FLUORO-SORB® 100 Adsorbent Offers Cost-Effective Soil Remediation Strategy

A firefighting training facility had high levels of PFAS and TPH contamination due to repeated use of aquous film-forming foam (AFFF) and recurrent petrol and diesel fires, respectively. A series of treatability studies were conducted to conclude that FLUORO-SORB 100 adsorbent was an effective and cost-effective strategy to treat the impacted soils via in-situ stabilization and solidification and permeable reactive barrier, without being affected by the TPH co-contaminants.

PROJECT DETAILS

Fire Training Center

Remediation Contractor: ATG Group

LOCATION

Southampton, United Kingdom

PRODUCTS USED

FLUORO-SORB® 100 adsorbent

CHALLENGE:

A fire training center located near Southampton, United Kingdom had high levels of PFAS contamination after recurrent use of aqueous film-forming foam (AFFF). Groundwater and near-surface soils had PFAS contamination levels exceeding 100 ppb (parts per billion) with long-chain compounds, PFOS and PFOA. Additionally, the fire training facility had been used for petrol and diesel fires, causing significant TPH (total petroleum hydrocarbons) contamination, creating a scenario of co-contamination.

Because the site was situated near a tidal marine estuary, additional challenges included poor geotechnical ground conditions due to marine silts and groundwater tidal influences as well as the presence of high sulfates.

SOLUTION:

The team looked to devise a remediation strategy that not only maximized removal levels, but was also cost-conscious for this public sector client with a limited budget. Treatability trials were conducted on site soil samples. Treated with various combinations of FLUORO-SORB 100 adsorbent and cementitious binders, six 500g mono-

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liths were formed. Separate 64-day tank tests were conducted on each based on EA NEN7375:2004/US EPA 1315. The treatability studies determined that the leachate samples had undetectable levels of PFAS and TPH, making FLUORO-SORB 100 adsorbent an effective additive for in-situ solidification and stabilization of PFAS contaminated soil, even when the soil has TPH co-contaminants present. Conversely, granular activated carbon (GAC) can be fouled by TPH and reduce its PFAS adsorption effectiveness.

As a result of these findings, impacted soils were excavated and disposed of while near-surface soils were treated via in-situ stabilization and solidification utilizing FLUORO-SORB 100 adsorbent. A permeable reactive barrier (PRB) was installed on the downgradient boundary also utilizing FLUORO-SORB 100 adsorbent.

RESULT:

FLUORO-SORB 100 adsorbent not only proved to be a cost-effective solution, but it was proven to be more effective than Granular Activated Carbon (GAC) and Ion Exchange Resin. The remediation plan offers the site a long-term solution of more than 20 years.

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