USE OF ENVIRONMENTAL FORENSIC TECHNIQUES TO ENHANCE SITE CHARACTERIZATION FOR PETROLEUM IMPACTED SITES

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This paper presents four case studies of petroleum impacted sites to illustrate how environmental forensic techniques can be used to enhance the understanding of a site so investigation and/or remediation cost may be avoided or minimized. The first case study involves a site with multiple LNAPL occurrences. While liability is not an issue, understanding of the relationship of the LNAPL occurrences (i.e., same or different sources) is still critical for conceptual site model development and, in turn, remediation optimization. The second case study is about a site where a current release intermingled with historical release(s). Use of a forensic approach at this site differentiated current from historical releases which helped expedite remediation by limiting cleanup to the area that was impacted only by current release. The third case study involves a site with a comingled LNAPL plume. Resolution of end member products and analysis of the change in their relative percentages over time helped in the understanding of cause of the fluctuation of contaminants of concern. This aided in eliminating the concern of an “on-going” release. The final case study concerns an active petroleum refinery wherein an LNAPL forensic program was developed to detect new releases with use of the existing remediation monitoring well network.

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