



Modified Environmental Site Assessment - I-270 Corridor Improvements Environmental Impact Statement

Federal Project No.: STU 2706-046

CDOT Project Code: 25611

Identification Number: FHWA-CO-EIS-24-001

June 2025



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Acronyms and Abbreviations

Acronym	Definition
AAI	All Appropriate Inquiry
ACM	Asbestos Containing Materials
AHERA	Asbestos Hazard Emergency Response Act
AS	Air Sparge
ASTM	American Society for Testing and Materials International
bgs	below ground surface
BNSF	BNSF Railway
CAA	Clean Air Act
CABI	Certified Asbestos Building Inspector
CCR	Code of Colorado Regulations
CDOT	Colorado Department of Transportation
CDPHE	Colorado Department of Public Health and Environment
CDPS	Colorado Discharge Permit System
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation and Liability Information System
CFR	Code of Federal Regulations
CGS	Colorado Groundwater Standards
CORRACTS	RCRA Corrective Action Sites
DCA	Dichlorethane
DCE	Dichloroethene
DEH	Denver Department of Environmental Health
DWR	Colorado Department of Natural Resources, Division Water Resources
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
ERIS	Environment Risk Information Services
ERNS	Emergency Response Notification System
ESA	Environmental Site Assessment
FHWA	Federal Highway Administration
GIS	Geographic Information System
HASP	Health and Safety Plan
HISTSWLF	Historic Solid Waste Landfill
HMA	Hot Mix Asphalt
HMIRS	Hazardous Materials Incident Report System
I-25	Interstate 25

I-270	Interstate 270
I-70	Interstate 70
I-76	Interstate 76
ITS	Intelligent Transportation Systems
ISA	Initial Site Assessment
LBP	Lead-Based Paint
LNAPL	Light Non-Aqueous Phase Liquid
LST	Leaking Storage Tank
LUST	Leaking Underground Storage Tank
LUSTTRUST	Leaking Underground Storage Tank Trust Fund
MCL	Maximum Contaminant Level
MESA	Modified Environmental Site Assessment
MMP	Materials Management Plan
mph	miles per hour
µg/L	micrograms/liter
MRDS	Mineral Resource Data System
msl	Mean Sea Level
NAD	No Action Determination
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NFA	No Further Action Determination
NFRAP	No Further Remedial Action Planned
ng/L	nanograms/liter
NPL	National Priority List
NRCS	National Resources Conservation Service
NS	Not Searched
OPS	Colorado Department of Labor and Employment – Division of Oil and Public Safety
OSHA	Occupational Health and Safety Administration
OU	Operable Units
PCB	Polychlorinated Biphenyl
PCE	Tetrachloroethene
PFAS	Per- and Polyfluoroalkyl Substances
PFOA	Perfluorooctanoic Acid
PFOS	Perfluorooctanesulfonic Acid
PMEA	Preliminary Modified Environmental Assessment
ppm	parts per million
ppmv	parts per million per volume
RCRA	Resource Conservation and Recovery Act
ROW	Right-of-Way

RSL	Regional Screening Level
RTD	Regional Transportation District
SACWSD	South Adams County Water Sanitation District
SEMS	Superfund Enterprise Management System
SIA	Stapleton International Airport
SNC	Stapleton numeric criteria
SVOC	Semi-Volatile Organic Compound
SWF/LF	Solid Waste Facility/Landfill
TCA	Trichloroethane
TCE	Trichloroethene
TPH	Total Petroleum Hydrocarbons
TSD	RCRA Treatment, Storage, and Disposal
TSCA	Toxic Substances Control Act
UPRR	Union Pacific Railroad
U.S.	United States
USC	United States Code
USGS	United States Geological Survey
VCP	Voluntary Clean-Up Program
VOC	Volatile Organic Compound
WQC	Water Quality Criteria
WQCC	Colorado Department of Public Health and Environment Water Quality Control Commission
WQCD	Colorado Department of Public Health and Environment, Water Quality Control Division

1.0 Introduction

CDOT is dedicated to providing an accessible experience for everyone. While we are continuously improving our standards, some complex items in this document, such as certain figures and images, are difficult to create with fully accessible parameters to all users. If you need help understanding any part of this document, we are here to assist and have resources to provide additional accessibility assistance to any requests. Please email us at CDOT_Accessibility@state.co.us to request an accommodation, and a member of our I-270 Engineering Program will schedule a time to review the content with you. To learn more about accessibility at CDOT, please visit the [Accessibility at CDOT webpage on the CDOT Website](#).

The Federal Highway Administration (FHWA) and Colorado Department of Transportation (CDOT) are preparing an Environmental Impact Statement (EIS) to evaluate potential improvements to the Interstate 270 (I-270) corridor. FHWA and CDOT are the lead agencies for this National Environmental Policy Act (NEPA) process, which was initiated in 2020, initially anticipating an Environmental Assessment (EA). Moving into 2023, CDOT determined a more detailed environmental review was needed and requested that an EIS be prepared.

This technical report evaluates and documents potential impacts to and recommended mitigation measures for hazardous materials. It supports the analysis and conclusions in the EIS.

1.1 Project Description

I-270 in Colorado is a controlled-access interstate highway with two through lanes in each direction between Interstate 25 (I-25) and Interstate 70 (I-70) in central Denver and Commerce City (Figure 1). It has a posted speed limit of 55 miles per hour (mph). The project limits include the I-270 interchanges with Interstate 76 (I-76), York Street, Vasquez Boulevard, and Quebec Street. The project will tie into the I-25 and I-70 system interchanges but improvements to these interchanges are part of projects on I-25 and I-70 and will be designed and approved separately.

The purpose of the I-270 Corridor Improvements Project is to implement transportation solutions that modernize the I-270 Corridor to accommodate existing and forecasted transportation demands. The project needs are:

- Traveler safety on the corridor,
- Travel time and reliability on the corridor,
- Transit on the corridor,
- Bicycle and pedestrian connectivity across I-270, and
- Freight operations on the corridor.

In addition to addressing project needs, CDOT, FHWA, and Cooperating and Participating Agencies have established a key project goal: to minimize environmental and community impacts resulting from the project.

CDOT developed a range of potential alternatives for I-270 improvements. The alternatives ranged from no improvements to minimal infrastructure improvements without added highway capacity to alternatives that added one or two travel lanes in each direction, which could be operated as transit, general-purpose, or Express Lanes.

Page 2

- Three General-Purpose Lanes Alternative
- Two General-Purpose Lanes and One Express Lane that Accommodates Transit Alternative

The No Action Alternative is also fully evaluated as a baseline for comparison.

Additional information on the alternatives development and evaluation process is included in the Alternatives Development Technical Report.

2.1 No Action Alternative

The No Action Alternative evaluates operations of I-270 if a build alternative would not occur along the corridor. It does not address the project Purpose and Need but is carried forward as a baseline for comparison. This alternative would maintain the existing highway configuration of two general-purpose travel lanes in each direction. Bridges and pavement would be maintained and repaired continuously, but underlying infrastructure deficiencies would remain.

The No Action Alternative would include substantial ongoing maintenance and the rehabilitation of 19 existing structures, including seven locations that have structures that are or will be reaching the end of their useful life. The age of the structure, recent bridge inspections, and current ongoing maintenance costs, both planned and emergency maintenance, determine if a structure is or will be reaching the end of its useful life. The seven structure locations along the I-270 corridor that are or will be reaching the end of their useful life are as follows:

- Vasquez Bridge over Sand Creek (E-17-AT)
- York Street Bridge over I-270 (E-17-IC)
- I-270 over South Platte River Eastbound and Westbound Bridges (E-17-IE & E-17-ID)
- I-270 over Burlington Ditch Eastbound and Westbound Bridges (E-17-IG & I-17-IF)
- I-270 over Brighton Boulevard, Union Pacific Railroad (UPRR) and BNSF Railway (BNSF) Eastbound and Westbound Bridges (E-17-II & E-17-IH)
- I-270 over 60th Avenue & BNSF Eastbound and Westbound Bridges (E-17-IK & E-17-IJ)
- I-270 over East 56th Avenue Eastbound and Westbound (E-17-IO & E-17-IN)

The cross section would remain unchanged along I-270 under the No Action Alternative. The No Action Alternative cross sections are shown on Figure 2 and Figure 3.

Figure 2. No Action Alternative (west of Vasquez Boulevard)

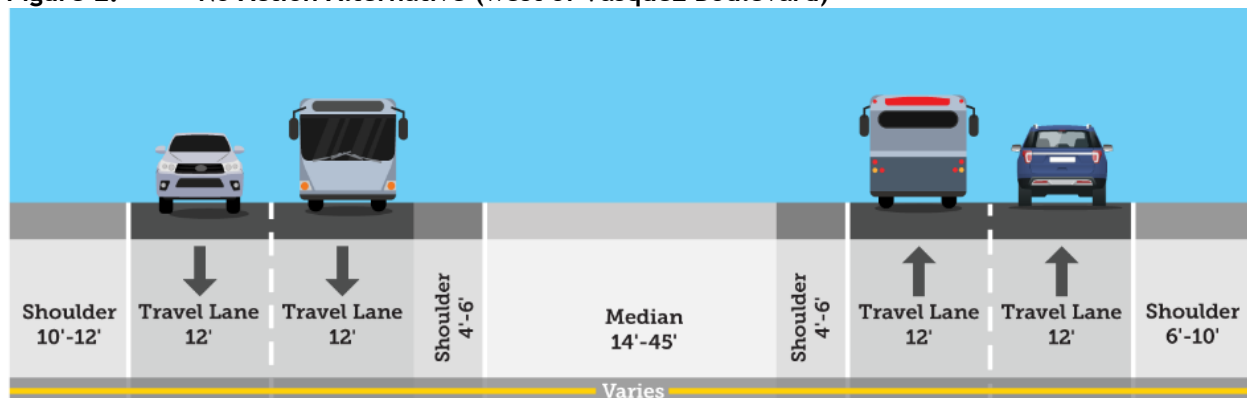
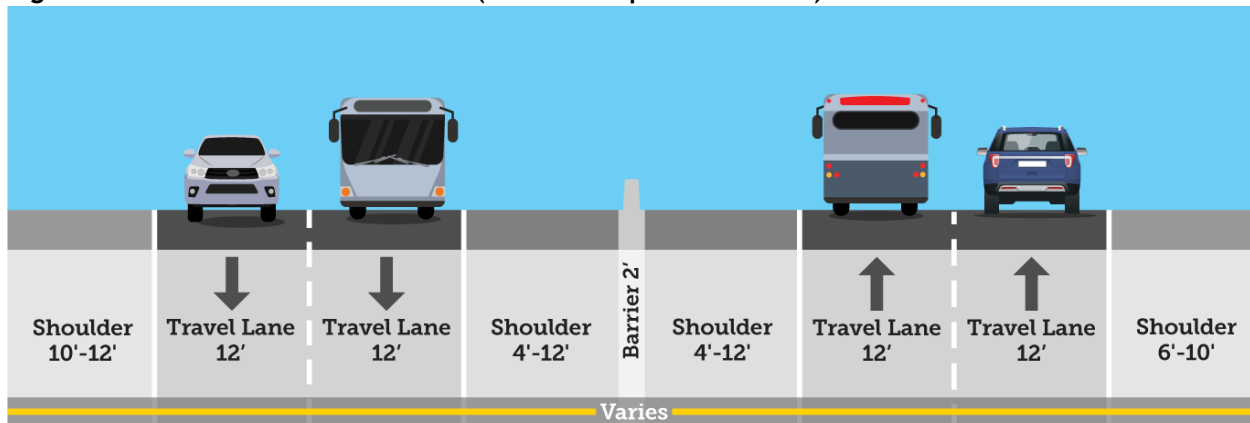


Figure 3. No Action Alternative (east of Vasquez Boulevard)



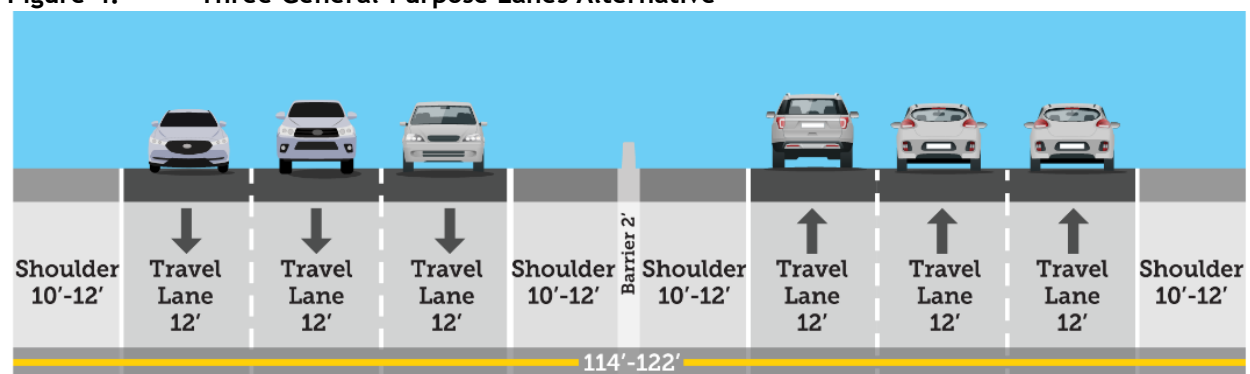
2.2 Build Alternatives

The build alternatives include improving the operational and physical conditions of the I-270 highway; reconfiguring interchanges and ramps; enhancing transit on the corridor; improving bicycle and pedestrian access across I-270; replacing deficient bridges and other infrastructure; and providing modern drainage, water quality, intelligent transportation systems (ITS), and other supporting infrastructure. Both add one new travel lane in each direction and have similar footprints, varying primarily how the additional travel operates.

2.2.1 Three General-Purpose Lanes Alternative

This alternative would reconstruct I-270 to provide three general-purpose lanes in each direction, as shown in Figure 4.

Figure 4. Three General-Purpose Lanes Alternative



This alternative includes:

Mainline Improvements

- Providing three general-purpose lanes in each direction
- Widening shoulders to meet current standards
- Restriping of the westbound I-270 to northbound I-25 off-ramp to provide dual-exit lane capacity

- Adding emergency turnouts and turnaround.
- Adding one continuous auxiliary lane in each direction between the I-76 and Vasquez Boulevard on-ramps and off-ramps

Interchange Improvements

- Adding an eastbound collector ramp to consolidate incoming movements from the I-76 on-ramps
- Separating the westbound I-270 York Street and I-76 off-ramps
- Improving the Vasquez Boulevard interchange design with improved westbound on-ramp acceleration lanes and the eastbound off-ramp deceleration lanes
- Improving the Quebec Street interchange ramp acceleration and deceleration lengths

Bridge Improvements

- Reconstructing bridges that are at, or will be reaching, the end of their useful life. Bridges carrying travel lanes on I-270 include widening to accommodate additional lanes
 - Replacing the existing York Street bridge over I-270 to meet current bridge standards, accommodate an additional travel lane in each direction on York Street, include a 10-foot multi-use path and a 5-foot sidewalk, and enhance lighting
 - Replacing the existing I-270 bridges over the South Platte River Trail to meet current bridge standards, accommodate this project's bicycle and pedestrian improvements on the South Platte River Trail, and enhance lighting
 - Replacing the existing I-270 bridges over the Burlington Ditch to meet current bridge standards, accommodate future bicycle and pedestrian improvements, and enhance lighting
 - Replacing the existing I-270 bridges over Brighton Boulevard to meet current bridge standards, accommodate this project's bicycle and pedestrian improvements on Brighton Boulevard and future bicycle and pedestrian improvements by others, and enhance lighting
 - Replacing the existing I-270 bridges over East 60th Avenue and the BNSF crossing to meet current bridge standards, accommodate future bicycle and pedestrian improvements, and enhance lighting
 - Replacing the existing I-270 bridges over East 56th Avenue to meet current bridge standards, accommodate this project's bicycle and pedestrian improvements, and enhance lighting
 - Replacing the existing Vasquez Boulevard bridge over Sand Creek to meet current bridge standards and accommodate this project's bicycle and pedestrian improvements

Bicycle and Pedestrian Improvements

- Improving the York Street I-270 ramp terminal intersections with crosswalks, curb ramps, and pedestrian indicators at the ramp terminal traffic signals
- Adding a new 5-foot sidewalk on the west side and reconstructing a 6-foot sidewalk on the east side of Brighton Boulevard under I-270
- Reconstructing East 56th Avenue under I-270 and adding an on-street bicycle lane, a 10-foot multi-use path, and 6-foot sidewalk connecting to existing sidewalks
- Improving the intersection at East 56th Avenue and South Sandcreek Drive to include curb ramps, crosswalks, and lighting that meet current standards

- Improving the intersection at East 56th Avenue and Eudora Street to include curb ramps, crosswalks, and lighting that meet current standards
- Adding attached sidewalks on the west side of South Sandcreek Drive. The new sidewalks would be 8 feet wide from Quebec Street to East 47th Avenue Drive and 6 feet wide from East 47th Avenue Drive to East 49th Avenue, with a pedestrian crosswalk across East 47th Avenue Drive connecting the two segments
- Improving wayfinding at key locations, guiding bicyclists and pedestrians to the nearest Regional Transportation District (RTD) bus stops, major road connections, or distances to the next trailhead to avoid out-of-direction travel

Trail Improvements

- Reconfiguring the South Platte River Trail crossing under I-270 to improve bicycle and pedestrian visibility around tight curves and increase vertical clearance from the I-270 overpass
- Improving bicycle and pedestrian visibility on the Sand Creek Trail by straightening out tight curves, adding a center stripe, and enhancing lighting at the Vasquez Boulevard bridge over the Sand Creek Trail
- Adding a multi-use path with bicycle and pedestrian underpasses crossing under two free-flow interchange ramps on the east side of Vasquez Boulevard through the interchange with enhanced lighting
- Adding a multi-use path on the east and west sides of the Vasquez Boulevard bridge over Sand Creek, connecting users from the East 56th Avenue and Vasquez Boulevard intersection to a new connection to the Sand Creek Trail
- Adding a multi-use trail spur, connecting the proposed north-south Vasquez Boulevard multi-use trail to the East 56th Avenue and South Sandcreek Drive intersection
- Adding a multi-use path in the southeast corner of East 56th Avenue and South Sandcreek Drive
- Adding a 10-foot-wide bicycle and pedestrian overpass over I-270 and South Sandcreek Drive approximately halfway between East 56th Avenue and Quebec Street

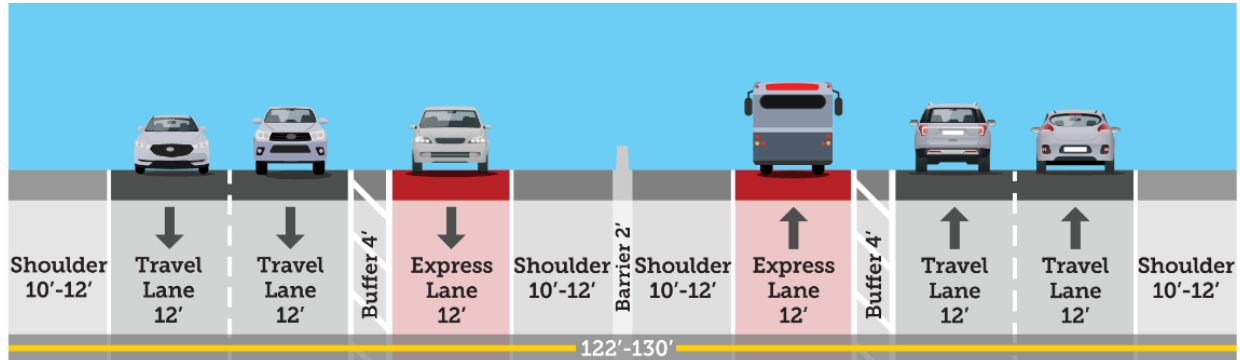
Transit Improvements

- Adding four new bus stops with connecting sidewalks and curb ramps on Quebec Street and South Sandcreek Drive near the I-270/Quebec Street interchange to improve access to RTD routes 88 and 37

2.2.2 Two General-Purpose Lanes and One Express Lane that Accommodates Transit Alternative

This alternative would reconstruct I-270 with two general-purpose lanes and one Express Lane in each direction, as shown in Figure 5. Transit vehicles and high-occupancy vehicles (three or more people) could travel in the Express Lane, free of charge. Other travelers, including freight trucks, who choose to pay a fee could also use the new Express Lane.

Figure 5. Two General-Purpose Lanes and One Express Lane that Accommodates Transit Alternative



This alternative includes:

Mainline Improvements

- Providing two general-purpose lanes and one Express Lane in each direction that accommodates transit
- Remainder of mainline improvements identified in the Three General-Purpose Lanes Alternative

Interchange Improvements

This alternative includes the same interchange improvements identified in the Three General-Purpose Lanes Alternative.

Bridge Improvements

This alternative includes the same bridge improvements identified in the Three General-Purpose Lanes Alternative.

Bicycle, Pedestrian, Trail, and Transit Improvements

This alternative includes the same bicycle, pedestrian, trail, and transit enhancements identified in the Three General-Purpose Lanes Alternative.

3.0 Regulatory Context

There are multiple federal, state, and local environmental regulations that provide for the use, transport, and disposal of hazardous materials and clean-up of soil and groundwater that have been impacted by the improper use, storage, and disposal of these materials.

The following section details common regulations that pertain to hazardous materials and hazardous waste.

- **Comprehensive Environmental Response, Compensation, and Liability Act** (42 United States Code [USC] Part 103, Sec. 9601 et seq.). The federal Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) was enacted in 1980 (42 USC §9601 et seq.) and subsequently amended by the Superfund Amendments and Reauthorization Act (42 USC §9601 et seq.). CERCLA (also known as “Superfund”) is designed to clean up

closed and abandoned sites contaminated with hazardous substances. The law authorizes the United States (U.S.) Environmental Protection Agency (EPA) to identify parties responsible for contamination of sites and compel the parties to clean up the sites. Sites potentially impacted by hazardous substances are reported to the EPA, and additional investigation is conducted. Based on the results of the investigation, the EPA either determines that no further action is necessary at the federal level (but may refer the site to the state for additional activities) or places the site on the National Priorities List (NPL). Sites remain on the NPL until clean-up activities have been completed, and the site is delisted.

- **EPA Standards and Practices for All Appropriate Inquiries/American Society for Testing and Materials (ASTM)** (40 Code of Federal Regulations [CFR] Part 312). The EPA has established federal standards and practices for conducting all appropriate inquiries related to the previous ownership and uses of a property to qualify for landowner liability protections under CERCLA. As of February 13, 2024, ASTM International Standard E1527-21 procedures shall be used.
- **Resource Conservation and Recovery Act** (40 CFR Parts 260-299). The Resource Conservation and Recovery Act (RCRA) (42 USC §321 et seq.), enacted in 1976, established a framework for the management of both solid waste and hazardous waste. RCRA Subtitle C authorizes the EPA to develop regulations for cradle-to-grave management of these wastes. In Colorado, the Colorado Department of Public Health and Environment (CDPHE) has promulgated regulations for management of both solid waste (6 Code of Colorado Regulations [CCR] 1007-2) and hazardous waste (6 CCR 1007-3).
- **Underground Storage Tank Remediation, Colorado Department of Labor and Employment – Division of Oil and Public Safety** (7 CCR 1101-14). Under the auspices of the Colorado Department of Labor and Employment – Division of Oil and Public Safety (OPS), this regulation identifies responsibilities of the owner/operators of underground tanks and provides technical guidance for response to releases from underground tanks.
- **CDPHE Hazardous Materials and Waste Management Division Regulations.**
 - Radiation Control (6 CCR 1007-1) provides guidance on radiation management
 - Solid waste regulations (6 CCR 1007-2 Part 1) provide guidance pertaining to solid waste sites/landfills and facilities and asbestos waste management
- **CDPHE Water Quality Control Commission Regulations.** The CDPHE Water Quality Control Commission promulgates rules regarding the discharge of stormwater and groundwater to waters of the state. Colorado Department of Public Health and Environment, Water Quality Control Division (WQCD) administers these rules. With regards to the project and the build alternatives, the most relevant regulations are Regulation 31 (The Basic Standards and Methodologies for Surface Water [5 CCR 1002-31]), Regulation 38 (Classifications and Numeric Standards for South Platte River Basin, Laramie River Basin, Republican River Basin, Smoky Hill River Basin [5 CCR 1002-38]), and Regulation 41 (The Basic Standards for Ground Water [5 CR 1002-41]).
 - Colorado Discharge Permit System (CDPS) provides guidance on discharge permits
 - Policy 20-1: Policy for Interpreting the Narrative Water Quality Standards for Per- and Polyfluoroalkyl Substances (PFAS)
 - Overview of PFAS Requirements under the Dewatering General Permit Program

- **EPA's PFAS Strategic Roadmap and the PFAS Enforcement Discretion Settlement Policy under CERCLA.** The U.S. Department of Transportation and the Colorado Department of Public Safety, State Patrol Hazardous Materials Section are responsible for regulating hazardous materials transported on I-270. The Colorado State Patrol is responsible for reporting spills associated with highway transportation incidents to CDPHE. For spills occurring within the CDOT right-of-way (ROW), the CDOT Property Management Division is responsible for contracting associated response and cleanup activities.

4.0 Methods

Section 1.1 describes the I-270 EIS project, location, and project limits. For this hazardous materials assessment, a study area was developed extending up to 1 mile from the project footprint, as dictated by ASTM Standard E1527-21 (Figure 1 in Attachment A). Sections 4.3 and 8.0 include a discussion of the study area, specific database search radii for sites with potential to impact the project area, and the screening process.

Highway corridors generally consist of areas where light industrial and commercial businesses historically or currently operate. These types of businesses, such as gasoline service stations, automotive repair facilities, and larger truck stop establishments, typically use underground storage tanks (UST) or aboveground storage tanks (AST) to store petroleum products, waste oil, and/or other hazardous materials. Such facilities are also often regulated based on their current hazardous waste generation management activities. Consequently, areas with light industrial and commercial use present a risk of having the presence of soil and groundwater contamination as the result of past spills or releases of hazardous substances, including petroleum products. Historic railroad operations within the project area also present the risk of having the presence of contamination due to an accumulation (over time) of drips, leaks, spills, and hydrocarbon exhaust residues from rail traffic and the transport and storage of hazardous materials. Other typical hazardous materials concerns associated with transportation projects include the presence of lead-based paint or asbestos-containing materials on highway structures or within older buildings (pre-1980) that will be demolished during ROW acquisition.

The objective of the modified environmental site assessment (MESA) is to provide information needed for planning efforts and the analysis of alternatives in preparation of an EIS related to properties (sites) within the project area that pose a potential risk of environmental contamination from hazardous materials. A thorough assessment and investigation of properties within the project area for past or present soils and/or groundwater contamination are an integral component of the planning process. These planning efforts include ROW acquisition costs and property appraisals, options for owner-funded site remediation prior to CDOT acquisition, property avoidance, and evaluating design of alternatives for transportation improvements to minimize the necessary remediation and treatment of residual hazardous materials.

Due to their contaminated nature, hazardous materials require specific practices for materials management, handling, worker health and safety, transportation management, and disposal. In the case that contamination of soils and/or groundwater is suspected, avoidance, minimization of impacts, or mitigation measures for impacts can be implemented, when reasonably possible. Encountering soil and groundwater contamination during the construction

process without prior knowledge of contamination has potential to adversely affect the project in terms of mitigation, disposal, cost, schedule, and human/environmental impacts.

This MESA has been prepared with a level of detail appropriate for development and screening of design alternatives for the EIS. In certain cases, sites that were identified with potential to impact the project area may be present but could not be confirmed without additional inspection or investigation, which is beyond the scope of this MESA. It is anticipated that additional assessment and/or field investigations will be needed to assist in a ROW acquisition, in final design, and developing specific materials management or Institutional Controls that may be required during construction. Recommendations pertaining to additional assessment and investigation are provided in Sections 9.2 and 9.3.

Additionally, as mentioned in Section 1.0, the NEPA process was previously initiated in 2020, which anticipated an EA class of action. Several hazardous material assessments were previously prepared for the I-270 corridor from I-70 to US 36 in support of that EA. These previous assessments include a Preliminary Modified Environmental Assessment (PMEA) (Pinyon, 2019), and a Phase II Environmental Site Assessment (ESA) (CDOT, 2022). The 2019 PMEA identified sites along the I-270 corridor that were known to be, or potentially may be, contaminated with hazardous materials. The subsequent 2022 Phase II ESA reviewed and incorporated the findings of the PMEA to further investigate the subsurface conditions to identify the presence or absence of identified historical contaminants in the soil and groundwater potentially encountered during transportation corridor-related construction. Both reports were reviewed in preparation of this MESA, which supports the current EIS class of action. Summaries of findings from previous assessments are presented in Section 8.4.

4.1 Guidance Modifications and Limitations

This MESA report was prepared for FHWA and CDOT, for their sole use and reliance. Reliance on this report by any other person(s) or entity(ies) is strictly at their own risk, and CDOT makes no warranties to person(s) or entity(ies) other than to FHWA and CDOT, who use information provided in this report. If any other person(s) or entity(ies) wish to rely on this report, CDOT will require such parties agree to our contract terms in writing.

CDOT Region 1 staff performed this work with the purpose of assisting with identifying sites with environmental conditions that have potential to impact the project area. The scope of work commissioned for this project does not represent an exhaustive study but rather a reasonable inquiry consistent with CDOT hazardous materials guidance (CDOT, 2025), as modified from ASTM Designation E 1527 and EPA Standards and Practices for All Appropriate Inquiries [40 Code of Federal Regulations (CFR) Part 312] (EPA, 2005).

Any findings and recommendations presented in this report are geared specifically to address issues regarding hazardous materials that would affect the planning, alternative analysis, and design of the build alternatives and the construction project. This MESA has been prepared with a level of detail appropriate for the EIS NEPA documentation and identifies sites with potential to impact the project area. The term “hazardous materials” is defined in Section 4.2.

CDOT’s assessment and findings presented herein are based on observations of current conditions within the project area and a review of readily available standard historical

sources and environmental agency databases. Modifications to the standard Phase I ESA process include:

- CDOT's assessment did not include interviews of current and/or past owners and occupants or properties located within the project area
- CDOT's assessment did not include a search for environmental cleanup liens
- CDOT's visual site assessment was limited to areas visible from public ROW and did not include access to fenced-in areas, interiors of buildings, rear lots (alley side portion of adjacent sites), or areas not visible from public ROW
- This assessment did not attempt to detect the presence of potential environmental contamination that may exist in areas that could not be visually inspected from public ROW
- At the discretion of the CDOT Region 1 Hazardous Materials Specialist, sites identified during the database review and screening process were not categorized as either potential or recognized environmental conditions, rather they were classified by low, medium, or high potential risk
- CDOT's assessment focused on environmental mediums of surface water, groundwater, soils and soil vapor. A hazardous material assessment in the air was beyond the scope of this MESA and will be addressed in the Air Quality Technical Memorandum
- An ASTM-based Phase I ESA is valid for only 180 days. However, the ASTM-based shelf-life for an ESA report does not correlate well to transportation project scheduling and delivery, as it typically requires more than 180 days between the time the ESA is completed and the end of the property acquisition process. Therefore, CDOT transportation projects typically use the MESA documentation method which is being used here, in which the shelf-life of an ESA is tied to the NEPA process. When the CDOT Specialist finalizes and approves the ESA for a transportation project, CDOT Form 128 - NEPA Determination/Project Certification Form provides clearance for the hazardous materials assessment. The completed Form 128 is considered valid unless a CDOT Reevaluation is required (CDOT Form 1399). The most common reasons for conducting a Reevaluation are the project is proceeding to the next major approval or action [23 CFR 771.129(c)]; project changes, such as laws, policies, guidelines, design, environmental setting, impacts, or mitigation; or greater than 3 years have elapsed since FHWA's approval of the project or the study. Additionally, the CDOT Environmental Project Manager may request a Reevaluation of the ESA at their discretion. Reevaluations or updates to this MESA document should require updated environmental regulatory review, including a new database search.

The agency data screening is only as accurate as the Environmental Risk Information Services (ERIS) database mapping. When possible, the actual location of sites was verified during site reconnaissance activities and an agency file review. Based on this information, sites were remapped, as necessary.

This MESA was non-intrusive. Sampling of soils, groundwater, and/or surface waters was beyond the scope of this MESA. Other environmental liabilities to a property owner, such as identifying the presence of asbestos-containing materials, radon, methane, or lead-based paint were also beyond the scope of investigation for this MESA. The presence or absence of such conditions cannot be confirmed without additional investigation.

This MESA does not guarantee the absence of contamination within the project area, beyond that described at the time of writing this report. Therefore, conclusions presented herein are not necessarily indicative of future conditions or operating practices surrounding the project area. No warranties (expressed or implied) are made. All conclusions and recommendations represent professional opinions of CDOT personnel involved with the MESA, and results should not be considered a legal interpretation of existing environmental conditions.

4.2 Terminology

This section provides a brief explanation of some common terminology utilized within the MESA report.

- **Hazardous Materials** - The term hazardous materials is an all-inclusive term for materials that are regulated as solid waste, hazardous waste, and other wastes contaminated with hazardous substances, radioactive materials, petroleum fuels, toxic substances, and pollutants, as defined by ASTM E1527-21
- **Initial Site Assessment** - CDOT most commonly uses the initial site assessment (ISA) as its hazardous materials assessment method. The ISA is a quick and relatively inexpensive method to identify hazardous materials concerns within a project area or potential property to be acquired. CDOT's ISA process was derived from the ASTM standard E1528 - Limited Environmental Due Diligence: Transaction Screen Process. CDOT uses the ISA to support a CatEx Project or a ROW acquisition. An ISA can also be used for properties that CDOT acquires, dedicates to, or disposes, and that have minimal hazardous materials concerns.
- **Modified Environmental Site Assessment** - The MESA method is an adapted version of the ASTM Phase I ESA process. The MESA is most commonly used in support of an EA or an EIS. The MESA is modified to allow a hazardous materials assessment to be conducted on a corridor-wide or project-wide scale.
- **Phase I Environmental Site Assessment** - The main objectives of the ASTM E1527-21 standard method Phase I ESA report are primarily to identify environmental concerns, to meet the EPA's AAI Rule requirements, and to obtain one of the landowner liability protections. The ASTM E1527-21 standard was written for conducting an ESA of a single parcel of commercial real estate. The Phase I ESA is typically used in CDOT processes as a method of conducting additional investigation into a property identified with potential issues identified in either the ISA or MESA documentation. Additionally, properties to be fully acquired, as opposed to partially or temporarily acquired, are more likely to require a Phase I ESA if any potential concerns or known conditions exist on the property.
- **Phase II Environmental Site Assessment** - The Phase II ESA, or subsurface investigation, is typically performed onsite to obtain scientifically valid data concerning actual property conditions. The Phase II ESA scope of assessment can vary based on project-specific goals; however, the data collection typically relates specifically to concerns identified during the Phase I ESA and involves sampling environmental media (i.e., soil, surface water, groundwater, or soil vapor, etc.) that may or may not be impacted by the target analytes at the time. A goal of the Phase II ESA is to further evaluate the presence and to quantify concentrations of target analytes at the site. This may be done through a variety of techniques, including visual observation, field screening, and/or chemical testing.

4.3 Methodology

A methodology was prepared for this MESA based on the [CDOT 2025 Hazardous Materials Guidance Manual](#) as modified from the ASTM Designation E 1527, “Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process” and EPA Standards and Practices for All Appropriate Inquiries [40 CFR Part 312]. Modifications to this guidance are presented in Section 4.1. Additionally, CDOT Region 1 Staff followed Chapter 9.26 of the CDOT NEPA Manual (CDOT, 2023) regarding the hazardous material evaluation process.

Methodology used to identify sites with potential to impact the project area within and surrounding the project footprint included the following steps:

- Performance of a limited site reconnaissance (“windshield survey”) of properties within the project area from public ROW to identify current site activities and potential contamination sources adjacent to the project corridor
- A review of readily available standard historical sources, including aerial photographs, and U.S. Geological Survey (USGS) topographic maps to identify historical land uses within the project area
- Contracting ERIS to conduct a regulatory database search of readily available local, state, tribal, and federal environmental agency databases for sites with potential to impact the project area up to 1 mile from the project footprint, as dictated by ASTM Standard E1527-21. The specific search distances used were equal to or greater than the ASTM E1527-21 approximate minimum search distances and are described in detail in Table 4. Due to the size of the study area, ERIS report(s) were obtained for the project corridor based on the project footprint, as alternatives for the corridor were developed. The ERIS report—obtained on April 8, 2024 in support of the EIS project—is included in Attachment C.
- The ERIS report included several non-standard listings not prescribed by the ASTM Standard (i.e., PFAS, mineral resource data system [MRDS], SPILLS, and Asbestos listings, etc.). At the discretion of the CDOT Region 1 Hazardous Materials Specialist, these listings were not included in further screening; however, some were selected to be briefly evaluated for potential to impact the project area as part of a review for corridor-wide issues of concern in Section 8.3
- A screening of sites identified in regulatory databases based on distance from the proposed ROW, known environmental site conditions, and, in certain cases, groundwater flow direction. Attachment A contains figures identifying sites with potential to impact the project area, and Attachment B summarizes the results of the screening process.
- A review of previous CDOT reports, CDPHE records, OPS records, EPA records, and other available records from local, state, and federal agencies regarding properties with potential to impact the project area
- Identification of properties within the project area requiring additional evaluation or investigation to assist in project design, specific-materials management/Institutional Controls that may be required during construction, or the ROW acquisition process, if a full acquisition is necessary

5.0 Existing Conditions

The I-270 EIS project area is located in an urban area along approximately 6.5 miles of interstate corridor between the I-25/US 36/I-270 interchange in the northwest to the I-270/I-70 interchange in the southeast, crossing through the City and County of Denver, Commerce City, and Adams County, Colorado (Figure 1 in Attachment A). The elevation within the project ranges from approximately 5,170 feet above mean sea level (msl) at the I-25 interchange, to 5,110 feet msl at the South Platte River, and then to 5,270 feet msl at the I-70 interchange. Topography for the majority of the project area slopes slightly to the northwest towards the South Platte River. However, the western portion of the study area, starting at the I-25/US 36/I-270 interchange, slopes down to the east-southeast towards Clear Creek and the South Platte River.

5.1 Surficial Soil

Surficial soils within the project area consist of 12 different soil units (Table 1) present on interfluves, plains, floodplains, terraces, drainage ways, and gravel pits (Figure 2 in Attachment A). Soils are alluvial and eolian deposits and are present in various combinations in the project area. The Natural Resources Conservation Service (NRCS) has not published detailed soil information for the southern part of the project area and to the south of Quebec Street in the City and County of Denver (NRCS, 2024).

Table 1. Summary of Surficial Soils in the Project Area

Soil Unit Descriptions	Typical Soil Profile	Parent Type
Ascalon Sandy Loam 0%-3% slopes: Well drained, occurs on interfluves	0 to 6 inches: sandy loam 6 to 12 inches: sandy clay loam 12 to 19 inches: sandy clay loam 19 to 35 inches: sandy clay loam 35 to 80 inches: sandy loam	Wind-reworked alluvium and/or calcareous sandy eolian deposits
Blakeland Loamy Sand 3%-9% slopes: Somewhat excessively drained, occurs on plains	0 to 9 inches: loamy sand 9 to 60 inches: sand	Alluvium derived from mixed and/or eolian deposits derived from mixed
Ellicott-Glenberg Complex 0%-3% slopes: Somewhat excessively drained, occurs on floodplains	0 to 4 inches: sand 4 to 13 inches: sand 13 to 30 inches: sand 30 to 44 inches: sand 44 to 80 inches: coarse sand	Non-calcareous, stratified sandy alluvium
Loamy Alluvial Land, Moderately Wet: Somewhat poorly drained, occurs on drainageways	0 to 6 inches: variable 6 to 36 inches: stratified loam to clay loam 36 to 60 inches: sand	Alluvium derived from mixed sources
Gravel Pits	0 to 6 inches: extremely gravelly sand 6 to 60 inches: extremely gravelly sand	Not specified

Soil Unit Descriptions	Typical Soil Profile	Parent Type
Nunn Clay Loam 0%-1% slopes: Well drained, occurs on terraces	0 to 6 inches: clay loam 6 to 10 inches: clay loam 10 to 26 inches: clay loam 26 to 31 inches: clay loam 31 to 47 inches: loam 47 to 80 inches: loam	Pleistocene aged alluvium and/or eolian deposits
Nunn Clay Loam 1%-3% slopes: Well drained, occurs on terraces	0 to 9 inches: clay loam 9 to 13 inches: clay loam 13 to 25 inches: clay loam 25 to 38 inches: clay loam 38 to 80 inches: clay loam	Pleistocene aged alluvium and/or eolian deposits
Terrace Escarpments: Terraces	0 to 3 inches: gravelly sand 3 to 60 inches: gravelly sand	Alluvium derived from mixed
Truckton Sandy Loam 1%-3% slopes: Well-drained, occurs on plains	0 to 9 inches: sandy loam 9 to 21 inches: sandy loam 21 to 32 inches: loamy sand 32 to 60 inches: coarse sand	Eolian deposits derived from mixed
Truckton Sandy Loam 5%-9% slopes: Well-drained, occurs on plains	0 to 9 inches: sandy loam 9 to 21 inches: sandy loam 21 to 32 inches: loamy sand 32 to 60 inches: coarse sand	Eolian deposits derived from mixed
Vona Sandy Loam 0%-1% slopes: Well drained, occurs on plains	0 to 9 inches: sandy loam 9 to 22 inches: sandy loam 22 to 60 inches: loamy sand	Eolian sands
Vona Sandy Loam 1%-3% slopes: Well drained, occurs on plains	0 to 9 inches: sandy loam 9 to 22 inches: sandy loam 22 to 60 inches: loamy sand	Eolian sands

5.2 Regional Geology

The entire project lies within the U.S. Geological Survey Commerce City map quadrangle, and the corresponding 7.5-minute geologic map was used to review the geological context of the project (Lindvall, 1980). Surficial geology in the project area consists of seven units present in various combinations (NRCS, 2024). Geological units are summarized below in Table 2. The I-270 corridor has a history of using artificial fill as embankment material to raise the highway to its current grade, and also along the Sand Creek and South Platte River channels for channelization and stabilization (Figure 3 in Attachment A). Additionally, numerous areas along the corridor were identified as historic landfill/solid waste disposal areas. These artificial fill areas may impact the geotechnical aspect of the project through differential settling or other geotechnically compromised subgrade materials. The bedrock underlying the project area is classified as the Denver and Arapahoe Formations of the Upper Cretaceous Age (Lindvall, 1980). This formation consists of brown, yellowish-brown, gray, and blue-gray interbedded sandstone, claystone, siltstone, shale, and conglomerate.

Table 2. Summary of Geological Units in the Project Area

Geological Unit Name	Geological Unit Descriptions
Artificial Fill	Human-made unit, clay, silt, sand, gravel, and a variety of debris consisting of concrete, brick, wood, metal, plastic, glass, vegetation, and other trash. Includes engineered and compacted fill for highways, buildings, and bridge abutments; engineered and semi-engineered fill for dams, canals, and railway embankments; stream channelization dikes; sanitary landfills; and uncompacted materials in local rubbish dumps. May also include smelter slag waste deposits.
Holocene-age Post-Piney Creek alluvium	Light- to dark-grayish-brown clay, silt, sand, and small amounts of gravel. Areas of dark-brown and dark-bluish-black humic (organic) bog clays are interbedded in places with sand and silt.
Holocene-age Piney Creek alluvium	Brown, light-brown, light- to dark-gray, interbedded sand, silt, and clay; generally, well stratified; Humic materials common in upper 1 foot to 2 feet; interbedded gravel in lower part.
Pleistocene-age Louviers alluvium	Reddish- to yellowish-brown pebbly arkosic sand, coarse sand, cobble gravel, and a few boulders.
Pleistocene-age Slocum alluvium	Brown to reddish-brown, well-stratified pebbly clay, silt, sand, and gravel. A few scattered cobbles and boulders.
Pleistocene-age Broadway alluvium	Pink to light brown; generally well stratified sand and gravel in well-defined terraces on the east side of the South Platte River valley.
Pleistocene-age and Holocene-age eolian sand	Fine, light-brown sand, sandy silt, and clay.

5.3 Surface Water

Sand Creek flows northwest along the western side of I-270 before joining the South Platte River in the northern portion of the study area. Clear Creek flows northeast under I-270 near the northern terminus of the study area before intersecting with South Platte River (Figure 4, Figure 5, and Figure 6 in Attachment A). South Platte River flows north, under, and perpendicular to I-270 and near the center of the study area. Denver's wastewater treatment plant: Robert W. Hite Treatment Facility is directly south of the project area along the South Platte River at 6450 York Street. The South Platte River is a highly manipulated stream, subject to altered flow regime because of water diversions; storage projects (Cat Lake and Miller Reservoir); treatment facilities; residential, commercial, and industrial use; and urban runoff. The Burlington Ditch crosses under the project area west of Brighton Boulevard.

The study area contains many roadside ditches, swales, and stormwater detention basins associated with runoff and drainage from I-270 and adjacent infrastructure. Other sources of hydrology include stock ponds, stormwater runoff occurring as sheet flow across the interstate, and stormwater directed into permanent water quality features. Based on information provided by both Mile High Flood District and the Federal Emergency Management Agency, portions of the project area near Clear Creek, Sand Creek, and the South Platte River floodways are within the 100-year and 500-year floodplain.

5.4 Regional Hydrology

Water table conditions in the project area are predominantly in unconsolidated alluvial deposits and depth to groundwater is assumed to be between 5 feet and 20 feet below ground surface (bgs) (Hillier, et. al., 1983). Soil borings completed in support of various investigations within the vicinity have confirmed that the groundwater elevation of shallow groundwater in the project area occurs between 5 feet to 49 feet bgs. Well permit data from the Colorado Department of Natural Resources, Division of Water Resources (DWR) was reviewed, and well locations adjacent to the project area were presented in Figure 4, Figure 5, and Figure 6 of Attachment A. Typically, shallow groundwater flow direction mimics topography and is influenced by adjacent waterways. In general, and as observed in several groundwater monitoring efforts along the corridor, groundwater flow in the project area is to the north but may locally be to the northeast or northwest (GHD Services, Inc. 2024, and TRC, 2024). Sand Creek, which runs adjacent to the south of the majority of the project area, is classified as a perennial stream; Sand Creek does not act as a hydrological barrier for groundwater movement, and groundwater has been shown to transport contaminants from the southside of Sand Creek across Sand Creek to the north (EPA, 2022).

6.0 Site Reconnaissance

To obtain information indicating potential for sites to impact the project area, a limited site reconnaissance was conducted, which consisted of a “windshield survey” of the project footprint from public ROW and of properties adjacent to the project area. The limited site reconnaissance focused on visual areas of chemical and petroleum usage, storage, and discharges. Site reconnaissance activities were performed on April 2 and 4, 2024 (see Attachment D, Photographic Log). Access to some areas, including private property and roadways, was limited. Additionally, site reconnaissance for the study area (up to 1 mile from the project footprint) included a review of sites identified in the Section 8.0, Database Search and Site Screening process as having Medium or High Potential to impact the project area.

Site reconnaissance activities were performed for this MESA by Austin Curry, Environmental Protection Specialist with CDOT Region 1. The visual inspection included the identification of current land use and observable site activities with potential contamination sources for properties located adjacent to the project corridors, such as:

- Presence of ASTs and secondary containment for spill prevention
- Evidence of USTs, including fill ports, vent pipes, and fueling facilities
- Disposal of solid waste, waste management practices, and general good housekeeping of waste storage/disposal areas
- Evidence of on-site dumping and landfilling
- Handling and storage of hazardous materials, such as the presence of 55-gallon drums, tote containers, etc.
- Presence of drains, sumps, septic systems, wastewater discharges, pits, ponds, or lagoons

Due to the large size of the project area and lack of finalized ROW plans identifying the specific ROW and acquisition requirements at the time site reconnaissance activities were performed, the “windshield survey” was conducted from public ROW. The interior of buildings, fenced areas, and rear lots (alley side portion of each site) were not inspected

during the site reconnaissance. Additionally, interviews with current and/or past owners or occupants of properties located within the project area were not conducted to limit interactions with potential acquisition owners/tenants, without the presence of CDOT ROW personnel. Modifications to the ASTM standard guidance on-site reconnaissance and project limitations are discussed in Section 4.1.

Site reconnaissance activities did not include identifying pole-mounted electrical transformers or other types of equipment that have been historically associated with the use of polychlorinated biphenyls (PCB) as a dielectric fluid coolant and stabilizer. EPA defines PCB equipment as containing greater than 500 parts per million (ppm) PCBs; “PCB contaminated equipment” as containing 50 ppm to 500 ppm PCBs; and “non-PCB equipment” as containing less than 50 ppm PCBs. However, any electrical equipment with no label or unknown concentration is assumed to be “PCB contaminated equipment,” per EPA regulation. The local utility provider (Xcel Energy) likely owns and operates the transformers.

Photographs taken during the site reconnaissance are presented in Attachment D.

6.1 General Land Use Descriptions

Mixed use land surrounds the urban/industrial corridor along I-270, including light industrial, business/commercial, agricultural districts, residential districts, as well as recreational areas. Restaurants, shops, travel centers/fueling stations, automotive/truck repair facilities, trucking/freight transportation and distribution centers, warehouses, storage yards, the Suncor Energy refinery and labs, the Metro Water Recovery sewage treatment plant, Waste Management solid waste transfer, water storage reservoirs, vacant lots, ditches, railroads, as well as single family residences occupy properties surrounding the project footprint.

Near the northern project limits, within unincorporated Adams County, I-270 crosses over Washington Street, East 70th Avenue, and Clear Creek, and crosses under I-76 and York Street. As the highway enters Commerce City from the northwest, it is elevated from its surroundings with embankment material and crosses over the South Platte River, the South Platte River Trail, Burlington Ditch, as well as both the UPRR and BNSF rail lines at Brighton Boulevard. Additional I-270 bridge crossings include East 60th Avenue, Vasquez Boulevard, and East 56th Avenue. Near the southern project limits, within the City and County of Denver, the interstate crosses under Northfield/Quebec Street. Sand Creek and the Sand Creek Regional Greenway trail parallel I-270 from the southern end of the project area until the confluence with the South Platte River. Photographs of the project area taken during the site reconnaissance are listed in Attachment D.

6.2 Summary of Observed Potential Environmental Conditions

During the windshield survey, the following observations were made that indicate potential presence of regulated materials:

- USTs/fueling areas were observed within the study area at gas stations, fueling centers, repair facilities, etc.
- ASTs and above ground piping were observed within the study area at the Robert W. Hite Treatment Facility at 6450 York Street, Suncor Energy refinery facilities at 5800 Brighton Boulevard, Blue Knight Energy Partners/BKEP asphalt terminals at 4308/4310 East 60th

Avenue, United Asphalts storage yard at 4304 East 60th Avenue, and the Phillips 66 Denver Terminal at 3960 East 56th Avenue

- Groundwater monitoring wells were observed within the study area within the Multi-Contractor Site and Weaver Electric Site
- Solid waste, including stockpiles, surface trash, and roadside debris was observed throughout the project area and study area
- Surface staining was observed throughout the project area and study area. Small stains were observed on ROW, railroad properties, and various private parcels; this staining was likely associated with normal transportation activities
- Private ROW was fenced throughout the study area. A number of commercial and industrial businesses were fenced or contained protected/placarded areas
- Several water treatment/storage reservoirs (Cat Lake and Miller Reservoir) were observed north of I-270 in the study area. Several drainage ditches, swales, and water quality ponds were also observed within the study area
- Evidence of buried landfills was observed within the project area and study area along I-270 between Brighton Boulevard and the South Platte River

7.0 Historical Use

To evaluate past uses of the project area and identify any sites with potential environmental conditions, CDOT conducted a review of readily available historic aerial photographs and USGS topographic maps (Table 3). Sanborn fire insurance maps were not available for review of this area. The objective of the historical review is to establish a history of previous uses of the property and surrounding area and to help identify the likelihood of past uses having led to recognized environmental conditions. Due to the large size of the project's regional study area, the historical review research was focused on establishing a generalized description of land-use over time.

Table 3. Summary of Historic Records Reviewed

Historical Data Source	Dates of Documents Reviewed
USGS Topographic Maps	1890, 1938, 1940, 1947, 1950, 1957, 1965, 1971, 1980, 1994, 2013 and 2019
Aerial Photographs	1937, 1953, 1963, 1971, 1975, 1978, 1984, 1988, 1994, 1999, 2004, 2005, 2009, 2011, 2013, 2015, 2017, 2019, 2021 and 2023

The review indicated that in 1890, the project area was generally vacant or agricultural land. Railroad tracks crossed the project area at Vasquez Boulevard and Quebec Street. Several roads crossed the project area running north-south, and a small residential area was located in the project area at the intersection of I-70 and Quebec Street. By 1938, the project area generally was developed for agricultural use, with scattered single-family residences and small roads. A residential neighborhood was located north of Sand Creek and east of Colorado Boulevard. The area around Sand Creek Junction, located south of the future footprint of I-270, consisted of industrial development, including oil refineries. Through the 1940s and 1950s, development increased in the project area.

By 1963, the runway for the Stapleton International Airport (SIA) was constructed east of the project area near the current intersection of I-70 and Central Park Boulevard. The project area was generally agricultural and residential between Quebec Street and Holly Street, commercial and industrial between Holly Street and Vasquez Boulevard, and residential and agricultural between Vasquez Boulevard and U.S. 36.

By this time, I-76 and I-25 were constructed. Several gravel pits (or gravel pits converted into landfills) were in the project area. By 1971, I-70 was constructed, and I-270 was constructed between I-70 and I-76. Commercial, industrial and residential development increased adjacent to I-270 from the 1970s to the 1990s. In late 1999, the final section of I-270 was constructed, when it was connected to US 36 and I-25. In the early 2000s, redevelopment of SIA properties was underway, and much of the project area was developed similarly to as it appears today. By 2017, the majority of the Northfield shopping center and Conservatory Green at Stapleton residential development were constructed northeast of the project area.

8.0 Database Search and Site Screening

On April 8, 2024, CDOT contracted with ERIS to conduct a database search of local, state, tribal, and federal environmental records for information relating to sites within the study area, which extends up to 1 mile from the project area (Figure 1 in Attachment A). For this analysis, the number and types of regulated facilities were identified within the ASTM-prescribed search distances from the project area. Table 4 provides a summary of each database searched, associated search distances, and the number of recorded listings identified in the ERIS report.

A thorough assessment of the database report and facilities identified in and near the project area was also conducted to determine any potential for past or present soil and/or groundwater impacts. This database review serves as a component of the planning process and evaluating project liability (i.e., property acquisition and encountering regulated materials during ground disturbing activities).

CDOT prepared this MESA based on CDOT hazardous materials guidance as modified from the ASTM international standard. The regulatory research and records review were prepared with a level of detail appropriate for the development and screening of design alternatives. Sites identified in the ERIS database record search were screened to determine which sites would potentially have the presence of contamination (existing or residual) from hazardous materials and could have an adverse impact on the project alternatives. The screening process consisted of identifying sites listed in the database report that lie within 1 mile of the project area. Sites were categorized as being less than 0.125 miles, between 0.125 miles to 0.25 miles, between 0.25 miles and 0.5 miles, or greater than 0.5 miles from the project area (Table 4).

Table 4. Summary of Regulated Facility Listings within the ASTM-Specified Search Distance*

Type of Regulated Listing	Number of listings located within or adjacent to project area	Number of listings located up to 0.125 mile from project area	Number of listings located 0.125 mile to 0.25 mile from project area	Number of listings located 0.25 mile to 0.50 mile from project area	Number of listings located 0.50 mile to 1 mile from project area	Total Facility Listings
Federal Engineering Control	0	0	0	1	NS	1
Emergency Response Notification System	0	2	NS	NS	NS	2
Federal Brownfields	0	0	0	1	NS	1
Bulk Terminal	0	4	2	NS	NS	6
Facility Response Plan	0	1	1	NS	NS	2
Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS)	2	13	14	25	NS	54
CERCLIS No Further Remedial Action Planned (NFRAP)	1	12	14	24	NS	51
RCRA—Corrective Action Sites (CORRACTS)	0	2	3	6	10	21
RCRA Non-CORRACTS Treatment, Storage & Disposal Facilities	0	0	0	3	NS	3
RCRA—Large Quantity Generator	0	0	2	NS	NS	2
RCRA— Small Quantity Generator	0	2	5	NS	NS	7
RCRA—Very Small Quantity Generator	0	23	16	NS	NS	39

RCRA–Non-Generator	0	36	50	NS	NS	86
Superfund Enterprise Management System (SEMS)	1	0	0	1	NS	2
SEMS Archive	1	14	14	24	NS	53
Delisted NPL	1	0	0	1	NS	2
NPL	1	0	0	0	2	3
Proposed NPL	0	0	0	0	0	0
Toxic Release Inventory	0	1	NS	NS	NS	1
Covenants	3	4	1	2	NS	10
Brownfields	0	0	0	0	NS	0
AST Facilities	0	25	22	NS	NS	47
UST Facilities	0	26	46	NS	NS	72
Leaking Storage Tanks (LST)	0	30	38	66	NS	134
Leaking Underground Storage Tank Trust Fund (LUSTTRUST)	0	8	5	18	NS	31
Voluntary Clean-up Program (VCP)	0	2	4	8	NS	14
Historical Solid Waste Landfill	12	8	8	18	NS	46
Hazardous Waste Sites–Corrective Action	0	1	3	4	6	14
Superfund Sites	3	0	0	1	2	6
Solid Waste Facilities/Landfill	1	35	13	43	NS	92
Totals	26	249	261	246	20	802

NS–Not Searched (beyond ASTM-required search distance) *Regulated facility listings from ERIIS database report (April 8, 2024)

In total, the ERIIS database report indicated 1,316 environmentally regulated listings within 1 mile of the project area. Of the 1,316 regulated listings, 802 listings are on the ASTM-prescribed environmental databases within the ASTM-specified search distance (Table 4). The remaining listings were included in the databases but are non-standard listings not prescribed by the ASTM Standard (i.e., PFAS, MRDS, SPILLS, and Asbestos listings, etc.). While not included in further screening, these listings were briefly evaluated for potential to impact the project area as part of review for corridor-wide issues of concern (Section 8.3).

Further, many of the listings include facilities that may be included on multiple agency databases or were located at the same address as another site. For this analysis, the listings

and facilities were reconciled, leaving a total of 377 regulated facilities identified within the study area. A summary of each of these facilities is in Attachment B. The ERIS database report is in Attachment C.

8.1 Site Screening

The listed facilities were then categorized as either having a low, medium, or high potential of regulated or impacted materials to impact the project area; or being encountered during the construction of the build alternatives for the transportation improvement project.

- **Low Potential Site:** Sites with minimal indications of an existing release, past release, or material threat of a release of any hazardous substances or petroleum products into the ground (soil), groundwater, or surface water. Through an initial review, it is determined that it is unlikely that contamination would be encountered during construction.
- **Medium Potential Site:** Sites with moderate indications of an existing release, past release, or material threat of a release of any hazardous substances or petroleum products into the ground (soil), groundwater, or surface water. Through an initial investigation, it is unclear whether contamination is in the project area. Subsequently, a subsurface investigation or further coordination with regulatory agencies determines it is unlikely that contamination would be in the project footprint; however, there is greater uncertainty than for a low potential site. On a case-by-case basis, a commitment to the contractor and CDOT Project Manager to look for signs of contamination in specific areas can be included in the hazardous materials assessment and subsequently, a Materials Management Plan (MMP) (when required) rather than proceeding with a subsurface investigation.
- **High Potential Site:** Sites with indications of a known existing or past release of any hazardous substances or petroleum products into the ground (soil), groundwater, or surface water and the possibility for large scale migration from the contaminant source. Through a file review or subsurface investigation, it is determined that it is likely that contamination would be encountered during construction.

The 377 listed facilities were screened based on their type of regulated listing(s) and relative distance from the project study area (Table 5). Consideration was also given to the site's hydrogeological relationship to the project area and potential impact or degree of disturbance of proposed project work (i.e., excavation, structure work, etc.) in that area.

Table 5. Detailed Review Site Evaluation Matrix - Environmental Condition Classification (Low, Medium, High)

Distance from Proposed Project Study Area	Low	Medium	High
Within 0.125 mile of the Project Area			
0.125 mile to 0.25 mile of the Project Area			
0.25 mile to 0.50 mile of the Project Area			
Greater than 0.50 mile			

Dark grey - Detailed Records Review Recommended

Light grey - Not Recommended for Detailed Records Review

Facilities categorized as medium and high potential risk sites were then reviewed in detail. Figures of these facilities are presented in Figure 7, Figure 8, Figure 9, and Figure 10 of Attachment A.

8.1.1 Detailed Record Review

Based on the criteria described above, a total of nine facilities were identified with a medium or high potential to impact the project area. Table 6 provides a summary of these listed facilities/sites, which were selected for further investigation due to their potential to impact the project area (Figure 7 in Attachment A).

The objective of the detailed records review was to examine available information regarding the extent of any known impacts from hazardous materials to soil, groundwater, and surface water associated with sites within the project area. The detailed review consisted of researching available CDPHE or OPS records for information concerning properties with potential to impact the project area.

Records for these sites were reviewed in detail, and summaries of findings and recommendations were provided. Sites identified in the ERIS database report that were either categorized as low potential sites or located greater than 0.50 miles from the project area were judged quite unlikely to have impacts on project activities.

Table 6. Summary of Detailed Reviewed Sites, Database Report Map IDs, and Risk Classification

Facility Name	Map ID (ERIS 2024)	Listing Types/Concerns	Distance/Direction from Project Area	Risk Classification and Summary of Facility Uses
Sand Creek Industrial	9, 10, 152, 167, 240	NPL, Superfund, RCRA Treatment, Storage, and Disposal (TSD), Solid Waste Facility (SWF)/Landfill (LF), Covenants, SEMS	Within the project area and adjacent to the south; upgradient	High. Former landfill, a former pesticide manufacturer, a closed acid storage impoundment, and a former oil refinery
Multi-Contractor Site	20, 42, 47	VCP, SWF/LF, Covenants	Within the project area and adjacent to the south; upgradient	High. Former gravel mining, landfill, and transformer and equipment storage
Weaver Electric Lot #1 and #2	4, 6, 15, 37, 47	VCP, SWF/LF, SEMS CERCLIS, Covenants	Within the project area and adjacent to the south; upgradient	High. Former gravel mining, landfill, and transformer and equipment storage
Former Anderson's Formal Wear	78, 168	LST, RCRA CORRACT, Covenants	150 feet to the south of the project area and upgradient	High. Former dry cleaner
Suncor Energy Facility	115, 160, 204, 239, 540, 542	LST, RCRA CORRACT, SEMS Toxic Substances Control Act (TSCA)	Adjacent to the south of the project area and cross gradient	High. Operating refinery
Chemical Sales/CSC	17, 18, 21, 138, 538	NPL, Superfund	Adjacent to the south of the project area and upgradient	High. Industrial uses
Phillips 66 Company/Denver Pipeline Terminal	209	RCRA CORRACT	570 feet to the south of the project area and cross gradient	Medium. Operating bulk terminal and pipeline.
SIA (and various listings)	290, 292, 341, 501, 534	VCP, RCRA CORRACT LST, Historic Solid Waste Landfill (HISTSWLF)	Approximately 0.5 miles to the east and cross gradient	High. Former SIA and landfill. Medium. Numerous associated landfill areas, clean ups, and closed LST events.

Historic Landfills	1, 2, 3, 5, 8, 11, 12, 13, 14, 16, 26, 27, 28, 36, 46, 50, 60, 65, 68, 76, 122, 142, 193, 200, 207, 242, 264, 268, 279, 285, 286, 292, 298, 299, 301, 307, 338	Historic Landfill	Within and adjacent to the project area	High. Former landfills at various locations within and adjacent to the project area.
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As part of the detailed records review for medium and high-risk sites, CDOT staff reviewed the previously prepared PMEA, which was based on the 2019 GeoSearch report. Detailed records information was duplicated from the PMEA, so this report can stand alone and address pertinent issues. In an effort to bring these detailed facility discussions up to date, CDOT staff reviewed subsequent CDPHE and OPS records completed after 2019. Additionally, it should be noted that the study area limits have changed since the previous 2019 PMEA review. Specifically, the eastern end of the study area no longer extends to the Central Park Interchange, and therefore sites, such as the former SIA and various associated listings, are now located outside of the project area.

8.1.2 Sand Creek Industrial (ERIS ID 9, 10, 152, 167, 240; EPA ID: COD980717953), 33rd Avenue and Dahlia Street, Commerce City

- The 350-acre Sand Creek facility is south of I-270, north of 48th Avenue, east of Colorado Boulevard and west of Ivy Street in Commerce City, Colorado (EPA, 2020). A former landfill, a former pesticide manufacturer, a closed acid storage impoundment, and a former oil refinery are within the boundaries of this former Superfund facility. The 48th and Holly Landfill accepted residential, commercial, and industrial solid waste from 1968 to 1975. In 1977, two explosions that killed two men and injured five others were traced to the migration of methane gas from the landfill. The Colorado Organic Chemical Company manufactured pesticides until 1984. The L.C. Corporation acid neutralization impoundments operated from 1968 to 1972. The Oriental Refinery property was the site of a fire in 1955, which resulted in the release of approximately 48,000 gallons of refined petroleum products. The hazardous substances that contaminated soil, surface water, and groundwater at the site were volatile organic compounds (VOC), semi-volatile organic compounds (SVOC), pesticides, herbicides, and metals. The Remedial Action Completion Report was issued for the site in September 1995, and the site was deleted from the National Priorities List on December 20, 1996.
- This facility was split into six Operable Units (OU). OUs 1 (soil vapor extraction for volatile organic compound remediation) and 5 (low temperature thermal treatment for pesticide remediation) were for soil remediation at the former Colorado Organic Chemical Company. Remediation of the acid neutralization pits at the LC Corporation was classified as OU 2. OU 3 was remediation of contamination at the Holly Landfill, and OU 6 was gas

extraction and monitoring at the landfill. OU 4 was site-wide groundwater actions. Remedial action at all OUs is complete, with the CDPHE assuming responsibility for continued groundwater monitoring at OU 4 since March 1996. BNSF and Browning-Ferris Industries continue gas extraction and treatment at OUs 3 and 6, in addition to perimeter gas and groundwater monitoring for the 48th and Holly Landfill.

- The former landfill is over 1,600 feet to the south of the project area; impacts from the landfill are not being tracked onto the project area. A Landfill Gas Extraction System is in operation, and regular groundwater monitoring activities are conducted.
- In 2019, while preparing the PMEA Pinyon Environmental contacted the CDPHE regarding the most recent groundwater sampling report available, which was from the 2013 sampling event (CDPHE, 2013). Three aquifers underlie the former Sand Creek Superfund site; aquifers 0 and 1 are under the eastern and northwestern portions of the site, respectively, and aquifer 2 underlies the majority of the site. The light non-aqueous phase liquid (LNAPL) plume is reportedly in aquifer 2, and groundwater flow is reported to be to the north toward Sand Creek. During the 2013 sampling event, six groundwater samples and two surface water samples were collected and analyzed for VOCs, SVOCs, pesticides, and total and dissolved metals.
- Based on analytical results, the report concluded that there was no evidence that the site was impacting Sand Creek. Monitoring wells RW-1 and RW-5 are closest to I-270, and RW-5 is north of I-270 within the project area (Figure 7). Well RW-1 was completed to a depth of 26.98 feet; in 2013, VOCs tetrachloroethene (PCE), trichloroethene (TCE) were detected, but concentrations were below their site Remediation Goals, which are Colorado Groundwater Standards (CGS). Well RW-5 was completed to a depth of 100 feet; in 2013, PCE, TCE, 1,1-dichloroethene, cis-1,2-dichloroethene, and chlorobenzene were detected but were all at concentrations below their site Remediation Goals. 1,4-dioxane was detected at concentrations of 0.41 micrograms per liter ($\mu\text{g}/\text{L}$ 0.41) in RW1 and 31.6 $\mu\text{g}/\text{L}$ in RW-5, above the interim CGS of 0.35 $\mu\text{g}/\text{L}$. Depth to groundwater was reported at 5.7 feet below ground surface in well RW-1 and 21.34 feet bgs in RW-5; reportedly both these wells are finished in aquifer 2.

8.1.3 Weaver Electric Main Site I; Weaver Electric Lot 2 (ERIS ID 4, 6, 15, 37, 47), 3200 East 64th Avenue

The approximately 20-acre Weaver Electric Lot #2 may have historically been mined for sand and gravel and was reportedly backfilled with solid and/or sanitary waste through the 1970s. The landfill was permitted with the designation Viking Steel Landfill, and approximately 160,000 cubic yards of sanitary waste from unknown sources is reported to have been placed into the landfill. After the landfill was capped, Weaver Electric stored transformers and other electrical equipment on the partially paved lot from the late 1970s to 2003. During an investigation at this location in 1989, elevated levels of PCBs, toluene, and methylene chloride were reported in soils and shallow groundwater. An investigation in 2012 reported SVOCs, PCBs, pesticides, and metals in shallow soils, as well between 6 inches and 4 feet below ground surface. Based on this investigation, this site was not put on the NPL; however, soil exposure, and to a lesser extent, surface water and groundwater pathways were identified as pathways of potential concern.

In 2014, CDPHE approved a VCP application, and in 2018, an engineered evapo-transpirative cover was constructed across approximately 11.84 acres of the site. Additionally, approximately 660 cubic yards of soil was brought onto the site for beneficial reuse from two other VCP properties to serve as a landfill cap. In 2020, use restrictions, such as no excavation, drilling, tilling, or any other soil-disturbing activity, unless conducted in accordance with the MMP Addendum were put in place. Additionally, use of shallow groundwater is prohibited.

8.1.4 Multi-contractor Site (ERIS ID 20, 42, 47), 3200 East 64th Avenue

In the early 1980s, the site was improved with an office/garage structure. Since that time, the property was used as a trucking facility/contractor's yard with portions of the site used for landscaping, construction, and household materials dumping. Elevated levels of SVOCs, total petroleum hydrocarbons, RCRA metals, and naphthalene were reported in soils at levels above EPA Industrial Regional Screening Levels (RSL). Five groundwater samples were collected and analyzed for VOCs; VOCs were not reported in groundwater at levels above CGS. For the environmental review, this property was separated from the adjacent Weaver Electric Property. As part of a VCP application approved by CDPHE in 2014, the selected environmental remedy was to construct an evapo-transpirative cover on impacted portions of the site in 2017 and 2018.

In 2021, a No Action Determination (NAD) was approved for the site and deed restrictions imposed, including prohibiting the use of groundwater and maintaining an MMP.

8.1.5 Former Anderson's Formal Wear; Andersons Formal Wear; UVAG Warehouse ERIS ID 78, 168), 4661 Monaco Street

In 2002, an Integrated Corrective Action Plan was filed with CDPHE to address PCE-impacted soil and groundwater from former dry cleaning operations at this facility. Soil excavation was completed in 2002, and one year of groundwater monitoring was conducted. Analytical results showed a decreasing trend of contaminant concentrations, and no additional remediation or monitoring was required. At the time of the last groundwater monitoring event in 2004, levels of PCE in monitoring wells MW-2, MW-1 and MW-7, located along the northern site boundary and within 150 feet of the study area, ranged from 5.5 to 74 µg/L, above the CGS of 5.0 µg/L (Spectrum Services, 2004).

Shallow groundwater was reported at depths from 9 feet to 22 feet bgs with a flow direction to the north-northwest. In 2004, environmental use restrictions were imposed on the site to restrict the use of groundwater. Since then, the CDPHE conducts site inspections every 5 years to evaluate for any violations of these restrictions. No violations have been reported.

8.1.6 Suncor Energy (USA), Inc., East Plant Colorado Refining Company (ERIS ID 115, 160, 204, 239, 540, 542) 5800 Brighton Boulevard

The present-day Suncor refinery was formerly multiple refining operations that have been in business since the 1930s. The property has been impacted by numerous releases of petroleum hydrocarbons related to petroleum refining operations. By the 1990s, Conoco and Colorado Refining were operating in this location. The EPA and CDPHE issued multiple Administrative

and Compliance Orders to the two facilities between 1989 and 2003, which identified work to be performed at the refineries, to minimize or eliminate the releases of waste with hazardous constituents, and to mitigate or eliminate any threat to human health or the environment from such releases (TRC, 2024). By 2005, Suncor had purchased both segments of the refinery, and in 2007, CDPHE issued a combined Consent Order for the present day Suncor Plants 1, 2, and 3. Additional Orders were issued in 2011 and 2012 for the refinery to halt and address off-site impacts after Suncor reported measurable LNAPL in 32 off-site monitoring wells and concentrations above CGS for benzene in 50 off-site monitoring wells. Impacted off-site properties include Metro and Packaging Corporation of America/Republic Paperboard Company. The most recent report of the LNAPL investigation from 2022 indicated that 23 monitoring wells detected measurable LNAPL (TRC, 2024). Numerous release reports for this facility are actively being monitored, under recovery, or under investigation. Multiple on-site and off-site monitoring events are conducted each year to comply with each order.

These events include:

- Quarterly site-wide fluid level monitoring
- Quarterly groundwater sampling at boundary control areas
- Semi-annual groundwater sampling of RCRA Corrective Action internal plant wells
- Monthly and quarterly surface water monitoring
- Quarterly Sand Creek and Burlington Ditch surface water level measurement
- Semi-annual surface cover monitoring and documentation
- Off-site fluid level measurement and groundwater sampling
- Annual LNAPL sampling and baildown tests
- Semi-annual PFAS groundwater sampling
- Voluntary PFAS surface water sampling

The following remedial activities are also conducted:

- Operation and performance monitoring of the Sand Creek Interim Measure
- Operation of groundwater recovery wells
- Performance monitoring of multiple Barrier Wall systems
- Operation of groundwater recovery sumps
- Liquid hydrocarbon recovery
- Operation of multiple air sparge/soil vapor recovery systems
- Deployment of Oxygen Release Compound

In 2019, the site began sampling for PFAS at boundary control and off-site area monitoring wells and surface water sampling from Sand Creek, Burlington Ditch, and South Platte River. The 2023 Annual RCRA Corrective Action Program Report indicated that over the last 10 years since these efforts were implemented, the leading edge of the contaminant plume has retreated approximately 1,200 feet, and the 10,000 µg/L benzene plume is no longer present off-site. In May 2021, a petroleum sheen was reported in Sand Creek; however, the event was closed in July 2021 after required monitoring and investigation was completed. PFAS sampling conducted in 2023 indicated that samples taken from Sand Creek adjacent to and downstream from the site were generally comparable to or lower than at upstream locations. In general, surface water in Sand Creek and Burlington Ditch have reportedly not been impacted. Impacts are not being tracked onto the project area.

Depth to groundwater ranges from less than 10 feet bgs on the northern part of the facility (closest to Sand Creek) to up to 30 feet bgs on the southern part of the facility. Groundwater flow is to the north and northwest.

8.1.7 Chemical Sales Co. (ERIS ID 17, 18, 21, 138, 538), 4661 Monaco Street

In 1962, a warehouse was constructed at 4661 Monaco Street. Samsonite and the Gates Rubber Company occupied the building until 1976, when the Chemical Sales Company took occupancy (CDPHE, 2020). In 1981, during a random drinking water survey, VOCs were detected in nearby drinking water wells. From 1989 to 1991, subsequent remedial investigations detected soil contamination beneath the site and a groundwater contaminant plume originating at the facility. This plume was mapped, and the facility was designated as a Superfund site.

The site consists of four OUs: OU 1 refers to contaminated subsurface soils and groundwater south of Sand Creek; OU 2 addresses VOC contaminated groundwater north of Sand Creek; OU 3 addresses residential exposure to contaminated groundwater in OU 2; and OU 4 addresses the South Adams County Water Sanitation District (SACWSD) alluvial raw water supply wells 18, 21, and 47. Groundwater in OU 1 generally flows north-northwest until it intersects the Quebec Paleochannel and flows northeast and then north toward the SACWSD central wellfield.

Response actions for OU 1 and OU 2 included extraction, treatment, and re-injection of groundwater and scheduled monitoring. Active treatment has been completed at OU 1 since 1994, and groundwater monitoring is required every other year. Active treatment was suspended at OU 2 in 2014 for re-assessment and monitoring. For OU 3, residences in OU 2 served by private groundwater wells were connected to the public water supply. This area is under an EPA institutional control, prohibiting new groundwater wells. In OU 4, impacted SACWSD wells are scheduled for regular monitoring.

VOC levels above remediation targets remain in OU 1 and OU 2. The project area has been impacted by these groundwater plumes. Based on a review of the most recent sampling data from 2017, levels of TCE and PCE in groundwater of the project area are likely between 5 µg/L and 50 µg/L; 1,4-dioxane is likely between 0.35 µg/L and 10 µg/L (CDPHE, 2017a). Remediation levels for TCE and PCE have been set at 5 µg/L; a remediation level for 1,4-dioxane has not yet been set. Additionally, in 2019, PFAS samples were collected from the plume area at a location immediately south of Sand Creek and I-270. The sum of concentration levels was 66 nanograms/liter (ng/L), indicating a detection but not exceedance of the US EPA health advisory level of 70 ng/L. The Chemical Sales Company facility is not suspected to be the source of this detection.

8.1.8 Phillips 66 Company/Denver Pipeline Terminal (ERIS ID 209), 3960 East 56th Avenue

The Denver Pipeline Terminal is an active petroleum products pipeline terminal, operated by Phillips 66 Company, and includes ASTs, a propane tank farm, various above ground and underground piping, and a truck loading rack. Site investigation activities were initiated in 1991, and in 1998, CDPHE issued a Compliance Order on Consent for the Denver Pipeline

Terminal (GHD, 2024). Since then, several different remediation systems have been implemented to address petroleum contamination, including a soil vapor extraction system, an air sparge (AS) system, a product skimmer pump for LNAPL removal, a mobile dual phase extraction (MDPE) events, in-situ chemical oxidation injections and natural attenuation. Groundwater monitoring has occurred on a semi-annual basis since 1999. During the most recent sampling from 2023, groundwater was encountered beneath the property at a depth ranging from 22 feet bgs to 28 feet bgs, and with flow direction to the northwest (GHD, 2024). Chemicals of concern include VOCs; however, in 2021, CDPHE requested the addition of PFAS sampling to be performed with groundwater monitoring activities. While there have been several recent PFAS detections above the WQCC 2020 Translation level set at 70 ng/L, the majority of the groundwater samples indicate levels below 70 ng/L. Groundwater wells analyzed during the second semi-annual monitoring effort for 2023 were not detected for the primary VOC of concern: benzene.

8.1.9 Former Stapleton International Airport; various listings; Central Park Interchange (ERIS ID 290, 292, 341, 501, 534)

SIA (formerly known as Denver Municipal Airport) operated from 1930 to 1995. Over 36 closed LST events and at least 13 VCP sites are associated with SIA. At least nine VCP listings were granted NADs (the Stapleton Business Center, Stapleton Business Center South, Stapleton Building 66 II, Stapleton Business Center C5, Stapleton Filing 7, Stapleton Filing 7 Embankment, and Stapleton Filing 7 Stockpile and Outer Loop II); however, the status of the remaining VCPs are not known (Outer Loop Landfill, Stapleton Redevelopment Asbestos, Stapleton Business Center N, and Stapleton Filing 7 Lg. Stockpile II). Remedial activities associated with the Outer Loop RCRA Corrective Action, including the excavation and removal of approximately 32,000 cubic yards of petroleum contaminated soil, are complete, and the corrective action was terminated in 2006.

In the late 1990s and early 2000s, distinct source areas and Stapleton numeric criteria (SNC) were developed to facilitate remediation of impacted areas throughout SIA (Parsons, 2000). Although most of these events have been closed, impacted soil and groundwater below SNC but above applicable current state and federal standards, may remain in place.

Several major investigations were conducted approximately 0.5 miles east of the I-270 project area for the SIA redevelopment. These include the Stapleton International Runways Site, the I-70 and Central Park Boulevard interchange, and the SIA Northern Bulk Fuels Farm.

Stapleton International Airport Runways Site

In 1995, a site investigation was conducted at the former SIA under CERCLA to evaluate impacts to surface soil, surface water, and groundwater impacts from runway deicing operations. Analytical results indicate that 1,1-dichloroethane (1,1-DCA); 1,1-dichloroethene (1,1-DCE); PCE; 1,1,1 trichloroethane (1,1,1-TCA); and TCE were detected in groundwater near runway/taxiway areas. Additionally, a wide range of nitrate values were detected in groundwater samples collected during this investigation. Approximately 70 percent of these groundwater samples exceeded the established CGS Maximum Contaminant Level for nitrate (10 mg/L), including several wells adjacent to the project area.

Stapleton International Airport Northern Bulk Fuel Farm

In June 2004, the City and County of Denver initiated a soil excavation project to remove all areas at the facility with potential for containing free-phase jet fuel. Over 22,000 cubic yards of jet fuel-contaminated soil was removed, and confirmation sampling was completed to demonstrate compliance with modified SNC soil criteria. Impacts from this facility were mapped as stopping at Sand Creek.

I-70 and Central Park Boulevard

Central Park Boulevard was a former runway at SIA. In 2009, A MESA was completed for the I-70 Central Park Boulevard Interchange. The report indicated VOC-impacted groundwater, asbestos-impacted soil, dumping, and former industrial uses as environmental concerns.

Subsequent soil and groundwater investigations were conducted in 2010. Contamination was not detected in soil and groundwater, and although some debris was observed, it was determined that asbestos containing materials (ACM) were not present.

8.2 Additional Corridor-wide Issues of Concern

In addition to these main high potential sites, other corridor-wide issues of concern, including numerous LST facilities, former landfill facilities, gravel pits, institutional control sites, lead-based paint (LBP), ACMs, Emergency Response Notification System (ERNS)/SPILLS, and PFAS listings were identified in the database report and worth mentioning.

8.2.1 Historic Landfill Facilities

A total of 61 landfill facilities were listed in the ERIS database report within 0.5 miles of the project area. These facilities were recorded historical or abandoned solid waste fill listings from the Tri-County Health Department (Adams, Arapahoe, and Douglas Counties), the City and County of Denver, and CDPHE. Due to their proximity to the project area, 39 listings were classified as having a medium or high potential to impact the project area (Figure 7, Figure 8, Figure 9, and Figure 10 of Attachment A). Limited files were available for the majority of these facilities. It is possible that materials may include municipal solid waste (e.g., household garbage), demolition debris, engineered fill, or other uncontrolled fills.

In 2019, a Landfill Constraints Analysis was prepared as part of the PMEA (Pinyon, 2019). This report reviewed historical aerial photography to provide more specific recommendations regarding construction activities in or near landfills. The analysis also examined areas of disturbance or changes in channel alignment for the Sand Creek and South Platte River channels. The review identified approximately 77 acres of known historic landfills, 114 acres of suspected landfill areas, and 119.5 acres of former channels for Sand Creek and the South Platte River with the study area.

Hazards associated with former landfills potentially include the presence of explosive and asphyxiating gasses (such as methane and carbon dioxide, respectively), solid waste, ACMs, petroleum contaminated soil, or other regulated constituents in the waste stream, hazardous waste, or other special wastes, such as drums and biological waste. Since the disturbance of these landfill areas is likely to occur with construction activities of the proposed

improvements, the 6 CCR 1007-2 - Solid Waste Regulations will likely apply for managing unsuitable material within these areas.

As mentioned above, due to the potential presence of methane gas associated with historic landfills, these sites present a potential explosion hazard and worker health and safety concerns. Methane gas and other landfill gasses can migrate along drains, trenches, and underground utility corridors, or within natural subsurface geology up to distances over 1,500 feet. Additionally, Adams County maintains a Flammable Gas Overlay Zone District with regulations for any construction activities within 1,000 feet of a former solid waste disposal site or any site discovered to have been a solid waste disposal site. Conducting site characterization on landfills or surveys for presence of methane gas was beyond the scope of this MESA.

Prior to construction, consultation with involved agencies as well as targeted sampling may help mitigate these hazards and allow for proactive planning that can minimize risks in terms of health, safety, cost, and schedule. The following landfill sites (Table 7) represent a potential risk to the project area and associated project construction activities.

Table 7. Historic Landfill Sites with Potential to Impact the Project Area

ERIS Map ID #	Facility Name and Location	Use/Contents	Distance/Direction from Project Area	Environmental Concerns
1	No name reported (AD-153) 1 block east of Brighton Boulevard on south side of 60th Avenue	Construction demolition debris	Within the project area and adjacent to the northwest	High. Former Landfill (ID 00070-00000156); operation dates unknown.
2	Evans Paving (AD-056) 60th Avenue and Albion Street	Construction demolition debris	Within the project area and adjacent to the northwest	High. Former Landfill ((ID 00070-0000059) in operation from 1971 to 1976. Reported as non-compliant in 1975.
3	Landfill, Inc. (AD-058) Approximate location northeast of I-270, south of 63rd Avenue, and west of Colorado Boulevard	Solid waste and construction demolition debris	Within the project area and adjacent to the northwest	High. Former Landfill (ID 00070-0000061). Operation dates unknown, closed in 1977. Methane detected.
5	Viking Steel Landfill (AD-057) Northwest of I-270 and Brighton Boulevard intersection	Solid waste and portion of the site used by Weaver Electric	Within the project area and adjacent to the southwest	High. Former Landfill (ID 00070-0000060) in operation from 1963 to mid 1970s. Methane detected.



8	No name reported (AD-152) West side of Highway 85 between 56th Avenue and Sand Creek. 56th Avenue and Vasquez Boulevard (southeast corner)	Construction demolition fill	Within the project area and adjacent to the southwest	High. Former Landfill. From a memo listing, "West Adams Solid Waste Sites" and a 1977 map labeled as "closed demolition."
11	Gate City Steel (AD-047) South of I-270 at Vasquez Boulevard (550 Colorado Boulevard)	Construction demolition and sanitary waste fill	Within the project area and adjacent to the southwest	High. Former Landfill in operation from 1975 to 1982. No methane detected in 1983.
12	3S-67W-18NW1 (256) Northeast corner of Sand Creek and Dahlia Street	Known fill area	Within the project area and adjacent to the southwest	High. Acid pit on property; landfill dates of operation unknown but at least during the early 1970s; uncontrolled dumping near 50th Avenue and Dahlia Street.
13	Landfill, Inc. (AD-059) South of 64th Avenue at Monroe	Solid waste and construction demolition fill	Within the project area and adjacent to the northeast	High. Former Landfill (ID 00070-0000062) in operation from 1973 to 1984. Methane detected.
14	LC Corporation (AD-118) 54th Avenue and Dahlia Street	Unknown. Part of Superfund cleanup	Within the project area and adjacent to the southwest	High. Former landfill (ID 00070-0000121) operated at least in the early 1970s.
16	Landfill, Inc. (AD-061) Between South Platte River and Burlington Ditch, north and east of 64th Avenue	Solid waste and construction demolition fill	Within the project area and adjacent to the northwest	High. Former Landfill (ID 00070-0000064) in operation from 1968 to 1977. Methane detected in 1978.
26	Franzen & Sons Plumbing (AD-051) 5345 Newport Street, northwest of 52nd Avenue and Newport Street, Commerce City CO	Construction demolition fill	Within the project area and adjacent to the northwest	High. Former Landfill (ID 00070-0000054). In operation from 1974. Closure date unknown.
27	Siegrist/Shlegel (AD-043) West of York Street between 68th Avenue and 70th Avenue	Coal ash and construction demolition fill	Within the project area and adjacent to the northwest	High. Former Landfill (ID 00070-0000044, ID A-17-65 and A-103-65) In operation from 1967 to 1969 with unsigned permit, 1971 permit for construction demo fill. Closure date unknown.



28	Unknown	Unknown	Within the project area and adjacent to the southwest	High. Former Landfill. Operation dates unknown.
36	3S-67W-17SE (273) South of I-270, east of Newport Street and Pontiac, north of 50th Avenue and 48th Avenue	Artificial fill	Within the project area and adjacent to the southeast	High. Former Landfill. A reported dump consisting of unknown fill was reported.
46	P11 of Colorado (AD-041) South of 72nd Avenue, west of York Street, south of Clear Creek	Coal ash and construction demolition fill	Adjacent to the northwest	High. Former Landfill (ID 00070-0000043, ID 32-78-CD). In operation from 1978. Closed as of 1991. No methane detected in 1983.
50	Mr. & Mrs. Amato (AD-124) 6281 Steel Street	Solid waste and construction demolition fill	Adjacent to the southwest	High. Former Landfill (ID 00070-00000127); operation dates unknown.
60	McKintosh (AD-055) North of 58th Avenue and Albion Street	Construction demolition fill	85 feet to southwest	High. Former Landfill (ID 00070-0000058). In operation from 1971 to at least 1977.
65	Christianson 3311 East 64th Avenue Brighton Boulevard and East 64th Avenue Landfill	Building debris	115 feet to the northwest	High. Former Landfill. Operated from 1974-77. Methane detected at 10-52%.
68	3S-67W-17NW (257) North of 52nd Avenue and south of I-270 and South of Sand Creek	Artificial fill and embankments; clay, silt, sand, gravel, and a variety of debris consisting of wood, brick, concrete, metal, plastic, glass and vegetation, and other trash.	135 feet to the southeast	High. Former Landfill. Operation dates unknown.
76	AD-048 North of 5445 Dahlia Street to Sand Creek (700') and back 600 feet from Dahlia Street	Construction demolition fill	175 feet to the southeast	High. Former Landfill (ID 00070-0000050). Started operation in 1972; closure date unknown.
80	Siegrist Construction Company 69th Avenue and York Street	Unknown Fill	205 feet to the northwest	High. Former Landfill. (ID 00070-0000876) No additional information available.



122	3S-67W-18NW3 (255) 5500 N Colorado Blvd	Fill dirt, some rebar, and brick	365 feet to the southeast	High. Former Landfill. Known fill area in operation since 1975. Clean fill dirt used to bring up east side of property.
142	Booco Fly Ash (AD-102) West of 69th Avenue and Franklin Street	Coal ash	440 feet to the southwest	High. Former Landfill (ID 00070-00000105). In operation from 1982, in 1996 remedial action to possibly dispose of approximately 850 tons of coal ash.
165	L-C CORP. LAND 5445 Dahlia Street	Acid waste by product acid seepage	535 feet to the southeast	High. Former Landfill. Dates of operation unknown.
193	Krogh (AD-060)	Solid Waste	610 feet to the northwest	High. Former Landfill. In operation from 1974. Methane survey in 1978.
200	Browning Ferris Ind. (AD-063) East of the Platte River between 66th Avenue and 68th Avenue	Solid Waste	635 feet to the northwest	High. Former Landfill. In operation from 1971. Closure date unknown.
207	Consolidated Freightways (AD-089)	Construction demolition and non-commercial sanitary fill	660 feet to the southeast	High. Former Landfill. In operation from 1974. Closure date unknown.
242	ROOFCO (AD-115) 6555 York Street	Sanitary fill	855 feet to the southwest	High. Unpermitted sanitary landfill, 1989.
264	No name reported (AD-164)	Solid Waste. Surface trash dumping only. No methane survey completed.	940 feet to the southeast	High. Former Landfill. Memo in file about surface trash dumping. No methane survey was conducted since the site had surface trash dumping only.
268	Property Improvements, Inc. (AD-042) East of York Street and south of Colorado Highway 224	Coal Ash	965 feet to the northwest	High. Former Landfill (ID 00070-0000044, ID CD-9-70 and 79-79-CD) may have been used by Brannon Sand and gravel for clean fill. In operation from 1981 to 1994. No methane detected.
279	Fiore & Sons, Inc. (AD-091) 73rd Avenue and Williams	Inert Fill	1,005 feet to the northwest	High. Former Landfill. In operation from 1993 for two years. No methane detected.



285	No name reported (AD-117) North of 60th Avenue, east of Steel Street, and outside the sand creek floodplain.	Sludge	1,045 feet to the west	High. Former Landfill. Operation dates unknown.
286	3S-67W-18NE1 (259) Near 52nd Avenue and Forest	Unknown fill	1,045 feet to the southeast	High. Former Landfill. Operation dates unknown.
292	Stapleton Industrial Park (AD-179)	Solid Waste	1,055 feet to the southeast	High. Former Landfill. Only Blue card in file. No indication of any action.
298	Brink's Automotive (AD-049)	Construction demolition fill	1,080 feet to the southeast	High. Former Landfill in operation from 1977 to 1978. Methane detected in 1978. No methane detected in 1983.
299	3S-67W-17SW (272) Stapleton Industrial Park	Garbage, paper, furniture, trees, construction debris	1,085 feet to the southeast	High. Former Landfill. Reported dump, operation dates unknown.
301	3S-67W-18NW2 (276) 5315 Vasquez Boulevard	Fill dirt and used brick, no rubbish, trash or metal.	1,095 feet to the south	High. Former Landfill. In operation from 1972 to 1973.
307	3S-67W-21SS (271) 7850 East 40th Avenue boundaries are approximate; north of 40th Avenue, south of 41st Avenue, Denver, CO 80207	Known Fill Area. Burn dump.	1,140 feet to the southeast	High. Former burn dump. Reported methane and impacted groundwater.
338	No name reported (AD-144)	Construction demolition fill. Concrete Slabs.	1.260 feet to the southeast	High. Former Landfill. Operation dates unknown. 1981 Memo in file title "West Adams Solid Waste Sites" describes concrete slabs.

8.2.2 Gravel Pits/MRDS Listings

Thirteen former gravel pit sites/Mineral Resource Data System (MRDS) listings were identified within 0.5 miles of the project area. The majority of these sites operated sand and gravel pits. The Jones Fine Sand Company and the Superior Sand and Gravel Company pits are still producing. These two active pits are approximately 300 feet to 400 feet south of the project area on the southern side of Sand Creek between Dahlia Street and Ivy Street. The USGS tracks MRDS listings; however, only limited information was available for these facilities.

8.2.3 Institutional Controls/Covenants

Detailed records were reviewed for 11 facilities with environmental use restrictions or operating under Institutional Controls. Figures denoting locations of these facilities are in Attachment A.

If a cleanup decision is made for a property that does not allow unrestricted use on a site or part of a site; or if a cleanup decision requires a remedy to be maintained, an environmental covenant is required by state statute. CDOT Region 1 staff reviewed CDPHE records for facilities in the study area operating under Institutional Controls; information from the EPA regarding Institutional Controls at the Chemical Sales Superfund site was also reviewed.

8.2.3.1 Former Andersons Formal Wear, 6755 East 50th Avenue, Covenant ID HMCOV00013

PCE and TCE have impacted groundwater at this facility. In 2004, the following covenants were placed on the property: restrictions at this facility include non-residential use only; groundwater at the property shall not be removed except for monitoring purposes; and non-stormwater detention ponds or man-made lakes or ponds shall not be located at the facility.

8.2.3.2 Sand Creek Superfund Site (Chemical Sales), Covenant ID HMCOV00034

Methane and VOCs have impacted this facility. In 2007, the covenant that no use was allowed without CDPHE's approval was placed on the property. The purpose of the covenant was to protect human health and the environment by prohibiting use of the property until development of the former landfill would not adversely impact the landfill gas extraction system.

8.2.3.3 Former 48th and Holly Landfill, Covenant IDs HMCOV00027 and HMCOV00030

Covenant HMCOV00027 states that as a result of impacts to groundwater, a covenant has been in place at this facility; the covenant was instituted in 2004. Specific impacts of concern were not reported in covenant documents. Restrictions include no residential development, no development, or business primarily caring for or entertaining children may be operated, and no groundwater wells or other exposure to groundwater are allowed.

Covenant HMCOV00030 was placed on the property in 2006. This former landfill has impacted groundwater with VOCs and is also generating methane. This property cannot be developed without clearance from CDPHE, and any development cannot interfere with methane or groundwater monitoring.

8.2.3.4 Sand Creek Industrial Covenant, Covenant ID HMCOV00015

As a result of impacts to groundwater from PCE; TCE; benzene; and cis-1,2 dichloroethylene, a covenant has been in place at this facility since 2004. Restrictions include no residential development, no development or business primarily caring for or entertaining children, and no groundwater wells or other exposure to groundwater.

8.2.3.5 Sand Creek Industrial, Covenant ID HMCOV00027

Covenant HMCOV00027 states that as a result of impacts to groundwater, a covenant is required; the covenant at this facility has been in place since 2004. Specific impacts of

concern were not reported in covenant documents. Restrictions include no residential development, no development, or business primarily caring for or entertaining children, and no groundwater wells or other exposure to groundwater.

8.2.3.6 Chemical Sales Superfund Site, 4621 to 4661 Monaco Street, Covenant ID HMC0V00144

PCE; TCE; dichloroethylene; 1,1,1TCA; methylene chloride; carbon tetrachloride; vinyl chloride; and benzene have impacted groundwater and soil at this facility. In 2009, the following covenants were placed on the property: the use of groundwater located beneath any portion of the property shall be prohibited, and to facilitate development or use of any portion of the property, the owner may relocate active-monitoring or remediation wells to locations that CDPHE approves in writing, which approval shall not be unreasonably withheld.

Additionally, SACWSD provides Institutional Controls through its authority to establish and enforce the use of groundwater within the district that includes OU 1 and OU 2 (EPA, 2022). SACWSD has established restrictions on the installation and use of groundwater wells for the alluvial aquifer. Furthermore, the Colorado Division of Water Resources, also known as the State Engineer's Office of the Department of Natural Resources, has established informational Institutional Controls that notify well applicants of groundwater contamination associated with the Chemical Sales property (EPA, 2022).

8.2.3.7 Weaver Property, 3200 East 64th Avenue, Institutional Control ID RSDEC00006

PCB and VOC contamination has impacted groundwater and soil at the approximately 20-acre Weaver Property. In 2020, use restrictions, such as no excavation, drilling, tilling, or any other soil-disturbing activity, occurred unless conducted with the MMP Addendum. Additionally, the use of shallow groundwater is prohibited.

8.2.3.8 Multi-contractor Property, 3200 East 64th Avenue, Institutional Control ID RSDEC00007

Asbestos, PCB, and VOC contamination has impacted groundwater and soil at this property. In 2021, use restrictions, such as no excavation, drilling, tilling, or any-other soil-disturbing activity unless conducted with the MMP Addendum, were placed. Additionally, the use of shallow groundwater is prohibited. During excavation of a test pit, three out of 17 samples contained ACMs.

8.2.3.9 Mile High Greyhound Park Site/Former Commerce City Dog Track/Greyhound Park Flats, 6200 Dahlia Street, Institutional Control ID RSN0T00060 thru 69

The former Commerce City Dog Track site, located at 6200 Dahlia Street, is currently in redevelopment as the Mile High Greyhound Park subdivision, which includes retail, mixed use, multi and single-family residences, and parks. The approximately 65-acre site was used as a greyhound racing track from 1950 to the mid-2000s. Between 2006 and 2013, the site's buildings were demolished. Remediation included ACM abatement and asbestos soil contamination removal activities. In 2014, the property received a no further action (NFA) determination from the CDPHE.

Contaminants of concern include SVOCs and 1,4-Dioxane in groundwater beneath the site. Historically, 1,4-Dioxane was used as a stabilizer of chlorinated solvents, such as TCA. There

is no history of chlorinated solvent use on the subject property. This solvent contamination is attributed to the adjacent OU 2 of the Chemical Sales site and the associated 1,4-Dioxane plume that extends onto the eastern portion of the property. In preparation for the site's redevelopment, additional soil and groundwater characterization were conducted. This testing determined that soil on the site was fit for reuse; however, use of groundwater was restricted. In 2021, environmental use restrictions were imposed, prohibiting use of groundwater.

8.2.3.10 Hampden Yard 8 LLC, 3740 and 3081 East 64th Avenue, Institutional Control ID RSN00140

In 2014, a Phase I investigation was conducted for the approximately 20-acre site. This report indicated environmental concerns, including 55-gallon drums, staining around ASTs, and previous use as a landfill. A subsequent Phase II was conducted in 2015. Contaminants of concern identified during the investigation include landfill waste, SVOCs and VOCs, polycyclic aromatic hydrocarbons in soil and groundwater. Additionally, methane was detected at 19,500 parts per million per volume (ppmv), which exceeded the indoor air concentration of 10,000 ppmv. In 2023, the site received an NAD, and the following use restrictions were imposed on the site: use of groundwater is prohibited; no structures intended for human occupancy may be built on the property without methane mitigation system; and no excavation, drilling, grading, digging, tilling, boring, or any other soil-disturbing activity is permitted unless in accordance with the MMP.

8.2.3.11 Central 70/C70, Institutional Control ID IC-00107

In 2023, the CDOT Central I-70 project used impacted soil from other areas of the I-70 corridor for beneficial reuse. This soil contained constituents at levels exceeding the EPA's RSLs for residential reuse, but below the maximum for commercial/industrial reuse, and was allowed to be used for fill material within the project limits in designated locations with CDOT's approval. Contaminants of concern include heavy metals, solvents, and petroleum. Several of these reuse areas were designated with restricted environmental use, indicating that no excavation, drilling, grading, digging, tilling, boring, or any other soil-disturbing activity is permitted unless in accordance with the MMP.

One of these areas is directly south of the project area at the I-270 eastbound connection to I-70 between Quebec Street and Central Park Boulevard.

8.2.4 Leaking Underground Storage Tank (LUST) Sites

Numerous LUST/LST facilities were identified within 0.5 miles of the project area. Of the 126 facilities listed ERIS report, 123 are listed as closed, and/or as had received notification that no further remedial action was required. Three facilities currently have open release events:

- Direct Transport, Inc. at 5590 East 55th Avenue is approximately 0.07 miles north of the project area. This facility has a confirmed release and is implementing a corrective action plan.
- Denver East Travel Center at 5101 Quebec Street is approximately 0.05 miles northeast of the project area. This facility has a confirmed release, and a site characterization has been requested.

- Sapp Brothers Travel Center at 7120 East 49th Avenue is approximately 0.07 miles southwest of the project area. This facility has a confirmed release and is implementing a corrective action plan.

Individual LST sites were not determined to be of medium or high potential to impact the project area; however, residual impacts to soil, groundwater, and/or soil vapor may remain at or adjacent to these facilities. OPS has developed a four-tier closure approach for petroleum releases. If all contaminants of concern are below Tier I Risk Based Screening Levels, remedial action is not warranted, and a no further action (NFA) request may be submitted. Based on various criteria, a facility may apply for and receive closure under Tier II, Tier III, or Tier IV requirements; under these closure designations, impacted soil and groundwater may remain onsite or offsite (such as under a public ROW due to limited exposure potential).

8.3 ERNS/SPILLS/HMIRS Listings

A total of 229 sites with known hazardous materials spills (SPILLS listings, ERNS and/or Hazardous Materials Incident Report System [HMIRS] database sites) were identified within 500 feet of the project alternatives. Thirteen of the listings/sites are associated with the project area (Table 8).

Table 8. Hazardous Materials Spill Sites

Location	Case/Report ID	Environmental Concerns
I-270 & Vasquez Boulevard	I-2002020005	In 2001, a truck rollover spilled approximately 1,200 gallons of gasoline.
I-270 WB & Vasquez Boulevard	2004-459	In 2004, a truck accident spilled approximately 70 gallons of diesel. All released material was contained on the asphalt of the highway. No waterways were impacted. Custom Environmental recovered all material.
I-270 EB Ramp & Vasquez Boulevard	CO90-168	In 1990, a truck rollover spilled approximately 500 gallons of gasoline. Cleanup will be done by Environmental Management.
I-270 & Vasquez Boulevard	CO91-065	In 1991, an accident spilled approximately 15 gallons of water-based printing ink. Pails of ink fell off the truck. Shoveled up ink.
I-270 & Vasquez Boulevard	2009-0463	In 2009, a truck accident spilled approximately 50 gallons of diesel. Belfor Environmental was notified to clean up all impacted areas.
I-270 WB & York Street Exit	2002-1063	In 2002, a truck accident spilled approximately 100 gallons of diesel. Fire Department applied absorbents to fuel on the roadway. RMCAT Environmental will do cleanup on the shoulder of the exit ramp.
I-270 WB & York Street	CO99-353	In 1999, a truck accident spilled approximately 110 gallons of diesel. RMCAT Environmental will do cleanup.
I-270 WB & Quebec Street	2021-0491	In 2021, a stormwater inspector found an oily sheen on the stormwater in an alcove. CMG installed a boom before the stormwater discharged to Sand Creek.

I-270 WB & Quebec Street	E-2011030416	In 2011, a truck traveling northbound impacted vehicles traveling southbound, minor/moderate damage, but incident spilled approximately 5 ounces of hydrochloric acid from an airline check valve.
Quebec Street and ¼ mile north of I-70, SB Lane	2015-0388	In 2015, a truck saddle tank fell off and spilled approximately 30 gallons of diesel. Approximately 10 gallons spread over 50 feet over soil and rock to storm drain. The Denver Department of Environmental Health (DEH) plans to excavate impacted soil.
Vasquez Boulevard and 56th Street	348748/ CO96-259/ I-1996070990	In 1996, a 55-gallon drum tipped over inside a truck spilling approximately 30 gallons of hydrochloric acid. The material was contained and cleaned up. Vasquez was closed in both directions for approximately three hours.
Vasquez Boulevard and 56th Street	20090170	In 2009, an incorrect operation error resulted in the rupture of an underground gas pipeline.
4150 E. 60th Avenue	CO97-318	In 1997, during rail load out a tank car valve was left open spilling approximately 3,831 gallons of methanol/methyl alcohol. The Fire Department and Hazmat team responded. Made a dam with dirt and backhoe and contained it, pumping out what they can.

8.3.1 Lead-based Paint

Lead is a hazardous substance that potentially exists on painted materials (i.e., steel, concrete, wood, etc.) on highway and railroad structures and/or bridges within the project area, particularly if they were constructed prior to 1980. Several federal statutes regulate lead as either a hazardous substance, hazardous waste, toxic substance, or air contaminant. These regulations include the RCRA, CERCLA, TSCA, Occupational Health and Safety Administration (OSHA) (29 CFR 1910.1025) and the Clean Air Act (CAA) under the National Emission Standards for Hazardous Air Pollutants (NESHAP) program. Due to potentially negative health impacts associated with lead exposure, presence of lead-based paint presents a worker health and safety concern. Project personnel can be exposed to toxic effects of lead through inhalation or ingestion of lead paint chips, dust, or debris during construction or materials management activities. Consequently, for purposes of this MESA, highway and railroad structures within the project area have been identified as sites with potential environmental risk due to potential presence of lead-based or heavy metals-based paint, particularly if they were constructed prior to 1980, when lead-based paints were widely used. Conducting a survey to determine the presence or absence of lead-based paint was beyond the scope of this MESA.

8.3.2 Asbestos

Asbestos is a toxic substance that may exist on highway and railroad structures and buildings within the project area, particularly if they were constructed prior to 1980. Asbestos is regulated under the federal TSCA, CAA, OSHA and CDPHE's Air Pollution Control Division and presents a worker health and safety concern due to potentially negative health impacts associated with inhalation of asbestos fibers. Consequently, for purposes of this MESA,

highway and railroad structures within the project area have been identified as sites with potential environmental risk due to the potential presence of asbestos.

Additionally, historic landfills/solid waste disposal areas may contain debris with ACMs. These areas have been identified as a potential environmental risk due to the potential presence of asbestos. Conducting a survey to determine the presence or absence of asbestos was beyond the scope of this MESA.

8.3.3 Emerging Contaminants - PFAS

PFAS are widely used, long-lasting chemicals and components of which break down very slowly over time. A review of PFAS listings was beyond the scope of this MESA. However, the following discussion was included in regard to this chemical as an emerging contaminant with potential to impact the project. In 2020, the CDPHE Water Quality Control Commission (WQCC) adopted Policy 20-1 (Policy for Interpreting the Narrative Water Quality Standards for PFAS), which regulated several PFAS chemicals with maximum contaminant levels set at 70 ng/L for drinking water. The policy also implemented other groundwater requirements and conditions for PFAS in CDPS discharge permits, in particular, the Dewatering General Permit Program.

On April 19, 2024, the EPA finalized a rule that adds two widely spread PFAS: perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) to the list of hazardous substances under CERCLA (i.e., "Superfund"). The EPA is also issuing a separate CERCLA enforcement discretion policy to focus enforcement on parties who significantly contributed to the release of PFAS chemicals into the environment. As indicated in previous sections, PFAS monitoring has been integrated into several facilities sampling plans (i.e., Suncor Energy, Phillips 66 Denver Terminal and Chemical Sales Company). Given the historic land use surrounding the I-270 corridor, it is recommended that the project team monitors future developments in PFAS regulations and to consider potential project implications (added costs, schedule delays, etc.) that additional PFAS regulations may cause. CDPHE maintains online Geographic Information System (GIS) mapviewers of potential PFAS source areas and risk categories associated with business type/land use. At the time of this report, PFAS concentration data was not available for these CDPHE GIS maps. It is recommended that the project team also monitors these CDPHE maps for future developments in PFAS reporting.

8.4 Previous Environmental Site Assessments

CDOT Region 1 staff reviewed the following reports completed for the I-270 corridor.

8.4.1 2012 - Geotechnical Investigation, I-270 Pavement Distress Evaluation between Brighton Boulevard and South Platte River, and Soil and Groundwater Evaluation, I-270 near Brighton Boulevard

In 2012, in response to identified road settling issues, Rocksol Consulting Group and Pinyon Environmental completed a geotechnical and environmental investigation, respectively, along I-270 between Brighton Boulevard and York Street. Twelve borings were drilled along I-270 in the vicinity of Brighton Boulevard and the Burlington Ditch. The Pavement Distress Evaluation (Rocksol, 2012) indicated that several areas of visible differential settlement were observed

within I-270, and that pavement cores identified numerous overlays of asphalt in this section, resulting in hot mix asphalt (HMA) thickness of up to 33 inches. This is compared to the original asphalt thickness of 8 inches. Additionally, the report concluded that based on subsurface conditions encountered, municipal solid waste landfill material is present under a significant portion of I-270 from approximately Brighton Boulevard and extending approximately 1,000 feet to the west, and that secondary compression settlement/consolidation over an extended period of time is due to chemical and biological decay processes within the landfill material.

The Soil and Groundwater Evaluation (Pinyon, 2012) collected soil and groundwater samples from the borings. Samples were analyzed for contaminants of concern. Depth to groundwater was reported between 18 feet bgs to 49 feet bgs. While landfill material was encountered during drilling operations, suspected ACMs were not observed. The report indicated that no analytes exceeded the Colorado Soil Evaluations Values for residential use (unrestricted), or worker protection (commercial and industrial uses), with the exception of arsenic. Additionally, significantly elevated metals concentrations were detected in groundwater samples.

8.4.2 2019 - Preliminary Modified Environmental Assessment, Interstate 270 Corridor between Interstate 70 and US 36

The PMEA, dated October 2019, identified sites along the I-270 corridor that were known to be, or may potentially be, contaminated with hazardous materials. A thorough assessment was conducted of facilities in and near the project area for past or present soil and/or groundwater impacts. Facilities categorized as medium and high potential risk sites were then reviewed in detail. Additionally, the PMEA also included a Landfill Constraints Analysis (Pinyon, 2019) which reviewed PMEA findings and provided more specific recommendations regarding construction activities in or near landfills and potential fill areas near the former alignment of the Sand Creek and South Platte River channels. Evaluated potential constraints include regulatory requirements, an elevated potential for encountering hazardous materials, increased waste disposal costs, schedule impacts due to unforeseen circumstances or discoveries during construction, geotechnical and design impacts, and health and safety considerations.

The PMEA indicated that of the listings within the Geosearch database report, a total of eight facilities were identified with a high potential to impact the project area. These listed facilities/sites include Sand Creek Industrial Park, former SIA sites, Weaver Electric, Multi-contractor Site, Former Anderson's Formal Wear, Suncor Energy (USA), Inc., and Chemical Sales Company. Records for these sites were reviewed in detail and summaries of findings and recommendations were provided.

In addition to these main sites, the PMEA indicated several corridor-wide issues of concern, including numerous LST facilities, former landfill facilities, LBP, ACMs, and Institutional Controls. The PMEA indicated that individual LST sites were not determined to be of medium or high potential to impact the project area. However, residual impacts to soil, groundwater, and/or soil vapor may remain at or adjacent to these facilities. Of the landfill facilities listed, the PMEA identified 29 listings with a medium or high potential to impact the project area. The Landfill Constraints Analysis identified approximately 77 acres of known historic landfills,

114 acres of suspected landfill areas, and 119.5 acres of former channels for Sand Creek and the South Platte River with the study area.

PMEA findings also indicated other potential concerns, including historical and current industrial uses, wells, surficial debris, former structures and utilities, and surficial staining.

8.4.3 2022 - Phase II Environmental Site Assessment, I-270 Corridor Improvements

The subsequent Phase II ESA, dated March 2022, was conducted by Jacobs Engineering Group, Inc. This report reviewed and incorporated PMEA findings to further investigate subsurface conditions for environmental locations along the I-270 corridor. Specifically, the Phase II ESA was performed to identify the presence or absence of identified historical contaminants in the soil and groundwater that may be potentially encountered during construction related to the transportation corridor. The field investigation and sample analyses were performed to determine if detected chemicals of concern in soils and groundwater were at concentrations exceeding regulatory detection criteria. Additionally, this information was used to assist in ROW acquisition, development of specific materials management, and/or Institutional Controls that may be required during construction.

The 38 soil borings locations were identified and selected to address potential impacts from the former sites identified in the PMEA. Only properties or facilities in the immediate vicinity of the study area were considered for liability as having a potential to be acquired or impacted due to project activities. Phase II activities consisted of soil and, where encountered, groundwater collection, real-time monitoring, and chemical analysis.

During the sample collection, a total of 51 soil samples were collected and screened for potential contamination by using a multiple gas monitor. Each soil boring collected within a historic landfill location was visually inspected by a CDPHE-certified asbestos building inspector (CABI) for the presence of ACMs. Soil data was compared to the EPA's RSLs protective of unrestricted use (residential) and the protection of migration to groundwater soil screening levels.

Groundwater samples were also collected from temporary groundwater monitoring wells at 21 of 38 boring locations. The objective of groundwater sampling was to establish concentrations in groundwater and to represent chemical concentrations for infiltrated water during construction. Groundwater data was compared to the EPA's maximum contaminant levels (MCLs) for drinking water and to the EPA's National Recommended Water Quality Criteria (WQC) protective of aquatic life and to evaluate potential impacts from the discharge of site-related waters to adjacent surface water bodies.

The analytical suite for collected soil and groundwater samples included VOCs, total petroleum hydrocarbons (TPH), RCRA metals, and where applicable, PCBs/Pesticides. Groundwater was typically encountered from 5.5 feet to 27 feet bgs. Not all borings encountered groundwater.

Landfill debris, including construction debris, glass, metal, plastics, cloth, paper, rubber, and similar were encountered during the investigation at eight of 38 boring locations. No observations of ACMs were identified. Black staining was observed in soil from nine borings.

PCBs were not detected in the samples. Real-time gas monitoring indicated elevated measurements above background for VOCs and/or methane, carbon monoxide, and oxygen at 20 locations. Elevated methane levels were encountered in 10 borings adjacent to the Burlington Ditch, the Waste Management facility, Brighton Boulevard, and the southeast cloverleaf off Vasquez Boulevard.

Soil exceedances above respective RSLs for VOCs were detected adjacent to the Suncor facility, former Multi-Contractor Site, the Sand Creek industrial Superfund site, and within footprints of numerous historic landfills. The majority of borings detected at least one type of TPH exceedance; however, only six locations encountered concentrations high enough to be considered petroleum-contaminated soils, requiring management and waste-profiling in accordance with OPS's guidance. Pesticides were detected at two locations. RCRA metal exceedances above RSLs were detected in every soil sample.

Organic compounds (VOCs and SVOCs) were not detected in groundwater at concentrations exceeding their respective MCLs or the EPA's RSLs. Exceedances of the EPA's RSL for TPH were detected in groundwater at nine locations. Pesticides and PCBs were not detected in groundwater.

RCRA metals were detected in all unfiltered groundwater samples, and total metals were detected in all 21 groundwater samples, with most of the detected metals being exceedances. A limited number of locations collected dissolved (filtered) phase groundwater samples. RCRA metals were detected in all these filtered samples; however, no exceedances were detected.

9.0 Conclusions

9.1 Findings

CDOT Region 1 staff evaluated the project area and vicinity, including parcels that may sustain impacts from ground disturbance activities, property acquisitions, or easements (if applicable) as a result of the project (Table 9). Only facilities in the immediate vicinity of the project, on adjacent parcels, or within potential limits of construction were considered for liability as having a potential to be acquired or impacted (i.e., easements) due to proposed project activities (Figures 7 through 10 in Attachment A). For the purpose of evaluating project liability (i.e., encountering regulated materials during ground disturbance activities), facilities were categorized as having a low, medium, or high potential to impact the project area.

Table 9. Summary of Findings

Facility/Address	Distance/Direction to Project Area	Impact Category
Sand Creek Industrial 33rd Avenue and Dahlia Street, Commerce City	Within the project area and adjacent to the south; upgradient	High. This is a delisted NPL (Superfund) site. Operations from a former landfill, a former pesticide manufacturer, a closed acid storage impoundment, and a former oil refinery have impacted groundwater in the project area.

Weaver Electric Main Site I; Weaver Electric Lot 2 3200 East 64th Avenue	Within the project area and adjacent to the south; upgradient	High. Operations from a former landfill and partially paved former storage yard have resulted in elevated levels of PCBs, SVOCs, toluene, pesticides, and heavy metals in soils and shallow groundwater. Soil exposure, and to a lesser extent, surface water, and groundwater pathways have been identified as pathways of potential concern. Under the VCP, the site implemented remedial actions and brought in borrow material to serve as a landfill cap. This property is under Institutional Controls, with use restrictions prohibiting soil-disturbing activities unless conducted in accordance with the MMP Addendum. Project construction activities planned for this area may impact residual soil and groundwater contamination.
Multi-Contractor Site 3200 East 62nd Avenue	Within the project area and adjacent to the south; upgradient	High. This property was formerly used as a landfill, dump, and contractor's yard. Elevated levels of SVOCs, TPHs, RCRA metals, and naphthalene were reported in soils. Under the VCP, the site implemented remedial actions, and a NAD was approved in 2021. This property is under Institutional Controls, with use restrictions prohibiting soil-disturbing activities unless conducted in accordance with the MMP Addendum.
Former Anderson's Formal Wear; Andersons Formal Wear; UVAG Warehouse 4661 Monaco Street	150 feet to the south of the project area and upgradient	High. Although this facility has been granted closure, groundwater impacted with PCE at levels above CGS remains onsite. Groundwater beneath the project area may have been impacted.
Suncor Refinery 5800 Brighton Boulevard	Adjacent to the south of the project area and cross gradient	High. This facility has operated as a refinery since at least the 1930s. Although impacts to soil and groundwater are not currently being mapped onto the project area, it is possible that residual impacts to soil and groundwater are present. Flow of groundwater is to the northwest and cross gradient to project area.
Chemical Sales Company 4661 Monaco Street Denver, CO	Adjacent to the south of the project area and upgradient	High. This is an active NPL (Superfund) site. OU 1 refers to contaminated subsurface soils and groundwater south of Sand Creek. OU 2 addresses VOC-contaminated groundwater north of Sand Creek. VOC levels above remediation targets remain in OU 1 and OU 2. Groundwater beneath the project area has been impacted by these groundwater plumes. Based on a review of the most recent data (2017), TCE and PCE levels in groundwater of the project area are likely between 5 µg/L and 10 µg/L; 1,4-dioxane is likely between 1 µg/L and 10 µg/L.

Phillips 66 Company/Denver Pipeline Terminal	570 feet to the south of the project area and cross gradient	Medium. Operating bulk petroleum products terminal and pipeline. The site had previous releases, which resulted in petroleum-contaminated soil and groundwater beneath the site. Residual VOC contamination may be present on or adjacent to the project area. Flow of groundwater is to the northwest and cross gradient to project area.
Closed LST Facilities	Throughout the project area	High. Forty-nine LST facilities are mapped within one-eighth mile of the project area. Although all but three of these facilities are closed, residual impacts to soil, groundwater, and/or soil vapor may remain and may have impacted the project area. Three active release events are either completing site characterization or implementing corrective action.
Former SWLF Facilities	Throughout the project area	High. Thirty-nine former landfill facilities mapped within 1,500 feet of the project area were identified with medium or high potential to impact the project area. Fill from these facilities may be encountered during construction activities and could also impact geotechnical efforts and design. In addition, these facilities may have impacted soil, soil vapor, and/or groundwater in the project area. The potential presence of flammable methane gas and other landfill gasses present a potential explosion hazard and worker health and safety concern.
Historical and Current Industrial Uses	Throughout the project area	Medium. Industrial and commercial facilities using and storing hazardous materials and railroads have been located adjacent to and in the vicinity of the project area since at least the 1930s. These facilities may have impacted soil, soil vapor, and/or groundwater in the project area.
Bulk terminal, storage and pipelines	Adjacent to project area	Medium. ASTs and pipelines were observed at the following industrial facilities: the Suncor Energy refinery facilities at 5800 Brighton Boulevard; Blue Knight Energy Partners/BKEP asphalt terminals at 4308/4310 East 60th Avenue; United Asphalts storage yard at 4304 East 60th Avenue; and the Phillips 66 Denver Terminal at 3960 East 56th Avenue. Residual petroleum contamination at these facilities may have impacted soil and groundwater in the project area.
Wells	Throughout the project area	Medium. Drinking water and groundwater monitoring wells are located throughout the project area and may be impacted by construction. However, there are no drinking water or groundwater wells within the project footprint.
Surficial Debris	Throughout the project area	Medium. Debris was observed throughout the project area, generally located within or immediately adjacent to roadway ROW areas. In some areas, debris consisted of abandoned mechanical and automotive equipment and general household refuse (i.e., wood, metal, concrete, and trash).

Structures and utilities	Throughout the project area	Medium. Structures were present within and adjacent to the project area from at least the 1930s, until I-270 was constructed in the 1960s and 1970s. Debris that potentially exists from the demolition of these former structures may be present in the subsurface and could contain LBP, ACMs, or other regulated materials. Additionally, current structures could contain LBP or ACMs.
Surficial Staining	Throughout the project area	Low. Surficial staining was observed throughout the project area, generally located within or immediately adjacent to roadway ROW areas.

9.2 Next Steps

This MESA has been prepared with a level of detail appropriate for the development and screening of design alternatives for the I-270 Corridor Improvements Project. It is anticipated that additional assessment and/or field investigations may be needed to assist in ROW acquisition and development of specific materials management or Institutional Controls that may be required during construction. Recommendations pertaining to additional assessment and investigation are provided below.

- As Project design is developed, update this MESA to reflect project and alternative selection considerations
- During the NEPA phase of the project, identify strategies to avoid, minimize, or mitigate impacts with hazardous materials, as practicable
- As project design is developed, target high priority areas that are most likely to be approved for improvements. Complete targeted, detailed environmental constraints analyses for these segments to better understand opportunities to avoid conflicts or identify risk management strategies
- Where conflicts are unavoidable, conduct subsurface investigations in these key, high priority areas, as necessary. Subsurface data collection can occur concurrently with geotechnical data collection to avoid duplicative drilling costs
- Initiate discussions with CDPHE and Adams County to evaluate classification, management, and disposal options for hazardous materials, including landfill debris, buried waste, and impacted soil and groundwater
- Initiate a discussion with railroad and irrigation ditch owners regarding potential impacts to these features
- Incorporate practicable mitigation commitments into the NEPA decision document that can proceed into final design and construction

9.3 Future Considerations

Based on results of this assessment, the potential exists for hazardous materials to be encountered in areas with excavation activities (e.g., retaining walls or bridge abutments). Activities related to this project will disturb the soil and will likely require the dewatering of groundwater. Therefore, it is recommended that workers be made aware of these materials, and that those media be managed appropriately.

Subsurface investigations from 2012 and 2022 indicated that residual soil and groundwater contamination were encountered within CDOT's ROW at or adjacent to sites identified as having medium or high potential to impact the site. Types of contamination detected in soils included VOCs, TPHs, RCRA metals, and pesticides. While solid waste/landfill debris was encountered during drilling activities, no ACM was identified in and/or adjacent to landfills. Also, while stained soils were encountered in several borings, PCBs were not detected in soil samples. Groundwater contamination encountered included VOCs, TPHs, and RCRA metals; however, notable exceedances were only detected for TPHs and RCRA metals. Pesticides and PCBs were not detected in groundwater samples. Elevated levels of methane gas were detected in borings on or adjacent to historic landfill areas.

Based on findings of the MESA, CDOT makes the following recommendations:

- Dewatering activities could potentially be necessary during the installation of deep foundation systems for new bridge structures, retaining walls, or other features. Results of sampling in various locations in the vicinity indicate that various contaminants have impacted groundwater to levels which exceed surface water and groundwater standards. Therefore, water would require either treatment to meet those standards prior to discharge or off-site disposal.
- An MMP should be prepared and implemented to specify management practices for contaminated soil, debris, regulated asbestos contaminated soil, impacted groundwater, and landfill gases that may be encountered during construction.
- CDPHE should be involved with this project, particularly in areas where historical landfill may be encountered. CDPHE is the oversight agency and would likely provide input on design and mitigation strategies.
- Electric transformers that may contain PCBs may require special management and disposal. The Contractor should coordinate with the utility owner for proper removal and disposal of electrical equipment that may be disturbed during construction.
- Acquisition of properties by CDOT should be accompanied by Phase I ESAs completed in accordance with ASTM Standard E1527-21, which will also meet the EPA's All Appropriate Inquiry (AAI) rule. This will provide CDOT with bona fide, prospective purchaser landowner liability protection under the realm of CERCLA liability. This is particularly important as portions of the I-270 Corridor Project are within or adjacent to boundaries of an active or former CERCLA (Superfund) site, and there may be real property liabilities to CDOT when acquiring ROW for this project.
- When recommended by the Phase I ESA or MMP, conduct subsurface investigations in high priority areas, as necessary, to help define or refine project risks. Utilize additional data generated to develop more targeted recommendations that help to mitigate hazardous materials issues. Subsurface investigations could be conducted prior to construction as a part of the property acquisition process or as additional environmental monitoring during construction activities involving excavation near the area(s) of concern.
- Due to many unknowns associated with landfills, a health and safety plan (HASP) should be completed in accordance with requirements of OSHA, 29 CFR 1929.
- Previous subsurface geotechnical investigation encountered elevated methane levels along I-270 between the South Platte River and Vasquez Boulevard. Therefore, the HASP will need to include provisions for assessing and monitoring air quality in accordance with

CDOT specification 250.03(d)3 for construction (i.e., excavations, trenches and drill holes, etc.) within 1,000 feet of a known or potentially contaminated site.

- When flammable or toxic gas is found in the area, those precautions and procedures in subsection 250.03(d)2 shall apply. Under 29 CFR Part 1926.651(g) Specific Excavation Requirements, Hazardous Atmosphere, OSHA requires testing the atmosphere of excavations greater than four feet in depth before employees enter the excavation where oxygen deficient (less than 19.5 percent oxygen) environments exist or could reasonably be expected to exist. OSHA also requires that precautions be taken to prevent employee exposure to atmospheres containing less than 19.5 percent oxygen and other hazardous atmospheres.
- If structure demolition is planned, structures proposed for removal and/or demolition at projects should be surveyed for ACMs by an EPA-accredited Asbestos Hazard Emergency Response Act ([AHERA]; 40 CFR763) and a state of Colorado-certified inspector.
- There is a possibility that ACMs may be encountered associated with landfills or buried utilities within the project area. In the event that suspected ACM is encountered, workers must follow CDOT Specification 250.07 - Asbestos-Containing Material Management and CDOT Regulated Asbestos - Contaminated Soil Management Standard Operating Procedure.
- If structure demolition is planned, painted structures proposed for removal and/or demolition at projects (e.g., signal poles, bridges, concrete abutments) should be evaluated for lead content. Regardless of lead content, the future contractor must comply with OSHA Regulation 1926.62 for worker safety.
- Impacts to wells, including monitoring wells may not be avoidable. CDOT should initiate discussions with well owners to discuss proper abandonment of existing wells, project phasing, etc. Impacted wells would require proper abandonment, per Colorado Division of Water Resources requirements. Mapped well locations are presented in Figure 4, Figure 5, and Figure 6 of Attachment A. Well locations should be field verified.
- It is recommended to follow any site-specific MMPs and addendums for construction activities within Institutional Control properties with use restrictions.
- It is recommended to initiate discussions with CDPHE and Adams County Health Department for construction activities in historic landfill areas and with railroad and irrigation ditch owners regarding potential impacts to these features.
- It is recommended that the project team monitor future developments in PFAS regulations, and to consider the potential project implications (added costs, schedule delays, etc.) that additional PFAS regulations may cause.

10.0 Impacts Assessment

10.1 No Action Alternative

The No Action Alternative is the condition where CDOT would not proceed with a build alternative. The No Action Alternative includes ongoing highway and bridge maintenance and isolated pavement reconstruction. Ongoing maintenance includes work CDOT routinely performs on I-270 as part of its maintenance program, such as mill and overlay, crack sealing, maintenance of bridge, drainage and water quality structures, and guardrail replacement or repair, as warranted.

The No Action Alternative would have no impact on existing areas of contamination, including sites identified as low, medium, and high potential. However, if structures or infrastructure are disturbed during maintenance activities, they must be tested for LBP and ACMs for worker protection and disposal purposes.

10.2 Three General-Purpose Lanes Alternative

Construction of the I-270 Three General-Purpose Lanes Alternative would require excavation and subsurface drilling for potential bridge/overpass construction, noise walls, and/or signs and lighting. Grading activities could range from 2 feet to 4 feet depth, while drilling activities could extend to depths of up to 60 feet to 80 feet. Groundwater may be encountered during bridge construction or in areas where deep foundations may be necessary (e.g., deep retaining wall and/or pedestrian bridge foundations). Depths to groundwater vary highly throughout the study area, but groundwater will likely be encountered during construction. Therefore, the Three General-Purpose Lanes Alternative would likely result in temporary impacts to existing areas of residual soil and groundwater contamination or landfill gases at or adjacent to the listed facilities of medium or high potential to impact the project area.

- Bridge Repair/Replacements:
 - I-270 bridge over Washington Street - low potential to encounter impacted soil, may require dewatering
 - I-270 bridge over E 70th Avenue and Clear Creek - low potential to encounter impacted soil, may require dewatering
 - I-76 bridge over I-270 - low potential to encounter impacted soil, may require dewatering
 - York Street bridge over I-270 - adjacent to historic landfill, medium potential to encounter impacted soil and soil vapor, may require dewatering. Recommended MMP.
 - I-270 bridge over South Platte River - adjacent to historic landfill, medium potential to encounter impacted soil and soil vapor, deep excavation may encounter fill material from stream channelization, may require dewatering. Recommended MMP.
 - I-270 bridge over Burlington Ditch - historic landfills within project area, high potential to encounter impacted soil and soil vapor, deep excavation may encounter fill material from channelization, may require dewatering. Proposed impacts with the Multi-contractor and Weaver Electric properties south of I-270 at 3200 East 64th Avenue. These properties are under Institutional Control, with use restrictions prohibiting soil-disturbing activities unless conducted in accordance with the MMP Addendum. Historic landfills also occur north of I-270. Recommended MMP and additional investigation. Proposed improvements will have approximately 5 acres of impacts within landfill areas and Institutional Control property.
 - I-270 bridge over Brighton Boulevard and railroad - historic landfill within project area, high potential to encounter impacted soil and soil vapor, deep excavation may encounter fill material from stream channelization, may require dewatering. Recommended MMP and additional investigation.
 - I-270 bridge over East 60th Avenue and railroad - adjacent to historic landfill, medium potential to encounter impacted soil and soil vapor, may require dewatering. Adjacent to bulk terminal/pipeline/AST storage properties. Recommended MMP and additional investigation.

- I-270 bridge over Vasquez Boulevard - adjacent to historic landfill, medium potential to encounter impacted soil and soil vapor, may require dewatering. Recommended MMP
- Vasquez Boulevard bridge over Sand Creek - historic landfill within project area, high potential to encounter impacted soil and soil vapor, deep excavation may encounter fill material from stream channelization, may require dewatering. Recommended MMP and additional investigation. Proposed improvements will have approximately 1 acre of impacts within the landfill area.
- I-270 over East 56th Avenue - adjacent to historic landfill, medium potential to encounter impacted soil and soil vapor, may require dewatering. Recommended MMP
- Northfield Quebec Street bridge over I-270 - low potential to encounter impacted soil, may require dewatering
- Reconstruction/realignment of ramps and trails:
- WB I-270 to EB I-76 and WB I-270 to WB I-76 ramps - historic landfill within project area, high potential to encounter impacted soil and soil vapor. Recommended MMP. Proposed improvements will have approximately 4 acres of impacts within the landfill area.
- WB and EB I-270 ramps to York Street - low potential to encounter impacted soil.
- South Platte River Trail - low potential to encounter impacted soil, deep excavation may encounter fill material from channelization.
- Vasquez Boulevard north of I-270 - low potential to encounter impacted soil.
- Sand Creek Regional Greenway at Vasquez Boulevard - historic landfill within project area, medium potential to encounter impacted soil and soil vapor. Recommended MMP.
- Sand Creek Regional Greenway east of East 56th Avenue - historic landfill within project area, medium potential to encounter impacted soil and soil vapor, deep excavation may encounter fill material from channelization. Recommended MMP. Proposed improvements will have approximately 1 acre of impacts within the landfill area.
- I-270 ramps to I-70 - located adjacent to Central 70 Institutional Control areas for reused soil. Low potential to encounter impacted soil; however, these areas are under use restrictions, prohibiting soil-disturbing activities unless conducted in accordance with the MMP.
- Proposed stormwater discharge facility east of the Burlington Ditch at the Weaver Electric property at 3200 East 64th Avenue. Historic landfill within the project area, high potential to encounter impacted soil and soil vapor, deep excavation may encounter fill material from channelization. Additionally, this property is under Institutional Control with use restrictions, prohibiting soil-disturbing activities unless conducted in accordance with the MMP Addendum. Recommended MMP and additional investigation. Proposed improvements will have approximately 4 acres of impacts within landfill area and Institutional Controls property.
- Proposed permanent water quality facilities for the project will be needed and may require permanent easements and/or ROW acquisition. Additional environmental investigation may be necessary to confirm proposed locations.
 - I-270/I-76 Interchange - adjacent to historic landfill, medium potential to encounter impacted soil and soil vapor. Recommended MMP
 - North of I-270, between South Platte River and Cat Lake - low potential to encounter impacted soil

- North of I-270, between Brighton Boulevard and Burlington Ditch and access road to East 64th Avenue near Waste Management Facility - historic landfill within project area, high potential to encounter impacted soil and soil vapor. Recommended MMP and additional investigation. Proposed improvements will have approximately 7.5 acres of impacts within the landfill area.
 - Within Vasquez Boulevard interchange clover leaf - low potential to encounter impacted soil
 - North of I-270 east of East 56th Avenue - low potential to encounter impacted soil
 - South of I-270, north of Sand Creek, west of Quebec Street - adjacent to historic landfill, medium potential to encounter impacted soil and soil vapor, deep excavation may encounter fill material from channelization. Recommended MMP.
 - North of I-270, west of Quebec Street - adjacent to historic landfill, south of active LST site, medium potential to encounter impacted soil and soil vapor. Recommended MMP and additional investigation
- Proposed reconstruction of I-270 west of Brighton Boulevard - previous geotechnical and environmental investigations indicate differential settlement beneath the highway, adjacent historic landfills and landfill material extending beneath the project area. There is a high potential to encounter impacted soil and soil vapor, deep excavation may require dewatering. Recommended MMP and additional investigation.
 - Proposed pedestrian crossing of I-270 west of Quebec - this area is located within the groundwater contamination plume of the Chemical Sales Superfund site. Deep excavation activities have a high potential to encounter contaminated groundwater and require dewatering.

As indicated above, dewatering activities will likely be necessary during the installation of deep foundation systems for new bridge structures, retaining walls, or other features. Results of 2022 Phase II ESA sampling in various locations of the I-270 study area indicate that various contaminants have impacted regional groundwater to levels that exceed surface water and groundwater standards. Therefore, water would require either treatment to meet those standards prior to discharge to state waters or would require off-site disposal.

To the extent that contaminated soils and groundwater are treated onsite or removed for safe treatment or disposal, the Three General-Purpose Lanes Alternative would result in permanent reduction of contaminated material in the study area. It may be an option to beneficially reuse impacted soil elsewhere within the project area; however, this would require coordination and approval with CDPHE.

ACM was not encountered during CDOT's boring investigations associated with historic landfills. However, ACM was detected within several samples of a test pit at the Weaver Electric property at 3200 East 64th Avenue. ACMs may still be encountered with buried utilities or other areas of historic landfills not fully investigated within the study area.

Elevated levels of landfill gas (methane) were encountered during CDOT's boring investigations associated with historic landfills. Additional investigation, monitoring and/or mitigation of landfill gas in areas of concern prior to construction is not anticipated to require permitting with CDPHE; however, coordination with CDPHE is recommended.

Additionally, the Three General-Purpose Lanes Alternative include the replacement of bridges along the corridor. If structures or infrastructure are disturbed or demolished, they must be tested for LBP and ACMs for worker protection and disposal purposes.

10.3 Two General-Purpose Lanes and One Express Lane that Accommodates Transit Alternative

Impacts to hazardous materials would be the same under the Two General-Purpose Lanes and One Express Lane that Accommodates Transit Alternative as impacts under the Three General-Purpose Lanes Alternative.

11.0 Mitigation Measures

Mitigation measures are recommended to address permanent and temporary adverse impacts of the project alternatives. Impacts identified in Section 9.0 are summarized in tabular format (by alternative) in this section to align with recommended mitigation.

Table 10 shows a summary of the impacts and mitigations for the build alternatives.

Table 10. Summary of Impacts and Mitigation - Build Alternatives

Activity Triggering Mitigation	Location of Activity	Impact	Mitigation	Responsible Branch	Timing/Phase that Mitigation will be Implemented
General construction activities	Study Area	Potential to encounter contamination during construction	Obtain and implement the requirements from CDPHE's Colorado Discharge Permit System - Construction Dewatering Permit (Water Quality Control Division [WQCD])	CDOT Engineering and Environmental, and Contractor	Pre-Construction, Construction, and Post-Construction
General construction activities	Study Area	Potential to encounter contamination during construction from per- and polyfluoroalkyl substances (PFAS)	For project areas located within mapped PFAS contaminated groundwater, the Contractor will follow revised Section 107.25 - Legal Relations and Responsibility to Public. CDPHE PFAS source/concentration maps will be reviewed, when available.	CDOT Engineering and Environmental, and Contractor	Pre-Construction and Construction
General construction activities	Study Area	Potential to encounter contamination during construction from PFAS	Consult with CDPHE WQCD on potential PFAS impact and management. There are likely monetary impacts associated with encountering PFAS contamination.	CDOT Engineering and Environmental	Pre-Construction and Construction
Geotechnical investigation and sampling	Study Area	Potential duplicative efforts	Coordinate any geotechnical and sampling work prior to doing the work to save money and avoid potential duplicative testing/mobilizations.	CDOT Engineering and Environmental, and Contractor	Pre-Construction and Construction

General construction activities	Study Area	Potential to encounter contamination during construction	Obtain and implement the requirements from CDPHE's Beneficial Reuse of Impacted Soil, Environmental Use Restriction/Covenant Permit, and the Materials Management Plan (MMP) (Hazardous Materials and Waste Management Division)	CDOT Engineering and Environmental, and Contractor	Pre-Construction and Construction
General construction activities	Study Area	Potential to encounter contamination during construction	Obtain and implement the requirements from CDPHE's Demolition Permit - Asbestos-Containing Materials (ACM) (Hazardous Materials and Waste Management Division)	CDOT Engineering and Environmental, and Contractor	Pre-Construction and Construction
Dewatering of groundwater/infiltration water in excavations	All locations where groundwater / infiltration water is generated, and dewatering is required.	Potential to encounter contaminated groundwater during construction dewatering	Follow CDOT Standard Specifications for Road and Bridge Construction, Section 250 regarding monitoring and characterization, and Section 107.25 regarding water quality control.	CDOT Engineering and Contractor	Pre-Construction and Construction

Construction in potentially contaminated areas	Southeast clover leaf off Vasquez Boulevard; adjacent to Sand Creek and Suncor Plant 1; and areas adjacent to Waste Management Facility and Brighton Boulevard	Potential to encounter subsurface contamination	Comply with CDOT's latest Revision of Section 250 (Environmental, Health and Safety Management) of the Standard Specifications for Road and Bridge Construction. Workers shall be alert during excavations for any visual or olfactory signs of contamination. If soil or groundwater contamination is encountered, work will stop immediately, and the procedures outlined in CDOT Specification 250 and subsection 107.25(b) shall be followed.	CDOT Engineering and Contractor	Pre-Construction and Construction
Construction/excavation in petroleum contaminated areas	Adjacent to Sand Creek and Suncor Plant 1 Areas adjacent to Waste Management Facility and Brighton Boulevard	Potential to encounter petroleum contaminated soil	A project-specific MMP will be prepared and implemented to specify characterization and management practices for contaminated soil, debris, impacted groundwater, and landfill gases that may be encountered during construction.	CDOT Engineering and Contractor	Pre-Construction and Construction

Construction/excavation in petroleum contaminated areas	Adjacent to Sand Creek and Suncor Plant 1 Areas adjacent to Waste Management Facility and Brighton Boulevard	Potential to encounter petroleum contaminated soil	A Health and Safety Plan will be completed to address hazardous materials that could be uncovered during construction.	CDOT Engineering and Contractor	Pre-Construction and Construction
Construction/excavation in petroleum contaminated areas	Adjacent to Sand Creek and Suncor Plant 1 Areas adjacent to Waste Management Facility and Brighton Boulevard	Potential to encounter petroleum contaminated soil	Generate waste profiles for petroleum contaminated soil and oversee transportation and disposal of petroleum contaminated soil with local landfill.	CDOT Engineering and Contractor	Construction
Construction/excavation in areas with Institutional Controls or environmental use restrictions	Weaver Electric and Multi-Contractor properties, 3200 East 64th Avenue; south of I-270, north of Sand Creek, east and west of Burlington Ditch, west of Brighton Boulevard	Potential to encounter subsurface contamination on Weaver Electric property	This property is under Institutional Controls with use restrictions, prohibiting soil-disturbing activities unless conducted in accordance with the MMP Addendum. Prior to construction, contact CDPHE and property representative(s) to approve and coordinate construction activities. Additionally, any soil-disturbing activities will be conducted in accordance with the site-specific MMP Addendum.	CDOT Engineering and Contractor	Pre-Construction and Construction

Construction/excavation in potentially contaminated areas	Landfill areas with debris and elevated methane adjacent to the Burlington Ditch; southeast clover leaf off Vasquez Boulevard; westbound I-270 to eastbound I-76 and westbound I-270 to westbound I-76 ramps; and areas adjacent to the Waste Management Facility and Brighton Boulevard	Potential to encounter subsurface contamination associated with historic landfills	Prior to construction, conduct targeted subsurface investigation to characterize landfill gas levels within areas of concern. Conduct additional landfill gas monitoring and/or mitigation, as needed, to minimize worker health and safety concern and to define potential project risks. Develop landfill gas mitigation plan for construction.	CDOT Engineering and Environmental, and Contractor	Pre-Construction
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Construction / excavation in potentially contaminated areas	Landfill areas with debris and elevated methane adjacent to the Burlington Ditch; southeast clover leaf off Vasquez Boulevard; westbound I-270 to eastbound I-76 and westbound I-270 to westbound I-76 ramps; and areas adjacent to the Waste Management Facility and Brighton Boulevard	Potential to encounter subsurface contamination associated with historic landfills	Perform real-time monitoring during construction for volatile organic compounds, methane, and ACMs. Health and safety monitoring and ACMs remediation may be necessary. Follow the safety practices in the MMP and the Adams County Flammable Gas Overlay Zone District Regulations for any construction activities within 1,000 feet of a former solid waste disposal site or any site discovered to have been a solid waste disposal site.	CDOT Engineering and Contractor	Construction
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Construction/excavation in historic landfills	Landfill areas with debris and elevated methane adjacent to the Burlington Ditch; southeast clover leaf off Vasquez Boulevard; westbound I-270 to eastbound I-76 and westbound I-270 to westbound I-76 ramps; and areas adjacent to the Waste Management Facility and Brighton Boulevard	Potential to impact historic landfills	Coordinate with CDPHE and Adams County Health Department, where historic landfills may be encountered during construction activities. “Hot work” activities will be prohibited in proximity to any excavations, including, but not limited to, welding/cutting, grinding, explosives, smoking, etc., due to the potential for explosion. If construction activities, such as drilling, have the potential to extend through the bottom of the landfill, the boring is required to be grouted with slurry or bentonite to prevent creating a hole in the landfill liner. The contractor shall comply with CDPHE’s Solid Waste Regulations (6 CCR 1007-2 Part 1) pertaining to solid waste sites/landfills.	CDOT Engineering and Contractor	Pre-Construction and Construction
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Construction/ excavation in potentially contaminated areas with ACM	Landfill areas with debris in the southeast clover leaf off Vasquez Boulevard, Multi- contractor and Weaver Electric properties, and areas adjacent to the Waste Management Facility and Brighton Boulevard	Discovery of ACM in soil or landfill debris	If suspected ACM is encountered, workers will follow CDOT Specification 250.07 and CDOT Soil Management standard operating procedures and CDPHE's Soil Regulations and requirements under 6 CCR 1007-2.	CDOT Engineering and Contractor	Construction
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General construction activities	Throughout the project area and/or surrounding properties; Monitoring wells on Multi-contractor and Weaver Electric properties	Potential to impact drinking water or groundwater monitoring wells	Impacts to wells, including monitoring wells may not be avoidable. CDOT should initiate discussions with well owners about proper abandonment of existing wells, project phasing, and replacement if necessary. If any drinking water and groundwater monitoring wells are within the proposed construction area, wells will be abandoned and plugged according to CDOT Section 202.02 in Standard Specifications for Road and Bridge Construction and in conformance with the Colorado Department of Natural Resources Division of Water Resources State Engineer Water Well Construction Rules, specifically Rule 16, "Standards for Plugging, Sealing, and Abandoning Wells and Boreholes."	CDOT Engineering and Contractor	Construction
Bridge replacement, demolition of structures	Throughout the project area and/or surrounding properties	Lead-based paint (LBP) and ACM	If structures are disturbed or demolished, they must be tested for LBP and ACMs for worker protection and disposal purposes.	CDOT Engineering and Contractor	Pre-Construction

Acquisition of property with potential hazardous material concerns	Throughout the I-270 corridor, surrounding properties located outside the existing CDOT ROW	Potential to acquire property with potential hazardous material concerns	An ASTM International-compliant Phase I Environmental Site Assessment (ESA) should be completed (at the discretion of the CDOT Hazardous Materials Specialist) before taking any additional ownership interest for properties considered for acquisition. Based on results of those assessments, specific management practices for areas where contamination could be encountered during construction or parcels where an ROW is acquired in these areas may be necessary. When recommended by the Phase I ESA or MMP, conduct subsurface investigations in high priority areas, as necessary, to help define or refine project risks. Utilize additional data generated to develop more targeted recommendations that help to mitigate hazardous materials issues.	CDOT Engineering, Environmental and ROW	Pre-Construction
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12.0 Required Permits and Coordination

The following permits will be required for hazardous materials (Table 1). These permits are also referenced in the mitigation summary table.

Table 11. Required Permits and Coordination by Agency and Project Phase (from Agency Coordination Plan)

Agency	Permit/Coordination	Phase
CDPHE, Hazardous Materials and Waste Management Division	Demolition Permit (ACM)	Construction
CDPHE, Hazardous Materials and Waste Management Division	Beneficial Reuse of Impacted Soil, Environmental Use Restriction/Covenant, and MMP	Construction
CDPHE, WQCD	Colorado Discharge Permit System Permit, Construction Dewatering Activities, or Remediation Activities Permit	Construction

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14.0 Signatures and Qualifications

The preceding report has been prepared in accordance with standard industry practice for performance of a MESA and includes applicable portions of procedures codified in ASTM 1527-21, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, U.S. EPA Standards, and Practices for AAls, and CDOT hazardous materials guidance. The end user of this report may rely on the contents, findings, and conclusions to be accurate within the limitations stated herein. The report also complies with specific requirements supplied by the Client. CDOT performed this work for the sole purpose of assisting in the evaluation of sites with potential to impact the project area associated with the properties within the study area.

The following sections provide the qualifications of the environmental professionals who conducted this MESA.

Austin Curry, Senior Environmental Project Manager and Environmental Protection Specialist III, CDOT Region 1

Education:

- B.S., Biology, University of Colorado at Denver, 2011

Training:

- 40-Hour Hazardous Waste Operations and Emergency Response (HAZWOPER) Certification, 2020
- Annual 8-Hour HAZWOPER Refresher, 2024
- 38-Hour US Army Corps of Engineers Wetland Delineation Training Program, 2018
- Applying the NEPA Process and Writing Effective NEPA Documents, Shipley Group, 2019
- SWMP Preparer Certification, CDOT, 2019
- Transportation Core Curriculum (TETP), CDOT, 2020
- Environmental Project Manager Training, FHU, 2021
- CDOT Leadership Journey 1, 2021
- Advanced NEPA Training, 2022
- NEPA Reevaluation Training, 2024

Biography:

Mr. Curry has over ten years of experience in environmental compliance, project management, environmental site assessment/due diligence, subsurface investigation and impact assessment. He has over five years of environmental consulting experience, in which he conducted numerous Phase I and Phase II Environmental Site Assessments on a variety of commercial properties, as well as performed soil and groundwater sampling, remediation design, monitoring and reporting. Mr. Curry has assisted in developing and implementing material management plans and documents for the Colorado's Voluntary Cleanup Program and Brownfield redevelopment. Since 2019, Mr. Curry has been an Environmental Protection Specialist with the Planning and Environmental Program at CDOT Region 1 (Denver Metro Area). As a Project Manager, he has working experience ensuring NEPA compliance for

transportation projects, such as I-70 Noise Wall Replacements (I-76 to Pecos), I-70 Bridge Replacements over Ward Road and Harlan Street, and Vasquez Boulevard (I-270 to 64th Avenue) Environmental Assessment. Additionally, as a Hazardous Materials Specialist for the Region, Austin has experience in review of technical documents and material management plans, and report preparation in support of CatEx, EA and EIS level projects, including Floyd Hill, Alameda and I-25 Bridge Replacement, South Broadway and I-25 Reevaluation, 88th Avenue Widening EA and I-270 Corridor Improvement EIS. Additionally, Mr. Curry oversaw consultant work for the Phase I and Limited Phase II Site Investigation efforts to support the acquisition of the Burnham Yard property.

Report prepared by:



Austin Curry

Senior Environmental Project Manager and Environmental Protection Specialist III, CDOT
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Attachments

CDOT is dedicated to providing an accessible experience for everyone. While we are continuously improving our standards, some complex items in this document, such as certain figures and images, are difficult to create with fully accessible parameters to all users. If you need help understanding any part of this document, we are here to assist and have resources to provide additional accessibility assistance to any requests. Please email us at CDOT_Accessibility@state.co.us to request an accommodation, and a member of our I-270 Engineering Program will schedule a time to review the content with you. To learn more about accessibility at CDOT, please visit the [Accessibility at CDOT webpage on the CDOT Website](#).

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Attachment A. Figures

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Attachment B. Agency Database Summary

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Attachment C. ERIS Database Report

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Attachment D. Photographic Log

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