MovingAhead

STREETS AND PLACES REIMAGINED

DRAFT FINAL Hazardous Materials Technical Report

Lane Transit District
City of Eugene

In cooperation with
Lane Council of Governments
Lane County
Oregon Department of Transportation

July 7, 2017

DRAFT FINAL Hazardous Materials Technical Report

MovingAhead Project

Prepared in accordance with the
National Environmental Policy Act of 1969, as amended 42 U.S.C. 4322
and the
Federal Transit Act of 1964, as amended 49 U.S.C. 1601 et seq.

July 7, 2017

Prepared for
Federal Transit Administration
Lane Transit District
City of Eugene

Prepared by
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Acronyms, Abbreviations, and Terms

Acronyms and Abbreviations	Definitions
AA	Alternatives Analysis
ADA	Americans with Disabilities Act
API	Area of Potential Impact
BAT	Business Access and Transit
BMP	Best Management Practice
BRT	Bus Rapid Transit
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CERCLIS	Comprehensive Environmental Response Compensation and Liability Information System
CFR	*Code of Federal Regulations*
CIP	Capital Improvements Program
City	City of Eugene
CRL	Confirmed Release List
DEQ	Department of Environmental Quality
Draft Eugene 2035 TSP	*DRAFT Eugene 2035 Transportation System Plan* (City of Eugene, 2016)
ECSI	Environmental Cleanup Site Information database
EmX	Emerald Express, Lane Transit District's Bus Rapid Transit System
EPA	U.S. Environmental Protection Agency
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act of 1974
FTA	Federal Transit Administration
FTN	Frequent Transit Network
HMTA	Hazardous Materials Transport Act of 1975, with amendments in 1990 and 1994
LCC	Lane Community College
LOS	level of service
LTD	Lane Transit District
LUST	leaking underground storage tank
NEPA	National Environmental Policy Act
NFA	no further action

Acronyms and Abbreviations	Definitions
OAR	Oregon Administrative Rule
OPA	Oil Pollution Act of 1990
ORS	Oregon Revised Statutes
PCB	polychlorinated biphenyl
RCRA	Resource Conservation and Recovery Act of 1976
RTP	Regional Transportation Plan
SARA	Superfund Amendments and Reauthorization Act of 1986
SARA III	Emergency Planning and Community Right to Know Act of 1986; part of the SARA amendments
TSP	Transportation System Plan
U.S.C.	United States Code
UST	underground storage tank
WEEE	West Eugene EmX Extension

Terms	Definitions
Action	An “action,” a federal term, is the construction or reconstruction, including associated activities, of a transportation facility. For the purposes of this Handbook, the terms “project,” “proposal,” and “action” are used interchangeably unless otherwise specified. An action may be categorized as a “categorical exclusion” or a “major federal action.”
Alternatives Analysis (AA)	The process of evaluating the costs, benefits, and impacts of a range of transportation alternatives designed to address mobility problems and other locally-defined objectives in a defined transportation corridor, and for determining which particular investment strategy should be advanced for more focused study and development. The Alternatives Analysis (AA) process provides a foundation for effective decision making.
Area of Potential Impact	An assessment’s Area of Potential Impact for the project is defined separately for each discipline.
Auxiliary Lanes	Lanes designed to improve safety and reduce congestion by accommodating cars and trucks entering or exiting the highway or roadway, and reducing conflicting weaving and merging movements.
Base Fare	The price charged to one adult for one transit ride; excludes transfer charges, and reduced fares.
Base Period	The period between the morning and evening peak periods when transit service is generally scheduled on a constant interval. Also known as "off-peak period."
Boarding	Boarding is a term used in transit to account for passengers of public transit systems. One person getting on a transit vehicle equals one boarding. In many cases, individuals will have to transfer to an additional transit vehicle to reach their destination and may well use transit for the return trip. Therefore, a single rider may account for several transit boardings in one day.
Bus Rapid Transit (BRT)	A transit mode that combines the quality of rail transit and the flexibility of buses. It can operate on bus lanes, high-occupancy vehicle (HOV) lanes, expressways, or ordinary streets. The vehicles are designed to allow rapid passenger loading and unloading, with more doors than ordinary buses.
Business Access and Transit (BAT) Lane	In general, a BAT lane is a concrete lane, separated from general-purpose lanes by a paint stripe and signage. A BAT lane provides Bus Rapid Transit (BRT) priority operations, but general-purpose traffic is allowed to travel within the lane to make a turn into or out of a driveway or at an intersecting street. However, only the BRT vehicle is allowed to use the lane to cross an intersecting street.
Busway	Exclusive freeway lane for buses and carpools.
Capital Improvements Program (CIP)	A CIP is a short-range plan, usually 4 to 10 years, which identifies capital projects and equipment purchases, provides a planning schedule, and identifies options for funding projects in the program.
Categorical Exclusion (CE)	A CE means a category of actions that do not individually or cumulatively have a significant effect on the human environment and for which, therefore, neither an environmental assessment nor an environmental impact statement is required.
Clean Air Act Amendments of 1990	The comprehensive federal legislation that establishes criteria for attaining and maintaining the federal standards for allowable concentrations and exposure limits for various air pollutants; the act also provides emission standards for specific vehicles and fuels.
Commercial	C-3
Commuter Rail	Commuter rail is a transit mode that is a multiple car electric or diesel propelled train. It is typically used for local, longer-distance travel between a central city and adjacent suburbs, and can operate alongside existing freight or passenger rail lines or in exclusive rights of way.
Compressed Natural Gas (CNG)	An alternative fuel; compressed natural gas stored under high pressure. CNG vapor is lighter than air.

Terms	Definitions
Corridor	A broad geographical band that follows a general directional flow connecting major sources of trips that may contain a number of streets, highways, and transit route alignments.
Documented Categorical Exclusion (DCE)	A DCE means a group of actions that may also qualify as Categorical Exclusions (CEs) if it can be demonstrated that the context in which the action is taken warrants a CE exclusion; i.e., that no significant environmental impact will occur. Thus, these actions are referred to as DCEs. Such actions require some National Environmental Policy Act documentation, but not an Environmental Assessment or a full-scale Environmental Impact Statement. DCEs documentation must demonstrate that, in the context(s) in which these actions are to be performed, they will have no significant environmental impact or that such impacts will be mitigated.
Effects	Effects include ecological, aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative. Effects may also include those resulting from actions that may have both beneficial and detrimental effects, even if on balance the agency believes that the effect will be beneficial. Effects include: (1) direct effects that are caused by the action and occur at the same time and place, and (2) indirect effects that are caused by the action and are later in time or farther removed in distance but are still reasonably foreseeable. Indirect effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use; population density or growth rate; and related effects on air and water and other natural systems, including ecosystems (40 CFR 1508.8).
EmX	Lane Transit District's Bus Rapid Transit System, pronounced "MX," short for Emerald Express.
Envision Eugene	The City of Eugene's Comprehensive Plan (latest draft or as adopted). Envision Eugene includes a determination of the best way to accommodate the community's projected needs over the next 20 years.
Evaluation Criteria	Evaluation criteria are the factors used to determine how well each of the proposed multimodal alternatives would meet the project's Goals and Objectives. The Evaluation Criteria require a mix of quantitative data and qualitative assessment. The resulting data are used to measure the effectiveness of proposed multimodal alternatives and to assist in comparing and contrasting each of the alternatives to select a preferred alternative.
Exclusive Right of Way	A roadway or other facility that can only be used by buses or other transit vehicles.
Fatal Flaw Screening	The purpose of a Fatal Flaw Screening is to identify alternatives that will not work for one reason or another (e.g., environmental, economic, community). By using a Fatal Flaw Screening process to eliminate alternatives that are not likely to be viable, a project can avoid wasting time or money studying options that are not viable and focus on alternatives and solutions that have the greatest probability of meeting the community's needs (e.g., environmentally acceptable, economically efficient, implementable).
Fixed Route	Service provided on a repetitive, fixed-schedule basis along a specific route with vehicles stopping to pick up and deliver passengers at set stops and stations; each fixed-route trip serves the same origins and destinations, unlike demand responsive and taxicabs.
Goals and Objectives	Goals and objectives define the project's desired outcome and reflect community values. Goals and objectives build from the project's Purpose and Need Statement. • Goals are overarching principles that guide decision making. Goals are broad statements. • Objectives define strategies or implementation steps to attain the goals. Unlike goals, objectives are specific and measurable.
Guideway	A transit right of way separated from general purpose vehicles.
Headway	Time interval between vehicles passing the same point while moving in the same direction on a particular route.

Terms	Definitions
Impacts	A term to describe the positive or negative effects upon the natural or built environments as a result of an action (i.e., project).
Industrial	I-2 and I-3
Institution	PL and PRO
Key Transit Corridors	Key transit corridors are mapped in Envision Eugene and are anticipated to be significant transit corridors for the City and the region
Level of Service (LOS)	LOS is a measure used by traffic engineers to determine the effectiveness of elements of transportation infrastructure. LOS is most commonly used to analyze highways, but the concept has also been applied to intersections, transit, and water supply.
Limited (or Controlled) Access	Restricted entry to a transportation facility based upon facility congestion levels or operational condition. For example, a limited access roadway normally would not allow direct entry or exit to private driveways or fields from said roadway.
Liquefied Natural Gas (LNG)	An alternative fuel; a natural gas cooled to below its boiling point of 260 degrees Fahrenheit so that it becomes a liquid; stored in a vacuum bottle-type container at very low temperatures and under moderate pressure. LNG vapor is lighter than air.
Locally Preferred Alternative (LPA)	The LPA is the alternative selected through the Alternatives Analysis process completed prior to or concurrent with National Environmental Policy Act analysis. This term is also used to describe the proposed action that is being considered for New Starts or Small Starts funds.
Maintenance facility	A facility along a corridor used to clean, inspect, repair and maintain bus vehicles, as well as to store them when they are not in use.
Metropolitan Planning Organization (MPO)	The organization designated by local elected officials as being responsible for carrying out the urban transportation and other planning processes for an area.
Mitigation	A means to avoid, minimize, rectify, or reduce an impact, and in some cases, to compensate for an impact.
Mode	A particular form or method of travel distinguished by vehicle type, operation technology, and right of way separation from other traffic.
MovingAhead Project	The City of Eugene and LTD are working with regional partners and the community to determine which improvements are needed on some of our most important transportation corridors for people using transit, and facilities for people walking and biking. MovingAhead will prioritize transit, walking, and biking projects along these corridors so that they can be funded and built in the near-term. The project will focus on creating active, vibrant places that serve the community and accommodate future growth. During Phase 1, currently underway, the community will weigh in on preferred transportation solutions for each corridor and help prioritize corridors for implementation. When thinking about these important streets, LTD and the City of Eugene refer to them as corridors because several streets may work as a system to serve transportation needs.
Multimodal	Multimodal refers to various modes. For the MovingAhead project, multimodal refers to Corridors that support various transportation modes including vehicles, buses, walking and cycling.
National Environmental Policy Act of 1969 (NEPA)	A comprehensive federal law requiring analysis of the environmental impacts of federal actions such as the approval of grants; also requiring preparation of an Environmental Impact Statement for every major federal action significantly affecting the quality of the human environment.
No Action or No-Build Alternative	An alternative that is used as the basis to measure the impacts and benefits of the other alternative(s) in an environmental assessment or other National Environmental Policy Act action. The No-Build Alternative consists of the existing conditions, plus any improvements that have been identified in the Statewide Transportation Improvement Program.

Terms	Definitions
Off-Peak Period	Non-rush periods of the day when travel activity is generally lower and less transit service is scheduled. Also called "base period."
Park and Ride	Designated parking areas for automobile drivers who then board transit vehicles from these locations.
Peak Hour	The hour of the day in which the maximum demand for transportation service is experienced (refers to private automobiles and transit vehicles).
Peak Period	Morning and afternoon time periods when transit riding is heaviest.
Preferred Alternative	An alternative that includes a major capital improvement project to address the problem under investigation. As part of the decision making process, the Preferred Alternative is compared against the No Action or No-Build Alternative from the standpoints of transportation performance, environmental consequences, cost-effectiveness, and funding considerations.
Purpose and Need	The project Purpose and Need provides a framework for developing and screening alternatives. The purpose is a broad statement of the project's transportation objectives. The need is a detailed explanation of existing conditions that need to be changed or problems that need to be fixed.
Ridership	The number of people using a public transportation system in a given time period.
Right of Way	Publicly owned land that can be acquired and used for transportation purposes.
Study Area	The area within which evaluation of impacts is conducted. The study area for particular resources will vary based on the decisions being made and the type of resource(s) being evaluated.
Title VI	This Title declares it to be the policy of the United States that discrimination on the ground of race, color, or national origin shall not occur in connection with programs and activities receiving federal financial assistance and authorizes and directs the appropriate federal departments and agencies to take action to carry out this policy.
Transportation Improvement Program (TIP)	A program of intermodal transportation projects, to be implemented over several years, growing out of the planning process and designed to improve transportation in a community. This program is required as a condition of a locality receiving federal transit and highway grants.
Water Quality	Refers to the characteristics of the water, such as its temperature and oxygen levels, how clear it is, and whether it contains pollutants.

Hazardous Materials Summary

This Hazardous Materials Technical Report documents the hazardous materials and waste disposal regulatory requirements, methods, affected environment, and potential environmental consequences of alternatives for the Lane Transit District (LTD) and City of Eugene's MovingAhead Project in Eugene, Oregon. The purpose of the MovingAhead Project is to determine which high-capacity transit corridors identified in the adopted Emerald Express (EmX) System Plan, *Lane Transit District Long-Range Transit Plan* (LTD, 2014) and the Frequent Transit Network (FTN) are ready to advance to capital improvements programming in the near term. LTD and the City of Eugene initiated the MovingAhead Project in 2014 to identify and examine alternatives for improving multimodal safety, mobility, and accessibility in key transit corridors in the City. A main theme of the City's vision is to concentrate new growth along and near the City's key transit corridors and within core commercial areas while protecting neighborhoods and increasing access to services for everyone. LTD and the City are jointly conducting the project to facilitate a more streamlined and cost-efficient process through concurrent planning, environmental review, and design and construction of multiple corridors.

Hazardous materials require special handling and disposal. Encountering hazardous materials during construction and operations of the project could pose risks to human health and the environment or could create potentially costly control or cleanup requirements for the project. This report considers the potential of the MovingAhead corridors' alternatives to encounter hazardous materials and to introduce new sources of hazardous materials into the environment.

The evaluation completed for this report is based on a preliminary conceptual level of engineering, and it is not intended to be used as a due diligence assessment for property transfer. If a build alternative(s) emerges as the Locally Preferred Alternative for further development under the MovingAhead Project, a more detailed project-level hazardous materials analysis would occur during subsequent environmental reviews and documentation prior to commencing acquisition and construction activities.

LTD and the City of Eugene examined multimodal transit alternatives in five key transit corridors identified in the *Draft Envision Eugene Comprehensive Plan* (Envision Eugene, 2016, July) and the *DRAFT Eugene 2035 Transportation System Plan* (City of Eugene, 2016; Draft Eugene 2035 TSP), the region's highest growth centers, and downtown Eugene:

- Highway 99 Corridor
- River Road Corridor
- 30th Avenue to Lane Community College (LCC) Corridor
- Coburg Road Corridor
- Martin Luther King, Jr. Boulevard Corridor

No-Build, Enhanced Corridor, and EmX Alternatives were developed for each corridor, except the Martin Luther King, Jr. Boulevard Corridor, for which only No-Build and Enhanced Corridor Alternatives were developed. Each proposed corridor location is shown on Figures S.1-1 and S.1-2 for the Enhanced Corridor Alternatives and the EmX Alternatives, respectively. The *Level 2 Definition of Alternatives* (CH2M HILL, Inc. [CH2M] et al., 2016) contains a detailed description of the project alternatives. The following items summarize the project alternatives evaluated.

- The **No-Build Alternatives** serve as a reference point to gauge the benefits, costs, and effects of the Enhanced Corridor and EmX Alternatives in each corridor. Each No-Build Alternative is based on the projected conditions in 2035. Capital projects are derived from the financially constrained project lists in the Draft Eugene 2035 TSP, the *Lane County Transportation System Plan* (Lane County Public

Figure S.1-1. Enhanced Corridor Alternative Overview

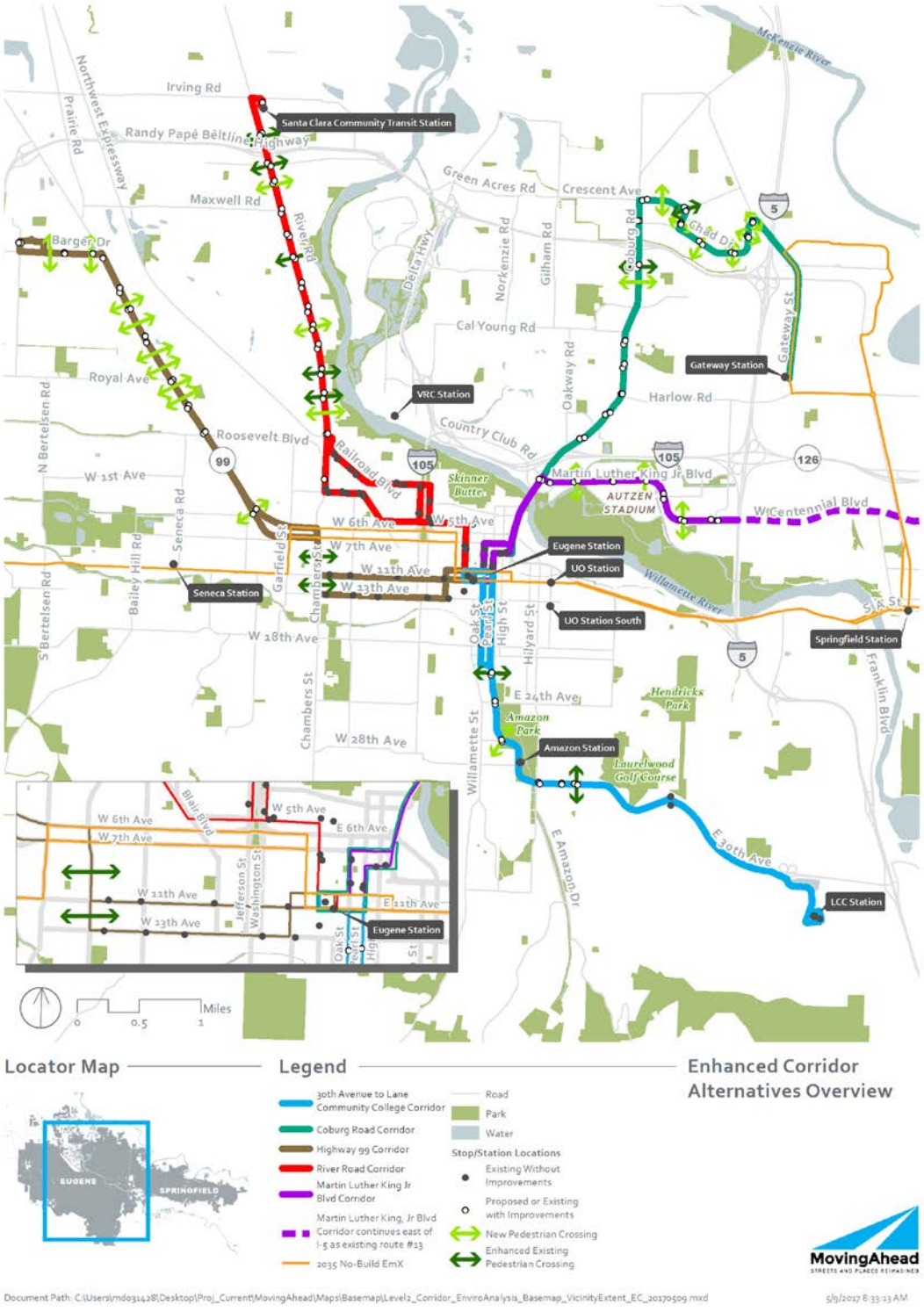
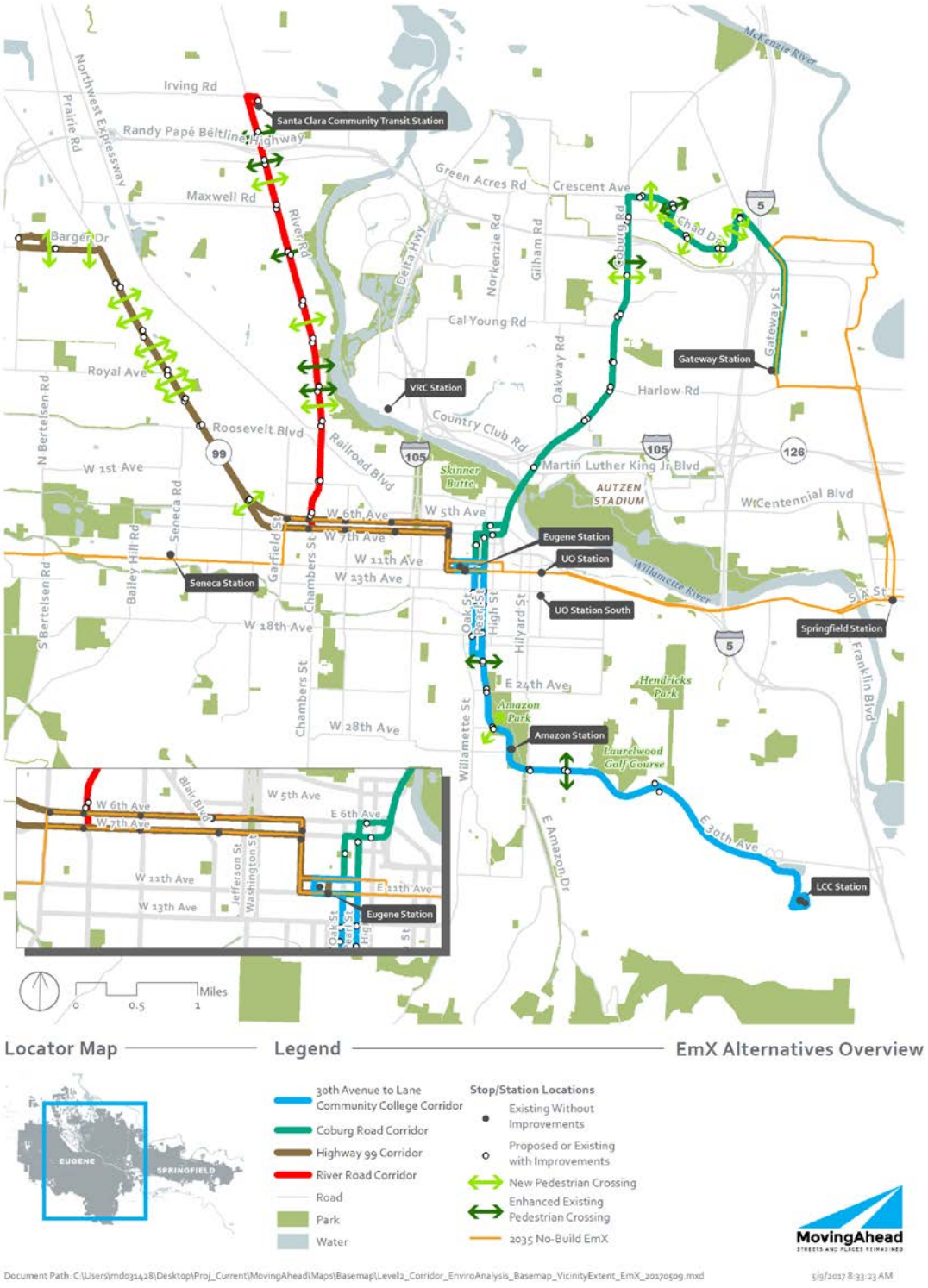


Figure S.1-2. EmX Alternative Overview



Works, Engineering Division Transportation Planning, 2004, update in progress), the *Lane Transit District Capital Improvement Plan* (LTD, 2015, Amended 2015, June), and the *Lane Transit District Long-Range Transit Plan* (LTD, 2014).

- **Enhanced Corridor Alternatives** are intended to address the project's Purpose, Need, Goals, and Objectives without major transit capital investments, instead focusing on lower-cost capital improvements, operational improvements, and transit service refinements, including 15-minute-or-better service frequency. Features can include transit queue jumps (lanes for buses that allow the bus to "jump" ahead of other traffic at intersections using a separate signal phase), stop consolidation, and enhanced shelters. These features can improve reliability, reduce transit travel time, and increase passenger comfort, making transit service along the corridor more attractive.
- **EmX Alternatives** are characterized by sections of exclusive guideway, branded multi-door 60-foot-long bus rapid transit (BRT) vehicles, and enhanced stations with level boarding platforms instead of bus stops; off-board fare collection; transit signal priority; wider stop spacing; and 10-minute service frequencies. In general, EmX is a transit mode positioned between fixed-route bus service operating in mixed traffic and urban rail service operating in a separate right of way. EmX service is intended to improve transit speed, reliability, and ridership.

Figure S.1-1 shows the proposed corridors for the Enhanced Corridor Alternatives and Figure S.1-2 shows the proposed corridors for the EmX Alternatives.

This report, prepared to support the MovingAhead Project Alternatives Analysis (AA), addresses potential adverse and beneficial effects that the project alternatives would have on hazardous materials. It describes how the proposed project alternatives would change the hazardous materials conditions of the five study corridors. It bases the assessments on how the alternatives would have potential adverse impacts to hazardous materials in the area of potential impact (API) and identifies potential mitigation measures to reduce impacts to hazardous materials.

This report was prepared in compliance with the National Environmental Policy Act (NEPA) and applicable state environmental policy legislation, as well as local and state planning and land use policies and design standards.

S.1. Affected Environment

The area of potential impact (API) for the identification of potential hazardous material sites is defined as the alternative-specific corridor plus a 0.125-mile buffer area on either side of the corridor alternative centerline. The API was selected because, if contamination is present, being within 0.125 mile of a high-risk site could affect the project or the project could affect the site.

S.2. Environmental Consequences

The hazardous materials analysis for the build alternatives focused on the potential short-term construction impacts, and the potential long-term direct effects on the environment from affected sites that federal and / or state regulatory agencies have recorded on one or more hazardous materials lists.

The project team identified and categorized the sites within the Oregon Department of Environmental Quality comprehensive federal and state regulatory databases into three potential risk categories – high, medium, and low. The purpose of the risk assessment was to prioritize sites to determine the need for avoidance, remediation, and / or mitigation while considering associated costs and liability. The project team defined the three potential risk levels as follows:

- **High.** The project team assigned a high-risk level to contaminated sites that might create liability for LTD either because of construction activities or by acquiring all or a portion of the site. High-risk

sites included sites overlapping with a potentially affected tax lot identified on one or more regulatory lists and have not obtained a no further action (NFA) determination or cleanup complete status from regulatory agencies.

- **Medium.** A medium-risk level was assigned to contaminated sites that are identified on one or more regulatory lists and located within the API but are not on a potentially affected tax lot, or overlap with a potentially affected tax lot that have received a NFA determination or cleanup complete status from regulatory agencies.
- **Low.** The low-risk level was assigned to known sites within the API but not on a potentially affected tax lot, and with no documented release of contaminants to the environment. Therefore, they would be expected to have negligible impacts related to the project. The low-risk level was also assigned to sites that are located outside of the potentially affected tax lot where past releases had occurred, but where remedial cleanup had been completed and applicable regulatory agencies had provided either an NFA determination or cleanup complete status. Sites with active, non-leaking underground storage tanks (USTs) were also considered as low-risk level sites.

S.2.1. No-Build Alternative – All Corridors

Under the No-Build Alternative in each corridor, the existing transportation system would continue to operate and other committed transportation and development projects would be implemented as separate actions from the MovingAhead Project. No-Build projects that include physical improvements could have the same contaminated sites within their footprint as the build alternatives in each corridor.

No project-related construction activities would be associated with the No-Build Alternative. This alternative would not directly affect known and suspected hazardous waste contamination sites. No handling and disposal of contaminated soil, groundwater, and / or demolition / renovation debris would be necessary. The No-Build Alternative would not expose people and ecological receptors to contamination, and contaminants would not have further potential of release into the environment by construction disturbance and material / waste transport. The No-Build Alternative would not remediate existing contaminants.

S.2.2. Impacts Common to All Build Alternatives

Construction of the MovingAhead Project would increase hazardous materials use and waste generation. The construction could also inadvertently disturb sites with previously undocumented contamination or could affect known sites with contaminated media. The extent of short-term construction impacts and long-term operation impacts associated with acquisition of properties that are the source of contamination would be defined more specifically during subsequent design refinement of the MovingAhead Project. Following the summary of potential hazardous materials-related environmental consequences in the following subsections, Table S.2-1 identifies, for each corridor alternative, the number of high-risk and medium-risk sites located on land tax lots that would overlap the construction footprint (that is, potentially affected tax lots). As described in more detail in Table S.2-1, the amount of hazardous materials generated during construction and the potential for accidental release of hazardous materials or petroleum products into the environment would likely be proportionally less for the Enhanced Corridor Alternative compared to the EmX Alternative within the four corridors that include each build alternative. The EmX Alternatives would require a greater magnitude of capital improvements than the Enhanced Corridor Alternatives, and the EmX Alternatives could encounter a greater number of high-risk sites during construction.

The MovingAhead Project is not expected to change the number of hazardous materials sites along the corridors, although it is likely to result in the removal of some contaminated soils and groundwater.

Removed contaminated soils and groundwater, if disposed of outside of the API would have a positive effect on the overall environmental conditions within the general vicinity.

Table S.2-1. Number of Hazardous Sites[a] on Potentially Impacted Tax Lots

Alternatives	High Risk[b]	Medium Risk[b]
Highway 99 Corridor		
No-Build	0	0[c]
Enhanced Corridor	0	0
EmX	2	0
River Road Corridor		
No-Build	0[c]	0[c]
Enhanced Corridor	0	0
EmX	1	0
30th Avenue Lane Community College Corridor		
No-Build	0[c]	0[c]
Enhanced Corridor	1	0
EmX	4	0
Coburg Road Corridor		
No-Build	0[c]	0[c]
Enhanced Corridor	2	0
EmX	3	0
Martin Luther King, Jr. Boulevard Corridor		
No-Build	0[c]	0[c]
Enhanced Corridor	1	1

[a] For the purpose of this technical report, hazardous sites are defined as any sites with one or more active underground storage tank(s) (i.e. active tanks on the *Underground Storage Tank Cleanup Site* List) or sites that are identified in one of the following Oregon Department of Environmental Quality databases: *Environmental Cleanup Site Information*; *Leaking Underground Storage Tank Cleanup Site*; *Solid Waste Permitted Facilities.* No Comprehensive Environmental Response, Compensation, and Liability Act of 1980 sites were identified within the API using the U.S. Environmental Protection Agency's Comprehensive Environmental Response Compensation and Liability Information System.

[b] Risk level is assigned based on potential contamination at the site and whether the site overlaps with an impacted tax lot. All high-risk sites are located on potentially affected tax lots. Locations for sites with only a street address (that is, no latitude / longitude information) were estimated using a geocoding process. Medium risk sites are within the API but not on a potentially affected tax lot.

[c] The No-Build Alternative would not have impacts related to construction, operation, or maintenance of the MovingAhead Project. The number of hazardous sites shown excludes sites potentially impacted by improvements not related to the MovingAhead Project.

S.2.3. Highway 99 Corridor

S.2.3.1. No-Build Alternative

The No-Build Alternative for the Highway 99 Corridor would not affect hazardous materials beyond the potential effects described in Section S.2.1.

S.2.3.2. Enhanced Corridor Alternative

The Enhanced Corridor Alternative would not affect any high-risk sites. Within the corridor API are 90 medium-risk sites. However, no medium-risk sites are within the potentially affected tax lots.

S.2.3.3. EmX Alternative

The EmX Alternative could potentially affect two high-risk sites (Site IDs 27 and 1034). Within the corridor API are 111 medium-risk sites. However, none of the medium-risk sites are within the potentially affected tax lots.

S.2.4. River Road Corridor

S.2.4.1. No-Build Alternative

The No-Build Alternative for the River Road Corridor would not affect hazardous materials beyond the potential effects described in Section S.2.1.

S.2.4.2. Enhanced Corridor Alternative

The Enhanced Corridor Alternative would not affect any high-risk within the corridor API. Within the corridor API, there are 101 medium-risk sites. However, none of the medium-risk sites are within potentially affected tax lots.

S.2.4.3. EmX Alternative

The EmX Alternative could potentially affect one high-risk site (Site ID 27). There are 106 medium-risk sites within the corridor. However, none of the medium-risk sites are within potentially affected tax lots.

S.2.5. 30th Avenue to Lane Community College Corridor

S.2.5.1. No-Build Alternative

The No-Build Alternative for the 30th Avenue to Lane Community College Corridor would not affect hazardous materials beyond the potential effects described in Section S.2.1.

S.2.5.2. Enhanced Corridor Alternative

The Enhanced Corridor Alternative could potentially affect one high-risk site (Site ID 1). Within the corridor API are 52 medium-risk sites. However, none of the medium-risk sites are within potentially affected tax lots.

S.2.5.3. EmX Alternative

The EmX Alternative could potentially affect four high-risk sites (Site IDs 1, 27, 302, and 1025). Within the corridor API are 51 medium-risk sites. However, none of the medium-risk sites are within potentially affected tax lots.

S.2.6. Coburg Road Corridor

S.2.6.1. No-Build Alternative

The No-Build Alternative for the Coburg Road Corridor would not affect hazardous materials beyond the potential effects described in Section S.2.1.

S.2.6.2. Enhanced Corridor Alternative

The Enhanced Corridor Alternative could potentially affect two high-risk sites (Site IDs 122 and 1004). Within the corridor API are 66 medium-risk sites. However, none of the medium-risk sites are within potentially affected tax lots.

S.2.6.3. EmX Alternative

The EmX Alternative could potentially affect three high-risk sites (Site IDs 27, 122, and 150). Within the corridor API are 65 medium-risk sites; however, none of the medium-risk sites are within potentially affected tax lots.

S.2.7. Martin Luther King, Jr. Boulevard Corridor

S.2.7.1. No-Build Alternative

The No-Build Alternative for the Martin Luther King, Jr. Boulevard Corridor would not affect hazardous materials beyond the potential effects described in Section S.2.1.

S.2.7.2. Enhanced Corridor Alternative

The Enhanced Corridor Alternative could affect one high-risk (Site ID 1004). Of the 38 medium-risk sites in the corridor API, one site (Site ID 28) would be within a potentially affected tax lots.

S.3. Mitigation Measures

LTD could implement best management practices to minimize potential encounters with contaminated sites, cleanup contamination prior to construction, and minimize potential impacts on contaminant migration. Implementing proper environmental due diligence for all potentially acquired property and avoiding acquisition of contaminated sites, where possible, could mitigate long-term impacts associated with the acquisition of contaminated sites. Best management practices related to contaminant migration could minimize potential long-term impacts associated with potential releases of hazardous materials into the environment. Environmental regulations require that hazardous materials potentially released or encountered during soil disturbance for development of a project must be cleaned up or remediated. These development activities would, together, have a positive effect on the overall environmental conditions of the API. Therefore, no mitigation measures are anticipated to be needed for potential indirect or cumulative impacts related to hazardous materials.

S.4. Conclusions

Based on the lower magnitude of the capital improvements and fewer potentially affected contaminated sites, construction-related, and potential long-term direct impacts would be proportionally less for the Enhanced Corridor Alternatives than for the EmX Alternatives in each of the four corridors where both of these build alternatives are considered. For the Martin Luther King, Jr. Corridor, the Enhanced Corridor Alternative could affect one high-risk site and one medium-risk site.

To the extent feasible, subsequent project design refinement would avoid sites with known contamination. Construction at contaminated sites would be contingent on appropriate coordination and agreements with regulatory agencies. The potential for accidental spills and releases could be reduced to negligible with implementation of mitigation measures. Contaminated soils and groundwater, if removed and properly disposed of outside of the API, would have a positive effect on the overall environmental conditions.

1 Introduction

1.1 MovingAhead Technical Reports

A total of 20 technical reports have been prepared for the MovingAhead Project. The technical reports have been prepared to support the selection of preferred alternatives for the MovingAhead Project and subsequent environmental documentation. The technical reports assume that any corridors advanced for environmental review will require a documented categorical exclusion under the National Environmental Policy Act (NEPA). Any corridors requiring a higher level of environmental review would be supported by the technical evaluation but might not be fully covered by the technical evaluation.

Technical reports have been prepared for the following disciplines:

- Acquisitions and Displacements
- Air Quality
- Capital Cost Estimating
- Community Involvement, Agency and Tribal Coordination
- Community, Neighborhood, and Environmental Justice
- Cultural Resources
- Ecosystems (Biological, Fish Ecology, Threatened and Endangered Species, Wetlands and Waters of the U.S. and State)
- Energy and Sustainability
- Geology and Seismic
- Hazardous Materials
- Land Use and Prime Farmlands
- Noise and Vibration
- Operating and Maintenance Costs
- Parklands, Recreation Areas, and Section 6(f)
- Section 4(f)
- Street and Landscape Trees
- Transportation
- Utilities
- Visual and Aesthetic Resources
- Water Quality, Floodplain, and Hydrology

In general, each technical report includes the following information for identifying effects:

- Relevant laws and regulations
- Contacts and coordination
- Summary of data sources and analysis methods described in the *MovingAhead Environmental Disciplines Methods and Data Report* (CH2M HILL, Inc. [CH2M] et al., 2015)
- Affected environment
- Adverse and beneficial effects including short-term, direct, indirect and cumulative
- Mitigation measures
- Permits and approvals
- References

1.2 Hazardous Materials Technical Report and Purpose

This technical report presents the results of the hazardous materials evaluation for the MovingAhead corridors' alternatives. Hazardous material impacts and possible mitigation measures are considered in the selection of locally preferred alternatives within each corridor. The evaluation completed for this report is based on a preliminary conceptual level of engineering, and it is not intended to be used as a due diligence assessment for property transfer. If a build alternative(s) emerges as the Locally Preferred Alternative (LPA) for further development under the MovingAhead Project, a more detailed project-level hazardous materials analysis would occur during subsequent environmental reviews and documentation prior to commencing acquisition and construction activities associated with further development of a build alternative.

1.3 Discipline Experts

Table 1.2-1 identifies the discipline experts who contributed to the preparation of this report, including their areas of expertise, affiliated organizations, titles, and years of experience.

Table 1.2-1. Discipline Experts

Discipline	Technical Expert	Affiliated Organization	Title / Years of Experience
Hazardous Materials	Joy Chen	CH2M	Environmental Toxicologist / 13 years
Editors	Ryan Farncomb	CH2M	Senior Transportation Planner / 7 years
	Lynda Wannamaker	Wannamaker Consulting	President / 33 years
	Jodi Ketelsen	CH2M	Senior Project Manager / 20 years
	Rob Rodland	CH2M	Project Manager / 20 years
	Todd cotton	CH2M	Senior Geotechnical Engineer / 15 years
	Rachel Chang	CH2M	Senior Environmental Engineer / 20 years
	Michael Hoffmann	CH2M	Senior Planner / 14 years
	Tom Schwetz	LTD	Planning and Development Director
	James McGrath	CH2M	Senior Designer / 18 years
	Rick Attanasio	CH2M	Senior Engineer / 30 years
	Kristin Hull	CH2M	Senior Project Manager / 15 years
	Scott Richman	CH2M	Senior Project Manager / 24 years
	Sasha Luftig	LTD	Development Project Manager / 9 years

Source: MovingAhead Project Team. (2017).

1.4 Study Background

The purpose of the MovingAhead Project is to determine which high-capacity transit corridors identified in the adopted *Central Lane Metropolitan Planning Organization Regional Transportation Plan* (Lane Council of Governments [LCOG], 2011, December; RTP) and the *Lane Transit District Long Range Transit Plan* (Lane Transit District [LTD], 2014) as part of the Frequent Transit Network (FTN) are ready to advance to capital improvements programming in the near term. The study is being conducted jointly with the City of Eugene and LTD to facilitate a streamlined and cost-efficient process through concurrent planning, environmental review, and design and construction of multiple corridors. The study area includes Eugene and portions of unincorporated Lane County.

The *Lane Transit District Long-Range Transit Plan* (LTD, 2014) identifies the full Martin Luther King, Jr. Boulevard / Centennial Boulevard Corridor as a future part of the FTN. Initially, MovingAhead considered options on Centennial Boulevard to serve Springfield as part of this corridor. Because Springfield does not have the resources available to consider transit enhancements on Centennial Boulevard at this time, MovingAhead will only develop Emerald Express (EmX) and Enhanced Corridor Alternatives within Eugene. Figure 1.4-1 presents LTD's existing and future bus rapid transit (BRT) system.

Figure 1.4-1. Lane Transit District's EmX System

Source: LTD. (2015, Amended 2015, June).

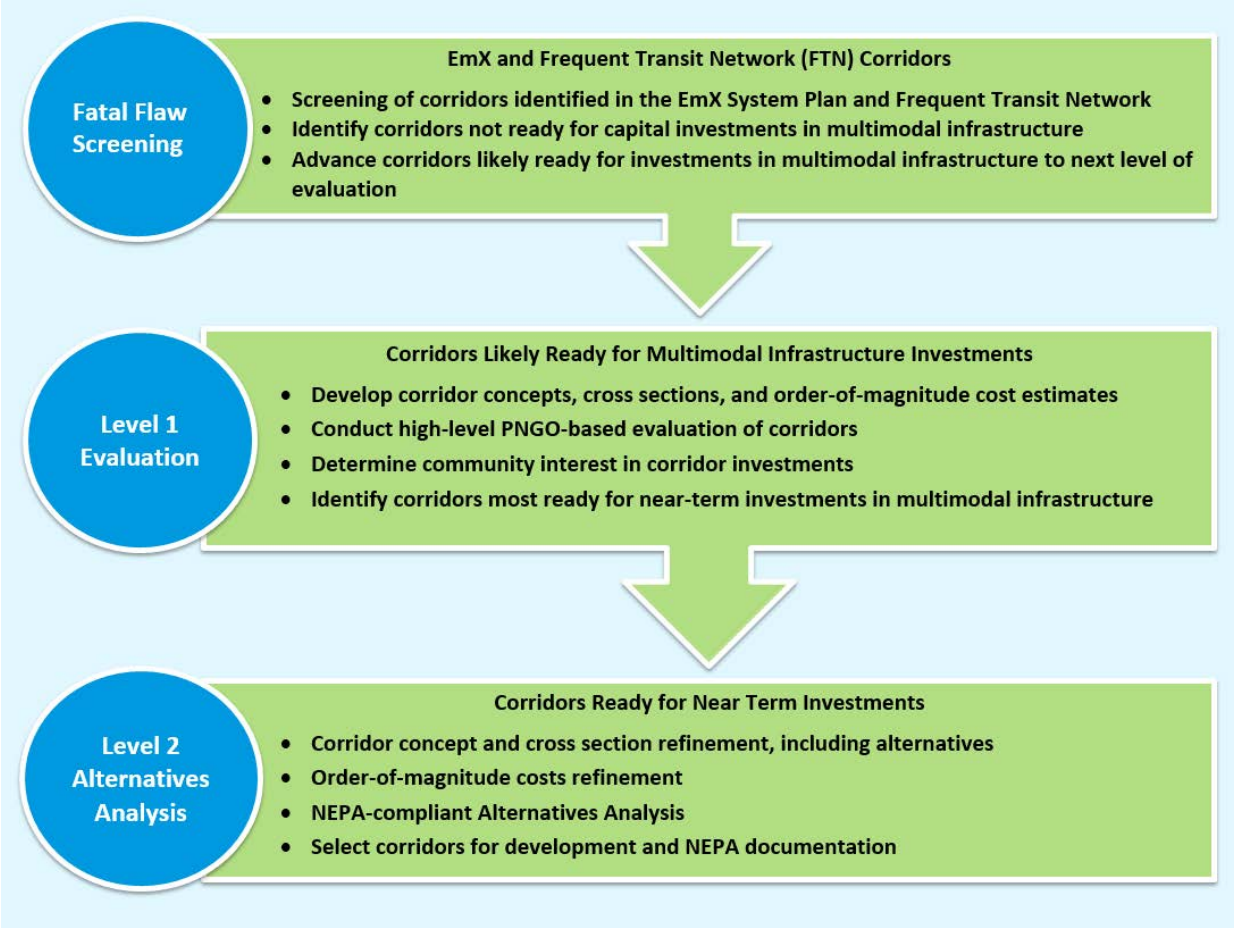
1.5 Screening and Evaluation of Multimodal Options

The MovingAhead Project process includes two phases. This first phase has three discrete but closely related tasks: identifying transit improvements; identifying improvements for bicyclists, pedestrians, and users of mobility devices; and preparing a NEPA-compliant evaluation of alternatives focused on the region's transportation system. Corridor options identified as part of the first phase were developed using multimodal cross sections that include variations on automobile, truck, and bus travel lanes; bicycle lanes; landscaping strips; and sidewalks. At the end of the first phase, the City of Eugene and LTD will select the corridors that are most ready for near-term capital improvements and prioritize improvements for funding. The selected corridors will be advanced to the second phase, which will focus on preparing NEPA environmental reviews (Documented Categorical Exclusions), and initiating the Federal Transit Administration (FTA) project development process.

1.5.1 Fatal Flaw Screening

The project team conducted a fatal flaw screening in February 2015 to identify which of the 10 corridors should not move forward to the Level 1 Screening Evaluation (Figure 1.5-1). This high-level evaluation used criteria based on MovingAhead's Purpose, Need, Goals, and Objectives (LTD, 2015, Amended 2015, June) and existing data to determine which corridors were not ready for capital investment in BRT or multimodal infrastructure in the next 10 years. The screening was conducted with local, regional, and state agency staff. Of the 10 corridors identified, the following three corridors were not advanced from the fatal flaw screening to the Level 1 Screening Evaluation: 18th Avenue, Bob Straub Parkway, and Randy Papé Beltline Highway. Table 1.5-1 shows the results of the fatal flaw screening.

Figure 1.5-1. MovingAhead Phase 1 Steps



Source: Wannamaker Consulting. (2015).

Although originally advanced from the fatal flaw screening, the Main Street-McVay Highway Corridor was also not advanced to the Level 1 Screening Evaluation because the Springfield City Council (on May 18, 2015) and LTD Board (on May 20, 2015) determined that the corridor is ready to advance to a study to select a locally preferred transit solution. At the time (May 2015), the Main Street-McVay Highway Corridor was on a schedule ahead of the MovingAhead Project schedule. If the Main Street-McVay Highway Corridor study schedule is delayed and its progress coincides with this project, the corridor could be reincorporated back into MovingAhead.

Table 1.5-1. Results of the Fatal Flaw Screening

Corridor	Advanced to Level 1	Consider Later
Highway 99	✓	
River Road	✓	
Randy Papé Beltline		✓
18th Avenue		✓
Coburg Road	✓	
Martin Luther King Jr. Boulevard / Centennial Boulevard	✓	
30th Avenue to Lane Community College	✓	
Main Street-McVay Highway	✓	
Valley River Center	✓	
Bob Straub Parkway		✓

Source: LTD and City of Eugene. (2015, June).

The six remaining multimodal corridors were advanced to the Level 1 Screening Evaluation to determine how they compared with each other in meeting the Purpose, Need, Goals, and Objectives.

1.5.2 Level 1 Screening Evaluation

The Level 1 Screening Evaluation assessed how each corridor would perform according to the Purpose, Need, Goals, and Objectives of MovingAhead. The Level 1 Screening Evaluation used existing studies and readily available data to evaluate each corridor. Based on community input and technical analysis, the following corridors and alternatives were advanced from the Level 1 Screening Evaluation to the Level 2 Alternatives Analysis (AA) (Table 1.5-2):

- No-Build Alternatives: all corridors
- Enhanced Corridor and EmX Alternatives:
    - Highway 99 Corridor
    - River Road Corridor
    - 30th Avenue to Lane Community College (LCC) Corridor
    - Coburg Road Corridor
- Enhanced Corridor Alternative:
    - Martin Luther King Jr. Boulevard Corridor

The Valley River Center Corridor received the least public support during public outreach and was not carried forward to the Level 2 AA.

For a detailed discussion of alternatives and design options considered for each corridor, but not carried forward to the Level 2 AA, please refer to the *Alternatives and Design Options Considered but Eliminated Technical Memorandum* (CH2M, 2016).

Table 1.5-2. Corridors and Transit Alternatives Advanced to the Level 2 Alternatives Analysis

Corridor	No-Build	Enhanced Corridor	EmX
Highway 99	✓	✓	✓
River Road	✓	✓	✓
30th Avenue to Lane Community College	✓	✓	✓
Coburg Road	✓	✓	✓
Martin Luther King, Jr. Boulevard	✓	✓	

Source: CH2M. (2016).

1.5.3 Level 2 Alternatives Analysis

To guide the Level 2 AA, LTD prepared new ridership forecasts and related evaluation measures using the LCOG regional model. Base-year and future-year forecasts were prepared for corridor alternatives based upon updated inputs and transit networks specific to each corridor. The planning horizon year used for the Level 2 AA is 2035. The built and natural environments, transit operations, traffic, finance, historical resources, and other areas were also evaluated as part of the Level 2 AA. The findings from the Level 2 AA will aid LTD and the City of Eugene in determining how corridors should be prioritized for capital investments over the next 5 years. Selected corridors will be advanced to Phase 2.

1.6 Purpose and Need

The prioritization of capital investments in multimodal transit corridors is a powerful tool for implementing local and regional comprehensive land use and transportation plans, agency strategic plans, and other community planning documents. Capital investments in multimodal transit corridors can have a substantial impact on patterns of growth and development. By coordinating the timing of, and prioritizing the funding for, strategic multimodal capital investments, the MovingAhead Project (a multimodal transit corridor study) helps ensure that future development is consistent with our region's plans and vision.

The Purpose and Need Statement was refined based on public and agency input.

1.6.1 Purpose

The purpose of the MovingAhead Project is to:

- Develop a Capital Improvements Program that forecasts and matches projected revenues and capital needs over a 10-year period
    - Balance desired multimodal transit corridor improvements with the community's financial resources
    - Ensure the timely and coordinated construction of multimodal transit corridor infrastructure
    - Eliminate unanticipated, poorly planned, or unnecessary capital expenditures
- Identify the most economical means of financing multimodal transit corridor capital improvements
- Establish partnerships between LTD, City of Eugene, and other local agencies that prioritize multimodal transit infrastructure needs and promote interagency cooperation
- Ensure that multimodal transit corridor investments are consistent with local comprehensive land use and transportation plans

1.6.2 Need

The need for the MovingAhead Project is based on the following factors:

- LTD's and the region's commitment to implementing the region's vision for BRT in the next 20 years consistent with the RTP that provides the best level of transit service in a cost-effective and sustainable manner.
- Need for streamlined environmental reviews to leverage systemwide analysis.
- Need to build public support for implementation of the systemwide vision.
- Selection of the next EmX / FTN corridors is based on long-range operational and financial planning for LTD's service.

1.6.3 Goals and Objectives

Goal 1: Improve multimodal transit corridor service

- Objective 1.1: Improve transit travel time and reliability
- Objective 1.2: Provide convenient transit connections that minimize the need to transfer
- Objective 1.3: Increase transit ridership and mode share in the corridor
- Objective 1.4: Improve access for people walking and bicycling, and to transit
- Objective 1.5: Improve the safety of pedestrians and bicyclists accessing transit, traveling in and along the corridor, and crossing the corridor

Goal 2: Meet current and future transit demand in a cost-effective and sustainable manner

- Objective 2.1: Control the increase in transit operating cost to serve the corridor
- Objective 2.2: Increase transit capacity to meet current and projected ridership demand
- Objective 2.3: Implement corridor improvements that provide an acceptable return on investment
- Objective 2.4: Implement corridor improvements that minimize impacts to the environment and, where possible, enhance the environment
- Objective 2.5: Leverage funding opportunities to extend the amount of infrastructure to be constructed for the least amount of dollars

Goal 3: Support economic development, revitalization, and land use redevelopment opportunities for the corridor

- Objective 3.1: Support development and redevelopment as planned in other adopted documents
- Objective 3.2: Coordinate transit improvements with other planned and programmed pedestrian and bicycle projects
- Objective 3.3: Coordinate transit improvements with other planned and programmed roadway projects
- Objective 3.4: Minimize adverse impacts to existing businesses and industry
- Objective 3.5: Support community vision for high capacity transit in each corridor
- Objective 3.6: Improve transit operations on state facilities in a manner that is mutually beneficial to vehicular and freight traffic flow around transit stops and throughout the corridor
- Objective 3.7: Improve transit operations in a manner that is mutually beneficial to vehicular traffic flow for emergency service vehicles

1.6.4 Evaluation Criteria

Evaluation criteria will be used during the Trade-off Analysis, which is part of the Level 2 AA, to aid in determining how well each of the corridor alternatives would meet the project's Purpose, Need, Goals, and Objectives. The evaluation criteria require a mix of quantitative data and qualitative assessment. The resulting data will be used to measure the effectiveness of each proposed corridor alternative and to assist in comparing and contrasting the alternatives and options. In Table 1.6-1, evaluation criteria are

listed for each of the project's objectives. Some objectives have only one criterion for measuring effectiveness, while others require several criteria.

Table 1.6-1. Evaluation Criteria

Goals and Objectives		Evaluation Criteria
Goal 1: Improve multimodal transit corridor service		
Objective 1.1:	Improve transit travel time and reliability	• Round trip p.m. peak transit travel time between select origins and destinations • On-time performance (no more than 4 minutes late) of transit service
Objective 1.2:	Provide convenient transit connections that minimizes the need to transfer	• Number of transfers required between heavily used origin-destination pairs
Objective 1.3:	Increase transit ridership and mode share in the corridor	• Average weekday boardings on corridor routes • Transit mode share along the corridor • Population within 0.5 mile of transit stop • Employment within 0.5 mile of transit stop
Objective 1.4:	Improve access for people walking and bicycling, and to transit	• Connectivity to existing pedestrian facilities • Connectivity to existing bicycle facilities
Objective 1.5:	Improve the safety of pedestrians and bicyclists accessing transit, traveling in and along the corridor, and crossing the corridor	• Opportunity to provide a safe and comfortable environment for pedestrians and bicyclists in the corridor
Goal 2: Meet current and future transit demand in a cost-effective and sustainable manner		
Objective 2.1:	Control the increase in transit operating cost to serve the corridor	• Cost per trip • Impact on LTD operating cost • Cost to local taxpayers
Objective 2.2:	Increase transit capacity to meet current and projected ridership demand	• Capacity of transit service relative to the current and projected ridership
Objective 2.3:	Implement corridor improvements that provide an acceptable return on investment	• Benefit / cost assessment of planned improvements
Objective 2.4:	Implement corridor improvements that minimize impacts to the environment and, where possible, enhance the environment	• Results of screening-level assessment of environmental impacts of transit solutions
Objective 2.5:	Leverage funding opportunities to extend the amount of infrastructure to be constructed for the least amount of dollars	• Number and dollar amount of funding opportunities that could be leveraged • Meet the FTA's Small Starts funding requirements

Table 1.6-1. Evaluation Criteria

Goals and Objectives		Evaluation Criteria
Goal 3:	**Support economic development, revitalization and land use redevelopment opportunities for the corridor**	
Objective 3.1:	Support development and redevelopment as planned in other adopted documents	• Consistent with the BRT System Plan and FTN concept • Consistent with the *Regional Transportation System Plan* (Central Lane Metropolitan Planning Organization [MPO], 2007) • Consistent with local comprehensive land use plans
Objective 3.2:	Coordinate transit improvements with other planned and programmed pedestrian and bicycle projects	• Capability of transit improvement to coordinate with other planned and programmed pedestrian and bicycle projects identified in adopted plans and Capital Improvements Programs
Objective 3.3:	Coordinate transit improvements with other planned and programmed roadway projects	• Capability of transit improvement to coordinate with other planned and programmed roadway projects identified in adopted plans and Capital Improvements Programs
Objective 3.4:	Minimize adverse impacts to existing businesses and industry	• Impacts to businesses along the Corridor measured in number and total acres of properties acquired, parking displacements, and access impacts. • Impact on freight and delivery operations for Corridor businesses
Objective 3.5:	Support community vision for high capacity transit in corridor	• Community vision includes high capacity transit in corridor
Objective 3.6:	Improve transit operations on state facilities in a manner that is mutually beneficial to vehicular and freight traffic flow around transit stops and throughout the corridor	• Impact on current and future year intersection level of service on state facilities • Impact on current and future year p.m. peak hour auto / truck travel times on state facilities
Objective 3.7:	Improve transit operations in a manner that is mutually beneficial to vehicular traffic flow for emergency service vehicles	• Qualitative assessment of potential impacts to emergency service vehicle traffic flow and access

Source: LTD and City of Eugene. (2015, June).

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2 Alternatives Considered

This section briefly reviews the major features of the alternatives considered in the Level 2 AA. For full details on each alternative and the five corridors described in this technical report – Highway 99, River Road, 30th Avenue to LCC, Coburg Road, and Martin Luther King, Jr. Boulevard – refer to the *MovingAhead Level 2 Definition of Alternatives* (CH2M et al., 2016). Each corridor location is shown on Figures 2.1-1 and 2.1-2 for the Enhanced Corridor Alternatives and the EmX Alternatives, respectively.

Figure 2.1-1. Enhanced Corridor Alternative Overview

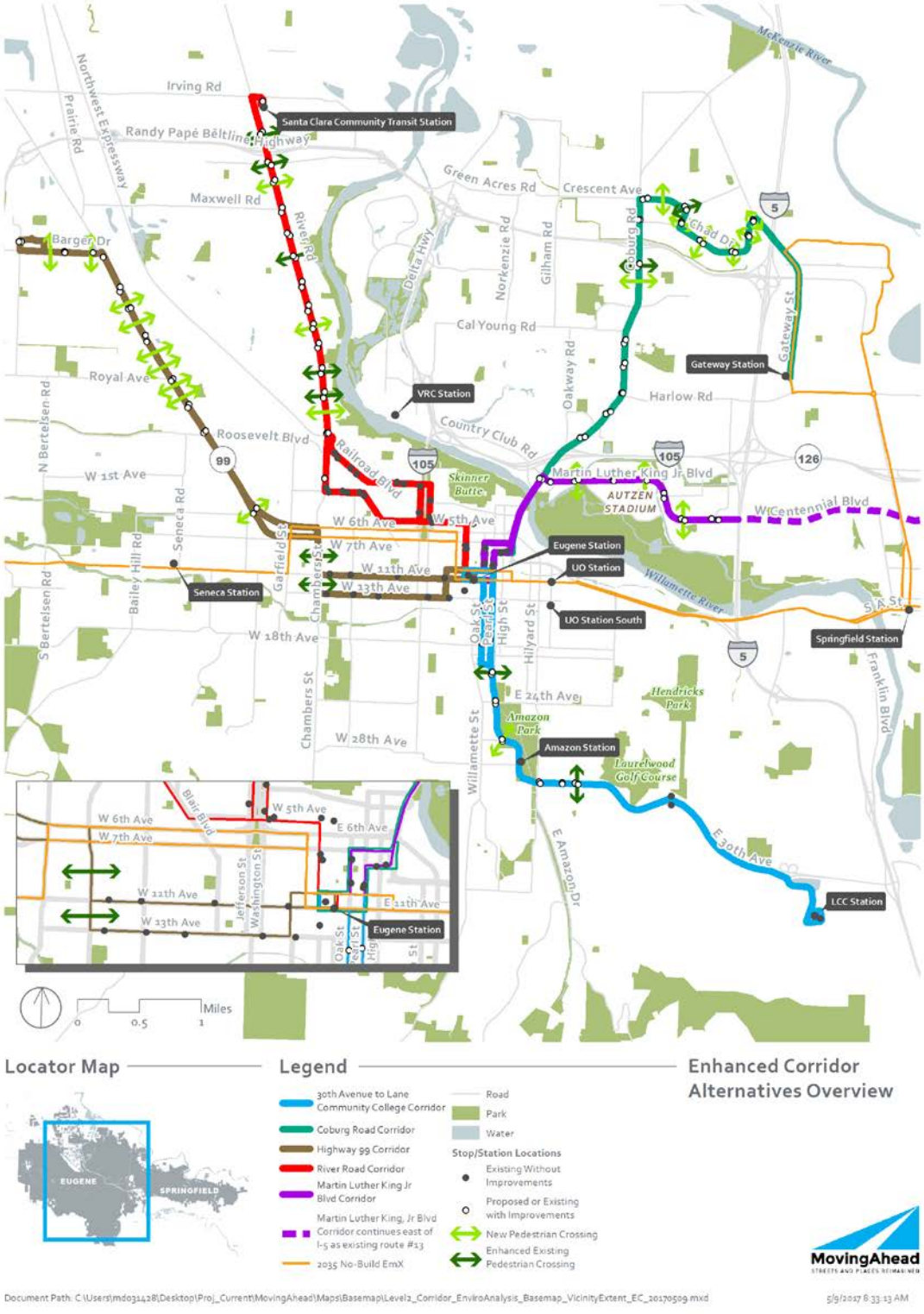
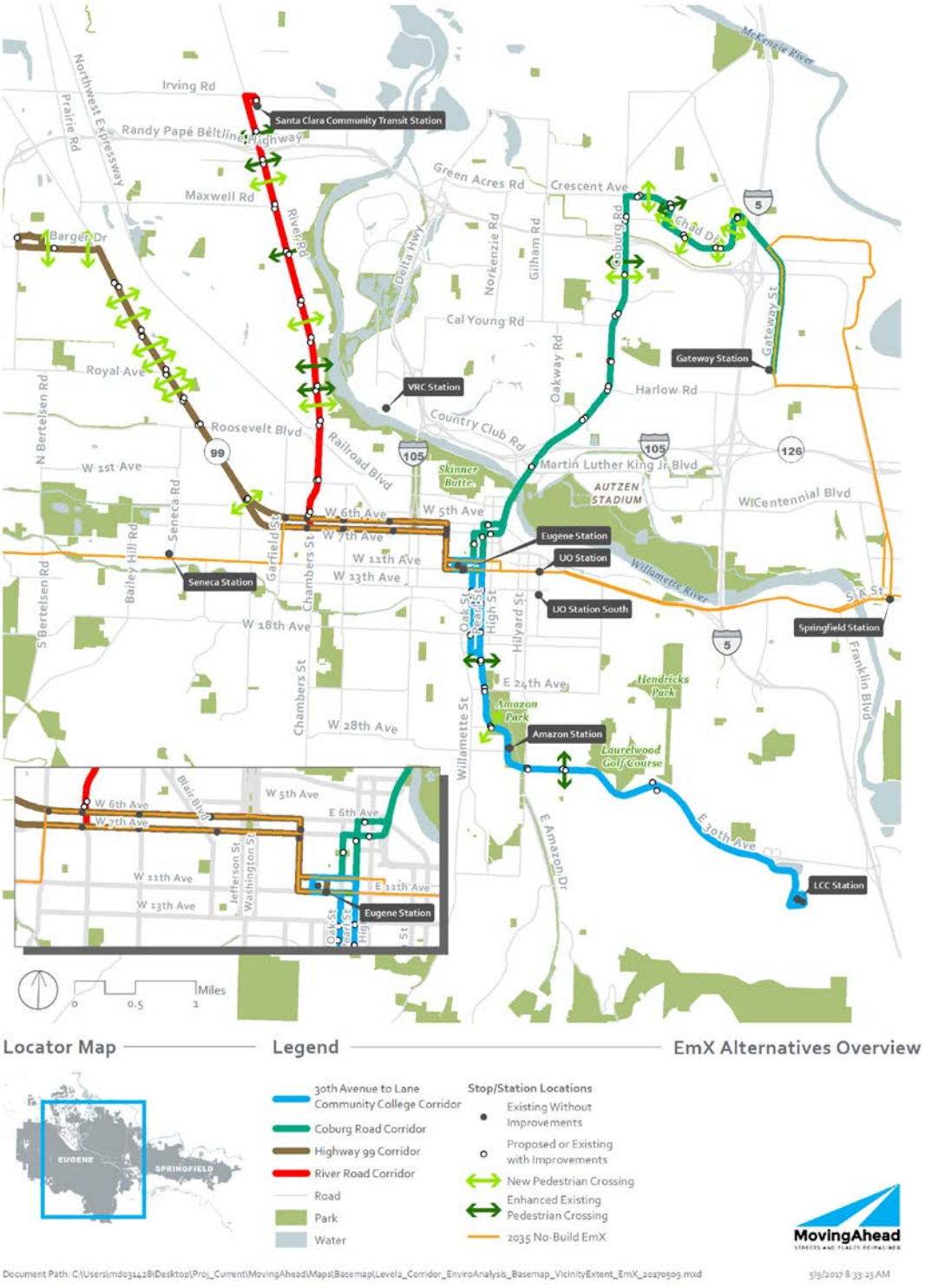


Figure 2.1-2. EmX Alternative Overview



2.1 No-Build Alternative Transit Network

This section describes the No-Build Alternative transit network, which is based on projected conditions in the year 2035, the project's environmental forecast year. For each corridor, the No-Build Alternative serves as a reference point to gauge the benefits, costs, and effects of the build alternatives.

2.1.1 Capital Improvements

Under the No-Build Alternative, the following capital improvements are anticipated by 2035:

- **West Eugene EmX Extension**. Currently under construction, the West Eugene EmX Extension (WEEE) project and its associated capital improvements will be completed in 2017.
- **Santa Clara Community Transit Center**. The existing River Road Station is located at the southeast corner of the River Road / Randy Papé Beltline Highway interchange between the eastbound on-ramp and River Avenue. To meet growing demand and avoid the impacts of increasing congestion, LTD plans to relocate the River Road Station to a site north of the Randy Papé Beltline Highway at the southeast corner of River Road and Hunsaker Lane. Once relocated to the new site, the River Road Station would be renamed the Santa Clara Community Transit Center. This new transit center is planned to include a mix of uses including a park and ride lot, residential housing, community space, and commercial uses. The River Road Station relocation to the new site is anticipated to be completed by the end of 2018.
- **Main Street EmX Extension**. Included in the RTP and currently under study, the extension of the existing Franklin EmX line on Main Street from Springfield Station to Thurston Station and associated capital improvements (e.g., stations, bicycle and pedestrian facilities, and signal modifications) is anticipated to be completed within the 20-year planning horizon (2035). The No-Build Alternative transit network assumes EmX service on Main Street. However, the outcome of this study, and the ultimate improvements chosen, are uncertain at this time.
- **McVay Highway Enhanced Corridor**. Included in the RTP and currently under study, Enhanced Corridor service from Springfield Station on McVay Highway to LCC and associated capital improvements (e.g., improved stops, transit queue jumps, and improved bicycle and pedestrian crossings) is anticipated to be completed within the 20-year planning horizon (2035).

2.1.2 Transit Operations

The No-Build Alternatives for each corridor include changes to transit service anticipated as a result of the WEEE project, Main Street EmX Extension project, development of the Santa Clara Community Transit Center, and other changes to fixed route service. The following changes to the existing 2016 fixed route services are anticipated by 2035:

- Eliminated routes:
    - Route 11 (replaced by Main Street EmX service)
    - Route 32 (replaced by WEEE service)
    - Route 76 (replaced by WEEE service)
    - Route 85 (replaced by Enhanced Corridor service on the McVay Highway)
    - Route 43 (replaced by WEEE service)
- Other route modifications:
    - Add WEEE service (replaces Route 43 service on W. 11th Avenue) as extension of existing EmX service
    - Add Main Street EmX service from Springfield Station to Thurston Station
    - Add Route 2 with service from Barger Drive / Echo Hollow Road to Eugene Airport
    - Add Route 16 to connect north and south of Main Street with EmX service

    - Add Enhanced Corridor service on McVay Highway from Springfield Station to LCC (replaces Route 85)
    - Reroute Route 33 and extend to Amazon Parkway
    - Reroute Route 36 to extend north of W. 11th Avenue to Barger Drive (replaces Route 43)
    - Reroute Route 41 via Highway 99 / Royal Avenue / W. 11th Avenue
    - Reroute Route 40 via Royal Avenue / Elmira Road / Roosevelt Boulevard / Chambers Street / W. 2nd Avenue / Oak and Pearl Streets
    - Add Route 44 paralleling Route 40 above to serve West Eugene
    - Reroute Route 55 to extend to Santa Clara Community Transit Center
    - Reroute Route 93 with service continuing to Eugene Station via Seneca Station and service terminating at the WEEE terminus
- Change in service frequencies:
    - Increase service on Route 24 from 30-minute peak frequencies to 15-minute peak frequencies
    - Increase service on Route 28 from approximately 30-minute peak frequencies (varying 20- to 30-minute intervals) to 15-minute peak frequencies
    - Increase service on Route 41 from 30- and 15-minute peak frequencies to 15-minute peak frequencies
    - Increase service on Route 51 from 60-minute off-peak frequencies to 30-minute off-peak frequencies
    - Increase service on Route 52 from 60-minute off-peak frequencies to 30-minute off-peak frequencies
    - Increase service on Route 66 from 30- and 15-minute weekday a.m. peak, off-peak, and p.m. peak frequencies to 15-minute weekday a.m. peak, off-peak, and p.m. peak frequencies
    - Increase service on Route 67 from approximately 30-minute weekday a.m. peak, off-peak, and p.m. peak frequencies to 15-minute weekday a.m. peak, off-peak, and p.m. peak frequencies
    - Increase service on Route 78 from approximately 60-minute frequencies from 8 a.m. to 6 p.m. to 30-minute weekday a.m. peak, off-peak, and p.m. peak frequencies
    - Increase service on Route 79x from 30-minute peak frequencies to 10-minute peak frequencies, and modify off peak frequencies to 15 minutes from between 10 and 30 minutes currently
    - Decrease a.m. peak service on Route 93 from 60-minute frequencies to 120-minute frequencies during a.m. peak hours, and increase from no service between Veneta and the WEEE terminus to 120-minute frequencies during p.m. peak hours (off-peak service is 120-minute frequencies between Veneta and the WEEE terminus)
    - Decrease a.m. peak service on Route 96 from 30-minute frequencies to 60-minute frequencies, and increase off-peak service from no service between 8:20 a.m. and 3:40 p.m. to 60-minute off-peak frequencies

Key transportation improvements specific to each corridor are described under each corridor's No-Build Alternative.

2.2 Enhanced Corridor Alternatives

Enhanced Corridor Alternatives are intended to address the project's Purpose, Need, Goals, and Objectives without major transit capital investments, instead focusing on lower-cost capital improvements, operational improvements, and transit service refinements. Features could include

transit queue jumps (lanes for buses that allow the bus to "jump" ahead of other traffic at intersections using a separate signal phase), stop consolidation, enhanced shelters, and redesigned service to improve cross-town connectivity. These features improve reliability, reduce transit travel time, and increase passenger comfort.

Enhanced Corridor service would run from 6:45 a.m. to 11:30 p.m. weekdays, 7 a.m. to 11 p.m. Saturdays, and 8 a.m. to 8 p.m. Sundays. Service frequencies are assumed to be 15 minutes during all periods.

2.3 EmX Alternatives

EmX (BRT) Alternatives are characterized by exclusive guideways (business access and transit lanes [BAT] or bus-only lanes); branded, multi-door 60-foot-long BRT vehicles; enhanced stations with level boarding platforms instead of stops; off-board fare collection; signal priority; wider stop spacing; and frequent and redesigned service to improve cross-town connectivity.

EmX service is assumed to run from 6:45 a.m. to 11:30 p.m. weekdays, 7 a.m. to 11 p.m. Saturdays, and 8 a.m. to 8 p.m. Sundays. Service frequencies are assumed to be 10 minutes during all periods.

2.4 Highway 99 Corridor

The Highway 99 Corridor begins at the Eugene Station, travels through downtown, then extends northwest along Highway 99 to Barger Drive, turning west at Barger Drive to terminate on Cubit Street north of the intersection of Barger Drive and Cubit Street east of the Randy Papé Beltline Highway. This corridor is approximately 10.5 round-trip miles.

2.4.1 No-Build Alternative

The Highway 99 Corridor No-Build Alternative includes existing roadway, bicycle, pedestrian, and transit facilities in the corridor, as well as planned improvements in the *DRAFT Eugene 2035 Transportation System Plan* (City of Eugene, 2016; Draft Eugene 2035 TSP). The No-Build Alternative would not include capital improvements on Highway 99. As part of the Draft Eugene 2035 TSP, the following transportation improvements are planned along or adjacent to the corridor:

- Upgrade Bethel Drive, from Highway 99 to Roosevelt Boulevard, to a two-lane urban facility with sidewalks on both sides of the road, bicycle lanes, and planting strips
- Widen Barger Drive immediately west of the Randy Papé Beltline Highway interchange to include an additional travel lane in each direction
- Add a shared-use path on the west side of Highway 99 from Roosevelt Boulevard south to the intersection of W. 7th Avenue and Garfield Street (the section of this project from Roosevelt to W. 5th Avenue has been completed)
- Add bicycle lanes on Garfield Street from Roosevelt Boulevard south to W. 6th Avenue
- Add a bicycle lane on W. 6th Avenue from Garfield Street to W. 5th Avenue
- Complete the sidewalk network on Highway 99 from Roosevelt Boulevard south to Garfield Street
- Add a shared-use path on Roosevelt Boulevard from Maple Street to Highway 99
- Add a bicycle lane on Roosevelt Boulevard from Highway 99 east to railroad tracks

Under the No-Build Alternative, Highway 99 Corridor service would remain at 15-minute headways during peak periods and 30-minute headways during off-peak periods and evenings. Under the No-Build Alternative, a slight change is also made to Route 93, which would stop at the Pearl Buck Center in the absence of Route 44.

2.4.2 Enhanced Corridor Alternative

Capital improvements under the Highway 99 Corridor Enhanced Corridor Alternative would include enhanced bicycle and pedestrian crossings; improvements to existing bus stops and the construction of new stops; construction of queue jumps at some intersections; traffic signal reconstruction; construction of bus-only left turn lanes; and roadway widening at some locations in the corridor.

Existing conventional fixed-service routes would remain the same as with the No-Build Alternative, with the exception of the elimination of Route 41. Service west of WinCo would also remain the same or be improved.

2.4.3 EmX Alternative

The Highway 99 Corridor EmX Alternative would include creating BAT lanes on segments of W. 7th Avenue and Highway 99; reconstructing the Highway 99 / Roosevelt Boulevard intersection (traffic signal, turn lanes, and queue jump); completing other intersection modifications in the corridor; roadway widening at some locations; and constructing nine new enhanced pedestrian and bicycle crossings, new sidewalks, and a pedestrian bridge across the railroad line from Highway 99 to the Trainsong neighborhood. Four existing bus stop locations would be improved to EmX stations, in addition to constructing new stations. Some existing EmX stations would be used for the Highway 99 Corridor EmX service.

Route 44 is a conventional service line added to this alternative only, providing coverage on 11th and 13th Avenues as well as service to the Pearl Buck Center on W. 1st Avenue, with 30-minute headways during all periods. This would be a decrease in service for the 11th and 13th Avenue corridors that currently have 15-minute peak service. Route 44 is primarily intended to replace conventional service lost with the removal of the existing Route 41. Route 41 would be replaced with the Highway 99 Corridor EmX service described in this alternative.

2.5 River Road Corridor

The River Road Corridor begins at the Eugene Transit Center, travels through downtown and then north to the Santa Clara Community Transit Center (intersection of Hunsaker Lane and River Road). This corridor is approximately 10.3 round-trip miles.

2.5.1 No-Build Alternative

The River Road Corridor No-Build Alternative would include existing roadway, bicycle, pedestrian, and transit facilities in the corridor, as well as planned improvements in the Draft Eugene 2035 TSP. There would be no additional major bus capital improvements under the No-Build Alternative.

As part of the Draft Eugene 2035 TSP, the following transportation improvements are planned adjacent to and along the River Road Corridor:

- Upgrade the Hunsaker Lane / Beaver Street intersection to urban collector standards, including two travel lanes, a center turn lane, bicycle lanes, sidewalks on both sides of the road, and planting strips from River Road to Division Avenue
- Provide bicycle boulevards on Ruby Avenue, Horn Lane, Arbor Drive, and Park Avenue
- Include sidewalks on Hunsaker Lane, Howard Avenue, and Hilliard Lane
- Provide protected bicycle lanes on River Road from the Northwest Expressway to Division Avenue

Under the No-Build Alternative, River Road Corridor service would remain at 30-minute headways for both Routes 51 and 52 (which together effectively provide 15-minute service during peak periods) and

off-peak periods. After 6:15 p.m., there is no longer a combined 15-minute frequency, and headways return to 30 minutes.

2.5.2 Enhanced Corridor Alternative

Capital improvements constructed as part of the River Road Corridor Enhanced Corridor Alternative would include BAT lanes on River Road approaching the Randy Papé Beltline Highway and other roadway improvements, like traffic signal reconstruction at certain locations along the corridor. Improvements to existing bus stops and the construction of new stops would also occur.

Routes 51 and 52 would be eliminated, and Enhanced Corridor service for River Road includes a split alignment in order to serve portions covered by those routes at 30-minute headways. In this arrangement, the area from Railroad Boulevard to W. 1st Avenue is served by one Enhanced Corridor service as a replacement for the Route 51 service, while the area along Blair Boulevard and W. 2nd Avenue is served by the other alignment to replace service lost with removal of Route 52. Those alignments meet at Railroad Boulevard and River Road to serve the River Road Corridor with consistent 15-minute headways.

2.5.3 EmX Alternative

New construction under the River Road Corridor EmX Alternative would include lane repurposing on River Road for BAT lanes, constructing short sections of exclusive bus lanes near the Randy Papé Beltline Highway, reconstructing traffic signals and intersections at several locations, constructing new bicycle and pedestrian crossings, improving existing stops to EmX stations, and constructing new stations. Some existing EmX stations would be used with the River Road EmX service.

Transit service changes would also include modifying headways on Route 40 during the a.m. and p.m. peak hours to 15 minutes, developing a new Route 50 “River Road Connector” with 30-minute headways all day, and eliminating Routes 51, 52, and 55. These replacements ensure no loss in existing coverage or service.

2.6 30th Avenue to Lane Community College Corridor

The 30th Avenue to LCC Corridor begins at Eugene Station and travels south along Pearl Street (outbound) to Amazon Parkway, then on E. 30th Avenue to its terminus at the LCC Station. The return trip travels on Oak Street (inbound), which is the northbound couplet to Pearl Street. This corridor is approximately 10.2 round-trip miles.

2.6.1 No-Build Alternative

The 30th Avenue to LCC Corridor No-Build Alternative would include existing roadway, bicycle, pedestrian, and transit facilities in the corridor, as well as planned improvements in the Draft Eugene 2035 TSP. There would be no additional major bus capital improvements to the 30th Avenue to LCC Corridor under the No-Build Alternative.

The Draft Eugene 2035 TSP identifies the following transportation improvements along or adjacent to the corridor:

- Bicycle boulevard on Alder Drive

For the portion of E. 30th Avenue in unincorporated Lane County, Lane County does not plan to improve bicycle facilities along the road.

Under the No-Build Alternative, 30th Avenue to LCC Corridor service would remain at 30-minute headways on Route 81. The Route 82 service would remain at 10-minute headways during

the a.m. peak, 15-minute headways during off-peak periods, and 20-minute headways during the p.m. peak, with no weekend service.

2.6.2 Enhanced Corridor Alternative

Capital improvements as part of the 30th Avenue to LCC Corridor Enhanced Corridor Alternative would include the construction of new bus stops, capital improvements to some existing bus stops, a new traffic signal on Amazon Parkway at E. 20th Avenue, and new bike facilities on Oak and Pearl Streets.

Under the 30th Avenue to LCC Corridor Enhanced Corridor Alternative, service to LCC provided by Routes 81 and 82 would be eliminated and replaced by Enhanced Corridor service. The direct connection between LCC and the University of Oregon Station along Route 81 would be eliminated. It would be replaced by connecting the 30th Avenue to LCC Corridor Enhanced Corridor Alternative to the Franklin EmX line with a transfer at Eugene Station.

2.6.3 EmX Alternative

The 30th Avenue to LCC Corridor EmX Alternative would include repurposing parking and general-purpose lanes to BAT lanes on Oak and Pearl Streets, constructing queue jumps, extending E. 20th Avenue, adding a new traffic signal on Amazon Parkway, and adding a new cycle track on High Street. In addition to constructing new EmX stations, existing bus stops would be improved to EmX stations in certain locations.

Service to LCC provided by Routes 81 and 82 would be replaced with EmX service. The direct connection between LCC and the University of Oregon Station along Route 81 would be eliminated. It would be replaced by connecting the 30th Avenue to LCC Corridor EmX Alternative to the Franklin EmX line with a transfer at Eugene Station.

2.7 Coburg Road Corridor

The Coburg Road Corridor begins at Eugene Station and continues to Coburg Road using the Ferry Street Bridge. The corridor continues north on Coburg Road to Crescent Avenue, east on Crescent Avenue and Chad Drive to N. Game Farm Road, and south on N. Game Farm Road and Gateway Street to the existing Gateway Station at the Gateway Mall. Although service extends from N. Game Farm Road to the Gateway Station, capital improvements for the corridor terminate at Interstate 5 (I-5). This corridor is approximately 11.2 round-trip miles.

2.7.1 No-Build Alternative

The Coburg Road Corridor No-Build Alternative includes existing roadway, bicycle, pedestrian, and transit facilities in the corridor, as well as planned improvements in the Draft Eugene 2035 TSP. There would be no additional major transportation improvements to the Coburg Road Corridor under the No-Build Alternative.

Under the No-Build Alternative, the Coburg Road Corridor service would remain at 15-minute headways on Routes 66 and 67 at all weekday times, 30-minute headways on Saturdays, and 60-minute headways on Sundays.

2.7.2 Enhanced Corridor Alternative

The Coburg Road Corridor Enhanced Corridor Alternative would include new traffic signal construction, intersection reconstruction at several locations on Coburg Road, the addition of queue jumps, and the addition of BAT lanes south of the Interstate 105 (I-105) interchange. New crossings for bicyclists and

pedestrians would be constructed. Existing bus stops would be improved and new stops would also be constructed.

Route 12 would be altered to serve Valley River Center and Marcola Road. A new route (Route 60) would be added to serve Valley River Center, and Routes 66 and 67 would be eliminated. This change would provide new service and coverage to the Cal Young neighborhood and along Hayden Bridge Way in Springfield. It would require current passengers along Harlow Road to transfer in order to get downtown.

2.7.3 EmX Alternative

Improvements to the corridor under the Coburg Road Corridor EmX Alternative would include construction of exclusive transit lanes at several locations on Coburg Road and intersection reconstruction at multiple locations. New bicycle and pedestrian crossings and EmX stations would be constructed, and some existing bus stops would be improved to EmX stations.

As in the Coburg Road Corridor Enhanced Corridor Alternative, Route 12 would be altered to serve Valley River Center and Marcola Road, and Route 60 would be added to serve Valley River Center, while Routes 66 and 67 would be eliminated. This change would provide new service and coverage to the Cal Young neighborhood and along Hayden Bridge Way in Springfield. It would require current passengers along Harlow Road to transfer in order to get downtown.

2.8 Martin Luther King, Jr. Boulevard Corridor

The Martin Luther King, Jr. Boulevard Corridor begins at Eugene Station and travels through downtown Eugene on Oak and Pearl Streets and on 7th and 8th Avenues. The corridor uses the Ferry Street Bridge to reach Martin Luther King, Jr. Boulevard and continues east on Martin Luther King, Jr. Boulevard past Autzen Stadium to Centennial Boulevard. Although transit service continues along Centennial Boulevard, capital improvements for the corridor terminate at I-5. The corridor is approximately 6.0 round-trip miles.

2.8.1 No-Build Alternative

The Martin Luther King, Jr. Boulevard Corridor No-Build Alternative includes existing roadway, bicycle, pedestrian, and transit facilities in the corridor, as well as planned improvements in the Draft Eugene 2035 TSP. The Draft Eugene 2035 TSP identifies the following transportation improvements along or adjacent to the Martin Luther King, Jr. Corridor:

- Add a center turn lane along sections of Martin Luther King, Jr. Boulevard from Club Road to Leo Harris Parkway

Under the No-Build Alternative, the Martin Luther King, Jr. Boulevard Corridor service would remain at 30-minute headways.

2.8.2 Enhanced Corridor Alternative

Capital improvements associated with the Martin Luther King, Jr. Boulevard Corridor Enhanced Corridor Alternative would include reconstructing traffic signals at the intersections of Coburg Road and Martin Luther King, Jr. Boulevard and of Martin Luther King, Jr. Boulevard and Centennial Loop; repurposing existing outside general-purpose lanes to BAT lanes on Martin Luther King, Jr. Boulevard; adding a new traffic signal at the intersection of Martin Luther King, Jr. Boulevard and Leo Harris Parkway; enhancing pedestrian crossings; constructing new bus stops; and improving existing bus stops. Existing Route 13 would be eliminated.

3 Methods and Data

This section describes the analysis methodologies and data used for the Hazardous Materials evaluation for the MovingAhead Project.

3.1 Relevant Laws and Regulations

3.1.1 Federal

Federal environmental regulatory programs that might impact roadway development originate from statutory laws and regulations. Two environmental acts that directly impact roadway projects are the Resource Conservation and Recovery Act of 1976 (RCRA) and the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA). RCRA, which was designed to regulate materials that could be defined as both a solid and a hazardous waste, is related to activities that are currently taking place. CERCLA was designed to identify sites that are contaminated as a result of past releases of a hazardous substance into the environment.

If contaminated soil or hazardous substances are discovered during construction, the handling and cleanup of the materials and the site must be conducted according to existing regulations. These include not only RCRA and CERCLA, but also the Safe Drinking Water Act, the Clean Air Act, the Toxic Substances Control Act, and other regulations.

The legal definition of hazardous waste is contained in 40 *Code of Federal Regulations* (CFR) 261.3. It is important to note that the process of identifying a chemical / waste material as a hazardous waste is complex. "Regulations for Identifying Hazardous Waste" are contained in 40 CFR 261.

FTA Circular 5010.1D, *Grant Management Requirements,* Chapter IV.2.g(4) August 27, 2012, regulates due diligence efforts by grantees during property acquisition activities.

3.1.1.1 Environmental Acts

- **RCRA.** Established for the regulation of hazardous waste and related activities that include hazardous waste generators, transporters, and storage and disposal facilities.
- **CERCLA.** Established to identify and provide for the cleanup of sites contaminated with hazardous substances from past uncontrolled releases into the environment. In addition, it provides for emergency response actions and gives the federal government the authority to assign responsibilities for contamination and subsequent cleanup via a Superfund liability.
- **Clean Water Act of 1972.** 33 United States Code (U.S.C.) 26, with amendments in 1977. Established for the regulation of discharges of pollutants into the waters of the United States. In addition, it provides standards for surface water quality.
- **Safe Drinking Water Act of 1974.** Amended in 1986 and 1996. Established drinking water standards to ensure the quality of drinking water.
- **The Superfund Amendments and Reauthorization Act of 1986 (SARA).** Amended CERCLA and introduced more stringent and detailed guidelines for cleanups. In addition, it created more complex and costly liability issues, as well as defenses against liability for potentially responsible parties.
- **SARA III.** The Emergency Planning and Community Right to Know Act of 1986. Part of the SARA amendments. Required that communities and the public be supplied with information on chemical inventories, release reporting, and accidents / spills, and provided for full public participation in planning and preparing for chemical emergencies with local industries.
- **Toxic Substances Control Act of 1976.** Established for the regulation of toxic substances such as polychlorinated biphenyl (PCBs) and related activities.

- **Federal Insecticide, Fungicide, and Rodenticide Act of 1974**. Established for the regulation of chemicals that are used as pesticides.
- **Hazardous Materials Transport Act of 1975.** Amended in 1990 and 1994. Provided for the regulation of the transportation of hazardous materials by the U.S. Department of Transportation.
- **Oil Pollution Act of 1990.** Established requirements for contingency planning to prevent and respond to oil spills.

3.1.2 State

- **Oregon Hazardous Waste Management Act.** Oregon Revised Statutes (ORS) 466.005 – 466.225. Hazardous Waste Management Rules; Oregon Administrative Rule (OAR) 340-100 et seq. Established a regulatory structure for the generation, transportation, treatment, storage, and disposal of hazardous wastes.
- **Hazardous Substance Remedial Action Rules.** ORS 465.200-465.900 and OAR 340-122 et seq. Established Oregon Department of Environmental Quality (DEQ) guidelines for assessing human health and ecology risk assessments on potential adverse effects from contamination according to Oregon DEQ risk guidelines and levels. Set standards for the degree of cleanup required.
- **Solid Waste Management.** ORS 459.005-418; OAR 340-093-097. Established a regulatory structure for the collection, transportation, treatment, storage, and disposal of solid wastes.
- **Asbestos Removal.** OAR 340-32-5620 through 5650. Established Oregon DEQ requirements for licensing and certification for asbestos workers. All workers who handle asbestos-containing materials must meet certain training, licensing, and certification requirements. OAR 340-33-010 through 100 established Oregon DEQ requirements for handling asbestos-containing materials.

3.1.3 Local

- **Hazardous Substance Discharge and Removal.** *Eugene Code* Sections 6.345 to 6.480. Established guidelines to minimize threats to the public health, safety, and welfare from releases of hazardous substances into the environment.

3.2 Area of Potential Impact

The MovingAhead Project encompasses five corridors in the City. The API for the hazardous materials evaluation includes tax lots that fully or partially fall within the area up to 0.125 mile from the centerline of the construction footprint of the build alternatives within each corridor under consideration in the Level 2 AA.

3.3 Contacts and Coordination

Government agencies were not directly contacted during the Level 1 Screening Analysis, because no data were collected. The project team contacted a state agency during the Level 2 AA.

3.3.1 Federal

Not applicable.

3.3.2 State

During the Level 2 AA, the project team contacted Oregon DEQ to obtain clarifications on environmental database information provided online.

3.3.3 Local

Not applicable.

3.4 Level 1 Screening Analysis

No data were collected for the Level 1 Screening Analysis.

3.5 Level 2 Alternatives Analysis

The major objectives of the Level 2 AA for hazardous materials were to:

- Establish the potential for the presence of hazardous materials and substances on an impacted tax lot (that is, a tax lot that overlaps with the construction footprint of the proposed corridor alternative).
- Identify properties within the vicinity of an impacted tax lot that might be involved with or were involved with activities that resulted in the generation of hazardous materials that could potentially affect the impacted tax lot.
- Provide information on how the MovingAhead Project could avoid and minimize potential effects of hazardous materials.
- Assist in the decision with regard to the selection of specific corridor alternatives.

To support the Level 2 AA, the project team researched hazardous materials sites within the API. The research consisted of a review of applicable regulatory databases of known or potential hazardous wastes sites and properties or facilities currently under investigation for potential environmental contamination. The research identified known properties or facilities that might have the potential to adversely affect environmental conditions along the corridors' alternatives. Information from the various government databases is presented as is, without additional verification for the accuracy or completeness of the information. As stated in Sections S.1 and 1.2, more detailed project-level hazardous materials analysis would occur during subsequent environmental reviews and documentation prior to commencing acquisition and construction activities associated with further development of a build alternative.

3.5.1 Data Collection

The project team reviewed the information in several databases, including the following:

- The Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) maintained by the U.S. Environmental Protection Agency (EPA). CERCLIS is the official repository for site-specific and non-site-specific data to support CERCLA. It contains information on hazardous waste site assessment / remediation from 1983 to the present.
- **Environmental Cleanup Site Information (ECSI) maintained by Oregon DEQ.** The ECSI contains sites that are, or might be, contaminated and might require cleanup (Oregon DEQ, 2016a).
- **Leaking Underground Storage Tank (LUST) Cleanup Site list maintained by Oregon DEQ.** The LUST list is a compilation of site names and addresses for sites that contain reported leaking underground storage tanks (USTs) (Oregon DEQ, 2016b).
- **UST Cleanup Site list maintained by Oregon DEQ.** The UST list is a compilation of both active and inactive UST facilities. The list does not indicate whether a spill or release has occurred. Only sites with active USTs are included in this hazardous materials evaluation.
- **Solid Waste Permitted Facilities list maintained by Oregon DEQ**. The Solid Waste Permitted Facilities list is a compilation of active permitted facilities (including landfills, waste tire storage sites and carriers).

3.5.2 Materials under Consideration

Hazardous materials may be classified in a number of different categories based on laws and regulations that define their characteristics and use. These categories include hazardous waste, hazardous substances, and toxic substances. Although often treated separately from hazardous materials, petroleum products (including crude oil and refined products such as fuels and lubricants) and natural gas are considered in the hazardous material evaluation because they may also pose a potential hazard to human health and the environment, if released.

3.5.3 Significance Thresholds

This section describes the methods used for evaluating effects and the significance criteria used in establishing thresholds for evaluating impacts under NEPA.

Pursuant to NEPA regulations (40 CFR 1500-1508), project effects were evaluated based on the criteria of context and intensity. Context means the affected environment in which a proposed project occurs. Intensity refers to the severity of the effect, which is examined in terms of the type, quality, and sensitivity of the resource involved; the location and extent of the effect; the duration of the effect (short- or long-term), and other considerations. Beneficial effects were identified and described. When no measurable effect would result, the project team determined that an impact would not occur. The intensity of adverse effects is the degree or magnitude of a potential adverse effect, described as negligible, moderate, or substantial. Context and intensity are considered together when determining whether an impact is significant under NEPA. Thus, it is possible that a significant adverse effect might still exist when the intensity of the impact was determined to be negligible or even if the impact was beneficial.

For hazardous materials, the project team defined three levels of intensity:

- An impact with negligible intensity is a risk to health and safety that could largely be mitigated.
- An impact with moderate intensity creates a known but rare or infrequent health and safety condition. Moderate intensity encompasses adverse effects of the proposals in localized areas but that would not have wide-ranging effects.
- An impact with substantial intensity creates a permanent and known health and safety condition.

3.5.4 Impacts Analysis

3.5.4.1 Impacts Analysis Approach

The hazardous materials analysis for the build alternatives focused on the potential short-term construction impacts, and the potential long-term direct effects on the environment from affected sites that federal and / or state regulatory agencies have recorded on one or more hazardous materials lists.

- Short-term construction-related impacts focused on the potential for releasing and spreading contaminated soil, sediment, or groundwater; accidental hazardous materials spills or releases; types and quantities of construction wastes and their likely treatment / disposal methods; and risks and management provisions related to the accidental release of oil or toxic chemicals.
- Long-term direct impacts focused on the potential for accidental hazardous materials spills or releases; types and quantities of operation wastes and their likely treatment / disposal methods; risks and management provisions related to the accidental release of oil or toxic chemicals; and ongoing cleanup responsibilities relating to contaminated properties acquired.

For the Level 2 AA, the project team identified and categorized the sites within the Oregon DEQ comprehensive federal and state regulatory databases into three potential risk categories – high, medium, and low. The purpose of the risk analysis was to prioritize sites to determine the need for

avoidance, remediation, and / or mitigation while considering associated costs and liability. The project team defined risk levels as follows:

- **High.** A high-risk level was assigned to contaminated sites that might create liability for LTD either because of construction activities or by acquiring all or a portion of the site. For the Level 2 AA, high-risk sites included sites overlapping with a potentially affected tax lot that was listed on the EPA CERCLIS list, the Oregon DEQ LUST list, or the Oregon DEQ ECSI list with an investigative status of either suspected – contamination suspected but not confirmed, or listed on the Confirmed Release List (CRL) and Inventory – sites with contamination confirmed or Institutional Controls in place.
- **Medium.** A medium-risk level was assigned to contaminated sites that are located between the potentially affected tax lot boundary and the API, as well as to sites that overlap with the potentially affected tax lot that have received a no further action (NFA) determination or cleanup complete status from regulatory agencies. For the Level 2 AA, medium-risk sites included sites located between the potentially affected tax lot boundary and the API listed on the CERCLIS list, the Oregon DEQ LUST list, or the Oregon DEQ ECSI list with investigative status suspected or listed on the CRL / Inventory. Medium-risk sites also included those overlapping with a potentially affected tax lot that are listed on the Oregon DEQ ECSI list with an investigative status code of NFA or sites listed on the CERCLIS list with a cleanup complete status.
- **Low.** The low-risk level was applied to known sites with no documented release of contaminants to the environment. Therefore, they would be expected to have negligible impacts related to the project. The low-risk level was also assigned to sites that are located outside of the potentially affected tax lot where past releases had occurred, but where remedial cleanup had been completed and applicable regulatory agencies had provided either an NFA determination or cleanup complete status. Sites with active, non-leaking USTs were also considered as low-risk-level sites.

3.5.4.2 Indirect and Cumulative Impacts Analysis Approach

Indirect and cumulative impacts were addressed qualitatively. The impacts analysis defined the API and temporal boundaries of the corridor alternatives and compared the relative potential impacts of the corridor alternatives to those of the No-Build Alternative. The indirect and cumulative impacts analysis focused on potential health and safety conditions associated with hazardous materials.

3.5.4.3 Mitigation Measures Analysis Approach

If the analysis identified potential hazardous material-related impacts on human health or the environment, mitigation measures might need to be considered. Typical measures include refining the alternative design to avoid the contaminated sites, or portions of sites, and identifying and implementing best management practices (BMPs) to control hazardous materials planned for use within the context of constructing, operating, or maintaining the EmX system / FTN. Section 5 discusses these measures qualitatively.

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4 Environmental Consequences

This section describes the environmental consequences of hazardous materials and hazardous wastes for the MovingAhead Project.

4.1 Affected Environment

The API for the identification of potential hazardous material or hazardous waste sites is the alternative-specific corridor, plus a 1/8-mile buffer area on either side of the corridor-alternative centerline. The API would account for hazardous materials that could be located in the vicinity of the potentially affected tax lots (that is, tax lots that overlap with the construction footprint of the proposed corridor alternative). Figures 4.1-1 through 4.1-9 show the APIs for the corridor alternatives. Table 4.1-1 shows high-, medium- and low-risk sites within the API by corridor for each alternative. Additional studies and building surveys would need to be conducted to confirm the presence or absence of contaminated environmental media, and extent of any contamination, at or near the high-risk sites. Appendix C contains a complete list of all sites in the API.

4.2 Effects Common to Most or All Build Alternatives

4.2.1 Short-Term Construction-Related Impacts

Potential construction impacts could result from encountering existing soil or groundwater contamination and from encountering containers holding hazardous materials. Soil or groundwater contamination could be found on or adjacent to contaminated sites and in utility corridors, which could be conduits for contamination. Contaminated groundwater, if present, could be encountered during construction of the MovingAhead Project.

Containers that hold hazardous materials include aboveground storage tanks and USTs (which typically contain petroleum products) and pole-mounted transformers (which might contain PCB-contaminated transformer oil). The likelihood of impacts from encountering existing contamination or hazardous materials containers would depend upon the extent and characteristics of the contamination and hazardous materials.

A variety of impacts, both beneficial and adverse, would be possible, including the following:

- Construction activities, such as grading, in the vicinity of these materials could release contaminants to soil, groundwater, and surface water.
- Contaminated materials might be uncovered, allowing more direct exposure to the public.
- Contamination might spread as a result of construction.
- Dewatering (which might occur to further construction activities) might generate large quantities of contaminated water that would need to be treated and disposed of.
- Contamination that otherwise would remain in place and potentially migrate might be discovered and the project might address the contamination.
- To accommodate project construction, contamination might be cleaned up earlier than otherwise would occur.

Figure 4.1-1. Highway 99 Corridor – Enhanced Corridor Alternative High- and Medium-Risk Hazardous Material Sites

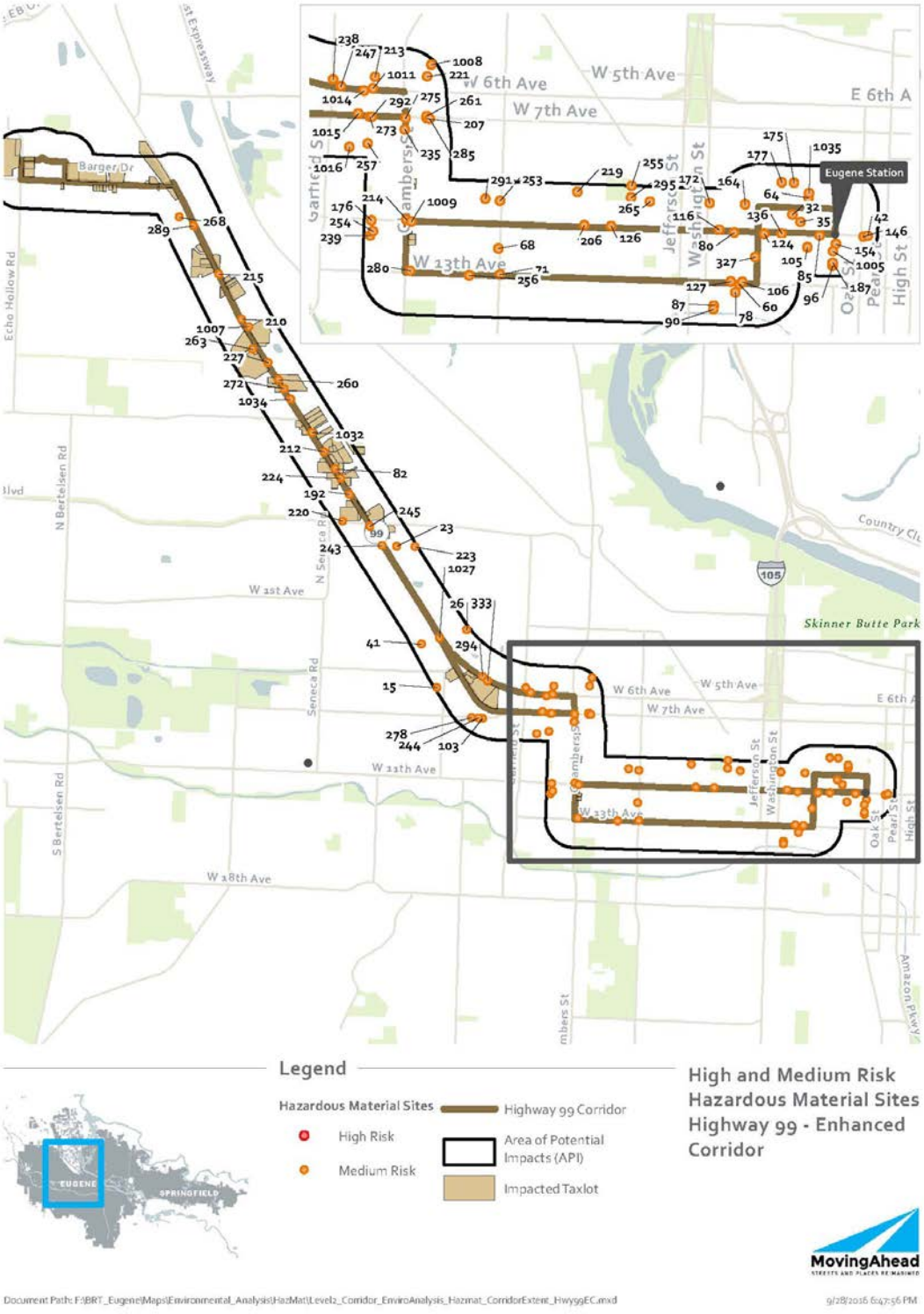

Figure 4.1-2. Highway 99 Corridor – EmX Alternative High- and Medium-Risk Hazardous Material Sites

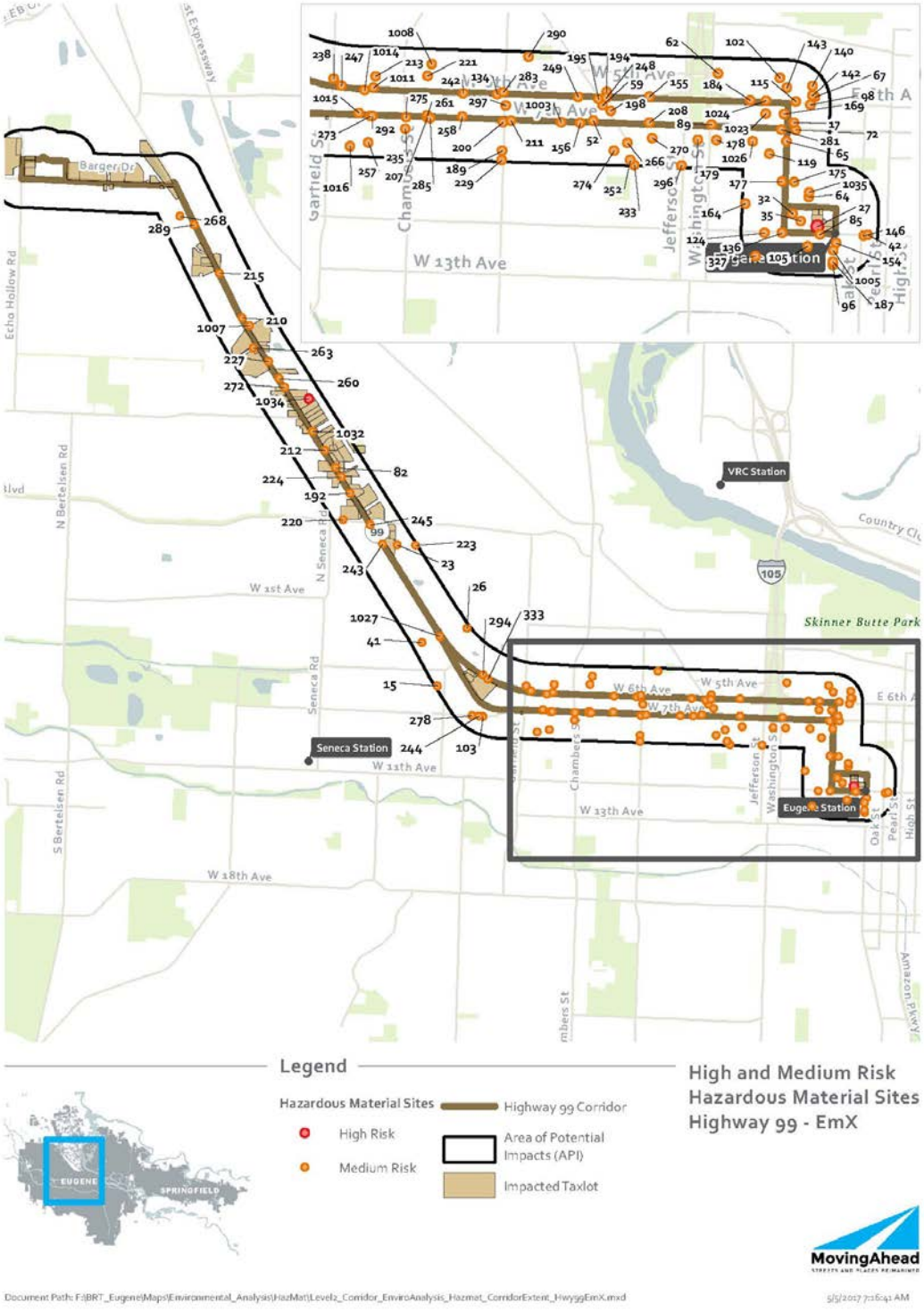

Figure 4.1-3. River Road Corridor – Enhanced Corridor Alternative High- and Medium-Risk Hazardous Material Sites

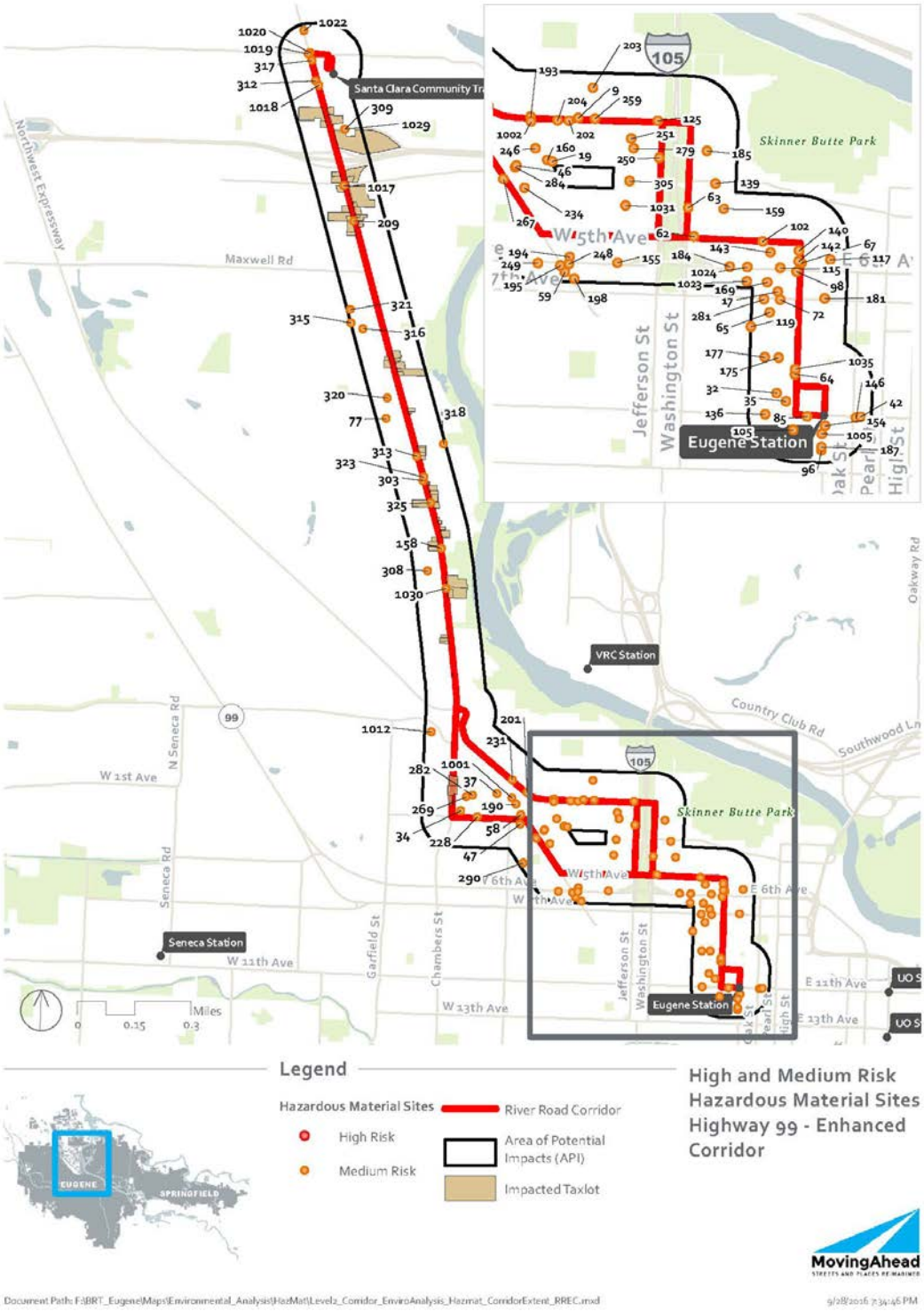

Figure 4.1-4. River Road Corridor – EmX Alternative High- and Medium-Risk Hazardous Material Sites

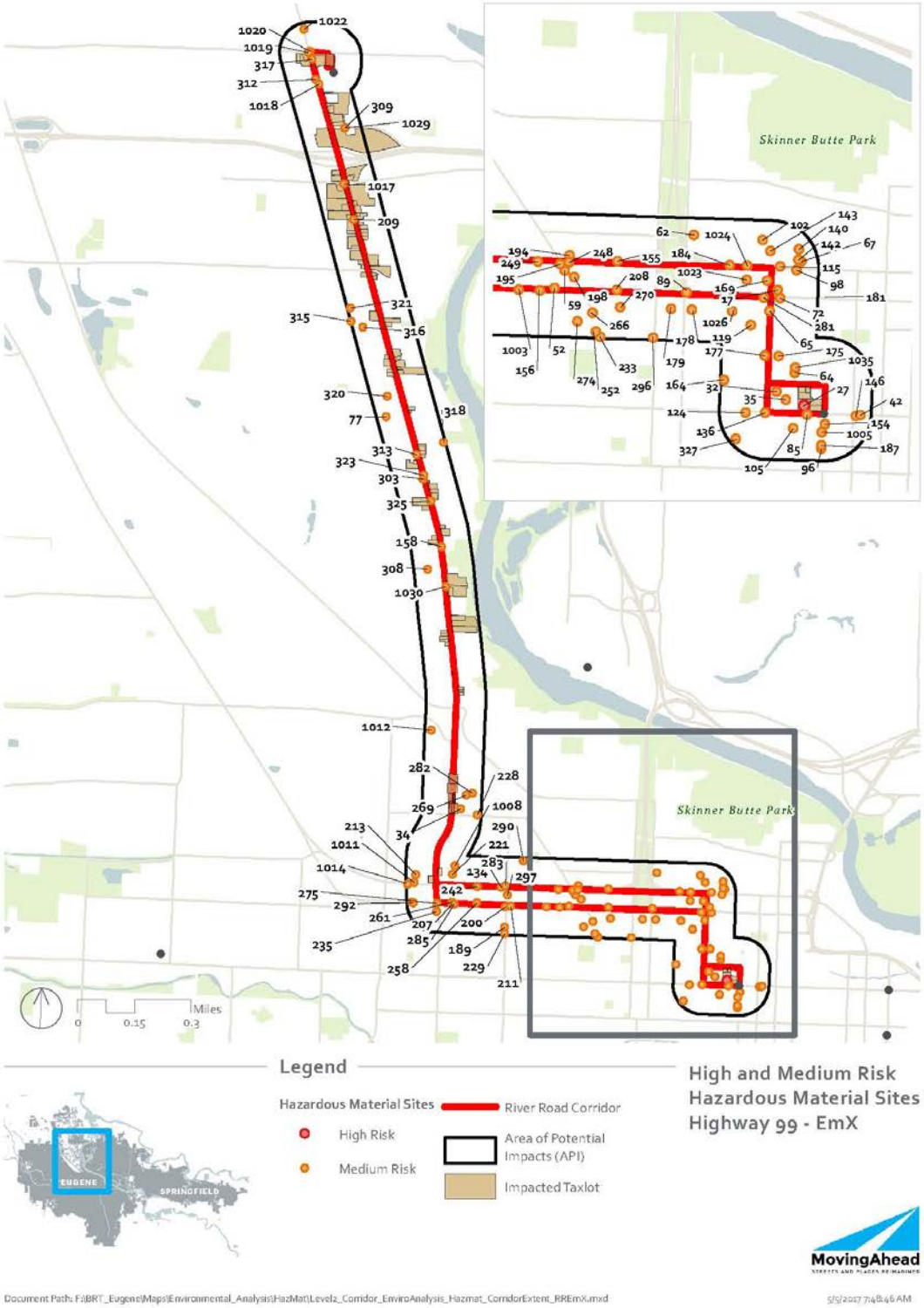

Figure 4.1-5. 30th Avenue to Lane Community College Corridor – Enhanced Corridor Alternative High- and Medium-Risk Hazardous Material Sites

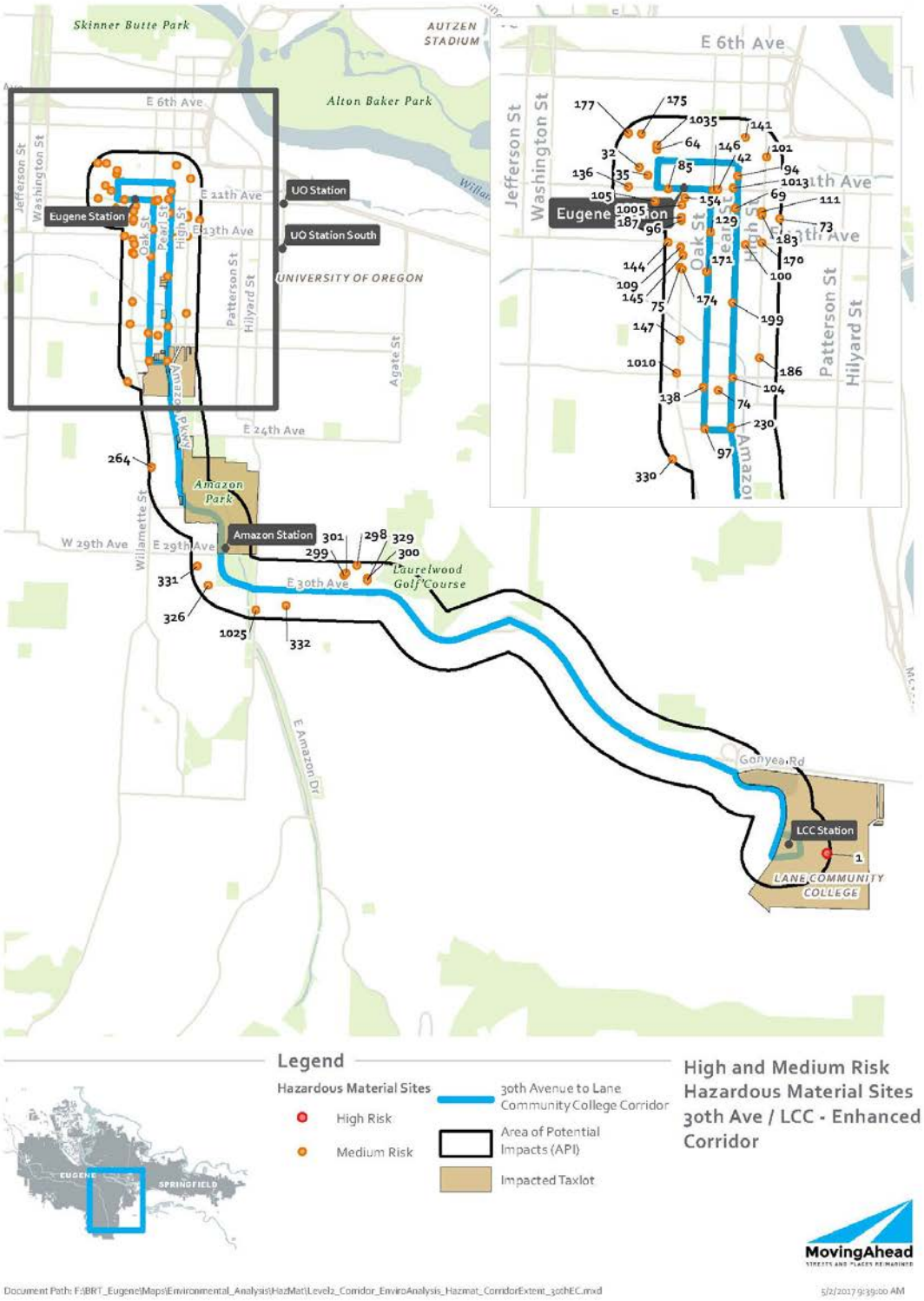

Figure 4.1-6. 30th Avenue to Lane Community College Corridor – EmX Alternative High and Medium Risk Hazardous Material Sites

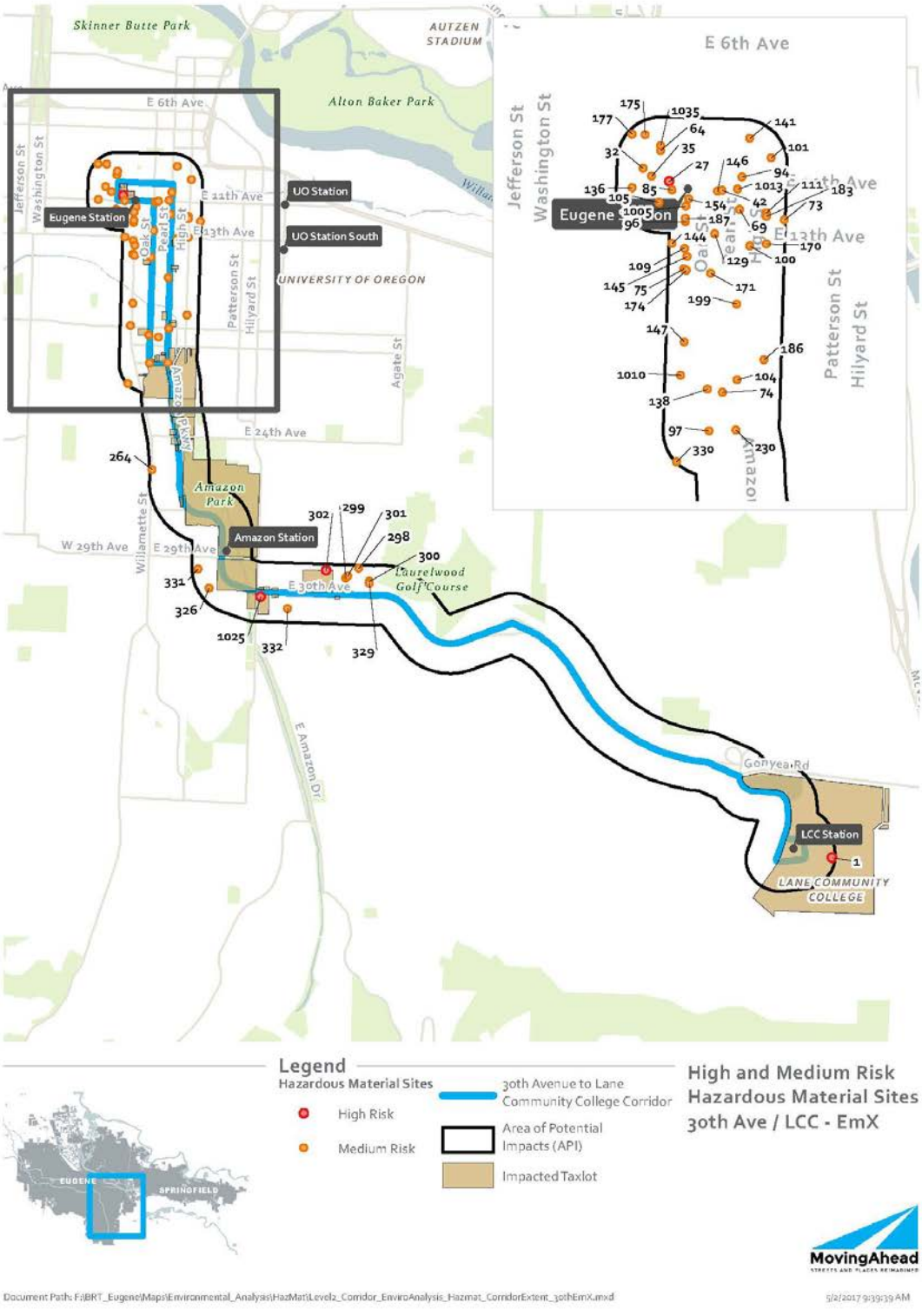

Figure 4.1-7. Coburg Road Corridor – Enhanced Corridor Alternative High- and Medium-Risk Hazardous Material Sites

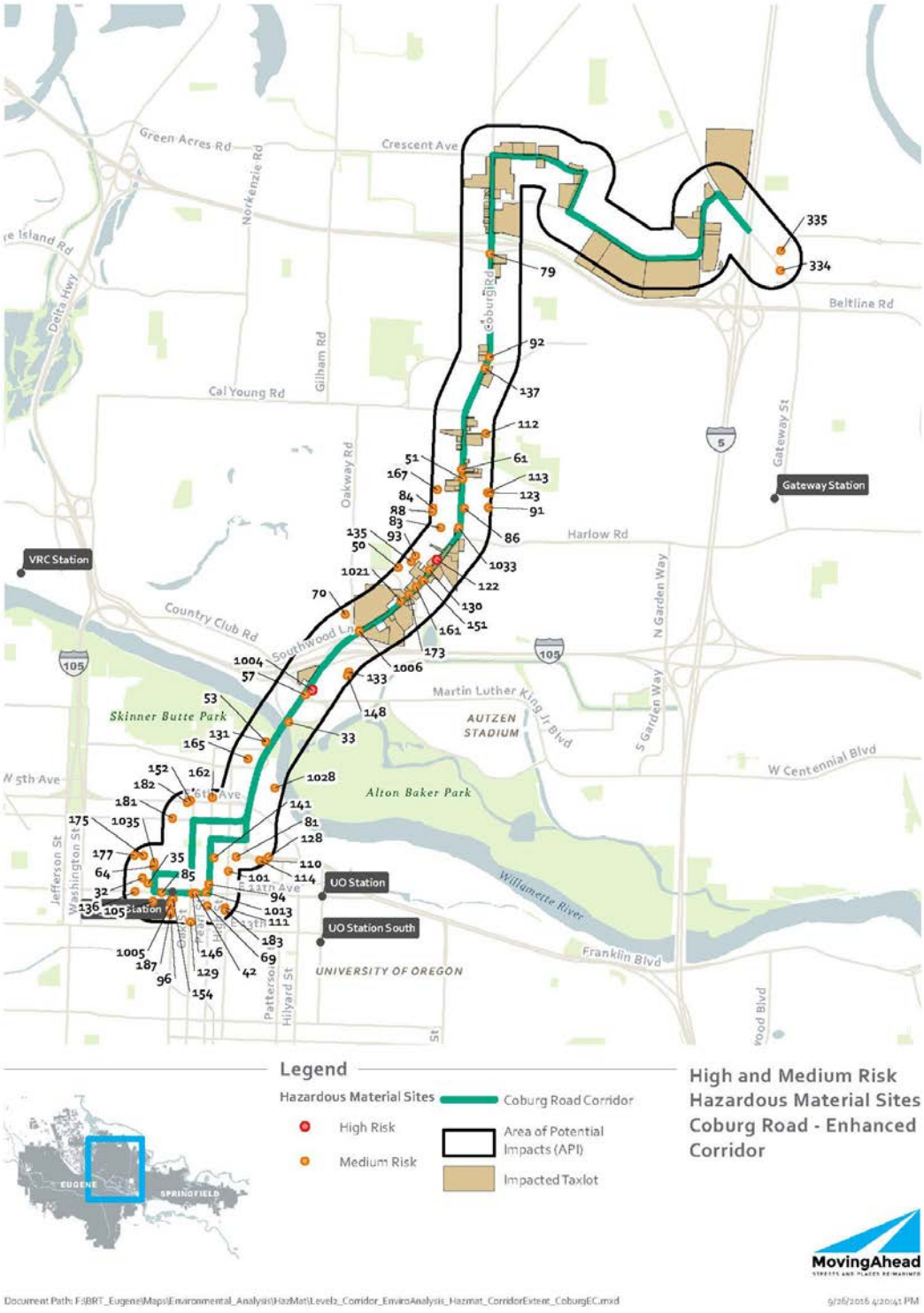

Figure 4.1-8. Coburg Road Corridor – EmX Alternative High- and Medium-Risk Hazardous Material Sites

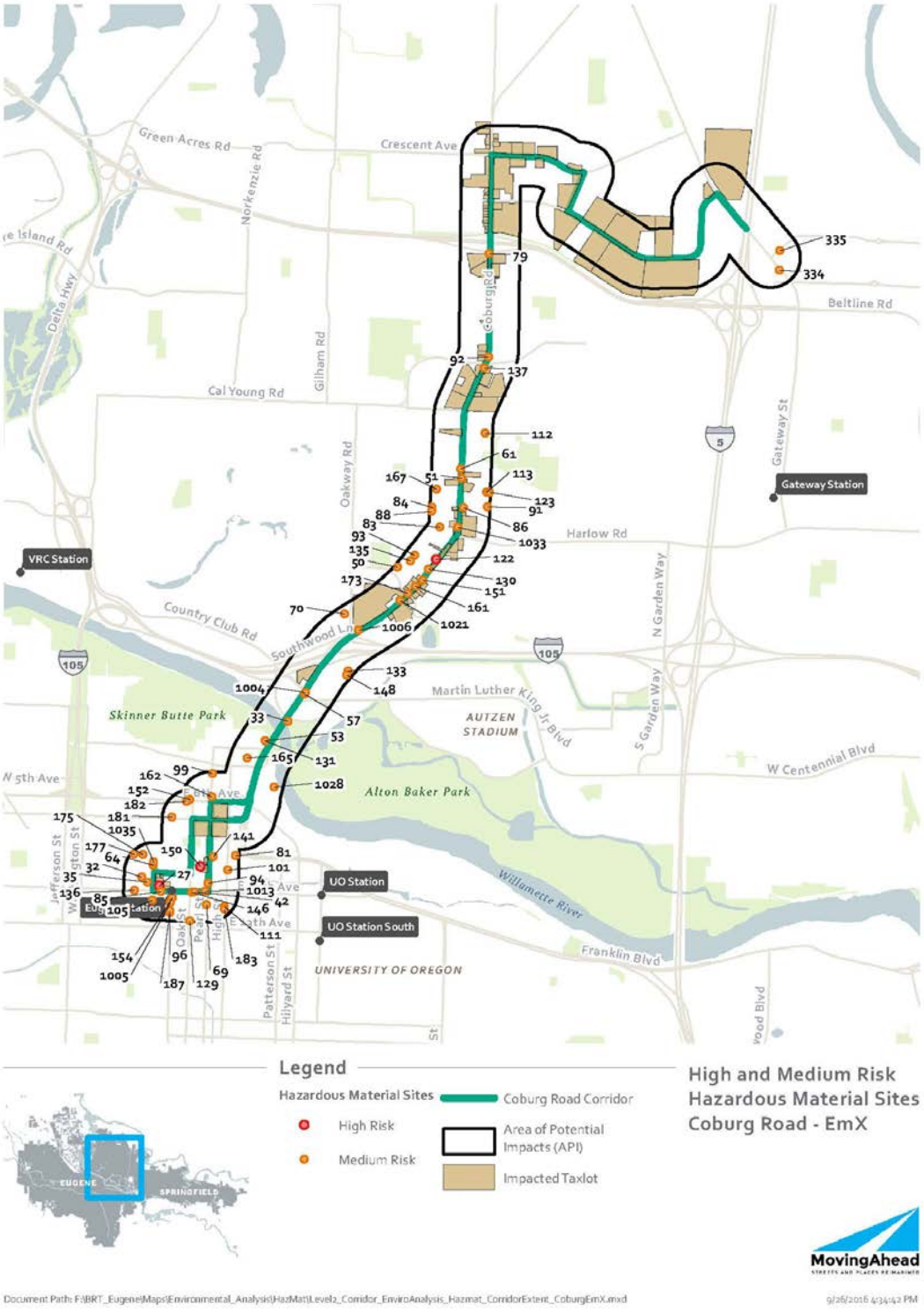

Figure 4.1-9. Martin Luther King, Jr. Boulevard Corridor – Enhanced Corridor Alternative High- and Medium -Risk Hazardous Material Sites

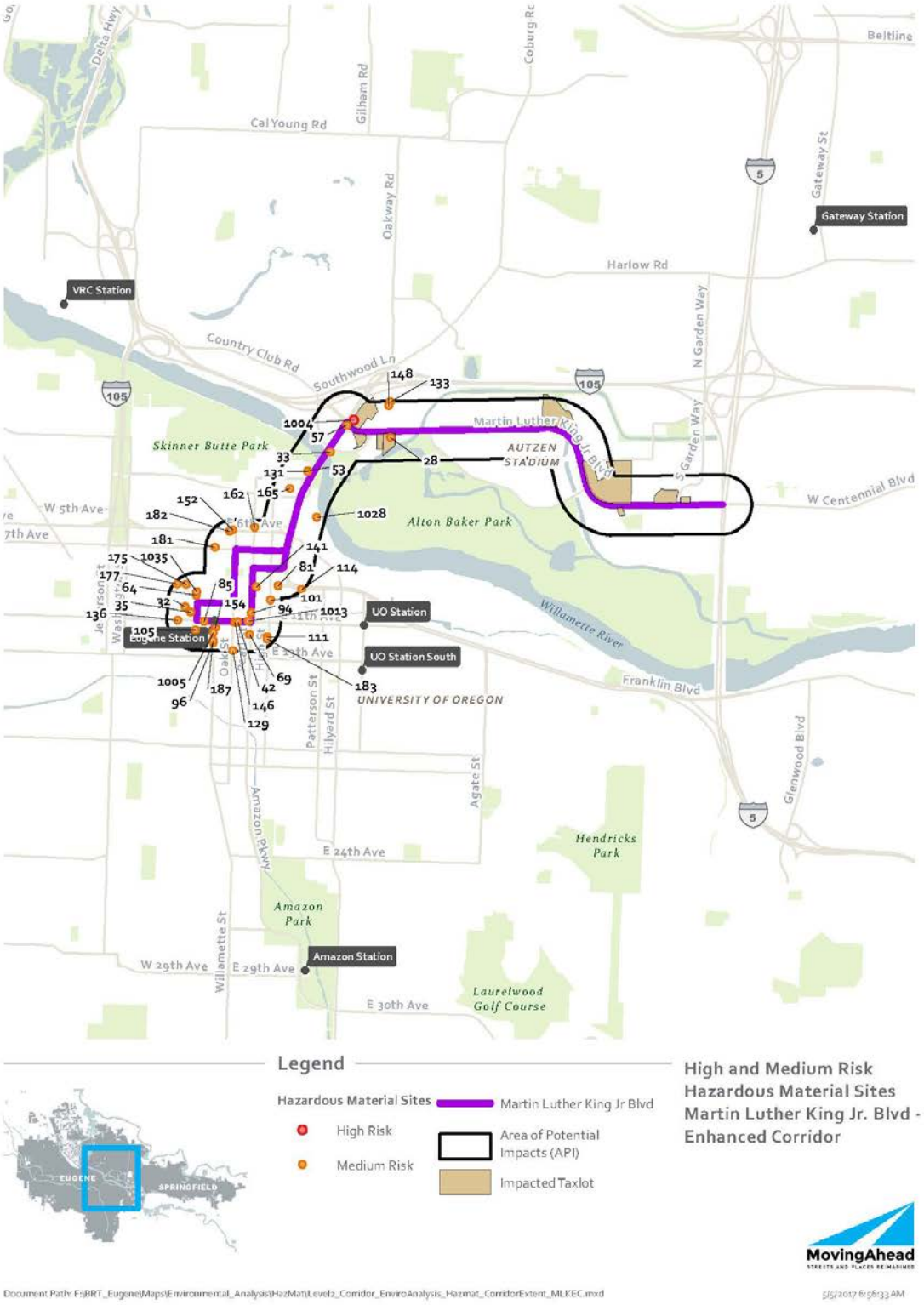

Table 4.1-1. Number of Hazardous Sites Identified by Corridor and Alternative

Alternatives	High Risk[a]		Medium Risk[a]		Low Risk[a]	
	Site IDs	Number of Sites[b]	Site IDs	Number of Sites[b]	Site IDs	Number of Sites[b]
Highway 99 Corridor						
Enhanced Corridor	NA	0	60, 64, 68, 71, 1035, 78, 80, 82, 85, 87, 90, 96, 103, 105, 106, 116, 124, 126, 127, 136, 146, 154, 164, 172, 175, 176, 177, 187, 1005, 192, 1014, 206, 207, 210, 212, 213, 214, 215, 1015, 219, 220, 221, 223, 224, 1011, 227, 1008, 235, 238, 239, 243, 244, 245, 247, 253, 254, 255, 256, 257, 260, 261, 263, 265, 268, 1034, 272, 273, 275, 278, 280, 285, 1027, 289, 291, 292, 1032, 294, 295, 327, 333, 1016, 15, 23, 26, 32, 35, 1007, 1009, 41, 42	90	388, 411, 470, 481, 2, 7	6
EmX	**27**, **1034**	2	52, 1024, 59, 62, 64, 65, 67, 72, 1035, 82, 85, 89, 96, 98, 102, 103, 105, 115, 119, 124, 134, 136, 140, 142, 143, 146, 154, 155, 156, 1026, 164, 169, 175, 177, 178, 179, 1023, 184, 187, 1005, 189, 192, 194, 195, 1014, 198, 200, 207, 208, 210, 211, 212, 213, 215, 1015, 220, 221, 223, 224, 1011, 227, 229, 1008, 233, 235, 238, 242, 243, 244, 245, 247, 248, 249, 252, 257, 258, 260, 261, 1003, 263, 266, 268, 270, 272, 273, 274, 275, 278, 281, 283, 285, 1027, 289, 290, 292, 1032, 294, 296, 297, 327, 333, 1016, 15, 17, 23, 26, 32, 35, 1007, 41, 42	111	374, 388, 408, 411, 470, 481, 2, 7, 22	8
River Road Corridor						
Enhanced Corridor	NA	0	1024, 58, 59, 62, 63, 64, 65, 67, 72, 1035, 77, 85, 96, 98, 102, 105, 115, 117, 119, 125, 136, 139, 140, 142, 143, 146, 154, 155, 158, 159, 160, 169, 175, 177, 1023, 181, 184, 185, 187, 1005, 190, 193, 194, 195, 198, 201, 202, 203, 204, 209, 1020, 228, 231, 234, 1031, 246, 248, 249, 250, 251, 259, 267, 269, 279, 281, 282, 284, 290, 303, 305, 1030, 308, 309, 1019, 1022, 312, 313, 1029, 315, 316, 317, 318, 320, 321, 1018, 323, 1017, 325, 9, 17, 1012, 19, 1002, 32, 34, 35, 37, 42, 1001, 46, 47	101	374, 388, 408, 499, 3, 5, 6, 10, 11, 20, 22, 25, 29, 31	14
EmX	**27**	1	17, 32, 34, 35, 42, 52, 59, 62, 64, 65, 67, 72, 77, 85, 89, 96, 98, 102, 105, 115, 119, 124, 134, 136, 140, 142, 143, 146, 154, 155, 156, 158, 164, 169, 175, 177, 178, 179, 184, 187, 189, 194, 195, 198, 200, 207, 208, 209, 211, 213, 221, 228, 229, 233, 235, 242, 248, 249, 252, 258, 261, 266, 269, 270, 273, 274, 275, 281, 282, 283, 285, 290, 292, 296, 297, 303, 308, 309, 312, 313, 315, 316, 317, 318, 320, 321, 323, 325, 327, 1003, 1005, 1008, 1011, 1012, 1014, 1017, 1018, 1019, 1020, 1022, 1023, 1024, 1026, 1029, 1030, 1035	106	374, 388, 408, 499, 2, 3, 10, 11, 20, 22, 25, 29	12

Table 4.1-1. Number of Hazardous Sites Identified by Corridor and Alternative

Alternatives	High Risk[a]		Medium Risk[a]		Low Risk[a]	
	Site IDs	Number of Sites[b]	Site IDs	Number of Sites[b]	Site IDs	Number of Sites[b]
30th Avenue to Lane Community College Corridor						
Enhanced Corridor	**1**	1	64, 69, 73, 74, 75, 1035, 85, 94, 96, 97, 100, 101, 104, 105, 109, 111, 129, 136, 138, 141, 144, 145, 146, 147, 154, 1010, 1013, 170, 171, 174, 175, 177, 183, 186, 187, 1005, 199, 230, 264, 298, 299, 300, 301, 326, 1025, 329, 330, 331, 332, 32, 35, 42	52	388, 44	2
EmX	**302**, **1**, **1025**, **27**	4	64, 69, 73, 74, 75, 1035, 85, 94, 96, 97, 100, 101, 104, 105, 109, 111, 129, 136, 138, 141, 144, 145, 146, 147, 154, 1010, 1013, 170, 171, 174, 175, 177, 183, 186, 187, 1005, 199, 230, 264, 298, 299, 300, 301, 326, 329, 330, 331, 332, 32, 35, 42	51	388, 44	2
Coburg Road Corridor						
Enhanced Corridor	**122**, **1004**	2	50, 51, 53, 57, 61, 64, 69, 70, 1035, 79, 81, 83, 84, 85, 86, 88, 91, 92, 93, 94, 96, 101, 105, 110, 111, 112, 113, 114, 123, 128, 129, 130, 131, 1033, 133, 135, 136, 137, 141, 146, 148, 151, 152, 1021, 154, 161, 162, 165, 1006, 167, 1013, 173, 175, 177, 181, 182, 183, 187, 1005, 334, 335, 32, 33, 35, 1028, 42	66	386, 388, 397, 514, 5, 36, 48	7
EmX	**122**, **150**, **27**	3	50, 51, 53, 57, 61, 64, 69, 70, 1035, 79, 81, 83, 84, 85, 86, 88, 91, 92, 93, 94, 96, 99, 101, 105, 111, 112, 113, 1004, 123, 129, 130, 131, 1033, 133, 135, 136, 137, 141, 146, 148, 151, 152, 1021, 154, 161, 162, 165, 1006, 167, 1013, 173, 175, 177, 181, 182, 183, 187, 1005, 334, 335, 32, 33, 35, 1028, 42	65	386, 388, 397, 514, 5, 36, 48	7
Martin Luther King, Jr. Boulevard Corridor						
Enhanced Corridor	**1004**	1	53, 57, 64, 69, 1035, 81, 85, 94, 96, 101, 105, 111, 114, 129, 131, 133, 136, 141, 146, 148, 152, 154, 162, 165, 1013, 175, 177, 181, 182, 183, 187, 1005, **28**, 32, 33, 35, 1028, 42	38	386, 388, 5, 16, 36, 48	6

[a] Risk level is assigned based on potential contamination at the site and whether the site overlaps with an impacted tax lot. Location for sites with only a street address (that is, no latitude / longitude information) were estimated using a geocoding process.

[b] For the purpose of this technical report, hazardous sites are defined as any sites with one or more active underground storage tank(s) (i.e. active tanks on the UST Cleanup Site List) or sites that are identified in one of the following Oregon DEQ databases: ECSI, LUST Cleanup Site, and Solid Waste Permitted Facilities list. No CERCLA sites were identified within the API using the EPA's CERCLIS.

BOLD indicates a site located on an impacted tax lot.

Demolition of existing structures, if needed, could potentially release hazardous materials to the environment.

- Asbestos (commonly used in construction because of its insulation, fireproofing, and soundproofing qualities) causes cancer and other respiratory problems. Asbestos is most dangerous when crushed, broken, or otherwise disturbed so that fibers are released to the air and inhaled.
- Lead is often found in lead pipes; copper pipes with lead solder; and interior and exterior painted wood, siding, window frames, and plaster. Lead could cause lead poisoning if handled inappropriately and inhaled or ingested during demolition.

Construction of the MovingAhead Project would temporarily increase the regional transportation, use, storage, and disposal of hazardous materials and petroleum products (e.g., diesel fuel, lubricants, paint and solvents, and cement products containing strong basic or acidic chemicals). These materials are commonly used at construction sites. Hazardous waste generated during construction might consist of welding materials, fuel and lubricant containers, paint and solvent containers, and cement products containing strong basic or acidic chemicals. Hazardous waste might also be generated during demolition (including asbestos-containing material and lead-based paint). Accidental release of hazardous materials and petroleum products is a hazard common to all construction projects, but is particularly acute for construction over water or in areas where stormwater runs off into water bodies. Spills of any size, if not contained, could create hazards to persons and the environment in the immediate area and downstream.

4.2.2 Long-Term Direct Impacts

Most impacts associated with encountering contamination would occur during construction. However, long-term operation impacts could occur if the MovingAhead Project would require acquisition of properties that are the source of contamination that could require ongoing cleanup responsibilities. The extent of long-term liability for ongoing cleanup responsibility would depend on factors such as the extent of contamination and the complexity of the site.

Buses and BRT vehicles use diesel fuel. An accident involving a bus or BRT vehicle might release hazardous materials or fuel. The potential for bus or BRT-vehicle accidents might increase or decrease, depending on the change in accident potential resulting from the corridor alternatives.

Although no changes to the number of maintenance facilities are proposed, the increased number of vehicles and vehicle miles could increase the use of hazardous materials and the generation of hazardous wastes associated with routine maintenance. Maintenance of new / improved bicycle and pedestrian facilities, bus stops, bus-layover facilities, EmX stations, and EmX layover facilities might require the use of hazardous materials associated with maintenance activities and janitorial supplies. It would be expected that these hazardous materials would be within the regulatory threshold quantities. However, accidental spills of these hazardous materials, if not contained, could create hazards to persons and the environment.

4.2.3 Indirect and Cumulative Effects

The MovingAhead Project might remove some contaminated soils and groundwater from hazardous material sites that would be located directly within the construction footprint. With or without the MovingAhead Project, other hazardous materials sites in the API could be redeveloped. This redevelopment would temporarily expose contaminated media. However, ultimately, such redevelopment would incrementally reduce contamination as contaminated soils and groundwater were removed and disposed of outside of the API. Together, these activities would have a positive effect on the overall environmental conditions within the general vicinity.

Potential releases of hazardous materials from construction, operation, or maintenance of the EmX system / FTN could be minimized by implementing mitigation measures discussed in Section 5.

4.3 Potential Effects by Alternative

4.3.1 No-Build Alternative

Under the No-Build Alternative in each corridor, the existing transportation system would continue to operate and other committed transportation and development projects would be implemented as separate actions from the MovingAhead Project. These improvements would generate a comparable mix and quantity of hazardous materials proportional to the magnitude of the improvements. Contaminated sites could affect these improvement projects in the same corridors under each No-Build Alternative.

No project-related construction activities would be associated with the No-Build Alternative. This alternative would not directly affect known and suspected hazardous waste contamination sites. No handling and disposal of contaminated soil, groundwater, and / or demolition / renovation debris would be necessary. The No-Build Alternative would not expose people and ecological receptors to contamination, and contaminants would not have further potential of release into the environment by construction disturbance and material / waste transport. The No-Build Alternative would not remediate existing contaminants.

4.3.2 Build Alternatives

Construction of any build alternative as part of the MovingAhead Project would increase hazardous materials use and waste generation. The construction could also inadvertently disturb sites with previously undocumented contamination or could affect known sites with contaminated media. The extent of short-term construction impacts and long-term operation impacts associated with acquisition of properties that are the source of contamination would be defined more specifically during subsequent design refinement of the MovingAhead Project. Following the summary of potential hazardous materials-related environmental consequences in the following subsections, Table S.2-1 identifies, for each corridor alternative, the number of high-risk and medium-risk sites located on land tax lots that would overlap the construction footprint (that is, potentially affected tax lots. As described in more detail in Table S.2-1, the amount of hazardous materials generated during construction and the potential for accidental release of hazardous materials or petroleum products into the environment would likely be proportionally less for the Enhanced Corridor Alternatives compared to the EmX Alternatives within the four corridors that include each build alternative. The EmX Alternatives would require a greater magnitude of capital improvements than the Enhanced Corridor Alternatives, and the EmX Alternatives could encounter a greater number of high-risk sites during construction.

The MovingAhead Project is not expected to change the number of hazardous materials sites along the corridors, although it is likely to result in the removal of some contaminated soils and groundwater. Removed contaminated soils and groundwater, if disposed of outside of the API, would have a positive effect on the overall environmental conditions within the general vicinity.

4.3.3 Highway 99 Corridor

4.3.3.1 No-Build Alternative

The No-Build Alternative for the Highway 99 Corridor would not affect hazardous materials beyond the potential effects described in Section 4.3.1.

4.3.3.2 Enhanced Corridor Alternative

The Enhanced Corridor Alternative would not potentially affect any high-risk sites or the 90 medium-risk sites located within the corridor API. No medium-risk sites within the corridor API are within potentially affected tax lots.

4.3.3.3 EmX Alternative

The EmX Alternative could potentially affect two high-risk sites (Site IDs 27 and 1034). While 111 medium-risk sites are located within the corridor API, none of the medium-risk sites are within potentially affected tax lots.

- Site ID 27 refers to the Hammer/Furtick Property. It is located on an impacted tax lot with potential subsurface work relating to construction of a proposed restroom facility. The nature and extent of contamination at this site are unknown. According to the Oregon DEQ ECSI database, it has a "Suspect" investigation status. Groundwater receives the released substance. "The following potential sources of surface and subsurface contamination include: possible USTs at the site; a spray paint area in the northwest corner of the site when it was an auto dealership; and a former service station located offsite, but near the subject property" (Oregon DEQ, 2016a).

Site ID 1034 refers to Curtis Serve 'N' Save. According to the Oregon DEQ ECSI database, it has a "Suspect" investigation status. Soil receives the released substance. "Two environmental site assessments conducted on adjacent properties suggest that soil and groundwater at Curtis are contaminated with gasoline and fuel oils. Shallow groundwater samples collected at the adjacent Eugene Family Shelter in 1990 found benzene concentrations above acceptable risk levels for vapor intrusion. There are two underground storage tanks at the site (last used 1994) and four aboveground storage tanks. The City of Eugene's Department of Public Safety cited Curtis for potential violations of the fire code in 1992 (inadequate diking of the aboveground storage tanks, storing solvents in drums, etc.)" (Oregon DEQ, 2016a).

4.3.4 River Road Corridor

4.3.4.1 No-Build Alternative

The No-Build Alternative for the River Road Corridor would not affect hazardous materials beyond the potential effects described in Section 4.3.1.

4.3.4.2 Enhanced Corridor Alternative

The Enhanced Corridor Alternative would not affect any high-risk sites within the corridor API. 101 medium-risk sites are located within the corridor API. However, none of the medium-risk sites are within potentially affected tax lots.

4.3.4.3 EmX Alternative

The EmX Alternative could potentially affect one high-risk site (Site ID 27). 106 medium-risk sites are located within the corridor API. However, none of the medium-risk sites are within potentially affected tax lots.

- Site ID 27 refers to the Hammer/Furtick Property. It is located on an impacted tax lot with potential subsurface work relating to construction of a proposed restroom facility. The nature and extent of contamination at this site are unknown. According to the Oregon DEQ ECSI database, it has a "Suspect" investigation status. Groundwater receives the released substance. "The following potential sources of surface and subsurface contamination include: possible USTs at the site; a spray

paint area in the northwest corner of the site when it was an auto dealership; and a former service station located offsite, but near the subject property" (Oregon DEQ, 2016a).

4.3.5 30th Avenue to Lane Community College Corridor

4.3.5.1 No-Build Alternative

The No-Build Alternative for the 30th Avenue to Lane Community College Corridor would not affect hazardous materials beyond the potential effects described in Section 4.3.1.

4.3.5.2 Enhanced Corridor Alternative

The Enhanced Corridor Alternative could potentially affect one high-risk (Site ID 1) and contains 52 medium-risk sites within the corridor API. No medium-risk sites within the corridor API are within potentially affected tax lots.

- Site ID 1 refers to Lane Community College. According to the Oregon DEQ ECSI database, it has a "Suspect" investigation status. Groundwater receives the released substance. "College maintenance department disposed of paint wastes in storm drains on property" (Oregon DEQ, 2016a).

4.3.5.3 EmX Alternative

The EmX Alternative could potentially affect four high-risk sites (Site IDs 1, 27, 302, and 1025). Fifty-one medium-risk sites are located within the corridor API. However, no medium-risk sites are within potentially affected tax lots.

- Site ID 1 refers to Lane Community College. According to the Oregon DEQ ECSI database, it has a "Suspect" investigation status. Groundwater receives the released substance. "College maintenance department disposed of paint wastes in storm drains on property" (Oregon DEQ, 2016a).
- Site ID 27 refers to the Hammer/Furtick Property. It is located on an impacted tax lot with potential subsurface work relating to construction of a proposed restroom facility. The nature and extent of contamination at this site are unknown. According to the Oregon DEQ ECSI database, it has a "Suspect" investigation status. Groundwater receives the released substance. "The following potential sources of surface and subsurface contamination include: possible USTs at the site; a spray paint area in the northwest corner of the site when it was an auto dealership; and a former service station located offsite, but near the subject property" (Oregon DEQ, 2016a).
- Site ID 302 refers to a heating oil tank (Oregon DEQ, 2016b).
- Site ID 1025 refers to Albertson's – Eugene. According to the Oregon DEQ ECSI database, it has a "Suspect" investigation status. Groundwater receives the released substance (Oregon DEQ, 2016a).

4.3.6 Coburg Road Corridor

4.3.6.1 No-Build Alternative

The No-Build Alternative for the Coburg Road Corridor would not affect hazardous materials beyond the potential effects described in Section 4.3.1.

4.3.6.2 Enhanced Corridor Alternative

The Enhanced Corridor Alternative could potentially affect two high-risk sites (Site IDs 122 and 1004). 66 medium-risk sites are located within the corridor API, however, none of the medium-risk sites are within potentially affected tax lots.

- Site ID 122 refers to Coburg Road – former BP (Oregon DEQ, 2016b).
- Site ID 1004 refers to a Unocal Service Station #3838 or Coburg Road 76. According to the Oregon DEQ ECSI database, it has a "Listed on the CRL/Inventory" investigation status. Groundwater

receives the released substance. “Soil and groundwater have been impacted at the site. The extent and magnitude of these impacts have not been fully characterized. Some cleanup and investigation has been pursued under the LUST program” (Oregon DEQ, 2016a).

4.3.6.3 EmX Alternative

The EmX Alternative could potentially affect three high-risk sites (Site IDs 27, 122, and 150) and contains 65 medium-risk sites within its API. None of the medium-risk sites are within potentially effected tax lots.

- Site ID 27 refers to the Hammer/Furtick Property. It is located on an impacted tax lot with potential subsurface work relating to construction of a proposed restroom facility. The nature and extent of contamination at this site are unknown. According to the Oregon DEQ ECSI database, it has a “Suspect” investigation status. Groundwater receives the released substance. “The following potential sources of surface and subsurface contamination include: possible USTs at the site; a spray paint area in the northwest corner of the site when it was an auto dealership; and a former service station located offsite, but near the subject property” (Oregon DEQ, 2016a).
- Site ID 122 refers to Coburg Road – former BP (Oregon DEQ, 2016b).
- Site ID 150 refers to Perry’s on Pearl (Oregon DEQ, 2016b).

4.3.7 Martin Luther King, Jr. Boulevard Corridor

4.3.7.1 No-Build Alternative

The No-Build Alternative for the Martin Luther King, Jr. Boulevard Corridor would not affect hazardous materials beyond the potential effects described in Section 4.3.1.

4.3.7.2 Enhanced Corridor Alternative

The Enhanced Corridor Alternative could potentially affect one high-risk site (Site ID 1004) and one medium-risk site (Site ID 28). 38 medium-risk sites are located within the corridor API. Of the 38 medium-risk sites, one site (Site ID 28) is within a potentially affected tax lot. The Martin Luther King, Jr. Boulevard Corridor does not have an EmX Alternative.

- Site ID 1004 refers to a Unocal Service Station #3838 or Coburg Road 76. According to the Oregon DEQ ECSI database, it has a “Listed on the CRL / Inventory” investigation status. Groundwater receives the released substance. “Soil and groundwater have been impacted at the site. The extent and magnitude of these impacts have not been fully characterized. Some cleanup and investigation has been pursued under the LUST program” (Oregon DEQ, 2016a).
- Site ID 28 refers to Staff Jennings. According to the Oregon DEQ ECSI database, it has an NFA investigation status. “Two USTs decommissioned by removal in 1989. Pervasive oil stains observed. Presence of oil sump likely used for oil changes” (Oregon DEQ, 2016a)

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5 Potential Mitigation Measures

5.1 Short-Term Construction-Related Impacts

Implementing BMPs and developing plans to guide the characterization, management, and disposal of contaminated materials could be used to avoid or minimize construction-related impacts. Construction-related BMPs can be grouped into three general categories – site avoidance, cleanup prior to construction, and minimization of potential impacts on contaminant migration.

5.1.1 Site Avoidance

Impacts from sites with known contamination could be minimized by avoiding construction at the contaminated sites, or portions of sites, as practical. By minimizing encounters with hazardous materials, the project would reduce exposure risk, as well as potential delays, construction costs, and liability associated with site acquisition and cleanup. Avoiding contaminated sites would also reduce the opportunity for beneficial impacts associated with cleanup. Avoidance could be implemented using the following strategies:

- Conducting additional studies and building surveys to confirm the presence or absence of contaminated environmental media at or near the high-risk sites
- Evaluating the nature and extent of contamination at high-risk sites with confirmed contamination prior to construction
- Locating USTs and associated piping at sites within the construction footprint
- Using construction techniques that minimize disturbance or release of contaminated media

5.1.2 Cleanup Prior to Construction

Cleanup efforts implemented before or during construction would reduce potential short-term and long-term impacts. The MovingAhead Project would comply with hazardous materials regulatory requirements associated with project construction. To the extent possible, the extent of contamination at a site with known contamination should be verified prior to construction to minimize exposure to hazardous materials. Coordination with the site cleanup manager and agencies could help ensure that the MovingAhead Project would be in compliance with site-specific cleanup and disposal requirements.

5.1.3 Minimization of Potential Impacts on Contaminant Migration

Potential impacts on contaminant migration should be minimized to the extent possible using the following strategies:

- Preparing a comprehensive contingency and hazardous substances management plan; a worker health and safety plan; a spill prevention control and countermeasures plan; and a stormwater pollution prevention plan
- Managing and disposing of hazardous or contaminated materials in accordance with applicable requirements
- Preparing a stormwater pollution plan to prevent pollution in stormwater runoff

5.2 Long-Term Direct Impacts

The most likely long-term direct impacts would be from acquiring contaminated sites and from releasing hazardous materials into the environment following accidental spills. Potential long-term impacts associated with acquiring contaminated sites could be mitigated through either performing proper environmental due diligence for all potentially acquired property or by avoiding the acquisition of contaminated sites, where possible. Potential long-term impacts associated with potential releases of hazardous materials into the environment could be minimized through the strategies outlined in Section 5.1.3.

5.3 Indirect and Cumulative Effects

With or without the MovingAhead Project, environmental regulations require the cleanup or remediation of hazardous materials potentially released or encountered during project development. These development activities, together with the MovingAhead Project, would positively affect the overall environmental conditions of the API. Therefore, no mitigation measures would be needed for the indirect or cumulative effects of hazardous materials related to the MovingAhead Project.

6 References

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Appendix A: Glossary and Naming Conventions

This appendix includes a detailed list of acronyms, abbreviations and technical terms used throughout this report. It also includes naming conventions used in the MovingAhead Project.

Table A-1. Acronyms and Abbreviations

Acronyms and Abbreviations	Definitions
/H-RCP	Historic Structures or Sites Combine Zone
/WP	Waterside Protection
/WQ	Water Quality
°C	degree(s) Celsius
µg/L	microgram(s) per liter
µg/m^3	microgram(s) per cubic meter
AA	Alternatives Analysis
AAC	all aluminum conductor
AASHTO	American Association of State Highway and Transportation Officials
AAI	All Appropriate Inquiry
ACS	American Community Survey
ADA	Americans with Disabilities Act
AEO	Annual Energy Outlook
APE	Area of Potential Effect
API	Area of Potential Impact
approx.	approximately
ARTS	All Roads Transportation Safety Program
ATR	Automated Traffic Recording
BAT	business access and transit
BEST	Better Eugene Springfield Transit
BFE	Base Flood Elevation
BMP	best management practice
BPA	Bonneville Power Administration
BRT	bus rapid transit
Btu	British thermal unit
c	circa
CAA	Clean Air Act
CAFE	Corporate Average Fuel Economy
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CERCLIS	Comprehensive Environmental Response Compensation and Liability Information System
CFR	Code of Federal Regulations
CFU	Colony-Forming Unit
CH2M	CH2M HILL, Inc.
CIG	Capital Investment Grant

Table A-1. Acronyms and Abbreviations

Acronyms and Abbreviations	Definitions
CIP	Capital Improvements Program
City	City of Eugene
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
COGP	County Opportunity Grant Program
Corps	U.S. Army Corps of Engineers
CRL	Confirmed Release List
CSZ	Cascadia Subduction Zone
CTR	commute trip reduction
CWA	Clean Water Act
CY	cubic yard
dB	decibel
dBA	A-weighted decibel
DBE	Disadvantaged Business Enterprise
DEIS	Draft Environmental Impact Statement. Also referred to as Draft EIS.
DEQ	Oregon Department of Environmental Quality
DKS	DKS Associates
DLS	Donation Land Claim
DOE	Determination of Eligibility
DOGAMI	Oregon Department of Geology and Mineral Industries
DOT	Department of Transportation
Draft EIS	Draft Environmental Impact Statement. Also referred to as DEIS.
Draft Envision Eugene	*Draft Envision Eugene Community Vision* (Envision Eugene, 2016, July)
Draft Eugene 2035 TSP	*DRAFT Eugene 2035 Transportation System Plan* (City of Eugene, 2016)
DSL	Oregon Department of State Lands
DU	dwelling unit
EA	Environmental Assessment or each
EC	City of Eugene Code
EC	eligible contributing
EC	Enhanced Corridor Alternative (in some tables)
ECLA	*Eugene Comprehensive Lands Assessment* (ECONorthwest, 2010, June)
ECSI	Environmental Cleanup Site Information database (Oregon DEQ, 2016)
EFH	essential fish habitat
EIS	Environmental Impact Statement
EJ	Environmental Justice
EmX	Emerald Express, Lane Transit District's Bus Rapid Transit System
EmX	EmX Alternative (in some tables)
EOA	Equity and Opportunity Assessment
EPA	U. S. Environmental Protection Agency

Table A-1. Acronyms and Abbreviations

Acronyms and Abbreviations	Definitions
ES	eligible significant
ES NR	eligible significant NRHP
ESA	Endangered Species Act or Environmental Site Assessment
ESH	essential indigenous anadromous salmonid habitat
ESU	Evolutionarily Significant Unit
EWEB	Eugene Water & Electric Board
FAST Act	Fixing America's Surface Transportation Act
FEIS	Final Environmental Impact Statement. Also referred to as Final EIS.
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act of 1974
Final EIS	Final Environmental Impact Statement. Also referred to as FEIS.
FOE	Finding of Effect
FPPA	Farmland Protection Policy Act, 7 U.S.C. 4201-4209 and 7 CFR 658
FRA	Federal Railroad Administration
ft	foot (feet)
ft^2	square foot (feet)
FTA	Federal Transit Administration
FTN	Frequent Transit Network
FY	fiscal year
GAN	Grant Anticipation Note
GARVEE	Grant Anticipation Revenue Vehicle
GHG	greenhouse gas
GIS	geographic information system
GLO	General Land Office
Heritage	Heritage Research Associates, Inc.
HGM	Hydro-geomorphic
HMTA	Hazardous Materials Transport Act of 1975, with amendments in 1990 and 1994
HOV	high-occupancy vehicle
HPNW	Historic Preservation Northwest
I-5	Interstate 5
I-105	Interstate 105
IOF	Immediate Opportunity Fund
ISA	International Society of Arboriculture
ISTEA	Intermodal Surface Transportation Efficiency Act
kV	kilovolt(s)
LaneACT	Lane Area Commission on Transportation
LCC	Lane Community College
LCDC	Land Conservation and Development Commission
LCOG	Lane Council of Governments

Table A-1. Acronyms and Abbreviations

Acronyms and Abbreviations	Definitions
Ldn	day-night sound level
LE	Listed Endangered
LEP	limited English proficiency
L_{eq}	equivalent sound level
LF	lineal foot (feet)
LGAC	Local Government Affairs Council
LGGP	Local Government Grant Program
LID	Local Improvement District
L_{max}	maximum sound level
L_{min}	minimum sound level
LNG	liquefied natural gas
LOS	level of service
LPA	Locally Preferred Alternative
LRAPA	Lane Regional Air Protection Agency
LRFP	LTD's Long-Range Financial Plan
LRT	Light Rail Transit
LRTP	LTD's Long-Range Transit Plan
LT	Listed Threatened
LTD	Lane Transit District
LUST	leaking underground storage tank
LWCF	Land and Water Conservation Fund
m	meter(s)
MAP-21	Moving Ahead for Progress in the 21st Century
MBTA	Migratory Bird Treaty Act
Metro Plan	*Metro Plan, Eugene-Springfield Metropolitan Area General Plan* (LCOG et al., 1987, as updated on 2015, December 31)
mg/kg	milligram(s) per kilogram
MI	mile(s)
mL	milliliter(s)
MMA	Michael Minor and Associates, Inc.
MOA	Memorandum of Agreement
MOE	Measure of Effectiveness
MPC	Metropolitan Policy Committee
mpg	miles per gallon
mph	miles per hour
MPO	Metropolitan Planning Organization
MTIP	*Metropolitan Transportation Improvement Program Federal FY 2015 to Federal FY 2018* (Central Lane MPO, adopted 2014, October, as amended)
Mw	Earthquake moment magnitude
N/A	not applicable

Table A-1. Acronyms and Abbreviations

Acronyms and Abbreviations	Definitions
NA	not applicable; no data available
NAAQS	National Ambient Air Quality Standards
NAC	Noise Abatement Criteria
NAVD88	North American Vertical Datum of 1988
ND	nodal development
NEPA	National Environmental Policy Act of 1969, as amended, 42 U.S.C. 4321-4347
NFA	no further action
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NO_2	nitrous dioxide
NO_x	nitrous oxides
NPDES	National Pollutant Discharge Elimination System
NPMS	National Pipeline Mapping System
NPS	Department of Interior's National Park Service
NR	Natural Resource
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NS	no standard established
NW Natural	Northwest Natural
O_3	ozone
O&M	operations and maintenance
OAR	Oregon Administrative Rule
OARRA	Oregon Archaeological Records Remote Access
ODA	Oregon Department of Agriculture
ODEQ	Oregon Department of Environmental Quality
ODFW	Oregon Department of Fish and Wildlife
ODOE	Oregon Department of Energy
ODOT	Oregon Department of Transportation
OHP	Oregon Highway Plan
OPA	Oil Pollution Act of 1990
OPRD	Oregon Parks and Recreation Department
OR	Oregon
ORBIC	Oregon Biodiversity Information Center
ORS	Oregon Revised Statutes
OTIB	Oregon Transportation Infrastructure Bank
Pb	lead
PCB	polychlorinated biphenyl
PEM	Palustrine Emergent Wetland
PM	particulate matter
PM_{10}	particulate matter – 10 microns in diameter

Table A-1. Acronyms and Abbreviations

Acronyms and Abbreviations	Definitions
$PM_{2.5}$	particulate matter – 2.5 microns in diameter
PMT	Project Management Team
ppb	parts per billion
PPE	personal protective equipment
ppm	parts per million
PROS	Parks, Recreation, and Open Space
PUC	Public Utilities Commission
Qls	landslide and debris avalanche deposits
Qtg	terrace and fan deposits
Qty	quantity
RCRA	Resource Conservation and Recovery Act of 1976
RFFA	reasonably foreseeable future action
ROW	right of way
RRFB	Rectangular Rapid Flash Beacon
RTP	*Central Lane Metropolitan Planning Organization Regional Transportation Plan* (LCOG, adopted 2007, November; 2011, December). (The RTP includes the Financially Constrained Roadway Projects List)
SARA	Superfund Amendments and Reauthorization Act of 1986
SARA III	Emergency Planning and Community Right to Know Act of 1986; part of the SARA amendments
SC	sensitive critical
SCC	Standard Cost Categories
SCORP	Statewide Comprehensive Outdoor Recreation Plan
SDC	Systems Development Charge
SDWA	Safe Drinking Water Act
sec	second(s)
Section 4(f)	Section 4(f) of the Department of Transportation Act of 1966
Section 6(f)	Section 6(f) of the LWCF Act of 1965
Section 106	Section 106 of the National Historic Preservation Act of 1966 (36 CFR 800.5)
SF	square foot (feet)
SHPO	Oregon State Historic Preservation Office
SIP	State Implementation Plan
SMU	Species Management Unit
SO_2	sulfur dioxide
SOC	species of concern
SSGA	Small Starts Construction Grant Agreement
STA	Special Transportation Area
STIP	Statewide Transportation Improvement Program
SV	Sensitive Vulnerable
SY	square yard(s)

Table A-1. Acronyms and Abbreviations

Acronyms and Abbreviations	Definitions
TAP	Transportation Alternatives Program
TAZ	traffic analysis zone
TCE	Temporary Construction Easement
TD	transit-oriented development
TDM	Transportation Demand Management
TEA-21	Transportation Equity Act for the 21st Century
Teoe	siliciclastic marine sedimentary rocks
TESCP	Temporary Erosion and Sediment Control Plan
TIF	Tax Increment Financing
TIP	Transportation Improvement Program
TMDL	total maximum daily load
TOD	transit-oriented development
TPAU	Department of Transportation – Transportation Planning Analysis Unit
TPR	Transportation Planning Rule
TransPlan	*Eugene-Springfield Transportation System Plan* (City of Eugene et al., adopted 2002, July)
TRB	Transportation Research Board
TSI	Transportation System Improvement
TSM	Transportation System Management
TSP	Transportation System Plan
UGB	Urban Growth Boundary
UMTA	Urban Mass Transit Administration
Uniform Act	Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, 42 U.S.C. 4601 et. seq., 49 CFR Part 24
URA	Urban Renewal Area
U.S.C.	United States Code
USDOT	U.S. Department of Transportation
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UST	underground storage tank
v/c	volume-to-capacity
VHT	vehicle hours traveled
VMT	vehicle miles traveled
VOC	volatile organic compound
WEEE	West Eugene EmX Extension
WEG	wind erodibility group
YOE	year of expenditure

Terms

Table A-2. Terms

Terms	Definitions
Accessibility	The extent to which facilities are barrier-free and useable for all persons with or without disabilities.
Action	An “action,” a federal term, is the construction or reconstruction, including associated activities, of a transportation facility. For the purposes of this Handbook, the terms “project,” “proposal,” and “action” are used interchangeably unless otherwise specified. An action may be categorized as a “categorical exclusion” or a “major federal action.”
Agricultural / Forest / Natural Resource	AG, EFU-25, EFU-30, EFU-40, F-1, F-2, and NR
Alignment	Alignment is the street or corridor that the transit project would be located within.
Alternative Fuels	Low-polluting fuels which are used to propel a vehicle instead of high-sulfur diesel or gasoline. Examples include methanol, ethanol, propane or compressed natural gas, liquid natural gas, low-sulfur or "clean" diesel and electricity.
Alternatives Analysis (AA)	The process of evaluating the costs, benefits, and impacts of a range of transportation alternatives designed to address mobility problems and other locally-defined objectives in a defined transportation corridor, and for determining which particular investment strategy should be advanced for more focused study and development. The Alternatives Analysis (AA) process provides a foundation for effective decision making.
Area of Potential Effect	A term used in Section 106 to describe the area in which historic resources may be affected by a federal undertaking.
Area of Potential Impact	An assessment’s Area of Potential Impact for the project is defined separately for each discipline.
Auxiliary Lanes	Lanes designed to improve safety and reduce congestion by accommodating cars and trucks entering or exiting the highway or roadway, and reducing conflicting weaving and merging movements.
Base Fare	The price charged to one adult for one transit ride; excludes transfer charges, and reduced fares.
Base Period	The period between the morning and evening peak periods when transit service is generally scheduled on a constant interval. Also known as "off-peak period."
Boarding	Boarding is a term used in transit to account for passengers of public transit systems. One person getting on a transit vehicle equals one boarding. In many cases, individuals will have to transfer to an additional transit vehicle to reach their destination and may well use transit for the return trip. Therefore, a single rider may account for several transit boardings in one day.
Bus Phase	An exclusive traffic signal phase for buses and/or BRT vehicles.
Bus Rapid Transit (BRT)	A transit mode that combines the quality of rail transit and the flexibility of buses. It can operate on bus lanes, high-occupancy vehicle (HOV) lanes, expressways, or ordinary streets. The vehicles are designed to allow rapid passenger loading and unloading, with more doors than ordinary buses.
Business Access and Transit (BAT) Lane	In general, a BAT lane is a concrete lane, separated from general-purpose lanes by a paint stripe and signage. A BAT lane provides Bus Rapid Transit (BRT) priority operations, but general-purpose traffic is allowed to travel within the lane to make a turn into or out of a driveway or at an intersecting street. However, only the BRT vehicle is allowed to use the lane to cross an intersecting street.
Busway	Exclusive freeway lane for buses and carpools.

Table A-2. Terms

Terms	Definitions
Capital Improvements Program (CIP)	A CIP is a short-range plan, usually 4 to 10 years, which identifies capital projects and equipment purchases, provides a planning schedule, and identifies options for funding projects in the program.
Categorical Exclusion (CE)	A CE means a category of actions that do not individually or cumulatively have a significant effect on the human environment and for which, therefore, neither an environmental assessment nor an environmental impact statement is required.
Chambers Special Area Zone	S-C
Charter Tree	A tree defined by the Eugene Charter (City of Eugene, 2002, updated 2008) as "… (a living, standing, woody plant having a trunk 25 inches in circumference at a point 4-½ feet above mean ground level at the base of the trunk) of at least fifty years of age within publicly owned rights of way for streets, roads, freeways, throughways, and thoroughfares and within those portions of the city which were in the incorporated boundaries of the city as of January 1, 1915, shall be designated historic street trees and recognized as objects of high historic value and significance in the history of the city and deserving of maintenance and protection." These trees have special historic importance to the City and require special processes be followed if their removal is proposed, including a public vote on the project proposing the removal.
Charter Tree Boundary	Defined by the Eugene Charter (City of Eugene, 2002, updated 2008) as "…those portions of the city which were in the incorporated boundaries of the city as of January 1, 1915." Trees within this boundary may, if they meet certain criteria, be granted the special title and protective status of a Charter Tree, defined above.
City of Eugene Zoning Classifications	Industrial (I-2 and I-3), Commercial (C-3), Mixed-Use (C-1, C-2, GO, S-C, S-CN, S-DR, S-DW, S-E, S-F, S-HB, S-JW, S-RN, S-W, and S-WS), Single-Family Residential (R-1), Multi-Family Residential (R-2 and R-3), Institution (PL and PRO), Agricultural / Forest / Natural Resource (AG, EFU-25, EFU-30, EFU-40, F-1, F-2, and NR), Office (E-1 and E-2), Special Area Zone (Non-Mixed Use) (S-H and S-RP), Downtown Westside Special Area Zone (S-DW), Chambers Special Area Zone (S-C)
Clean Air Act Amendments of 1990	The comprehensive federal legislation that establishes criteria for attaining and maintaining the federal standards for allowable concentrations and exposure limits for various air pollutants; the act also provides emission standards for specific vehicles and fuels.
Collector Streets	Collector streets provide a balance of both access and circulation within and between residential and commercial/industrial areas. Collectors differ from arterials in that they provide more of a citywide circulation function, do not require as extensive control of access, and are located in residential neighborhoods, distributing trips from the neighborhood and local street system.
Commercial	C-3
Commuter Rail	Commuter rail is a transit mode that is a multiple car electric or diesel propelled train. It is typically used for local, longer-distance travel between a central city and adjacent suburbs, and can operate alongside existing freight or passenger rail lines or in exclusive rights of way.
Compressed Natural Gas (CNG)	An alternative fuel; compressed natural gas stored under high pressure. CNG vapor is lighter than air.
Conformity	The ongoing process that ensures the planning for highway and transit systems, as a whole and over the long term, is consistent with the state air quality plans for attaining and maintaining health-based air quality standards; conformity is determined by metropolitan planning organizations (MPOs) and the U.S. Department of Transportation (U.S. DOT), and is based on whether transportation plans and programs meet the provisions of a State Implementation Plan.

Table A-2. Terms

Terms	Definitions
Congestion Mitigation and Air Quality (CMAQ)	Federal funds available for either transit or highway projects that contribute significantly to reducing automobile emissions, which cause air pollution.
Cooperating Agency	Regulations that implement the National Environmental Policy Act define a cooperating agency as any federal agency, other than a lead agency, which has jurisdiction by law or special expertise with respect to any environmental impact involved in a proposal (or a reasonable alternative) for legislation or other major federal action significantly affecting the quality of the human environment.
Coordination Plan	Required under Moving Ahead for Progress in the 21st Century (MAP-21), the coordination plan contains procedures aimed at achieving consensus among all parties in the initial phase of environmental review and to pre-empt disagreements that can create delays later on in a project.
Corridor	A broad geographical band that follows a general directional flow connecting major sources of trips that may contain a number of streets, highways, and transit route alignments.
Corridor Transit Service Characteristics	The amount of transit service provided in each corridor, measured by daily vehicle hours traveled, daily vehicle miles traveled, and daily place-miles of service.
Demand Responsive	Non-fixed-route service utilizing vans or buses with passengers boarding and alighting at pre-arranged times at any location within the system's service area. Also called “Dial-a-Ride.”
Diesel Multiple Unit (DMU)	Each unit carries passengers and can be self-powered by a diesel motor; no engine unit is required.
Documented Categorical Exclusion (DCE)	A DCE means a group of actions that may also qualify as Categorical Exclusions (CEs) if it can be demonstrated that the context in which the action is taken warrants a CE exclusion; i.e., that no significant environmental impact will occur. Thus, these actions are referred to as DCEs. Such actions require some National Environmental Policy Act documentation, but not an Environmental Assessment or a full-scale Environmental Impact Statement. DCEs documentation must demonstrate that, in the context(s) in which these actions are to be performed, they will have no significant environmental impact or that such impacts will be mitigated.
Downtown Westside Special Area Zone	S-DW
Draft Environmental Impact Statement (DEIS)	The DEIS is the document that details the results of the detailed analysis of all of the projects alternatives. The DEIS contains all information learned about the impacts of a project and alternatives.
Earmark	A federal budgetary term that refers to the specific designation by Congress that part of a more general lump-sum appropriation be used for a particular project; the earmark can be designated as a minimum and/or maximum dollar amount.
Effects	Effects include ecological, aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative. Effects may also include those resulting from actions that may have both beneficial and detrimental effects, even if on balance the agency believes that the effect will be beneficial. Effects include: (1) direct effects that are caused by the action and occur at the same time and place, and (2) indirect effects that are caused by the action and are later in time or farther removed in distance but are still reasonably foreseeable. Indirect effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use; population density or growth rate; and related effects on air and water and other natural systems, including ecosystems (40 CFR 1508.8).
Electrical Multiple Unit (EMU)	The EMU is heavier than a light rail vehicle, but it is powered in the same way by an overhead electrical system.

Table A-2. Terms

Terms	Definitions
EmX	Lane Transit District's Bus Rapid Transit System, pronounced "MX," short for Emerald Express.
Environmental Assessment (EA)	A report subject to the requirements of the National Environmental Policy Act (NEPA) demonstrating that an Environmental Impact Statement (EIS) is not needed for a specific set of actions. The EA can lead to a Finding of No Significant Impact (FONSI).
Environmental Impact Statement (EIS)	A comprehensive study of likely environmental impacts resulting from major federally-assisted projects; EISs are required by the National Environmental Policy Act.
Environmental Justice	A formal federal policy on environmental justice was established in February 1994 with Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations." There are three fundamental environmental justice principles: • To avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations. • To ensure the full and fair participation by all potentially affected communities in the transportation decision-making process. • To prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations.
Envision Eugene	The City of Eugene's Comprehensive Plan (latest draft or as adopted). Envision Eugene includes a determination of the best way to accommodate the community's projected needs over the next 20 years.
Evaluation Criteria	Evaluation criteria are the factors used to determine how well each of the proposed multimodal alternatives would meet the project's Goals and Objectives. The Evaluation Criteria require a mix of quantitative data and qualitative assessment. The resulting data are used to measure the effectiveness of proposed multimodal alternatives and to assist in comparing and contrasting each of the alternatives to select a preferred alternative.
Exclusive Right of Way	A roadway or other facility that can only be used by buses or other transit vehicles.
Fatal Flaw Screening	The purpose of a Fatal Flaw Screening is to identify alternatives that will not work for one reason or another (e.g., environmental, economic, community). By using a Fatal Flaw Screening process to eliminate alternatives that are not likely to be viable, a project can avoid wasting time or money studying options that are not viable and focus on alternatives and solutions that have the greatest probability of meeting the community's needs (e.g., environmentally acceptable, economically efficient, implementable).
Finding of No Significant Impact (FONSI)	A document prepared by a federal agency showing why a proposed action would not have a significant impact on the environment and thus would not require preparation of an Environmental Impact Statement (EIS). A FONSI is based on the results of an Environmental Assessment (EA).
Fixed Guideway System	A system of vehicles that can operate only on its own guideway constructed for that purpose (e.g., rapid rail, light rail). Federal usage in funding legislation also includes exclusive right of way bus operations, trolley coaches, and ferryboats as "fixed guideway" transit.
Fixed Route	Service provided on a repetitive, fixed-schedule basis along a specific route with vehicles stopping to pick up and deliver passengers at set stops and stations; each fixed-route trip serves the same origins and destinations, unlike demand responsive and taxicabs.
Geographic Information System (GIS)	A data management software tool that enables data to be displayed geographically (i.e., as maps).

Table A-2. Terms

Terms	Definitions
Goals and Objectives	Goals and objectives define the project's desired outcome and reflect community values. Goals and objectives build from the project's Purpose and Need Statement. • Goals are overarching principles that guide decision making. Goals are broad statements. • Objectives define strategies or implementation steps to attain the goals. Unlike goals, objectives are specific and measurable.
Guideway	A transit right of way separated from general purpose vehicles.
Headway	Time interval between vehicles passing the same point while moving in the same direction on a particular route.
Heritage Tree	The C*ity of Eugene Urban Forest Management Plan* (City of Eugene Public Works Department Maintenance Division, 1992) defines "Heritage Trees" as: "Any tree of exceptional value to our community based on its size (relative to species), history, location, or species, or any combination of these criteria." Such a tree cannot be removed "except when otherwise necessary for the public health, safety, or welfare."
Hydrology	Refers to the flow of water including its volume, where it drains, and how quickly it flows.
Impacts	A term to describe the positive or negative effects upon the natural or built environments as a result of an action (i.e., project).
In-vehicle Travel Time	The amount of time it takes for a transit vehicle to travel between an origin and a destination.
In-vehicle Walk and Wait Travel Time	The amount of in-vehicle travel time plus time spent walking to transit, initial wait time, transfer wait time (if any), and time walking from transit to the destination.
Independent Utility	A project or section of a larger project that would be a usable and reasonable expenditure even if no other projects or sections of a larger project were built and/or improved.
Industrial	I-2 and I-3
Institution	PL and PRO
Intergovernmental Agreement	A legal pact authorized by state law between two or more units of government, in which the parties contract for, or agree on, the performance of a specific activity through either mutual or delegated provision.
Intermodal	Those issues or activities that involve or affect more than one mode of transportation, including transportation connections, choices, cooperation, and coordination of various modes. Also known as "multimodal."
Jefferson Westside Special Area Zone	S-JW
Joint Development	Ventures undertaken by the public and private sectors for development of land around transit stations or stops.
Key Transit Corridors	Key transit corridors are mapped in Envision Eugene and are anticipated to be significant transit corridors for the City and the region
Kiss & Ride	A place where commuters are driven and dropped off at a station to board a public transportation vehicle.

Table A-2. Terms

Terms	Definitions
Land and Water Conservation Fund (LWCF) Act of 1965	16 U.S.C. 4601-4 et seq. The Land and Water Conservation Fund (LWCF) State Assistance Program was established by the LWCF Act of 1965 to stimulate a nationwide action program to assist in preserving, developing, and providing assurance to all citizens of the United States (of present and future generations) such quality and quantity of outdoor recreation resources as may be available, necessary, and desirable for individual active participation. The program provides matching grants to states and through states to local units of government, for the acquisition and development of public outdoor recreation sites and facilities.
Landscape Tree	A living, standing, woody plant having a trunk that exists on private property.
Lane Regional Air Protection Agency (LRAPA)	LRAPA is responsible for achieving and maintain clean air in Lane County using a combination of regulatory and non-regulatory methods
Layover Time	Time built into a schedule between arrival at the end of a route and the departure for the return trip, used for the recovery of delays and preparation for the return trip.
Lead Agency	The organization that contracts and administers a study. For transit projects, FTA would typically fill this role. The lead agency has the final say about the project's purpose and need, range of alternatives to be considered, and other procedural matters.
Level of Detail	The amount of data collected, and the scale, scope, extent, and degree to which item-by-item particulars and refinements of specific points are necessary or desirable in carrying out a study.
Level of Service (LOS)	LOS is a measure used by traffic engineers to determine the effectiveness of elements of transportation infrastructure. LOS is most commonly used to analyze highways, but the concept has also been applied to intersections, transit, and water supply.
Light Rail Transit (LRT)	Steel wheel/steel rail transit constructed on city streets, semi-private right of way, or exclusive private right of way. Formerly known as "streetcar" or "trolley car" service, LRT's major advantage is operation in mixed street traffic at grade. LRT vehicles can be coupled into trains, which require only one operator and often are used to provide express service.
Limited (or Controlled) Access	Restricted entry to a transportation facility based upon facility congestion levels or operational condition. For example, a limited access roadway normally would not allow direct entry or exit to private driveways or fields from said roadway.
Liquefaction	A phenomenon associated with earthquakes in which sandy to silty, water saturated soils behave like fluids. As seismic waves pass through saturated soil, the structure of the soil distorts, and spaces between soil particles collapse, causing ground failure.
Liquefied Natural Gas (LNG)	An alternative fuel; a natural gas cooled to below its boiling point of 260 degrees Fahrenheit so that it becomes a liquid; stored in a vacuum bottle-type container at very low temperatures and under moderate pressure. LNG vapor is lighter than air.
Local Streets	Local streets have the sole function of providing direct access to adjacent land. Local streets are deliberately designed to discourage through-traffic movements.
Locally Preferred Alternative (LPA)	The LPA is the alternative selected through the Alternatives Analysis process completed prior to or concurrent with National Environmental Policy Act analysis. This term is also used to describe the proposed action that is being considered for New Starts or Small Starts funds.
Low-Income Persons	Those whose median household income is at or below the Department of Health and Human Services poverty guidelines. For a four-person household with two related children, the poverty threshold is $24,300 (year 2016 dollars).

Table A-2. Terms

Terms	Definitions
Maintenance area	An air quality designation for a geographic area in which levels of a criteria air pollutant meet the health-based primary standard (national ambient air quality standard, or NAAQS) for the pollutant. An area may have on acceptable level for one criteria air pollutant, but may have unacceptable levels for others. Maintenance/attainment areas are defined using federal pollutant limits set by EPA.
Maintenance facility	A facility along a corridor used to clean, inspect, repair and maintain bus vehicles, as well as to store them when they are not in use.
Major Arterial	Major arterial streets should serve to interconnect the roadway system of a city. These streets link major commercial, residential, industrial, and institutional areas. Major arterial streets are typically spaced about one mile apart to assure accessibility and reduce the incidence of traffic using collectors or local streets for through traffic in lieu of a well-placed arterial street. Access control, such as raised center medians, is a key feature of an arterial route. Arterials are typically multiple miles in length.
Major Investment Study (MIS)	An alternatives analysis study process for proposed transportation investments in which a wide range of alternatives is examined to produce a smaller set of alternatives that best meet project transportation needs. The purpose of the study is to provide a framework for developing a package of potential solutions that can then be further analyzed during an Environmental Impact Statement process.
Metro Plan Designations	Commercial, Commercial / Mixed Use, Government and Education, Heavy Industrial, High Density Residential / Mixed-Use, High Density Residential, Light-Medium Industrial, Low Density Residential, Medium Density Residential, Medium Density Residential / Mixed-Use, Mixed-Use, Parks and Open Space, Major Retail Center, Campus Industrial, University Research
Metropolitan Planning Organization (MPO)	The organization designated by local elected officials as being responsible for carrying out the urban transportation and other planning processes for an area.
Minimum Operable Segment	A stand-alone portion of the alternative alignment that has independent utility, allowed by FTA to be considered as interim termini for a project. A minimum operable segment (MOS) provides flexibility to initiate a project with available funding while pursuing additional funding to complete the remainder of the project.
Minor Arterial	A minor arterial street system should interconnect with and augment the urban major arterial system and provide service to trips of moderate length at a somewhat lower level of travel mobility than major arterials. This system also distributes travel to geographic areas smaller than those identified with the higher system. The minor arterial street system includes facilities that allow more access and offer a lower traffic mobility. Such facilities may carry local bus routes and provide for community trips, but ideally should not be located through residential neighborhoods.
Minority	A person who is one or more of the following: • Black: a person having origins in any of the black racial groups of Africa • Hispanic or Latino: a person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race • Asian American: a person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent • American Indian and Alaskan Native: a person having origins in any of the original people of North America, South America (including Central America), and who maintains cultural identification through tribal affiliation or community recognition • Native Hawaiian and Other Pacific Islander: a person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands
Mitigation	A means to avoid, minimize, rectify, or reduce an impact, and in some cases, to compensate for an impact.

Table A-2. Terms

Terms	Definitions
Mixed-Use	C-1, C-2, GO, S-C, S-CN, S-DR, S-DW, S-E, S-F, S-HB, S-JW, S-RN, S-W, and S-WS
Modal Split	A term that describes how many people use alternative forms of transportation. Frequently used to describe the percentage of people using private automobiles as opposed to the percentage using public transportation. Modal split can also be used to describe travelers using other modes of transportation. In freight transportation, modal split may be measured in mass.
Mode	A particular form or method of travel distinguished by vehicle type, operation technology, and right of way separation from other traffic.
Moving Ahead for Progress in the 21st Century (MAP-21)	Moving Ahead for Progress in the 21st Century (MAP-21) was signed by President Obama on July 6, 2012, reauthorizing surface transportation programs through FY 2014. It includes new and revised program guidance and regulations with planning requirements related to public participation, publication, and environmental considerations.
MovingAhead Project	The City of Eugene and LTD are working with regional partners and the community to determine which improvements are needed on some of our most important transportation corridors for people using transit, and facilities for people walking and biking. MovingAhead will prioritize transit, walking, and biking projects along these corridors so that they can be funded and built in the near-term. The project will focus on creating active, vibrant places that serve the community and accommodate future growth. During Phase 1, currently underway, the community will weigh in on preferred transportation solutions for each corridor and help prioritize corridors for implementation. When thinking about these important streets, LTD and the City of Eugene refer to them as corridors because several streets may work as a system to serve transportation needs.
Multi-Family Residential	R-2 and R-3
Multimodal	Multimodal refers to various modes. For the MovingAhead project, multimodal refers to Corridors that support various transportation modes including vehicles, buses, walking and cycling.
National Environmental Policy Act of 1969 (NEPA)	A comprehensive federal law requiring analysis of the environmental impacts of federal actions such as the approval of grants; also requiring preparation of an Environmental Impact Statement for every major federal action significantly affecting the quality of the human environment.
New Starts	Federal funding granted under Section 3(i) of the Federal Transit Act. These discretionary funds are made available for construction of a new fixed guideway system or extension of any existing fixed guideway system, based on cost-effectiveness, alternatives analysis results, and the degree of local financial commitment.
No Action or No-Build Alternative	An alternative that is used as the basis to measure the impacts and benefits of the other alternative(s) in an environmental assessment or other National Environmental Policy Act action. The No-Build Alternative consists of the existing conditions, plus any improvements that have been identified in the Statewide Transportation Improvement Program.
Nonattainment Area	Any geographic region of the United States that the U.S. Environmental Protection Agency (EPA) has designated as not attaining the federal air quality standards for one or more air pollutants, such as ozone and carbon monoxide.
Notice of Intent	A federal announcement, printed in the *Federal Register*, advising interested parties that an Environmental Impact Statement will be prepared and circulated for a given project
Off-Peak Period	Non-rush periods of the day when travel activity is generally lower and less transit service is scheduled. Also called "base period."
Office	E-1 and E-2

Table A-2. Terms

Terms	Definitions
Oregon Statewide Comprehensive Outdoor Recreation Plan (SCORP)	The 2013-2017 Oregon Statewide Comprehensive Outdoor Recreation Plan (SCORP), entitled *Ensuring Oregon's Outdoor Legacy* (OPRD, No Date), constitutes Oregon's basic 5-year plan for outdoor recreation. The plan guides the use of LWCF funds that come into the state; provides guidance for other OPRD-administered grant programs; and provides recommendations to guide federal, state, and local units of government, as well as the private sector, in making policy and planning decisions.
Park and Ride	Designated parking areas for automobile drivers who then board transit vehicles from these locations.
Participating Agency	A federal or non-federal agency that may have an interest in the project. These agencies are identified and contacted early-on in the project with an invitation to participate in the process. This is a broader category than "cooperating agency" (see Cooperating Agency).
Passenger Miles	The total number of miles traveled by passengers on transit vehicles; determined by multiplying the number of unlinked passenger trips times the average length of their trips.
Peak Hour	The hour of the day in which the maximum demand for transportation service is experienced (refers to private automobiles and transit vehicles).
Peak Period	Morning and afternoon time periods when transit riding is heaviest.
Peak/Base Ratio	The number of vehicles operated in passenger service during the peak period divided by the number operated during the base period.
Place-miles	Place-miles refers to the total carrying capacity (seated and standing) of each bus and is calculated by multiplying vehicle capacity of each bus by the number of service miles traveled each day. Place-miles highlight differences among alternatives caused by a different mix of vehicles and levels of service.
Preferred Alternative	An alternative that includes a major capital improvement project to address the problem under investigation. As part of the decision making process, the Preferred Alternative is compared against the No Action or No-Build Alternative from the standpoints of transportation performance, environmental consequences, cost-effectiveness, and funding considerations.
Purpose and Need	The project Purpose and Need provides a framework for developing and screening alternatives. The purpose is a broad statement of the project's transportation objectives. The need is a detailed explanation of existing conditions that need to be changed or problems that need to be fixed.
Queuing	Occurs when traffic lanes cannot fit all the vehicles trying to use them, or if the line at an intersection extends into an upstream intersection.
Record of Decision (ROD)	A decision made by FTA as to whether the project sponsor receives federal funding for a project. The Record of Decision follows the Draft EIS and Final EIS.
Regulatory Agency	An agency empowered to issue or deny permits.
Resource Agency	A federal or state agency or commission that has jurisdictional responsibilities for the management of a resource such as plants, animals, water, or historic sites.
Revenue Hours	Hours of transit service available for carrying paying riders.
Ridership	The number of rides taken by people using a public transportation system in a given time period.
Ridesharing	A form of transportation, other than public transit, in which more than one person shares the use of the vehicle, such as a van or car, to make a trip. Also known as "carpooling" or "vanpooling."
Right of Way	Publicly owned land that can be acquired and used for transportation purposes.

Table A-2. Terms

Terms	Definitions
Safe, Accountable, Flexible, Efficient Transportation Equity Act (SAFETEA-LU)	SAFETEA-LU was passed by Congress July 29, 2005, and signed by the President August 10, 2005. Includes new and revised program guidance and regulations (approximately 15 rulemakings) with planning requirements related to public participation, publication, and environmental considerations. SAFETEA-LU covers FY 2005 through FY 2009 with a total authorization of $45.3 billion.
Scoping	A formal coordination process used to determine the scope of the project and the major issues likely to be related to the proposed action (i.e., project).
Screening Criteria	Criteria used to compare alternatives.
Section 4(f) of the Department of Transportation Act of 1966	23 U.S.C. 138 and 49 U.S.C. 303. Parks are subject to evaluation in the context of Section 4(f) of the Department of Transportation Act of 1966, which governs the use of publicly-owned/open to the public park and recreation lands, government-owned wildlife lands, and historic resources.
Section 4(f) resources	(i) any publicly owned land in a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance, or (ii) any land from a historic site of national, state, or local significance
Section 6(f) of the LWCF Act of 1965	The LWCF's most important tool for ensuring long-term stewardship is its "conversion protection" requirement. Section 6(f)(3) strongly discourages conversions of state and local park, and recreational facilities to other uses. Conversion of property acquired or developed with assistance under the program requires approval of the Department of Interior's National Park Service (NPS) and substitution of other recreational properties of at least equal fair market value, and of reasonably equivalent usefulness and location.
Section 106	Section 106 of the National Historic Preservation Act of 1966 requires that federal agencies take into account the effect of government-funded construction projects on property that is included in, or eligible for inclusion in, the NRHP.
Shuttle	A public or private vehicle that travels back and forth over a particular route, especially a short route or one that provides connections between transportation systems, employment centers, etc.
Single-Family Residential	R-1
Special Area Zone (Non-Mixed Use)	S-H and S-RP
Springfield 2030	Currently underway, this update to the City of Springfield's Comprehensive Plan will guide and support attainment of the community's livability and economic prosperity goals and redevelopment priorities.
Springfield Transportation System Plan (TSP)	The City of Springfield's Transportation System Plan looks at how the transportation system is currently used and how it should change to meet the long-term (20-year) needs of the City of Springfield's residents, businesses, and visitors. The Plan, which identifies improvements for all modes of transportation, will serve as the City of Springfield's portion of the Regional Transportation System Plan prepared by Lane Council of Governments (LCOG). It was prepared in coordination with Oregon Department of Transportation, LCOG, and the Oregon Department of Land Conservation and Development. The TSP was adopted March 11, 2014.
State Implementation Plan (SIP)	A state plan mandated by the Clean Air Act Amendments of 1990 that contains procedures to monitor, control, maintain, and enforce compliance with national standards for air quality.
Strategy	An intended action or series of actions which when implemented achieves the stated goal.
Street Tree	A living, standing, woody plant having a trunk that exists in the public right of way.

Table A-2. Terms

Terms	Definitions
Study Area	The area within which evaluation of impacts is conducted. The study area for particular resources will vary based on the decisions being made and the type of resource(s) being evaluated.
Throughput	The number of users being served at any time by the transportation system.
Title VI	This Title declares it to be the policy of the United States that discrimination on the ground of race, color, or national origin shall not occur in connection with programs and activities receiving federal financial assistance and authorizes and directs the appropriate federal departments and agencies to take action to carry out this policy.
Transit Oriented Development (TOD) or Nodal Development	A strategy to build transit ridership, while discouraging sprawl, improving air quality and helping to coordinate a new type of community for residents. TODs are compact, mixed-use developments situated at or around transit stops. Sometimes referred to as Transit Oriented Communities, or Transit Villages.
Transit System	An organization (public or private) providing local or regional multi-occupancy-vehicle passenger service. Organizations that provide service under contract to another agency are generally not counted as separate systems.
Transitway	A Bus Rapid Transit (BRT) priority lane generally with a concrete lane, with or without concrete tracks with grass-strip divider, and a curb separation, traversable by general-purpose vehicles at signalized intersections.
Transportation Demand Management (TDM)	Strategies to attempt to reduce peak period automobile trips by encouraging the use of high occupancy modes through commuter assistance, parking incentives, and work policies that alter the demand for travel in a defined area in terms of the total volume of traffic, the use of alternative modes of travel, and the distribution of travel over different times of the day.
Transportation Improvement Program (TIP)	A program of intermodal transportation projects, to be implemented over several years, growing out of the planning process and designed to improve transportation in a community. This program is required as a condition of a locality receiving federal transit and highway grants.
Travel Shed	Synonymous with “corridor” (see Corridor). A subarea in which multiple transportation facilities are experiencing congestion, safety, or other problems.
urban plaza	An urban plaza is a place that can be used for socializing, relaxation, and/or events.
v/c ratio	Used as a principal measure of congestion. The “v” represents the volume or the number of vehicles that are using the roadway at any particular period. The “c” represents the capacity of a roadway at its adopted level of service (LOS). If the volume exceeds the capacity of the roadway (volume divided by capacity exceeds 1.00), congestion exists.
Vehicle Hours of Delay	Cumulative delay experiences by transit vehicles during high traffic periods.
Water Quality	Refers to the characteristics of the water, such as its temperature and oxygen levels, how clear it is, and whether it contains pollutants.
Whiteaker Special Area Zone	S-W

Appendix B: Construction Activities and Methods

General Construction Methods

The following section describes how construction of the Locally Preferred Alternative (LPA) would likely be staged and sequenced. This description is based on Lane Transit District's (LTD's) experience with the Franklin, Gateway, and West Eugene EmX Corridors. The final plan for construction methods, sequencing, and staging will be determined in coordination with the contractor and permitting authorities.

Utility work will generally be completed before the transportation infrastructure is constructed. Utility work, often conducted by local utility companies, occurs separately from project-related construction. After completing required utility relocation and other preparatory site work, the contractor will begin with construction of new transit lanes, bike lanes, sidewalks, and any other "flatwork." The contractor will modify existing signals or construct new traffic signals as part of this work. In some cases, the contractor may construct the signal footings but install signal arms after initial work is complete. Flatwork for stations, including curbs, ramps, and station footings, will be completed as the work progresses along the alignment. Streets and street segments will be restored to normal operations after this work is complete. The contractor is expected to progress approximately two blocks every 2 weeks, with additional time required – up to 2 weeks – for each enhanced stop or EmX station. Additional time will be required at intersections that require new or substantially modified traffic signals. The construction sequencing will be determined through coordination between the contractor and local residents, businesses, and property owners regarding construction scheduling preferences. It is expected that, for each major segment, the work would start at one end of the segment and progress to the other end of the segment. All flatwork is expected to be completed in two construction seasons.

Stations will be fabricated during the second construction season and installed during the subsequent (final) construction season, along with landscaping, fare machines, real-time passenger information, enhanced stop or EmX station amenities, and other similar items.

The contractor and LTD will coordinate closely with the Oregon Department of Transportation (ODOT) and with the City of Eugene (as appropriate to the jurisdiction) on traffic control. Depending on the segment, ODOT or the City will review and approve traffic plans for construction.

On streets with multiple lanes in each direction (or multiple lanes in one direction for one-way streets), at least one lane of traffic will be open at all times. Flaggers will coordinate travel at intersections and other points of congestion, as necessary. On streets with a single lane, it may be necessary to close one direction of traffic for certain periods. In those situations, flaggers will be used to manage the traffic flow safely. The contractor and LTD will also coordinate with businesses to ensure that the project maintains access for patrons and deliveries.

Coordination with Businesses and Residents

LTD's Franklin, Gateway, and West Eugene EmX projects demonstrated LTD's commitment to communicating with impacted businesses, residences, and travelers, both before and during construction. As with those projects, LTD will contact all businesses and residents along the alignment well before construction begins to solicit local concerns, issues, and scheduling preferences. Businesses and residents will also be able to communicate with the contractor and LTD during construction. LTD's construction liaison will provide e-mail updates and serve as an ongoing point of contact to address concerns and to provide information to affected businesses, residents, and other interested persons.

LTD will provide a 24-hour hotline to quickly address construction concerns from businesses and residences.

LTD will also work to enhance activity at businesses affected by construction. This can be done through attractive signage, direct communications with the public (e.g., direct mail and advertising), and community events (e.g., street fairs). These techniques succeeded in keeping business areas active during previous EmX projects.

Appendix C: List of Hazardous Material Sites

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Appendix C: List of Hazardous Material Sites

Table C-1. Summary of Hazardous Site Information

Site ID	Database	Site Name	Oper'n Desc'n	On Impacted Taxlot?	Invest'n Status	Site Description	Medium Receiving Released Substance	Admin/ Remedial Action	Released Substance	Instit'al / Eng Control	# of Active Tanks
1	ECSI	Lane Community College	College	Yes	Suspect	College maintenance department disposed of paint wastes in storm drains on property.	Groundwater	Site added to database, last updated 3/17/1995	Toluene		
2	ECSI	Northwest Solvents & Supply, Inc.	Distributor of industrial solvents	No	No Further Action	Soil on the property is contaminated. Manner of release not known; however, it is probably from onsite disposal of spent solvents. Site was proposed on highway right-of-way; DEQ-approved closure, RCRA closure of drum storage area in 9-87. There is no longer a facility – it has been replaced by the highway. (12/28/00 BTM/SAS) Only the drum storage building (along with the west edge of the property) paved over. The rest of the facility is still operating. Site contamination indicated by 1987 soil and concrete sampling includes petroleum at concentrations ranging from 20 to 4,000 ppm, and PCE at up to 3 ppm. (5/1/13 SJS/SAS) Sampling during the XPA showed soil and groundwater contamination of PCE and decay products and diesel.		Site evaluation, last updated 4/10/2001	Oil – lubricating		
3	ECSI	Potter Manufacturing	Company produced decals from silk screens; the operation	No	No Further Action	(4/12/88 DAB/SAS) Upon visiting this facility, in order to follow up a pollution complaint, a WVR DEQ Inspector noted that solvents used in a washing	Groundwater	No Further State Action Required, last updated 6/25/2004	Acetone		

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Site ID	Database	Site Name	Oper'n Desc'n	On Impacted Taxlot?	Invest'n Status	Site Description	Medium Receiving Released Substance	Admin/ Remedial Action	Released Substance	Instit'al / Eng Control	# of Active Tanks
			was purchased in 1989 and moved to a new site in Eugene; the building and wash shed were removed.			procedure were discharged directly to the soil. The solvent used in this procedure is a mixture of the following chemicals: acetone 43 percent, toluene 37 percent, methyl ethyl ketone 15 percent, and ethyl acetate 5 percent. In addition to this disposal practice, for years the owner discharged to a dry well located on the property. Solvent/ink floating on soils and waters of these areas were noted to have an unmistakable smell. Samples from where the solvent pools on the ground with rainwater were collected.					
5	ECSI	Unocal Service Station – Eugene	Gasoline service station	No	No Further Action	Time of release: Dec. 1987; manner of release not known.	Soil	Site added to database, last updated 3/17/1995	Gasoline		
6	ECSI	Slide-Rite River Boat Co.	Manufacture riverboats – fiberglass, riverboat accessories.	No	No Further Action	(9/18/01 JWG/SAS) A site assessment and sampling event was completed January 2000 by PBS Environmental. Five sample locations were selected as the areas most likely to indicate impacts as a result of historical operations associated with the subject property... Laboratory results indicate that the presence of solvents such as acetone or other similar solvents for fiberglass and/or automotive paints, PCBs, and metal screening for Cr, Cd, and Pb are below the detection level. Measurable contamination on the site is in a specific area and appears limited to hazardous	Groundwater	Site Evaluation, last updated 9/20/2001	TPHs		

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						substances associated with a motor fuel or heating oil underground tank.					
7	ECSI	States Industries, Inc.		No	No Further Action	This facility has released glue wastewater to a ditch on its property a number of times (documented in 1978 and 1981). It must be determined whether or not the waste is a hazardous substance.		Site added to CERCLIS, last updated 9/15/1991			
9	ECSI	Advanced Transmission	Automotive shop	No	Listed on the CRL/Inventory	(12/21/90 CW) According to an 11/9/88 pollution complaint, site operators were dumping the contents of a vat containing solvent from transmission cleaning with a hose to the road approximately every 72 hours. The disposal of engine fluid waste to the ground in back of a building was part of an ongoing, previous operating practice. After a site visit by DEQ, this practice has stopped and the present disposal practice is adequate. Of possible concern, though, is an area at the back of the shop building that shows potential oil contamination. This area was covered with sawdust to absorb oily surface contaminants and the present owner and operator have submitted a soil removal cost estimate to WVR. (5/16/01 BTM/SAS) In 1993 owner excavated soil to below visible contamination; segregated visibly clean soil from visibly contaminated soil; used visibly clean soil to grade			Oil – waste		

Table C-1. Summary of Hazardous Site Information

Site ID	Database	Site Name	Oper'n Desc'n	On Impacted Taxlot?	Invest'n Status	Site Description	Medium Receiving Released Substance	Admin/ Remedial Action	Released Substance	Instit'al / Eng Control	# of Active Tanks
						front parking lot; aerated/tilled visibly contaminated soil until 1995; collected composite sample from four locations of stockpile for petroleum analysis (none identified/detected); then used the soil to grade original location prior to paving it.					
10	ECSI	Glass Spray Service, Inc.	Spray service – pesticide, herbicide applicator	No	No Further Action	(7/2/91 DJH/SAS) No known on- or offsite contamination.					
11	ECSI	Retta Manufacturing, Inc.	Spray service – pesticide, herbicide applicator	No	No Further Action	No known releases.					
15	ECSI	Willamette Valley Co.		No	Suspect	This facility manufactures products for the wood industry. Acetone, toluene, ethyl acetate, iso-cyanate, and process oil are used in the manufacturing process. The facility has been in operation since 1938. As of 1990, the wastewater, waste putty, solvent waste, and acetone are recycled. Past disposal practices are unknown.					
16	ECSI	Chase Gardens, Inc.	Former greenhouse – nursery operation	No	No Further Action	Concerns on the site related to the release of hazardous substances have included pesticide applications in the onsite greenhouses, potential leaks or spills around pesticide tanks, a December 1990 release of diesel and motor oil from an aboveground tank to a concrete bunker, and release of gasoline from an UST.			Endosulfan I		

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17	ECSI	KBTC	Currently: Office building. Previouly: Auto repair facility, a fuel dealer ship, and a creamery.	No	Suspect	(2/26/97 GEA/VCP) KBTC, a development company, purchased the site with the intent of constructing a five-story office building. As part of the process to obtain financing for the construction, the bank required KBTC to conduct an environmental site assessment. Contamination was detected, and KBTC signed up for DEQ oversight under the VCP. A Site Investigation was completed in November 1993. Groundwater samples taken at the site around September 1995 showed low levels of PAH contamination.	Soil		Petroleum		
19	ECSI	Shell Bulk Terminal (Former) – Eugene	Bulk Facility dismantled	No	Listed on the CRL/Inventory	Source of contamination is not certain, but may be past practices associated with aboveground storage tank at bulk plant, or leaking underground storage tanks onsite. Free product found in one of the monitoring wells onsite during ESA performed in January 1994.	Soil		Gasoline		
20	ECSI	Dorlon Himber Property	Former bulk fuel storage facility (1951-1963). Currently (1994) a vacant lot and Chambers Street.	No	No Further Action	Site proposed for redevelopment. Site was bulk fuel facility (until 1960s). Chambers Street constructed in late 1980s and cuts across site. Diesel impact to soil and groundwater (below standards) near property boundary with Chambers Street. Impacts may go offsite.	Soil		Diesel – fuel oil		

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22	ECSI	Diamond Parking/Rainier Properties	Formerly auto service, silk screening, etc. Now parking and theater.	No	No Further Action	There is a confirmed release from UST (gasoline, BTEX, PAH) impacting soil and groundwater; there's also a suspected release from a sump in-building. Sludge in the sump was removed and found to have F-listed and characteristic hazardous wastes. The sludge tested at very high levels for metals and HVOCs and there may have been an impact to the surrounding soil and groundwater.	Groundwater		1,1,1-Trichloroethane		
23	ECSI	Schnitzer Steel – Eugene		No	Listed on the CRL/Inventory	(6/1/95 KNA/SAS) This site was referred to SAS by DEQ Water Quality Staff. A complaint had led to the investigation of the site for excessive metals and oil and grease in its storm water discharge. Samples of water and sediment at the site showed elevated PAHs and metals in sediment. Sample results were forwarded to SAS. Several carcinogenic PAHs were found above soil cleanup levels. Because samples were taken from sediment at a storm water outfall, there may be widespread contamination at the site, where lead batteries were recycled prior to 1990.			Benzo(a)anthracene		
25	ECSI	Ken's Dry Cleaning (Former)		No	No Further Action	The site operated from about 1972 to 1978 as Ken's Dry Cleaning. The site was bought by new operators in 1978 and operated from about 1978 to 1993. Apparently the new					

Table C-1. Summary of Hazardous Site Information

Site ID	Database	Site Name	Oper'n Desc'n	On Impacted Taxlot?	Invest'n Status	Site Description	Medium Receiving Released Substance	Admin/ Remedial Action	Released Substance	Instit'al / Eng Control	# of Active Tanks
						operators did the actual dry cleaning offsite.					
26	ECSI	BNSF – Eugene (Former)		No	Listed on the CRL/Inventory	This site came to the attention of the Site Assessment program when Burlington Northern Santa Fe informed DEQ of pentachlorophenol in groundwater. Site was active in LUST from 12/89 through 3/92 (LUST #20-89-4150). The site formerly operated as Eugene Wood Products, Inc., which was operated by WTD Industries. Both Eugene Wood Products, Inc. and WTD Industries are out of business.	Soil		Pentachlorophenol	Quit Claim Deed recorded 07/02/2002; BNSF assigns to The Justin Company LLC the groundwater use restriction for the property, related to known contamination (CJR 03/07/2016)	
27	ECSI	Hammer/Furtick Property		Yes	Suspect	(6/25/01 MME/SAS) Due to a pending sale of the Hammer/Furtick Property to LTD, a site evaluation was conducted by DEQ on September 17, 1996. The following potential sources of surface and subsurface contamination include: possible USTs at the site; a spray paint area in the northwest corner of the site when it was an auto dealership; and a former service station located offsite, but near the subject property.	Groundwater		TCE		
28	ECSI	Staff Jennings		Yes	No Further Action	Two USTs decommissioned by removal in 1989. Pervasive oil stains observed. Presence of oil sump likely used for oil changes.					
29	ECSI	Dorlon Himber II (West)	Commercial/light industrial	No	No Further Action	Petroleum contamination in soil and groundwater. Petroleum	Soil		Gasoline		

Table C-1. Summary of Hazardous Site Information

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			ranging from fish market, wood staining operation lumber retail, and equipment storage			traveled from a neighboring bulk-fuel plant.					
31	ECSI	Strand Property		No	No Further Action	No known releases at the site. Low-concentration PAH contamination likely from offsite source.					
32	ECSI	Eugene Library (New)		No	Suspect	(12/11/01 GJW/VCS) Many commercial businesses have been located in the past at this site or on adjacent properties. Former businesses operations that had potential to cause environmental impacts to the area were dry cleaners, service stations, paint shops, and automobile repair shops. Currently, there is a dry-cleaning business (McAyeal's – ECSI #2490) immediately south of the library site. (McAyeal's joined DEQ's Dry Cleaner Program to address potential environmental contamination present onsite. Investigations at McAyeal's will be initiated by DEQ in 2002.) Between September 1998 and March 2000, the City of Eugene conducted several environmental investigations to determine the nature/extent of soil and groundwater contamination. Petroleum-contaminated soils were encountered predominantly at			Petroleum hydrocarbons		

Table C-1. Summary of Hazardous Site Information

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						the southeast corner of the site. Groundwater contaminated with solvents above U.S. EPA Drinking Water Maximum Contaminant Levels was also detected in samples from monitoring wells and push probes located on, and south of, the site.					
33	ECSI	Ferry Street Bridge Site		No	Listed on the CRL/Inventory	(10/27/99 BTM) The City of Eugene contacted DEQ when contamination was encountered at the base of a bridge during the construction of a bike path. Tar-like oil and a wooden sump containing an oily substance were found.			Benzo(a)pyrene		
34	ECSI	Auto Safety Center, Inc.		No	Listed on the CRL/Inventory	(2/23/00 M2C/CU) Site was brought to Cleanup section attention from Hazardous Waste inspection by DEQ's Salem office. NON number ENF-WMC/HW-WRS-99-292 was issued 9/8/99. The NON recommended the owner contact the Cleanup Section in the Eugene DEQ office. The inspector noted that a sump located inside the secondary containment structure discharged wastewater and waste oil onto the ground surface behind the building. Also, near the area of the waste oil discharge, there was about a gallon of heavy grease dumped onto the gravel.					

Table C-1. Summary of Hazardous Site Information

Site ID	Database	Site Name	Oper'n Desc'n	On Impacted Taxlot?	Invest'n Status	Site Description	Medium Receiving Released Substance	Admin/ Remedial Action	Released Substance	Instit'al / Eng Control	# of Active Tanks
35	ECSI	McAyeal's Wardrobe Cleaners	Dry cleaners	No	Suspect	(1/15/2003 DH/SRS) The site was brought to DEQ's attention after groundwater contamination commonly associated with dry cleaners was found at an adjacent site (the Eugene Library, ECSI #2405). The City of Eugene signed up for DEQ's Independent Cleanup Pathway (ICP) in July 1999 to obtain limited DEQ oversight for evaluating the contamination at the library site. Groundwater investigations conducted by the city found groundwater at the library site to be contaminated with PCE and associated breakdown products, and that the highest levels of PCE were located near the McAyeal's site. McAyeal's applied to DEQ's Dry Cleaner Program in April 2000, and was accepted in June 2000.	Groundwater		PCE	In early 2000 the City of Eugene installed a groundwater pump and treat system (stacked tray stripper) at the site. The air stripper also was designed to treat water from library construction activities that occurred on the property to the north. After library completion the air stripper was configured to treat dewatering water from the library sumps. DEQ assumed control and ownership of the treatment system from the City in 2003. Originally the treated water was sent to the city sanitary sewer under a	

Table C-1. Summary of Hazardous Site Information

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										wastewater permit. The water is routed to the air stripper. Treated water is currently discharged to the storm sewer under an NPDES permit. DEQ monitors flow and tests the discharge water monthly.	
36	ECSI	Chiquita Processed Foods		No	No Further Action	Petroleum hydrocarbons, PCBs, metals, BTEX, PAHs			Petroleum hydrocarbons		
37	ECSI	Tosco/Unocal Bulk Plant #0968 (former)		No	Suspect	(12/27/06 CPJ – Tanks) Bulk fuel distribution facility constructed in 1915 with three aboveground fuel tanks. Two additional ASTs were installed in 1921 and 1931. A semi-buried tank was installed in 1948. The 1915 tanks were replaced in 1950 and the semi-buried tank was removed in 1955. An additional AST was installed in 1955. All tanks were removed in 1989 except an UST for heating oil, an AST for heating oil, and an aboveground waste oil tank. Two new lube oil tanks were installed during mid-1989. 9/14/12 PSR – A spill of diesel occurred in January 2009 at the time the facility was operated by Tyree oil. Some cleanup of the diesel spill occurred under the					

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						oversight of DEQ's spill response program. During cleanup of the fresh diesel spill, apparently older petroleum contamination was encountered. DEQ spill response staff indicated that Tyree Oil could continue soil removal at their expense or stop its emergency response actions, in which case the remaining fresh diesel oil would be referred to DEQ's cleanup program for further action under ECSI 3764. Tyree Oil decided to cease excavating. This 2009 diesel spill still requires further action. (12/31/2014 CJR) Note that this site is separate from ECSI #4379 (101 Blair Blvd) and should remain as two distinct cleanup sites (different addresses and historical ownership). ECSI 4379 is Unocal Bulk Plant 0968.					
41	ECSI	Great Western Chemical Co. (former)		No	Listed on the CRL/Inventory	(4/20/05 M2C/VCP) High levels of PCE and TCE found in groundwater onsite, downgradient of former Great Western Chemical.	Groundwater		TCE		
42	ECSI	E 11th Drycleaner – Eugene (former)		No	Suspect	Low levels of PCE and TCE were detected in groundwater.					
44	ECSI	Skopil's Cleaners	Stopped using PCE in 2001.	No	No Further Action	(06/06/06 GB/VCP) Site added to VCP. The site has been in use as a dry cleaning facility since 1957. PCE was used an industrial solvent at the Site between 1957 and 2001. Subsurface impacts from	Groundwater		TCE	Sub-slab depressurizatio n needed at dry cleaner building currently. May be	

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						PCE and its degradation products (cis-1,2-dichloroethene TCE), and vinyl chloride) were initially discovered during an environmental investigation performed in November 2004. Since 2004, several investigations and IRAMs have been conducted at, and in the vicinity, of the site. Quarterly groundwater monitoring has occurred from September 2007 through September 2009.The uppermost water bearing zone underlying the site appears to exist in a relatively narrow depth interval (approximately 5 feet below ground surface) at contact between weathered portions of the bedrock. Shallow groundwater occurrence may be affected by subsurface utilities (e.g., a sanitary sewer, storm drains, etc.), as well as seasonal variations in precipitation. The groundwater flow direction as measured during quarterly monitoring events has been generally to the northeast. The flow direction is generally toward Amazon Creek, located approximately 1,600 feet east of the Site. The spatial distribution of the VOC concentrations in shallow groundwater indicate that the storm and sewer lines in the vicinity of the site may act as preferential routes of migration for VOCs in groundwater. The results of a simple nonlinear regression				discontinued in future if site conditions warrant.	

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						model indicate that the lateral extent of the VOCs in shallow groundwater may extend to roughly 600 feet downgradient of the furthest downgradient monitoring well (MW-19). The findings of the November 2009 surface water sampling at Amazon Creek confirmed that the locality of facility does not include Amazon Creek given that VOCs were not detected in any of the three surface water samples collected. In November 2006, an IRAM was completed that removed 480 tons of impacted soil and placed a Daramend bioremediation treatment in the fill material in an attempt to drive anaerobic reductive dechlorination of chlorinated ethenes to non-toxic compounds (ethene, ethane, and methane).					
						(NWR 1/10/11) IRAM In November of 2006, 480 tons of contaminated soil were removed from the site and disposed in a permitted landfill as listed hazardous waste. The pits were backfilled with a mixture of clean soil and a commercial remediation product known as Daramend. The purpose of the Daramend soil amendment is to increase the rate of reductive dechlorination of residual chlorinated compounds. Three tons of Daramend were mixed					

Table C-1. Summary of Hazardous Site Information

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						with a clean sand and gravel backfill at a ratio of 1:14 by weight. The three residences immediately east of the site had potential exposures to elevated levels to air containing contaminants from the site. All three homes had impermeable vapor barriers installed in the crawlspace. Two of the three were also outfitted with fans and a sub-barrier depressurization system. FS Summary The remedial action recommended by theFS was soil excavation with a soil vapor extraction system in the Skopil's Dry Cleaner building. The elements of this remedy were the following: 1. Development of a contaminated media management plan. 2. If necessary, a deed restriction on the site. 3. Continued operation and monitoring of the offsite residential vapor controls, if necessary. 4. Abandonment of wells MW-1 and MW-9 prior to excavation, and installation of two new monitoring wells after the excavation. 5. Excavation and disposal of contaminated soil from selected areas at the site.					

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						6. Treatment of residual contamination through the addition of Daramend to the backfill of the excavations 7. Installation and operation of a SVE system at the northeast building walls. 8. Monitored natural attenuation to address residual concentrations of contaminants in non-source areas and groundwater. 9. Monitoring to evaluate the concentrations of contaminants in soil, groundwater, and vapor to evaluate the effectiveness of the remedial alternative. These elements were incorporated into the 2012 Record of Decision for the site.					
						Construction Pre-construction sampling showed that vapor concentrations beneath the slab underlying the drycleaner building were much less than was anticipated based on the RI information. The SVE system was therefore changed to a vapor collection system. In addition, the extent of soil excavation was reduced because during excavation it was found that the previous IRAM was excavation was larger than the previous reporting indicated. Because of the smaller excavation volume, there was an excess of Daramend material					

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						available, so the entire pit volume was amended with Daramend mixture. Summary During the RD/RA work plan remediation implementation, more than 158 tons of soil were excavated from three areas at the site and disposed of as non-hazardous waste at a permitted Subtitle D solid waste landfill. Approximately 8.3 tons of Daramend soil amendment was mixed with the backfill material and the site was restored to its original condition by July 27, 2013. Samples collected from the excavation extents demonstrate that the residual concentrations of PCE and TCE are below the acceptable RBCs. One sample did show vinyl chloride concentrations above the RBC, but vapor sampling demonstrated the vapor intrusion pathway is acceptable. Soil gas concentrations and sub slab vapor concentrations collected from beneath the site building were consistently below the applicable RBCs, which indicated that the soil gas venting system was adequate and the proposed SVE system was not needed. This venting system reduces pressures beneath the slab floor of the building and reduces the potential for vapor intrusion. The sub-slab depressurization					

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						system began operating August 2, 2013. Concentrations of the chloroethene compounds in soil, vapor, and groundwater meet acceptable risk levels, and indicate that no additional remediation is needed at the site. Trend in the VOC concentrations will be assessed in the future to assess the potential for seasonal fluctuations in concentrations. (NWR 1/13/13)					
46	ECSI	267 Van Buren		No	Suspect	Soil contamination: petroleum products: TPH-G and TPH-D Solvents: suspected due to historical use as distribution and storage facility.					
47	ECSI	IBU		No	Suspect	[Jan. 2013] Former aboveground storage tank facility that has diesel contamination in soil and groundwater. Contaminants migrated in groundwater beneath neighboring properties. One such adjacent property, TJN Property (Tax lot 6404/6400) has diesel contaminants in groundwater that has migrated from the IBU site. But TJN sample concentrations are below applicable risk-based levels. DEQ made a no-further action decision at TJN in January 2013 (see document posted below). However, further work is needed at the source property, IBU/ECSI #5778.					

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48	ECSI	Mercedes of Eugene		No	No Further Action	Petroleum contamination has been discovered in soil associated with former hydraulic lifts.					
50	LUST	Heating oil tank		No							
51	LUST	Heating oil tank		No							
52	LUST	Sounds On Wheels (SOW)		No							
53	LUST	Eugene Moving & Storage		No							
57	LUST	Les Schwab – Coburg Road		No							
58	LUST	Shamrock Welding		No							
59	LUST	Heating oil tank		No							
60	LUST	Wagon Works		No							
61	LUST	Heating oil tank		No							
62	LUST	Basket Market		No							
63	LUST	Eugene Service Parts		No							
64	LUST	Sears Automotive Lot		No							
65	LUST	West 7th and Charnelton		No							
67	LUST	Eugene Main Post Office		No							
68	LUST	Heating oil tank		No							
69	LUST	Heating oil tank		No							
70	LUST	Heating oil tank		No							
71	LUST	Heating oil tank		No							

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72	LUST	Goodyear – Eugene		No							
73	LUST	Heating oil tank		No							
74	LUST	Heating oil tank		No							
75	LUST	AT&T Eugene		No							
77	LUST	Heating oil tank		No							
78	LUST	Heating oil tank		No							
79	LUST	Heeran Center		No							
80	LUST	Wyatts Tire Company		No							
81	LUST	Heating oil tank		No							
82	LUST	American Battery		No							
83	LUST	Heating oil tank		No							
84	LUST	Heating oil tank		No							
85	LUST	Smith & Crakes		No							
86	LUST	Heating oil tank		No							
87	LUST	Heating oil tank		No							
88	LUST	Heating oil tank		No							
89	LUST	Selective Motors, Inc.		No							
90	LUST	Heating oil tank		No							
91	LUST	Heating oil tank		No							
92	LUST	Heating oil tank		No							
93	LUST	Heating oil tank		No							
94	LUST	Citizens Building Parking		No							
96	LUST	Heating oil tank		No							
97	LUST	Eugene 4J Civic Site		No							

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98	LUST	110 W Sixth Ave		No							
99	LUST	State Motor Pool		No							
100	LUST	Heating oil tank		No							
101	LUST	Baker Downtown Center		No							
102	LUST	Hamilton Electric		No							
103	LUST	McCracken Motor Freight, Inc.		No							
104	LUST	Heating oil tank		No							
105	LUST	Lounsbury-Musgrove Mortu.		No							
106	LUST	Heating oil tank		No							
109	LUST	Merle's Tire Center		No							
110	LUST	Heating oil tank		No							
111	LUST	Heating oil tank		No							
112	LUST	Heating oil tank		No							
113	LUST	Heating oil tank		No							
114	LUST	Hult & Associates		No							
115	LUST	Jensen Property		No							
116	LUST	Salvation Army – Eugene		No							
117	LUST	Unocal 0460		No							
119	LUST	Jennings Development LLC		No							

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122	LUST	Coburg Road – former BP		Yes							
123	LUST	Heating oil tank		No							
124	LUST	Heating oil tank		No							
125	LUST	First and Jefferson Property		No							
126	LUST	Heating oil tank		No							
127	LUST	Dale A Berg		No							
128	LUST	Chevron USA, Inc. – 95818		No							
129	LUST	Heating oil tank		No							
130	LUST	Northside Liquor Store		No							
131	LUST	Heating oil tank		No							
133	LUST	Staff Jennings		No							
134	LUST	B & G Auto		No							
135	LUST	Heating oil tank		No							
136	LUST	Poole-Larsen Funeral Home		No							
137	LUST	Texaco 025		No							
138	LUST	Wells Fargo Property – EA Mock Investments		No							
139	LUST	Eugene Planing Mill		No							
140	LUST	Farmers Union		No							
141	LUST	Eugene Hotel		No							

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142	LUST	Heron Building (former Dairygold)		No							
143	LUST	Rainier Properties		No							
144	LUST	Just Hair		No							
145	LUST	Heating oil tank		No							
146	LUST	St. Vincent dePaul		No							
147	LUST	Heating oil tank		No							
148	LUST	Williams/Wilson Pont. VW		No							
150	LUST	Perry's on Pearl		Yes							
151	LUST	Blockbuster – Eugene		No							
152	LUST	Lane County 6th & Oak		No							
154	LUST	Heating oil tank		No							
155	LUST	Heating oil tank		No							
156	LUST	Lane Medical Dental Center		No							
158	LUST	Heating oil tank		No							
159	LUST	Heating oil tank		No							
160	LUST	Former Shell Bulk Facility		No							
161	LUST	Standard Insurance-Coburg		No							
162	LUST	Heating oil tank		No							
164	LUST	Heating oil tank		No							
165	LUST	Telecom		No							

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167	LUST	Heating oil tank		No							
169	LUST	Budget Rent A Car		No							
170	LUST	Chevron 0301 (Former)		No							
171	LUST	Heating oil tank		No							
172	LUST	Heating oil tank		No							
173	LUST	Minit Lube--Eugene		No							
174	LUST	Eugene Chamber of Commerc		No							
175	LUST	Heating oil tank		No							
176	LUST	B & B Battery		No							
177	LUST	City of Eugene – Bwy & Ch		No							
178	LUST	Panoco #5		No							
179	LUST	City Center Car Wash		No							
181	LUST	Business Office		No							
182	LUST	Eugene Hilton		No							
183	LUST	Heating oil tank		No							
184	LUST	Heating oil tank		No							
185	LUST	Rodeen Property		No							
186	LUST	Heating oil tank		No							
187	LUST	David R. Lyons Trust		No							
189	LUST	Heating oil tank		No							
190	LUST	Atticus Finch LLC		No							
192	LUST	Franko Oil #11		No							
193	LUST	Heating oil tank		No							

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194	LUST	Former Dixies Cafe		No							
195	LUST	Peterson Bros.		No							
198	LUST	Heating oil tank		No							
199	LUST	Franko #2		No							
200	LUST	Heating oil tank		No							
201	LUST	Heating oil tank		No							
202	LUST	Scharpf's Twin II		No							
203	LUST	Heating oil tank		No							
204	LUST	Scharpf's Twin Oak Bldg		No							
206	LUST	Heating oil tank		No							
207	LUST	Heating oil tank		No							
208	LUST	Heating oil tank		No							
209	LUST	Chevron 4187		No							
210	LUST	Eugene Monument		No							
211	LUST	Heating oil tank		No							
212	LUST	Estate of Charles Gill		No							
213	LUST	Heating oil tank		No							
214	LUST	Pride of Oregon – W 11th		No							
215	LUST	Heating oil tank		No							
219	LUST	Heating oil tank		No							
220	LUST	Valley Enterprises, Inc.		No							
221	LUST	Heating oil tank		No							
223	LUST	Real Wood Products		No							

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224	LUST	Panoco #3		No							
227	LUST	Gerald's Transmission		No							
228	LUST	C & K Petroleum		No							
229	LUST	Heating oil tank		No							
230	LUST	Heating oil tank		No							
231	LUST	Vacant lot		No							
233	LUST	Smeed Sound Service		No							
234	LUST	West Side Foreign Auto		No							
235	LUST	Rexius Forest By-products		No							
238	LUST	Heating oil tank		No							
239	LUST	Hall Crane Service		No							
242	LUST	Heating oil tank		No							
243	LUST	Willamette Graystone Eugene		No							
244	LUST	U-Haul		No							
245	LUST	Zellner Property		No							
246	LUST	Himbers Property		No							
247	LUST	Commercial Property 1963 W. 6th		No							
248	LUST	WEEE Acquisition #B3-096 / John Khasfedai		No							
249	LUST	Heating oil tank		No							

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250	LUST	Ramsay Signs		No							
251	LUST	Vik Construction Building		No							
252	LUST	Heating oil tank		No							
253	LUST	Heating oil tank		No							
254	LUST	Fat City Texaco		No							
255	LUST	Heating oil tank		No							
256	LUST	Faith Center Church		No							
257	LUST	Heating oil tank		No							
258	LUST	Old Field Appliances		No							
259	LUST	Comfort Flow Heating Co.		No							
260	LUST	McDonald Industries of OR (former)		No							
261	LUST	Keeper Import Service		No							
263	LUST	Gilbert Shopping Center		No							
264	LUST	Helterline Properties		No							
265	LUST	Heating oil tank		No							
266	LUST	Blair Center		No							
267	LUST	Heating oil tank		No							
268	LUST	Laidlaw Transit – Eugene		No							
269	LUST	Heating oil tank		No							
270	LUST	Bill Fogelson's Texaco		No							

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272	LUST	Eugene Family Shelter		No							
273	LUST	Heating oil tank		No							
274	LUST	Heating oil tank		No							
275	LUST	Jones Sign System Corp.		No							
278	LUST	Wentworth Buick		No							
279	LUST	Ivy Hi-Lift		No							
280	LUST	Scottish Rite Temple		No							
281	LUST	Safelite Autoglass		No							
282	LUST	Heating oil tank		No							
283	LUST	Lane County Glass		No							
284	LUST	J Vos Rentals		No							
285	LUST	Heating oil tank		No							
289	LUST	Fast Property (RV Corral)		No							
290	LUST	Heating oil tank		No							
291	LUST	Heating oil tank		No							
292	LUST	Heating oil tank		No							
294	LUST	Zip-O Log Mills, Inc.		No							
295	LUST	Heating oil tank		No							
296	LUST	Heating oil tank		No							
297	LUST	Heating oil tank		No							
298	LUST	Heating oil tank		No							
299	LUST	Heating oil tank		No							

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300	LUST	Heating oil tank		No							
301	LUST	Heating oil tank		No							
302	LUST	Heating oil tank		Yes							
303	LUST	Autobahn Imports LLC		No							
305	LUST	Aberdeen Oklahoma Assoc.		No							
308	LUST	Heating oil tank		No							
309	LUST	Division Shell		No							
312	LUST	Santa Clara RFD (River)		No							
313	LUST	Frank Prondzinski		No							
315	LUST	Heating oil tank		No							
316	LUST	Heating oil tank		No							
317	LUST	Heating oil tank		No							
318	LUST	Heating oil tank		No							
320	LUST	Heating oil tank		No							
321	LUST	Heating oil tank		No							
323	LUST	Mr. Suds Carwash		No							
325	LUST	River Road AM/PM Franko		No							
326	LUST	Heating oil tank		No							
327	LUST	Heating oil tank		No							
329	LUST	Heating oil tank		No							
330	LUST	Heating oil tank		No							
331	LUST	Heating oil tank		No							
332	LUST	Heating oil tank		No							

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333	LUST	Guthrie Truck Sales		No							
334	LUST	Springfield Hwy Patrol		No							
335	LUST	Stalick International		No							
374	UST	Lane County Adult Corrections Facility		No							1
386	UST	PSB – Emergency Generator Tanks		No							1
388	UST	QWEST Corporation DBA CenturyLink QC		No							1
397	UST	Tesoro Mobil #62525		No							2
408	UST	Astro #207		No							3
411	UST	Barger ARCO AM/PM		No							3
470	UST	Rons Oil #16		No							4
481	UST	Transportation		No							3
499	UST	Fred Meyer Fuel #325, Santa Clara		No							3
514	UST	Costco Gasoline #17		No							3
1001	ECSI	Unocal Bulk Plant 0968		No	Suspect	(12/27/06 CPJ – Tanks) Bulk fuel distribution facility constructed in 1915 with three aboveground fuel tanks. Two additional ASTs were installed in 1921 and 1931. A semi-buried tank was installed in 1948. The 1915 tanks were					

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						replaced in 1950 and the semi-buried tank was removed in 1955. An additional AST was installed in 1955. All tanks were removed in 1989 except an UST for heating oil, an AST for heating oil, and an aboveground waste oil tank. Two new lube oil tanks were installed during mid-1989.					
	LUST	Unocal Bulk Plant 0968		No							
1002	ECSI	Old Dominion Carstar		No	Listed on the CRL/Inventory	(5/21/1998 PSR/VCS) The site was initially developed in the mid-1940s, and appears to have been used for commercial and industrial activities. The site was used as an automotive service business since the 1970s. An UST was used at the site to store gasoline until the late 1980s. Previous investigations at the site identified three areas of contamination: 1. Residual contamination associated with an historic release of gasoline from the former UST. The UST was decommissioned by removal in 1988. 2. Surface and near-surface waste oil contamination near a trailer that had been used to store waste oil and paints. The trailer, located near the southern property boundary, was removed in 1993. 3. Shallow subsurface bunker oil contamination on the southern			PAHs	Requirements of the No Further Action include maintenance of an asphalt and concrete cap, maintaining the Equitable Servitude and Easement recorded with Lane County, periodic inspection and repair of the cap, and periodic reporting to DEQ.	

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						half of the site, which was found to extend beneath the existing building, and is believed to have resulted from a surface release prior to development of the site in the 1940s. During implementation of the remedial action for the bunker oil contamination, a small area of lube oil-type soil contamination was found and removed.					
	LUST	Eugene Auto Body		No							
1003	LUST	Sunny West 7th		No							
	LUST	Shell 120475		No							
	UST	Jackson Food Stores #547		No							4
1004	ECSI	Unocal Service Station #3838	Service station operated for 40 years.	Yes	Listed on the CRL/Inventory	(12/16/94 KNA/SAS) Soil and groundwater have been impacted at the site. The extent and magnitude of these impacts have not been fully characterized. Some cleanup and investigation has been pursued under the LUST program. The site was referred to SAS by the LUST program.	Groundwater		PCE		
	LUST	Unocal 3838		Yes							
	UST	Coburg Road 76		Yes							2
1005	LUST	Eugene Clinic II		No							
	LUST	Downtown Eugene Clinic III		No							
1006	LUST	ConocoPhillips Company 2611018		No							

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	LUST	BP Oil 11018		No							
1007	ECSI	Chevron Truax #21 (Former)		No	Suspect	The UST file for the subject site was closed on July 20, 2000. Halogenated solvents and some daughter products have been reported in groundwater samples collected from monitoring wells at the above referenced property. Historical and investigative data suggest that the contamination most likely originates from an offsite source. There is no evidence of solvent use, solvent storage, service repair, or waste oil storage at the subject site. Some potential offsite sources have been identified.					
	LUST	Chevron-Truax #21		No							
	UST	Merritt #1 1-4 (Eugene)		No							3
1008	LUST	Star Wood Products		No							
	LUST	Star Wood Products, Inc		No							
1009	ECSI	A.C. Sunshine Cleaners (former)		No	Suspect	DEQ is recommending a site screening to determine the extent of soil and/or groundwater contamination. 12/20/2006: Cathy Rodda assigned as project manager for LUST and cleanup issues at site. Meeting with RP contacts scheduled for 12/22/2006. File review for petroleum issues completed April 2006.2009: C.	Groundwater		TCE		

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						Rodda working with ERT Mary Camarata, city of Eugene, & EPA to obtain funding through EPA Targeted Brownfield Assessment program; site did not make list for funding in 2009 cycle (C. Rodda, 1/14/2010)					
	LUST	AC's Sunshine Cleaners		No							
1010	LUST	Higgins Petroleum, Inc		No							
	LUST	Higgins Texaco II		No							
	LUST	Higgins Texaco		No							
	UST	Higgins Petroleum, Inc		No							3
1011	LUST	6th Avenue Texaco		No							
	UST	Buy2 022		No							4
1012	ECSI	Fleet Maintenance Facility – Eugene Public Works	Fueling, repair, and maintenance facility	No	Listed on the CRL/Inventory	Six USTs decommissioned in 1991. Contaminated soil removal and remediation followed shortly thereafter. Highest VOC numbers in groundwater are apparently in an upgradient direction from the former tank locations, which may indicate another source (on- or offsite), or faulty assumptions on groundwater flow direction.	Soil		Diesel – fuel oil		
	LUST	Eugene, City of (Maint.)		No							
	LUST	City of Eugene, PW		No							

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	UST	Fleet Maintenance		No							3
1013	ECSI	Firestone Tire & Auto Service Center	Currently a store for retail tire sales and automobile service. Former use: gas station from approximately 1928 to the 1980s.	No	No Further Action	(10/27/92 LSK) A 315-gallon waste oil tank was removed on 7/24/91, and contaminants were identified.	Groundwater		Benzene		
	LUST	Firestone Service Center		No							
1014	ECSI	Eugene Linen (Former)		No	No Further Action	(8/9/07 GCB/VCS) Completed VCPIntent to Participate form received. (3/5/08 C Rodda) Six tanks used to store gasoline, diesel, and Stoddard solvents were located at the property until their removal in 1987. At that time, a release from the Stoddard solvent USTs was reported to DEQ. Based on recorded information, a consultant excavated visually contaminated soil from the Stoddard solvent UST cavity. The contaminated soil was apparently disposed of at a landfill. In 2007, Adapt Engineering conducted additional site assessment activities and proposed closure of the USTC and Cleanup projects. Sampling completed in March and				Extraction of groundwater prohibited at the site.	

Table C-1. Summary of Hazardous Site Information

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						November 2007 showed that soil and groundwater do not contain petroleum or solvent-related contaminants at concentrations above [applicable] DEQÆs risk-based standards.					
	LUST	Eugene Linen Supply		No							
1015	ECSI	Mansell Recapping	Tire recapping	No	No Further Action	UST release reported 9/88.	Soil	No Further State Action Required, last updated 4/8/2002	Gasoline		
	LUST	Mansell Recapping		No							
1016	ECSI	Lane Transit District	transporation & maintenance facility	No	Suspect	(11/2/92 LSK) The release occurred through a waste oil UST and aboveground spillage. Benzene is present in groundwater above drinking water standards.			Chlorobenzene		
	LUST	Lane Transit District		No							
1017	LUST	BP Oil 11017		No							
	UST	River Road 76		No							3
1018	LUST	ARCO-Truax (Eugene)		No							
	LUST	ARCO-Truax/Harris		No							
	LUST	Truax Harris – River Road		No							
1019	LUST	Texaco River Road		No							
	LUST	Shell 121028 – River Rd		No							

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	UST	Jackson Food Stores #544		No							4
1020	LUST	Panoco Quick Stop		No							
	LUST	Panoco #4		No							
1021	LUST	Heating oil tank		No							
	LUST	Chevron USA, Inc. – 92601		No							
	UST	Jacksons Food Store #113		No							2
1022	LUST	Chevron 9-4849		No							
	UST	SAI Golden Food & Gas LLC		No							2
1023	LUST	Truax Harris Energy #214		No							
	LUST	Stage Stop Market		No							
	UST	6th Street Cardlock		No							4
1024	LUST	Stage Stop Cardlock		No							
	LUST	Pacific Pride, Stage Stop		No							
1025	ECSI	Albertson's – Eugene	Grocery store – commercial area	Yes	Suspect	Peter Stroud, Dames & Moore, (503)228-7688	Groundwater		Methylene chloride	Extraction of groundwater prohibited at the site, except for dewatering activities conducted in accordance with requirements that may be	

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										specified by the City of Eugene.	
	LUST	Albertson property		Yes							
1026	LUST	Heating oil tank		No							
	LUST	Chevron 1827 (Gas)		No							
	UST	Jacksons Food Stove #114		No							3
1027	LUST	Hwy 99 Cardlock		No							
	UST	Highway 99 Cardlock		No							3
1028	ECSI	EWEB Operations (Former)		No	Suspect	In September 2002, while completing an asphalt patching project, EWEB encountered visibly contaminated soils in two areas, to the north of the Steam Plant and to the north of the Willamette Substation. Both areas are in or adjacent to an access road that parallels a bike path and provides access to EWEB facilities. Approximately four inches of impacted soil were removed from both areas (to prepare the asphalt sub-grade). The impacted soil was sampled and found to contain arsenic (1.4 ppm) and carcinogenic PAHs above acceptable levels for industrial sites. The contamination in the areas may be due to historical operations at the MGP (See ECSI # 1723), which is just southwest of the impacted			Polycyclic aromatic hydrocarbons (PAHs)		

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						areas. The MGP site is in the Voluntary Cleanup Program and a Feasibility Study will be completed soon there. There is pervasive heavy MGP-waste (similar to coal tar or creosote) buried at the MGP site, with DNAPL present in the groundwater. EWEB has requested, and DEQ has agreed, to split out the recently discovered soil contamination from the MGP site. Other possible sources for the contaminated soils include the Willamette Substation and the Steam Plant. Specific releases at either location are unknown; however, the Steam Plant does have a 100,000-gallon Bunker C tank.					
	LUST	EWEB		No							
1029	LUST	Fred Meyer-Santa Clara II		No							
	LUST	Fred Meyer – Santa Clara		No							
1030	LUST	Sunset Investments LLC		No							
	LUST	Clark Hollis Texaco		No							
1031	LUST	Facilities Maint. Site II		No							
	LUST	Facilities Maint. Site		No							
1032	LUST	Tomlin's Auto		No							

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	UST	Tomlin's Auto Service		No							4
1033	LUST	Heating oil tank		No							
	LUST	Eugene Fire Station #6		No							
1034	ECSI	Curtis Serve 'N' Save	Sales and distribution of fuel oils and solvents.	Yes	Suspect	(1/15/2003 JG/SRS) Curtis Serve 'n' Save operated as a gasoline service station from at least the early 1960s to 1994. Curtis currently sells kerosene, propane, lacquer thinner, and off-road fuel oil. A second company operating at the site, Farwest Solvents, delivers drums of solvents, and also dispenses and sells some solvents from the site. Two environmental site assessments conducted on adjacent properties suggest that soil and groundwater at Curtis are contaminated with gasoline and fuel oils. Shallow groundwater samples collected at the adjacent Eugene Family Shelter in 1990 found benzene concentrations above acceptable risk levels for vapor intrusion. There are two underground storage tanks at the site (last used 1994) and four aboveground storage tanks. The City of Eugene's Department of Public Safety cited Curtis for potential violations of the fire code in 1992 (inadequate diking of the aboveground storage tanks, storing solvents in drums, etc.). DEQ issued Curtis a Notice of	Soil	Orphan site, last updated 2/26/2003	Total hydrocarbons (as diesel)		

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						Noncompliance in 1996 for failing to decommission the underground storage tanks and for not investigating the potential contamination at the site. In May 2000, DEQ determined that the owner of Curtis was unable to afford an investigation and cleanup of the site. The site was designated as an Orphan project in October 2000.					
	LUST	Hansen Property		Yes							
1035	ECSI	Sears Automotive Center (Former)	Former automotive store	No	No Further Action	(4/11/91 CW/WVR) The site is the location of a former Sears automotive store. Soil contamination was discovered after the old automobile hoists were dug up during a UST cleanup. (8/25/10 DEH/CU) Contamination in soil consisted of petroleum hydrocarbons, PCBs (Aroclor 1260 at 2.5 mg/kg), and the volatile organic compounds tetrachloroethylene (PCE, at 5.5 mg/kg) and trichloroethylene (TCE, at 0.47 mg/kg). Groundwater was not encountered in excavations and has not been evaluated at this site.			PCBs		
	LUST	Sears Building		No							

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Notes:
# = Number
Admin = Administrative
AST = aboveground storage tank
BNSF = Burlington Northern and Santa Fe Railway Company
BTEX = benzene, toluene, ethylbenzene, and xylenes
Cd = Cadmium
CERCLIS = Comprehensive Environmental Response, Compensation, and Liability Information System
Cr = chromium
CRL = Confirmed Release List
Desc'n = Description
DEQ = Oregon State Department of Environmental Quality
DNAPL = dense nonaqueous phase liquid
ECSI = Environmental Cleanup Site Information (Oregon DEQ, 2016a) database
Eng = Engineering
ESA = environmental site assessment
FS = feasibility study
HVOC = halogenated volatile organic compound
Invest'n = Investigation
Inst'al = Institutional
IRAM = interim remedial action measures
LTD = Lane Transit District
LUST = leaking underground storage tank and
MGP = Manufactured Gas Plant
mg/kg = milligrams per kilogram
NPDES = National Pollutant Discharge Elimination System
Oper'n = Operation
PAH = polycyclic aromatic hydrocarbon
Pb = lead
PCB = polychlorinated biphenyl
PCE = tetrachloroethene
ppm = part per million
RBC = risk-based concentration;
RCRA = Resource Conservation and Recovery Act of 1976
RD/RA = remedial design/remedial action
SAS = Site Assessment
SVE = soil vapor extraction
TPH = total petroleum hydrocarbon
TPH-G = total petroleum hydrocarbons, gasoline-range organics
TPH-D = total petroleum hydrocarbons, diesel-range organics
TCE = trichloroethene
UST = underground storage tank
VCP = Voluntary Cleanup Program
VOC = volatile organic compound
WVR = Willamette Valley Region
XPA = Expanded Preliminary Assessment