SESSION 2

Addressing Data Gaps That Remain Before the Remedy Can Be Selected

FILLING DATA GAPS TO ALLOW FOR COMPLETION OF THE RFI

Agenda:
Filling Data Gaps to Allow for Completion of the RFI

- Identifying Data Gaps
- Approaches to Filling Data Gaps
  - Triad Approach
  - Systematic-Project Planning
  - Real-Time Field Measurement Technologies
  - Dynamic Work Plans

Identification of Data Gaps

- Data gaps should be identified prior to planning any investigation
- There are three primary types of data gaps:
  - Quality
  - Location
  - Objective

Quality Data Gaps

- Quality of existing data are not adequate to evaluate performance standards
- Resampling and analysis are required to replace existing data

Examples:

- Quantitation limit (QL) for existing data is higher than performance standards (e.g., QL = 10, MCL = 5)
- Data were rejected during the data review and validation process due to field or laboratory QC failures
- Samples were collected or analyzed by outdated procedures that are no longer accepted

Location Data Gaps

- Additional data are required to evaluate previously unsampled locations

Examples:

- Extent of contamination is not adequately defined
  - Horizontal
  - Vertical
- Contaminant concentrations are not known at critical exposure points
  - Surface soil
  - Water supply wells
- Geologic or hydrologic properties are not adequately defined at the proposed location of the treatment system

Objective Data Gaps

- Additional data are required to evaluate a previously unforeseen issue

Examples:

- Previous samples were not analyzed for a particular constituent of concern (e.g., fuel contamination not analyzed for MTBE)
- There is a new requirement to evaluate natural attenuation processes. Samples must be analyzed for geochemical indicator parameters.

Approach to Filling Data Gaps Will Depend on Complexity of the Site and the Significance of Data Gaps

- First, perform a systematic evaluation of the available data with the overall and specific goal of site investigation in mind
  - Historical data
  - Conceptual site model
- Depending on the significance of data gaps
  - Full-scale, phase of site investigation may be warranted
  - More commonly, targeted investigations to supplement existing data set will be required
- Approaches to filling data gaps
  - Traditional RFI
  - Streamlined, flexible

Triad Approach Can Increase Efficiency of Site Investigations by Managing Decision Uncertainty

- Supported by EPA to foster modernization of technical practices for characterizing and remediating contaminated sites
- Foundation of Triad Approach is an accurate conceptual site model (CSM)
- CSM serves as basis for decision making associated with:
  - Systematic project planning
  - Real-time field measurement techniques
  - Dynamic work plans
- Quality control is crucial to Triad Approach because it can significantly impact the decision making process

Systematic Project Planning

- A planning process that lays a scientifically defensible foundation for proposed project activities
- Involves all stakeholders in process of:
  - Identifying key decisions to be made
  - Development of a CSM
  - Evaluation of decision uncertainty
  - Requires stakeholders to develop ways to address challenges and take proactive control over significant sources of uncertainty
- Important to create an atmosphere conducive to trust and cooperative negotiations
- Encourages developing strong working relationships between all stakeholders

Dynamic Work Plans

- Encourages work planning documents to be developed as a flexible and dynamic guide for work rather than prescriptive documents
  - Based on initial CSM and information available at the time
  - Guide the course of the project based on performance goals
  - Can be adapted in real-time as new information becomes available
- Places greater responsibility for decision making on field personnel
- Instead of traditional iterative approach to site investigation, real-time decisions are made based on previously established criteria

Real-Time Field Measurement Technologies

- Designed to gather data and information fast enough to allow field decisions to be make effectively and accurately
- Real-time analysis using field laboratory equipment can dramatically shorten the waiting time for analytical results
  - Typical turnaround time for analytical data can be three or more weeks
  - Field equipment can provide results in days or even hours
- Disadvantage can be greater uncertainty resulting from lower accuracy and precision of field measurements
  - Often off-set by increasing the density of field measurement
- Field-based measurements allow highly accurate and detailed CSMs to be developed as the foundation of the decision-making process

Resources

- Field Sampling and Analysis Technologies Screening Matrix, Federal Remediation Technologies Roundtable

  http://www.frtr.gov/site

- EPA REACH IT (Remediation and Characterization Innovative Technologies)

  http://www.epareachit.org

- Triad Resource Center

  http://www.triadcentral.org