

NFPA[®]

1142

**Standard on Water Supplies for
Suburban and Rural Fire Fighting**

2017



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NFPA®1142

Standard on

Water Supplies for Suburban and Rural Fire Fighting

2017 Edition

This edition of NFPA 1142, *Standard on Water Supplies for Suburban and Rural Fire Fighting*, was prepared by the Technical Committee on Wildland and Rural Fire Protection. It was issued by the Standards Council on May 13, 2016, with an effective date of June 2, 2016, and supersedes all previous editions.

This edition of NFPA 1142 was approved as an American National Standard on June 2, 2016.

Origin and Development of NFPA 1142

This document originally was issued in 1968 as a tentative document titled NFPA 25, *Recommended Practices for Water Supply Systems for Rural Fire Protection*. It was reissued in 1969 without the tentative status. In 1975, the document was changed to a standard and renumbered and retitled as NFPA 1231, *Standard on Water Supplies for Suburban and Rural Fire Fighting*.

The standard continued to be maintained and enhanced with 1984, 1989, and 1993 editions. The 1999 edition was renumbered as NFPA 1142, in keeping with the committee's plan to group all its documents within a number range.

The 2001 edition incorporated much of the information about the design of dry hydrants, formerly found in the annexes, into the requirements in order to encourage improved design and performance.

The 2007 edition was completely revised to better organize the requirements in the standard and to better differentiate between alternative water supplies for fire fighting and municipal-type water systems. The material in Annex A on designing dry hydrant systems was reorganized and updated into a separate Annex I. The other annexes were reviewed and updated to reflect current practices.

In the 2012 edition of NFPA 1142, the Technical Committee made multiple updates to definitions in an effort to be consistent with the *NFPA Glossary of Terms*. Substantial changes in the 2012 edition included new material with guidance on bridge access to water sources, clarification of the working space surrounding dry hydrants, and additional annex material regarding water eductors and ejectors.

For the 2017 edition, the Technical Committee developed new text for alternative methods, modifications to the standard, and unit and formula consistency. The Committee has added text for alternative water supplies from storage tanks, but the storage tanks need to be inspected and maintained to NFPA 25. Before combustibles can be brought to the site location, water supplies for fire protection systems need to be established. The technical committee removed significant text and tables relative to fire flow requirements, opting instead to utilize the Verisk Analytics website (ISO) information. Finally, Annex J, Geospatial Support for Water Supply Planning, has been added.

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Committee Scope: This committee shall have the primary responsibility for documents on fire protection in wildland, rural, and suburban areas.

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NFPA 1142

Standard on

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NOTICE: An asterisk (*) following the number or letter designating a paragraph indicates that explanatory material on the paragraph can be found in Annex A.

A reference in brackets [] following a section or paragraph indicates material that has been extracted from another NFPA document. As an aid to the user, the complete title and edition of the source documents for extracts in mandatory sections of the document are given in Chapter 2 and those for extracts in informational sections are given in Annex K. Extracted text may be edited for consistency and style and may include the revision of internal paragraph references and other references as appropriate. Requests for interpretations or revisions of extracted text shall be sent to the technical committee responsible for the source document.

Information on referenced publications can be found in Chapter 2 and Annex K.

Chapter 1 Administration

1.1 Scope.

1.1.1 This standard identifies a method of determining the minimum requirements for alternative water supplies for structural fire-fighting purposes in areas where the authority having jurisdiction (AHJ) determines that adequate and reliable water supply systems for fire-fighting purposes do not otherwise exist.

1.1.2 An adequate and reliable municipal-type water supply is one that is sufficient every day of the year to control and extinguish anticipated fires in the jurisdiction, particular building, or building group served by the water supply.

1.2* Purpose. The purpose of this standard is to assist the AHJ to establish the minimum water supply necessary for structural fire-fighting purposes in those areas where it has been determined that there is no water or inadequate water for fire fighting.

1.3 Application.

1.3.1 This standard does not address fireground operational procedures dealing with the rate or method of water application.

1.3.2* This standard does not apply to the calculation of an adequate amount of water for large, special fire protection problems, such as bulk flammable liquid storage, bulk flammable gas storage, large varnish and paint factories, some plastics manufacturing and storage, aircraft hangars, distilleries, refineries, lumberyards, grain elevators, large chemical plants, coal mines, tunnels, subterranean structures, and warehouses using high rack storage for flammables or pressurized aerosols.

1.3.3 This standard does not exclude the use of this water for other fire-fighting or emergency activities.

1.4 Equivalency. Nothing in this standard is intended to prevent the use of systems, methods, or devices of equivalent or superior quality, strength, fire resistance, effectiveness, durability, and safety in place of those prescribed by this standard, provided technical documentation is submitted to the AHJ to demonstrate equivalency and the system, method, or device is approved for the intended purpose.

1.5 Alternatives. The specific requirements of this standard shall be permitted to be altered by the AHJ to allow alternative methods that will secure equivalent fire safety, but in no case shall the alternative afford less fire safety, in the judgment of the AHJ, than that which would be provided by compliance with the provisions contained in this standard.

1.6 Modifications. The AHJ is authorized to modify any of the provisions of this standard upon application in writing by the owner, a lessee, or a duly authorized representative where there are practical difficulties in the way of carrying out the provisions of the standard, provided that the intent of the standard shall be complied with, public safety secured, and substantial justice done.

1.7 Units and Formulas. In this standard, values for measurement in U.S. units are followed by equivalents in SI units. Either set of values can be used, but the same set of values (either U.S. units or SI units) shall be used consistently.

Chapter 2 Referenced Publications

2.1 General. The documents or portions thereof listed in this chapter are referenced within this standard and shall be considered part of the requirements of this document.

2.2 NFPA Publications. National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471.

NFPA 13, *Standard for the Installation of Sprinkler Systems*, 2016 edition.

NFPA 13D, *Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes*, 2016 edition.

NFPA 13R, *Standard for the Installation of Sprinkler Systems in Residential Occupancies up to and Including Four Stories in Height*, 2016 edition.

NFPA 25, *Standard for Inspection, Testing and Maintenance of Water-Based Fire Protection Systems*, 2017 edition.

NFPA 220, *Standard on Types of Building Construction*, 2015 edition.

NFPA 285, *Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components*, 2012 edition.

NFPA 1963, *Standard for Fire Hose Connections*, 2014 edition.

2.3 Other Publications.

Merriam-Webster's Collegiate Dictionary, 11th edition, Merriam-Webster, Inc., Springfield, MA, 2003.

2.4 References for Extracts in Mandatory Sections.

NFPA 1, *Fire Code*, 2015 edition.

NFPA 13D, *Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes*, 2016 edition.

NFPA 101®, *Life Safety Code*®, 2015 edition.

NFPA 1141, *Standard for Fire Protection Infrastructure for Land Development in Wildland, Rural, and Suburban Areas*, 2017 edition.

NFPA 1600®, *Standard on Disaster/Emergency Management and Business Continuity Programs*, 2016 edition.

NFPA 1901, *Standard for Automotive Fire Apparatus*, 2016 edition.

NFPA 1911, *Standard for the Inspection, Maintenance, Testing, and Retirement of In-Service Automotive Fire Apparatus*, 2012 edition.

NFPA 1925, *Standard on Marine Fire-Fighting Vessels*, 2013 edition.

NFPA 1961, *Standard on Fire Hose*, 2013 edition.

NFPA 5000®, *Building Construction and Safety Code*®, 2015 edition.

Chapter 3 Definitions

3.1 General. The definitions contained in this chapter shall apply to the terms used in this standard. Where terms are not defined in this chapter or within another chapter, they shall be defined using their ordinarily accepted meanings within the context in which they are used. *Merriam-Webster's Collegiate Dictionary*, 11th edition, shall be the source for the ordinarily accepted meaning.

3.2 NFPA Official Definitions.

3.2.1* Approved. Acceptable to the authority having jurisdiction.

3.2.2* Authority Having Jurisdiction (AHJ). An organization, office, or individual responsible for enforcing the requirements of a code or standard, or for approving equipment, materials, an installation, or a procedure.

3.2.3 Shall. Indicates a mandatory requirement.

3.2.4 Should. Indicates a recommendation or that which is advised but not required.

3.2.5 Standard. An NFPA Standard, the main text of which contains only mandatory provisions using the word “shall” to indicate requirements and that is in a form generally suitable for mandatory reference by another standard or code or for adoption into law. Nonmandatory provisions are not to be considered a part of the requirements of a standard and shall be located in an appendix, annex, footnote, informational note, or other means as permitted in the NFPA Manuals of Style. When used in a generic sense, such as in the phrase “standards development process” or “standards development activities,” the term “standards” includes all NFPA Standards, including Codes, Standards, Recommended Practices, and Guides.

3.3 General Definitions.

3.3.1 Alternative Water Supply. Water supplies provided to meet the minimum fire flow/duration requirements where no municipal-type water system exists or to supplement an inadequate municipal-type water supply.

3.3.2 Automatic Aid. A plan developed between two or more fire departments for immediate joint response on first alarms.

3.3.3 Building. Any structure used or intended for supporting or sheltering any use or occupancy. [101, 2015]

3.3.4 Construction Classification Number. A series of numbers from 0.5 through 1.5 that are mathematical factors used in a formula to determine the total water supply requirements.

3.3.5 Dry Hydrant. An arrangement of pipe permanently connected to a water source other than a piped, pressurized water supply system that provides a ready means of water supply for fire-fighting purposes and that utilizes the drafting (suction) capability of a fire department pump.

3.3.6 Dwelling. Any detached building, or any part of a townhouse structure that is separated from the remainder of the townhouse structure with fire resistance rated assemblies in accordance with local building code, that contains no more than two dwelling units intended to be used, rented, leased, let, or hired out to be occupied or that are occupied for habitation purposes. [13D, 2016]

3.3.7 Dwelling Unit. One or more rooms arranged for complete, independent housekeeping purposes, with space for eating, living, and sleeping; facilities for cooking; and provisions for sanitation. [5000, 2015]

3.3.8 Eductor. A device that uses the Venturi principle to siphon a liquid in a water stream. [1925, 2013]

3.3.9 Ejector. A siphon device used to fill an engine's tank when the water source is below or beyond the engine's drafting capability.

3.3.10* Exposure Hazard. A structure within 50 ft (15.24 m) of another building and 100 ft² (9.3 m²) or larger in area.

3.3.11* Fire Department. An organization providing fire suppression, rescue, and related activities.

3.3.12* Large Diameter Hose. A hose of 3½ in. (90 mm) or larger size. [1961, 2013]