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Service activities relating to drinking water supply, wastewater and stormwater systems — Examples of good practices for stormwater management

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National foreword

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 224, *Service activities relating to drinking water supply, wastewater and stormwater systems*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

The objectives of stormwater management systems include effective control and management of flows; protection of water quality; preservation of water quantity; protection of the built, public and natural environments; water conservation and reuse; protection or enhancement of ecosystem health; protection or enhancement of public health, safety and welfare; protection or enhancement of social values; and facilitation of sustainable development and climate adaptation.

"Climate Change 2014: Synthesis Report: Summary for Policymakers, 2014, Intergovernmental Panel on Climate Change" gives us the warning that many global risks of climate change are concentrated in urban areas. It indicates that risks are amplified for those lacking essential infrastructure and services or living in poor-quality housing and exposed areas. The key risks, all of which are identified with high confidence, include those of severe ill-health and disrupted livelihoods for urban populations due to flooding from a range of sources including pluvial, fluvial, storm surges and coastal flooding.

Pursuant to the "World Urbanization Prospects: The 2011 Revision, 2011, United Nations", the world urban population is expected to increase by 72 per cent by 2050, from 3,6 billion in 2011 to 6,3 billion in 2050. i.e. the same size as the world's total population was in 2002. Virtually all of the expected growth in the world population will be concentrated in the urban areas of the less developed regions, which are deemed to be vulnerable to flooding. The report states that flooding is the most frequent and greatest hazard for the 633 largest cities or urban agglomerations analysed. Mud slides are often associated with severe weather conditions and flooding, particularly in rural areas and commonly will impact rural villages and small towns, or their associated transportation infrastructures.

Thus, climate change and urbanization with rapid growth in population in cities and surrounding areas are most likely to increase flooding and the risks associated with stormwater worldwide. Serious challenges for stormwater management are posed for an increasing number of stormwater utilities, which are responsible for the control of pluvial flooding that is caused by rainwater entering and surcharging stormwater systems or remaining on surfaces and flowing overland or into local depressions and topographic lows to create temporary ponds.

The immediate impacts of urban flooding can include loss of human life, damage to property, disruption of traffic and other services and deteriorations of limited freshwater resources, water ecosystems and hygienic living conditions. Effective stormwater management systems can enhance the resilience of communities by reducing the likelihood and severity of pluvial, fluvial and coastal flooding.

Planning methods for stormwater systems have been established in most developed countries but they do not always apply directly to other countries with different conditions. In order to help deliver the best solution to the targeted area, the framework and planning processes should be standardised, within a local institutional and regulatory context.

Urban stormwater management is usually the responsibility of municipal water and wastewater service providers. However, in some countries the urban stormwater system management is performed by separate entities especially established for this purpose. Sometimes these services are not financially supported from the municipal water and wastewater revenues but from stormwater levies applied to flood vulnerable properties concerned and created for that purpose or a local governing authority.

While it is largely and historically true that urban stormwater management has been the responsibility of municipal wastewater authorities, it is increasingly recognized that stormwater management may be best or additionally served through collaboration with other relevant stakeholders such as Forestry Commissions (for forested hill and mountain sides), Agricultural Commissions for upstream farming properties, river authorities or Port Commissions for the management of tidal surges on both marine and freshwater bodies or local governing authorities.

This document compiles examples of good practices in stormwater management.

These examples illustrate a wide range of measures including both asset and non-asset-related measures for various objectives relating to stormwater management.

TECHNICAL REPORT **ISO/TR 24539:2021**

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1 Scope

This document provides examples of good practices in stormwater management related to ISO 24536 and information on standards and guidelines used in various countries.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

4 Format and content of the examples provided in this document

Examples of stormwater management introduced here are classified by country and are described in Annex A. They are also classified according to the objectives in ISO 24536:2019, Table 1, and are shown in Table A.1. The examples were provided by country representatives and adapted to the format of this document. In addition, although various standards and guidelines are described in Annex B, Table B.1 and Table B.2, they are shown only as a name and a reference URL.

Table 1 illustrates the structure of the examples included in Annex A.

Table 1 — The structure of the examples

Section	Content
Background	Provides background information on the project, such as characteristics of the watershed, social background, issues and tasks.
Purpose	Provides a description of the project objectives, such as improvements to be achieved.
Project outline	Provides a description of the project.
Organization	Provides simply the identity of the organization offering its experience.