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Tools Selection Process

Contents of this Section

- Orientation to the Tools Matrix
- The Tools Selection Framework
- Tools Matrix Functionality
- Case Study
- Summary

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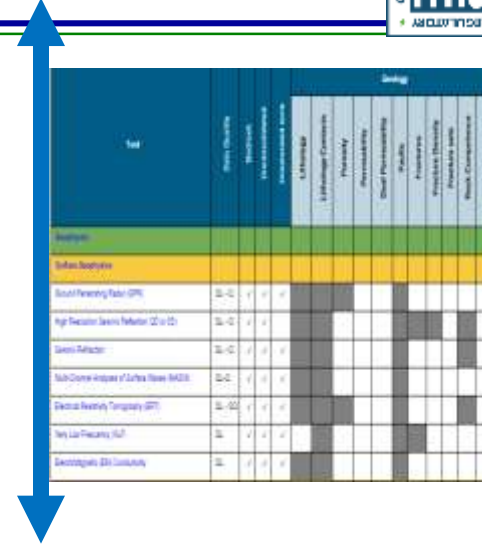
Orientation to the Tools Selection Matrix

- Contains over **100** tools
- Sorted by:
  - Category
    - Geology
    - Hydrogeology
    - Chemistry
  - Effectiveness in media
    - Unsaturated
    - Unconsolidated
    - Bedrock
- Ranked by data quality
  - Quantitative
  - Semi-quantitative
  - Qualitative



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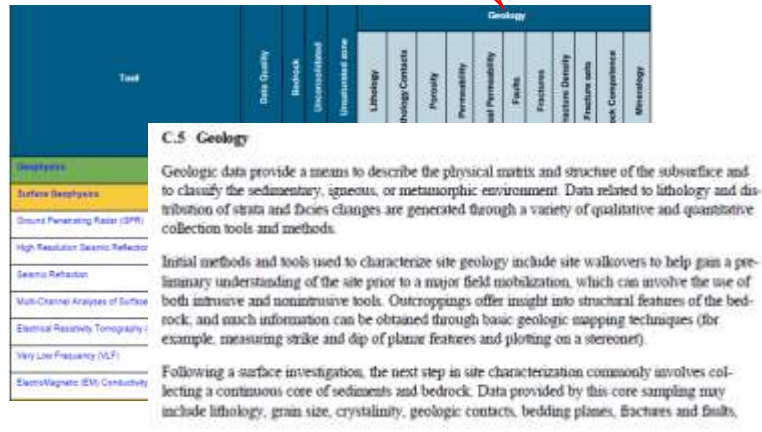
Tools Matrix Functionality

Click any box for a description or definition

Click



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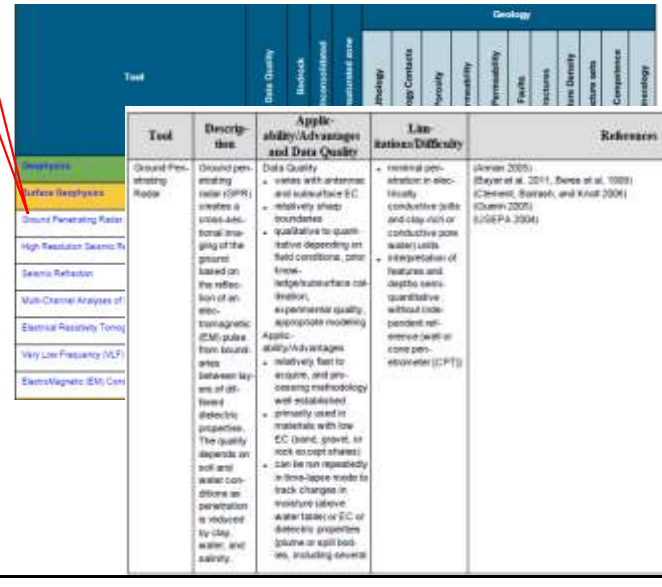
Detailed Tool Descriptions (Appendix X?)

Click

Click on any tool

- Description
- Applicability
- Limitations
- Additional reference material



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Shaded Boxes Denote Tool Meets Objective

Tools collect these types of information

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Using the Tools Matrix

- Down-selecting appropriate tools to meet your characterization objectives
- A systematic process
  1. Select your categories: geology, hydrogeology, chemistry
  2. Select parameters of interest
  3. Identify geologic media (e.g., unconsolidated, bedrock)
  4. Identify interval (e.g., unsaturated, saturated)
  5. Choose data quality
  6. Apply Filters, evaluate tools for effectiveness, availability, and cost

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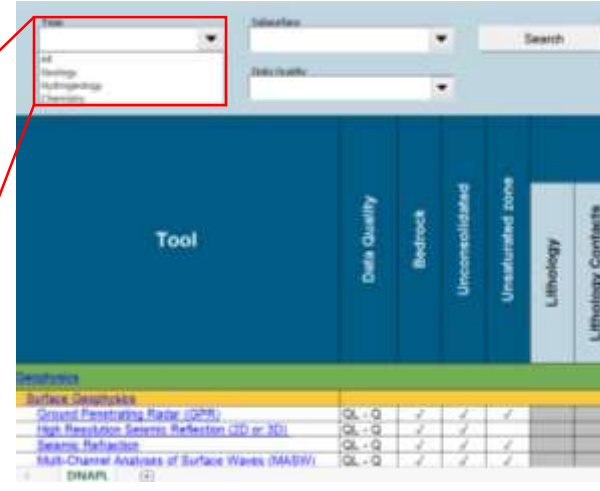
1. Select Category

All
Geology
Hydrogeology
Chemistry



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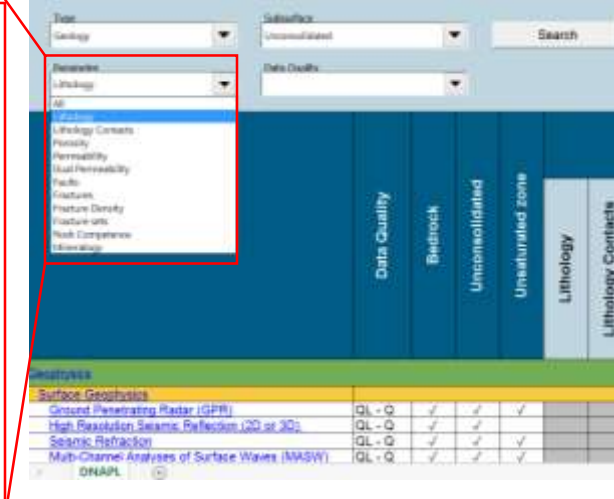
2. Select Parameters of Interest

All
Lithology
Contacts
Porosity
Permeability
Dual Permeability
Faults
Fractures
Fracture Density
Fracture Sets
Rock
Competence
Mineralogy



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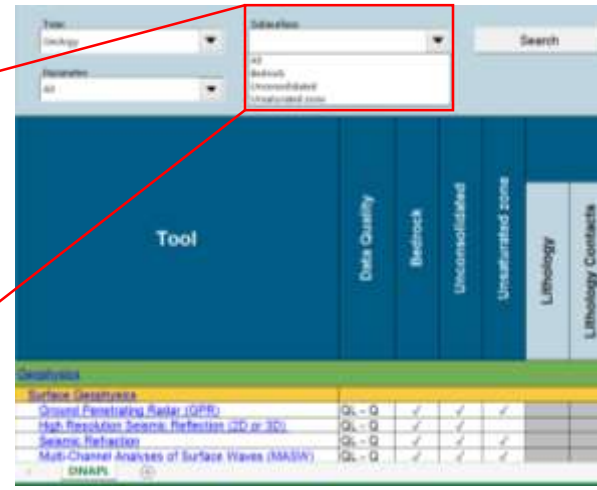
3. Identify Geologic Media

All
Bedrock
Unconsolidated
Unsaturated Zone



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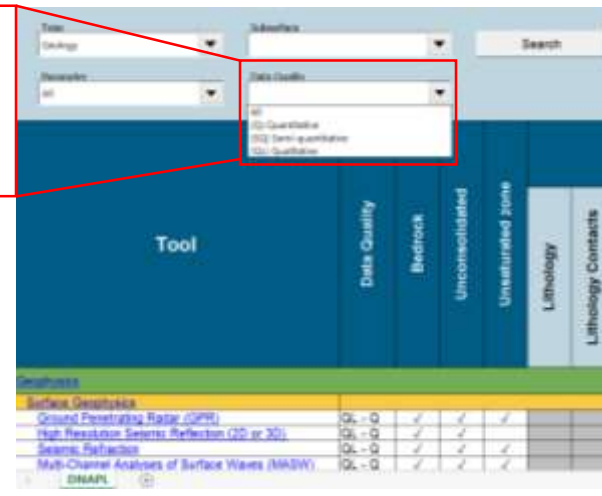
4. Choose Data Quality

(Q) quantitative
(SQ) semi-quantitative
(QL) qualitative



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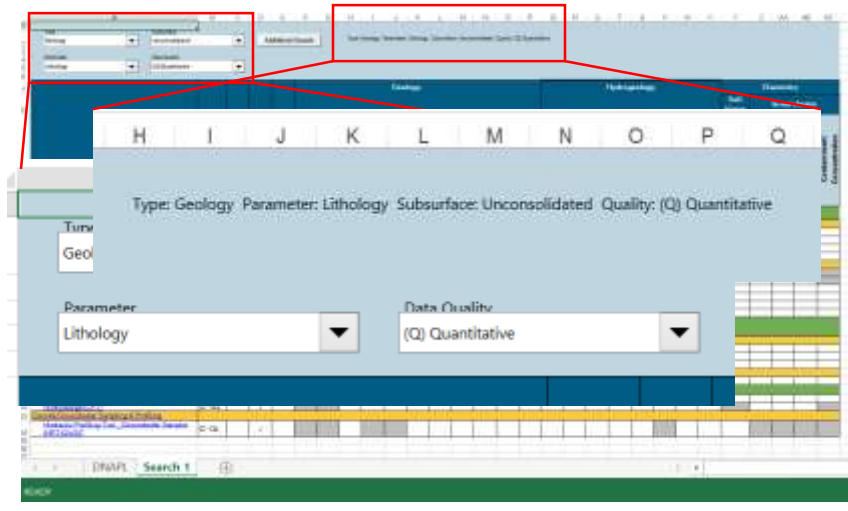
5. Apply Filters, Evaluate Tools



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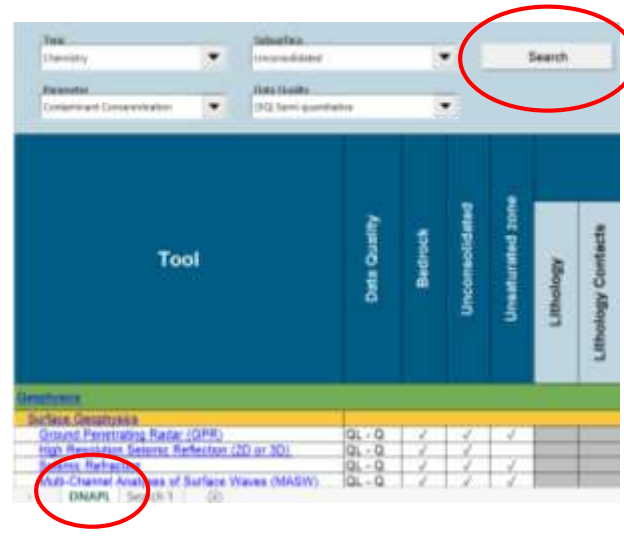
Perform additional searches to find more tools for different objectives

Search 2 – creates new, separate tool list from first search



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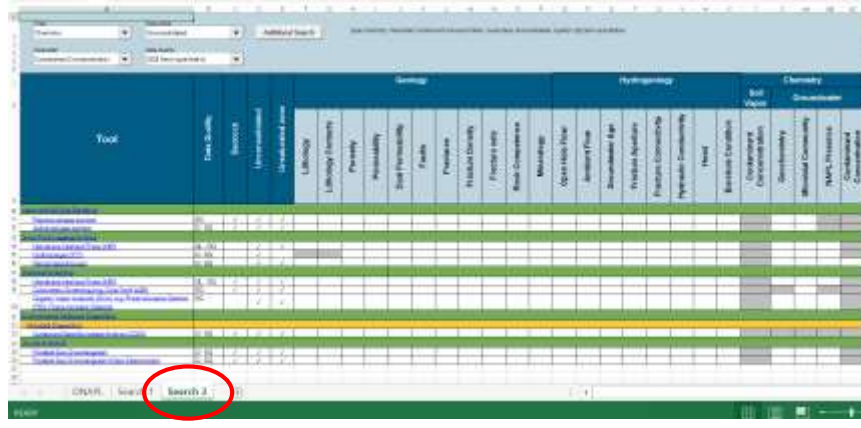
Search 2 results



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Apply selected tool(s)

- Incorporate selected tool(s) into characterization plan
- Implement plan, evaluate data, update CSM, reassess characterization objectives
- Repeat tool selection process as necessary

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Case Example – permeability distribution

Characterization Objective – Define the vertical and horizontal hydrogeologic flow regime and influence of utility corridors on VOC distribution.

- Category - Geology
- Parameter - Permeability
- Subsurface media - Unconsolidated
- Data Quality Objective – Semi-quantitative

Tools identified (13), Tools selected:

- HPT, Slug and Pumping Tests, tracer tests

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Case Example – presence of tarry DNAPL

Characterization Objective – Define the vertical and lateral extent of tarry DNAPL

- Category - Chemistry
- Parameter – NAPL Presence
- Subsurface media - Unconsolidated
- Data Quality Objective – All

Too many tools (30), refine search – SQ (16)

Project Team Selects:

- Colorimetric screening, UV fluorescence

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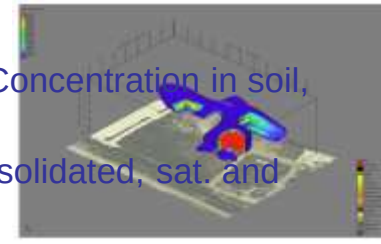
Case Example – CVOC mass distribution

Characterization Objective – Define the three-dimensional cVOC mass distribution at three different dry cleaner sites.



- Category – Chemistry
- Parameter – Contaminant Concentration in soil, water, and soil vapor
- Subsurface media – Unconsolidated, sat. and unsat.
- Data Quality Objective - Quantitative

Tools Identified (22), tools selected:

- Active soil gas survey, FLUTE, Screen-point 22, dual tube sampler
- On-site analytics (GC/MS), GIS for mass

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Tools Matrix Summary

- Characterization Objectives guide selection of tools
- Interactive Tools Matrix - over 100 tools with links to detailed descriptions
- A systematic tools selection process
  - Tools Selection Framework
- Continual update of CSM and alignment of data gaps with characterization objectives
- Validation and consensus that objectives have been met

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Q & A End of Tools Table