

ICS 27.140
CCS P 59

NB

**ENERGY INDUSTRY STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

NB/T 10139-2019

**Specification for investigation and control design of debris flow
for hydropower projects**

水电工程泥石流勘察与防治设计规程

Issued on: June 4, 2019

Implemented on: October 1, 2019

Issued by: National Energy Administration of the PRC

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Foreword

This document was issued on 4 June 2019 by the National Energy Administration of the PRC and takes effect on 1 October 2019.

It is a NB/T standard: recommended rather than compulsory, but it is the text a Chinese reviewer applies when assessing a submission.

It is classified under ICS 27.140, Chinese classification P 59.

This specification has been formulated in accordance with the requirements of the Notice of the National Energy Administration on Issuing the Second Batch of the 2012 Plan for the Formulation (Revision) of Industry Standards in the Energy Field (Guo Neng Ke Ji [2012] No. 326). During its preparation the drafting group carried out extensive investigation and research, earnestly summarized practical experience, referred to relevant advanced standards at home and abroad, and prepared this specification on the basis of widely soliciting opinions.

The main technical contents of this specification are: content of debris flow investigation, methods of debris flow investigation, engineering geological assessment of debris flow, debris flow control standards, design of debris flow control works, debris flow monitoring and forewarning, construction planning of debris flow treatment projects, and debris flow investigation and design reports.

This specification is under the administration of the National Energy Administration. It was proposed by the General Institute of Hydropower and Water Resources Planning and Design, which is also responsible for its routine administration, while the Standardization

Technical Committee for Hydropower Investigation and Design of the Energy Industry is responsible for the interpretation of its specific technical content.

Should any comment or suggestion arise during the implementation of this specification, please send it to the General Institute of Hydropower and Water Resources Planning and Design (address: No. 2 Liupukang Beixiaojie, Xicheng District, Beijing; postcode 100120).

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Issue and Approval

Energy industry standard of the People's Republic of China NB/T 10139-2019, Specification for Investigation and Control Design of Debris Flow for Hydropower Projects. Chief editing department: General Institute of Hydropower and Water Resources Planning and Design. Approving department: National Energy Administration. Date of implementation: 1 October 2019. Published in Beijing in 2019.

National Energy Administration Announcement No. 4 of 2019: the National Energy Administration approved 297 industry standards, including the Code for Electrical Design of Photovoltaic Power Generation Projects, among which 105 are energy standards (NB), 168 are electric power standards (DL) and 24 are petrochemical standards (NB/SH), and hereby issues them. Attachment: catalogue of industry standards. National Energy Administration, 4 June 2019.

In the attached catalogue of industry standards this specification appears under serial number 12: standard number NB/T 10139-2019, standard title Specification for Investigation and Control Design of Debris Flow for Hydropower Projects, with no superseded standard and no adopted international standard shown, approval date 4 June 2019 and implementation date 1 October 2019.

The cover of the standard bears the international classification ICS 27.140 and the Chinese standard classification code P 59, with the document filed under class P. The standard was issued on 4 June 2019 by the National Energy Administration and came into force on 1

October 2019.

1 Scope

NB/T 10139-2019 covers the investigation of debris flows on hydropower projects and the design of the works that control them. A debris flow is a moving mass of water, mud and boulders coming down a steep gully, and on a mountain hydropower site it threatens exactly the things that cannot be moved: the dam and its abutments, the powerhouse, the access roads, the construction camps and spoil areas, and the reservoir itself, which a large flow can partly fill. The specification sets the general provisions and the defined terms, then the basic requirements by design stage and by the importance of what is being protected. Investigation comes first: the identification and mapping of debris flow gullies, the geomorphological and geological survey of the source area, the assessment of the loose material available, the rainfall that triggers a flow, and the historical record. From that it sets out how the flow is characterised - its type, its scale and recurrence, the peak discharge, the density, the velocity and the impact force, and the run-out and deposition expected. Control design follows, covering the whole family of measures: check dams and sabo works, drainage and diversion channels, deposition basins, guide dykes, slope stabilisation and revegetation in the source area, and the crossing structures that must pass a flow safely. Monitoring, early warning and maintenance close the document. It applies to hydropower projects in China.

1.0.1 This specification is formulated in order to standardize the technical requirements for the investigation of debris flow and for the design of debris flow prevention and control works in hydropower projects.

1.0.2 This specification applies to the investigation of debris flow and to the design of debris flow prevention and control works in the engineering areas of hydropower projects, in concentrated resettlement areas for displaced people, in owner camps and in construction camps.

1.0.3 In addition to complying with this specification, the investigation of debris flow and the design of debris flow prevention and control works for hydropower projects shall also comply with the provisions of the relevant current national standards.

2 Terms

2.0.1 Debris flow: a fluid carrying a large amount of solid material, produced in a gully or on a hillslope by the action of runoff such as precipitation or glacier meltwater.

2.0.2 Debris flow hazard: a natural disaster in which a debris flow causes damage to, or endangers, human life, property, buildings and structures.

2.0.3 Debris flow influence range: the area that may be subject to effects of a debris flow such as scouring and burial by deposition.