工程地质学报 2009, 17(1) 50-55 DOI: ISSN: CN:



论文

# 红石河堰塞湖漫顶溃坝风险评估

常东升①② |张利民① |徐耀① |黄润秋②

(①香港科技大学土木与环境工程系 |香港)
(②成都理工大学地质灾害防治与地质环境保护国家重点实验室 |成都 |610059)

摘要：

四川省青川县红石河堰塞湖是2008年5月12日汶川大地震形成的34座大型堰塞湖之一，是由东河口滑坡堵塞红石河形成的。该堰塞体高度约50 m、宽度约250 m、顺河向长度约500 m、形成的最大库容约400万m3 。本文作者对红石河堰塞体做了较详尽的现场试验，包括土的冲蚀试验、土的基本物性试验等。基于现场试验数据，对土的冲蚀性和漫顶溃坝风险做了详细的分析。结果显示，从土的抗冲蚀性角度考虑，只要有水溢出就会有土体被冲蚀，这说明红石河堰塞体的漫顶溃决可能性较高。本文还提出经验公式来预测红石河堰塞体漫顶的溃决时间，大约为4.5d，如果考虑到大石块对抗冲蚀稳定性的有利影响，这一数值会增大。此外，还研究了溃决深度随时间的变化规律。

关键词： 汶川地震,堰塞湖,漫顶,溃坝,冲蚀,风险分析

# ANALYSIS OF OVERTOPPING FAILURE OF HONGSHIHE LANDSLIDE DAM AFTER WENCHUAN EARTHQUAKE

CHANG Dongsheng①② |ZHANG Limin① |XU Yao① |HUANG Runqiu②

(①Department of Civil and Environmental Engineering, Hong Kong University of Science and Technology, Hong Kong)
(②State Key Laboratory of Geohazard Prevention and Geoenvironment Protection, Chengdu University of Technology, Chengdu |610059)

Abstract:

The Hongshihe landslide dam, located at Qingchuan County, Sichuan Province, is one of the 34 large-scale landslide dams induced by the Great Wenchuan Earthquake on May 12, 2008. The Hongshi River was blocked by the Donghekou Landslide. The landslide debris formed the Hongshihe landslide dam approximately 50 m in height, 250 m in width, 500 m in length along the river. The dam reservoir capacity was estimated to be 6×10 6m 3. Field tests were conducted at the Hongshihe landslide dam after its breaching. The tests include soil erodibility tests and basic soil property tests. Based on in situ soil erosion resistance data, the breaching failure risk was studied. It is shown that the landslide soils can be eroded as long as there is overflow, which means the overtopping breaching failure risk of the Hongshihe landslide dam is quite high. Moreover, the breaching time is evaluated based on newly introduced empirical equations and is about 4.5 days. As the presence of boulders is not included in the analysis, the actual failure time could be longer than our estimation. The trend of soil erosion depth with time is also investigated. The methodology presented in the paper may provide some guidance in handling similar incidences in the future.

Keywords: Whenchuan Earthquake, Landslide dam, Overtopping, Dam breaching, Soil erosion, Risk analysis, Hongshihe

收稿日期 修回日期 网络版发布日期

DOI:

基金项目:

通讯作者:

作者简介:

作者Email: cechangd@ust.hk

参考文献：

本刊中的类似文章

文章评论

| | | | |
|---|---|---|---|
| 反馈人 | | 邮箱地址 | |
| 反馈标题 | | 验证码 | 0711 |