



## Using Analysis Results for Optimization

Geospatial methods can be used to guide sampling plan design, determine the extent of a groundwater plume, understand trends, identify redundant sampling points, and aid in a number of other approaches to optimizing remediation efforts. This section includes descriptions of using geospatial results to support different optimization activities and also some examples. Several examples in this section, (as well as longer [case studies](#) elsewhere in this guidance) illustrate how geospatial methods are used at various stages in the project life cycle. Often, more than one geospatial method is appropriate; for example, an analysis might start with [EDA](#) and [simple methods](#), then progress to [more complex](#) or [advanced](#) methods. The method selection [flow charts](#) can be used to assist in determining applicable methods for a site.

Table 5 below summarizes certain general topics that geospatial analysis can support in each stage of the project life cycle.

**Table 5 Using Geospatial Results for Optimization**

General Topic	Life Cycle Stage
<a href="#">Plume Intensity and Extent</a>	Release Detection, Site Characterization, Monitoring
<a href="#">Trend Maps</a>	Release Detection, Remediation, Monitoring, Closure
<a href="#">Estimating Quantities</a>	All Stages
<a href="#">Hot Spot Detection</a>	Release Detection, Site Characterization
<a href="#">Sample Spacing</a>	Site Characterization
<a href="#">Estimating Concentrations Based on Proxy Data</a>	Site Characterization
<a href="#">Background Estimation</a>	Site Characterization
<a href="#">Quantifying Uncertainty</a>	Site Characterization, Closure
<a href="#">Remedial Action Optimization</a>	Remediation
<a href="#">Monitoring Program Optimization</a>	Monitoring, Closure

The examples illustrate how geospatial analysis is performed for optimization.

- [Example 1](#): Sampling redundancy analysis for monitoring program optimization using VSP.
- [Example 2](#): Plume shrinkage analysis using Surfer or ArcGIS.
- [Example 3](#): Sampling optimization using co-kriging and Isatis software.
- [Example 4](#): Sampling design strategy using VSP or ArcGIS.