



# United States Environmental Protection Agency

## Superfund Proposed Plan for an Early Action Soil Cleanup – Residential Properties Southside Chattanooga Lead Site

Chattanooga, Hamilton County, Tennessee

November 2018

### Introduction

This **Proposed Plan** identifies the preferred alternative for an early action to remediate residential contaminated soil at the Southside Chattanooga Lead (SCL) Site in Chattanooga, Tennessee (Figure 1). The preferred alternative calls for the excavation and off-site disposal of contaminated soil on properties in eight (8) residential neighborhoods: Alton Park, Cowart Place, East Lake, Highland Park, Jefferson Heights, Oak Grove, Richmond, and Southside Gardens.

The U.S. Environmental Protection Agency (EPA) has performed soil sampling at approximately 300 properties. The results of the residential soil sampling program identified residential properties where a remedial action is required. Additional sampling will be conducted to further refine the extent of contamination at the residential properties.

This Proposed Plan: (1) describes the remedial alternatives evaluated to address the contaminated Site soil and (2) presents the rationale for EPA's preferred alternative. This Proposed Plan was developed by EPA, the lead agency for Site, in consultation with the Tennessee Department of Environment and Conservation (TDEC), the support agency. The EPA, in consultation with the TDEC, will select a final remedy for contaminated soil at affected residential properties after reviewing and considering all information submitted during the 30-day public comment period. The EPA, in consultation with the TDEC, may modify the preferred alternative or select another response action presented in this proposed plan based on new information or public comments. Therefore, the public is encouraged to review and comment on the alternatives presented in this Proposed Plan.

This Proposed Plan complies with the requirements of the **National Oil and Hazardous Substances Pollution Contingency Plan (NCP)**, Section 300.430(f)(2), and the **Comprehensive Environmental Response**,

### Community Involvement Opportunities

#### 30 Day Public Comment Period

**Dates:** November 1, 2018 to November 30, 2018

**Purpose:** To solicit comments on the Proposed Early Action Soil Cleanup Plan for Southside Chattanooga Lead Site.

#### Public Meeting

**Date:** November 15, 2018

**Time:** 6:00 to 8:00 PM

**Place:** South Chattanooga Recreation Center  
1151 W 40<sup>th</sup> Street  
Chattanooga, TN 37409

**Purpose:** To discuss the Proposed Early Action Soil Cleanup Plan for the Southside Chattanooga Lead Site.

#### EPA Contacts

Direct questions or written comments to:

**Robenson Joseph**, Remedial Project Manager  
OR

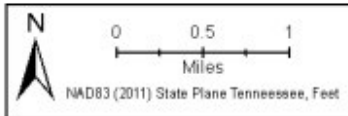
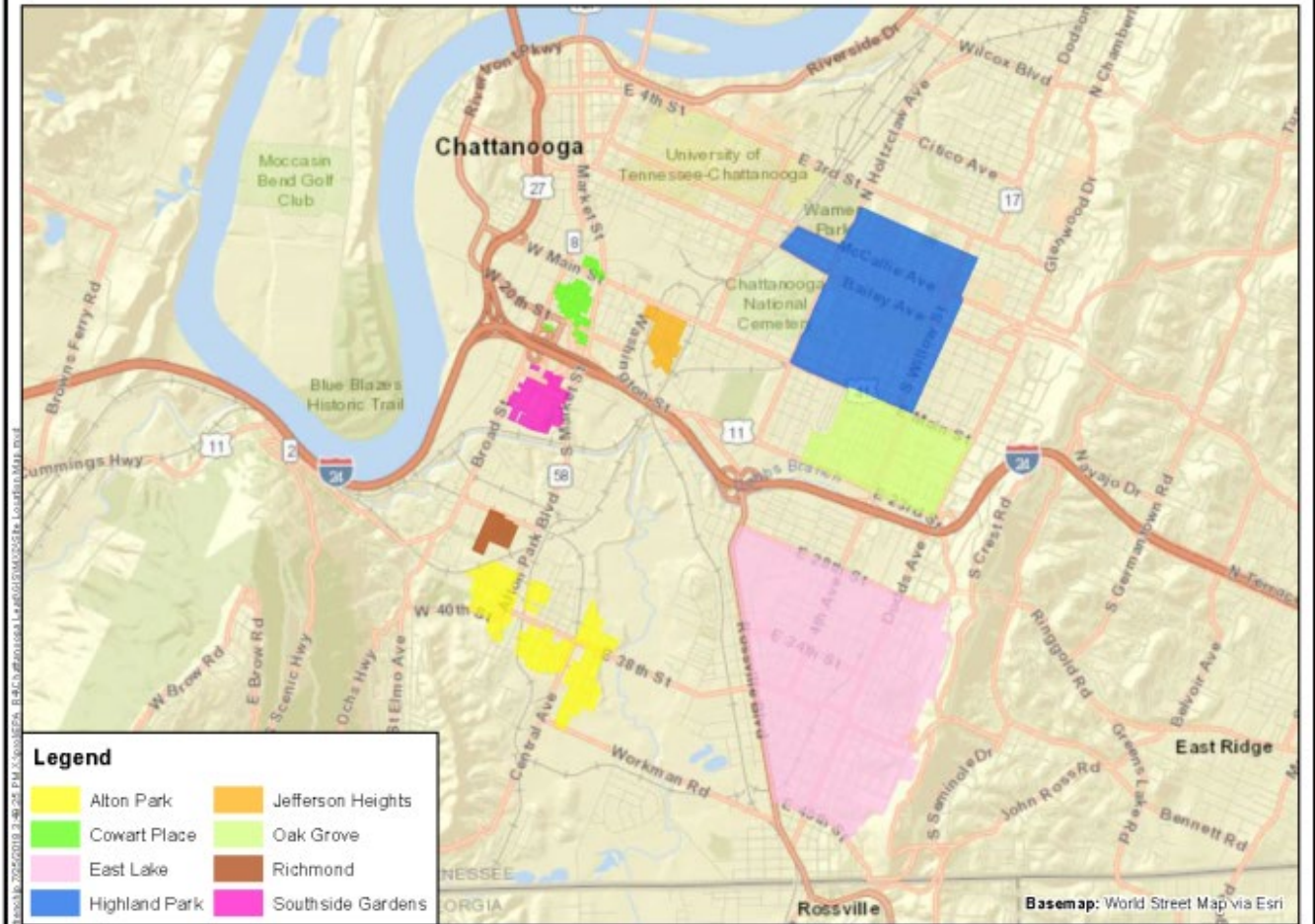
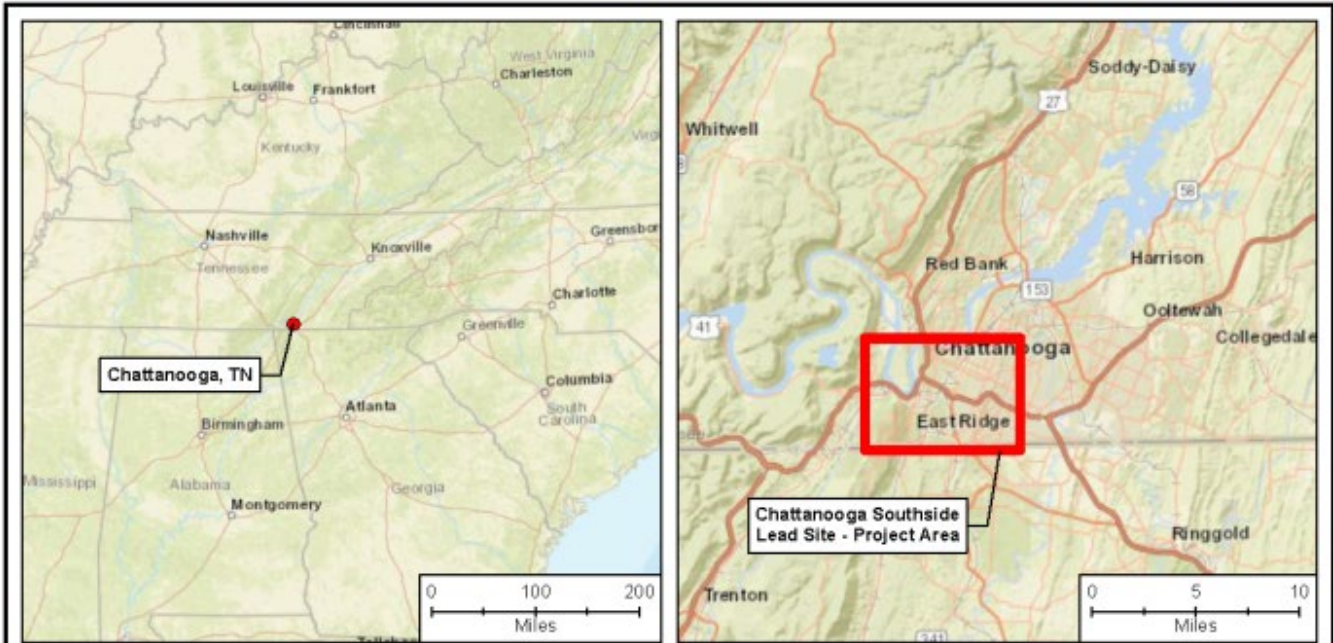
**Stephanie Brown**, Community Involvement Coordinator

Superfund Restoration & Sustainability Branch  
U.S EPA  
Atlanta Federal Center  
61 Forsyth Street, SW  
Atlanta, Georgia 30303  
**(800) 435-9234**

The Administrative Record and an Information Repository for the Southside Chattanooga Lead Site are located at:

Chattanooga Public Library  
South Chattanooga Branch  
925 39<sup>th</sup> Street  
Chattanooga, TN 37410  
Phone: (423) 643-7780

All items in **bold typeface** defined in the attached Glossary.



Site Location Map  
 Southside Chattanooga Lead Site  
 Chattanooga, Hamilton County, Tennessee

Figure  
 1

**Compensation, and Liability Act (CERCLA)**, Section 117(a). The Proposed Plan includes a summary of the Site Inspection (SI) and the interim **Remedial Investigation/Feasibility Study (RI/FS)** data that are part of the Site **Administrative Record** and are available to the public at the Site **Information Repository** located at the Chattanooga Public Library, South Chattanooga Branch, 925 39<sup>th</sup> Street, Chattanooga, Tennessee 37410.

## Community Role In Selection Process

This Proposed Plan is being issued to inform the public of EPA's proposed alternative for residential properties and to solicit public comments pertaining to all of the remedial alternatives evaluated, including the preferred alternative. Changes to the proposed alternative, or a change to another alternative, may be made if public comments or additional data indicate that such a change would result in a more appropriate remedial action. The final decision regarding the selected remedy will be made after the EPA has taken into consideration all public comments. The EPA is soliciting public comments on all of the alternatives considered in the Proposed Plan, because the EPA may select a remedy other than the proposed alternative. This Proposed Plan has been made available to the public for a public comment period that concludes on November 30, 2018.

A public meeting will be held during the public comment period to present the conclusions of the RI/FS, to elaborate further on the reasons for proposing the preferred alternative, and to receive public comments. The public meeting will include a presentation by EPA of the preferred alternative and other cleanup options. Information concerning the public meeting and on submitting written comments can be found in the "Community Involvement Opportunities" text box on Page 1. Comments received at the public meeting, as well as written comments received during the public comment period, will be documented in the **Responsiveness Summary** section of the **Record of Decision (ROD)**. The ROD is the document that explains which alternative has been selected and the basis for the selection of the remedy.

## Scope and Role of this Early Action

The EPA is addressing the cleanup of the Site in several phases. This Proposed Plan is for an early action to address contaminated soil at residential properties in eight neighborhoods. This action is necessary to minimize children exposure to the lead contaminated soil. Future actions will address the site groundwater, surface water, and sediment.

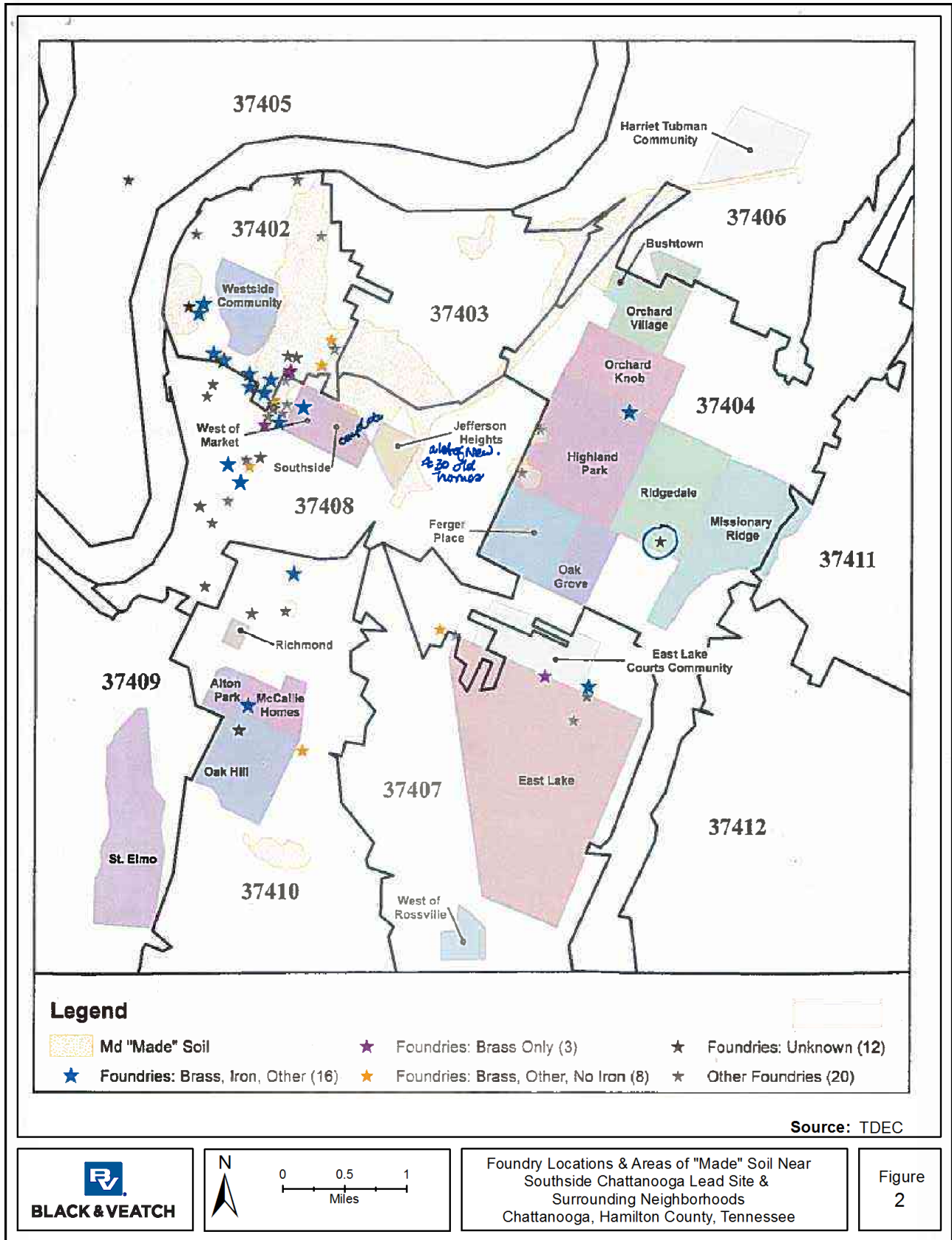
The number of affected properties referenced in this Proposed Plan with elevated lead concentrations in surface soil are an estimate used to calculate the approximate costs of the cleanup alternatives. EPA believes that the estimate is not likely to change significantly. The precise number of residential properties to be remediated will be determined upon completion of additional soil sampling during the remedial design and possibly refined during implementation of the remedial action.

## Site Location and Description

The Site (EPA ID TNN000410686) is located in Chattanooga, Hamilton County, Tennessee. The Site consists of residential and child high impact properties (common areas such as playgrounds, parks, daycare centers, etc.), where lead-bearing material from past foundry operations was used as fill and top soil. The Site includes eight residential neighborhoods: Alton Park, Cowart Place, East Lake, Highland Park, Jefferson Heights, Oak Grove, Richmond, and Southside Gardens. Impacted commercial and industrial properties will be addressed by the state pursuant to its Brownfield Project Voluntary Cleanup Oversight and Assistance Program.

## Site History and Investigations

Beginning in the mid-19<sup>th</sup> century, approximately 60 foundries, both iron and brass, have operated within the City of Chattanooga (Figure 2). Ferrous (iron and steel) foundries specialize in melting and casting metal into desired shapes. The casting process involves pouring molten metal into molds and sand is the most common molding material used. Foundry sand can be reused; however, sand fines are removed from the process. Used foundry sand can contain elevated concentrations of lead and other metals. Anecdotal information indicates that it was common practice in the early 1900s for foundries to give local residents excess foundry sand to use as fill and top soil.



### *Early Response Actions*

In 2011, TDEC was contacted due to a resident of Chattanooga with elevated blood lead levels. TDEC initiated soil assessment activities at the residence on Read Avenue. Initial sampling activities indicated elevated concentrations of lead in surface soil at the property. TDEC requested assistance from the EPA, Emergency Response and Removal Branch (ERRB). EPA, with assistance from TDEC, assessed residential properties along Read Avenue and an adjoining public park located on Mitchell Avenue. This assessment was conducted to determine whether the lead contamination observed at the Read Avenue property was present in adjacent properties.

In 2011, EPA and TDEC sampled several properties for lead in soil on Read Avenue, Mitchell Avenue, Underwood Street (formerly Carr Street) and intersecting streets.

In 2012, additional soil sampling was conducted in the vicinity of Read Avenue. Based on the results of these sampling activities, The EERB conducted a time-critical removal action (TCRA) and excavated approximately 8,222 tons of soil contaminated with lead from 84 properties located along Read Avenue, Mitchell Avenue, Underwood Street (formerly Carr Street) and intersecting streets.

In 2016, EPA, in cooperation with TDEC and the Tennessee Department of Health (TDOH), began the SI to determine whether lead-contaminated foundry-related waste materials were isolated to the area of previous soil removals or whether additional areas may be impacted. After obtaining permission from property owners, EPA collected soil samples in several neighborhoods near the former foundries. The collected soil samples were analyzed for lead, arsenic and other metals. The SI determined that elevated levels of lead in soil was not limited to the Read and Mitchell Avenue area.

In 2017, based on blood lead levels data from the TDOH, EERB conducted another TCRA and excavated lead-contaminated foundry-related waste soil from 15 residences in Jefferson Heights.

### *Remedial Investigation*

In August 2017, EPA initiated the RI and collected soil samples from 33 residential properties in Oak Grove, Highland Park, and East Lake.

The Site was proposed to the National Priorities List (NPL) on January 18, 2018 and added to the NPL on September 13, 2018.

In May 2018, EPA collected soil samples from an additional 28 properties in Alton Park, Cowart Place, Jefferson Heights, and Southside Gardens.

Between May 2011 and May 2018, soil samples were collect from approximately 300 properties at the Site. The collected soil samples were analyzed for metals (primarily lead and arsenic). Some samples were also analyzed for polycyclic aromatic hydrocarbons (PAHs). Lead, the primary **contaminant of the concern (COC)** for the Site was detected in the soil at concentrations above the site-specific preliminary cleanup goal of 360 milligrams per kilogram (mg/kg). The highest lead concentrations of 2,610 mg/kg were observed from soil samples collected at a property in Jefferson Heights.

### **Site Physical Characteristics**

The Site is situated within the Ridge and Valley physiographic province of southeastern Tennessee. The Ridge and Valley province is characterized by long north-northeasterly trending ridges separated by fertile valleys and extends continuously from New York to the edge of the Coastal Plain (fall line) in Alabama. The province's topography is due to the erosion of alternating layers of hard and soft sedimentary rock that were folded and faulted during the building of the Appalachians. The ridges are developed on resistant layers of sandstone or chert, while the valleys are underlain by shale or limestone. Thin acidic soils are formed from the sandstone and chert, which support wooded areas on the ridges' steep slopes. In the valleys, shale and especially limestone provide thicker, more fertile lowland soils.

Elevations in the Chattanooga area range from 675 feet above sea level near the Tennessee river to 2,391 feet above sea level on Lookout Mountain. The topography across the Site is generally flat.

The United States Department of Agriculture (USDA) soil survey of Hamilton County, Tennessee indicates that the predominant soil types in the SCL study area are Urban Land (Ur) and Colbert-Urban Land Complex (CdC). The USDA notes that the Ur soils are found in the inner city of Chattanooga where at least 85% of the land is covered by buildings, streets, sidewalks, and other structures. No identifiable soils are found in the Ur unit. The CdC is comprised of well drained, gently sloping and sloping brown silt loam, and Ur soils. The

CdC soils grade to a yellowish-brown clay below the first 4-inches. Limestone can be encountered at depths as shallow as 55-inches bgs.

During the SI sampling activities, field personnel observed that the soil to a depth of 18 inches was dark brown, with the remaining soils varying from reddish brown and light brown. These soils were predominantly composed of silts, with minor sand and clay present. At locations where fill contained a large amount of foundry waste material, the fill was a coarse material which was dark brown, dark gray or black.

Hydrology at the Site primarily consists of storm water runoff from parking lots, roads, ground surface, drainage ditches, and surface water in small creeks in the neighborhoods. Surface water runoff from Highland park, Oak Grove, Cowart Place, and Jefferson Heights drain into the combined sanitary sewer system of the City of Chattanooga Public Water Works combined sanitary sewer system. East Lake, Alton Park and Southside Gardens are in the Chattanooga Creek watershed. The Tennessee River is located approximately 1 mile to the west of the Site and flows to the south. Chattanooga Creek is located to the west of East Lake and east of Alton Park neighborhoods and flows to the north. Downstream of the confluence with Dobbs Branch, Chattanooga Creek flows to the west/southwest to the Tennessee River.

Groundwater beneath the Site is classified as a potential source of drinking water. A groundwater investigation will be conducted in the future as part of the RI for the Site. Based on environmental investigation data from other sites in the area, groundwater is approximately 10 to 20 feet below land surface (bls). Groundwater is suspected to generally flow to the west and/or south toward the Tennessee River or Chattanooga Creek. Future investigations at the Site will provide better understanding of the Site-specific hydrogeology.

## Nature and Extent of Contamination

Activities to fully characterize the Site are ongoing. Based on Hamilton County Census data, it is estimated that approximately 3,600 properties within the eight known impacted neighborhoods will be sampled. As of May 18, 2018, approximately 300 properties have been sampled. EPA evaluated the data collected to date and estimated that approximately 30 percent (%) of the total (3,600) properties contain lead-bearing material with concentrations above the site-specific preliminary remediation goal of 360 mg/kg. This results in an estimated 1,100 properties that will require remediation.

Based on information collected during the removal actions, it was determined that the average lot size is approximately a quarter of an acre [10,000 square feet (sf)]. The typical lot has a house that occupies approximately one half of the surface area. A quarter of the typical lot is also covered with impervious material such as asphalt and concrete. Therefore, EPA estimated that approximately a quarter (25%) of the surface area of each impacted property will be remediated to a maximum depth of 2 feet bls. The total volume of lead-contaminated soil requiring remediation is estimated to be 203,703 cubic yards (cy). Additional details regarding the extent of the contamination are included in the focused FS report.

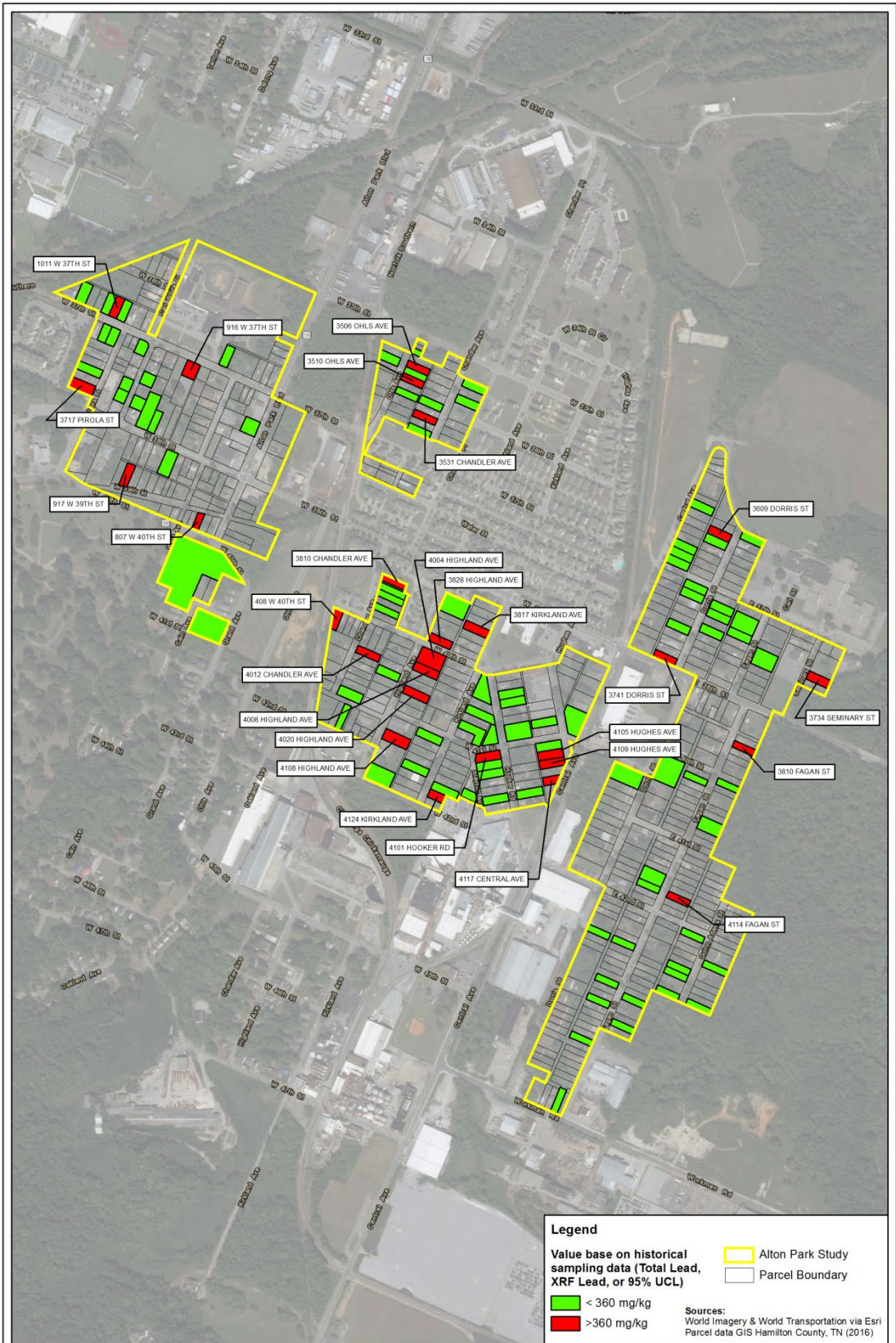
Because the foundry waste material was not distributed uniformly across the Site or neighborhoods, there is no centralized source area of lead contamination. The sections below present a brief summary of the extent of the contamination in each neighborhood.

### Alton Park

Alton Park is located in the southwest portion of the Site (Figure 1). There are approximately 566 residential properties in this neighborhood. During the SI and 2018 sampling activities, a total of 116 properties within the Alton Park neighborhood were sampled (Figure 3). Of these 116 properties, 89 had concentrations of lead below the site-specific preliminary remediation goal. These properties are depicted in green on Figure 3. Twenty-seven of the properties sampled had lead concentrations above the site-specific preliminary remediation goal. The maximum lead concentrations observed in Alton Park were 900 mg/kg.

### Cowart Place

Cowart Place is located in the northwest portion of the Site (Figure 1) and includes approximately 232 residential properties. During the SI and 2018 sampling efforts, a total of 14 properties within the Cowart Place neighborhood were sampled (Figure 4). Nine sampled properties had concentrations of lead below the site-specific preliminary remediation goal. These properties are depicted in green on Figure 4. Five of the sampled properties had lead concentrations above the site-specific preliminary remediation goal. The maximum lead concentrations observed in Cowart Place were 580 mg/kg.



### Jefferson Heights

The Jefferson Heights neighborhood is located in the north central portion of the Site (Figure 1). There are an estimated 170 residential properties in this neighborhood. A total of 73 properties were sampled in Jefferson Heights during the SI and the 2018 sampling effort (Figure 5). Fifty-three of the sampled properties had concentrations of lead below the site-specific preliminary remediation goal. These properties are depicted in green on Figure 5. Twenty of the 73 properties had lead concentrations above the site-specific preliminary remediation goal. The maximum lead concentrations observed in Jefferson Heights were 2,610 mg/kg.

### Richmond

The Richmond neighborhood is located in the southwest portion of the Site just north of the Alton Park neighborhood (Figure 1) and includes approximately 55 residential properties. During the SI, a total of 16 properties within the Richmond neighborhood were sampled (Figure 6). Of these, 11 had concentrations of lead below the site-specific preliminary remediation goal. These properties are depicted in green on Figure 6. Five of the properties sampled had lead concentrations above the site-specific preliminary remediation goal. The maximum lead concentrations observed in Richmond were 460 mg/kg.

### Southside Gardens

The Southside Gardens neighborhood is located in the north central portion of the Site, southwest of the Cowart Place neighborhood (Figure 1). An estimated 145 residential properties are included in this neighborhood. Thirty-three properties within the Southside Gardens neighborhood were sampled as part of the SI and the 2018 sampling activities (Figure 7). Eighteen of the sampled properties had concentrations of lead below the site-specific preliminary remediation goal. These properties are depicted in green on Figure 7. Fifteen properties had lead concentrations above the site-specific preliminary remediation goal. The maximum lead concentrations observed in Southside Gardens were 1,873 mg/kg.

### Highland Park

Highland Park is located in the northeast portion of the Site (Figure 1). Approximately 850 residential properties are included in this neighborhood. During the 2017 sampling effort, a total of 16 properties within the Highland Park neighborhood were sampled (Figure 8). Twelve sampled properties had concentrations of lead

below the site-specific preliminary remediation goal. These properties are depicted in green on Figure 4-6. Four of the properties had lead concentrations above the site-specific preliminary remediation goal. The maximum lead concentrations observed in Highland Park were 1,293 mg/kg.

### East Lake

The neighborhood of East Lake is in the southeast portion of the Site (Figure 1). An estimated 1,267 residential properties in this neighborhood will need to be investigated. During the 2017 sampling effort, a total of eight properties within the East Lake neighborhood were sampled (Figure 9). Seven sampled properties had concentrations of lead below the site-specific preliminary remediation goal. These properties are depicted in green on Figure 9. One property had lead concentrations of 396 mg/kg, which are above the site-specific preliminary remediation goal. This property is shown in red on Figure 9.

### Oak Grove

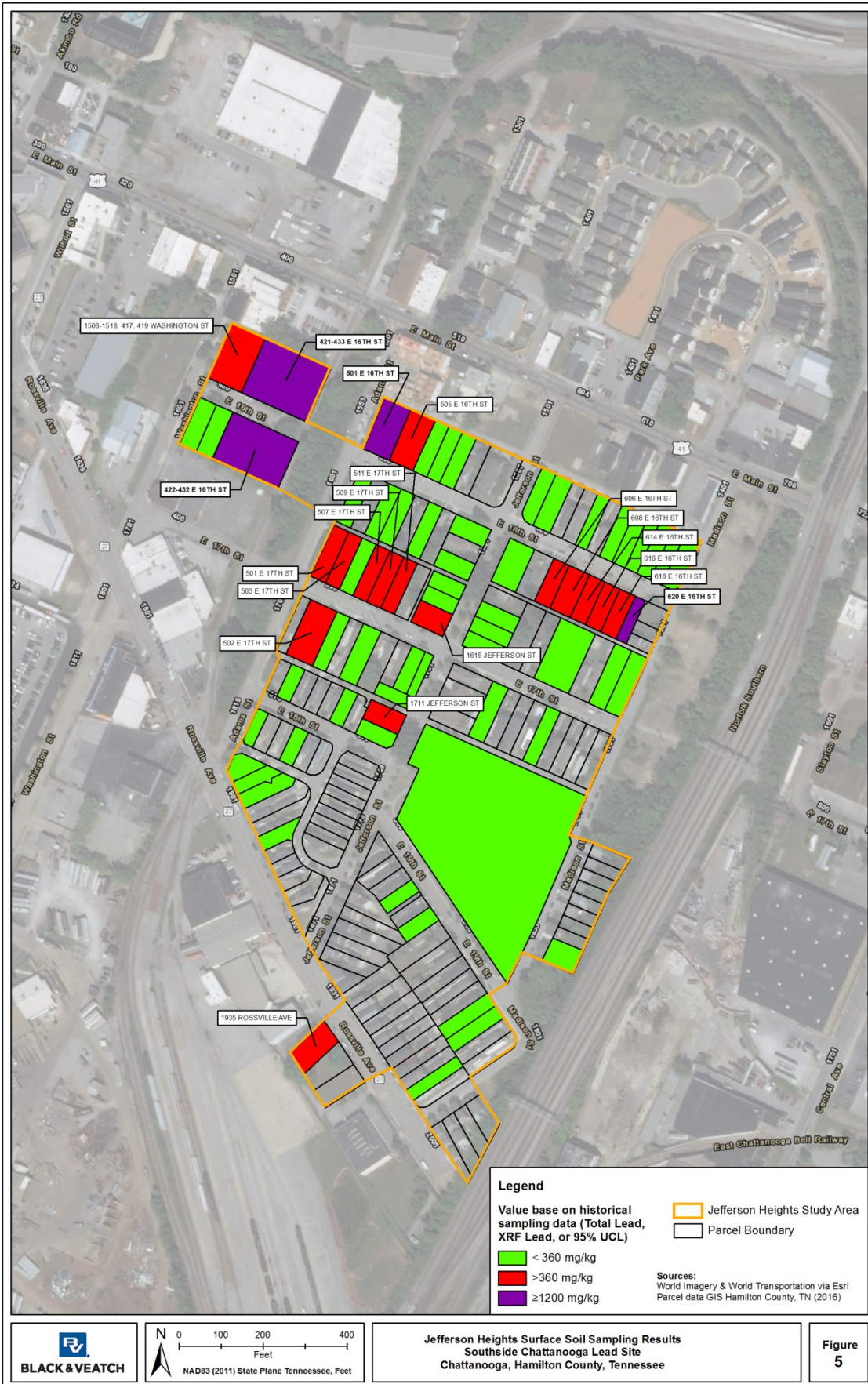
The Oak Grove neighborhood is in the east-central portion of the Site between Highland Park and Southside Gardens (Figure 1) and includes approximately 327 residential properties. During the 2017 sampling effort, a total of ten properties within the East Lake neighborhood were sampled (Figure 10). Five of the properties that were sampled had concentrations above the site-specific preliminary remediation goal. These are shown in red on Figure 10. The maximum lead concentrations observed in Oak Grove were 832 mg/kg.

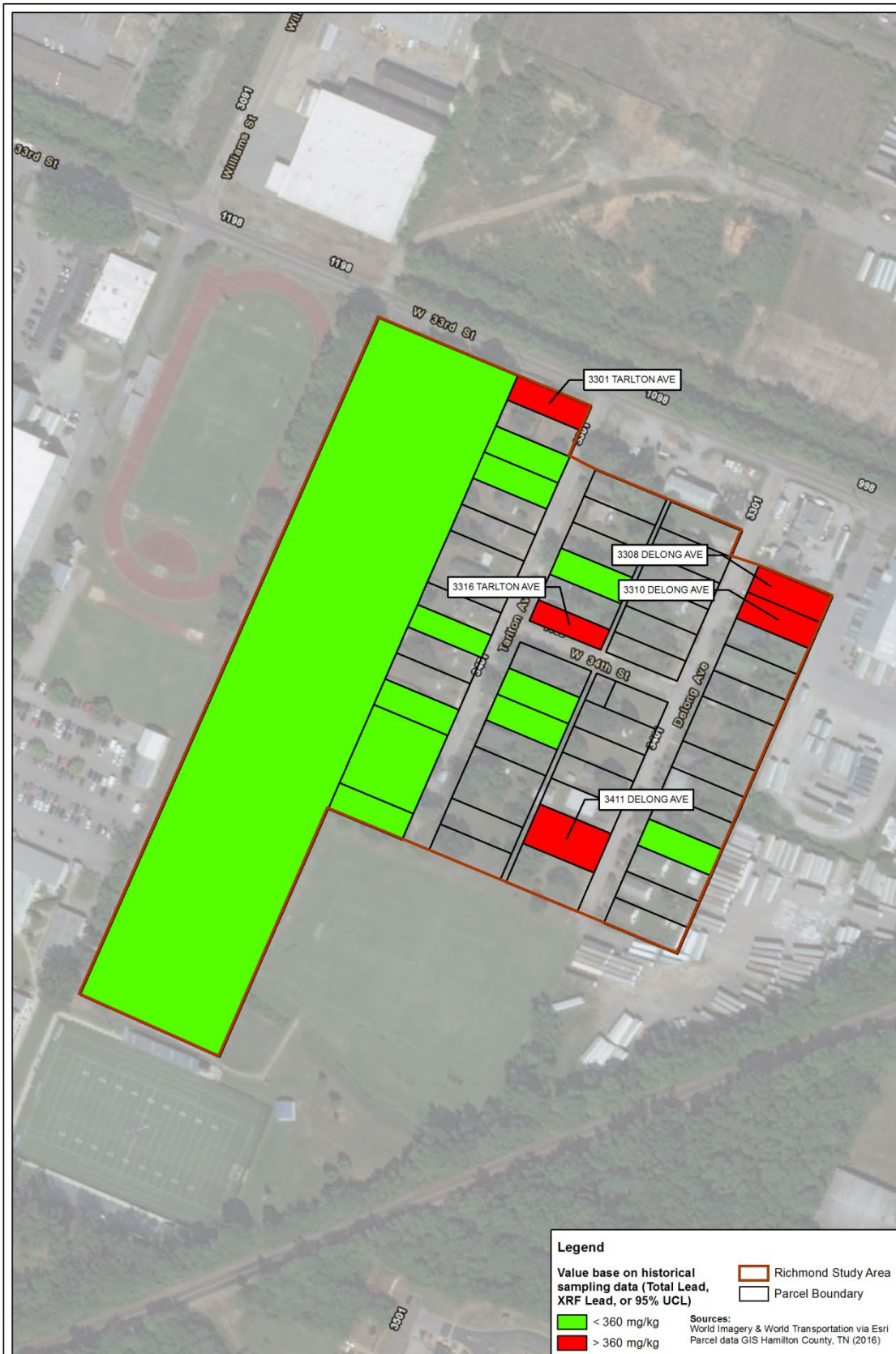
## Principal Threat Waste (PTW)

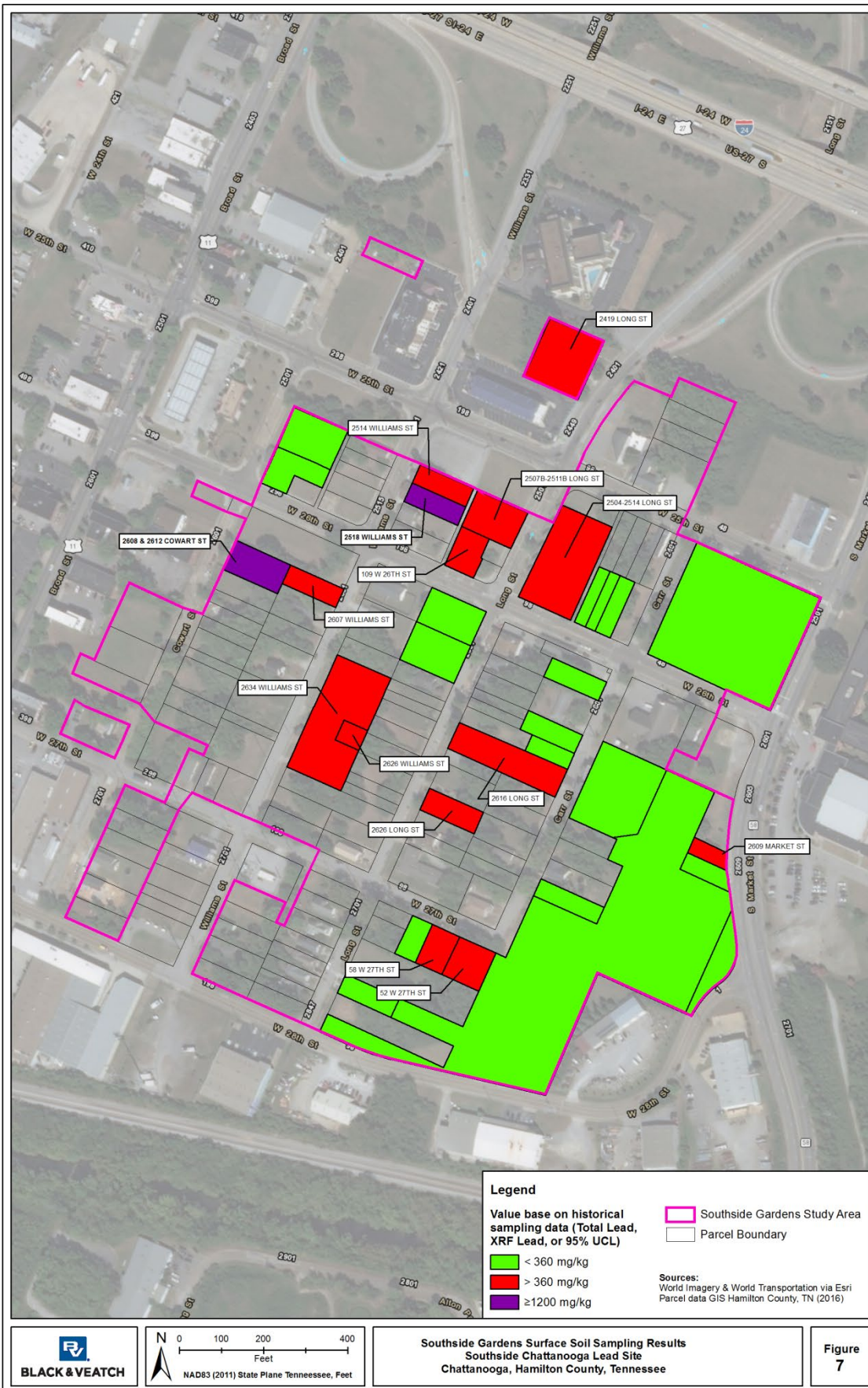
The NCP establishes an expectation that EPA will use treatment to address the principal threats posed by a site wherever practicable (40 CFR §300.430(a)(1)(iii)(A)). The “principal threat” concept is applied to the characterization of “source material” at a Superfund site. A source material is material that includes or contains hazardous substances, pollutants or contaminants that act as a reservoir for migration of contamination to the groundwater, surface water, or air, or acts as a source for direct exposure. Contaminated groundwater generally is not considered to be a source material; however, Non-Aqueous Phase Liquids (NAPLs) in groundwater may be viewed as source material. Principal threat wastes (PTW) are those source materials considered to be highly toxic or highly mobile that generally cannot be reliably contained, or would present a significant risk to human health or the environment should exposure occur.

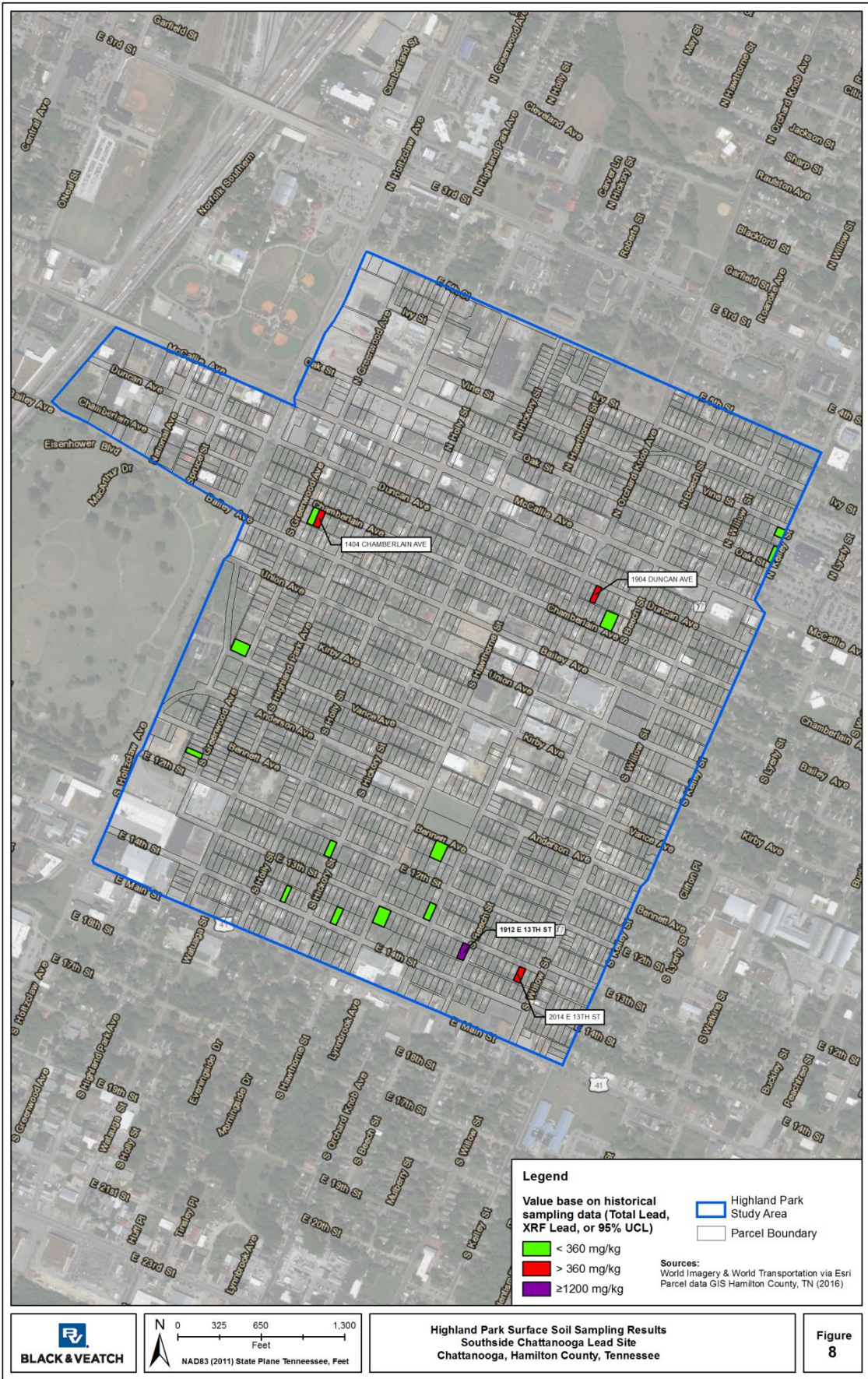




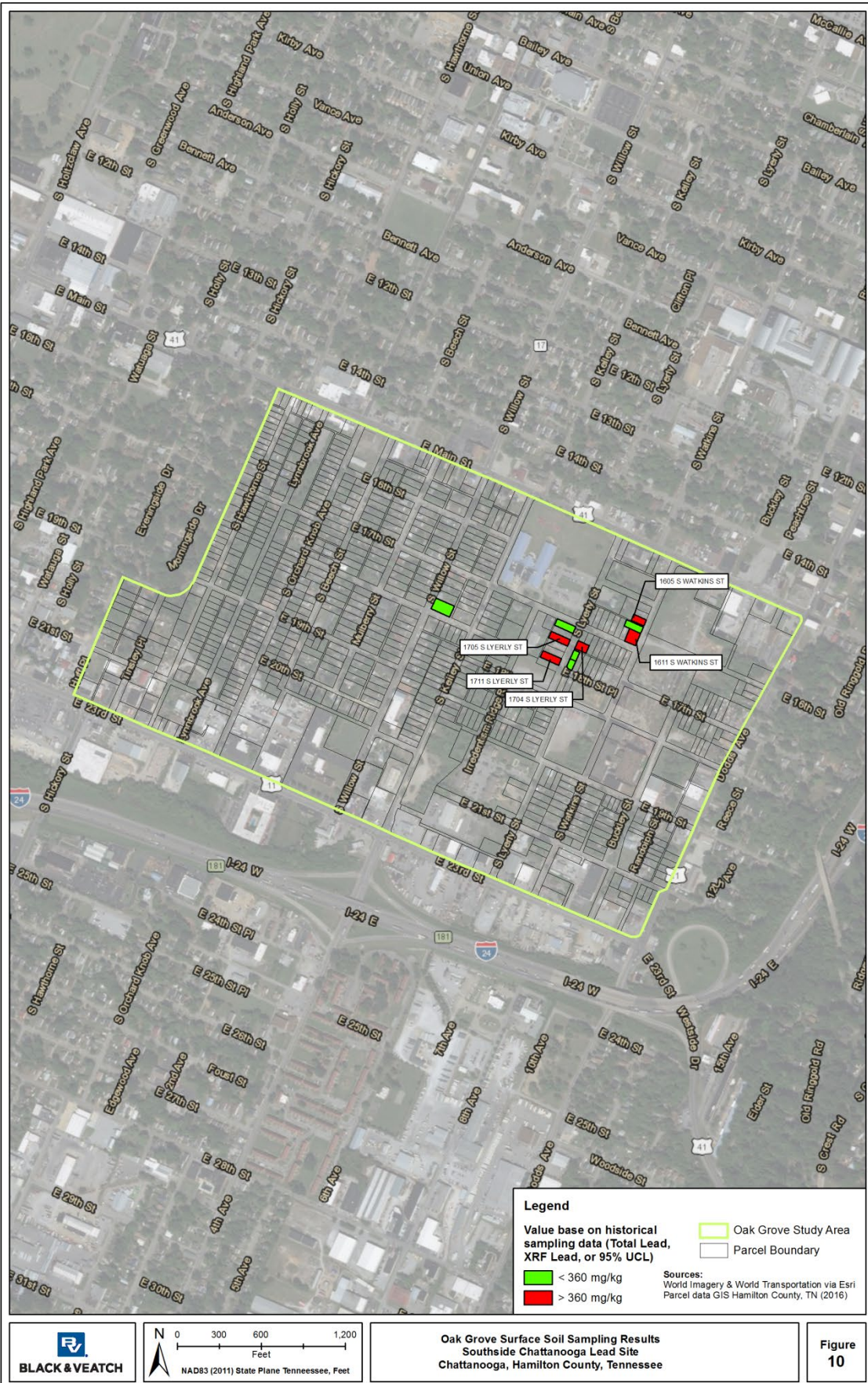












The decision to treat these wastes is made on a site-specific basis through a detailed analysis of the alternatives using the nine remedy selection criteria. Remedies which involve treatment of PTW likely will satisfy the statutory preference for treatment as a principal element, although this will not necessarily be true in all cases.

Although lead in soil at the residential properties may act as sources to surface water, sediment, and groundwater contamination, these sources are not highly mobile and are not considered PTW for this early action of the Site.

## Summary of Site Risks

The scope of the RI data collection to date has focused on soil in residential areas. Details of the streamlined **Risk Assessment** are presented in the streamlined Human Health Risk Assessment included in the Interim Remedial Investigation Report (B&V, September 2018). Ecological risk assessment will be conducted and included in the final RI report for the Site.

### *Human Health Risk Assessment*

During the SI, approximately 300 surface soil samples were collected and analyzed for metals and polycyclic aromatic hydrocarbons (PAHs). The laboratory results of the collected soil samples were compared with the urban background concentrations and the residential soil values in the November 2017 Regional Screening Level (RSL) table to identify the Contaminants of Potential Concern (COPC). The COPCs were then used to estimate potential human health risks based on a residential exposure.

For this evaluation, risks were calculated for a hypothetical yard containing the maximum concentration detected for each COPC, excluding lead. This conservative evaluation showed that contaminant-specific risks were within EPA's acceptable risk range ( $1 \times 10^{-6}$  to  $1 \times 10^{-4}$ ), except for PAHs which resulted in risk levels of  $2.4 \times 10^{-4}$ . Further analyses of the data concluded that benzo(a)pyrene was the primary risk driver. There was only one residential property with benzo(a)pyrene at the upper end of the risk range and that property also had elevated lead, therefore would require a cleanup based on the elevated lead concentrations. The properties surrounding the yard with the detection of benzo(a)pyrene at the upper end of the risk range were within EPA's acceptable risk range, but elevated concentrations of lead were present. Therefore,

it was concluded that PAHs are not site-related contaminants.

Lead is the primary COC for the Site. In accordance with EPA's recommended risk assessment approach for lead, potential health risks to children were evaluated using the Integrated Exposure Uptake Biokinetic (IEUBK) model. The model calculated the expected distribution of blood lead levels and estimated the probability that child exposure to the Site soil may result in blood lead levels greater than the target concentrations of 8 micrograms per deciliters ( $\mu\text{g}/\text{dL}$ ).

Based on the maximum lead concentrations (2,610 mg/kg) observed at the Site, there is a probability of more than 90% that a child exposed to the Site soil would have blood lead level greater than  $8 \mu\text{g}/\text{dL}$ . It is the EPA's current judgment that the Preferred Alternative identified in this Proposed Plan is necessary to protect public health or welfare or the environment from actual or threatened releases of pollutants or contaminants from the Site that may present an imminent and substantial endangerment to public health or welfare.

## Remedial Action Objectives (RAOs)

Before developing cleanup alternatives for a **Superfund** site, EPA establishes remedial action objectives (RAOs) to protect human health and the environment. RAOs are specific goals to protect human health and the environment. These objectives are based on available information and standards, such as applicable or relevant and appropriate requirements (ARARs), to-be-considered (TBC) guidance, and site-specific, risk-based levels.

Soil contamination on residential properties is present in surface soil. The following RAOs for contaminated soil to attain a degree of cleanup that ensures the protection of human health and the environment:

- Prevent potential current and future unacceptable risks to human receptors resulting from direct contact with soil containing lead at concentrations above the cleanup level.
- Prevent migration of lead from the impacted properties to other areas via overland flow and air dispersion.



## Preliminary Remedial Goals (PRGs)

To achieve RAOs, EPA has selected soil preliminary remediation goals (PRGs) for residential properties. Groundwater, and impact to groundwater, will be evaluated as part of final action for the Site. The IEUBK model was used to estimate the probability that child exposure to the Site soil would result in blood lead levels greater than the target concentrations of 8 µg/dL. The cleanup goal for lead in residential properties is 360 mg/kg.

## Summary of Remedial Alternatives

CERCLA, Section 121(b)(1), 42 U.S.C. Section 9621(b)(1), mandates that remedial actions must be protective of human health and the environment, cost-effective, comply with **Applicable Relevant and Appropriate Requirements (ARARs)**, and utilize permanent solutions and alternative treatment technologies and resource recovery alternatives to the maximum extent practicable. Section 121(b)(1) also establishes a preference for remedial actions which employ, as a principal element, treatment to permanently and significantly reduce the volume, toxicity, or mobility of the hazardous substances, pollutants, and contaminants at a site. CERCLA Section 121(d), 42 U.S.C. Section 9621(d) further specifies that a remedial action must attain a level or standard of control of the hazardous substances, pollutants, and contaminants, which at least attains ARARs under federal and state laws, unless a waiver can be justified pursuant to CERCLA Section 121(d)(4), 42 U.S.C. Section 9621(d)(4).

The focused FS evaluated remedial technologies capable of addressing the contaminated soil. The remedial alternatives were screened and analyzed for their effectiveness in protecting human health and the environment, compliance with ARARs, implementability, cost, and time required to achieve RAOs and PRGs. The following sections summarize the alternatives that were evaluated for remediating the contaminated soil (see FFS report for additional details).

### Alternative 1: No Action

*Estimated Capital Cost: \$0*

*Estimated Operation and Maintenance (O&M) Cost: \$88,300*

*Estimated Total Present Worth Cost: \$0*

*Estimated Timeframe to Achieve RAOs: >100 Years*

The NCP requires that a “No Action” alternative be evaluated to establish a baseline for comparison with other remedial alternatives. Under this alternative, no action would be taken to remediate the contaminated soil at residential properties. Because this alternative would result in hazardous substances, pollutants, or contaminants remaining at the properties above levels that would allow for unlimited use and unrestricted exposure, EPA would review conditions at residential properties every five years.

### Alternative 2: Excavation and Offsite Disposal

*Estimated Capital Cost: \$25,870,600*

*Estimated Operation and Maintenance (O&M) Cost: \$0*

*Estimated Total Present Worth Cost: \$25,870,600*

*Estimated Timeframe to Achieve RAOs: 5 Years*

Under this alternative, contaminated soil exceeding the cleanup level would be excavated to a maximum depth of 2 feet bls. Excavated soil would be transported and disposed off-site at an EPA approved facility. Excavated soil would be sampled to determine if the soil would be disposed of as either hazardous waste or non-hazardous waste. Treatment of soil, if needed, would be conducted at and by the approved disposal facility. The excavated areas would be backfilled with clean material and graded to provide positive drainage. Impacted and disturbed areas would be restored.

Although not anticipated, if lead-bearing material is present at a property at depth greater than 2 feet bls, a demarcation material/barrier will be placed at the bottom of the excavated area and institutional controls (ICs) such as restrictive covenants will be put in place to prevent direct contact with the contaminated material left in place.

## Evaluation of Alternatives

EPA uses nine criteria to evaluate the remedial alternatives individually and against each other to select a remedy (See insert “Nine Criteria for Superfund Remedial Alternatives”). This section of the Proposed Plan profiles the relative performance of each alternative against the nine criteria, noting how it compares to the other options under consideration. The nine evaluation criteria are discussed below. Detailed evaluation of the remedial alternatives is included in the focused FS report.

**Threshold Criteria #1: Overall Protection of Human Health and the Environment**

Alternative 2 which consists of excavation and offsite disposal of the contaminated soil would be protective of human health and the environment. Under Alternative 1, the contaminated soil would be left in place. Therefore, Alternative 1 would not be protective of human health and the environment.

**Threshold Criteria #2: Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)**

Alternative 2 complies with chemical-specific and action-specific ARARs.

**Balancing Criteria #1: Long-Term Effectiveness and Permanence**

Alternative 2 would provide long-term effectiveness and permanence by removing contaminants from residential properties and providing secure disposal of excavated soil at appropriate permitted facilities.

Long-term monitoring and maintenance of the residential properties and CERCLA five-year reviews would not be required since the properties would be remediated to unrestricted use. Alternative 1 would not be effective since the impacted material would be kept in place.

**Balancing Criteria #2: Reducing Toxicity, Mobility or Volume through Treatment**

Neither Alternative would achieve reduction of toxicity, mobility or volume through treatment.

**Balancing Criteria #3: Short-Term Effectiveness**

Appropriate safeguards and health and safety protocols would be implemented for Alternative 2 to protect Site workers and residents. Engineering controls would be used to manage truck traffic, minimize dust, and manage stormwater. Alternative 1 would be more effective in the short-term since no activities would be conducted.

**Balancing Criteria #4: Implementability**

Alternative 2 (excavation and off-site disposal) is a well-established technology and has been implemented at many sites with readily available equipment, technical specialists, contractors and materials. Both Alternatives 1 and 2 are implementable.

<b>NINE CRITERIA FOR SUPERFUND REMEDIAL ALTERNATIVES</b>	
<b>THRESHOLD CRITERIA</b>	
	1. <b>Overall Protectiveness of Human Health and the Environment</b> determines whether an alternative eliminates, reduces, or controls threats to public health and the environment through institutional controls, engineering controls, or treatment.
	2. <b>Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)</b> evaluates whether the alternative meets Federal and State environmental statutes, regulations, and other requirements that pertain to the site, or whether a waiver is justified.
<b>PRIMARY BALANCING CRITERIA</b>	
	3. <b>Long-term Effectiveness and Permanence</b> considers the ability of an alternative to maintain protection of human health and the environment over time.
	4. <b>Reduction of Toxicity, Mobility, or Volume (T/M/V) of Contaminants through Treatment</b> evaluates an alternative's use of treatment to reduce the harmful effects of principal contaminants, their ability to move in the environment, and the amount of contamination present.
	5. <b>Short-term Effectiveness</b> considers the length of time needed to implement an alternative and the risks the alternative poses to workers, residents, and the environment during implementation.
	6. <b>Implementability</b> considers the technical and administrative feasibility of implementing the alternative, including factors such as the relative availability of goods and services.
	7. <b>Cost</b> includes estimated capital and annual operations and maintenance costs, as well as present worth cost. Present worth cost is the total cost of an alternative over time in terms of today's dollar value. Benefits weighed against cost.
<b>MODIFYING CRITERIA</b>	
	8. <b>State/Support Agency Acceptance</b> considers whether the State agrees with the EPA's analyses and recommendations, as described in the RI/FS and Proposed Plan.
	9. <b>Community Acceptance</b> considers whether the local community agrees with EPA's analyses and preferred alternative. Comments received on this Proposed Plan are an important indicator of community acceptance.

### **Balancing Criteria #5: Cost**

Cost estimates for Alternatives 1 and 2 (using an effective discount rate of 7%) were developed during the focused FS.

### **Modifying Criteria #1: State Acceptance**

TDEC has been actively involved in the development and implementation of the SI, RI, FS, risk assessments and other studies and cleanup plans for the Site. State support for the proposed cleanup plan is anticipated.

### **Modifying Criteria #2: Community Acceptance**

Community acceptance of the proposed cleanup plan will be evaluated based on comments submitted to EPA as part of the public review and comment process. Comments received during this period will be addressed and responses will be presented in the Responsiveness Summary, which will be included in the ROD.

### **EPA's Preferred Alternative**

The Preferred Alternative for achieving RAOs for the residential properties with lead contaminated soil is Alternative 2, excavation and off-site disposal. Alternative 2 meets the standards of the threshold criteria, primary balancing criteria, and modifying criteria and provides for the most balanced remedy selection.

Although not anticipated, if lead-bearing material is present at a property at depth greater than 2 feet bls, a demarcation material/barrier will be placed at the bottom of the excavated area and ICs such as restrictive covenants will be put in place to prevent direct contact with the contaminated material left in place.

Based on the information available at this time, EPA believes the Preferred Alternative would be protective of human health and the environment, would comply with the chemical-, action-, or location-specific ARARs as outlined in Table 3.1 of the focused FS, would be cost effective, and would utilize permanent solutions to the extent practicable. The remedy does not meet the statutory preference for the selection of a remedy that involves treatment as a principal element because of technical limitations related to treatment technologies for lead. The Preferred Alternative can change in response to public comment or new information.

**Five-Year Reviews** are not anticipated. The contaminated material will be excavated and transported

off-site for disposal. However, in the event that lead-bearing material is left in place at depth greater than 2 feet bls, Five-Year reviews will be conducted accordingly. The total estimated cost for the preferred remedial alternative is \$25,870,600.

### **Community Participation**

EPA and TDEC provided information regarding the cleanup of the Site to the public through meetings, the Administrative Record file for the Site, and an announcement published in the local newspaper.

EPA and TDEC encourage the public to attend the public meeting and to gain a more comprehensive understanding of the Site and the Superfund activities that have been conducted there.

The dates for the public comment period; the date, location, and time of the public meeting; and the location of the Administrative Record file are provided on the front page of this Proposed Plan.

For additional information on EPA's Preferred Alternative for the Site, please contact:

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(404) 562-8891

OR

**Stephanie Brown**, Community Involvement Coordinator  
[Brown.stephanie@epa.gov](mailto:Brown.stephanie@epa.gov)  
(404) 562-8450

## GLOSSARY

**Administrative Record:** Material documenting EPA's selection of cleanup remedies at Superfund Sites, a copy of which is placed in the **Information Repository** near the Site.

**Applicable or Relevant and Appropriate Requirements (ARARs):** Refers to federal and state requirements a selected remedy must attain, which vary from site to site.

**Comprehensive Environmental Response, Compensation and Liability Act (CERCLA):** Also known as Superfund, CERCLA is a federal law passed in 1980 and modified in 1986 by the Superfund Amendment and Reauthorization Act. The Act created a trust fund to investigate and clean up abandoned or uncontrolled hazardous waste sites. The law authorizes the federal government to respond directly to releases of hazardous substances that may endanger public health or the environment. EPA is responsible for managing the Superfund.

**Contaminants of Concern (COCs):** Chemical constituents associated with a Superfund site that have been released into the environment and pose a risk to human health.

**Feasibility Study (FS):** Study conducted after the Remedial Investigation to assess what alternatives or technologies could be applicable to clean up the site-specific COCs.

**Five-Year Review:** A statutory requirement to evaluate the implementation and performance of a remedy in order to assess whether the remedy is or will be protective of human health and the environment.

**Information Repository:** A library or other location where documents and data related to a Superfund project are placed to allow public access to the material.

**National Oil and Hazardous Substances Pollution Contingency Plan (NCP):** The federal regulation that guides the Superfund program. The NCP was revised in February 1990.

**Operation and Maintenance (O&M):** Activities conducted at sites after cleanup remedies have been constructed to make sure they continue functioning properly.

**Principal Threat Waste (PTW):** Source materials considered to be highly toxic or highly mobile that generally cannot be reliably contained or would present a significant risk to human health or the environment should exposure occur as defined by OSWER Directive No. 9380.3-06FS, November 1991 "A Guide to Principal Threat and Low Level Threat Wastes" (USEPA, 1991a).

**Proposed Plan (PP):** A Superfund public participation fact sheet that summarizes the preferred cleanup strategy for a Superfund site.

**Record of Decision (ROD):** A public document describing EPA's rationale for selection of a Superfund remedy.

**Remedial Investigation/Feasibility Study (RI/FS):** A two-part investigation conducted to assess the nature and extent of a release, or threat of release, of hazardous substances, pollutants, or contaminants, and to identify alternatives for cleanup. The Remedial Investigation gathers the necessary data to support the corresponding Feasibility Study.

**Responsiveness Summary:** A summary of oral and written comments received by EPA during a comment period on key EPA documents, and EPA's responses to those comments. The responsiveness summary is a key part of the ROD, highlighting community concerns for EPA decision-makers.

**Risk Assessment:** A qualitative and quantitative evaluation performed in an effort to define the risk posed to human health and the environment by the presence or potential presence of specific contaminants.

**Superfund:** The common name used for CERCLA, the federal law that mandates cleanup of abandoned hazardous waste sites.



**SOUTHSIDE CHATTANOOGA LEAD SITE**

**PUBLIC COMMENT SHEET**



Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Place  
Stamp

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U.S. EPA, Region 4  
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