Residential Soil Remedial Action Work Plan–Phase 1

Prepared for

Walter Coke, Inc.
Birmingham, Alabama

May 2011
Revised June 2011

Prepared by
CH2M HILL/MGM

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Acronyms and Abbreviations

ADEM	Alabama Department of Environmental Management
BaP TEQ	benzo(a)pyrene toxic equivalents
CAP	Community Advisory Panel
CFR	*Code of Federal Regulations*
CIP	Community Involvement Plan
COPC	chemical of potential concern
DQO	data quality objective
EPA	U.S. Environmental Protection Agency
FAQ	frequently asked questions
HSP	Health and Safety Plan
PAH	polycyclic aromatic hydrocarbon
ppm	parts per million
QAPP	Quality Assurance Project Plan
RAWP	Residential Soil Remedial Action Work Plan
RSR	Residential Sampling Report

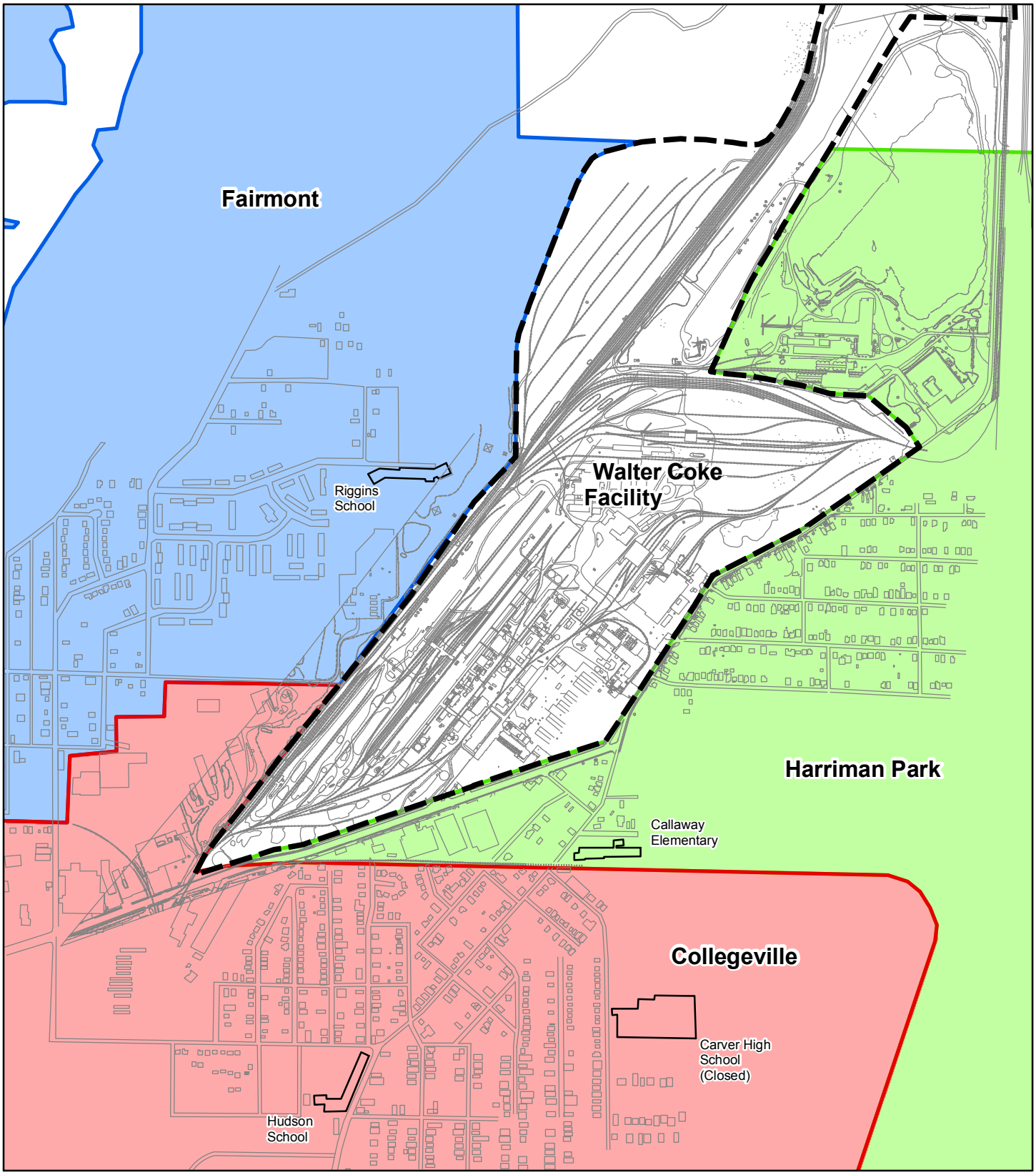
1.0 Project Background

1.1 Introduction

Walter Coke, Inc. (formerly Sloss Industries) agreed to cooperate with the U.S. Environmental Protection Agency (EPA) in sampling 75 residential properties, drainage areas, and public areas (for example, schools) in 3 neighborhoods of interest for chemicals of potential concern (COPCs). These COPCs include arsenic and 7 polycyclic aromatic hydrocarbons (PAHs) measured as benzo(a)pyrene toxic equivalents (BaP TEQ). This Residential Soil Remedial Action Work Plan (RAWP) defines the scope of activities and schedule proposed by Walter Coke to remove residential surface soils identified as exceeding the EPA's cleanup levels in the Harriman Park and Collegeville neighborhoods (Figure 1-1). The cleanup levels are 37 parts per million (ppm) for arsenic and 1.5 ppm for BaP TEQ. The sampling and analyses upon which the soil remediation described in this plan has been based were performed in 2009 and documented in the *Residential Sampling Report (RSR): Walter Coke, Inc., Birmingham, Alabama* (CH2M HILL, December 2009). The report was submitted in draft form to EPA in December 2009; the final RSR was submitted to EPA on May 13, 2011, following receipt of EPA's final comments on the draft RSR in April 2011.

This RAWP is being submitted pursuant to agreements reached between Walter Coke and EPA Region 4 during a meeting held on April 12, 2011, and conference calls on May 6 and May 17, 2011, as well as pursuant to the cover letter delivering this RAWP to EPA. The RAWP will be incorporated into a new settlement agreement/order to be negotiated between the parties.

Walter Coke believes that there is no information from which to conclude that Walter Coke is the source of these constituents. However, Walter Coke has agreed to perform these actions in an expedited manner as a good corporate citizen and to help address potential concerns of the residents involved. The work described in this plan constitutes final action for the properties identified herein.



Legend

- Walter Coke Facility Boundary

Neighborhood

- Collegeville
- Harriman Park
- Fairmont

N

0 500 1,000 2,000 Feet

FIGURE 1-1
Walter Coke Facility and Surrounding Neighborhoods
Residential Remedial Action
Walter Coke Inc.
Birmingham, Alabama

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Following a brief discussion of the site background and community involvement information, the remainder of this RAWP presents the procedures to prepare for and implement the soil remedial actions in Collegeville and Harriman Park, including follow-up (post-excavation) data collection, analyses, and quality assurance procedures. The data collection activities have been designed to meet the data quality objectives (DQOs) developed for this remedial effort. The DQOs, which were developed using EPA's *Guidance on Systematic Planning Using the Data Quality Objectives Process* (2006), are included in Appendix A.

1.2 Site Background

Three neighborhoods–Collegeville, Fairmont, and Harriman Park–are located in proximity to numerous current and historical industrial and commercial activities, including the Walter Coke Birmingham facility. The neighborhoods are in north Birmingham, Jefferson County, Alabama, in an area that is a mixture of industrial, open pit mining, natural wooded uplands, and residential. Construction of the residential neighborhoods began after 1957.

1.3 Purpose and Scope

The overall purpose of this project is to cooperate with EPA to eliminate potential residential exposure in 31 yards (including garden and drip line location) within 23 properties where surface soil concentrations were found to exceed EPA's established cleanup levels of 37 ppm for arsenic and 1.5 ppm for BaP TEQ during the 2009 sampling event.

If any of these constituents might have come from the Walter Coke facility, the hypothetical migration pathway for the COPCs (excluding any native arsenic present) would be airborne deposition of particulates to surface soils. Therefore, the objective of this remedial action is to address potential exposure to surface soil for residents. This remedial action will involve removing soils (up to 1 foot in depth in yards/drip lines or 2 feet for gardens) from the 31 yards within the 23 subject properties and replacing the soil with clean fill. The soil remediation described herein represents the final action for these 23 properties.

1.4 Community Engagement

Walter Coke will continue to engage the community, with support from EPA, throughout the residential soil remedial process. A Community Involvement Plan (CIP) was developed during the residential sampling effort in 2009, and Walter Coke is in the process of revising the CIP to reflect current or planned activities, such as the distribution of community information flyers prior to any soil removal action and the scheduling of community availability sessions at the conclusion of the soil removal action.

Another key update to the CIP is Walter Coke's and the communities' establishment of a Community Advisory Panel (CAP), which serves as a liaison among EPA, Walter Coke, and the surrounding communities of Collegeville, Fairmont, and Harriman Park. The CAP communicates information about the environmental findings and any related cleanup to members and representatives of these communities, and provides candid feedback about community perceptions and concerns to Walter Coke. Because the CAP functions as a "third party," independent of both EPA and Walter Coke, and because the CAP includes known opinion leaders, the CAP should have significant credibility with the community and can be

an effective conduit of information once the group members are comfortable with the work being done.

Walter Coke will obtain EPA comments and approval, before finalizing the CIP.

2.0 Preparation for Remedial Action

Walter Coke will perform the following activities in preparation for excavating the surface soils at subject residential properties in Harriman Park and Collegeville:

- Submit a site-specific Health and Safety Plan (HSP) in accordance with 26 *Code of Federal Regulations* (CFR) 1910(e) and the updated CIP to EPA before the initiation of field work.
- Obtain access agreements from the owners (and occupants, where applicable) of properties where sampling of surface soils in 2009 detected either sieved arsenic at concentrations greater than 37 ppm or BaP TEQ at levels greater than 1.5 ppm.
- Identify a source of clean backfill.
- Obtain waste certification and approval for disposal from the Alabama Department of Environmental Management (ADEM).
- Perform utility clearances of the subject properties.
- Perform initial (pre-excavation) property inspection.

These activities are described in more detail in the following text.

2.1 Obtain Access Agreements

Walter Coke will use "best efforts" to obtain access to properties proposed for soil removal as described herein. "Best efforts" will consist of the following:

- Identify property owners and occupants. Walter Coke will use publically available information to identify the owners and occupants (should the owners not reside on the property) of the properties proposed for soil removal.
- Provide notification via hand delivery or U.S. Postal Service (via certified mail) to the owners and occupants, consisting of the following:
  - A cover letter to provide background information, a summary of the work to be performed, and contact names and information in the event that the owner or occupant has questions. The letter will request that the owners and occupants sign and return the included access agreement by a specified date. The letter generally will provide 15 days for the return of the signed access agreement.
  - The access agreement will identify the work to be performed, restrict access of the owners and occupants from any ongoing excavation or construction activity, and give Walter Coke permission to remove and replace soils in the subject yards.
  - A pre-paid return envelope will be provided in each notification package for the return of the signed access agreement.
- Attempt to contact the owners and occupants directly if notification was delivered via U.S. Postal Service to answer any questions and to confirm that both owners and occupants intend to grant access.

- In the event that the property owner does not reside at the property to be remediated, Walter Coke will not consider access to be granted until it has received the signed access agreement from both the current occupant and the property owner.
- In the event that the owner or occupant denies access, or otherwise does not respond to the request for access by the specified date, Walter Coke will document the owner's or occupant's decision and notify EPA. Walter Coke understands that EPA might contact the property owners and/or occupants who have refused access.

"Best efforts" will not include any monetary compensation in exchange for access permission or in lieu of remediation.

2.2 Obtain Waste Certification and Approval to Dispose of Remediation Waste

Waste disposal activities will be performed in accordance with applicable state and federal regulations and ADEM guidance. Walter Coke will follow the same protocols used to dispose of the soils excavated from the Riggins and Hudson Schools in March, April, and May 2011, and will work with the selected disposal facility and ADEM to secure the necessary approvals for the residential soil removal effort, as follows:

- Waste will be disposed at the Green Mountain Management disposal facility (but Walter Coke reserves the right to identify additional or replacement disposal facilities subject to ADEM's approval).
- Walter Coke will coordinate with ADEM and the disposal facility to achieve waste disposal approval.
- Walter Coke will adhere to any ADEM or disposal facility requirements for waste characterization sampling.
- Excavated soils will be maintained in accordance with ADEM's regulations before disposal.

Note that excavation will not begin until the required certifications and approvals for waste disposal are in place.

2.3 Identify Source of Clean Backfill

Walter Coke will identify a source of imported backfill and evaluate the condition of the source through laboratory analyses of the following

- Target compound list (TCL) volatile organic compounds (VOCs)
- TCL semivolatile organic compounds (SVOCs)
- Low-level PAHs
- Target analyte list (TAL) metals
- Pesticides
- Herbicides
- Polychlorinated biphenyls

If analytical results indicate that none of these constituents are detected at concentrations above the method detection limits (with the exception of naturally occurring metals), the backfill will be considered "clean" and suitable for placement in the residential excavations.

2.4 Utilities Clearance

Alabama's 811 Call-Before-You-Dig services will be used to clear utilities at each property before performing site clearing or removal activities. Verification of utility clearance activities, including reviews of utility maps or hand excavation, will be performed in addition to the 811 service information.

2.5 Initial Property Inspection

Before excavation activities begin, a site visit will be performed at each property for which access has been granted for soil removal. During this site visit, the area for excavation will be identified and items within the area will be inventoried. Items might include plants, fences, or any other structures. If plants are located within the excavation area, Walter Coke will consult with a landscaping contractor to inventory the plants. Any trees, shrubs, plants, or structures that the property owner or occupant does not want disturbed will be noted. Private utilities installed by the owners also will be identified at this time. Photographs will be taken and an inventory and sign-off sheet will be used to document the pre-excavation condition of the property and inventoried items.

3.0 Soil Remedial Actions

Figure 3-1 shows the 23 residential properties where sampling of surface soils in 2009 detected sieved arsenic and/or BaP TEQ at concentrations exceeding their respective cleanup levels. Table 3-1 lists the specific properties and yards/locations proposed for soil removal. As noted in Figure 3-1 and Table 3-1, the properties identified for soil removal are in Collegeville and Harriman Park. No residential properties in Fairmont require soil removal, based on the 2009 sampling results. However, it is noted that one yard in Fairmont will be resampled (under a separate work plan) as a result of a quality control sample discrepancy.

3.1 Site Preparation

On the basis of the initial property inspection, protective measures will be installed around any trees, shrubs, plants, or structures within the proposed area that are not to be disturbed per the owner and/or occupant request. No excavation activities will occur within a reasonable radius of these areas to avoid damage, except with owner or occupant permission.

Clearing and grubbing will be performed within each excavation area as needed. This step includes removal of interfering or objectionable material lying on or protruding above the ground surface, such as vegetation, stumps, or buried logs.

The earthwork subcontractor will remove sections of fence and other obstructions and temporarily store them at the property outside the excavation limits. The removed yard obstructions will be labeled clearly with the correct owner information. If sections of fencing are removed, the opening(s) will be secured at the end of each day to provide an equivalent level of protection.

The earthwork subcontractor will establish and maintain two points of continuous access to the property at all times.

3.2 Erosion and Sediment Control

As required, the subcontractor will apply erosion and sediment control measures. The subcontractor will manage erosion control throughout the remedial action. Stormwater runoff will be controlled so that no soils leave the excavation area and soils that could be carried offsite from truck traffic will be monitored and abated when noted. In addition, dust abatement measures will be implemented, when needed, via water application.

LEGEND

- Properties Proposed for Clean-up
- Site Boundary
- NeighborhoodGrids

N

0 150 300 600 Feet

1 inch = 550 feet

FIGURE 3-1
Neighborhood Properties
Proposed for Cleanup

Residential Soil
Remedial Action Work Plan
Walter Coke Inc.
Birmingham, Alabama

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TABLE 3-1
Summary of Properties Proposed for Remedial Action
Residential Soil Remedial Action Work Plan, Walter Coke, Inc., Birmingham, Alabama

Property ID	Address	Sample Yard/Location	Exceedance Concentration		Proposed Excavation Depth (ft)
			Sieved Arsenic (ppm)	BaP TEQ (ppm)	
Harriman Park					
1	4509 37th St. N.	Front Yard		8.5	1
2	3637 44th Ave. N	Back Yard		3.4	1
		Left Yard		8.5	1
3	3669 43rd Ave. N.	Dripline		3.9	1
4	3554 41st Ave. N	Garden		1.7	2
Collegeville					
5	4024 FL Shuttlesworth Dr.	Back Yard		15	1
6	3472 33rd St. N	Garden		13	2
7	3144 34th Terrace Pl. N.	Front Yard		2.4	1
8	3145 34th Terrace Pl N	Back Yard		14	1
		Left Yard *****		16	1
9	3137 34th Terrace Pl. N.	Front Yard		4.8	1
		Left Yard		3.5	1
10	3460 31st Way N	Front Yard		2.6	1
11	3145 34th Ct. N.	Front Yard		2.0	1
12	3389 33rd St. N.	Front Yard		12	1
13	3409 31st Way N.	Back Yard		2.3	1
14	3441 31st St N	Front Yard *****		15	1
15	3452 30th Way N	Front Yard	38		1
16	3456 30th Way N.	Front Yard	38		1
17	3347 30th Pl. N	Front Yard		1.7	1
18	3361 31st St N.	Back Yard		7.9	1
		Front Yard		5.9	1
19	3377 33rd Pl. N	Back Yard		3.5	1
		Right Yard		4.1	1
20	3369 33rd Pl. N.	Back Yard		3.4	1
21	3364 34th St. N	Back Yard		3.3	1
		Front Yard		11	1
22	3360 34th St. N.	Back Yard *****		8.2	1
		Dripline		2.3	1
		Garden	40	3.0	2
23	3348 34th St. N	Front Yard		6.0	1

Notes:
BaP TEQ = benzo(a)pyrene toxic equivalents
ft = feet
ppm = parts per million
***** Location selected for post-excavation sampling (refer to Section 3.4).

3.3 Excavation and Disposal Activities

Remedial actions will be performed in accordance with the Hazardous Waste Operations and Emergency Response, Title 29 CFR Part 1910.120.

Surface soil in the subject yards will be removed to a depth of 1 foot. At the three properties where gardens require remedial actions, the garden areas will be excavated to a depth of 2 feet because gardening activities (for instance, tilling, digging, and raking) can expose the gardener to soil between 1 and 2 feet below the ground surface. Table 3-1 lists the depths of excavation planned for each property and yard.

Safety measures will be implemented at each property, as follows:

- Controlling traffic as needed during earthwork activities.
- Covering the excavations on a daily basis, if the area is not backfilled immediately.
- Placing high-visibility fencing around each excavation area to provide a visual warning for the public, personnel, and/or trespassers, until the area is ready to be backfilled.
- Posting signage at the properties during earthwork activities.

Each excavation area will be backfilled with clean fill. The excavation area will be returned to substantially the same condition as before soil removal, as described further in Section 3.5. Placement of 1 foot of clean fill in any excavation (or 2 feet in excavated gardens) will eliminate the potential for exposure of a surface user to constituents that might exist at the 1-foot level. Although the presence of constituents at levels deeper than 1 from airborne deposition foot is highly improbable, Walter Coke agrees to perform post-excavation sampling at 10 percent of the locations to document the conditions in the soils that will remain beneath the fill, as described further in Section 3.4.

Walter Coke will manage excavated soil and any additional investigation-derived waste to comply with local, state, and federal regulations. For the purpose of transportation and disposal, removed soil is assumed to not be a regulated hazardous waste, based on concentrations reported to date.

Transportation and disposal activities will be performed in accordance with guidelines provided by ADEM and the disposal facility. Excavated waste will be segregated for offsite disposal as soil or construction debris, should any be encountered or produced. Transport of the excavated soil and potential debris material will be completed by a licensed transporter, and each truckload will be covered with a functioning tarp system. Provisions for routine street and alley cleaning might be developed, if needed, to minimize contamination and to maintain a clean work area.

Dust abatement will be performed during transportation operations. Water application will be used as an abatement measure, if needed. Given the site setting, transport is anticipated to be limited to paved roads. To minimize spillage of excavated soil onto the roads, it is assumed that plastic sheeting or tarps will be placed under trucks during loading activities.

3.4 Post-excavation Sampling and Data Evaluation

Post-excavation sampling of the exposed soil at the bottom of the excavation will be conducted for approximately 10 percent of the subject yards, or 3 excavated yards. As documented in the DQO summary for this effort (Appendix A), the purpose of this sampling effort is to document the condition of soils (that is, the concentrations) that will remain in place beneath the clean backfill. Residential properties selected for post-excavation sampling are those with the highest concentrations found in surface soil, as follows:

- Property ID 8–left yard
- Property ID 14–front yard
- Property ID 22-back yard

The post-excavation samples will be collected using the 5-point-on-die composite sampling technique, per the *Superfund Lead-Contaminated Residential Sites Handbook* (EPA, 2003), as documented in the approved 2008 *Residential Sampling Work Plan* (Section 3.2.2.3). Samples will be submitted to a contracted laboratory for analysis of low-level PAHs, the constituents that triggered removal of soils at the selected properties.

The post-excavation data evaluation will proceed as follows:

- If the measured concentrations of BaP TEQ in the excavation area composite samples do not exceed the cleanup level, no additional action (excavation or sampling) will occur.
- If the measured concentrations in the excavation area composite sample exceed the cleanup level, an additional 1 foot of soil will be removed (to a total depth of 2 feet) at the subject location. Following excavation to 2 feet, if needed, no additional sampling or excavation will occur.
- No post-excavation sampling in the other excavated yards included in this plan will be conducted.

Fast turn-around time (24- to 48-hour) analysis of low-level PAHs will be requested to evaluate whether additional excavation is needed at those yards where post-excavation sampling was conducted. Additional information about sample analysis is provided in the Quality Assurance Project Plan (QAPP), approved as part of the 2008 *Residential Sampling Work Plan*; Appendix B provides relevant updates to the QAPP.

3.5 Site Restoration

Each excavated yard will be restored as closely as possible to the grade before excavation and with positive drainage. Fences or other features removed to facilitate excavation will be replaced. The sections of fence removed from properties that are not reusable will be replaced with new sections of like-kind fencing. Concrete sidewalks and asphalt areas damaged during the construction activities will be repaired. Any utility lines damaged or removed during excavation will be replaced according to the building codes of the City of Birmingham.

Items removed from the site will be returned to the site and reinstalled as appropriate. Items damaged while in storage or in transit will be repaired or replaced, as necessary.

Walter Coke will restore the filled and graded areas of the site. Grassed areas made bare by the excavation will be re-sodded, and plants or small trees will be replanted to reasonably match the original conditions. Each homeowner or occupant is responsible for the upkeep of any new sod, trees, shrubs, and perennials (for example, watering).

Photographs will be taken and a sign-off sheet will be used to document the post-construction condition of the property.

3.6 Field Documentation

Field notebooks will be maintained to record site activities and field conditions, and to log any issues that might occur at a property. A copy of the signed access agreement and pre-excavation photographs for each property will be maintained onsite during construction and restoration activities.

4.0 Schedule and Reporting

4.1 Project Schedule

Table 4-1 lists the proposed schedule for completion of the residential soil removal activities. Walter Coke will initiate the first activity within 1 week of EPA approval of the Final RAWP.

TABLE 4-1
Proposed Project Schedule
Residential Soil Remedial Action Work Plan, Walter Coke, Inc., Birmingham, Alabama

Activity Description	**Activity Completion*** *(based on June 24, 2011, Final RAWP Approval)*
Preparation Activities (refer to Section 2.1 – 2.3)	
Initiate Efforts to Obtain the following: –Access Agreements –ADEM Waste Disposal Approval –Backfill Source –Initial utility locate (to continue weekly)	June 27, 2011
Submit HSP and CIP to EPA	July 15, 2011
Complete Preparation Activities	July 22, 2011
Remedial Soil Action	
Property Inspections	On-going (July through October)
Mobilize Contractor/Initiate Site Preparation for Excavation	August 1, 2011
Complete Excavation and Disposal, and Demobilize Contractor	November 4, 2011
Reporting	
Progress Report #1	July 15, 2011
Progress Report #2	August 19, 2011
Progress Report #3	September 16, 2011
Progress Report #4	October 14, 2011
Progress Report #5	November 11, 2011
Draft of Final Report	November 28, 2011
Final Report	January 6, 2011
CIP Activities	
Community Information Flyer Distribution	July 1, 2011
Community Availability Session	January 19, 2012

* Requests for modifications of due dates and schedules, if needed, will be submitted in writing via email communication between Walter Coke and EPA. See Appendix C.

4.2 Reporting

Progress reports will be prepared as noted in the proposed project schedule to document the status of the ongoing remedial activities. A final report will be prepared to document the residential soil remedial action. Specifically, the report will document the activities completed within each property, as well as the final condition of each property.

APPENDIX A

Data Quality Objectives

TABLE A-1
Data Quality Objectives Summary
Residential Soil Remedial Action Work Plan, Walter Coke, Inc., Birmingham, Alabama

DQO #	Step 1–State the Problem	Step 2–Goal of the Study	Step 3–Information Inputs	Step 4–Study Boundaries	Step 5–Analytic Approach	Step 6–Performance or Acceptance Criteria	Step 7–Plan for Obtaining Data
1	*Describe the problem.* Excavation of the upper 1 foot of soils in residential yards (2 feet in gardens) is being performed to address the potential for exposure to concentrations of arsenic and BaP TEQ in surface soils. No data exist for soil conditions below the original sample interval of 0 to 6 inches, so post-excavation sampling is being performed to document the concentrations of sieved arsenic and/or BaP TEQ in soils at the base of the excavation. Approximately 10% of the yards/locations proposed for excavation will be selected for post-excavation sampling. *Establish the planning team.* The planning team consists of CH2M HILL, Walter Coke, and EPA Region 4. *Describe the conceptual model of the potential hazard.* If concentrations of arsenic and/or BaP TEQ in surface soil exceed the cleanup level, they may occasionally be contacted by construction workers excavating below a 1-foot depth to install utilities or dig subsurface foundations for a building. Due to the extremely limited frequency and duration of this type of activity on residential property, and the low concentrations expected to be present, this exposure pathway is expected to be insignificant. *Identify the general intended use of collected data.* The data collected in this study will be used to document the arsenic and/or BaP TEQ concentrations present in soils at the base of the excavated areas and to evaluate whether additional excavation is needed. *Identify available resources, constraints, and deadlines.* To minimize potential hazards associated with an open excavation area and possible inconvenience to residents, the areas will be backfilled after the samples have been collected.	*Specify the primary study question.* The primary question is, "What are the concentrations of arsenic and/or BaP TEQ in soils at the base of the excavation areas?" *Determine the range of possible outcomes from this study.* If concentrations of sieved arsenic and/or BaP TEQ in composite surface soil samples collected at the base of the excavation exceed cleanup levels,1 additional foot of excavation (to a total depth of 2 feet) will occur. No additional sampling will occur at the 2-foot excavation depth. If the cleanup levels are not exceeded at the 1-foot excavation depth, no further excavation or sampling will occur.	*Identify the types of information needed to resolve the decision statement.* Arsenic and BaP TEQ concentrations will be evaluated in sieved (arsenic) and unsieved (BaP TEQ) 5-point composite soil samples (0- to 6-inch interval typical for bottom excavation samples) according to established protocol and comparing to the site cleanup levels. *Identify the source of information.* EPA Region 4 has identified cleanup levels for sieved arsenic (37 ppm) and BaP TEQ (1.5 ppm). *Identify how the cleanup level will be determined.* EPA Region 4 determined the cleanup levels based on a target hazard quotient of 1 and default bioaccessability of 60% for arsenic, and based on a target excess lifetime cancer risk of 1E-6 for BaP TEQ. *Identify appropriate sampling and analysis methods.* A 5-point-on-die composite soil sample will be collected from each excavation area selected for post-excavation sampling. The laboratory will sieve a portion of the sample if arsenic analysis is requested. Samples will be analyzed by SW-846 Method 6010B (arsenic) and/or SW-846 Method 8270D-LL/8270-SIM (low-level PAHs), depending on the constituent(s) that triggered removal of the property soils. Detection limits will be below cleanup levels. Fast turn-around time analyses (24- to 48-hour PAHs; 4- to 5-day arsenic) will be requested for the post-excavation samples, as appropriate.	*Specify the target population.* EPA has identified the target 10% yards/locations as 3 properties with the highest reported concentrations of the COPCs as documented in the RSR. *Specify other practical constraints for collecting data.* Permission from each property owner is required before CH2M HILL can enter the property to excavate and collect post-excavation soil samples, including permission to leave the excavation open pending laboratory analysis of the post-excavation samples. *Specify the scale of estimates to be made.* Not applicable. *Specify the scale of inference for decision making.* The analytical data from the selected locations will be used to determine the need for an additional 1 foot of excavation at the selected locations.	*Specify the cleanup level.* EPA Region 4 has identified cleanup levels for sieved arsenic (37 ppm) and BaP TEQ (1.5 ppm). *Develop the population of interest and the theoretical decision rule.* If the measured concentrations in the excavation area (sieved arsenic and unsieved BaP TEQ composite samples, as appropriate) exceed the cleanup levels, the base of the excavation will be excavated 1 additional foot (to a total depth of 2 ft).	*Set the baseline condition.* Sieved arsenic and unsieved BaP TEQ composite data, as appropriate, will be used to compare the reported concentrations from each sample to the cleanup levels. *Determine the impact of decision errors and setting tolerable decision error limits.* Not applicable.	*Select the sampling design.* Communications with EPA's Arsenic Workgroup indicate that sampling for arsenic should be conducted similar to lead sampling, using the *Superfund Lead-Contaminated Residential Sites Handbook* (EPA, 2003), and samples should be sieved with a 250-micron sieve (#60 sieve) to evaluate the fraction that adheres to hands and is available for incidental ingestion. A 5-point-on-die composite soil sample will be collected from each excavation area selected for sampling. Samples for BaP TEQ analysis will not be sieved to minimize the potential for volatilization from the sample. Samples will be sent to an offsite laboratory for analysis. **Total Yards/Locations Selected for Post-Excavation Sampling–3**

Notes:
BaP TEQ = benzo(a)pyrene toxic equivalents
COPC = chemical of potential concern
EPA = U.S. Environmental Protection Agency
PAH = polycyclic aromatic hydrocarbon
ppm = parts per million

Source: *Guidance on Systematic Planning Using the Data Quality Objectives Process*, EPA QA/G-4. EPA/240/B-06/001. February 2006

APPENDIX B

Quality Assurance Project Plan Update

APPENDIX B

Quality Assurance Project Plan Update

The procedures for sample collection, preparation, chain-of-custody documentation, and shipping of environmental samples generally will adhere to the *Field Branches Quality System and Technical Procedures* (U.S. Environmental Protection Agency [EPA] Region 4, October 2010), as documented in the approved *2008 Residential Sampling Work Plan*. This section briefly summarizes key information from the approved 2008 *Quality Assurance Project Plan* (QAPP), modified for this effort. References to the approved QAPP section are included as appropriate.

Field activities will be conducted by personnel working under a project-specific Health and Safety Plan (HSP) plan developed for the Walter Coke offsite residential remedial action activities. Field activities will be conducted following the HSP protocols, prepared in accordance with practices for "Hazardous Waste Operations and Emergency Response," Title 29 *Code of Federal Regulations* (CFR), Part 1910.120.

Field Sampling Procedures and Documentation

[This is an update to Section 4.1 of the approved 2008 QAPP.]

Sample Containers, Volumes, Preservation, and Holding Times

Sample container and preservation requirements for each analytical method by media are listed in Table B-1.

Field Quality Assurance/Quality Control

Quality assurance/quality control (QA/QC) measures will be followed to ensure that the data are scientifically valid and defensible, and of sufficient quality to support future project decision-making activities. QA/QC standards for establishing analytical protocols and documentation requirements will be performed in accordance with the *Field Branches Quality System and Technical Procedures* (EPA Region 4, October 2010). Laboratory and field QC samples will be included in the analytical batch with native soil samples. The QC sample requirements and designations are described in the follow text.

One **Field duplicate** sample will be collected to measure the precision of the sampling and analysis process. The source information will be recorded in the field notes, but not on the chain-of-custody form prepared by the field team at the time of sample collection. The identity of the duplicate will be labeled as follows: MMYY-FD1, where MM is the two–digit month and YY is the two-digit year that the sample was collected.

One matrix spike/matrix spike duplicate (**MS/MSD)** sample will be collected and shipped to the laboratory for sample analysis. The identity of the MS/MSD sample will be identified with an 'MS' and 'MSD' notation following the native sample ID.

One **equipment rinsate blank,** identified as MMYY-EB1, will be collected by rinsing the sampling equipment after decontamination and will be analyzed for the same analytical parameters as the corresponding samples.

One **ambient blank** will be identified as MMYY-FB1 and collected to evaluate the potential contamination from ambient air during sampling procedures.

TABLE B-1
Requirements for Containers, Preservation, Sample Volumes, and Holding Times
Residential Soil Remedial Action Work Plan, Walter Coke, Inc., Birmingham, Alabama

Parameter	Analytical Methods	Container	Preservation	Sample Volume/Weight Requirements	Maximum Holding Time
Surface Soil					
PAHs – Low Level	SW8270D-LL/ 8270-SIM	4-oz glass jar, Teflon-lined cap	4°C	(1) 4-oz jar	14 days to extraction, 40 days to analysis
Sieved Arsenic	SW6010B	4-oz glass jar, Teflon-lined cap	4°C	(1) 4-oz jar	180 days
Water Samples (Field QA/QC Samples)					
PAHs – Low Level	SW8270D-LL/ 8270-SIM	1-L amber glass	4°C	(2) 1-L bottles	7 days to extraction, 40 days to analysis
Sieved Arsenic	SW6010B	500-mL HDPE	4°C, pH<2 w/HNO_3	(1) 500-mL bottle	180 days

Notes:
SW = SW-*846 Test Methods for Evaluating Solid Waste Physical/Chemical Methods*
PAH - polycyclic aromatic hydrocarbon
HNO_3 = nitric acid
mL = milliliter
ºC = degrees Celsius
oz= ounce
L=liter
HDPE = high-density polyethylene

Analytical Procedures and Data Validation

[This is an update to Section 4.2 of the approved 2008 QAPP].

Required Parameters and Reporting Limits

Table B-2 lists the cleanup levels required for this project, along with the typical laboratory reporting limits (RLs) and method detection limits (MDLs). MDLs must be lower than the minimum RLs and should be at least less than one-half of the minimum RLs.

Analytical Methodology

All analytical tests will be conducted in accordance with the methodologies listed in Table B-1. All laboratory deviations from these protocols must be approved by the project chemist in writing prior to sample receipt by the laboratory.

TABLE B-2
Project Cleanup Level, Laboratory Reporting limits and MDLs
Residential Soil Remedial Action Work Plan, Walter Coke, Inc., Birmingham, Alabama

PAH Compounds	Cleanup Level	SW8270D–Low Level	
		Lab MDL (ppm)	Lab RL (ppm)
Benzo[a]anthracene	Measured as 1.5 ppm BaP TEQ	0.0021	0.0067
Benzo[a]pyrene		0.002	0.0067
Benzo[b]fluoranthene		0.0062	0.0067
Benzo[k]fluoranthene		0.0043	0.0067
Chrysene		0.0023	0.0067
Dibenz(a,h)anthracene		0.0035	0.0067
Indeno[1,2,3-cd]pyrene		0.0019	0.0067
Metals	**Action Level**	**SW6010B**	
		Lab MDL (ppm)	**Lab RL (ppm)**
Arsenic	37 ppm	0.49	1

Notes:
MDL = method detection limit
RL = reporting limit
PAH = polycyclic aromatic hydrocarbon
BaP = benzo(a)pyrene
ppm = parts per million

Certification

The laboratory must have current Alabama certification (if applicable) along with National Environmental Laboratory Accreditation Program (NELAP) certification for the requested analyses. Documentation of certification must be supplied by the laboratory to CH2M HILL before samples are received.

Quality Assurance, Data Validation, and Reporting

QA requirements will be in accordance with the referenced analytical method. The individual methods summarize the quality control (QC) audit types, parameters, and laboratory control limits. Exceedances in control limits or parameters required by the laboratory's internal analytical standard operating procedures should be noted in the case narrative.

EPA Level IV quality assurance (QA)/QC data analysis and data deliverables are required for this project. The laboratory must provide two unbound hard copies of the Level IV data packages to the CH2M HILL project manager and project chemist. Level IV data packages will include sample results, QC summary forms, and unreduced instrument data.

Analytical Turn-around Times

If requested, verbal results for fast turn-around time LL-PAHs will be emailed or faxed to the project chemist within 24 to 48 hours of sample collection to support field decisions regarding additional excavation and backfilling at those yards where post-excavation sampling will occur.

Final reports, including both a hard-copy data package and electronic data deliverable, will be submitted within 21 calendar days starting from the date of receipt of each daily shipment of samples by the laboratory.

CH2M HILL will be notified immediately of any problems or laboratory conditions that affect the timeliness of analysis and data reporting.

APPENDIX C

EPA Agreement on Reasons for and Method of Schedule Modifications

Jarry Taylor

From: Redleaf-Durbin.Joan@epamail.epa.gov
Sent: Tuesday, June 21, 2011 10:17 AM
To: Jarry Taylor
Cc: Pallas.Jeff@epamail.epa.gov; Chuck Stewart; Grucza, Dan
Subject: Modifications to schedules and due dates

Hi. As we discussed, including specific dates as part of schedules in EPA-approved workplans provides clarity to the process. However, EPA recognizes that circumstances may occur that may require revising schedules included in any approved workplan. EPA also recognizes that formal modification of an approved workplan or order to which a workplan is appended may not always be necessary to simply adjust a schedule or a due date for a deliverable. Hence, for schedules and due dates in approved workplans to address the clean up and additional assessment and clean up, if necessary, in the Collegeville, Harriman Park and Fairmont neighborhoods, and in any Order EPA and Walter Coke enter into to address this clean up and assessment, modifications of due dates and schedules can occur by email agreement between you and me, or between Chuck Stewart and Jeff Pallas. EPA expects Walter Coke will submit in writing an explanation of the schedule change it seeks, and the reasons and any supporting documentation for the change. EPA will review the information and inform Walter Coke as quickly as possible whether it approves the request.

Thanks
Joan

Joan Redleaf Durbin
Associate Regional Counsel
(404) 562-9544