

3.12 Hazardous Materials

This chapter provides a preliminary identification of known properties that could potentially contain hazardous waste sites or hazardous materials. This chapter analyzes effects of the reasonable alternatives on these properties or potentially hazardous sites, including whether contaminated soils could be present within the construction footprint of the reasonable alternatives, and whether remediation or additional field analysis would be required. The chapter also analyzes the health and safety effects on construction workers or people who live near hazardous waste sites affected by the reasonable alternatives.

3.12.1 WHAT ARE HAZARDOUS MATERIALS AND HAZARDOUS WASTE SITES?

Hazardous materials are defined as any material that has or will have, alone or when combined with other materials, a harmful effect on humans or the natural environment. They may be characterized as reactive, toxic,

infectious, flammable, explosive, corrosive, or radioactive.¹ Hazardous materials and waste sites are regulated primarily by the Resource Conservation and Recovery Act of 1976 (RCRA), as amended; the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA); and the Superfund Amendments and Reauthorization Act of 1986 (SARA).

Hazardous waste sites are defined as having hazardous materials, generating hazardous waste, or possessing hazardous materials storage tanks. These sites include, but are not limited to, the following:

- Aboveground storage tanks (ASTs), which typically store flammable, combustible liquids.
- Underground storage tanks (USTs), including leaking underground storage tanks (LUSTs), which mostly store petroleum products such as gasoline and diesel fuels.²
- Drycleaners, which are prioritized by a tier system that categorizes sites into one of five tiers, designed to identify sites which require immediate action to eliminate actual human exposure or to prevent imminent exposure to contaminants.^{3, 4}
- Hazardous waste generators, which are sites that generate, store, treat or dispose of RCRA hazardous waste.
- Solid waste facilities (landfills), which accept waste material, including municipal solid waste, industrial, construction and demolition debris, and road (soil, asphalt, and concrete) debris.⁵

Hazardous materials are defined as any material that has or will have, alone or when combined with other materials, a harmful effect on humans or the natural environment.

What are hazardous materials?

¹ RCRA Subtitle C, 40 CFR 251.

² SCDHEC UST Registry Search. 2013. http://www.scdhec.gov/apps/environment/ustregistry/ (accessed October 2017).

³ SCDHEC *Solid Waste Facilities Lists.* 2014. http://www.scdhec.gov/Environment/LW/SolidWaste/FacilitiesLists/ (accessed October 2017).

⁴ SCDHEC. *Drycleaners*. February 2015. http://www.scdhec.gov/Environment/LW/Drycleaners/ (accessed October 2017).



- Hazardous waste sites considered for cleanup under CERCLA, or Superfund.⁶
- Solid waste or hazardous waste sites that had outstanding compliance-related issues and have been visited by state agencies for any number of reasons including compliance checks, enforcement visits, or emergency response activities. Some sites may be duplicates of sites found in other geographic information system (GIS) layers such as CERCLA, LUST, and UST.⁷
- Any facility that is proposed for or listed on the National Priorities List (NPL), which is a list of CERCLA/Superfund sites of national priority.⁸

3.12.2 WHAT IS THE AFFECTED ENVIRONMENT WITHIN THE PROJECT STUDY AREA?

Based on aerials and topographic maps, in the late 1930s, the primary use within the project study area was rural farmland and woodlands with unpaved dirt roads. By the early 1940s many roads had been realigned and by the early 1950s, dirt roads had become paved. By the mid-1950s, more homes had been constructed and by the mid-1960s, portions of I-26 and I-20 had been constructed. By the early 1980s, exit and entrance ramps had been constructed, surface streets had been widened, shopping centers had been built, and the project study area had become suburban with the appearance of gas stations, hotels, and restaurants. In the 1990s, more shopping centers and residences were constructed. With the exception of some infill development, little has changed in the project study area between 2000 and 2017. Potential hazardous materials sites are located throughout the project study area, including gas stations, dry cleaning facilities, and solid waste generating facilities.

What is the hazardous materials project study area?

The hazardous materials project study area is a ¼-mile buffer around the project study area.

3.12.3 WHAT METHODOLOGY WAS USED FOR ANALYSIS OF HAZARDOUS MATERIALS AND HAZARDOUS SITES?

An assessment of the project study area was performed to determine the presence of potentially hazardous materials or waste sites located within or in proximity to the project study area. To determine whether hazardous materials are present along the project corridor, a project study area for hazardous materials was defined which established a ¼-mile buffer around the project study area (Figures 3.13.1A-D and 3.13.2A-D). From there, a two-step process was completed to determine properties with potential for or known to contain existing environmental contamination.

⁵ SCDHEC *Solid Waste Facilities Lists.* 2014. http://www.scdhec.gov/Environment/LW/SolidWaste/FacilitiesLists/ (accessed October 2017).

⁶ EPA. Envirofacts. June 2014. http://www.epa.gov/enviro/facts/cerclis/search.html.

⁷ SCDHEC *Solid Waste Facilities Lists.* 2014. http://www.scdhec.gov/Environment/LW/SolidWaste/FacilitiesLists/ (accessed October 2017).

⁸ Superfund: National Priorities List. August 2017. https://www.epa.gov/superfund/superfund-national-priorities-list-npl



3.12.3.1 Step 1: Limited Environmental Records Review

Given the extent of the project study area, a limited environmental records review was conducted to identify potential properties of concern relative to soil and/or groundwater contamination that may be in or near the

hazardous materials project study area and determine whether further investigation was warranted. The limited environmental records review was completed using publicly-available environmental records databases and GIS data provided by the South Carolina Department of Health and Environmental Control (SCDHEC). Online database records were reviewed to confirm incident reports/closure statuses for sites listed in the AST, drycleaner, and UST (including LUST) database files provided in the SCDHEC GIS files. Additionally, Environmental Data Resources (EDR) reports included a search of the USEPA hazardous materials databases.

Based on the records review, identified properties were categorized utilizing a qualitative risk ranking system for low, medium, and high-risk classifications, as described below.

 Low-risk sites had few indications of the potential for the release of hazardous materials. On some occasions, sites that have had a hazardous materials issue in the past, but have been remediated with the approval of the state environmental agency or the U.S. Environmental Protection Agency (USEPA), may qualify as low risk. Examples of low-risk sites include undeveloped or agricultural properties, residential properties, or benign commercial properties such as office buildings, banks, or theaters.

What is a recognized environmental condition (REC)?

The presence or likely presence of any hazardous substances or petroleum products in, on, or at a property due to any release to the environment, under conditions indicative of a release to the environment, or under conditions that pose a material threat of a future release to the environment.

- Medium-risk sites had some indications of possible hazardous materials issues. A medium-risk site may appear on a database list as having a permit to handle hazardous materials, but has no recorded violations to date. Additionally, a site could have been interpreted as a medium risk if the records search found no listing, but the site's operations and appearance may indicate a hazardous materials concern, such as a facility with visible surface staining. Examples of medium-risk sites include auto-repair garages, welding shops, or vacant manufacturing facilities with no listing in the environmental database report.
- **High-risk** sites had a high potential for releasing hazardous materials to the soil or groundwater, or have a recorded release of hazardous materials. Examples of high-risk sites include current service stations, violation sites listed in the environmental database report, or sites with known release incidents (such as the site of a train derailment with an associated hazardous materials release).

3.12.3.2 Step 2: Phase I Environmental Site Assessments

After high-risk sites were identified during the limited environmental records review, a site-specific Phase I Environmental Site Assessment (ESA) was conducted for each property (incorporated by reference and available upon request). The Phase I ESAs were conducted in accordance with the American Society for Testing and



Materials (ASTM) *ASTM E1527-13, Standard Practice for Environmental Site Assessments: Phase I Site Assessment Process* to identify, to the extent feasible, RECs in connection with the subject properties. ASTM 1527-13 defines a REC as the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property due to any release to the environment, under conditions indicative of a release to the environment, or under conditions that pose a material threat of a future release to the environment.

The Phase I ESAs consisted of review of reasonable ascertainable SCDHEC records for the subject properties as well as records pertaining to properties within the minimum search distances as defined in ASTM 1527-13, a review of available current and past aerial photographs, EDR reports for the properties, and a site reconnaissance. Interviews with owners, operators, and/or occupants were not conducted. Interview information required for the Phase I ESA was gathered from interviews with government officials, where applicable and the lack of owner/operator interviews was noted as a data gap in the Phase I ESAs to be compliant with ASTM 1527-13 standards. Published geological information and site observations were utilized to estimate likely surficial and subsurface containment migration pathways. Recommendations were made as to the need for additional investigations, where applicable. The need for additional investigations is dependent on the proximity of the property to the reasonable alternatives. Contaminants may travel laterally in the subsurface; therefore, for the impacts assessment, a 200-foot-wide buffer is used as a basis for determining the potential for contamination.

3.12.3.3 What hazardous materials and hazardous waste sites exist in the project study area?

Under step 1 of the above methodology, 224 properties with potential for environmental contamination concerns were identified in the hazardous materials project study area. Of those, 145 were classified as low-risk sites, 42 were classified as medium-risk sites, and 33 were classified as high-risk sites. To confirm the presence and location of the sites, a visual reconnaissance, which consisted of a windshield survey from public roadways and photographic documentation, was performed for the 33 sites identified as high-risk within the hazardous materials project study area.

Based on the identification of active high-risk sites, Phase I ESAs described in Step 2 above were completed in accordance with ASTM International Practice E1527-13 for 30 of the 33 high-risk sites. Three properties were eliminated from further evaluation due to duplication across databases and inaccurate site and parcel information.

The majority of the 30 high-risk sites in the hazardous materials project study area are active or former gas stations containing LUSTs. Other sites include active or former drycleaners, solid waste generating facilities, a hospital with USTs, and an active amusement park with USTs. Details about each site can be found in the Phase I ESAs incorporated by reference.



Table 3.12-1 Types of High Risk Sites In the Hazardous Materials Project Study Area

Site type	Number of sites
LUST/UST	24
Solid waste processing	2
Drycleaner	4
Total	30

Source: SCDHEC UST Registry Search; SCDHEC drycleaners, SCDHEC solid waste facilities lists.

3.12.4 HOW WOULD THE REASONABLE ALTERNATIVES IMPACT HAZARDOUS MATERIALS?

3.12.4.1 No-Build Alternative

The no-build alternative would not impact sites with potential hazardous materials or contamination.

3.12.4.2 Reasonable Alternatives

Overall, the proposed Carolina Crossroads I-20/26/126 Corridor Improvement Project would directly impact properties with potential hazardous materials or contamination and the impacts would be similar between all reasonable alternatives.

Construction of either of the two reasonable alternatives – RA1 and RA5 Modified – would require right-of-way (ROW) acquisition, primarily around existing interchanges. The amount of ROW required for each reasonable alternative would vary somewhat depending on the proposed interchange configurations, and would result in impacts to properties with potential hazardous materials or contamination, as Overall, the proposed Carolina Crossroads project would directly impact six sites with potential hazardous materials or contamination.

shown in Table 3.12-2. RA1 and RA5 Modified would have similar direct impacts. These impacts are calculated by measuring the distance from the subject property boundary based on the county parcel tools to the reasonable alternative footprint, which is based on the outermost construction limit or ROW. The subject properties are considered affected if they are directly overlapped by the footprint or within a 200-foot-wide buffer of the footprint of the reasonable alternatives. Consideration of buffer zones is important because contaminants may travel laterally in the subsurface.

Of the 30 high-risk sites, 18 properties are within 200 feet of one or both of the reasonable alternatives. Of these, 12 properties would be directly affected by all reasonable alternatives, and six properties would be directly adjacent or hydrologically downstream of both of the reasonable alternatives, as noted in bold in Table 3.12-2. Each property is discussed in detail in the site-specific Phase I ESAs incorporated herein by reference.



Table 3.12-2 Potentially Affected High-Risk Sites by Reasonable Alternatives

Property identificatio n number (see figures)	Parcel number	Property address	Facility name	Description/REC	Distance from RAs
1	R05916-10-01	1204 Bush River Road; Columbia, SC 29210-7520	Vacant gas station	2 RECs from LUST releases	Direct impact from both RAs
2	R05916-11-01	1203 Bush River Road; Columbia, SC 29210	Sunoco gas station	2 RECs from LUST releases	Direct impact from both RAs
3	R07402-03-01	2116 Broad River Road; Columbia, SC 29210	Vacant gas station (former Sheppards Texaco)	5 RECs from LUST releases	Direct impact from both RAs
4	R07402-03-02	2108 Broad River Road; Columbia, SC 29210	Vacant gas station/convenience store	5 RECs from LUST releases	Direct impact from both RAs
5	R07402-04-14	2121 Broad River Road; Columbia, SC 29210	Jiffy Lube oil service station	5 RECs from LUST releases	Direct impact from both RAs
6	R07402-02-02	2220 Broad River Road; Columbia, SC 29210-6730	Circle K gas station	2 RECs from LUST releases	Direct impact from both RAs
7	R07402-02-01	2224 Broad River Road; Columbia, SC 29210-6730	North American Title Loans (former Speedway gas station)	2 RECs from LUST releases	Direct impact from both RAs
8	002898-03-004	477 Piney Grove Road; Columbia, SC 29210 (Piney Grove Road @ I-26)	Vacant lot/former Gulf Service Station	1 REC from past LUST release	Direct impact from both RAs
9	002898-03-014	495 Piney Grove Road; Columbia, SC 29210	Spinx gas station	1 REC from past LUST releases	Direct impact from both RAs
10	R06011-01-01	800 St Andrews Road; Columbia, SC 29210-5814	Exxon gas station	2 RECs from past LUST releases	Direct impact from both RAs



Property identificatio n number (see figures)	Parcel number	Property address	Facility name	Description/REC	Distance from RAs
11	003697-02-046	742 St Andrews Road;	Best Catch Seafood and One	1 REC from past release	Direct impact from both
		Columbia, SC 29210	Hour Martinizing drycleaner	from drycleaner	RAs
12	R04009-01-05	7710 Broad River Road; Irmo,	Gas station under	2 RECs from LUST releases	Direct impact from both
		SC 29063	construction/former gas station		RAs
13	R05916-08-01	830 Bush River Road;	Citgo Express Zone 2 gas	2 RECs from LUST releases	~<5 feet east of all RAs
		Columbia, SC 29210-7515	station		(along ROW boundary)
14	002898-01-004	609 Giles Ct.; Columbia SC	Giles Auto Service	1 REC from past LUST	~35 feet west of all RAs
		29210		release	
15	003697-02-051	2201 Bush River Road;	Circle K gas station	1 REC from past LUST	~15 feet north of RA1 and
		Columbia, SC 29210		release	RA5 Modified;
16	002899-04-050	775 St Andrews Road;	BP gas station	1 REC from past LUST	~90 feet north RA1; ~140
		Columbia, SC 29210		release	feet northwest of RA5
					Modified
17	003697-07-036	1900 Bush River Road;	Marathon (Express Lotto)	1 REC from LUST release	~150 feet east of all RAs
		Columbia, SC 29210	gas station		
18	003697-05-013	1301 Bush River Road;	City Fuel & Food Speedway	1 REC from past LUST	~200 feet northwest of all
		Columbia, SC 29210		release	RAs
19	R04009-02-14	7735 Broad River Road; Irmo,	Circle K BP gas station	1 REC from LUST release;	~700 feet southwest of
		SC 29063			both RAs
20	002899-04-025	637 St Andrews Road;	Speedway gas station	1 REC from active LUST	~715 feet west of RA1;
		Columbia, SC 29210		release	~1,100 feet west of RA5
					Modified
21	003697-09-001	100 Independence Ave.;	C.R Jackson Construction	4 RECs from past LUST	~1,025 feet southeast of
		Columbia, SC 29210	(asphalt production)	release, a solid waste	RA1; 1,080 feet southeast
				landfill, and ASTs.	of RA5 Modified



Property identificatio n number (see figures)	Parcel number	Property address	Facility name	Description/REC	Distance from RAs
22	003697-01-001	538 St Andrews Road; Columbia, SC 29210	Shell gas station	1 REC from active LUST release	~1,475 feet west of RA1; ~1,900 feet west of RA5 Modified
23	002899-04-041	570 St. Andrews Road; Columbia, SC 29210	Dutch Cleaners & Laundry (Richardson Plaza Shopping Center)	1 REC from past release from drycleaner	~1,550 feet west of RA1, ~1,900 feet west of RA5 Modified
24	004597-03-026	2249 Sunset Blvd; West Columbia, SC 29169-4713	Sunset Court Shopping Center	2 RECs from past LUST release and former drycleaner release	~2,550 feet southeast of both RAs
25	004597-09-029	2990 Sunset Blvd; Columbia, SC 29169	Mobil Scotchman gas station	1 REC from past LUST release	~2,715 feet west of both RAs
26	004674-01-024	2250 Sunset Blvd; West Columbia, SC 29169	Westland Square Shopping Center	1 REC from past drycleaner release	~2,835 feet southeast of both RAs
27	004599-10-019	105 Corporate Blvd; West Columbia, SC 29169-4609	Vacant former Purolator Courier Company (freight forwarder)	1 REC from active LUST release	~4,275 feet southeast of both RAs
28	R05005-01-04	140 Parkridge Drive; Columbia, SC 29212	Frankie's Fun Park (amusement park)	No RECs	~65 feet west of all RAs
29	004597-09-007	2720 Sunset Blvd; West Columbia, SC 29169-0000	Lexington Medical Center	No RECs	~550 feet west of all RAs
30	003698-03-069	100 Rich-Lex Drive; Lexington, SC 29072	Crandall Corporation (solid waste and RCRA generating station)	No RECs	~975 feet west of RA1; ~980 feet northwest of RA5 Modified

Note: Bold text indicates site may be directly affected by RA1 or RA5 Modified, or directly adjacent or hydrologically downstream of one or all reasonable alternatives (within 200 feet of footprint).



3.12.4.3 RA1 (Recommended Preferred Alternative)

3.12.4.3.1 Would RA1 impact hazardous waste sites?

As shown in Table 3.13.2, RA1 would potentially affect 18 properties with potential hazardous materials or contamination, including 11 active gas stations or auto service stations, 6 former gas stations, and 1 drycleaner with active or past chemical leaks. Each of these 18 properties are located either within the proposed RA1 footprint or within a 200-foot-wide buffer around the footprint. Twelve properties are within the proposed RA1 footprint and six properties are within 200 feet of the proposed RA1 footprint and would potentially be affected

by proposed RA1. The remaining high-risk sites are either over 700 feet away from the proposed RA1 and/or do not contain a REC and, therefore, would not be affected by the reasonable alternative. Figure 3.13.1A-D shows the 30 high-risk sites in relation to RA1 within the hazardous materials project study area.

Overall, effects to hazardous waste sites are expected from RA1. Therefore, the alternative could result in health impacts to construction workers or the public from hazardous waste sites.

Would RA1 impact hazardous waste sites?

RA1 would potentially impact 18 sites with potential hazardous materials contamination.





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3.12.4.4 RA5 Modified

3.12.4.4.1 Would RA5 Modified impact hazardous waste sites?

As shown in Table 3.13.2, RA5 Modified would potentially affect 18 properties with potential hazardous materials or contamination, including 11 active gas stations or auto service centers, six former gas stations, and one drycleaner with active or past chemical leaks. Each of the 18 properties are located either within the proposed footprint or within a 200-foot-wide buffer around the footprint. Twelve sites are within the proposed RA5 Modified footprint and six sites are within 200 feet of the proposed RA5 Modified footprint and would potentially be affected by the proposed RA5 Modified. The remaining high-risk sites are either over 700 feet away from the proposed RA5 Modified footprint and/or do not contain a REC and, therefore, would not be affected by the reasonable alternative. Figure 3.13.2A-D shows the properties in relation to RA5 Modified within the hazardous materials project study area.

Overall, effects to hazardous waste sites are expected from RA5 Modified. Therefore, the alternative could result in health impacts to construction workers or the public from hazardous waste sites. Would RA5 Modified impact hazardous waste sites?

RA5 Modified would potentially impact 18 sites with potential hazardous materials contamination.

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3.12.5 HOW WOULD HAZARDOUS MATERIALS IMPACTS BE MITIGATED?

When possible, avoidance or minimization is the primary mitigation for identified hazardous materials sites. It is SCDOT's practice to avoid the acquisition of USTs and other hazardous materials, if possible. The site-specific Phase I ESAs recommend a Phase II ESA be performed prior to ground disturbance for 27 of the 30 properties due to the presence of RECs (see Table 3.13.2). The 27 properties recommended for Phase II ESAs were analyzed in comparison to proximity to the footprints of the reasonable alternatives and based on the methodology above. Of those 27 properties, 18 are within the 200-foot buffer of the reasonable alternatives footprints and would be potentially affected by the reasonable alternatives. Based on lack of proximity to the reasonable alternative footprints or lack of RECs, the other nine properties would not require additional investigation.

Prior to construction, the project contractor will perform Phase II ESAs on the properties identified within the footprint, including the subject properties, and/or on the adjoining properties or the ROW. Ultimately, the Phase II ESAs would include environmental sample collection (e.g. soil, soil gas, and groundwater), specifically, in areas where a potential for disturbance of soil and/or groundwater exists. Asbestos Containing Material and/or Lead Based Paint testing would be assessed separately as it outside of ASTM guidelines and only if deemed necessary on a site-specific account.

For dry cleaning sites, the sampling strategy for the Phase II ESA will follow a logical progression from the information gathered during the Phase I ESA records research. This information will be used to develop a site-specific sampling plan with regards to the anticipated location(s) of potential contamination within the areas of disturbance during construction, as well as to establish sampling locations, depths, and media to be sampled. Samples will be analyzed for those parameters associated with dry cleaning contaminants (i.e. cis-1,2, dichloroethene, tetrachloroethene, trichloroethene, vinyl chloride, trans-1,2-dichloroethene), as noted in the Phase I ESAs of the subject properties.

For UST/LUST sites, the sampling strategy for the Phase II ESA will follow the field screening and sampling procedures, as directed in the SCDHEC Underground Storage Tank Programs Quality Assurance Program Plan (QAPP) to determine the presence of hydrocarbons. Samples should be analyzed for those parameters listed in the QAPP and those typical of a petroleum release, as noted in the research of the subject Property. If relocation or removal of an AST or UST is necessary, the removal/relocation would be addressed in accordance with the applicable laws and regulation of the State of South Carolina.

A hazardous waste management plan will be prepared for the handling of hazardous materials during construction, and an on-site health and safety plan will be developed for construction activities to protect human health (i.e. workers, residents, recreation and trespassers) and the environment within proximate to the site. The hazardous waste management plan will also state that disposal of waste materials will be disposed of in approved landfills. Should previously unknown contamination be discovered as the project moves forward, the contamination (contaminated soil and/or groundwater within the right-of-way) will be evaluated and addressed in accordance with regulatory requirements prior to the initiation of construction activities at the site. If soils that appear to be contaminated are encountered during construction, SCDHEC will be informed and measures will be employed to avoid, reduce, or otherwise mitigate environmental impacts associated with the proposed

project. Tanks and other hazardous materials will be tested and removed and/or treated in accordance with USEPA and SCDHEC requirements. Cost of necessary remedial actions will be considered during the right-of-way appraisal and acquisition process.

A spill prevention, control, and countermeasures (SPCC) plan will be prepared in accordance with 40 CFR 112, for the handling of oils or oil-based products during construction to prevent a discharge of oil into navigable waters.