REMEDIATION ROUNDTABLE
November 12, 2013

www.ct.gov/deep/remediationroundtable
AGENDA

• Various Updates
• Risk Evaluation Assessment
• Future Transformation RSR Amendments
• Municipality Liability Relief
• Stormwater Construction Permit
• RCRA Ecological Risk Assessment
• Groundwater Technical Impracticability
2013 Fall Transformation Roll Out:

- Wave 1 RSR amendment Fact Sheets
- Wave 2 Public Discussion Drafts on proposed regulations
  - RSR Amendments – Remediation lead
  - Release Reporting – MMCA lead
  - Soil Reuse – MMCA lead
- Risk Assessment Evaluation initiated – RFP posted -> dedicated webpage
UPDATES

Wave 1 Guidance Documents (late November)

- Incidental Releases - 2(b)(4), 2(c)(4)(D) and 3(f)
- Inaccessible Soil definition – fill under pavement
- PMC Exemption 80% rule – 2(c)(4)(C)
UPDATES

Wave 2 Public Discussion Drafts

• Group 1 (August)
  • Alternative GWPC Areas
  • Monitored Natural Attenuation
  • Engineered Controls

• Group 2 (late November)
  • Institutional Controls
  • Sediment
UPDATES

Wave 2 Public Discussion Drafts

• Group 3
  • Alternative PMC - self-implementing
  • Additional Exposure Category Criteria - Recreational Use
  • Early Exit – pending discussions with ER&SP
UPDATES

Wave 2 Public Discussion Drafts

• Draft Discussion Documents on web

• Please send in your feedback
  DEEP.RemediationRoundtable@ct.gov
  OR DEEP.cleanup.transform@ct.gov
Remediation Website

- ELUR Application – Lean Team Grand Finale! (September)
- Municipal Brownfield Liability Relief Program Fact Sheet and Application (October)
- All NEW Verification Forms (November)
Remediation Website

- In-situ Chemical Oxidation General Permit for Public Notice (November)
  - Public meeting: 25 November 2013 in Phoenix auditorium from 3 - 5 PM

- Technical Impracticability Fact Sheet (November)

- 95%UCL Guidance Document for Public Comment (late November)
Please state your name and speak loudly.

Submit comments to
DEEP.remediationroundtable@ct.gov

www.ct.gov/deep/remediationroundtable
Risk Evaluation Update

CHERYL CHASE
DIRECTOR
INLAND WATER RESOURCES DIVISION
Risk-Based Decision Making

PA 13-308 signed July 2013 requires the Commissioner of Energy and Environmental Protection, in consultation with the Commissioner of Public Health to evaluate risk-based decision making related to the remediation of contaminated sites and make recommendations for statutory and regulatory changes based on the consideration of such evaluation.
Risk Evaluation Update

Risk-Based Decision Making Steps

- Workgroup established August 2013
- RFP Drafted by workgroup
- Funding: DECD has agreed to fund
- OPM Authorization: received 10/18/13
- RFP release: 11/7/13
- Deadline for submittals: 12/6/13

DEEP Risk Evaluation Webpage
Questions / Comments

Please state your name and speak loudly.

Submit comments to
DEEP.remediationroundtable@ct.gov
www.ct.gov/deep/remediationroundtable
Transformation RSR Amendments
Wave 2

JAN CZECHOTKA
ASSISTANT DIRECTOR
REMEDIATION DIVISION
• Goal of RSR amendments is to support the Transformation into forming ONE unified program
  – Remediation compliance from start to finish
    • Early Exits
    • Self-implementing options
    • Site-specific approaches
    • Institutional Controls
    • Tiered Exits A, B, C
CLEANUP TRANSFORMATION ROADMAP

Completed

- Municipal Liability Relief (effective July 2013)
- Cleanup Standards – Wave 1 (effective 6/27/13)
- New Authority: Expanded Institutional Controls (October 2013)

2013

- Risk Assessment Evaluation (Started August 2013)
- Public Discussion on Regulatory Reform
  - Wave 2 Cleanup Standards
  - Spill Reporting
  - Soil Reuse
WAVE 2 RSR AMENDMENTS

Discussion Documents Introduced May Roundtable

**EARLY EXITS**
- Develop framework for Early Exits

**ALT GWPC**
- Developing Map of GA Areas Where an Alternative GWPC is Potentially Eligible for Use
  - Working with DPH on Alternative GWPC

**ICs**
- Create list of all current and new EUR types to categorize them into specific institutional controls
  - Consult with DPH on any risk concerns with Institutional Controls
Discussion Documents Introduced August Roundtable

ECs
- Developing self-implementing DEC options
- Soliciting ideas for self-implementing PMC options

MNA
- Developing concept for self-implementing MNA compliance point

Connecticut Department of Energy and Environmental Protection
WAVE 2 RSR AMENDMENTS

Discussion Documents

- Provide a self-implementing site-specific alternative
- Developing potential self-implementing options

PMC

SEDIMENT

- Developing a new section of the RSRs considering Transformation Workgroup’s suggestions
Purpose:
- Establish soil PMC that will not cause groundwater to exceed applicable groundwater criteria
- Develop self-implementing options for evaluating the soil leaching pathway to groundwater using:
  • Soil-Water partitioning (SWP) equations with default values
  • Site-specific parameters
  • Unsaturated zone fate and transport models
  • Other leaching procedures
• General Requirements and Limitations

• Additional options for consideration:
  1. SWP Equation: Fixed parameter 3-phase partitioning model
  2. SWP Equation: Variable parameter 3-phase partitioning model
  3. Unsaturated Zone Leaching Models: SESOIL and VLEACH
  4. Other leaching procedures to develop site-specific PMC
Fixed SWP equation assumptions:
- Assumes soil column is contaminated from surface to water table (no assumed attenuation in vadose zone)
- Assumes that groundwater impacts are < GWPC
- Use default soil characteristics

*Self-implementing options not considered applicable or protective if groundwater is impacted > applicable criteria*
Variable SWP equation assumptions:

- Assumes soil column is contaminated from surface to water table (no assumed attenuation in vadose zone)
- Assumes that groundwater impacts are < GWPC
- Using site-specific soil characteristics

Self-implementing options not considered applicable or protective if groundwater is impacted > applicable criteria
• Unsaturated Zone Leaching Models: SESOIL and VLEACH:
  – Assumes soil column is uncontaminated below the release area (attenuation in vadose zone)
  – Assumes no measureable impact to groundwater
  – Uses site-specific soil characteristics
MULTI-LEVEL EXIT CLASSES

- **C1/C2**
  - Soil Cleanup Complete
  - Groundwater Remedy Operational
  - Long-term Maintenance

- **B1/B2**
  - Soil Cleanup Complete
  - Groundwater Cleanup Complete
  - Land-Use Controls
  - Long-term Maintenance

- **A**
  - Soil Cleanup Complete
  - Groundwater Cleanup Complete
  - Unrestricted Reuse

INCREASING LEVEL OF CLEANUP
WAVE 2 RSR AMENDMENTS - Sediment

- Purpose: to provide a consistent, defined approach that is flexible, cost effective and protective of HH and Env
- Designed to fit transformed remediation program
- Address stakeholder concerns
  - Clarifies requirements for eco-assessment
    - When, how and to what extent
• Flexibility in remedial options
• Self-implementing compliance options
• Fits into tiered exit concept
• Specific requirements to address chemicals that bioaccumulate
• APS will be addressed similar to soil
WAVE 2 RSR AMENDMENTS - Sediment

Current State

- Scoping-Level Assessment
- Sediments located in vicinity of a release?
- Yes: Analytical testing results exceed benchmarks?
- Yes: Commissioner approval: Background pollution study
- No: Early Exit Report by ERP/LEP in 90 days
- No: Verification or DEEP Final Approval
- No: Likely migration of contaminants to sediments?
- Yes: Remediation subject to Commissioner approval
- No: Verification or DEEP Final Approval
- No: Verification or DEEP Final Approval

Future State

- Scoping-Level Assessment
- Sediments located in vicinity of a release?
- Yes: Analytical testing results exceed benchmarks?
- Yes: Commissioner approval: Background pollution study
- No: Determine site-specific cleanup numbers, remediate if necessary. Choose 1 of 3 options:
  - Option 1: ERM-Q or PEC-Q with Target ≤ 0.5
  - Option 2: On-site toxicity study
  - Option 3: DEEP oversight for highly complex releases
- No: Streamlined option: Remediate to benchmarks
- No: Verification or DEEP Final Approval
- No: Likely migration of contaminants to sediments?
- Yes: Remediation subject to Commissioner approval
- No: Verification or DEEP Final Approval
- No: Verification or DEEP Final Approval

Key:
- Commissioner Approval
- Self Implementing

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JAN CZECZOTKA
3 Self-Implementing Options:

• Cleanup to conservative screening values as a streamlined option
• On-site toxicity study to determine cleanup values
• Using hazard quotients (ERM-Q or PEC-Q) to determine cleanup values
WAVE 2 RSR AMENDMENTS - Sediment

- Applicable to all Exit Classes
  - Self-implementing options available in Early Exit, Class A and Class B2
  - Commissioner’s approval only option for class B1 (need ELUR) and Class C (need engineered control)
MULTI-LEVEL EXIT CLASSES

C1/C2
- Soil Cleanup Complete
- Groundwater Remedy Operational
- Long-term Maintenance

B1/B2
- Soil Cleanup Complete
- Groundwater Cleanup Complete
- Land-Use Controls
- Long-term Maintenance

A
- Soil Cleanup Complete
- Groundwater Cleanup Complete
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INCREASING LEVEL OF CLEANUP
Wave 2 Public Discussion Drafts

- **Group 1** (August)
  - Alternative GWPC Areas
  - Monitored Natural Attenuation
  - Engineered Controls

- **Group 2** (late November)
  - Institutional Controls
  - Sediment
Wave 2 Public Discussion Drafts

- Group 3
  - Applicability
  - Alternative PMC - self-implementing
  - Additional Exposure Category Criteria - Recreational Use
  - Early Exit – pending discussions with ER&SP
- Group 4
WAVE 2 RSR AMENDMENTS

Feed back to date = 1
Feedback opportunities prior to formal Public Hearing Draft:

- Information Sessions – TBA
- E-mailboxes for your feedback
  DEEP.RemediationRoundtable@ct.gov
  OR DEEP.cleanup.transform@ct.gov

Draft Discussion Documents – Alt GWPC, MNA, EC
Questions / Comments

Please state your name and speak loudly.

www.ct.gov/deep/remediationroundtable
Municipal Brownfield Liability Relief Program

GRAHAM STEVENS
OFFICE DIRECTOR
CONSTITUENT AFFAIRS/ LAND MANAGEMENT
Municipal Brownfield Liability Relief

• Section 30 of Public Act No. 13-308 created new program

• Designed to provide municipalities with comfort to serve vital role of facilitating redevelopment and cleanup of brownfields

• Municipalities in a unique position to shepherd these properties through pre-development stages and find a developer
Benefits

- Provides state and third party liability relief for any pre-existing contamination
- Municipalities do not have to file under Property Transfer Act when they acquire
- Municipality is not responsible for conducting site investigation and remediation
  – Must act as good stewards of land
Program open to any municipality or any of the following entities established by a municipality to address redevelopment:

- economic development agencies
- nonprofit economic development corporations
- nonstock corporation or limited liability company
Application

• Program is application based
• Simple process focused on applicant certifications
  – intend to acquire title to such brownfield for the purpose of redeveloping or facilitating redevelopment
  – did not establish or create a facility or condition at or on such brownfield that can reasonably be expected to create a source of pollution
  – are not affiliated with any person responsible for such pollution
  – are not otherwise required to remediate such pollution
Stewardship Obligations

• Once in the program – applicants must:
  – comply with Significant Environmental Hazard statute
  – make good faith efforts to minimize the risk to public health and the environment
  – submit a plan and schedule that outlines what steps are being proposed to facilitate redevelopment and cleanup
Facilitate Redevelopment & Cleanup?

- Marketing a property for redevelopment
- Applying for funding assistance
  - For planning, investigation, cleanup, or design functions
- Conducting site preparations (e.g., demolition, infrastructure improvements, removal of bulky wastes, securing the property)
- Conducting investigations or targeted hot spot remedial actions
Application and factsheet available at: www.ct.gov/deep/remediation
Please state your name and speak loudly.

www.ct.gov/deep/remediationroundtable
Stormwater Construction Permit

CHRISTOPHER STONE
SANITARY ENGINEER III
WATER PERMITTING & ENFORCEMENT DIVISION
Connecticut Department of Energy and Environmental Protection

CT STORMWATER PROGRAM

Construction* Stormwater Permitting and Site Remediation

Rain Happens!

* Exposing soil is construction

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CT STORMWATER PROGRAM

Program goals

Conduct consistent detailed review of plans without additional staff

Ensure proper plan implementation

Comply with public notice requirements

Focus on enforcement to address non-compliance issues
CT STORMWATER PROGRAM

Permit Modifications

Major changes to permit

- Qual. Prof. (QP) review
- Public availability & comment
- Impaired waters & anti-degradation
- Turbidity monitoring
- Emphasis on endangered species
- Low Impact Dev. performance standards

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Plan Review Certification

Step 1 – Design by QP

Step 2 – Review by QP
  - District or consultant
  - Degree of independence

Step 3 - submit registration with QP cert.

Step 4 - QP inspect within 90 days
Impaired Waters Controls

- Disturbed area <3 ac. at once and stabilized w/in 30 days of dist; or
- Retain 2-year storm; or
- Meet TMDL requirements

Other TMDL requirements

DEEP provides list of impaired
**CT Stormwater Program**

**Turbidity Monitoring**

Outfall Turbidity Monitoring

- No Benchmark or Effluent Limit
- Normal working hours
- Monitor once per month
- 3+ grabs per storm
- Submit average of results on form
- Remediation Plan may require added parameters

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CT STORMWATER PROGRAM

Retention Performance Standard

Performance Standards

Redeveloped sites >40% impervious
- Retain ½ Water Quality Volume (WQV) & treat full WQV
- If unable, retain & treat to WQV

All Other development
- new dev, redev <40%, HQ, impervious
- design to retain WQV
- If unable, retain & treat to WQV
Remediation Stormwater Issues

- Remedial Plan addresses Const. GP
- Qual. Prof. has remediation experience
- Engineered controls must meet GP
- Infiltration issues & alternatives
- Address impaired/TMDL issues
Questions / Comments

Please state your name and speak loudly.

www.ct.gov/deep/stormwater
Contact Chris Stone at chris.stone@ct.gov

www.ct.gov/deep/remediationroundtable
RCRA Corrective Action: Tools for Facilitating Ecological Risk Assessment

Stephanie Carr
Senior Enforcement Coordinator
Toxics and Pesticides Unit
EPA Region 1
Issues

Ecological risk assessment:
- Often occurs later in a remediation project than is optimal
- Requires up-front planning, including a Quality Assurance Project Plan and Field Sampling and Analysis Plan
- Can require a lengthy time-frame:
  - Inherently iterative
  - Considers multiple pathways and receptors
  - Requires agency input
Tools for Facilitating Ecological Risk Assessment

1. Ecological Receptor Exposure Pathway Scoping Checklist

2. Considerations for Assessing Ecological Risks reference document
Scoping Checklist

• Developed in June 2008, updated Fall 2013 by EPA Region I with input from CT DEEP

• Objective: Tool for identifying complete exposure pathways for ecological receptors

• Designed for use with RCRA Corrective Action projects as an initial “scoping” step in performing ecological risk assessment
Scoping Checklist Format

Includes:

• Questions on:
  - Affected media
  - Migration pathways
  - Habitat types

• Decision tree on all potential ecological exposures to each impacted site medium
Scoping Checklist Outcomes

- **Complete exposure pathways identified:** Checklist findings focus further ecological risk assessment (checklist is not a substitute for an ERA)
- **No complete exposure pathways identified (UNLIKELY):** Completed checklist documents that ecological exposure pathways were evaluated
Eco Considerations Reference

• Discusses issues in which we frequently see problems in ecological risk assessments

• Purpose: To make the process more efficient by providing feedback on these issues up front
Eco Considerations Topics

1. Importance of up-front planning
2. Separation of the Screening Level and Baseline Ecological Risk Assessment stages (SLERA & BERA)
3. Selection of data for use in an ERA
4. Background/reference location data
Eco Considerations Topics (cont’d)

5. Use of Acid Volatile Sulfides – Simultaneously Extracted Metals (AVS-SEM) analysis

6. Handling non-detect values in a risk assessment

7. Evaluation of groundwater discharge to surface water

8. Determining appropriate depth for soil and sediment evaluation
9. Water Samples: filtered vs. unfiltered and hardness considerations

10. Carrying constituents that bioaccumulate or biomagnify through the SLERA
Eco Considerations Reference

Please send suggestions for future revisions to the EPA Region I RCRA Corrective Action Program

www.epa.gov/epawaste/hazard/correctiveaction/contacts/index.htm
CT Eco Risk Guidance and Support

- CTDEEP is also developing guidance and tools to assist with Ecological Risk Assessment.
- CT DEEP guidance is designed to be:
  - Tailored to CT Remediation Programs
  - Consistent with goals of Transformation Process
  - Complementary to EPA guidance
Questions / Comments

Please state your name and speak loudly.

www.ct.gov/deep/remediationroundtable
Groundwater Technical Impracticability Workgroup Report

MAURICE HAMEL
ENVIRONMENTAL ANALYST 3
REMEDIATION DIVISION

ANDREW ZLOTNICK, LEP
SENIOR VICE PRESIDENT
FUSS & O’NEILL
Work Group

- Meeting monthly since April 2011
- 7 LEPs, 3 Attorneys, 4 DEEP Staff

What will be available online:

- Fact sheet (with Flow Chart)
- Draft Guidance Document (November - December)
6 Sites approved for TI Variance
4 Approved since 2010
21 Sites received initial screen since 2010
13 of those preparing supplemental submissions
TECHNICAL IMPRACTICABILITY VARIANCE

Section 22a-133k-3(e)(2)

• Variance for groundwater contamination which is not technically feasible to be remediated to the applicable criteria

• Not a waiver for source area remediation
TI VARIANCE OVERVIEW

1. Characterize Fully
2. Understand Sources
3. Remediate as Required
4. Establish Plume Stability
5. Identify and Protect Receptors
6. Provide Long-term Certainty
KEY TERMS

- **Technically Practicable** -
  Greatest degree of remediation that can be achieved using sound engineering and hydrogeologic practices.

- **Prudent** -
  Reasonable degree of remediation after taking into consideration cost, in light of societal and environmental benefits.
TI SCENARIOS

Residual Source
- DNAPL
- Some LNAPLs
- Solid
- Sorbed

Persistent Plume
- Steady state or slowly diminishing plume
- Will not dissipate within a reasonable time frame

Both scenarios may be applicable at some sites
TI ZONES

• **TI Zone** - Area covered by TI Variance where groundwater quality would otherwise be exceeding applicable criteria – for a plume resulting from a specific release and specified COCs

• **Secondary TI Zone** - Area beyond TI Zone where changes in pumping, drainage or recharge could cause plume to expand beyond TI Zone
SOURCE REMEDIATION REQUIREMENTS

• Goal for sources contributing to the plume
  - Limit extent of plume
  - Limit duration of long-term care
  - Ensure steady state or declining plume

• Plume management is not an alternative to addressing the source

• RemEDIATE other sources not contributing to TI plume
PLUME CONTROL REQUIREMENTS

Evaluate and implement to the extent “technically practicable”

- Commonly accepted and proven technologies
- No consideration of cost

Once determined to be impracticable to fully remediate

- Apply the concept of “prudent” to remedial approach
- Reduce permanent mass loading on environment
- Reduce plume to limit area of permanent impairment
TI APPLIES TO GROUNDWATER

• Source Remediation may leave residuals
  – NAPL under Section 2(g)
  – Sorbed contaminants below watertable

• Groundwater impacts
  – Naturally attenuate / MNA
  – TI Variance to groundwater criteria under Section 3(e)(2)
LONG-TERM RESPONSIBILITIES

- Land Use Controls and Monitoring
- Monitoring program to gauge effectiveness
- Triggers for performing maintenance or re-evaluating
- A program for assessing and implementing contingency
- Financial assurance for continued operation of the systems
- 5 Year Status Review Reporting
- Respond to changes that may threaten receptors
A TI VARIANCE IS NOT ...

- A determination that no further action is feasible
- A waiver for the remediation of PMC soils
- A GB reclassification
- A waiver of complete remediation and monitoring for other release areas
- A substitute for Monitored Natural Attenuation at sites that can achieve compliance within a “reasonable timeframe”
WHY TIs ARE USEFUL?

* Provide a remedial endpoint balanced with protection of HH&E
* Allow clear definition of long-term obligations
* May be suitable to support Final Verification and Form II filing
* Enable transfer of property and reassignment of post-remedial obligations
Questions / Comments

Please state your name and speak loudly.

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REMEDIATION ROUNDTABLE

GENERAL Q&A

E-mail: DEEP.remediationroundtable@ct.gov
Web: www.ct.gov/deep/remediationroundtable
THANK YOU

Next meeting: February 11, 2014

Schedule and agenda on website
www.ct.gov/deep/remediationroundtable

Submit comments to Carl Gruszczak at
DEEP.remediationroundtable@ct.gov