described in the final report (see Section 8).

7.1 The device shall be operated and maintained according to the manufacturer's instructions. If these instructions conflict with the performance testing and evaluation protocols of this standard, the protocols contained in this standard shall apply.

7.2 All sample collection and analytical methods shall be those established in *Standard Methods*,[3] or an alternate validated method with documented equivalent performance, except as otherwise specified. “Equivalent performance” means having the same or better sensitivity, accuracy, and precision over the expected measurement range for the same sample types. “Validated” means that the method was demonstrated to be fit for purpose with sensitivity, accuracy, precision and robustness via a formal validation study or published as a standardized method of analysis. Analytical test methods used shall be documented in the certifier’s test report, and the certifier shall document all equivalency assessments and make them available upon request.

7.3 The duration of the evaluation period shall be sufficient to ensure that results are reliable and applicable to anticipated operating conditions. The length of the evaluation period shall be specified in the test report.

8 Final report

•
•
•

NSF/ANSI Standard 245
for Wastewater Technology –

Residential Wastewater Treatment Systems – Nitrogen Reduction

•
•
•

8.3.3 Analyses

The samples collected as described in Sections 8.3.1 and 8.3.2 shall be analyzed as follows:

Parameter	Sample type	Sample location		Testing location
		Raw influent	Treated effluent	
BOD_5	24-h composite	X	—	laboratory
$CBOD_5$	24-h composite	—	X	laboratory
total suspended solids (TSS)	24-h composite	X	X	laboratory
pH	grab	X	X	test site
temperature (°C)	grab	X	X	test site
dissolved oxygen (DO)	grab	—	X	test site
alkalinity (as $CaCO_3$)	24-h composite	X	X	laboratory
TKN (as N)	24-h composite	X	X	laboratory
ammonia-N (as N)	24-h composite	X	X	laboratory
nitrite / nitrate-N (as N)	24-h composite	X	X	laboratory

8.3.4 Analytical methods

The appropriate methods in *Standard Methods*[4] or an alternate validated method with documented equivalent performance shall be used to complete the analyses indicated in Section 8.3.3. "Equivalent performance" means having the same or better sensitivity, accuracy, and precision over the expected measurement range for the same sample types. "Validated" means that the method was demonstrated to be fit for purpose with sensitivity, accuracy, precision and robustness via a formal validation study or published as a standardized method of analysis. Analytical test methods used shall be documented in the certifier's test report, and the certifier shall document all equivalency assessments and make them available upon request.

8.3.5 Pressure and flow

•
•
•

NSF/ANSI Standard 350

for Wastewater Technology –

Onsite Residential and Commercial Water Reuse Treatment Systems

•
•
•

7 Other documentation

The manufacturer shall prepare and maintain documentation for each system including, at a minimum:

— a basic description of the system;
— drawings of the system;
— design basis data; and
— a comprehensive and detailed discussion of process fundamentals.

8 Performance testing and evaluation

The analytical methods listed in Table N-1.2 shall be used for testing. Alternate validated methods with documented equivalent performance are permissible.~~, provided equivalency is demonstrated by technical review and the review is documented. An equivalent method involves the same measurement technique. Equivalent methods are known to be capable of generating reliable results to equivalent quality requirements~~. "Equivalent performance" means having the same or better sensitivity, accuracy, and precision over the expected measurement range for the same sample types. "Validated" means that the method was demonstrated to be fit for purpose with sensitivity, accuracy, precision and robustness via a formal validation study or published as a standardized method of analysis. Analytical test methods used shall be documented in the certifier's test report, and the certifier shall document all equivalency assessments and make them available upon request. All sample collection methods shall be in accordance with *Standard Methods*[5] unless otherwise specified.

8.1 Greywater treatment systems with capacities up to 5,678 LPD (1,500 GPD)

•
•
•