This work examines a complex coastal hydrogeological system characterized by a tight relationship between groundwater and surface water, both impacted by chlorinated solvents contamination. Groundwater flow is strongly influenced by tidal fluctuations and by the presence of surface water drainage channels that represents the contamination target. Different methods were performed to investigate groundwater and surface water interactions focusing on physical and geochemical processes affecting transport contamination at groundwater-surface water interface. Based on continuous water level monitoring system, the interactions between groundwater-surface water were connected with tidal fluctuations, seasonal trend of precipitation and anthropic draining pump system. A channel hydraulic study was implemented in order to identify flow rate, flow direction and water levels fluctuations. Tracer tests were conducted to verify the effectiveness of the ongoing emergency remedial actions and to estimate water and solute transfer from groundwater to surface water and relationship with level fluctuations. The study was supported by two 3D flow and transport transient numerical model: the first was implemented using finite difference MODFLOW® code and the second by finite element FEFLOW® code. An human and risk assessment was performed using surface water contaminants concentrations and hydrogeological parameters, derived from testing and modelling. Vapour inhalation pathway and fish ingestion were considered for humans scenarios; the final goal for environment scenarios was set with the groundwater and the marine ecosystem protection.