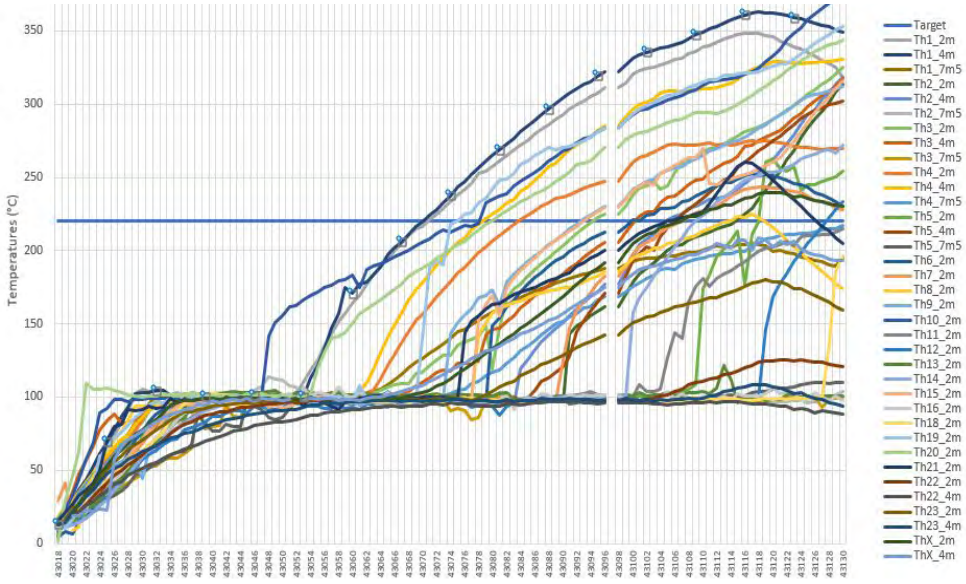
ISTD/ I-18-04
GANLØSEPARKEN (DK)

Context & Project Description

The site is located in Ganløseparken in Denmark, over two gardens in a private property. COCs are hydrocarbons from a gasoil tank leak and are located partially under the house below the basement. Treatment goals are defined by local regulation. The total volume of soil to treat was of 1350 m^3, at 7.5m depth.

Almost every temperature measurement rose above 220°C. The main problematic points are located at 7,5m deep and never passed the 100°C threshold. This issue can be explained by the unexpected presence of a water layer just below the treatment volume. This layer prevented the temperature to rise above 100°C because of the permanent renewing of the water content in soil. This was observed in the south-eastern part of the site near the limits of the treatment zone.

In the case of constantly incoming water, it acts as an energy absorber that limits the temperature we can reach in the soil. In our case, the amount of energy absortbed by water was higher that our heating power, preventing the temperature to rise above 100°C. Indeed, we can show with other similar project in Denmark (Vedbaek project) that the temperatures should pass this threshold and rise above 100°C. Figure 1 shows this follow-up.



Conclusion

Treatment is validated through external soil sampling performed for COWI's account. These were performed between 2nd February and 13th March 2018. Only one control point does not respect the treatment goals (160 mg/kg). Every other point is compliant with local regulation. According to final samples, less than 20mg/kg should remain (limit of detection) so at maximum 20 kg. That makes a 99,2% removal rate. The project was accomplished with success (defined targets reached), temperatures raised pretty fast but the 100°C threshold lasted a lot more than expected due to the unexpected presence of water around 8m bgl. The reburn process worked successfully without producing any environmental disturbance. Emissions norms were respected all along the treatment duration.

Key words

Contaminants
THC (C10-C40)

Max. concentration
13.000mg/kg DM

Volume
1350 m^3

Tonnage
2430 Tons

Nb of heating tubes
63

Temperature Target
220°C

Heating duration
113 days

Treatment targets
<100 mg/kg DM

Location
Ganløse, Denmark

Future Use
Residential

Client
Arkil

Partner
Arkil

Consultant
COWI

Date
2017-2018