STATEMENT OF BASIS

PROPOSED RCRA REMEDY SELECTION
FORMER CHEMICAL PLANT

ERP COMPLIANT COKE, LLC
BIRMINGHAM, ALABAMA

EPA I. D. NUMBER: ALD 000 823 848
RCRA Docket #: RCRA-04-2016-4250

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United States Environmental Protection Agency
Region 4

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1. EXECUTIVE SUMMARY

This Statement of Basis (SB) is for the Former Chemical Plant present at ERP Compliant Coke, LLC, a coke manufacturer located at 3500 35th Avenue North, Birmingham, Alabama. Specifically, this document sets forth the U.S. Environmental Protection Agency (EPA) - Region 4's proposed corrective measure (remedy) for the Former Chemical Plant, pursuant to a Resource Conservation and Recovery Act (RCRA; pronounced 'rick-ra') Section 3008(h) Administrative Order on Consent (Order; Docket Number: RCRA-04-2016-4250). The Former Chemical Plant is one of the five study areas identified at the Facility and addressed by the Order.

On September 17, 2012, the EPA issued a RCRA Order to Walter Coke. The 2012 Order outlined requirements for Walter Coke to finalize corrective measure studies and implementation at forty-five (45) Solid Waste Management Units (SWMUs) and six (6) Areas of Concern (AOCs). The 2012 Order built upon and closed out a previous 1989 RCRA Section 3008(h) Administrative Order, which triggered numerous environmental studies on-site and off-site over the past 23 years on this ~400-acre Facility.

The Walter Coke facility was purchased by ERP Compliant Coke in February 2016 out of bankruptcy proceedings. As part of the bankruptcy settlement, the new owner assumed the environmental responsibilities identified in the 2012 Order with Walter Coke. On August 11, 2016, the 2012 Order was modified and re-issued to note the ownership change.

Because this SB merely summarizes information that can be found in greater detail in documents contained in the Administrative Record (e.g., investigation and evaluation reports), EPA encourages the interested public to review these documents in order to gain a more comprehensive understanding.

Quick SB Fact: The SB provides general background information and summarizes the remedial alternatives evaluation process and identifies the remedy EPA is proposing to protect human health and the environment. This SB has the following four-fold purposes:

- Identify the proposed remedy
- Describe the process of considering remedial options
- Solicit public review
- Provide information on public involvement in remedy selection

Accordingly, these documents are available for review during the **45-day public comment period**, which runs from October 1, 2017, to November 14, 2017.

During the 45-day public comment period, the EPA will be accepting comments on the proposed remedy, which consists of Land Use Controls + In-Situ Soil Source Area Treatment + Groundwater Removal and Treatment + Groundwater Monitoring, as discussed in this SB. The Agency may modify its proposed remedy described herein or select another corrective measure alternative based on new information or on public comments.

Please see Sections 12 and 13 of the SB for the locations of the Administrative Record, how to submit written comments to the EPA, and the upcoming public meeting/hearing.

Upon conclusion of the public comment period, the EPA will issue a final determination and, if comments are received, a Response to Comments.

RCRA's Relation to EPA Superfund Actions: Basically, RCRA is addressing on-site (and directly related offsite) contamination at the ERP Compliant Coke facility. The EPA Superfund Program, through its designation of the 35th Avenue Superfund Site, is addressing contamination within the community.

2. FACILITY BACKGROUND

The roots of the ~400-acre ERP Compliant Coke facility can be traced back to 1881 when Sloss-Sheffield Steel and Iron Company first began producing pig iron in Birmingham, Alabama. In 1920, Sloss-Sheffield Steel and Iron Company built two coke oven batteries to serve its own needs as well as those of other customers. As Birmingham's steel industry grew, so did the need for furnace coke, which prompted the construction of three more batteries at the Facility during the 1950s. Beginning in 1952, the company experienced a series of corporate transactions and restructurings that culminated in the name change to Walter Coke in May 2009. The Walter Coke facility was purchased by ERP Compliant Coke in February 2016 out of bankruptcy proceedings.

The Former Chemical Plant manufacturing began in 1948, and all chemical manufacturing operations ceased in 2002 (Figure 1). The primary product lines coming out of the Former Chemical Plant were foundry catalyst used in sand cast foundry molds to make iron pipe and other foundry products. In addition, a mineral wool plant, which manufactured mineral fiber used in the production of ceiling tile and insulating products, was built in late 1947 and was decommissioned in 2010. Other product lines at the facility, now discontinued, included iron from the blast furnace plant which operated from 1951 to 1979. Currently, the facility produces foundry coke and furnace coke in the Coke Manufacturing Plant, located generally to the west of the Former Chemical Plant.

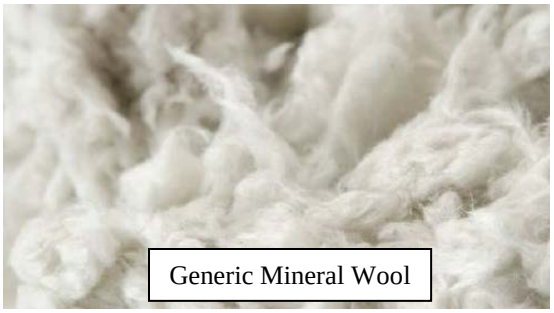
As part of the bankruptcy settlement, ERP Compliant Coke assumed the environmental responsibilities identified in a 2012 Order with Walter Coke. On August 11, 2016, the 2012 Order was modified and re-issued to note the ownership change. Like the 2012 Order, the 2016 Order requires finalization of corrective measure studies and implementation at forty-five (45) Solid Waste Management Units (SWMUs) and six (6) Areas of Concern (AOCs). The 2016 Order is designed to be a "roadmap" for accomplishing site-wide clean-up at all on-site SWMUs and AOCs, which have been grouped into five (5) SWMU Management Areas (SMAs) (Table 1, Figure 1).

Table 1. Identified SWMU Management Areas (SMAs)	
SMA 1 - Biological Treatment Facility	SMA 4 - Former Chemical Plant
SMA 2 - Land Disposal Area	SMA 5 - Former Pig Iron Foundry
SMA 3 - Coke Manufacturing Plant	

Each SMA is being studied separately to identify cleanup options and to identify protective cleanup standards. After reviewing the results from past investigations and studies, EPA believes that corrective measures are necessary at SMA 4 – the Former Chemical Plant, which has fourteen identified units of interest (Table 2). The other 4 SMAs will be addressed via separate Statements of Basis (SB).

Table 2. Identified SWMUs and AOC at SMA 4 – Former Chemical Plant	
SMWU 26 – Main Process Building	SWMU 33 – Plant Drum Storage Area
SWMU 27 – Floor Drain System	SWMU 34 – Wastewater Neutralization System
SWMU 28 – Sulfonation Floor Drain	SWMU 35 – Mineral Wool Waste Piles
SWMU 29 – Product Tank Containment Area	SWMU 36 – Used Oil Tank
SWMU 30 – Centrifuge Waste Water Tank	SWMU 42 – Former Above Ground Storage Tanks (ASTs)
SWMU 31 – Monohydrate Floor Drain and Sump	AOC B – Drainage Ditch next to Shuttlesworth Drive and 35th Avenue
SWMU 32 – Drum Storage Area	AOC D – Former Chemical Plant (FCP) Groundwater Plume

One of the units listed in Table 2 for the Former Chemical Plant, the Mineral Wool Piles (SWMU 35), deserves further explanation based on past community interest. The Mineral Wool Piles reach heights of ~75 feet and have been estimated by the Facility to contain ~2 million cubic yards of material. The origin of the Mineral Wool Piles rests with the Facility's past Fiber Division, which operated five coke-fired cupola furnaces that melted basic steel blast furnace slag and other minerals for the purpose of manufacturing slag-based mineral fiber. This fiberous material is variously called mineral, rock or slag wool insulation (see inset picture). It is made from rock and blast furnace slag which are melted and spun into fibers to resemble the texture of wool. Mineral wool comes in batts, rolls or loose-fill forms. Like fiberglass, it is also used throughout a house in sidewalls, attics, floors, crawl spaces, cathedral ceilings, and basements. The majority of the product produced by the Facility was packaged in 700 lb. bales to be utilized for ceiling tile wool.


Generic Mineral Wool

The Mineral Wool Piles consist of Slag Wool Aggregate, which was a co-product of the former slag wool fiberization process. The Mineral Wool Piles contains fibrous material and non-fibrous material that was removed from the fiber as part of the product cleaning process. The chemistry of Slag Wool Aggregate is identical to that of the fiber product; but it contains much less of the fiberized form of the material.

3. SUMMARY OF ENVIRONMENTAL SETTING

The Facility is underlain by sedimentary rocks (e.g., limestone). At SMA 4, industrial fill material is present at thicknesses ranging from 0.5 to 6 feet. The native soil over the bedrock consists of clays. In general, there are three zones of groundwater movement beneath the Facility, including SMA 4:

1) fill/soil (shallow flow zone - ~20 ft or less below ground surface),
2) the soil-bedrock interface or shallow bedrock (intermediate flow zone - ~20 to 50 ft below ground surface), and
3) the deep bedrock (bedrock flow zone – deeper than 50 ft below ground surface).

Due to the complex nature of area soils and bedrock, the rate and direction of groundwater flow varies from one zone to another, as well as within each zone. The intermediate flow zone is much more porous and permeable than the other two zones, and it is the main contaminated groundwater zone at SMA 4.

SMA 4 does not contain any aquatic or terrestrial habitats of interest (e.g., ponds, forests).

4. SUMMARY OF NATURE AND EXTENT OF CONTAMINATION (What is Contaminated and Where is the Contamination?)

A brief summary of the nature and extent of contamination is presented below for SMA 4.

- Subsurface Soil: Subsurface soil samples were collected from a total of 74 locations. Based on the operating history of the Facility, the following categories of constituents underwent laboratory analysis: volatile organic chemicals (VOCs, e.g., benzene), semi-volatile organic chemicals (SVOCs, e.g., benzo(a)pyrene), and metals (e.g., arsenic). Constituents within each of

these chemical categories were not found in any distinct or concentrated area(s); rather, the constituents were dispersed throughout the subsurface of SMA 4 (Figure 2). Specifically, of the 74 subsurface samples collected/analyzed:

  - four soil samples detected constituents at levels above the preliminary cleanup (i.e., benzo(a)pyrene at 29 ppm and 98 ppm vs. a preliminary cleanup goal of 28 ppm; benzene at 760 ppm vs. a preliminary cleanup goal of 409 ppm; toluene at 56,000 ppm vs. a preliminary cleanup goal of 21,785 ppm).
  - thirty-one soil samples detected at least one constituent above their respective screening levels used to evaluate concentrations that present a potential threat for future contamination of groundwater.

- Surface Soil (0-1 foot): Except for the Drainage Ditch (AOC B), surface soil samples were not collected in SMA 4 because the areas not containing structures were covered by concrete, asphalt surfaces or naturally hard surfaces (mineral wool). Ten soil samples were collected in the Drainage Ditch and analyzed for volatile organic chemicals (VOCs, e.g., benzene), semi-volatile organic chemicals (SVOCs, e.g., benzo(a)pyrene), and metals (e.g., arsenic). The main detected constituents were arsenic and a few semi-volatiles (e.g., benzo(a)pyrene) (Figure 3). Three ditch samples detected arsenic at 23 ppm, 25 ppm and 26 ppm, which is above the preliminary cleanup goal for arsenic of 19 ppm. Two ditch samples detected benzo(a)pyrene at 3.4 ppm and 7.7 ppm, which is above the preliminary cleanup goal of 2.8 ppm.
- Groundwater: A total of 18 monitoring wells have been installed to address SMA 4. The main constituents seen in the groundwater are volatile organic compounds (e.g., benzene) and semi-volatile organic compounds (e.g., benzo(a)pyrene), and the preliminary cleanup standards for multiple constituents are exceeded and make up a contaminated groundwater plume that is approximately 550 ft x 800 ft in size within the shallow bedrock (Figure 4).
- Mineral Wool Piles: To assess the piles, 8 samples were collected and 16 analyses made for volatile organic chemicals (VOCs, e.g., benzene), semi-volatile organic chemicals (SVOCs, e.g., benzo(a)pyrene), and metals (e.g., arsenic, cyanide). A few metals (e.g., arsenic, chromium) and a few SVOCs (e.g., benzo(a)pyrene) were found to be slightly above their respective industrial screening levels.

5. SUMMARY OF INTERIM MEASURES (What Cleanup has Already Occurred?)

The groundwater plume at SMA 4 is composed primarily of volatiles, both dissolved phase hydrocarbons (e.g., benzene) and chlorinated solvents (e.g., chlorobenzene) that have migrated to the downgradient property boundary along Shuttlesworth Drive. To begin addressing this plume, which had begun to migrate offsite, EPA approved an Interim Measures plan in 2012 whose performance objective is to establish pumping rates in the containment wells to maintain an inward gradient along a segment of the property line and thereby control migration. A secondary benefit of hydraulic containment is chemical mass removal. Groundwater removal is currently accomplished through 6 extraction wells. Eighteen monitoring wells are currently used to assess the effectiveness of the extraction system (Figure 4). The containment wells, and the associated well monitoring, have been successfully operating since the Spring of 2013.

To assess concern over the potential for vapors from the Former Chemical Plant's groundwater to migrate and enter nearby homes, quarterly sampling (i.e., May 2013, August 2013, November 2013, and February 2014) of the air in and around a home across Shuttlesworth Drive occurred. The study's objective was to determine the potential for and nature and extent of any adverse vapor intrusion by

collecting and analyzing air from three areas: subsurface house crawlspace and outside air. EPA concurred with the study's evaluation in 2015 that the potential for vapor intrusion from nearby contaminated groundwater has been adequately investigated, and vapor intrusion from the groundwater plume appears to have little to no potential to increase contaminant concentrations in indoor air. In addition, operation of the groundwater removal system helps to further reduce the source of potential vapors that might enter nearby structures in the future.

6. SUMMARY OF FACILITY RISKS
(What Risks Exist?)

Part of the decision process in determining whether remediation of detected contaminants is needed includes determining if the detected contaminant concentrations pose unacceptable risks to human health or the environment. This risk is evaluated for each potential exposure pathway based on consideration of current and reasonably expected future uses of the Facility and maximum beneficial use of ground water. Once the beneficial uses are determined, cleanup levels to protect those uses are established, which then helps with determining the scope of the remediation.

Investigations at SMA 4 indicate that soil contains semi-volatile organics (e.g., benzo(a)pyrene) and metals (e.g., arsenic), and groundwater contains volatile organics (e.g., benzene) and semi-volatile organics (see Section 5). These detected contaminants were used in the development of a Baseline Risk Assessment where the potential adverse health effects are analyzed for various routes of exposure (e.g., ingestion, inhalation, dermal) associated with the contaminated soil and groundwater. Because the Facility's current use and reasonably expected future use are as an operating industrial facility with restricted access, industrial/commercial workers and constructions workers were the two main groups (i.e., receptors) whose risk was assessed. To account for possible facility access without permission, the potential risk to an adolescent trespasser was also assessed.

Consideration of possible remedial action (i.e., cleanup actions) is required if the Facility's contamination fails any one of the four standard EPA remediation triggers. As shown in Table 3, some of the remediation triggers have been exceeded at SMA 4.

Table 3. Evaluation of Remediation Triggers

EPA Remediation Trigger	Analysis		Is there an Identified Risk to Assess for Possible Cleanup?
	Receptor	**Baseline Risk Assessment Finding**	
The cumulative excess carcinogenic site risk to an individual exceeds 0.0001 (i.e., 1E-04).*	Industrial Worker	Cumulative excess carcinogenic site risk was calculated to be 2.7E-03 and 1.6E-02, current and future risk respectively. Groundwater is the predominant factor in exceeding the cumulative site risk.	Yes
	Construction Worker	Cumulative excess carcinogenic site risk was calculated to be 5.6E-04 and 5.6E-04, current and future risk respectively. Groundwater is the predominant factor in exceeding the cumulative site risk.	Yes
	Trespasser	Cumulative excess carcinogenic site risk was calculated to be 5.6E-06 for both current and future risk.	No
	Resident	For adult and child residents, the excess carcinogenic risk from the Mineral Wool Piles via an inhalation route of exposure was found to be 1.9E-07 and 2.3E-07, respectively.***	No

Table 3. Evaluation of Remediation Triggers			
EPA Remediation Trigger	**Analysis**		**Is there an Identified Risk to Assess for Possible Cleanup?**
The non-carcinogenic hazard index is greater than 1 (i.e., 1E 00).**	Industrial Worker	Non-carcinogenic hazard index was calculated to be 2.9E+02 and 6.2E+02, current and future risk respectively. Groundwater is the predominant factor in exceeding the cumulative site risk.	Yes
	Construction Worker	Non-carcinogenic hazard index was calculated to be 3.7E+02 and 3.7E+02, current and future respectively. Groundwater is the predominant factor in exceeding the cumulative site risk. Subsurface soil is also a minor contributing factor in exceeding the cumulative site risk.	Yes
	Trespasser	Non-carcinogenic hazard index was calculated to be 1.4E-02 for both current and future risk.	No
	Resident	For adults and children, the noncancer hazard index for the Mineral Wool Piles via an inhalation route of exposure was calculated to be 8.6E-05 and 1.7E-04, respectively.***	No
Site contaminants cause adverse environmental impacts.	No areas of ecological significance exist at SMA 4.		No
Chemical-specific standards are exceeded.	Drinking water standards (aka maximum contaminant levels (MCL)) have been exceeded in wells within SMA 4 for the following constituents: Benzene, Chlorobenzene, Cis-1,2-Diclhoroethene, and Vinyl Chloride.		Yes

Notes

* A risk level of 1E-04 represents an increase of one additional person out of 10,000 developing cancer over the course of a lifetime of exposure. Risks calculated to exceed 1E-04 for a receptor are deemed to have exceeded a protective level and remedial action is needed. When a facility's calculated cumulative risk for a receptor exceeds 1E-04, EPA's goal is to reduce the threat from carcinogenic contaminants such that, for any medium, the excess lifetime risk of cancer to such a receptor generally falls within a range from one in ten thousand to one in one million (i.e., 1E-04 to 1E-06).

** As the hazard index exceeds 1.0, the potential for adverse health effects increases. Risks calculated to exceed 1.0 are deemed to have exceeded a protective level and remedial action is needed.

*** Given the community's concern regarding the Mineral Wool Piles, the risk to nearby residents from the piles was evaluated as if it were soil. Although the risk assessment was based on the facility's current and reasonably expected future uses as an operating industrial facility with restricted access, in the case of the Mineral Wool Piles, it is possible that some material from the pile may become airborne, disperse in wind, and migrate off-site causing some exposure. Because of this potentially complete pathway, nearby residents (both adult and children) were evaluated for inhalation exposure to the constituents present in the Mineral Wool Piles.

7. SCOPE OF CORRECTIVE MEASURES (Where is Cleanup Needed?)

Based on the cumulative site risk established by the Baseline Risk Assessment (Section 6), preliminary cleanup standards were established. Comparison of these preliminary cleanup standards to the detected concentrations can identify areas where remediation may be necessary. The following are the risk management conclusions on which environmental media require action to protect human health.

- Soil
- Groundwater

8. FACILITY-SPECIFIC CORRECTIVE MEASURE (REMEDY) OBJECTIVES (What Site-Specific Objectives are needed for a Protective Cleanup?)

Facility-specific Corrective Measure Objectives form the basis for evaluating potential remedial technologies to address the Facility's contamination in a manner that is protective of the identified risks to be addressed. These objectives were crafted with consideration of the three general Corrective Measure Performance Standards used in any remedy evaluation (see Section 9) and were based on an evaluation of the Facility investigation results and the Baseline Risk Assessment, including any preliminary cleanup standards developed in conjunction with the current and reasonably expected land and groundwater uses and their identified routes of exposure to humans and ecological receptors.

No environmental receptors were identified in the investigation of SMA 4; therefore, the Facility-specific Corrective Measure Objectives listed in Table 4 are solely to protect human health from contamination at SMA 4.

Table 4. Facility-Specific Corrective Measure Objectives

No.	Environmental Media	Corrective Measures Objective
1	Soil	Maintain, in perpetuity, land use as industrial, a setting that has been found to be protective for the detected soil concentrations.
2	Soil	Ensure that industrial/commercial workers, construction workers, and trespassers are not exposed to unacceptable levels of soil contaminants.
3	Soil	Minimize the potential for soil contaminants to leach and contaminant groundwater or adversely impact groundwater cleanup.
4	Groundwater	Restore groundwater to maximum beneficial use, which in this case is as a drinking water aquifer.*
5	Groundwater	While aquifer restoration is sought, hydraulically control the groundwater plume in order to keep contamination that is above identified cleanup standards from expanding and/or migrating offsite.
6	Groundwater	Remove significant sources of subsurface mass.**
7	Groundwater	While aquifer restoration is sought, control current land use exposures (e.g., industrial/commercial workers, construction workers, and trespassers) and potential future exposures (residents) to groundwater above the identified cleanup standards.

Notes

* It is EPA's policy to determine protective media cleanup objectives for groundwater remedies considering the use, value, and vulnerability of the groundwater resource, and all potential pathways that could result in human or ecological exposure to contaminants (Final Comprehensive State Ground Water Protection Program Guidance, December 1992). Typically, the groundwater use designation or classification system is the starting point for determining the appropriate reasonable expected uses and exposures to evaluate risks and identify groundwater cleanup levels.

** Reaching restoration of groundwater will not occur unless the original source is remediated/eliminated. In this context, "sources" includes both the location of the original release as well as locations where significant mass of contaminants may have migrated and remain in a distinct geographic area.

9. SUMMARY OF REMEDIAL ALTERNATIVES AND REMEDY EVALUATION (What Cleanup Approaches were Considered, and How were they Evaluated?)

Remedial alternatives are combinations of cleanup technologies designed to meet the Facility-specific Corrective Measure Objectives (Section 8). The technologies retained from the technology screening process were assembled into 5 preliminary alternatives that were believed to have a change at treating or

containing the contaminants in soil and groundwater, protect human health, control the residual contamination source, and reduce contaminant mass (Table 5).

Table 5. List of Considered Remedial Alternatives	
Alternative No.	**Description**
1	No Action
2	Physical, Legal, and Administrative Barriers (Land Use Controls)
3	Land Use Controls + Groundwater Long Term Monitoring
4	Land Use Controls + In-Situ Soil Source Area Treatment + In-Situ Groundwater Treatment + Groundwater Monitoring
5	Land Use Controls + In-Situ Soil Source Area Treatment + Groundwater Removal and Treatment + Groundwater Monitoring

These 5 preliminary alternatives were then evaluated (screened) to arrive at a final set of remedial alternatives that would be evaluated in detail. Because all remedies must achieve and maintain long-term protection of human health and the environment, this evaluation/screening was made against the following three EPA generated and standard Corrective Measure Performance Objectives (aka remedy threshold criteria).

- Protect human health and the environment,
- Attain media cleanup standards, and
- Control sources of releases to reduce or eliminate further releases that might pose threats to human health or the environment.

For comparison purposes, the baseline alternative (Alternative 1) is always no action. The remaining 4 alternatives at SMA 4 included the incremental addition of technologies to build a full range of alternatives that might be able to address the contamination. Based on the screening process, 2 of the 5 alternatives were found to satisfy the three Corrective Measure Performance Objectives and were retained for further evaluation. The retained alternatives are listed in the Table 6.

Table 6. List of Retained Remedial Alternatives	
Alternative No.	**Description**
4	Land Use Controls + In-Situ Soil Source Area Treatment + In-Situ Groundwater Treatment + Groundwater Monitoring
5	Land Use Controls + In-Situ Soil Source Area Treatment + Groundwater Removal and Treatment + Groundwater Monitoring

The detailed evaluation of Alternatives 4 and 5 used the following balancing criteria:

- Long-term Reliability and Effectiveness;
- Reduction of Toxicity, Mobility, or Volume;
- Short-term Effectiveness;
- Implementability; and
- Cost.

The detailed evaluation was conducted in two stages. Each alternative was first compared individually to each of the criteria listed above. Next, the alternatives were compared against each other for each criterion. These two alternatives would provide varying degrees of protection of human health and the

environment by eliminating, reducing, or controlling risk through treatment, engineering controls, or institutional controls. However, the Alternative 5 provides the best, or at least a comparable, balance among the alternatives with respect to the five criteria EPA uses to balance alternatives (see Table 7).

Table 7. Comparative Analysis of Corrective Action Alternatives
SMA 4 – Former Chemical Plant

Balancing Criteria	Alternative 4 Rating (0-5)	Alternative 5 Rating (0-5)
Long-Term Reliability and Effectiveness	4.0	5.0
Reduction of Toxicity, Mobility or Volume of Wastes	3.3	4.3
Short-Term Effectiveness	5.0	5.0
Implementability	5.0	5.0
Costs	2.0	2.0
Total Rating	19.3	21.3

Notes:

Alternative 4 = Institutional Controls + In-Situ Soil Source Area Treatment + In-Situ Groundwater Treatment + Groundwater Monitoring.
Alternative 5 = Institutional Controls + In-Situ Soil Source Area Treatment + In-Situ Groundwater Treatment + Groundwater Removal/Treatment + Groundwater Monitoring.

Rating: 5 indicates the highest degree of effectiveness, reduction, implementability, etc.
0 indicates the lowest degree of effectiveness, reduction, implementability, etc.
(e.g., a rating of 2 indicates a less expense alternative when compared to an alternative rated at 3)

10. PROPOSED REMEDY
(What Cleanup is being Proposed for Public Comment?)

Based on the remedy alternative development and evaluation process summarized above, in EPA's estimation, the Facility recommended Alternative 5 is the preferred corrective measure in that it meets the Facility-specific Corrective Measure Performance Objectives (Section 8), meets the EPA generated and standard Corrective Measure Objectives (Section 9), is effective in both the short and long terms, controls the migration of contaminants from the source area, includes actions that seek mass reduction over time, is implementable, and is cost-effective. Therefore, EPA proposes that the remedy for SMA 4 be Alternative 5, which consists of the following components:

- Land Use Controls: The purpose of the land use controls is to:
  - Ensure that the groundwater is not used before remediation is complete.
  - Ensure that exposure to contaminated soil is mitigated during any future construction projects.
  - Ensure that the land use remains industrial/commercial, a scenario that does not pose unacceptable risk based on detected soil concentrations.
- In-Situ Soil Source Area Treatment/In-Situ Groundwater Treatment: Chemicals or bacteria (e.g., zero valent iron, yeast extract, micronutrients, potassium permanganate, etc.) will be used with the purpose of helping prevent any further release of contaminants from the soil to the groundwater and aiding in advancing the groundwater remediation. Bench scale studies will need to be conducted to determine the appropriate chemicals or bacteria to be used, the concentrations, locations, etc.
- Groundwater Removal and Treatment: The hydraulic control well network, which was installed under an Interim Measures in 2013 to control the VOC groundwater plume and currently consists of 6 extraction wells, will continue. The recovered groundwater will be used as process water

for the coke plant and will eventually cycle to the Facility's Biological Treatment Facility (BTF) for subsequent discharge in compliance with the Facility's Clean Water Act NPDES permit.

- Groundwater Monitoring: Long-term groundwater monitoring will occur to assess the effectiveness of the overall remediation system.

11. CLEANUP STANDARDS

The EPA evaluated the cleanup standards recommended by the Facility to determine its conformance with the EPA's boundary conditions for establishing cleanup standards. The Facility recommended cleanup standards were found to meet these criteria and are listed below as numeric and non-numeric cleanup standards for the proposed remedy (Tables 8 through 11).

Table 8. Numeric Cleanup Standards for Facility-Specific Groundwater Objective 4 (Groundwater Restoration) and Groundwater Objective 5 (Hydraulic Control)

Contaminant	Groundwater Concentration (ug/L)	Point of Compliance
1. Benzene	5 *	Throughout the Plume
2. Benzo(a)anthracene	0.03 **	
3. Benzo(a)pyrene	0.2 *	
4. Benzo(b)fluoranthene	0.25 **	
5. Chlorobenzene	100 *	
6. Cis-1,2-Dichloroethene	70 *	
7. Dibenz(a,h)anthracene	0.025 **	
8. Indo[1,2,3-cd]pyrene	0.25 **	
9. Methylene Chloride	5 *	
10. Napthalene	0.17 **	
11. Trichloroethene	5 *	
12. Toluene	1,000 *	
13. Pentachlorophenol	1 *	
14. Vinyl Chloride	2 *	
15. 1,2,4-Trichlorobenzene	70 *	
16. 1,2-Dichloroethane	5 *	
17. 1,4-Dichlorobenzene	75 *	
18. 1,4-Dioxane	0.46 **	

Key
* = Maximum Contaminant Level (MCL)
** = Carcinogenic Tapwater Regional Screening Level (June 2017)

Table 9. Numeric Cleanup Standards* for Facility-Specific Groundwater Objective 6 (Source Removal) and Soil Objective 3 (Leaching)	
Contaminant	**Groundwater Protection Soil Screening Levels (leachability)**
	Concentration (mg/kg)
Arsenic	6
Benzene	0.11
Benzo(a)anthracene	1
Benzo(b)fluoranthene	2
Carbazole	0.1
Chlorobenzene	3.1
Dibenzofuran	0.015
Methylene chloride	0.033
Naphthalene	0.026
Toluene	31
Vinyl chloride	0.017
1-Methylnaphthalene	0.006
3 & 4 Methylphenol	0.17
4-Methylphenol (p-cresol)	0.15
*** Note:** These soil leaching standards are site specific soil screening levels from Appendix G of the Phase III RFI Report. They constitute the lowest target values that soil might need to reach in order for groundwater cleanup to be obtained/maintained. Soil levels higher than those listed here may turn out to be acceptable if Facility-Specific Groundwater Objective 4 (aquifer restoration) can reached. In other words, the leachability cleanup standards are not to be strictly interpreted as levels to be met at every soil sample location. Instead, they are to be applied in coordination with the success in meeting the cleanup standards for groundwater restoration listed in Table 8.	

Table 10. Numeric Cleanup Standards*** for Facility-Specific Soil Objectives 1 and 2 (Land Use Controls)				
Contaminant	**Industrial/Commercial Worker**		**Construction Worker**	
	Surface Soil (0-1 ft)	**Groundwater**	**Subsurface Soil (2-15 ft)**	**Groundwater**
	Concentration (mg/kg)	**Concentration (ug/L)**	**Concentration (mg/kg)**	**Concentration (ug/L)**
1. Arsenic	19 *	N/A	N/A	N/A
2. Benzene	N/A	15 *	409 **	110 **
3. Benzo(a)anthracne	29 *	0.08 *	N/A	N/A
4. Benzo(a)pyrene	2.9 *	0.005 *	28 *	N/A
5. Benzo(b)fluoranthene	29 *	0.09 *	N/A	N/A
6. Chlorobenzene	N/A	261 **	1,171 **	222 **
7. Chromium	65 *	N/A	N/A	N/A
8. Cis-1,2-Dichloroethene	N/A	202 *	N/A	N/A
9. Dibenz(a,h)anthracene	2.9 *	0.003 *	N/A	N/A
10. Indo[1,2,3-cd]pyrene	29 *	0.003 *	N/A	N/A
11. Methylene Chloride	N/A	547 *	N/A	N/A
12. Napthalene	N/A	5.18 *	N/A	16 **
13. Trichloroethene	N/A	9.54 **	N/A	9.54 **
14. Toluene	N/A	5,278 **	21,785 **	16,382 **
15. Pentachlorophenol	N/A	0.51 *	N/A	N/A
16. Vinyl Chloride	N/A	3.7 *	N/A	317 **
17. 1,2,4-Trichlorobenzene	N/A	12 *	N/A	12 **
18. 1,2-Dichloroethane	N/A	5.4 *	N/A	31.2 **

Table 10. Numeric Cleanup Standards*** for Facility-Specific Soil Objectives 1 and 2 (Land Use Controls)				
Contaminant	**Industrial/Commercial Worker**		**Construction Worker**	
	Surface Soil (0-1 ft)	**Groundwater**	**Subsurface Soil (2-15 ft)**	**Groundwater**
	Concentration (mg/kg)	**Concentration (ug/L)**	**Concentration (mg/kg)**	**Concentration (ug/L)**
19. 1,4-Dichlorobenzene	N/A	15 *	N/A	327 *
20. 1,4-Dioxane	N/A/	17 *	N/A	N/A

Key
N/A = Not Applicable
***** = April 14, 2017 Risk Assessment, Estimated Lifetime Cancer Risk (ELCR) = 10E-05
** = April 14, 2017 Risk Assessment, Hazardous Quotient = 1
*** These soil cleanup standards constitute the level that is protective of humans in an industrial setting. At this time, the soil concentrations and distribution do not warrant active remediation given the current industrial land use. These industrial cleanup levels serve as the basis for applying institutional controls (see Table 11), and can be used to evaluate any future soil results obtained within SMA-4 in order to help in determining what, if any, active remediation is needed.

Table 11. Narrative (Non-Numeric) Cleanup Standards for Facility-Specific Soil Objectives 1 and 2 and Groundwater Objective 7 (Land Use Controls)				
Cleanup Standard	**Comment on Cleanup Standard**	**Implementation Technique / Mechanism**	**Components**	**Point of Compliance**
Institutional Controls	With use of a current and reasonable setting of industrial/commercial land use, the need to actively address soil contamination was deemed not to be needed. Groundwater contamination does exist at levels requiring active remediation. In order to satisfy Facility-Specific Soil Corrective Measure Objectives 1 and 2 and to satisfy Facility-Specific Corrective Measure Objective 4, institutional controls are needed to ensure that land use does not inadvertently and/or unknowingly become residential in the future, and to protect workers from unknowingly being exposed to contamination that might be at unacceptable levels.	Environmental Covenant	An Environmental Covenant shall be secured under the Alabama Uniform Environmental Covenants Act, Ala. Code §§ 35-19-1 to 35-19-14 (2007 Cum. Supp.). The Environmental Covenant shall be entered with the intent of providing clear and enforceable rules for the perpetual care of the Facility's real estate in light of the selected remedy. The Environmental Covenant shall list components of the LUCP that best reside long term with the land as opposed to specific operating procedures at the Facility (e.g., deed restriction to limit site to industrial land use only; deed restriction to limit use of groundwater, etc.).	Throughout the SMA
Institutional Controls		Corporate Land Use Plan (LUCP)	The LUCP, at a minimum, shall: 1. Acquire a deed restriction on land and groundwater use through securing an Environmental Covenant. 2. Explain the land use controls to be used to protect workers, contractors, public from exposure to contaminated environmental media (e.g., permits to perform any digging activities and the proper personal protective equipment (PPE), fences/signs as necessary to prevent unauthorized access, etc.). 3. Include all necessary information or	Throughout the SMA

Table 11. Narrative (Non-Numeric) Cleanup Standards for Facility-Specific Soil Objectives 1 and 2 and Groundwater Objective 7 (Land Use Controls)				
Cleanup Standard	**Comment on Cleanup Standard**	**Implementation Technique / Mechanism**	**Components**	**Point of Compliance**
			structure necessary to implement the LUCP (e.g., points-of-contact; monitoring program; notification procedures for LUCP violations, pending sale/lease of property, etc.; and reporting).	

12. PUBLIC COMMENT PERIOD – OCTOBER 1 TO NOVEMBER 14, 2017

Before issuing a final decision, EPA may modify the proposed corrective measure described herein or select another corrective measure alternative based on new information or on public comments. Specifically, Section XI (Remedy Selection) of the 2016 Order states the following:

> *"EPA will provide the public with an opportunity to review and comment on its selection of the proposed final corrective measure(s), including the detailed written description and justification for its selection in the Statement of Basis. Following the public comment period, EPA will select the final corrective measure(s), and will notify the public and Respondent of the decision and rationale in a written Final Decision and Response to Comments (RTC). The RTC will include EPA's detailed reasons for selecting the corrective measure(s) and for rejecting the other proposed corrective measure(s)."*

During the public comment period, the public is encouraged to provide the EPA contact listed in Table 12 with any comments arising from their review of the proposed remedy. The comment period will begin on October 1, 2017, which is the date of publication of the public notice in major local newspapers of general circulation, and will end on November 14, 2017.[1]

To further aid the public in understanding the Facility and the proposed remedy, the Administrative Record, which contains all of the documents, correspondence, data and other information that the EPA considered in preparing the Statement of Basis, is available for public review at the locations listed in Table 12.

Table 12. Viewing Locations for the Administrative Record		
Local Repository	**EPA**	**Web**
North Birmingham Regional Branch Library 2501 31st Ave, North Birmingham, Alabama 35207	US EPA – Region 4 Sam Nunn Atlanta Federal Center 61 Forsyth Street, SW Atlanta, GA 30303 Contact: Wesley Hardegree RCRA Cleanup and Brownfields Branch (404) 562-9629 Hardegree.wes@epa.gov	go.usa.gov/xNHKx https://www.epa.gov/foia/outreach-information-erp-compliant-coke-llc

[1] There is no set timeframe for the comment period for orders. In establishing the comment period for the 2016 Order, the EPA is choosing to follow 40 CFR §124.10, which requires a 45-day comment period for draft RCRA permits.

13. PUBLIC MEETING/HEARING

To help the community understand the proposed remedy, EPA is scheduling a public meeting, to be followed by a public hearing where comments will be received, at the following location.

Bethel Baptist Church
3200 28th Ave N.
Birmingham, Alabama 35207
November 2, 2017
4:00 PM – 5:30 PM: Open House (Informal Meet and Greet Session)
6:00 PM – 8:00 PM: Public Meeting/Hearing

14. POST PUBLIC COMMENT PERIOD

Pursuant to the 2016 Order, after EPA's consideration of the public comments that are received, they will be summarized and responses will be provided in a Response to Comments (RTC) document. The RTC document will be drafted after the conclusion of the public comment period and will be incorporated into the Administrative Record. The final decision shall become effective immediately upon signature by the Division Director for EPA – Region 4's Resource Conservation and Restoration Division.

FIGURE 1. Facility Location, SWMU Management Area (SMA), including SMA 4 - Former Chemical Plant

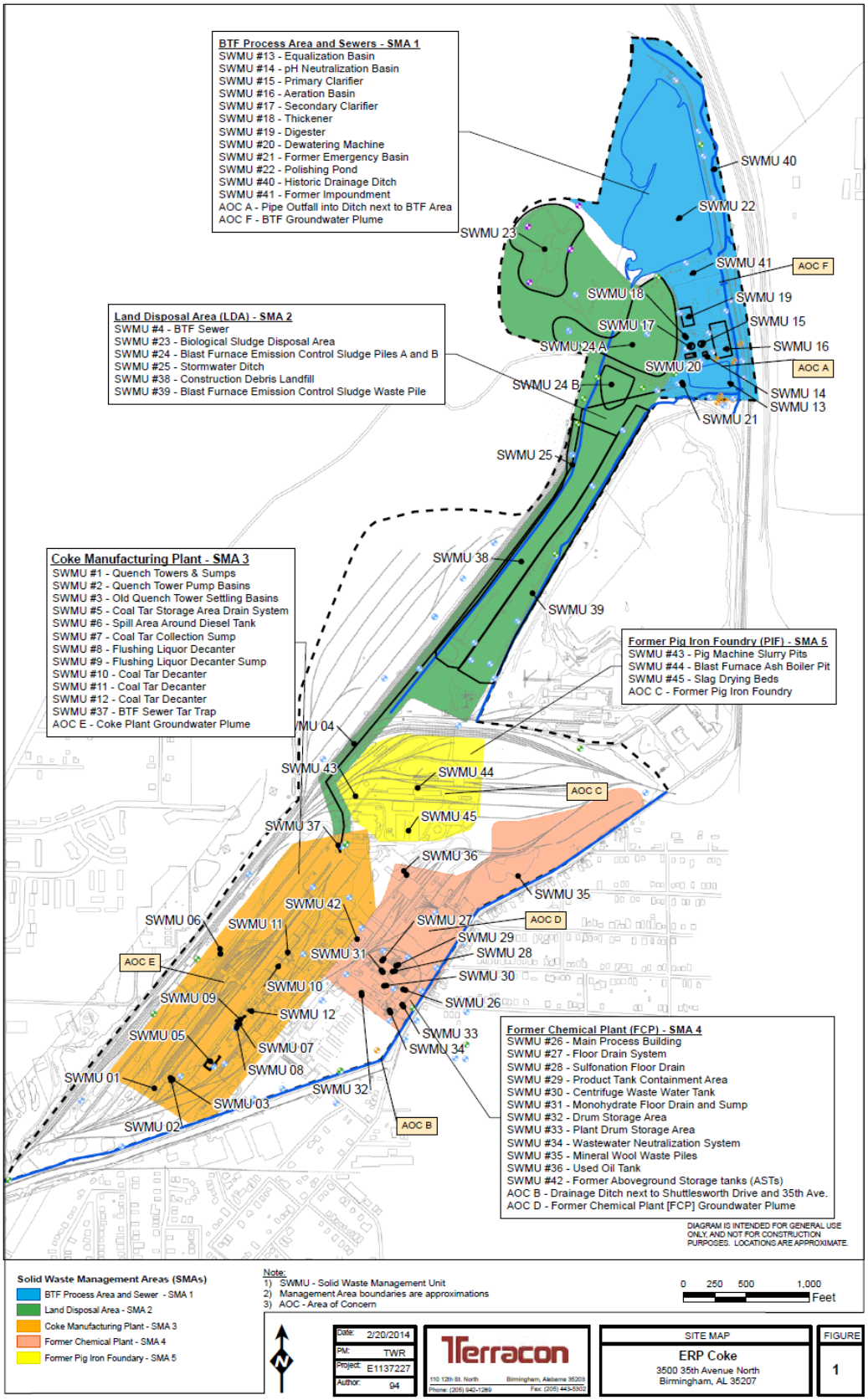


FIGURE 2: Subsurface Soil

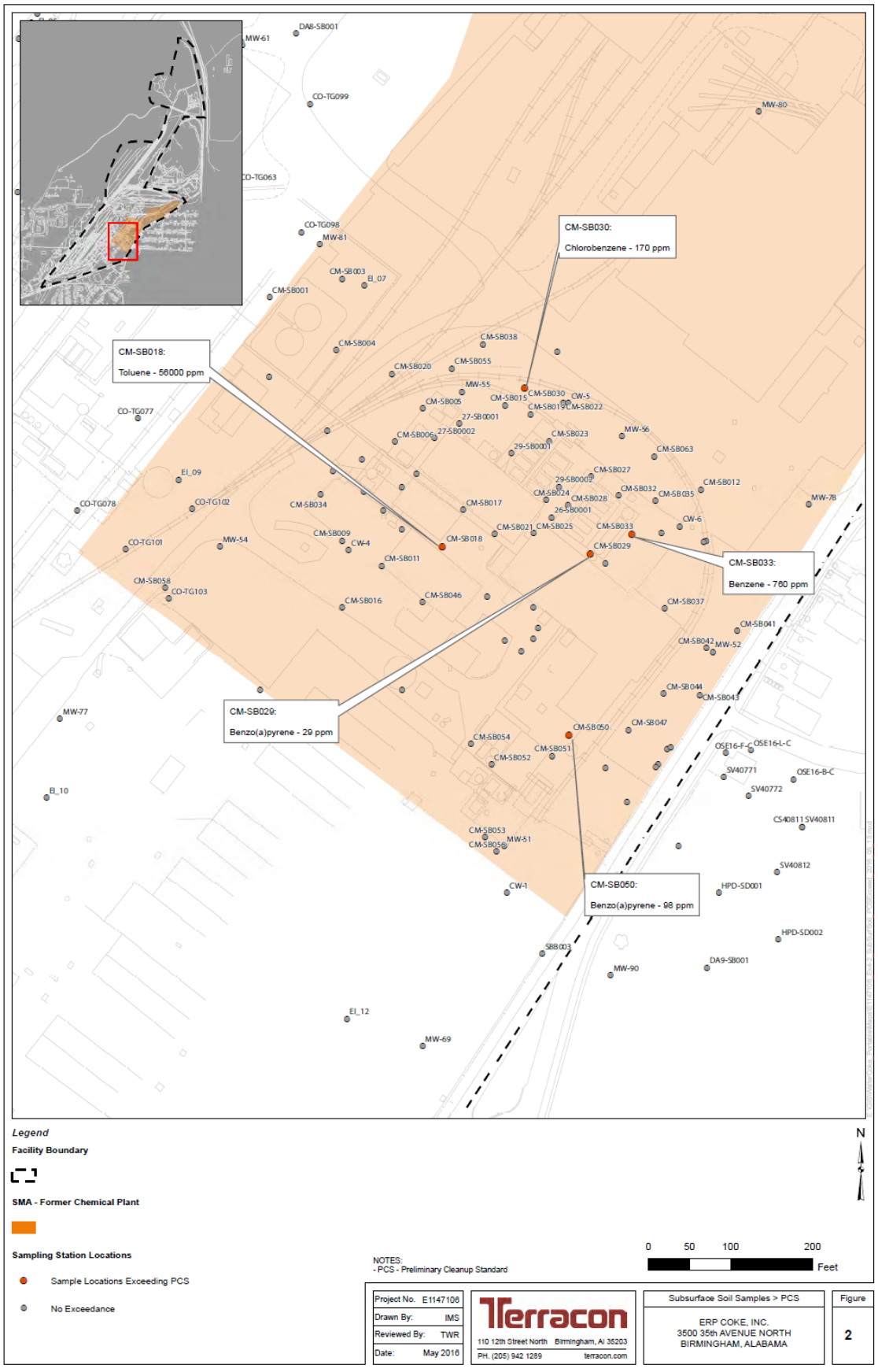
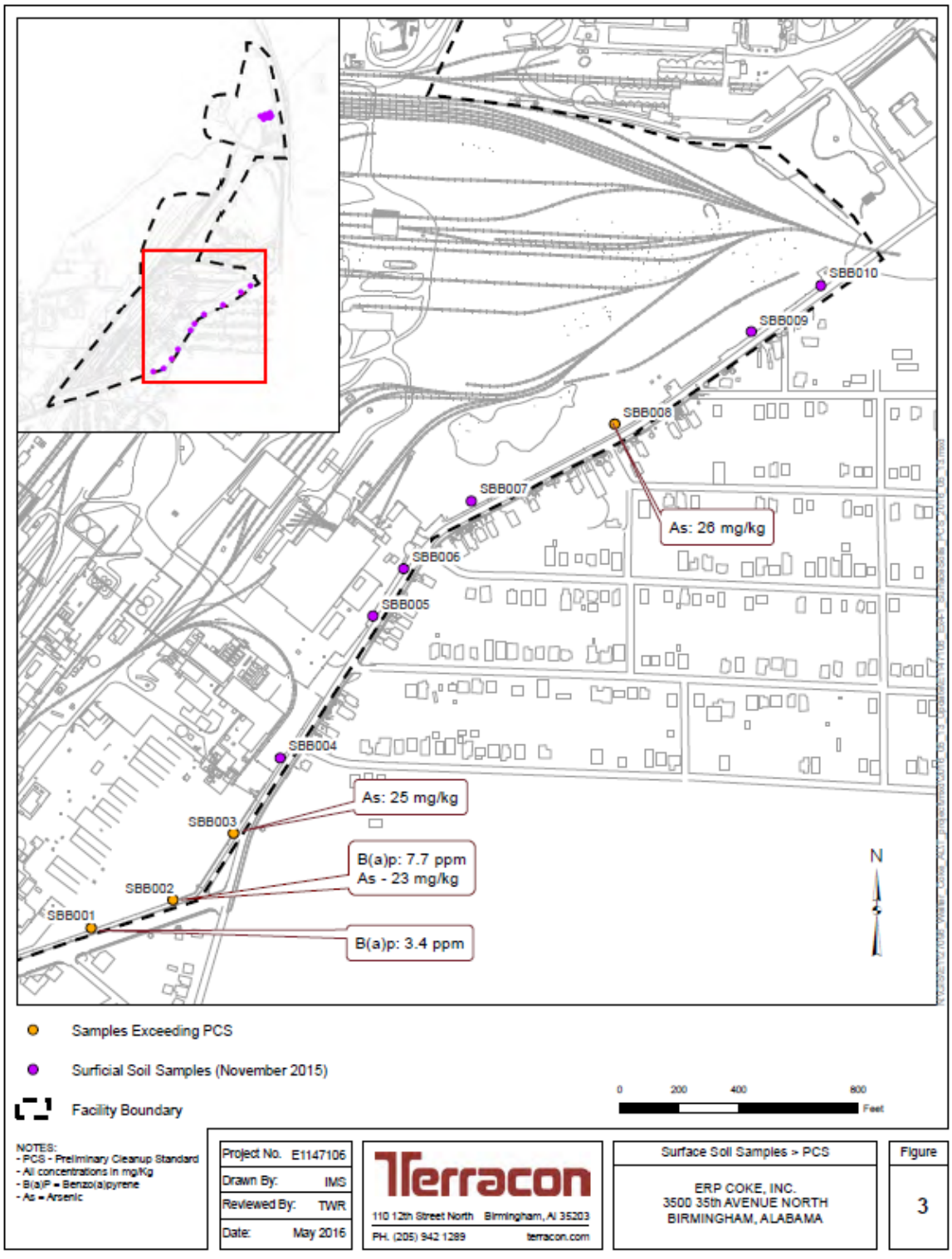


FIGURE 3: Surface Soil



NOTES:
- PCS - Preliminary Cleanup Standard
- All concentrations in mg/Kg
- B(a)P = Benzo(a)pyrene
- As = Arsenic

Project No.	E1147106
Drawn By:	IMS
Reviewed By:	TWR
Date:	May 2016

Terracon
110 12th Street North Birmingham, Al 35203
PH. (205) 942 1289 terracon.com

Surface Soil Samples > PCS

ERP COKE, INC.
3500 35th AVENUE NORTH
BIRMINGHAM, ALABAMA

Figure 3

FIGURE 4. Groundwater Plume, Extraction Wells, Monitoring Wells