

State Perspectives on RPO

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ITRC (www.itrcweb.org) – Shaping the Future of Regulatory Acceptance

▶ Host organization



▶ Network

- State regulators
- Federal partners



DOE



DOD



EPA

- ITRC Industry Affiliates Program



- Academia
- Community stakeholders

▶ Wide variety of topics

- Technologies
- Approaches
- Contaminants
- Process

▶ Products

- Technical and regulatory guidance documents
- Internet-based and classroom training

Purpose of ITRC

ITRC is a state-led, national coalition of regulators and others working to

- ▶ Improve state review and permitting processes
- ▶ Speed implementation of new environmental technologies



What is RPO?

Remediation Process Optimization (RPO) is the systematic evaluation and enhancement of site remediation processes to ensure that human health and the environment are being protected over the long term at minimum risk and cost.

Elements of RPO

- ▶ Site selection
- ▶ Building the RPO team
- ▶ Evaluating the exit strategy
- ▶ Evaluating performance
- ▶ Evaluating cost efficiency
- ▶ Remedy optimization
- ▶ Monitoring optimization
- ▶ Cost benefit analysis
- ▶ Implementation and tracking

Remedy Optimization

- ▶ Optimizing the exit strategy
- ▶ Optimizing the remedial system
- ▶ Optimizing the monitoring program

Implementing the Optimization Strategy

- ▶ Create an implementation strategy to facilitate optimization recommendations
- ▶ Some recommendations may be contingent on results of implementation of other recommendations
- ▶ Consider a sequencing strategy that will maximize the desired improvements
- ▶ Base strategy largely on the potential for each recommendation to improve performance and reduce time and costs

Challenges in the RPO Process and Possible Solutions

- ▶ Several hurdles may exist for implementing RPO activities
 - Technical
 - Institutional
 - Contractual
 - Regulatory
- ▶ Technical issues
 - Uncertainties and heterogeneities
 - Dynamic nature of remediation – things change
 - Consider alternative technologies if appropriate
 - Conduct reliability assessment, stochastic modeling

NJ and RPO

- ▶ 2002 Participates in the USEPA OUST RSE Program
- ▶ 2003 NJDEP forms a RPO Team
 - Conducts NJDEP RPO using state funding
- ▶ 2004 - 2006 USEPA RSE-Lite Pilot Project
- ▶ 2003 - 2010 Ad Hoc Optimization Continues

RSE =
Remediation
System
Evaluation



Lakehurst Exxon

Lakehurst Borough, Ocean County

- ▶ NJDEP lead RPO
- ▶ Contracted directly for RPO services
 - Contracting methods:
 - Direct purchase authority
 - Open competitive contracts
 - Waiver of advertising
 - Rutgers University
 - GeoTrans, Inc. via DPA
- ▶ Scope of work - RSE-Lite:
 - Review file
 - Recommend additional investigation
 - Make optimization recommendations



Lakehurst Exxon - Background

- ▶ Operated as a gasoline station from the 1950's until 1986
- ▶ Lakehurst Borough well field, 350 feet south of the station, impacted
 - 7 monitor wells installed into the Cohansey Sands
 - Screened from 30 to 50 feet in product saturated soils, estimated saturated thickness 60 feet
- ▶ 1986 USTs fail tank tightness tests, station closed & abandoned
 - UST closure
 - 400 tons of soil removed
 - 14 more monitor wells and 1 recovery well installed
 - Recovery system was a single GAC pump and treat system

Lakehurst Exxon - PF Take Over

- ▶ 1988 NJDEP Publicly Funded Site Remediation takes site
- ▶ Formal site investigation and system design
 - Two well pump and treat installed, 70 GPM total
 - Twin packed tower air strippers, vapor phase GAC
 - Single 1,000 pound aqueous phase GAC
 - Discharge treated water to storm sewer
 - SVE with sparge system
 - Results:
 - Hydraulic control achieved
 - Borough well field protected
 - Clean up achieved – NO!



Lakehurst RPO

▶ The 1990's and beyond:

- Hydraulic control maintained
- Additional USTs identified and removed
- Borough well field drills deeper wells
- Several efforts made to adjust sparge and vent and pumping
 - Limited success in achieving goals
 - **Goals = PQLs as we are in the Pinelands National Reserve**
 - “Whack a mole” order of the day

▶ GeoTrans RPO Results:

- Identified areas to focus sparge and vent, balanced system
- Sampling optimized

Lakehurst Exxon Status and Conclusions

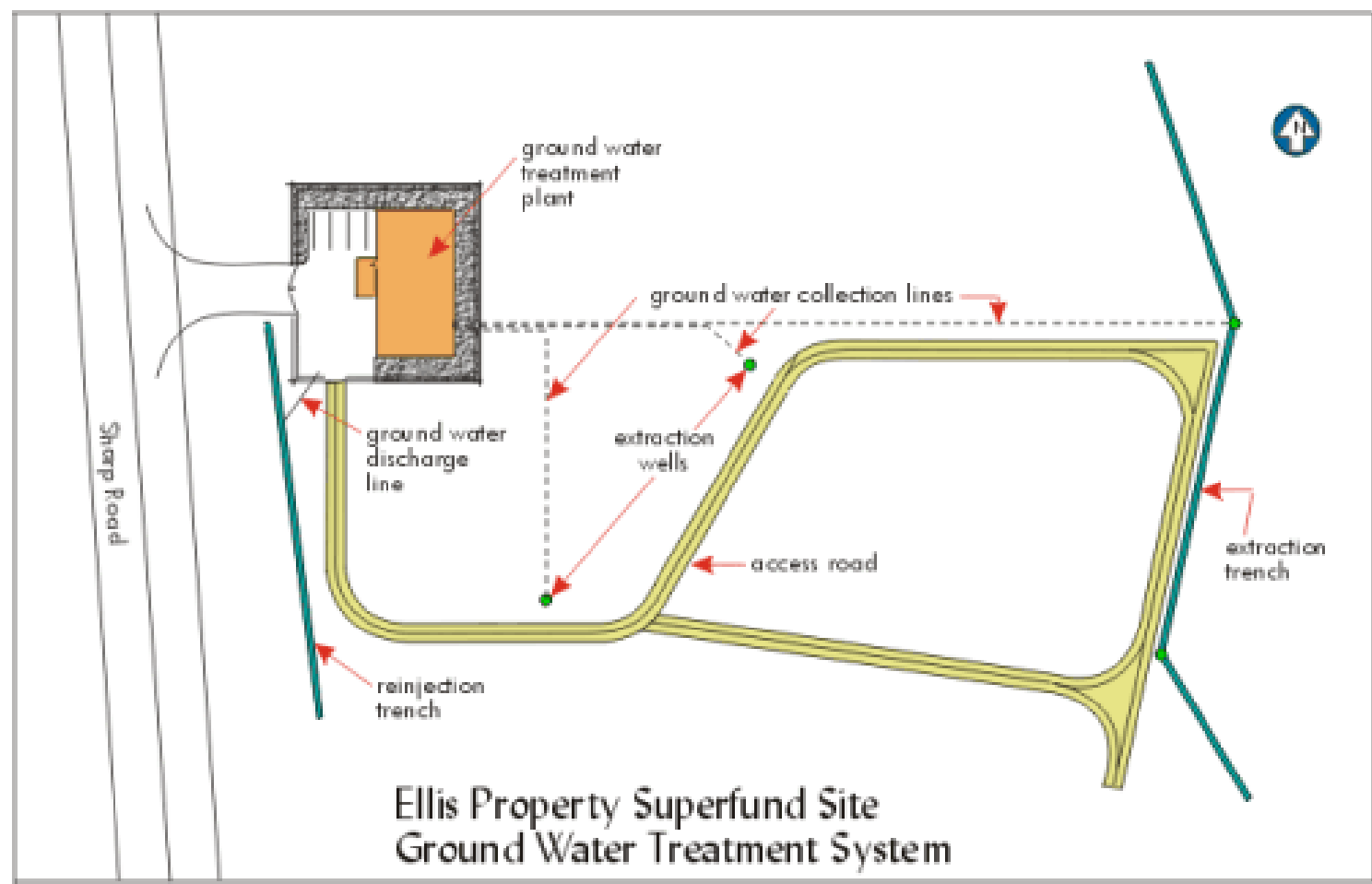
- ▶ Pump & treat syst. and sparging system off line since 2005
- ▶ Annual monitoring was put in place – since terminated
 - Classification Exception Area was developed
- ▶ Brownfields development area
 - Developer closed deal with the Department in 2008
 - CEA to be terminated
 - No Further Action letter issued
 - Development delayed due to economic climate, renewed interest underway

Ellis Property Superfund Site Evesham Twp., Burlington County

- ▶ Former drum recycling company
- ▶ State lead Superfund Site
- ▶ Listed in 1983
- ▶ USEPA & NJDEP IRMs
- ▶ RI/FS completed 1992
- ▶ Construction complete 2000
- ▶ Contaminants of concern:
 - Metals, Cu, Pb, Zn, As, Cr
 - PCBs
 - PCE, TCE



Ellis Property - Site Plan



Ellis Property - Pre RSE

- ▶ Atypical pump and treat performance
 - Constant recovery - no asymptotic curve
- ▶ NJDEP develops work plan to evaluate, 2005 - 2006
 - Begins field evaluations
- ▶ MAROS evaluation of sampling plan, 2006
 - Reduced sampling from quarterly to annual
 - Reduced number of wells sampled from 38 to 12
 - Annual saving >\$50,000

MAROS = Monitoring and Remediation Optimization System

Ellis Property RSE

- ▶ Conducted by the USEPA Technology Innovation Program
 - Final report issued September 2006
 - www.epa.gov/tio/download/remed/rse/final_ellis_rse.pdf
- ▶ Full RSE
- ▶ Findings highlights:
 - Capture zone analysis - NJDEP work plan modifications
 - Follow on plant / system modification options
 - Increase plant flow
 - Collection and discharge trench / gallery modifications
 - New wells
 - Existing plant modifications
 - In-situ chemical oxidation



Ellis Property - RSE Follow-up

- ▶ Annual follow-up calls from USEPA
- ▶ Did make modifications to existing plant
- ▶ Did not modify capture evaluation work plan
 - Conducted our own evaluation & design
- ▶ Award for new cut-off wall and sump relocation pending
 - Design to minimize excess water
- ▶ Soil removal design pending



Conclusions and Where We Go From Here

- ▶ NJDEP RPOs
 - Management mandate achieved
- ▶ Actively participate in Five-year Review Process
- ▶ Continue to volunteer for, and seek funding for, RPOs
- ▶ Conduct Follow-up on existing RSEs and RSE-Lites
- ▶ Contracting for NJDEP lead RPOs
 - LSRP pilot project underway
- ▶ Green and Sustainable Remediation Policy Pending
 - US EPA Region 2 Clean & Green policy included in RPO

Contacts and Resources

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www.nj.gov/dep/srp/



Resources

ITRC Websites: www.itrcweb.org
www.itrcweb.org/teampublic_RRM.asp
www.itrcweb.org/teampublic_RPO.asp
www.itrcweb.org/teampublic_GSR.asp

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