

Prevention of a Diesel Fuel Release to the Environment by the Successful Design and Construction of a Subsurface Mitigation System

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Due to the successful design and construction of a subsurface mitigation system at the CSX Intermodal facility in Worcester, Massachusetts, a diesel fuel release was directed to a self-contained on-site retention pond, preventing what could have been a groundwater remediation project which would have likely cost hundreds of thousands of dollars in remediation and regulatory costs.

On November 7, 2014, due to a faulty canister clamp, 2w, 300 gallons of diesel fuel was released from the engine of a locomotive while it was idling at the CSX Intermodal facility. The diesel fuel was directed to the facility's recently-constructed retention pond and did not impact the underlying soil or groundwater. An impermeable geomembrane was present just below the railroad ballast underneath and adjacent to the portion of the tracks where locomotives were parked and fueled. The geomembrane is located at a depth of approximately nine inches below the ground surface. The geomembrane was sloped at an angle which directed the diesel fuel to migrate to a 30 inch diameter subsurface concrete conduit that discharged to a self-contained on-site retention pond located within the facility. This mitigation system was specifically designed to intercept releases to the environment and direct them to the retention pond for recovery.

As soon as the diesel fuel was observed in the retention pond, CSX personnel closed the gate valve leading to the pond, preventing further migration of the diesel fuel into the pond. The diesel fuel was pumped out of the concrete conduit and the retention pond by CSX's remediation contractor, and an insubstantial amount of the affected soil located at the sited of the pond was later excavated and removed. The captured oil/water mixture was processed through the facility's oil/water separator and the recovered oil was recycled off-site. The fuel oil affected ballast in the area of the released was flushed out with water by the remediation contractor to ensure that no diesel fuel remained trapped above the geomembrane or within the concrete conduit.

Had the subsurface mitigation system not been constructed at the time of yard reconstruction, spills such as this diesel fuel would have migrated through the sandy vadose zone soil and into the aquifer, resulting in significant response and remediation costs.
