LRAPA
Lane Regional Air Pollution Authority
1010 Main Street
Springfield, OR 97477

INDIRECT SOURCE CONSTRUCTION PERMIT APPLICATION

(1) Business Name: Oregon Department of Transportation Phone: 503/986-3485

(2) Mailing Address: 355 Capitol Street NE City: Salem Zip: 97301

(3) Nature of Business: State Transportation

(4) Responsible Person to Contact: Brian Bauman Title: Region 2 Envir. Coordinator

(5) Other Person Who May Be Contacted: C. Newvine/TW Environmental Title: AQ Specialist

(6) Corporation ____ Partnership ____ Individual ____ Government Agency X

(7) Present Legal Owner: State of Oregon and City of Springfield

(8) Legal Owner's Address: _____ City: _____ Zip: _____

(9) Location of Proposed Construction of Indirect Source Facility: I-5/Beltline Interchange, Beltline Gateway Intersection

(10) Number of Parking Spaces: Not Applicable

(11) Describe vehicle usage and operating schedule of facility for average and maximum days use: Refer to Table 2 of the application.

Average: _____ vehicles/day _____ hours/day

Maximum: _____ vehicles/day _____ hours/day

(12) Number of spaces required by zoning ordinance: Not Applicable

NOTE: Generally, the maximum number of spaces allowed will be the minimum required by the applicable zone code.

(13) Estimated Construction Start Date: Late 2005, Early 2006

Estimated Construction Completion Date: Last phase estimated to start in 2020

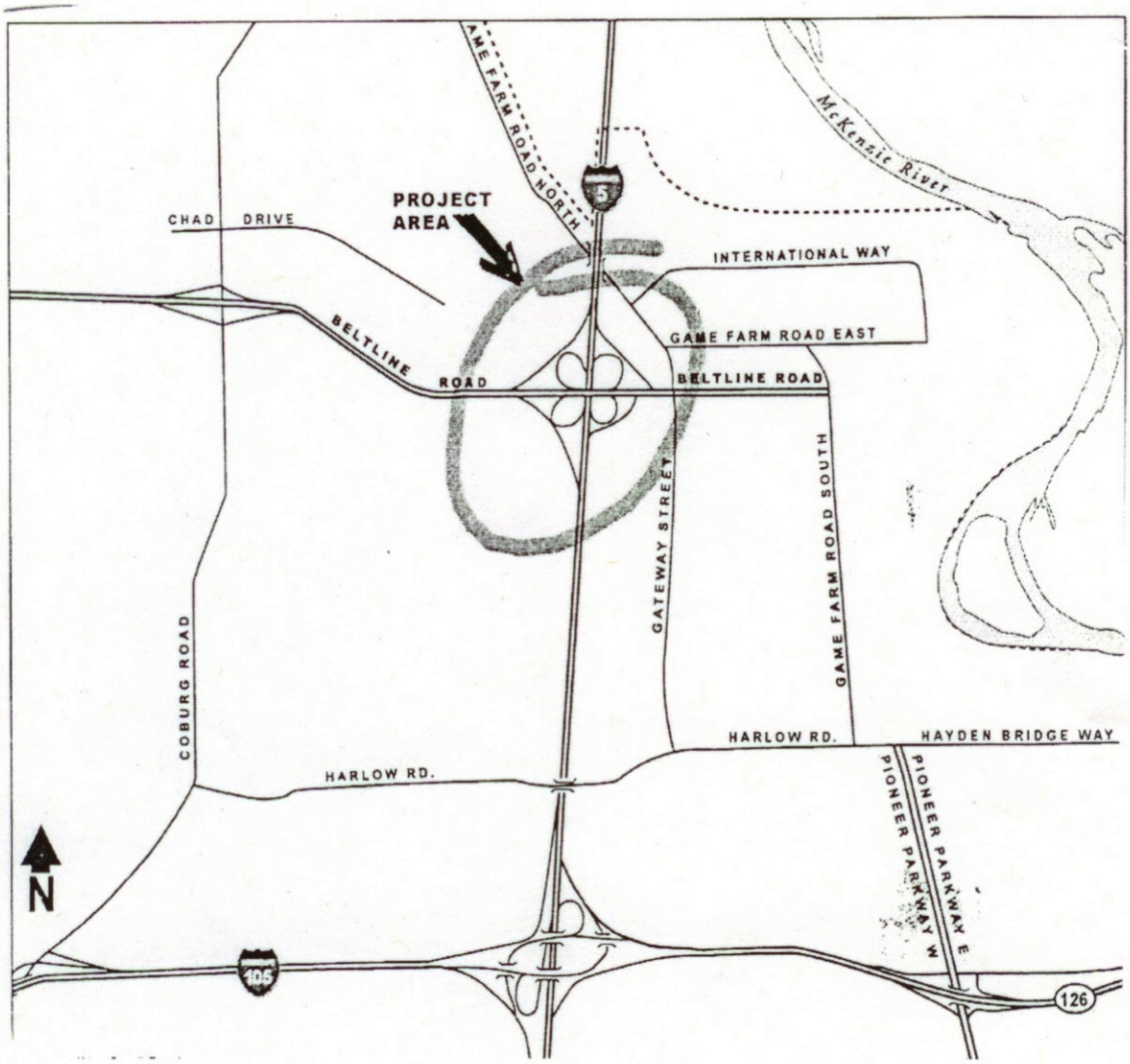
NOTE: If this is a phased development please attach a discussion of the time frame for each stage. See Section vii of this application

(14) Name of Applicant or Owner of Business: Brian Bauman-ODOT

(15) Title: Region 2 Environmental Coordinator Phone: 541/726-2442

(16) Signature: _____ Date: _____

**NOTE: Submit with this application 1 copy of a plot plan showing the proposed facility, including all entrances and exits, and its relationship to surrounding buildings and streets and any additional information as required in Title 20 of the Lane Regional Air Pollution Authority Rules and Regulations.



This drawing is from the *I-5/Beltline Interchange Environmental Assessment*; FHWA, ODOT; May 2002.

Figure 1
Project Location

I-5/Beltline Interchange Project

Table of Contents

Executive Summary 1

Items (A) through (C) of subsection 20-125(1)(a). 3

(A) A completed application form i
(B) A map showing the location of the site ii
(C) A description of the proposed and prior use 3

(iii) A map showing the topography of the highway section and points of ingress and egress. 4

(iv) The existing average and maximum daily traffic on the highway section proposed to be modified. 7

(v) An estimate of the maximum traffic levels for one- and eight-hour periods in the year in which the maximum air quality impact is projected 10

(vi) An estimate of vehicle speeds for average and maximum traffic volumes for the year in which the maximum air quality impact is projected). 10

(vii) A description of the general features of the highway section and associated right-of-way. 13

I-5/Beltline Interchange 13
Beltline Highway 13
Gateway Street 14
Bicycle/Pedestrian Facility 14
Conceptual Phasing Plan 15

(viii) An analysis of the impact of the highway section on the development of mass transit and other modes of transportation 15

(ix) Alternative designs of the highway section, i.e. size, location, etc., which would minimize adverse environmental effects of the highway section. 16

(x) The compatibility of the highway section with an adopted comprehensive transportation plan for the area. 17

(xi) An estimate of the additional residential, commercial, and industrial development which may occur as the result of the construction. 17

(xii) Estimates of the effect of the operation and use of the indirect source on major shifts in traffic patterns. 18

Existing and No Build Traffic Conditions 18
Project Traffic Conditions 19

(xiii) An analysis of the area-wide air quality impact for carbon monoxide, photochemical oxidants, nitrogen oxides, and lead particulates 20

(xiv) The total air quality impact (carbon monoxide and lead) of maximum and average traffic volumes.. 22

Tables

ES1 Summary of Project Area Emissions Resulting From the Project 1
1 Existing and No Build Condition Daily Traffic Volumes (ADT) 7
2 Vehicle Speeds and Peak Hour Volumes for the Proposed Project 2009 and 2025. 10
3 Summary of Phasing Plan Concept 15
4 MOBILE6.2 Area-Wide Emission Factors 20
5 Comparison of Emissions From No Build and Build Scenarios..... 21
6 Summary of Speed Data for Gateway and Game Farm Road East Intersection..... 23
7 CO Emission Factors for Intersection Analysis 23
8 Maximum Predicted Eight-Hour CO Concentrations for Gateway/Game Farm Road East 24

Figures

1 Project Location ii
2 I-5/Beltline Interchange Project and Bike/Pedestrian Improvements 5
3 Proposed Project Intersection Modifications 6
4 No Build Condition Roadway Link Identification..... 9
5 Proposed Project Roadway Link Identification..... 12

Appendices

A Existing and No Build Traffic Volume Data
B Revised Modeling Assumptions for the I-5/Beltline Interchange Project Indirect Source Construction Permit (ISP) Application
C Project Data: Raw Data from ODOT for 2005 and 2025
D MOBILE6.2 Modeling Input and Output Files fro the Project-Wide Analysis
E Calculation of Project VMT; Calculation of No Build VMT (Spreadsheets)
F MOBILE6.2 Modeling Input and Output Files for the Intersection Analysis
G ODOT Intersection Data for Game Farm Road East/Gateway
H CAL3QHC Modeling Input and Output Files for the Intersection Analysis

Executive Summary

This document is an Indirect Source Construction Permit (ISCP) application for the Interstate 5 and Beltline Highway (I-5/Beltline Highway Interchange) project. An ISCP is requested for the 1st and 2nd phases of the project. The 1st phase of the project is for safety improvement and consists of reconstruction of the interchange at the junction of I-5 and Beltline Highway to current design standards. The interchange currently has unsafe weaving movements. The 2nd phase of the project consists of improvements to the intersection of Beltline Highway at Gateway Street (Gateway/Beltline Intersection) and a pedestrian/bicycle overcrossing of I-5 will also be constructed. The purpose of the 2nd phase is congestion relief.

In Lane County, highway sections being proposed for construction with an annual average daily traffic (ADT) of 20,000 or more vehicles within 10 years of completion, or being modified so that the ADT will increase to 20,000 or more vehicles, or will be increased by 10,000 or more vehicles within 10 years of completion, require an ISCP issued by the Lane Regional Air Pollution Control Authority (LRAPA). The I-5/Beltline Interchange project meets the above criteria.

This application has been prepared to meet the requirements of the LRAPA rules under Title 20, Section 20-129(1)(b)(D). The application includes traffic data for the project and an analysis of project area air pollutant emissions of nitrogen oxides (NO_X), volatile organic compounds (VOCs), and carbon monoxide (CO). The area-wide emissions are shown in Table ES-1. The projected year of maximum emissions for the project is 2009.

Table ES-1
Summary of Project Area Emissions Resulting from the Project

Pollutant	Year	No Build Emissions (tons/yr)	Build Emissions (tons/yr)	Emissions Increase (tons/yr)
VOC	2009	93	102	9
	2025	57	63	6
NO_X	2009	147	160	13
	2025	55	62	7
CO	2009	1,795	1,962	167
	2025	1,608	1,789	181

Emissions in the immediate project area will increase with construction of the project because of increased roadway and freeway capacity. However, the effect of the project will be to move vehicles onto the high speed roadways and to alleviate congestion on smaller, local roadways. The project is expected to reduce congestion overall.

Although the local project area emissions are estimated to be greater with the Project than the No Build, on a regional basis emissions would be expected to decrease with reduced congestion and higher speeds. This project meets the requirements for conformity and is included in Eugene-Springfield Transportation System Plan (TransPlan) and in the Metropolitan Transportation Improvement Program (MTIP) FY 2005 to FY 2007.

Local CO impacts at the Gateway Street and Game Farm Road East intersection were analyzed using the CAL3QHC dispersion model. This is the only intersection in the project area predicted to operate at a poor level of service (F). CO concentrations are not predicted to exceed the National or State Ambient Air Quality Standards.

Indirect Source Construction Permit Application

This ISCP application is formatted to follow the applicable sections of the regulations for ease of review**.**

Title 20, Section 129(1)(b)(D)

For highway section, the following information shall be submitted:

Items (A) through (C) of subsection 20-125(1)(a).

(A) A completed application form

Enclosed (Page i)

(B) A map showing the location of the site

Figure 1, located after the Application (Page ii)

(C) A description of the proposed and prior use

This project is located on I-5 in Lane County near the cities of Eugene and Springfield near milepost (MP) 195. The City of Eugene is located on the west side and the City of Springfield is on the east side of the Interstate. The project consists of reconstruction of the I-5/Beltline Highway Interchange to current design standards. Part of the project includes the reconstruction of the Gateway/Beltline Intersection. The project will include a separated bikeway, involving a bicycle/pedestrian overcrossing structure across I-5, as well as sidewalks along the widened portions of Beltline Road east of I-5.

The I-5/Beltline Interchange is a cloverleaf form with circular loops in all four quadrants. The interchange opened in 1968, serving a predominantly rural area. Land uses consisted primarily of farms and pastures. Recent urban development in the last decade included the development of the Gateway Mall, construction in the Chad Drive area, and industrial complexes. Land uses are now urban, which has affected the function of the interchange and surrounding transportation system. The interchange provides access to travel-related services such as restaurants, lodging, and gasoline, access to industrial complexes, and access to the Gateway Mall, as well as to local residential neighborhoods. Current problems at the interchange can generally be classified into the three categories of geometric, operational, and safety deficiencies. This project work, classified as a modernization, will address these issues.

The I-5/Beltline Interchange Project Environmental Assessment (EA) was completed in May 2002 to analyze several build alternatives. A Revised EA (REA) was completed in July 2003, identifying the Preferred Alternative as the Interchange Build Alternative with Intersection Option 3, Value Engineering (VE) Option A-10. Figures 2 and 3 show the project as it is planned for construction.

(ii) Subsection 20-125(2) shall be applicable within 15 days after submission of this application for the permit, LRAPA must provide a completeness determination.

(iii) A map showing the topography of the highway section and points of ingress and egress.

Figure 2 (I-5/Beltline Interchange Project and Bike/Pedestrian Improvements) and Figure 3 (Proposed Project Intersection Modifications) show points of ingress and egress. The project area is relatively flat with little rise in elevation. Elevations range from 420 to 435 feet along Beltline from west (ramps west of the interchange) to east (Game Farm Road South).

This drawing is from the "I-5/Beltline Interchange Project Environmental Assessment," Federal Highway Administration, and Oregon Department of Transportation, May 2002.

North

LEGEND
- PROPOSED R/W
- EXTG. R/W
- TOE FILL SLOPE
- LANE LINE
- STRUCTURE
- BIKE/PED FACILITY

AUXILIARY LANES ON BELTLINE EXTEND TO COBURG ROAD.

Figure 2
I-5/Beltline Interchange Project and Bike/Pedestrian Improvements

I-5/Beltline Interchange Project

This drawing is from the "I-5/Beltline Interchange Project Environmental Assessment," Federal Highway Administration, and Oregon Department of Transportation, May 2002.

LEGEND
- PROPOSED R/W
- CONCRETE CURB
- LANE LINE
- RAISED MEDIAN/ISLAND
- PLANTER
- SIGNAL

INTERNATIONAL WAY
GAME FARM RD. N.
GAME FARM RD. E.
HUTTON
KRUSE WAY
GATEWAY
GATEWAY LP.
N

Figure 3
Proposed Project
Intersection Modifications

I/5/Beltline Interchange Project

(iv) The existing average and maximum daily traffic on the highway section proposed to be modified.

Table 1 shows the traffic volumes for the 2005 existing condition for each roadway in the project area. The traffic data supplied by ODOT are ADT volumes. The ADT volumes are based on peak hour (August) values. The afternoon peak hour is approximately equal to the 30th highest hour because seasonal change is minimal for this area. Therefore, the ADT is effectively a maximum daily volume. Average annual daily volumes are estimated to be 3.5 percent lower (personal communication, ODOT, August 2005). The ADT data are used for analysis purposes in this ISCP application. Data are from ODOT. No Build data (2025) are also provided in Table 1 and are used in the calculations performed for Section xiii.

Table 1
Existing and No Build Condition Daily Traffic Volumes (ADT)

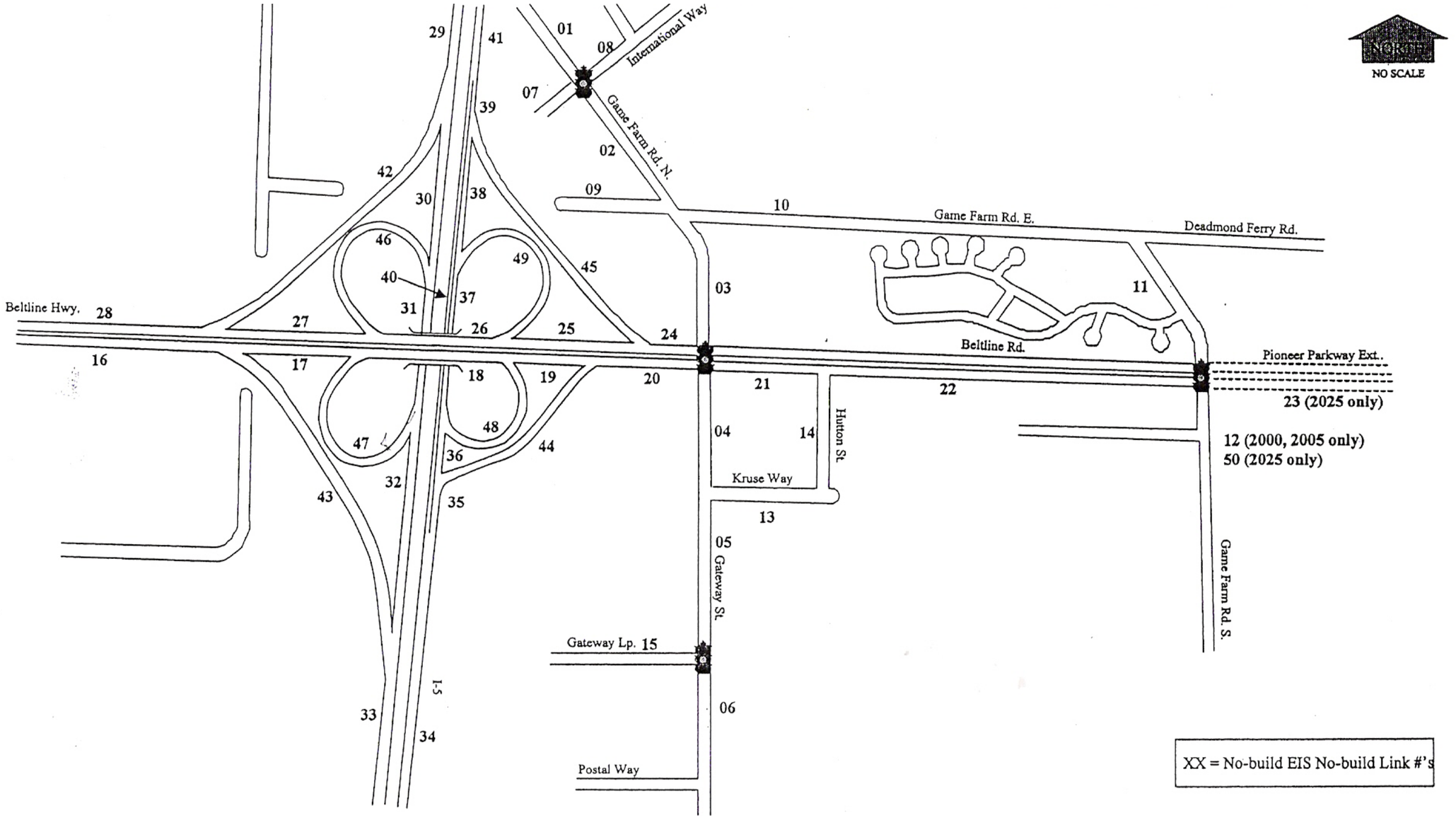
	Link ID	2005	2025
Roadway Name	**(See Figure 4)**	**Avg Day Vol**	**Avg Day Vol**
Game Farm Rd N	001	10,900	18,600
Game Farm Rd N	002	15,700	25,600
Gateway Street	003	15,200	23,800
Gateway Street	004	31,700	33,000
Gateway Street	005	30,700	31,600
Gateway Street	006	27,200	27,500
Parking Lot	007	1,000	1,300
International Way	008	5,600	8,900
Game Farm Rd W	009	1,000	1,300
Game Farm Rd E	010	5,400	12,200
Game Farm Road S	011	6,000	13,200
Game Farm Road S	012	14,800	0
Kruse Way	013	3,700	4,900
Hutton Street	014	2,600	4,000
Gateway Loop	015	6,300	8,200
Beltline Hwy EB	016	30,300	41,800
Beltline Hwy EB	017	17,900	28,500
Beltline Hwy EB	018	19,900	33,300
Beltline Hwy EB	019	15,300	26,200
Beltline Hwy EB	020	21,400	35,000
Beltline Hwy	021	11,600	33,400
Beltline Hwy	022	11,000	32,600
Pioneer Parkway Ext	023	0	34,400
Beltline Hwy WB	024	17,500	27,200
Beltline Hwy WB	025	14,900	22,200

Table 1
Existing and No Build Condition Daily Traffic Volumes (ADT)

Roadway Name	Link ID (See Figure 4)	2005 Avg Day Vol	2025 Avg Day Vol
Beltline Hwy WB	026	28,600	36,700
Beltline Hwy WB	027	23,600	30,000
Beltline Hwy WB	028	28,700	37,500
I-5 Southbound	029	22,000	37,500
I-5 Southbound	030	16,900	30,000
I-5 Southbound	031	21,900	36,700
I-5 Southbound	032	19,900	31,900
I-5 Southbound	033	32,300	45,200
I-5 Northbound	034	37,800	52,400
I-5 Northbound C-D Road	035	19,800	23,300
I-5 Northbound C-D Road	036	13,700	14,500
I-5 Northbound C-D Road	037	18,300	21,600
I-5 Northbound C-D Road	038	4,600	7,100
I-5 Northbound C-D Road	039	7,200	12,100
I-5 Northbound	040	18,000	29,100
I-5 Northbound	041	25,200	41,200
I-5 South to Beltline West Ramp	042	5,100	7,500
Beltline East to I-5 South Ramp	043	12,400	13,300
I-5 North to Beltline East Ramp	044	6,100	8,800
Beltline West to I-5 North Ramp	045	2,600	5,000
Beltline West to I-5 South Loop	046	5,000	6,700
I-5 South to Beltline East Loop	047	2,000	4,800
Beltline East to I-5 North Loop	048	4,600	7,100
I-5 North to Beltline West Loop	049	13,700	14,500
I-5 North to Beltline West Loop	050	0	7,000

Note: 2005 and 2025 No Build ADT data include only the funded (programmed) and fiscally constrained projects from Eugene-Springfield Metro Area Transportation Plan (TransPlan) without the I-5/Beltline Interchange Project. This data includes the traffic contribution from the Pioneer Parkway Extension.

Figure 4 shows the roadways associated with the data in Table 1. Supporting data for Table 1 are located in Appendix A.



This drawing is from Oregon Department of Transportation Traffic Data Analysis for the I-5/Beltline Interchange Project; printing date, February 1, 2001

Figure 4
No Build Condition
Roadway Link Identification

I-5/Beltline Interchange Project

(v) An estimate of the maximum traffic levels for one- and eight-hour periods in the year in which the maximum air quality impact is projected and the first and last years the highway section is projected not to be in compliance with the requirements of subsections 20-130(5)(a), (b), and (c).

See Section vi for the constructed project peak hour traffic volumes for 2009, the year of maximum air quality impacts. The section on area-wide impacts discusses how the year of maximum air quality impacts was determined. Maximum eight-hour traffic levels are not included for this Application. After discussion with LRAPA, it was agreed that reporting the one-hour peak traffic volumes would be adequate to characterize the Build condition, along with the one-hour modeling results for one-hour and eight-hour CO concentrations for evaluating CO impacts.

(vi) An estimate of vehicle speeds for average and maximum traffic volumes for the year in which the maximum air quality impact is projected and the first and last years the highway section is projected not to be in compliance with the requirements of subsection 20-130(5)(a), (b), and (c).

Table 2 shows the peak hour volumes for 2009 and 2025 (design year) along with the peak hour speeds. These data are for the project as proposed for construction, referred to in the EA as Option 3, VE Option A-10, and referred to as Alternative X-1 in the ODOT traffic data. Project peak hour data include all funded and fiscally constrained projects (including I-5/Beltline Interchange and Pioneer Parkway Extension Projects) from TransPlan. ODOT provided peak hour data for 2005 and 2025. Peak hour volumes for 2009 were calculated as follows:

$$\text{Peak Hour}_{2009} = [(\text{Peak Hour}_{2025} - \text{Peak Hour}_{2005}) * 4/20] + \text{Peak Hour}_{2005}$$

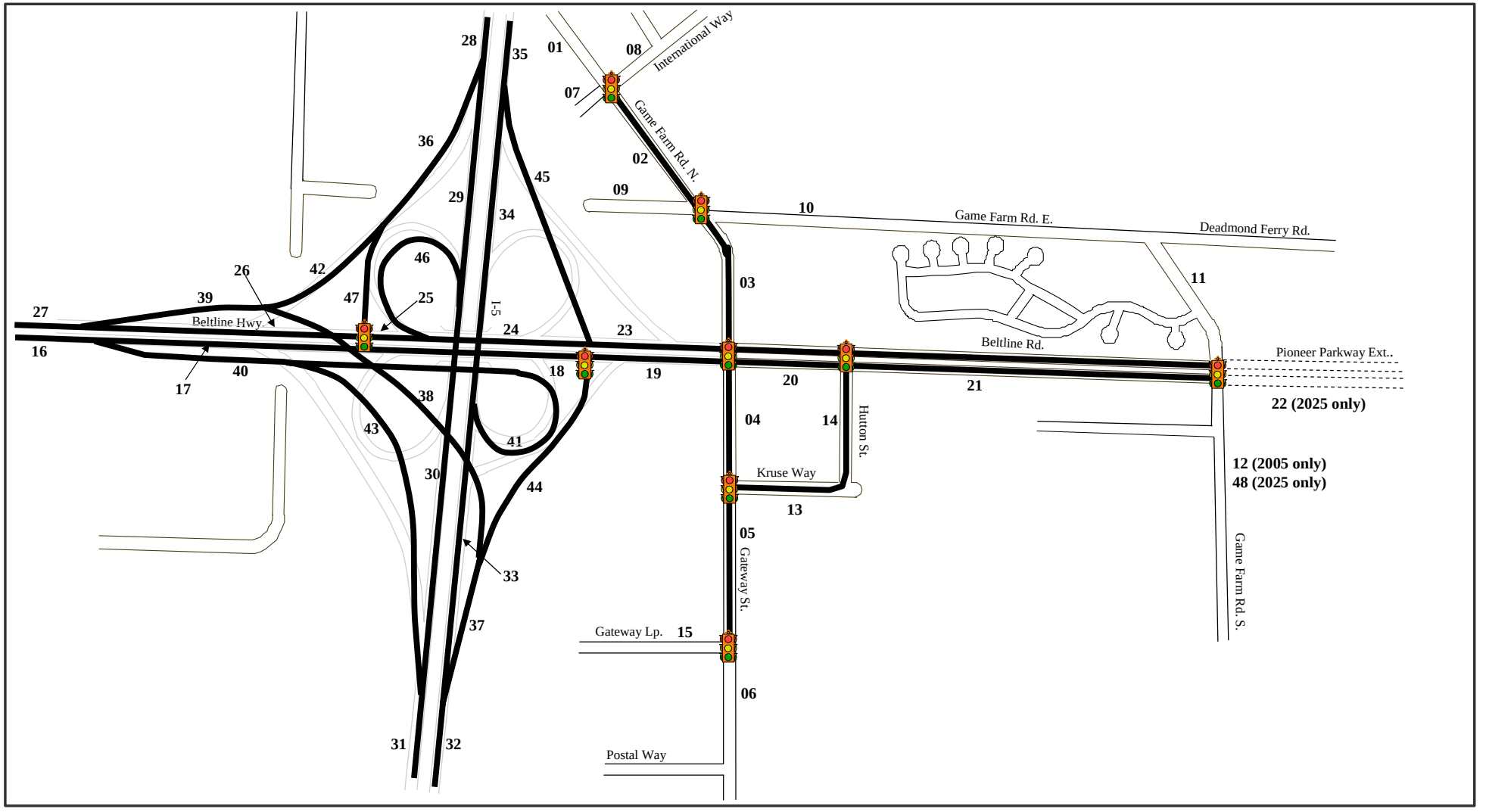
Figure 5 shows the location of the roadway links (refer to link ID number on Table 2) for the Proposed Project.

Table 2
Vehicle Speeds and Peak Hour Volumes for the Proposed Project 2009 and 2025

	Link ID	Peak Hour Traffic Volume		Peak Hour Speed	
Street or Link Name	**(See Figure 5)**	**2009**	**2025**	**2009**	**2025**
Game Farm Road N	001	1,048	1,620	40	35
Game Farm Road N	002	1,501	2,230	40	37
Gateway Street	003	1,444	2,070	40	40
Gateway St - One Way S	004	1,680	1,850	35	35
Gateway Street	005	2,686	2,750	35	35
Gateway Street	006	2,382	2,390	35	35
Parking Lot	007	85	110	15	14
International Way	008	528	770	40	35
Game Farm Road W	009	95	120	25	25

Table 2
Vehicle Speeds and Peak Hour Volumes for the Proposed Project 2009 and 2025

	Link ID	Peak Hour Traffic Volume		Peak Hour Speed	
Street or Link Name	**(See Figure 5)**	**2009**	**2025**	**2009**	**2025**
Game Farm Road E	010	549	1,020	10	35
Game Farm Road S	011	608	1,140	35	29
Game Farm Road S	012	1,290	0	35	35
Kruse Way - One Way	013	1,507	1,620	32	27
Hutton St - One Way N	014	1,392	1,400	35	27
Gateway Loop	015	587	710	25	25
Beltline Hwy Eastbound	016	2,815	3,640	55	55
Beltline Hwy Eastbound	017	1,275	1,860	55	55
Beltline Hwy Eastbound	018	1,490	2,280	45	45
Beltline Hwy Eastbound	019	2,053	3,050	45	45
Beltline Road	020	2,407	4,000	45	44
Beltline Road	021	1,212	2,830	45	42
Pioneer Parkway Extension	022		2,990	45	37
Beltline Hwy Westbound	023	1,660	2,360	45	45
Beltline Hwy Westbound	024	1,408	1,940	45	45
Beltline Hwy Westbound	025	941	1,350	45	45
Beltline Hwy Westbound	026	941	1,350	55	55
Beltline Hwy Westbound	027	2,636	3,260	27	29
I-5 Southbound	028	2,134	3,260	55	55
I-5 Southbound	029	1,442	2,180	55	55
I-5 Southbound	030	1,901	2,770	55	55
I-5 Southbound	031	2,995	3,920	55	55
I-5 Northbound	032	3,512	4,560	55	55
I-5 Northbound	033	1,729	2,540	55	55
I-5 Northbound	034	2,174	3,160	55	55
I-5 Northbound	035	2,425	3,580	55	55
I-5 South to Beltline West Ramp	036	693	1,080	45	44
I-5 North to Beltline West Flyover	037	1,776	2,020	55	53
I-5 North to Beltline West Flyover	038	1,204	1,260	55	55
I-5 North to Beltline West Flyover	039	1,693	1,920	55	53
Beltline East to I-5 North/South Road	040	1,549	1,860	55	55
Beltline East to I-5 South Loop Ramp	041	437	620	25	26
I-5 South to Beltline West Ramp	042	477	660	45	45
Beltline West to I-5 South Ramp	043	1,096	1,160	44	44
I-5 North to Beltline East Ramp	044	570	760	45	45
Beltline West to I-5 North Ramp	045	250	420	45	45
Beltline West to I-5 South Loop Ramp	046	465	580	25	25
I-5 South to Beltline West Ramp	047	213	420	45	44
Game Farm Road S	048	0	600	35	29



This drawing is from Oregon Department of Transportation Traffic Data Analysis for the I-5/Beltline Interchange Project, printing date, February 1, 2001. It has been altered from the original to show the signalization of Game Farm Road East and Gateway Street.

NO SCALE

Figure 5
Proposed Project
Roadway Link Identification

I-5/Beltline Interchange Project

(vii) A description of the general features of the highway section and associated right-of-way.

Figures 2 and 3 (found in Section iii of this Application) show the proposed changes to the interchange and modifications to the intersections along Gateway Street and Beltline Highway. The northern limit of the project along I-5 would include new ramp connections from the north at milepost 196.6, north of the Game Farm Road overcrossing structure at milepost 195.8. The southern limits are the northern ramps to the I-105 interchange located at milepost 194.04. The western limits along Beltline Highway would be the eastern ramps to the Coburg Road Interchange at milepost 11.85 (Beltline Highway). The eastern limit is the Game Farm Road South/ Beltline Road intersection. Additional improvements would be made to Game Farm Road North/International Way intersection to Beltline Road and along Gateway Street just to the south of Kruse Way and terminating before Gateway Loop/Gateway intersection.

I-5/Beltline Interchange

The proposed interchange form consists of a partial cloverleaf (loop ramps in advance of the overcrossing structure of I-5) with a single exit and entrance ramps from and to the I-5 mainline. The ramps have a separate decision point for eastbound or westbound movements. The highest volume movement is a high speed directional ramp for northbound I-5 to westbound Beltline Highway movement.

North of Beltline Highway, I-5 would consist of three 3.6-meter (12-foot) travel lanes in each direction with an outside shoulder of 3.6 meters (12 feet), inside shoulder of 3.0 meters (10 feet), and a variable median. To the south, between Beltline Highway and I-105, Interstate 5 would consist of three 3.6-meter (12-foot) travel lanes in each direction with an auxiliary lane of 3.6 meters (12 feet) to improve safety of weaving movements, an outside shoulder of 3.6 meters (12 feet), inside shoulder of 3.0 meters (10 feet), and a variable median. Steepened fill slopes, retaining walls, and/or structures would be used to minimize right-of-way impacts when it is cost-effective.

Beltline Highway eastbound east of the Beltline Highway/Coburg Road interchange would have two 3.6-meter (12-foot) through travel lanes with an auxiliary lane of 3.6 meters (12 feet) to the I-5 northbound/southbound on-ramps and a 1.8-meter (6-foot) outside shoulder and a 3.6-meter (12-foot) inside shoulder. A second 3.6-meter (12 feet) auxiliary lane is added in advance of the diverging I-5 northbound/southbound on-ramp roadway. Three eastbound through lanes continue east to the I-5 southbound off-ramp terminal intersection. East of the I-5 southbound ramp terminal intersection, a fourth 3.6-meter (12 feet) through lane is added which continues to Gateway Street. The added fourth lane becomes a right turn lane at Gateway Street.

Beltline Highway

Beltline Highway westbound west of Gateway Street will have three 3.6-meter (12-foot) lanes that continue to the I-5 southbound loop on-ramp. One lane discontinues at the ramp exit and two lanes continue westward. Beltline Highway westbound west of I-5 would consist of two 3.6-meter (12-foot) through travel lanes with a 3.6-meter (12-foot) auxiliary lane to the Beltline Highway/Coburg Road Interchange, a 1.8-meter (6-foot) outside shoulder and a 3.6-meter (12-foot) inside shoulder. There would be a variable median width through this section. The I-5/Beltline Interchange overcrossing structure

would be widened to accommodate seven 3.6-meter (12-foot) through travel lanes, 2.4-meter (8-foot) inside shoulders, and 3.0-meter (10-foot) outside shoulders.

Beltline Road east of I-5 to Game Farm Road South eastbound would consist of three 3.6-meter (12-foot) through travel lanes plus right- or left-turn lanes at intersections (Figure 3, found in Section iii of this Application). Beltline Road westbound would have two 3.6-meter (12-foot) lanes from Game Farm Road South to the Kruse Way/Hutton Road intersection and three 3.6-meter (12-foot) lanes west of Gateway Street. Auxiliary left- and right-turn lanes are provided. Access would be limited. This section includes in both directions a variable-width planted median, a 1.8-meter (6-foot) bicycle lane, a 1.8-meter (6-foot) planter strip, and a 1.8-meter (6-foot) sidewalk.

Gateway Street

From International Way to Beltline Road, improvements would consist of two 3.6-meter (12-foot) through travel lanes, a 1.8-meter (6-foot) bicycle lane, a 1.8-meter (6-foot) planter strip, and a 1.8-meter (6-foot) sidewalk. Auxiliary left- and right-turn lanes would be provided as shown on Figure 3. Raised medians are proposed on Gateway Street from Game Farm Road East to Beltline Road. Adjacent properties would have right-in/right-out access.

Gateway Street from Beltline Road to Kruse Way would become one-way southbound consisting of three 3.6-meter (12-foot) travel lanes, a 1.8-meter (6-foot) bicycle lane, a 1.8-meter (6-foot) planter strip, and a 1.8-meter (6-foot) sidewalk. The left-most lane would be dropped as a stop sign controlled left-turn lane at Kruse Way. In the vicinity of Kruse Way, northbound traffic along Gateway Street would curve to the right along a modified alignment of Kruse Way to the east, curving north to the Beltline/Hutton intersection. The northbound segment would consist of three 3.6-meter (12-foot) travel lanes, a 1.8-meter (6-foot) bicycle lane, a 1.8-meter (6-foot) planter strip, and a 1.8-meter (6-foot) sidewalk. Gateway Street, south of Kruse Way, would return to two-way traffic and match into the existing section. There would be no raised medians in the one-way segments and there would be right-in/right-out or left-in/left-out access depending on the proper direction and flow of traffic.

Bicycle/Pedestrian Facility

Off-roadway bicycle/pedestrian facilities will be constructed parallel to I-5 connecting to Game Farm Road West to the north and Harlow Road to the south (Figure 2, found in Section iii of this Application). In addition, there is a proposed overcrossing of I-5 providing connectivity from Eugene to Springfield at Postal Way. The bicycle/pedestrian facility is a two-way, 3.6-meter (12-foot)-wide facility with a maximum vertical grade of 5 percent and maximum cross slope of 2 to 3 percent to comply with the Americans with Disabilities Act (ADA). The minimum vertical clearance would be 3 meters (10 feet) through a box culvert under four ramps. The minimum horizontal curvature is 12 meters (36 feet) radius for a design speed of 20 kilometers per hour (km/h) (12 mph). The facility would pass under the ramps in the northwest and southwest quadrants at a relatively flat grade while minimizing the perceived safety hazard of the “tunnel effect” with relatively short crossings.

The bicycle/pedestrian facility then traverses in a southerly direction to connect to Harlow Road. There is a proposed connection to the west with Willakenzie Street

providing entrance into the local neighborhood. Opposite Postal Way, the bicycle/pedestrian facility slopes upward to gain elevation to accommodate the overcrossing of I-5 to an elevation of approximately 5.2 meters (17 feet) above ground elevation prior to crossing I-5 and then slopes back down matching into ground level. The elevated section allows for a crossing of I-5 with a minimum vertical clearance of 5.2 meters (17 feet) from the surface of I-5 to the bottom of the overcrossing structure without displacing residential dwellings. The horizontal alignment of the overcrossing is perpendicular to I-5 until reaching the east side, where the fill section then angles to the northeast slightly, and then angles east to match existing grade at Postal Way.

Conceptual Phasing Plan

It is anticipated that the I-5/Beltline Interchange would be constructed in three phases over a period of several years to match available funding. The phasing plan is conceptual and the actual year of construction may vary depending on actual growth and available funds. In the proposed phasing sequence, immediate safety-related deficiencies are addressed first, followed by anticipated congestion and safety-related concerns. All right-of-ways needed for Interchange Phases 1 and 3 would be purchased under Phase 1. The three phases are summarized below, along with the approximate year of construction. This ISCP Application is for Phases 1 and 2.

Table 3
Summary of Phasing Plan Concept

Phase	Approximate Start Year	Approximate Year of Completion	Elements to be Constructed
1	Early 2006	Summer 2008	• Bicycle/pedestrian Facility south of Beltline Highway • Northbound freeway exit ramp • Northbound freeway entrance ramp modification
2	2009	2010	• Beltline/Gateway Intersection improvements
3	2020	2022	• Bicycle/pedestrian Facility north of Beltline Highway • Southbound freeway exit ramp/CD Road modification • Southbound freeway entrance ramp • Complete southbound freeway exit ramp • Complete northbound freeway entrance ramp • Harlow Road overcrossing

(viii) An analysis of the impact of the highway section on the development of mass transit and other modes of transportation such as bicycling.

The Interchange project includes the addition of a bicycle/pedestrian crossing of I-5 and an improved trail system (refer to the above project description and location). The bicycle and pedestrian facility is expected to eliminate some use of vehicles in the interchange area, particularly at the Gateway/Beltline intersection.

The project is designed to accommodate the safe and efficient operation of transit vehicles, consistent with TransPlan programs to expand transit service, build park-and-ride lots, and add bicycle/pedestrian facilities in the area.

Although this project does not directly address mass transit, it will facilitate other projects planned for this region that do address mass transit. The Transportation Demand Management (TDM) measures that have already been developed in TransPlan include ridesharing, alternative modes, and mass transit. The TransPlan elements were factored into the transportation analysis for this project through the use of Lane Council of Government's (LCOG's) TransPlan travel demand model. Transit ridership assumptions and strategies have been incorporated into the Transportation Demand Management (TDM) measures that were included in the transportation analysis for this project.

(ix) Alternative designs of the highway section, i.e. size, location, etc., which would minimize adverse environmental effects of the highway section.

The identification and selection of the Proposed Project resulted from a concerted effort of alternatives screening, evaluation, refinement, and ranking by the Stakeholders Working Group (SWG) as part of the project's environmental assessment process. The public stakeholders and agencies worked together to develop feasibility/acceptability criteria for project alternatives. Threshold criteria for the interchange considered speed management, weaving movements, and spacing between adjacent interchanges. Threshold criteria for the intersections concerning right-of-way and safety of operations were influenced by space limits and conflict points. Data was collected to assist in the quantification of impacts to the natural and social environments for use in the application of the evaluation criteria. Descriptions of the other two alternatives considered can be found in the *Environmental Assessment* (EA) (FHWA and ODOT, May 2002) and the *Revised Environmental Assessment* (FHWA and ODOT, July 2003). The criteria for the selection and screening processes, including public input are included in the EA and the Revised EA.

The Proposed Project would result in less traffic congestion and lower volume-to-capacity ratios for the I-5/Beltline Interchange area and the related local transportation network east of Interstate 5. Safety of the I-5/Beltline Interchange would be improved. In summary, the Proposed Project was selected for the following reasons:

- Improvements in interchange geometry, multimodal operations, and safety
- Least cost to build and maintain
- Phaseable implementation and delayed impacts
- Local stakeholder and community support

The Proposed Project rose to the top of the evaluation criteria, which were developed by the SWG, as having the

- least total project cost,
- fewest business displacements,
- low impacts to the natural environment, and
- reduced congestion with improved safety and access at key locations, when
- implemented in phases to address current conditions and anticipated changes through the year 2025.

(x) The compatibility of the highway section with an adopted comprehensive transportation plan for the area.

The I-5/Beltline Interchange project is consistent with local land use and transportation plans (i.e., Metro Plan, TransPlan, Gateway Refinement Plan, and Willakenzie Area Plan). The transportation modeling used for this project is consistent with TransPlan, beginning with the fundamental land use assumptions contained in TransPlan. Land use issues related to the Metro Plan and TransPlan were identified in the Land Use and Regulatory Compliance technical memorandum (CH2M HILL, July 17, 2000) and the Plans, Policies, and Study Review Summary (CH2M HILL, February 18, 2000), which became the basis for the analyses in the Land Use Technical Report (CH2M HILL, February 2002) and related sections of the EA for the project.

TransPlan includes the I-5/Beltline Interchange project as Project 606, categorized as a Major Interchange Improvement in the list of Financially Constrained 20-year Capital Improvement Actions. The TransPlan planning horizon is 2021. The Revised EA lists the Third Phase as needed by 2022, which puts it beyond the TransPlan planning horizon. LCOG states that the issues with the Third Phase of construction can be taken up with the plan update process – the 2005 TransPlan update will include the third phase of the project within the financially constrained project list.

(xi) An estimate of the additional residential, commercial, and industrial development which may occur as the result of the construction and use of the highway section, including an air quality assessment of such development.

Additional development resulting from the project is difficult to estimate. The area is already highly utilized and developed. Some of the other TransPlan capital improvement projects scheduled for this area are:

- Martin Luther King, Jr. (MLK) Parkway (Pioneer Parkway Extension) – connecting Beltline Highway to Harlow Road
- PeaceHealth (a major medical center) – development of 174 acres at the north end of the MLK project
- Delta Street/Beltline Highway Interchange
- Beltline Highway at Coburg Road
- I-5/Beltline Interchange safety improvement project completed in 1999
- Eugene-Springfield Highway (SR126) at the Mohawk Boulevard Interchange
- Harlow Road at Pheasant Boulevard
- Q Street at Pioneer Parkway
- Cardinal Way
- Coburg Road (Kinney Loop to Armitage Park)
- Garden Way (Sisters View Avenue to Centennial Boulevard)
- County Farm Loop
- Game Farm Road North (Coburg Road to Crescent Avenue)
- Game Farm Road South (Beltline Highway to Harlow Road)
- Old Coburg Road (Game Farm Road to Chad Drive)

- Coburg Road (Crescent Avenue to Oakway Road)

The I-5/Beltline Interchange project, as well as the preceding list of transportation projects, are consistent with TransPlan's assumptions concerning planned land uses within the project area.

The traffic volume estimates used in the air quality analysis for this project incorporate the expected traffic generation from the TransPlan projects with the exception of the PeaceHealth development. The analysis did not consider the Riverbend/Peacehealth hospital development because the development was not considered official before the final project EA was published. Consequently, the air quality analysis accounts for growth impacts to the indirect emission source with the exception of the development in the Riverbend/PeaceHealth area.

As a result of PeaceHealth's intentions, a traffic study was conducted regarding secondary impacts. Preliminary traffic numbers, subject to PeaceHealth's application and the review and approval processes, indicate the interchange and all intersections except Beltline/Gateway Intersection would meet mobility standards through 2025. With some minor modifications, the Beltline/Gateway intersection would meet mobility standards through 2025 as well. The PeaceHealth project would be required to apply for a separate ISCP for the project.

Any industrial and commercial property development in the project area could potentially include industrial air pollutant emissions sources. Potential emissions from industrial point sources have not been addressed in this analysis. Each industrial source would be subject to LRAPA regulations governing point source emissions.

(xii) Estimates of the effect of the operation and use of the indirect source on major shifts in traffic patterns, volumes, and flow in, on or within 1/4 mile of the highway section.

Existing and No Build Traffic Conditions

Traffic volume forecast analyses performed for the EA for the I-5/Beltline Interchange Project indicate that waiting time and queue length will decrease at the major intersections in the project area when the TransPlan financially constrained projects (including I-5/Beltline) are included verses the no-build condition for 2025.

The current and projected volume-to-capacity (v/c) ratios for key elements of the interchange area confirm that measures beyond protection of the existing system are needed. By 2025, the I-5/Beltline Highway major weaving sections are expected to be failing, along with most of the major intersections in the study area. These problems are too serious to be solved through improvements to traffic operations, such as signal timing optimization. By 2025, traffic volumes measured as vehicles per day (vpd) on Beltline east of I-5 are expected to increase almost 55 percent. Gateway Street, north of Beltline Highway, is expected to see traffic grow by more than 95 percent, and just south of Beltline Highway, traffic is predicted to grow by almost 85 percent.

By 2025, all but two of the study area intersections are expected to operate unacceptably with the No Build conditions. Traffic demands at the signalized Beltline/Gateway Intersection are expected to increase the v/c ratio to 1.68 (LOS F) for several hours, and traffic would back up along all four of the intersection's approaches. These conditions would also impact movements on several of the I-5/Beltline Interchange ramps. Traffic backed up along the I-5 off-ramps could extend to the freeway itself, resulting in potentially unsafe conditions. Vehicle backups at the Beltline/Gateway Intersection would extend 500 feet to the west, affecting I-5's northbound off-ramp operations and impeding eastbound traffic flow along Beltline Highway. Under the No Build conditions, northbound backups would extend about 1,100 feet to the south, inhibiting driveways along Gateway.

Because of the proximity of the Beltline/Gateway Intersection to the Interstate, future traffic forecasts predict that the traffic queues at the local intersection will adversely affect the performance of the I-5/Beltline Interchange northbound ramp terminal. That is, under the year 2025 No Build conditions, vehicle backups at the Beltline/Gateway Intersection would extend 500 feet to the west, affecting I-5's northbound off-ramp operations and impeding eastbound traffic flow along Beltline Highway. Northbound backups would extend about 1,100 feet to the south, inhibiting driveways along Gateway. In addition, there is a great deal of local traffic concentrated at this intersection creating problems for bicycles, pedestrians, and transit.

Project Traffic Conditions

With construction of the project, 2025 design hour traffic backups extending from the Beltline/Gateway Intersection would be contained between the intersection and each of its four adjacent signalized intersections. The Gateway/Kruse Way Intersection would allow southbound Gateway movements to bypass the traffic signal, eliminating southbound backups except for left-turning vehicles. The Beltline Highway/Hutton Way Intersection 2025 design northbound traffic backup would extend about 925 feet to the south, but since Hutton would be one-way northbound, driveway movements would be improved.

The project would not have any weaving areas operating at unacceptable service levels, by eliminating them or adding auxiliary lanes along Beltline Highway between I-5 and Coburg Road and along I-5 between Beltline and I-105. The problematic weaving area on I-5 northbound south of Beltline that currently exceeds mobility standards and is projected to worsen, is expected to meet mobility standards in 2025 with construction of the project.

With construction of the project, local street circulation would be altered through the creation of a one-way couplet section to the south of Beltline Highway east of I-5. Gateway would be changed from two-way travel to southbound only to a point just to the south of existing Kruse Way. Kruse Way and Hutton Way would become one-way north. With this configuration, it is possible to accommodate left turns for the eastbound Beltline traffic onto North Game Farm Road as well as maintain a more direct point of access to properties in the SE quadrant of the Beltline/Gateway intersection.

(xiii) An analysis of the area-wide air quality impact for carbon monoxide, photochemical oxidants, nitrogen oxides, and lead particulates for the year in which maximum air quality impact is projected and the first and last years the highway section is projected not to be in compliance with the requirements of subsections 20-130(5)(a), (b), and (c). This analysis would be based on the change in total vehicle miles traveled in the area selected for analysis.

Emission estimates for CO, NO_X, and VOC were calculated for the year of maximum air quality impacts. Emission estimates for lead were not calculated. Following the development and use of unleaded gasoline, lead and particulate emissions have been significantly reduced and are no longer pollutants of concern for most highway projects.

The methodology used in assessing the potential impacts of the Proposed Project was presented and commented on by LRAPA prior to performing the analysis. A copy of the methodology memorandum sent to LRAPA can be found in Appendix B. Roadways in the project area (within approximately ¼ mile of the construction limits) were included. Figures 4 and 5 (found in Sections iv and v of this Application) show the roadways included in the analysis. ODOT data examined for this analysis included roadway link lengths; average daily traffic (ADT) for the Existing condition (2005) and No Build condition (2025); ADT, peak hour, vehicle speeds (average day, average hour, and peak hour speeds) for the Proposed Project (2005 and 2025). These data for the Proposed Project (labeled Build Alternative) can be found in Appendix C. The data for the No Build condition were presented in Section iv of this Application.

The year of maximum impact was determined by running MOBILE6.2 without the average speed option, for summer and winter seasons, and for various analysis years starting with 2009. Emission factors from MOBILE output were then used to estimate annual area-wide air quality emissions. Assumptions for the area wide MOBILE6.2 modeling can be found in the Methodology Memorandum located in Appendix B.

The resulting CO, NO_X, and VOC emission factors from MOBILE6.2 model runs were used, along with the vehicle miles traveled (VMT) for the project area roadway links, to calculate the area emissions for each analysis year. MOBILE6.2 input and output files for the area-wide analysis are located in Appendix D. Table 4 shows the MOBILE6.2 emission factors for the analysis years 2009, 2010, 2015, 2020, and 2025. Although 2009 was determined to be the year of maximum air quality impacts, the other years were examined in order to incorporate all project phases. The estimated years of completion for each of the three phases of the project are the summer of 2008, 2010, and 2022.

Table 4
MOBILE6.2 Area-Wide Emission Factors

Pollutant	Year	Season	G/MI
VOC	2009	S	0.960
	2010	S	0.888
	2015	S	0.631
	2020	S	0.500
	2025	S	0.434

Table 4
MOBILE6.2 Area-Wide Emission Factors

Pollutant	Year	Season	G/MI
NO_X	2009	S	1.506
	2010	S	1.361
	2015	S	0.799
	2020	S	0.537
	2025	S	0.423
CO	2009	W	18.449
	2010	W	17.446
	2015	W	14.324
	2020	W	12.777
	2025	W	12.298

The VMT for each roadway link was calculated from data provided by ODOT. As mentioned previously, ODOT provided average daily traffic (ADT) volume data for 2005 and 2025 traffic data along with the lengths of each of the roadway links in the area. (For ADT data see Appendix A and Appendix C for the No Build and the Project scenarios, respectively.) VMT is calculated as:

VMT = average daily traffic volume for roadway X length of the roadway

The daily VMT is then multiplied by 365 to obtain the annual VMT. This will overestimate annual VMT and provide a conservative estimate of emissions. VMT for interim years between 2005 and 2025 was calculated using a growth algorithm supplied by ODOT and used for the traffic analysis modeling for this project. Appendix E contains the speadsheets and equations used to calculate VMT for the selected analysis years for the No Build and Build (project) conditions. ODOT projected traffic volume data are the result of analysis and modeling, which included all projects in the TransPlan's financially constrained list, including West Eugene Parkway and Pioneer Parkway. The traffic projections for the HealthPeace development were not included in ODOT's traffic projection work (2001) performed for this project. Table 5 compares the emissions from the No Build and Build scenarios and shows the MOBILE6.2 emission factors and VMT as well. Annual emissions are calculated as follows:

Annual Emissions (TPY) = Annual VMT x Emission Factor (g/mi) x 1 lb/453.6 g x 1 ton/2000 lbs

Table 5
Comparison of Emissions from No Build and Build Scenarios

Pollutant	YEAR	G/MI	VMT No Build	VMT Build	No Build Emissions (TPY)	Build Emissions (TPY)	Increase in Emissions (TPY)
VOC	2009	0.96	88,258,706	96,467,606	93	102	9
	2025	0.434	118,583,390	131,948,595	57	63	6
NO_X	2009	1.506	88,258,706	96,467,606	147	160	13
	2025	0.423	118,583,390	131,948,595	55	62	7

Table 5
Comparison of Emissions from No Build and Build Scenarios

Pollutant	YEAR	G/MI	VMT No Build	VMT Build	No Build Emissions (TPY)	Build Emissions (TPY)	Increase in Emissions (TPY)
CO	2009	18.449	88,258,706	96,467,606	1,795	1,962	167
	2025	12.298	118,583,390	131,948,595	1,608	1,789	181

Table 5 shows that the emission factors decrease with time, while the VMT increases with time. Also, emissions for all pollutants are greater for the Proposed Project than the No Build conditions in the immediate vicinity of the project. This is likely due to the increased capacity of the roadway links. In fact, the purpose of this project is to increase safety and alleviate congestion. I-5 north of Beltline Highway and several of the intersections adjacent to the interchange are currently operating at over volume-to-capacity standards. The Proposed Project would result in less traffic congestion and lower volume-to-capacity ratios for the I-5/Beltline Interchange area and the related local transportation network east of I-5. This would improve safety along the I-5/Beltline Highway Interchange, as well.

Another likely reason the Build emissions are higher than No Build is that the analysis performed for this project considered only roadways within the project area and not all regional roadways. On a regional basis this project meets the requirements for conformity and is listed in the Eugene-Springfield MTIP.

(xiv) The total air quality impact (carbon monoxide and lead) of maximum and average traffic volumes. This analysis would be based on the estimates of an appropriate diffusion model at reasonable receptor and exposure sites.

SEE SECTION BELOW

Measurements shall be made prior to construction and estimates shall be made for the year in which maximum air quality impact is projected and the first and last years the highway section is projected not be in compliance with the requirements of subsections 20-130(5)(a), (b), and (c).

This provision is not applicable because the project is projected to be in compliance with the requirements of subsection 20-130(5)(a), (b), and (c).

The CAL3QHC (EPA, 1995) model was used to estimate maximum 1-hour and 8-hour CO concentrations near the Gateway Street and Game Farm Road East intersection (see Figure 3 for location). Lead impacts are no longer a concern and therefore were not analyzed. The intersection at Gateway Street and Game Farm Road East is projected to operate at level of service (LOS) F in 2025. According to ODOT traffic engineering, all other intersections in the project area operate at level of service LOS C or better through 2025. Signalized intersections operating at LOS C or better and unsignalized intersections do not generally have high enough traffic volumes or sufficient congestion levels to cause CO levels exceeding the NAAQS. Only poorly performing

(LOS D, E, or F) signalized intersections were analyzed for CO impacts. The intersection at Gateway Street and Game Farm Road East is currently unsignalized. It is expected to exceed signal warrants in 2006 and will most likely be signalized at that time.

After examining the area-wide emissions impacts (refer to the discussion above), the year of maximum impact was determined to be 2009 (opening year for Phase 1). MOBILE6.2 was used to calculate emission factors for the CAL3QHC modeling. MOBILE6.2 was used to calculate moving and idle emission factors for roadway links by using 2.5 miles per hour for idle emissions and the link free flow speed for moving links. Free flow speeds used in the analysis are shown in Table 6. Table 7 shows the resulting emission factors from the MOBILE modeling. The MOBILE6.2 input and output files for the intersection analysis can be found in Appendix F.

Other intersection data (i.e., signal timing, progression rate, etc) required for modeling were also provided by ODOT and can be found in Appendix G. The 2025 traffic data for this intersection were also used for analysis year 2009, providing a more conservative input to the model.

Table 6
Summary of Speed Data for Gateway and Game Farm Road East Intersection

Roadway	2025 Posted Speed	2025 Free Flow Speeds
Gateway, north and south of intersection	40	35
Game Farm Road, east of Gateway	25	15
Game Farm Road, west of Gateway	35	35

Table 7
CO Emission Factors for Intersection Analysis

Year	Speed	Emission Factor (g/mi)	IDLE (g/mi)
2009	2.5	45.619	114.0475
	15	19.549	
	35	17.096	
2010	2.5	42.925	107.3125
	15	18.478	
	35	16.155	
2015	2.5	33.845	84.6125
	15	15.095	
	35	13.247	
2020	2.5	30.246	75.615
	15	13.454	
	35	11.786	
2025	2.5	29.022	72.555
	15	12.937	
	35	11.338	

Note: Idle emission factors are calculated: $EF_{IDLE} = EF_{2.5} \times 2.5$

Twenty-three receptors were placed along the roadways of the intersection, following the procedures in *Guideline for Modeling Carbon Monoxide from Roadway Intersections* (EPA, 1992). These quidelines require the receptors to be placed at least 3 meters from the edge of the pavement at distances of 3 meters, 25 meters and 50 meters from the crosswalk or stop line. The intersection geometry, receptor coordinates, emission factors, cycle timing, and saturation flow volumes were used as inputs to the CAL3QHC model. CAL3QHC model input assumptions are included in the Methodology Memorandum, located in Appendix B.

The CAL3QHC model was used to calculate the 1-hour maximum concentrations of 3.1 ppm and 2.0 ppm for 2009 (opening year for Phase 1) and 2025 (design year), respectively. After the background concentration of 1.5 ppm is added, the predicted concentrations for 2009 and 2025 are 4.6 ppm and 3.5 ppm, respectively. Both of these concentrations are well below the state and federal 1-hour standard of 35 ppm.

From the 1-hour modeled concentrations, the 8-hour concentrations were calculated, using a persistence factor and the CO background concentration for the Eugene-Springfield area. The 8-hour CO standard is important because historically it is the standard that has been violated. The 8-hour concentration is calculated as follows:

8-hour CO concentration (ppm) = 1-hour predicted CO concentration x persistence factor + CO Background

where: 1-hr predicted CO concentration is from modeling output
persistence factor = 0.76 (provided by LRAPA)
CO background = 1.5 (provided by LRAPA)

Table 8 shows the 8-hour maximum CO concentrations predicted for the Gateway/Game Farm Road intersection analysis were 3.9 ppm and 3.0 ppm for 2009 and 2025, respectively. These concentrations are also below the state and federal 8-hour standard of 9 ppm. CAL3QHC model input and output files for the intersection analysis are included in Appendix H.

Table 8
Maximum Predicted Eight-Hour CO Concentrations for Gateway/Game Farm Road East

YEAR	8-HOUR Concentration (ppm)
2009	3.9
2025	3.0

(xv) Where applicable and requested by the Authority, an Authority-approved surveillance plan for motor vehicle related air contaminants.

Because transportation pollutant levels have been decreasing over time, and predicted concentrations are well below the NAAQS, a surveillance plan should not be needed.

Appendix A

Existing and No Build Traffic Volume Data

TRANSPORTATION PLANNING ANALYSIS UNIT
EIS TRAFFIC DATA

PROJECT: I-5/ Beltline Interchange Project
LOCATION: Springfield
ALTERNATIVE: No-build

PRINTING DATE: Feb 1, 2001
UNIT: English

SECT	DIST	YEAR	AVERAGE DAY VOL	AVERAGE DAY TRKS	AVERAGE DAY SP	PEAK HOUR VOL	PEAK HOUR AUTO	PEAK HOUR MTR	PEAK HOUR HTR	PEAK HOUR SP	AVERAGE HOUR VOL	AVERAGE HOUR TRKS	AVERAGE HOUR SP	PEAK TRUCK HOUR VOL	PEAK TRUCK HOUR AUTO	PEAK TRUCK HOUR MTR	PEAK TRUCK HOUR HTR	PEAK TRUCK HOUR SP
Game Farm Road N																		
001	0.25	2000	9400	357	40	820	805	12	3	40	660	25	40	620	569	34	17	40
001	0.25	2005	10900	414	40	940	922	14	4	40	760	29	40	710	651	39	20	40
001	0.25	2025	18600	707	40	1620	1590	24	6	40	1310	50	40	1220	1119	67	34	40
Game Farm Road N																		
002	0.14	2000	13800	1021	40	1200	1157	25	18	40	960	55	40	870	756	84	30	40
002	0.14	2005	15700	1162	40	1360	1311	29	20	40	1090	62	40	990	861	95	34	40
002	0.14	2025	25600	1894	40	2230	2150	47	33	40	1790	102	40	1620	1409	156	55	40
Gateway Street																		
003	0.12	2000	13400	804	40	1160	1107	31	22	40	1000	69	40	900	780	86	34	40
003	0.12	2005	15200	912	40	1320	1259	36	25	40	1140	78	40	1020	884	97	39	40
003	0.12	2025	23800	1428	40	2070	1975	56	39	40	1780	123	40	1600	1387	152	61	40
Gateway Street																		
004	0.11	2000	28200	1015	35	2450	2374	59	17	35	2160	87	35	2060	1940	87	33	35
004	0.11	2005	31700	1141	35	2760	2675	66	19	35	2440	97	35	2320	2186	97	37	35
004	0.11	2025	33000	1188	35	2880	2791	69	20	35	2540	102	35	2420	2279	102	39	35
Gateway Street																		
005	0.19	2000	27200	979	35	2370	2297	59	14	35	2090	79	35	1650	1550	74	26	35
005	0.19	2005	30700	1105	35	2670	2587	67	16	35	2350	89	35	1860	1746	84	30	35
005	0.19	2025	31600	1138	35	2750	2664	69	17	35	2420	92	35	1920	1803	86	31	35
Gateway Street																		
006	0.25	2000	24000	288	35	2080	2070	8	2	35	1890	19	35	1870	1775	65	30	35
006	0.25	2005	27200	326	35	2360	2349	9	2	35	2140	21	35	2130	2021	75	34	35
006	0.25	2025	27500	330	35	2390	2378	10	2	35	2170	22	35	2150	2041	75	34	35
Parking Lot																		
007	0.03	2000	900	119	15	80	80	0	0	15	70	2	15	60	53	7	0	15
007	0.03	2005	1000	132	15	80	80	0	0	15	70	2	15	60	53	7	0	15
007	0.03	2025	1300	172	15	110	110	0	0	15	100	3	15	80	70	10	0	15
International Way																		
008	0.25	2000	4900	500	40	430	405	12	13	40	300	27	40	290	234	39	17	40

ABBREVIATION: SECT = SECTION NUMBER
VOL = TOTAL VOLUME
MTR = MEDIUM TRUCK VOLUM
SP = SPEED OF VEHICLE
AUTO = AUTOMOBILE VOLUME
HTR = HEAVY TRUCK VOLUME

ANALYST: Peter Schuyteme
CHECKED BY:
FILE: BELTNB.MDB

TRANSPORTATION PLANNING ANALYSIS UNIT
EIS TRAFFIC DATA

PROJECT: I-5/ Beltline Interchange Project
LOCATION: Springfield
ALTERNATIVE: No-build

PRINTING DATE: Feb 1, 2001
UNIT: English

SECT	DIST	YEAR	AVERAGE DAY VOL	TRKS	SP	PEAK HOUR VOL	AUTO	MTR	HTR	SP	AVERAGE HOUR VOL	TRKS	SP	PEAK TRUCK HOUR VOL	AUTO	MTR	HTR	SP
008	0.25	2005	5600	571	40	480	451	14	15	40	330	30	40	330	267	44	19	40
008	0.25	2025	8900	908	40	770	724	22	24	40	540	48	40	530	429	70	31	40
Game Farm Road W																		
009	0.05	2000	1000	99	25	90	78	12	0	25	80	10	25	40	24	14	2	25
009	0.05	2005	1000	99	25	90	78	12	0	25	80	10	25	40	24	14	2	25
009	0.05	2025	1300	129	25	120	105	15	0	25	110	13	25	50	30	17	3	25
Game Farm Road E																		
010	0.42	2000	4700	183	35	410	401	8	1	35	360	15	35	180	152	26	2	35
010	0.42	2005	5400	211	35	470	460	9	1	35	410	17	35	210	177	31	2	35
010	0.42	2025	12200	476	31	1020	997	20	3	18	890	37	27	460	387	68	5	35
Game Farm Road S																		
011	0.11	2000	5100	204	35	440	428	8	4	35	320	14	35	240	218	16	6	35
011	0.11	2005	6000	240	35	520	505	10	5	35	380	17	35	290	264	19	7	35
011	0.11	2025	13200	528	35	1140	1107	22	11	35	820	37	35	630	573	41	16	35
Game Farm Road S																		
012	0.25	2000	13400	469	35	1160	1124	31	5	35	830	34	35	680	633	39	8	35
012	0.25	2005	14800	518	35	1290	1250	35	5	35	930	38	35	750	698	43	9	35
012	0.25	2025	0	0	35	0	0	0	0	35	0	0	35	0	0	0	0	35
Kruse Way																		
013	0.11	2000	3300	142	25	290	283	4	3	25	290	15	25	270	244	20	6	25
013	0.11	2005	3700	159	25	320	312	4	4	25	320	17	25	300	271	22	7	25
013	0.11	2025	4900	211	25	420	409	6	5	25	420	22	25	400	362	29	9	25
Hutton Street																		
014	0.11	2000	2400	96	25	210	204	5	1	25	160	6	25	150	135	15	0	25
014	0.11	2005	2600	104	25	220	214	5	1	25	170	6	25	150	135	15	0	25
014	0.11	2025	4000	160	25	340	331	7	2	25	270	9	25	230	208	22	0	25
Gateway Loop																		
015	0.17	2000	5900	342	25	520	490	0	30	25	480	26	25	350	310	25	15	25
015	0.17	2005	6300	365	25	540	509	0	31	25	500	27	25	360	319	26	15	25
015	0.17	2025	8200	476	25	710	669	0	41	25	660	36	25	480	425	34	21	25

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ANALYST: Peter Schuytema
CHECKED BY:
FILE: BELTNB.MDB

TRANSPORTATION PLANNING ANALYSIS UNIT
EIS TRAFFIC DATA

PROJECT: I-5/ Beltline Interchange Project
LOCATION: Springfield
ALTERNATIVE: No-build

PRINTING DATE: Feb 1, 2001
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Beltline Hwy EB																		
016	0.64	2000	27900	2427	55	2420	2260	70	90	55	2040	192	55	1960	1684	135	141	55
016	0.64	2005	30300	2636	55	2640	2465	77	98	54	2230	209	55	2130	1830	147	153	55
016	0.64	2025	41800	3637	54	3640	3399	106	135	34	3070	288	52	2940	2525	203	212	53
Beltline Hwy EB																		
017	0.21	2000	16100	1159	55	1400	1330	41	29	55	1180	90	55	1080	975	67	38	55
017	0.21	2005	17900	1289	55	1560	1482	45	33	55	1320	100	55	1200	1084	74	42	55
017	0.21	2025	28500	2052	55	2480	2356	72	52	55	2100	159	55	1910	1725	118	67	55
Beltline Hwy EB																		
018	0.05	2000	17800	1210	55	1540	1464	45	31	55	1300	95	55	1180	1060	80	40	55
018	0.05	2005	19900	1353	55	1740	1655	50	35	55	1470	107	55	1330	1195	90	45	55
018	0.05	2025	33300	2264	55	2900	2758	84	58	55	2450	179	55	2220	1994	151	75	55
Beltline Hwy EB																		
019	0.13	2000	13500	526	55	1170	1124	32	14	55	970	45	55	860	810	42	8	55
019	0.13	2005	15300	597	55	1340	1288	36	16	55	1110	51	55	980	923	48	9	55
019	0.13	2025	26200	1022	55	2280	2191	62	27	55	1890	87	55	1680	1583	82	15	55
Beltline Hwy EB																		
020	0.08	2000	19000	779	45	1650	1593	40	17	45	1460	67	45	1210	1126	56	28	45
020	0.08	2005	21400	877	45	1860	1796	45	19	45	1640	75	45	1360	1266	63	31	45
020	0.08	2025	35000	1435	45	3050	2946	73	31	45	2690	124	45	2240	2085	103	52	45
Beltline Road																		
021	0.11	2000	10700	407	45	930	903	21	6	45	710	29	45	620	578	38	4	45
021	0.11	2005	11600	441	45	1010	981	23	6	45	770	32	45	680	634	42	4	45
021	0.11	2025	33400	1269	45	2910	2826	67	17	45	2210	91	45	1960	1826	122	12	45
Beltline Road																		
022	0.00	2000	10100	354	45	880	849	24	7	45	660	27	45	570	539	29	2	45
022	0.00	2005	11000	385	45	960	926	26	8	45	720	29	45	620	586	32	2	45
022	0.00	2025	32600	1141	45	2840	2740	77	23	45	2140	86	45	1840	1739	94	7	45
Pioneer Parkway Extension																		
023	0.25	2000	0	0	45	0	0	0	0	45	0	0	45	0	0	0	0	45

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PRINTING DATE: Feb 1, 2001
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SECT	DIST	YEAR	AVERAGE DAY VOL	AVERAGE DAY TRKS	AVERAGE DAY SP	PEAK HOUR VOL	PEAK HOUR AUTO	PEAK HOUR MTR	PEAK HOUR HTR	PEAK HOUR SP	AVERAGE HOUR VOL	AVERAGE HOUR TRKS	AVERAGE HOUR SP	PEAK TRUCK HOUR VOL	PEAK TRUCK HOUR AUTO	PEAK TRUCK HOUR MTR	PEAK TRUCK HOUR HTR	PEAK TRUCK HOUR SP
023	0.25	2005	0	0	45	0	0	0	0	45	0	0	45	0	0	0	0	45
023	0.25	2025	34400	1204	45	2990	2897	81	12	45	2150	88	45	1750	1629	100	21	45
Beltline Hwy WB																		
024	0.04	2000	15600	640	45	1360	1313	33	14	45	1130	52	45	920	840	61	19	45
024	0.04	2005	17500	718	45	1520	1469	36	15	45	1260	58	45	1030	940	68	22	45
024	0.04	2025	27200	1115	45	2360	2279	57	24	45	1960	90	45	1600	1460	106	34	45
Beltline Hwy WB																		
025	0.18	2000	13400	523	55	1170	1125	30	15	55	970	45	55	770	706	52	12	55
025	0.18	2005	14900	581	55	1300	1249	34	17	55	1080	50	55	860	788	58	14	55
025	0.18	2025	22200	866	55	1940	1865	50	25	55	1610	74	55	1280	1173	87	20	55
Beltline Hwy WB																		
026	0.02	2000	26500	1881	55	2310	2165	60	85	55	1920	156	55	1480	1279	93	108	55
026	0.02	2005	28600	2031	55	2480	2324	64	92	55	2070	167	55	1580	1365	100	115	55
026	0.02	2025	36700	2606	55	3200	2999	83	118	55	2670	216	55	2040	1762	129	149	55
Beltline Hwy WB																		
027	0.29	2000	22100	1724	55	1920	1789	50	81	55	1600	139	55	1190	1009	79	102	55
027	0.29	2005	23600	1841	55	2050	1911	53	86	55	1710	149	55	1270	1077	84	109	55
027	0.29	2025	30000	2340	55	2610	2432	68	110	54	2180	189	55	1620	1374	107	139	55
Beltline Hwy WB																		
028	0.62	2000	26800	2305	55	2330	2165	65	100	55	1960	185	55	1440	1194	108	138	55
028	0.62	2005	28700	2468	55	2500	2323	70	107	55	2110	198	55	1550	1285	116	149	55
028	0.62	2025	37500	3225	54	3260	3029	91	140	50	2750	258	54	2020	1675	151	194	55
I-5 Southbound																		
029	0.50	2000	19300	3648	55	1680	1364	82	234	55	1540	342	55	1440	1021	143	276	55
029	0.50	2005	22000	4158	55	1920	1559	94	267	55	1760	391	55	1650	1170	163	317	55
029	0.50	2025	37500	7088	54	3260	2647	160	453	47	2990	664	52	2800	1985	277	538	53
I-5 Southbound																		
030	0.28	2000	14600	3051	55	1270	990	65	215	55	1170	270	55	1190	835	113	242	55
030	0.28	2005	16900	3532	55	1470	1147	75	248	55	1360	313	55	1380	969	131	280	55
030	0.28	2025	30000	6270	55	2600	2028	133	439	55	2410	553	55	2440	1713	232	495	55

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I-5 Southbound																		
031	0.02	2000	19000	3211	55	1660	1364	75	221	55	1500	286	55	1470	1071	154	245	55
031	0.02	2005	21900	3701	55	1900	1562	85	253	55	1720	328	55	1690	1231	177	282	55
031	0.02	2025	36700	6202	55	3190	2622	144	424	55	2880	550	55	2830	2060	297	473	55
I-5 Southbound																		
032	0.26	2000	17300	3149	55	1510	1221	69	220	55	1380	279	55	1370	1025	105	240	55
032	0.26	2005	19900	3622	55	1750	1415	80	255	55	1590	324	55	1580	1182	122	276	55
032	0.26	2025	31900	5806	55	2770	2239	127	404	55	2520	512	55	2500	1871	192	437	55
I-5 Southbound																		
033	0.93	2000	29100	4423	55	2540	2159	99	282	55	2240	381	55	2250	1728	173	349	55
033	0.93	2005	32300	4910	55	2800	2380	109	311	55	2470	420	55	2480	1905	191	384	55
033	0.93	2025	45200	6870	55	3920	3332	153	435	54	3460	588	55	3470	2665	267	538	55
I-5 Northbound																		
034	0.68	2000	34400	4266	55	3000	2628	78	294	55	2460	337	55	2000	1584	108	308	55
034	0.68	2005	37800	4687	55	3290	2882	86	322	55	2690	369	55	2200	1742	119	339	55
034	0.68	2025	52400	6498	55	4560	3994	119	447	52	3730	512	55	3050	2415	165	470	55
I-5 Northbound C-D Road																		
035	0.17	2000	18600	1600	47	1620	1490	41	89	10	1350	130	39	1050	888	55	107	54
035	0.17	2005	19800	1703	42	1720	1582	43	95	10	1440	138	29	1120	948	58	114	53
035	0.17	2025	23300	2004	32	2020	1858	51	111	10	1690	162	10	1320	1116	69	135	43
I-5 Northbound C-D Road																		
036	0.15	2000	13100	1375	55	1140	1039	30	71	52	960	110	55	700	564	41	95	55
036	0.15	2005	13700	1438	54	1190	1085	31	74	52	1000	115	54	740	596	43	101	55
036	0.15	2025	14500	1522	54	1260	1149	33	78	48	1060	121	53	780	629	45	106	55
I-5 Northbound C-D Road																		
037	0.07	2000	17400	2071	50	1510	1380	45	85	20	1290	161	45	1030	822	79	129	54
037	0.07	2005	18300	2178	40	1720	1572	52	96	10	1460	183	25	1170	934	90	146	52
037	0.07	2025	21600	2570	32	1880	1719	56	105	10	1600	200	10	1280	1021	99	160	46
I-5 Northbound C-D Road																		
038	0.15	2000	4300	697	55	370	340	15	15	55	330	50	55	320	250	38	32	55

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038	0.15	2005	4600	745	55	400	368	16	16	55	360	54	55	350	273	42	35	55
038	0.15	2025	7100	1150	55	620	570	25	25	55	550	84	55	540	422	64	54	55
I-5 Northbound C-D Road																		
039	0.10	2000	6500	812	55	560	520	20	20	55	500	66	55	480	392	48	40	55
039	0.10	2005	7200	900	55	630	585	23	22	55	560	74	55	540	441	54	45	55
039	0.10	2025	12100	1512	55	1040	967	37	36	54	930	122	55	900	735	90	75	55
I-5 Northbound																		
040	0.64	2000	15800	2639	55	1380	1139	40	201	55	1100	205	55	950	706	39	205	55
040	0.64	2005	18000	3006	55	1570	1295	46	229	55	1260	234	55	1080	803	44	233	55
040	0.64	2025	29100	4860	55	2540	2095	74	371	55	2030	378	55	1740	1293	71	376	55
I-5 Northbound																		
041	0.50	2000	22300	3456	55	1940	1649	60	231	55	1590	262	55	1420	1091	85	244	55
041	0.50	2005	25200	3906	55	2200	1870	68	262	55	1810	297	55	1610	1236	97	277	55
041	0.50	2025	41200	6386	54	3580	3043	111	426	35	2940	483	53	2620	2012	157	451	54
I-5 South to Beltline West R																		
042	0.43	2000	4700	583	45	400	365	15	20	45	360	44	45	250	185	29	36	45
042	0.43	2005	5100	632	45	440	402	16	22	45	390	49	45	270	200	31	39	45
042	0.43	2025	7500	930	45	660	604	24	32	45	590	73	45	410	303	48	59	45
Beltline East to I-5 South R																		
043	0.42	2000	11800	1263	45	1030	940	30	60	45	870	100	45	880	708	68	104	45
043	0.42	2005	12400	1327	45	1080	986	31	63	44	910	105	45	930	748	72	110	45
043	0.42	2025	13300	1423	45	1160	1059	34	67	44	970	113	45	1000	805	77	118	45
I-5 North to Beltline East Ra																		
044	0.25	2000	5500	231	45	480	460	10	10	45	400	20	45	350	324	14	12	45
044	0.25	2005	6100	256	45	530	508	11	11	45	440	22	45	390	361	16	13	45
044	0.25	2025	8800	370	45	760	728	16	16	44	630	32	45	550	509	22	19	45
Beltline West to I-5 North R																		
045	0.26	2000	2200	117	45	190	180	5	5	45	160	5	45	150	134	9	7	45
045	0.26	2005	2600	138	45	220	208	6	6	45	190	6	45	170	152	10	8	45
045	0.26	2025	5000	265	45	420	398	11	11	45	350	12	45	330	294	20	16	45

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Beltline West to I-5 South L																		
046	0.29	2000	4400	172	25	380	365	10	5	25	320	15	25	280	263	12	5	25
046	0.29	2005	5000	195	25	440	423	11	6	25	370	17	25	320	300	14	6	25
046	0.29	2025	6700	261	25	580	557	15	8	25	480	23	25	420	394	18	8	25
I-5 South to Beltline East Lo																		
047	0.23	2000	1700	60	25	140	135	5	0	25	120	5	25	100	86	12	2	25
047	0.23	2005	2000	70	25	180	174	6	0	25	150	6	25	130	112	16	2	25
047	0.23	2025	4800	168	25	420	406	14	0	25	350	15	25	300	257	37	6	25
Beltline East to I-5 North Lo																		
048	0.21	2000	4300	697	25	370	340	15	15	25	330	50	25	320	250	38	32	25
048	0.21	2005	4600	745	25	400	368	16	16	25	360	54	25	350	273	42	35	25
048	0.21	2025	7100	1150	25	620	570	25	25	26	550	84	25	540	422	64	54	25
I-5 North to Beltline West Lo																		
049	0.23	2000	13100	1375	20	1140	1039	30	71	10	960	110	14	700	564	41	95	27
049	0.23	2005	13700	1438	18	1190	1085	31	74	10	1000	115	10	740	596	43	101	28
049	0.23	2025	14500	1522	18	1260	1149	33	78	10	1060	121	10	780	629	45	106	29
I-5 North to Beltline West Lo																		
050	0.25	2000	0	0	35	0	0	0	0	35	0	0	35	0	0	0	0	35
050	0.25	2005	0	0	35	0	0	0	0	35	0	0	35	0	0	0	0	35
050	0.25	2025	7000	84	35	600	597	2	1	35	540	5	35	540	512	19	9	35

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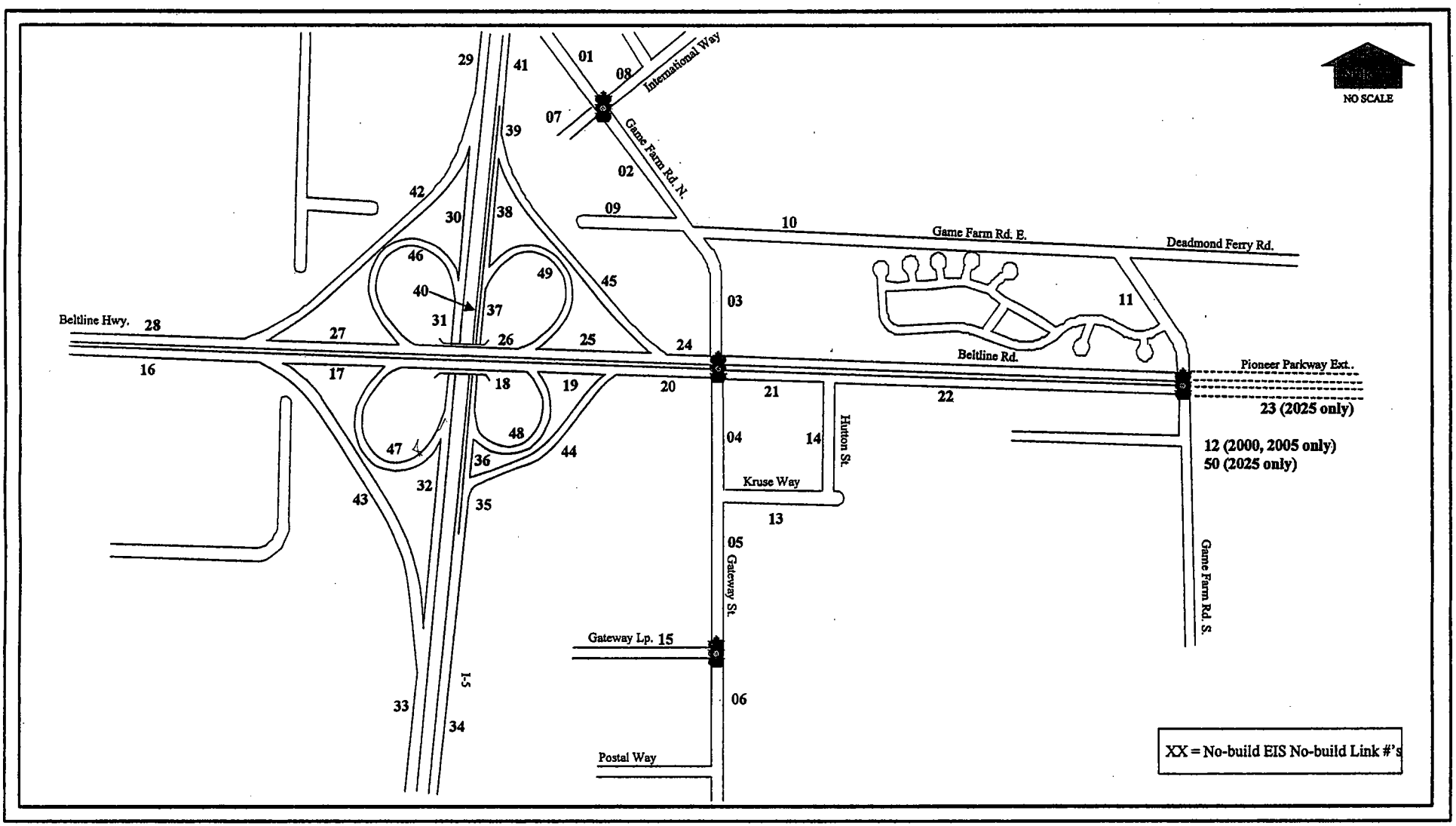

OREGON DEPARTMENT OF TRANSPORTATION

TPAU TRANSPORTATION PLANNING ANALYSIS UNIT

Beltline Interchange Project - No-build EIS Link Numbers	FILE : Beltline Int ~.ppt	Prepared By: Peter L. Schuytema	FIGURE 6
	DATE : 01/1201	Reviewed By: Brian G. Dunn, P.E.	

Appendix B

Revised Modeling Assumptions for the I-5/Beltline Interchange Project Indirect Source Construction Permit (ISP) Application

TW Environmental, Inc.

136 NE 28th Avenue, Portland, OR 97232-3146

503-235-9194 Fax: 503-239-7998

To:	Mr. Ralph Johnston Lane Regional Air Pollution Authority
From:	Carole Newvine
Subject:	Revised Modeling Assumptions for the I-5/Beltline Interchange Project Indirect Source Permit (ISP) Application
Project #:	254.10
Date:	July 22, 2005
cc:	Corrinne Humphrey/HDR Marina Orlando/ODOT

The proposed I-5/Beltline Interchange project lies within the municipal boundaries of the Cities of Eugene and Springfield. The project includes modifications to sections of highway that will result in increases of the annual Average Daily Traffic to 20,000 vehicles or more. Other roadway modifications are proposed within the project area that will result in increases of the Average Daily Traffic by 10,000 or more vehicles per day within ten years after completion. Therefore an Indirect Source Permit (ISP) application is required (LRAPA Rules, Section 20-115(2)(a)(B). This memorandum summarizes the modeling assumptions to be used for the I-5/Beltline Interchange Project ISP application air quality analysis.

The modeling assumptions are based on correspondence between TW Environmental, Inc. (TWE) and Lane Regional Air Pollution Authority (LRAPA) personnel and the previous environmental assessment (EA) work done for this project (*I-5/Beltline Interchange Project, Revised Environmental Assessment*, Federal Highway Administration (FHWA) and Oregon Department of Transportation (ODOT), July 2003).

The permit application will address the requirements of Section 20-29(1)(b)(D) of the LRAPA rules for indirect sources which include modeling the carbon monoxide (CO) impacts from one intersection and estimating the area-wide emissions of CO, volatile organic compound (VOC), and nitrogen oxide (NO_x) emissions. The emission factors for the intersection modeling and emissions estimates will be calculated for the build condition using the MOBILE6.2 model. Since this project will be completed in three phases, with projected completion dates of 2009, 2010, and 2023, all phases will be included in the analysis. The ISP application will seek approval for all phases of construction.

Intersection Modeling

One intersection, Gateway and Game Farm Road East, will be modeled for CO impacts using CAL3QHC because it is projected to operate at level of service (LOS) F in 2025. All other intersections in the project area operate at level of service LOS C or better through 2025 (ODOT

correspondence 6/16/2005 and 7/20/2005). The intersection at Gateway and Game Farm Road East is currently unsignalized. It is expected to exceed signal warrants in 2006 and will most likely be signalized at that time. In order to determine the year of maximum air quality impacts, we propose running MOBILE6.2 for analysis year 2006 and then for every fifth year starting with 2010 up to 2025 (design year). The resulting emission factors, along with the vehicle miles traveled (VMT) for the project area roadway links will be used to calculate the year of maximum impact. MOBILE6.2 will be run at the free-flow speeds shown in Table 1 for the roadway links at this intersection. In addition, MOBILE6.2 will be used to calculate an idle emission factor for these roadway links by using 2.5 miles per hour as input data.

Table 1: Summary of Speed Data for Gateway and Game Farm Road East Intersection

Roadway	2025 Posted Speed	2025 Free Flow Speeds
Gateway, north and south of intersection	40	35
Game Farm Road, east of Gateway	25	15
Game Farm Road, west of Gateway	35	35

Area-Wide Impacts

Emission estimates of CO, NO_X, and VOC are required for the year of maximum air quality impacts. We will use the methodology described in the intersection modeling section of this memorandum to determine the year of maximum impacts. The resulting emission factors and vehicle miles traveled (VMT) will be used to calculate emissions. Traffic volumes and roadway link distances for 2005 and 2025 have been provided by ODOT. ODOT projected traffic volumes are the result of analysis and modeling which included all projects in the Eugene-Springfield Metro Area Transportation Plan's (TransPlan) fiscally constrained list, including West Eugene Parkway and Pioneer Parkway. VMT for interim years will be calculated using an ODOT geometric growth curve. Table 2 summarizes the MOBILE6.2 input assumptions for the proposed runs (intersection and area-wide analyses).

Table 2: MOBILE6.2 Input Assumptions:

User Manual Section for Reference	Command	Comment	Use for this Analysis?
	MOBILE6 INPUT FILE	Required	Y
	RUN DATA	Required	Y
	SCENARIO RECORD : Eugene	Required; scenario name	Y
	END OF RUN	Required	Y
2.8.3 All Output Commands			
	POLLUTANTS:	Default is CO HC, and NOX	N – for area-wide Y – for intersection (CO only)
	NO REFUELING	MOBILE6.2 reports refueling emissions if this command is NOT used	N
2.8.4 Descriptive Output Commands			
	REPORT FILE	Designate output file name if different from input file name	N
	EXPAND BUS EFS	Not needed for default which provides 8 vehicle categories used in M5	N
	EXPAND HDDV EFS		
	EXPAND HDGV EFS		
	EXPAND LDT EFS		

	EXPAND EXHAUST	Default is composite emission factors (EFs)	N
	EXPAND EVAPORATIVE	Not used with composite EFs	N
2.8.5 Database Output Commands			N
2.8.6 External Condition Commands			
	CALENDAR YEAR	Analysis years	Y – 2006, 2010, 2015, 2020, 2025
	EVALUATION MONTH	January – for intersection analysis July – for area wide analysis	Y
	MIN/MAX TEMPERATURE	Required	Y, 35 and 35 (Jan) for CO modeling; 82.1 and 51.2 (July) for NO_X and HC modeling
	HOURLY TEMPERATURES	Not required if Min/Max provided	N
	ALTITUDE	Low is default	N
	ABSOLUTE HUMIDITY	75 grains per lb is default	Y – 27 (January); 48 (July)
	CLOUD COVER	0 is default	N
	PEAK SUN	10am to 4pm is default	N
	SUNRISE/SUNSET	6am, 9pm are defaults	N
2.8.7 Vehicle Fleet Characteristic Commands			
	REG DIST	Option to provide distribution for each of 16 composite vehicle types	N, use M6 defaults
	DIESEL FRACTIONS	Option to use locality specific diesel fractions for 14 of 16 vehicle types	N, use M6 defaults
	MILE ACCUM RATE	Option to supply mileage accumulation rates by vehicle age	N, use M6 defaults
	NGV FRACTION	Option to indicate % of natural gas vehicles	N
	NGV EF	Only needed if NGV FRACTION is used	N
2.8.8 Activity Commands			
	VMT FRACTIONS	Option to allocate VMT to specific vehicle types	N, use M6 defaults
	VMT BY FACILITY	Option to allocate VMT to roadway types by vehicle class	N, use M6 defaults
	VMT BY HOUR	Option to allocate fraction of the VMT by hour of the day	N, use M6 defaults
	SPEED VMT	Option to allocate VMT by average speed on fwys or arterials	N, use M6 defaults
	AVERAGE SPEED	Option to designate a single average speed to use for the entire day on specific roadway type	See Note 1

	STARTS PER DAY	Option to specify starts per day for specific classes for weekdays/weekends	N, use M6 defaults
	START DIST	Option to allocate engine starts by hour of day	N, use M6 defaults
	SOAK DISTRIBUTION	Option to enter vehicle soak duration distribution	N, use M6 defaults
	HOT SOAK ACTIVITY	Option to specify a hot soak duration distribution for each of 14 daily time periods	N, use M6 defaults
	DIURN SOAK ACTIVITY	Option to specify a diurnal soak time distribution for each of 18 daily time periods.	N, use M6 defaults
	WE DA TRI LEN DI	Option to specify the fraction of weekday VMT that occurs during trips of various durations at each hour of the day.	N
	WE EN TRI LEN DI	Option to specify the fraction of weekend VMT that occurs during trips of various durations at each hour of the day.	N
	WE VEH US	Option to apply weekend activity information in emissions calculations	N, use M6 default
2.8.9 State Programs			
	STAGE II REFUELING	Option to include Stage II vapor recovery system requirements	N
	ANTI-TAMP PROG	Option to include an anti-tampering program	N (no program)
	2.8.9.4 I/M Program Commands	Option to include an I/M program	N (no program)
2.8.10 Fuel Commands			
	FUEL PROGRAM	Option to specify an RFG program, Tier 2 sulfur phase-in schedules, or to specify sulfur content of gasoline after 1999.	N (no program, standard Tier2 phase in schedule)
	SULFUR CONTENT	Option to enter sulfur content of fuels up to 1999 year	N
	OXYGENATED FUELS	Option to include oxygenated gasoline	N
	FUEL RVP	Required	Y, 15 (January – CO model runs); 9 (July - HC, NO_X model runs)
	SEASON	Default is winter when January is used or Summer as option	N for CO modeling; Y for NO_X and HC modeling

	NO CLEAN AIR ACT	Option to model vehicle emissions as if 1990 Amendments had not been implemented	N
	NO DEFEAT DEVICE	Option to turn off the effects of the HDDV Nox off-cycle emission effects	N
	NO NOX PULL AHEAD	Option to turn off the effects of the Pull Ahead mitigation program	N
	NO REBUILD	Option to turn off effects of the Rebuild mitigation program	N
	REBUILD EFFECTS	Option to change the Rebuild program effectiveness rate	N
	2.8.11.3 Tier 2 Emission Standards and Fuel Requirements	Option to override the defaults	N
	94+ LDG IMP	Option to override default certification standard phase-in schedule for Tier 1, NLEV and Tier 2 programs	N
	NO 2007 HDDV RULE	Option to override default settings for 2007 HDDV emission standards	N

Note 1: For the intersection modeling emission factor MOBILE runs, the AVERAGE SPEED command will be used to model the speeds required for CAL3QHC input. Those speeds will include 2.5 miles per hour (mph) for the calculation of an idle emission factor and the other free flow speeds shown in Table 1. The format of the input will be:

AVERAGE SPEED : 2.5 Arterial

For area-wide emission estimates, the average speed command will not be used. The MOBILE6.2 default national fleet data VMT by average speed for freeways and arterial roadways will be used.

Table 3 is a summary of CAL3QHC input command options for use in the I-5/Beltline Interchange ISP.

Table 3: CAL3QHC Model Input Assumptions

Meteorological Variables	
Averaging Time	60 minutes
Surface Roughness	175.00 (city land use - office)
Wind Speed	1 meter/second
Wind Angle	0 to 360 degrees in 10 degree increments
Stability Class	4 (D)
Mixing Height	1,000 meters

Persistence Factor (1- hour to 8-hour)	0.76
Ambient Background Concentration	1.5 ppm
Site Variables	
Receptor Coordinates	• At least 3 meters from each traveled roadway on both sides of the street[1], at distances of 3 meters, 25 meters, and 50 meters from the cross street. • Height 1.8 meters.
[1]Distances are measured 3 meters back from the queue line and 3 meters out from the lane edge. All receptor locations will be verified to ensure that none are placed in the roadway.	

Appendix C

Project Data: Raw Data from ODOT for 2005 and 2025

BUILD ALTERNATIVE (referred to in EA as OPTION 3, VE OPTON A-10; in Revised EA as Alternative X-1)

Data from ODOT, E-mail dated 7/5/2005 from Peter.L.Schuytema)

ID	Class	Distance	Year1	Year2	Loscvol1	Loscvol2	Speed	Adt1	Adt2	ATruckFact	Phv1	Phv2	PhmTruckFact	PhhTruckFact	AhvFact	AhTruckFact	PthvFact	PthmTruckFact	PthhTruckFact	RevisionDate	OpSpeed	OpDistance
001	0	0.25	2005	2025	1310	1500	40	10900	18600	038	940	1620	015	004	809	038	755	055	028			
002	0	0.14	2005	2025	1870	2140	40	15700	25600	074	1360	2230	021	015	801	057	726	096	034			
003	0	0.09	2005	2025	1700	2160	40	15200	23800	060	1320	2070	027	019	860	069	772	095	038			
004	0	0.08	2005	2025	2080	2040	35	18800	21300	043	1640	1850	025	010	855	048	728	041	024			
005	0	0.17	2005	2025	2980	2940	35	30700	31600	036	2670	2750	025	006	880	038	698	045	016			
006	0	0.25	2005	2025	2920	2670	35	17200	17500	012	2380	2390	004	001	907	010	901	035	016			
007	0	0.03	2005	2025	120	100	15	1000	1300	132	80	110	000	000	571	032	725	121	000			
008	0	0.25	2005	2025	670	710	40	5600	8800	102	480	770	029	031	697	090	684	133	058			
009	0	0.05	2005	2025	130	120	25	1000	1300	099	90	120	128	000	902	121	422	342	053			
010	0	0.42	2005	2025	80	1020	35	5400	12100	039	470	1020	020	003	876	041	449	147	011			
011	0	0.11	2005	2025	750	1030	35	7000	13200	040	520	1140	019	010	723	045	551	065	025			
012	0	0.25	2005	2025	1840	0	35	15800	0	035	1290	0	027	004	718	041	584	057	012			
013	0	0.08	2005	2025	1400	1400	35	17000	18600	043	1480	1620	025	010	855	048	728	041	024			
014	0	0.08	2005	2025	1640	1210	35	16000	16000	043	1390	1400	025	010	855	048	728	041	024			
015	0	0.17	2005	2025	570	790	25	6400	8200	058	560	710	000	058	929	054	673	071	043			
016	2	0.37	2005	2025	5680	5680	55	30300	41800	087	2640	3640	029	037	843	094	808	069	072			
017	2	0.38	2005	2025	3560	3120	55	13300	21400	042	1160	1860	025	007	829	048	736	038	025			
018	2	0.22	2005	2025	2600	2780	45	15500	26200	041	1340	2280	027	006	829	047	734	048	019			
019	2	0.13	2005	2025	4340	5900	45	21400	35000	041	1860	3050	024	010	832	046	733	046	023			
020	0	0.09	2005	2025	2610	3920	45	24400	46000	041	2120	4000	025	009	815	045	707	048	019			
021	0	0.32	2005	2025	1460	2710	45	11100	32600	035	980	2830	027	008	753	040	648	051	004			
022	0	0.25	2005	2025	0	2690	45	0	34400	035	0	2990	027	004	718	041	584	057	012			
023	2	0.14	2005	2025	4350	4350	45	17500	27100	041	1520	2360	024	010	832	046	677	066	021			
024	2	0.12	2005	2025	4360	4360	45	14900	22200	039	1300	1940	024	007	830	048	654	067	014			
025	2	0.09	2005	2025	3870	3540	45	9900	15500	039	860	1350	023	004	830	049	623	079	012			
026	2	0.38	2005	2025	2910	2910	55	9900	15500	039	860	1350	023	004	830	049	623	079	012			
027	2	0.42	2005	2025	3110	3110	27	28700	37500	086	2500	3260	028	043	843	094	620	075	096			
028	2	1.00	2005	2025	4170	4170	55	22000	37500	189	1920	3260	049	139	917	222	860	099	192			
029	2	0.52	2005	2025	4090	4090	55	14900	25200	231	1300	2180	055	191	939	280	959	092	227			
030	2	0.28	2005	2025	4180	4180	55	19900	31900	183	1730	2770	049	146	919	221	910	084	192			
031	2	0.81	2005	2025	5650	5650	55	32200	45200	152	2800	3920	039	111	882	170	886	077	155			
032	2	0.62	2005	2025	5730	5730	55	37800	52400	124	3290	4560	026	098	819	137	668	054	154			
033	2	0.47	2005	2025	4210	4210	55	18000	29100	167	1570	2540	029	145	800	182	688	042	218			
034	2	0.30	2005	2025	4210	4210	55	22700	36200	166	1980	3160	031	124	819	176	723	060	190			
035	2	1.00	2005	2025	4520	4520	55	25300	41200	155	2200	3580	031	119	822	164	731	060	172			
036	2	0.22	2005	2025	1090	1090	45	7100	12300	099	620	1080	036	030	872	102	659	119	090			
037	2	0.21	2005	2025	1950	1950	55	19800	23300	086	1720	2020	025	055	836	096	651	052	102			
038	2	0.50	2005	2025	1880	1880	55	13700	14500	105	1190	1260	026	062	838	115	618	058	136			
039	2	0.19	2005	2025	1870	1870	55	18800	22000	110	1640	1920	030	058	852	118	618	078	139			
040	2	0.24	2005	2025	2150	2150	55	17000	20400	122	1480	1860	033	052	854	120	861	092	112			
041	2	0.55	2005	2025	660	660	25	4700	7200	162	400	620	040	041	892	152	865	119	100			
042	2	0.42	2005	2025	1070	1070	45	5100	7500	124	440	660	037	049	889	125	617	116	144			
043	2	0.46	2005	2025	1080	1080	45	12300	13200	107	1080	1160	029	058	840	116	859	072	118			
044	2	0.24	2005	2025	1020	930	45	6100	8800	042	530	760	021	021	833	050	729	040	034			
045	2	0.30	2005	2025	1110	1110	45	2600	4900	053	220	420	026	027	842	034	790	060	047			
046	2	0.29	2005	2025	700	700	25	5000	6700	039	440	580	026	013	831	047	727	043	018			
047	2	0.28	2005	2025	310	410	45	2000	4800	035	180	420	034	001	828	042	724	124	019			
048	0	0.25	2005	2025	0	540	35	0	7000	012	0	600	004	001	907	010	901	035	016			

BUILD ALTERNATIVE (referred to in EA as OPTION 3, VE OPTON A-10; in Revised EA as Alternative X-1)

Data from ODOT, E-mail dated 7/5/2005 from Peter.L.Schuytema)

avg_trk_vol1	avg_trk_vol2	avg_day_speed1	avg_day_speed2	pk_hr_auto1	pk_hr_auto2	pk_hr_mtr1	pk_hr_mtr2	ph_hr_htr1	ph_hr_htr2	pk_hr_speed1	pk_hr_speed2	avg_hr_vol1	avg_hr_vol2	avg_hr_trks1	avg_hr_trks2	avg_hr_speed1
414	707	40	40	922	1590	14	24	4	6	40	35	760	1310	29	50	40
1162	1894	40	40	1311	2150	29	47	20	33	40	37	1090	1790	62	102	40
912	1428	40	40	1259	1975	36	56	25	39	40	40	1140	1780	78	123	40
808	916	35	35	1583	1785	41	46	16	19	35	35	1400	1580	67	76	35
1105	1138	35	35	2587	2664	67	69	16	17	35	35	2350	2420	89	92	35
206	210	35	35	2368	2378	10	10	2	2	35	35	2160	2170	22	22	35
132	172	15	15	80	110	0	0	0	0	15	14	50	60	1	2	15
571	898	40	40	451	724	14	22	15	24	40	35	330	540	30	48	40
99	129	25	25	78	105	12	15	0	0	25	25	80	110	10	13	25
211	472	22	35	460	997	9	20	1	3	10	35	410	890	17	37	10
280	528	35	35	505	1107	10	22	5	11	35	29	380	820	17	37	35
553	0	35	35	1250	0	35	0	5	0	35	35	930	0	38	0	35
731	800	35	35	1428	1563	37	41	15	16	32	27	1270	1390	61	66	35
688	688	35	35	1341	1351	35	35	14	14	35	27	1190	1200	57	57	35
371	476	25	25	528	669	0	0	32	41	25	25	520	660	28	36	25
2636	3637	55	55	2465	3399	77	106	98	135	55	55	2230	3070	209	288	55
559	899	55	55	1123	1800	29	47	8	13	55	55	960	1540	46	74	55
636	1074	45	45	1296	2204	36	62	8	14	45	45	1110	1890	52	89	45
877	1435	45	45	1796	2946	45	73	19	31	45	45	1550	2540	71	117	45
1000	1886	45	45	2048	3864	53	100	19	36	45	44	1730	3260	78	147	45
389	1141	45	45	946	2731	26	76	8	23	45	42	740	2130	30	85	45
0	1204	45	45	0	2897	0	81	0	12	45	37	0	2150	0	88	45
718	1111	45	45	1469	2279	36	57	15	24	45	45	1260	1960	58	90	45
581	866	45	45	1260	1879	31	47	9	14	45	45	1080	1610	52	77	45
386	604	45	45	837	1314	20	31	3	5	45	45	710	1120	35	55	45
386	604	55	55	837	1314	20	31	3	5	55	55	710	1120	35	55	55
2468	3225	27	27	2323	3029	70	91	107	140	27	29	2110	2750	198	258	27
4158	7088	55	55	1559	2647	94	160	267	453	55	55	1760	2990	391	664	55
3442	5821	55	55	980	1644	72	120	248	416	55	55	1220	2050	342	573	55
3642	5838	55	55	1392	2230	85	136	253	404	55	55	1590	2550	351	563	55
4894	6870	55	55	2380	3332	109	153	311	435	55	55	2470	3460	420	588	55
4687	6498	55	55	2882	3994	86	119	322	447	55	55	2690	3730	369	512	55
3006	4860	55	55	1296	2098	46	74	228	368	55	55	1260	2030	229	370	55
3768	6009	55	55	1673	2670	61	98	246	392	55	55	1620	2590	285	455	55
3921	6386	55	55	1870	3043	68	111	262	426	55	55	1810	2940	297	483	55
703	1218	45	45	579	1009	22	39	19	32	45	44	540	940	55	96	45
1703	2004	55	55	1582	1858	43	51	95	111	55	53	1440	1690	138	162	55
1438	1522	55	55	1085	1149	31	33	74	78	55	55	1000	1060	115	121	55
2068	2420	55	55	1496	1751	49	58	95	111	55	53	1400	1640	165	193	55
2074	2489	55	55	1354	1702	49	61	77	97	55	55	1260	1590	152	191	55
761	1166	25	25	368	570	16	25	16	25	25	26	360	550	54	84	25
632	930	45	45	402	604	16	24	22	32	45	45	390	590	49	73	45
1316	1412	45	45	986	1059	31	34	63	67	44	44	910	970	105	113	45
256	370	45	45	508	728	11	16	11	16	45	45	440	630	22	32	45
138	260	45	45	208	398	6	11	6	11	45	45	190	350	6	12	45
195	261	25	25	423	557	11	15	6	8	25	25	370	480	17	23	25
70	168	45	45	174	406	6	14	0	0	45	44	150	350	6	15	45
0	84	35	35	0	597	0	2	0	1	35	29	0	540	0	5	35

BUILD ALTERNATIVE (referred to in EA as OPTION 3, VE OPTON A-10; in Revised EA as Alternative X-1)

Data from ODOT, E-mail dated 7/5/2005 from Peter.L.Schuytema)

avg_hr_speed2	pk_trk_hr_vol1	pk_trk_hr_vol2	pk_trk_hr_auto1	pk_trk_hr_auto2	pk_trk_hr_mtr1	pk_trk_hr_mtr2	pk_trk_hr_htr1	pk_trk_hr_htr2	pk_trk_hr_speed1	pk_trk_hr_speed2
40	710	1220	651	1119	39	67	20	34	40	40
40	990	1620	861	1409	95	156	34	55	40	40
40	1020	1600	884	1387	97	152	39	61	40	40
35	1190	1350	1112	1263	49	55	29	32	35	35
35	1860	1920	1746	1803	84	86	30	31	35	35
35	2140	2150	2031	2041	75	75	34	34	35	35
15	60	80	53	70	7	10	0	0	15	15
40	330	530	267	429	44	70	19	31	40	40
25	40	50	24	30	14	17	2	3	25	25
35	210	460	177	387	31	68	2	5	10	35
35	290	630	264	573	19	41	7	16	35	35
35	750	0	698	0	43	0	9	0	35	35
35	1080	1180	1010	1104	44	48	26	28	35	35
35	1010	1020	945	954	41	42	24	24	35	35
25	380	480	337	425	27	34	16	21	25	25
55	2130	2940	1830	2525	147	203	153	212	55	55
55	850	1370	797	1284	32	52	21	34	55	55
45	980	1670	914	1558	47	80	19	32	45	45
45	1360	2240	1266	2085	63	103	31	52	45	45
45	1500	2830	1400	2640	72	136	28	54	45	45
45	640	1830	604	1730	33	93	3	7	45	45
45	0	1750	0	1629	0	100	0	21	45	45
45	1030	1600	940	1460	68	106	22	34	45	45
45	850	1270	781	1167	57	85	12	18	45	45
45	540	840	491	764	43	66	6	10	45	45
55	540	840	491	764	43	66	6	10	55	55
27	1550	2020	1285	1675	116	151	149	194	27	27
55	1650	2800	1170	1985	163	277	317	538	55	55
55	1250	2090	851	1424	115	192	284	474	55	55
55	1570	2520	1137	1824	132	212	301	484	55	55
55	2480	3470	1905	2665	191	267	384	538	55	55
55	2200	3050	1742	2415	119	165	339	470	55	55
55	1080	1750	800	1295	45	74	235	381	55	55
55	1430	2280	1072	1710	86	137	272	433	55	55
55	1610	2620	1236	2012	97	157	277	451	55	55
45	410	710	324	562	49	84	37	64	45	45
55	1120	1320	948	1116	58	69	114	135	55	55
55	740	780	596	629	43	45	101	106	55	55
55	1010	1190	791	932	79	93	140	165	55	55
55	1270	1600	1011	1274	117	147	142	179	55	55
25	350	540	273	422	42	64	35	54	25	25
45	270	410	200	303	31	48	39	59	45	45
45	930	1000	753	810	67	72	110	118	45	45
45	390	550	361	509	16	22	13	19	45	45
45	170	330	152	294	10	20	8	16	45	45
25	320	420	300	394	14	18	6	8	25	25
45	130	300	112	257	16	37	2	6	45	45
35	0	540	0	512	0	19	0	9	35	35

BUILD ALTERNATIVE (referred to in EA as OPTION 3, VE OPTON A-10; in Revised EA as Alternative X-1)

Data from ODOT, E-mail dated 7/5/2005 from Peter.L.Schuytema)

Note	StreetName
NONE	Game Farm Road N
NONE	Game Farm Road N
NONE	Gateway Street
NONE	Gateway St - One Way S
NONE	Gateway Street
NONE	Gateway Street
NONE	Parking Lot
NONE	International Way
NONE	Game Farm Road W
2005 PHV exceeds LOS C Volume by 487%	Game Farm Road E
NONE	Game Farm Road S
Future year ADT is less then base year ADT Future year PHV is less then base year PHV	Game Farm Road S
2025 PHV exceeds LOS C Volume by 15%	Kruse Way - One Way
2025 PHV exceeds LOS C Volume by 15%	Hutton St - One Way N
NONE	Gateway Loop
NONE	Beltline Hwy Eastbound
NONE	Beltline Hwy Eastbound
NONE	Beltline Hwy Eastbound
NONE	Beltline Hwy Eastbound
NONE	Beltline Road
NONE	Beltline Road
NONE	Beltline Road
NONE	Pioneer Parkway Extension
NONE	Beltline Hwy Westbound
NONE	Beltline Hwy Westbound
NONE	Beltline Hwy Westbound
NONE	Beltline Hwy Westbound
NONE	Beltline Hwy Westbound
NONE	I-5 Southbound
NONE	I-5 Southbound
NONE	I-5 Southbound
NONE	I-5 Southbound
NONE	I-5 Northbound
NONE	I-5 Northbound
NONE	I-5 Northbound
NONE	I-5 Northbound
NONE	I-5 South to Beltline West Ramp
NONE	I-5 North to Beltline West Flyover
NONE	I-5 North to Beltline West Flyover
NONE	I-5 North to Beltline West Flyover
NONE	Beltline East to I-5 North/South Road
NONE	Beltline East to I-5 South Loop Ramp
NONE	I-5 South to Beltline West Ramp
NONE	Beltline West to I-5 South Ramp
NONE	I-5 North to Beltline East Ramp
NONE	Beltline West to I-5 North Ramp
NONE	Beltline West to I-5 South Loop Ramp
NONE	I-5 South to Beltline West Ramp
NONE	Game Farm Road S

Appendix D
MOBILE6.2 Modeling Input and Output Files for the Project-Wide Analysis

Appendix E

Calculation of Project VMT (spreadsheet)
Calculation of No Build VMT (spreadsheet)

PN 254.10 I-5/BELTLINE INTERCHANGE ISP
VMT FOR various BUILD years (Alt X-1)
Link lengths and average daily volumes 2005 and 2025 for Alt X-1 provided by P. Schuytema/ODOT

Street Name	Link ID	Distance (mi)	2005 Avg Day Vol	2025 Avg Day Vol	2005* VMT	2025* VMT	*I*	*2009*** VMT	*2010*** VMT	*2015*** VMT	*2020*** VMT	reality check *2025*** VMT	*2022*** VMT
Game Farm Road N	001	0.25	10900	18600	2725	4650	0.02708012	3032	3114	3560	4068	4650	4292
Game Farm Road N	002	0.14	15700	25600	2198	3584	0.02474785	2424	2484	2807	3172	3584	3331
Gateway Street	003	0.09	15200	23800	1368	2142	0.02267271	1496	1530	1712	1915	2142	2003
Gateway St - One Way S	004	0.08	18800	21300	1504	1704	0.00626204	1542	1552	1601	1652	1704	1672
Gateway Street	005	0.17	30700	31600	5219	5372	0.00144577	5249	5257	5295	5333	5372	5349
Gateway Street	006	0.25	17200	17500	4300	4375	0.00086495	4315	4319	4337	4356	4375	4364
Parking Lot	007	0.03	1000	1300	30	39	0.01320463	32	32	34	37	39	37
International Way	008	0.25	5600	8800	1400	2200	0.02285655	1532	1567	1755	1965	2200	2056
Game Farm Road W	009	0.05	1000	1300	50	65	0.01320463	53	53	57	61	65	62
Game Farm Road E	010	0.42	5400	12100	2268	5082	0.04116505	2665	2775	3395	4154	5082	4503
Game Farm Road S	011	0.11	7000	13200	770	1452	0.03222362	874	902	1057	1239	1452	1320
Game Farm Road S	012	0.25	15800	0	3950	0	-1	0	0	0	0	0	0
Kruse Way - One Way	013	0.08	17000	18600	1360	1488	0.00450754	1385	1391	1423	1455	1488	1468
Hutton St - One Way N	014	0.08	16000	16000	1280	1280	0	1280	1280	1280	1280	1280	1280
Gateway Loop	015	0.17	6400	8200	1088	1394	0.0124689	1143	1158	1232	1310	1394	1343
Beltline Hwy Eastbound	016	0.37	30300	41800	11211	15466	0.01621753	11956	12150	13168	14271	15466	14737
Beltline Hwy Eastbound	017	0.38	13300	21400	5054	8132	0.02406638	5558	5692	6411	7220	8132	7572
Beltline Hwy Eastbound	018	0.22	15500	26200	3410	5764	0.02659343	3787	3888	4433	5055	5764	5328
Beltline Hwy Eastbound	019	0.13	21400	35000	2782	4550	0.02490288	3070	3146	3558	4023	4550	4226
Beltline Road	020	0.09	24400	46000	2196	4140	0.0322108	2493	2573	3015	3533	4140	3764
Beltline Road	021	0.32	11100	32600	3552	10432	0.05534567	4406	4650	6087	7969	10432	8875
Pioneer Parkway Extension	022	0.25	0	34400	0	8600	#DIV/0!	8600	8600	8600	8600	8600	8600
Beltline Hwy Westbound	023	0.14	17500	27100	2450	3794	0.02210747	2674	2733	3049	3401	3794	3553
Beltline Hwy Westbound	024	0.12	14900	22200	1788	2664	0.02013661	1936	1975	2182	2411	2664	2509
Beltline Hwy Westbound	025	0.09	9900	15500	891	1395	0.02266837	975	997	1115	1247	1395	1304
Beltline Hwy Westbound	026	0.38	9900	15500	3762	5890	0.02266837	4115	4208	4707	5266	5890	5507
Beltline Hwy Westbound	027	0.42	28700	37500	12054	15750	0.013462	12716	12887	13779	14731	15750	15131
I-5 Southbound	028	1	22000	37500	22000	37500	0.02702361	24476	25138	28723	32819	37500	34617
I-5 Southbound	029	0.52	14900	25200	7748	13104	0.02662235	8607	8836	10076	11491	13104	12111
I-5 Southbound	030	0.28	19900	31900	5572	8932	0.02387486	6123	6270	7055	7938	8932	8322
I-5 Southbound	031	0.81	32200	45200	26082	36612	0.01710111	27912	28390	30902	33636	36612	34796
I-5 Northbound	032	0.62	37800	52400	23436	32488	0.01646394	25018	25430	27593	29941	32488	30935
I-5 Northbound	033	0.47	18000	29100	8460	13677	0.02430908	9313	9539	10757	12129	13677	12726
I-5 Northbound	034	0.3	22700	36200	6810	10860	0.02360909	7476	7653	8600	9664	10860	10126
I-5 Northbound	035	1	25300	41200	25300	41200	0.02468136	27892	28580	32286	36471	41200	38294
I-5 South to Beltline West Ramp	036	0.22	7100	12300	1562	2706	0.02785615	1743	1792	2056	2359	2706	2492
I-5 North to Beltline West Flyover	037	0.21	19800	23300	4158	4893	0.00817178	4296	4331	4511	4698	4893	4775
I-5 North to Beltline West Flyover	038	0.5	13700	14500	6850	7250	0.00284167	6928	6948	7047	7148	7250	7189
I-5 North to Beltline West Flyover	039	0.19	18800	22000	3572	4180	0.00789024	3686	3715	3864	4019	4180	4083
Beltline East to I-5 North/South Roa	040	0.24	17000	20400	4080	4896	0.00915776	4232	4270	4469	4678	4896	4764
Beltline East to I-5 South Loop Ran	041	0.55	4700	7200	2585	3960	0.02155495	2815	2876	3199	3559	3960	3715
I-5 South to Beltline West Ramp	042	0.42	5100	7500	2142	3150	0.01947024	2314	2359	2598	2860	3150	2973
Beltline West to I-5 South Ramp	043	0.46	12300	13200	5658	6072	0.00353712	5738	5759	5861	5966	6072	6008
I-5 North to Beltline East Ramp	044	0.24	6100	8800	1464	2112	0.01849205	1575	1604	1758	1927	2112	1999
Beltline West to I-5 North Ramp	045	0.3	2600	4900	780	1470	0.03219354	885	914	1071	1255	1470	1337
Beltline West to I-5 South Loop Ran	046	0.29	5000	6700	1450	1943	0.01474107	1537	1560	1678	1806	1943	1860
I-5 South to Beltline West Ramp	047	0.28	2000	4800	560	1344	0.04474563	667	697	868	1080	1344	1179
Game Farm Road S	048	0.25	0	7000	0	1750	#DIV/0!	1750	1750	1750	1750	1750	1750

	2005	2025	2010	2009	2015	2020	2025 QC	2022
Avg Day VMT	238,929	361,503	269,325	264,295	296,370	326,918	361,503	340235
Annual Factor	365	365	365	365	365	365	365	365
Annual VMT	87,209,085	131,948,595	98,303,497	96,467,606	108,175,011	119,325,103	131,948,595	124,185,662

Notes
1. Highlighted rows are new or deleted roadways for which "I" cannot be calculated, if roadway was delete, used 0 for all years; if new roadway, data for 2025 was used.
2. Years other than 2005 and 2025 were calculated using growth factor provided by P. Schuytema/ODOT:
Future = Present * (1 + *i*) ^ n where Future = 2025, Present = 2005, n = 20,
i = ((2025/2005)^ 1/20) -1

TW Environmental, Inc
PN 254.1
I-5/Beltline Interchange
No Build VMT, emissions

Roadway	Link ID	Distance (mi)	2005 Avg Day Vol	2025 Avg Day Vol	2005 VMT (Day)	2025 VMT	i	2008 VMT	2009 VMT	2010 VMT	2015 VMT	2020 VMT	2022 VMT	2025 VMT
Game Farm Rd N	001	0.25	10900	18600	2725	4650	0.027080118	2952	3032	3114	3560	4068	4292	4650
Game Farm Rd N	002	0.14	15700	25600	2198	3584	0.02474785	2365	2424	2484	2807	3172	3331	3584
Gateway Street	003	0.12	15200	23800	1824	2856	0.022672714	1951	1995	2040	2282	2553	2670	2856
Gateway Street	004	0.11	31700	33000	3487	3630	0.002011565	3508	3515	3522	3558	3594	3608	3630
Gateway Street	005	0.19	30700	31600	5833	6004	0.001445767	5858	5867	5875	5918	5961	5978	6004
Gateway Street	006	0.25	27200	27500	6800	6875	0.000548602	6811	6815	6819	6837	6856	6864	6875
Parking Lot	007	0.03	1000	1300	30	39	0.013204634	31	32	32	34	37	37	39
International Way	008	0.25	5600	8900	1400	2225	0.023434608	1501	1536	1572	1765	1982	2076	2225
Game Farm Rd W	009	0.05	1000	1300	50	65	0.013204634	52	53	53	57	61	62	65
Game Farm Rd E	010	0.42	5400	12200	2268	5124	0.041593602	2563	2670	2781	3409	4179	4534	5124
Game Farm Road S	011	0.11	6000	13200	660	1452	0.040210262	743	773	804	979	1192	1290	1452
Game Farm Road S	012	0.25	14800	0	3700	0	0	0	0	0	0	0	0	0
Kruse Way	013	0.11	3700	4900	407	539	0.014144215	425	431	437	468	502	517	539
Hutton Street	014	0.11	2600	4000	286	440	0.021772788	305	312	319	355	395	412	440
Gateway Loop	015	0.17	6300	8200	1071	1394	0.013266455	1114	1129	1144	1222	1305	1340	1394
Beltline Hwy EB	016	0.64	30300	41800	19392	26752	0.016217531	20351	20681	21016	22777	24684	25492	26752
Beltline Hwy EB	017	0.21	17900	28500	3759	5985	0.023527678	4031	4125	4223	4743	5328	5582	5985
Beltline Hwy EB	018	0.05	19900	33300	995	1665	0.026076067	1075	1103	1132	1287	1464	1541	1665
Beltline Hwy EB	019	0.13	15300	26200	1989	3406	0.027260273	2156	2215	2275	2603	2977	3142	3406
Beltline Hwy EB	020	0.08	21400	35000	1712	2800	0.02490288	1843	1889	1936	2189	2476	2601	2800
Beltline Hwy	021	0.11	11600	33400	1276	3674	0.054300528	1495	1577	1662	2165	2820	3135	3674
Beltline Hwy	022	0.32	11000	32600	3520	10432	0.05582331	4143	4374	4618	6060	7951	8863	10432
Pioneer Parkway Ext	023	0.25	0	34400	0	8600	0	8600	8600	8600	8600	8600	8600	8600
Beltline Hwy WB	024	0.04	17500	27200	700	1088	0.02229572	748	765	782	873	974	1018	1088
Beltline Hwy WB	025	0.18	14900	22200	2682	3996	0.020136614	2847	2905	2963	3274	3617	3764	3996
Beltline Hwy WB	026	0.02	28600	36700	572	734	0.012546558	594	601	609	648	690	707	734
Beltline Hwy WB	027	0.29	23600	30000	6844	8700	0.012069793	7095	7180	7267	7716	8193	8392	8700
Beltline Hwy WB	028	0.62	28700	37500	17794	23250	0.013461998	18522	18772	19024	20340	21746	22336	23250
I-5 Southbound	029	0.5	22000	37500	11000	18750	0.027023614	11916	12238	12569	14361	16410	17309	18750
I-5 Southbound	030	0.28	16900	30000	4732	8400	0.029109832	5157	5308	5462	6305	7277	7707	8400
I-5 Southbound	031	0.02	21900	36700	438	734	0.026150586	473	486	498	567	645	679	734
I-5 Southbound	032	0.26	19900	31900	5174	8294	0.023874862	5554	5686	5822	6551	7371	7727	8294
I-5 Southbound	033	0.93	32300	45200	30039	42036	0.016943432	31592	32127	32672	35535	38649	39970	42036
I-5 Northbound	034	0.68	37800	52400	25704	35632	0.016463936	26995	27439	27891	30264	32838	33928	35632
I-5 Northbound C-D Road	035	0.17	19800	23300	3366	3961	0.008171779	3449	3477	3506	3651	3803	3865	3961
I-5 Northbound C-D Road	036	0.15	13700	14500	2055	2175	0.002841671	2073	2078	2084	2114	2144	2157	2175
I-5 Northbound C-D Road	037	0.07	18300	21600	1281	1512	0.008324067	1313	1324	1335	1392	1451	1475	1512
I-5 Northbound C-D Road	038	0.15	4600	7100	690	1065	0.021939124	736	753	769	857	955	998	1065
I-5 Northbound C-D Road	039	0.1	7200	12100	720	1210	0.026296018	778	799	820	933	1063	1119	1210
I-5 Northbound	040	0.64	18000	29100	11520	18624	0.024309084	12381	12682	12990	14647	16516	17329	18624
I-5 Northbound	041	0.5	25200	41200	12600	20600	0.024884285	13564	13902	14248	16111	18218	19136	20600
I-5 South to Beltline West Ramp	042	0.43	5100	7500	2193	3225	0.019470244	2324	2369	2415	2659	2929	3044	3225
Beltline East to I-5 South Ramp	043	0.42	12400	13300	5208	5586	0.003509522	5263	5281	5300	5394	5489	5528	5586
I-5 North to Beltline East Ramp	044	0.25	6100	8800	1525	2200	0.018492046	1611	1641	1671	1832	2007	2082	2200
Beltline West to I-5 North Ramp	045	0.26	2600	5000	676	1300	0.033236722	746	770	796	937	1104	1179	1300
Beltline West to I-5 South Loop	046	0.29	5000	6700	1450	1943	0.014741074	1515	1537	1560	1678	1806	1860	1943
I-5 South to Beltline East Loop	047	0.23	2000	4800	460	1104	0.044745627	525	548	573	713	887	968	1104
Beltline East to I-5 North Loop	048	0.21	4600	7100	966	1491	0.021939124	1031	1054	1077	1200	1338	1397	1491
I-5 North to Beltline West Loop	49	0.23	13700	14500	3151	3335	0.002841671	3178	3187	3196	3242	3288	3307	3335
I-5 North to Beltline West Loop	50	0.25	0	7000	0	1750	0	1750	1750	1750	1750	1750	1750	1750
Daily TOTALS								**237603**	**241805**	**246106**	**269219**	**295317**	**306698**	**324886**
Annual TOTALS								**86,725,216**	**88,258,706**	**89,828,714**	**98,265,024**	**107,790,784**	**111,944,736**	**118,583,390**

PROJECT AREA EMISSIONS

Pollutant	YEAR	SEASON	G/MI	NB TPY
VOC	2009	S	0.96	93
	2010	S	0.888	88
	2015	S	0.631	68
	2020	S	0.5	59
	2022	S	0.456	56
	2025	S	0.434	57
NOX	2009	S	1.506	147
	2010	S	1.361	135
	2015	S	0.799	87
	2020	S	0.537	64
	2022	S	0.482	59
	2025	S	0.423	55
CO	2009	W	18.449	1795
	2010	W	17.446	1727
	2015	W	14.324	1552
	2020	W	12.777	1518
	2022	W	12.558	1550
	2025	W	12.298	1608

Notes

1. Highlighted rows are new or deleted roadways for which "I" cannot be calculated, if roadway was delete, used 0 for all years; if new roadway, data for 2025 was used.
2. Years other than 2005 and 2025 were calculated using growth factor provided by P. Schuytema/ODOT:

To estimate years between 2005 and 2025: **Future = Present * (1 + i) ^ n where Future = 2025, Present = 2005, n = 20,** ***i = ((2025/2005)^ 1/20) -1***

Appendix F

MOBILE6.2 Modeling Input and Output Files for the Intersection Analysis

Appendix G

ODOT Intersection Data for Game Farm Road East/Gateway

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	(shared)	LTR	(shared)	L	TR	(shared)	L	TT	R	L	TTR	(shared)
Total Lost Time (s)		4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Permitted Saturation flow (pcphg)		1461		1644	1478		1613	3130	1443	1629	2565	
Approach Volume (vph)	5	10	50	210	10	415	30	750	210	200	850	10
Flow Rate (PHF adjusted) (vph)	5	11	53	221	11	437	32	789	221	211	895	11
Act. Effective Green (s)		6.5		20.8	20.8		6.2	57.6	78.4	19.1	70.5	
Yellow Time (s)		4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All- Red Time (s)		0.5		0.5	0.5		0.5	0.5	0.5	0.5	0.5	
Free-Flow Speed (mph):		15		35	35		35	35	35	35	35	
Total Cycle Length (s): 120												
Signal type: Actuated												
Progression Arrival Rate:		3		3	3		3	5	5	3	4	
Note: EB approach is a driveway												
Data is from ODOT												

All other intersections in project area are at LOS C or better through 2025.

Appendix H
CAL3QHC Modeling Input and Output Files for the Intersection Analysis