U.S. DEPARTMENT OF ENERGY | Legacy Management

2018 Long-Term Stewardship Conference

August 20–23, 2018
Grand Junction, Colorado

Advancing Integrated Monitoring Systems (AIMS): A DOE Integrated Systems-Based Monitoring Approach

Vicky Freedman
Pacific Northwest National Laboratory

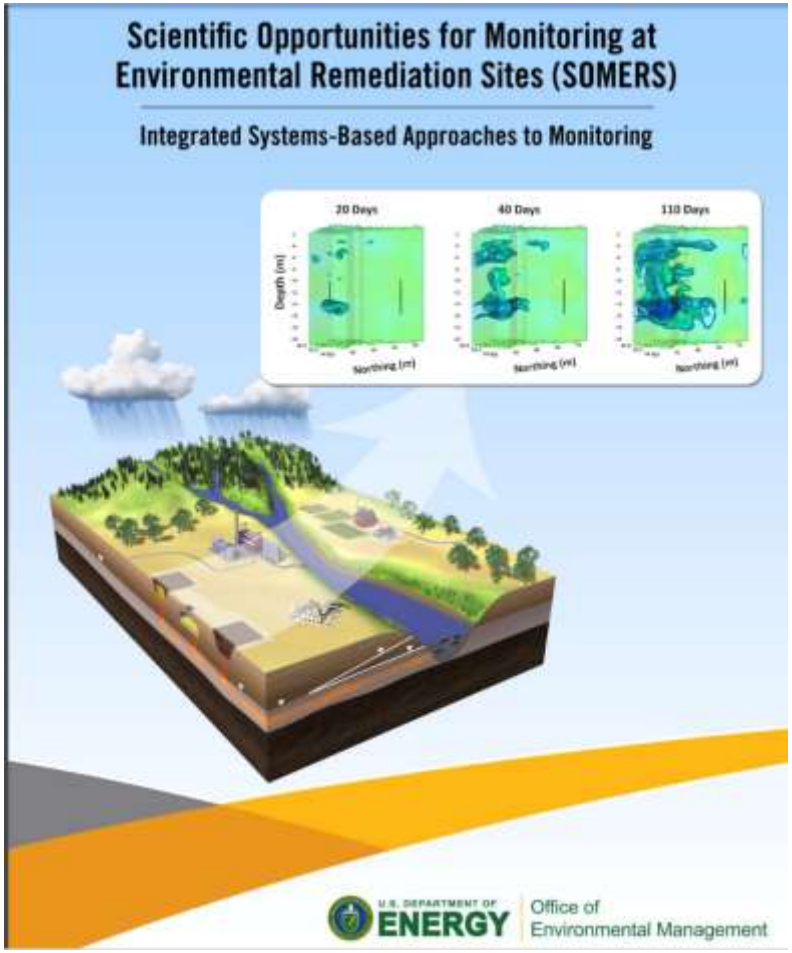
Track 6.3, August 23, 2018

Introduction

- Monitoring is the longest duration activity for DOE environmental site management
- Critical for
  - Managing remedy performance
  - Meeting compliance requirements
  - Predicting environmental systems
- Traditional monitoring approaches are costly and rely on point measurements

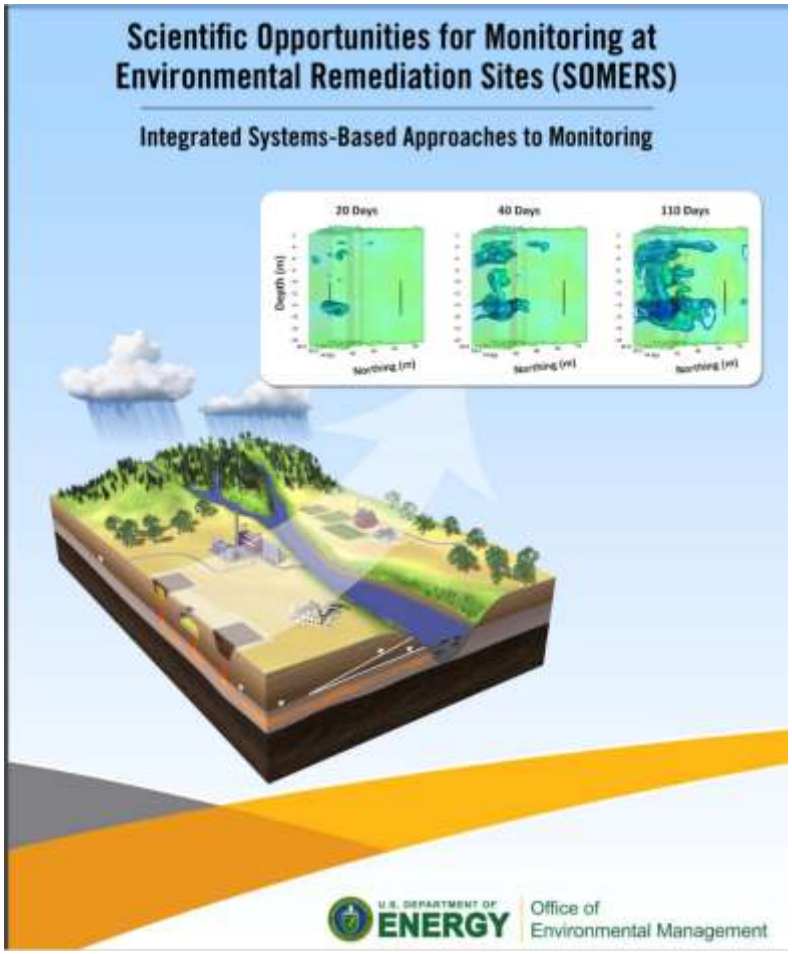
Monitoring Challenges

- SOMERS
  - Cost- and labor-intensive **point-source monitoring has limitations** for monitoring design and interpretation
  - Transitioning toward **long-term monitoring** needs to consider approaches and innovations that are compliant, but cost-effective and appropriate for the phase of monitoring
  - To be successful, scientific and technology developments for innovative monitoring tools must **reduce costs and meet needs** to manage remedies and risks



Monitoring Opportunities: Technical

- How can monitoring meet needs and objectives of each phase in the remedy process?
  - Characterization
  - Remedy selection
  - Remedy implementation
  - Long-term monitoring
- What integration can occur between monitoring and conceptual site models (CSM) (e.g., controlling features and processes) to improve understanding of the system as a whole and improve monitoring approaches?



Monitoring Opportunities: Management

- How are monitoring strategies and monitoring advancements integrated into site management approaches?
  - Regulatory drivers
  - Assessment of alternatives
  - Risk-informed approaches
- How can monitoring advancements be aligned with DOE site needs and identify and address the scientific, technical, and implementation challenges to cost-effective monitoring?

Are there on-going efforts occurring within the DOE Offices providing scientific and technical advancements that could provide step changes in environmental monitoring through integration?

Panel Introductions

Panel Presentations

- How is monitoring currently used by each Office?
- What is needed in terms of monitoring advances?
- What are the technical challenges to overcome?
- Can you identify 3 themes that are a priority to guide development of improved monitoring approaches?

Additional Panel Questions

- What do you see as common monitoring development and implementation needs for SC, EM, and LM?
- How could each Office benefit from contributions from the other two Offices?
- What does each of the Offices bring to the table relative to this concept?
- What opportunities are there in your program portfolio for collaborative work on monitoring challenges?
- How can data management and access be integrated across all three Offices?