Detection of extraneous water ingress into the sewer system using tandem methods - a case study in Trondheim city.

https://arctichealth.org/en/permalink/ahliterature300025

Author: M Beheshti  
S Sægrov

Author Affiliation: Department of Civil and Environmental Engineering, Norwegian University of Science and Technology (NTNU), Trondheim, Norway E-mail: maryam.beheshti@ntnu.no.


Date: Jan-2019

Language: English

Publication Type: Journal Article

Keywords: Cities  
Drainage, Sanitary - methods  
Fiber Optic Technology  
Norway  
Remote Sensing Technology  
Sewage  
Water Movements

Abstract: Infiltration and inflow (I/I) of extraneous water in separate sewer systems are serious concerns in urban water management for their environmental, social and economic consequences. Effective reduction of I/I requires knowing where excess water ingress and illicit connections are located. The present study focuses on I/I detection in the foul sewer network of a catchment in Trondheim, Norway, during a period without snowmelt or groundwater infiltration. Fiber-optic distributed temperature sensing (DTS) was used for the first time in Norway to detect I/I sources in tandem with closed-circuit television inspection (CCTV) and smoke testing. DTS was an accurate and feasible method for I/I detection, though it cannot identify exact types of failure and sources of I/I. Therefore, other complementary methods must be used, e.g. CCTV or smoke testing. However, CCTV was not completely useful in confirming the DTS results. This study provides practical insights for the rehabilitation and repair of sewer networks that suffer from the undesirable I/I of extraneous water.

PubMed ID: 30865594 View in PubMed
Detection of extraneous water ingress into the sewer system using tandem methods - a case study in Trondheim city.

https://arctichealth.org/en/permalink/ahliterature298833

Author: M Beheshti

Author Affiliation: Department of Civil and Environmental Engineering, Norwegian University of Science and Technology (NTNU), Trondheim, Norway E-mail: maryam.beheshti@ntnu.no.


Date: Jan-2019

Language: English

Publication Type: Journal Article

Abstract: Infiltration and inflow (I/I) of extraneous water in separate sewer systems are serious concerns in urban water management for their environmental, social and economic consequences. Effective reduction of I/I requires knowing where excess water ingress and illicit connections are located. The present study focuses on I/I detection in the foul sewer network of a catchment in Trondheim, Norway, during a period without snowmelt or groundwater infiltration. Fiber-optic distributed temperature sensing (DTS) was used for the first time in Norway to detect I/I sources in tandem with closed-circuit television inspection (CCTV) and smoke testing. DTS was an accurate and feasible method for I/I detection, though it cannot identify exact types of failure and sources of I/I. Therefore, other complementary methods must be used, e.g. CCTV or smoke testing. However, CCTV was not completely useful in confirming the DTS results. This study provides practical insights for the rehabilitation and repair of sewer networks that suffer from the undesirable I/I of extraneous water.

PubMed ID: 30865594 View in PubMed