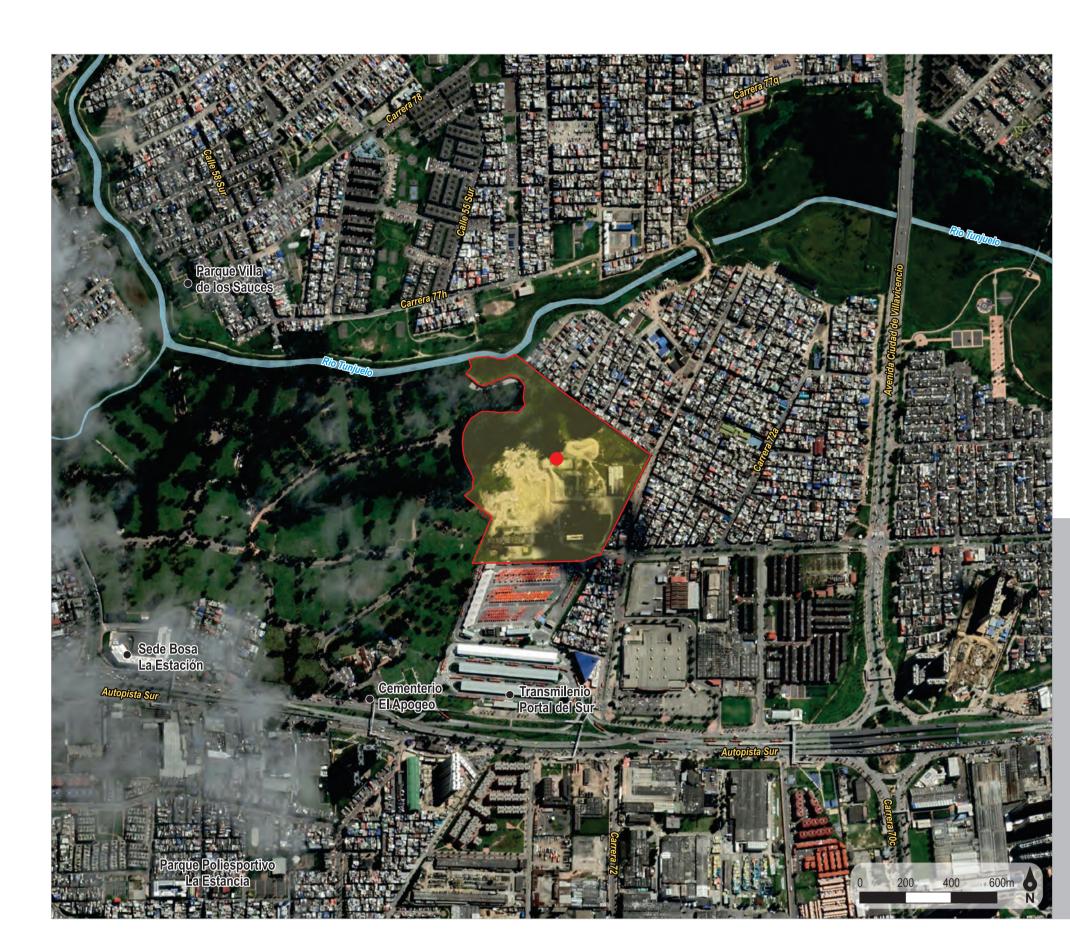
Multiple Remediation Technologies: Challenging Contaminated Site in Colombia

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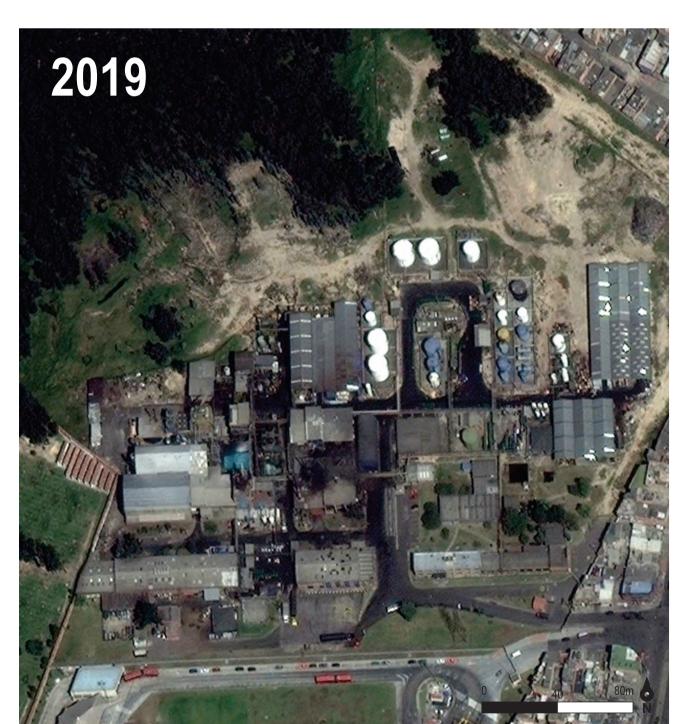
Background / Objectives



Former chemical industry located in Colombia, having operated for over 50 years manufacturing chemical additives, plasticizers, stabilizers, tar distillation. The plant was deactivated and currently is under redevelopment.

Colombian environmental scenario is not well developed and the procedures for investigation and remediation are being learned by government, the local companies and environmental authority.

Considering the plant location, inside a very populated neighborhood, with residential receptors living close by, the future land use considered is residential, what brings the need for more aggressive remediation technologies to recover the area.







Initially the company conducted a poor site investigation and the identified LNAPL from the area was subjected to a huge excavation removing more than 100,000 metric tons in one year. Considering the excavation was still revealing more and more free phase occurrences, it was decided to identify a company with the necessary expertise to carry out a new investigation to understand the hydrogeological conceptual model and the contamination of the area.

Approach / Activities

SGW decided to stop all remediation actions and step back to investigation mixing traditional and high-resolution investigation tools. Centimetric direct and indirect investigations were carried out. Hundreds of OIP and HPT, dozens of MIP points and additional drillings were performed.



Clayey silt

Sandy silt

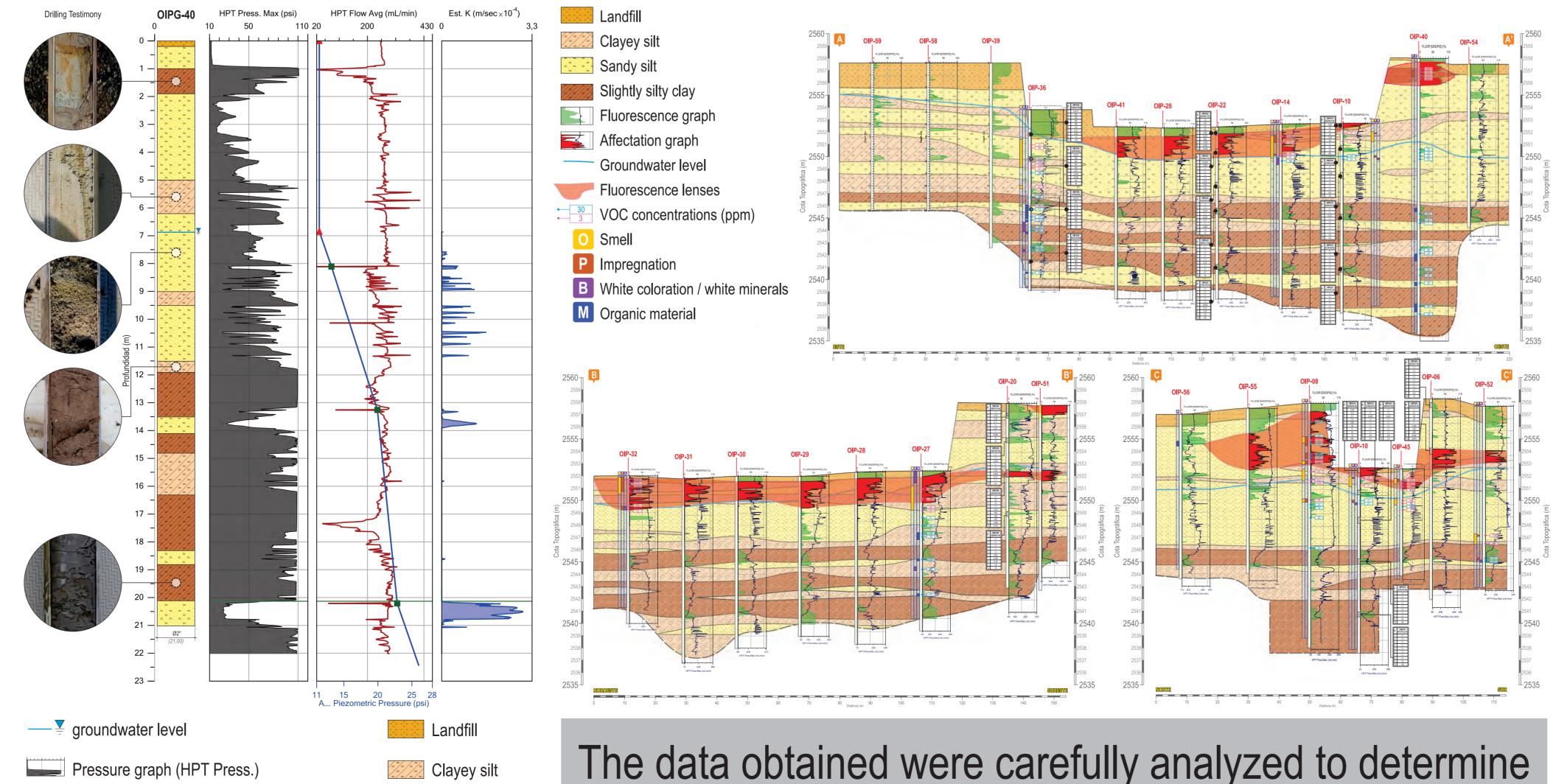
Pressure graph (HPT Press.)

Flow Chart (HPT Flow)

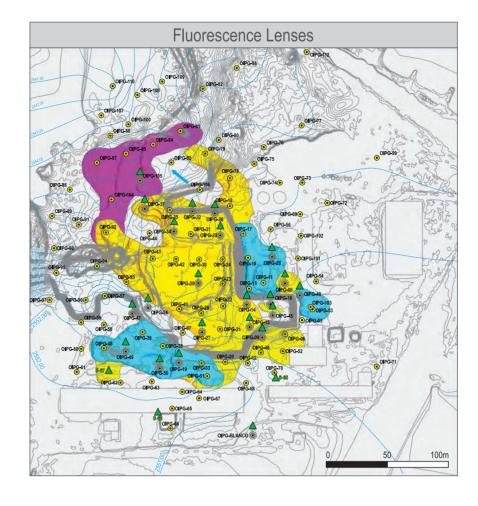


a precise and refined stratigraphic model.

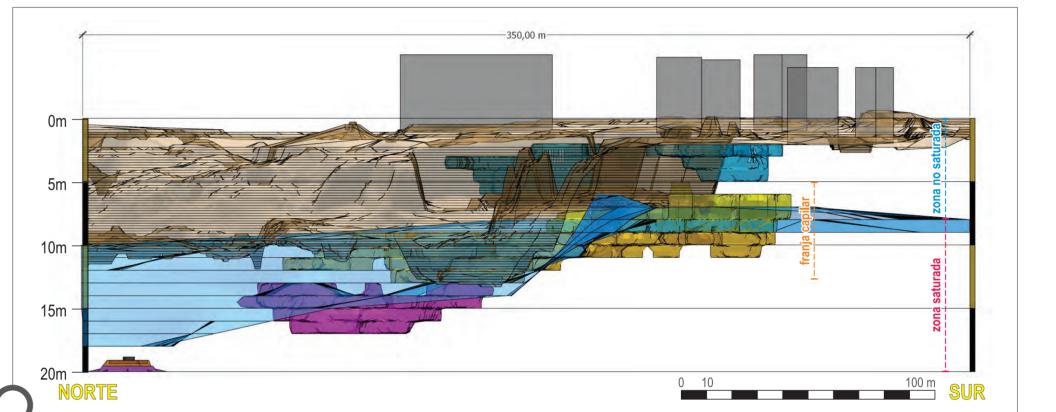
An experienced field team was the key to identify the presence of several different hydrocarbons at the site and update the site conceptual model. o-

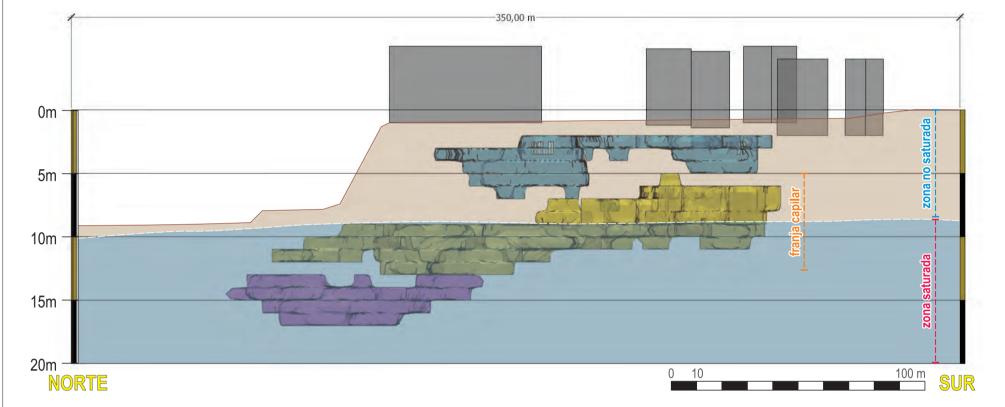


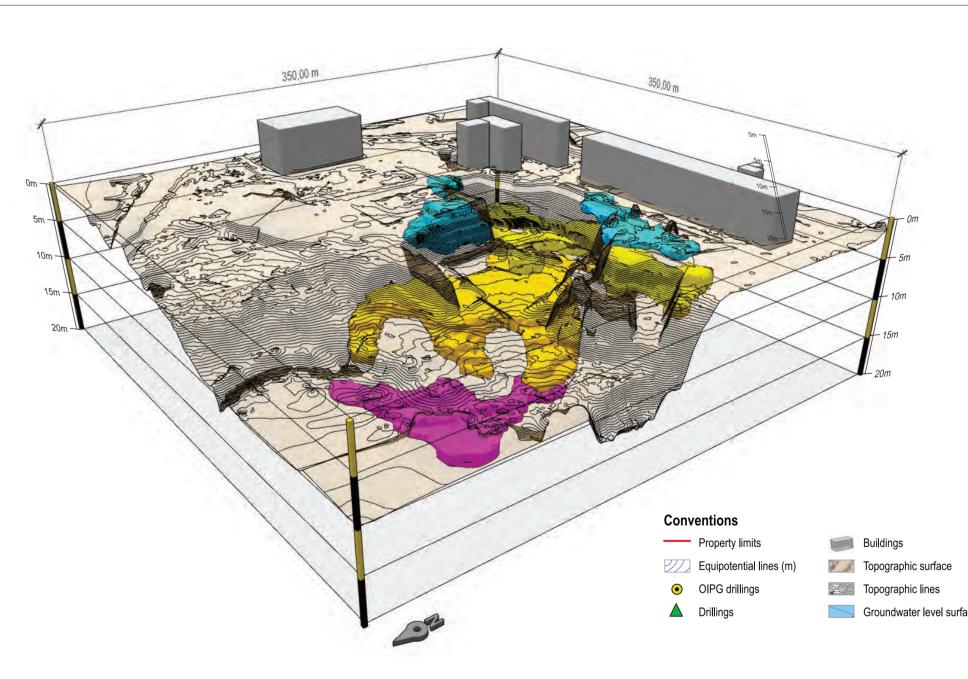
Results / Lessons Learned

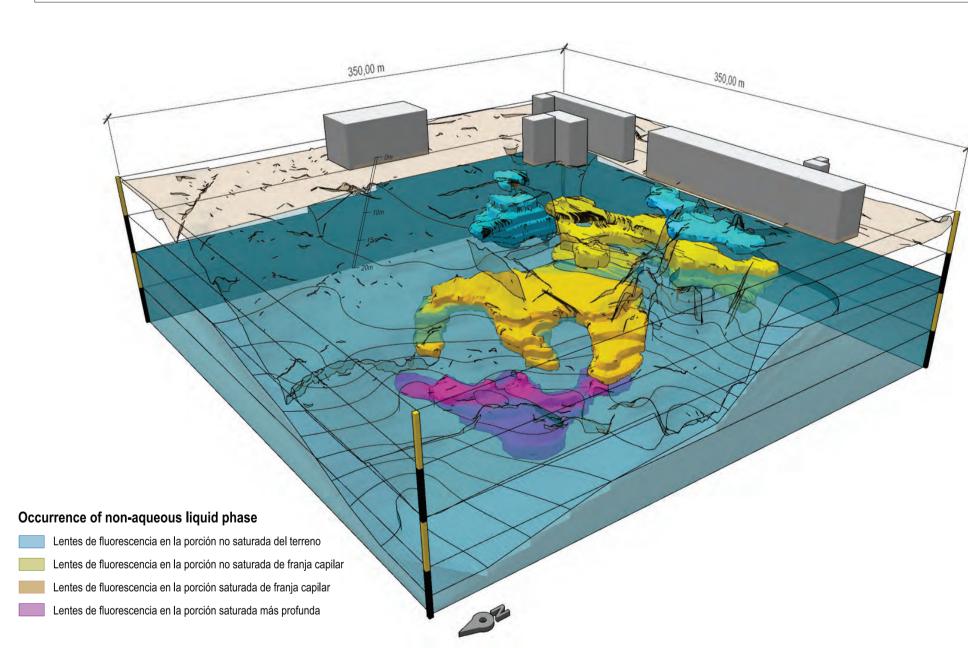


Despite the high resolution tools, site characteristics can lead to misinterpretations about distribution of contaminants: organic clays, calcite, iron oxides and high fluctuations in the water table. On-site hydrocarbons, with different sources, additives, viscosities and behaviors, will be an additional challenge for LNAPL removal and dissolved and vapor phase treatments.









Multiple remediation technologies had to be implemented to obtain the best effectiveness. The first step is ongoing now with excavation, MPE and soil flushing. The second step will have ISCO and soil washing. Additionally, institucional and engeneering controls will be necessary to fully address the recovery of the area.



SGW Services is a Brazilian environmental consultancy specialized in engineering, assessment and remediation of contaminated areas, audit and licensing. With solid technical skills and large experience in environmental projects in Brazil and Latin America, operates in the most diverse sectors of market in an efficient, transparent and responsible way.

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