Screening, Removal, and Restoration Procedures for Libby Amphibole Contaminated Properties in Libby, Montana

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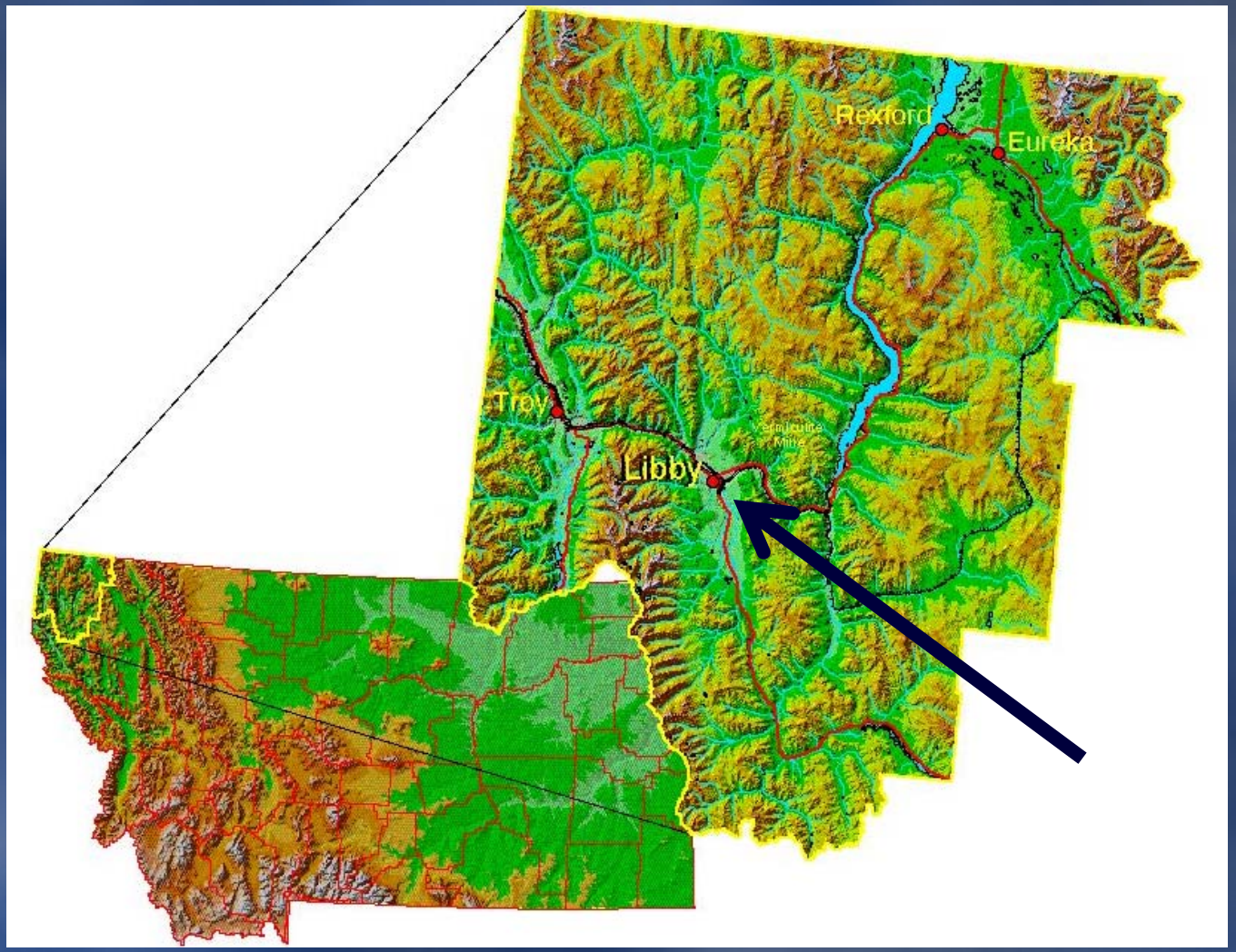
Overview

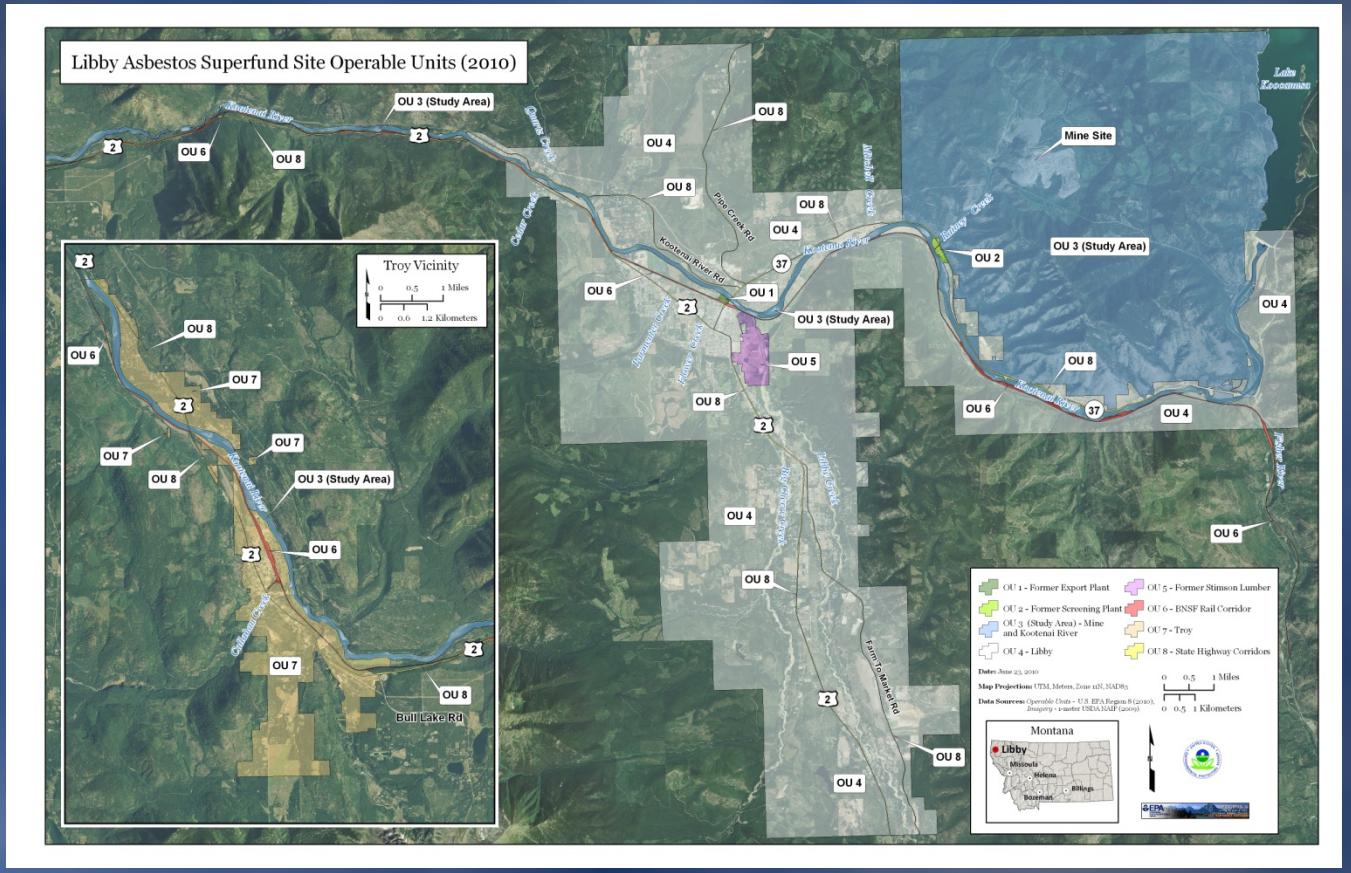
- Project Background
- Screening Procedures
- Removal Techniques
- Restoration Activities
- Conclusions

Project Background - Location

- Libby is located in northwest Montana (Lincoln County)



Project Operable Units



Project Background - History

- Over 75 years of vermiculite-mining activities
  - Estimated that the Mine supplied over 80% world's vermiculite
- Vermiculite was contaminated with virulent form of asbestos – Libby amphibole (LA)
- Vermiculite was widely used as
  - Building insulation
  - Soil amendment (garden, flowerbed, etc.)
  - Backfill material (utility lines, septic tanks)
  - Lightweight construction aggregate

Project Background - History

- 1999 – News of elevated deaths and incidents of asbestos-related diseases prompted EPA to dispatch an Emergency Response Team to Libby
- EPA was challenged with identifying source areas and screening individual properties and developing systematic removal actions

Screening Techniques

- Phase 1 Investigation
- Remedial Investigation
  - Contaminant Screening Study
- Screening Results

Phase 1 Investigation

Is immediate action required to protect public health?
What are the source areas and LA asbestos concentrations?

- **Initial Investigation**
  - **1999 through 2001**
  - **Focused on mining activity and vermiculite processing areas**
  - **Limited residential investigations**
  - **Problem more widespread than anticipated**

Contaminant Screening Study

Is contamination present at the property?

- **Listed on National Priorities List in 2002**
  - **180 mi^2 study area established around Libby**
- **EPA Required Rapid Investigation Process**
  - **Intensive property characterization program**
  - **Door to door visits by neighborhood**
  - **Environmental data and resident interviews**
- **Areas Inspected:**
  - **Interior structures – insulation/building materials**
  - **Exteriors – high-traffic areas and special use areas**

Screening Results

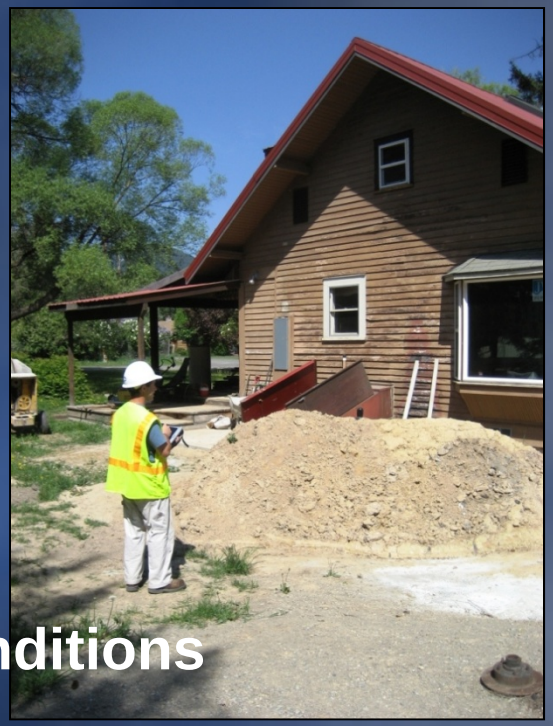
- **Approximately 4,000 Properties Investigated**
  - ***EPA's largest single season residential investigation program in history***
  - **Approximately 1,700 required action**
    - **based on EPA's site-specific cleanup levels**
  - **Not all properties screened**
    - **refusals, out-of-town, incomplete parcel data**
- **Screening Is Still Ongoing**

Work Plan Design

Where is the contamination?

- Design Field Investigation
  - Supplement previously collected data
  - Determine extent of contamination
  - Detailed field reconnaissance
- Draft Work Plan
  - Calculate volume of material to be removed
    - Attic insulation and soil volume
  - Utilize construction plans and specs to develop work plan

Work Plan Design



- Field Review of Draft Work Plan
  - Revisit subject property
  - Identification of any changed conditions
  - Solicit homeowner input
- Finalize Work Plan and Restoration Plan
  - Incorporate homeowner's input
  - Develop site-wide general notes for all designs
  - Ready for contract

Removal Process

Control of ACM is of paramount importance!

- **Pre-Removal Activities**
  - **Relocate residents during removal activities**
  - **Tailgate planning and safety meeting**
    - **Discuss site setup and load out plan**
    - **Address health and safety concerns**
  - **Documentation of pre-existing conditions**
    - **Digital photograph and checklists/logbooks**

Control of Material

- Engineering and Administrative Controls
  - Decontamination trailers
  - Interior - Negative air and plastic enclosures
  - Exterior - Exclusion zones
  - Wet down material (interior and exterior)
  - Single handling of material

Controls:
Decon Trailers

3-stage process

Setup considerations

Water supply and capture

Controls: Interior

Minimize particulate generation

Negative pressure enclosure

HEPA filtered exhaust air

Controls: Wet Material

Exterior and Interior

Pre-wetting of material

Too much water results in muddy/slurry conditions

Controls: Single Handle

Live load material: excavator and vacuum

“Moving” truck loading pad: gravel roads/poly sheeting

Covered trucks and blue boxes

Interior Work

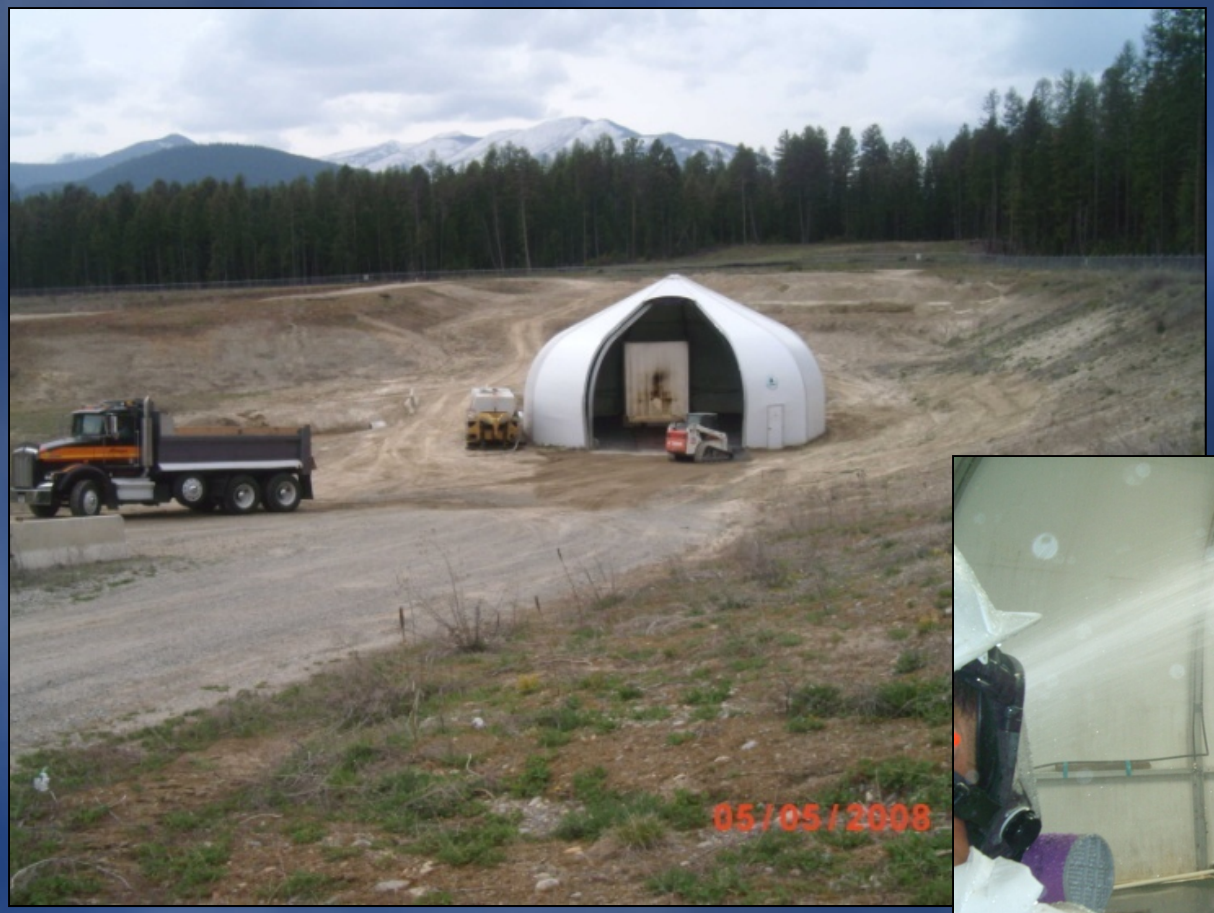
Interior Work

Exterior Work

Waste Disposal

- Lincoln County Asbestos Landfill
  - Contaminated building debris
  - Vermiculite insulation
- Former Vermiculite Mine
  - Contaminated soil

Waste Disposal – Landfill Operations



Tent enclosure to control dust

Water spray during dumping

Waste Disposal – Mine Operations

Haul trucks stay on pavement to transfer area

Dedicated trucks haul to top of mine

Air Monitoring Program

- Personal Air Monitoring
  - OSHA 1926.1101 App B
- Perimeter Air Monitoring
- Clearance Sampling
- Equipment Monitoring
  - Containment exhaust
  - Decontamination trailers

Restoration Activities

- Backfill
- Landscaping
- Re-insulation
- Repair damaged items

How protective is the Remedy?

- Activity Based Sampling (ABS)
- Ambient Air Sampling
- ERS
- O&M

Conclusions

- **Successful Process Attributed to:**
  - **Effective screening and design investigation process**
  - **Soliciting homeowner input on work plans**
  - **Employing standardized construction specs across all properties**
  - **Controlling material during removal activities**
  - **Detailed restoration plans**

Thank You!

- Questions?
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