

Appendix I: Proposed Refinements Hazardous Materials Technical Report

Durham-Orange Light Rail Transit Project



October 2018

Table of Contents

Executive Summary	v
<i>Limited Phase I Activities</i>	<i>v</i>
<i>Findings.....</i>	<i>vi</i>
<i>Opinions.....</i>	<i>vii</i>
<i>Conclusions</i>	<i>viii</i>
<i>Recommendations</i>	<i>viii</i>
Recommendation 1.....	viii
Recommendation 2.....	viii
Recommendation 3.....	ix
Recommendation 4.....	ix
1. Introduction	1
1.1 <i>Description of the Proposed Refinements</i>	<i>1</i>
1.1.1 Purpose.....	2
1.1.2 Recognized Environmental Condition.....	2
1.1.3 Historical REC.....	2
1.1.4 Controlled REC.....	2
1.1.5 Risk Ranking.....	3
1.2 <i>Report Users</i>	<i>3</i>
1.3 <i>Scope of Services, Assumptions, and Limitations</i>	<i>4</i>
2. Legal and Regulatory Framework	6
2.1 <i>Location and Legal Description</i>	<i>6</i>
2.2 <i>Site and Vicinity Characteristics</i>	<i>6</i>
2.3 <i>Area Geology, Hydrogeology and Groundwater</i>	<i>6</i>
3. User Provided Information	8
4. Records Review	8
4.1 <i>Environmental Records Review</i>	<i>8</i>
4.2 <i>Summary of Listed Records</i>	<i>8</i>
4.3 <i>Agency File Review</i>	<i>19</i>
4.4 <i>Historical Use Information.....</i>	<i>19</i>
4.4.1 <i>Historical Aerial Photographs</i>	<i>19</i>
4.5 <i>Summary of Previous Environmental Investigations</i>	<i>20</i>
4.6 <i>Interviews</i>	<i>20</i>
4.7 <i>Site Reconnaissance</i>	<i>20</i>
4.8 <i>Utilities and Polychlorinated Biphenyls (PCBs)</i>	<i>21</i>

5. Data Gap Analysis.....	21
6. Findings, Opinions, and Conclusions	21
6.1 Findings	21
6.2 Opinions.....	31
6.3 Conclusions.....	31
7. Recommendations.....	31
7.1 Recommendation 1	31
7.2 Recommendation 2	32
7.3 Recommendation 3	32
7.4 Recommendation 4	32
8. Qualifications of Environmental Professionals.....	32
8.1 Signatures and Qualifications.....	32
Qualifications of Environmental Professionals	33
9. References.....	34

List of Tables

Table 4-1: Summary of Environmental Database Search	9
Table 4-2: Regulatory Listings Located Within or Adjacent to the Project Corridor.....	16
Table 6-1: Findings and Phase I Recommendations	23

Table of Figures

Figure 2-1: Project Location Map	7
Figure 6-1: Grid Index	26
Figure 6-2: Hazardous Materials Site Risk Rankings	27
Figure 6-3: Hazardous Materials Site Risk Rankings	28
Figure 6-4: Hazardous Materials Site Risk Rankings	29
Figure 6-5: Hazardous Materials Site Risk Rankings	30

List of Attachments

- Attachment I.1: EDR Report – Governmental Database Search Results
- Attachment I.2: Historic Aerial Photography
- Attachment I.3: Site Photographs

List of Acronyms and Abbreviations

Acronym/Abbreviation	Definition
AAI	All Appropriate Inquiries
ACRES	Assessment, Cleanup and Redevelopment Exchange System
AIRS	Aerometric Information Retrieval System
AST	Aboveground storage tank
ASTM	American Society for Testing and Materials
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CESQG	conditionally exempt small quantity generators
CFR	Code of Federal Regulations
DEIS	Draft Environmental Impact Statement
D-O LRT	Durham-Orange Light Rail Transit
EDR	Environmental Data Resources
EPA	Environmental Protection Agency
ESA	Environmental Site Assessment
FEIS	Final Environmental Impact Statement
FINDS	Facility Index Database System
FTA	Federal Transit Administration
HSWA	Hazardous and Solid Waste Amendments
ICIS	Integrated Compliance Information System
kg	Kilogram
LQG	Large Quantity Generator
LUST	Leaking underground storage tank
NCCU	North Carolina Central University
NFRAP	No Further Remedial Action Planned
NonGen	Non-generator
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NRCS	Natural Resources Conservation Service
PCBs	Polychlorinated Biphenyls
RCRA	Resource Conservation and Recovery Act
RCRA LQG	Resource Conservation and Recovery Information System Large Quantity Generators
RCRA SQG	Resource Conservation and Recovery Information System Small Quantity Generators
RCRA Non-Gen	Resource Conservation and Recovery Information System Non-Generator
REC	Recognized Environmental Condition
RCRA	Resource Conservation and Recovery Act
ROD	Record of Decision
ROMF	Rail Operations and Maintenance Facility
SEMS	Superfund Enterprise Management System

Acronym/Abbreviation	Definition
TSD	Treatment, storage, or disposal of waste
TRIS	Toxic Chemical Release Inventory System
TSD	treatment, storage, and disposal
US	United States
USGS	United States Geological Survey
UST	underground storage tank
WMUDS	Waste Management Unit Database System

Note: A complete acronyms list is located in the Governmental Database Report, Attachment I.1

Executive Summary

HDR Engineering, Inc. of the Carolinas (the D-O LRT Project team) conducted a Limited Phase I Environmental Site Assessment (Limited Phase I ESA) - Addendum # 1 for the Proposed Refinements of the Durham-Orange Light Rail Transit (DO-LRT) Project, located in Durham and Orange Counties, North Carolina (**Figure 2-1**). This Limited Phase I ESA has been prepared for the Federal Transit Administration (FTA) and GoTriangle (GoTriangle). This Limited Phase I ESA has been prepared as a hazardous materials assessment for the Supplemental EA for the Proposed Refinements to augment prior site identification in the Amended Record of Decision (ROD). The purpose of this report is to identify the location of potential environmental concerns stemming from the Proposed Refinements that might be avoided during the engineering and construction phases of the D-O LRT Project.

The D-O LRT Project team prepared this Limited Phase I ESA Addendum # 1 following the *DEIS Limited Phase I Environmental Site Assessment* (AECOM, 2015) methodology with the addition of indeterminate ranking where appropriate. This report similarly follows the Draft Environmental Impact Statement (DEIS) scope of work in examining “properties occurring within the approximate search distance of one mile on either side of the proposed D-O LRT Corridor, which consists of the alignment, stations, park-and-rides, and rail operations and maintenance facility (ROMF) alternatives, to determine visual presence of hazardous material as defined by the United States (US) Environmental Protection Agency (EPA) on its list of Hazardous and Toxic Wastes [Title 40 of the Code of Federal Regulations (CFR), Part 261] and petroleum handling facilities.”

Limited Phase I Activities

This Limited Phase I ESA documents Recognized Environmental Conditions (RECs) that may adversely affect the D-O LRT Project Corridor. The Limited Phase I ESA was conducted in general conformance with the scope and limitations of the American Society for Testing and Materials (ASTM) Practice E1527-13, with certain exclusions (including site interviews and onsite reconnaissance). This report includes the following investigative elements, later referenced as the “DEIS methodology” (DEIS - Section 4.11.1): a review of an environmental database search report; a review of additional relevant regulatory documentation (i.e., North Carolina Department of Environmental Quality Spills Database); a review of historical data sources (i.e., historic aerial photography); and a summary of the site reconnaissance conducted on February 21, 2018. Given the preliminary engineering/design phase of the D-O LRT Project, interviews were not conducted as part of the Limited Phase I ESA. Any exceptions to or deviations from these ASTM practices are described later in this report (**section 5.0**). Records reviewed for indications of RECs pertain to those properties having the potential to impact construction activities associated with the proposed project development, as well as those properties located within a defined search distance in order to assess the potential for encountering contaminated materials from released or migrating hazardous substances or petroleum products.

Following the aforementioned DEIS methodology, an approximate 500-foot buffer on either side of the alignment centerline (surrounding the corridor) was evaluated for the purposes of this report. The D-O LRT Project Corridor is presented on **Figure 2-1**. The D-O LRT Project has been revised since the original report was completed in 2012. The project, including changes made during the project development phase, are documented in the *Draft Environmental Impact Statement* (AECOM, 2015b), *Combined Final Environmental Impact Statement and Record of Decision* (AECOM, 2016), *Supplemental Environmental Assessment – North Carolina Central University (NCCU) Station Refinement* (AECOM, 2016b) and *Amended Record of Decision – NCCU Station Refinement* (AECOM, 2016c). The current D-O LRT Corridor was

captured in the Environmental Data Resources (EDR) records search coverage, and the regulatory records search results are included as part of the report analysis. The symbology on **Figure 6-1** through **Figure 6-5** reflects changes to the D-O LRT Corridor boundary since the issuance of the Amended ROD. A review of the regulatory information reported by the EDR database search dated February 12, 2018 (**attachment I.1**) is provided in **Table 4-1**.

Findings

The Limited Phase I ESA resulted in the following findings:

- The D-O LRT Project is located within Durham and Orange Counties in North Carolina (**Figure 2-1**, Project Location Map), within the Triangle region of the state. It extends 17.7 miles from southwest Chapel Hill to the NCCU Neighborhood and includes several educational, medical, and other key activity centers that generate a large number of trips each day. Additional detail regarding the study corridor is included in the 2015 DEIS and 2016 Supplemental EA.
- The D-O LRT Corridor is characterized by varied land uses, including some residential, undeveloped, highway transit, industrial and commercial businesses. Surrounding land uses are similar in nature and extent.
- According to the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS), and the Soil Survey Geographic Database indicates that the majority of the proposed corridor is within the Durham Triassic Basin geologic unit, which is characterized by clay soils atop weathered rock. Within the region, unconsolidated materials atop the bedrock have been penetrated during later geological periods by diabase intrusion.
- Groundwater is often present above the bedrock into project-wide low permeability soils. Determination of localized groundwater flow direction varies across the D-O LRT Project.
- Following the DEIS Methodology and utilizing the EDR database search resulted in 1,605 regulatory listings located within the EDR 1-mile search radius from the Proposed Refinements. Of which a total of 252 property listings were listed in the EDR report as located within or immediately adjacent to the D-O LRT Project Corridor (500 foot buffer), and of those 59 corresponding regulatory listings located directly along the proposed alignment resulting in potential changes. **Table 4-2**, Regulatory Listings Located Within or Adjacent to the D-O LRT Project Corridor, documents 38 specifically new sites located within the light rail alignment and buffer refinements. These are the sites being carried forward within this document for further evaluation (**Table 4-2**). These sites were ranked according to risk (using the DEIS Methodology) with respect to the Proposed Refinements, and each site listing includes a site-specific Phase I assessment recommendation to be completed during either the right of way (ROW) and/or acquisition phase, as summarized in **Table 6-1**, Findings & Phase I Recommendations, and illustrated on **Figure 6-1** through **Figure 6-5**, Index Grid & Existing considered to be medium risk, and ten (10) sites are considered indeterminate Risk to the D-O LRT Project. Only areas with D-O LRT Project Corridor changes were shown on **Figure 6-1**.
 - Due to the scope of the D-O LRT Project, the map scale does not show individual addresses. The regulatory listings are associated with numerous business names and addresses over a broad span of time. Given the frequent change of tenant businesses leasing in this industrial area (as businesses are transient in nature) more than one address or name may be associated with the EDR map code.

- In urban areas, it is anticipated that commercial and industrial operations will increase the number of regulatory listings in a database search. However, many of the regulatory listings are not considered to be of concern due to the following reasons: (1) the scope of the D-O LRT Project would not impact the identified sites or parcels; (2) the distance of the listed site from the D-O LRT Project; and/or (3) the regulatory listing is not considered to be of concern to the D-O LRT Project due to the nature of the database (i.e., regulatory listings associated with air quality compliance). For example, records listed in the HAZNET database only identify facilities that have shipped hazardous waste with a manifest, which does not necessarily indicate a hazardous materials release.
- Section 4.11 in the DEIS and NCCU Refinement further discusses initial conclusions that this Limited Phase I builds upon, which were made necessary by further D-O LRT Project Corridor refinements.
- A review of aerial photographs indicated that the D-O LRT Project Corridor was mainly residential or undeveloped in the western portions of Chapel Hill and was characterized by more dense development to the east near the City of Durham in 1964. By 1993, the Chapel Hill area was still predominantly residential, while the Durham area had reached build-out, characterized by increased growth, urban sprawl, and the construction of Interstate 40. Finally, present conditions remain relatively unchanged from the early to mid-1990s overall, with the exception of newer residential properties and numerous apartment complexes located throughout the respective university areas at the western and eastern ends of the corridor.
- Given the preliminary engineering phase of the D-O LRT Project, no interviews were conducted as part of the Limited Phase I ESA.

A site reconnaissance was conducted on February 21, 2018 from public ROW areas. No site specific access was obtained. The overall project area consisted of mixed rural and highway uses, with areas of industrial and commercial business uses. The EDR regulatory listings were verified or compared with the current operating businesses. No pits, ponds, lagoons, disturbed soil, large-scale indications of waste dumping, or surface staining was noted during the site reconnaissance. It is important to note that many facilities had fencing, which limited the visual assessment of soil staining on private properties.

- Subsurface utilities were noted during site reconnaissance throughout the Corridor; due to the urban nature of the area the D-O LRT Project team surmised there is a substantial D-O LRT Project subsurface utility network. Pole-mounted and pad-mounted transformers were present throughout the D-O LRT Project Corridor, and it is possible that PCB-containing transformers could be present. The EDR report and agency reviews did not indicate any transformer-fire related listings. Further evaluation of PCBs will be conducted as part of site specific Phase I reports that will be completed for property acquisition.

Opinions

The D-O LRT Project team has performed the stated assessment elements, which are described in the ASTM E1527-13 assessment protocol (as described in more detail in **Section 1.1**). Based on this assessment, the D-O LRT Project team has developed the following professional opinions:

- Per the *DEIS Limited Phase I Environmental Site Assessment Ranking Methodology*; “high risk properties should undergo a full Phase I or Phase II ESA following ASTM standards after a Record of Decision (ROD) is issued and prior to acquisition. This will ensure that any RECs are accurately

identified for properties that would potentially result in an environmental concern or would be directly impacted by the D-O LRT Project prior to acquisition.”

- Furthermore, medium ranked sites “should have their closure status or current site status reviewed with NCDEQ (formerly NCDENR) a few months prior to any construction activities. This will ensure that no new activities have occurred, which may elevate the risk level and that the current activities are still indicative of minimal potential for contamination from hazardous material use and/or activities.”
- Only corridor changes and newly included parcels within the alignment were carried forward in this evaluation, hence no low ranked sites resulted.
- The lack of interviews and limitations of property access presents a data gap. This issue will be resolved with site access and interview opportunities during site-specific Phase I reports, which will be performed on acquisition properties.

Conclusions

Based upon the above-detailed Findings and Opinions, the D-O LRT Project team concludes that RECs have been identified on or adjacent to the D-O LRT Project Corridor. The following statement is required by ASTM E1527-13 as a declaration of whether RECs were found:

HDR has performed a Limited Phase I ESA in general conformance with the scope and limitations of ASTM Standard E1527-13 of the proposed D-O LRT Project in Durham and Orange Counties, North Carolina. Any exceptions to or deletions from these practices are described in previous sections of this report. The limited Phase I ESA had identified properties with a high risk of hazardous material impacts, as documented in the previous sections.

Recommendations

Recommendations included in this report were developed through the investigative procedures described in the Scope of Services, Assumptions, and Limitations sections of this report. These findings should be reviewed within the context of the limitations provided in the Limitations section.

Based upon the four sites considered to be high risk sites associated with the project area, the D-O LRT Project team makes the following recommendations:

Recommendation 1

It is recommended that additional Phase I analysis be conducted if the D-O LRT Project or excavation limits change, and that site-specific Phase I reports will be performed, including access for site reconnaissance, on properties slated for acquisition.

Recommendation 2

It is recommended that a Phase II Environmental Site Assessment (drilling, sampling, and analytical program) be conducted for the four sites considered to be high risk sites (two of which were elevated from medium to high based on the DEIS report findings), and for any additional high risk sites that may be noted in the subsequent site specific Phase I report, prior to the start of project construction. The focus of the Phase II assessments will be on soils likely to be disturbed during construction. Soil samples (and groundwater, if encountered) will be collected and analyzed for the stated contaminants of concern.

Recommendation 3

It is recommended that all construction contractors should be instructed to immediately stop all subsurface activities in the event that potentially hazardous materials are encountered, an odor is reported, or stained soil is noted during construction. Contractors should be instructed to follow all applicable regulations regarding discovery and response for hazardous materials encountered during the construction process.

Recommendation 4

It is recommended consideration of the “shelf life” of the Phase I documents in determining risk. ASTM E1527-13, section 4.6 states that a conforming “Phase I” report is valid for a period of 180 days, and may be updated during the 180 days to 1-year timeframe. The report is valid for use in any of the CERCLA defenses only if it is updated within this time frame. If greater than one year passes from the final report date, the Phase I effort would need to be repeated to remain in compliance with ASTM and the “All Appropriate Inquiry” (AAI) protection. The 180-day expiry is most applicable for individual property risk management, and is less meaningful for preliminary Corridor Phase Is.

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1. Introduction

The previous National Environmental Policy Act (NEPA) documentation for the proposed Durham-Orange Light Rail Transit (D-O LRT) Project, including the Draft Environmental Impact Statement (DEIS) (2015), Final Environmental Impact Statement/Record of Decision (FEIS/ROD) (2016), Supplemental Environmental Assessment (EA) and Amended ROD (2016), evaluated the effects of the D-O LRT Project based on a preliminary engineering design referred to herein as the “Previous Design.” Since the Amended ROD was issued, the engineering design has advanced, resulting in refinement proposals to modify certain physical and operational aspects of the proposed action. These Proposed Refinements to the Previous Design would modify the limits of disturbance of the D-O LRT Project and require additional effects evaluations. The previous NEPA documentation identified no impacts to hazardous, contaminated, and regulated materials under the No Build Alternative. The Proposed Refinements do not change that finding.

This Limited Phase 1 Technical Report supplements the DEIS Limited Phase I ESA and the NCCU Station Refinement Hazardous Materials Assessment previously submitted for the D-O LRT Project Corridor. All prior documentation, including the relevant technical reports and environmental evaluations, are therefore incorporated by reference and findings. Opinions and recommendations included herein do not replace any conclusions or recommendations made in the Amended ROD.

1.1 Description of the Proposed Refinements

The Proposed Refinements have been incorporated into the Previous Design based on the following:

- Advancements in design since the Amended ROD, including refinements resulting from Value Engineering (VE) workshops and evaluation of additional measures to reduce project cost; and;
- Responses to public comments and stakeholder feedback on the previous NEPA documentation and the Amended ROD.

The Proposed Refinements include the following changes:

- Modifications to the station platform lengths;
- Adjustments to the location and configuration of the station platforms, as well as corresponding refinements to the track alignments;
- Modifications to the planned park-and-ride lots;
- Inclusion of bicycle and pedestrian facilities throughout the project;
- Changes in the locations and number of Traction Power Substations;
- Reconfiguration of the Rail Operations and Maintenance Facility (ROMF) and rail yard;
- Using single-track configuration for segment that includes New Hope Creek Bridge;
- Revision to the alignment to pass underneath the intersection of University Drive and Shannon Road, rather than cross through the intersection at grade;
- Elevation of the alignment on Erwin Road;
- Addition of a new station at Blackwell/Mangum Streets; and
- Inclusion of drainage, grading, and site preparation throughout the project.

1.1.1 Purpose

The purpose of this Limited Phase I ESA is to evaluate the D-O LRT Project Corridor, specifically those new parcels and those affected by the Proposed Refinements for indications of “recognized environmental conditions” or RECs. ASTM Practice E1527-13 defines the following categories of RECs.

1.1.2 Recognized Environmental Condition

The presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment. *De minimis* conditions are not recognized environmental conditions (as defined below).

ASTM E1527-13 states the release of any hazardous substance or petroleum product shall have the same meaning as the definition of “release” in CERCLA 42 U.S.C. §9601(22)).

1.1.3 Historical REC

A past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted use criteria established by a regulatory authority, without subjecting the property to any required controls (for example, property use restrictions, activity and use limitations, institutional controls, or engineering controls).

1.1.4 Controlled REC

A REC resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority (for example, as evidenced by the issuance of a no further action letter or equivalent, or meeting risk-based criteria established by regulatory authority), with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls (for example, property use restrictions, activity and use limitations, institutional controls, or engineering controls).

Additional conditions that are not included under the definitions of a REC, but are defined by ASTM Practice 1527-13 include *de minimis* and business environmental risks, both described below.

1.1.4.1 De Minimis

A condition that generally does not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies. Conditions determined to be *de minimis* are not RECs or controlled RECs.

1.1.4.2 Business Environmental Risk

These are risks that can have a material environmental or environmentally-driven impact on the business associated with the current or planned use of a parcel of commercial real estate, not necessarily limited to those environmental issues required to be investigated in this practice.

Consideration of business environmental risk issues may involve addressing one or more non-scope considerations.

1.1.5 Risk Ranking

In addition to the ASTM-based REC classification of a site, the DEIS Methodology relative risk ranking system was employed, which includes several investigative elements, to describe “sites of concern” located within the D-O LRT Project. A site of concern is a site that the investigative process has determined to have sufficient possibility of contamination, which warrants special attention during the Phase I ESA investigation. A site of concern may or may not ultimately be classified as a REC site as defined by ASTM, yet still may be “of concern” and is therefore highlighted in the report. A site of concern may or may not be carried forward in recommendations for further investigation, depending on the specific issues associated with the site.

Once the elements of the investigation process are completed, the sites are categorized sites of concern using a subjective risk ranking system, which was based on the ranking protocols adopted by the Minnesota Department of Transportation Office of Environmental Stewardship for limited Phase I ESAs of roadway corridors as previously utilized in the DEIS Limited Phase I Environmental Site Assessment, classifying the sites as low risk, moderate risk, high risk or (in some instances) indeterminate. The following paragraphs provide general descriptions of each category per their scope of work.

- **Low** – Based on the geological information available for the area, properties that are greater than 500 feet away from the alignment have the least risks of environmental impacts. This is because groundwater and subsurface contamination is significantly minimized at such a distance. In addition, waste generators or listing records (e.g., no recorded incident, FINDS database record, etc.) are classified as low risk.
- **Medium** – Properties that are within 500 feet of the alignment and are closed LUST sites, AST/UST sites, vehicle repair sites, junk yards, or have closed spill incidents.
- **High** – Properties that are within 500 feet of the alignment and are closed LUST sites that had no documented cleanup, are historical dry cleaners, historical auto stations (i.e., gas stations), active LUST sites, or have open spill incidents.
- **Indeterminate** — Sites that, at the time of report preparation, did not include sufficient information to include a high, medium, or low ranking. Indeterminate sites often require additional file review to determine the details of any related environmental issues at the site.

Once a risk ranking was assigned to a site, the risk ranking criteria was reviewed and concurred with by at least one Environmental Professional (EP) as defined in ASTM. Subjective criteria was cross-reviewed for accuracy and adherence to protocol and internal quality assurance standards. Risk ranking does not directly correspond to whether a site qualifies as a REC; rather, the risk ranking system is intended as a method of categorizing sites on large projects for consideration of common contamination characteristics that may have had the possibility of impacting the D-O LRT Project Corridor.

1.2 Report Users

HDR received authorization from GoTriangle to conduct a Limited Phase I ESA for the Proposed Refinements of the D-O LRT Project, located in Durham and Orange Counties, North Carolina.

This Limited Phase I ESA has been prepared for GoTriangle as the client, and only GoTriangle has the right to rely on the contents of this Limited Phase I ESA without written authorization.

1.3 Scope of Services, Assumptions, and Limitations

Services provided for the D-O LRT Project consisted of the following:

- Provide a description of the D-O LRT Project Corridor, including current land uses (**sections 2.1 through 2.3**);
- Provide a general description of the topography, soils, geology, groundwater flow, and oil and gas wells (**section 2.3**);
- Review reasonably ascertainable and reviewable regulatory information published by federal, state, local, tribal, health, and/or environmental agencies pertaining to the D-O LRT Project Corridor (**section 4.1 through 4.3**);
- Review historical data sources for the D-O LRT Project Corridor, including aerial photographs (**Section 4.4**) and previous environmental investigations (**Section 4.5**);
- Interview the current owner and other persons that have knowledge of the development history of the project area (**Section 4.6**);
- Conduct an area reconnaissance and an environmental review, including a visual review of adjoining properties, with a focus on indications of hazardous substances, petroleum products, polychlorinated biphenyls (PCBs), wells, storage tanks, solid waste disposal pits and sumps, and utilities (**Section 4.7 and 4.8**);
- Determine data gaps in the information obtained and comment on their significance in identifying RECs for the D-O LRT Project Corridor (**Section 5**);
- Summarize the findings, opinions, and conclusions (**Section 6**); and
- Provide recommendations based on the investigative procedures (**Section 7**).

The goal of this scope of services is to assist the user in identifying conditions in the D-O LRT Project Corridor that may indicate risks regarding hazardous materials storage, disposal, or other impacts. The resulting report may qualify the user for relief from liabilities as one of three “defenses” identified in the 2002 Brownfields Amendments to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 9607 (AAI subsections). These three defenses include:

1. The “innocent landowner” defense to potential liabilities under 42 United States Code [U.S.C.] § 9601;
2. The “contiguous project corridor owner” defense pursuant to 42 U.S.C. § 9607q; and
3. The “bona fide prospective purchaser” defense pursuant to 42 U.S.C. §9607r.

Federal regulations (42 U.S.C §9601(35)(A) & (B), §9607(b)(3), §9607(q); and §9607(r)), promulgated by the United States (U.S.) Environmental Protection Agency (EPA), require that liability release be based (in part) on completion of AAI prior to purchase of a property. Those inquiries are documented by Phase I reports, or Environmental Site Assessments (ESAs). EPA has agreed that the recently developed ASTM guidance (ASTM Practice E1527-13: 3.2.6) specifies and interprets AAI requirements.

A user is defined by ASTM Practice E1527-13 as the party seeking to use Practice E1527 to complete a Phase I ESA of a project area and may include a potential purchaser of land in the project area, a potential tenant of the project area, an owner of land in the project area, a lender, or a project area manager. Investigative areas not included in the standard ASTM Phase I ESA scope include: asbestos, lead-based paint, lead in drinking water, radon or urea formaldehyde, wetland issues, regulatory compliance, cultural

and historic resources, industrial hygiene, health and safety, ecological resources, endangered species, and high voltage power lines.

Indoor air quality from sources such as mold and asbestos is not included in the ASTM standard, except to the extent that indoor air impacts are related to Superfund release and/or caused by releases of hazardous substances into subsurface soil or groundwater (vapor intrusion).

The potential for vapor encroachment or intrusion into structures in the D-O LRT Project Corridor are not considered nor identified from sources.

The scope of services for Limited Phase I ESA projects also does not include the completion of soil borings, the installation of groundwater monitoring wells, or the collection of soil or groundwater samples. State and national policies and standards relevant to vapor intrusion are in flux and subject to change.

The following assumptions were made in preparing the scope of this assessment:

- Data gathered from public information sources (i.e., libraries or public regulatory agencies) are accurate and reliable.
- Site operations reflect site conditions relative to potential releases and no intentional concealment of environmental conditions or releases has occurred.
- Interview information (if conducted) is directly reported as gathered by the assessor and is limited by the accuracy of the interviewee's recollection and experience.
- Published geologic information and site observations made by the EP are used to estimate likely contaminant migration pathways in the subsurface. These estimates by the EP are limited in accuracy and are generally cross-referenced with existing information about similar sites and environmental releases in the area.
- Regulatory information is limited to sites identified after the late 1980s because reliable records were not kept by regulatory agencies prior to that time.

The findings and conclusions presented in this report are based on the procedures described in ASTM Practice E1527-13, a review of the available literature cited in this report, conditions noted at the time of this Limited Phase I ESA, and the interpretation of the information obtained as part of this Limited Phase I ESA. The findings and conclusions are limited to the specific project and properties described in this report, and by the accuracy and completeness of the information provided by others.

A Limited Phase I ESA cannot entirely eliminate uncertainty regarding the potential for RECs. Conducting this assessment is intended to reduce, but not eliminate, uncertainty regarding the potential for RECs in connection with a D-O LRT Project Corridor within reasonable limits of time and cost. In conducting its services, the D-O LRT Project team used a degree of care and skill ordinarily exercised under similar circumstances by reputable members of its profession practicing in the same locality. This Limited Phase I ESA generally conforms to the level of documentation required in ASTM Practice E1527-13. However, discussion of certain records; i.e., sources deemed inapplicable or of limited value to the specific needs of this client may have been omitted. In accordance with ASTM; however, if the lack of available documentation results in a data gap, this data gap is identified herein and its significance is discussed.

2. Legal and Regulatory Framework

Please refer to the legal and regulatory framework identified in appendix K25 of the DEIS.

2.1 Location and Legal Description

The D-O LRT Project is located within Durham and Orange Counties, North Carolina (**Figure 2-1**) within the Triangle region of the state. It extends 17.7 miles from southwest Chapel Hill to the NCCU Neighborhood and includes several educational, medical, and other key activity centers, which generate a large number of trips each day. The land uses in the D-O LRT Project are supported by a network of major highways, including NC 54, Interstate 40, US 15-501, Erwin Road, and NC 147. Additional detail regarding the study corridor is included in the D-O LRT Project DEIS (2015) and Supplemental EA (2016).

2.2 Site and Vicinity Characteristics

The D-O LRT Project Corridor is characterized by varied land uses, including residential, undeveloped, highway transit, industrial, and commercial business land uses. Surrounding land uses include industrial; commercial and retail facilities (gas station, auto repair business, etc.), and residential.

As stated previously, the D-O LRT Project Corridor extends over a 17-mile proposed light rail corridor that is oriented in a west/east direction. Roadways include Fordham Boulevard, Raleigh Road, Interstate 40, US 15-501, Durham Chapel Hill Boulevard, University Drive, Shannon Road, Tower Road, Western Bypass Road, Erwin Road, West Pettigrew Street, East Pettigrew Street, and Alston Avenue.

2.3 Area Geology, Hydrogeology and Groundwater

According to the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS), the Soil Survey Geographic Database indicates that the majority of the proposed D-O LRT Project is within the Durham Triassic Basin geologic unit, which is characterized by clay soils atop weathered rock. Within the region, unconsolidated materials atop the bedrock have been penetrated during later geological periods by diabase intrusion (“diabase dikes”), which present different permeabilities to groundwater migration. This is especially true in the zones adjacent to the dikes where the older Triassic materials were impacted by heat from the diabase intrusions such that they can be more permeable to groundwater migration than unaffected Triassic material.

The project is located in the Piedmont Physiographic Province. Groundwater often extends above the bedrock into these site-wide low permeability soils. Determination of localized groundwater flow direction at the site varies by location.

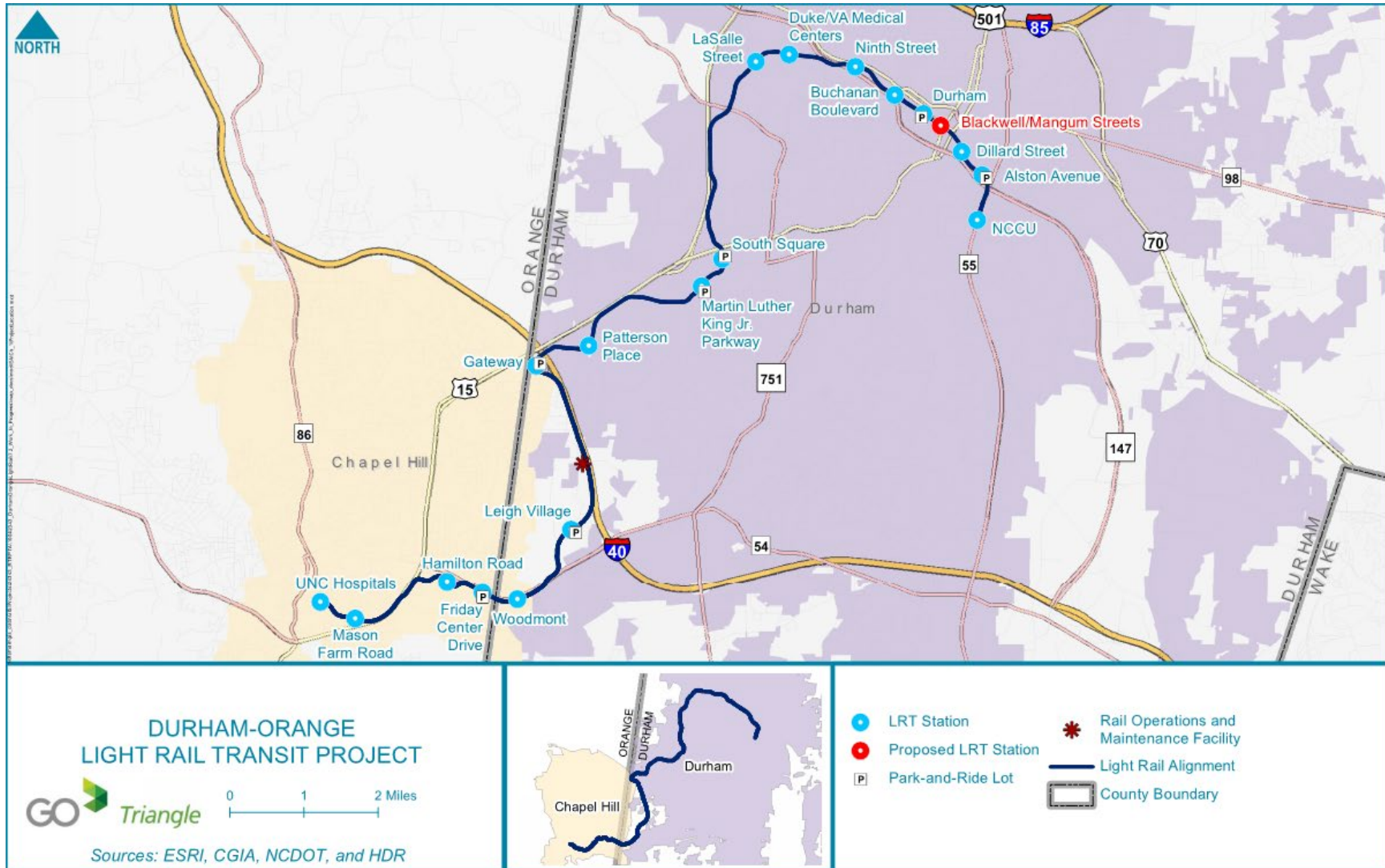


Figure 2-1: Project Location Map

3. User Provided Information

GoTriangle provided the limits of the D-O LRT Project Corridor and a map of the site based on the Proposed Refinements as of March 2018. In addition they provided prior DEIS EDR database searches, prior submission documents, as well as resources used. These are discussed further in **section 4**.

4. Records Review

4.1 Environmental Records Review

A database search was conducted of federal, state, and tribal environmental records for the D-O LRT Project Corridor, which outlined project boundaries and search parameters, including a one-mile search radius. A computerized environmental information database search was completed on February 12, 2018. The database search included federal, state, local, tribal databases as defined by ASTM E1527-13 and also other proprietary databases. The results of the database search are summarized below in **Table 4-1**. Individual listings are further discussed in **Table 4-2**. A complete copy of the environmental database report is included in **attachment I.1**.

4.2 Summary of Listed Records

Following the DEIS methodology and utilizing the 2018 database search resulted in 1,605 regulatory listings located within the 1-mile search radius from the Proposed Refinements. Of these, a total of 252 property listings were listed as being located within or immediately adjacent to the D-O LRT Project Corridor (500-foot buffer), and of those 59 corresponding regulatory listings were located directly along the proposed alignment, resulting in potential changes. These corresponding regulatory listings are in addition to the DEIS and NCCU Refinement findings and are meant as an addendum based on the Proposed Refinements. **Table 4-2** documents 38 new sites within the alignment and buffer being carried forward within this document for further evaluation as high, medium, or indeterminate risk sites. Due to the scope of the D-O LRT Project, the map scale does not show individual addresses. The regulatory listings are associated with numerous business names and addresses over a broad span of time. Given the frequent change of tenant businesses leasing in this industrial area, as businesses are transient in nature, more than one address or name may be associated with the map code.

Table 4-1: Summary of Environmental Database Search

Database	Description	Records Listed Within the EDR Radius	Environmental Concern to the Project Corridor
Federal			
SEMS	SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA’s Superfund Program across the United States. The list was formerly known as CERCLIS (Comprehensive Environmental Response, Compensation, and Liability Information System), renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.	3	0
SEMS-ARCHIVE	SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA’s knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the NPL, unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that no hazard associated with a given site; it only means that. Based upon available information, the location is not judged to be potential NPL site.	9	0
CORRACTS	A list of handlers with Resource Conservation and Recovery Information System (RCRA) with nationally-defined corrective action core events.	1	0

Table 4-1 (cont'd): Summary of Environmental Database Search

Database	Description	Records Listed Within the EDR Radius	Environmental Concern to the Project Corridor
RCRA - TSDF	The EPA maintains a database RCRA facilities associated with treatment, storage, or disposal (TSD) of the waste. Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste.	1	0
RCRA-LQG	RCRA - Large Quantity Generators - RCRAInfo is EPA's comprehensive information system, providing access to data supporting the RCRA of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat, and/or dispose of hazardous waste as defined by the RCRA. Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.	7	0
RCRA-SQG	RCRA - Small Quantity Generators - RCRAInfo is EPA's comprehensive information system, providing access to data supporting the RCRA of 1976 and the HSWA of 1984. The database includes selective information on sites which generate, transport, store, treat, and/or dispose of hazardous waste as defined by the RCRA. SQGs generate between 100 kg and 1,000 kg of hazardous waste per month.	13	0
RCRA-CESQG	RCRA - Conditionally Exempt Small Quantity Generators - RCRAInfo is EPA's comprehensive information system, providing access to data supporting the RCRA of 1976 and the HSWA of 1984. The database includes selective information on sites which generate, transport, store, treat, and/or dispose of hazardous waste as defined by the RCRA. Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.	17	0
RCRA-NonGen/NLR	RCRA enacted by Congress in 1976; Amended in 1984 with the Hazardous and Solid Waste Amendments. Database includes selective information on sites which generate, transport, store, treat, and/or dispose of hazardous waste. Non-generators (NonGen) do not presently generate hazardous waste, or no-longer reported.	63	1

Table 4-1 (cont'd): Summary of Environmental Database Search

Database	Description	Records Listed Within the EDR Radius	Environmental Concern to the Project Corridor
US BROWNFIELDS	Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.	60	0
DOD	Department of Defense Sites - This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.	1	0
US MINES	Mines Master Index File - Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.	2	0
SSTS	Section 7 of the Federal Insecticide, Fungicide, and Rodenticide Act, to submit a report to the EPA of the types and amounts of pesticides being produced, sold, or distributed.	1	0
ICIS	The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.	3	0
FINDS	The Facility Index Database System (FINDS) is an EPA/ National Technical Information Service database that contains both facility information and "pointers" to other sources of information that contain more detail.	44	0

Table 4-1 (cont'd): Summary of Environmental Database Search

Database	Description	Records Listed Within the EDR Radius	Environmental Concern to the Project Corridor
RAATS	RCRA Administration Action Tracking System - RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.	1	0
U.S. AIRS	A sub-system database of the Aerometric Information Retrieval System (AIRS), which contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies.	3	0
ECHO	Enforcement & Compliance History Information ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.	24	0
2020 COR ACTION	The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.	1	0
State, Local, and Tribal			
SHWS	Inactive Hazardous Sites Inventory State Hazardous Waste Sites - State hazardous waste site records are the states' equivalent to CERCLIS. These sites may or may not already be listed on the federal CERCLIS list. Priority sites planned for cleanup using state funds (state equivalent of Superfund) are identified along with sites where cleanup will be paid for by potentially responsible parties. Available information varies by state.	30	2
IMD	Incident Management Database - Groundwater and/or soil contamination incidents	291	0

Table 4-1 (cont'd): Summary of Environmental Database Search

Database	Description	Records Listed Within the EDR Radius	Environmental Concern to the Project Corridor
HSDS	Hazardous Substance Disposal Site - Locations of uncontrolled and unregulated hazardous waste sites. The file includes sites on the National Priority List as well as those on the state priority list.	14	0
UIC	Underground Injection Wells Listing - A listing of underground injection wells locations.	5	0
SWRCY	Recycling Center Listing - A listing of recycling center locations.	6	0
LUST	Leaking Underground Storage Tanks (LUST) Incident Report –SWRCB LUST records contain an inventory of reported leaking UST incidents.	382	18
LUST TRUST	State Trust Fund Database - This database contains information about claims against the State Trust Funds for reimbursements for expenses incurred while remediating Leaking USTs.	163	1
UST	Underground Storage Tank (UST) as regulated under Subtitle I of the RCRA, data source from the SWRCB Hazardous Substance Storage Container Database.	126	18
LAST	Leaking Aboveground Storage Tanks - A listing of leaking aboveground storage tank site locations.	59	1
AST	Aboveground Storage Tank (AST) - SWRCB provides listing of ASTs Waste Management Unit Database System (WMUDS) – SWRCB maintains a list of waste management systems, including active and inactive, permitted and non-permitted solid waste disposal facilities, transfer stations and waste haulers.	4	1
MANIFEST	Hazardous Waste Manifest Data - Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.	1	0
VCP	Responsible Party Voluntary Action Sites - Responsible Party Voluntary Action site locations.	3	0
DRYCLEANERS	Dry-cleaning Sites - Potential and known dry-cleaning sites, active and abandoned, that the Dry-cleaning Solvent Cleanup Program has knowledge of and entered into this database.	14	1 (Orphan)

Table 4-1 (cont'd): Summary of Environmental Database Search

Database	Description	Records Listed Within the EDR Radius	Environmental Concern to the Project Corridor
BROWNFIELDS	Brownfields Projects Inventory - A brownfield site is an abandoned, idled, or underused property where the threat of environmental contamination has hindered its redevelopment. All of the sites in the inventory are working toward a brownfield agreement for cleanup and liability control.	14	4
SPILLS	Spills Incident Listing - A listing spills, hazardous material releases, sanitary sewer overflows, wastewater treatment plant bypasses and upsets, citizen complaints, and any other environmental emergency calls reported to the agency.	0	1 (Orphan)
NPDES	Listing of all NPDES permits including stormwater.	4	0
EDR Proprietary Records			
EDR MGP	The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800s to 1950s to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.	1	0
EDR US Hist Auto Stat	Historical Auto Stations – Gas stations/filling stations/service station establishments.	126	3
EDR US Hist Cleaners	Historical Cleaners – Dry cleaners, cleaners, laundry, Laundromat, cleaning/laundry, wash and dry establishments.	74	8

Table 4-1 (cont'd): Summary of Environmental Database Search

Database	Description	Records Listed Within the EDR Radius	Environmental Concern to the Project Corridor
RGA HWS	The EDR Recovered Government Archive State Hazardous Waste database provides a list of SHWS incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Environment, Health and Natural Resources in North Carolina.	2	0
RGA LUST	This database provides a list of LUST incidents derived from historical databases and includes records that no longer appear in current government lists.	32	0
Total Regulatory Listings		1,605	59

Only those Historical Auto and Historical Cleaners within the proposed alignment that posed potential for adverse environmental concerns were included for further evaluation, as shown above in **Table 4-2**. Additionally, it is important to note that orphan sites (e.g., parcels identified in the EDR report that could not be geo-referenced by EDR) were reviewed by EPs. Two orphan sites were located within the study area of the D-O LRT Project Corridor and were evaluated along with the other properties.

Table 4-2: Regulatory Listings Located Within or Adjacent to the Project Corridor

Number	EDR Map Code	Site Name	Address	Regulatory Listings	Within or Adjacent to the Project Area	Associated Photo (attachment I.3)	Comments
1.	1-24	Methodist Retirement Community	2604 Erwin Road	UST, LUST	Within	None	2015 LUST - During UST removal
2.	1-24	Duke Medical Center (Bell Building)	Trent Drive	SHWA, SPILLS	Within	None	None Listed
3.	1-24	Lakeview Residences	2610 Erwin Road	Brownfields	Adjacent	None	Finalized Brownfields Agreement
4.	1-24	Duke University	2237 Elba Street	UST, LUST	Adjacent	None	2015 LUST – Residential spill, no closure date
5.	1-24	Duke University	2233 Elba Street	UST, LUST	Adjacent	None	2015 LUST – Residential spill, no closure date
6.	1-24	Duke University	2231 Elba Street	UST, LUST	Adjacent	None	2015 LUST – Residential spill
7.	1-24	Modern Damp Wash Laundry	2031 Erwin Road	HIST Drycleaners	Within	None	Historical cleaners 1925
8.	1-24	Dillehay Ollie V Auto Repair	2033 Erwin Road	HIST AUTO	Within	None	Historical Auto 1930-1940s
9.	5-56	Duke University Life Flight Center	Erwin Road	UST, LUST	Adjacent	None	1993 LUST – Diesel Spill, TPH levels 26-260 ppm
10.	5-64	Duke Medical Center	Trent Drive	LUST	Within	None	2005 LUST – No Groundwater Contamination, but under investigation
11.	6-89	Former Howerton-Bryan Funeral Home	1001 West Main Street	UST, LUST, HIST DC	Adjacent	None	2017 LUST– Removed and was cleaners in 1970s
12.	6-110	Ingold Tire	202 Gregson Street	HIST AUTO	Within	None	Historic Auto 1958
13.	6-133	Elmwood Investments, LLC	91 West Main Street	UST, LUST	Adjacent	None	2006 – Open incident, in progress
14.	6-137	Durham Trans Station Site	West Pettigrew Street	UST, LUST	Within	None	2005 LUST – Closed, former gas station
15.	6-145	Durham City Center II	110 Corcoran Street	UST, LUST	Adjacent	None	2016 – Closed LUST
16.	11-163	Jack West Property	302 East Pettigrew Street	UST, LUST	Adjacent	None	1997 LUST – soil contamination noted with UST removal, closed 2010
17.	11-163	Scarborough & Hargett Funeral	306 South Roxboro Street	SHWS, SPILLS	Adjacent	None	2010 – Groundwater contamination detected
18.	11-175	305 South Roxboro	305 South Roxboro Street	Brownfields	Adjacent	None	2013 & 2015 Incident, no further details

Number	EDR Map Code	Site Name	Address	Regulatory Listings	Within or Adjacent to the Project Area	Associated Photo (attachment I.3)	Comments
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Table 4 2 (cont'd): Regulatory Listings Located Within or Adjacent to the Project Corridor

Number	EDR Map Code	Site Name	Address	Regulatory Listings	Within or Adjacent to the Project Area	Associated Photo (attachment I.3)	Comments
19.	11-180	Triangle Ecycling	905 East Jackie Robinson Drive	Brownfields, RCRA	Adjacent	None	2015 Incident – no violations
20.	11-181	Hendricks Auto body Shop	510 Pettigrew Street	Brownfield	Within	None	None Listed
21.	11-181	City of Durham Property	Pettigrew Street & Dillard Street	AST, LAST	Within	None	1995 LAST – Indications of contamination from gas station
22.	11-181	Pugh London	516 West Pettigrew Street	HIST Drycleaners	Within	None	1925 cleaning and pressing
23.	11-181	Sou Dry Cleaners	500 East Pettigrew Street	HIST Drycleaners	Within	None	1949 – 1954 Cleaners and dyers
24.	11-181	Royal Cleaners Inc.	538 East Pettigrew Street	HIST Drycleaners	Within	None	1940-1958 Cleaners and dryers
25.	11-218	Freeway BP 120	308 Alston Avenue	UST, LUST, LUST TRUST	Adjacent	Photo 9	2000 – Soil contamination discovered upon UST removal
26.	11-218	Aguilera Filmon Property	1102 Gann Street	UST, LUST	Adjacent	None	2013 LUST – none listed
27.	11-238	Terry's One Hour Martinizing	710 Alston Avenue	HIST Drycleaners	Within	None	1983 Cleaning and Dyers
28.	11-238	One Hour Martinizing	706 Alston Avenue	HIST Drycleaners	Within	None	1979 Cleaning and laundries
29.	11-245	High J Otis Garage	1012 Alston Avenue	HIST AUTO	Within	None	Hist Auto 1944
30.	11-251	NCCU McDougald House	East Lawson Street & Alston Avenue	UST, LUST	Within	Photo 10	1998 LUST – Heating oil tank removal, TPH-DRO was detected
31.	15-281	H & 8 Cleaners	4018 University Drive	HIST Drycleaners	Within	None	Indication of early 1900 Drycleaners
32.	15-307	Durham Auto Park	3821 Chapel Hill Boulevard	UST, LUST	Within	None	2009 LUST – Groundwater Contamination
33.	21-272	Glenwood 66	1010 Raleigh Road	UST, LUST	Within	Photo 2	1993 LUST – 6 USTs removed, ~1700 tons of soil removed
34.	22-291	East 54 Development	1310 Raleigh Road	UST, LUST	Within	Photo 3	2008 LUST – 2 USTs removed during construction, ~200 tons of soil removed

Number	EDR Map Code	Site Name	Address	Regulatory Listings	Within or Adjacent to the Project Area	Associated Photo (attachment I.3)	Comments
35.	23-395	UNC Chapel Hill – Victory Village Daycare	150 Mason Farm Road	LUST	Adjacent	Photo 1	UST removal, Limited Site Assessment, TPH above action levels
36.	Orphan	N/A - Orphan Site	Martin Luther King Parkway and University Drive	SPILLS	Within	None	None Listed
37.	Orphan (5-30)	Durham DryCleaning	2526 Erwin Road	DRYCLEANERS	Adjacent	Photo 6	None Listed
38.	Unmapped	Valero – Current Business	3322 Old State Route 54	UST	Within	Photo 4	Current Gas Station

4.3 Agency File Review

Given the preliminary engineering phase of the D-O LRT Project, no agency file reviews were conducted as part of the Limited Phase I ESA. Agency file reviews will be conducted as part of site specific Phase I reports that will be completed for property acquisition, if deemed necessary by the EP at that time.

4.4 Historical Use Information

The objective of reviewing historical use information is to develop a history of previous land uses in the project area. This information was used to assess the previous land uses for potential hazardous materials impacts that may affect the project area. Those historical sources that were reasonably ascertainable and likely to provide useful information, as defined by the ASTM standard, were reviewed.

4.4.1 Historical Aerial Photographs

Historical aerial photographs are valuable for the EP to review features of the D-O LRT Project Corridor and surrounding properties over a long period of time. The USGS historical aerial photographs were reviewed for the following years: 1964, 1980, 1993, and 2016 (augmented with recent Google Earth imagery). The historical aerial photographs are presented as **attachment I.2**.

- **1964:** The D-O LRT Project Corridor was mainly residential or undeveloped in the western portions of Chapel Hill. The UNC Chapel Hill campus and some of the existing roadways (Raleigh Road) were located to the east of the D-O LRT Project Corridor. Interstate 40 had not been constructed, and land uses throughout this portion of the future corridor were entirely agricultural and undeveloped. Heavily residential areas, highways, and commercial/industrial businesses were present throughout the city center.
- **1980:** The area remained relatively unchanged from 1964 conditions. Duke and North Carolina Central Universities, along with their corresponding administrative and athletic facilities, were located east of the D-O LRT Project Corridor. Major highways and roads were present in similar configurations to current conditions. Chapel Hill remained mostly undeveloped, while Durham had been extensively developed, especially to the north and east of the D-O LRT Project corridor and northeast of US 147.
- **1993:** The general area had reached current build-out. Additional buildings and structures associated with the UNC had been developed. Much of the areas in the western portions of the D-O LRT Project Corridor were still predominantly residential. Additionally, connection to the newly constructed Interstate 40, as well as the corresponding commercial businesses, had been added along Raleigh Road. The central portion of the D-O LRT Project Corridor along Erwin Road and leading back to downtown Durham had seen the most development from prior years. Much of the area had been developed with residential or commercial/industrial businesses, especially along major roadways and in the vicinity of Duke University, and the corresponding increases in hospitals and residences. The City of Durham continued to show growth and urban sprawl. Central portions of the city had been completely built out, and larger structures had been replaced with smaller establishments and businesses.
- **2016 – Present:** The area remained relatively unchanged from the early to mid-1990s overall, with the exception of newer residential properties and numerous apartment complexes, which had been constructed throughout the respective university areas at the western and eastern ends of the corridor.

4.5 Summary of Previous Environmental Investigations

The *DEIS Limited Phase I ESA* reported 426 properties of concern, as described in more detail in DEIS Section 4.11.3 and in appendix K.25, Table 4.11-1 summarized the number of high and medium risk sites within 500 feet of the NEPA Preferred Alternative and the difference between alternatives. The number of high risk sites ranged from 41 to 42 sites depending on the alignment alternative. The number of medium risk sites ranged from 83 to 89 sites. Previous investigations were available for review for two sites along the D-O LRT Project Corridor. Overall, the *DEIS Limited Phase I ESA* reported 42 sites with a high risk potential for contamination from hazardous material uses or activities, 89 sites with a medium risk, and 295 sites with a low risk.

The *Supplemental EA NCCU Station Refinement Hazardous Materials* (AECOM, 2016d) document augmented the original DEIS with an additional portion of the preferred alignment. Multiple new EDR database regulatory listings were reported and reviewed as a result of the new track section. Five additional sites (one low, two medium, and two high risk sites) were added, as well as adjustments in risk ranking based on updated site reconnaissance or alignment refinements (one medium-to-high and three low-to-medium risk).

4.6 Interviews

Given the preliminary engineering phase of the D-O LRT Project, no interviews were conducted as part of the Limited Phase I ESA. Interviews will be conducted as part of site-specific Phase I reports that will be completed for property acquisition.

4.7 Site Reconnaissance

A site reconnaissance of the D-O LRT Project Corridor, including the surrounding properties, was conducted on February 21, 2018. No access to private property was provided; therefore, all areas were assessed by using public right-of-ways.

The overall area is urbanized, and considered mixed use with residential, industrial, and commercial throughout. Photographs were taken during the site reconnaissance (**attachment I.3**).

Mainly residential, undeveloped, municipal (i.e., highway) or smaller scale industrial and commercial land uses were located within and adjacent to the D-O LRT Project Corridor. This included the following: UNC Chapel Hill Station and LUST case (Photo 1), an active Exxon Station with historic clean up (Photo 2), additional gasoline facilities with soil contamination documented during removal (Photo 3), a previously undocumented BP Station with UST (Photo 4), Garrett Road BP Station on Durham Chapel Hill Boulevard (Photo 5), existing BP and Exxon station located near Durham Dry-cleaning Historic site (Photo 6), existing bus mass transit station to be upgraded for LRT project (Photo 7), Amtrak railway located along East Pettigrew Street (Photo 8), existing BP Station located near new refined NCCU section along South Alston Avenue (Photo 9), and NCCU station terminus located in close proximity to residence hall LUSTs (Photo 10).

The EDR regulatory listings were verified or compared with the current operating businesses. It is important to note that many facilities had opaque fencing, which limited visibility to assess for soil staining on private properties. *De minimis* surface staining was noted in the automobile repair areas, where accessible. No pits, ponds, lagoons, disturbed soil, or other indications of large-scale indications of waste dumping or significant surface staining were noted.

4.8 Utilities and Polychlorinated Biphenyls (PCBs)

Subsurface utilities were noted during site reconnaissance throughout the D-O LRT Project Corridor; due to the urban nature of the area, the D-O LRT Project team surmised there is a substantial subsurface utility network. Pole-mounted and pad-mounted transformers were present throughout the D-O LRT Project Corridor, and it is possible that PCB-containing transformers could be present. The EDR report and agency reviews did not indicate any transformer-fire related listings. Further evaluation of PCBs will be conducted as part of site-specific Phase I reports that will be completed for property acquisition.

5. Data Gap Analysis

The ASTM E1527-13 standards require a listing of “data gaps,” including data failure, encountered during the investigative process that may affect the validity of the conclusions drawn by the EP. The ASTM E1527-13 standard also requires that the EP estimate the relative importance of the data gaps. Generally, gaps in available data are related to the availability of historical data sources for specific sites of concern. The EP uses multiple historical data sources as a method to provide coverage for data gaps. Historical information is collected on a recurring basis, and the passage of time between data sets may or may not constitute a gap in data coverage. For this D-O LRT Project, the following items may constitute a data gap as defined by ASTM E1527-13.

Specifically for this assessment, the following data gaps were noted:

- Lack of interviews with persons with historic knowledge of the D-O LRT Project Corridor;
- Lack of review of agency files;
- Lack of review of Sanborn maps, tax maps, building permits, or property liens;
- Lack of access to many specific properties; and
- Lack of unobstructed views of property due to opaque fencing.

The lack of interviews, review of agency files, and limitations of property access present significant data gaps. The lack of Sanborn maps and other similar documentation for review is not considered to be a significant data gap, based on other available supporting historical information. This issue will be resolved with site access, file review, and interview opportunities during site-specific Phase I reports, which will be performed on acquisition properties.

6. Findings, Opinions, and Conclusions

The Phase I ESA – Addendum # 1 was performed following *DEIS Limited Phase I Environmental Site Assessment* methodology and in general accordance with the scope and limitations of ASTM Practice E1527-13. This Limited Phase I ESA includes a review of an environmental database search report, review of historical data sources; review of any additional regulatory documentation, and a summary of the site reconnaissance conducted on February 21, 2018. The findings, opinions, and conclusions of the review are provided in subsequent sections.

6.1 Findings

General findings of this assessment include the following:

- Following the DEIS methodology and utilizing the EDR database search resulted in 1,605 regulatory listings located within the EDR 1-mile search radius from the Proposed Refinements. Of those, a total of 252 property listings were listed in the EDR report as located

within or immediately adjacent to the D-O LRT Project Corridor (500-foot buffer), and of those 59 corresponding regulatory listings located directly along the proposed alignment resulting in potentially changes. **Table 4-2** documents 38 new sites located within the alignment and buffer. These sites were ranked according to risk (using the original DEIS Methodology), and each site listing includes a Phase I recommendation during right-of-way or acquisition, as summarized in **Table 6-1** and illustrated on **Figure 6-1**. Four sites are considered to be high risk, while 24 sites are considered to be medium risk, and 10 were considered to be indeterminate risk. Only areas with D-O LRT Project Corridor changes were shown on **Figure 6-1**.

- A review of aerial photographs indicated that the D-O LRT Project Corridor was mainly residential or undeveloped in the western portions of Chapel Hill, and was characterized by more dense development to the east near the City of Durham in 1964. By 1993, the Chapel Hill area was still predominantly residential, while the Durham area had reached build-out, characterized by increased growth, urban sprawl, and the construction of Interstate 40. Finally, present conditions remain relatively unchanged from the early to mid-1990s overall, with the exception of newer residential properties and numerous apartment complexes located throughout the respective university areas at the western and eastern ends of the corridor.
- A site reconnaissance was conducted on February 21, 2018 from public right-of-way areas. No site-specific access was obtained. The overall project area consisted of mixed rural and highway uses, with areas of industrial and commercial business uses. The EDR regulatory listings were verified or compared with the current operating businesses. No pits, ponds, lagoons, disturbed soil, large-scale indications of waste dumping, or significant surface staining was noted during the site reconnaissance. It is important to note that many facilities had fencing, which limited the visual assessment of soil staining on private properties.
- Subsurface utilities were noted during site reconnaissance throughout the D-O LRT Project Corridor; due to the urban nature of the area, the D-O LRT Project team surmised there is a substantial subsurface utility network. Pole-mounted and pad-mounted transformers were present throughout the D-O LRT Project Corridor, and it is possible that PCB-containing transformers could be present. The EDR report and agency reviews did not indicate any transformer-fire related listings.

Further evaluation of PCBs will be conducted as part of site-specific Phase I reports that will be completed for property acquisition.

Table 6-1: Findings and Phase I Recommendations

Number	EDR Map Code ^a	Site Name	Address	Regulatory Listing ^b	Data Source ^c	Risk Ranking L/M/H/I ^d	Phase I Recommendation
1.	1-24	Methodist Retirement Community	2604 Erwin Road	UST, LUST	D, R	M	Yes
2.	1-24	Duke Medical Center (Bell Building)	Trent Drive	SHWA, SPILLS	D, R	H	Yes
3.	1-24	Lakeview Residences	2610 Erwin Road	Brownfields	D, R	M	Yes
4.	1-24	Duke University	2237 Elba Street	UST, LUST	D, R	M	Yes
5.	1-24	Duke University	2233 Elba Street	UST, LUST	D, R	M	Yes
6.	1-24	Duke University	2231 Elba Street	UST, LUST	D, R	M	Yes
7.	1-24	Modern Damp Wash Laundry	2031 Erwin Road	HIST Drycleaners	D, R	I	Yes
8.	1-24	Dillehay Ollie V Auto Repair	2033 Erwin Road	HIST AUTO	D, R	M	Yes
9.	5-56	Duke University Life Flight Center	Erwin Road	UST, LUST	D, R	M	Yes
10.	5-64	Duke Medical Center	Trent Drive	LUST	D, R	M	Yes
11.	6-89	Former Howerton-Bryan Funeral Home	1001 West Main Street	UST, LUST, HIST DC	D, H, R	M	Yes
12.	6-110	Ingold Tire	202 Gregson Street	HIST AUTO	D, R	M	Yes
13.	6-133	Elmwood Investments, LLC	91 West Main Street	UST, LUST	D, R	M	Yes
14.	6-137	Durham Trans Station Site	West Pettigrew Street	UST, LUST	D, R	M	Yes
15.	6-145	Durham City Center II	110 Corcoran Street	UST, LUST	D, R	M	Yes

Table 6-1 (cont'd): Findings and Phase I Recommendations

Number	EDR Map Code ^a	Site Name	Address	Regulatory Listing ^b	Data Source ^c	Risk Ranking L/M/H/I ^d	Phase I Recommendation
16.	11-163	Jack West Property	302 East Pettigrew Street	UST, LUST	D, R	M	Yes
17.	11-163	Scarborough & Hargett Funeral	306 South Roxboro Street	SHWS, SPILLS	D, H, R	H	Yes
18.	11-175	305 South Roxboro	305 South Roxboro Street	Brownfields	D, R	M	Yes
19.	11-180	Triangle Ecycling	905 East Jackie Robinson Drive	Brownfields, RCRA	D, R	M	Yes
20.	11-181	Hendricks Auto body Shop	510 Pettigrew Street	Brownfield	D, R	M	Yes
21.	11-181	City of Durham Property	Pettigrew Street & Dillard Street	AST, LAST	D, H, R	M	Yes
22.	11-181	Pugh London	516 West Pettigrew Street	HIST Drycleaners	D, R	I	Yes
23.	11-181	Sou Dry Cleaners	500 East Pettigrew Street	HIST Drycleaners	D, R	I	Yes
24.	11-181	Royal Cleaners Inc.	538 East Pettigrew Street	HIST Drycleaners	D, R	I	Yes
25.	11-218	Freeway BP 120	308 Alston Avenue	UST, LUST, LUST TRUST	D, R	M	Yes
26.	11-218	Aguilera Filmon Property	1102 Gann Street	UST, LUST	D, R	M	Yes
27.	11-238	Terry's One Hour Martinizing	710 Alston Avenue	HIST Drycleaners	D, R	I	Yes
28.	11-238	One Hour Martinizing	706 Alston Avenue	HIST Drycleaners	D, R	I	Yes
29.	11-245	High J Otis Garage	1012 Alston Avenue	HIST AUTO	D, R	M	Yes

Table 6-1 (cont'd): Findings and Phase I Recommendations

Number	EDR Map Code ^a	Site Name	Address	Regulatory Listing ^b	Data Source ^c	Risk Ranking L/M/H/I ^d	Phase I Recommendation
30.	11-251	NCCU McDougald House	East Lawson Street & Alston Avenue	UST, LUST	D, R	M	Yes
31.	15-281	H & 8 Cleaners	4018 University Drive	HIST Drycleaners	D, R	I	Yes
32.	15-307	Durham Auto Park	3821 Chapel Hill Boulevard	UST, LUST	D, H, R	M	Yes
33.	21-272	Glenwood 66	1010 Raleigh Road	UST, LUST	D, H, R	H*	Yes
34.	22-291	East 54 Development	1310 Raleigh Road	UST, LUST	D, R	H*	Yes
35.	23-395	UNC Chapel Hill – Victory Village Daycare	150 Mason Farm Road	LUST	D, R	M	Yes
36.	Orphan	N/A - Orphan Site	Martin Luther King Parkway and University Drive	SPILLS	D, R	M	Yes
37.	Orphan (5-30)	Durham Dry Cleaning	2526 Erwin Road	DRYCLEANERS	D, R	M	Yes
38.	Unmapped	Valero – Current Business	3322 Old State Route 54	UST	D, H, R	M	Yes

Note:

- ^a Corresponds to location of site as indicated in the EDR report (**attachment I.1**).
- ^b Complete acronym list is identified in EDR report (**attachment I.1**).
- ^c Indicates primary information sources for listing: R=Reconnaissance, D=Database, H=Historical Source (historical aerial photographs)
- ^d Risk of potential impacts onsite: L = Low; M = Moderate; H =High; I=Indeterminate
- * Previously Medium Ranked sites that were elevated to High Rank based on increased proximity with alignment changes

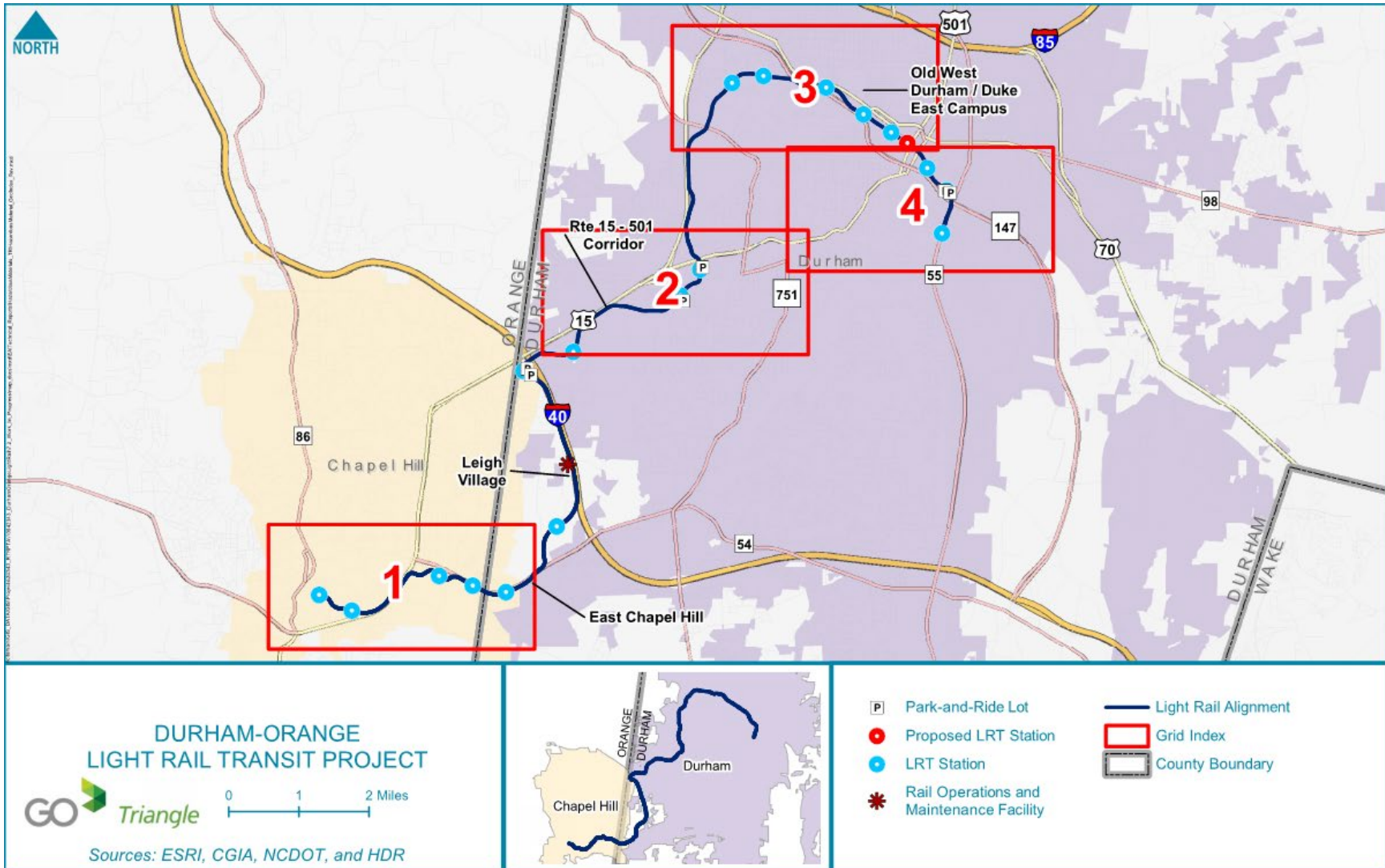


Figure 6-1: Grid Index

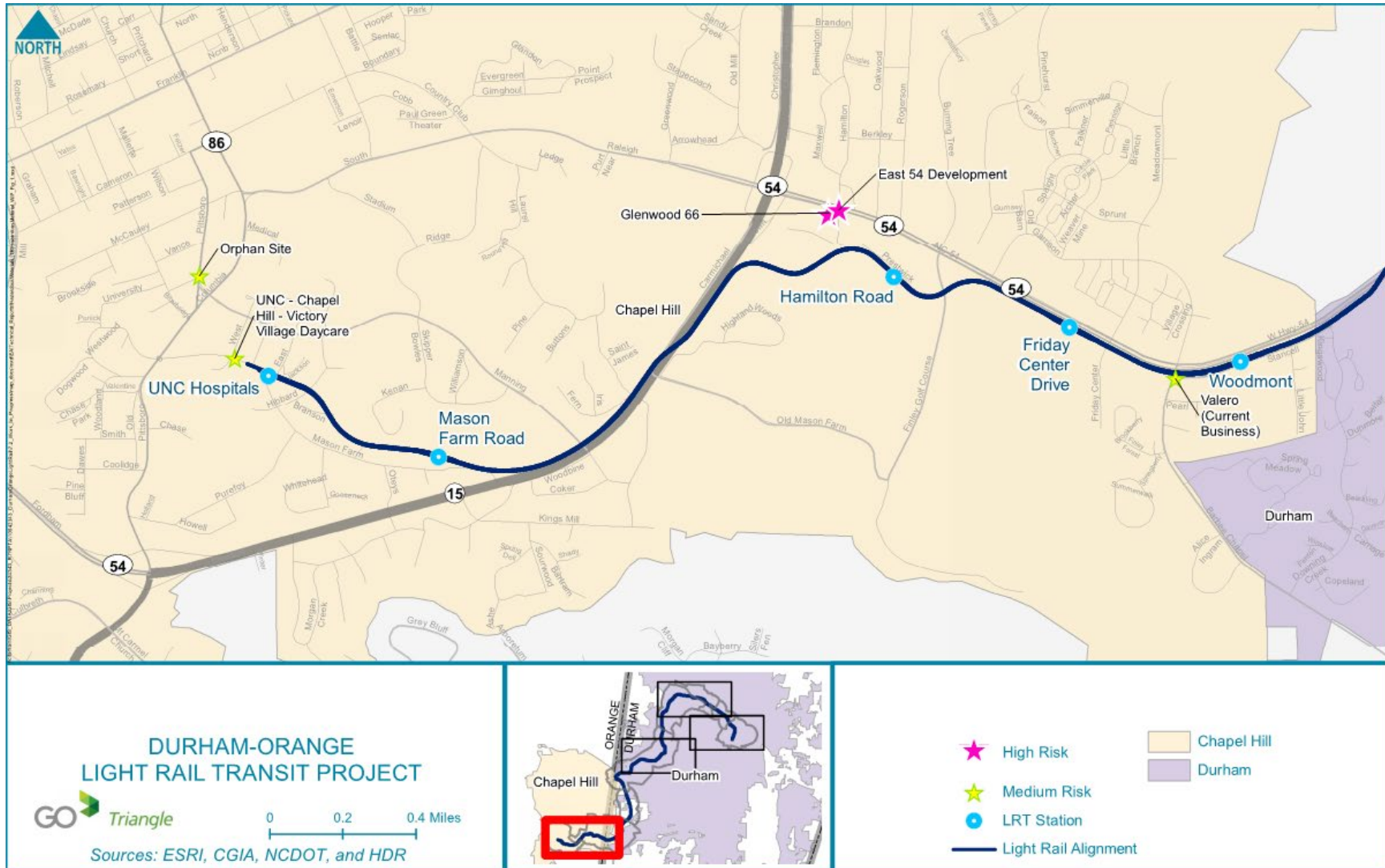


Figure 6-2: Hazardous Materials Site Risk Rankings

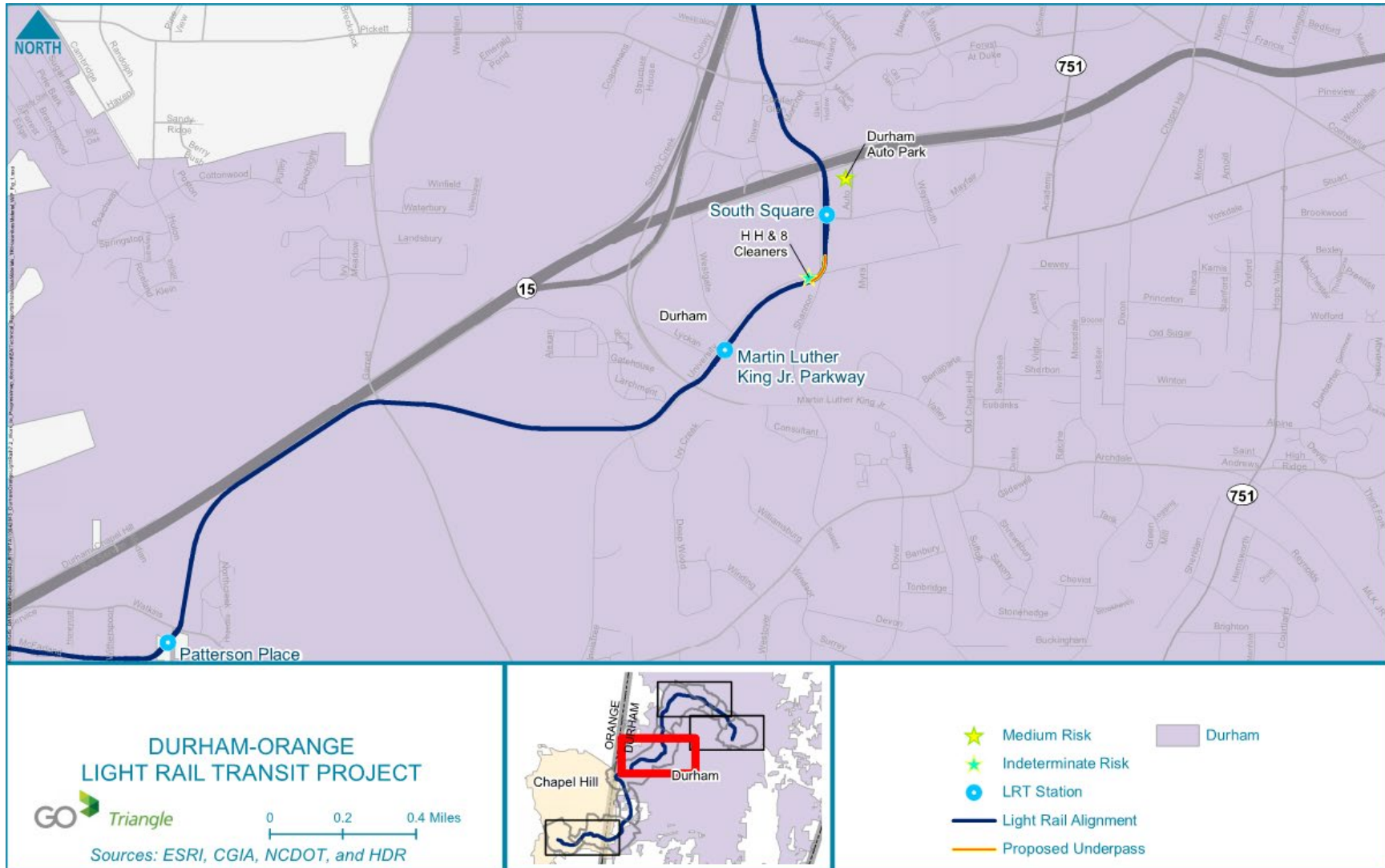


Figure 6-3: Hazardous Materials Site Risk Rankings

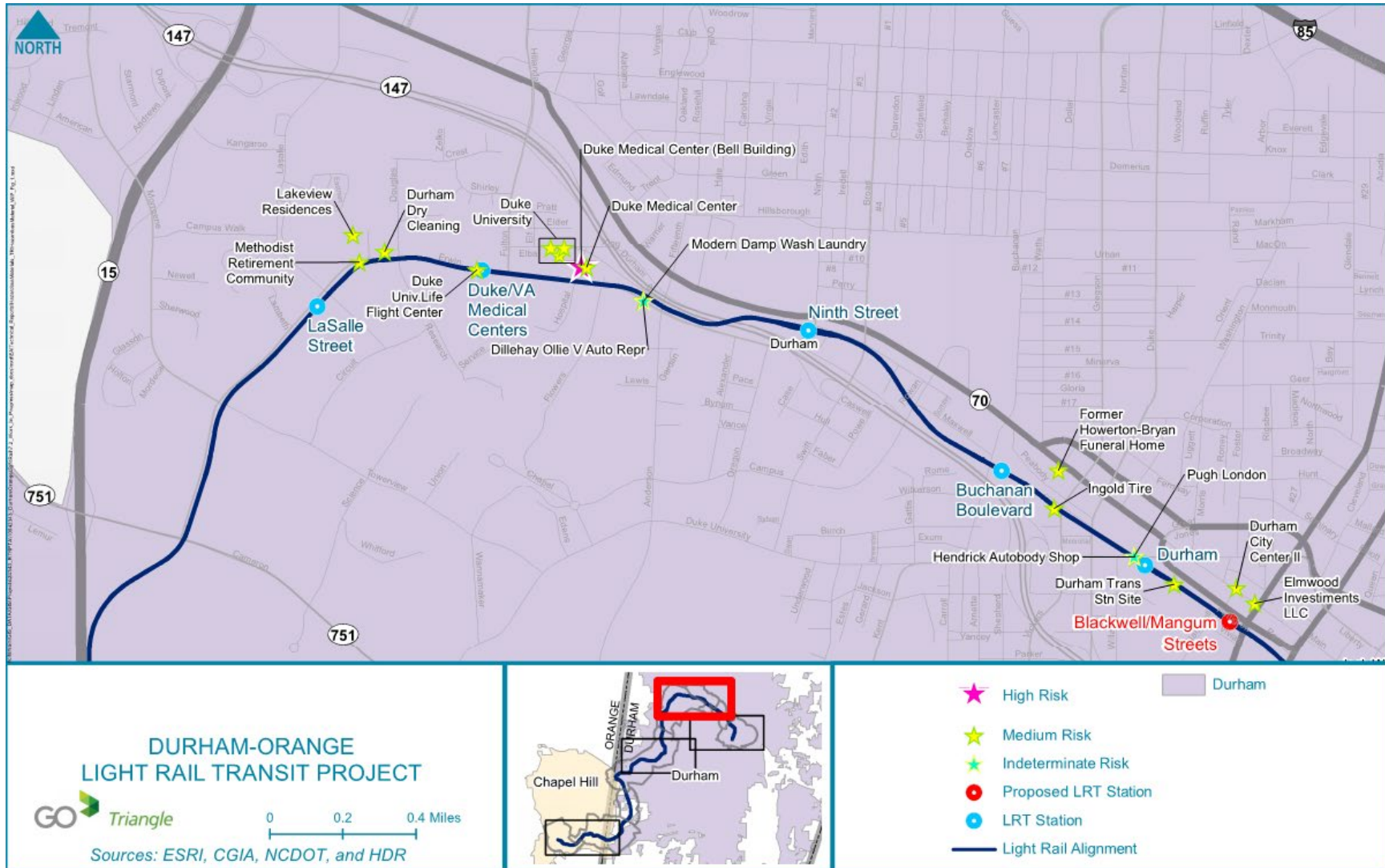


Figure 6-4: Hazardous Materials Site Risk Rankings

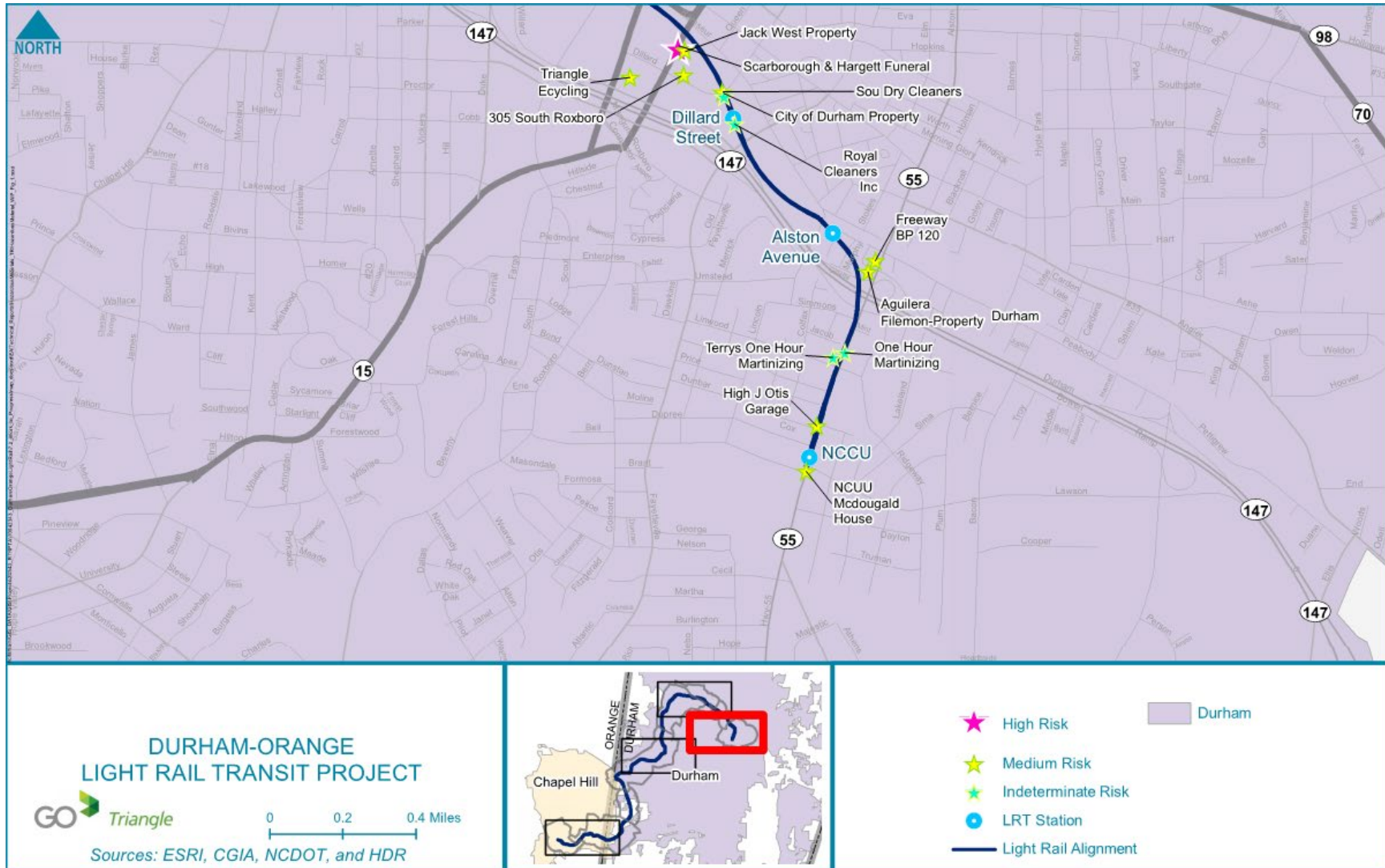


Figure 6-5: Hazardous Materials Site Risk Rankings

6.2 Opinions

The D-O LRT Project team performed the stated assessment elements, which are described in the ASTM E1527-13 assessment protocol. Based on this assessment, the team has developed the following professional opinions:

- Per the *DEIS Limited Phase I Environmental Site Assessment Ranking Methodology*; “high risk properties should undergo a full Phase I or Phase II ESA following ASTM standards after a ROD is issued and prior to acquisition. This will ensure that any RECs are accurately identified for properties that would potentially result in an environmental concern or would be directly impacted by the D-O LRT Project prior to acquisition.”
- Furthermore, medium ranked sites “should have their closure status or current site status reviewed with NCDEQ (formerly NCDENR) a few months prior to any construction activities. This will ensure that no new activities have occurred, which may elevate the risk level and that the current activities are still indicative of minimal potential for contamination from hazardous material use and/or activities.”
- Only corridor changes and newly included parcels within the alignment were carried forward in this evaluation, hence no low ranked sites resulted.
- The lack of interviews, lack of agency file reviews, and limitations of property access present significant data gaps. These issues will be resolved with site access and interview opportunities during site-specific Phase I reports, which will be performed on acquisition properties.

6.3 Conclusions

Based on the above-detailed Findings and Opinions, The D-O LRT Project team concludes that RECs have been identified on or adjacent to the D-O LRT Project Corridor. The following statement is required by ASTM E1527-13 as a declaration of whether RECs were found:

HDR has performed a Limited Phase I ESA in general conformance with the scope and limitations of ASTM Standard E1527-13 of the proposed Durham-Orange LRT Project in Durham and Orange Counties, North Carolina. Any exceptions to or deletions from these practices are described in previous sections of this report. The limited Phase I ESA has identified properties with a high risk of hazardous material impacts (RECs), as documented in the previous sections.

7. Recommendations

Recommendations included in this report were developed through the investigative procedures described in the Scope of Services, Assumptions, and Limitations sections of this report. These findings should be reviewed within the context of the limitations provided in the Limitations section.

Based on the four sites considered to be high risk sites associated with the project area, the D-O LRT Project team makes the following recommendations:

7.1 Recommendation 1

It is recommended that additional Phase I analysis be conducted if the D-O LRT Project or excavation limits change, and that site-specific Phase I be performed, including access for site reconnaissance, on properties slated for acquisition.

7.2 Recommendation 2

It is recommended that a Phase II Environmental Site Assessment (drilling, sampling, and analytical program) be conducted for the four sites considered to be high risk sites (two of which were elevated from medium to high based on the DEIS report findings), and for any additional high risk sites that may be noted in the subsequent site specific Phase I reports, prior to the start of D-O LRT Project construction. The focus of the Phase II assessments will be on soils likely to be disturbed during construction. Soil samples (and groundwater, if encountered) will be collected and analyzed for the stated contaminants of concern.

7.3 Recommendation 3

It is recommended that all construction contractors should be instructed to stop all subsurface activities immediately in the event that potentially hazardous materials are encountered, an odor is reported, or stained soil is noted during construction. Contractors should be instructed to follow all applicable regulations regarding discovery and response for hazardous materials encountered during the construction process.

7.4 Recommendation 4

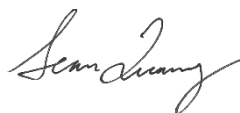
It is recommended the “shelf life” of the Phase I documents be considered when determining risk. ASTM E1527-13, section 4.6 states that a conforming “Phase I” report is valid for a period of 180 days, and may be updated during the 180 days to 1-year time frame. The report is valid for use in any of the CERCLA defenses only if it is updated within this time frame. If greater than one year passes from the final report date, the Phase I effort would need to be repeated to remain in compliance with ASTM and the AAI protection. The 180-day expiry is most applicable for individual property risk management, and is less meaningful for preliminary Corridor Phase I reports.

8. Qualifications of Environmental Professionals

8.1 Signatures and Qualifications

I declare that, to the best of my professional knowledge and belief, I meet the definition of Environmental Professional as defined in Section 312.10 of 40 CFR Part 312.

I have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. I have developed and performed the all appropriate inquiries in conformance with standards and practices set forth in 40 CFR Part 312.



Environmental Scientist
Sean Quarry



Kelly Kading, CPG
Senior Professional Associate

Qualifications of Environmental Professionals

This Limited Phase I ESA was performed by the following D-O LRT Project team personnel:

Mr. Sean Quarry, an EP as defined by ASTM E1527-13, has 12 years of experience in the environmental engineering, human health risk assessment, and the assessment and remediation of impacted properties and compliance with environmental regulations. He has a B.S. in Agricultural and Environmental Engineering from Cornell University, a Master's of Science from Syracuse University and a Master's of Science from New York University. Mr. Quarry specializes in investigations of hazardous materials-impacted properties for public and private sector clients as well as performing human health risk assessments. His experience covers assessments ranging from agricultural properties to industrial facilities located in a number of states. He is knowledgeable of federal, state, and local environmental regulations and standards, along with environmental due diligence related to real estate transactions.

Quality Control was provided for this Phase I ESA by the following D-O LRT Project team personnel:

Mr. Kelly Kading, CPG, an EP as defined by ASTM E1527-13, has more than 29 years of experience in assessment and remediation of impacted properties and compliance with environmental regulations. He has a B.S. in Geology from Colorado State University and is a Certified Professional Geologist (#9173). He specializes in forensic investigation of hazardous materials-impacted properties for municipal and state agencies, as well as commercial clients. His experience covers assessment of more than 3,500 properties ranging from agricultural land to multigenerational industrial properties in 34 states and 2 foreign countries. He is highly knowledgeable of federal, state, and local environmental regulations and standards and has served on the National Board of Directors of the Academy of Certified Hazardous Materials Managers.

9. References

- AECOM, 2015a. "Limited Phase I Environmental Site Assessment." July 24, 2015.
- AECOM, 2015b. "Draft Environmental Impact Statement."
- AECOM, 2016a. "Combined Final Environmental Impact Statement and Record of Decision."
- AECOM, 2016b. "Supplemental Environmental Assessment – NCCU Station Refinement."
- AECOM, 2016c. "Amended Record of Decision –NCCU Station Refinement."
- AECOM, 2016d. "NCCU Station Refinement Hazardous Materials." November 2016.
- ASTM E1527-05. 2005. *Standard Practice for Environmental Site Assessment: Phase I Environmental Site Assessment Process*. ASTM International. West Conshohocken, PA. www.astm.org
- ASTM E1527-13. 2013. *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*. ASTM International. West Conshohocken, PA. www.astm.org
- EDR. 2018. *EDR Durham-Orange Light Rail Transit Project Corridor Study*. EDR DataMap Environmental Atlas, Aerial Photographs, City Directory, and Topographic Maps. Inquiry 5181895. February 12, 2018.
- GoogleEarth. 2016. Street view photograph and aerials from 2016.
- United States Department of Agriculture, Natural Resources Conservation Service. 2018. Web Soil Survey. Accessed March 1, 2018. <http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>
- United States Geological Survey (USGS). 2018. *Earthquake Hazards Program*. Interactive Fault Map. Accessed March 1, 2018. <http://earthquake.usgs.gov/hazards/qfaults/map/>