



## Evaluation of Soil Chloride Delineation Requirements

Daniel Pollard and Ashley Morgan, Matrix Solutions Inc

Delineation of chloride in soil can be challenging because of the low concentration threshold and overlap with natural range of chloride concentrations. A simple interpretation of the regulatory requirements for delineation suggests that samples must be collected from outside the extent of a contaminant plume which exceeds the relevant concentration guideline. However, a better understanding of contaminant plume extent and potential risk can be obtained based on an understanding the distribution of mass within the plume. Typically, the proportion of the contaminant mass at the fringes of a plume is relatively low, but this is the focus of the delineation requirements. Matrix undertook work focusing on the principal of utilizing information on the distribution of the majority of the mass to support the understanding of the small portion of the contaminant mass at the plume fringes. We investigated how geospatial models can predict the distribution at the fringe of the plume where there is limited or incomplete delineation. We also evaluate different methods to statistically support a determination of whether sufficient data is available to utilize an interpolation method to support gaps in delineation.

### Daniel Pollard

Daniel is a contaminant hydrogeologist with Matrix Solutions Inc. He has around 20 years of technical expertise in site assessment, risk assessment, contaminated sites closure and regulatory compliance. His work in Alberta, British Columbia, and the United Kingdom has included hydrogeological, geochemical, and contamination assessment and has spanned industry sectors.

His primary focus is the use of geological, hydrogeological and geochemical principals to consider chemical fate and transport when developing conceptual site models and risk-based remediation objectives. Daniel has contributed to the development of operational policies for the AER and supported development of regulatory instruments.

### Ashley Morgan

Ms. Morgan is a hydrogeologist and Professional Geoscientist in Alberta and Saskatchewan with Matrix Solutions, based in Calgary, AB. Ms. Morgan manages and provides technical assistance to complex sites within Western Canada. She has over 12 years of experience with a focus in contaminant hydrogeology. She has extensive field and officebased experience, with an emphasis on assessment and remediation of impacted soils and groundwater. Ms. Morgan has provided technical support or managed sites ranging in complexity and size from wellsite with shallow localized impacts to domestic use aquifer impacted sites spanning multiple LSDs. She has managed remediation programs based on Tier 1 or 2 guidelines, Subsoil Salinity Tool, and risk-based approaches including site-specific risk assessments within Alberta and Saskatchewan.