# The Embankment test dam of Älvkarleby – From design to decommissioning (2019-2024)

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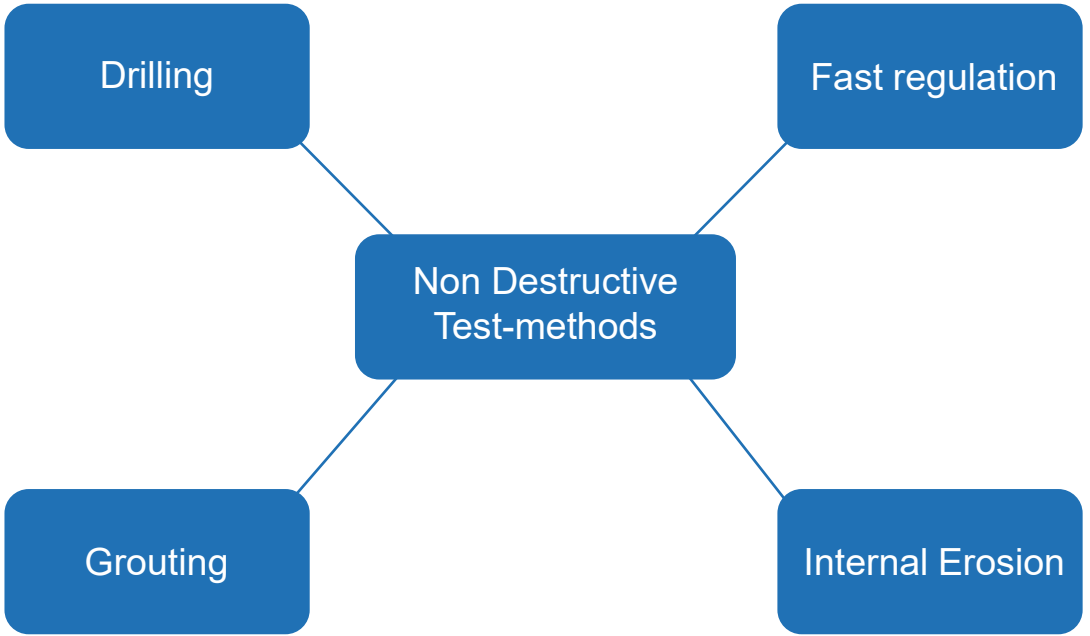
# Introduction

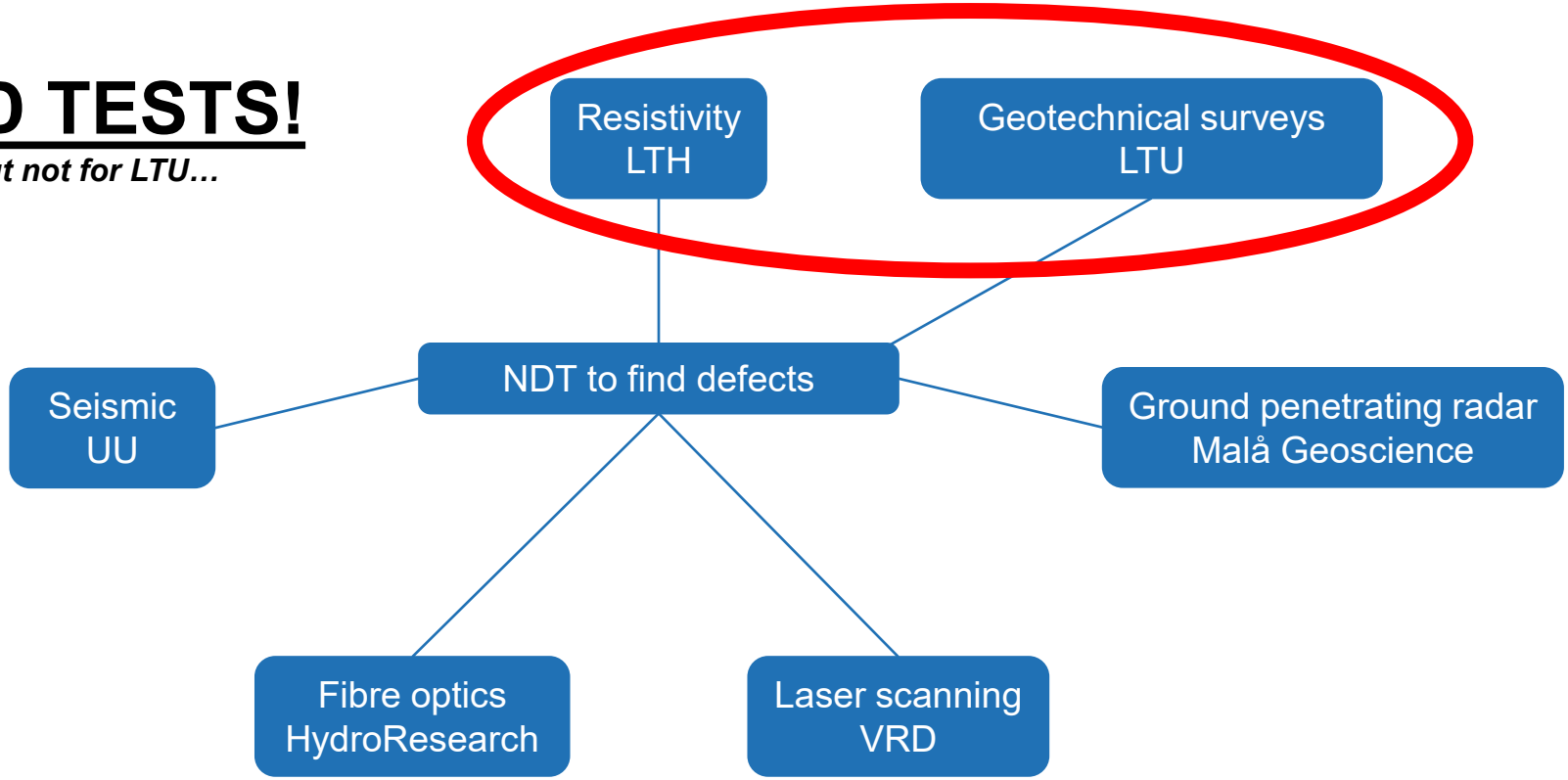
- Our dams get older
- Deterioration inevitable
- Observe
- Localize
- Specify
- Remediate



# Introduction

**BLIND TESTS!**

***But not for LTU…***

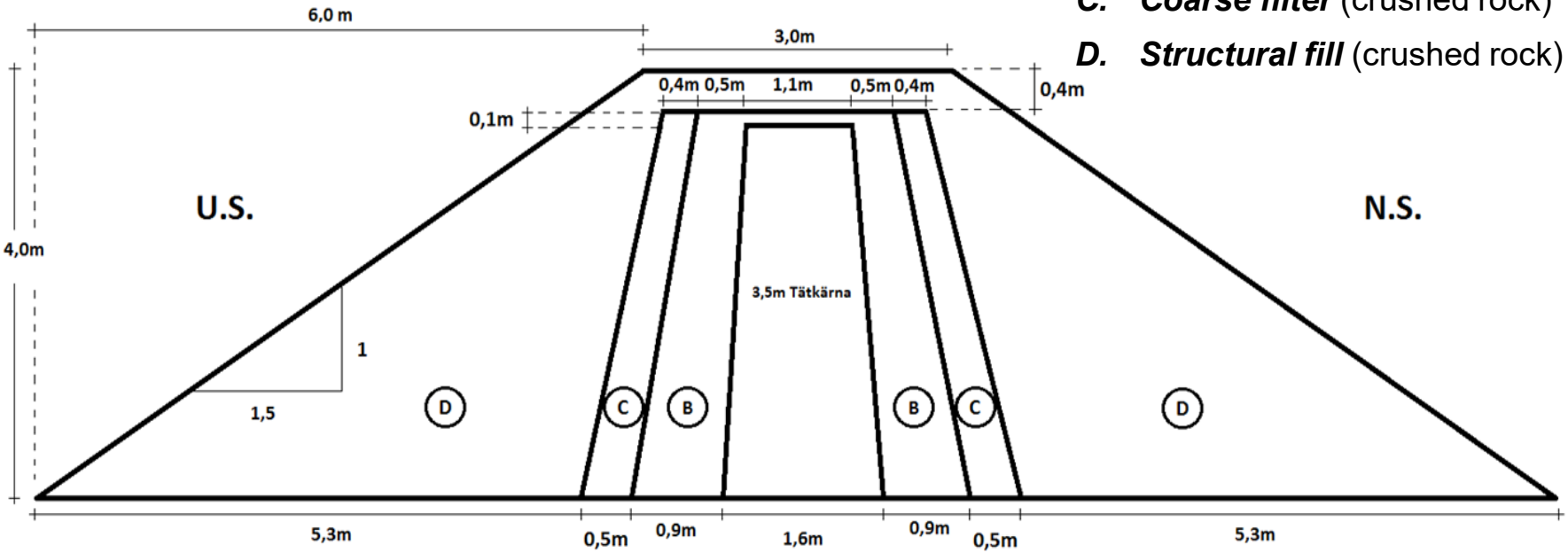


# Infrastructure – Concrete Pool

- Watertight concrete ”pool”
- Pumps
- Tent
- Thomson weirs
- Reserve power

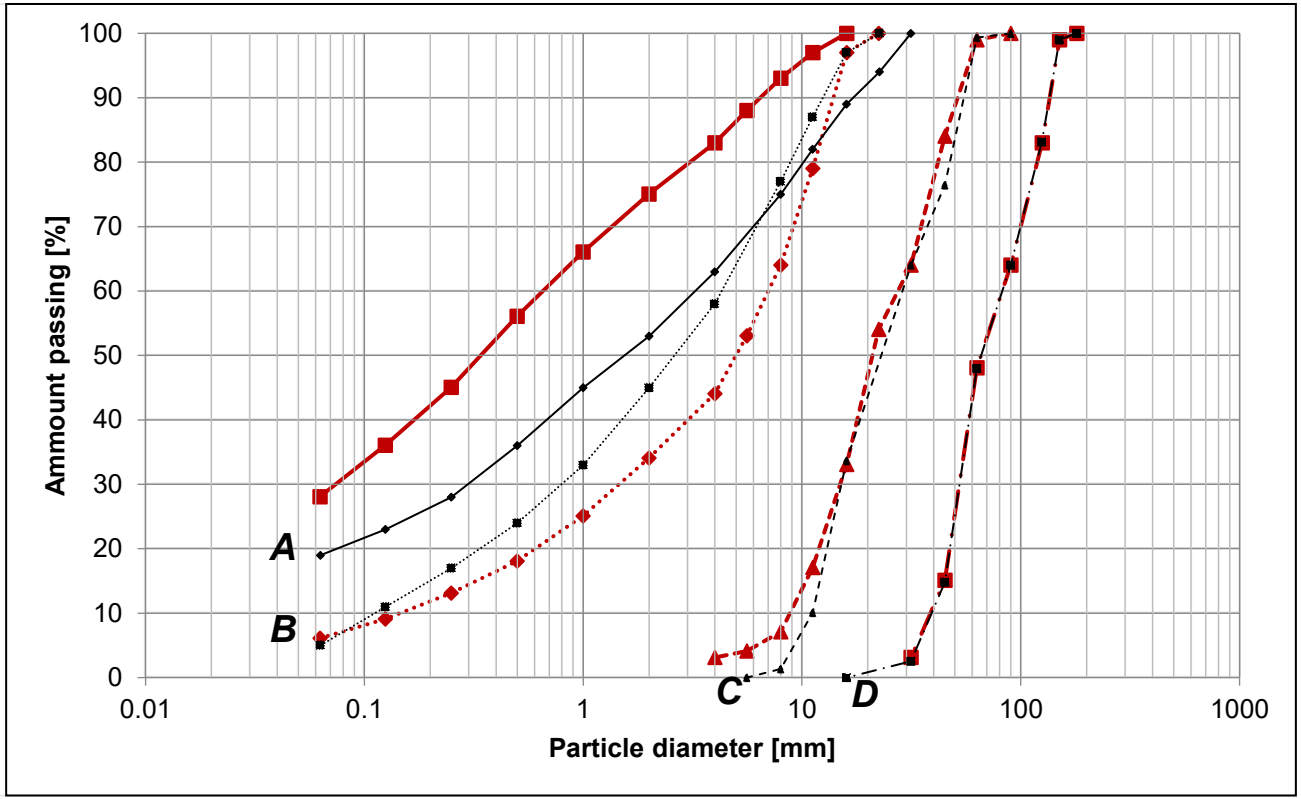
# Infrastructure – The Embankment Dam

A. ***Core soil*** (moraine)
B. ***Fine filter*** (crushed rock)
C. ***Coarse filter*** (crushed rock)
D. ***Structural fill*** (crushed rock)




**Embankment dam built according to (RIDAS 2012).**

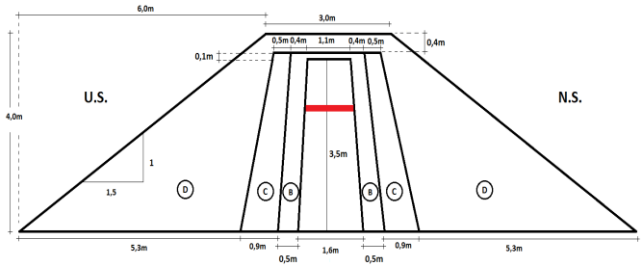
# Infrastructure – The Embankment Dam

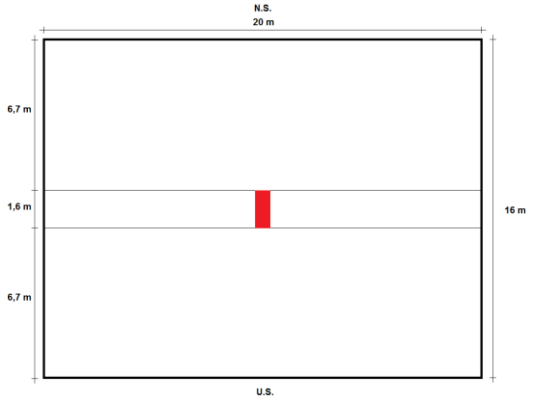


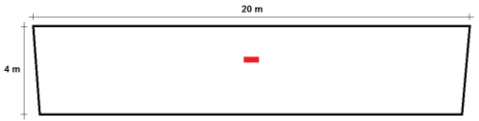

**Embankment dam DESIGNED according to (RIDAS 2012).**

# Defects

***To be found by NDT-methods***

# Defects

***To be found by NDT-methods***


”Cavity”

”Old grout material”

”High permeable horizontal”

”High permeable vertical”

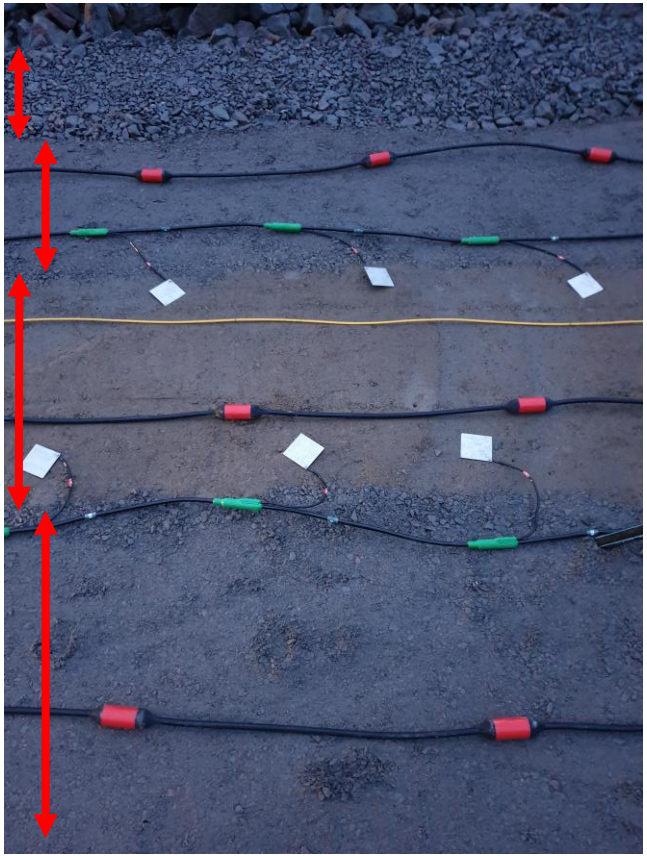
# NDT Equipment

Coarse Filter

Fine Filter

Core soil

Fine Filter



Seismic

Resistivity

Fibre optics

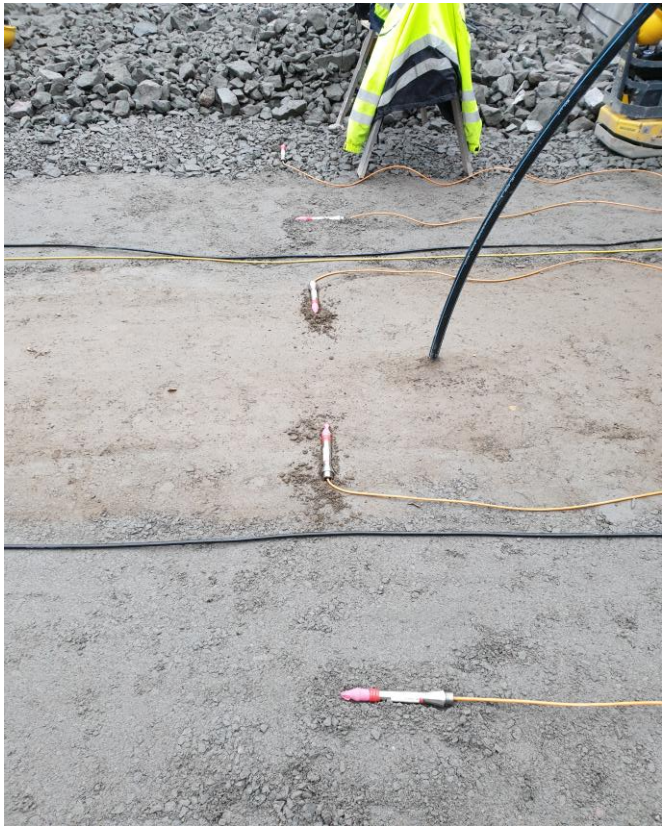
Seismic

Resistivity

Seismic

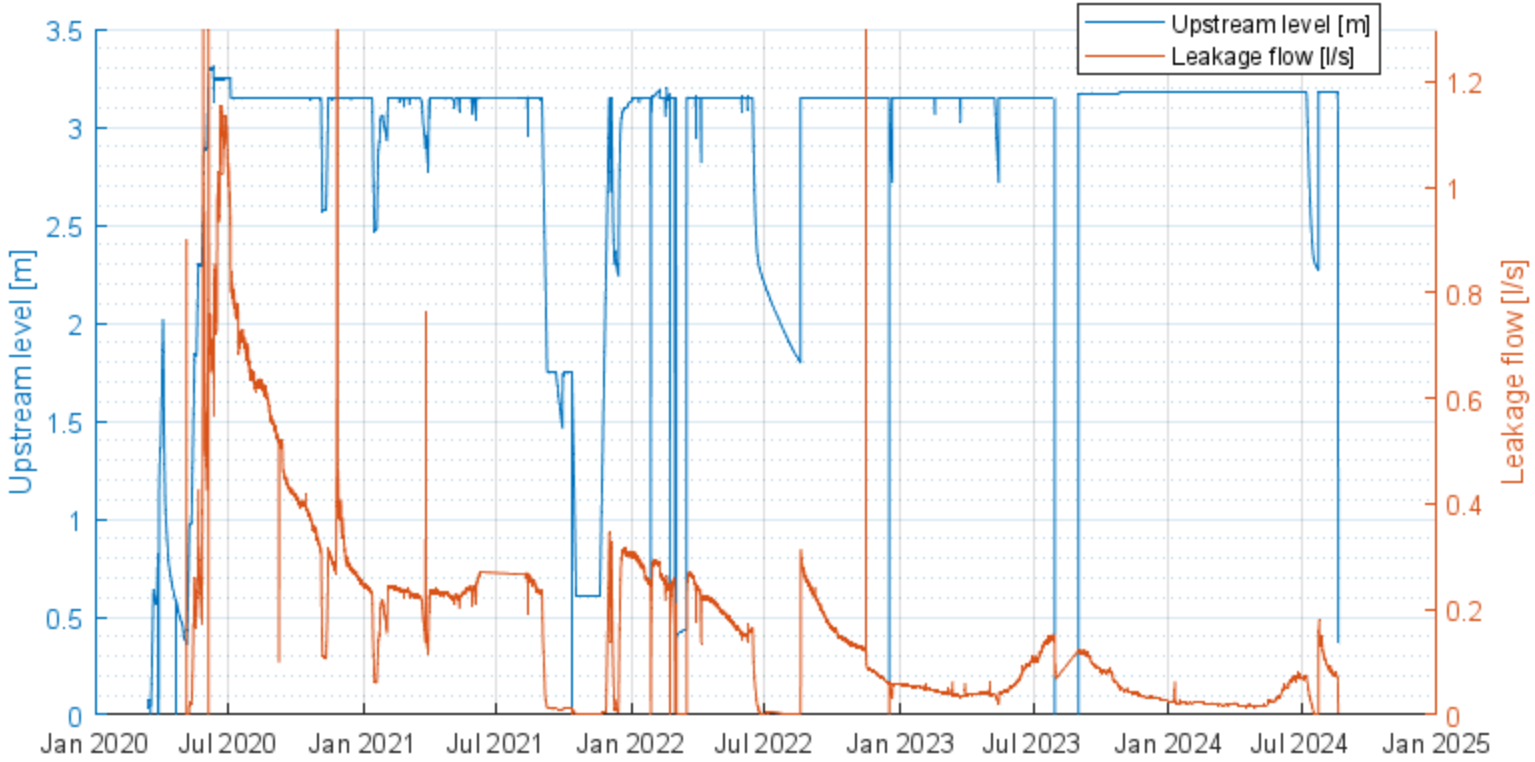
# NDT Equipment

Strain cables and inclinometers



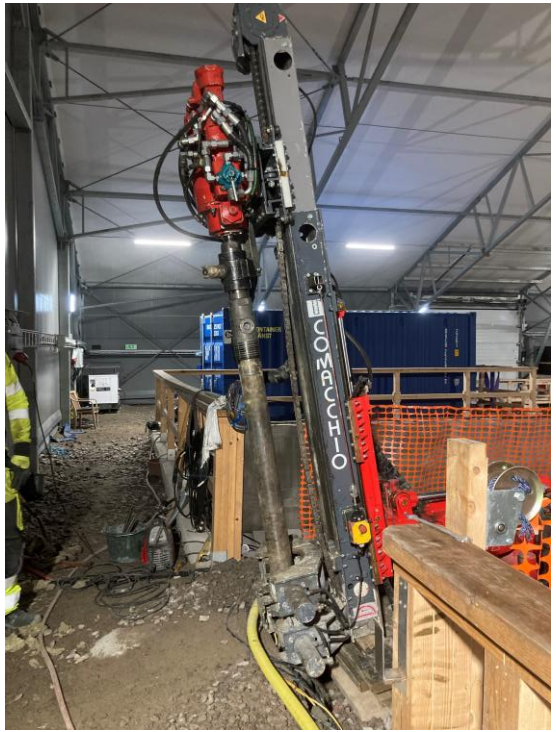
Pore pressure gauges (5 levels)

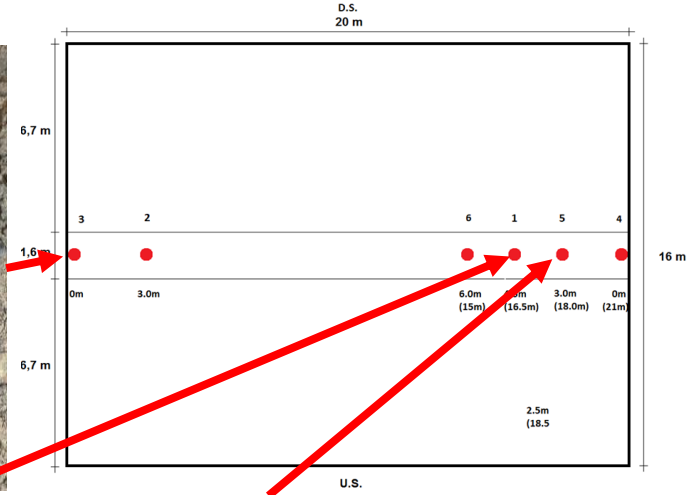
# Operation of the Dam



# Drilling and Grouting

***In the core soil***

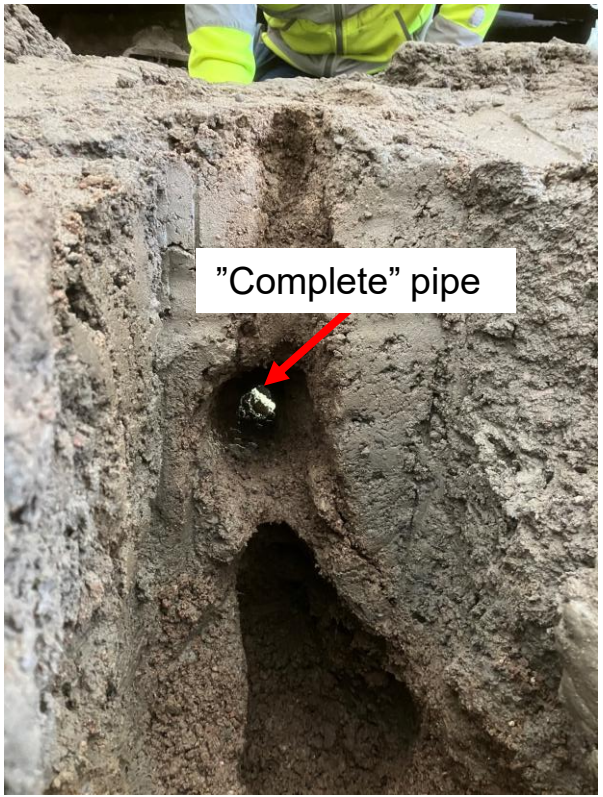



**Intentional fracturing**

# Dismantling

***Internal erosion found!***




# Conclusions

1. The infrastructure worked very well.
2. Results from RESISTIVITY and GEOTECHNICS right after this presentation
3. 30 ish scientific papers written and 4 PhD students involved.
4. ICOLD Gothenburg 2023 – a full day workshop (damage detection). Experts from various countries participated actively.

Report from dismantling under review. Release date Nov – Dec 2025. Energiforsk report.

400+ pages. Coffee table book of the year!

***"Dismantling, documentation and testing of the Älvkarleby test embankment dam"***

# Questions

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