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Programmatic Implementation of Triad on a State-wide, Multi-site Reimbursement Program

Presentation Overview

- Objectives
- DATCP Program History and Overview
- Typical Site Layout
- Systematic Planning and CSM
- Dynamic Work Strategy
- Real-Time Measurement
- Conclusions

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Presentation Objectives

Objectives

To demonstrate……

- that simply using a mobile laboratory does NOT make a Triad project
- Triad approach can be used on small sites
- “Programmatic” application of Triad
- how Triad techniques extend into remedial action
- Triad project that never uses the term “Triad,” *i.e.*, Triad chicken and egg debate

DATCP Program Overview

DATCP Program

- DATCP – Department of Agriculture, Trade, and Consumer Protection
- The Agricultural Chemical Cleanup Program (ACCP) has two separate functions.
  - Identifies and helps manage clean up of releases of pesticide and fertilizer spills
  - Once a site has been identified as needing a clean up, the ACCP program provides reimbursement for eligible costs incurred by the responsible persons

DATCP Program - History

- **PROBLEM STATEMENT:** 1984 to 1988, DATCP/ DNR discovered approximately 30 cases of soil and/or groundwater contamination at or near sites where pesticides where mixed and loaded
- 1989 – Comprehensive report summarizing the findings
  - Necessitated a call for state-wide action plan
  - Stakeholder group formed and additional studies conducted
- 1991 – Findings of additional study published, basically forming the essence of a programmatic Conceptual Site Model (CSM)
- 1994 – ACCP established
- 1994 to Present – Success Story!
  - Initiated over 509 facility-related clean ups
  - Closed out over 287 facility-related cleanup cases
  - Responded to and closed out over 97% (848) of the 874 reported spills of agrichemicals
  - Received over 950 reimbursement applications and have paid out over $33 million in reimbursements

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Typical Site Layout

Typical Pesticide/ Fertilizer Dealership

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Typical Pesticide/ Fertilizer Dealership

Typical Site Areas of Concern

- Bulk Liquid Mixing/ Loading Areas
- Bulk Liquid Pesticide and Nitrogen Storage Areas
- Drainageways and Ponding Areas
- Pesticide Equipment Parking Areas
- Vehicle Weigh Scale Pits
- Acute Spill Areas
- Discarded Pesticide Container Storage Areas
- Burn Piles
- Dry Fertilizer Load In and Load Out Areas
- Wash Areas

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Systematic Planning and CSM

Systematic Planning

- Systematic planning includes three primary elements. These are:
  - **Framing the Problem:** identifying project objectives, constraints, stakeholders, the regulatory framework, and primary/secondary decisions.
  - **Developing a CSM:** constructing and maintaining a conceptual site model (CSM) that captures information pertinent to the primary/secondary decisions that must be made.
  - **Evaluating and Managing Uncertainty:** evaluating and managing the uncertainty associated with decision-making in the context of the CSM so that decisions can be made with acceptable levels of confidence.

Conceptual Site Model

- The CSM…..
  - Synthesizes and crystallizes what is already known about a site that is pertinent to decision-making requirements.
  - May take any (or several) of a number of formats (or combinations of formats) that can effectively portray site concerns significant to the decisions that must be made.
  - Evolves and mature as project work progresses.

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CSM Development

- Inputs to State-wide Strategic Planning and Baseline CSM Process (early 90's)
  - Between 86 and 99% of all sites in Wisconsin can be expected to be contaminated
  - Between 45 and 75% will require soil remediation
  - Several common site areas will be targeted
  - Sites sampled and entered into the program
  - Budgets and timeframe are essential – need for use of dynamic approaches across the board

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Dynamic Work Strategy

Dynamic Work Strategy

Needed to:

- Fill data gaps that are present between the programmatic CSM and unique site-specific conditions
  - History of operations
  - Secondary containment
  - Geology/ hydrogeology
- Address investigation/ remedial activities during a very short window (spring and fall)

Dynamic Work Strategy

Keys to DATCP/ACCP success….

- Starting with the well-documented baseline CSM
- Understanding site-specific nuances and uncertainty
- Not being rigid and allowing CSM to mature real-time
- Experienced field staff (both consultants and agency)
- Large universe if sites employing a consistent approach
- Informed stakeholder group
- Used throughout the process, up to and including site closure

Real Time Measurement

Real Time Measurement

- Direct-push drilling (investigation) and test pits (remedial action)
- Mobile laboratory used for 75% of the sites (investigation and/or remedial action)
- Experienced chemists using established, codified methods
  - Pesticides by 8141 (GC/NPD)
  - Nitrate/nitrite + ammonia by Standard Method 4500 F and G (Ion Selective Electrode)
- 25 pesticide and 25 nitrogen can be analyzed for ~ $1,800 per day (total)
- Results within 1-hour (pesticides) and <0.5-hour (nitrogen/ ammonia)

Conclusions

Conclusions

To demonstrate……

- ✓ that simply using a mobile laboratory does NOT make a "Triad" project
- ✓ that the Triad approach can be used on small sites
- ✓ a "programmatic" application of Triad
- ✓ how Triad techniques extend into remedial action
- ✓ a "Triad" project that never uses the term "Triad," *i.e.*, Triad chicken and egg debate

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CDM
Effective Funding Management Approaches for Triad Investigations
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August 18, 2009
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Overview

- Project Summary
- Incremental Funding Challenges
- Triad Investigations Implemented
- Optimal Funding

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Project Summary

- Emmell's Septic Landfill Site – 38-acre former septic waste and sludge disposal facility
- Located in a rural area of Atlantic County, New Jersey
- Wastes disposed from 1967 to 1979
  - Septic wastes and sewage sludge were disposed in trenches and lagoons
  - Chemical wastes, paint sludge, and household garbage were also disposed at the site

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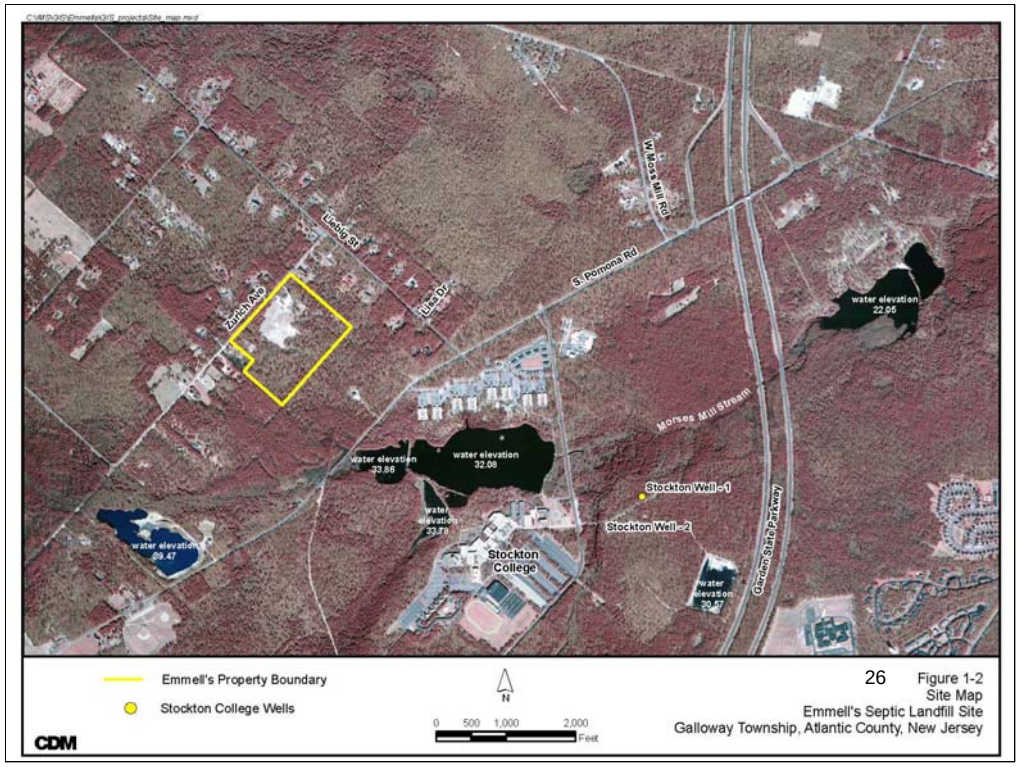

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Site Map
Emmell's Septic Landfill Site
Galloway Township, Atlantic County, New Jersey

Project Summary

- Primary contaminants – TCE, cis-1,2-DCE, vinyl chloride in groundwater
- Placed on the National Priorities List on July 22, 1999
- EPA Fund-Lead Site
- CDM is completing the RI/FS under the EPA Region 2 Response Action Contract (RAC)
- The project is incrementally funded

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Incremental Funding

- **Definition: Incremental allocation of funds based on a project's scope, fund usage rate (burn rate), and schedule.**

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Incremental Funding Challenges

- Flexible work plan needed to address the dynamic strategy of the field screening program
- Communication plan to inform EPA when funds will be required for each stage of work
- Flexibility to accommodate field changes and associated additional funding requests
- Keeping within existing project funding limits

Triad Investigations

- Triad approach was implemented in three phases of the field investigation:
  - Groundwater screening in the shallow aquifer combined with on-site laboratory analysis
  - Membrane Interface Probe (MIP) was used to screen for NAPL in the source area
  - Groundwater screening in the deep aquifer using off-site laboratories

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Groundwater Screening - Shallow Aquifer

Investigation Summary

- Planned 60 locations – screening every 10 feet from the water table to 80 feet bgs
- Identified sampling locations ahead of time
- Implemented screening in accordance with dynamic strategy
- Requested funding to cover full investigation
- Held daily calls with EPA to discuss results and future locations to be investigated

Groundwater Screening - Shallow Aquifer

Results

- Determine plume boundary in the shallow aquifer with 24 screening locations
- Supported targeted placement of permanent monitoring wells
- Completed 3 weeks ahead of schedule and under budget
- Managed property access issues to limit impact on the program

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Groundwater Screening - Shallow Aquifer

Successes

- Implemented Triad approach within the contract requirements and funding structure
- Used remaining screening funds to continue the field investigation
- Executed a communication plan:
  - Kept EPA informed on progress, results, and field decisions
  - Communicated property access agreements critical to the program

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MIP Investigation

Investigation Summary

- Planned to screen 47 locations in the source area - surface to 80 feet bgs
- Completed 37 locations as planned – except for weather delay
- Added 3 new locations to further define specific areas
- Coordinated with EPA and other stakeholders regularly to make field decisions as a team

MIP Investigation

Challenge

- Formal submittal and review of technical memorandum after screening delayed the Phase 2 field investigation

Solution

- Minimize submittal of formal interim reports
- Propose meetings, present results, and use meeting minutes to document decisions
- Establish this more interactive approach during project planning

Groundwater Screening - Deep Aquifer

Investigation Summary

- Initially planned 9 locations to be completed using Geoprobe® drill rig
- Screened at 10-foot intervals from 80 to 160 feet bgs
- Sent groundwater samples for VOC analysis to off-site laboratory – 24-hour turn around time
- Frequent meetings with EPA and stakeholders to discuss results and plan the next screening points

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Groundwater Screening - Deep Aquifer

Funding Challenges

- Geoprobe® could not reach proposed depth – limited to 125 feet bgs under site conditions
- Needed to use hydropunch with mud rotary drilling to reach total depth
- Required installation of casings into low permeability layer
- Did not include these costs in budget, although identified potential need for this method if Geoprobe® failed

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Groundwater Screening - Deep Aquifer

Solution

- Completed screening to maximum depth of Geoprobe® and then stopped
- Provided EPA with justification for new drilling method and associated cost increase
- Modified drilling subcontract
- Successfully completed investigation using new drilling and sampling method

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Groundwater Screening in the Deep Aquifer

Lessons Learned

- Maintain communication with EPA
  - Notified EPA early about drilling method shortcoming and immediately began work on alternative method
  - Minimized downtime to less than one month
- Clearly identify contingencies in the work plan
- Address impacts of contingencies on funding

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Conclusions

- Successful implementation of the Triad approach with limited and incremental funding requires:
  - Detailed planning
  - Clear statements of goals and contingencies
  - Frequent and effective communication with EPA's technical and management personnel and other stakeholders

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Resources

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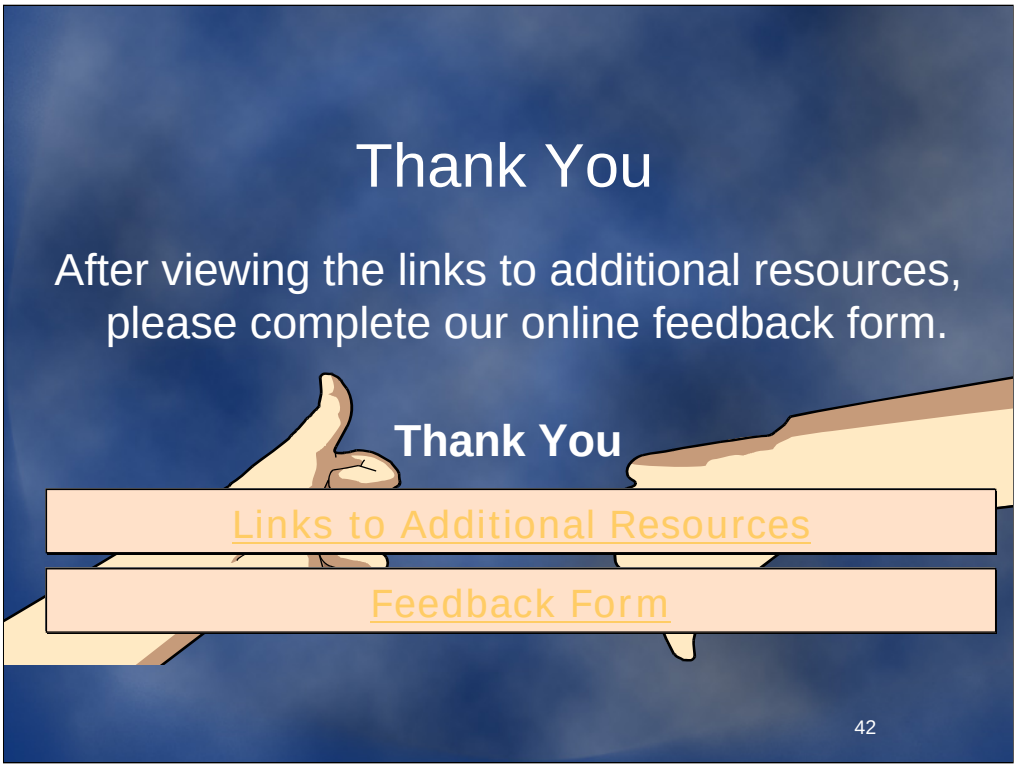
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