

**Kerr-McGee Chemical Corp.
Navassa, North Carolina
Superfund Site**

**Public Meeting
June 25, 2019**

**U.S. Environmental Protection Agency
N. C. Department of Environmental Quality
Greenfield Environmental Multistate Trust LLC,
Trustee of the Multistate Environmental Response Trust**



Public Meeting Agenda

- ✓ **Introductions**
- ✓ **Update on EPA Information Repository**
- ✓ **NCDEQ and Navassa Trustee Council Update**
- ✓ **NCEERC Update**
- ✓ **Remediation Investigations (RI) Highlights and Plans**
- ✓ **Superfund Process Update**
- ✓ **Marketing Strategy and Plan**
- ✓ **Questions and Discussion**



Introductions

Tonya Spencer, EPA



Introductions

- ✓ **Navassa Superfund Site Cleanup Team**
 - ✓ U.S. Environmental Protection Agency (EPA)
 - ✓ N.C. Department of Environmental Quality (NCDEQ)
 - ✓ Multistate Environmental Response Trust (Multistate Trust)
- ✓ **Navassa Town Council**
- ✓ **Navassa Community Environmental and Economic Redevelopment Corporation (NCEERC)**
- ✓ **Navassa Trustees Council – Natural Resource Damage (NRD) Restoration**
- ✓ **Other Partners**
 - ✓ N.C. Department of Health and Human Services/N.C. Division of Public Health (N.C. DPH) – Health education and outreach
 - ✓ University of North Carolina – Wilmington (UNCW) – College / Underserved Community Partnership Program (CUPP)



Update on EPA Information Repository

Public Meetings Every Quarter

Next Meeting **September 24th**



NCDEQ and Navassa Trustee Council Update

Anjie Ackerman, NCDEQ



Navassa Trustee Council

NATURAL
RESOURCE
DAMAGE
ASSESSMENT
AND
RESTORATION

Draft restoration
plan is being
reviewed.



Navassa Trustee Council

Kerr McGee NRDAR Trustees

NOAA:

- Howard Schnabolk
- (843) 740-1328
- Howard.Schnabolk@noaa.gov

- Krista McCracken
- 843-740-1203
- Krista.mccracken@noaa.gov

US Fish and Wildlife Service:

- Sara Ward
- (252) 473-1132 ext.243
- Sara_Ward@fws.gov

State of North Carolina:

- Carolina Jimenez
- (919) 707-8626
- Guadalupe.Jimenez@ncdenr.gov

- Anjie Ackerman
- (919) 707-8312
- Anjie.Ackerman@ncdenr.gov



Navassa Community Environmental and Economic Redevelopment Corporation (NCEERC) Update

Chris Graham, NCEERC



Remediation Investigations Highlights and Plans

Richard Elliott, Multistate Trust



Remedial Investigations (RI)

Purpose of Remedial Investigations (RI):

Identify areas of contamination on and around the Site that need to be remediated to protect people and the environment

- ✓ Investigate all potentially contaminated media on- and off-Site – soil, sediment, groundwater and surface water
- ✓ Determine the limits and concentrations of Site contaminants
- ✓ Develop/refine a conceptual site model (CSM) that presents the understanding of the nature and extent of contamination and provides the framework for evaluation of remediation alternatives in the Feasibility Study
- ✓ Use RI results to evaluate potential risks to people and the environment and identify remediation actions (Feasibility Study)



RI Highlights

- ✓ **Constituents of Concern (COCs)**
 - ✓ **Polycyclic Aromatic Hydrocarbons (PAHs) (creosote-related SVOC contaminants)**

- ✓ **Extent of Contamination**
 - ✓ **Surface Soils**
 - ✓ **Subsurface Soils**
 - ✓ **Marsh Sediment**
 - ✓ **Groundwater**

- ✓ **Human Health Risk Assessment**

- ✓ **Baseline Ecological Risk Assessment**



Key Activities

First Quarter 2019 Progress

✓ Complete Reports

– RI Report

- Final Draft Released to EPA and NCDEQ for Review and Comments

– HHRA

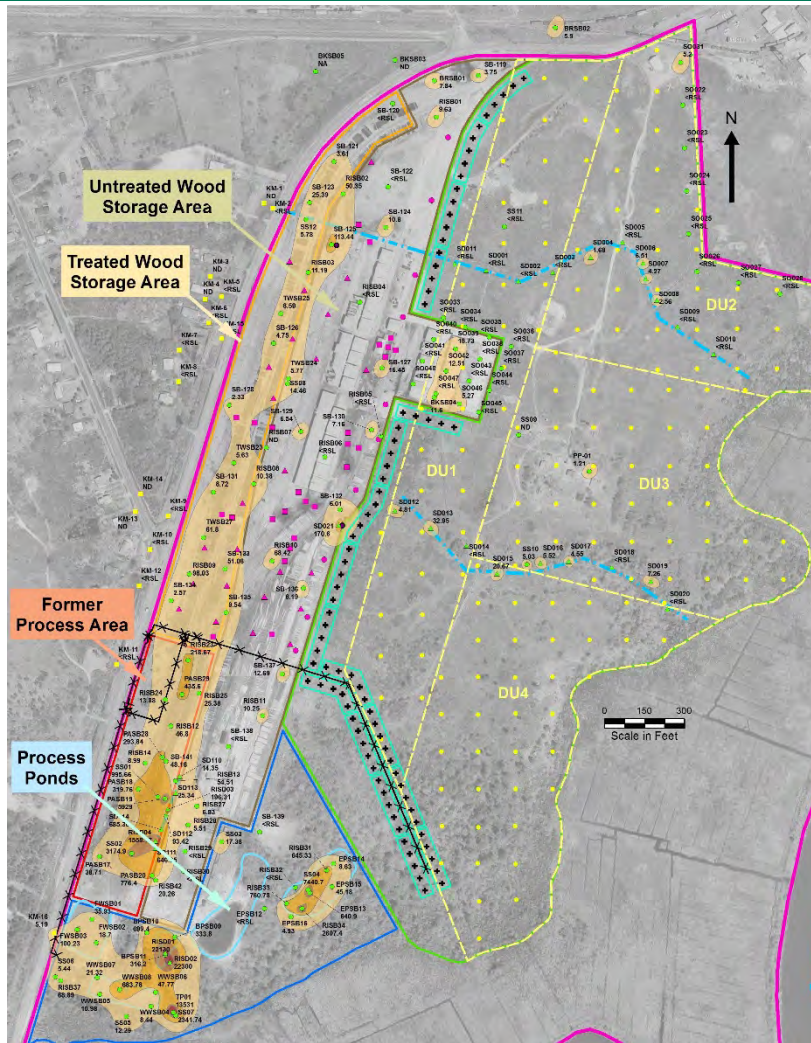
- Final Draft has been Submitted to EPA and NCDEQ
- Awaiting Final Approval

– BERA

- BERA has been Approved and Posted by EPA



Distribution of Creosote-Related SVOCs in Surface Soil and Terrestrial Sediments



Legend

- 2019 COMPOSITE SAMPLE
- 2019 SURFACE SOIL SAMPLE
- 2019 TRENCH SOIL BORING
- 2019 BOUNDARY SOIL BORING
- SOIL BORING
- TERRESTRIAL SEDIMENT
- PROPERTY BOUNDARY
- DRAINAGE SWALE
- TREATED WOOD STORAGE AREA
- UNTREATED WOOD STORAGE AREA
- EASTERN UPLAND
- POND AREA
- <RSL - LESS THAN RESIDENTIAL REGIONAL SCREENING LEVEL (RSL)
- mg/kg - MILLIGRAMS PER KILOGRAM
- ND - NOT DETECTED

CREOSOTE-RELATED SVOC CONCENTRATIONS (mg/kg)

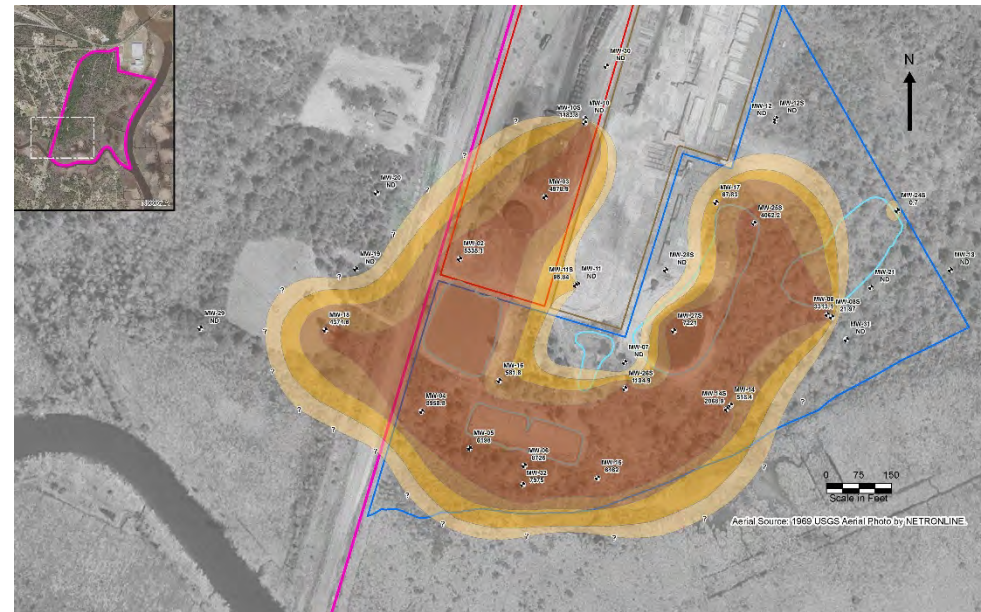
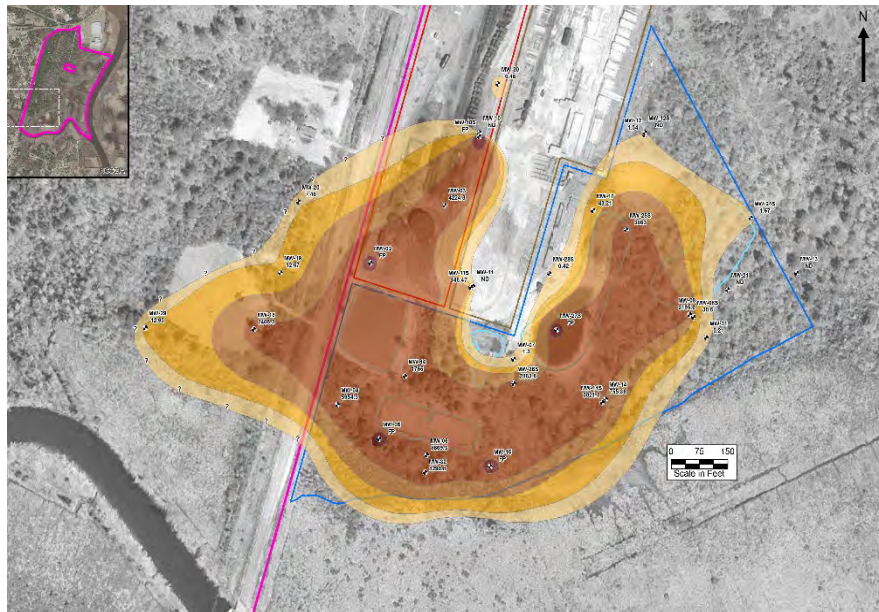
- 0 - 100
- 100 - 1000
- 1000 - 10000
- > 10000

- **485 soil samples**
 - 323 locations
 - 292 surface soil samples (0" to 12" below ground surface [BGS])
 - 193 subsurface samples (greater than 12" BGS)
- **225 sediment samples**
 - 175 locations
- **20 surface water samples**
 - Sturgeon Creek and the tidal marsh areas
- **548 groundwater samples**
 - 53 on-site groundwater wells,
 - 6 off-site groundwater wells
 - 37 temporary on-site groundwater wells
 - depths up to 95 feet BGS

Distribution of Creosote-Related SVOCs in Groundwater

March 2017 Results

April 2019 Results

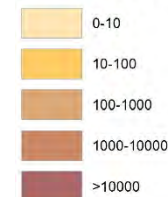


Legend

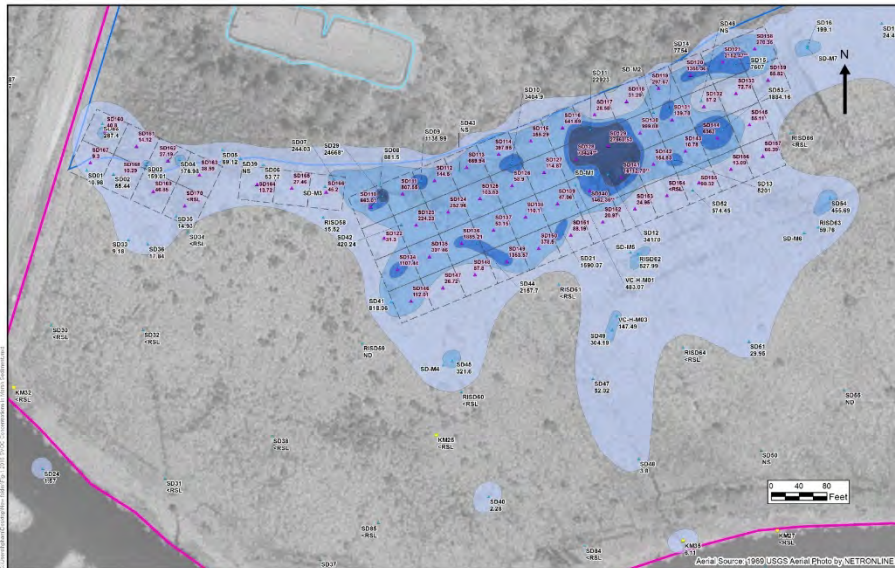
- ◆ SHALLOW MONITORING WELL
 - PROPERTY BOUNDARY
 - PROCESS AREA
 - UNTREATED WOOD STORAGE AREA
 - POND AREA
 - FORMER POND
- RSL - REGIONAL SCREENING LEVEL
 ug/L - MICROGRAMS PER LITER
 FP - FREE PRODUCT
 ND - NOT DETECTED

NOTE: CREOSOTE-RELATED SVOCs INCLUDE 1,1-BIPHENYL, CARBAZOLE, DIBENZOFURAN AND PAHS

CREOSOTE-RELATED SVOC CONCENTRATIONS (ug/L)

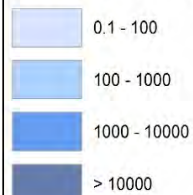


BERA Results for 35-Acre Southern Marsh

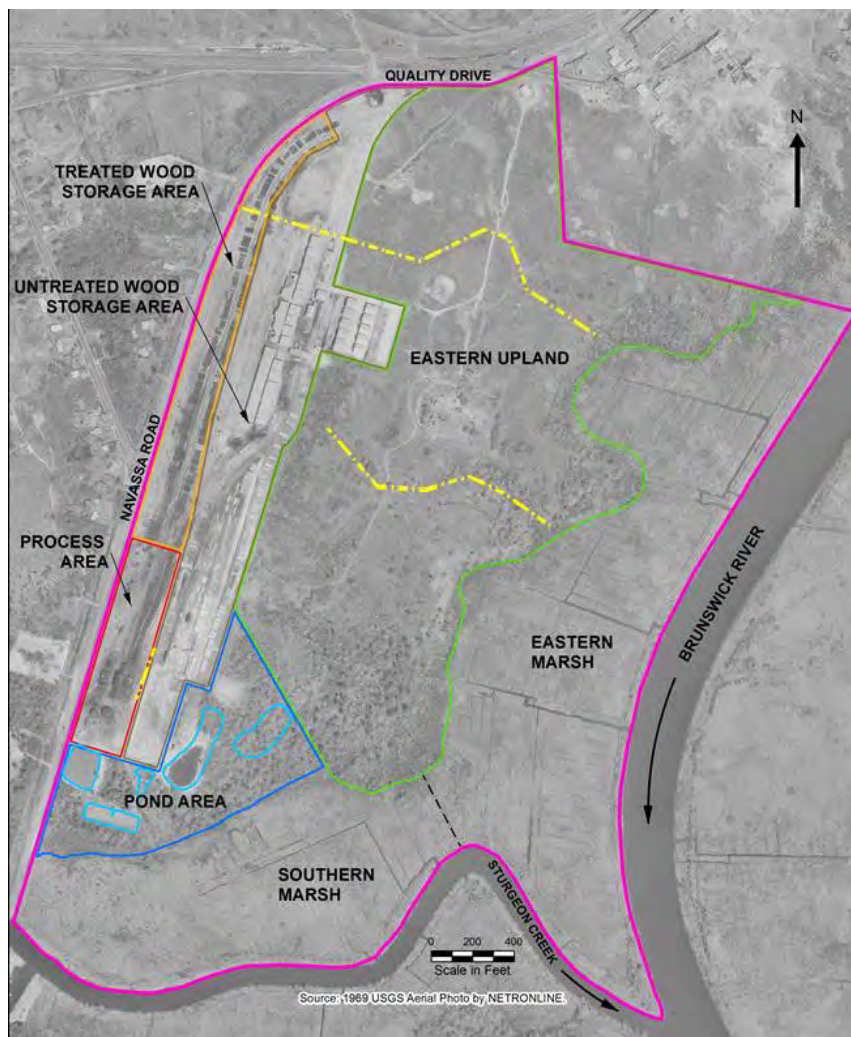


- ✓ Approximately 31.5 acres had samples with TUs ≤ 1
- ✓ Approximately 3.5 acres had samples with TUs > 1
- ✓ Additional sampling and toxicity testing recommended to:
 - better quantify the threshold for ecological impacts
 - determine the concentration threshold for taking a remedial action

CREOSOTE-RELATED
SVOC CONCENTRATION (mg/kg)



HHRA Results



- ✓ **No unacceptable risk from soils in Treated and Untreated Wood Storage Areas or Eastern Upland Area.**
 - Additional Sampling to Confirm Assessment
- ✓ **Unacceptable risk to residential and industrial receptors identified for soils in Pond and Process Areas**
- ✓ **Unacceptable risk to residential and industrial receptors identified for groundwater**
- ✓ **No unacceptable risk identified in Southern Marsh**

Key Activities 2019 Plan

✓ OU1

- Completed Additional Sampling Activities in June
 - Sufficient Data to Inform Risk Management Decisions
 - Data to Reduce Uncertainty in Subsurface Soils
 - Data to Define Superfund Site Eastern Boundary
- Confirm HHRA Assessment
- EPA to Finalize Proposed Plan and ROD

✓ Marsh/Pond and Process Area/Groundwater

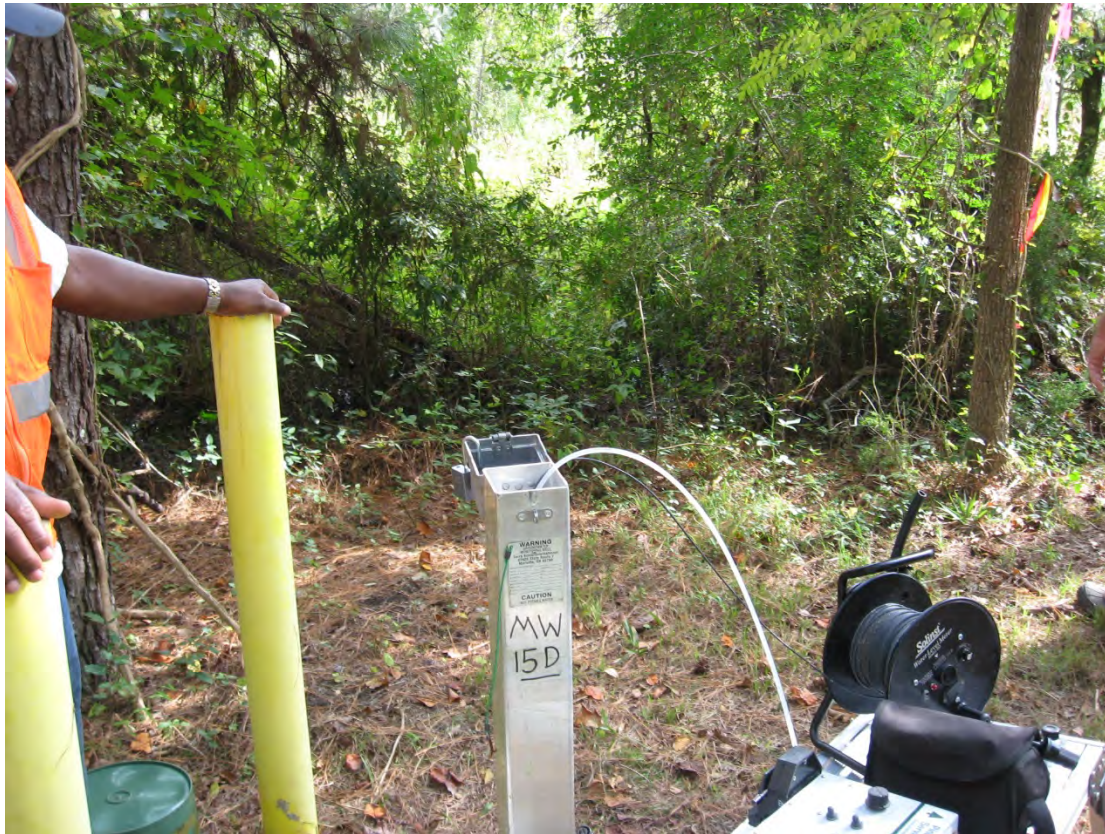
- Complete Marsh Sampling Work Plans and Obtain EPA Approval
 - Sampling and Toxicity Testing
 - Addendum to BERA
- Initiate Feasibility Study
- Complete Two Groundwater Sampling Events (one sampling event completed in April 2019)
- Conduct Groundwater Plume Studies and Issue Report

✓ Site Property Activities

- Market the Site
- Work with Town Council to Rezone the Property
- Initiate Institutional Controls Activities



Pictures of Monitoring Well Sampling



Northern Area Sampling Activities



Geoprobe taking soil cores

Logging the core and taking samples



Superfund Process and Record of Decision (ROD) Update

Erik Spalvins, EPA



Superfund Process Update

Erik Spalvins, EPA



Risk Overview

- ✓ Steps in site characterization
 - Determine the extent of the release
 - Use screening levels to determine where investigation should continue
- ✓ Risk evaluation (HHRA)
 - Estimating risks to future users of site
 - Concept of “unacceptable risk”
 - Determine if unacceptable risk might occur
- ✓ How Risk Analysis for OU1 has evolved
 - New information
- ✓ Any other questions?

Steps in Site Characterization

- ✓ What is the extent of the release
 - How was contaminant released?
 - Duration, quantity, what was source?
 - Where is the contaminant now?
 - Soil or sediment, Surface water, Groundwater
- ✓ Initial evaluation of release (screening levels)
- ✓ Detailed risk analysis – HHRA and Eco-Risk Assessment
- ✓ Risk-management decision – Proposed Plan and ROD

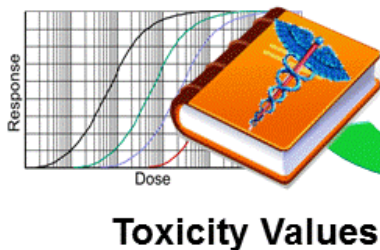
Initial Evaluation of Release

- ✓ EPA uses risk-based screening levels to identify contaminants of potential concern & areas of potential interest
- ✓ Does contamination warrant further investigation?
 - Above screening levels – Contaminant of Potential Concern or Potential for early actions
 - Below screening levels – not carried forward in risk assessment
- ✓ Screening levels can be developed for different levels of risk and different exposure scenarios

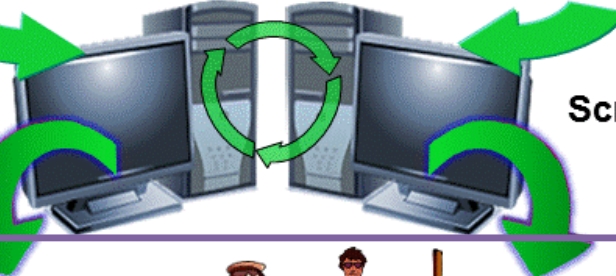


Risk-Based Screening Levels

Toxicity Values



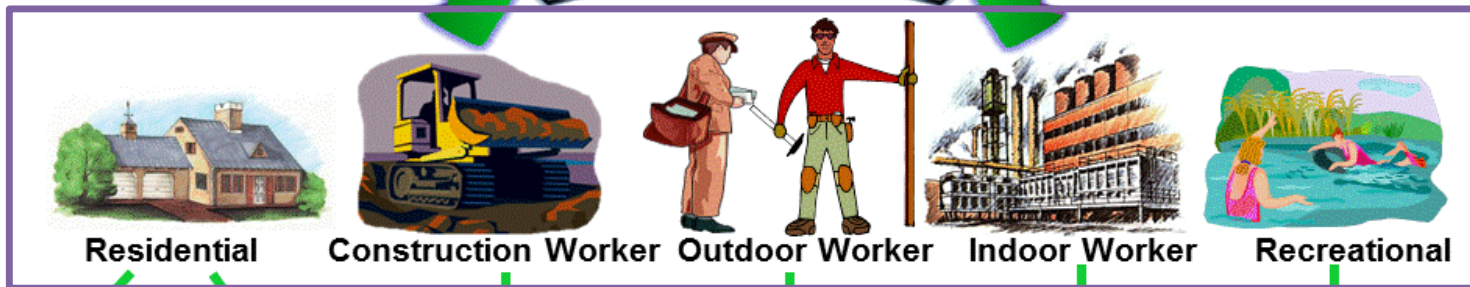
Screening Level Calculation



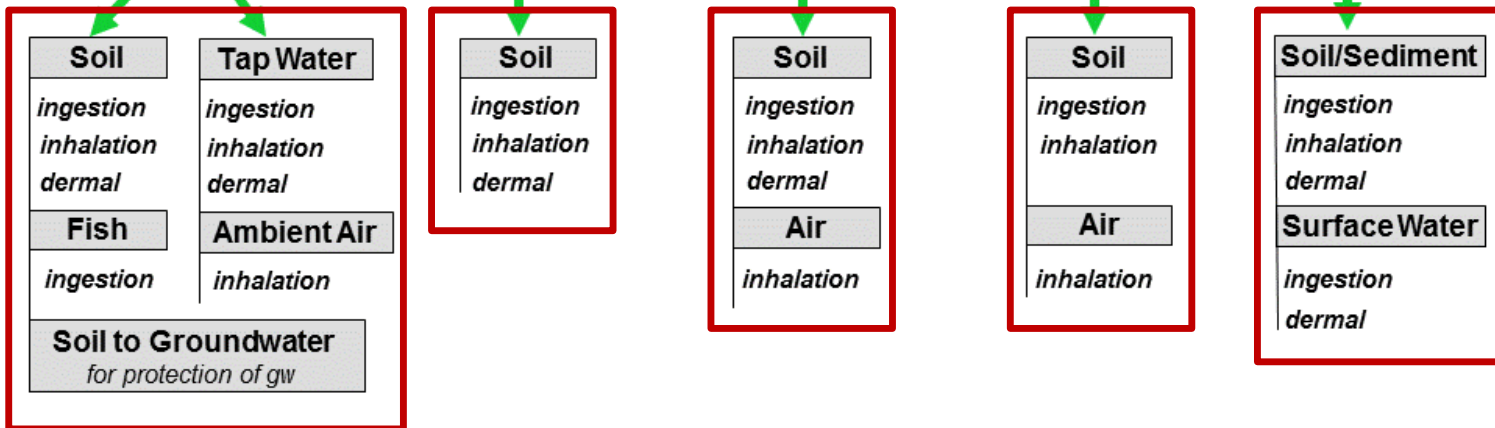
Screening Level Equations



Receptors
Future users



Pathways of exposure



Exposure Assumptions – activities, duration, etc.

Pathways of Exposure

“Whether a person exposed to creosote gets sick or not will depend on several things, including:

- ✓ level (**amount**) to which a person was exposed,*
- ✓ duration (**length of time**), and*
- ✓ frequency (**number of times**) of exposure.”*

-ATSDR Public Health Assessment



Comparison of Residential and Industrial Screening Levels

Example Benzo(a)pyrene

- ✓ Residential Screening Level for Soil
 - 0.11 mg/kg = 1 in 1,000,000 cancer risk
- ✓ Industrial Screening Level for Soil
 - 2.1 mg/kg = 1 in 1,000,000 cancer risk

Risk Evaluation

- ✓ Estimating risks to future users of site
 - Contaminant can cause cancer (carcinogenic)
 - Contaminant can cause a health effect other than cancer (non-carcinogenic)
 - Some contaminants cause both

- ✓ Cancer risk is a *probability* of developing an “excess lifetime” cancer that is above the overall cancer risk to the US population because of the exposure in question
 - Overall risk for US population is 1 in 3 to develop cancer

- ✓ Non-Cancer risk is expressed as a ratio
 - The estimated dose compared to a “safe” dose
 - “Safe” dose is the amount that will not cause a negative health effect
 - Estimated dose is based on exposure assumptions

Superfund addresses “Unacceptable Risks”

Determined by the Superfund Law and regulations

- ✓ Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)
- ✓ National Contingency Plan (NCP)

Unacceptable Cancer Risk is an additional 1 in 10,000 probability of developing an “excess lifetime” cancer.

- ✓ For example: Excess Lifetime Cancer Risk of 3.4 in 10,000

Unacceptable Non-cancer Risk is if the ratio of estimated dose to the “safe” dose is greater than 1.

- ✓ For example: Hazard Quotient (HQ) of 3.2



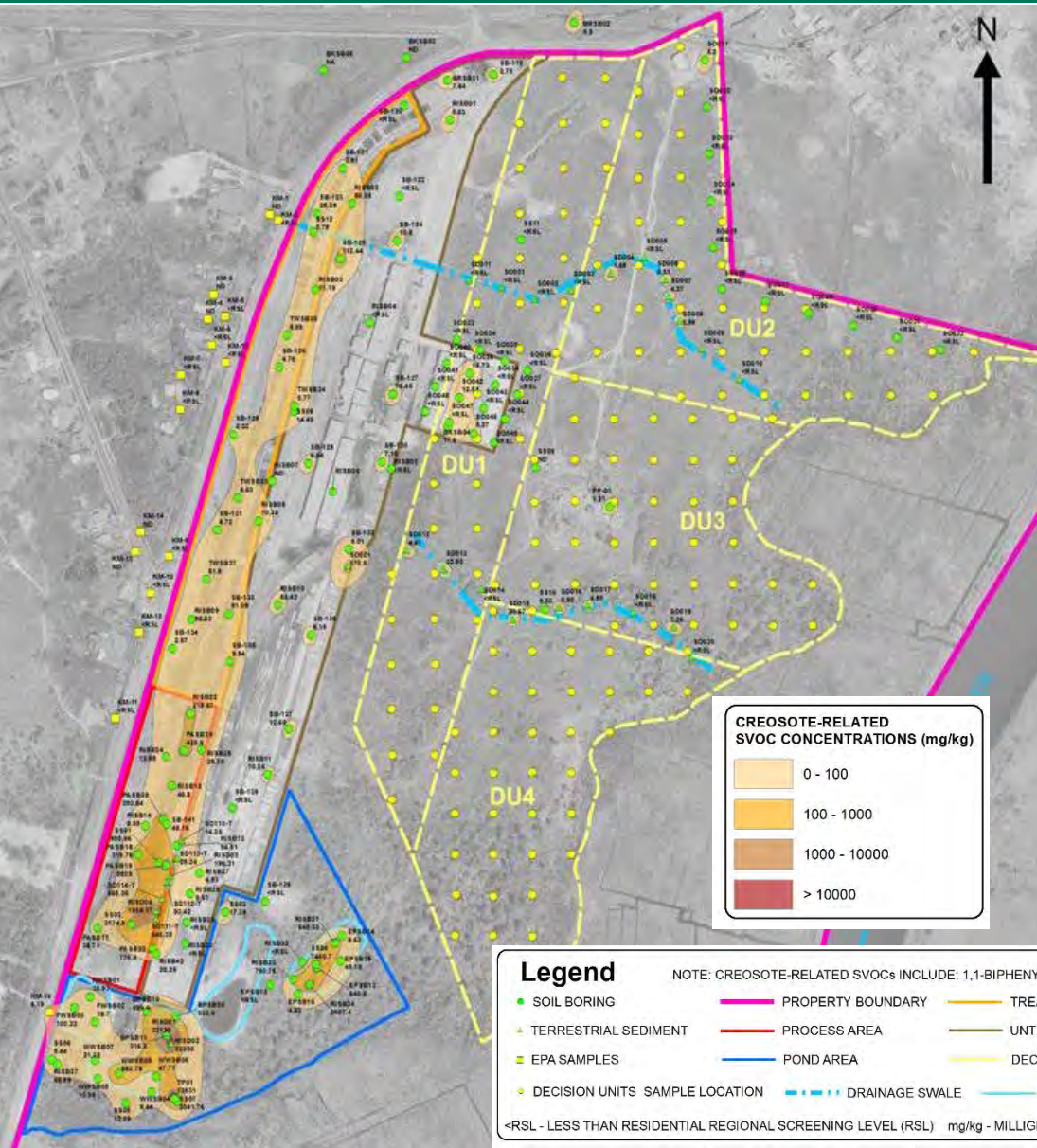
Unacceptable Risk

- ✓ HHRA calculates risk under future land use assumptions
 - What is future land use?
 - Who are future users?
 - What are exposure pathways?
 - Will future land use result in unacceptable risk?
- ✓ If we estimate there could be unacceptable risks, then an action may be required
- ✓ If land use changes, EPA and State can revisit the risk analysis and require an action if needed

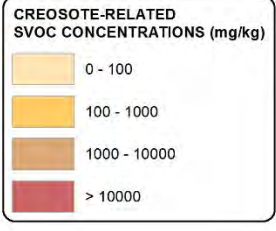
Evolution of Understanding of OU1

- ✓ Evolution of Understanding of OU1
 - HHRA
 - New information resulted in taking another look at data sufficiency
 - Propose to revise OU1 to reflect new data

Distribution of Creosote-Related SVOCs in Surface Soil



Where creosote chemicals are found above residential screening levels

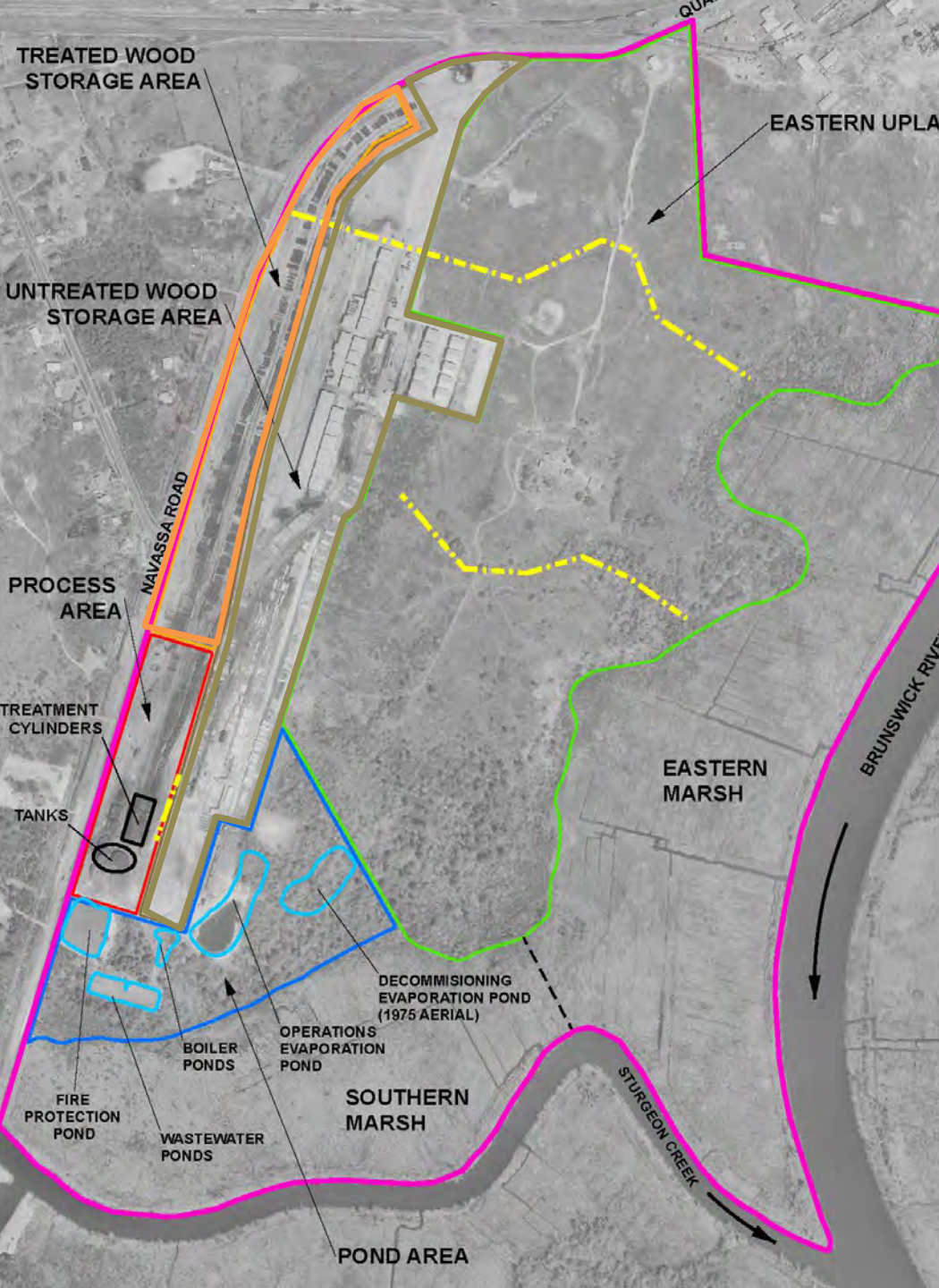


Legend NOTE: CREOSOTE-RELATED SVOCs INCLUDE: 1,1-BIPHENYL, CARBAZOLE, DIBENZOFURAN AND PAHS

- SOIL BORING
- PROPERTY BOUNDARY
- TREATED WOOD STORAGE AREA
- ▲ TERRESTRIAL SEDIMENT
- PROCESS AREA
- UNTREATED WOOD STORAGE AREA
- EPA SAMPLES
- POND AREA
- DECISION UNITS
- DECISION UNITS SAMPLE LOCATION
- - - DRAINAGE SWALE
- FORMER POND

<RSL - LESS THAN RESIDENTIAL REGIONAL SCREENING LEVEL (RSL) mg/kg - MILLIGRAMS PER KILOGRAM ND - NOT DETECTED



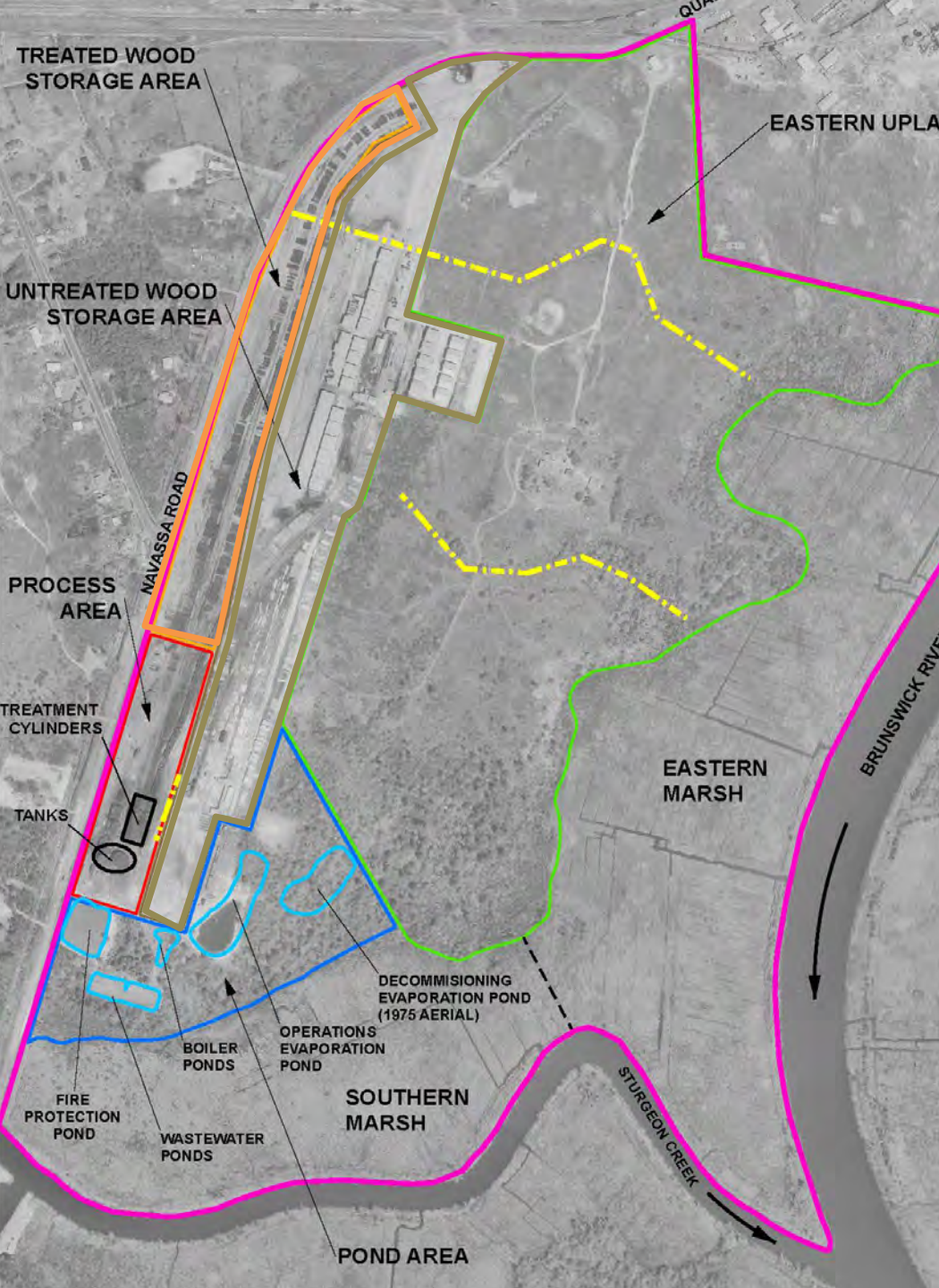


The HHRA uses exposure units to estimate risk to future users

- Based on future land use assumptions
- distribution of contaminants

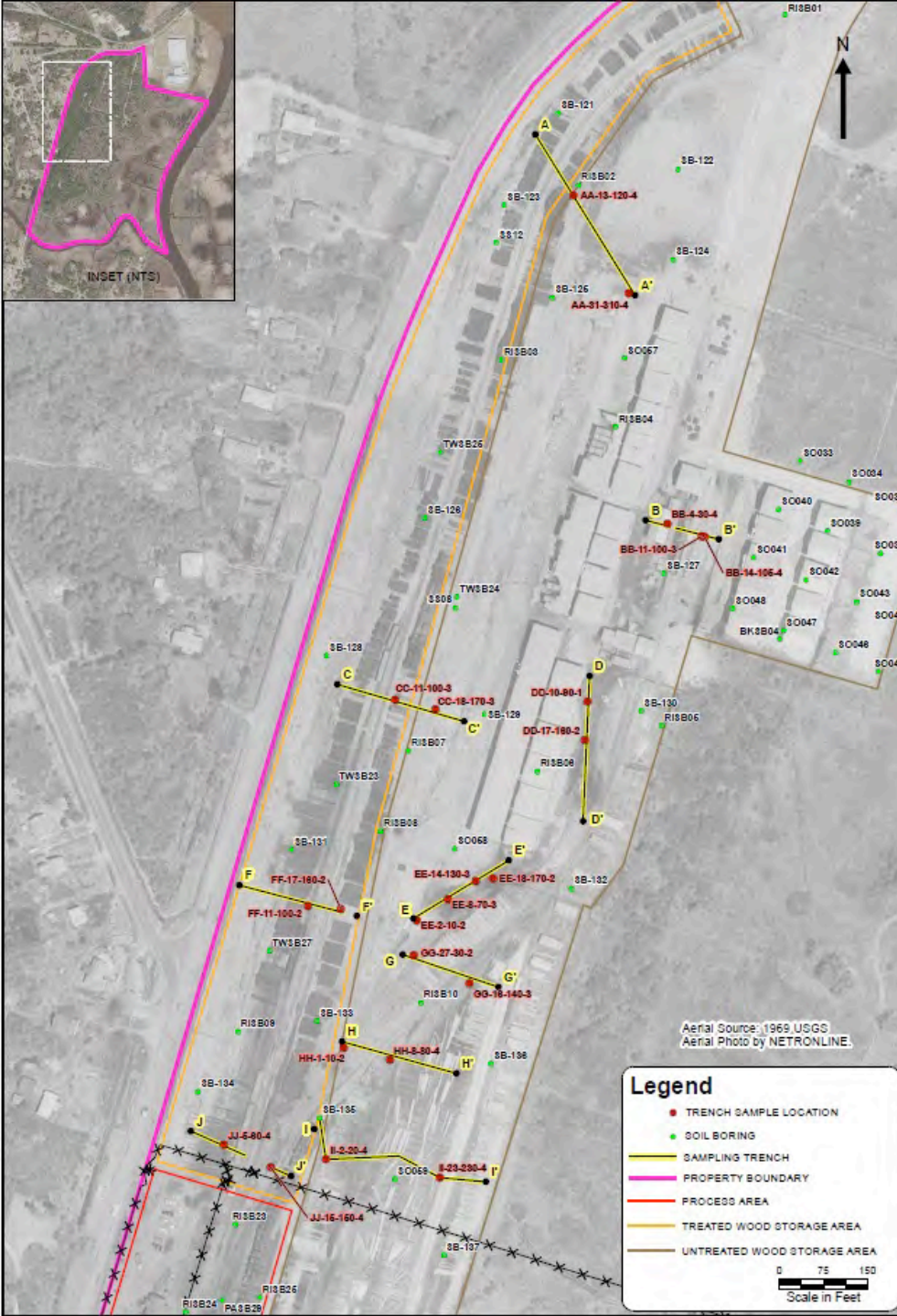
The HHRA uses operational areas as exposure units.

- Treated wood storage
- Untreated wood storage
- Process area
- Pond area



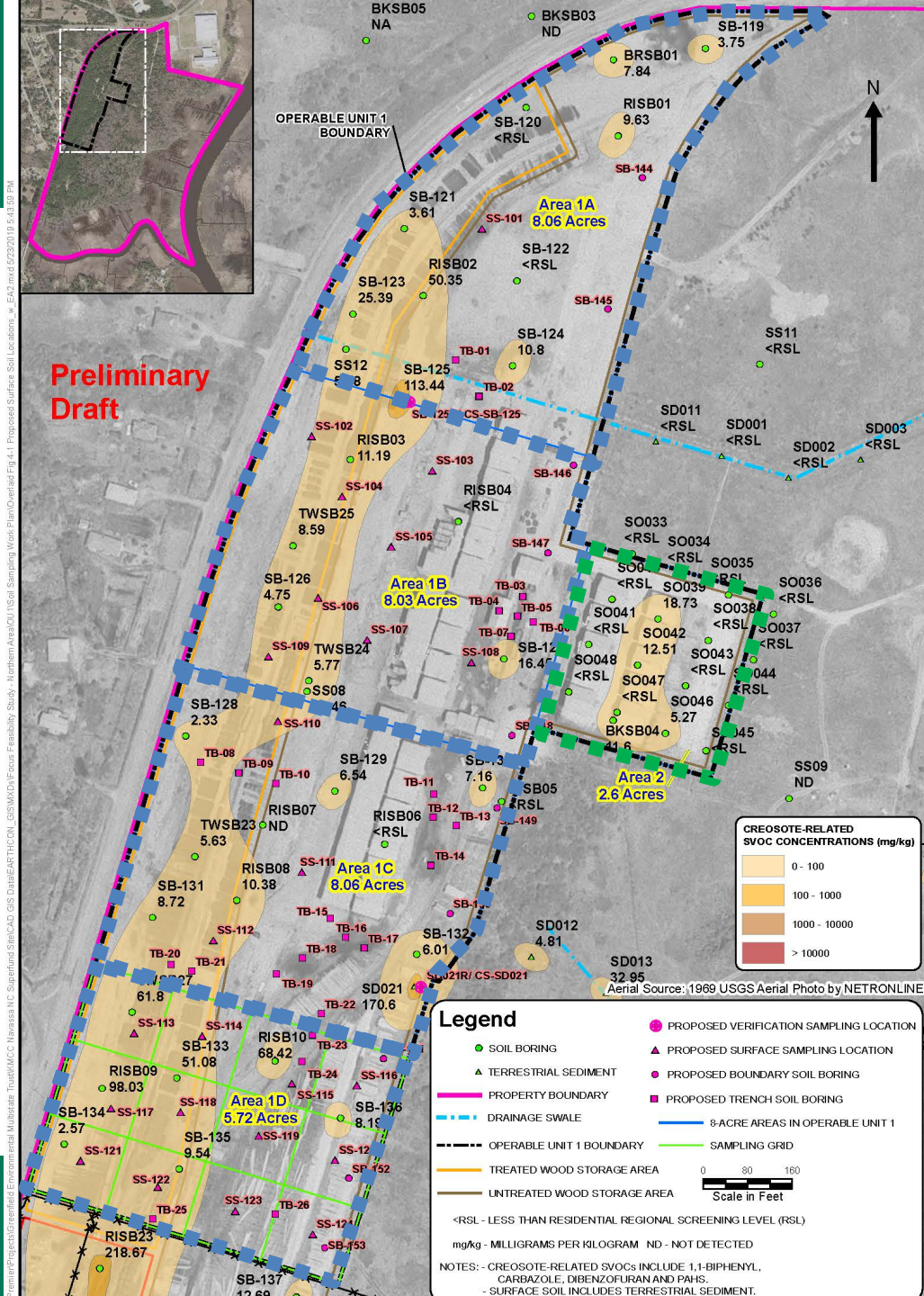
HHRA showed:

- No unacceptable risk in the treated and untreated wood storage areas.
 - Conducted a trench study to confirm results
- Unacceptable risk in pond and process areas.



2018 Trench Study

- Challenged the assumptions about the wood storage areas.
- Reorganized exposure units north to south
 - Consistent with redevelopment plans.
- Used a statistical analysis to assess need for more data.



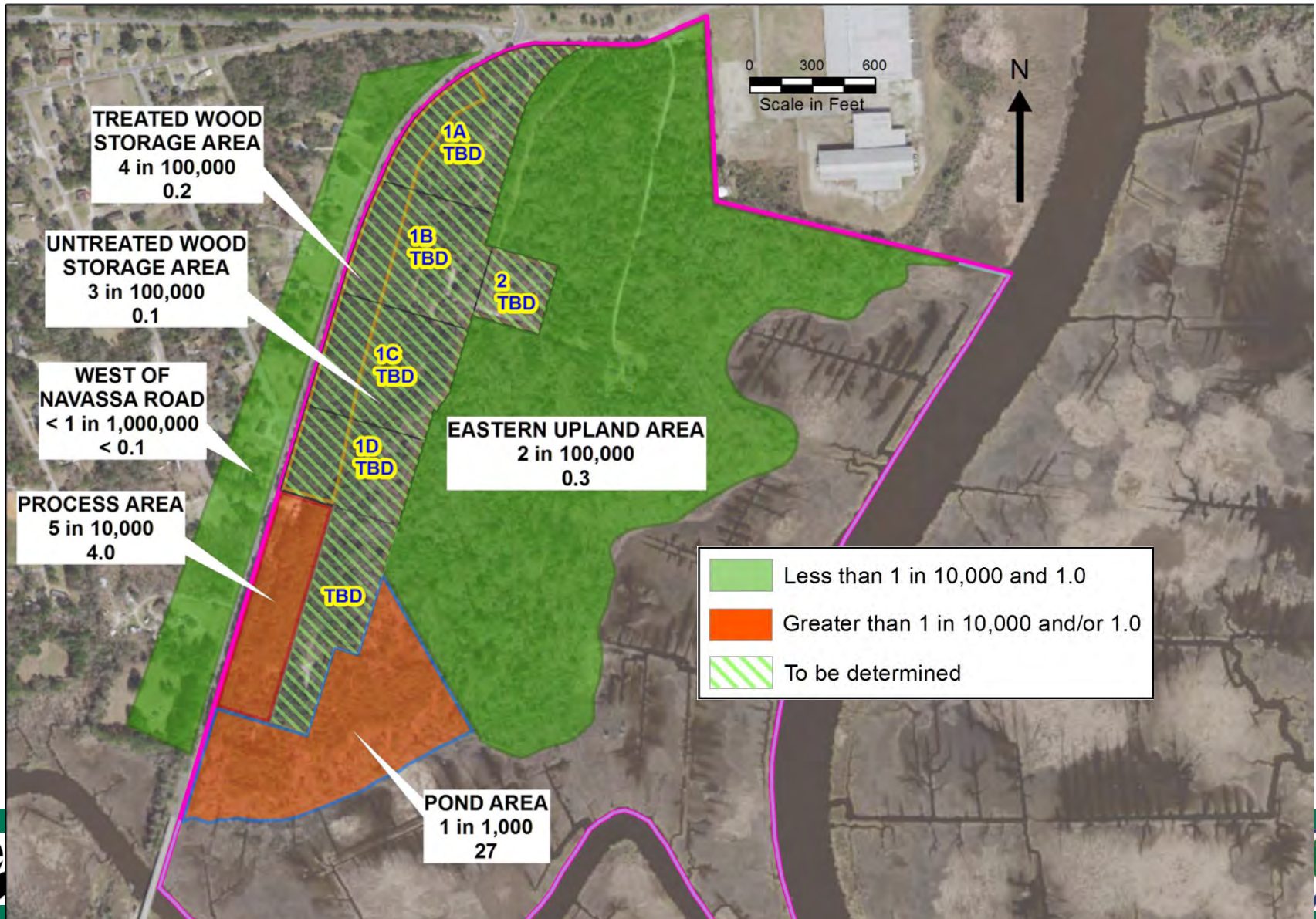
New exposure units proposed for the northern area in the June 2019 sampling plan.

Sampled to get better spatial information, analytical data from trench areas, and subsurface data.

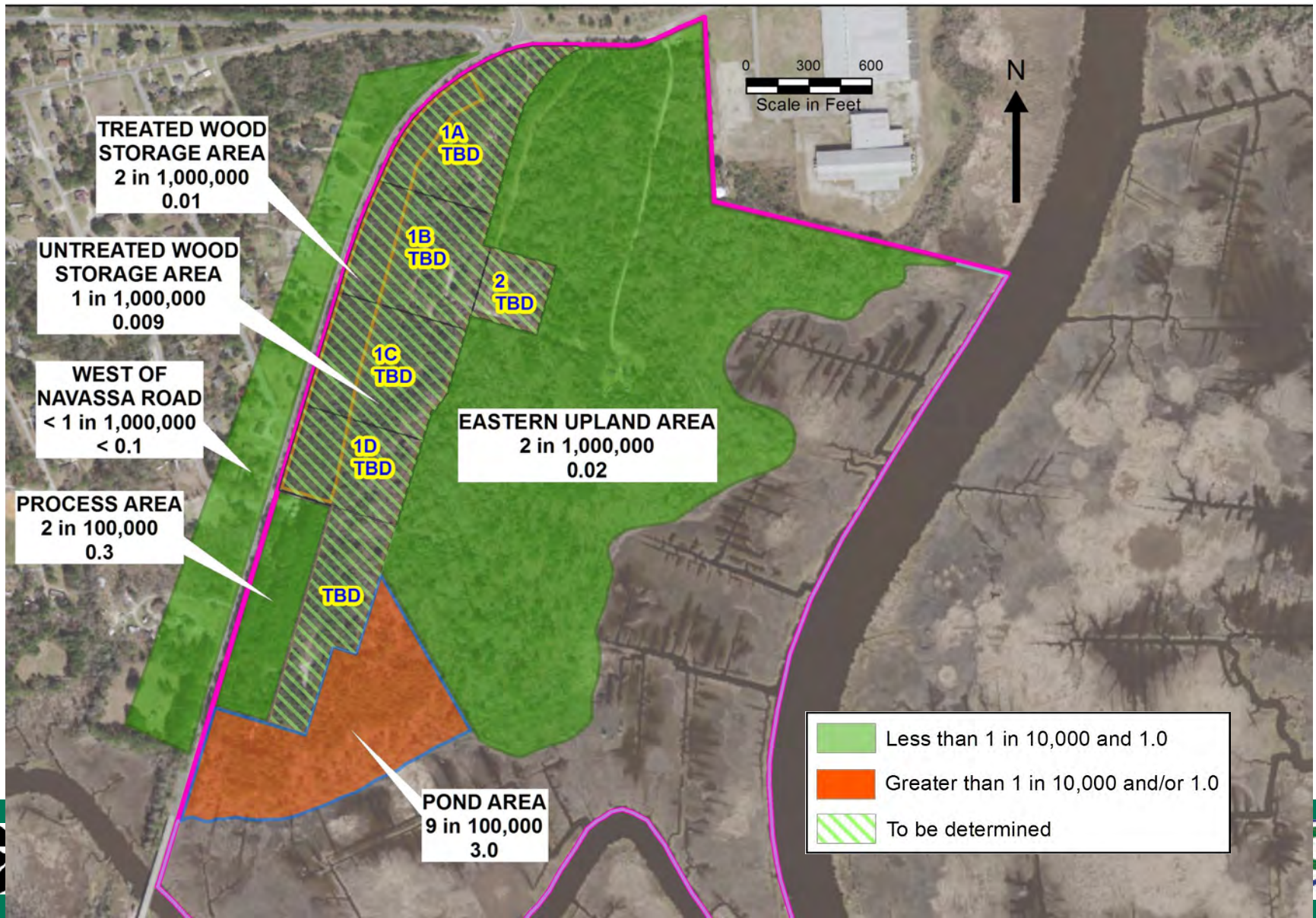
Areas that pose no unacceptable risk may be scope of a No-Action ROD.



Updated Risk Estimate Lifetime Resident



Updated Risk Estimate Commercial/Industrial Worker



Next Steps

- ✓ An HHRA addendum will be prepared based on June 2019 data.
- ✓ Areas that pose no unacceptable risk may be addressed in a No-Action ROD.
- ✓ Site will be divided into Operable Units in future RODs.
- ✓ Operable Units will be adjusted as needed
 - OU1 boundaries will be defined based on new data

Next Steps

- ✓ Possible outcomes for soils
 - No unacceptable risks -> No Action ROD
 - Unacceptable risks for potential residents (not the anticipated future users) - land use restrictions and/or monitoring of land use
 - Unacceptable risks to anticipated future users (commercial/industrial) -> Actions that may include physical excavation of soil, “Hot Spot” removal, etc.

Marketing Strategy and Plans

Richard Elliott, Multistate Trust



Property Marketing

Multistate Trust Vision and Goals for Site Reuse

- **Transform Site by pursuing uses that benefit Navassa community**
- **Redevelop Site consistent with community-endorsed themes and redevelopment concepts**
- **Achieve market-based value to help fund future remediation activities**
- **Sell and/or convey property to one or more third parties—private, non-profit and/or governmental owners**



Marketing Strategy

- ✓ **Create awareness of Site attributes through multipronged outreach to a broad spectrum of potential future users/owners—commercial, industrial and recreational**
- ✓ **Subject to EPA issuance of a Record of Decision (ROD),**
 - **Leverage marketing efforts of local, regional and state economic development entities**
 - **Seek to attract business(es) that provide goods and/or services that support community**
 - **Identify low impact industries to strengthen Navassa tax base and provide quality jobs for community**
- ✓ **Identify a long-term title holder for property to be dedicated to recreational, educational and cultural uses**
- ✓ **Work with Town of Navassa on development plans, including PUD, zoning and infrastructure consistent with the Town's long-term growth plans and goals**



Questions and Discussion



Contact Information

- ✓ Erik Spalvins, EPA Remedial Project Manager
 - (404) 562-8938, spalvins.erik@epa.gov
- ✓ Tonya Spencer, EPA Community Involvement Coordinator
 - (404) 562-8463, spencer.latonya@epa.gov
- ✓ David Mattison, NCDEQ Superfund Section Project Manager
 - (919) 707-8336, david.mattison@ncdenr.gov
- ✓ Cindy Brooks, Multistate Trust Managing Principal
 - (617) 448-9762, cb@g-etg.com
- ✓ Richard Elliott, Multistate Trust Project Manager
 - (617) 953-1154, re@g-etg.com

