

Brassworks Digs Into NC DOT Budget



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Charlotte Gateway Station and Track & Safety Improvements

- NC DOT, the City of Charlotte, and others are developing the Charlotte Gateway Station (CGS) project.
- Phase I of the CGS project is underway.
- 2000 feet of rail, rail signals, five new railroad bridges, and a passenger platform.

The Project Cont'd

NC DOT Rendering of CGS Project (Phase I)



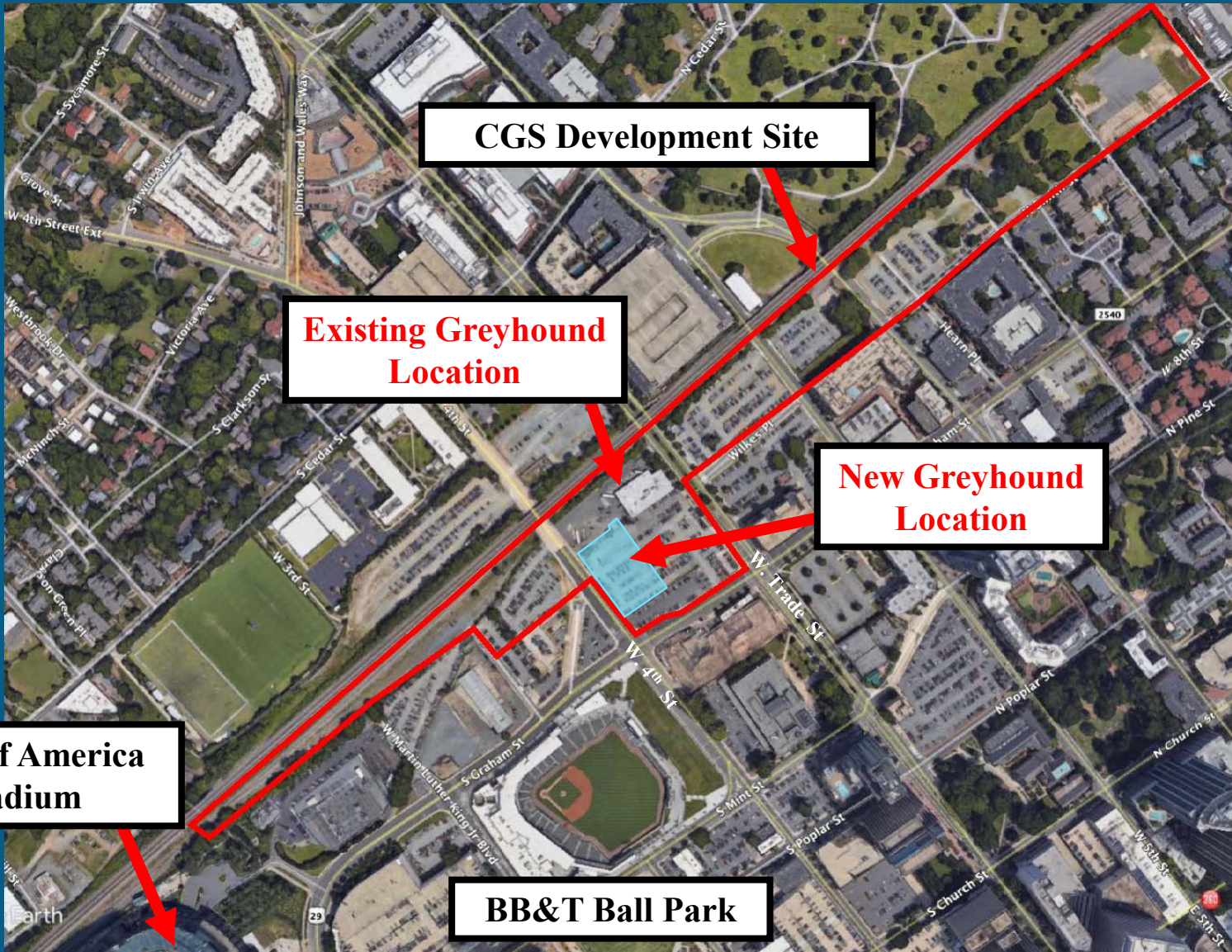
The Project Cont'd

- Phase I includes relocation of the Greyhound Bus Station between 4th Street and Trade Street.

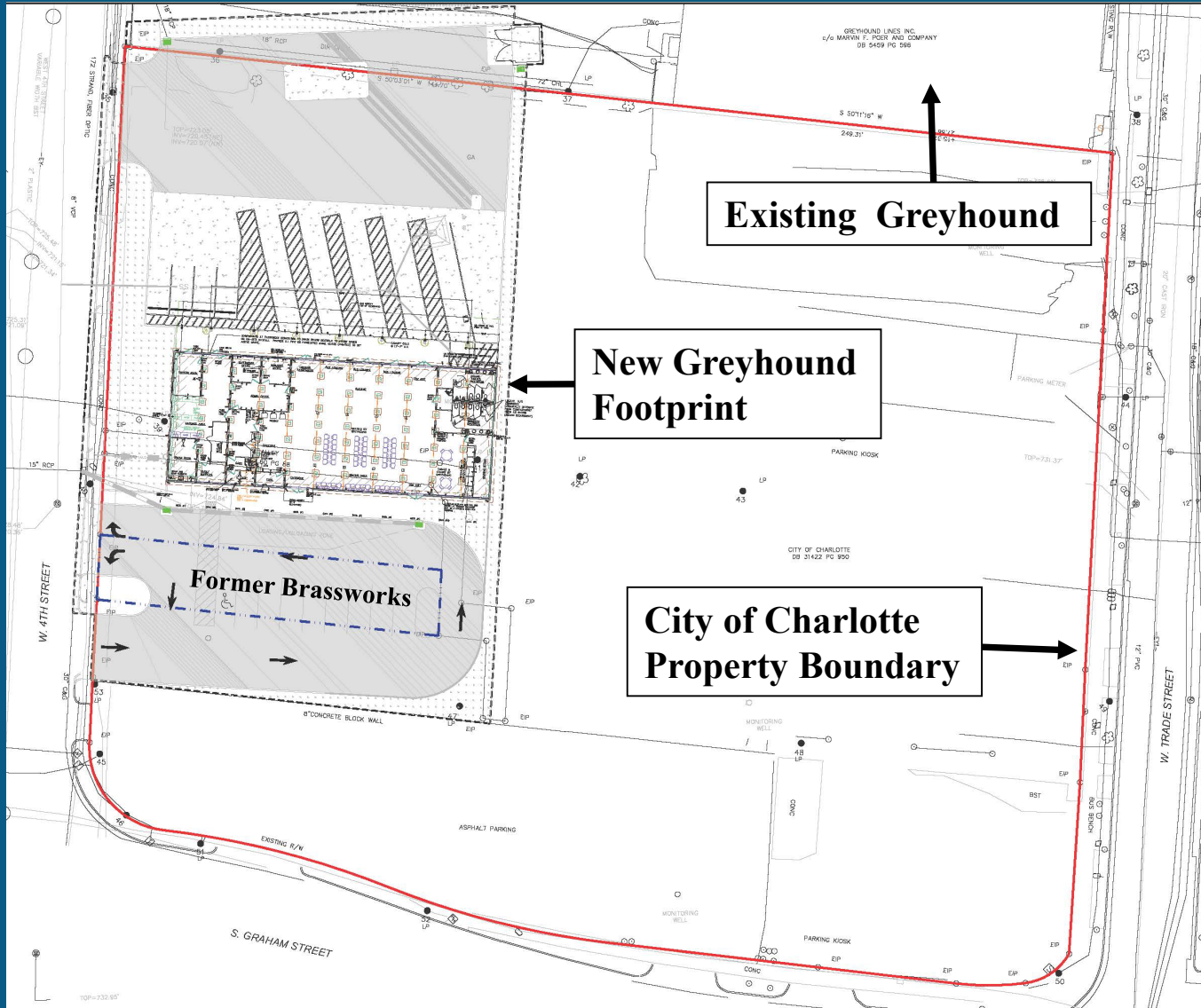


- Greyhound site was a former brassworks facility.
- Metals, petroleum, and PAHs in shallow soil.

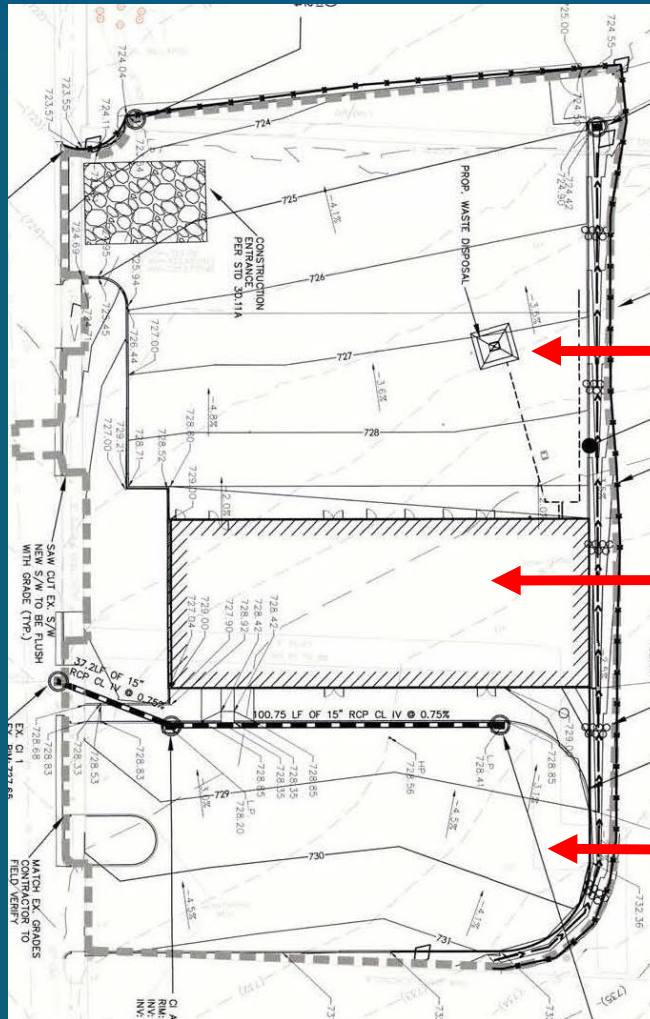
Project Location - Charlotte, NC



New Greyhound Facility Location



Proposed Cut at Greyhound Facility



Up to ~ 3 ft cut

Up to ~ 8 ft cut

Up to ~ 5 ft cut

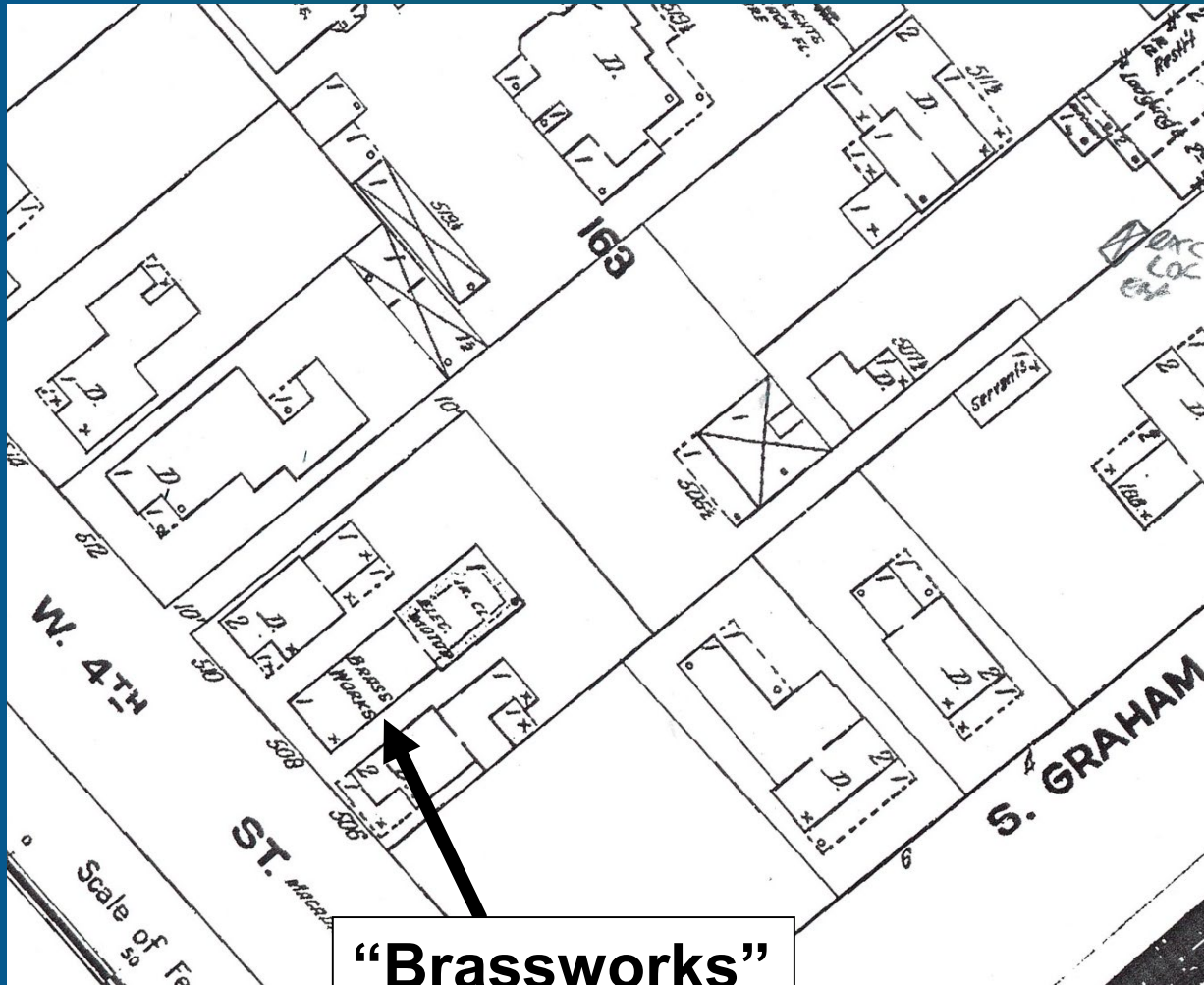
- Includes parking areas, utility trenches, and crawlspace for building

The Site – Former Brassworks

- Formerly a printing shop and a brassworks facility (circa 1911)
- Vacant parking lot prior to Greyhound construction



1911 Sanborn Map - Former Brassworks



“Brassworks”

Brass often contains lead as an alloy at 2 to 8 %



Assessment For Greyhound Facility

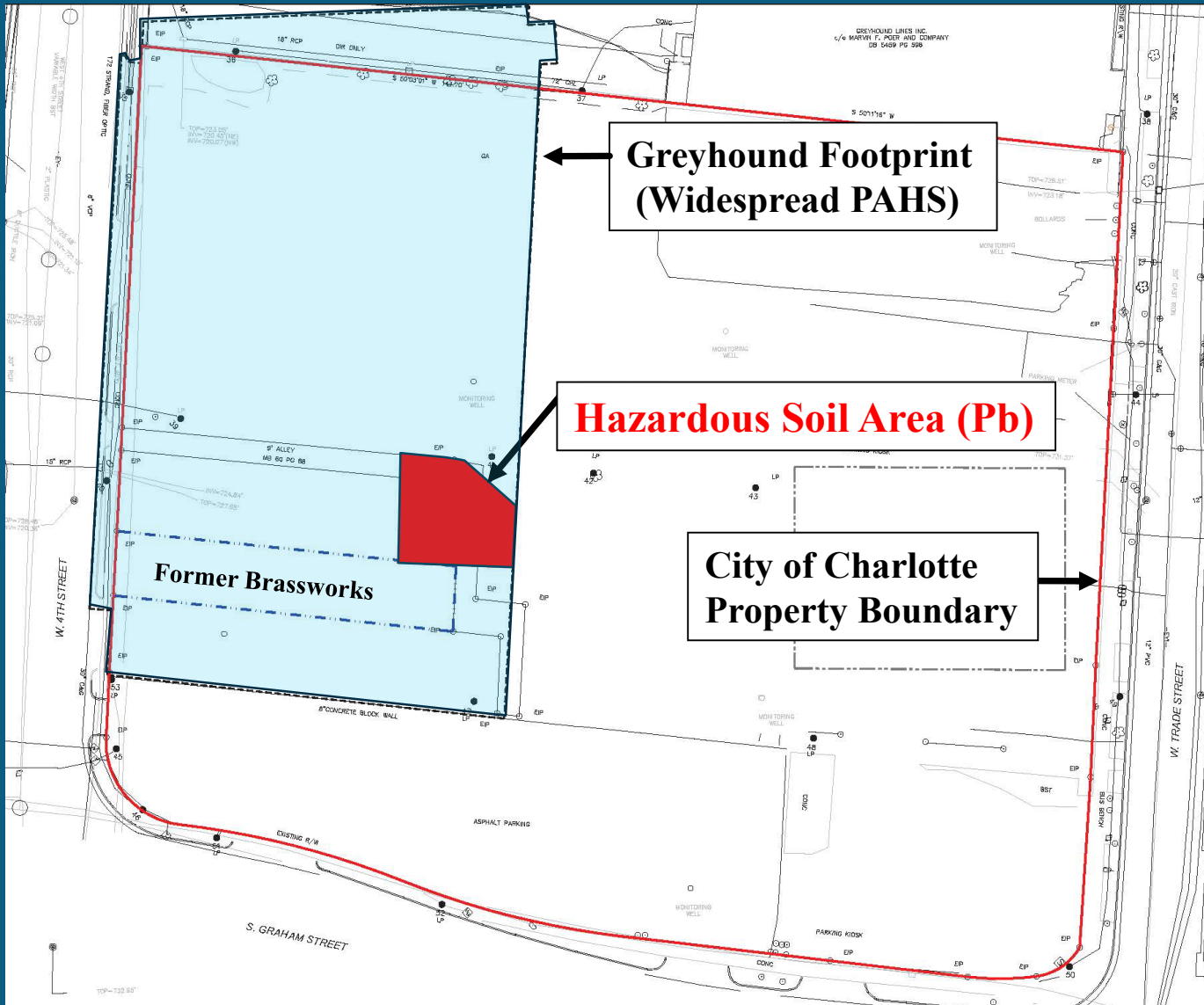
Maximum Concentrations in Soil (and target level)

- Total Lead – up to 8,100 mg/kg (800 mg/kg)
- TCLP Lead - 85 mg/L (5 mg/L)
- PAHs (Above IHSB PSRGs)

Greyhound Footprint

- Widespread PAHs in soil
- Localized Hazardous TCLP Lead in soil

Widespread Soil Impacts



**Greyhound Footprint
(Widespread PAHS)**

Hazardous Soil Area (Pb)

**City of Charlotte
Property Boundary**

Former Brassworks

Soil Management Constraints



1. **Time.** Construction was set to begin ASAP.
2. **Budget.** Estimated cost to manage non-hazardous and hazardous impacted soil is over 700K.
3. **Space limitations** for managing impacted soil.
4. **Coordinating work** with construction contractor.

Soil Management Options

Non-Hazardous Soil - Estimated 5,500 tons

- Stockpile, Load, and Transport to Subtitle D Landfill

Hazardous Soil - Estimated 590 tons

- Load and Transport to Subtitle C Landfill
- On-Site Soil Treatment and Disposal at a Subtitle D Landfill

Soil Management Solutions

1. **Coordinate Temporary Non-Hazardous Soil Stockpiling on City of Charlotte Property and Disposal in a Subtitle D Landfill**
2. **Coordinate Temporary Stockpiling and Treatment of Hazardous Soil on City of Charlotte Property**
3. **Obtain NC DEQ Approval to Excavate and Conduct On-Site Hazardous Soil Treatment**
4. **Dispose of Treated Hazardous Soil in a Subtitle D Landfill.**



Hazardous Lead Impacted Soil Management

Treatability Study

- **Two Soil Treatment Compound Vendors**
- **Determine Pre-Treatment Dosage and Cost Comparison**
- **Soil Needs to be Treated to < 5.0 mg/L for TCLP Lead**

Treatability Study Results

Dosage (% Soil wt)

TCLP Lead Result

Vendor #1

2%

<0.005 mg/L

5%

0.060 mg/L

Recommended Dose = 3% (% Soil wt)

Vendor #2

2%

0.33 mg/L

3%

<0.067 mg/L

4%

<0.067 mg/L

Recommended Dose = 3% (% Soil wt)

Cost for Treatment Compound

Vendor #1

\$569 per ton X 3% Dosage rate (18 tons) = \$10,242

Vendor #2

\$649 per ton X 3% Dosage rate (18 tons) = \$11,682



Small Cost Savings = \$1,440

Hazardous Soil Treatment

- Soil Treated On-Site to Non-Hazardous Levels Using Free Flow 100 (proprietary blend)
- Work Plan Approved by NC DEQ Hazardous Waste Section



Hazardous Soil Treatment

- **Post-Treatment Composite Soil Sampling**
 - Max TCLP Lead Before = 85 mg/L
 - Max TCLP Lead After = 1.1 mg/L
 - One TCLP sample failed (6.9 mg/L), Remixed (0.47 mg/L)
- **Treated Non-Hazardous Soil Transported to Waste Management's Subtitle D Landfill in Randleman, NC**



Hazardous Soil Management Cost Savings

- On-site Hazardous Soil Treatment and Disposal in a Subtitle D Landfill instead of a Subtitle C Landfill
 - Approximately \$190,000



More Costs Averted Question Lab Results

Based on the 20:1 rule some of the TCLP results were not possible!

	<u>Total Lead</u>	<u>TCLP Haz. Lead</u>	<u>Corrected TCLP</u>
7B-32A (2 - 4 ft)	70 mg/kg	12 mg/L	BRL
7B-36 (0 - 2 ft)	1,000 mg/kg	190 mg/L	0.19
7B-37 (0 - 2 ft)	65 mg/kg	13 mg/L	BRL
7B-38 (0 - 2 ft)	38 mg/kg	7.9 mg/L	BRL

TCLP results were not calculated properly by laboratory.

Quantity of Hazardous Soil w/ Lab Error = 1,450 tons

Quantity of Hazardous Soil w/ Corrected Lab Error = 590 tons

<u>Soil Management Options</u>	<u>1,450 Tons</u>	<u>590 Tons</u>
Treatment and Subtitle D Disposal	\$225,000	\$90,000
T&D (Subtitle C)	\$690,000	\$280,000

Note:

Subtitle D Landfill = Waste Management (Randleman, NC)

Subtitle C Landfill = Waste Management (Emelle, AL)

Potential Extra Costs for NC DOT (with Lab Error)

Soil Treatment and Disposal*	\$135,000
Soil T&D (Emelle AL.)	\$410,000

* Property not large enough to treat 1,450 tons on-site.

Overall Cost Savings for NC DOT for Hazardous Soil Management

Treatability Study **\$1,440 (small)**

**On-Site Soil Treatment
and Non-Haz Disposal** **\$190,000 (large)**

Lab Error **up to \$410,000
(extra Large)**

Total = up to \$601,440

Summary

- **Greyhound relocation on major DOT rail project on heavily impacted site**
- **Former brassworks (hazardous lead impacted soil)**
- **NC DEQ approval to treat hazardous soil on site**
- **Non-haz impacted soil stockpile/direct to landfill**
- **Treat hazardous soil to non-haz levels for Subtitle D landfill disposal**
- **Significant cost savings (up to ~\$600,000)**

Questions?