

# LOCKFORMER ELECTRIC RESISTIVE HEATING CASE STUDY

U.S. EPA Emergency Response Branch  
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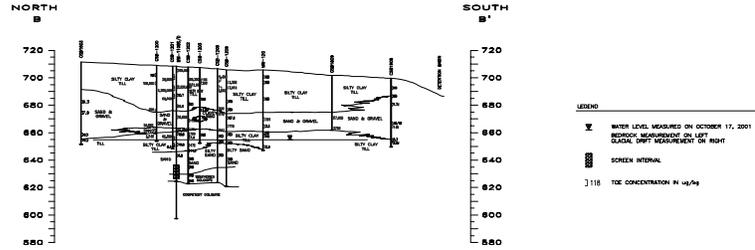
## Lockformer ERH Case Study

- Work Plan was submitted under a Unilateral Administrative Order issued by U.S. EPA
- The Work Plan proposed ERH treatment of the upper clay till/fill which is contaminated with TCE
- Soil Vapor Extraction has been proposed for the underlying sand and gravel zone

## Lockformer Case Study

- Removal Action conducted under CERCLA Section 106 Order
- Site contaminants include TCE and breakdown products
- Historical Spills of TCE with high levels of soil contamination (range 1 ppm – 2,000 ppm of TCE)

# Lockformer Geological Cross Section



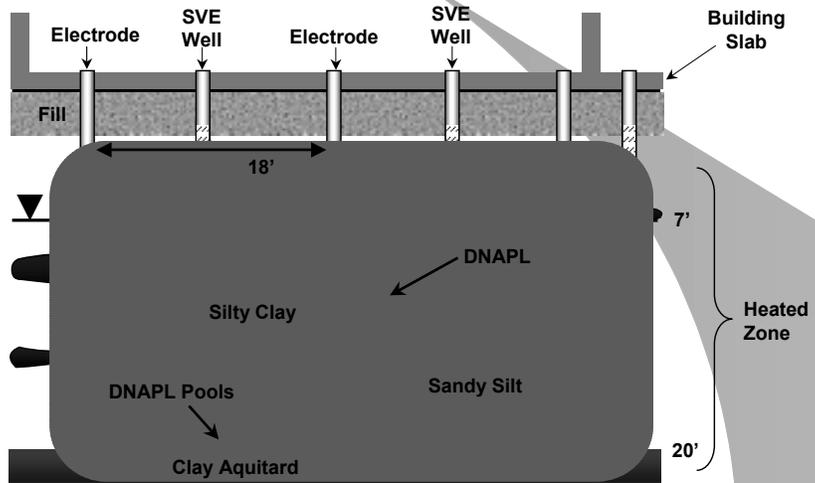
HORIZONTAL SCALE IN FEET  
0 20 40 60

VERTICAL EXAGGERATION = 2X

CHECK BY	CROSS SECTIONS B - B'
DRAWN BY	THE LOCKFORMER COMPANY
DATE	711 W. OGDEN AVENUE
SCALE	LESLIE, ILLINOIS
DWG NO.	030310B
PLG. NO.	030310B



# Full-Scale DNAPL Cleanup Subsurface Cross-Section



# Lockformer Site Plan





# Surface Equipment

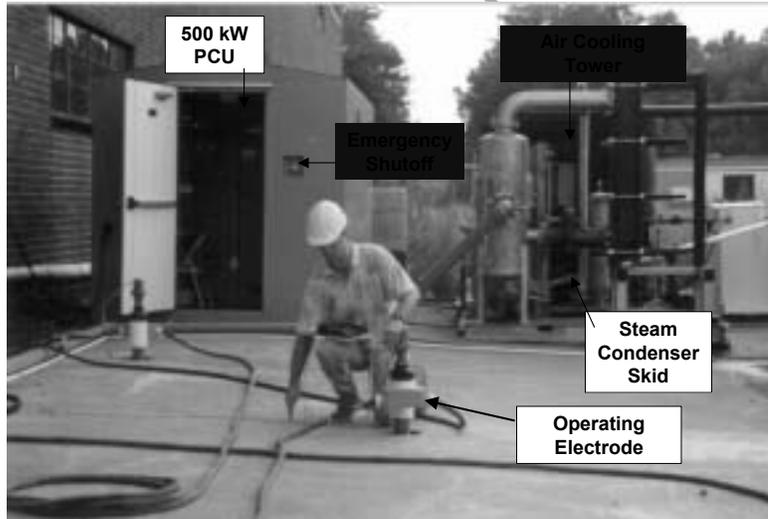


Photo  
Courtesy of  
Brown and  
Caldwell

## ERH Remediation Beneath a Building

Limited  
overhead  
access

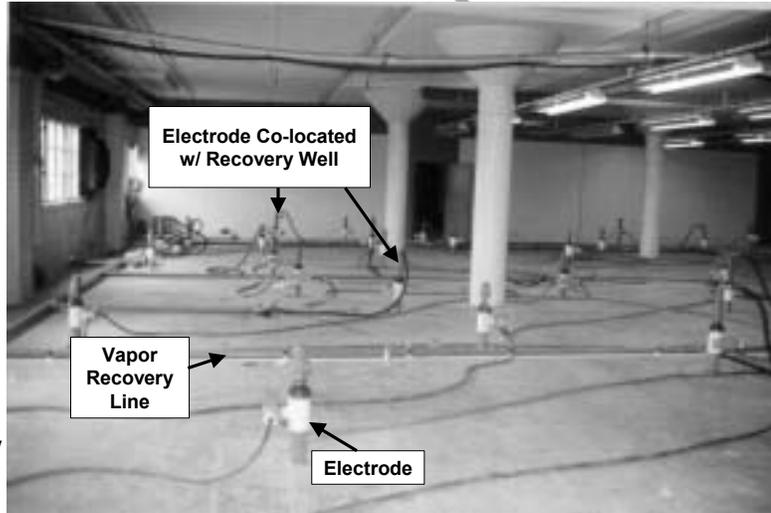
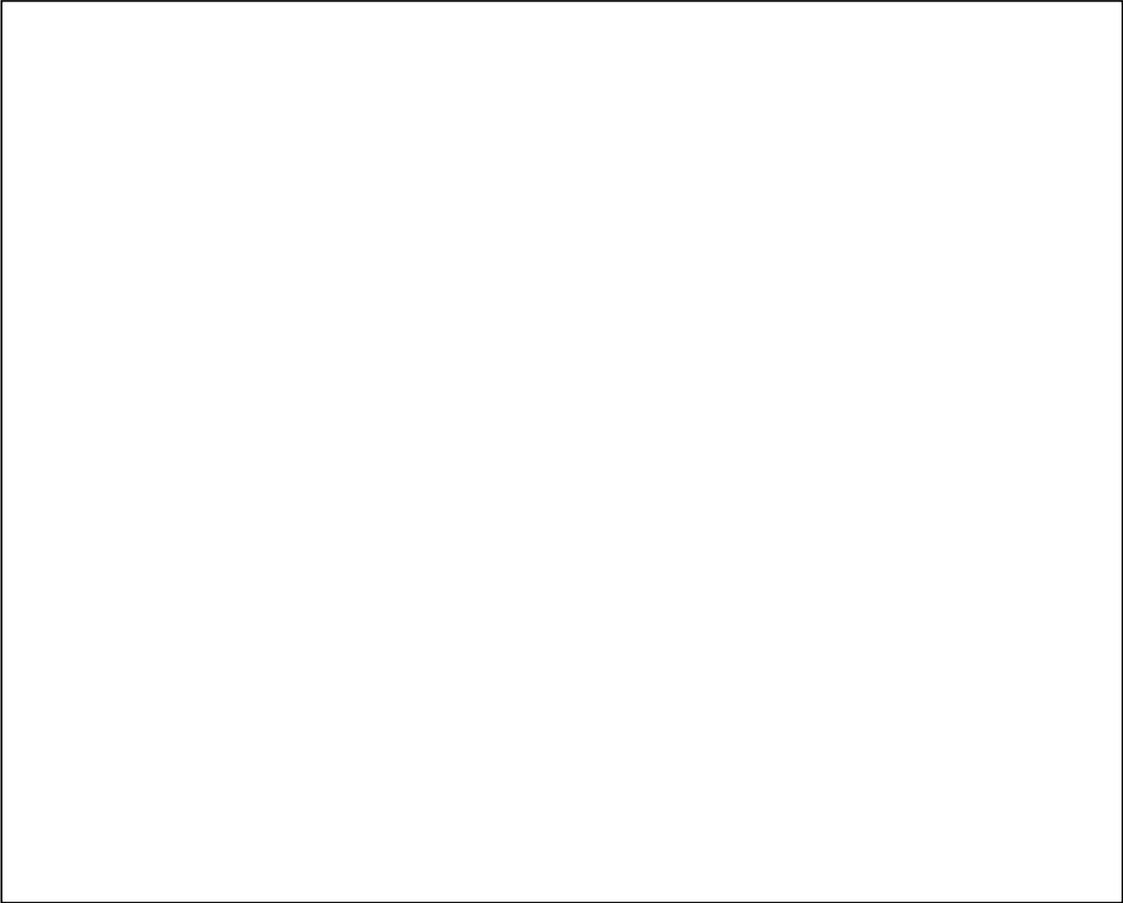
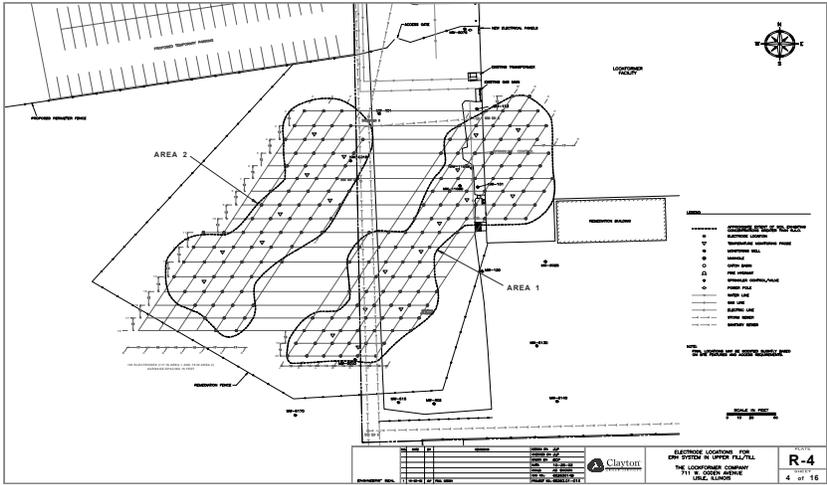


Photo Courtesy  
of Brown and  
Caldwell

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# Lockformer ERH Area







# Regulatory Requirements

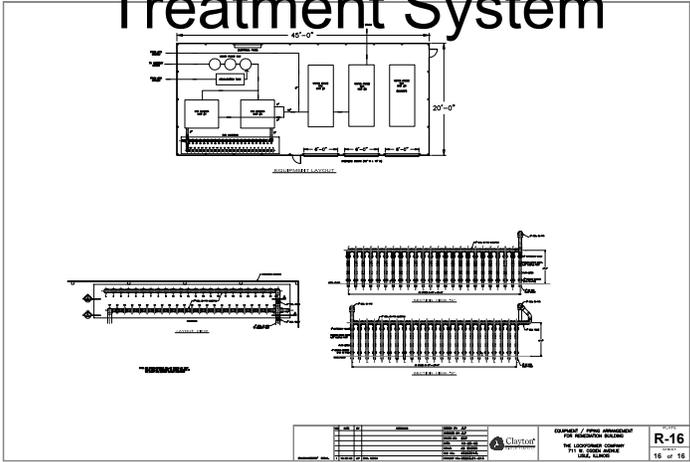
- Clean-up objectives for TCE in the upper till were set at 8.9 ppm (IEPA TACO Industrial Worker Inhalation Standard).
- Installation of plenum with vapor recovery system.
- Installation of temperature monitoring points
- Operation of the ERH in conjunction with the SVE system to eliminate vapor migration vertically or horizontally

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## Regulatory Requirements

- Vapor recovery and Granular Activated Carbon Treatment of the vapor phase and collected water.
- Continuous Air Monitoring of stack emissions and site work zone and perimeter monitoring is required due to the close proximity of residences.

# ERH and SVE Vapor Treatment System



## Conclusions

- The use of ERH in conjunction with SVE to treat TCE contaminated soil in-situ has been approved in the Lockformer Work Plan and construction of the plenum and electrodes has initiated. Planned start-up of the system is projected in February-March of 2003.
- The design and construction of temperature and vapor monitoring probes was required to evaluate movement of the vapor phase
- Air monitoring of stack emissions, site work zones and perimeter was instituted due to proximity of residences.

## Conclusions (cont.)

- Previous case studies from AT&T Skokie Works Site and the Avery Dennison in Waukegan were submitted to U.S. EPA to demonstrate that the ERH technology is capable of treating soil with low permeability below the soil objectives chosen for this site (8.9 ppm TCE)