Episode 03 Jan. 2022

Extraneous Water Prevention in Drainage Systems

Klaus Jilg & Siqi Tong

- Monthly a new topic for discussion
- Exchange of knowledge in wastewater
- Passion sharing
- Get to know you!

Abwassertalk:
https://www.podcast.de/podcast/795779/abwassertalk

Episode	Topic	Content	Time (CET)
01	**Rat Control in Drainage Systems**	Environmental risks & application of waterproof baiting station in drainage systems	05 Nov. 21 10:00
02	**Drainage System Inspection (Drone & Boat)**	Innovative inspection of drainage systems using drone and camera-equipped boat	02 Dec. 21 10:00
03	**Extraneous Water Entrance Prevention**	Impacts of extraneous water & countermeasures?	13 Jan. 22 10:00
04	**Indirect Discharger Cadaster Investigation**	How to easily obtain full supervision over indirect discharger in your region?	03 Feb. 22 10:00
05	**Live Flow Monitoring in Drainage Systems**	Why is it so important to know the live-flow in our drainage system?	03 Mar. 22 10:00
06	**Exhaust Air Treatment in Wastewater Management**	Odour treatment through external equipments	07 Apr. 22 10:00
07	**Sulfide Balance in Drainage Systems**	Automatic calculation of sulfide balance & introduction to SULFIDUS	05 May 22 10:00
08	**Special Episode: IFAT Munich 2022**	What is new at the IFAT this year?	02 Jun. 22 10:00

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since 2000

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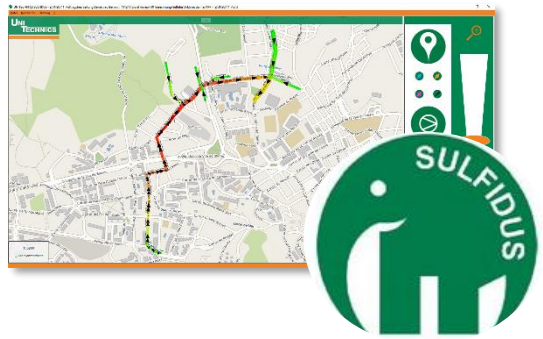
Engineering Consulting

Indirect Discharger Investigation

Sewage System Inspection



Sulfide Balance SULFIDUS

Odour & Corrosion

Extraneous Water Seal

Dosing & Exhaust Air Treatment

Rat Control

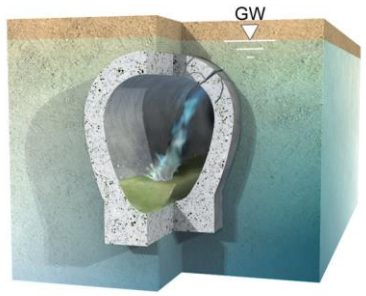
Extraneous Water Impression

Extraneous Water is …

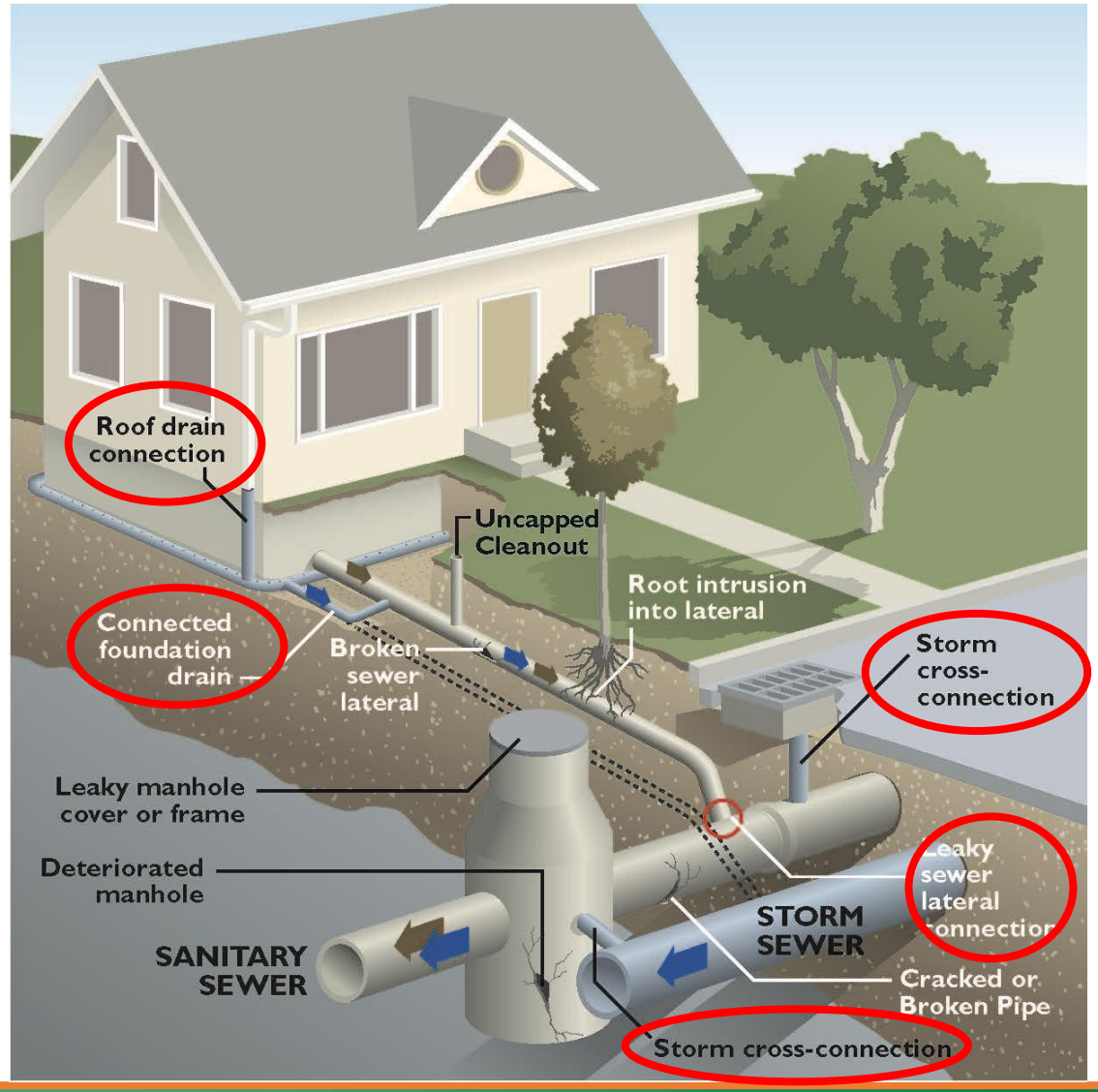
- *"ground water, storm water, or wrongly connected drainage entering the sewer system through defective pipes, joints and manholes"* (DIN 1999)
- *"water discharged to sewer system which is neither qualitatively influenced by domestic, industrial, agricultural or other usage nor specifically collected and discharged during precipitation"* (ATV-DVWK 2003)
- *"water that has entered the sewer system but should not be there…"* (Ruhrverband)

➢ **multiple sources** **unauthorized entries** **different qualities** **unwanted**

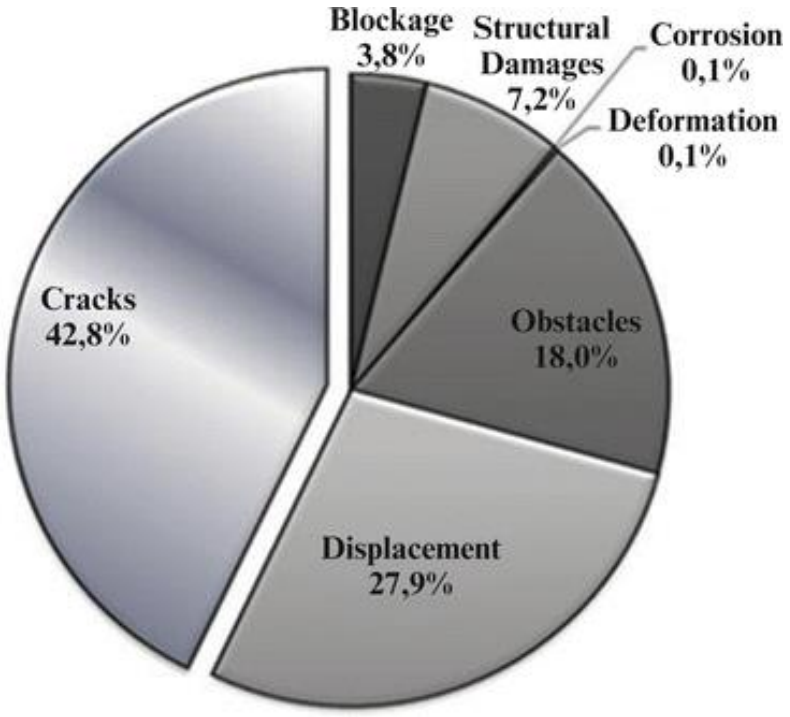
Multiple sources



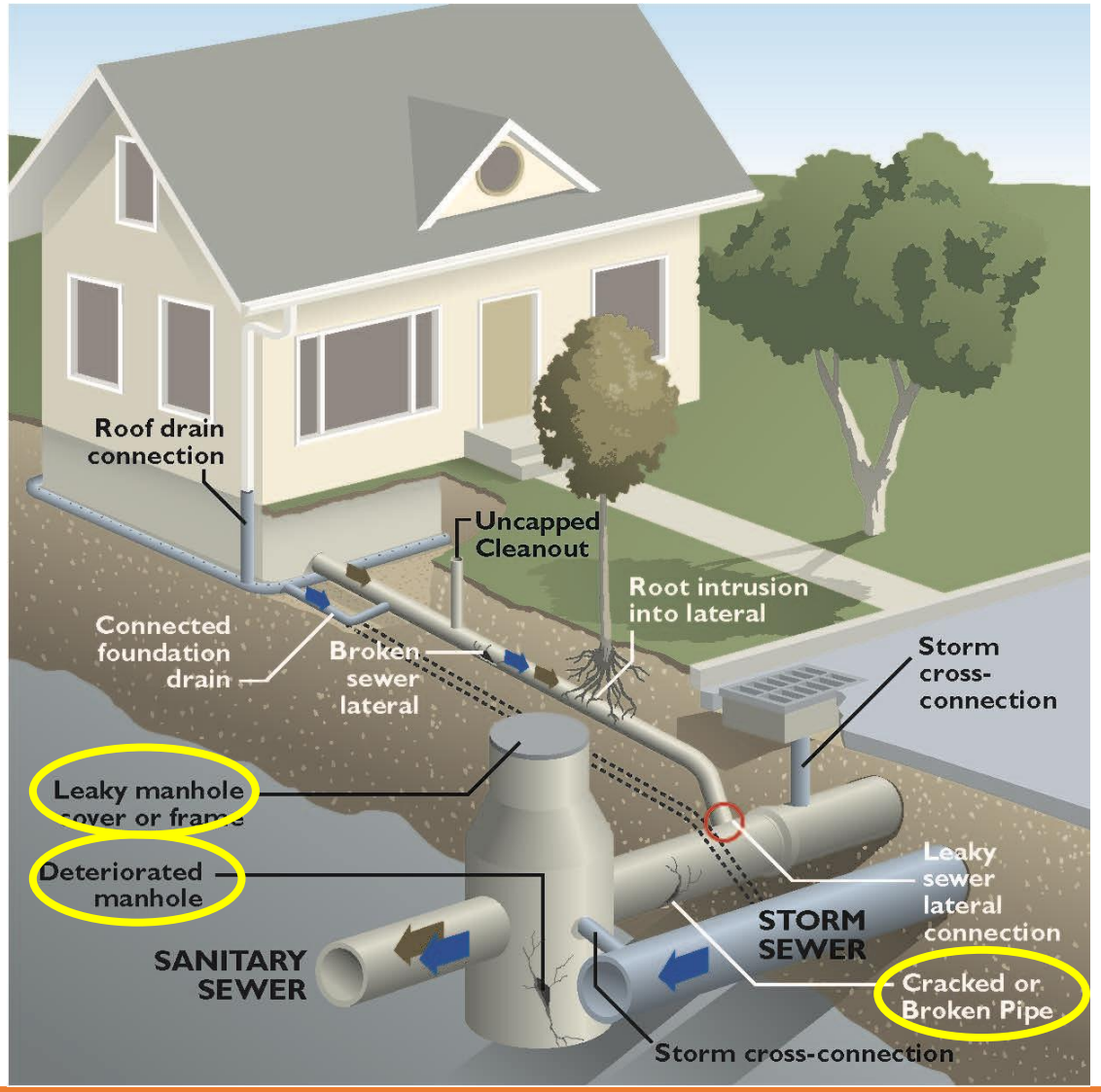
- Groundwater
- Storm water
- Spring water
- Illegally discharged drainage water
- Household leakages
- Drainage systems of building foundations or property areas
- Streams of water drained from during construction, renovation or cleaning works



Unauthorized entries



Source: Dimova G., Ribarova I., de Carné F. (2015) Coping with Extraneous Water in Sewerage Systems.



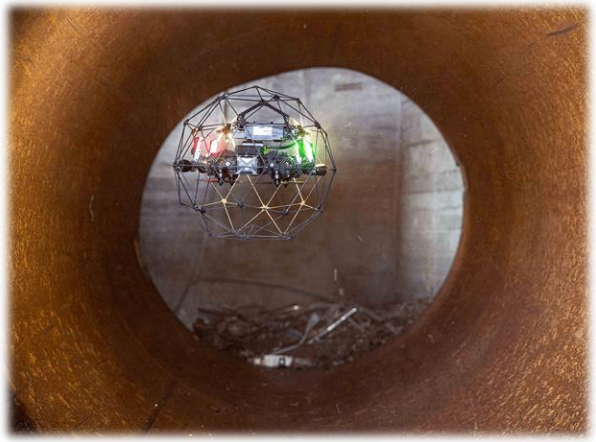
Impacts on sewer systems

- Manyfold increase in sewage flow rate
- gravity sewer system operation under pressure
- Backflow into basements or underground infrastructure facilities

Impacts on performance of WWTPs

- Periodical hydraulic overload of technological facilities
- Dilution and cooling of raw sewage
- Affect biological processes by means of activated sludge method
- Reduced treatment quality of sewage discharged to receiver bodies
- Higher operation and maintenance costs for pumping and treatment

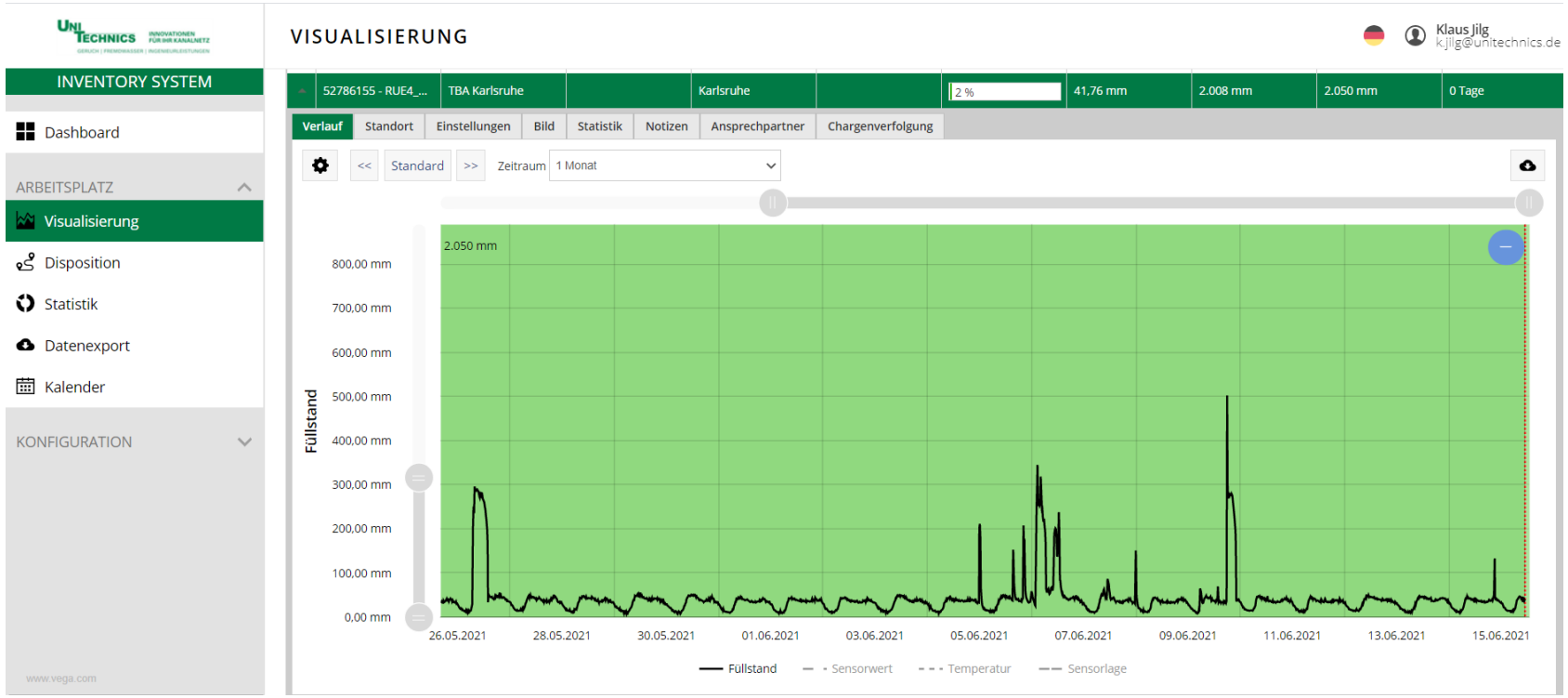
Identification of sewer cracks



- **Wastewater-Talk Ep. 02**

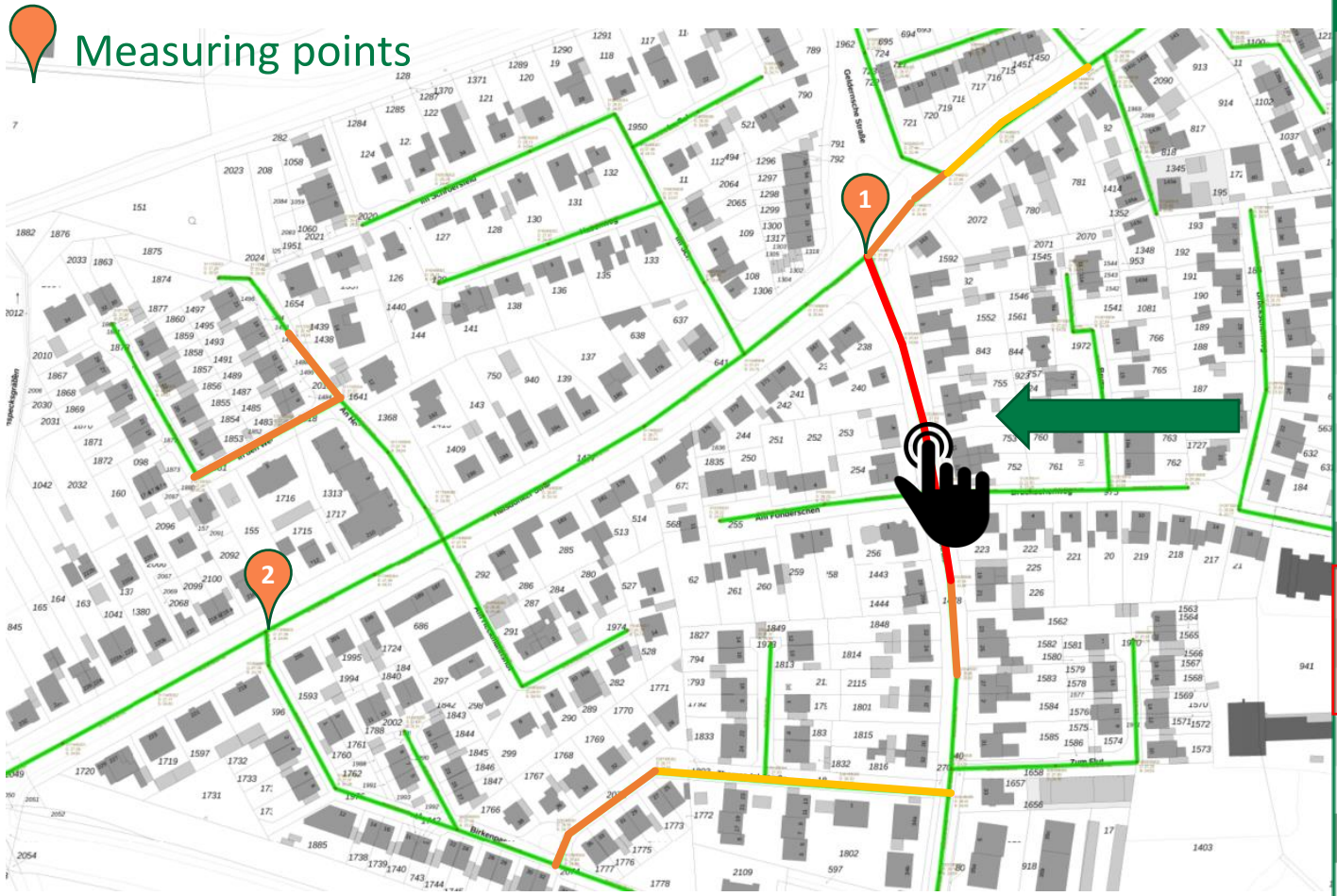
  Importance of regular drainage system inspection & innovative methods (video record)

Analysis of extraneous water flow



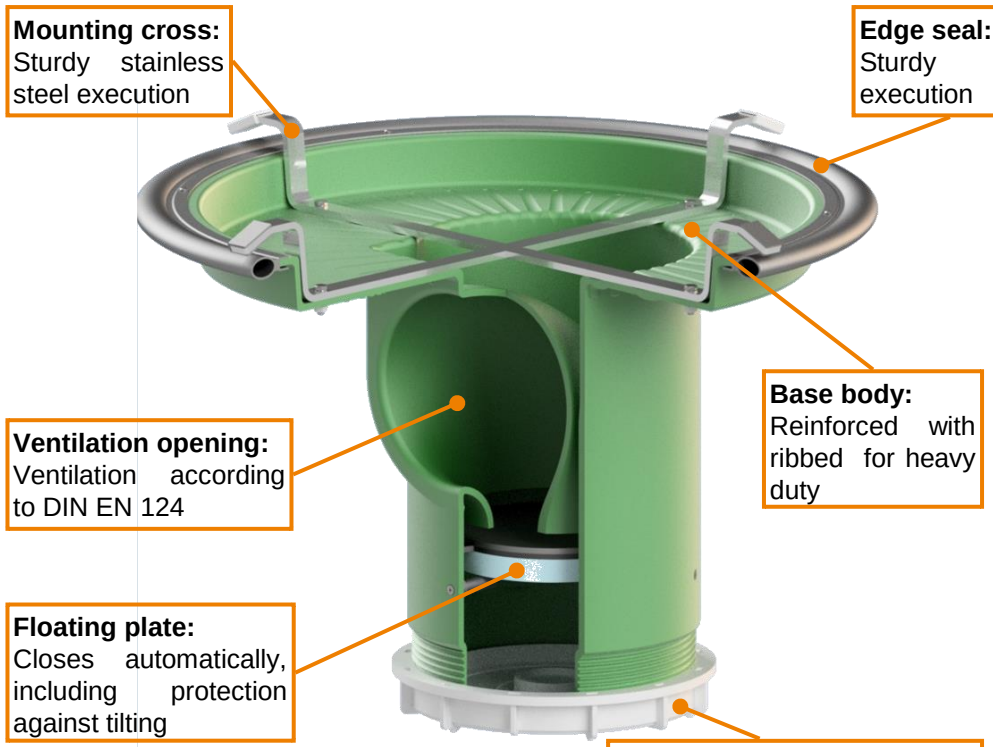
➢ **Wastewater-Talk Ep. 05 on 03 Mar.** Live flow monitoring in drainage systems

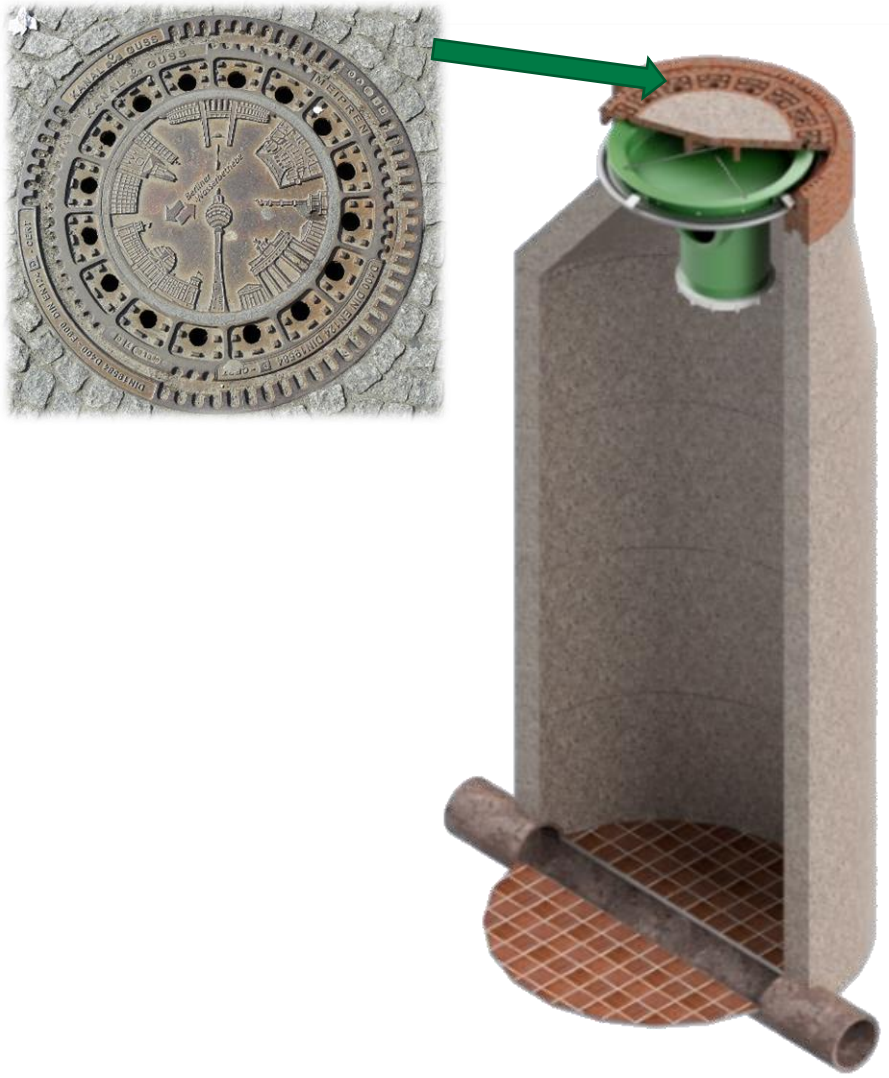
Measuring points

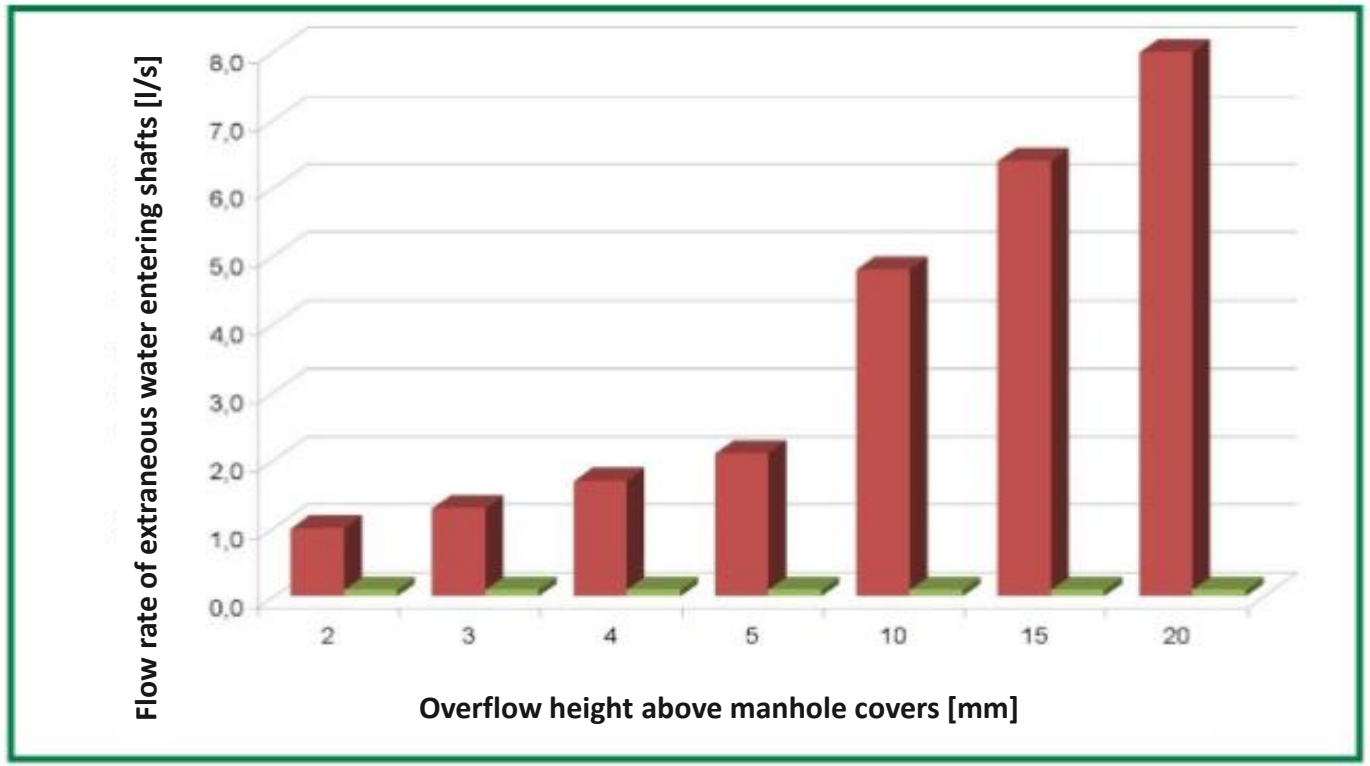


Attribut	Wert
Grunddaten	
Uhrzeit	01.04.2021 10:28 Uhr
Haltungsname	101602
Ablaufschacht	3185S008
Zulaufschacht	3185S009
Länge	52 m
DN	250
Profil	Kreis
Material	STZ
Gefälle	2,1 ‰
Hydraulik (Jetzt)	
Schmutzwasserdurchfluss	5 l/s
Grundwassereintrag	1 l/s
Niederschlagseintrag	10 l/s
Ermittlungsmethode	Berechnet
Niederschlag aktuelle Stunde	2 mm
Auswertungen	
Zur historischen Haltungsauswertung	

Prevention of entry from manhole covers







Without water shutout system:

1 cm overflow = 4.7 L/s exrtaneous water entering shafts

With water shutout system:

Entering flow rate of 0.1 L/s

➢ **50 times** control rate

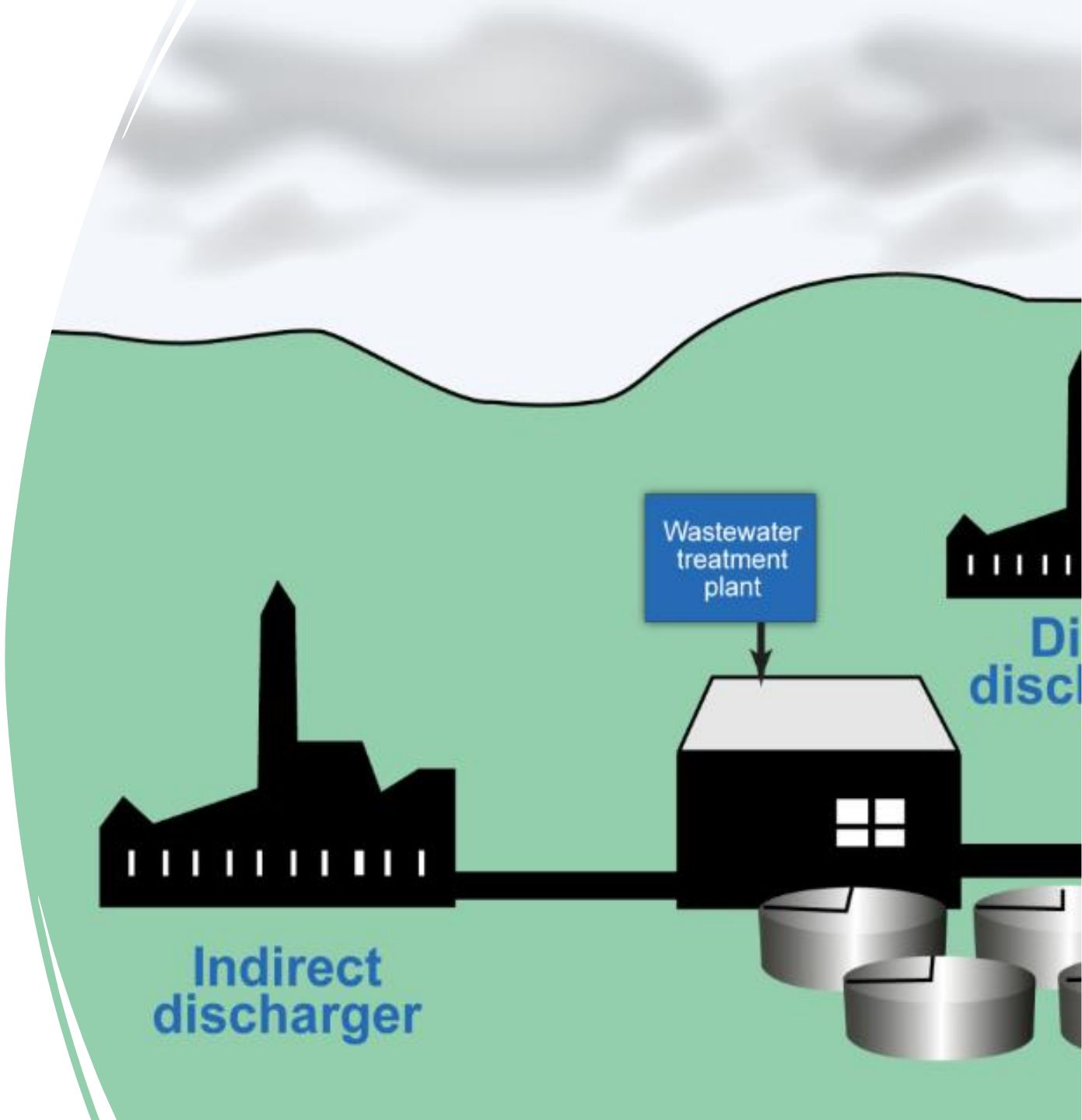
Extraneous water intrusion & countermeasures in your city/country?

Thank you!

See you next month

on 3rd February

Ep. 04 Indirect Discharger Investigation



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