

Case Study: Alfieri Site Site Characterization to Risk Management Decisions

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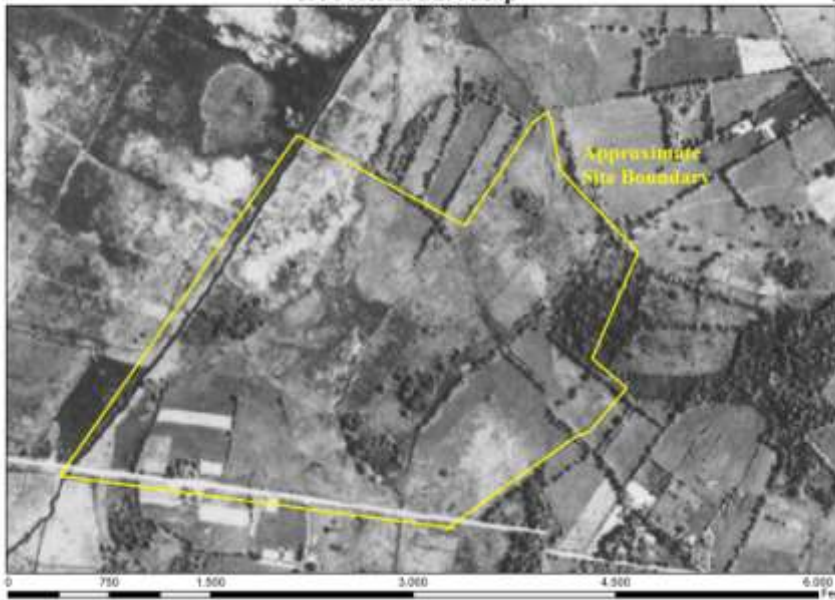
Alfieri Site: Site Characterization

- ◆ Two Historic Trap and Skeet Ranges
- ◆ Pb Levels in Excess of 100,000 ppm
 - Only One Intact Pellet Found Over Entire Site
- ◆ Majority of Contaminated Soil in Top Six Inches
- ◆ Groundwater Impact Minimal
- ◆ Channelized Streams Impacted
 - Toxicity Testing Showed 25% Mortality



Alfieri Site, Florham Park, New Jersey

1930 Aerial Base Map



Alfieri Site, Florham Park, New Jersey

2010 Aerial Photograph Base Map



Alfieri Site: Ecological Assessment

- ◆ 99 Acre Site
- ◆ Over Half of the Site Consists of Wetlands including Mature Forested Wetland
 - 15 Vernal Pools
 - 92 Species of Birds
 - 9 Species of Reptiles and Amphibians
 - 11 Species of Fish
 - 8 Species of Mammals
 - 121 Species of Plants
- ◆ Three Streams On-Site (Channelized)







Alfieri Site: Ecological Risk Assessment

- ◆ Collected Earthworms from Contaminated Soils
 - 7.71 mg/Kg - 5,898 mg/Kg
- ◆ Calculated BAFs Based on Soil Concentration and Earthworm Concentration
- ◆ Calculated 'Safe Soil Level' of 300 ppm Based on NOAELs for Higher Trophic Levels
- ◆ Would have to Clear Cut Majority of Mature Forested Wetland Area

Alfieri Site: Risk Management Decision

- ◆ Percent Reduction in Total Pb Mass vs. Acre of Mature Forested Wetland Removed
 - What is Overall Reduction in Ecological Risk
 - Value of Mature Forested Wetland
 - Preserve Vernal Pools (None in 'Hot Zone,' but Eight with Elevated Pb Levels)
- ◆ Human Health Considerations (i.e. Deed Notice and Engineering Controls)

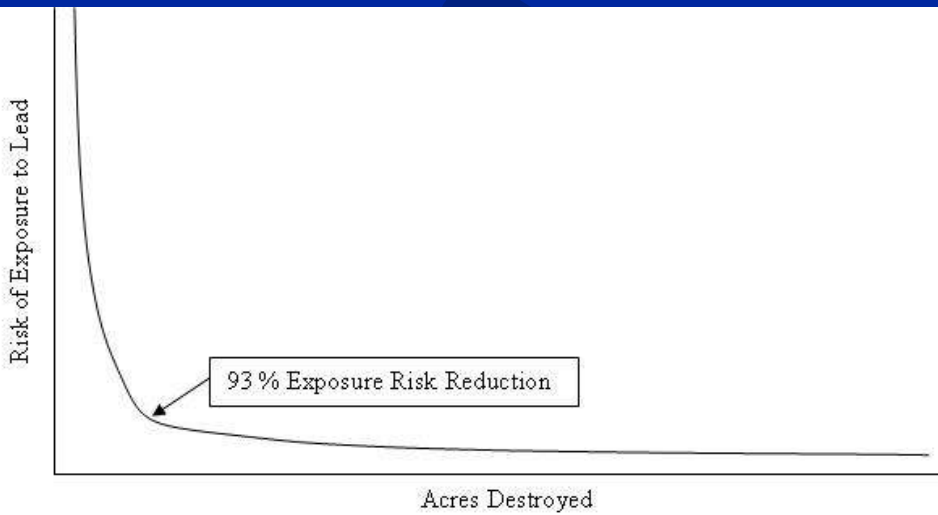
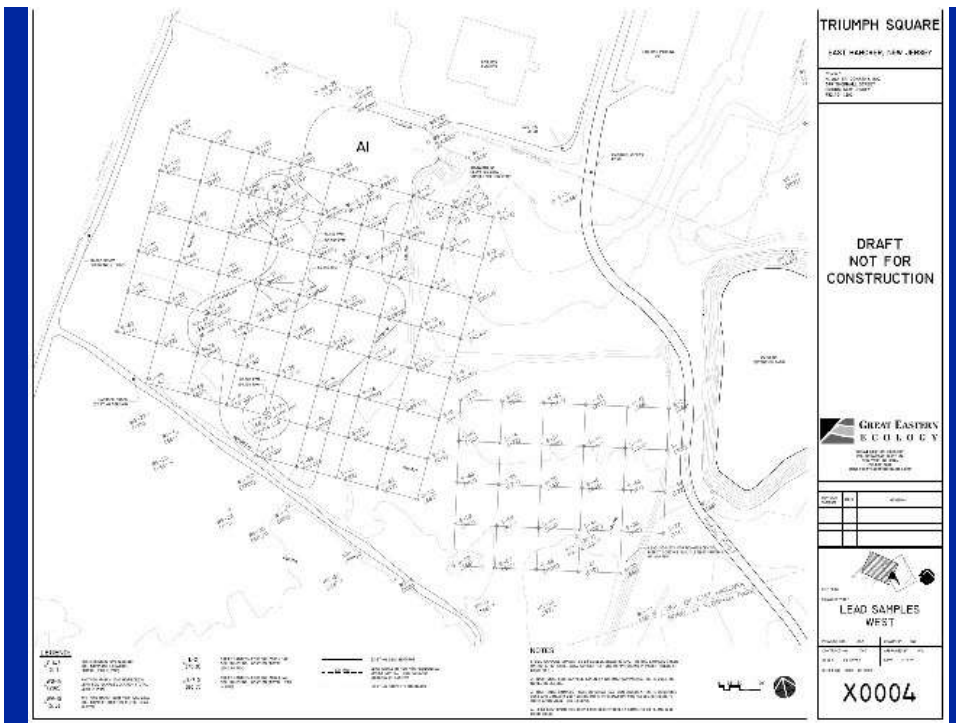
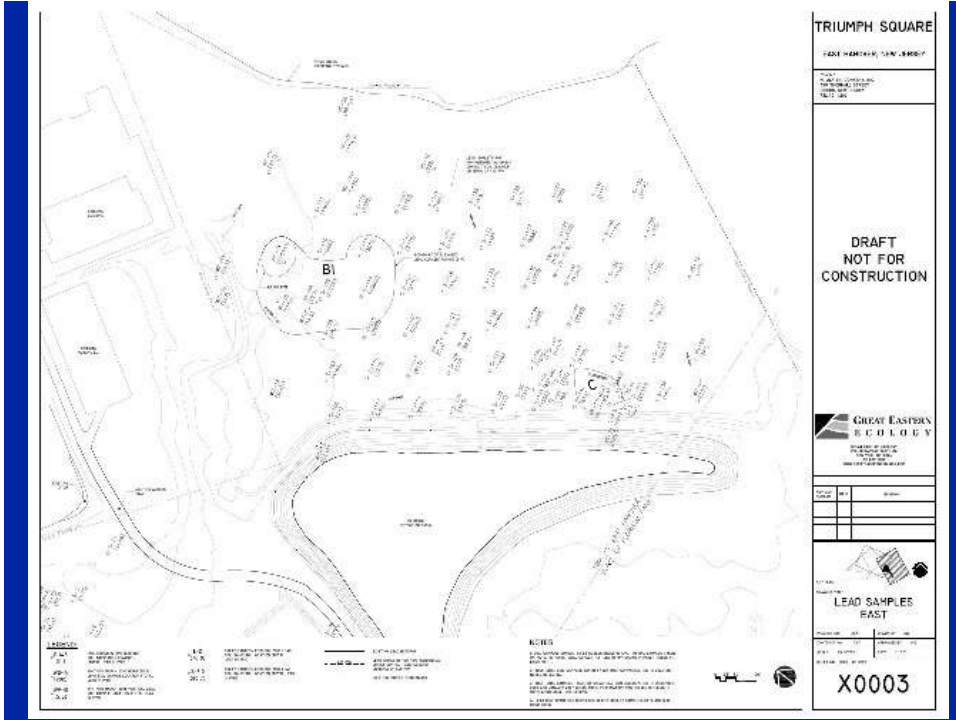


Figure 9-1: Plot of Exposure Risk Reduction vs. Acres of Habitat Destroyed

Alfieri Site: Risk Management Decision

- ◆ Remove 94% of Total Pb Mass
- ◆ Cap Upland Areas of Elevated Pb
- ◆ Reduce Receptor Uptake of Pb 93%
- ◆ Remediate to 8,000 ppm in Eastern Zone and 5,000 ppm in Western Zone



Risk Management Considerations



- ◆ Consider present and predicted value of the affected ESNRs
- ◆ Consider remedial activity's potential beneficial and/or detrimental effects on the ESNRs' value

Risk Management Considerations



- ◆ Impaired habitats can provide some valuable ecological benefit (i.e. food source, breeding, rearing, shelter, etc.)
- ◆ The ecosystem extends beyond the perimeter of the impaired area
- ◆ Reduction in ecological benefits in one area of the ecosystem may be offset by a corresponding increase in ecological benefits in another part of the ecosystem

Risk Management Considerations

- ◆ Restoration activities must exceed the future decreased ecological benefits associated with the continued exposure to COPECs and/or any remedial activities
- ◆ All RMDs must be approved by NJDEP (N.J.A.C. 7:26E-4.7(b))

Alfieri Site - Resolution

- ◆ Preserve 22+ Acres of Wetland with Elevated Pb Levels
- ◆ Destroy 7.5 Acre of Habitat
 - 3.7 Acres of Herbaceous Wetland
 - 2.8 Acres of Forested Wetland
 - * As of 2002, only 1% of Approved Forested Wetland Restorations in New Jersey were Successful
 - * Will Try to Preserve Specific Large Trees
 - 1.0 Acre of Upland Habitat
- ◆ Restore and Enhance Stream Habitat
 - Physical Modification, Sediment Removal, Wetland Mngt. – Increase Wetland/Upland Edge

Contacts

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