The New ROI: Return on Investigation from *Smart* Characterization Methods

**THE NEW ROI**
Return on Investigation from Smart Characterization Methods

Joe Quinnan, PE, PG
Nick Welty, CPG, PG
December 2, 2015
FRTR General Meeting
Site Characterization for Effective Remediation

**Agenda**
- Health and Safety Moment
- Return on Investigation
  - Exit Ramp Strategies
  - Smart Characterization
  - Flux-Based CSMs

**Health and Safety Innovation**

**Zipliner**

**FEATURES**
- Operates with drill tools similar to standard liners.
- Designed to fit with AMS Power-Probe and the Geoprobe Systems direct push technologies.
- The Zipliner is the safest opening tool for soil sampling sleeves.
- Similar durability as standard liners.

**The ROI of Smart Characterization**

90% of relative flux in 10% of cross-section

Return on Investigation
Client avoided spending > $5M on slurry wall
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**Return on Investigation**
Client avoided spending $4 - $5M on active LNAPL recovery

**Exit Ramp Strategies**
- Align remedy with business strategy
- Outcome certainty
- Least cost

**Value proposition**
- Smart Characterization
- Flux-Based Conceptual Site Model

**The New ROI**
- Current Trajectory
- Optimized OpEx
- Year 30 projected cost savings
- CapEx for Smart Characterization
- ROI payback period

**The New ROI**
- Current Trajectory
- Optimized OpEx
- Year 30 projected cost savings
- CapEx for source treatment or alternate strategy
- ROI payback period

**Return on Investigation**
No active remediation required

**The New ROI**
- Current Trajectory
- Best Outcome
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**Background**
- Diffuse VOC plume
- Characterized with monitoring wells
- 20 years of P&T

**The Problem**
- Mass Removal

**The New ROI Current Trajectory**
- Smart characterization
  - Find mass that moves
  - Focus remedy
  - Balanced approach:
    - Align remedy with business objectives
    - Achieve *return on investigation*

**The New ROI**
- Optimize P&T performance
- Flatten OpEx trajectory
- Potential to reduce duration
- Use Exit Ramps to ensure business solution

**Current Trajectory**
- Optimize remedy performance
- Align with business objectives
- Limit CapEx to ensure ROI
- Select alternative strategy or management based on payback period

**Outcome**
- CapEx for source treatment
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**Exit Ramp 1**

Result: Flux transect

- Plume is concentrated
- Pumping can be optimized
- Change cost and performance curve

Why is plume concentrated?

**Stratigraphic Flux**

Find the flux

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> 90% of flow is in coarse sand zone

**Return on Investigation Approach**

Exit Ramp Strategies

- Align remedy with business strategy
- Outcome certainty
- Least cost
- Next Generation Smart Characterization

**Stratigraphic Flux**

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> 90% of flux is in coarse sand zone
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**Exit Ramp 2 - OpEx Optimization**
- Consider ROI payback on CapEx
- Verify plume geometry

**Focus pumping on flux…**

**Optimize OpEx, enhance mass recovery with less flow**

**The New ROI – Flux-Based CSM**
- Optimize P&T performance
- Flatten OpEx trajectory
- Potential to reduce duration

**Outcome Certainty**
- Duration of P&T or opportunity for optimized remedy depends on source

**Calibrating ROI Expectations**
- Remedy decisions depend on more than least total cost
- Align the remedy to meet expectations that match your business needs in short- and long-term
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**The New ROI**

- What ROI is required to optimize remedy?
- Select payback period to determine if source characterization & remedy aligns with business objective

**Flux-based source evaluation – Transport zone**

- >90% of flux in coarse sand zone
- Limited mass in difficult to treat storage zone
- Size is key cost factor

**Flux-based source evaluation – Storage zone source**

- Treatment approach is key cost factor
- Significant mass in difficult to treat storage zone

**Source Treatment – Exit Ramp**

- Benefit of source evaluation
  - Evaluate payback period for CapEx of Smart Characterization and source treatment
  - Business decision to proceed

**The New ROI - Outcome**

- Benefit of source characterization
  - CapEx of source treatment exceeds reasonable payback
  - Optimize P&T performance
  - Flatten OpEx trajectory
  - Potential to reduce duration
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For new sites, do it right the first time:

CONVENTIONAL V S. SMART CHARACTERIZATION

Investigation
- Years of effort
- Dozens of reports & work plans

Remediation
- Long-term, ineffective remedy
- Poor outcome certainty

Investigation
- Weeks of effort using real-time methods
- ONE report & work plan

Remediation
- Focused, cost-effective remedy
- Outcome certainty with opportunity to match business objectives

Questions?

Return on Investigation Approach

Value proposition

Exit Ramp Strategies

The New ROI
Align remedy with business strategy
Outcome certainty
Least cost
Smart Characterization

Flex-Based Conceptual Site Model

Questions?

Contacts

Joe Quinnan, PE (Wisconsin), PG
Global Director Site Investigations/Emerging Contaminants Lead
24 years of experience, 15 with Arcadis
Brighton, Michigan
JQuinnan@Arcadis.com
810.225.1943

Nick Welty, PG, CPG
Principal Geologist, Next-Generation Site Characterization Lead
10 years with Arcadis
Brighton, Michigan
NWelty@Arcadis.com
810.225.1958

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