Facility Plan

I-5 Exit 30 Interchange Area Management Plan

(Volume II)

September 2021

Prepared for:
Oregon Department of Transportation, Region 3
3500 NW Stewart Parkway
Roseburg, Oregon 97470
(541) 957-3500



Oregon Department of Transportation

[This page left blank intentionally]

Interchange Area Management Plan

I-5 Exit 30 Interchange Area Management Plan Volume II: Technical Appendix

Medford, Oregon

Prepared For:
Oregon Department of Transportation, Region 3
3500 NW Stewart Parkway
Roseburg, OR 97470
(541) 957-3500

Prepared By:
Kittelson & Associates, Inc.
851 SW 6th Avenue, Suite 600
Portland, OR 97204
(503) 228-5230

Project Manager: Matt Hughart, AICP
Project Analysts: Matt Bell and Miranda Barrus
Project Principal: Marc Butorac, PE, PTOE, PMP

Project No. 23641.00

September 2021

[This page left blank intentionally]

TECHNICAL APPENDICES

Appendix A – Tech Memo #1: Definitions and Background

Appendix B – Tech Memo #2: Existing Deficiencies

Appendix C – Tech Memo #3: Methodology Memo

Appendix D – Tech Memo #4: Future No-Build Conditions

Appendix E – Tech Memo #5: Future Build Conditions

Appendix F – Tech Memo #6: Proposed Plan and Code Amendments

Appendix G – Preferred Solutions Traffic Operations Worksheets

[This page left blank intentionally]

Appendix A Tech Memo #1: Definitions and Background

[This page left blank intentionally]

KITTELSON & ASSOCIATES
851 SW 6th AVENUE, SUITE 600
PORTLAND, OR 97204
P 503.228.5230 F 503.273.8169

MEMORANDUM

Date:	December 20, 2019	Project #: 23641.3
To:	Virginia Elandt and Jeremiah Griffin, Oregon Department of Transportation	
CC:	Karl MacNair, City of Medford	
From:	Matt Hughart, AICP, Matt Bell, and Amy Griffiths, Kittelson & Associates, Inc.	
Project:	I-5 Exit 30 IAMP	
Subject:	Final Tech Memo 1: Definitions and Background	

The purpose of this memorandum is to provide an overview of the Interchange Area Management Plan ("IAMP") for Exit 30 in Medford. Specifically, this memorandum describes the project purpose and background. It also proposes goals, objectives, evaluation criteria, and the study area.

INTRODUCTION AND PURPOSE

The Oregon Department of Transportation (ODOT), in collaboration with the City of Medford (City), is required to prepare an Interchange Area Management Plan (IAMP) for the Interstate 5 (I-5), Exit 30 (north Medford) interchange in accordance with the *OR 62: I-5 to Dutton Road Final Environmental Impact Statement* (FEIS), Oregon Administrative Rule (OAR) 734-051, and the *Oregon Highway Plan* (OHP).

The I-5, Exit 30 interchange is one of two interchanges serving the City of Medford in Jackson County. It also serves the City of Central Point, Jackson County, the Rogue Valley International-Medford Airport, and nearby commercial and residential areas. The interchange ramp terminals connect to Oregon Route 62 (OR 62), a state highway providing connections throughout Jackson County.

The purpose of the I-5 Exit 30 IAMP is to protect the function of the interchange by maximizing its capacity for safe movement of the I-5 mainline, and to provide safe and efficient operations between connecting roadways. The IAMP must identify management and implementation strategies. The IAMP may result in policies, ordinances, and other provisions to be adopted into the City's Transportation System Plan (TSP) and Comprehensive Plan. The IAMP will also be adopted by the Oregon Transportation Commission as an amendment to the OHP.

BACKGROUND

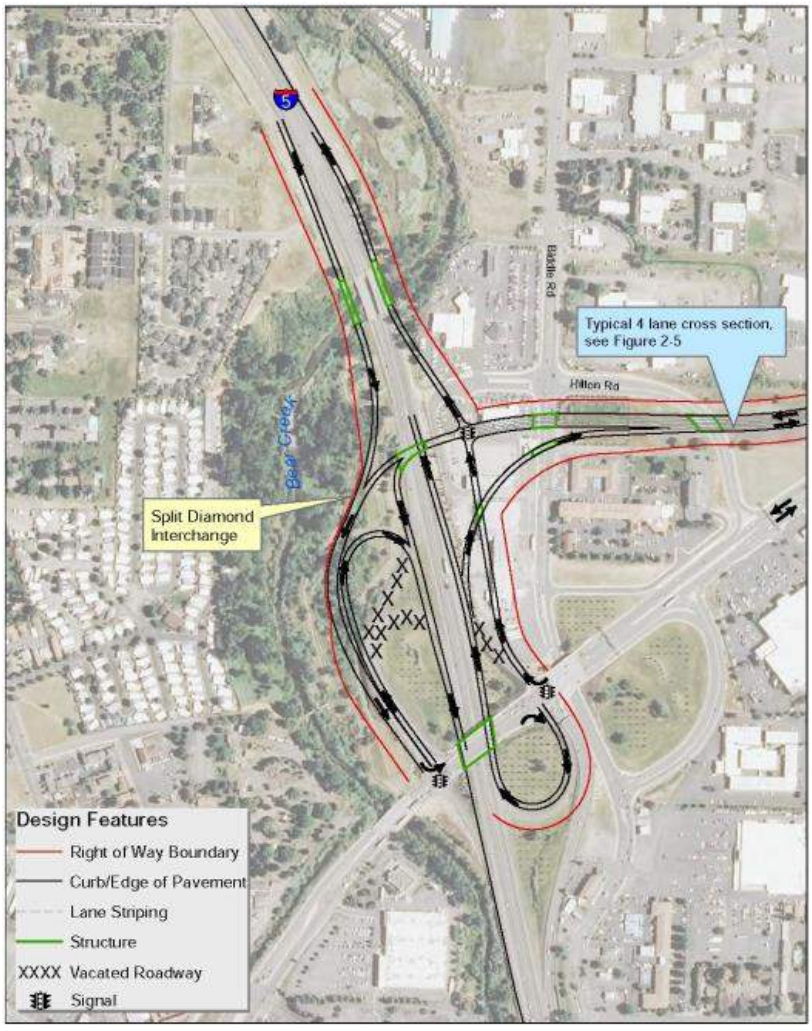
Since the 1990s, the Oregon Department of Transportation (ODOT), Rogue Valley Metropolitan Planning Organization ("RVMPO") Policy Committee, City of Medford, and Jackson County have recognized that the approximately 7.5-mile segment of OR 62 stretching from I-5 in Medford through White City has

experienced increasing traffic, congestion and safety problems. This segment of OR 62, also known as Crater Lake Highway, is a major transportation corridor that is heavily developed with commercial and industrial uses.

In 1997, ODOT formed a solutions team to address current and future highway capacity needs, improve intersection operations and provide enhanced transportation safety and multimodal opportunities along the OR 62 Corridor. The original study area included the I-5/OR 62 Interchange in Medford (also known as the north Medford interchange or Exit 30) and extended northeast to White City. Due to funding constraints, this original study area was divided into two units.

Highway 62 Corridor Project Unit 1 improved the north Medford interchange, realigning the I-5 ramps and reducing congestion and improving safety around Exit 30. Following a series of public meetings for Unit 2, the project's Citizens Advisory Committee and Project Development Team selected their preferred alternative, a 4.5-mile expressway that parallels the Old Medco Haul Road between White City and Medford. The preferred alternative is described in great detail in the OR 62 FEIS which also identifies a Split Diamond Interchange at Exit 30 as shown in Exhibit 1 and is the focus of this Project.

Exhibit 1: Split Diamond Interchange from FEIS



In 2009, the Oregon Legislature enacted the Jobs and Transportation Act ("JTA") which earmarked funds for part of the 4.5-mile expressway identified in the FEIS. These funds were used to construct the expressway from OR 62 (near the Whittle Avenue intersection) north to the intersection of OR 62 and Corey Road. This phase of the expressway was completed in May 2019 and has changed traffic patterns near the Exit 30 interchange.

The FEIS did not analyze traffic impacts west of the interchange ramps. Two commercial expansions at the intersection of OR 238 / OR 99 / OR 62 (the "Big X") southwest of the interchange will result in an increase in traffic volumes at the interchange. Developable lands at the Big X, which includes service and general industrial uses, may be rezoned to mixed use and/or residential in the future. These developments need to be analyzed in the context of the IAMP.

While the FEIS provided a significant amount of information, issues were identified for the split diamond design interchange which requires additional discussion to inform future decisions. These issues include (1) the need for a Highway Design Manual ("HDM") exception for the northbound I-5 ramp due to latent traffic demand; (2) additional access management strategies for facilities west of Poplar Drive/Bullock Road; (3) removing and replacing a Bear Creek Greenway bridge; (4) adding two new bridges; (5) the displacement of two businesses, one of which needs hazmat review; and (6) Section 6(f) determination for the Bear Creek Greenway. In addition, the FEIS does not provide guidance on how to transition from the interim solution that was completed in May 2019 with the preferred long-term split diamond interchange solution.

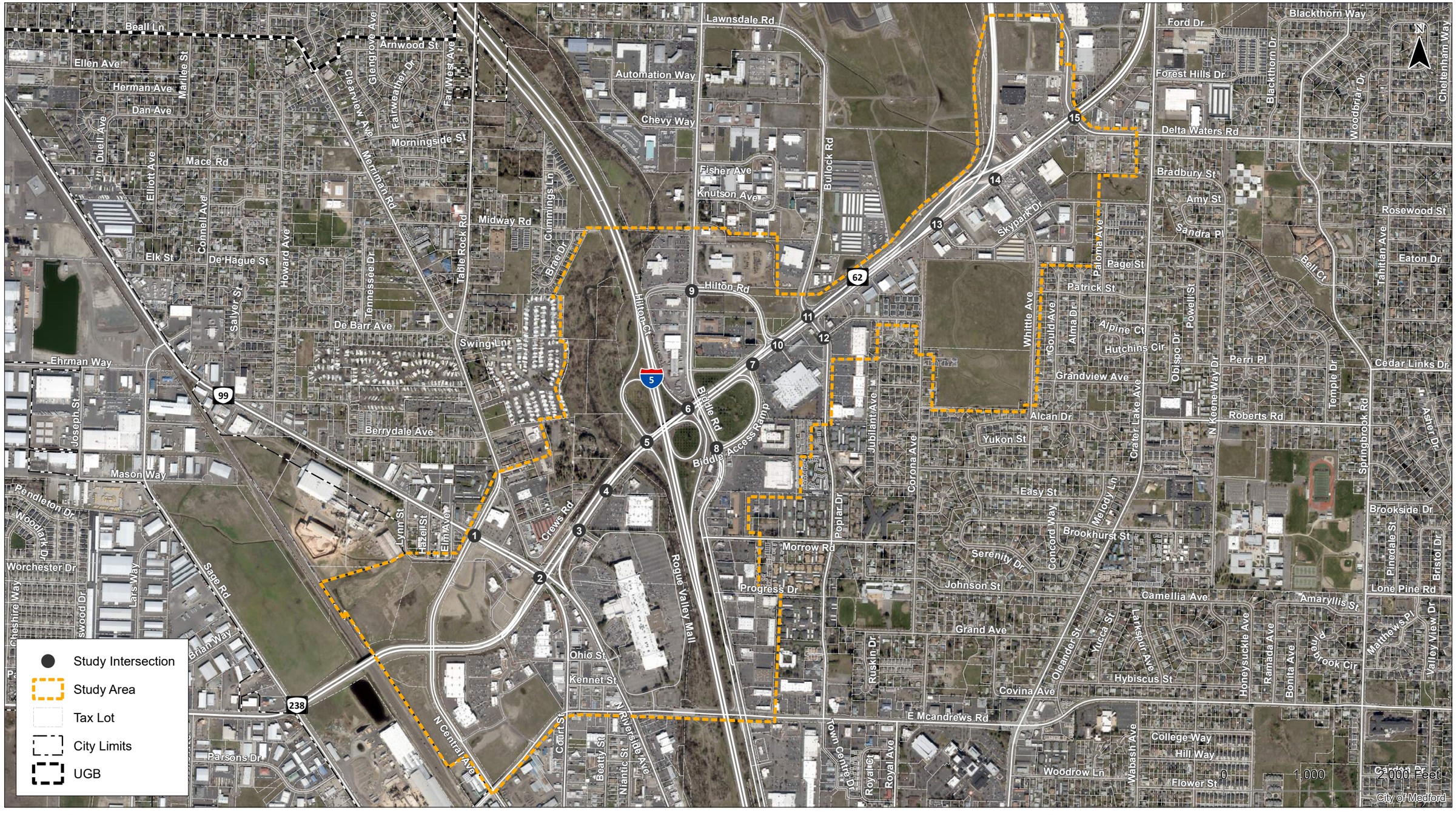
These issues need to be assessed and documented in the IAMP that can be adopted by the City of Medford as an amendment to their Transportation System Plan and adopted by the Oregon Transportation Commission as an amendment to the Oregon Highway Plan.

PROBLEM STATEMENT

The I-5 Exit 30 IAMP will confirm the proposed split diamond interchange design identified in the FEIS and develop solutions to connect the proposed interchange with the OR 62 bypass while maintaining access to OR 62. It will also develop and evaluate solutions to address the incremental impacts of traffic generated by future development and re-development within the IMSA, including the area southwest of the interchange near the Big X. Finally, it will address the outstanding issues identified in the FEIS to ensure the long-term viability of the interchange to facilitate movement between I-5, OR 62, and the OR 62 bypass.

INTERCHANGE MANAGEMENT STUDY AREA (IMSA)

To provide a comprehensive study and to achieve effective results, the IMSA includes developable and re-developable properties and major roadways that could significantly affect the function of the interchange over the next 20 years. At a minimum, the IMSA includes properties, as well as all access points within ½-mile from the interchange ramp terminals as defined by the IAMP Guidelines. Figure 1 presents the draft IMSA map.



Interchange Management Study Area
Medford, Oregon

Figure
1

Coordinate System: NAD 1983 2011 StatePlane Oregon South FIPS 3602 Ft Intl
Data Source: Delete if there isn't one.

KITTELSON & ASSOCIATES

H:\23\23641 - Exit 30 IAMP\gis\TM1\1_IMSA.mxd - qpenjotx - 4:12 PM 12/20/2019

Operations and Access Study Area

The Operations and Access Study Area includes all access points and intersections within the IMSA and encompasses those key intersections that have the potential to affect traffic operations in the interchange area over the 20-year planning period. These study boundaries identify the area for which operational analysis will be completed and the area that will be considered for the Access Management Plan. The study intersections include:

1. OR 99 / Table Rock
2. OR 62 / OR 238 / OR 99 / Court Street / N. Riverside Avenue
3. OR 62 / Rogue Valley Mall entrance (west)
4. OR 62 / Rogue Valley Mall entrance (east, at Target)
5. OR 62 / I-5 Southbound Ramp Terminal
6. OR 62 / I-5 Northbound Ramp Terminal
7. OR 62 / Biddle Road (north end of jug handle)
8. OR 62 / Biddle Road (south end of jug handle)
9. Biddle Road / Hilton Court
10. Hilton Court / Fred Meyer Parking Lot Entrance
11. OR 62 / Bullock Road / Popular Drive
12. Poplar Drive / Hilton Road
13. OR 62 / Sky Park Drive
14. OR 62 / Whittle Avenue
15. OR 62 / Delta Waters Road

Land Use Study Area

The Land Use Study Area includes all properties located roughly within the Operations and Access Study Area and beyond in order to incorporate developable and re-developable properties that have the potential to significantly affect the interchange functions. Properties identified with potential to affect the interchange include those that are expected to use the interchange as the primary connection to I-5. For the purpose of this study, the Land Use Study Area will include properties located north and south of OR 62 within the Medford City limits, roughly between the Central Oregon and Pacific Rail Line and the current OR 62 Expressway connection to OR 62.

GOALS AND OBJECTIVES

The primary goal of the IAMP is to protect the function of the interchange for the next 20 years while accounting for changes in land use and traffic patterns. As stated in Policy 3C of the Oregon Highway Plan, "*it is the policy of the State of Oregon to plan for and manage grade-separated interchange areas*

to ensure safe and efficient operation between connecting roadways." To this end, the following draft objectives have been developed based on this goal and the scope of work for this project:

1. Consider the surrounding contextual land use, roadway network, and pedestrian, bicycle, and transit systems;
2. Provide for efficient connectivity, right-of-way, and access control in the analysis area of the interchange;
3. Refine and prioritize improvements needed to maintain acceptable traffic operations at the interchange while providing safe access to adjacent land uses for all modes of transportation, including people walking, people biking, and transit users;
4. Provide plans for improved local street connectivity in the Project area while limiting cul-de-sacs or other non-connected streets;
5. Evaluate existing and potential land use designations, intensities, conditions, and actions that could have favorable effect on the facility or an adverse effect on the facility;
6. Include implementation policies to be adopted into the City and County comprehensive plans, transportation system plans, interchange access standards, and zoning ordinances, as appropriate; and
7. Develop alternatives that consider the surrounding topographical context, environmental impacts, construction cost, and potential phasing strategies.

These objectives will be reviewed with members of the Planning Advisory Committee (PAC) before they are finalized.

APPENDIX

Include the Review of Plans and Policies – TM #1 Appendix

MEMORANDUM

Technical Memorandum #1: Plans and Policies Review (Task 3.3)

Exit 30 Interchange Area Management Plan (IAMP)

DATE	December 18, 2019
TO	Matt Hughart and Matt Bell, Kittelson & Associates
FROM	Darci Rudzinski, Clinton "CJ" Doxsee, and Courtney Simms, Angelo Planning Group
CC	Project Management Team

OVERVIEW

Pursuant to the scope of work (Task 3.3), this memorandum presents a review of existing plans, regulations, agreements, and policies that affect transportation planning in the study area for the City of Medford and ODOT I-5 Exit 30 Interchange Area Management Plan (IAMP). The review explains the relationship between the documents and planning in this area, identifying key issues to track through the IAMP development process.

Documents in this review establish transportation-related standards, targets, and guidelines as well as transportation improvements with which the IAMP shall coordinate and be consistent. Other documents in this review – such as the City of Medford Transportation System Plan (TSP) and Land Development Code (LDC) – may be subject to future recommended amendments in order to implement the IAMP. Once the IAMP and implementing ordinances are completed, it is expected that the City will adopt key elements of the IAMP as a refinement to the Medford TSP before the IAMP is considered by the Oregon Transportation Commission (OTC) for adoption. Upon adoption by the OTC, the IAMP becomes an amendment to the Oregon Highway Plan (OHP).

Table 1 provides a list of the documents reviewed in this memorandum, the page in the memo where the applicable information can be found, and a summary of the relevance each document has to the Exit 30 IAMP and the Interchange Management Study Area (IMSA) specifically.

Table 1. Summary of Documents Reviewed and Project Relevance

Documents	Project Relevance	Page
FEDERAL AND STATE DOCUMENTS		
FHWA Access to Interstate System Policy	The Oregon Department of Transportation (ODOT) is responsible for the submission of access modification requests to the designated FHWA Division office for review. The IAMP must include all information required for submission under this policy.	6
2018-2021 Statewide Transportation Improvement Program	A result of the IAMP planning process may be recommended projects for inclusion in a future cycle of STIP funding. There is no guarantee that the projects will be included in the next version or future STIPs. Available statewide funding for transit-related improvements includes the Statewide Transportation Improvement Fund (STIF).	6
ODOT Title VI Guidance	Development of the IAMP must address any Title VI and Environmental Justice populations to ensure the planning project complies with related federal requirements. Title VI and Environmental Justice populations have been identified as part of demographic analysis performed for the project; project alternatives will be evaluated for impacts on these populations.	7
ODOT IAMP Guidelines	The project team will use the IAMP Guidelines as a tool during development of the IAMP, specifically considering the appropriateness of implementation measures identified in the guidelines.	8
Oregon Transportation Plan	The Exit 30 IAMP will seek to maximize performance of the existing transportation system through, for example, the use of technology and system management before considering larger and costlier improvements at the interchange.	8
Transportation Planning Rule (OAR 660-012)	While OAR 734-051 regulates access management and not the TPR (OAR 660-012), the TPR provides the connection between local development codes and access management, coordinated land use review procedures, and other standards, allowances, and requirements to protect road operations and safety, as well as provide for non-motorized modes of transportation. Planned improvements within the IMSA on local roadways will need to be consistent with Medford's adopted transportation requirements. Recommended IAMP implementation measures may entail local code amendments to ensure TPR provisions as well as IAMP recommendations are captured in the code.	9

Documents	Project Relevance	Page
Access Management Rule (OAR 734-051)	The Exit 30 IAMP will meet compliance with spacing standards in OAR 734-051 and their development will need to be consistent with the applicable criteria established for facility plans and project delivery in the Rule. To be consistent with the direction provided in Senate Bill 408, the development and evaluation of alternatives will acknowledge the impacts and benefits of property access, as measured by adopted local land use designations (allowed uses) and economic development objectives of the property owners. The IAMPs' access management plan should "include level of detail sufficient to inform affected real property owners of the potential for the modification, relocation or closure of existing private approaches within the area (§4(3)(c))." The location of local streets that intersect with the state highway system in the vicinity of the subject interchanges will be discussed with the City during the existing conditions phase of the project.	10
Oregon Highway Plan	The Exit 30 IAMP will be adopted as an amendment to the OHP; therefore, they must align will all relevant policies summarized above.	12
ODOT Highway Design Manual	The IAMP alternatives will be developed to be consistent with the applicable HDM Standards for interchanges and state highways. Any proposed bicycle or pedestrian improvements associated with the preferred alternatives will also need to be consistent with the HDM.	18
Oregon Bicycle Bill	Facilities for pedestrians and cyclists will be required where plan recommendations include new or reconstructed roadway associated with the state highways or interchange design.	19
Oregon Bicycle and Pedestrian Plan	The IAMP will consider State bicycle and pedestrian goals and strategies through this planning project and their implementation avenues.	19
Oregon Freight Plan	Maintaining and enhancing efficiency of the truck and freight system in the study area will be an integral part of the IAMP.	20
Oregon Aviation Plan	The Exit 30 IAMP will take into account land use and growth at the Rogue Valley International-Medford Airport and how improvements at Exit 30 may impact access and economic development.	21
Oregon Transportation Safety Action Plan	Safety factors will be reflected in IAMP Goals and Objectives and the assessment of project alternatives.	22
Oregon Public Transportation Plan	The IAMP process will coordinate with the Rogue Valley Transportation District (RVTD), the regional public transit agency, and the City's transit program to ensure that planning outcomes are consistent with transit planning. A representative from RVTD will be invited to participate on the planning advisory committee and will receive copies of each deliverable for review and comment to ensure coordination between the IAMP planning process and outcomes and regional transit operations and long-range planning.	23
I-5 Rogue Valley Corridor Plan (2012)	The Exit 30 IAMP will review and incorporate corridor concepts that are recommended in the Corridor Plan	24

Documents	Project Relevance	Page
ODOT Bridge Design Manual (2019)	Recommended improvements related to bridge design will be guided by AASHTO specifications.	25
AASHTO LRFD Bridge Design Specifications, 8th Edition (2017)		
AASHTO Guide Specifications for LRFD Seismic Bridge Design (2011)		
REGIONAL DOCUMENTS		
RMVPO Regional Transportation Plan (2017)	The projects recommended in the RTP, either proposed or already constructed within the IMSA, will be considered in the development of the IAMP. The IAMP will be adopted as an amendment to the RTP and therefore will need to be found, or made, consistent with standards and policies.	26
RVMPO Transportation Improvement Program (2017)	Improvements recommended in the Exit 30 IAMP will be available for inclusion in a future TIP and may be coordinated with other programmed projects, where applicable.	27
RVMPO Freight Study Report (2006, Updated 2012)	The IAMP will review the status of recommended projects within the study area and factor the planned improvements.	28
Rogue Valley Area Active Transportation Plan (in progress)	The RVMPO transportation/transit objectives and planned projects will be considered in the development of the IAMP.	28
Rogue Valley Regional ITS Plan (2016)	The IAMP project will review and incorporate as applicable the recommended ITS projects into the alternatives analysis and recommended alternative.	29
Rogue Valley International-Medford Airport Master Plan Update (2010)	The current operations and planned expansions of the airport will be considered in the development of the IAMP.	29
Bear Creek Greenway Management Plan (2006)	The IAMP project will consider and plan for mitigation resulting from impacts to the Bear Creek Greenway.	30
Greater Bear Creek Valley Regional Plan (2011)	Consistent with the Regional Plan, the TSP update will consider ways to reduce reliance on state facilities and increase local connectivity through the development of local arterials.	31
RVTD 2040 Transit Master Plan (in progress)	The IAMP project will consider and plan for service enhancements identified in the Transit Master Plan	31
RVTD Transit Master Plan 2007-2017 (2007)	The RVTD Transit Master Plan 2007-2017 is anticipated to be replaced by the RVTD 2040 Transit Master Plan. No relevance is anticipated.	33
LOCAL DOCUMENTS		
Medford Comprehensive Plan (various)	The IAMP will need to be consistent with Comprehensive Plan policies, either existing or as proposed to be modified. Furthermore, the IAMP will be adopted as an amendment to the City TSP, the Transportation Element of the City's Comprehensive Plan.	34

Documents	Project Relevance	Page
City of Medford Transportation System Plan 2018-2038 (2018)	The projects recommended in the TSP, either proposed or already constructed within the study area, will be considered in the development of the IAMP. The IAMP will be adopted as an amendment to the TSP and therefore will need to be found, or made, consistent with standards and policies in the TSP.	39
Medford Capital Improvement Plan (2017)	Improvements recommended in the Exit 30 IAMP will be available for inclusion in a future City's CIP and may be coordinated with other programmed projects, where applicable.	42
Land Development Code for the City of Medford (various)	Future growth in the study area will be based on zoning districts assessed as part of the projects existing conditions analysis. As the IAMP process progresses and recommendations are formed, the standards will guide local street improvements. IAMP recommended improvements on the local street system may require City Engineering approval.	43
OR 62: I-5 to Dutton Road Final Environmental Impact Study (2013)	The expressway Preferred Alternative is described in great detail in the OR 62 FEIS. It identifies a split diamond interchange at Exit 30 as shown in Figure 10. The FEIS did not analyze traffic impacts west of the interchange ramps. Two commercial expansions at the intersection of OR 238, OR 99, and OR 62 (the "Big X") southwest of the interchange will result in an increase in traffic volumes at the interchange. Developable lands at the Big X, which includes service and general industrial uses, may be rezoned to mixed use and/or residential in the future. These developments need to be analyzed in the context of the IAMP. Further, the issues identified in the FEIS related to improvements at the interchange need to be reexamined and resolved. Recommendations will be documented in the draft IAMP for future adoption - by the City of Medford as an amendment to the adopted Transportation System Plan and by the Oregon Transportation Commission as an amendment to the Oregon Highway Plan.	45
Liberty Park Neighborhood Plan (in progress)	The projects recommended in the Neighborhood Plan within the study area will be considered in the development of the IAMP.	47
Cooperative Improvement Agreements, Inter-Governmental Agreements, and Traffic Impact Studies relative to development within the IMSA	The IAMP will consider and review additional agreements and studies that are relevant to the IMSA as they become available.	49

FEDERAL AND STATE DOCUMENTS

Federal Highway Administration (FHWA) Access to Interstate System Policy (2017)

The Federal Highway Administration's (FHWA) policy established the federal requirements for new or improved access to the interstate system. The policy states the following:

> *It is in the national interest to preserve and enhance the Interstate System to meet the needs of the 21st Century by assuring that it provides the highest level of service in terms of safety and mobility. Full control of access along the Interstate mainline and ramps, along with control of access on the crossroad at interchanges, is critical to providing such service. Therefore, the Federal Highway Administration's (FHWA) decision to approve new or revised access points to the Interstate System under Title 23, United States Code (U.S.C.), Section 111, must be supported by substantiated information justifying and documenting that decision. The FHWA's decision to approve a request is dependent on the proposal satisfying and documenting the following requirements.*
>
> *1) An operational and safety analysis that have proven the proposed access changes does not have "a significant adverse impact on the safety and operation of the Interstate facility" or connected local street network. The area of analysis should at minimum expand from the interstate to the to the nearest major intersection on either side of proposed change in access.*
>
> *2) The proposed access connects to a public road only and will provide for all traffic movements. The report should demonstrate the proposed change meets the current standards of 23 CFR 625.2(a), 625.4(a)(2), and 655.603(d) and mitigation proposed to compensate for the missing movements, including wayfinding signage, impacts on local intersections, mitigation of driver expectation leading to wrong-way movements on ramps, etc.*

Project Relevance: The Oregon Department of Transportation (ODOT) is responsible for the submission of access modification requests to the designated FHWA Division office for review. The IAMP must include all information required for submission under this policy.

2018–2021 Statewide Transportation Improvement Program

The State Transportation Improvement Program (STIP) is the programming and funding document for transportation projects and programs statewide. The projects and programs undergo a selection process managed by ODOT Regions or ODOT central offices. The document covers a period of four years and is updated every two years. There are no current active STIP (2018-2021) projects proposed within the Exit 30 IAMP study area.[1]

[1] Note that a draft 2021-2024 STIP will likely be adopted by the OTC before the end of the Exit 30 IAMP planning effort. Proposed projects that are within the IMSA will be considered as future solutions for the interchange are developed and evaluated.

Statewide Transportation Improvement Fund (STIF)

House Bill 2017, Keep Oregon Moving, required that starting in 2019 a new state payroll tax of one-tenth of 1 percent would be enacted to fund public transportation improvements around the state. The new revenue is allocated under the Statewide Transportation Improvement Fund Program (STIF), with a majority of the funds allocated to qualified local entities. Rogue Valley Transportation District will receive STIF funds under the STIF Formula Disbursements. The Oregon Transportation Commission awarded over $1 million in STIF Discretionary & Intercommunity Program and Statewide Transit Network Program funding during the 2019 grant cycle. The allocated funds will go to the Eagle Point Intercity Route and Ashland Demand Response Micro-Transit Demonstration projects.

Project Relevance: A result of the IAMP planning process may be recommended projects for inclusion in a future cycle of STIP funding. There is no guarantee that the projects will be included in the next version or future STIPs. Available statewide funding for transit-related improvements includes the Statewide Transportation Improvement Fund (STIF).

ODOT Title VI Guidance

Title VI of the Civil Rights Act of 1964 prohibits discrimination on the basis of race, color, or national origin in programs that receive federal funding, including ODOT, MPO, and local government transportation planning, design, construction, and operations activities. Related statutes and policies prohibit discrimination on other bases, such as Executive Order 12898 (Environmental Justice), which requires that minority and low-income populations not be disproportionally subjected to impacts of proposed projects.

Title VI Guidance for Transportation Planning was released by the ODOT Transportation Development Division (TDD) in January 2015. It provides direction to local governments, MPOs, and ODOT staff in annual reporting to the FHWA and Federal Transit Administration (FTA) regarding the compliance of planning, design, and construction activities with Title VI. The guide provides direction for planning activities in particular, with an emphasis on activities related to scoping the project, identifying Title VI populations in planning study areas, developing and conducting targeted outreach to these populations, conducting alternatives analysis, and documenting activities and findings. The guide essentially provides checklists for local governments, MPOs, and ODOT Region Planning Project Managers, Region Planning Managers, TDD Planning Staff, and the Title VI Program Manager for documenting and reporting for the annual Title VI Accomplishment Report.

Project Relevance: Development of the IAMP will address Title VI and Environmental Justice populations to ensure the planning project complies with related federal requirements. The Public Involvement Plan will include a strategy for Title VI and Environmental Justice community outreach, which should be driven by the Phase 1 (Scoping) section of the Guidance. Title VI and Environmental Justice populations will be identified as part of demographic analysis performed for the project for Task 4.1; project alternatives will be evaluated for impacts on these populations.[2]

[2] See Technical Memorandum #2, Existing Inventory and Land Use Assumptions.

ODOT Interchange Area Management Plan Guidelines (2013)

The Interchange Area Management Plan (IAMP) Guidelines provide guidance for the preparation of IAMP. The guidelines include background regarding the purpose and regulatory significance of IAMP and addresses the following:

- IAMP contents and level of analysis,
- Timing of IAMP related to project development;
- IAMP preparation process;
- Relationship of ODOT and local governments;
- Relationship to NEPA; and
- Schedule, cost and funding.

As part of the "IAMP Process," the guidelines establish local development code, deed restrictions, funding mechanisms, traffic/transportation mechanisms, and access management as IAMP implementation measures. The guidelines identify policy statements, concurrency ordinances, trip capacity/allocation ordinances, trip budgets, overlay districts, and design review and performance standards as specific implementation measures to be pursued through potential local development code amendments.

The 2013 update retained much of the original material in the guidelines and added some new information, including differentiation of access management plans and strategies and expanded explanations related to coordination of the IAMP with project development (NEPA).

Project Relevance: The project team will use the IAMP Guidelines as a tool during development of the IAMP, ensuring that the process results in the level of analysis, plan content, and specific measures necessary to guide future improvements at the Exit 30 IAMP.

Oregon Transportation Plan (2006)

The Oregon Transportation Plan (OTP) is a comprehensive plan that addresses the future transportation needs of the State of Oregon through the year 2030. The primary function of the OTP is to establish goals, policies, strategies and initiatives that guide the development of the State's transportation modal plans, such as the OHP and Oregon Bike and Pedestrian Plan.

The OTP emphasizes the following key initiatives for implementation of the OTP:

- Maintaining and maximizing the assets in place
- Optimizing the performance of the existing system through technology
- Integrating transportation, land use, economic development and the environment
- Integrating the transportation system across jurisdictions, ownerships and modes
- Creating sustainable funding
- Investing in strategic capacity enhancements

Project Relevance: The IAMP will seek to maximize performance of the existing transportation system through, for example, the use of technology and system management before considering larger and costlier improvements at the interchanges.

Transportation Planning Rule (OAR 660-012)

The Transportation Planning Rule (TPR) implements Goal 12 (Transportation) of the statewide planning goals. The TPR contains numerous requirements governing transportation planning and project development. The TPR provides the connection between local development codes and access management, coordinated land use review procedures, and other standards, allowances, and requirements to protect road operations and safety. Recommended implementation measures for the Exit 30 IAMP may entail city code amendments to ensure TPR provisions as well as IAMP recommendations are captured in the code.

OAR 660-012-0045 (Section -0045)

Section -0045 requires each local government to amend its land use regulations to implement its TSP. It also requires local government to adopt land use or subdivision ordinance regulations consistent with applicable federal and state requirements "to protect transportation facilities, corridors and sites for their identified functions." Local governments also must adopt land use or subdivision regulations for urban areas that provide for safe and convenient pedestrian, bicycle, and vehicular circulation consistent with adopted access management standards and street functional classification.

Local compliance with -0045 provisions is achieved through a variety of measures, including access control measures, standards to protect future operations of roads, and expanded notice requirements and coordinated review procedures for land use applications. Local development codes should also include a process to apply conditions of approval to development proposals, and regulations ensuring that amendments to land use designations, densities, and design standards are consistent with the functions, capacities, and performance standards of facilities identified in the TSP.

The TPR does not regulate access management. ODOT adopted OAR 734-051 to address access management and this planning project and outcomes will need to be consistent with the Access Management Rule. Requirements include reviewing existing access points within at least one-quarter mile of interchange ramps. See the review of OAR 734-051 in the next section for a discussion of these access management rules.

OAR 660-012-0060 (Section -0060)

The 2012 TPR revisions resulted in new language in Section -0060 that allows a local government to exempt a zone change from the "significant effect" determination if the proposed zoning is consistent with the comprehensive plan map designation and the TSP.

Project Relevance: While OAR 734-051 regulates access management and not the TPR (OAR 660-012), the TPR provides the connection between local development codes and access management, coordinated land use review procedures, and other standards, allowances, and requirements to protect road operations and safety, as well as provide for non-motorized modes of transportation. Planned improvements within the IMSA on local roadways will need to be consistent with Medford's adopted transportation requirements. Recommended IAMP implementation measures may entail local code amendments to ensure TPR provisions as well as IAMP recommendations are captured in the code.

Access Management Rule (OAR 734-051)

OAR 734-051 defines the State's role in managing access to highway facilities in order to maintain functional use and safety and to preserve public investment. The rule includes spacing standards for varying types of state roadways and criteria for granting right of access and approach locations onto state highway facilities.

Amendments to OAR 734-051 were adopted in early 2012 based on passage of Senate Bill 1024 and Senate Bill 264 in the 2010 and 2011 Oregon Legislature respectively. The amendments were intended to allow more consideration for economic development when developing and implementing access management rules and involved changes to how ODOT deals with approach road spacing, highway improvement requirements with development, and traffic impact analyses requirements for approach road permits.

Senate Bill 408, which passed in the 2013 legislative session and became effective January 1, 2014, addressed three priorities: existing approaches (private driveways) without ODOT's written permission; access management in highway facility plans; and access management in highway project delivery.[3] The legislation provides new requirements for access management in the development of highway facility plans such as IAMP and corridor plans, and requires collaboration with local governments in determining the location of local roads that intersect highways in the planning area. The legislation also directs ODOT to develop an access management strategy for each highway modernization or improvement project. ODOT must develop key principles for each facility plan, which will be used to evaluate how abutting properties may retain or obtain access to the state highway during and after plan implementation. In developing the key principles, the department must also develop a methodology to weigh the benefits of a highway improvement to public safety and mobility against the locally adopted TSP and land uses permitted in the local comprehensive plan, as well as the economic development objectives of affected real property owners who require access to the state highway. If a facility plan identifies the need to modify, relocate or close existing private approaches, the plan must include key principles for managing access to the state highway and a timeline for plan implementation. Each facility plan also must document that there was collaborative discussion and agreement between the department and the affected city regarding the location of city streets that intersect a state highway within the study area.

OAR 734-051-4020 (Standards and Criteria for Approval of Private Approaches)

New spacing standards were established in 2012 for new or modified approaches to statewide highways[4] but spacing standards related to interchanges (spacing of tapers between interchanges, spacing between ramp tapers and approaches or intersections with left-turns) were not amended.[5]

[3] Senate Bill 408 resulted in the adoption of two permanent rules by the OTC: 734-051-1065 Restriction of Turning Movements for Existing Approaches, and 734-051-3015 Presumption of Written Permission for an Existing Private Connection. Additionally, fifteen (15) existing permanent rules were amended, and five previously adopted temporary rules were repealed.

[4] Tables 3-6 in OAR 734-051

[5] Tables 7-10 and Figures 1-4 in OAR 734-051

The amendments also allow access management plans (AMPs) and IAMPs to establish spacing standards that may take precedence over the highway/approach spacing standards in the rule.[6]

Interchange improvements that are proposed in the IAMP will need to meet or improve, "by moving in the direction of," the access management spacing standards by means of an access management strategy, plan, or mitigation proposal.[7] OAR 734-051-5120 (Access Management in Project Delivery)

Section -5120 of OAR 734-051 requires ODOT to develop an access management strategy during project delivery for modernization and highway improvement projects in the STIP. ODOT must collaborate with cities, counties, and owners of property adjacent to the highway to develop the access management strategy. The strategy must be consistent with the OTP, the OHP, and other modal plans adopted by the OTC, including Bicycle and Pedestrian Plan, Freight Plan, Highway Plan, Public Transportation Plan, and State Rail Plan.

The access management strategy must include a methodology that balances the economic development objectives of properties abutting the state highway with the transportation safety, access management objectives, and mobility of state highways, while also being consistent with local transportation system plans and the local comprehensive plans acknowledged under ORS Chapter 197.

Section -5120 provides a detailed outline for the required contents of the access management strategy. Both Section -5120 for Access Management in Project Delivery and Section -7010 Access Management in Highway Facility Plans, described below will apply to the Exit 30 IAMP. The strategies required for access management in -5120 and -7010 are the same and reflect the guidance in Senate Bill 408.

OAR 734-051-7010 (Access Management in Highway Facility Plans)

Section -7010 of OAR 734-051 identifies ODOT's responsibilities to address access management during the development of highway facility plans (access management plans and/or IAMPs) for particular sections of a state highway. The IAMP must comply with the following, unless it can be demonstrated that a criterion is not applicable.

- For the public participation process, provide notice and include interested stakeholders in to participate in the planning process. The process must include an opportunity for affected real property owners that abut the highway to review key principals and related methodology.
- Identify the need to modify, relocate, or close one or more existing approaches and how properties will retain or obtain access to the state highway during and after plan implementation.

[6] Pursuant to OAR 734-051-4020(8)(b)(C), spacing standards in AMPs and IAMPS may take precedence only over spacing standards in Tables 3-5 of OAR 734-051.

[7] OAR 734-051-1070(2), (3), and (4)

- Balance economic development objectives with transportation safety, access management, and mobility of state highway consistent with local plans.
- Articulate key principals in sufficient detail and include anticipated timeline for implementation.
- The plan must be consistent with the agreed upon local road connections identified in the TSP or during development of the plan and consider implications to state and local roadway networks and greater transportation systems.

The section also states that the methodology may include the following factors:

- How properties abutting state highways can develop or redevelop consistent with local designations, zoning and comprehensive plan.
- The level of direct highway access needed for properties
- Effects of out of direction travel for customers to recognize differences between destination and pass-by uses
- Effect of changing existing connections and circulation
- Safety and operational implications of traffic congestions or speed
- Creation of permanent jobs in the study area
- Community support for the project
- Reduction of vehicle conflict points where possible
- Safety and operation concerns
- Safety planning tools, data, and resources

Project Relevance: The IAMP will need to meet compliance with spacing standards in OAR 734-051 and future improvements will need to be consistent with the applicable criteria established for facility plans and project delivery in the Rule. To be consistent with the direction provided in Senate Bill 408, the development and evaluation of alternatives will acknowledge the impacts and benefits of property access, as measured by adopted local land use designations (allowed uses) and economic development objectives of the property owners. The IAMP's access management plan should "include level of detail sufficient to inform affected real property owners of the potential for the modification, relocation or closure of existing private approaches within the area (§4(3)(c))." The location of local streets that intersect with the state highway system in the vicinity of the subject interchanges will be discussed with the City during the existing conditions phase of the project.

Oregon Highway Plan (1999, last amended 2015)

The OHP is the modal plan of the OTP that guides ODOT's Highway Division in planning, operations, and financing. The Exit 30 IAMP is being developed by ODOT and projects, policies, and regulations

proposed as part of the IAMP must comply with or move in the direction of the OHP's standards and targets related to safety, access, and mobility. The IAMP must be consistent with the OHP when it is reviewed by the OTC for adoption.

The OHP defines policies and investment strategies for all state highways in Oregon. The OHP has three elements: vision for the future highway system; policies and goals for the five areas of: system definition, system management, access management, travel alternatives, and environmental and scenic resources; and a system element that analyzes the highway needs, revenue, investment and implementation strategy.

Policies in the OHP emphasize the need to efficiently manage the highway system to increase safety and to extend highway mobility, partner with other agencies and local governments, and use new techniques to improve road safety and mobility. These policies also link land use and transportation, set standards for highway performance and access management, and emphasize the relationship between state highways and local road, bicycle, pedestrian, transit, rail, and air systems. The following policies are particularly relevant to the Exit 30 IAMP, specifically to three highways located in the IMSA – Interstate 5 (I-5), Oregon Route 62 (OR 62) and Oregon Route 99 (OR 99). Biddle Road is described within the National Highway System as an NHS Intermodal Connector to the Airport.

Policy 1A: State Highway Classification System

The OHP classifies the state highway system into four levels of importance: Interstate, Statewide, Regional, and District. ODOT uses this classification system to guide management and investment decisions regarding state highway facilities. The system guides the development of facility plans, such as the Exit 30 IAMP, as well as ODOT's review of local plan and zoning amendments, highway project selection, design and development, and facility management decisions including road approach permits. Both Interstate 5 (I-5), Oregon Route 99 (OR 99), and Oregon Route 62 (OR 62) are a part of the National Highway System (NHS). The purpose and management objectives of these highways are provided in Policy 1A, as summarized below.

- **Interstate Highways**, such as I-5, provide connections between major cities in a state, regions of the state, and other states. A secondary function in urban areas is to serve regional trips within the urban area. Their primary objective is to provide mobility and, therefore, the management objective is to provide for safe and efficient high-speed continuous-flow operation in urban and rural areas.
- **Statewide Highways**, such as OR 62, typically provide inter-urban and inter-regional mobility and provide connections to larger urban areas, ports, and major recreation areas that are not directly served by Interstate Highways. A secondary function is to provide connections for intra-urban and intra-regional trips. The management objective is to provide safe and efficient, high-speed, continuous-flow operation. In constrained and urban areas, interruptions to flow should be minimal. Inside Special Transportation Areas (STAs), local access may also be a priority, there are no STAs located in the study area. In addition to the state highway classification system, I-5 and OR 62 are designated freight routes as discussed under Policy 1C.

- **District Highways** are facilities of county-wide significance and function largely as county and city arterials or collectors. They provide connections and links between small urbanized areas, rural centers and urban hubs, as well as serve local access and traffic. OR 99 fulfills this role in the vicinity of Exit 30.

Policy 1B: Land Use and Transportation

Policy 1B applies to all state highways. It is designed to clarify how ODOT will work with local governments and others to link land use and transportation in transportation plans, facility and corridor plans, plan amendments, access permitting and project development. Policy 1B recognizes the need to find balance between serving local communities (accessibility) and the through traveler (mobility) on state facilities. This policy recognizes the role of both the state and local governments related to the state highway system and calls for a coordinated approach to land use and transportation planning.

Policy 1C: State Highway Freight System

The primary purpose of the State Highway Freight System is to facilitate efficient and reliable interstate, intrastate, and regional truck movement through a designated freight system. This freight system is made up of the Interstate Highways and select Statewide, Regional, and District Highways and includes routes that carry significant tonnage of freight by truck and serve as the primary interstate and intrastate highway freight connection to ports, intermodal terminals, and urban areas. A primary function of the subject interchanges is to provide safe and efficient freight movements by providing free-flow movement for through traffic. I-5 and OR 62 have this designation and consequently higher highway mobility standards than other statewide highways. I-5 and OR 62 are also a designated "Reduction Review Route," where proposed activities (including those proposed in planning documents approved by a public agency) that will alter, relocate, change or realign these facilities must be reviewed for possible "Reduction of Vehicle-Carrying Capacity." Oregon Administrative Rule 731-012-0010, last revised in 2012, explains the review process and requirements.[8]

Policy 1F: Highway Mobility Policy

Policy 1F sets mobility targets for ensuring a reliable and acceptable level of mobility on the state highway system. The targets are used to assess system needs as part of long range, comprehensive

[8] September 2013 OHP text amendments provide the following explanation: "The 2003 legislature adopted changes to Oregon Revised Statutes (ORS) 366.215. This statute identifies the Oregon Transportation Commission's authority to build and modify state highways. The statute states that that the Commission may not permanently reduce the 'vehicle-carrying capacity' of an identified freight route unless safety or access considerations require the reduction or a local government requests the reduction. In the context of this statute, 'vehicle-carrying capacity' references the vertical and horizontal clearance for larger vehicles. Depending on the size and weight of a truck, oversized vehicles are issued permits on an annual or trip specific basis.

The need to protect existing vertical and horizontal clearance is different from the mobility function of the State Highway Freight System. The designated Reduction Review Routes identify where the Department will apply the OAR 731-012-0010 review of vertical and horizontal clearance."

planning transportation planning projects (such as the Exit 30 IAMP), during development review, and to demonstrate compliance with the TPR.

Significant amendments to Policy 1F were adopted at the end of 2011. The revisions were made to address concerns that state transportation policy and requirements have led to unintended consequences and inhibited economic development. Policy 1F now provides a clearer policy framework for considering measures other than volume-to-capacity (v/c) ratios for evaluating mobility performance. [9] Also as part of these amendments, v/c ratios established in Policy 1F were changed from being standards to "targets." These targets are to be used to determine significant effect pursuant to TPR Section -0060.

The mobility targets for state facilities in the IAMP study area are

- I-5: 0.85 v/c
- OR 62 (west of the interchange): 0.90 v/c
- OR 62 (east of the interchange): 0.95 v/c
- OR 99: 0.90 v/c

Policy 1G: Major Improvements.

This policy requires maintaining performance and improving safety on the highway system by improving efficiency and management on the existing roadway network before adding capacity. The state's highest priority is to preserve the functionality of the existing highway system. Tools that could be employed to improve the function of the existing interchanges include access management, transportation demand management, traffic operations modifications, and changes to local land use designations or development regulations.

After existing system preservation, the second priority is to make minor improvements to existing highway facilities, such as adding ramp signals, or making improvements to the local street network to minimize local trips on the state facility. The third priority is to make major roadway improvements which could, in the case of interchange improvements, include adding lanes or reconfiguring on- or off- ramps.

Policy 1H: Bypasses

This policy seeks to maintain or increase statewide and regional mobility by relocating highway alignments around a downtown, an urban or metropolitan area, or an existing highway. The intent of the policy is to provide effective service for state and regional traffic trips. Because the circumstances of each bypass vary, the application of Policy 1H provides a checklist of considerations rather than the application of an absolute criterion.

The recently constructed OR 62 Bypass has been designated as an Expressway. The Expressway classification begins at the intersection of OR 62 and Bullock Road, within the IMSA.

[9] The v/c may be the actual or projected rate of flow on a designated lane group during a specific time period (e.g., p.m. peak hour). A v/c ratio over 1.0 indicates the road or intersection is over-capacity; a v/c ratio under 1.0 indicates there is still room to accommodate additional vehicles. Definition from ODOT's *Analysis Procedures Manual*, June 2007.

Action 1H.3 applies to existing bypasses and recognizes that improvements to them occur incrementally and require multi-jurisdictional cooperation. It identifies the following actions ODOT should implement, where practical, that are applicable to this IAMP planning process.

a. Planning

In cooperation with local government:

3) Consider development of refinement plans or management plans, where appropriate, for the bypass termini with the affected local governments to protect the mobility function of the bypass. These plans should be adopted in the local transportation system plan and as facility plans by the Transportation Commission.

c. Interchanges/Intersections

1) Use grade separation and interchanges where possible and appropriate for safety. If a public connection jeopardizes the mobility function of the bypass, it should be grade-separated or closed.

2) Space any traffic signals and other at-grade intersections in urban areas at appropriate distances, as set forth in OAR 734-051. Traffic signals must be approved according to OAR 734-020.

d. Local Traffic Circulation

2) Support provisions in the local transportation system plan for local circulation off of the bypass facility.

Policy 2B: Off-System Improvements

This policy recognizes that the state may provide financial assistance to local jurisdictions to make improvements to local transportation systems if the improvements would provide a cost-effective means of improving the operations of the state highway system. As part of this planning process, improvements to the local road system that support the planned land use designations in the vicinity of the interchanges and that will help preserve capacity and ensure the long-term efficient and effective operation of the interchanges may be identified.

Policy 3A: Classification and Spacing Standards

It is the policy of the State of Oregon to manage the location, spacing, and type of road intersections on state highways to ensure the safe and efficient operation of state highways consistent with the classification of the highways.

Action 3A.2 calls for spacing standards to be established for state highways based on highway classification, type of area, and posted speed. Tables in OHP Appendix C present access spacing standards which consider urban and rural highway classification, traffic volumes, speed, safety, and operational needs. Where the crossroad is a state highway the required distance may be superseded by the Access Management Spacing standards, if they are greater than the requirements.

The access management spacing standards established in the OHP are implemented by access management rules in OAR 734, Division 51, addressed earlier in this report.

Appendix C provides access management spacing standards applicable to highways based on their classification, traffic volumes, and speed. Table 2 identifies these attributes for I-5, OR 62, and OR 99.

Table 2: Highway Classification Summary

Highway	I-5	OR 62	OR 62 Bypass	OR 238	OR 99
Classification	Interstate	Statewide	Statewide	District	District
OHP Expressway	No	No	Yes	No	No
Traffic Flow (AADT)	43,400 – 54,000	35,600 – 43,300	20,000[10]	14,500 – 18,200	15,400[10]
Posted Speed Limit	55	35-45	55	45	40

Table 3 lists access spacing standards for the highways in the IMSA, based on the classifications listed in Goal 3, Policy 3A. Access spacing standards are defined based on the highway's classification, AADT, and posted speed limit (see Table 2).

Table 3: Highway Access Management Spacing Standards

Highway	I-5	OR 62	OR 62 Bypass	OR 238	OR 99
Interchange Spacing	3 mi.	N/A	N/A	N/A	N/A
Access Management Spacing Standards	1,320 ft.	500-800 ft.	2,640 ft.	500 ft.	500 ft.

Policy 3C: Interchange Access Management Areas

This policy addresses management of grade-separated interchange areas to ensure safe and efficient operation between connecting roadways. Action items include developing interchange area management plans to protect the function of existing interchanges, provide safe and efficient operations between connecting roadways, and minimize the need for major improvements. Consistent with this policy, the Exit 30 IAMP planning process will include developing and analyzing alternatives for optimizing the function and capacity of the existing interchanges prior to selecting a package of improvements that will comprise a preferred alternative.

Table 4 shows the access spacing standards applicable to Interchange Access Management for interchanges.

[10] Traffic flow data available only for segment.

Table 4: Interchange Access Management Spacing Standards

Highway	I-5	OR 62	OR 62 Bypass	OR 238	OR 99
Distance between adjacent interchanges	1 mi.	N/A	N/A	N/A	N/A
Distance between start/end tapers	1 mi.	N/A	N/A	N/A	N/A
Distance between at-grade and ramp terminal intersection or end/start of taper.	1 mi.	N/A	N/A	N/A	N/A
First approach on the right, right in/right out only	N/A	750 ft.	750 ft.	750 ft.	750 ft.
First intersection where left turns allowed	N/A	1,320 ft.	1,320 ft.	1,320 ft.	1,320 ft.
Last right-in/right-out and on-ramp	N/A	750 ft.	750 ft.	750 ft.	750 ft.

Policy 4A: Efficiency of Freight Movement

This policy emphasizes the need to maintain and improve the efficiency of freight movement on the state highway system. I-5 and OR 62 east of the interchange are designated Freight Routes. A principal function of the interchanges is to accommodate safe and efficient freight movements by providing free-flow movements for through-traffic on the Interstate system and for traffic accessing existing (and future planned) industrial areas.

Project Relevance: The Exit 30 IAMP will be adopted as an amendment to the OHP; therefore, they must align will all relevant policies summarized above.

ODOT Highway Design Manual (2012)

The Highway Design Manual includes ODOT standards and procedures for the location and design of new construction, major reconstruction, and resurfacing, restoration or rehabilitation (3R) projects. The Highway Design Manual is used for all projects that are located on state highways. Section 9.5, Interchange Design, includes the design standards, guidelines, and processes for designing interchanges for State Highways. ODOT, through the Roadway Engineering Unit, and FHWA must approve the reconstruction of an interchange on the Interstate system. The proposed interchange design must be prepared on the Standard Interchange Layout Sheet by the Roadway Engineering Unit or authorized representative. The approved design is then used for contract plans.

The Highway Design Manual establishes ODOT standards and procedures for the location and design of new construction, major reconstruction, and resurfacing/restoration/rehabilitation

projects. The manual is used for all projects that are located on state highways. Design standards for state highways are dependent on the highway's functional classification and the project type.

Chapter 6 addresses urban highway design (non-freeway), applicable to the state highways in the IMSA that are not I-5. Chapter 9 addresses grade-separated interchanges. ODOT, through the Engineering Services Unit, and FHWA must approve the reconstruction of an interchange on the Interstate system. Chapter 13 addresses bicycle and pedestrian facilities on State Highways; detailed standards for ODOT highways and other facilities are found in the Oregon Bicycle and Pedestrian Design Guide (Appendix L of the Highway Design Manual). Chapter 13 standards are applicable to state highways in the IMSAs, excluding I-5.

Project Relevance: The IAMP alternatives will be developed to be consistent with the applicable HDM Standards for interchanges and state highways. Any proposed bicycle or pedestrian improvements associated with the preferred alternatives will also need to be consistent with the HDM.

Oregon Bicycle Bill (1971)

The Oregon Bicycle Bill is codified in ORS 366.514. Pursuant to the bill, the inclusion of facilities for pedestrians and bicyclists is required on new construction or reconstruction of roads, streets, or highways. However, footpaths and trails are not required, where the following exception conditions apply:

1. Where the establishment of such paths and trails would be contrary to public safety;
2. If the cost of establishing such paths and trails would be excessively disproportionate to the need or probable use; or
3. Where sparsity of population, other available ways or other factors indicate an absence of any need for such paths and trails

ORS 366.514 requires funds received from the State Highway Fund in "reasonable amounts" be used to provide necessary footpaths and bicycle trails, including providing improvements such as curb cuts and ramps. The funds may also be used for maintenance of footpaths and trails.

Project Relevance: Facilities for pedestrians and cyclists will be required where plan recommendations include new or reconstructed roadway associated with the state highways or interchange design.

Oregon Bicycle and Pedestrian Plan (2016)

The Oregon Bicycle and Pedestrian Plan (OBPP) provides actions that will assist local jurisdictions in understanding the principals and policies that ODOT follows in providing bike and walkways along state highways. In order to reach the plan's objectives, the strategies for system design are outlined, including:

- Providing bikeway and walkway systems and integrating with other transportation systems.
- Providing a safe and accessible biking and walking environment.
- Developing educational programs that improve bicycle and pedestrian safety.

The OBPP is an element of the OTP. The plan includes nine goal areas that support the vision for "people of all ages, incomes, and abilities can access destinations in urban and rural areas on comfortable, safe, well connected biking and walking route." There are policies and strategies associated with each of the plan's nine goals. The goals are the following:

1. Safety
2. Accessibility and Connectivity
3. Mobility and Efficiency
4. Community and Economic Vitality
5. Equity
6. Health
7. Sustainability
8. Strategic Investment
9. Coordination, Cooperation, and Collaboration

The plan also addresses implementation measures for the plan's policies and strategies. The implementation section also identifies the state, local, and regional stakeholders' roles as "implementation avenues." The implementation avenues are as follows:

- *Planning* - The polices and strategies in the plan provide an overall framework for planning decisions, safety needs and mobility challenges addressed through planning. Considers a holistic approach to planning and considering the needs for walking and biking in the context of the entire transportation system.
- *Programming* - Strategic investment to use limited fund as efficiently as possible.
- *Design* - Design guidelines reflect consideration of various users and contexts.
- *Project Development and Delivery* - A key consideration for Plan implementation will be leveraging opportunities to institutionalize pedestrian and bicycle transportation within the project development and delivery processes. Plan strategies identify the need for developing project check lists, where explicit walking and biking needs are considered in project development or including health criteria into project development processes.
- *Maintenance* - Facility maintenance is important to the functionality and safety of existing and new facilities.

Project Relevance: The IAMP will consider State bicycle and pedestrian goals and strategies through this planning project and their implementation avenues.

Oregon Freight Plan (2011, Updated 2017)

The Oregon Freight Plan (OFP) is another modal plan of the OTP and implements the state's goals, and policies related to the movement of goods and commodities. Its purpose statement is "to improve freight connections to local, Native American, state, regional, national and global markets in order to increase trade-related jobs and income for workers and businesses." The objectives of the plan include prioritizing and facilitating investments in freight facilities (including rail, marine,

air, and pipeline infrastructure) and adopting strategies to maintain and improve the freight transportation system.

To achieve the purpose statement, the OFP does the following:

- Supports identifying, prioritizing and facilitating investments in Oregon's highway, rail, marine, air and pipeline transport infrastructure to advance a safe, seamless multimodal and interconnected freight system;
- Identifies institutional and organizational barriers to an efficient and effective freight transportation system in Oregon, and develops strategies for addressing issues associated with overcoming these barriers; and
- Adopts strategies for implementation of OTP goals and policies related to the maintenance and improvement of the freight transportation system.

The plan defines a statewide strategic freight network. The Western Corridor (I-5 Rail Portion), including I-5, is designated as a strategic corridor in the OFP.

Policy and strategic direction provided in the OFP prioritizes preservation of strategic corridors as well as improvements to the supply chain achieved through coordination of freight and system management planning.

> *Strategy 1.2: Strive to support freight access to the Strategic Freight System. This includes proactively protecting and preserving corridors designated as strategic.*
>
> > *Action 1.2.1. Preserve freight facilities included as part of the Strategic Freight System from changes that would significantly reduce the ability of these facilities to operate as efficient components of the freight system unless alternate facilities are identified or a safety-related need arises.*
>
> *Strategy 2.4: Coordinate freight improvements and system management plans on corridors comprising the Strategic Freight System with the intent to improve supply chain performance.*

Project Relevance: Maintaining and enhancing efficiency of the truck and freight system in the study area will be an integrated part of the IAMP.

Oregon Aviation Plan (2007)

The Oregon Aviation Plan (OAP) is a modal plan of the OTP that defines policies and investment strategies for Oregon's public use aviation system for the next 20 years. The plan addresses the existing conditions, economic benefits, and jurisdictional responsibilities for the existing aviation infrastructure. The plan contains policies and recommended actions to be implemented by Oregon Department of Aviation in coordination with other state and local agencies and the Federal Aviation Administration.

The OAP categorizes airports based on functional role and service criteria. The Rogue Valley International Medford Airport is located near Exit 30, approximately 1 mile from the interchange, is considered a Category I, Commercial Service Airport. Category I airports support some level of

scheduled commercial airline service in addition to supporting a full range of general aviation aircraft activities. See the overview of the Rogue Valley International-Medford Airport Master Plan Update later in this memorandum.

Project Relevance: The Exit 30 IAMP will take into account land use and growth at the Rogue Valley International Medford Airport and how improvements at Exit 30 may impact access and economic development.

Oregon Transportation Safety Action Plan (2016)

An element of the OTP, the Oregon Transportation Safety Action Plan (OTSAP) establishes a safety agenda to guide the investments and actions of ODOT and the State for the next 20 years. As indicated in the name of the plan, the emphasis of the OTSAP is on action and implementation. Actions included in the OTSAP were chosen based on crash data and information provided by transportation safety experts. The OTSAP is guided by six long-term goals:

Goal 1- Improving safety culture,

Goal 2 - Improving infrastructure,

Goal 3 - Facilitating healthy and livable communities,

Goal 4 - Utilizing best available technologies,

Goal 5 - Collaborate and communicate, and

Goal 6 - Strategic investments.

Each of the six major goals include several policies and strategies. Relevant policies related to the Exit 30 IAMP include the following:

Policy 2.2: Continually improve and implement design and analysis techniques for safety-related decision-making in transportation planning, programming, design, construction, operations and maintenance for all modes.

Policy 2.3: Plan, design, construct, operate, and maintain the transportation system to achieve healthy and livable communities and eliminate fatalities and serious injuries for all modes.

Policy 4.1: Actively monitor technological advances and plan, design, maintain, and operate the system in a way that takes full advantage of opportunities to use technology to eliminate fatalities and serious injuries.

Policy 6.1: Allocate infrastructure safety funds strategically, considering all modes, to maximize total safety benefits.

The action plan includes emphasis areas as a framework for near-term (5 year) components of the plan. Emphasis areas related to the IAMP process include infrastructure and improved systems, as described below.

Infrastructure - Transportation facilities in Oregon can be constructed or retrofitted to reduce fatal and serious injury crashes, which can be implemented through the inclusion of implementing safety treatments on a site-specific basis or implementing low-cost treatments system-wide. Actions for the infrastructure emphasis area include identified to minimize intersection and roadway departure crashes.

Improved Systems - Opportunities to address and improve transportation safety come in various forms. Improved systems across professions actions starting with safety should be incorporated into responsibilities. Action items include to improve data, support law enforcement and minimize commercial vehicle crashes.

Project Relevance: Safety factors will be reflected in IAMP Goals and Objectives and the assessment of project alternatives.

Oregon Public Transportation Plan (2018)

The Oregon Public Transportation Plan (OPTP) is the OTP modal plan that provides guidance to ODOT and public transportation agencies regarding the development of public transportation systems. The guiding vision is to create:

A public transportation system that is an integral, interconnected component of Oregon's transportation system that makes Oregon's diverse cities, towns, and communities work.

Public transportation that is convenient, affordable, and efficient helps further the state's quality of life and economic vitality and contributes to the health and safety of all residents, while reducing greenhouse gas emissions.

The OPTP is designed to respond to trends, opportunities, and challenges that exist today, while providing an adaptable foundation for the future. The policies and strategies advance public transportation as an important piece of the overall transportation system, linking people to destinations, services, and opportunities, as well as to communities in neighboring states.

Relevant policies applicable to the Exit 30 IAMP include the following.

Policy 2.1: Enhance existing and identify new public transportation connections and services.

Policy 2.2: Improve access to and ease of use for public transportation by connecting routes and services, including linking stops and stations to bicycle and pedestrian facilities.

Policy 5.1: Provide access to healthy lifestyle options by supporting the ability of people to reach goods and services such as groceries, recreation, parks and natural areas, health care, and social opportunities via public transportation.

Policy 7.1: Support public transportation investments as a key approach to reducing greenhouse gas (GHG) emissions, as emphasized in state policy.

These policies are reflected and will be implemented through the RVTD Transit Plan reviewed later in this technical memorandum.

Project Relevance: The IAMP process will coordinate with RVTD, and the regional public transit agency to ensure that planning outcomes are consistent with transit planning. A representative from RVTD will be invited to participate on the project advisory committee and will receive copies of each deliverable for review and comment to ensure coordination between the IAMP planning process and outcomes and regional transit operations and long-range planning including the RVTD Transit Plan.

I-5 Rogue Valley Corridor Plan (2012)

The I-5 Rogue Valley Corridor Plan assess the existing and future transportation condition along 25 miles of I-5 between Interchange 11 south of Ashland to Interchange 35 north of Central Point. It identifies strategies and improvements to enhance transportation safety and capacity within the corridor.

The Corridor Plan evaluated future conditions for two scenarios: year 2034 using the RTP forecasting assumptions and year 2050 using the growth assumptions that were the basis for the Regional Problem Solving (RPS), which assumes that population in the Rogue Valley doubles. The 2034 RTP scenario indicate the freeway system would generally operate with relatively free flow operation except in both directions on I-5 between Interchanges 27 and 30, which could experience some congestion during the PM peak hour. Operations along the freeway system with the 2050 scenario show congestion would be present between Interchanges 21 and 33 in the northbound direction and between Interchanges 19 and 30 in the southbound direction.

Analysis of the transportation network within the urbanized Rogue Valley region for the 2034 scenario suggests that the system would not be over capacity except in a few circumstances including portions of OR 62 and OR 99. The 2050 RPS scenario suggests roadway sections will worsen, but generally will continue to operate within capacity.

The Corridor Plan includes corridor concepts, which are strategies to improve future traffic operation and safety deficiencies. Concepts are intended to be refined and developed into improvement projects. The 2034 Potential Concepts are shown in Figure 1 and 2050 Potential Concepts are shown in Figure 2. Potential concepts for Interchange 30 and the connecting I-5 segments include ramp meters and northbound auxiliary lanes.

Figure 1: 2034 Potential Concepts (Source: Figure 4-1, I-5: Rogue Valley Corridor Study)

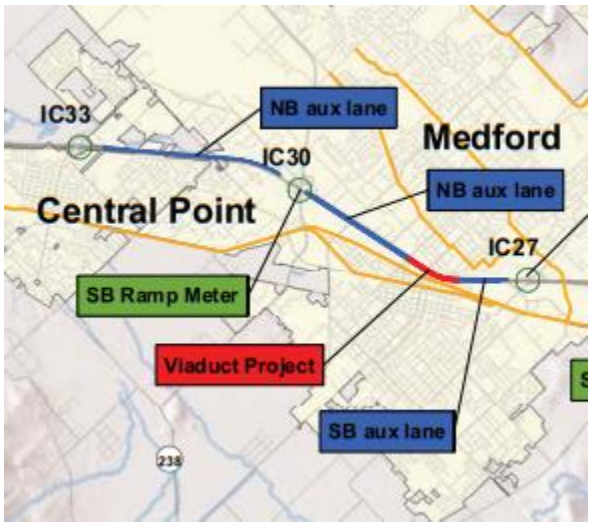
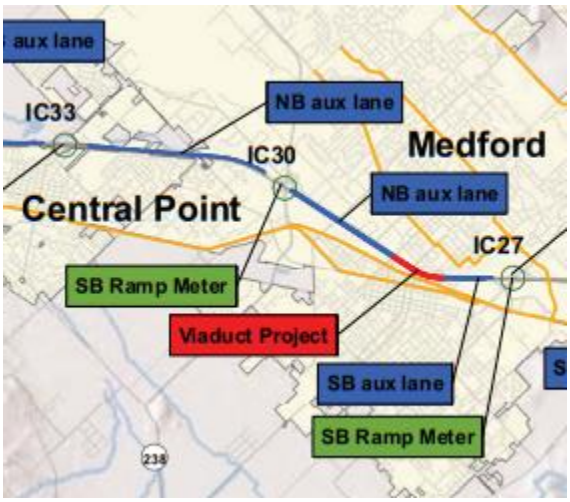


Figure 2: 2050 Potential Concepts (Source: Figure 4-2, I-5: Rogue Valley Corridor Study)



Project Relevance: The Exit 30 IAMP will review and test solutions related to the corridor concepts that are recommended in the Corridor Plan.

Bridge Design Manuals

ODOT Bridge Design Manual (2019)

The Bridge Design Manual (BDM) provides a reference for projects involving ODOT bridge design deliverables. It's intended to be used in the design of State Highway bridges. It includes three sections; design standards and detailing practices (Section 1), selective design and bridge type selection and geometric layout (Section 2), and bridge design roles and responsibilities, design and quality processes, and discipline coordination (Section 3).

AASHTO LRFD Bridge Design Specifications, 8th Edition (2017)

The AASHTO LRFD Bridge Design Specifications are intended for the design, evaluation, and rehabilitation of both fixed and movable highway bridges. The provisions employ the Load and Resistance Factor Design (LRFD) methodology. Seismic design is intended to be in accordance with the provisions of these specifications or AASHTO Guide Specifications for LRFD Seismic Bridge Design below. The document is organized into 15 sections that provide specification guidance several design factors, including load factors, structural analysis, structure materials, and foundations and support structures.

AASHTO Guide Specifications for LRFD Seismic Bridge Design (2011)

The AASHTO Guide Specifications for LRFD Seismic Bridge Design covers seismic design for typical bridges and applies to noncritical and non-essential bridges. This document differs from the current procedures in the LRFD Specifications in the use of displacement-based design procedures, instead of the traditional, force-based "R-Factor" method. This new approach is split into a simplified implicit displacement check procedure and a more rigorous pushover assessment of displacement capacity. The selection of which procedure to use is based on seismic design categories, similar to the seismic zone approach used in the AASHTO LRFD Bridge Design Specifications.

Project Relevance: Recommended improvements related to bridge design will be guided by AASHTO specifications.

REGIONAL DOCUMENTS

RVMPO Regional Transportation Plan (2017)

The Rogue Valley Regional Transportation Plan (RTP) is a multi-modal transportation plan designed to meet the anticipated 25-year transportation needs within the Rogue Valley Metropolitan Planning Organization planning area boundary. It provides a list of highway and transit capital investment as well as strategies for operating, managing, maintaining, and financing the regional transportation system.

The RTP contains the following policies that support or will guide development of the Exit 30 IAMP.

> *Goal 5. Identify, plan and develop transportation infrastructure which maximizes the efficient use for all user and modes.*
>
> > *Policy 5-2 Consider and support measures to optimize intersection and interchange design.*
> >
> > *Policy 5-3 Support an access management strategy to improve traffic flow.*
> >
> > > *Potential Actions: Increase intersection capacity through geometric improvements and elimination of turn movements.*

The RTP identifies all regional transportation actions anticipated to occur through the 2042 planning horizon. Projects are listed as Tier 1 or Tier 2 and further distinguished by the timing with which the project is expected to be completed.

- I-5: California to Gold Hill (Project #928). Repair or replace culverts, address scour and road embankment problems near culverts. The timing for this project is anticipated between 2017 and 2021.
- OR 62: I-5 to Dutton Road (Medford, JTA Phase). Right-of-way acquisition and construct phase funded by Oregon Jobs and Transportation Act; 2.76 miles.[11]

Appendix B in the RTP summarizes the MPO's Alternative Measures used to address state requirements. It includes seven measures for reducing automobile reliance as an alternative to the TPR's per capita VMT reduction measure. They include:

- Measure 1: Transit, Bicycle, and Walking Mode Share.
- Measure 2: Percentage of Dwelling Units within ¼-mile Walking Distance of 30-minute Transit

Table 5: RVMPO Adopted Alternative Measures for TPR Compliance

Measure	2015 Benchmark	2020 Target
Measure 1: Transit and bicycle pedestrian mode share	2% transit 8.4% bike/ped	3% transit 11% bike/ped
Measure 2: Percentage of dwelling units within ¼-mile walking distance of 30-minute transit	40%	50%
Measure 3: Percentage of Collectors and Arterials with bicycle facilities	48%	60%
Measure 4: Percentage of Collectors and Arterials in TOD areas with sidewalks	64%	75%
Measure 5: Percentage of new dwelling units in Activity Centers	41%	49%
Measure 6: Percentage of new employment in Activity Centers	36%	44%
Measure 7: Alternative transportation funding	$4.3 million	$6.4 million

Project Relevance: The projects recommended in the RTP, either proposed or already constructed within the study area, will be considered in the development of the IAMP. The IAMP will be adopted as an amendment to the RTP and therefore will need to be found, or made, consistent with standards and policies in the regional plan.

RVMPO Transportation Improvement Program (2017)

The Rogue Valley Metropolitan Planning Organization (RVMPO) Transportation Improvement Program (TIP) identifies transportation projects in the RVMPO that are expected to be implemented in federal fiscal years 2018-2021. Projects included in the TIP are drawn from the RVMPO RTP. The projects listed in the TIP are "financially constrained," meaning that funds are identified and expected to be available to complete the project.

[11] Note, the JTA phase of the bypass project has been constructed.

- I-5: California to Gold Hill (Project #928). Repair or replace culverts, address scour and road embankment problems near culverts.
- OR 62: Corridor Solutions Unit 2 Phase 3 (Medford, Project #930). Planting of vegetation for storm water treatment facilities.

Project Relevance: Improvements recommended in the Exit 30 IAMP will be available for inclusion in a future TIP and may be coordinated with other programmed projects, where applicable.

RVMPO Freight Study Report (2006, updated 2012)

The RVMPO Freight Study Report was released in 2006 and updated in 2012. It provides a freight industry profile for the RVMPO area, a review of freight movement through the region, and identifies improvements to facilities used by the industry. Appendix B in the report identifies OR 62 east of the interchange and Biddle Road north of OR 62 as problem routes. Both routes are classified as Major Freight Routes in the report. The list of recommended freight project improvements is provided on pages 69-70 of the report. Project 13 (Delta Waters at Highway 62) is listed as a recommended project for freight improvement with the descriptor "no action, but could be affected by Hwy 62 bypass." Only projects that were listed in Tier 1 of the of the Regional Transportation Plan that were funded and could be built are shown in the table.

Project Relevance: The IAMP will review the status of recommended projects within the study area and factor the planned improvements.

Rogue Valley Area Active Transportation Plan (in progress)

Jackson County and RVMPO are in the process of creating and adopting the Rogue Valley Area Active Transportation Plan. To date, there are seven technical memorandums available on the project's website.[12] The technical memorandum include:

- TM#1 - Existing Conditions & Existing Data Memorandum - Final
- TM#2 - Plan & Policy Review Memorandum - Final
- TM#3 - Vision & Goals Memorandum - Final
- TM#4 - Developing Regionally Classified Routes – Final
- TM#5 - Needs, Level of Traffic Stress, and Potential Barriers - Draft
- TM#6 - Design Guidance Toolkit - Draft
- TM#7 - Prioritization Process – Draft

The plan is scheduled to be adopted in June of 2020. Once adopted, the Rogue Valley Active Transportation Plan will identify regional active transportation routes within the Rogue Valley MPO area that connect communities, transit, and other places where people live, work, and play. It will identify missing links and barriers between key destinations and provides concepts for connections to promote walking and biking.

[12] http://www.walkbikeroguevalley.com/

Project Relevance: The RVMPO transportation/transit objectives and planned projects will be considered in the development of the IAMP.

Rogue Valley Regional ITS Plan (2016)

The Rogue Valley Regional ITS Plan provides a 10-year plan for improving transportation system operations by enhancing safety, addressing congestion hotspots, providing traveler information, and assisting system operators in implementing traffic management strategies. The plan's focus is on maximizing the efficiency of the existing transportation infrastructure, which enhances the overall system performance and reduces the need to add roadway capacity.

The plan identifies the following projects near the IAMP study area.

- Traffic Signal Interconnect, Connection to ODOT Central Traffic Signal Server, Signal Timing Improvements, Adaptive Signal System (Project # TM02). Along OR 62 in the Medford area, install traffic signal interconnect and connect traffic signals to ODOT Central Signal Server for remote access to traffic signals. Update traffic signal timing along corridors to improve network efficiency and explore adaptive signal solutions.
- Install Variable Message Signs (Project # TI01). Install variable message signs to inform drivers of road conditions and detours on OR 62 expressway, OR 62 business route, and I-5.
- Truck Signal Priority (Project #FM02). Install detection at traffic signals along designated freight routes that identifies approaching heavy vehicles and speed, and either extends green or conflicting red to prevent collision potential. Key locations include OR 62 at I-5 Exit 30

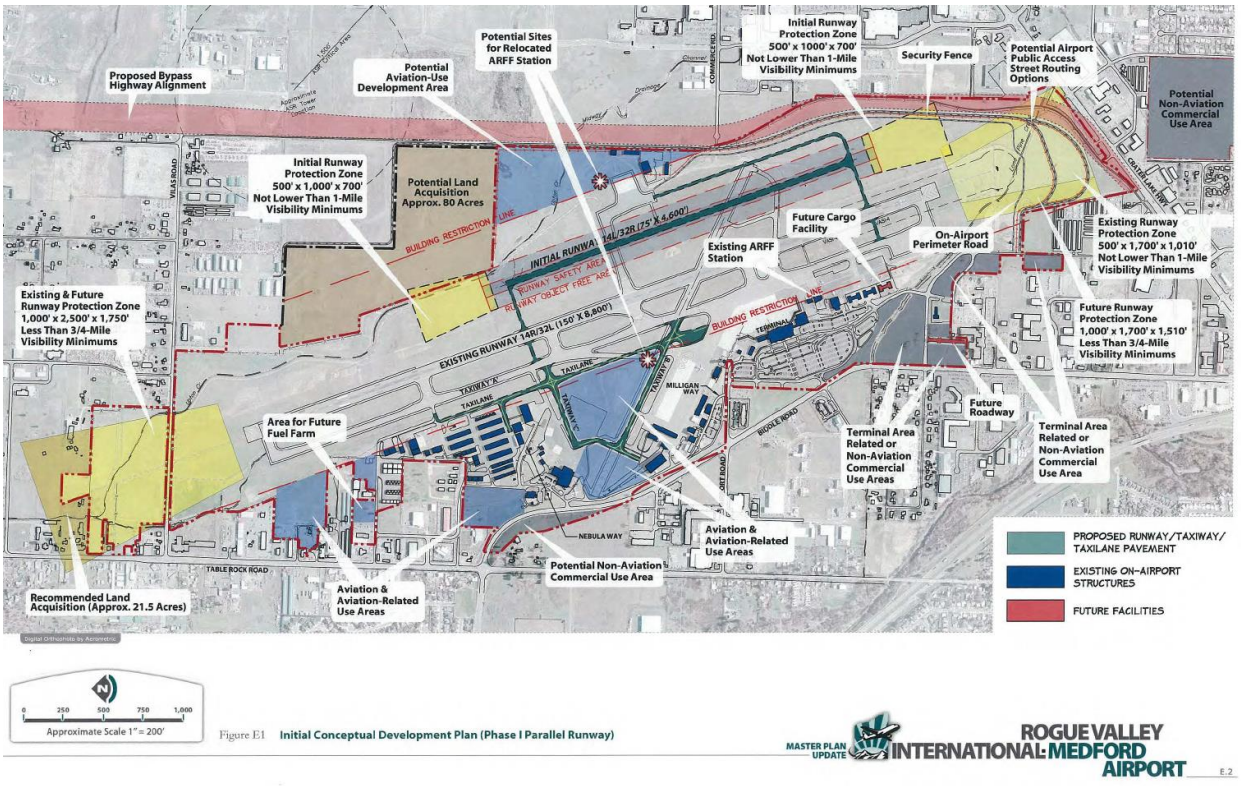
Project Relevance: The IAMP project will review and incorporate as applicable the recommended ITS projects into the alternatives analysis and recommended alternative.

Rogue Valley International Medford Airport Master Plan Update (2010)

The Rogue Valley International-Medford Airport is owned and operated by Jackson County. It defines the current, short-term, and long-term needs of the airport.

The Conceptual Development Plan chapter of the Master Plan forms the basis of the airport's long-term development program. Phase I of the Conceptual Development Plan includes major runway modifications and infill development with aviation related uses on the west side of the airport. It also considers land acquisition and potential aviation related development on the east side of the airport. The land acquisition recommendations include approximately 21.5 acres north the airport and approximately 80 acres on the east side of the airport. The land acquisition also factors the development of the proposed Highway 62 Bypass alignment as a constraint for future development. Phase II of the Conceptual Development Plan includes all of the proposed development in Phase I with a few modifications. The modifications include additional changes to the runways, relocation or channelization of Upton Creek, and the relocation of existing facilities.

Figure 3: Initial Conceptual Development Plan (Phase I Parallel Runway) (Source: Figure E.2, Rogue Valley International-Medford Airport Master Plan)



Project Relevance: The current operations and planned expansions of the airport will be considered in the development of the IAMP.

Bear Creek Greenway Management Plan (2006)

The Bear Creek Greenway is a 20-mile, paved, multi-use trail that links the cities of Ashland, Talent, Phoenix, Medford, and Central Point. The Greenway is continuous from the Ashland Dog Park to the Dean Creek Frontage Road near Seven Oaks Interchange on I-5, north of Central Point.

The Bear Creek Greenway Management Plan is a management plan that provides a preliminary list of maintenance and operation needs. Management functions are divided into high, medium, and low level options. The management needs are grouped into categories and include:

- Management
- Public Safety, Emergency Services, Litter and Vandalism Control
- Surface Management
- Vegetation Management
- Natural Resource Protection
- Future Capital Facilities

Of the management categories, the Future Capital Facilities may potentially have a bearing on the IAMP. The management category lists information kiosks, off-street parking, restrooms, drinking fountains and benches as improvements that are considered on a case-by-case basis.

Although not specifically identified in the management plan, the Bear Creek Greenway includes the Railroad Park, located adjacent to the interchange to the northwest. Railroad Park includes -off-street parking, restrooms, drinking fountains, and benches.

Project Relevance: The Exit 30 IAMP project will consider and plan for mitigation resulting from impacts to the Bear Creek Greenway.

Greater Bear Creek Valley Regional Plan (2011)

The Greater Bear Creek Valley Regional Plan is an amendment to the Jackson County comprehensive plan. It establishes Urban Reserve Areas (URAs) for Central Point, Eagle Point, Medford, Phoenix, and Talent. The URAs are intended to accommodate planned residential, commercial, and industrial growth for the respective areas.

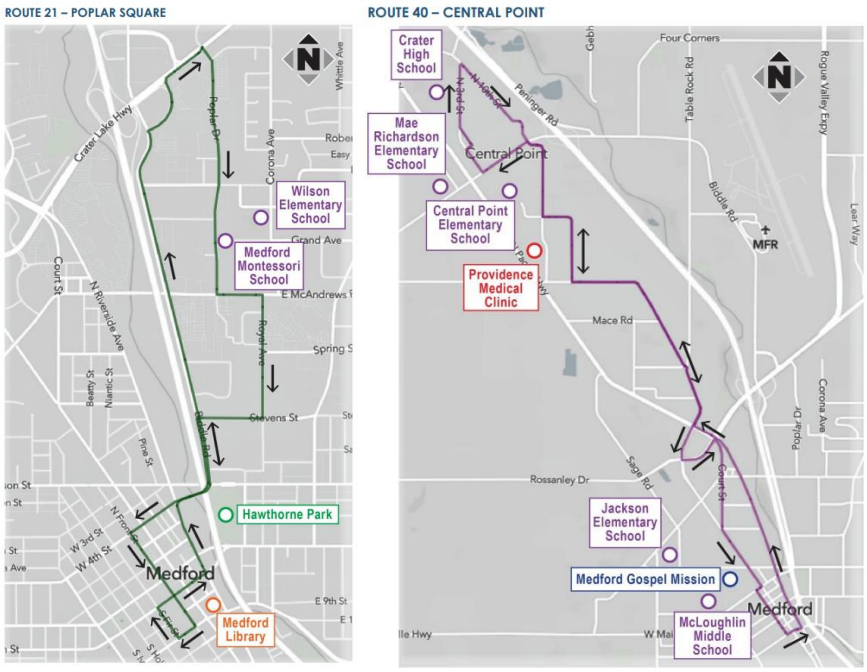
There are no URA's identified near the Exit 30 IAMP Study Area.

Project Relevance: Consistent with the Regional Plan, the TSP update will consider ways to reduce reliance on state facilities and increase local connectivity through the development of local arterials.

RVTD 2040 Transit Master Plan (in progress)

Rogue Valley Transportation District is currently in the process of adopting an updated Transit Master Plan (TMP). Adoption is anticipated to occur by the end of 2019. The TMP is a framework for providing transit and related services to the Rogue Valley for the next 25 years. It identifies new services, provides policy guidance, and informs how Statewide Transportation Improvement Funds (STIF) transit funds will be spent. The TMP identifies near-term (2027), mid-term (2037),and long-term (2042) transit service enhancements that help meet the vision and goals for transit in the region established through the TMP process.

Figure 4: Route 21 & Route 40 Preferred Service Enhancement Projects



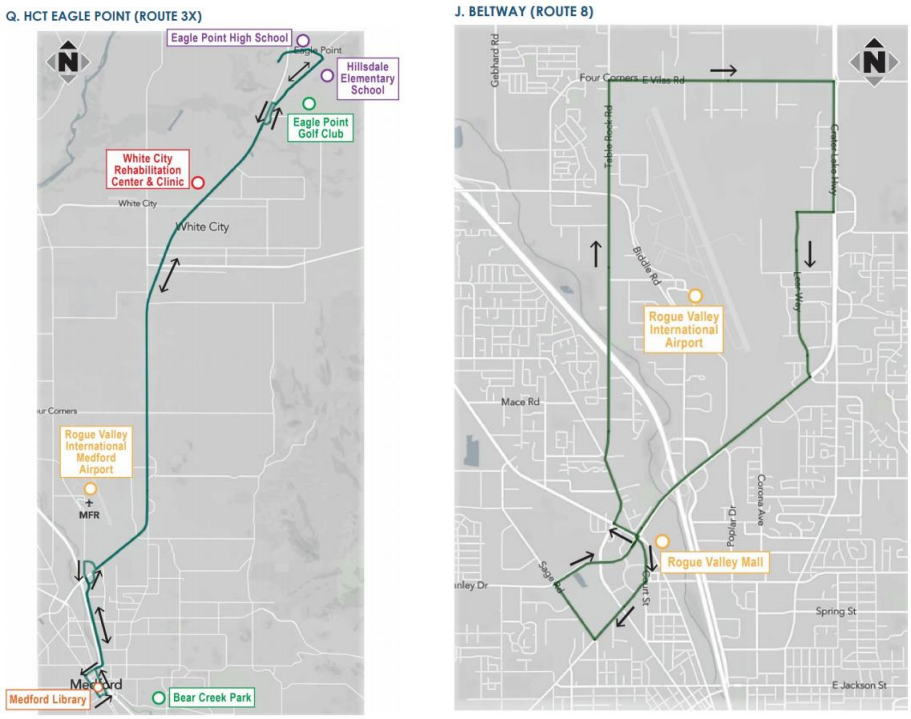
Route 21 – Poplar Square. Route 21 is a 5.3-mile bus route that connects north Medford to Front Street Station. Stops are spaced approximately 0.25-miles apart and buses operate at 60-minute frequencies during the week. In the mid-term, the route frequency and hours will be increased, including adding weekend service.

Route 40 – Central Point. Route 40 is a 12.9-mile route that connects Central Point to Front Street Station. The route has stops that are spaced approximately 0.2-miles apart and buses operate at 30-minute frequencies during the week and 60-minute frequencies on Saturday. In the short-term, the route will be shortened and frequency will be increased. In the mid-term, route frequency and hours are further increased, including adding Sunday service.

J. Beltway (Route 8). The Beltway route is identified as part of the mid-term preferred system. It would be a 10.5-mile bus route that connects central and northern Medford, looping around the Rogue Valley International-Medford Airport. The route is anticipated to have stops spaced 0.25-miles apart with 30-minute frequency during the week. I-5 is identified as a constraint, bisecting the route's service area and creating connectivity challenges.

Q. HCT Eagle Point (Route 3X). The HCT Eagle Point route is identified a part of the long-term preferred system. It would be a 26.0-mile route that connects Eagle Point to downtown Medford. The route would have stops spaced approximately 0.25 miles apart and would operate at 10-minute frequencies every day. Oregon Highway 62 is the only viable connection between White City, Eagle Point, and Medford, posing potential challenges to service during congestion or roadwork.

Figure 5: HCT Eagle Point (Route 3X) and Beltway (Route 8) Preferred Service Enhancement Projects



The Transit Master Plan Identifies a new transfer center at the intersection of Delta Waters and OR 62. The transfer station is intended to serve new routes as they are established.

Project Relevance: The IAMP project will consider and plan for service enhancements identified in the Transit Master Plan within the IMSA.

RVTD Transit Master Plan 2007-2017 (2007)

The RVTD Transit Master Plan 2007-2017 is a multi-modal document focused on revenue forecasting, fixed-route and paratransit services, departmental needs assessment, and establishing creative programs. An updated version of the Transit Master Plan is scheduled for adoption by December of 2019. The updated draft adoption version is currently available and summarized above.

Project Relevance: The RVTD Transit Master Plan 2007-2017 is anticipated to be replaced by the RVTD 2040 Transit Master Plan. No relevance is anticipated.

LOCAL DOCUMENTS

Medford Comprehensive Plan (various)

The Medford Comprehensive Plan is an extensive document that states the City's adopted goals and policies regarding land use and transportation. The goals and policies establish a framework upon which the City bases its decisions and actions. Background information about the City of Medford, including inventories and identified issues and alternatives. The plan contains relevant to planning within the IMSA.

The Plan contains select Policies relevant to planning within the IMSA.

NATURAL RESOURCES—WATER QUALITY, WETLANDS AND, WILDLIFE HABITAT—GOALS, POLICIES, AND IMPLEMENTATION MEASURES

Goal 7: To preserve and protect plants and wildlife habitat in Medford

Policy 7-B: The City of Medford shall strive to maintain, rehabilitate, and enhance Medford's waterways, using features such as gently sloped banks, natural riparian vegetation, and meandering alignment.

Implementation 7-B (2): Ensure that improvements, such as multi-use paths and storm drainage facilities sited in or near riparian corridors, waterways, wetlands, or other fish and wildlife habitat, include protective buffers, preserve natural vegetation, and comply with the requirements of Oregon Administrative Rule 660-23.

DISASTERS AND HAZARDS—GOALS, POLICIES, AND IMPLEMENTATION MEASURES

Goal 12: To protect the citizens of Medford from the potential damage caused by hazards such as flooding, earthquakes, noise, wildfires, and airport hazards.

Policy 12-D: The City of Medford shall strive to upgrade all city-owned buildings and facilities to meet earthquake standards.

GENERAL PUBLIC FACILITIES—GOALS, POLICIES, AND IMPLEMENTATION MEASURES

Goal 2: To assure that General Land Use Plan (GLUP) designations and the development approval process remain consistent with the City of Medford's ability to provide adequate levels of essential public facilities and services

Policy 2-B: The City of Medford shall strive to ensure that new development does not create public facility demands that diminish the quality of services to current residences and businesses below established minimum levels.

STORMWATER MANAGEMENT – GOALS, POLICIES, AND IMPLEMENTATION MEASURES.

Goal 1: To protect citizens of Medford from the potential damage caused by flooding.

Implementation 1-A-4. Through the development review process, require development and stormwater system improvements to comply with the standards in the current stormwater management plan.

Implementation 1-A-6. Require stormwater facilities to be designed to safely conduct less frequent, higher flows through or around facilities without damage to the facilities.

Policy 1-C: The City of Medford shall assure that stormwater is managed (infiltrated, detained and treated) on or as close as practicable to development sites in order to reduce the impact of new development on the stormwater management system and natural streams

Implementation 1-C-1. Require stormwater to be infiltrated onsite to the greatest extent possible through a combination of provisions, such as site design standards, that reduce impervious surfaces and protect natural areas.

Goal 2: To achieve and maintain a high level of water quality in Medford's waterways and groundwater.

Policy 2-A: The City of Medford shall protect surface and groundwater resources, including current and potential wellhead areas, from pollution through a variety of regulatory measures relating to land use, transportation, and hazardous substance management.

Implementation 2-A-4. Require the quality of stormwater leaving a site after development to be equal to or better than that leaving the site before development.

Policy 2-C: The City of Medford shall utilize stormwater management strategies that sustain natural streams and wetlands consistent with Environmental Element— Water Quality Section— Goal 6 and its policies and implementation strategies.

Implementation 2-C(4): Require buffering, setback requirements, maintenance of tree canopy and vegetative cover, and other best management practices (BMPs) as necessary to enhance water resources and protect their functions.

Policy 2-D: The City of Medford shall strive to eliminate sediment entering waterways consistent with Environmental Element - Soils Section - Goal 8 and its policies and implementation strategies.

Implementation 2-D-1. Require stormwater control facilities to be designed so that the rate of discharge is equivalent to a site's predevelopment stormwater discharge for a determined storm frequency or multiple frequencies.

PARKS, RECREATION, AND LEISURE SERVICES—GOALS, POLICIES, AND IMPLEMENTATION MEASURES

Goal 2: To preserve natural resources in the Medford Urban Growth Boundary that provide open space or have unique recreational potential, encouraging development with parks and recreation facilities if appropriate.

OVERALL TRANSPORTATION SYSTEM—GOALS, POLICIES, AND IMPLEMENTATION MEASURES

GOAL 1: To provide a multi-modal transportation system for the Medford planning area that supports the safe, efficient, and accessible movement of all people and goods, and recognizes the area's role as the financial, medical, tourism, and business hub of Southern Oregon and Northern California.

Policy 1-A: The City of Medford shall manage projected travel demand consistent with community, land use, environmental, economic and livability goals.

OVERALL TRANSPORTATION SYSTEM—FUNDING—GOALS, POLICIES, AND IMPLEMENTATION MEASURES

Policy 1-C: The City of Medford's top priority for the use of transportation funds shall be to address the maintenance, operational, and safety needs of the transportation system.

Policy 1-D: The City of Medford's second priority for the use of transportation funds shall be to maximize efficient use of the existing transportation system through use of Transportation System Management (TSM) and Transportation Demand Management (TDM) measures prior to expending transportation funds on capacity improvements.

Policy 1-E: The City of Medford's third priority for the use of transportation funds shall be to fund capital improvements that add capacity to the transportation system. These improvements shall be prioritized based on availability of funds, reducing reliance on the automobile, improving safety, relieving congestion, responding to growth, and system-wide benefits.

Implementation 1-E(1): Give priority to funding projects that most increase capacity and relieve congestion, such as intersection improvements as opposed to general street widening, consistent with the adopted level of service (LOS) standards.

GOAL 2: To provide a comprehensive street system that serves the mobility and multi-modal transportation needs of the Medford planning area.

Policy 2-C: The City of Medford shall design the street system to safely and efficiently accommodate multiple travel modes within public rights-of-way.

Implementation 2-C(2): Limit Major Arterial streets to a total cross-section width of no more than five travel lanes, except at intersections. Accommodate travel demand that would otherwise require a width of more than five lanes through increased system connectivity, transit service, use of transportation demand management (TDM) strategies, and other alternative modes of transportation

Implementation 2-C(5): Design the transportation system with consideration of the needs of persons with disabilities by meeting the requirements in the Americans with Disabilities Act (ADA).

Implementation 2-C(6): Assure that the design and operation of the transportation system allows for the safe and rapid movement of fire, medical, and police vehicles.

Policy 2-D: The City of Medford shall balance the needed street function for all travel modes with adjacent land uses through the use of context-sensitive street and streetscape design techniques.

Implementation 2-D(3): When designing new or reconstructed streets, make adjustments as necessary to avoid valuable topographical features, natural resources, historic properties, schools, cemeteries, significant cultural features, etc. that affect the livability of the community and the surrounding neighborhood.

Policy 2-F: The City of Medford shall bring Arterial and Collector streets up to full design standards where appropriate, and facilitate improving existing local streets to urban design standards where appropriate.

Implementation 2-F(1): Balance the needs of pedestrians, bicyclists, and motor vehicles when reconstructing streets that cannot meet full functional classification standards.

Policy 2-H: The City of Medford shall manage and maintain the transportation system in an efficient, clean, and safe manner.

Implementation 2-H(3): Continue to modernize the traffic signal system and improve its efficiency by ultimately connecting all signals to the centralized traffic control center. Employ traffic signal timing plans that maximize efficiency during different time periods. Provide a program to identify locations for new/modified signals.

Implementation 2-H(4): Utilize Intelligent Transportation Systems (ITS) such as realtime traffic monitoring cameras and management projects, that provide motorist information and incident response/clearance programs, to alleviate traffic congestion.

BICYCLE SYSTEM—GOALS, POLICIES, AND IMPLEMENTATION MEASURES

GOAL 4: To facilitate the increased use of bicycle transportation in the Medford planning area, as bicycle facilities are a measure of the quality of life in a community.

Policy 4-A: The City of Medford shall undertake efforts to increase the percentage of total daily trips taken by bicycling in Medford consistent with the target benchmarks in the "Alternative Measures" of the 2001-2023 Rogue Valley Regional Transportation Plan (RTP).

Implementation 4-A(2): Design streets and other public improvement projects to facilitate bicycling by providing bicycle-friendly paving, lane width, traffic control, storm drainage grates, striping, signage, lighting, etc.

Implementation 4-A(5): Provide interconnected off-street multi-use paths along stream and waterway corridors, such as Bear Creek and Larson Creek, and in other

suitable locations where multiple street or driveway crossings are unlikely and where such facilities can be constructed without causing significant environmental degradation.

Policy 4-B: The City of Medford shall undertake efforts to increase the percentage of Arterial and Collector street miles in Medford having bicycle facilities, consistent with the targeted benchmarks in the "Alternative Measures" of the Rogue Valley Regional Transportation Plan (RTP).

Implementation 4-B(2): Utilize all opportunities to add bike lanes on Collector and Arterial streets, such as during reconstruction and re-striping projects. Give priority to bicycle traffic over on-street parking on Collector and Arterial streets designated in the Transportation System Plan as, or otherwise determined to be, important bicycling routes. Alternatives should be considered where on-street parking is determined to be essential to the success of adjacent businesses in a pedestrian-friendly environment, such as in Downtown, other TODS, activity centers, etc.

PEDESTRIAN SYSTEM—GOALS, POLICIES, AND IMPLEMENTATION MEASURES

GOAL 5: To facilitate the increased use of pedestrian transportation in the Medford planning area.

Policy 5-A: The City of Medford shall develop a connected, comprehensive system of pedestrian facilities that provides accessibility for pedestrians of all ages, focusing on activity centers such as Downtown, other Transit Oriented Districts (TODs), commercial centers, schools, parks/greenways, community centers, civic and recreational facilities, and transit centers.

Implementation 5-A(2): Design street intersections, particularly Arterial and Collector street intersections, with convenient, safe, and accessible pedestrian crossing facilities.

FREIGHT MOVEMENT—GOALS, POLICIES, AND IMPLEMENTATION MEASURES

GOAL 7: To facilitate the provision of a multi-modal transport system for the efficient, safe, and competitive movement of goods and services to, from, and within the Medford planning area.

Policy 7-A: The City of Medford shall promote accessibility to transport modes that fulfill the needs of freight shippers.

Implementation 7-A(2): Utilize street design standards that meet the weight and dimensional needs of trucks for streets that serve industrial and commercial areas and those designated as "truck routes".

The General Land Use Plan serves as the City's comprehensive plan map. It shows the City's long-range land use areas for all lands inside the City's UGB and designates specific areas as Greenways. Portions of the Bear Creek Greenway are located within the IMSA. These areas are regulated so that improvements along waterways are designed to ensure that disturbance of banks and natural

vegetation in the riparian area is minimal, and that disturbed areas are promptly revegetated and protected from erosion. Uses permitted within the Greenways are usually limited to:

A. Streets, roads, bridges, and paths where necessary for access or crossings, provided these uses are designed and constructed to minimize intrusion into e riparian areas.
B. Drainage facilities, utilities, and irrigation pumps.
C. Water-related and water-dependent uses.
D. Replacement of existing structures with structures in the same location that do not disturb additional riparian area.
E. Interpretive and educational displays, and overlooks, including benches and outdoor furniture.
F. Interpretive and educational displays.
G. Habitat enhancement activities.

Project Relevance. The IAMP will need to be consistent with Comprehensive Plan policies, either existing or as proposed to be modified. Furthermore, the IAMP will be adopted as an amendment to the City TSP, the Transportation Element of the City's Comprehensive Plan.

City of Medford Transportation System Plan 2018-2038 (2018)

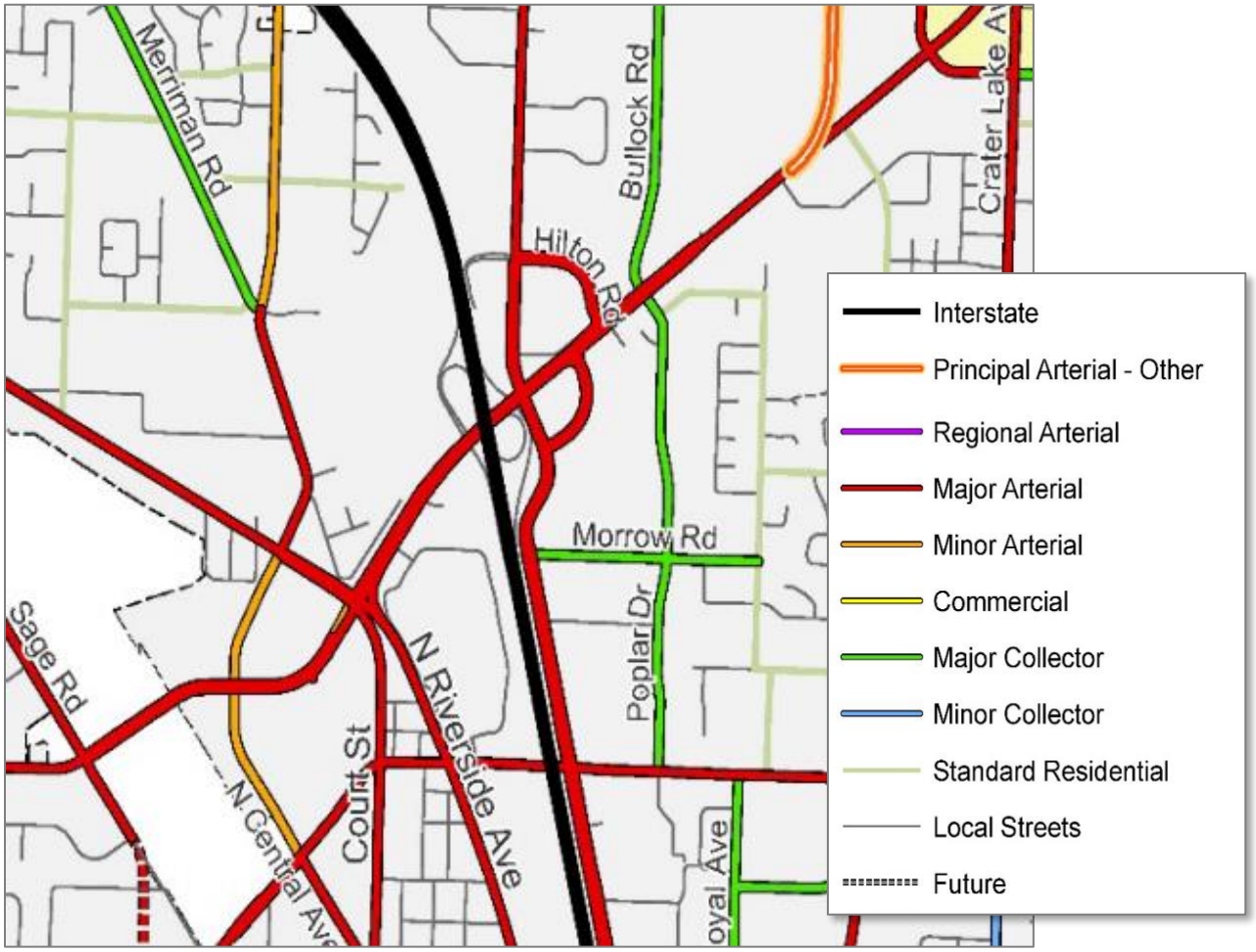
The City of Medford's Transportation System Plan (TSP) is the City's long-range plan for developing and managing its transportation system. It establishes goals, objectives, standards, and improvements to support planned land uses and population growth through a 20-year planning horizon.[13]

Street Plan Classification and Cross-sections

The street element of the TSP includes the roadway functional classifications, typical cross-sections, and prioritized project list including intersection projects. Figure 6 provides the TSP classifications assigned to roadways near Exit 30.

[13] Transportation policies are located in the Medford Comprehensive Plan summarized above.

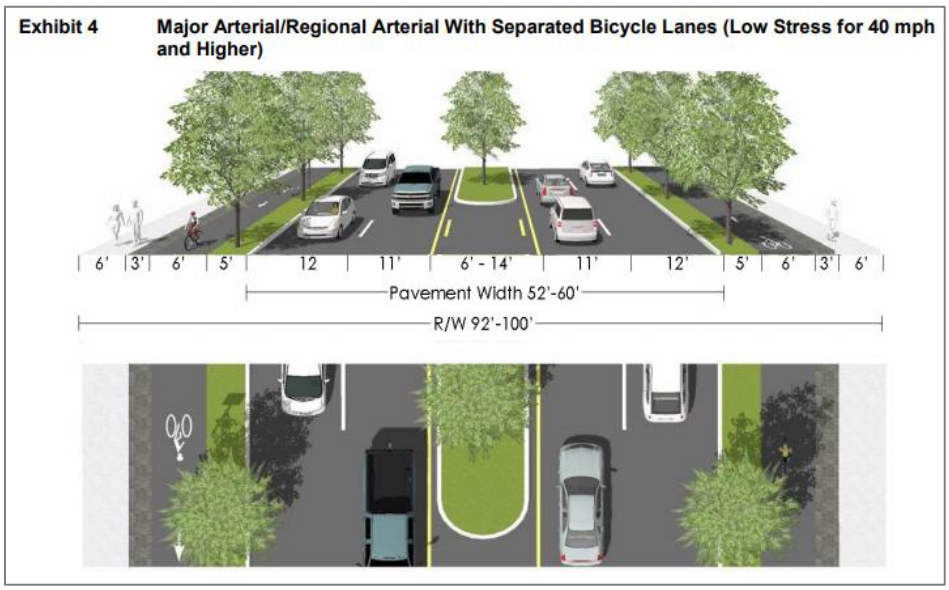
Figure 6: Roadway Functional Classification (Source: Figure 18, Medford TSP)



Medford's roadway cross-section standards apply to new and reconstructed roads. All new and unimproved roads are required to be built to the TSP cross-section standards. Existing improved roads that do not meet the cross-section standards are considered Legacy Street, subject to additional criteria summarized below. Cross-sections may be adjusted through adopted plans, including the TSP, and include Crater Lake Highway among others.

Cross-section for Major Arterials is shown in Figure 7.

Figure 7: Major Arterial/Regional Arterial with Separated Bicycle Lanes (Source: Exhibit 4, Medford TSP)



Legacy Streets

Legacy Streets are existing improved higher order streets that do not meet the cross-section width standards; existing higher order streets that are mostly improved but have unimproved segments; or existing higher order streets that are predominantly surround by developed properties on both sides. As development occurs on Legacy Streets, deviations from standard cross-section widths will allow improvement while reducing impacts to developed properties. The TSP provides circumstances under which right-of-way dedication or pavement widths may be reduced, or cross-sectional elements reduced, or eliminated at the City engineer's discretion. The legacy street provisions are incorporated into the Medford Municipal Code.

TSP Projects

The TSP identifies the following projects associated with the Exit 30 IAMP.

> OR 62 Bypass Project.[14] The OR 62 Bypass Project will result in a new four-lane access-controlled expressway from I-5 to OR 62 north of White City. The JTA Phase (Phase 1) was completed in May 2019, with an extent between Bullock Road/Poplar Drive to Corey Road, outside of city limits. The Phase 2 improvements are documented in OR 62: I-5 to Dutton Road Project Final Environmental Impact Statement. See the Environmental Impact Statement summary for more information.
>
> OR 62 Refinement Plan (OR62-5). Completion of the OR 62 Corridor Project is expected to significantly reduce traffic volumes. The refinement plan would identify potential improvements to OR 62, including access management, streetscape enhancements,

[14] Note, this is not a Tier 1 or Tier 2 project. The JTA phase was completed in May 2019. Remaining expressway improvements are documented in the OR 62 FEIS

pedestrian crossing treatments, sidewalk and bicycle facility improvements, and transit needs.

I-5 Rogue Valley Corridor Plan. The plan focuses on the 25 mile section of I-5 that extends from Interchange 11 to Interchange 35. The plan assesses existing and future transportation conditions and identifies strategies and improvements.

OR62 (Crater Lake Highway)/Bullock Road/Poplar Drive Intersection. The OR62 (Crater Lake Highway)/Bullock Road/Poplar Drive intersection is not projected to meet ODOT's mobility standards with the JTA Phase of the OR62 Bypass. The TSP acknowledges that the split diamond interchange will significantly reduce traffic volumes at this intersection, which was not modeled as part of the TSP analysis.

OR99/OR62/OR238 Intersection (Project I-80). This intersection is projected to operate a v/c ratio above 1.0. The TSP states the intersection needs to be studied as part of the Exit 30 IAMP and may need alternative mobility target.

Bullock Road, Crater Lake Highway to Lawnsdale Road (Project 640). This project is listed a Long-term Tier 1 project. It will upgrade the facility to major collector standards including one lane in each direction, center-turn lane, bike facilities, and sidewalks.

Court Street & Ohio Street (Project I-07). This intersection project is listed as a Tier 2 project. It will modify the existing signal to add a westbound left turn lane.

McAndrews Road & Riverside Avenue (Project I-63). This intersection project is listed as a Tier 2 project. It will include intersection improvements such as re-striping the westbound approach to one through, a shared through/right, and right-turn lane, signal modifications, and second westbound right-turn lane when needed.

Activity Centers

The southeast quadrant of the Exit 30 Interchange and the areas to the north, west, and south of the OR 62/OR 238/OR 99 intersection are identified as Activity Centers. The TSP identifies Activity Centers as areas for focused investment in transportation facilities and other community needs. Activity Centers are evaluated at a regional level for compliance with RVMPO's various Alternative Measurers. The current Alternative Measure targets set for 2020 are detailed on pages 28-29 in the TSP. See Table 1 for a summary of the Alternative Measures.

Project Relevance: The projects recommended in the TSP, either proposed or already constructed within the study area, will be considered in the development of the IAMP. The IAMP will be adopted as an amendment to the TSP and therefore will need to be found, or made consistent with, standards and policies in the TSP.

Medford Capital Improvement Plan (2017)

The Capital Improvement Plan (CIP) is provided in the City's 2017-2019 Adopted Biennial Budget. CIP projects involve additions, or enhancements to the City's infrastructure and include buildings, roads, sidewalks, storm drains, parks, and waste water treatment facilities. There are no transportation improvements within roughly one-quarter mile of Exit 30 identified in the CIP.

Project Relevance: Improvements recommended in Exit 30 IAMP will be available for inclusion in a future City's CIP and may be coordinated with other programmed projects, where applicable.

Land Development Code for the City of Medford (various)

The City's Land Development Code (LDC) implements the policies established in the City's Comprehensive Plan and regulates development through zoning designations and provisions that apply generally to all development and specifically to land divisions within the City. Articles that have standards, procedures, and criteria applicable to public facilities and improvements are summarized below.

Article 2 establishes land use review procedures, designates and defines responsibilities of approving authorities, and sets forth procedural requirements and substantive criteria and standards for each land use review.

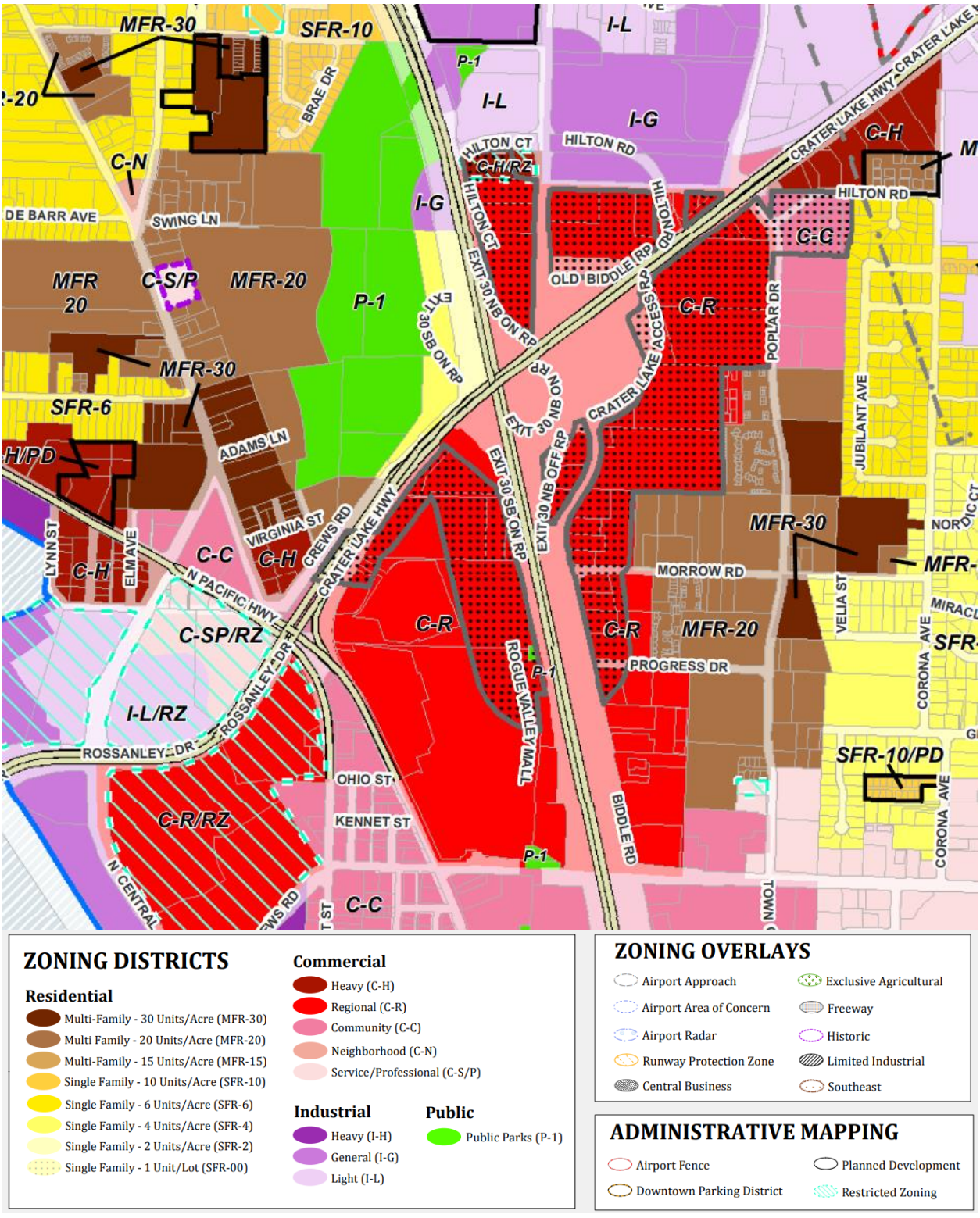
As set out in Article 2, City Council has the authority to conduct land use review and approval of transportation facility development. Transportation facility development review is subject to a Minor Type IV review procedure under Section 10.226. The approval criteria is included below.

> *B) Transportation Facility Development Approval Criteria. Preliminary plans for transportation facility development projects shall be consistent with the following criteria:*
>
> *(1) Transportation facility development projects shall be consistent with the Transportation Goals and Policies of the Comprehensive Plan.*
>
> *(2) Transportation facility projects should not prevent development of the remainder of the property under the same ownership or development of adjoining land.*
>
> *(3) If the project includes the creation of new streets, such streets should be laid out to conform to the plats of land divisions already approved for adjoining property.*
>
> *(4) All transportation projects must be consistent with the adopted Transportation System Plan (TSP).*

Article 3 of the LDC includes land use provisions through zoning districts, overlays, and administrative mapping categories for Medford. The zoning districts et al. implement the General Land Use Plan Element of the Comprehensive Plan. The location of the districts are established in the City of Medford Zoning Map; the area around the I-5 Interchange is shown in Figure 8.

As shown in Figure 8, there is a mix of Residential, Commercial, and Public zoning near Interchange 30 as well as a number of overlays including Freeway, Restricted Zoning, and Planned Development. The exact location and presence of land use zoning and applicable overlays in the study area will be verified as part of future project tasks.

Figure 8: Medford Zoning and Overlays (Source: Official City of Medford Zoning Map



Of note is the Freeway Overlay District, which applies to most of the area surrounding the Interchange. The Freeway Overlay District is intended to allow and regulate the use of freeway signage.

Similarly, the Restricted Zoning Overlay applies to parcels that have received a zone change with conditions of approval or stipulations as set forth in the LDC. The applicable conditions or stipulations are recorded by deed restriction or covenant and are available at the Planning Department.

Article 4 provides public improvement standards and criteria required for all public right-of-way elements, including streets, bicycle lanes, sidewalks, planter strips, street lights, alleys, and other related elements.

Sections 10.427 through 10.430 establishes the street classification system and is used to determine right-of-way improvement design standards. Cross-sections are contained in each subsection as identified in 10.429, 10.429, 10.430, 10.430A, and 10.430B. The cross-sections are consistent with the TSP. See Figure 7 in this memorandum for applicable cross-sections.

Unless specified in an adopted Zoning Overlay, Neighborhood Circulation Plan, or other special area plan, the Legacy Street standards in 10.427 (D-E) apply to all existing streets that do not meet the cross-section standards. Legacy Streets are reviewed and approved by the City Engineer and must meet specific approval criteria.

Section 10.550 establishes access standards, including driveway spacing and location standards. Driveway spacing standards for arterial and collector streets are shown in Figure 9. As shown in the Figure, access spacing standards are a function of the posted speed limit and range between 145 to 385 feet. Generally, lots are limited to one driveway access to an arterial street and all lots are required to place driveways on the lowest street classification if possible.

Figure 9: Minimum Driveway Spacing Arterial and Collector Streets (Source: Table 10.550-3, LDC Section 10.550)

SPEED LIMIT (MPH)	25	30	35	40	45
DRIVEWAY SPACING	145 ft.	195 ft.	250 ft.	315 ft.	385 ft.

Project Relevance: Future growth in the study area will be based on zoning districts assessed as part of the projects existing conditions analysis. As the IAMP process progresses and recommendations are formed, the standards will guide local street improvements. IAMP recommended improvements on the local street system may require City Engineering approval.

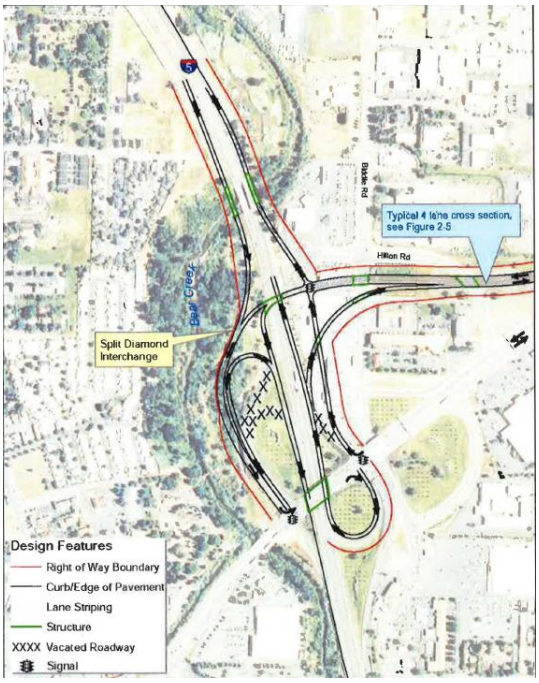
OR 62: I-5 to Dutton Road Final Environmental Impact Study (2013)

The OR 62: I-5 to Dutton Road Final Environmental Impact Study (FEIS) identifies the Preferred Alternative to construct a 7.5 mile, four-lane, access-controlled expressway that will serve as a bypass of existing OR 62 from Medford to north of White City. The project includes the bypass, four interchanges, and changes to local streets and roads to accommodate the bypass. Chapter 2 of the FEIS provides a complete description of the Preferred Alternative. The map set included in Figure 2-4 FEIS in Chapter 2 depicts the Preferred Alternative alignment and design details.

A portion of the improvements were funded with authorization from the 2009 Oregon Jobs and Transportation Act (JTA) authorized by HB 2001. The FEIS identifies this as the JTA phase. Figure 2-9 in Chapter 2 of the FEIS depicts the JTA phase alignment and design details.[15] The JTA phase does not include Exit 30. Instead, the FEIS recognizes that subsequent phases of the Preferred Alternative, including improvements to Exit 30, have not been identified due to financial constraints. When adequate funding is available for subsequent, federally-funded phases, that work will include appropriate NEPA considerations and a possible re-evaluation of the FEIS.

The preferred alternative identifies a Split Diamond Interchange at Exit 30 as shown in Figure 10. While the FEIS provided a significant amount of information, issues were identified for the split diamond design interchange that require additional discussion to inform future decisions. These issues include: (1) the need for a Highway Design Manual ("HDM") exception for the northbound I-5 ramp due to latent traffic demand; (2) access management strategies for facilities west of Poplar Drive/Bullock Road; (3) removing a Bear Creek Greenway bridge; (4) adding two new bridges; (5) the displacement of two businesses, one of which needs hazmat review; and (6) Section 6(f) determination for the Bear Creek Greenway.

Figure 10: Split Diamond Interchange



The FEIS also identifies an extensive list of mitigation measures. The mitigation measures are intended to be complete with the delivery of the project. Measures are grouped by environmental subject area and whether they are related to the JTA or subsequent phases. The mitigation measure environmental groupings include the categories listed below. Additional details can be found in the Record of Decision.

[15] The JTA funds were used to construct the expressway from the intersection of OR 62 and Delta Waters north to the intersection of OR 62 near Corey Rd. This phase of the expressway was completed in May 2019 and has changed traffic patterns near the Exit 30 interchange.

- Transportation
- Land Use
- Right-of-Way
- Socioeconomics
- Parks, Recreational Facilities, and Wildlife Refuges
- Cultural Resources
- Visual Resources
- Water Quality and Storm Water Runoff
- Natural Systems and Communities
- Wetlands and Other Waters
- Threatened and Endangered Species
- Non-threatened and Endangered Species
- Invasive Species
- Air Quality
- Noise
- Energy
- Geology
- Hazardous Materials

Project Relevance: The expressway Preferred Alternative is described in great detail in the OR 62 FEIS. It identifies a split diamond interchange at Exit 30 as shown in Figure 10. The FEIS did not analyze traffic impacts west of the interchange ramps. Two commercial expansions at the intersection of OR 238, OR 99, and OR 62 (the "Big X") southwest of the interchange will result in an increase in traffic volumes at the interchange. Developable lands at the Big X, which includes service and general industrial uses, may be rezoned to mixed use and/or residential in the future. These developments need to be analyzed in the context of the IAMP.

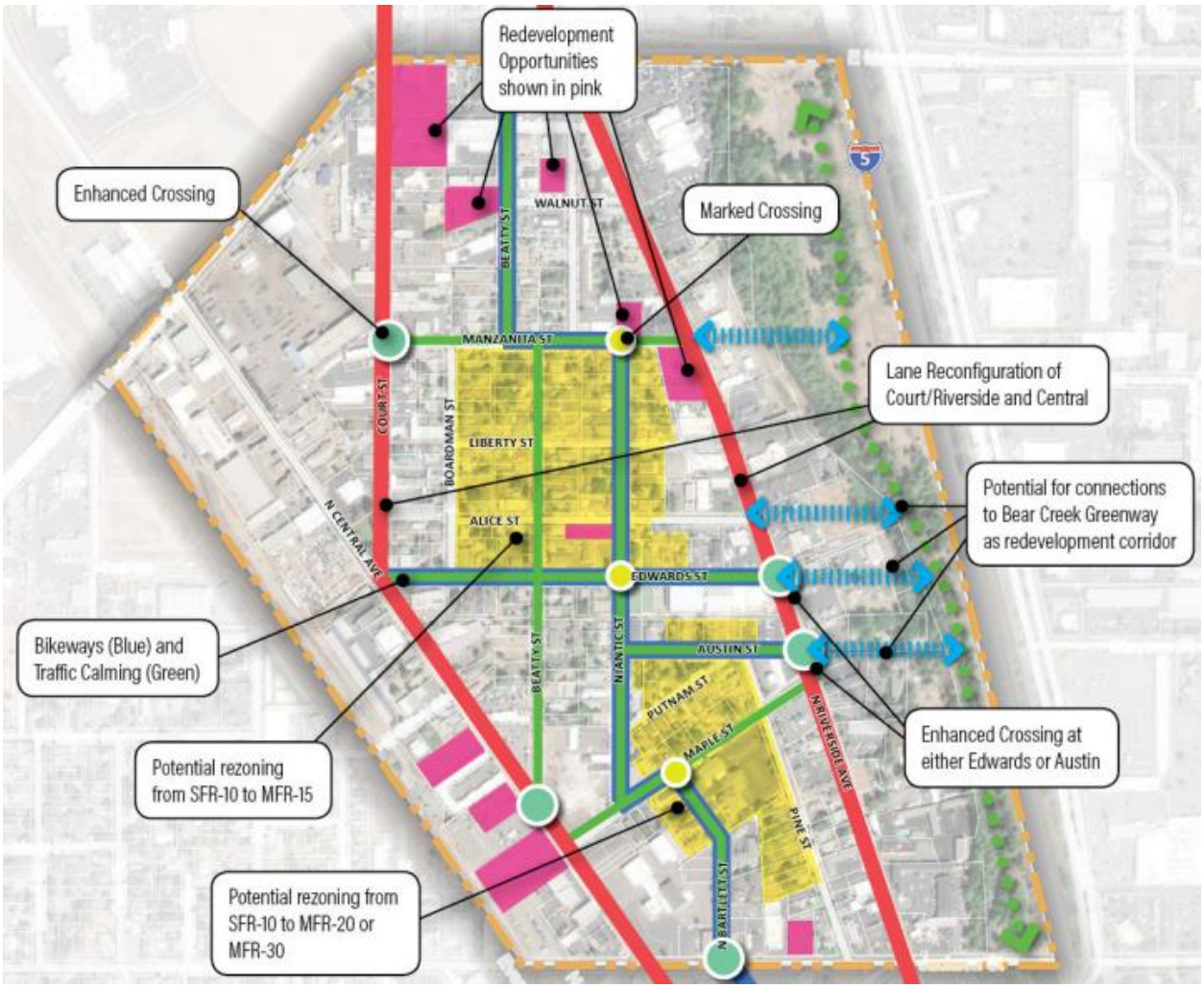
Further, the issues identified in the FEIS related to improvements at the interchange need to be reexamined and resolved. Recommendations will be documented in the draft IAMP for future adoption - by the City of Medford as an amendment to the adopted Transportation System Plan and by the Oregon Transportation Commission as an amendment to the Oregon Highway Plan.

Liberty Park Neighborhood Plan (in progress)

The City of Medford is in the process of adopting the Liberty Park Neighborhood Plan. The most recent draft plan available is dated October 2019. The Neighborhood Plan is intended to guide public and private investment and revitalization efforts to improve the neighborhood's livability and economic health for its residents, visitors, and business-owners. In 2018, the Medford Urban Renewal Agency allocated $17 million toward funding future improvements and development. The Neighborhood Plan helps prioritize that allocation.

The Neighborhood Plan includes recommendations for land use and transportation improvements within the neighborhood. A summary of the improvements are shown in Figure 11.

Figure 11: Land Use and Transportation Opportunities in the Liberty Park Neighborhood (Source: Figure 2, Liberty Park Neighborhood Plan)



The plan recommends several transportation-related improvements. A summary of the recommendations involving Court Street, OR 99 (N Riverside Avenue), and E McAndrews Road are provided below.

- Reduce speed limit to 25 mph on OR 99. Riverside Ave and Central St/Court Ave from McAndrews to Jackson (Project TC1).
- Re-stripe OR 99 to facilitate two 11' lanes and a bike lane. Court St./Central Ave between McAndrews Rd and Jackson St, and Riverside between McAndrews and Jackson (Project TC2).
- Reconfigure lanes on Riverside Avenue and Court/Central Street to include protected bike lane. Riverside/Court/Central between McAndrews and Jackson St (Project LR1)

Project Relevance: The projects recommended in the Neighborhood Plan within the study area will be considered in the development of the IAMP.

Cooperative Improvement Agreements, Inter-Governmental Agreements, and Traffic Impact Studies relative to development within the IMSA

The project scope of work lists cooperative improvement agreements, inter-governmental agreements, and traffic impact studies relative to development within the ISMA as part of the documents for review under this task. At this time, no documents that fit this description are available for review.

Project Relevance: The IAMP will consider and review additional agreements and studies that are relevant to the IMSA as they become available.

[This page left blank intentionally]

Appendix B Tech Memo #2: Existing Deficiencies

[This page left blank intentionally]

KITTELSON & ASSOCIATES
851 SW 6th AVENUE, SUITE 600
PORTLAND, OR 97204
P 503.228.5230 F 503.273.8169

MEMORANDUM

Date: May 12, 2020 Project #: 23641.0

To: Virginia Elandt, Oregon Department of Transportation
Karl MacNair, City of Medford

From: Matt Hughart, AICP, Matt Bell, and Miranda Barrus, Kittelson & Associates, Inc.

Project: I-5 Exit 30 Interchange Area Management Plan (IAMP)

Subject: Draft Tech Memo #2: Existing Deficiencies

This memorandum summarizes existing deficiencies within the Interchange Management Study Area (IMSA) for the I-5, Exit 30 Interchange Area Management Plan (IAMP). Additional information related to the deficiencies is provided in Tech Memo #2 Appendix A-C and includes information on the land use, population, and demographics inventory, environmental constraints, transportation inventory, and existing conditions analysis.

LAND USE, POPULATION, AND DEMOGRAPHIC SUMMARY

The land use and population analysis has revealed possible challenges and barriers to implementing an IAMP. Planning long-term transportation operations in the interchange area is complicated by several factors identified in Tech Memo #2 Appendix A, including the following:

- General Land Use Plan (GLUP) and zoning designations
- Recent and anticipated development
- Multiple growth forecasts
- Large elderly and minority populations

Land Use

Interchange improvements in the northwest quadrant of the IMSA will be limited by the Parks and School and Greenway GLUP designations and Single-Family Residential and Public Parks zoning. The Bear Creek Greenway is located adjacent to the interchange and provides a connection for the 20-mile long multi-use corridor. The IAMP should identify and propose mitigation for impacts associated with proposed transportation improvements.

Recent development in the southwest quadrant of the IMSA will add to existing commercial demand on the transportation system. Vacant and redevelopable commercial and industrial parcels also exist in the

southwest quadrant of the IMSA that have the potential to develop over the planning horizon and add additional demand to the transportation system. The IAMP should identify interchange solutions to account for existing and anticipated demand associated with this type of development.

Population

Multiple population forecasts have been conducted for the City of Medford showing growth estimates ranging between 1.1% to 2.16% average annual growth. The most recent forecasts, conducted by the Population Research Center at PSU, show less growth in the City compared to the other two forecasts. The challenge for the IAMP project is to "right size" transportation solutions to the anticipated growth and number of future users.

Demographics

The IMSA has a population of approximately 6,000 people. Of that population, there is a larger proportion of elderly and minorities compared to the City of Medford, Jackson County, and the State of Oregon. Because these populations are located near or just outside of the IMSA boundary, it is likely that transportation solutions will have indirect negative impacts to these populations. The planning process should reflect how transportation solutions both impact and benefit vulnerable populations.

TRANSPORTATION SYSTEM DEFICIENCIES

The inventory and traffic operations analysis identify several transportation system deficiencies that should be addressed by the IAMP. The following summarizes the deficiencies at the study intersections and along the study area roadways. For this analysis, OR 62 is referred to as a north-south roadway.

Functional Classifications

There are several discrepancies between federal and City of Medford functional classifications for roadways within the IMSA. These functional classifications are typically updated and aligned as part of local transportation system plans (TSP) or other long-range planning efforts. This is a potential outcome of the IAMP or more likely a task that that should be undertaken by the City of Medford as part of its next TSP update.

Pavement Conditions

Within the IMSA, pavement conditions surveys have noted "Poor" conditions along OR 238 and the segment of OR 99 north of OR 238. While likely not a deterrent to future growth or larger interchange area circulation improvements, any identified improvements to roadway segments with poor pavement conditions should reflect assumptions for pavement rehabilitation. It should be noted that there is an upcoming project in the 2021-2024 STIP that will improve safety and travel flow by repaving, repairing the bridge deck and replacing pedestrian ramps.

Bridges and Culverts

Three bridges within the IMSA have been classified as "functionally obsolete", which means they were built to construction standards that are now considered outdated (e.g. narrow travel lanes, narrow shoulders, etc.) and/or not built to ideally accommodate current traffic volumes. The bridges include:

- I-5 bridge over McAndrews Road
- OR 62 bridge over I-5
- OR 62 bridge over Biddle Road

These designations will be taken into consideration when evaluating potential long-term improvement projects that impact these facilities.

Bicycle and Pedestrian Facilities

Bicycle and pedestrian facilities are located along both sides of most roadways within the IMSA; however, there are some gaps and deficiencies that should be addressed as part of future IAMP improvements projects:

- On-street bike lanes generally have 4" stripes, which is more typical of shoulder striping, and some on-street bike lanes do not have bike stencil markings.
- There is a general lack of enhanced bicycle crossings at key locations along the corridor, such as the I-5 ramp terminals.
- There is a gap in the sidewalk network on the northwest side of OR 62 across the Bear Creek Bridge.
- The Biddle Path (between Biddle Road and I-5) needs to be updated and needs a connection.
- There is a general lack of enhanced pedestrian crossing treatments at key locations along the corridor, including most unsignalized crossings.

Access Inventory

There are three driveways within ¼ mile of the I-5 ramp terminals:

- A signalized intersection along OR 62 serving the Rogue Valley Mall.
- A right-in/right-out/left-in driveway along OR 62 serving the Rogue Valley Mall/Target.
- A right-in/right-out driveway along OR 62 serving Fred Meyer.

There are two public street connections within ¼ mile of the I-5 ramp terminals:

- A right-in/right-out public street connection along OR 62 at the Biddle Road jug-handle connection.
- A signalized intersection along OR 62 at Bullock Road.

When considering future infrastructure improvements within the IMSA, all of these private and public street connections should be reviewed from a future safety and operations perspective.

TRAFFIC OPERATIONS DEFICIENCIES

Traffic Operations

The traffic operations analysis indicates that all study intersections currently operate acceptably per their respective mobility standards and targets except the OR 62/Bullock Road-Poplar Drive intersection. The intersection currently operates with an overall intersection v/c ratio of 0.84; however, it operates with relatively high delay at LOS F. This is primarily due to the delay on the minor street (city) approaches. Future growth in the IMSA is expected to impact traffic operations and therefore, should be monitored as part of the future operations analyses.

Queueing analysis

The 95th percentile queues at the following study intersections currently exceed their striped storage, or block upstream signalized intersections, and should be further reviewed and potentially mitigated as part of future operations analyses:

- 2: OR 62-OR 238 / OR 99-Court Street-N Riverside Avenue – the northbound left- and right-turn queues exceed their striped storage and the northbound through queues block the upstream signalized intersection.
- 3: OR 62 / Rogue Valley Mall entrance (west) – the northbound right-turn queue exceeds its striped storage.
- 5: OR 62 / I-5 Southbound Ramp Terminal – the northbound right-turn queue exceeds its striped storage.
- 8: OR 62 / Biddle Road (south end of jug handle) – the northbound through queues block the upstream signalized intersection and the southbound left-turn queue exceeds its striped storage.
- 9: Biddle Road / Hilton Court – the northbound through queues block the upstream signalized intersection and the northbound right-turn queue exceeds its striped storage.
- 10: OR 62 / Hilton Court-Fred Meyer Parking Lot Entrance – the northbound and westbound right-turn queues exceed their striped storage.
- 11: OR 62 / Bullock Road-Poplar Drive – the eastbound right-turn queue exceeds its striped storage.

Multimodal Analysis

There are currently no locally adopted standards related to bicycle, pedestrian, or transit level of service (LOS). However, the analyses highlight potential issues related to the type of bicycle, pedestrian, and transit facilities and services along State and City roadways that should be addressed by the IAMP.

- Bicycle Level of Service – several roadways within the IMSA currently have a Bicycle LOS of F. This is primarily due to relatively narrow shoulders and/or on-street bike lanes, high traffic volumes/travel speeds, and multiple unsignalized conflicts, which result in a challenging environment for the majority of bicyclist skill levels.
- Pedestrian Level of service – several roadways within the IMSA currently have a Pedestrian LOS of E. This is primarily due to relatively high traffic volumes/travel speeds and a large number of adjacent travel lanes, which contribute to a challenging environment for pedestrians.
- Transit level of service – relatively few roadways within the IMSA have transit service, which is required to generate Transit LOS analysis results. The segments that do have transit service show that the service varies from B to F based on the speed and frequency of the service.

Crash Analysis

The five most recent years of crash data available from ODOT's Data and Reporting Unit (January 1, 2013 through December 31, 2017) was obtained and reviewed in an effort to identify potential safety issues. The crash analysis includes a review of crash characteristics, intersection crash rates, critical crash rates, excess proportion of specific crashes, and segment crash rates based on the five years of data. The crash analysis results are summarized below by the type of analysis.

- **Crash Characteristics** – the following crash types were reviewed in detail to highlight potential patterns or trends in fatal, serious injury (Injury A), and pedestrian and bicycle-related crashes.
    - Two (2) fatal crashes
    - Sixteen (16) serious injury crashes
    - Eight (8) pedestrian crashes
    - Twenty-nine (29) bicycle crashes
- **Intersection Crash Rate Analysis** – The OR 62 / Whittle Avenue intersection was found to exceed the 90th percentile rate for similar facilities throughout Oregon based on the most recently available historical crash data. It is important to note that most of the crashes occurred prior to the OR 62 bypass opening. This infrastructure improvement may result in future changes to the crash patterns at Whittle Avenue and should be monitored by ODOT and the City of Medford.
- **Critical Crash Rate Analysis** – The OR 62/Delta Waters Road intersection was found to exceed the critical crash rate for the reference inventory of 4-leg, signalized intersections within the IMSA. It is important to note that, like the OR 62/Whittle Avenue intersection, most of the crashes occurred prior to the OR 62 bypass opening. This infrastructure improvement may result in future changes to the crash patterns at Delta Waters Road and should be monitored by ODOT and the City of Medford.
- **Excess Proportion of Specific Crash Types Analysis** – Seven intersections were identified with excess proportions of specific crash types. The intersections, crash types, and probability of future occurrences are summarized below:

- OR 99 / Table Rock – fixed-object (99%)
- OR 62-OR 238 / OR 99-Court St-N Riverside Av – angle (100%)/fixed-object (99%)
- OR 62 / I-5 Northbound Ramp Terminal – turning movement (99%)
- Biddle Road / Hilton Court – Angle (97%)
- OR 62 / Bullock Road-Poplar Drive – backing (99%)/fixed-object (99%)
- OR 62 / Whittle Avenue – turning movement (98%)
- OR 62 / Delta Waters Road – angle (95%)/backing (98%)

- **Segment Crash Analysis** – 15 segments within the IMSA have crash rates that currently exceed the 90th percentile rate for similar facilities throughout Oregon. The segments include:
  - OR 99 from Table Rock Road to OR 62
  - OR 62 from OR 99 to RVM Main Entrance
  - OR 62 from Target Entrance to I-5 SB Ramp Terminal
  - I-5 SB Off-Ramp from SB Off-Ramp Gore to OR 62
  - Northerly SB On-Ramp from OR 62 to Northerly SB On-Ramp Gore
  - I-5 NB Off-Ramp from NB Off-Ramp Gore to OR 62
  - Southerly NB On-Ramp from OR 62 to Southerly NB On-Ramp Gore
  - OR 62 from I-5 SB Ramp Terminal to I-5 NB Ramp Terminal
  - OR 62 from I-5 NB Ramp Terminal to Biddle Road Jug handle (north)
  - Biddle Road from north of Morrow Road to Biddle Road Jug handle
  - OR 62 from Biddle Road Jug handle (north) to Fred Meyer Entrance
  - OR 62 from Fred Meyer Entrance to Bullock Road-Poplar Drive
  - OR 62 from Bullock Road-Poplar Drive to Sky Park Drive
  - OR 62 from Sky Park Drive to Whittle Avenue
  - OR 62 from Whittle Avenue to Delta Waters Road

MEMORANDUM

Existing Inventory and Land Use Assumptions - Land Use, Population, and Demographic Inventory (Task 4.1)

Exist 30 Interchange Area Management Plan (IAMP)

DATE March 27, 2020

TO Matt Bell and Matt Hughart, KAI

FROM Darci Rudzinski, Clinton "CJ" Doxsee, and Emma Porricolo, APG

OVERVIEW

This memorandum presents land use and demographic data for the I-5 Exit 30 Interchange Area Management Plan (IAMP) land use study area. The study area is hereafter referred to as the Interchange Management Study Area (IMSA). The IMSA was initially established in Technical Memorandum #1 (Project Background, Definition, Goals, and Objectives) and is the boundary depicted in the maps and figures included in this memorandum.

Land use data presented in this memorandum includes a description of existing land use designations and uses in the IMSA. This review is intended to inform the transportation needs of existing and potential future land uses that rely on the interchange and surrounding transportation system.

The review of demographic data addresses race, age, and income will inform project alternatives analysis in terms of minimizing adverse transportation impacts and equitably distributing the benefits of planned improvements. This data can also inform targeted outreach during the IAMP planning process.

The information in this memorandum is intended to accompany the review of IMSA transportation facilities and services, natural resources, and environmental features to complete a comprehensive existing conditions report (Technical Memorandum #2).

Location & Geography

The IMSA is in Southern Oregon, in the City of Medford. With a population of 81,780, Medford is the largest city in southern Oregon. It is surrounded by the Cascade and Siskiyou Mountains and lies within the Rouge River Valley. Medford is the county seat of Jackson County. It is located along I-5 near the California border, which is approximately 27 miles from the city limits. As such, Medford is a regional industrial, medical, and service center for portions of Southern Oregon and Northern California. Medford has several neighboring cities; it is located 25 miles southeast of Grants Pass (pop. 21,3599), 12 miles northwest of Ashland (pop. 21,117), 76 miles west of Klamath Falls (pop. 21,359). The market area

of Medford is approximately 400,000 to 450,000 people. In 2018 the city's Urban Growth Boundary (UGB) was expanded to include over 4,000 acres.

I. LAND USE

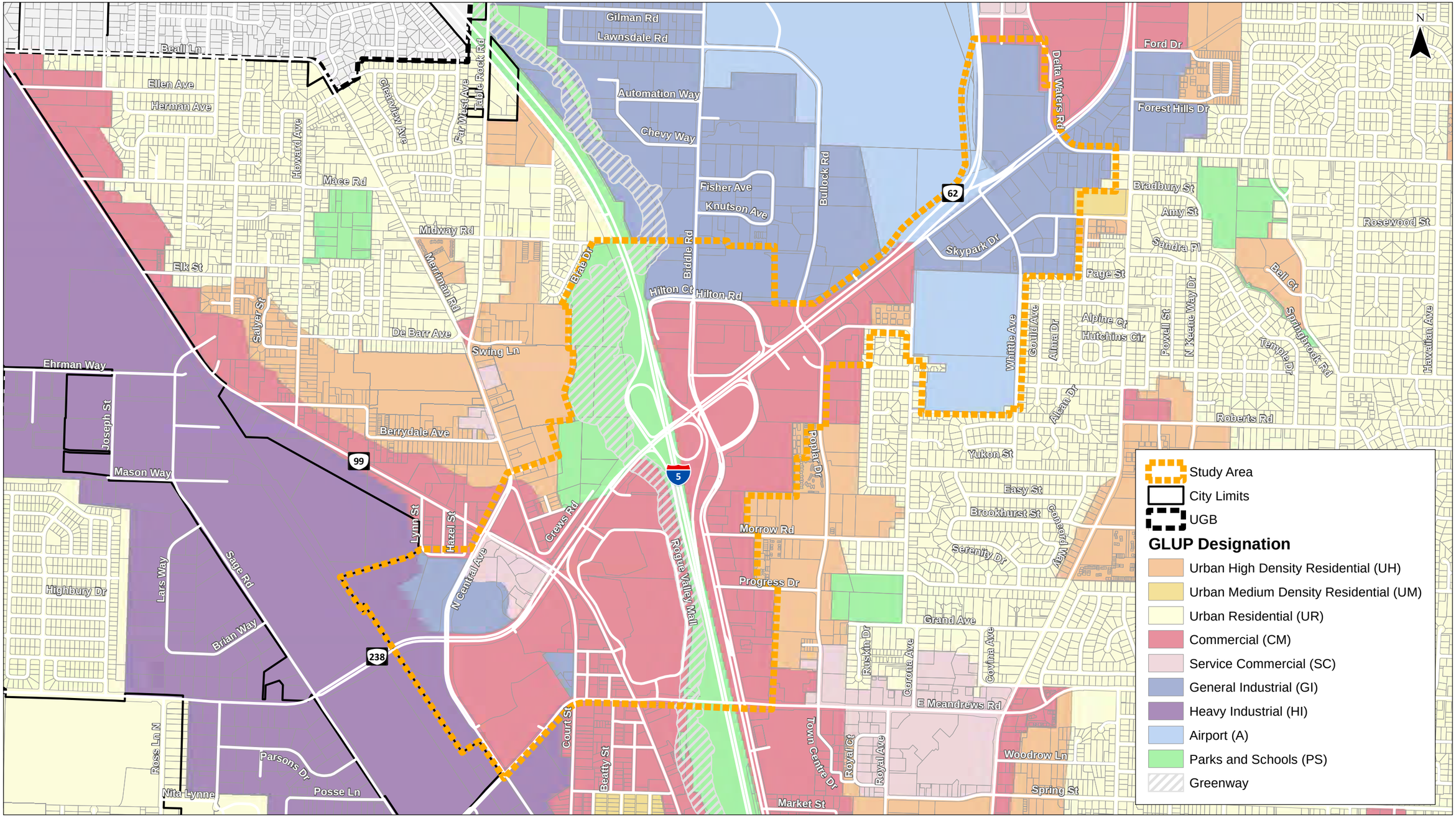
Land within the City of Medford UGB and city limits is subject to the City's land use and development regulations. The Medford Comprehensive Plan provides the policy basis for the City's land use regulations, which are implemented through the Medford Land Development Code (LDC). City land use designations are established in the Comprehensive Plan, as shown in the General Land Use Plan Map. The zoning map depicts current parcel zoning.

This section of the memorandum provides a summary of permitted land uses in the City and the associated requirements that govern development and redevelopment. This overview is intended to provide an indication of the type and intensity of land uses that can be expected within the 20-year planning horizon, which in turn will have an impact on future traffic generation. The number of trips that specific uses generate, and where those uses are located within the community, will have a bearing on planning for appropriate types of transportation solutions.

Comprehensive Plan Designations

The General Land Use Plan (GLUP) serves as the City's comprehensive plan map. It shows the City's long-range land use areas for all lands inside the City's UGB and designates specific areas as Greenways. Various land use designations and overlays are in the IMSA.

The use designations established in the GLUP Map, also known as the Comprehensive Plan Map, are shown in Figure 1. The land directly south of the interchange is primarily Commercial (CM) designation. The CM designation – which permits a variety of commercial development and accompanying uses - continues into the northeast quadrant of the interchange. Further out from the interchange is the Airport (A) and General Industrial (GI) designations. The Airport designation covers the Rogue Valley International Medford Airport and its affected environs. The General Industrial designation indicates areas where light or general industrial uses, a complementary use to the Medford Airport, are permitted. Additionally, a portion of the Heavy Industrial (HI) designation is found in the western edge of the IMSA. Directly northwest of the interchange is the Parks and Schools (PS) designation, which includes the Bear Creek Greenway, its surrounding areas, and Railroad Park. The Bear Creek Greenway is also shown in the Greenway overlay that abuts the west boundary of I-5. The Parks and Schools designation is comprised of existing and proposed public parks and schools. The Greenway overlay indicates parkland, riparian corridors, public or private open space, and includes land along stream corridors and waterways. The surrounding fringes of the IMSA are Urban High Density Residential (UH) and Urban Residential (UR) designations, which reflect varying residential densities.



0 1,000 2,000 Feet

General Land Use Plan
Medford, Oregon

Figure
1

Coordinate System: NAD 1983 2011 StatePlane Oregon South FIPS 3602 Ft Intl
Data Source: City of Medford

N:\Projects\02406\9 IAMP 30\GIS\Exit30_base_WORKING_zoning_CP.mxd - emma - 4:52 PM 2/12/2020

Zoning

The City's LDC implements the policies established in the City's Comprehensive Plan. It regulates development through zoning designations and provisions that apply generally to all development and specifically to land divisions within the City. The City's zoning requirements establish allowed uses and associated development regulations, permitted uses, and lot standards. Figure 2 shows the location of zoning districts within the IMSA, including residential, commercial, parks, and industrial zoning districts. Table 1 provides a list of zones found in the IMSA, organized by the quadrants created by the intersection of I-5 and Crater Lake Hwy. Additionally, each zone of the IMSA is summarized in Table A-1 in Attachment A.

Table 1. IMSA Zones by Quadrant

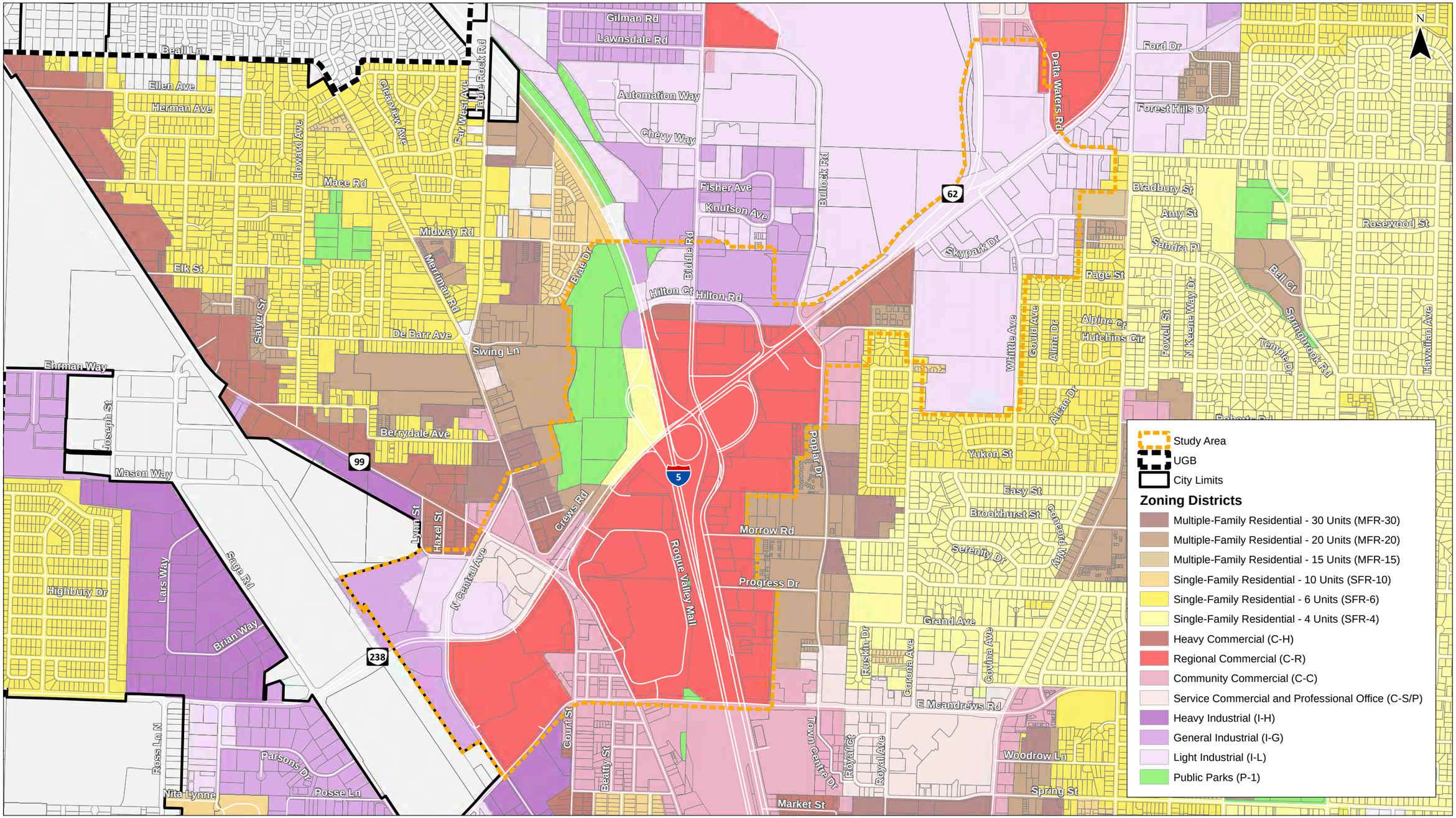
Study Area Quadrant	Zones
Northeast	• General Industrial (I-G) • Light Industrial (I-L) • Regional Commercial (C-R) • Heavy Commercial (C-H) • Community Commercial (C-C) • Public Parks (P-1)
Northwest	• General Industrial (I-G) • Light Industrial (I-L) • Heavy Commercial (C-H) • Service Commercial and Professional Office (C-S/P) • Community Commercial (C-C) • Public Parks (P-1) • Multi-family Residential – 20 units (MFR-20)
Southwest	• General Industrial (I-G) • Heavy Commercial (C-H) • Regional Commercial (C-R) • Community Commercial (C-C) • Public Parks (P-1)
Southeast	• Regional Commercial (C-R) • Community Commercial (C-C) • Light Industrial (I-L) • Multi-family Residential – 30 units (MFR-30) • Multi-family Residential – 20 units (MFR-20)

As reflected in Table 1, land in the northeast quadrant of the interchange is primarily zoned commercial (C-R and C-H)) and industrial (I-L and I-G). The southeast quadrant is primarily commercial (C-R and C-C) near the interchange and transitions to multifamily housing (MFR-20) further out. Southwest of the interchange is primarily commercial (C-R and C-S/P) with a few industrial (I-G) and parks (P-1) parcels. Northwest of the interchange is comprised of parks (P-1) and multifamily (MFR-20 and MFR-30) with a few industrial (I-G and I-L) and commercial parcels (C-C).

As shown on Figure 3, there are several overlays in the IMSA that indicate additional requirements or restrictions in addition to the underlying zoning. Most of the commercial areas directly adjacent to the

project area are within the Freeway Overlay District. This District is intended to allow and regulate the use of freeway signage. Additionally, the Rogue Valley International-Medford Airport is located less than a mile northeast of the interchange, and is surrounded by industrial sites. The Airport Approach overlay is also located in IMSA near the airport, east of the interchange. Located on the northeast and southwest outer edges of the IMSA are residential zones, with multifamily closer to the interchange transitioning to single family zoning further out.

The LDC Zoning Map has several administrative mapping elements located in the IMSA. They include Planned Development (P-D) and Restricted Zoning (R-Z). As shown on Figure 2, several parcels in the IMSA have a Planned Development overlay, which indicates those parcels have received Preliminary Planned Use Development approval pursuant to LDC Section 10.192. Additionally, several IMSA parcels have the Restricted Zoning overlay, which indicates parcels that have received a zone or GLUP designation change with conditions of approval or stipulations. Descriptions of the purpose, permitted uses, and lot standards for the IMSA's zones, overlays, and administrative zoning are found in Table A-1 in Attachment A.



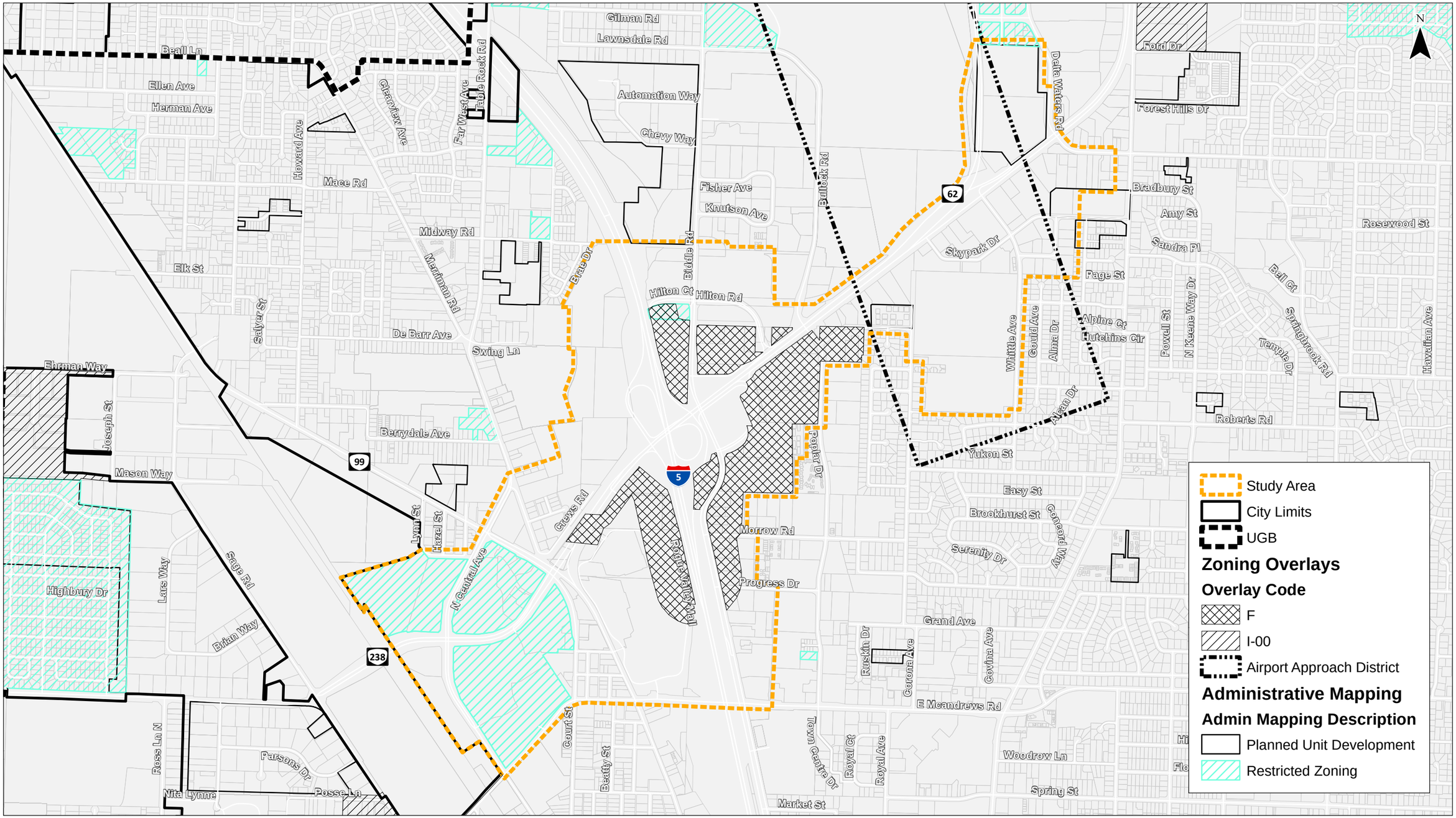
0 1,000 2,000 Feet

Zoning Map
Medford, Oregon

Figure 2

Coordinate System: NAD 1983 2011 StatePlane Oregon South FIPS 3602 Ft Intl
Data Source: City of Medford

N:\Projects\024069 IAMP 30\GIS\Exit30_base_WORKING_zoning.mxd - emma - 5:03 PM 2/12/2020



Zoning Overlays and Administrative Mapping Map
Medford, Oregon

Figure
3

N:\Projects\024069 IAMP 30\GIS\Exit30_base_WORKING_zoning.mxd - emma - 3:09 PM 2/19/2020

Coordinate System: NAD 1983 2011 StatePlane Oregon South FIPS 3602 Ft Intl
Data Source: City of Medford

Current Land Uses and Vacant/Developable Land

An inventory of existing land uses and vacant and developable land was produced using Medford County's tax assessor data for tax lots located within or partially within the IMSA. Each tax lot is classified in accordance with ORS 308.215[1] and, except for specially assessed properties, the classification is based upon the highest and best use of the property. Tax assessor information for tax lots provides a basic inventory of existing land uses and vacant and developable land (see Figure 4 and 5).

The IMSA is comprised of commercial, industrial, residential, and parks and open space uses. Properties shown as vacant are based on County property class codes. Redevelopable properties that are non-exempt (public) – i.e. residential, commercial, and industrial – are shown using a basic value ratio based on the most recent County assessment of property values.[2]

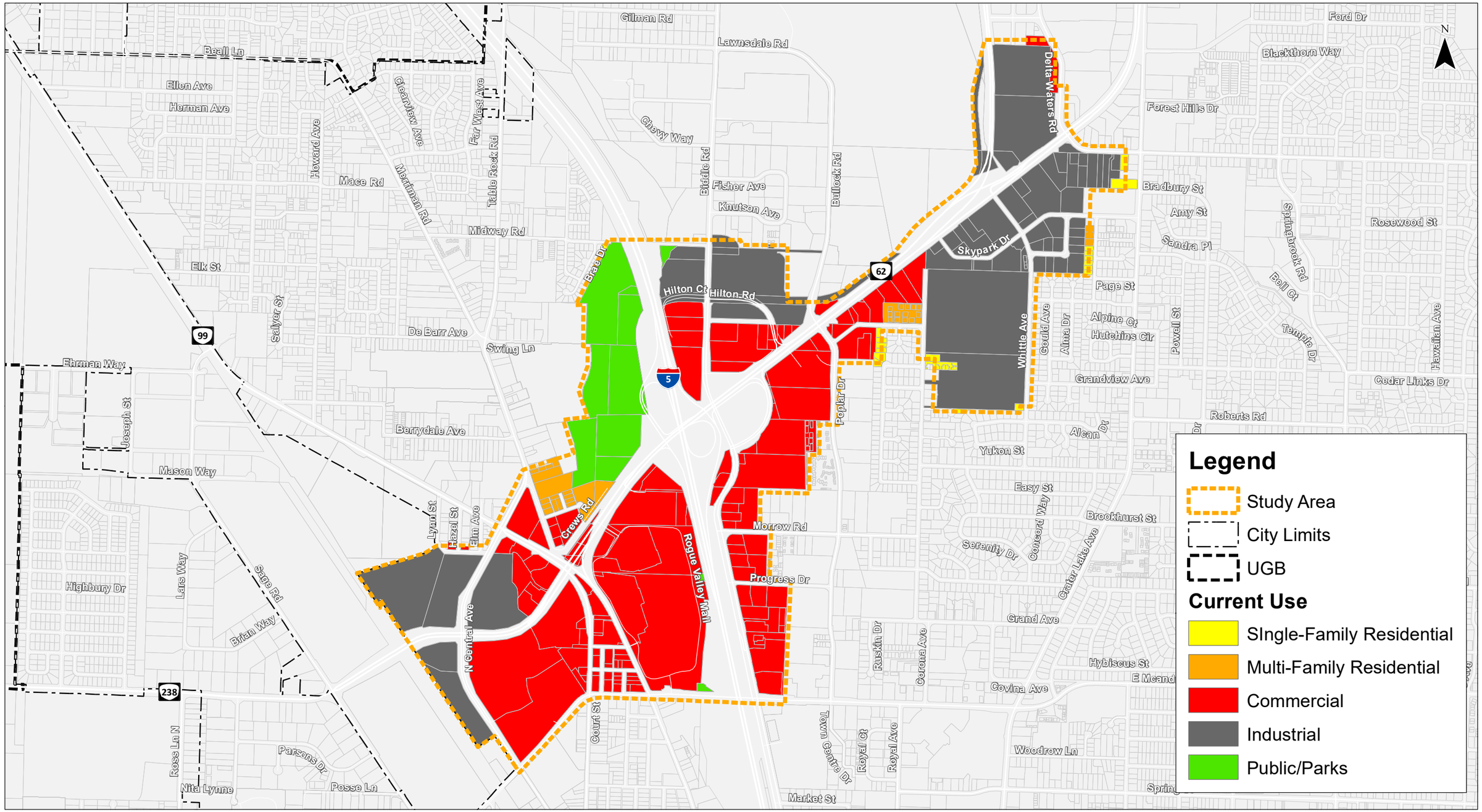
There are several areas of vacant land in the IMSA. The largest is the industrial and commercial areas along the western edge of the IMSA. Also, there are sections of vacant lands in the eastern edge of the IMSA near the airport, the most prominent being the vacant field south of Crater Lake Hwy. Of note, this area is located within the Airport Approach overlay and consequently limited by the LDC regarding the intensity of allowed development. Discussions with City staff suggest this area still has development potential as an outside storage area or laydown yard. As shown in Table 2, a significant portion of the commercial lands closer to the interchange in the southwest quadrant is assumed to have redevelopment potential. However, the extent to which redevelopment is possible must be reviewed further; the area is currently developed with a large shopping center that features large surface parking areas.

Table 2: Vacant and Redevelopable Land

Current Use	Developed Parcels	Redevelopable Parcels	Vacant Parcels	Total
Residential	22	2		**24**
Multi-Family	87	1	1	**89**
Commercial	97	31	25	**153**
Industrial	37	9	25	**71**
Public/Exempt	8		3	**11**
Total	**251**	**43**	**54**	**348**

[1] https://www.oregonlaws.org/ors/308.215

[2] Non-exempt properties shown as redevelopable are based on a land value to improvement value ratio of 2:1.



Legend

- Study Area
- City Limits
- UGB

Current Use

- SIngle-Family Residential
- Multi-Family Residential
- Commercial
- Industrial
- Public/Parks

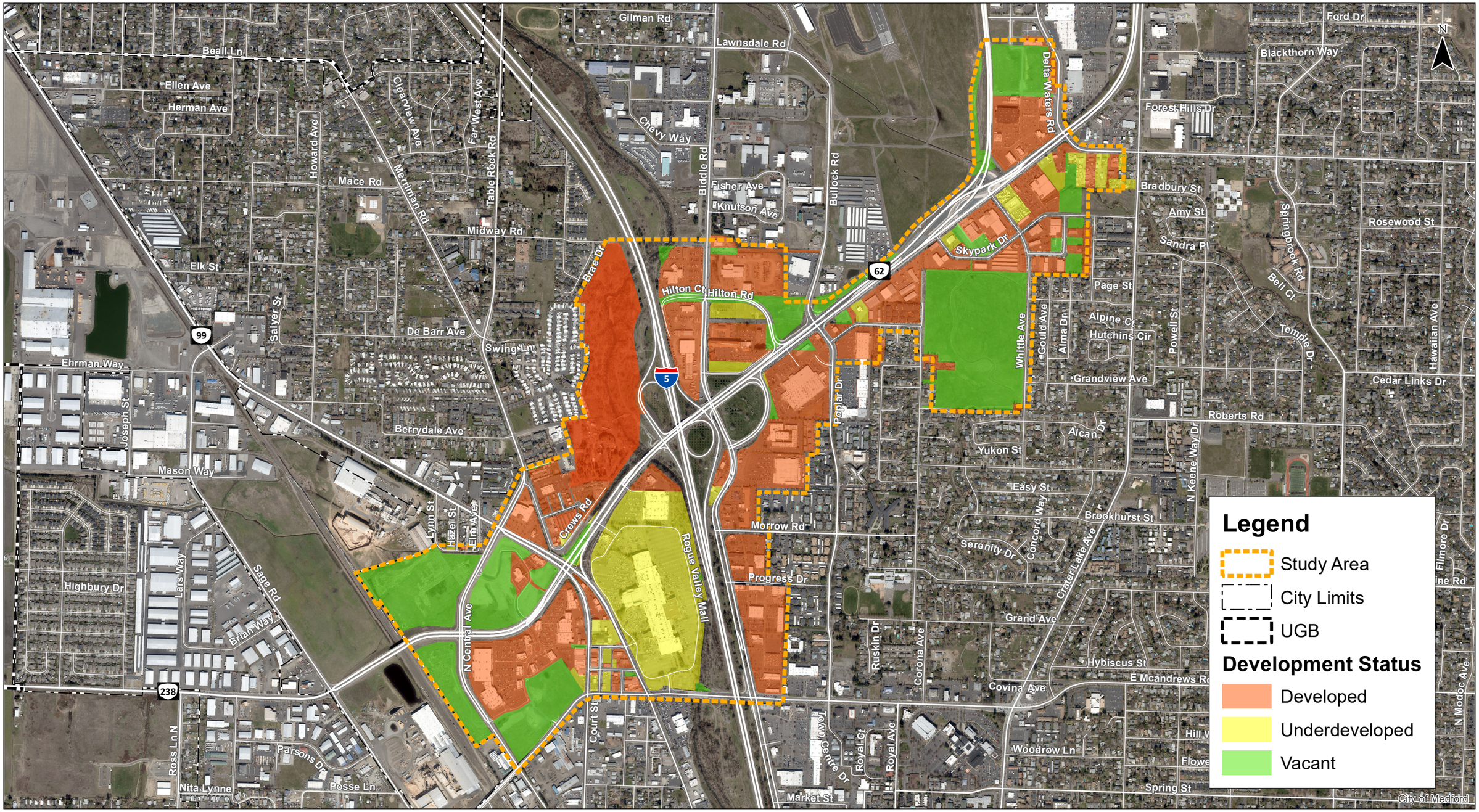
0 1,000 2,000 Feet

Current Uses
Medford, Oregon

Figure **4**

C:\Users\cdoxsee\Desktop\Medford GIS\MXDs\Ext30_base_WORKING_EP.mxd - cdoxsee - 2:14 PM 5/28/2020

Coordinate System: NAD 1983 2011 StatePlane Oregon South FIPS 3602 Ft Intl
Data Source: Jackson County Tax Assessor



Legend

- Study Area
- City Limits
- UGB

Development Status

- Developed
- Underdeveloped
- Vacant

0 1,000 2,000 Feet

Vacant and Underdeveloped Land
Medford, Oregon

Figure **5**

Coordinate System: NAD 1983 2011 StatePlane Oregon South FIPS 3602 Ft Intl
Data Source: Jackson County Tax Assessor

C:\Users\cdoxsee\Desktop\Medford GIS\MXDs\Exit30_base_WORKING_EP.mxd - cdoxsee - 2:21 PM 5/28/2020

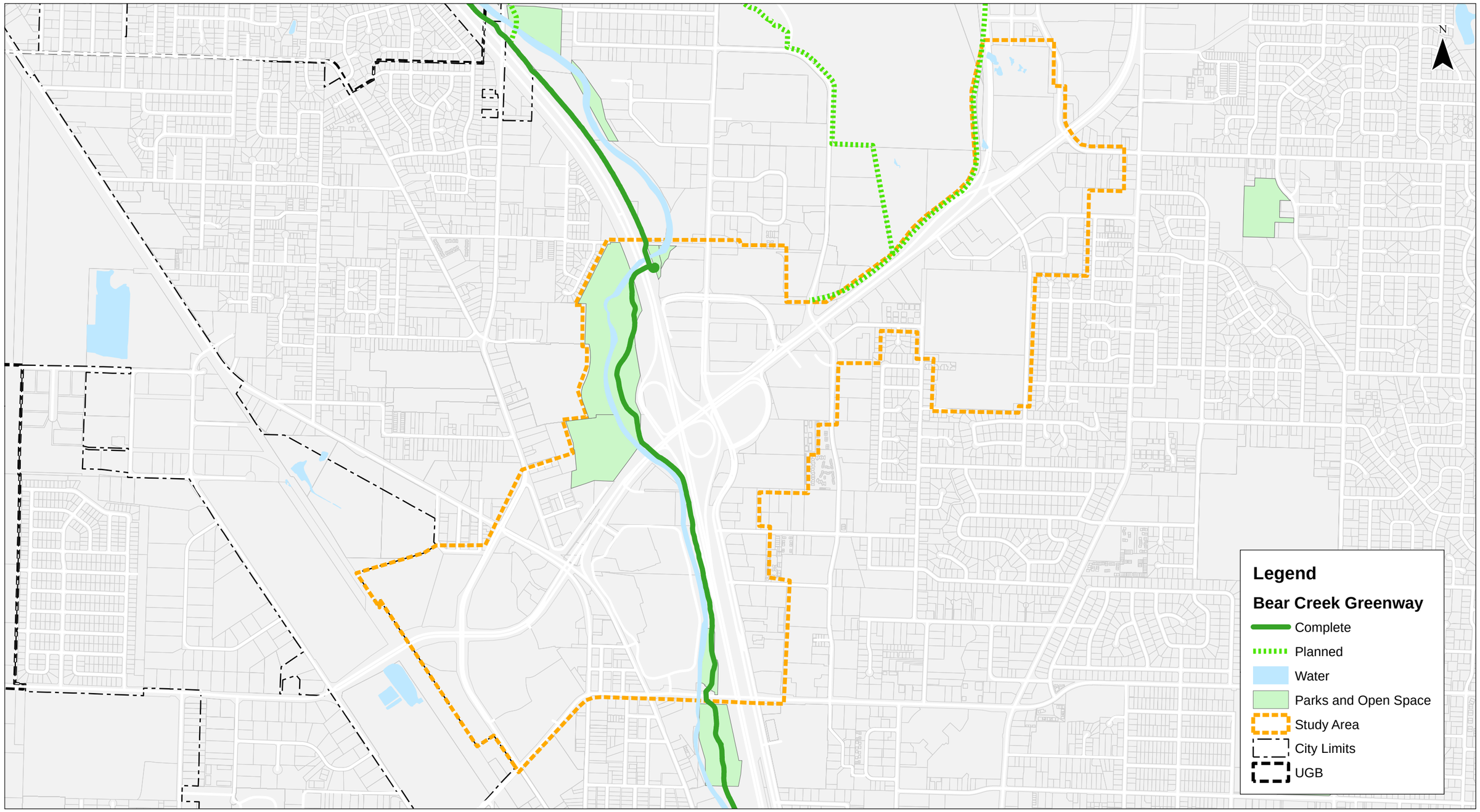
Parks and Recreation Areas

The Bear Creek Greenway a prominent open space and recreational facility in the IMSA. Bear Creek is one of the Rouge River's primary tributaries and flows through the City of Medford and the IMSA. The Greenway is an approximately 20-mile-long multi-use regional path corridor that spans from Central Point to Ashland. The entire length of the trail through the City is paved and is generally 10 feet wide.

The 50-acre Railroad Park is also located within the IMSA. The property was previously home to the City's sewer treatment plant, but now houses park amenities including a pavilion and miniature "built to scale" steam trains. Bear Creek Greenway abuts the park. Both recreation facilities are shown in Figure 6.

Activity Centers

Connecting residents and workers to services they use daily can be accomplished by well-integrated land use and transportation planning. Key activity centers within the IMSA, where the transportation network should support multi-modal and accessible public transportation, include the America's Best Kids Preschool, Medford Airport, Railroad Park, the Bear Creek Greenway, the Rouge Valley Mall, and Fred Meyers Shopping Center. Location of the IMSA activity centers are shown in Figure 7. Also, Downtown Medford, Medford Providence Medical Center, Kennedy Elementary School, Wilson Elementary School, and Montessori School of Medford also may be considered "attractors" that are accessed via the interchange.

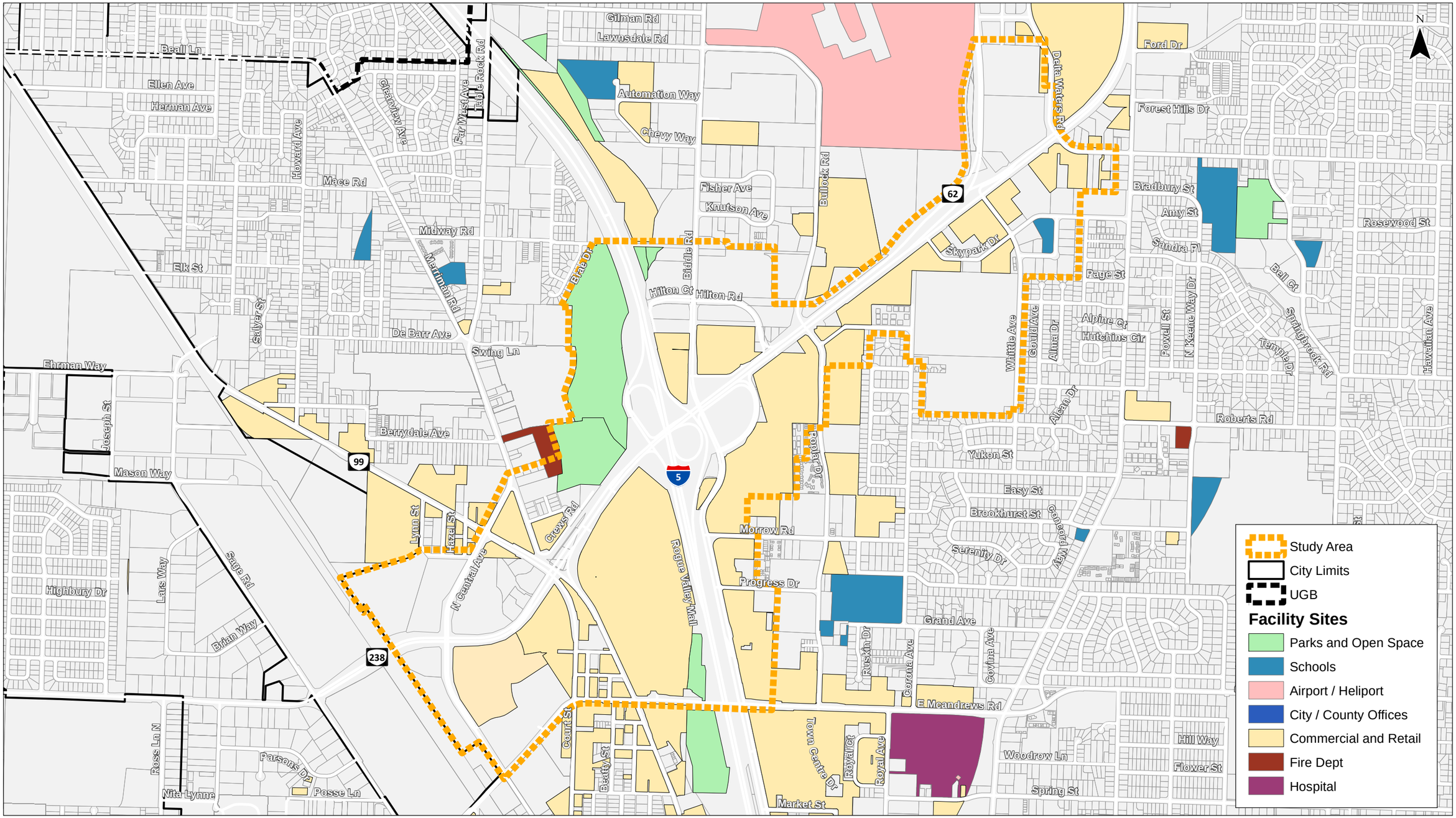


Parks and Recreation Facilities
Medford, Oregon

Figure
6

N:\Projects\024069 IAMP 30\GIS\MXDs\Exit30_base_WORKING_EP.mxd - emma - 1:05 PM 2/19/2020

Coordinate System: NAD 1983 2011 StatePlane Oregon South FIPS 3602 Ft Intl
Data Source: Jackson County Tax Assessor



Activity Centers
Medford, Oregon

Figure
7

N:\Projects\024069 IAMP 30\GIS\Exit30_base_WORKING_zoning_CP.mxd - emma - 2:39 PM 2/19/2020

Coordinate System: NAD 1983 2011 StatePlane Oregon South FIPS 3602 Ft Intl
Data Source: City of Medford

II. DEMOGRAPHIC INFORMATION

Statistical information covering various populations provides insight into the current conditions within the IMSA. Demographic data for identified populations was gathered using 2010 Decennial Census and 2017 5-Year American Community Survey (ACS) data sources. Note that neither census block groups associated with ACS 2017 5-Year American Community Survey, nor Census Tracts, associated with the 2010 Decennial Census fit precisely to the IMSA boundaries. Some block groups that are found in the IMSA, but that are largely outside and do not entirely representative of the IMSA characteristics. The demographic information considered is provided in the list below. Additional details are provided in Title VI and Environmental section, later in this document.

- Members of Minority Groups (Black or African American, Hispanic or Latino, Asian American, Native American and Alaskan Native, and Native Hawaiian or Other Pacific Islander)
- Elderly (Age 65 and Over)
- Low-income Households

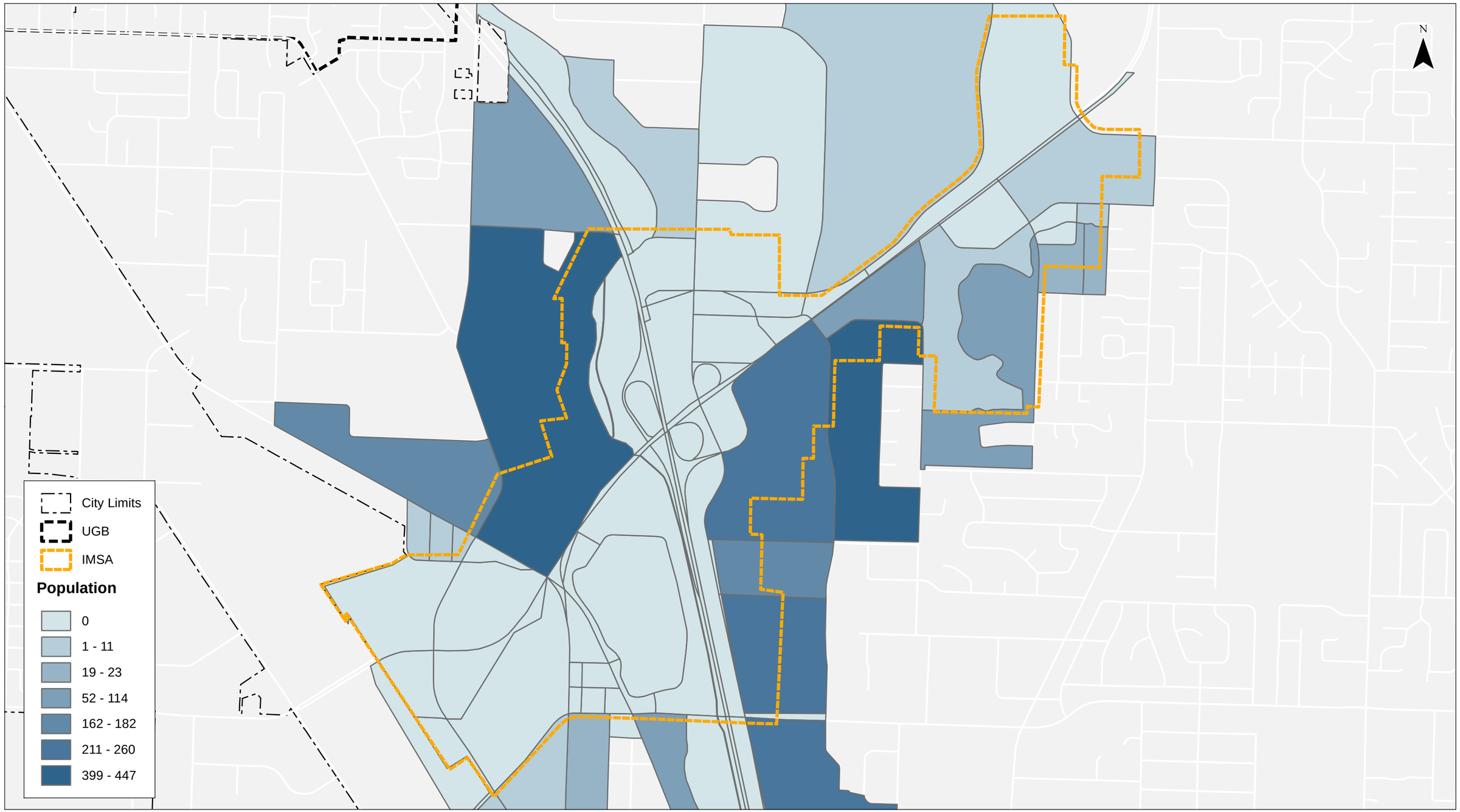
Population

The population of Medford was recorded as 74,097 in the 2010 Decennial Census. The City experienced 3% population growth between 1980 and 2010, which was greater than Jackson County (1.78%) and the State as a whole (1.52%). As shown in Table 3, Medford's population increased by 16,205 from 1990 to 2000. Following, the population grew by 11,753 people between 2000 and 2010—approximately 1.86% growth over that time. PSU's Center for Population Research Center estimates Medford had a population of 81,465 in 2018, which is following a pattern of historic growth between 1% and 2%.

Table 3. Medford Historic Population Growth (1980-2010) Source: Census Data

	Population				**Change 1980 – 2010**	
	1980	**1990**	**2000**	**2010**	**Number**	**Percent**
Oregon	2,633,105	2,842,321	3,421,399	3,831,074	1,197,969	1.52%
Jackson County	132,456	146,389	181,269	203,206	70,750	1.78%
Medford	39,603	46,951	63,154	74,907	35,304	2.97%

Figures 8 and 9 show the population and number of households by census block in the IMSA. This information provides the basis for the demographic data found in this memorandum. As shown, the blocks northeast and southwest of the interchange have few households and limited population within the IMSA, which is consistent with their primary use as employment lands (commercial and industrial uses).

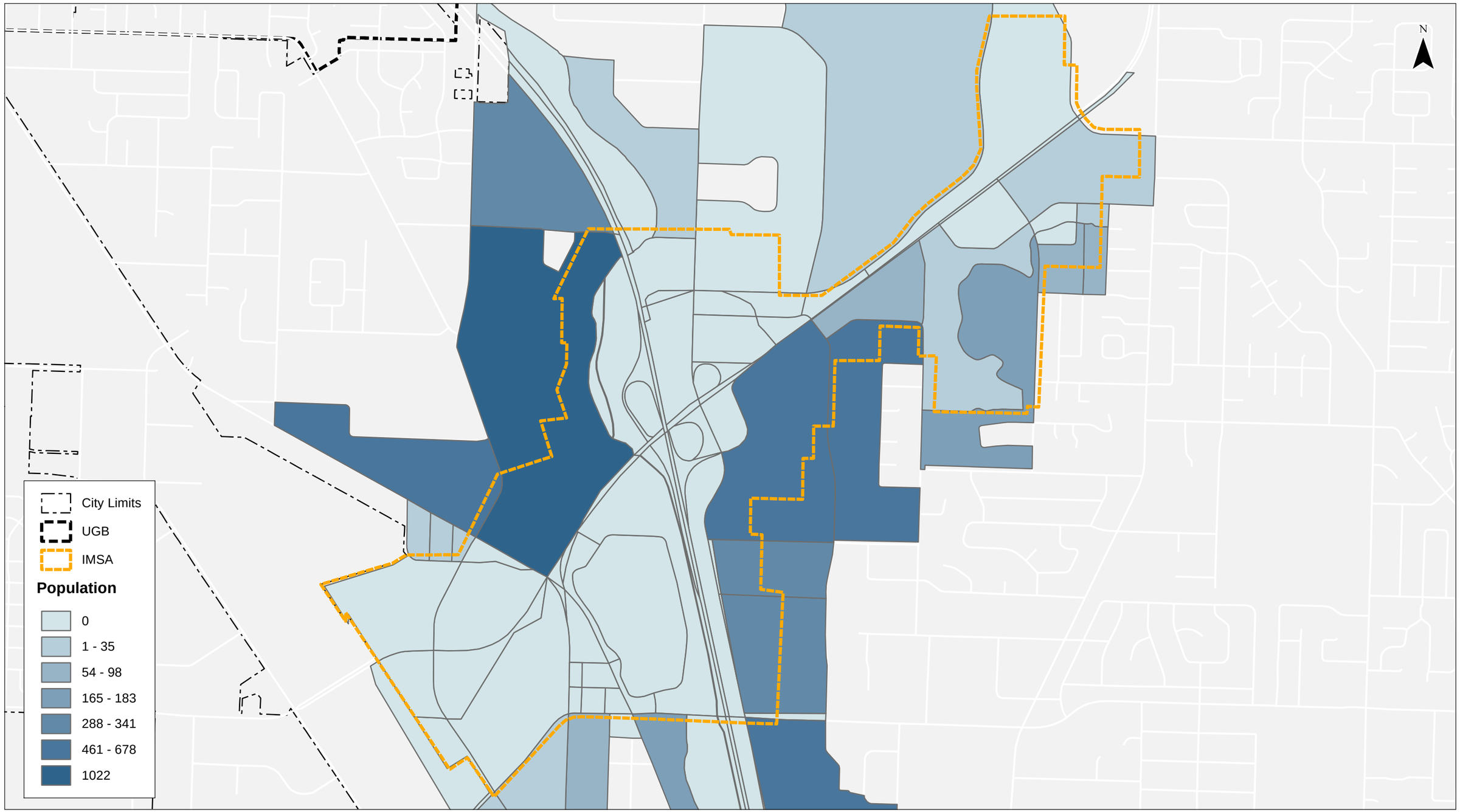


2010 Households (by Census Block)
Medford, Oregon

Figure
8

Coordinate System: NAD 1983 2011 StatePlane Oregon South FIPS 3602 Ft Intl
Data Source: U.S. Census

N:\Projects\024069 IAMP 30\GIS\1_IMSA_E1_v2.mxd - emma - 8:39 AM 2/13/2020



2010 Population (by Census Block)
Medford, Oregon

Figure 9

Coordinate System: NAD 1983 2011 StatePlane Oregon South FIPS 3602 Ft Intl
Data Source: U.S. Census

N:\Projects\024069 IAMP 30\GIS\1_IMSA_E1_v2.mxd - emma - 8:40 AM 2/13/2020

Population Forecast

Portland State University (PSU) Population Research Center

PSU's Population Research Center forecasts populations for regions around Oregon. In 2015, PSU developed population forecasts for Jackson County. As shown in Table 4, Jackson County is expected to have an annual average growth rate of 1% from 2015 to 2035. In comparison, Medford is expected to have 1.1% average annual growth rate (AAGR) in the same period. A similar relationship is shown for the AAGR from 2035 to 2065, Jackson County and Medford are expected to have 0.6% and 0.7% AAGRs, respectively.

Table 4. PSU Jackson County Population Forecast

Figure 1. Jackson County and Sub-Areas—Historical and Forecast Populations, and Average Annual Growth Rates (AAGR)

	Historical			Forecast				
	2000	2010	AAGR (2000-2010)	2015	2035	2065	AAGR (2015-2035)	AAGR (2035-2065)
Jackson County	*181,269*	*203,206*	*1.1%*	*211,275*	*255,840*	*306,858*	*1.0%*	*0.6%*
Ashland[1]	20,023	20,626	0.3%	20,905	23,183	24,138	0.5%	0.1%
Butte Falls	440	423	-0.4%	421	437	447	0.2%	0.1%
Central Point	13,310	17,736	2.9%	18,329	22,680	27,485	1.1%	0.6%
Eagle Point	4,952	8,508	5.6%	9,657	14,839	18,669	2.2%	0.8%
Gold Hill	1,181	1,228	0.4%	1,267	1,496	2,018	0.8%	1.0%
Jacksonville	2,256	2,785	2.1%	2,927	4,316	6,687	2.0%	1.5%
Medford	67,865	76,581	1.2%	80,024	99,835	124,582	1.1%	0.7%
Phoenix	4,379	4,774	0.9%	4,955	6,883	9,775	1.7%	1.2%
Rogue River	2,544	2,714	0.6%	2,838	3,705	5,545	1.3%	1.4%
Shady Cove	2,528	3,050	1.9%	3,168	4,343	6,105	1.6%	1.1%
Talent	5,683	6,123	0.7%	6,411	9,020	14,290	1.7%	1.5%
Outside UGBs	56,108	58,658	0.4%	60,373	65,104	67,119	0.4%	0.1%

Sources: U.S. Census Bureau, 2000 and 2010 Censuses; Forecast by Population Research Center (PRC).

[1] *For simplicity each UGB is referred to by its primary city's name.*

City of Medford Comprehensive Plan

The City of Medford's Comprehensive Plan developed an estimated population forecast in 2007. In accordance with the estimates, Medford is projected to have a 2026 population of 111,025 and 2040 population of 133, 397 (see Table 5). The City utilized available population forecasts for Jackson County in 2005. The Comprehensive Plan Population Element suggests the source of historic growth to be natural increase (births minus deaths) and an influx of residents. Conclusions from the Population Element include the following:

- Medford's forecasted average annual growth rate between 2007 and 2027 of 2.2% will be like that experienced during the period of 1980 to 2005.
- Medford can expect its proportion of the total County population to increase to 42% in 2027 and to 44% in 2040. This is consistent with the Regional Problem Solving program's future growth proposal, which suggests an increase in Medford's share of the urban population in the County over a 50-year period, allowing for some other cities to grow more slowly.

- Medford can expect that most population growth will continue to be from in-migration, and that there will be an increasing proportion of Hispanic or Latino residents. Medford will continue to attract residents who have retired or are soon to retire, but Medford will also continue to experience growth in the under 18 age group.

Table 5. Comprehensive Plan Population Forecast

Table 3. Population allocation and projected growth rates for incorporated cites, White City, And unincorporated areas of Jackson County, 2005-2040

				Change 2005 to 2026			Change 2005 to 2040		
	2005 Pop.	2026 Pop.	2040 Pop.	Difference	Percent change	AAGR	Difference	Percent change	AAGR
Ashland	20,880	22,319	23,056	1,439	7%	0.32%	2,176	10%	0.28%
Butte Falls	445	552	580	107	24%	1.03%	135	30%	0.76%
Central Point	15,640	23,875	31,237	8,235	53%	2.03%	15,597	100%	2.00%
Eagle Point	7,585	16,964	21,449	9,379	124%	3.91%	13,864	183%	3.01%
Gold Hill	1,080	1,476	1,901	396	37%	1.50%	821	76%	1.63%
Jacksonville	2,490	3,397	4,383	907	36%	1.49%	1,893	76%	1.63%
Medford	70,855	111,025	133,397	40,170	57%	2.16%	62,542	88%	1.82%
Phoenix	4,660	6,675	8,032	2,015	43%	1.73%	3,372	72%	1.57%
Rogue River	1,995	2,542	3,137	547	27%	1.16%	1,142	57%	1.30%
Shady Cove	2,645	3,594	3,867	949	36%	1.47%	1,222	46%	1.09%
Talent	6,255	8,472	9,817	2,217	35%	1.45%	3,562	57%	1.30%
White City	7,500	11,424	13,090	3,924	52%	2.02%	5,590	75%	1.60%
Applegate	27	37	43	10	36%	1.47%	16	57%	1.31%
Ruch	376	511	593	135	36%	1.47%	216	57%	1.31%
Other Unincorp.	52,082	51,557	51,837	-524	-1%	-0.05%	-244	0%	-0.01%
Total County	194,515	264,419	306,421	69,904	36%	1.47%	111,906	58%	1.31%

Source: 2005 population estimates from Portland State University Center for Population Research; 2005 White City population estimate from the Medford Water Commission; 2005 Applegate and Rush population estimates based on Jackson County Buildable Lands Inventory and average household size in Jackson County according to the 2005 U.S. Census American Households Survey; Calculations by *ECONorthwest.*

Note: This table is from the Jackson County Comprehensive Plan 2007 Population Element

Rouge Valley RVMPO

The RVMPO Regional Transportation Plan outlines the population forecast for their travel demand modeling (TDM) tool, a tool that replicates existing transportation conditions and evaluates future year development and infrastructure scenarios. Table 6 shows the population forecast for the City of Medford and the RVMPO area, which encompasses the urban areas of Jackson County. The population forecast used in the RVMPO TDM Model was based on the forecast from the Jackson County Comprehensive Population Element (same source as the Medford Comprehensive Plan). However, the 2005 projections were adjusted in 2012 to include a revised projection based on more recent data. Of note, the RVMPO transportation analysis zone (TAZ) boundaries, the geographic boundaries used for the projections, are not perfectly aligned to the City of Medford's jurisdictional boundary (urban growth boundary), which may account for some differences in comparison to other population forecasts.

Table 6. RVMPO Regional Transportation Plan Population Forecasts

Jurisdiction	2015	2038
Medford	91,924	130,137
RVMPO Area	191, 568	262,087

NOTE: Population relates to TAZ area boundaries, which do not match city boundaries, therefore, totals differ slightly from official "city" estimates.

Comparison of Population Forecasts

As shown in Table 7, all three sources of population estimates slightly vary. The RVMPO estimate was based on the same 2005 Jackson County population forecasts as the Medford Comprehensive Plan. However, in 2012 they were adjusted with more recent information. Additionally, the RVMPO looks at the spread of population through their designated Transportation Analysis Zones (TAZ), which are not always entirely consistent with urban growth boundaries for a given jurisdiction. The PSU Population Research Center's 2015 Jackson County population forecast is the most recent forecast of all the three sources.

The RVMPO and Medford Comprehensive Plan forecasts are comparable and are based on the same original data, the 2005 Jackson County population forecasts. PSU PRC's forecast is significantly less than the other two source; however, it is a more recent analysis, completed in 2015.

Table 7. Comparison between Estimated Population and Projections for Medford

Forecast source	2015	2038
PSU PCR Coordinated Population Forecast – Jackson County (2015)	80,024	103,148
RVMPO Regional TSP (2013)	91,924	130,137
Medford Comprehensive Plan (2007)	87,736	128,600

Title VI and Environmental Justice Populations

Environmental Justice (EJ) populations are a special focus in transportation planning and project development. Identifying EJ populations early on is intended to make participation in transportation planning and project development more inclusive of diverse communities. The analysis is also valuable in identifying the transportation needs that will provide the most benefits to EJ populations. Three population groups are considered for transportation impact susceptibility, representing those who may rely more heavily on public infrastructure or transit for access to day-to-day needs and jobs. They include minority groups, populations over 64 years of age, and low-income households.

Minority Groups[3]

Information on minority groups includes a combination of Hispanic or Latino origins as well as race at the census block geographic levels. Origin can be viewed as the heritage, nationality group, lineage, or country of birth of the person or the persons parents or ancestors before their arrival in the US. People who identify their origin as Hispanic or Latino may be any race. Race is based on racial classifications issued by the Office of Management and Budget (white, black or African American, American Indian or Alaska Native, Asian, Native Hawaiian or Other Pacific Islander, and Some Other Race). Respondents can select two or more races.

Table 8 summarizes the minority groups for the State of Oregon, Jackson County, the City of Medford, and the IMSA. Compared to the state, Medford, and Jackson County, the IMSA has the highest percentage of minority groups at 26%. Also, the IMSA has the largest percentage of a Hispanic or Latino population (18%) in comparison to Medford (14%), Jackson County (11%), and the State (12%).

Table 8. Hispanic or Latino, and Not Hispanic or Latino by Race (Table P5, 2010 Decennial Census)

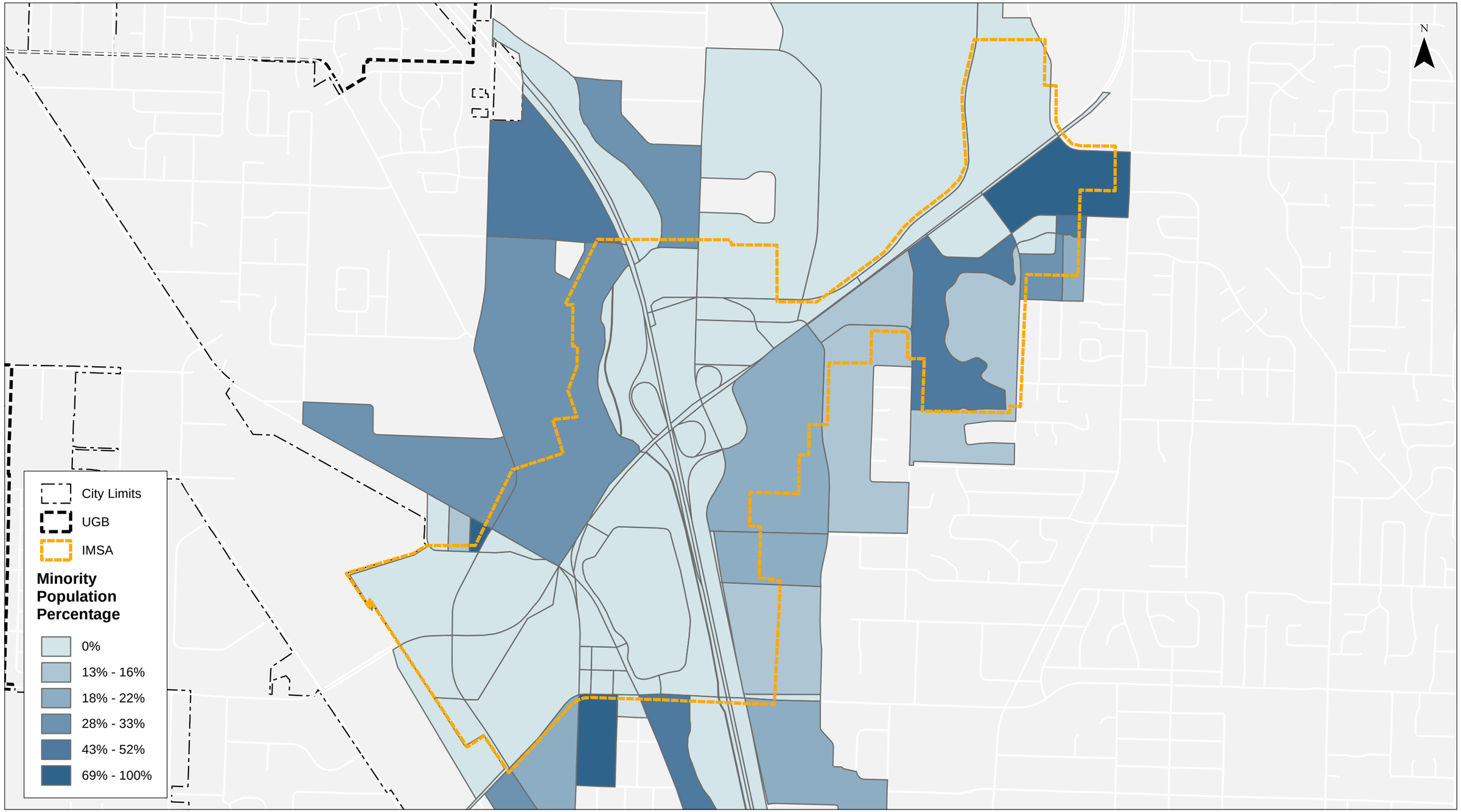
	IMSA		MEDFORD		JACKSON COUNTY		OREGON	
Total:	5,877		74,907		203,206		3,831,074	
Hispanic or Latino	1,075	18%	10,319	14%	21,745	11%	450,062	12%
Not Hispanic or Latino:	4,802	82%	64,588	86%	181,461	89%	3,381,012	88%
White alone	4,333	74%	59,756	80%	170,023	84%	3,005,848	78%
Black or African American alone	65	1%	598	1%	1,227	1%	64,984	2%
American Indian and Alaska Native alone	47	1%	691	1%	1,874	1%	42,706	1%
Asian alone	127	2%	1,084	1%	2,304	1%	139,436	4%
Native Hawaiian and Other Pacific Islander alone	51	1%	328	0%	562	0%	12,697	0%
Some other race alone	6	0%	76	0%	229	0%	5,502	0%
Two or more races	173	3%	2,055	3%	5,242	3%	109,839	3%

For the purposes of showing minority groups in Figure 10, minority groups are considered a combination of the following individual classifications:

- Not Hispanic or Latino: Black or African American alone
- Not Hispanic or Latino: American Indian and Alaska Native alone
- Not Hispanic or Latino: Asian alone
- Not Hispanic or Latino: Native Hawaiian and Other Pacific Islander alone
- Not Hispanic or Latino: Some Other Race alone
- Not Hispanic or Latino: Two or More Races
- Hispanic or Latino

[3] Information for selected demographic groups is from the 2010 Decennial Census data. Decennial Census data provides a full count of US population and various demographic information. Starting in 2010, the Census stopped using the long form survey and reports information on population, households, age, sex, race and ethnicity, and housing characteristics only. Additional information for other demographic and socioeconomic data was gathered using the American Community Survey.

Several areas of the IMSA have no minority population, but also have a limited population. The block in the northeast corner of the IMSA has a large minority population which consist of greater than 69% of the total population. The areas with the largest minority population percentages, exceeding the City's average minority population of 20%, are found in the northwest quadrant of the IMSA and clustered in the northeast quadrant of the interchange. The total population in each of these census blocks typically ranges between 0 and 98 but can be upwards of 600 people.



Minority Population (by Census Block)
Medford, Oregon

Figure **10**

N:\Projects\024069 IAMP 30\GIS\1. IMSA_EJ_v2.mxd - emma - 8:48 AM 2/13/2020

Coordinate System: NAD 1983 2011 StatePlane Oregon South FIPS 3602 Ft Intl
Data Source: U.S. Census

Age[4]

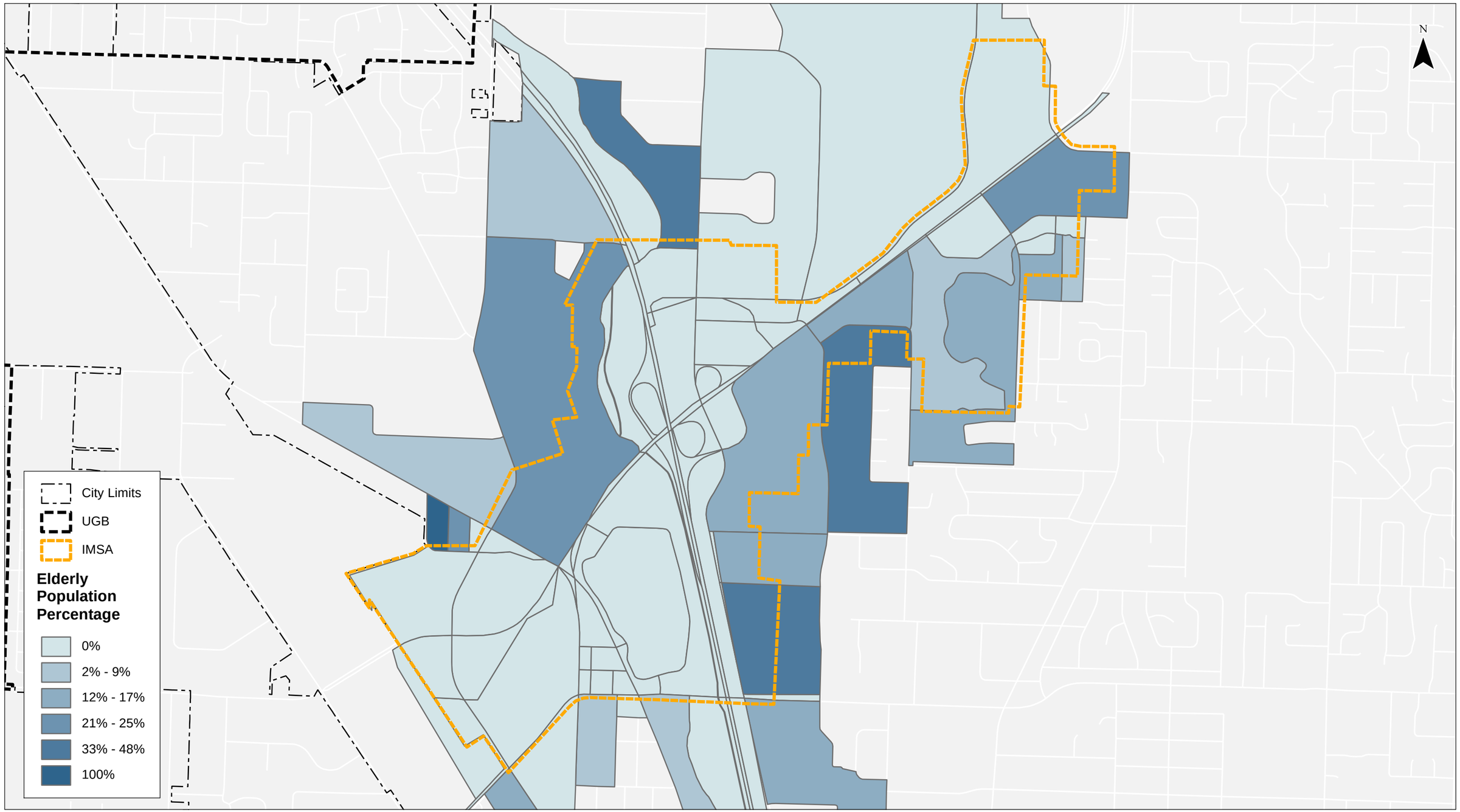
Data on age is derived from a two-part census question (age and date of birth). Both age and date of birth is used in combination to determine the most accurate age as of the census reference date. Elderly data is organized into groups of populations 65 and older. As summarized in Table 9, approximately 18% of the population of the IMSA are elderly. This is consistent with the percentage of elderly population in Jackson County and slightly lower than percentages for Medford and Oregon, 16% and 14% respectively.

Table 9. Youth and Elderly Populations (P12: Sex by Age, 2010 Decennial Census)

	IMSA		MEDFORD		JACKSON COUNTY		OREGON	
Total:	5,877		74,907		203,206		3,831,074	
Elderly (Age 65 and Over)	1,057	18%	12,109	16%	35,834	18%	533,533	14%

The location of elderly populations is also provided at the census block geographic level in Figure 11. Most of the elderly population in the IMSA are clustered east of the interchange and south of Crater Lake Hwy (Hwy 62). Another area with significant elderly population is the block directly northwest of the interchange. Additionally, there is a block with high percentage of elderly population, just south of Chevy Way in the northern area of the IMSA; however, this census block has a limited population of less than 10. Several large blocks have very limited elderly population, but also have a limited population, ranging from 0 to 7 people.

[4] Ibid



Elderly Population 65+ (by Census Block)
Medford, Oregon

Figure **11**

N:\Projects\024069 IAMP 30\GIS\1_IMSA_EJ_v2.mxd - emma - 8:52 AM 2/13/2020

Coordinate System: NAD 1983 2011 StatePlane Oregon South FIPS 3602 Ft Intl
Data Source: U.S. Census

Low Income[5]

Poverty statistics shown in Table 10 and Figure 12 adhere to the Office of Management and Budget in Statistical Policy's Directive 14. The data uses a set of dollar value thresholds that vary by various family characteristics. A person's poverty status is determined by comparing the person's total family income in the last 12 months with the poverty threshold appropriate for that person's family size and composition.

As shown in Table 10, nearly half of the households in the IMSA earn an income that is less than two-times the poverty level. Many researchers consider the poverty level to be too low to accurately represent income levels necessary for self-sufficiency; thus, using two-times the poverty level may be a more accurate measure of income sufficiency.[6]

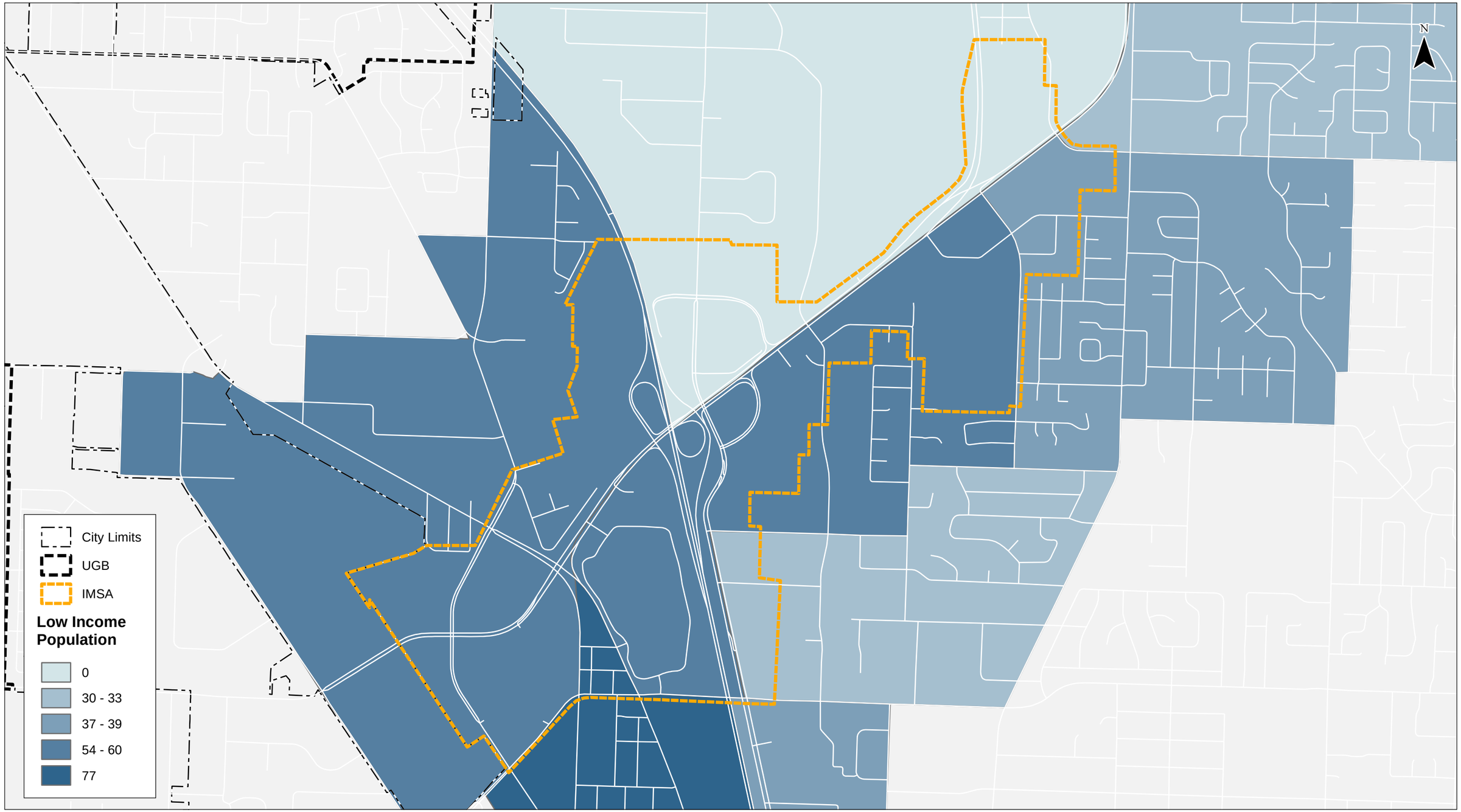
Table 10. Ratio of Income to Poverty (C17002: Ratio of Income to Poverty in the Past 12 Months, 2017 5-year American Community Survey)

	IMSA		MEDFORD		JACKSON COUNTY		OREGON	
Total:	9,496		77,630		208,556		3,905,386	
Under .50	508	5%	6,311	8%	15,289	7%	272,939	7%
.50 to .99	1,352	14%	10,331	13%	22,306	11%	341,284	9%
1.00 to 1.24	779	8%	4,623	6%	11,960	6%	192,900	5%
1.25 to 1.49	689	7%	4,043	5%	11,659	6%	186,458	5%
1.50 to 1.84	1,029	11%	5,999	8%	16,354	8%	270,741	7%
1.85 to 1.99	336	4%	2,440	3%	6,642	3%	110,868	3%
2.00 and over	4,803	51%	43,883	57%	124,346	60%	2,530,196	65%

Most of the block groups in the IMSA have greater than 37% population below 2.0, an indicator of poverty. As shown in Figure 12, the census block group northeast of the interchange has a low percentage, likely because of the low population of that block. The highest areas of poverty are found west of the I-5. The blocks consist of areas with greater than 54% of the population in poverty. Southeast of the interchange, most of the area south of Crater Lake Hwy has approximately 54% of the population in poverty.

[5] APG compiled information for selected demographic groups using American Community Survey (ACS) data. ACS data was used where 2010 decennial information on the identified demographics was not available. The ACS is a nation-wide survey conducted by the Census Bureau to provide estimates on population, housing unit, and household characteristics at the Census block Group geographic level. Because the ACS is based on a sample, they have a margin of error. The margin of error, combined with the ACS estimate, provides a range of values within which the actual value may fall. As such, demographic information shown should be considered carefully.

[6] For more information, see "Measuring Poverty" Center for Women's Welfare, University of Washington. Available at: http://selfsufficiencystandard.org/measuring-poverty



Low Income Population Under 2.00 (by Block Group)
Medford, Oregon

Figure **12**

N:\Projects\024069 IAMP 30\GIS\L_IMSA_EJ_v2.mxd - emma - 8:58 AM 2/13/2020

Coordinate System: NAD 1983 2011 StatePlane Oregon South FIPS 3602 Ft Intl
Data Source: U.S. Census

Title VI and Environmental Justice Summary

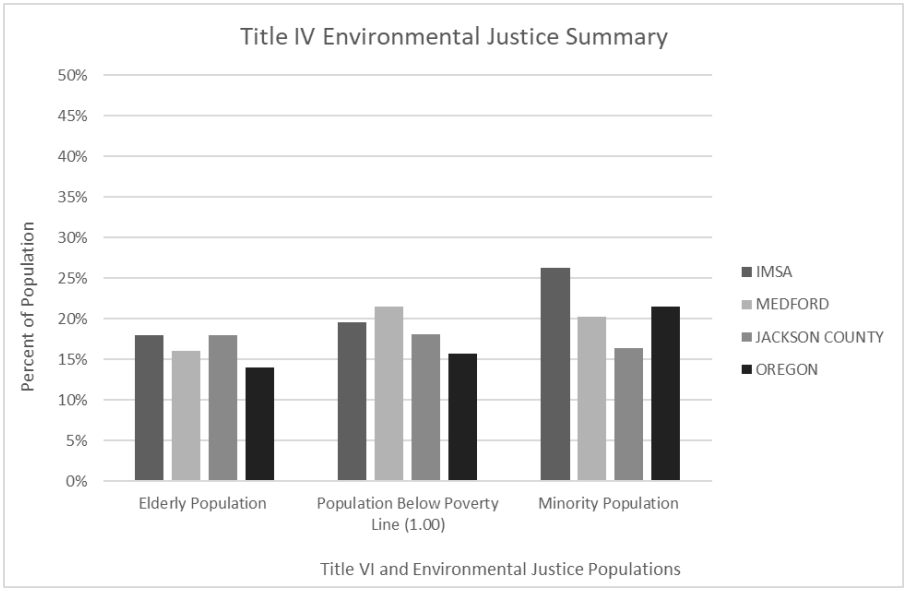
This memorandum provides generalized information on Title VI impact areas based on the combination of available data provided on the following demographic groups:

- Minority Groups (Block)
- Population 65 Years and Older (Block)
- Low-Income Population (Block Group)

As previously discussed, due to the limitations of available Decennial and ACS data, the specific location of Title VI populations is limited to census blocks and census block groups respectively. The geographic boundaries of blocks and block groups are not limited to the extent of the study area buffer; some census blocks, and most census block groups, extend beyond the study area. Further, the geographic boundaries of census blocks and census block groups can vary greatly in size.

Figures 10 through 12 show the information for all Title VI populations addressed in this memorandum and potential Title VI populations that may be affected. Tables 8 to 10 are summarized in Figure 13, below.

Figure 13. Title VI and Environmental Justice Summary



According to Figure 15, the demographic information available suggests the following:

- The IMSA has a significantly higher percentage of a minority population (26%) in comparison to Medford (20%), Jackson County (16%), and the State as a whole (22%).
- The IMSA has a slightly higher population of people living below the poverty line at 20% in comparison to Jackson County (18%) and the State (16%). However, the IMSA percentage is slightly lower than the poverty rate in Medford, 21%.
- In the IMSA the elderly population (18%) is equivalent to Jackson County's elderly population percentage and slightly larger than Medford (16%) and the State (14%).

III. LAND USE/POPULATION CHALLENGES AND BARRIERS

The land use and population analysis has revealed possible challenges and barriers to implementing an IAMP. Planning long-term transportation operations in the interchange area is complicated by several factors identified in this memorandum, including the following:

- GLUP and zoning restrictions
- Recent and anticipated development
- Multiple growth forecasts
- Large elderly and minority populations

Interchange improvements in the northwest quadrant of the IMSA will be limited by the Parks and School and Greenway GLUP designations and Single-Family Residential and Public Parks zoning. The Bear Creek Greenway is located adjacent to the interchange and provides a connection for the 20-mile long multi-use corridor. The IAMP will need to identify and propose mitigation for impacts associated with proposed transportation improvements.

Recent development in the southwest quadrant of the IMSA will add existing commercial demand on the transportation system. Vacant commercial and industrial parcels also exist in the southwest quadrant of the IMSA that have the potential to develop over the planning horizon and add additional demand to the transportation system. The IAMP will identify transportation solutions to account for existing and anticipated demand associated with this type of development.

Multiple population forecasts have been conducted for the City of Medford showing growth estimates ranging between 1.1% to 2.16% average annual growth. The most recent forecasts, conducted by the Population Research Center at PSU, show less growth in the City compared to the other two forecasts. The challenge for the IAMP project is to "right size" transportation solutions to the anticipated growth and number of future users.

The IMSA has a population of approximately 6,000 people. Of that population, there is a larger proportion of elderly and minorities compared to the City of Medford, Jackson County, and the State of Oregon. Because these populations are located near or just outside the IMSA boundary, [7] it is likely the transportation solutions will have indirect negative impacts to these populations. The planning process will need to reflect how transportation solutions both impact and benefit vulnerable populations.

[7] Population estimates are based on Census geographies which do not coincide with the IMSA boundary exactly. See Figures 8 through 12 for population estimates.

ATTACHMENT A-1: CITY OF MEDFORD ZONING DISTRICT REGULATIONS

As discussed earlier in the memorandum, land in the IMSA is subject to the land use regulations of the City of Medford, found in the Land Development Code (LDC). Because future development and redevelopment in the IMSA will be subject to LDC provisions, knowing the zoning designations, permitted uses, and lot standards in the IMSA provides information about the type and intensity of transportation demand to be expected in the area. Table A-1 provides a detailed summary of the purposes, permitted uses, and lot standards in each zoning district in the IMSA and the corresponding Comprehensive Plan designation.

Table A-1. IMSA Zoning District and Comprehensive Plan Designations

District	Purpose, Permitted Uses[1] and Lot Standards[2]	Corresponding Comprehensive Plan Designation
Zones		
Multiple-Family Residential -20 dwellings units per gross acre (MFR-20)	Purpose • This urban residential district provides for higher density townhouses and multiple-family dwellings, including duplexes and apartments, and group quarters. It is suitable and desirable for locations near neighborhood activity centers or mass transit. Permitted Uses • Single family detached dwelling, duplex, townhouse/rowhouse, accessory dwelling unit, boarding/lodging house, residential facility, childcare center, institutional uses, community services, transit, and utility distribution system Lot Standards • Minimum Density – 15 dwelling units (DU)/gross acre • Maximum Density – 20 DU/gross acre	Urban High Density Residential (UH)
Multiple-Family Residential -30 dwellings units per gross acre (MRF-30)	Purpose • This urban residential district provides for the highest density multiple-family dwellings and group quarters. It is suitable and desirable for locations within or near employment centers or near mass transit. Permitted Uses • Single family detached dwelling, duplex, accessory dwelling unit, childcare home, boarding/lodging house, residential facility, child day care center, institutional uses, community services, transit, and utility distribution system Lot Standards • Minimum density – 20 DU/gross ace • Maximum density – 30 DU/gross acre	Urban High Density Residential (UH)

District	Purpose, Permitted Uses[1] and Lot Standards[2]	Corresponding Comprehensive Plan Designation
Single-Family Residential – 6 units per gross acre (SFR-6)	Purpose • Provide land for residential development Permitted Uses • Single-family detached dwellings, small residential care homes, duplexes, cottage clusters, institutional uses, community services, and transit facilities Lot Standards • Minimum density – 4 dwelling units per acre • Maximum density – 6 dwelling units per acre, for duplexes 9 dwelling units per acre	Urban Residential (UR)
Community Commercial (C-C)	Purpose • The C-C district provides land for the development of commercial facilities servicing the shopping needs of the community and is typically comprised of community shopping centers. Permitted Uses • Business offices, public parks / recreation services, laboratory, retail trade, eating and drinking places, finance, insurance and real estate, and other services Lot Standards • Minimum lot area – 15,000 square feet • Maximum lot area – 50,000 square feet • Maximum lot coverage – 40%	Commercial (CM)
Service Commercial and Professional Office (C-S/P)	Purpose • The C-S/P district provides land for professional offices, hospitals, and limited service commercial uses. This district is intended to be customer-oriented, however, retail uses are limited. Permitted Uses • Business offices, public parks / recreation services, laboratory, eating and drinking places finance, insurance and real estate, personal and business services Lot Standards • Minimum lot area – 15,000 square feet • Maximum lot coverage – 40%	Commercial (CM)
Regional Commercial (C-R)	Purpose • The C-R zone provides land for the development of those service and commercial uses which serve shoppers from the surrounding region as well as from the local community. The C-R zone shall be located in areas served by adequate regional and local street systems to avoid the impact of regional traffic using neighborhood streets. Permitted Uses • Business offices, public parks / recreation services, laboratory, retail, retail trade, eating and drinking places, finance, insurance and real estate, services Lot Standards • Minimum lot area – 15,000 square feet • Maximum lot coverage – 40%	Commercial (CM)

District	Purpose, Permitted Uses[1] and Lot Standards[2]	Corresponding Comprehensive Plan Designation
Heavy Commercial (C-H)	Purpose • The zone is intended to provide land for heavier commercial and service commercial uses, which may produce a greater degree of noise or pollution than other commercial zones. Permitted Uses • Business offices, public parks, retail, agricultural services, contracting offices, transportation facilities, some utility services, office services, hotels and lodging, personal services, business services, auto repair shops, medical offices, and dwelling units Lot Standards • Minimum lot area – 7,000 square feet • Maximum lot coverage – 60%	Commercial (CM)
General Industrial (I-G)	Purpose • The I-G district provides land for industrial uses in which production and processing activities involve a degree of noise, vibration, air pollution, radiation, glare phenomena, and fire and explosive hazards. Permitted Uses • Production, processing, wholesale, laboratory, agricultural production-crops, agricultural services, construction, special trade contractors, manufacturing, apparel and textile mill products, furniture and fixtures, paper and allied products, printing and publishing, manufacturing, wholesale trade, eating and drinking places • Offices are permitted only when they are accessory and subordinate to principal permitted use. Lot Standards • Minimum lot area – 10,000 square feet • Maximum lot coverage – 90%	General Industrial (GI)
Light Industrial District (I-L)	Purpose • The I-L district provides land for warehouse, office, and low intensity industrial uses in areas near residential and commercial zones. It is intended for industrial uses which involve the lowest level of noise, vibration, air pollution, radiation, glare, or fire and explosive hazards. This district is not intended to be retail customer-oriented, and retailing shall be permitted as an accessory use only or as specifically allowed. Because of the locational character and proximity of the I-L district to residential lands, restrictive performance standards shall be imposed to limit the physical effects of industrial activities. Permitted Uses • Business offices, public parks / recreation services, production, processing, wholesale, agricultural production-crops, agricultural services, construction, special trade contractors, manufacturing, apparel and textile mill products, furniture and fixtures, printing and publishing, manufacturing, wholesale trade, auto dealers, eating and drinking places, finance, insurance and real estate Lot Standards • Minimum lot area – 20,000 square feet • Maximum lot coverage – 50%	General Industrial (GI)
Public Parks (P-1)	Purpose	PS

District	Purpose, Permitted Uses[1] and Lot Standards[2]	Corresponding Comprehensive Plan Designation
	• The P-1 district provides land for publicly owned open space, parkland, and trails. It is intended for city parks, recreational facilities, trails, paths, and open space publicly owned within the city. Permitted Uses • Public parks, recreation and leisure facilities and services, beekeeping, US Postal Service, wireless communication structures and facilities, electric services, gas production and distribution, utility and sanitary service, water supply, eating place, temporary food vendor, cemetery, camp and recreational vehicle park, commercial sports, amusement recreation services, elementary and secondary schools, child day care services, museums and art galleries, dwelling units for caretakers/watchman, and police and fire stations Lot Standards • None	
Overlay		
Freeway	Purpose • It is the purpose of the freeway overlay district to allow and regulate the use of freeway signage. Lot Standards • Regulations regarding freeway signage can be found in Section 10.1710.	N/A
Greenway	Purpose • To regulate areas designated in the Greenway Comprehensive Plan Overlay. Permitted uses • Streets, roads, bridges, and paths where necessary for access or crossings, provided these uses are designed and constructed to minimize intrusion into riparian areas. • Drainage facilities, utilities, and irrigation pumps. • Water-related and water-dependent uses. • Replacement of existing structures with structures in the same location that do not disturb additional riparian area. • Interpretive and educational displays, and overlooks, including benches and outdoor furniture. • Interpretive and educational displays. • Habitat enhancement activities.	Greenway
Administrative Mapping		
Planned Development	Purpose • For tracking and mapping of parcels that have received Preliminary Planned Unit Development (PUD) Plan approvals.	N/A
Restricted Zoning Administrative Mapping Category	Purpose • For tracking and mapping of parcels that have received a zone change with conditions of approval or stipulations as set forth in Section 10.204(B)(3)(C) or a General Land Use Plan (GLUP) Map amendment with conditions of approval or stipulations.	N/A

[1] *Permitted uses listed includes those permitted outright and as conditional uses.*

[2] *Lot standards summarize in the table are those specified for a specific zone, more general lot standards by use or pursuant to other provisions are not listed.*

KITTELSON & ASSOCIATES
851 SW 6th AVENUE, SUITE 600
PORTLAND, OR 97204
P 503.228.5230 F 503.273.8169

MEMORANDUM

Date: May 12, 2020 Project #: 23641.0

To: Virginia Elandt, Oregon Department of Transportation
Kar; MacNair, City of Medford

From: Matt Hughart, AICP, Matt Bell, and Miranda Barrus, Kittelson & Associates, Inc.

Project: I-5 Exit 30 Interchange Area Management Plan (IAMP)

Subject: Final TM#2B Appendix: Existing Inventory and Land Use Assumptions

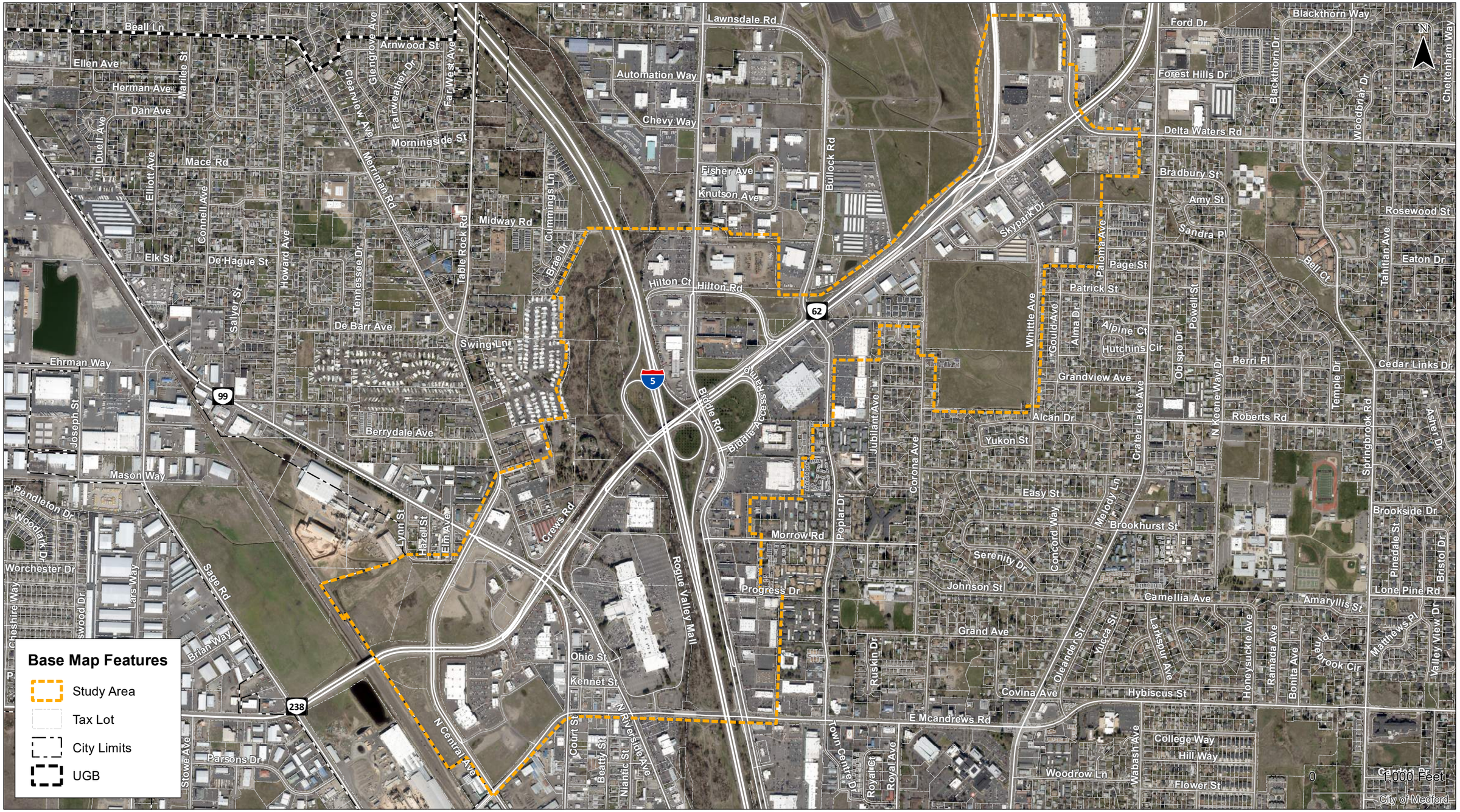
This memorandum provides an inventory of existing transportation facilities and services within the Interchange Management Study Area (IMSA) for the I-5, Exit 30 Interchange Area Management Plan (I-5, Exit 30 IAMP). Figure 1 illustrates the IMSA. This memorandum complements the memorandum prepared by Angelo Planning Group and OBEC that provides an inventory of existing land use, population, and demographics for the IMSA. The information provided in this memorandum serves as the basis for identifying existing gaps and deficiencies and for evaluating existing and projected future traffic conditions within the IMSA. This memorandum includes an inventory of the transportation facilities and services, right-of-way, and access points along the corridor. The information provided in this memorandum will be updated based on feedback from the project team and project advisory committees and refined throughout the planning process.

TRANSPORTATION INVENTORY

The transportation inventory documents the existing physical and operational characteristics of roadways within the IMSA including jurisdiction, functional classification, roadway characteristics (e.g. pavement width, shoulder width, number of lanes, lane width, etc.), stop control devices, bridges and culverts, bicycle and pedestrian facilities, freight facilities, and rail facilities.

Jurisdiction

Streets within the IMSA are owned and maintained by the Oregon Department of Transportation (ODOT), Jackson County (County), and City of Medford (City). Coordination is required among the jurisdictions to ensure the streets are planned, operated, maintained, and improved to safely meet public needs. Figure 2 illustrates the jurisdiction of the streets within the IMSA. As shown, ODOT owns and maintains the state highways (I-5, OR 238, OR 62, OR 62 bypass, OR 99) as well as segments of Riverside Avenue, Court Street, Biddle Road, Hilton Court-Road, and Old Biddle Ramp; the County owns and maintains segments of Crews Road and Corona Avenue, and the City owns and maintains all other public streets within the IMSA. It should be noted that ODOT is currently in the process of transferring the jurisdiction of OR 62 east of Whittle Avenue (mile 1.5 to 4.25) to the City of Medford.



Base Map Features

- Study Area
- Tax Lot
- City Limits
- UGB

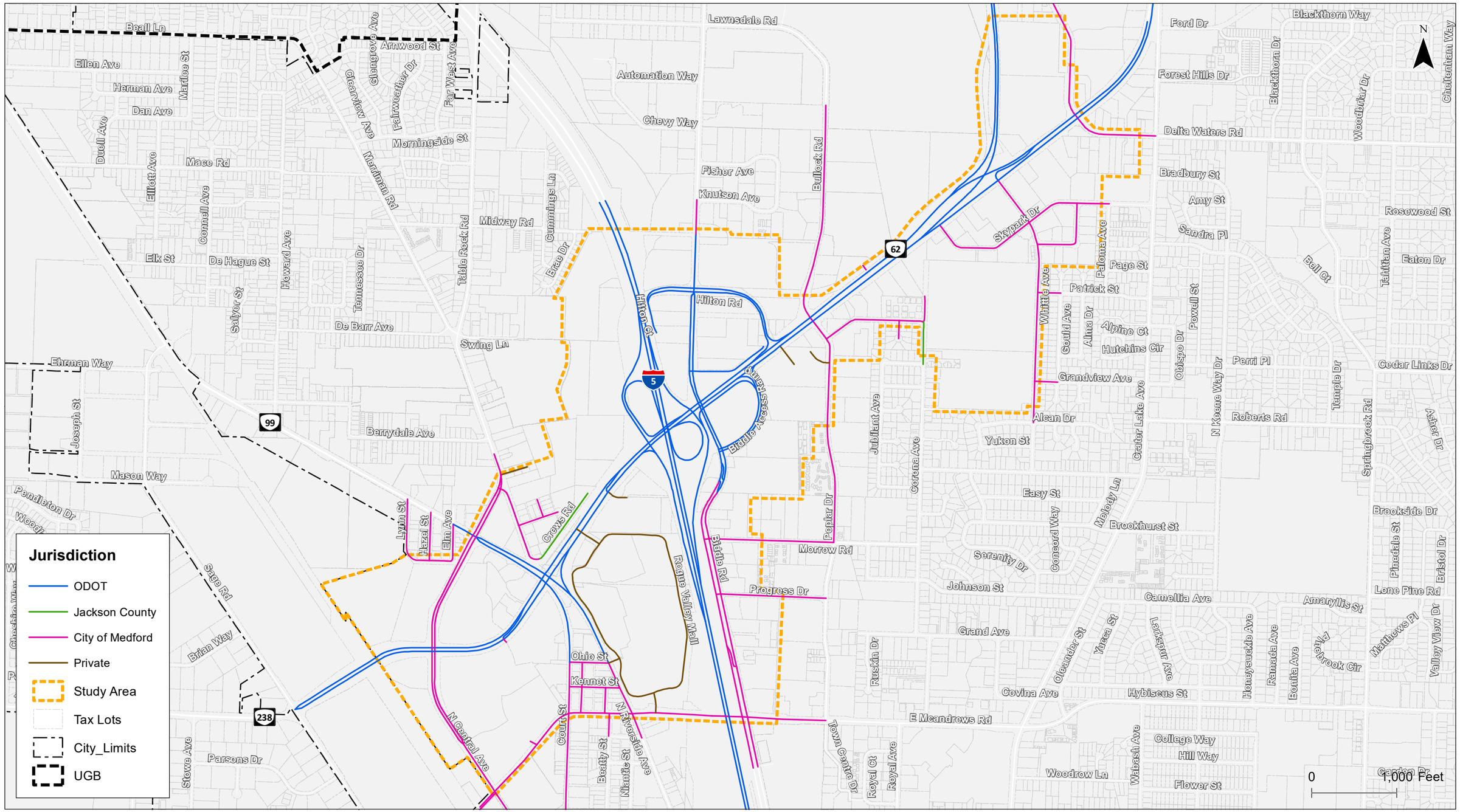
Interchange Management Study Area (IMSA)
Medford, Oregon

Figure **1**

Coordinate System: NAD 1983 2011 StatePlane Oregon South FIPS 3602 Ft Intl
Data Source: Delete if there isn't one.

KITTELSON & ASSOCIATES

H:\23123641 - Exit 30 IAMP\gis\TM2B1_IMSA.mxd - qpenpdx - 2:36 PM 5/12/2020



Roadway Maintenance/Jurisdiction
Medford, Oregon

Figure
2

H:\23\23641 - Exit 30 IAMP\gis\TM 2B\2_Jurisdiction.mxd - openpdx - 2:37 PM 5/12/2020

KITTELSON & ASSOCIATES

Coordinate System: NAD 1983 2011 StatePlane Oregon South FIPS 3602 Ft Intl

Functional Classification

The Oregon Highway Plan (OHP) identifies the functional classification of State highways within the IMSA and the City of Medford Transportation System Plan (TSP) identifies the functional classification of both state highways and City streets. A roadway's functional classification defines its role in the transportation system and its desired operational and design characteristics such as right-of-way, pavement width, pedestrian and bicycle facilities, and driveway (access) spacing standards. Table 1 summarizes the functional classifications of roadways within the IMSA and illustrates the differences in classification by jurisdiction. The classification shown in bold highlights the jurisdictional ownership of the roadway. As noted, there are several inconsistencies amongst the Federal and Local classifications that will need to be addressed as part of this planning process of future Medford Transportation System Plan updates. Figure 3 illustrates the functional classification of streets within the IMSA per the Medford TSP.

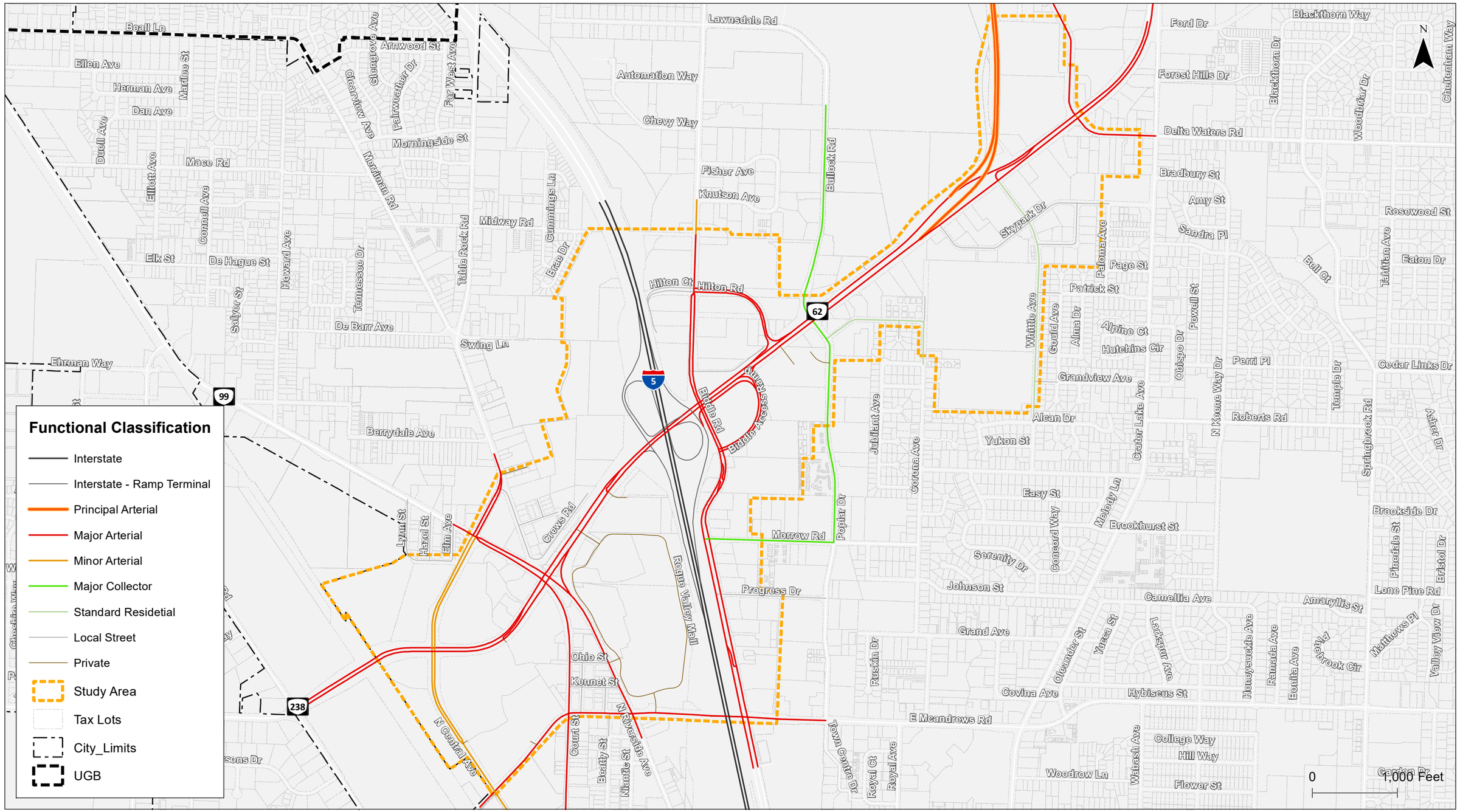
Table 1: Functional Classification Comparison

Roadway	Functional Classification		
	Federal	State	Local
OR 238	Principal Arterial	**District Highway**	Major Arterial
OR 62[1]	Principal Arterial	**Statewide Highway**	Major Arterial
OR 62 Jug Handle	Principal Arterial	**Local Interest Road**	Major Arterial
OR 62 Bypass	Principal Arterial	**Statewide Highway**	Principal Arterial
OR 99 (north of OR 238-OR 62)	Principal Arterial	**District Highway**	Major Arterial
Riverside Avenue	Principal Arterial		**Major Arterial**
Court Street	Principal Arterial		**Major Arterial**
Table Rock Road	Minor Arterial		**Major Arterial**
Central Avenue	Minor Arterial		**Minor Arterial**
Biddle Road	Minor Arterial	**Local Interest Road**	Major Arterial
Biddle Road (south of Jug Handle)	Minor Arterial		**Major Arterial**
Hilton Road (east of Biddle Road)	Local	**Local Interest Road**	Major Arterial
Bullock Road	Collector		Major Collector
Poplar Drive	Collector		**Major Collector**
Sky Park Drive			**Local Street**
Whittle Avenue			**Standard Residential**
Delta Waters Road (north of OR 62)	Collector		**Major Arterial**
Delta waters Road (south of OR 62)	Minor Arterial		**Major Arterial**

1. ODOT is currently in the process of transferring the jurisdiction of OR 62 east of Whittle Avenue (mile 1.5 to 4.25) to the City of Medford.

Roadway Characteristics

Roadway characteristics within the IMSA were inventoried using Geographic Information System (GIS) data obtained from ODOT and the City of Medford. The data was supplemented with information obtained from aerial images of the study area and through a site visit. The data include pavement and shoulder width, number and width of travel lanes, pavement type and condition, median locations, on-street parking locations, and posted speed limits within the IMSA.



Functional Classification
Medford, Oregon

Figure **3**

H:\23\23641 - Exit 30 IAMP\gis\TM2B3_Functional Classification.mxd - openpdx - 2:38 PM 5/12/2020

KITTELSON & ASSOCIATES

Coordinate System: NAD 1983 2011 StatePlane Oregon South FIPS 3602 Ft Intl

Pavement Width

Pavement width data for streets within the IMSA is currently unavailable. However, the data can be derived from the number and width of travel lanes and should width.

Shoulder Width

Shoulder width data is available for OR 238, OR 62, OR 62 Bypass, OR 99, Biddle Road, and Hilton Court-Road. Figure 4 illustrates the shoulder width data. As shown, 6-8 foot "shoulders" are generally provided along both sides of OR 62 with 0-2 foot "shoulders" adjacent to raised median islands – while the data identifies the facilities on OR 62 as "shoulders," aerial imagery indicates that the facilities are on-street bike lanes and buffered bike lanes. Additional information on these facilities is provided below.

Number of Lanes

Number of lanes data is available for OR 238, OR 62, OR 62 Bypass, OR 99, Biddle Road, and Hilton Court-Road. Figure 5 illustrates the number of lanes data. As shown, 2-3 lanes are generally provided along both sides of OR 62 – the segments with raised median islands are shown with 2-3 lanes in each direction, while the segments without raised median islands are shown with 5-6 lanes.

Lane Width

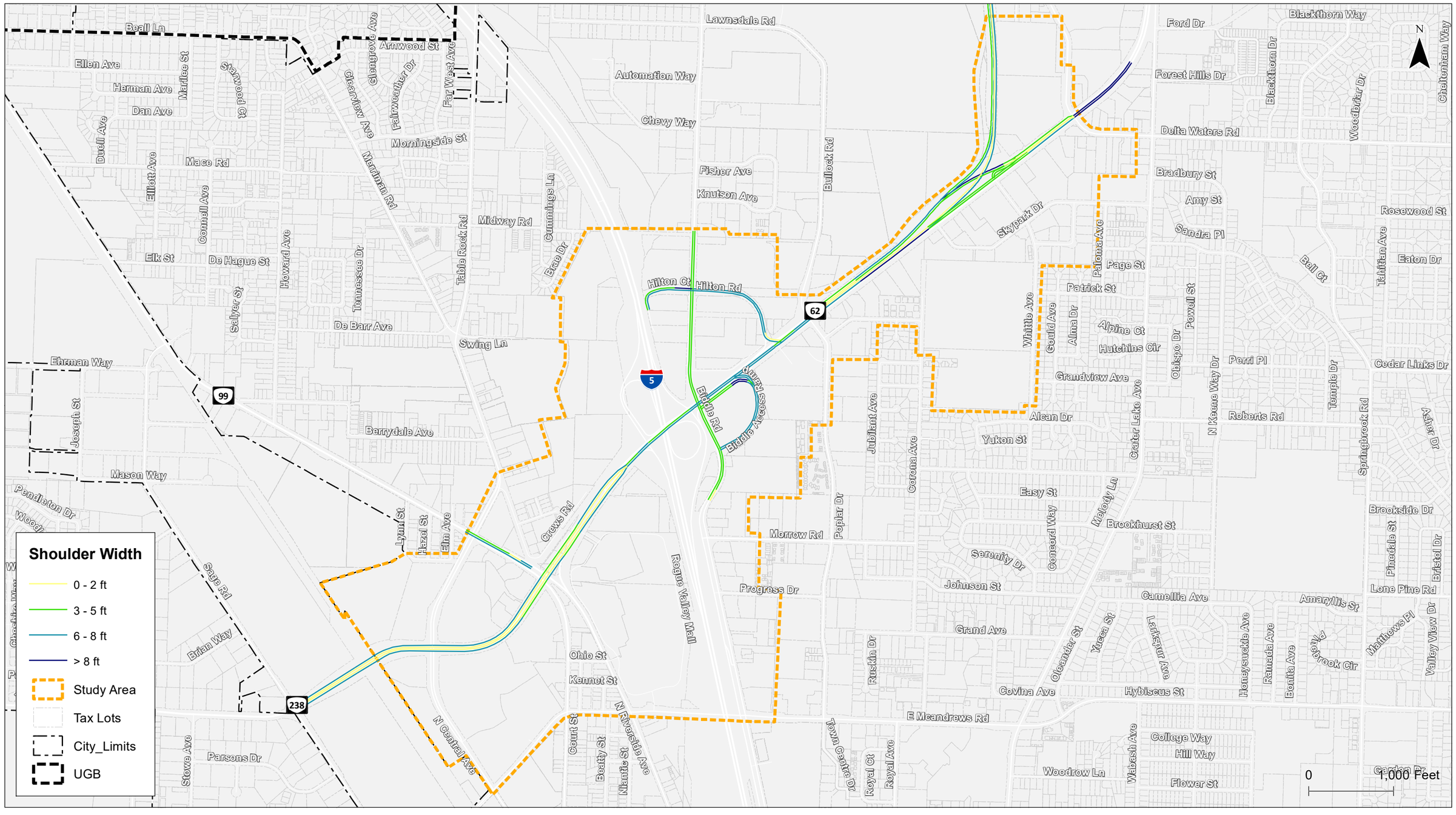
Lane width data is available for OR 238, OR 62, OR 62 Bypass, Biddle Road, and Hilton Court-Road. The data shows that 12-foot lanes are generally provided along both sides of OR 62 as well as most other state facilities within the IMSA. The exceptions include Biddle Road, which has 11-foot lanes in both directions, and the Biddle Road slip lane, which has a single 14-foot travel lane. Figure 6 illustrates the lane width data.

Pavement Type

Pavement type data is available for all streets within the within the IMSA. The data shows that most streets are paved with asphalt while one street (Adams Lane) is dirt and one street (Corona Avenue, north of Hilton Road) is gravel – aerial imagery indicates that Corona Avenue, north of Hilton Road is now paved with Asphalt. Figure 7 illustrates pavement type.

Pavement Condition

ODOT conducts pavement condition surveys biennially. It employs two separate and distinct pavement rating procedures; one for NHS routes, which consist of the most important routes in the County, and one for non-NHS routes. The NHS routes are surveyed using the Objective Rating Method, which provides detailed data on pavement surface distress types, severity, and quantities. The methodology is time- and labor-intensive. For non-NHS highways, ODOT applies a subjective Good-Fair-Poor (GFP) Rating Method, which relies on visual inspection of pavement surface and is rated from 1.0 to 5.0 based on the ride quality and surface distresses. The indexes resulting from both methodologies are then categorized into five conditions: "Very Good", "Good", "Fair", "Poor" and "Very Poor."



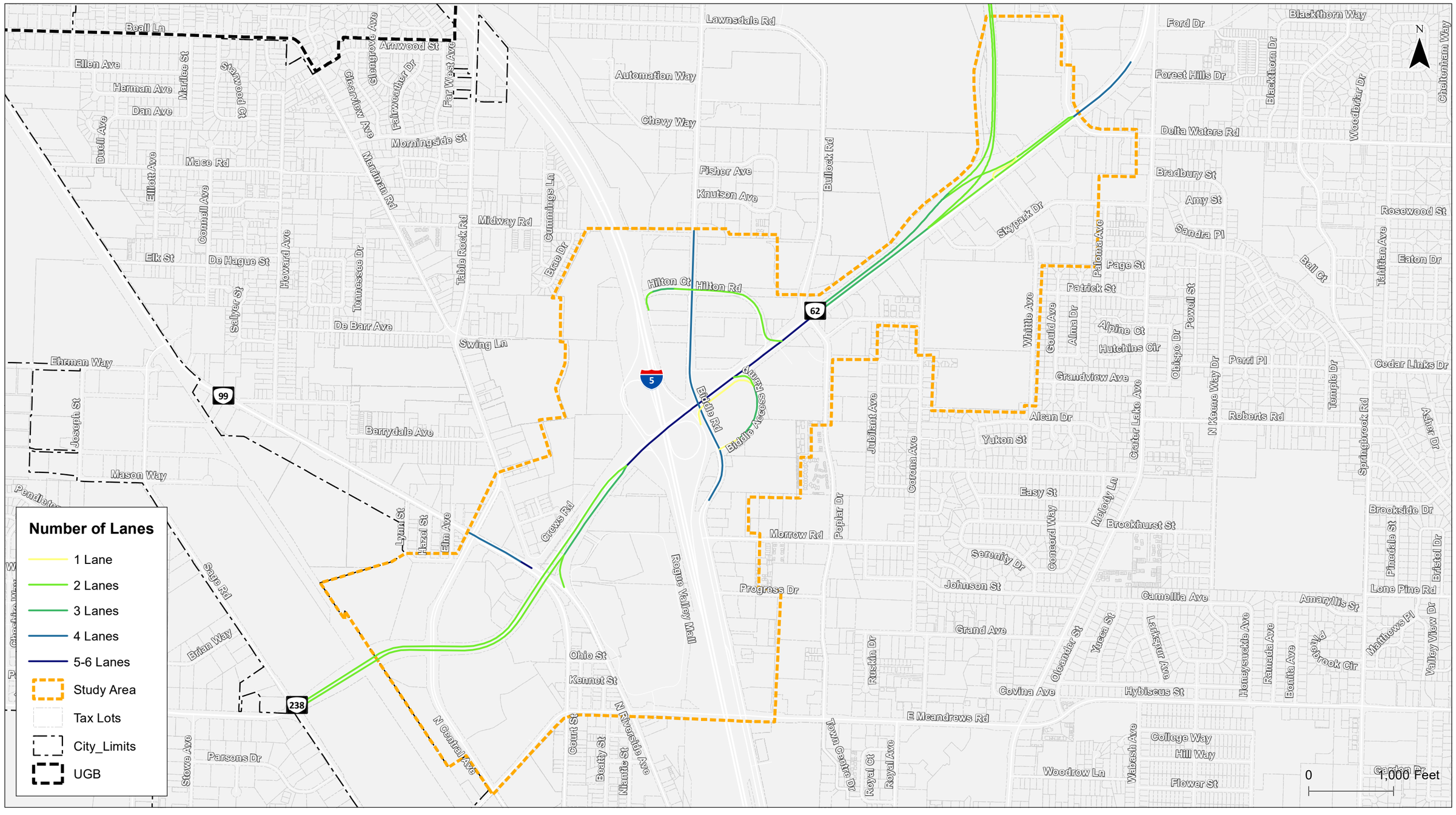
Shoulder Width
Medford, Oregon

Figure
4

H:\23123641 - Exit 30 IAMP\gis\TM2B\4_Shoulder Width.mxd - openpdx - 2:39 PM 5/12/2020

KITTELSON & ASSOCIATES

Coordinate System: NAD 1983 2011 StatePlane Oregon South FIPS 3602 Ft Intl



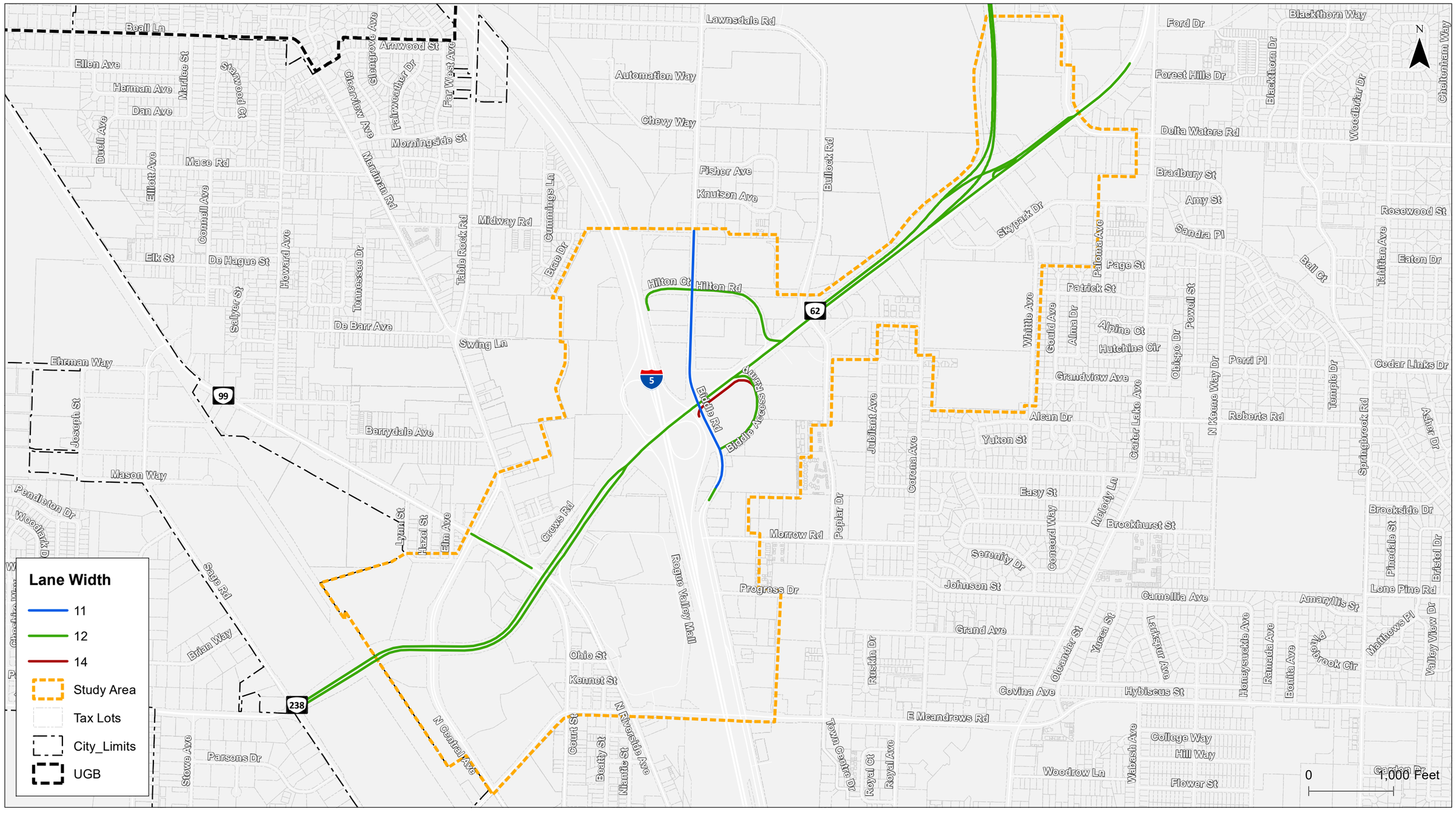
Number of Lanes
Medford, Oregon

Figure **5**

H:\23123641 - Exit 30 IAMP\gis\TM2B\5_Number of Lanes.mxd - openpdx - 2:39 PM 5/12/2020

KITTELSON & ASSOCIATES

Coordinate System: NAD 1983 2011 StatePlane Oregon South FIPS 3602 Ft Intl



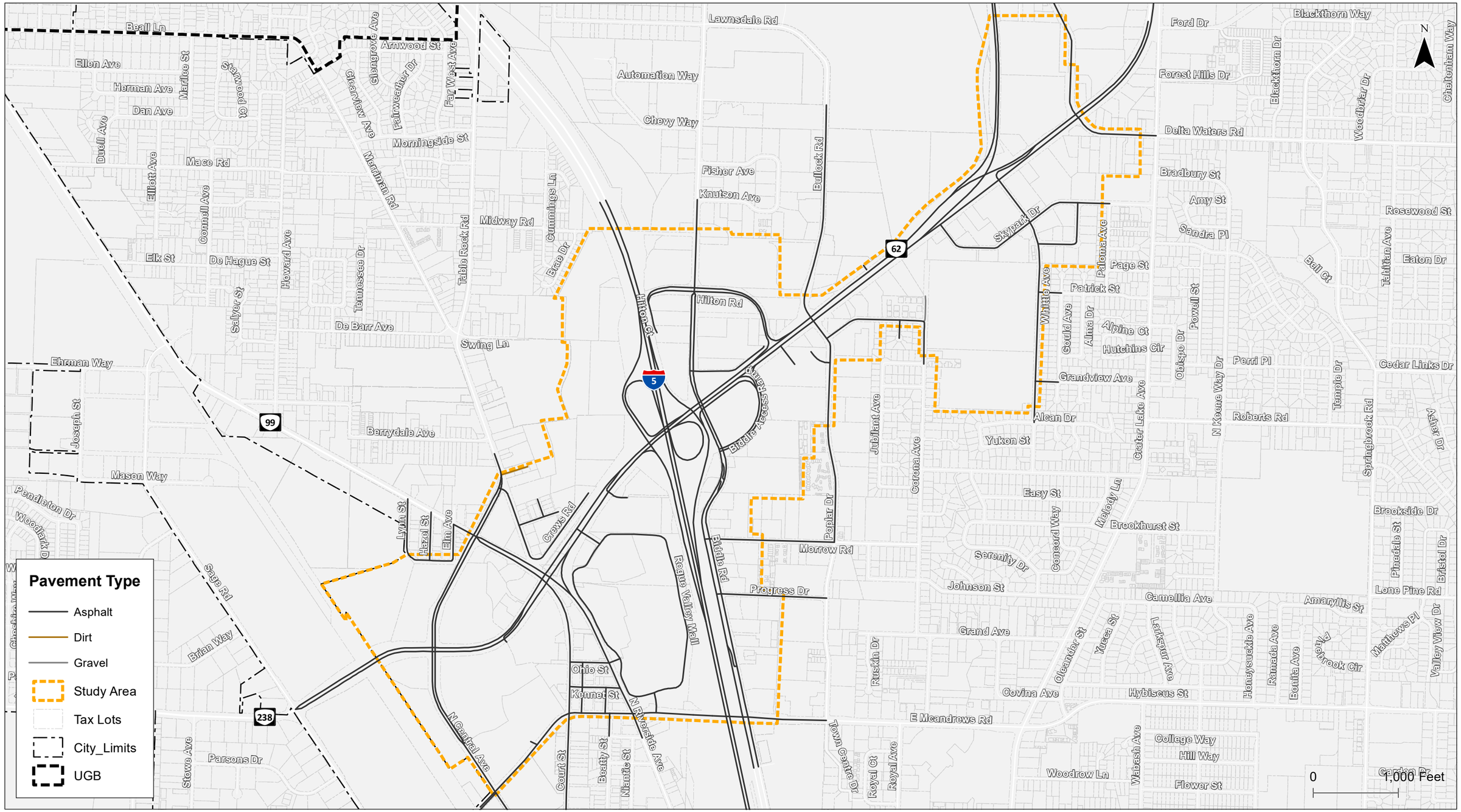
Lane Width
Medford, Oregon

Figure
6

H:\23123641 - Exit 30 IAMP\gis\TM2B6_Lane Width.mxd - qpenpdx - 2:41 PM 5/12/2020

KITTELSON & ASSOCIATES

Coordinate System: NAD 1983 2011 StatePlane Oregon South FIPS 3602 Ft Intl



Pavement Type
Medford, Oregon

Figure
7

H:\23\23641 - Exit 30 IAMP\gis\TM2B\7_Pavement Type.mxd - openpdx - 2:42 PM 5/12/2020

KITTELSON & ASSOCIATES

Coordinate System: NAD 1983 2011 StatePlane Oregon South FIPS 3602 Ft Intl

Pavement conditions data is available for OR 238, OR 62, and OR 99. Figure 8 illustrates the pavement condition data, which reflects conditions in 2016. As shown, OR 238 and the segment of OR 99 north of OR 238 are in poor condition and the segment of OR 62 from OR 99 to east of Bullock-Poplar Road is in fair condition. The remaining segment of OR 62 is in good condition.

Medians

Median data is available for OR 238, OR 62, OR 99, and several other streets within the IMSA. The data provides the location, size, and type (e.g. barrier, curbed, painted, painted center turn lane) of medians. Figure 9 illustrates the location and type of medians. As shown, medians are located along most of OR 62 with the exception of the segment between the I-5 ramp terminals and two segments east of Bolluck Road-Poplar Drive – aerial imagery indicates that the two segments east of Bullock Road-Poplar Drive now include curbed medians.

On-street Parking

On-street parking data is not available for streets within the IMSA; however, aerial imagery and field observations indicate that on-street parking is generally not allowed within the IMSA.

Posted Speed Limits

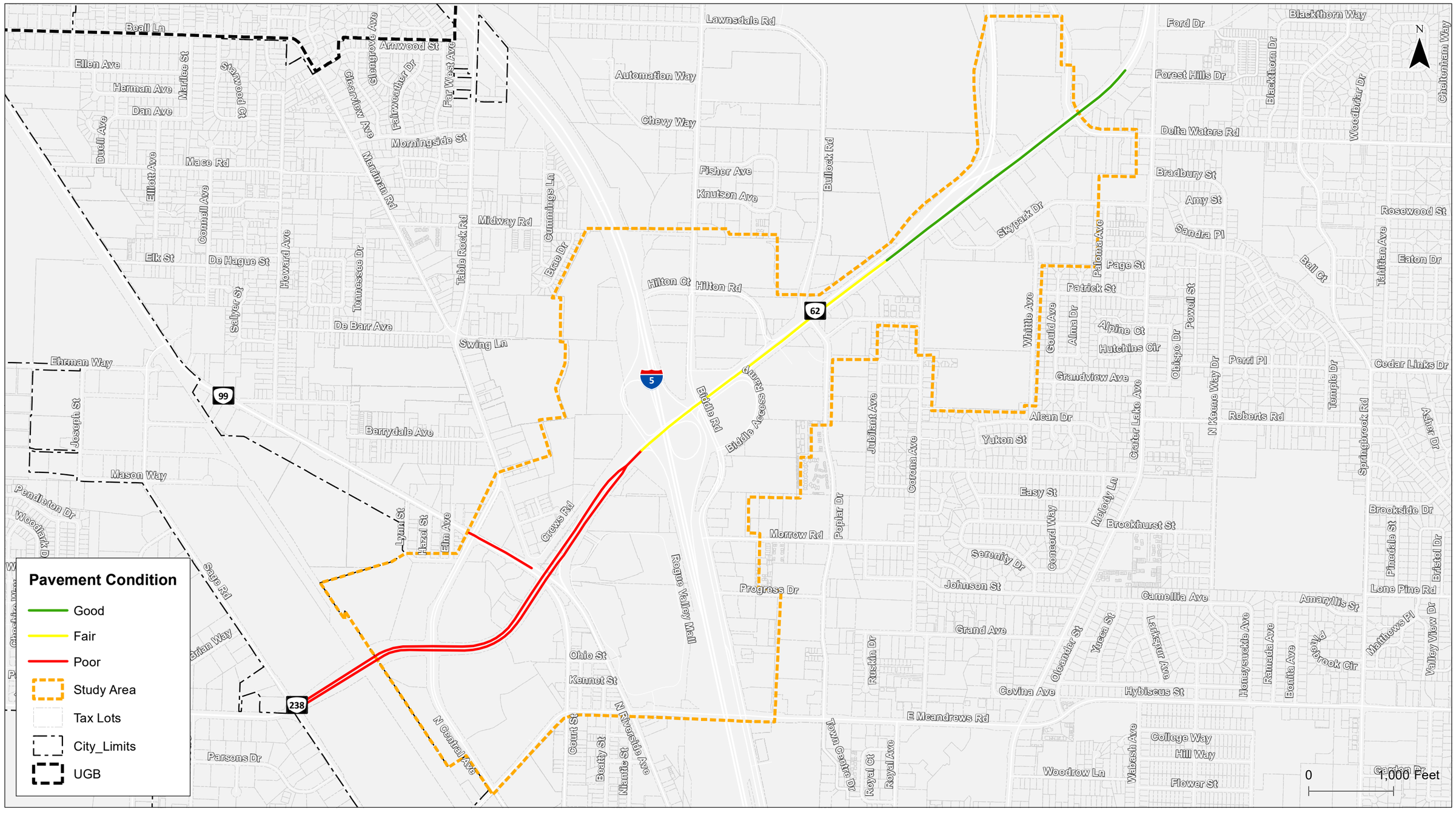
Posted speed limits typically correspond with functional classifications, with higher classifications (e.g. arterials and collectors) having greater speeds and lower classifications (e.g. locals) having lesser speeds. Posted speed limit data is available for most streets within the IMSA. Figure 10 illustrates the posted speed limits data. As shown, the segment of OR 62 from OR 99 to Bullock-Poplar Road is posted 35 miles per hour (mph) while all other segments of OR 62 are posted 40 mph and above.

Stop Control Devices

The majority of intersections within the IMSA are signalized with the exception of several local street and private connections. Figure 11 illustrates the stop control devices at the study intersections. As shown, nine of the 15 study intersections are signalized and six are stop controlled.

Bridges and Culverts

There are seven bridges and three culverts located within the IMSA. Figure 12 illustrates the location of the bridges and culverts along State and County facilities. ODOT owns and maintains the bridges and culverts shown along I-5, OR 62, and OR 238 and the County owns and maintains the bridge shown along McAndrews Road, west of I-5. Table 2 summarizes key information related to the bridges and culverts from ODOT's bridge database.



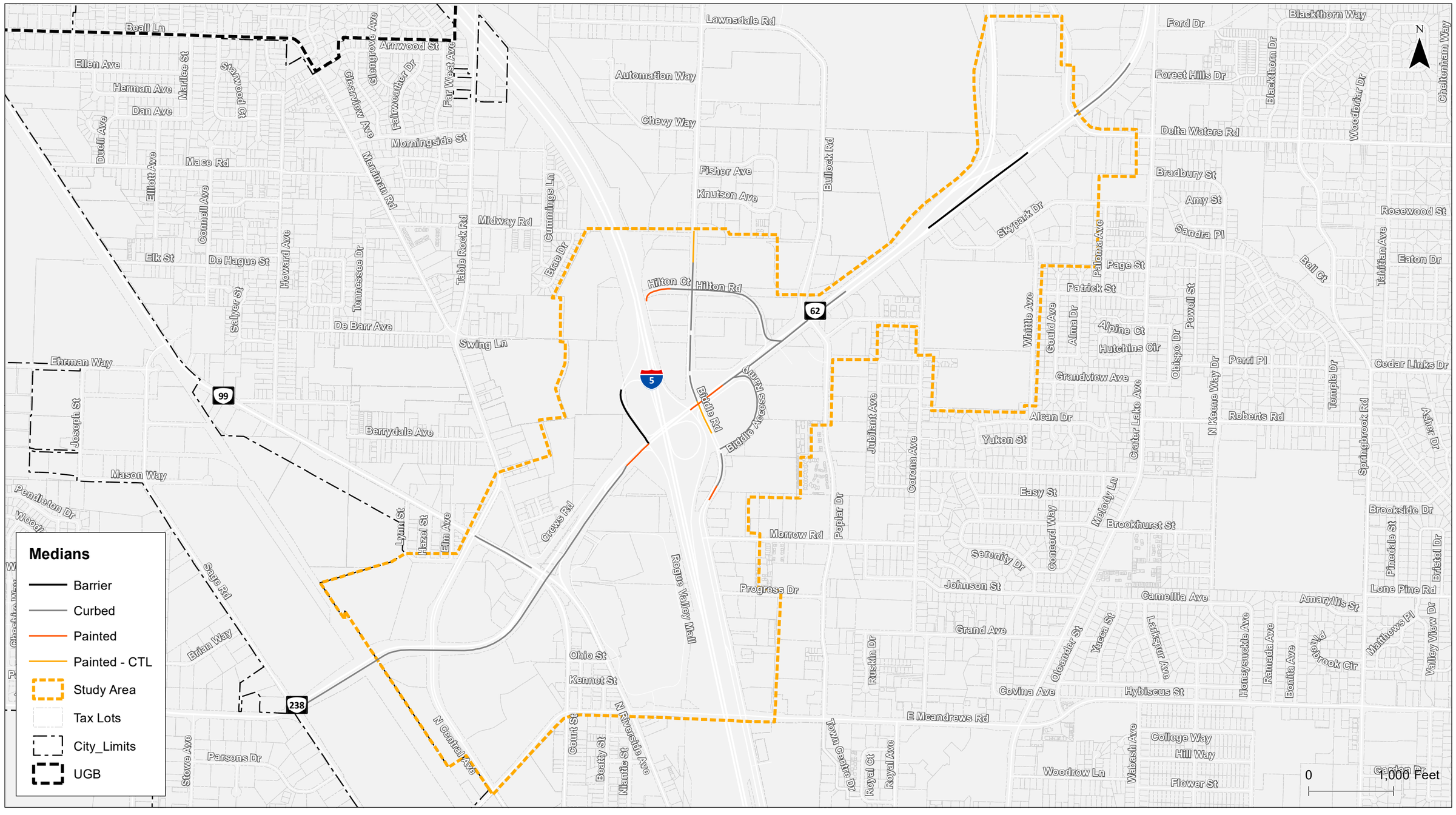
Pavement Condition
Medford, Oregon

Figure
8

H:\23123641 - Exit 30 IAMP\gis\TM2B\8_Pavement Condition.mxd - openpdx - 2:42 PM 5/12/2020

KITTELSON & ASSOCIATES

Coordinate System: NAD 1983 2011 StatePlane Oregon South FIPS 3602 Ft Intl



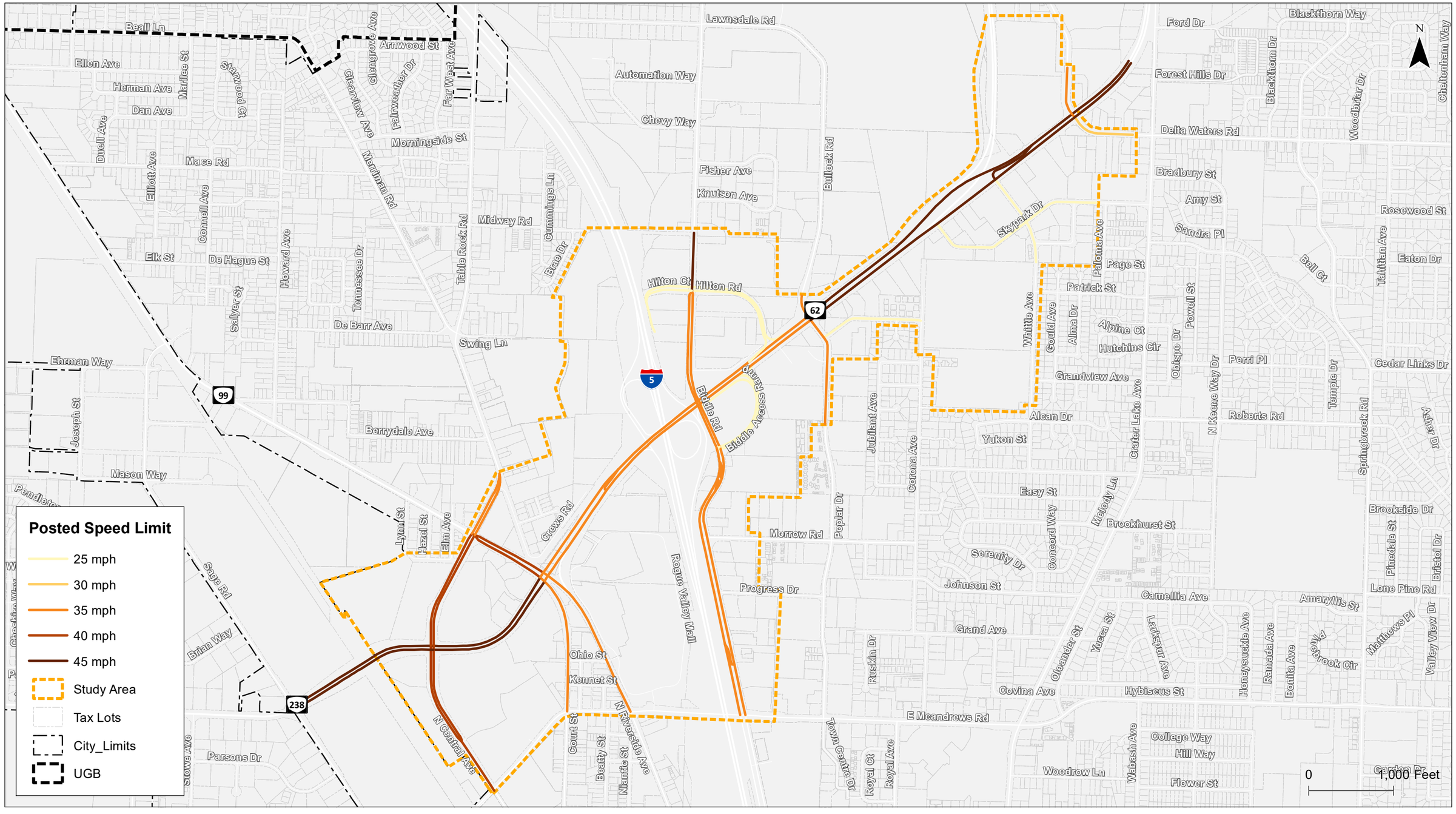
Medians
Medford, Oregon

Figure
9

KITTELSON & ASSOCIATES

Coordinate System: NAD 1983 2011 StatePlane Oregon South FIPS 3602 Ft Intl

H:\23123641 - Exit 30 IAMP\gis\TM2B\9_Medians.mxd - openpdx - 2:43 PM 5/12/2020



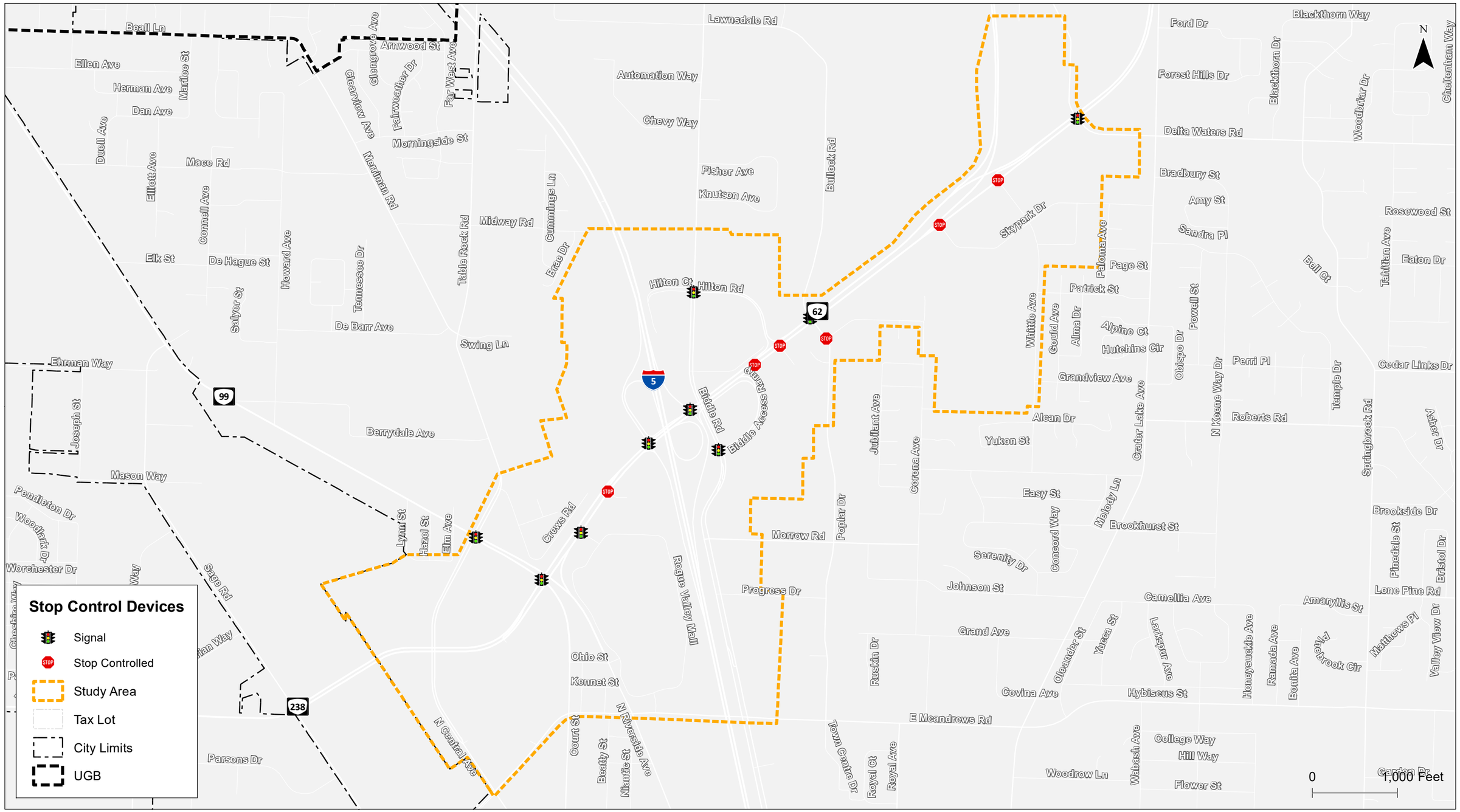
Posted Speed Limit
Medford, Oregon

Figure
10

H:\23\23641 - Exit 30 IAMP\gis\TM\2B\10_Posted Speed Limit.mxd - openpdx - 2:43 PM 5/12/2020

KITTELSON & ASSOCIATES

Coordinate System: NAD 1983 2011 StatePlane Oregon South FIPS 3602 Ft Intl



Stop Control Devices

- Signal
- Stop Controlled
- Study Area
- Tax Lot
- City Limits
- UGB

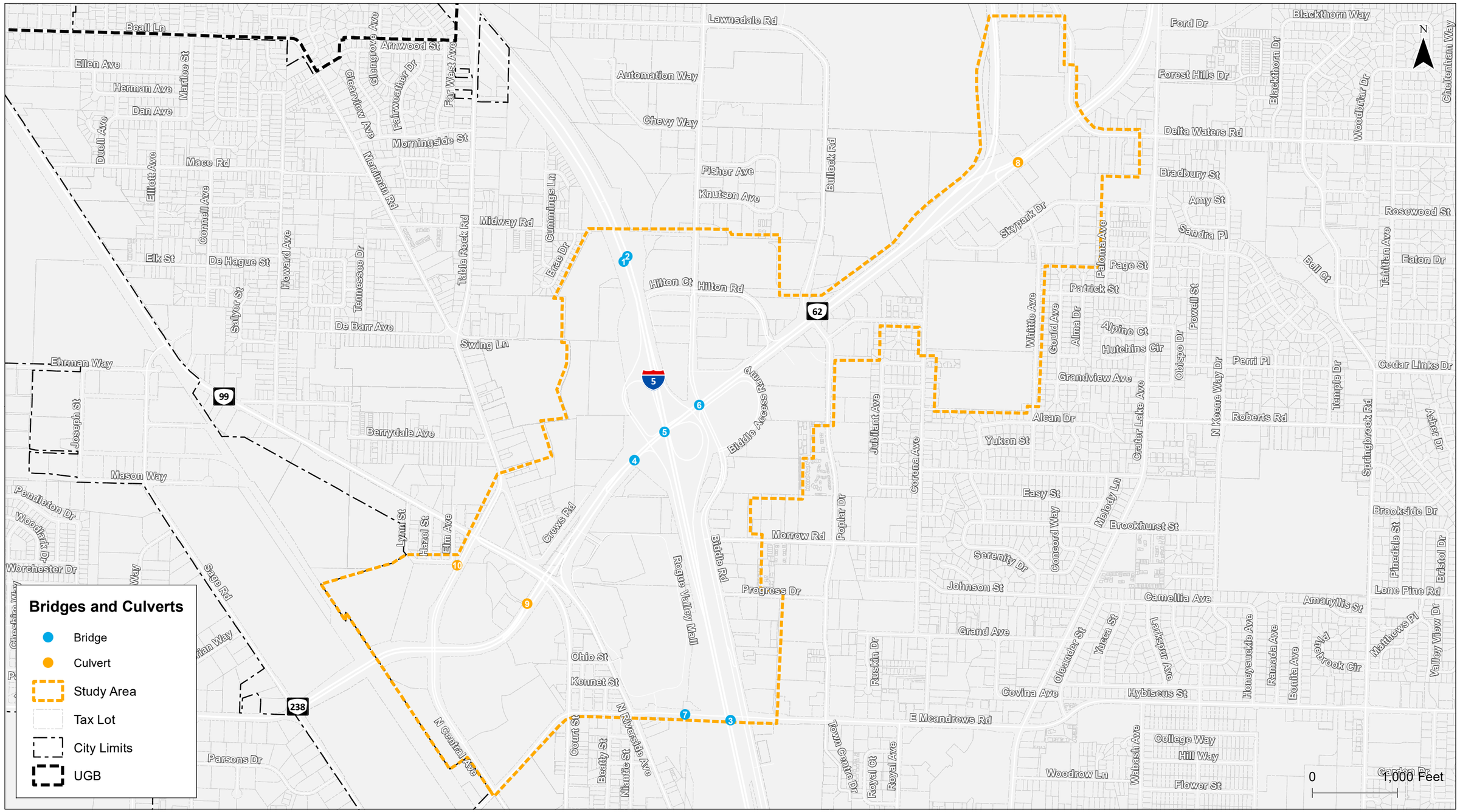
Stop Control Devices
Medford, Oregon

Figure **11**

H:\23\23641 - Exit 30 IAMP\gis\TM2B\11_Stop Control Devices.mxd - openpdx - 2:44 PM 5/12/2020

KITTELSON & ASSOCIATES

Coordinate System: NAD 1983 2011 StatePlane Oregon South FIPS 3602 Ft Intl



Bridges and Culverts
Medford, Oregon

Figure
12

H:\23\23641 - Exit 30 IAMP\gis\TM2B\12_Bridges and Culverts.mxd - openpdx - 2:45 PM 5/12/2020

KITTELSON & ASSOCIATES

Coordinate System: NAD 1983 2011 StatePlane Oregon South FIPS 3602 Ft Intl
Data Source: Delete if there isn't one.

Table 2: Bridges and Culverts

Map ID	Location	Bridge ID	Carries	Crosses	Status	Sufficiency Rating
Bridges						
1	I-5	08771S	I-5 SB	Bear Creek	Not Deficient	84.8
2	I-5	08771N	I-5 NB	Bear Creek	Not Deficient	84.8
3	I-5	08851	I-5	McAndrews Rd	Functionally Obsolete	73.8
4	OR 62	06605A	OR 62	Bear Creek	Not Deficient	82.0
5	OR 62	08821	OR 62	I-5	Functionally Obsolete	79.0
6	OR 62	09590	OR 62	Biddle Road	Functionally Obsolete	64.6
7	McAndrews Rd	20043	McAndrews Rd	Bear Creek	Not Deficient	90.1
Culverts						
8	OR 62	0P247	OR 62	N/A	N/A	85.0
9	OR 238	18777	OR 238	N/A	N/A	97.0
10	OR 238	18778	OR 238	N/A	N/A	97.0

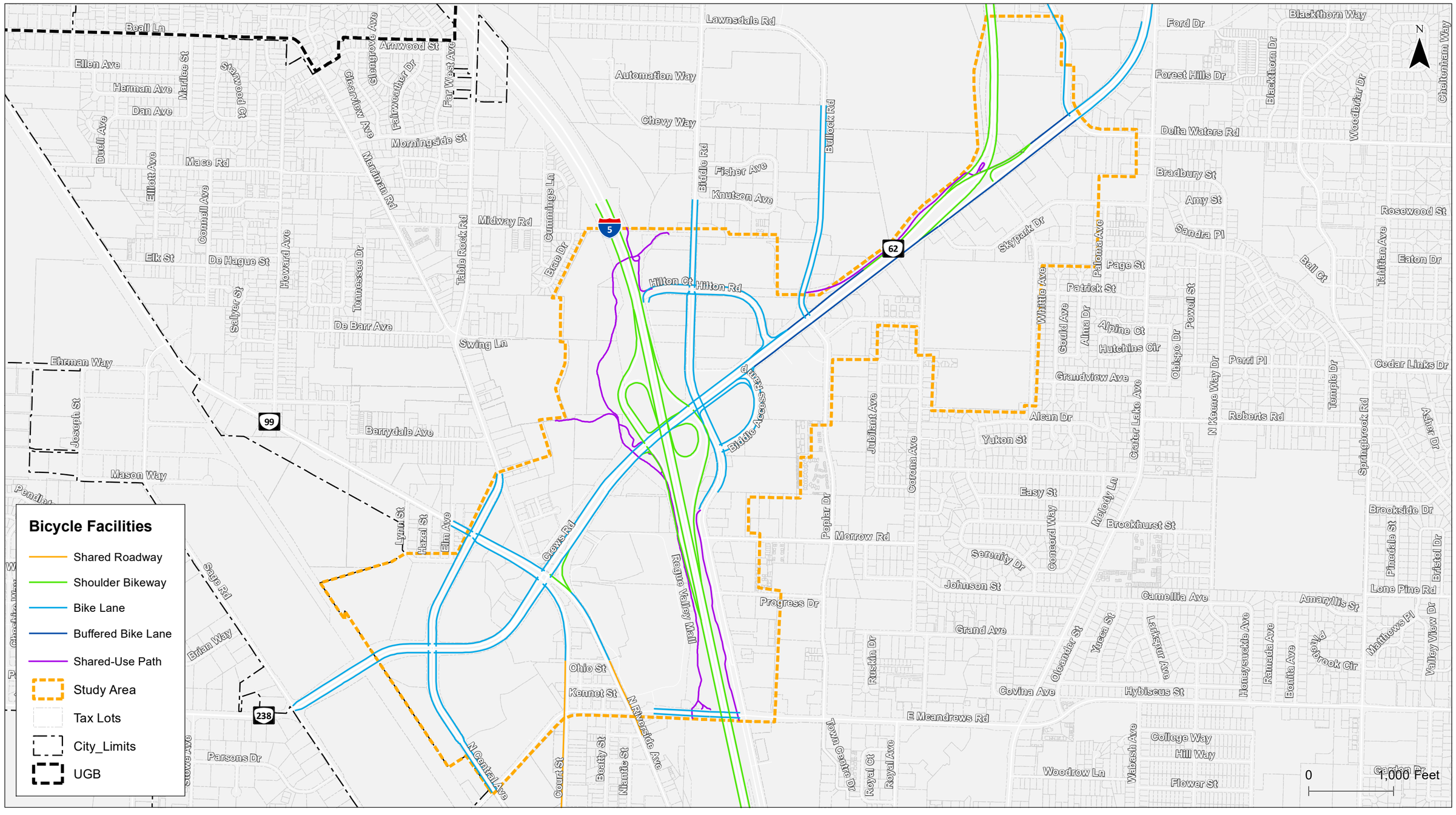
As shown in Table 2, three bridges are functionally obsolete, which means they were built to outdated construction standards (e.g. narrow travel lanes, narrow shoulders, etc.) and/or not built for current traffic volumes. The bridges also have a sufficiency rating between 50 and 80, which means they are in fair condition and rehabilitation, if cost-effective, will bring the bridge up to current standards. All other bridges and culverts are built to standard and have sufficiency rating above 80; bridges with sufficiency ratings above 80 may have specific elements that do not meet current standards, but overall are considered to be in good or adequate condition in all areas and are not eligible for federal funding.

Bicycle and Pedestrian Facilities

Bicycle and pedestrian facilities within the IMSA were inventoried using Geographic Information System (GIS) data obtained from ODOT and the City of Medford. The data was supplemented with information obtained from aerial images of the study area and through a site visit.

Bicycle Facilities

Bicycle facilities within the IMSA primarily consist of shared roadways, shoulder bikeways, on-street bike lanes, and shared-use paths as well as bicycle crossings at major intersections. Figure 13 illustrates the bicycle facilities within the IMSA. As shown, bike lanes and buffered bike lanes are located along both sides of OR 62 and bike lanes are located along the majority of other roadways within the IMSA – it can be difficult to differentiate between bike lanes and shoulder bikeways within the IMSA given that both bike lanes and shoulders are striped with a 4” stripe, also some have bike symbols and some do not. Therefore, for the purpose of this analysis, bike lanes are assumed where there is an adjacent sidewalk or where bike symbols are present.



Bicycle Facilities
Medford, Oregon

Figure
13

H:\23123641 - Exit 30 IAMP\gis\TM2B13_Bicycle Facilities.mxd - operpdx - 2:45 PM 5/12/2020

KITTELSON & ASSOCIATES

Coordinate System: NAD 1983 2011 StatePlane Oregon South FIPS 3602 Ft Intl

Pedestrian Facilities

Pedestrian facilities within the IMSA primarily consists of sidewalks and shared-use paths as well as signalized and unsignalized pedestrian crossings at major intersections. Figure 14 illustrates the pedestrian facilities within the IMSA. As shown, sidewalk are located along both sides of OR 62 as well as the majority of other roadways within the IMSA. Also shown, signalized pedestrian crossings are located at each of the signalized intersections.

Freight Facilities

Freight routes in the IMSA include Oregon Highway Plan (OHP) designated freight routes and National Highway System (NHS) routes. The Motor Carrier Transportation Division (MCTD) also includes designations for all state highways within the IMSA.

Freight Routes

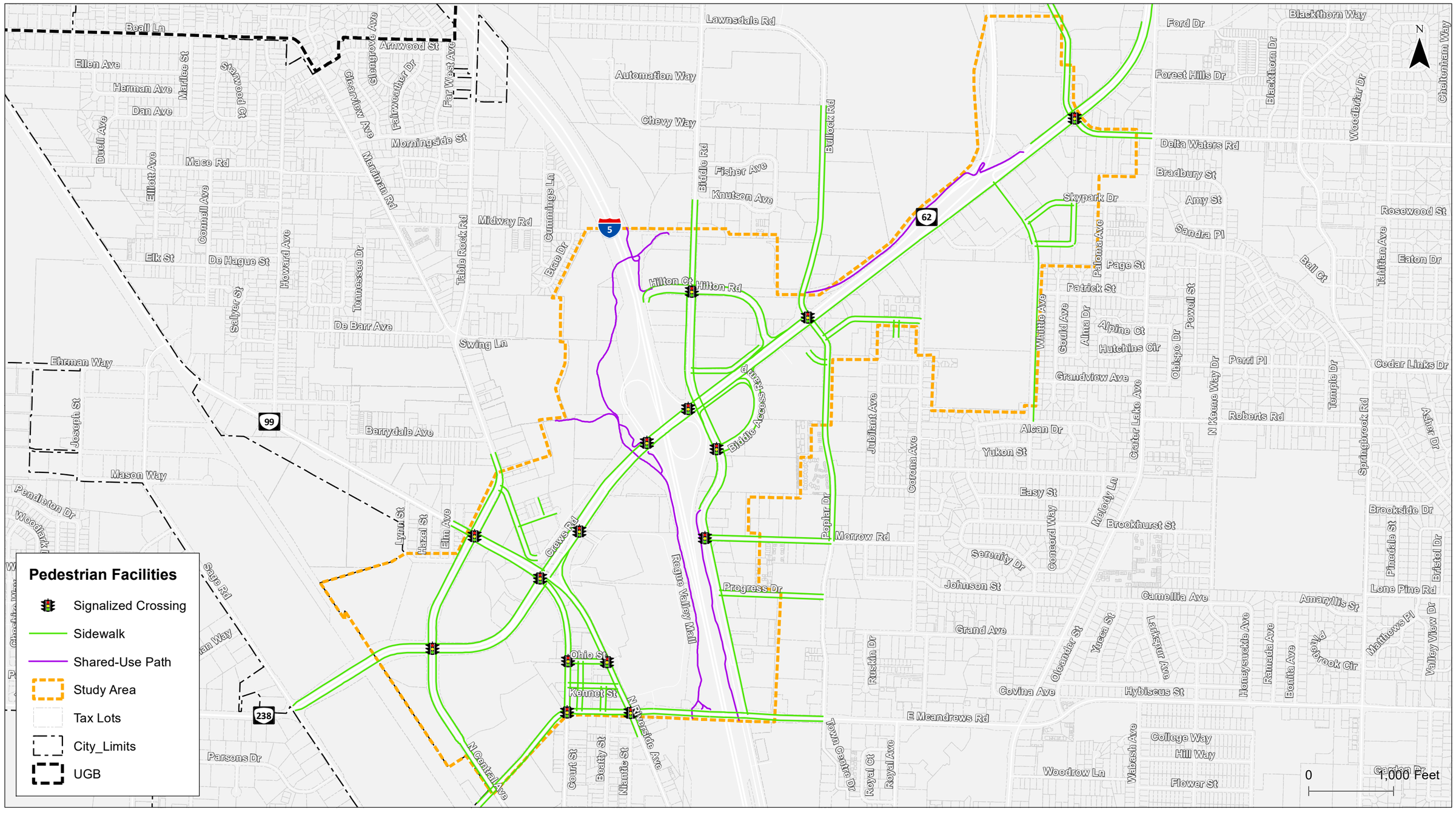
The primary purpose of the State Highway Freight System is to facilitate efficient and reliable interstate, intrastate, and regional truck movement through a designated freight system. This freight system, made up of Interstate highways and certain Statewide, Regional and District highways, includes routes that carry significant tonnage of freight by truck and serve as the primary interstate and intrastate highway freight connections to ports, intermodal terminals, and urban areas. Figure 15 illustrates the OHP designated freight routes within the IMSA. As shown, I-5, the segment of OR 62 from I-5 to the OR 62 Bypass, and the OR 62 Bypass are designated Freight Routes. The Freight Route designations impact highway design elements, such as roadway section width, median barrier type and width, and intersection design. Statewide Freight Routes also have higher mobility standards than other highways of the same classification.

National Highway System

The National Highway System (NHS) is a network of strategic highways within the United States, including the Interstate Highway System and other roads serving major airports, ports, rail or truck terminals, railway stations, pipeline terminals and other strategic transport facilities. In Oregon, the NHS highways include all the Interstate and Statewide Highways and intermodal connectors. Figure 15 also illustrates the location of NHS routes in the IMSA. As shown, nearly all roads within the study area or on NHS roads.

Freight Highway Bottlenecks

A freight highway bottleneck is a part of the transportation system that exhibits disproportionally high costs to the freight industry in terms of delay and unreliability. Based on the Oregon Freight Highway Bottleneck Project, there are no freight highway bottlenecks in the IMSA.



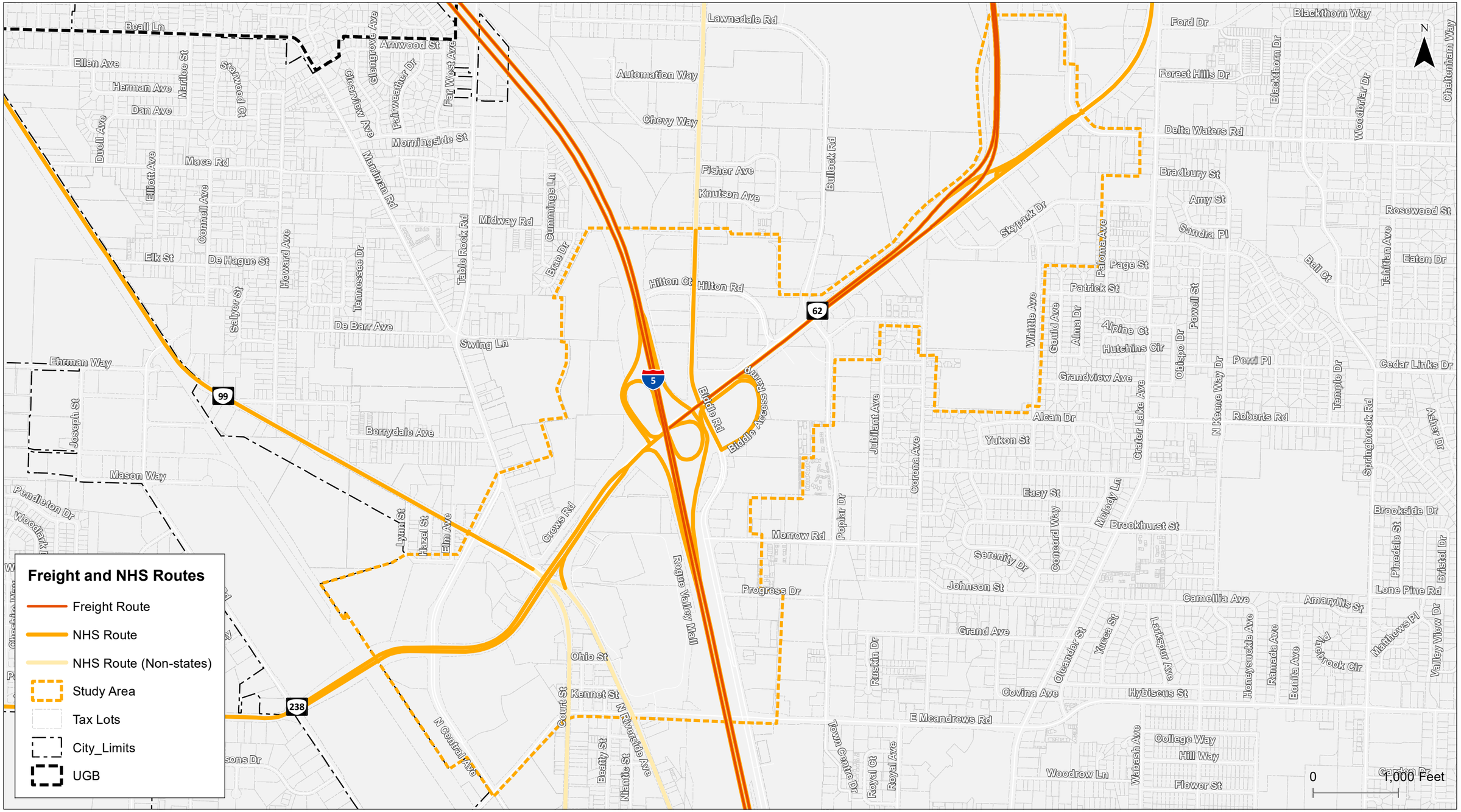
Pedestrian Facilities
Medford, Oregon

Figure
14

H:\23123641 - Exit 30 IAMP\gis\TM2B14_Pedestrian Facilities.mxd - openpdx - 2:46 PM 5/12/2020

KITTELSON & ASSOCIATES

Coordinate System: NAD 1983 2011 StatePlane Oregon South FIPS 3602 Ft Intl



Freight Routes and NHS Routes
Medford, Oregon

Figure **15**

H:\23\23641 - Exit 30 IAMP\gis\TM2B\15_Freight Routes.mxd - openpdx - 2:48 PM 5/12/2020

KITTELSON & ASSOCIATES

Coordinate System: NAD 1983 2011 StatePlane Oregon South FIPS 3602 Ft Intl

Intermodal Connectors

Intermodal connectors link airports, ports, rail terminals, and other passengers and freight facilities to Interstate and Statewide Highways and are of particular importance to Oregon's economy. State-owned intermodal connectors are either Regional or District Highways and are managed according to the state highway classification. Intermodal connectors within the IMSA include Biddle Road from the Biddle Road Jug handle to the north IMSA boundary and Hilton Road from Biddle Road to OR 62.

Highway Over-dimension Load Pinch Points

Highway over-dimensional load pinch points are physical features on the state highway system that restrict the movement of an over-dimension load because of height, width, weight or length constraints. Based on the There are no highway over-dimensional load pinch points within the IMSA.

Rail Facilities

There are no rail facilities within the IMSA. The closest rail facilities are located southeast of the IMSA and consist of multiple rail lines and a below grade rail crossing along OR 238. Figure 16 illustrates the location of the rail facilities.

RIGHT OF WAY INVENTORY

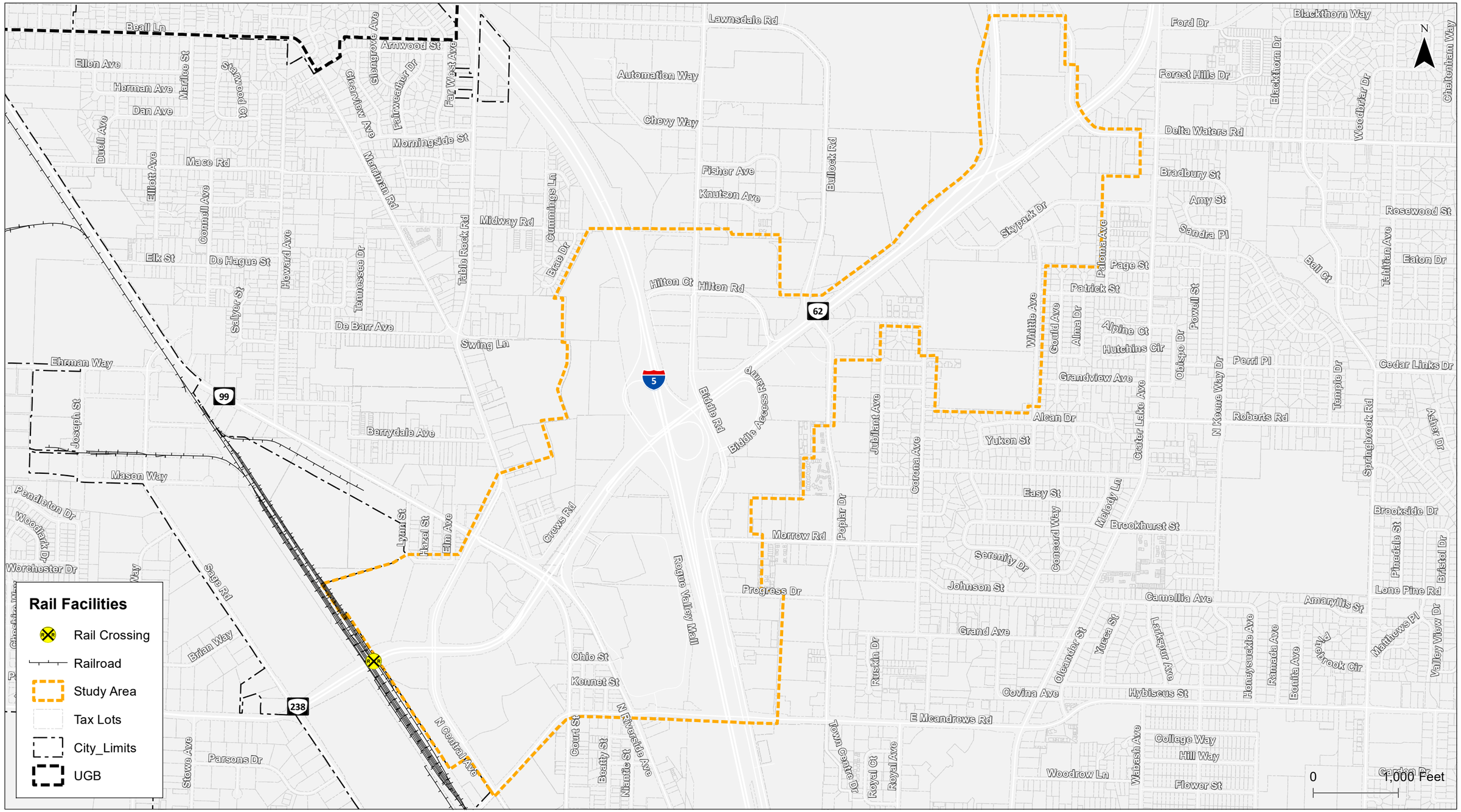
Right-of-way widths vary significantly within the IMSA. However, a cursory review of tax lot lines indicates that the existing right-of-way is sufficient along most of OR 62 as well as most other state and city facilities. Information on easements within the IMSA is currently not available. Figure 17 illustrates the tax lot lines overlaid on an aerial of the study area.

ACCESS INVENTORY

ODOT and the City of Medford have adopted access spacing standards for study area roadways. This section identifies ODOT's access spacing standards per Oregon Administrative Rule (OAR) 734 Division 51, and the City's access spacing standards per the current TSP. This section also identifies the access points along OR 62 and highlights access points within ¼ mile of the I-5 ramp terminal.

ODOT Access Spacing Standards

Access spacing standards for approaches to state highways are based on the classification of the highway and differ depending on average annual daily traffic (AADT) and posted speed. Table 3 summarizes the OHP classifications and designations of highways within the IMSA along with AADT, posted speeds, and the associated access spacing standards.



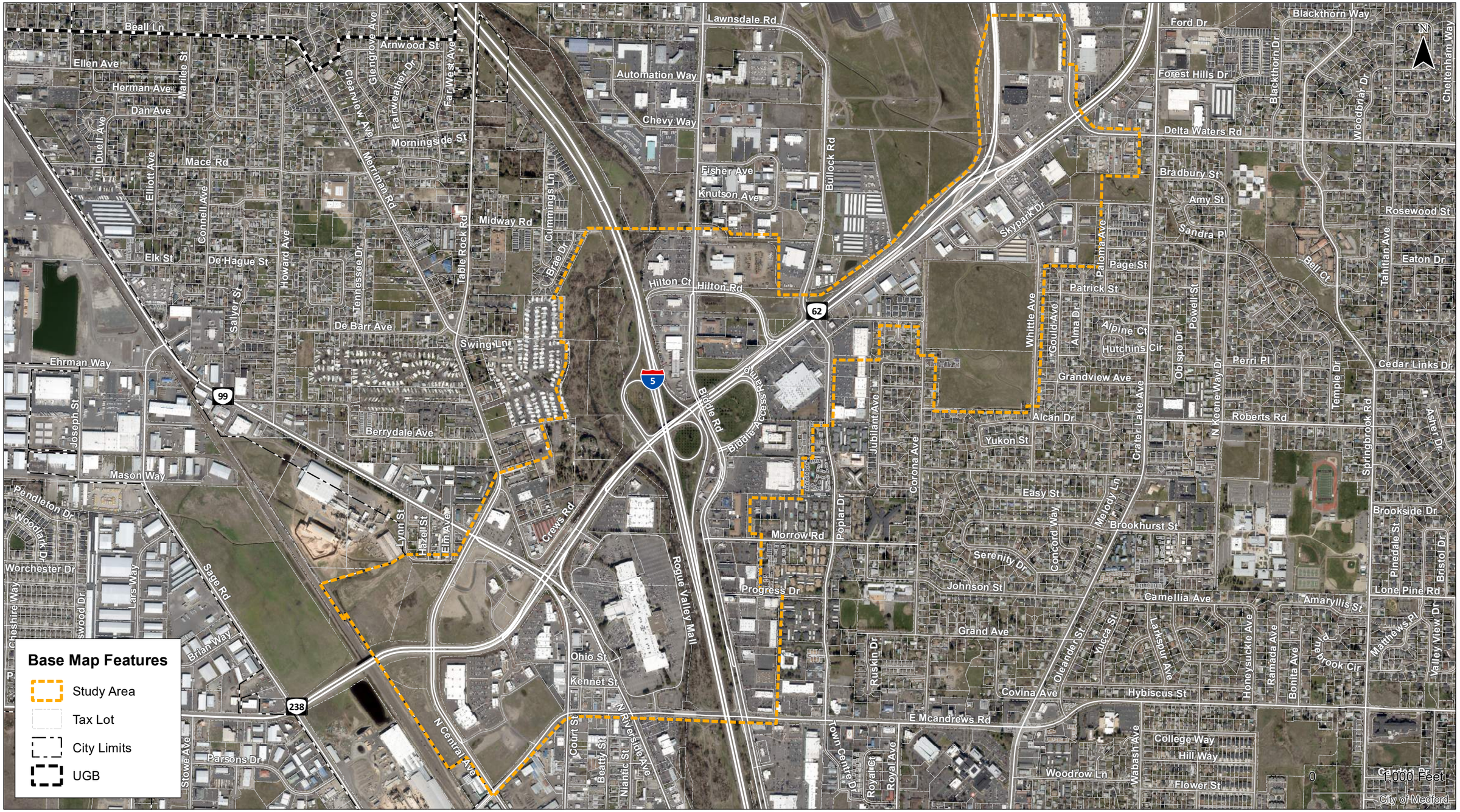
Rail Facilities
Medford, Oregon

Figure
16

H:\23\23641 - Exit 30 IAMP\gis\TM2B\16_Rail Facilities.mxd - openpdx - 2:48 PM 5/12/2020

KITTELSON & ASSOCIATES

Coordinate System: NAD 1983 2011 StatePlane Oregon South FIPS 3602 Ft Intl



Base Map Features

- Study Area
- Tax Lot
- City Limits
- UGB

Right-of-way
Medford, Oregon

Figure
17

KITTELSON & ASSOCIATES

Coordinate System: NAD 1983 2011 StatePlane Oregon South FIPS 3602 Ft Intl
Data Source: Delete if there isn't one.

H:\23123641 - Exit 30 IAMP\gis\TM2B17_Right-of-way.mxd - openpdx - 2:51 PM 5/12/2020

Table 3: ODOT Access Spacing Standards

Route Name	Facility Extents	Classification/ Designation	2019 AADT	Posted Speed Limit (mph)	Access Spacing Standard (Feet)
OR 238	West IMSA Boundary to OR 99	District Highway	>5,000	45	500
OR 62	OR 99 to Bullock Road-Poplar Drive	Statewide Highway	>5,000	35	500
OR 62	Bullock Road-Poplar Drive to East IMSA Boundary	Statewide Highway	>5,000	45	800
OR 62 Bypass	OR 62 to North IMSA Boundary	Statewide Highway/ Expressway	>5,000	55	2,640
OR 99	North IMSA Boundary OR238-OR 62	District Highway	>5,000	40	500

City Access Spacing Standards

Access spacing standards for approaches to City arterial and collector streets are based on the speed limit of the roadway. Table 4 summarizes the City access spacing standards

Table 4: City Access Spacing Standards (Center-to-Center – Arterial and Collector Streets)

Posted Speed Limit (mph)	Access Spacing Standard (Feet)
25	145
30	195
35	250
40	315
45	385

Access Inventory

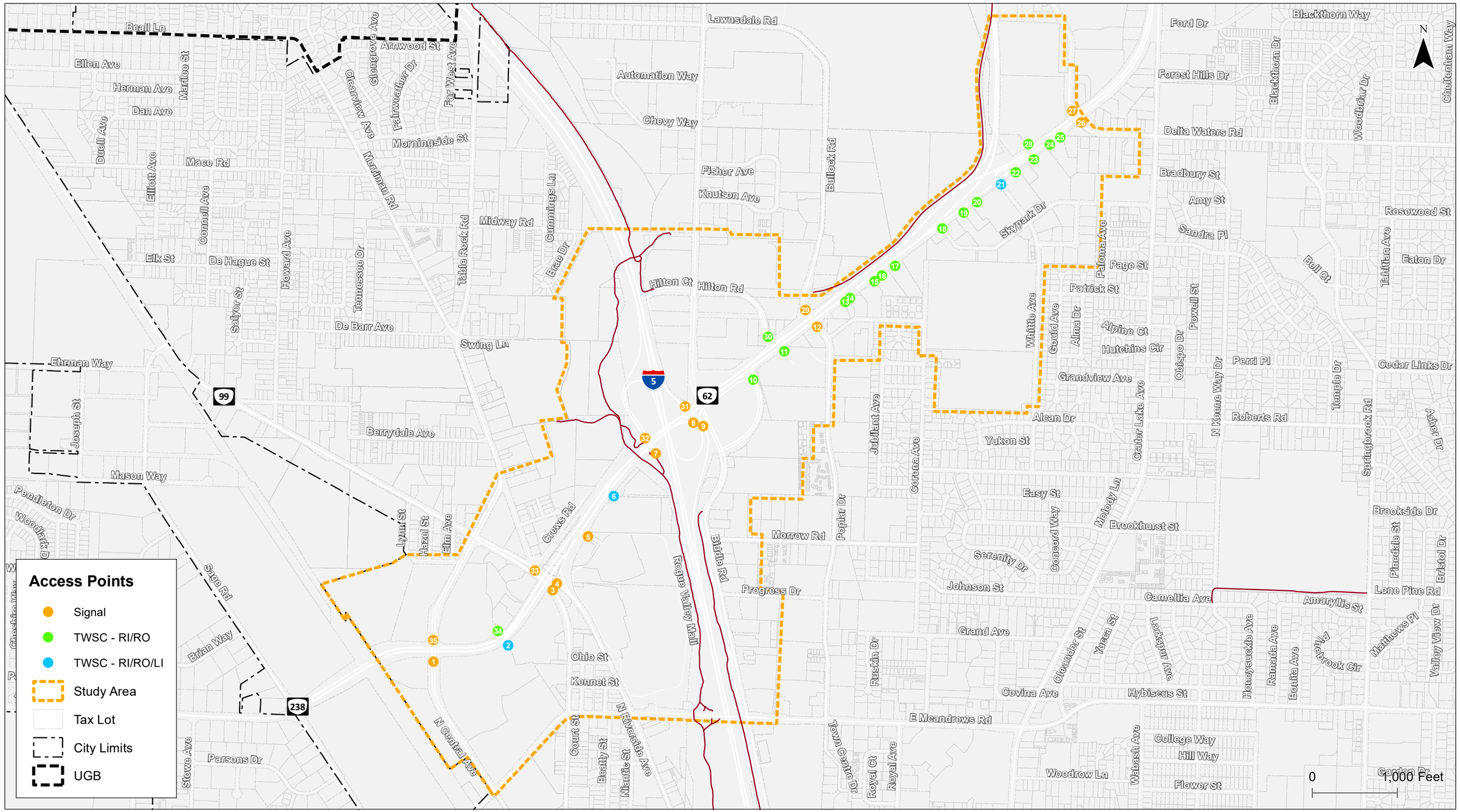
Figure 18 illustrates the location of access points along OR 62. Table 5 summarizes information related to the access points, including the location, approach type, approach control, restrictions, access width, and the tax lots and types of businesses/street connections served by the access. The access points shown in grey include the ramp terminals and all access points located within ¼ mile of the ramp terminals.

Table 5: Access Inventory (OR 62)

Map ID	Approach Type	Approach Control	Restrictions	Access Width (ft)[1]	Tax Lot	What Does the Access Serve?
1	Public	Signal	None	55	N/A	Central Avenue
2	Public	TWSC	RI/RO/LI	62	400, 401, 500, 700, 800, 900, 1100, 1400	Ohio Street
3	Public	Signal	None	35	N/A	Court Street (one-way SB)
4	Public	Signal	None	59	N/A	Riverside Avenue (one-way northbound)
5	Private	Signal	None	78	500, 501, 600, 601, 602, 2800	Rogue Valley Mall Entrance (west)
6	Private	TWSC	RI/RO/LI	42	100, 101, 103, 500, 501, 603, 604	Rogue Valley Mall Entrance (Target, east)
7	Public	Signal	None	25	N/A	I-5 SB On-ramp (one-way southbound)
8	Public	Free	None	25	N/A	I-5 NB On-ramp (one-way southbound)

Map ID	Approach Type	Approach Control	Restrictions	Access Width (ft)[1]	Tax Lot	What Does the Access Serve?
9	Public	Signal	None	43	N/A	I-5 NB off-ramp (one-way northbound)
10	Public	TWSC	RI/RO	58	N/A	Biddle Road Jug-handle (one-way NB)
11	Private	TWSC	RI/RO	35	100, 600, 700, 1400	Fred Meyer
12	Public	Signal	None	75	N/A	Poplar Street
13	Private	TWSC	RI/RO	30	900, 1000	Lakeway Veterinary Hospital
14	Private	TWSC	RI/RO	35	1100, 1200	Abby's Pizza
15	Private	TWSC	RI/RO	35	1300	Sherman Williams Paints
16	Private	TWSC	RI/RO	37	1400	Guitar Center
17	Private	TWSC	RI/RO	35	1500, 1600	Auto Complex
18	Public	TWSC	RI/RO	36	N/A	Sky Park Drive
19	Private	TWSC	RI/RO	36	4100, 4104	O'Reilly
20	Private	TWSC	RI/RO	44	2100	Dazey's
21	Public	TWSC	RI/RO/LI	36	N/A	Whittle Avenue
22	Private	TWSC	RI/RO	35	2100	All RV Needs
23	Private	TWSC	RI/RO	28	1900, 2000	Lava Lanes
24	Private	TWSC	RI/RO	35	1500, 1600, 1700, 1800, 2200	Arco
25	Private	TWSC	RI/RO	52	1500, 1600, 1700, 1800, 2200	Arco
26	Public	Signal	None	62	N/A	Delta Waters Road
27	Public	Signal	None	94	N/A	Delta Waters Road
28	Private	TWSC	RI/RO	30	500, 3000	Discount Tire
29	Public	Signal	None	98	N/A	Bullock Road
30	Public	TWSC	RI/RO	46	N/A	Hilton Road
31	Public	Signal	None	32	N/A	I-5 NB On-ramp (one-way northbound)
32	Public	Signal	None	80	N/A	I-5 SB Off-ramp (one-way southbound)
33	Public	Signal	None	110	N/A	OR 99
34	Private	TWSC	RI/RO	32	101, 102, 103, 105, 400 4300, 4600	Starbucks
35	Public	Signal	None	68	N/A	Central Avenue

[1]Data from Google Earth aerial imagery – measured at stop bar location or approximately 10 feet from edge of roadway.



Access Points
Medford, Oregon

Figure
18

H:\23\23641 - Exit 30 IAMP\gis\TM2B18_Access.mxd - qpenpdx - 2:51 PM 5/12/2020

KITTELSON & ASSOCIATES

Coordinate System: NAD 1983 2011 StatePlane Oregon South FIPS 3602 Ft Intl
Data Source: Delete if there isn't one.

KITTELSON & ASSOCIATES
851 SW 6th AVENUE, SUITE 600
PORTLAND, OR 97204
P 503.228.5230 F 503.273.8169

MEMORANDUM

Date: May 12, 2020 Project #: 23641.0

To: Virginia Elandt, Oregon Department of Transportation
Karl MacNair, City of Medford

From: Matt Hughart, AICP, Matt Bell, and Miranda Barrus, Kittelson & Associates, Inc.

Project: I-5 Exit 30 Interchange Area Management Plan (IAMP)

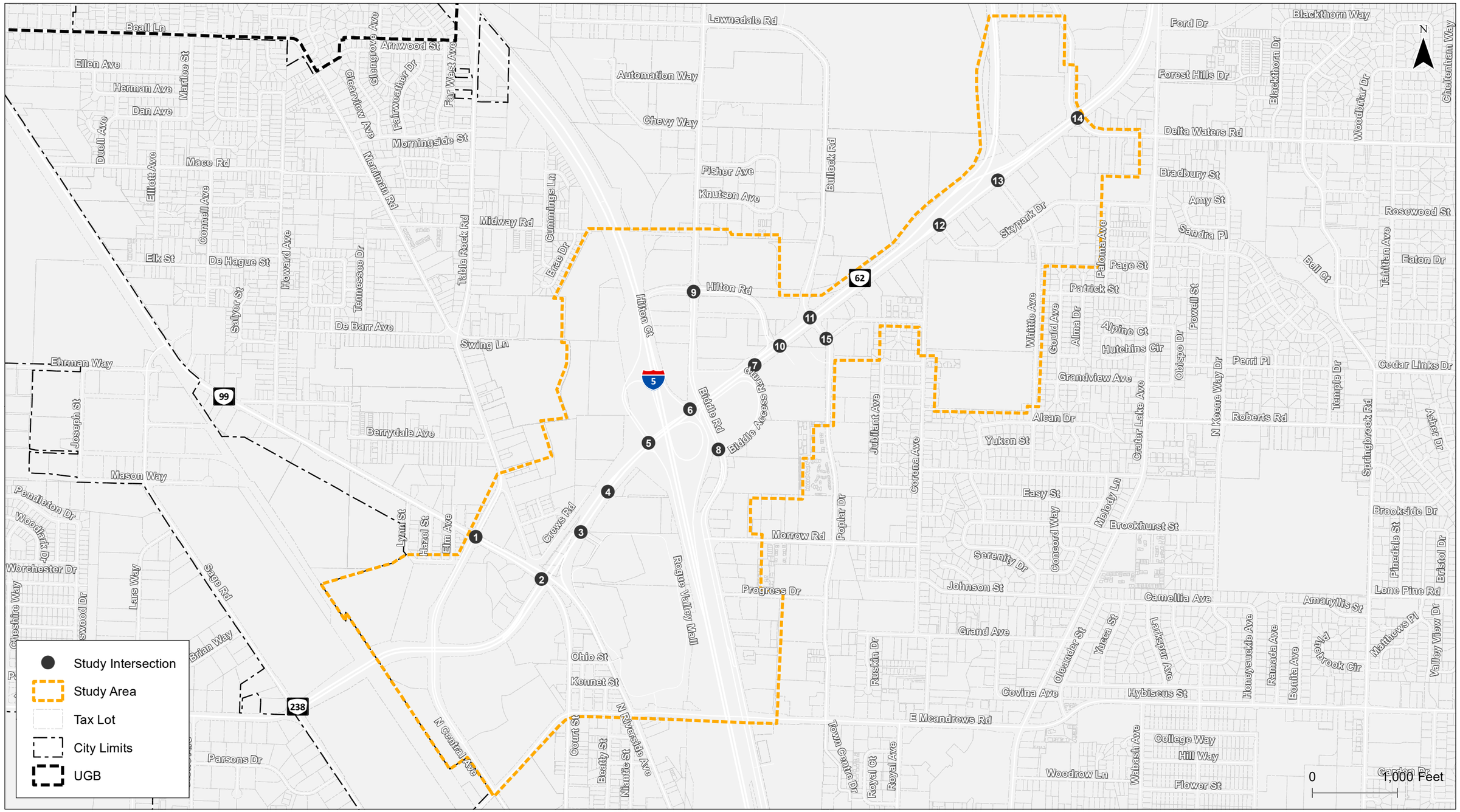
Subject: Final TM#2 Appendix C: Existing Traffic Conditions

This memorandum summarizes existing traffic conditions within the Interchange Management Study Area (IMSA) for the I-5, Exit 30 Interchange Area Management Plan (IAMP). This memorandum includes information on traffic counts conducted at the study intersections and the results of the current traffic operations analysis, current crash analysis, current freight analysis, and current multi-modal analysis. The information provided in this memorandum will serve as the basis for developing and evaluating transportation system alternatives and identifying improvement projects for the I-5, Exit 30 IAMP.

TRAFFIC VOLUME DATA COLLECTION

The study intersections for the I-5, Exit 30 IAMP were determined based on direction provided by City and ODOT staff. These intersections are expected to be impacted by proposed changes to the I-5, Exit 30 interchange as well as future development within the IMSA. There is a total of 15 study intersections, including 14 intersections (10 signalized, 4 unsignalized) along ODOT facilities and one intersection along City facilities. Figure 1 illustrates the location of the study intersections and Figure 2 illustrates the current lane configurations and traffic control devices at the study intersections.

Traffic counts were conducted at the majority of study intersections in March and August 2017, prior to opening of the OR 62 bypass. Because these counts are primarily located west of the bypass, they would not be subject to significant fluctuations in traffic patterns related to opening of the bypass. The remaining counts were conducted in July 2019 and reflect traffic conditions following opening of the bypass. Ten of the counts were conducted over a 16-hour period (6:00 AM to 10:00 PM) and four were conducted over a 4-hour period (2:00 to 6:00 PM). All the counts include the total number of pedestrians, bicyclists, and motor vehicles that entered the intersections in 15-minute intervals from 2:00 to 6:00 p.m. and in 60-minute intervals throughout all other time periods as applicable. *Attachment A contains the traffic count worksheets.*



Study Intersections
Medford, Oregon

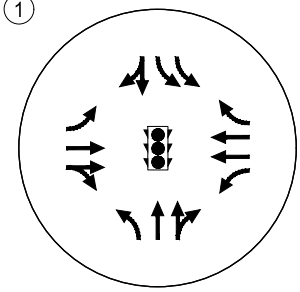
Figure
1

H:\23\23641 - Exit 30 IAMP\gis\TM2C\1_Study Intersections.mxd - openpdx - 2:52 PM 5/12/2020

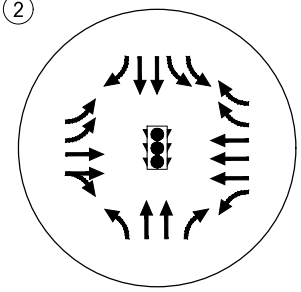
KITTELSON & ASSOCIATES

Coordinate System: NAD 1983 2011 StatePlane Oregon South FIPS 3602 Ft Intl
Data Source: Delete if there isn't one.

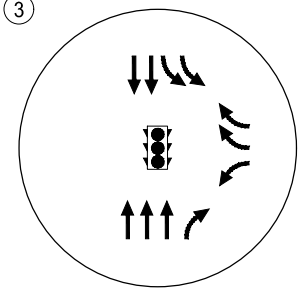
Table Rock Road/OR 99



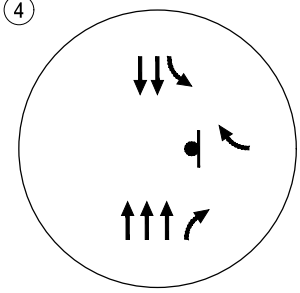
OR 238/OR 62/OR 99/Riverside/Court



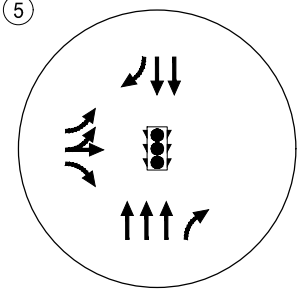
OR 62/RVM (south)



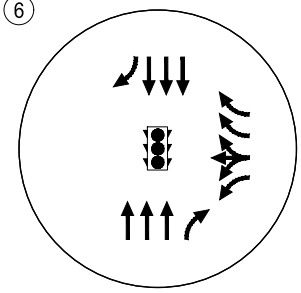
OR 62/RVM (north)



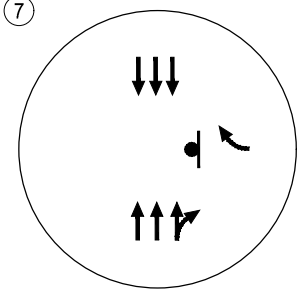
OR 62/I-5 SB Ramps



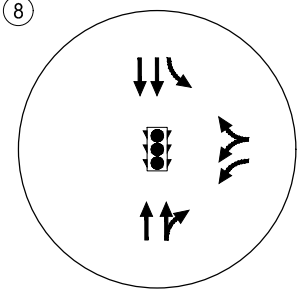
OR 62/I-5 NB Ramps



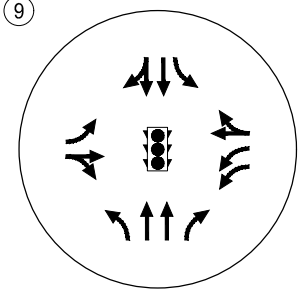
OR 62/Biddle Jughandle (north)



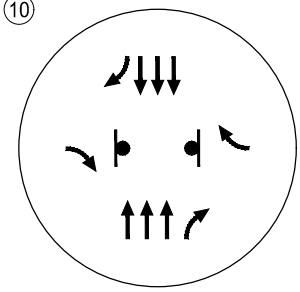
Biddle Road/OR 62 Ramp



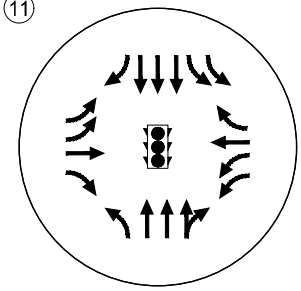
Biddle Road/Hilton Court



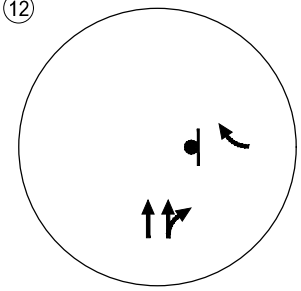
OR 62/Hilton Court/Fred Meyer



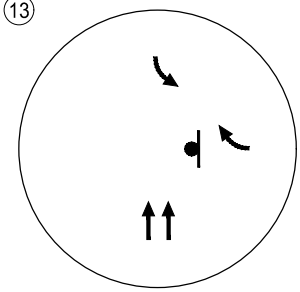
OR 62/Bullock Road/Poplar Drive



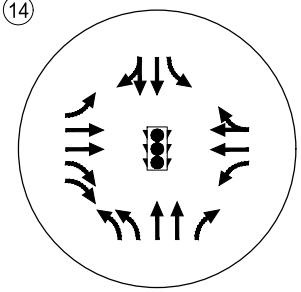
OR 62/Sky Park Drive



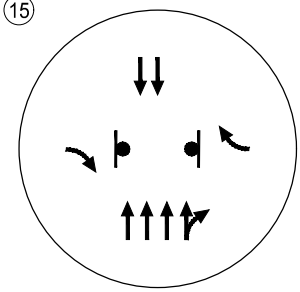
OR 62/Whittle Avenue



OR 62/Delta Waters Road



Poplar Drive/Hilton Road/Fred Meyer



- STOP SIGN
- TRAFFIC SIGNAL

Existing Lane Configurations & Traffic Control Devices
Medford, Oregon

Figure 2

H:\23\23641 - Exit 30 IAMP\gis\TM2\CT uning Movements.dwg May 12, 2020 - 3:03pm - mbell Layout Tab: Fig02 - LC & TCD

KITTELSON & ASSOCIATES

TRAFFIC COUNT PROCESSING AND ANALYSIS

The *Analysis Methodology and Assumptions Memorandum* includes information related to the peak hour development, seasonal adjustment factors, and historical factors used to develop traffic volumes for the traffic operations analysis. Per the memorandum, a system-wide peak hour of 4:30 to 5:30 p.m. was selected as a basis for the analysis; seasonal adjustment factors of approximately 1.04 and 1.02 were applied to the counts conducted in March and July to reflect the peak season, and; historical factors of approximately 1.03 and 1.01 were applied to the counts conducted in 2017 and 2019 to reflect year 2020 traffic conditions. The traffic volumes were also balanced to account for changes in travel patterns related to opening the OR 62 bypass. Figure 3 summarizes the traffic volumes developed at the study intersections for the traffic operations analysis.

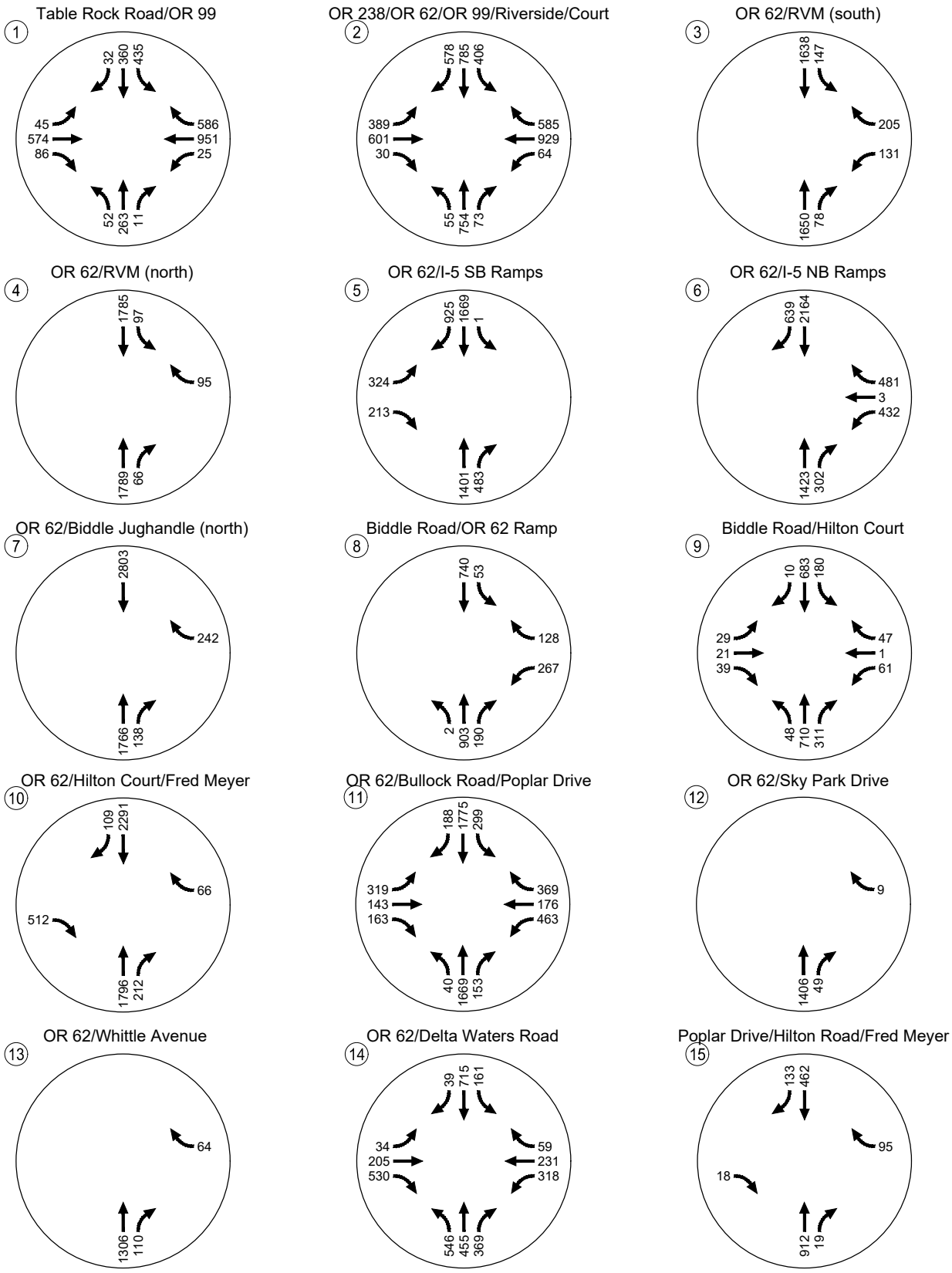
TRAFFIC OPERATIONS ANALYSIS

The traffic operations analysis identifies how the study intersections operate under existing traffic conditions during the weekday PM peak hour – the weekday PM peak hour was selected as a basis for the analysis given that it generally represents the most critical time period throughout the day. However, other peak hours may be more critical in some locations, such as near schools.

Intersection Operations Analysis

The intersection operations analysis was conducted using Synchro 10, which is a software tool designed to assist with operations analyses in accordance with Highway Capacity Manual (HCM) methodologies. The analysis results include level-of-service (LOS), delay (del), and volume-to-capacity (v/c) at all intersections regardless of jurisdiction. The LOS, del, and v/c are reported for the overall intersection at signalized intersections and the critical movement at unsignalized intersections – the overall intersection v/c ratios were developed in accordance with the methodologies outlined in ODOT's Analysis Procedures Manual (APM).

Table 1 summarizes the results of the intersection operations analysis and compares the results to the applicable mobility standards and targets. As shown, all of the study intersections currently operate acceptably per their applicable mobility standards and targets. *Attachment B contains the existing traffic conditions worksheets.*



Existing Traffic Volumes
Weekday PM Peak Hour
Medford, Oregon

Figure
3

H:\23\23641 - Exit 30 IAMP\gis\TM2\CTuning Movements.dwg May 12, 2020 - 3:04pm - mbell Layout Tab: Fig03 - Volumes

Table 1: Existing Intersection Operations

Map ID	Location	Control Type	Mobility Standard/Target	CM	V/C	Del	LOS
1	OR 99 / Table Rock Road	Signal	0.95	N/A	0.66	24.7	C
2	OR 62-OR 238 / OR 99-Court Street-N Riverside Avenue	Signal	0.90	N/A	0.83	42.9	D
3	OR 62 / Rogue Valley Mall entrance (west)	Signal	0.90	N/A	0.58	10.4	B
4	OR 62 / Rogue Valley Mall entrance (east, at Target)	Unsignalized	0.90 N-S/0.95 E-W	SBL	0.79	94.4	F
5[1]	OR 62 / I-5 Southbound Ramp Terminal	Signal	0.85[3]	N/A	0.72	22.7	C
6[1]	OR 62 / I-5 Northbound Ramp Terminal	Signal	0.85[3]	N/A	0.74	24.2	C
7[2]	OR 62 / Biddle Road (north end of jug handle)	Unsignalized	0.85 N-S/0.95 E-W	WBR	0.29	10.9	B
8[1]	OR 62 / Biddle Road (south end of jug handle)	Signal	0.95	N/A	0.73	15.4	B
9	Biddle Road / Hilton Court	Signal	0.95	N/A	0.56	12.2	B
10[2]	OR 62 / Hilton Court-Fred Meyer Parking Lot Entrance	Unsignalized	0.85 N-S/0.9 5E-W	EBR	0.71	20.5	C
11	OR 62 / Bullock Road-Poplar Drive	Signal	0.85	N/A	0.84	84.1	F
12	OR 62 / Sky Park Drive	Unsignalized	0.85 N-S/0.95 E-W	WBR	0.03	15.8	C
13	OR 62 / Whittle Avenue	Unsignalized	0.90 N-S/0.95 E-W	WBR	0.19	17.8	C
14	OR 62 / Delta Waters Road	Signal	0.90/LOS D	N/A	0.76	40.8	D
15	Poplar Drive / Hilton Road	Unsignalized	LOS D	WBR	0.23	15.4	C

[1]Lane configurations not supported by HCM 2010 or 6th Edition methodologies, therefore, HCM 2000 results are reported.
[2]The HCM 2010 and HCM 6th Edition analysis results do not reflect field observations. Therefore, the HCM 2000 analysis results are reported.
[3]This mobility target may be increased to as much as 0.90 through the IAMP adoption process.
[4]City and State mobility standards and targets are shown given the upcoming jurisdictional transfer.

As shown in Table 1, the OR 62/Bullock Road-Poplar Drive intersection currently operates with an overall intersection v/c ratio of 0.84; however, it operates with relatively high delay at LOS F. This is primarily due to the delay on the minor street (city) approaches.

Queueing Analysis

A queuing analysis was conducted at the study intersections using SimTraffic microsimulation software within Synchro 10. Table 2 summarizes the 95th percentile queues during the weekday PM peak hour under year 2020 current traffic conditions and indicates if existing storage can accommodate the queues. The vehicle queue and storage lengths were rounded to the nearest 25-feet. The turning movement storage lengths reflect the striped storage for each turn-lane pocket at the intersections and the through movement storage lengths reflect the distance from the intersections to the nearest adjacent intersection and/or driveway. *Attachment B contains the SimTraffic reports.*

Table 2: Existing Queuing Analysis

Map ID	Location	Movement	Storage Length (Feet)	95th Percentile Queue (Feet)	Adequate?
1	OR 99 /Table Rock Road	NBL	340	100	Yes
		NBT	525	150	Yes
		NBTR	340	150	Yes
		SBL (x2)	500	175-200	Yes
		SBTR	160	275	Yes[1]
		EBL	250	125	Yes
		EBT-TR	150	250	Yes[1]

Map ID	Location	Movement	Storage Length (Feet)	95th Percentile Queue (Feet)	Adequate?
		WBL	200	125	Yes
		WBT (x2)	190	450-475	Yes[1]
		WBR	975	300	Yes
2	OR 62-OR 238 / OR 99-Court Street-N Riverside Avenue	NBL	150	375	**No**
		NBT (x2)	750	2125-2150	**No**
		NBR	400	700	**No**
		SBL (x2)	325	225-275	Yes
		SBT (x2)	530	350	Yes
		SBR	400	350	Yes
		EBL (x2)	400	250-275	Yes
		EBT-TR	810	375-400	Yes
		WBL	800	100	Yes
		WBT (x3)	385	300-350	Yes
		WBR (x2)	250	100	Yes
3	OR 62 / Rogue Valley Mall entrance (west)	NBT (x3)	530	250-500	**Yes**
		NBR	100	150	**No**
		SBL (x2)	300	75-100	Yes
		SBT (x2)	1215	200-250	Yes
		WBL	175	125	Yes
		WBR (x2)	175	75	Yes
4	OR 62 / Rogue Valley Mall entrance (east, at Target)	NBR	125	25	Yes
		SBL	200	125	Yes
		WBR	180	150	Yes
5	OR 62 / I-5 Southbound Ramp Terminal	NBT (x3)	670	200-450	Yes
		NBR	75	100	**No**
		SBT (x2)	530	200	Yes
		SBR	625	25	Yes
		EBL	200	275	Yes[2]
		EBTL	200	275	Yes[2]
		EBR	350	250	Yes
6	OR 62 / I-5 Northbound Ramp Terminal	NBT (x3)	530	250-425	Yes
		SBT (x3)	1100	375	Yes
		SBR	295	175	Yes
		WBL	675	700	Yes[3]
		WBLTR	675	825	Yes[3]
		WBR	675	825	Yes[3]
7	OR 62 / Biddle Road (north end of jug handle)	WBR	1,125	750	Yes
8	OR 62 / Biddle Road (south end of jug handle)	NBT-TR	275	1600	**No**
		SBL	100	175	**No**
		SBT (x2)	640	325-400	Yes
		WBL	875	200	Yes
		WBLR	875	225	Yes
9	Biddle Road / Hilton Court	NBL	320	75	Yes
		NBT (x2)	425	2400-2450	**No**
		NBR	220	400	**No**

Map ID	Location	Movement	Storage Length (Feet)	95th Percentile Queue (Feet)	Adequate?
		SBL	175	375	Yes[4]
		SBT-TR	540	1475-1500	Yes[1]
		EBL	375	50	Yes
		EBTR	300	125	Yes
		WBL (x2)	220	50-75	Yes
		WBTR	220	50	Yes
10	OR 62 / Hilton Court-Fred Meyer Parking Lot Entrance	NBR	90	200	**No**
		EBR	1,200	1215	Yes[5]
		WBR	200	325	**No[6]**
11	OR 62 / Bullock Road-Poplar Drive	NBL	450	200	Yes
		NBT (x2)	360	550-575	Yes[1]
		NBTR	360	550	Yes[1]
		SBL (x2)	410	300-375	Yes
		SBT (x3)	2200	375-400	Yes
		SBR	425	375	Yes
		EBL (x2)	350	225-325	Yes
		EBT	165	325	Yes[1]
		EBR	150	200	**No**
		WBL (x2)	250	275-300	Yes[5]
		WBT	930	300	Yes
		WBR	450	325	Yes
12	OR 62 / Sky Park Drive	WBR	100	50	Yes
13	OR 62 / Whittle Avenue	WBR	135	75	Yes
14	OR 62 / Delta Waters Road	NBL (x2)	500	200-225	Yes
		NBT (x2)	620	250	Yes
		NBR	500	150	Yes
		SBL	200	275	Yes[5]
		SBT-TR	1190	350-375	Yes
		EBL	225	75	Yes
		EBT (x2)	400	250	Yes
		EBR (x2)	415	250-300	Yes
		WBL	400	250	Yes
		WBT-TR	130	225-250	Yes[1]

WB= Westbound, SB = Southbound, EB = Eastbound, NB = Northbound, L = Left, T = Through, R = Right
[1]Sufficient storage is available, but queue blocks nearest driveway or minor street intersection.
[2]Additional storage is available on the southbound ramp, outside of the deceleration lane.
[3]Additional storage is available on the northbound ramp, outside of the deceleration lane.
[4]Additional storage is available in the center two-way left-turn lane on Biddle Road.
[5]Additional storage is available in the through lane(s).
[6]Queue extends onto private property.

As shown in Table 2, 95th percentile queues for one or more movements at the following study intersections currently exceed their striped storage:

- 2: OR 62-OR 238 / OR 99-Court Street-N Riverside Avenue – the northbound left- and right-turn queues exceed their striped storage and the northbound through queues block the upstream signalized intersection.

- 3: OR 62 / Rogue Valley Mall entrance (west) – the northbound right-turn queue exceeds its striped storage.
- 5: OR 62 / I-5 Southbound Ramp Terminal – the northbound right-turn queue exceeds its striped storage.
- 8: OR 62 / Biddle Road (south end of jug handle) – the northbound through-through/right queues block the upstream signalized intersection and the southbound left-turn queue exceeds its striped storage.
- 9: Biddle Road / Hilton Court – the northbound through queues block the upstream signalized intersection and the northbound right-turn queue exceeds its striped storage.
- 10: OR 62 / Hilton Court-Fred Meyer Parking Lot Entrance – the northbound and westbound right-turn queues exceed their striped storage.
- 11: OR 62 / Bullock Road-Poplar Drive – the eastbound right-turn queue exceeds its striped storage.

MULTIMODAL ANALYSIS

The pedestrian, bicycle, and transit facilities and services within the IMSA were evaluated in accordance with the simplified Multimodal Level-of-Service (LOS) analysis methodologies identified in Chapter 14 of the ODOT Analysis Procedures Manual (APM). Per the APM, these methodologies are intended for use when a detailed analysis is desired or when a no-build alternative is compared to one or more build alternatives. These methodologies are not meant for defining overall needs or making prioritization decisions, rather they are meant for evaluating alternatives.

Multimodal LOS scores are based on user perceptions (traveler satisfaction) and are graded from best (LOS A) to worst (LOS F). The data values used to develop the multimodal LOS scores were obtained from inventories and aerial photographs of the study area. The data values were entered into the simplified multimodal LOS calculator developed by ODOT to obtain the cumulative probabilities which are subtracted from one another to obtain the LOS probabilities. The highest probability is chosen as the most-likely LOS. The calculator highlights probabilities that fall within 90% of the highest value. If the next highest probability is within this range, it is assumed that this is a LOS range (i.e. LOS E-F) with a total probability that is the sum of the individual probabilities. The results of the multimodal LOS analysis are summarized below.

Pedestrian Level of Service

The simplified multimodal LOS analysis methodology uses four variables to estimate Pedestrian LOS. The analysis is intended to be applied on road segments on a per direction basis like most HCM-based methods. The variables and their category values include:

- Sidewalk (Actual) Width (0-5 ft or >5 ft)
- Directional Traffic Volume (0-500 vph, 500-1500 vph, or >1500 vph)
- Number of (Through) Traffic Lanes per direction (1, 2, 3, or 4)

- (Posted) Speed Limit (20-40 mph or >40 mph)

As indicated in *Tech Memo 2B: Transportation Inventory*, sidewalks are provided along both sides of most roadways within the IMSA. The sidewalks are generally greater than 5-feet wide and include buffered landscape strips. However, directional traffic volumes, number of through lanes per direction, and posted speed limits are relatively high within the IMSA; therefore, the Pedestrian LOS analysis results reflect a challenging environment for pedestrians.

Figure 4 illustrates the Pedestrian LOS analysis results for the major roadways (collector and above) within the IMSA. As shown, the majority of facilities are currently LOS E with the exception of the segments with relatively low traffic volumes and/or travel speeds, such as Biddle Road, Bullock Road, and Poplar Drive. The segment of OR 62 from Bullock Road to the right-in/right-out commercial driveway is show as LOS F; however, the shared-use path that runs parallel to OR 62 is LOS. A. *A tabulated summary of the Pedestrian LOS analysis results is provided in Attachment C*.

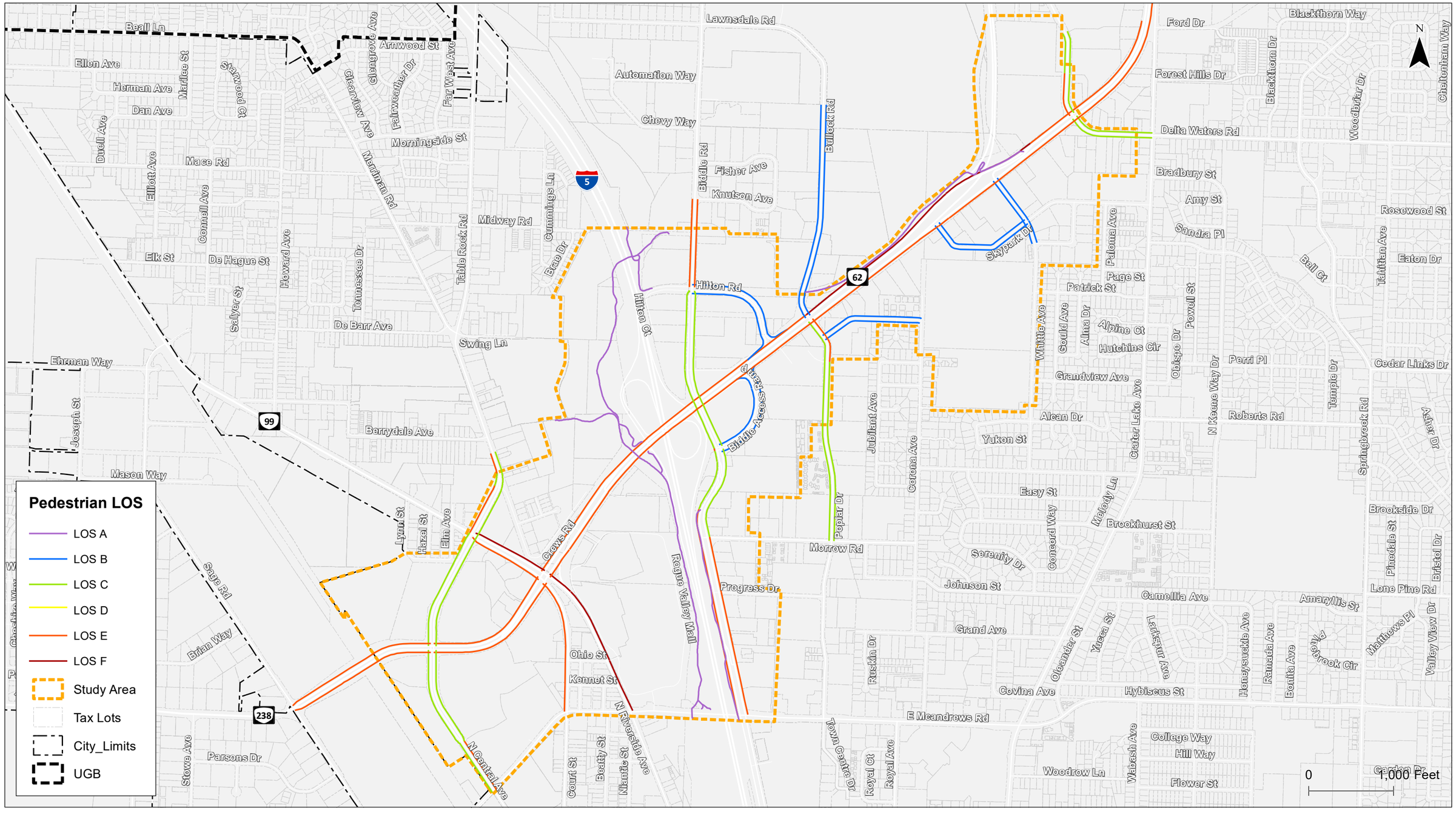
Bicycle Level of Service

The simplified multimodal LOS analysis methodology uses four variables to estimate Bicycle LOS. The analysis is intended to be applied on road segments on a per direction basis like most HCM-based methods. The variables and their category values include:

- Number of Through Traffic Lanes per direction (1 or >1)
- Bike Lane or Paved Shoulder Present (Yes or No)
- (Posted) Speed Limit (<= 30 mph or >30 mph)
- Unsignalized Conflicts (Yes or No)

As indicated in *Tech Memo 2B: Transportation Inventory*, on-street bike lanes or paved shoulders are provided along both sides of most roadways within the IMSA. The bike lanes are generally greater than 5-feet wide and some, such as those along OR 62, include buffers. However, the number of through lanes per direction, posted speed limits, and unsignalized conflicts are relatively high within the IMSA; therefore, the Bicycle LOS analysis results reflect a challenging environment for bicyclists.

Figure 5 illustrates the Bicycle LOS analysis results for the major roadways (collector and above) within the IMSA. As shown, the majority of facilities are currently LOS D with the exception of the segments with relatively low traffic volumes and/or travel speeds, such as Bullock Road. The segment of OR 62 from Poplar Road to Delta Waters Road is show as LOS F, despite buffered bike lanes, due to the number of unsignalized conflicts along the roadway. *A tabulated summary of the Bicycle LOS analysis results is provided in Attachment C.*



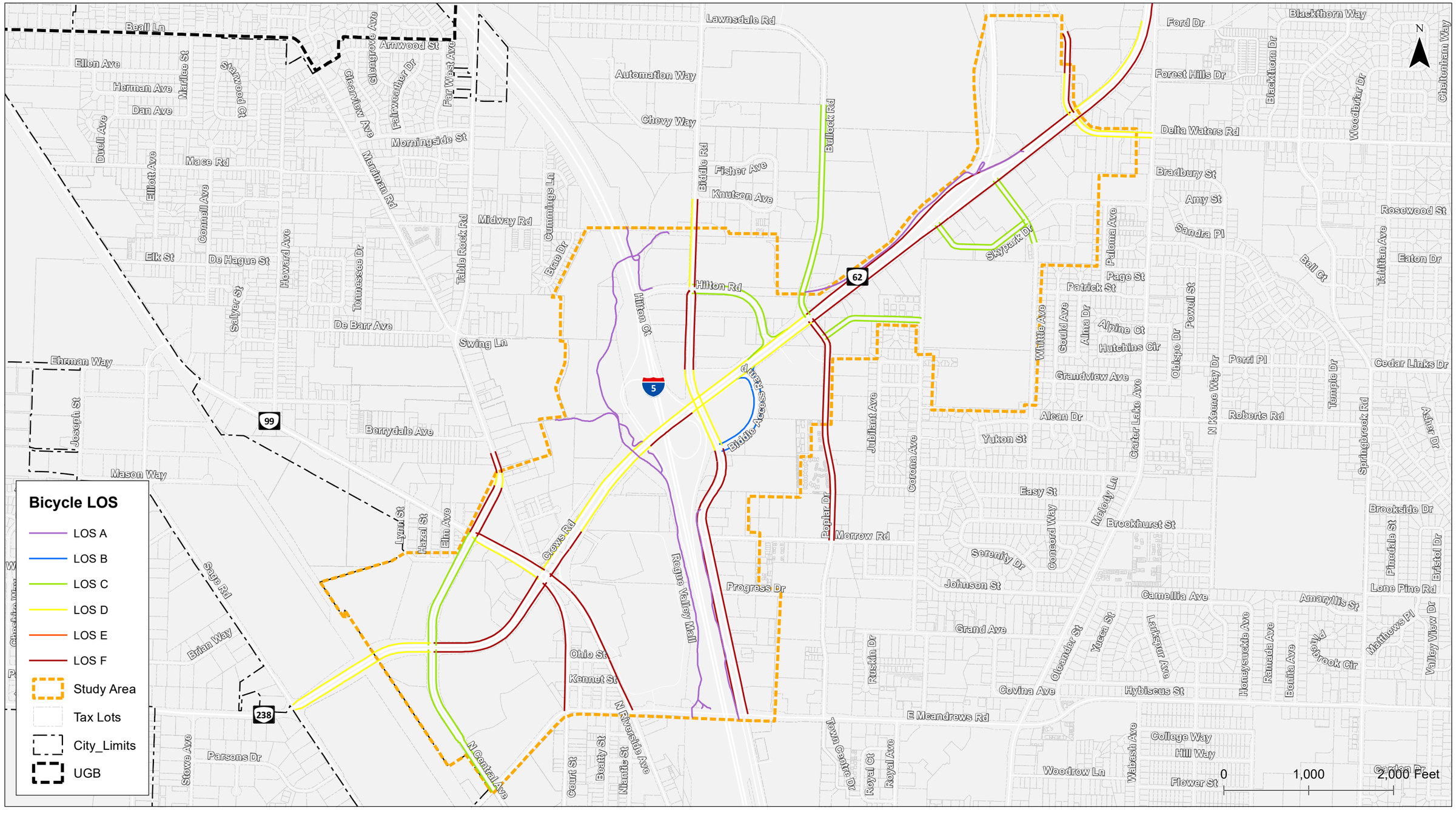
Pedestrian Level of Service (LOS)
Medford, Oregon

Figure **4**

H:\23\23641 - Exit 30 IAMP\gis\TM2C\4_Ped LOS.mxd - openpdx - 2:55 PM 5/12/2020

KITTELSON & ASSOCIATES

Coordinate System: NAD 1983 2011 StatePlane Oregon South FIPS 3602 Ft Intl



Bicycle Level of Service (LOS)
Medford, Oregon

Figure **5**

Coordinate System: NAD 1983 2011 StatePlane Oregon South FIPS 3602 Ft Intl

H:\23123641 - Exit 30 IAMP\gis\TM2C\5_Bike LOS.mxd - openpdx - 2:56 PM 5/12/2020

KITTELSON & ASSOCIATES

Transit Level of Service

The simplified multimodal LOS analysis methodology uses four variables to estimate Transit LOS. The analysis is intended to be applied on road segments within the study area that have applicable fixed-route transit service. The variables include:

- Transit Schedule Speed
- Transit Frequency
- Passenger Load Factor
- Pedestrian LOS

Local transit service is provided within the IMSA by Rogue Valley Transit District (RVTD). RVTD operates five fixed-route bus lines in the IMSA, including Line 21, 26, 27, 40, 60, and 61. Service is generally provided during the morning and evening peak time periods on 30 to 60-minute headways. Figure 6 illustrates the Transit LOS analysis results for the roadways within the IMSA that have applicable fixed-route transit service. As shown, the TLOS results vary significantly between the roadways. Roadways that are served by multiple bus lines or by bus lines with shorter headways and/or travel times have better LOS. *A tabulated summary of the Transit LOS analysis results is provided in Attachment C.*

CRASH ANALYSIS

The crash analysis evaluates the crash characteristics for reported crash data within the IMSA and at the study intersections. The analysis identifies existing safety issues based on five years of reported crashes from ODOT's Data and Reporting Unit (January 1, 2013 through December 31, 2017). See Attachment D for the raw crash data. This section contains the following:

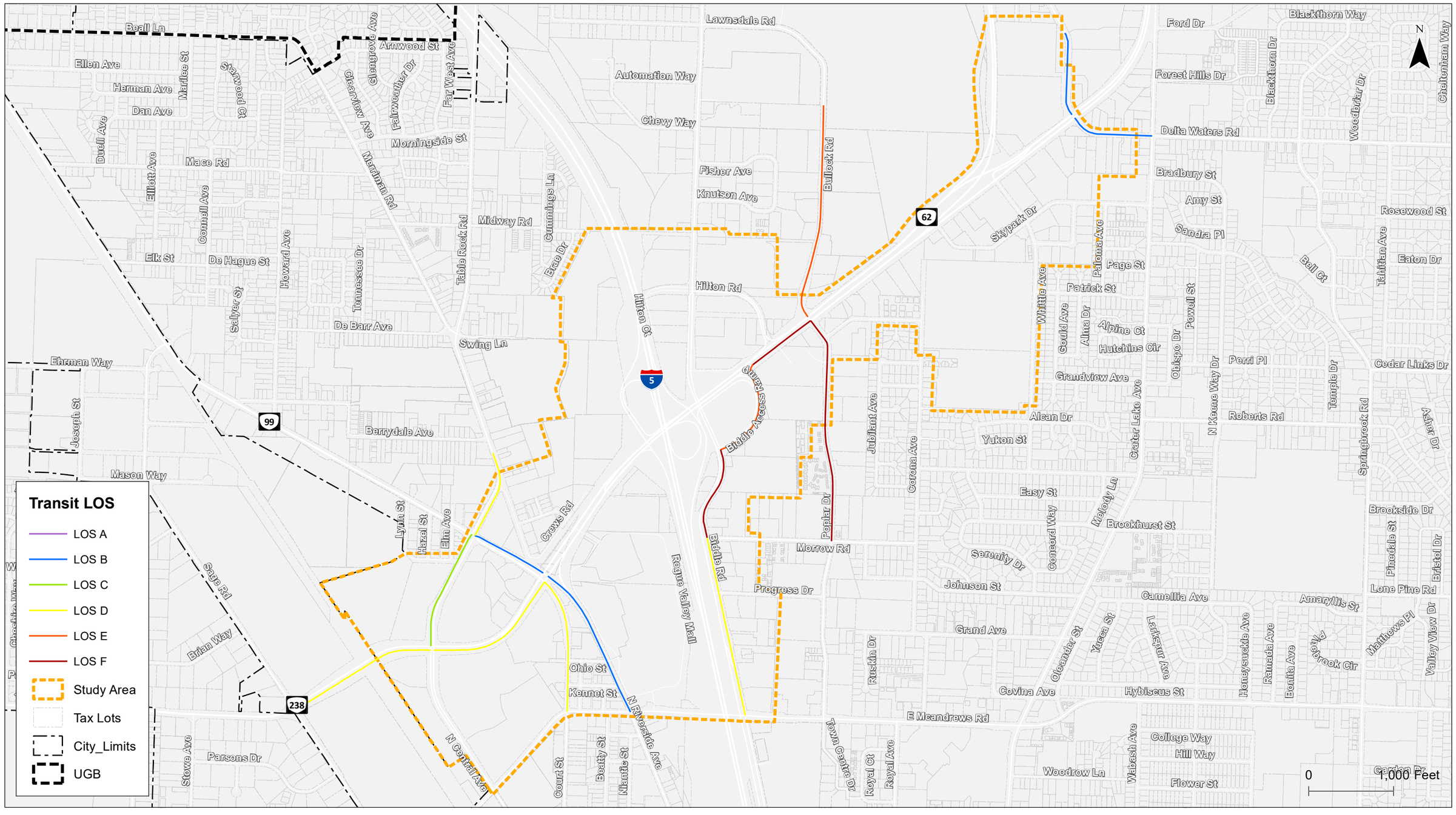
- An inventory of pedestrian and bicycle crashes as well as fatal and serious injury crashes on State and non-State roadways
- An analysis of intersection crash rates and comparisons to 90th percentile crash rates critical crash rates, and excess proportion of specific crashes
- An analysis of segment crash rates for all State highways and comparisons to state-wide segment crash rates
- A summary of Safety Priority Index System (SPIS) sites.

Crash Inventory

The crash inventory documents crash characteristics within the study area that are specific to pedestrian- and bicycle-related crashes and crashes that resulted in fatal or serious injuries.

Pedestrian and Bicycle Crashes

Eight (8) pedestrian and thirty-seven (37) bicycle-related crashes were reported within the IMSA over the five-year period from January 1, 2013 through December 31, 2017. The characteristics of each crash are briefly summarized below by location.



Transit Level of Service (LOS)
Medford, Oregon

Figure
6

H:\23123641 - Exit 30 IAMP\gis\TM2C\6_Transit LOS.mxd - openpdx - 2:58 PM 5/12/2020

KITTELSON & ASSOCIATES

Coordinate System: NAD 1983 2011 StatePlane Oregon South FIPS 3602 Ft Intl

N Central Avenue/OR238

One (1) pedestrian and one (1) bicycle-related crash occurred at this intersection resulting in non-serious injuries. The data indicates that both the pedestrian and the bicyclist disregarded the traffic signal.

OR 99/Table Rock Road (#1)

Two (2) bicycle-related crashes occurred at this intersection resulting in non-serious injuries. The data indicates that in both crashes the bicyclists were in the roadway illegally and struck the motor vehicles.

Table Rock Road/Adams Lane

One (1) bicycle-related crash occurred at this intersection resulting in non-serious injuries. The data indicates that the bicyclist made an improper lane change.

OR 99: Table Rock Road to OR 62

Two (2) bicycle-related crashes occurred along this segment resulting in non-serious injuries. The data indicates that in one crash the motorists did not yield the right-of-way; it was undetermined who made the error in the other crash.

Crews Road (Midblock)

One (1) bicycle-related crash occurred on this roadway resulting in non-serious injuries. The data indicates that the bicyclist did not yield the right-of-way.

OR 62-OR 238/OR 99-Court Street-N Riverside Avenue (#2)

Four (4) bicycle-related crashes occurred at this intersection resulting in non-serious injuries. The data indicates that in two crashes the bicyclists disregarded the traffic signal and struck the motor vehicles; in one crash the bicyclist was illegally in the roadway; and in one crash the driver did not yield the right-of-way to the bicyclist.

Court Street south of OR 62

One (1) bicycle-related crash occurred on this roadway resulting in non-serious injuries. The data indicates that the bicyclist was riding the wrong direction on a one-way street and struck the motor vehicle.

OR 99/Ohio Street

One (1) bicycle-related crash occurred at this intersection resulting in non-serious injuries. The data indicates that the driver did not yield the right-of-way and the bicyclist struck the motor vehicle.

OR 62/Main Rogue Valley Mall Entrance (#3)

One (1) bicycle-related crash occurred at this intersection resulting in non-serious injuries. The data indicates that the bicyclist disregarded the traffic signal.

OR 62/Target Entrance (#4)

One (1) bicycle-related crash occurred at this intersection resulting in non-serious injuries. The data indicates that the driver did not yield the right-of-way.

OR 62/I-5 Northbound Terminal (#6)

One (1) pedestrian and one (1) bicycle-related crash occurred at this intersection resulting in non-serious injuries. The data indicates that the pedestrian and bicyclist disregarded the traffic signal and were wearing non-visible clothing.

OR 62/Biddle Road (north end of jughandle) (#7)

Two (2) pedestrian-related crashes occurred near this intersection resulting in fatal and serious injuries. The data indicates that both pedestrians were in the roadway illegally. The fatal injury crash was a hit and run, alcohol and drugs were involved, and the pedestrian's clothing was not visible.

OR 62/Biddle Road (south end of jughandle) (#8)

One (1) bicycle-related crash occurred at this intersection resulting in non-serious injuries. The data indicates that the driver did not yield the right-of-way.

Biddle Road south of Hilton Road

One (1) pedestrian-related crash occurred on this roadway resulting in serious injuries. The data indicates that the pedestrian did not yield the right-of-way and the pedestrian's clothing was not visible. Alcohol was also involved.

OR 62/Bullock Road-Poplar Drive (#11)

One (1) bicycle-related crash occurred at this intersection resulting in non-serious injuries. The data indicates that the bicyclist disregarded the traffic signal and struck the motor vehicle.

Poplar Drive south of Fred Meyer Drive

One (1) bicycle-related crash occurred on this roadway resulting in non-serious injuries; it was undetermined who made the error.

OR 62/Whittle Avenue (#13)

Two (2) bicycle-related crashes occurred near this intersection resulting in serious and non-serious injuries. The data indicates that both bicyclists made improper traffic lane changes and did not yield the right-of-way.

OR 62/Delta Waters Road (#14)

Two (2) bicycle-related crashes occurred at this intersection resulting in non-serious injuries. The data indicates that one driver disregarded the traffic signal and one bicyclist did not yield the right-of-way and struck the motor vehicle.

McAndrews Road/Court Street

One (1) bicycle-related crash occurred at this intersection resulting in non-serious injuries. The data indicates that the bicyclist disregarded the traffic signal and struck the motor vehicle.

McAndrews Road/Beatty Street

One (1) pedestrian-related crash occurred at this intersection resulting in non-serious injuries. The data indicates that the driver did not yield the right-of-way.

McAndrews Road/N Riverside Avenue

One (1) bicycle-related crash occurred at this intersection resulting in non-serious injuries. The data indicates that the bicyclist disregarded the traffic signal, was in the roadway illegally, and was not wearing visible clothing.

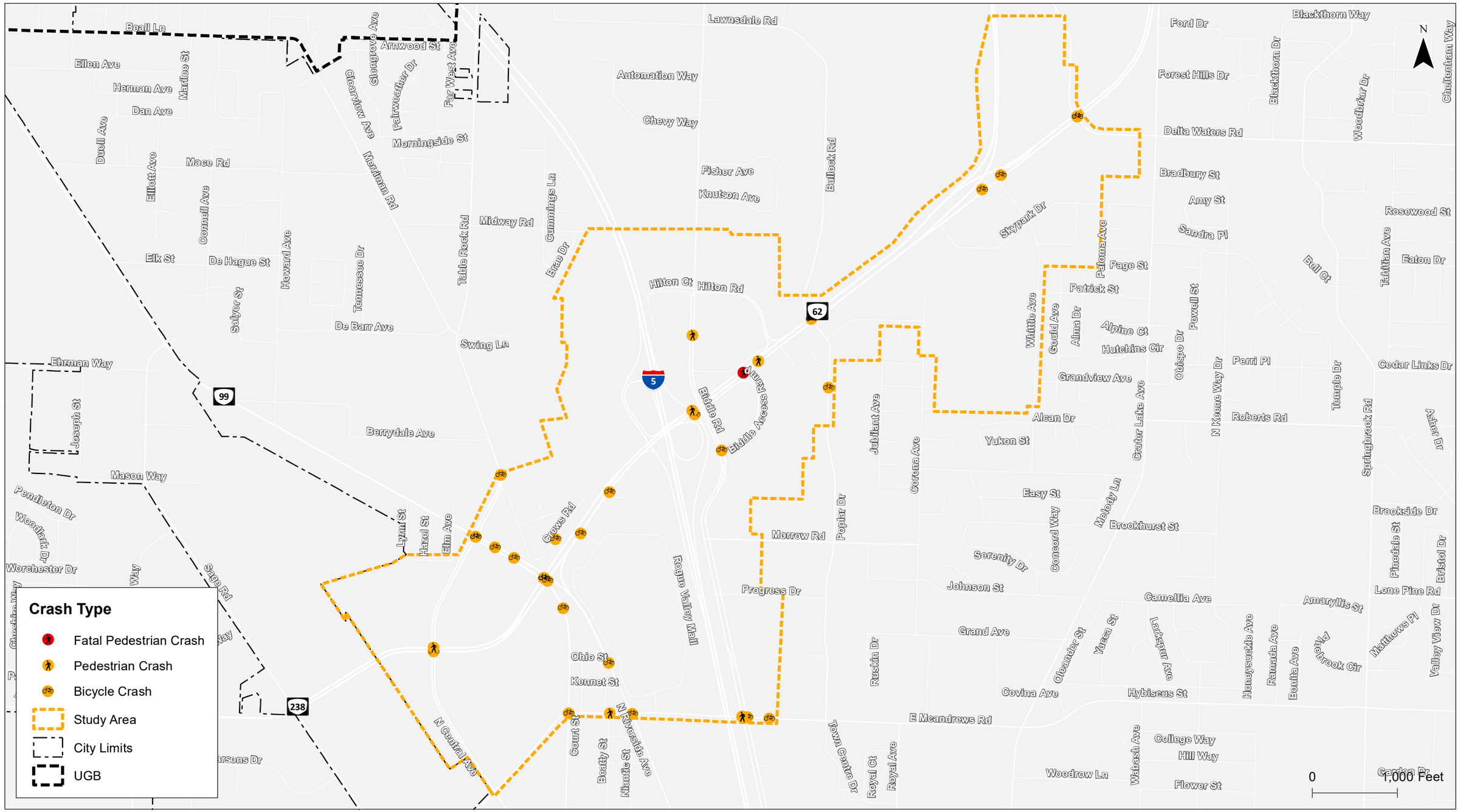
McAndrews Road/Biddle Road

Three (3) bicycle and two (2) pedestrian-related crashes occurred at this intersection resulting in serious and non-serious injuries. The serious injury crash was caused by the bicyclist disregarding the traffic signal. The data also indicates that one bicycle crash was caused by the driver not yielding the right-of-way and the other was caused by the bicyclist not wearing visible clothing and disregarding the traffic signal. One pedestrian crash was caused by the pedestrian not wearing visible clothing and disregarding the traffic signal and the other was caused by the driver not yielding the right-of-way and the pedestrian not wearing visible clothing.

McAndrews Road east of Biddle Road

One (1) bicycle-related crash occurred on this roadway resulting in non-serious injuries. The data indicates that the driver did not yield the right-of-way.

Figure 7 illustrates the location and severity of pedestrian and bicycle crashes within the IMSA.



Pedestrian and Bicycle Crashes
Medford, Oregon

Figure **7**

H:\23\23641 - Exit 30 IAMP\gis\TM2\C7_Ped_Bike Crashes.mxd - openpdx - 2:58 PM 5/12/2020

KITTELSON & ASSOCIATES

Coordinate System: NAD 1983 2011 StatePlane Oregon South FIPS 3602 Ft Intl
Data Source: Delete if there isn't one.

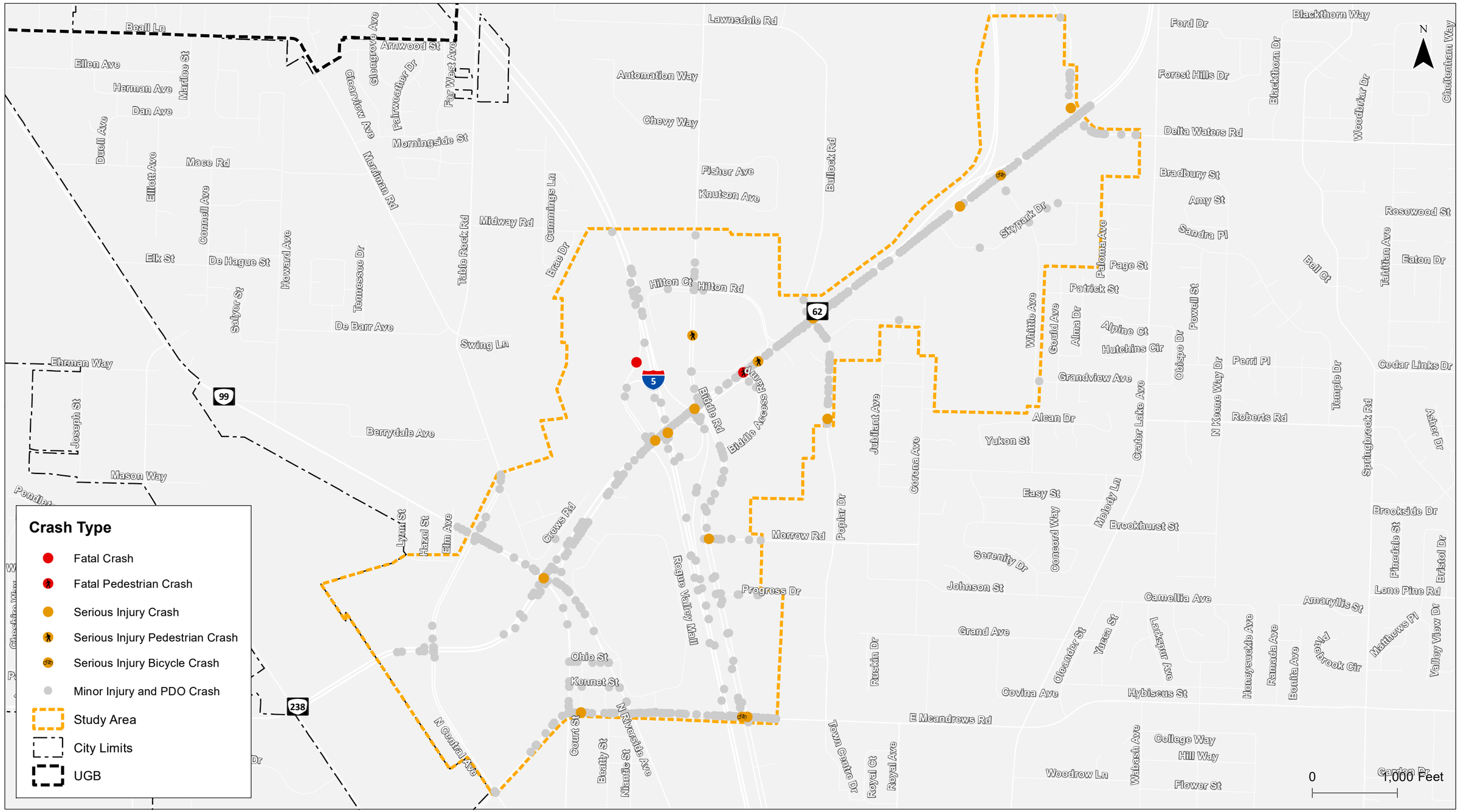
Fatal and Serious Injury Crashes

Two (2) fatal and sixteen (16) serious injury crashes were reported within the IMSA over the five-year period from January 1, 2013 through December 31, 2017. The characteristics of each crash are summarized below location.

- One fatal crash occurred in September 2016 on the I-5 southbound off-ramp under clear, dry roadway surface, and non-daylight (no streetlights) conditions when the driver overturned the vehicle. The data indicates that the crash was caused by driving too fast for roadway conditions, but not exceeding the speed limit, and alcohol was involved.
- One fatal crash occurred in December 2016 on OR 62 under cloudy, wet roadway surface, and non-daylight (with streetlights) conditions when a pedestrian was struck near the Biddle Road access ramp intersection. The data indicates that the crash was caused by the pedestrian not yielding right-of-way, being in the roadway illegally, and wearing non-visible clothing. Both alcohol and drugs were involved.
- One serious (Injury A) turning movement crash occurred in January 2013 on OR 62 near the I-5 northbound terminal (#6) under rainy, wet roadway surface, and non-daylight (with streetlights) conditions. The data indicates that the crash was caused by the driver disregarding the traffic signal. Alcohol or drugs were not reported to be involved.
- One serious (Injury A) turning movement crash occurred in April 2013 on I-5 near the southern northbound on-ramp gore under cloudy, dry roadway surface, and daylight conditions. The data indicates that the crash was caused by the driver not yielding right-of-way. Alcohol or drugs were not reported to be involved.
- One serious (Injury A) rear-end crash occurred in November 2013 on OR 62 near the I-5 southbound terminal (#5) under clear, dry roadway surface, and non-daylight (dusk) conditions. The data indicates that the crash was caused by the driver following too closely. Alcohol or drugs were not reported to be involved.
- One serious (Injury A) rear-end crash occurred in December 2013 on Poplar Drive under cloudy, dry roadway surface, and daylight conditions. The data indicates that the crash was caused by the driver following too closely. Alcohol or drugs were not reported to be involved.
- One serious (Injury A) rear-end crash occurred in December 2013 on OR 62 between Sky Park Drive (#12) and Whittle Avenue (#13) under cloudy, dry roadway surface, and daylight conditions. The data indicates that the crash was caused by the driver being forced by impact into another vehicle and following too closely. Alcohol or drugs were not reported to be involved.
- One serious (Injury A) turning movement crash occurred in March 2014 on OR 62 near Bullock Road-Poplar Drive (#11) under clear, dry roadway surface, and non-daylight (with streetlights) conditions. The data indicates that the crash was caused by the driver disregarding the traffic signal. Alcohol or drugs were not reported to be involved.
- One serious (Injury A) fixed-object crash occurred in April 2014 on OR 62 near OR 62-OR238/OR 99-Court Street-N Riverside Avenue (#2) under clear, dry, and daylight conditions. The crash was caused by the driver careless driving. Alcohol or drugs were not reported to be involved.

- One serious (Injury A) turning movement crash occurred in October 2014 on I-5 near the southern northbound on-ramp gore under cloudy, dry roadway surface, and daylight conditions. The data indicates that the crash was caused by careless driving, driving too fast for roadway conditions, but not exceeding the speed limit, and not yielding right-of-way. Alcohol or drugs were not reported to be involved.
- One serious (Injury A) turning movement crash occurred in November 2014 near the Biddle Road/Morrow Road intersection under clear, dry roadway surface, and non-daylight (with streetlights) conditions. The data indicates that the crash was caused by reckless driving and a disregard for the traffic signal. Alcohol was reported to be involved.
- One serious (Injury A) turning movement crash occurred in January 2015 near the McAndrews Road/Biddle Road intersection under cloudy, dry roadway surface, and daylight conditions. The data indicates that the crash was caused by the driver being forced by impact into another vehicle, disregarding the traffic signal, and making an improper turn. Alcohol or drugs were not reported to be involved.
- One serious (Injury A) rear-end crash occurred in September 2015 on OR 62 near Whittle Avenue (#13) under clear, dry roadway surface, and daylight conditions. The data indicates that the crash was caused by the driver making an improper change of traffic lanes. Alcohol or drugs were not reported to be involved.
- One serious (Injury A) rear-end crash occurred in October 2015 on Delta Waters Road near OR 62 (#14) under clear, dry roadway surface, and daylight conditions. The data indicates that the crash was caused by the driver following too closely. Alcohol or drugs were not reported to be involved.
- One serious (Injury A) pedestrian crash occurred in November 2015 on OR 62 near the north end of the Biddle Road jug handle (#7) under cloudy, dry roadway surface, and non-daylight (with streetlights) conditions. The data indicates that the crash was caused by the pedestrian being in the roadway illegally. Alcohol or drugs were not reported to be involved.
- One serious (Injury A) turning movement crash occurred in March 2016 near the McAndrews Road/Boardman Street intersection under cloudy, dry roadway surface, and daylight conditions. The data indicates that the crash was caused by the driver having an obscured view and being forced by impact into another vehicle. Alcohol or drugs were not reported to be involved.
- One serious (Injury A) angle crash occurred in April 2016 near the McAndrews Road/Biddle Road intersection under clear, dry roadway surface, and daylight conditions. The data indicates that the crash was caused by the driver disregarding the traffic signal. Alcohol or drugs were not reported to be involved.
- One serious (Injury A) pedestrian crash occurred in May 2017 on Biddle Road near Hilton Road (#9) under clear, dry roadway surface, and non-daylight (with streetlights) conditions. The data indicates that the crash was caused by the pedestrian not yielding right-of-way and wearing non-visible clothing. Alcohol was reported to be involved.

Figure 8 illustrates the location of the fatal and serious (Injury A) crashes within the IMSA.



Fatal and Serious Injury Crashes
Medford, Oregon

Figure
8

H:\23123641 - Exit 30 IAMP\gis\TM2\C8_Serious_Fatal Crashes.mxd - openpdx - 3:00 PM 5/12/2020

KITTELSON & ASSOCIATES

Coordinate System: NAD 1983 2011 StatePlane Oregon South FIPS 3602 Ft Intl
Data Source: Delete if there isn't one.

Intersection Crashes

The study intersection crash analysis evaluated 90th percentile crash rates, critical crash rates, and excess proportion of specific crashes per ODOT's Analysis Procedures Manual (APM) to identify intersections where existing safety issues may exist.

Intersection Crash Rates

Intersection crash rates were developed for the study intersections based on the total number of crashes reported at the intersections over the five-year period from January 1, 2013 through December 31, 2017 and total entering volume, or million entering vehicles (MEV). The intersection crash rates were compared to the 90th-percentile crash rates developed by ODOT from a study of 500 intersections in Oregon and documented in Table 4-1 of the ODOT APM. Table 3 summarizes the total number of crashes reported at the study intersections over the five-year period, the intersection crash rates, and the corresponding 90th percentile crash rates as identified in the APM. As shown, the intersection crash rate at the OR 62/Whittle Avenue intersection currently exceeds the 90th percentile crash rate. More than 86 percent of the crashes reported at the OR 62/Whittle Avenue intersection are turning movement crashes, while the remaining are rear end crashes.

It is important to note that because these crashes occurred prior to the OR 62 bypass opening, there is potential that this intersection will experience a reduction in turning movement crashes in the future. *Attachment E contains the analysis worksheet.*

Table 3: Intersection Crash Rates vs. ODOT 90th-Percentile Rates

Map ID	Study Intersection	Total Crashes	Intersection Crash Rate[2]	90th-Percentile Crash Rate[1]	Exceed 90th-Percentile Rate?
1	OR 99 / Table Rock	26	0.42	0.86	No
2	OR 62-OR 238 / OR 99-Court Street-N Riverside Avenue	50	0.51	0.86	No
3	OR 62 / Rogue Valley Mall entrance (west)	24	0.33	0.51	No
4	OR 62 / Rogue Valley Mall entrance (east, at Target)	5	0.07	0.29	No
5	OR 62 / I-5 Southbound Ramp Terminal	22	0.23	0.86	No
6	OR 62 / I-5 Northbound Ramp Terminal	50	0.48	0.86	No
7	OR 62 / Biddle Road (north end of jug handle)	5	0.05	0.29	No
8	OR 62 / Biddle Road (south end of jug handle)	8	0.19	0.51	No
9	Biddle Road / Hilton Court	9	0.23	0.86	No
10	OR 62 / Hilton Court-Fred Meyer Parking Lot Entrance	4	0.04	0.41	No
11	OR 62 / Bullock Road-Poplar Drive	47	0.44	0.86	No
12	OR 62 / Sky Park Drive	3	0.11	0.29	No
13	OR 62 / Whittle Avenue	15	0.55	0.29	**Yes**
14	OR 62 / Delta Waters Road	51	0.76	0.86	No
15	Poplar Drive / Hilton Road	5	0.16	0.41	No

[1]ODOT APM Exhibit 4-1 for urban intersections
[2]ODOT APM Intersection Crash Rate per MEV equation; AADT determined using identified intersection peak hours

Critical Crash Rates

Calculation of critical crash rates is based on intersection type, AADT entering the intersection, and sufficient reference populations. This method is only applicable where at least 5-10 reference population sites are available for screening. Otherwise, the critical crash rate defaults to the 90th-percentile crash rates outlined in Table 3. Critical crash rates were calculated for the study intersections using ODOT's Critical Crash Rate Calculator tool. Table 4 summarizes the total number of crashes reported at the study intersections over the five-year period, the intersection crash rates, and the corresponding critical crash rates. Based on the results, the OR 62/Delta Waters Road intersection (#14) exceeds the critical crash rate and the OR 62/Whittle Avenue intersection (#13) defaults to the 90th-percentile crash rate, which it exceeds. Note that the OR 62/Whittle Avenue intersection (#13) has the potential to experience a reduction in overall crashes in the future following the recent OR 62 Bypass opening. *Attachment E contains the analysis worksheet.*

Table 4: Intersection Crash Rates vs. Critical Crash Rates

Map ID	Study Intersection	Total Crashes	Intersection Crash Rate[2]	Critical Crash Rate	Exceed Critical Crash Rate?
1	OR 99 / Table Rock	26	0.42	0.59	No
2	OR 62-OR 238 / OR 99-Court Street-N Riverside Avenue	50	0.51	0.56	No
3	OR 62 / Rogue Valley Mall entrance (west)	24	0.33	*See Table 3*	*See Table 3*
4	OR 62 / Rogue Valley Mall entrance (east, at Target)	5	0.05	*See Table 3*	*See Table 3*
5	OR 62 / I-5 Southbound Ramp Terminal	22	0.23	0.56	No
6	OR 62 / I-5 Northbound Ramp Terminal	50	0.48	0.56	No
7	OR 62 / Biddle Road (north end of jug handle)	5	0.05	*See Table 3*	*See Table 3*
8	OR 62 / Biddle Road (south end of jug handle)	8	0.19	*See Table 3*	*See Table 3*
9	Biddle Road / Hilton Court	9	0.23	0.63	No
10	OR 62 / Hilton Court-Fred Meyer Parking Lot Entrance	4	0.04	*See Table 3*	*See Table 3*
11	OR 62 / Bullock Road-Poplar Drive	47	0.44	0.56	No
12	OR 62 / Sky Park Drive	3	0.11	*See Table 3*	*See Table 3*
13	OR 62 / Whittle Avenue	15	0.55	*See Table 3*	*See Table 3*
14	OR 62 / Delta Waters Road	51	0.76	0.59	**Yes**
15	Poplar Drive / Hilton Road	5	0.16	0.59	*See Table 3*

Excess Proportion of Specific Crash Types

This analysis utilized ODOT's Excess Proportions Calculator tool to identify study intersections with excess proportions of specific crash types. This helps to identify intersection improvements specific to the crash types in excess as observed through crash histories. Table 5 summarizes the intersections with high probability (over 90 percent) that the expected proportion of certain crash types will be greater than the long term expected proportion for that intersection type.

The table shows the study intersection, intersection type/reference population, the collision type in excess, the probability of future occurrences, and the proportion of benefit – the proportion of benefit indicates "the likelihood that the site will benefit from a countermeasure targeted at the collision type

under consideration." This indicates that the intersections identified may benefit from countermeasures targeted at specific crash types. *Attachment E contains the analysis worksheet.*

Table 5: Excess Proportions of Specific Crash Types

Map ID	Study Intersection	Intersection Type/Reference Population	Collision Type in Excess	Probability of Future Occurrence	Proportion of Benefit
1	OR 99 / Table Rock	4-Leg Signalized Intersection	Fixed-Object	0.99	0.05
2	OR 62-OR 238 / OR 99-Court Street-N Riverside Avenue	4-Leg Signalized Intersection	Angle	1.00	0.10
			Fixed-Object	0.99	0.01
6	OR 62 / I-5 Northbound Ramp Terminal	4-Leg Signalized Intersection	Turning Movement	0.99	0.19
9	Biddle Road / Hilton Court	4-Leg Signalized Intersection	Angle	0.97	0.14
11	OR 62 / Bullock Road-Poplar Drive	4-Leg Signalized Intersection	Backing	0.99	0.04
			Fixed-Object	0.99	0.04
13	OR 62 / Whittle Avenue	3-Leg Stop-Controlled Intersection	Turning Movement	0.98	0.22
14	OR 62 / Delta Waters Road	4-Leg Signalized Intersection	Angle	0.95	0.04
			Backing	0.98	0.02

Segment Crashes

This section evaluates crashes along State roadways, excluding crashes at study intersections, by comparing their overall crash rates in Table II of the 2017 statewide Crash Rate Book. Table II lists crash rates for mainline State highways for the past five years, by federally defined urban and rural areas and functional classification.

Segment crash rates were calculated for each segment described in Table 6 according to ODOT's APM, which depend on the total number of crashes along the segments, segment lengths, and traffic volumes. The total number of crashes along the segments and the segment lengths were obtained from GIS data. Traffic volume data were estimated for the corridors based on the traffic counts collected for the intersection operations analysis. Table 6 summarizes the segment crash rates for each study segment and compares them to ODOT's state highway system crash rates. *Attachment E contains the crash analysis worksheet.*

Table 6: Segment Crash Rates vs. ODOT State Highway System Crash Rates

Street	From	To	Segment Length (mile)	Segment Crash Rate	State Highway Crash Rate	Exceed State Highway Rate?
OR 238	RxR Overpass	OR 99	0.5	1.20	1.61	No
OR 99	Table Rock Road	OR 62	0.2	3.22	1.61	**Yes**
OR 62	OR 99	Poplar Dr/Bullock Rd	0.8	2.80	1.61	**Yes**
I-5 SB Off-Ramp	SB Off-Ramp Gore	OR 62	0.3	1.19	0.54	**Yes**
Northerly SB On-Ramp	OR 62	Northerly SB On-Ramp Gore	0.3	0.91	0.54	**Yes**
Southerly SB On-Ramp	OR 62	Southerly SB On-Ramp Gore	0.3	0.00	0.54	No
I-5 NB Off-Ramp	NB Off-Ramp Gore	OR 62	0.4	1.84	0.54	**Yes**
Southerly NB On-Ramp	OR 62	Southerly NB On-Ramp Gore	0.2	1.03	0.54	**Yes**
Northerly NB On-Ramp	OR 62	Northerly NB On-Ramp Gore	0.2	0.00	0.54	No
Biddle Road Jughandle	OR 62	Biddle Road	0.2	0.77	1.61	No
Biddle Road	north of Morrow Road	Greenway Trail	0.6	1.23	1.50	No
OR 62	Poplar Dr/Bullock Rd	Delta Waters	0.7	3.50	1.61	**Yes**

It is important to note that approximately 85 percent of the crashes along these segments are rear-end crashes (73 percent) and turning movement crashes (11 percent), which are typically caused by vehicle queueing or turning movements at intersections. Therefore, the remaining 15 percent of collisions that have occurred (e.g. head-on, miscellaneous/non-collision, pedestrian, sideswipe) are more likely attributed to the roadway segments.

Safety Priority Index System (SPIS) Sites

The Safety Priority Index System (SPIS) was developed by ODOT to identify sites along state and local roads where potential safety issues warrant further investigation. The SPIS compares the total number of crashes reported on city street, county roads, and state highways and generates a list of sites (intersections and roadway segments) with calculated SPIS scores. The scores are based on crash frequency, crash rate, and crash severity. SPIS sites with scores in the top five percent are investigated by ODOT staff and reported to the Federal Highway Administration (FHWA). Per the most recent SPIS list, there are 43 sites within the IMSA in the top five percent and 32 sites in the top ten percent locations, as summarized in Table 7. *Attachment E contains the SPIS report(s) for the sites.*

Table 7: Top 5 and 10 Percent SPIS Sites within the IMSA

SPIS Location	# of Sites with SPIS Location	Notes
Top 5% of Site		
OR 62 (MP 0.45 to 0.64)	10	Includes OR 62/I-5 Northbound Ramp Terminal (#6) intersection
OR 62 (MP 0.64 to 0.77)	6	Includes OR 62/Biddle Road (north end of jug handle) (#7) and OR 62/Hilton Court-Fred Meyer Parking Lot Entrance (#10) intersections
OR 62 (MP 0.79 to 0.98)	10	Includes OR 62/Bullock Road-Polar Drive intersection (#11)
OR 62 (MP 1.33 to 1.45)	5	Includes OR 62/Whittle Avenue intersection (#13)
OR 62 (MP 1.51 to 1.69)	10	Includes OR 62/Delta Waters Road intersection (#14)
OR 99 (MP 1.73 to 1.74)	2	Includes OR 99/Table Rock Road (#1) intersection
Top 10% of Site		
OR 62 (MP 0.38 to 0.54)	8	Includes OR 62/I-5 Southbound Ramp Terminal (#5) and OR 62/I-5 Northbound Ramp Terminal (#6) intersections
OR 62 (MP 0.63 to 0.88)	4	OR 62/Biddle Road (north end of jug handle) (#7), OR 62/Hilton Court-Fred Meyer Parking Lot Entrance intersection (#10), and OR 62/Delta Waters Road (#14) intersections
OR 62 (MP 0.90 to 1.01)	3	-
OR 62 (MP 1.16 to 1.28)	4	Includes OR 62/Sky Park Drive intersection (#12)
OR 62 (MP 1.30 to 1.47)	6	Includes OR 62/Whittle Avenue intersection (#13)
OR 99 (MP 1.72 to 1.78)	7	Includes OR 99/Table Rock Road (#1) intersection
Delta Waters Road (MP 0.65 to 0.66)	2	-

FREIGHT ANALYSIS

The current freight analysis identifies potential issues with freight movements on designated freight routes within the IMSA, including freight route restrictions, bottlenecks, over-dimension load pinch points. Potential transportation improvement projects along designated freight routes are subject to the provisions of Oregon Revised Statute (ORS) 366.215, which states that the Oregon Transportation Commission may not permanently reduce the vehicle-carrying capacity of an identified freight route when altering, relocating, changing or realigning a state highway unless safety or access considerations require the reduction. However, a local government, such as the City of Medford, may apply to the commission for an exemption to this provision, provided the commission finds that the exemption is in the best interest of the state and that freight movement is not unreasonably impeded by the exemption.

As indicated in *Tech Memo 2B: Transportation Inventory*, the majority of state highways within the IMSA are designated freight routes and/or National Highway System (NHS) routes. Therefore, they have been designed to accommodate large trucks and the intersections have been designed to accommodate large truck turning movements. The Motor Carrier Transportation Division (MCTD) Freight Mobility Map also identifies the majority of state highways in the IMSA as *Orange Routes*, or generally unrestricted freight and oversize/overweight routes; OR 238 is identified as a *Magenta Route*, which is a route with some restrictions for both length and width. The inventory also indicates that there are no freight bottlenecks or over dimension load pinch points within the IMSA. Therefore, the only potential issues with freight movements are the traffic operations and safety issues identified previously in this report.

Appendix A Raw Traffic Counts

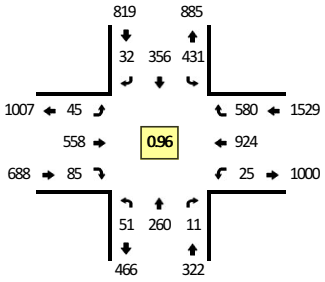
Type of peak hour being reported: Intersection Peak

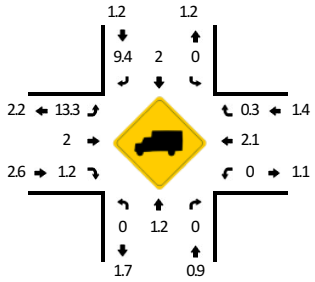
Method for determining peak hour: Total Entering Volume

LOCATION: 48748. Table Rock Rd -- Hwy 63/N Pacific Hwy
CITY/STATE: Medford, OR

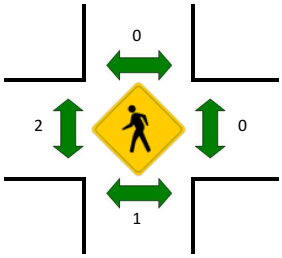
QC JOB #: 15143713
DATE: Wed, Jul 10 2019

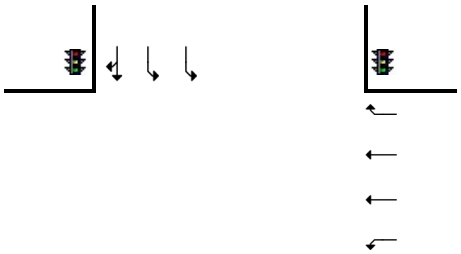
Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 5:15 PM -- 5:30 PM

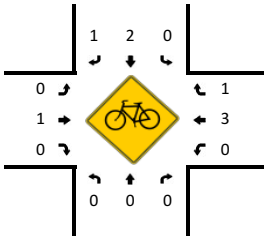


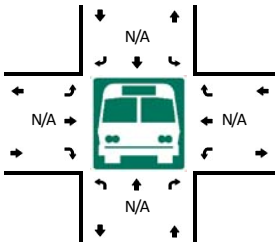


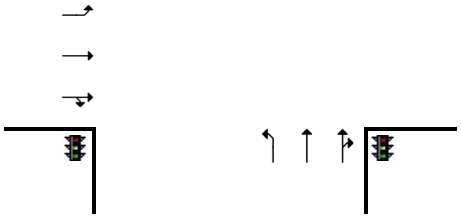
Quality Counts
DATA THAT DRIVES COMMUNITIES

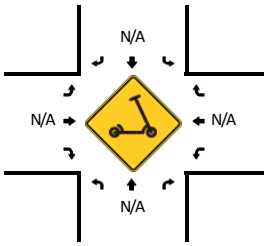












15-Min Count Period Beginning At	48748. Table Rock Rd (Northbound)				48748. Table Rock Rd (Southbound)				Hwy 63/N Pacific Hwy (Eastbound)				Hwy 63/N Pacific Hwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	7	37	2	0	28	28	3	0	1	37	6	0	1	24	18	0	192	
6:15 AM	4	18	3	0	46	26	3	0	2	66	7	0	2	53	22	0	252	
6:30 AM	6	47	1	0	65	30	5	0	2	87	11	0	1	67	28	0	350	
6:45 AM	8	41	7	0	50	69	13	0	4	87	18	0	1	75	29	0	402	1196
7:00 AM	9	47	2	0	62	46	4	0	8	85	13	0	2	61	21	0	360	1364
7:15 AM	12	52	4	0	81	63	7	0	4	101	14	0	2	96	30	0	466	1578
7:30 AM	11	53	8	0	102	74	8	0	4	175	30	0	2	79	34	0	580	1808
7:45 AM	15	45	16	0	109	59	13	0	2	186	34	0	0	128	42	0	649	2055
8:00 AM	8	55	9	0	79	56	7	0	7	117	21	0	4	91	39	0	493	2188
8:15 AM	7	52	7	0	91	45	8	0	6	139	23	0	3	107	36	0	524	2246
8:30 AM	19	40	2	0	92	55	9	0	6	133	22	0	3	108	37	0	526	2192
8:45 AM	15	35	7	0	80	36	17	0	8	150	20	0	2	119	53	0	542	2085
9:00 AM	13	39	6	0	64	36	10	0	8	112	13	0	4	101	46	0	452	2044
9:15 AM	9	34	12	0	89	43	6	0	19	107	9	0	0	106	52	0	486	2006
9:30 AM	9	25	6	0	85	38	9	0	5	109	16	0	4	110	59	0	475	1955
9:45 AM	12	46	8	0	69	41	16	0	13	134	31	0	2	118	58	0	548	1961
10:00 AM	21	55	5	0	80	41	10	0	9	127	19	0	2	140	79	0	588	2097
10:15 AM	13	42	5	0	68	57	13	0	13	130	16	0	3	130	69	0	559	2170
10:30 AM	20	37	6	0	86	54	10	0	9	127	24	0	3	124	79	0	579	2274
10:45 AM	13	40	8	0	92	56	18	0	12	131	24	0	4	165	85	0	648	2374
11:00 AM	12	38	7	0	80	64	13	0	12	111	13	0	2	178	77	0	607	2393
11:15 AM	11	39	8	0	84	48	12	0	17	154	16	0	7	158	84	0	638	2472
11:30 AM	10	64	4	0	106	60	16	0	12	153	23	0	8	176	87	0	719	2612
11:45 AM	26	48	13	0	84	57	20	0	21	163	19	0	8	196	91	0	746	2710
12:00 PM	18	65	10	0	100	58	16	0	23	160	20	0	7	195	99	0	771	2874
12:15 PM	15	56	8	0	97	63	15	0	16	144	27	0	5	195	96	0	737	2973
12:30 PM	19	51	3	0	108	61	19	0	16	159	13	0	4	193	102	0	748	3002
12:45 PM	15	49	2	0	141	66	20	0	18	169	19	0	3	195	108	0	805	3061
1:00 PM	15	55	6	0	110	61	17	0	14	153	20	0	10	182	101	0	744	3034
1:15 PM	15	42	7	0	107	56	13	0	13	151	33	0	4	205	92	0	738	3035
1:30 PM	12	64	3	0	98	73	13	0	20	153	26	0	5	177	91	0	735	3022
1:45 PM	13	44	7	0	96	56	9	0	15	160	28	0	6	196	118	0	748	2965
2:00 PM	20	47	4	0	90	80	16	0	18	129	19	0	9	203	108	0	743	2964
2:15 PM	10	48	5	0	81	79	10	0	19	129	26	0	9	179	105	0	700	2926
2:30 PM	9	34	8	0	92	84	10	0	12	136	23	0	4	196	132	0	740	2931
2:45 PM	11	73	6	0	114	67	20	0	12	144	22	0	4	168	105	0	746	2929
3:00 PM	9	61	7	0	105	81	12	0	13	120	17	0	6	202	102	0	735	2921
3:15 PM	18	71	3	0	90	67	15	0	17	140	18	0	12	203	115	0	769	2990
3:30 PM	18	44	2	0	100	66	11	0	12	137	23	0	6	195	122	0	736	2986

15-Min Count Period Beginning At	48748. Table Rock Rd (Northbound)				48748. Table Rock Rd (Southbound)				Hwy 63/N Pacific Hwy (Eastbound)				Hwy 63/N Pacific Hwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:45 PM	21	72	1	0	98	83	15	0	19	148	28	0	5	236	143	0	869	3109
4:00 PM	15	63	6	0	95	83	12	0	14	146	12	0	5	230	132	0	813	3187
4:15 PM	20	52	4	0	91	81	7	0	9	150	28	0	6	177	124	0	749	3167
4:30 PM	13	54	1	0	121	83	5	0	5	152	16	0	8	220	129	0	807	3238
4:45 PM	9	71	4	0	94	79	11	0	19	137	34	0	8	230	142	0	838	3207
5:00 PM	15	73	3	0	110	109	7	0	8	144	20	0	7	209	129	0	834	3228
5:15 PM	14	62	3	0	106	85	9	0	13	125	15	0	2	265	180	0	879	3358
5:30 PM	22	62	0	0	93	81	9	0	12	108	25	0	7	173	125	0	717	3268
5:45 PM	9	67	1	0	80	69	4	0	10	107	14	0	5	199	128	0	693	3123
6:00 PM	7	51	2	0	103	64	4	0	15	109	8	0	7	162	120	0	652	2941
6:15 PM	13	53	1	0	80	66	7	0	4	101	19	0	0	149	82	0	575	2637
6:30 PM	13	56	3	0	69	62	2	0	6	81	8	0	5	147	117	0	569	2489
6:45 PM	13	34	1	0	65	51	5	0	4	66	19	0	10	126	91	0	485	2281
7:00 PM	3	32	4	0	55	47	9	0	2	58	12	0	6	136	86	0	450	2079
7:15 PM	4	23	3	0	53	34	4	0	5	66	3	0	4	110	76	0	385	1889
7:30 PM	3	35	1	0	52	42	7	0	2	51	13	0	5	104	77	0	392	1712
7:45 PM	6	24	4	0	56	40	3	0	2	50	8	0	4	108	68	0	373	1600
8:00 PM	1	27	1	0	51	30	3	0	5	54	8	0	2	104	63	0	349	1499
8:15 PM	2	26	1	0	34	41	4	0	3	45	10	0	2	77	78	0	323	1437
8:30 PM	3	33	4	0	51	38	2	0	4	60	3	0	2	105	57	0	362	1407
8:45 PM	7	27	2	0	48	34	3	0	2	56	14	0	3	91	57	0	344	1378
9:00 PM	6	12	1	0	60	24	2	0	7	38	3	0	3	82	69	0	307	1336
9:15 PM	8	26	4	0	46	20	2	0	3	39	7	0	0	82	76	0	313	1326
9:30 PM	0	14	3	0	42	36	2	0	5	38	13	0	1	69	50	0	273	1237
9:45 PM	0	23	0	0	29	25	2	0	0	39	4	0	1	73	56	0	252	1145

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	56	248	12	0	424	340	36	0	52	500	60	0	8	1060	720	0	3516
Heavy Trucks	0	4	0		0	4	0		12	4	0		0	12	0		36
Buses																	
Pedestrians		0				0				4				0			4
Bicycles	0	0	0		0	1	0		0	1	0		0	2	0		4
Scooters																	

Comments:

Report generated on 1/6/2020 11:21 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

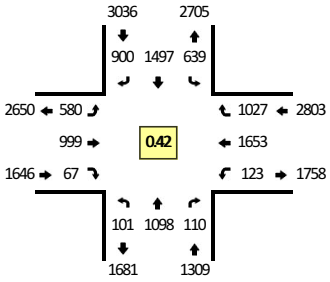
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

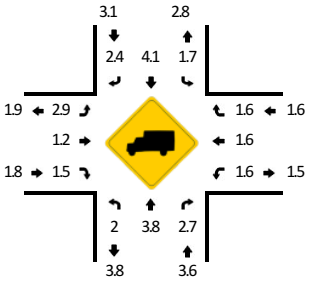
LOCATION: 37165. OR-62 -- OR-99
CITY/STATE: Jackson, OR

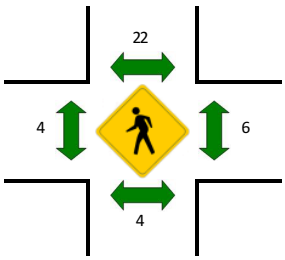
QC JOB #: 15143703
DATE: Tue, Mar 14 2017

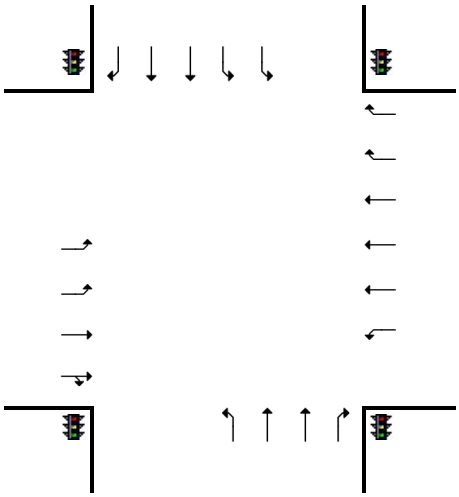
Peak-Hour: 4:15 PM -- 5:15 PM
Peak 15-Min: 5:00 PM -- 5:15 PM

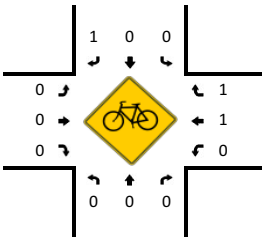


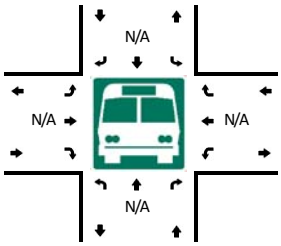


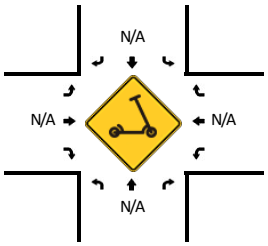












15-Min Count Period Beginning At	37165. OR-62 (Northbound)				37165. OR-62 (Southbound)				OR-99 (Eastbound)				OR-99 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	10	292	26	0	161	264	148	0	210	229	3	0	9	263	100	0	1715	
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1715
7:00 AM	3	556	31	0	396	443	217	0	372	676	4	0	30	348	210	2	3288	3288
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3288
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3288
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3288
8:00 AM	12	500	65	0	393	400	271	0	361	706	6	0	35	406	247	1	3403	3403
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3403
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3403
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3403
9:00 AM	9	444	49	0	360	391	238	0	262	492	14	0	40	428	299	3	3029	3029
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3029
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3029
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3029
10:00 AM	26	435	87	0	344	421	283	0	290	486	22	1	49	470	349	2	3265	3265
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3265
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3265
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3265
11:00 AM	55	485	63	2	468	511	376	0	327	538	26	0	46	607	445	3	3952	3952
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3952
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3952
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3952
12:00 PM	70	508	99	1	418	530	404	1	375	594	18	1	61	721	470	2	4273	4273
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4273
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4273
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4273
1:00 PM	68	543	63	1	358	496	372	0	363	553	23	0	55	714	518	3	4130	4130
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4130
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4130
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4130
2:00 PM	17	150	14	1	85	142	90	0	66	134	4	0	13	201	126	0	1043	1043
2:15 PM	4	123	18	0	99	164	93	0	90	144	2	0	34	392	115	0	1278	2321
2:30 PM	14	114	20	1	89	157	116	1	86	144	1	0	13	208	114	2	1080	3401
2:45 PM	11	164	17	0	92	146	130	0	98	178	9	0	13	158	139	0	1155	4556
3:00 PM	7	163	24	1	104	177	111	0	84	142	7	0	18	230	135	0	1203	4716
3:15 PM	15	170	15	1	84	126	113	0	113	153	10	0	16	195	119	1	1131	4569
3:30 PM	16	176	9	0	120	150	122	0	83	149	6	0	12	209	151	1	1204	4693

15-Min Count Period Beginning At	37165. OR-62 (Northbound)				37165. OR-62 (Southbound)				OR-99 (Eastbound)				OR-99 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:45 PM	17	123	15	1	115	168	116	0	104	166	2	0	13	246	126	0	1212	4750
4:00 PM	13	160	19	2	80	160	129	0	91	127	5	0	15	227	138	1	1167	4714
4:15 PM	13	151	14	1	103	188	124	0	87	159	13	0	16	256	135	0	1260	4843
4:30 PM	14	145	22	1	102	149	123	0	94	170	4	0	20	240	125	0	1209	4848
4:45 PM	14	173	18	0	83	162	148	0	78	140	8	0	13	181	129	0	1147	4783
5:00 PM	56	629	56	2	351	998	505	0	321	530	42	0	64	976	638	10	5178	8794
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7534
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6325
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5178
6:00 PM	69	393	33	3	216	487	386	0	305	414	32	0	40	625	401	3	3407	3407
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3407
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3407
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3407
7:00 PM	65	286	26	0	176	337	277	0	211	288	22	0	29	421	309	1	2448	2448
7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2448
7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2448
7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2448
8:00 PM	43	206	19	1	93	255	225	1	147	172	13	0	23	376	267	2	1843	1843
8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1843
8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1843
8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1843
9:00 PM	18	133	10	0	81	176	171	0	79	105	7	0	0	266	135	2	1183	1183
9:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1183
9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1183
9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1183

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	224	2516	224	8	1404	3992	2020	0	1284	2120	168	0	256	3904	2552	40	20712
Heavy Trucks	4	96	4		28	104	44		28	32	0		4	68	28		440
Buses																	
Pedestrians		8				36				4				20			68
Bicycles	0	0	0		0	0	1		0	0	0		0	0	1		2
Scooters																	

Comments:

Report generated on 12/10/2019 12:22 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: 110085. OR-62 -- Rogue Valley Mall Main Ent

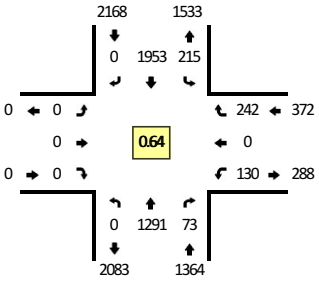
QC JOB #: 15143705

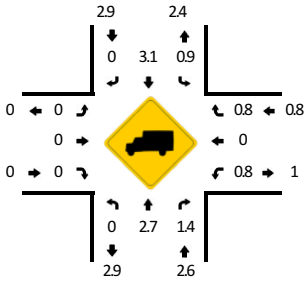
CITY/STATE: Jackson, OR

DATE: Mon, Mar 13 2017

Peak-Hour: 5:15 PM -- 6:15 PM

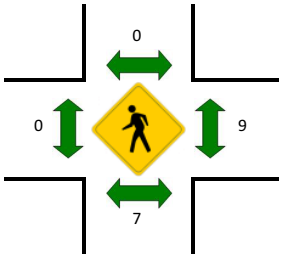
Peak 15-Min: 6:00 PM -- 6:15 PM

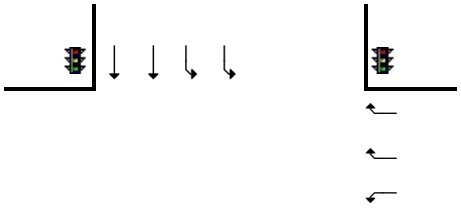


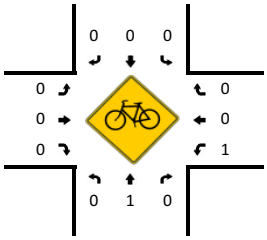


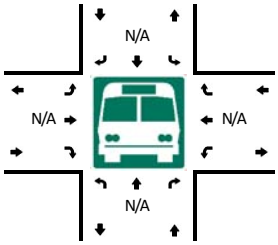
Quality Counts

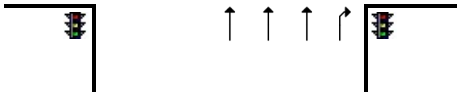
DATA THAT DRIVES COMMUNITIES

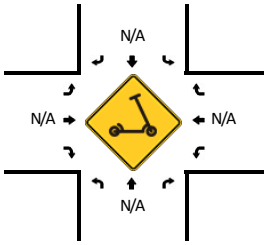












15-Min Count Period Beginning At	110085. OR-62 (Northbound)				110085. OR-62 (Southbound)				Rogue Valley Mall Main Ent (Eastbound)				Rogue Valley Mall Main Ent (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	0	533	25	0	14	510	0	0	0	0	0	0	8	0	3	0	1093	
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1093
7:00 AM	0	1057	15	0	18	1014	0	0	0	0	0	0	7	0	18	0	2129	2129
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2129
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2129
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2129
8:00 AM	0	1094	20	0	34	951	0	0	0	0	0	0	20	0	19	0	2138	2138
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2138
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2138
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2138
9:00 AM	0	976	39	0	87	871	0	0	0	0	0	0	37	0	26	0	2036	2036
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2036
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2036
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2036
10:00 AM	0	1067	48	0	132	1005	0	0	0	0	0	0	48	0	100	0	2400	2400
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2400
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2400
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2400
11:00 AM	0	1246	107	0	183	1087	0	0	0	0	0	0	74	0	153	0	2850	2850
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2850
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2850
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2850
12:00 PM	0	1269	116	0	210	1208	0	0	0	0	0	0	116	0	202	0	3121	3121
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3121
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3121
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3121
1:00 PM	0	1274	90	0	178	1205	0	0	0	0	0	0	109	0	249	0	3105	3105
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3105
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3105
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3105
2:00 PM	0	335	24	0	32	308	0	0	0	0	0	0	25	0	63	0	787	787
2:15 PM	0	267	16	0	36	305	0	0	0	0	0	0	36	0	48	0	708	1495
2:30 PM	0	326	19	0	34	331	0	0	0	0	0	0	20	0	51	0	781	2276
2:45 PM	0	309	10	0	64	334	0	0	0	0	0	0	20	0	51	0	788	3064
3:00 PM	0	364	23	0	32	306	0	0	0	0	0	0	34	0	54	0	813	3090
3:15 PM	0	363	29	0	36	346	0	0	0	0	0	0	23	0	54	0	851	3233
3:30 PM	0	382	22	0	42	371	0	0	0	0	0	0	24	0	50	0	891	3343

15-Min Count Period Beginning At	110085. OR-62 (Northbound)				110085. OR-62 (Southbound)				Rogue Valley Mall Main Ent (Eastbound)				Rogue Valley Mall Main Ent (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:45 PM	0	335	21	0	30	330	0	0	0	0	0	0	30	0	34	0	780	3335
4:00 PM	0	366	29	0	46	388	0	0	0	0	0	0	34	0	44	0	907	3429
4:15 PM	0	355	19	0	38	363	0	0	0	0	0	0	22	0	78	0	875	3453
4:30 PM	0	359	21	0	41	375	0	0	0	0	0	0	28	0	51	0	875	3437
4:45 PM	0	330	22	0	31	366	0	0	0	0	0	0	34	0	50	0	833	3490
5:00 PM	0	381	17	0	39	335	0	0	0	0	0	0	33	0	46	0	851	3434
5:15 PM	0	385	16	0	32	397	0	0	0	0	0	0	32	0	48	0	910	3469
5:30 PM	0	341	15	0	41	291	0	0	0	0	0	0	24	0	47	0	759	3353
5:45 PM	0	261	21	0	31	318	0	0	0	0	0	0	23	0	45	0	699	3219
6:00 PM	0	304	21	0	111	947	0	0	0	0	0	0	51	0	102	0	1536	3904
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2994
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2235
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1536
7:00 PM	0	701	51	0	82	684	0	0	0	0	0	0	77	0	130	0	1725	1725
7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1725
7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1725
7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1725
8:00 PM	0	523	55	0	61	509	0	0	0	0	0	0	65	0	99	0	1312	1312
8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1312
8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1312
8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1312
9:00 PM	0	338	23	0	44	325	0	0	0	0	0	0	53	0	98	0	881	881
9:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	881
9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	881
9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	881

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	1216	84	0	444	3788	0	0	0	0	0	0	204	0	408	0	6144
Heavy Trucks	0	32	0		8	104	0		0	0	0		0	0	0		144
Buses																	
Pedestrians		16				0				0				16			32
Bicycles	0	1	0		0	0	0		0	0	0		0	0	0		1
Scooters																	

Comments:

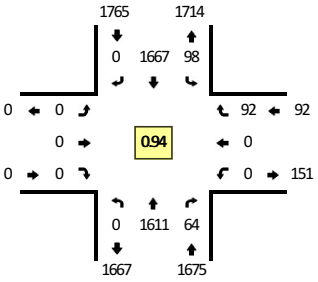
Report generated on 12/10/2019 12:22 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

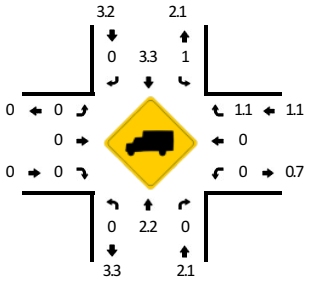
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

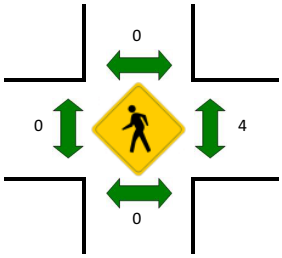
LOCATION: 110080. OR-62 -- Rogue Valley Mall Ent | **QC JOB #:** 15143709
CITY/STATE: Jackson, OR | **DATE:** Wed, Mar 15 2017

Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 5:00 PM -- 5:15 PM

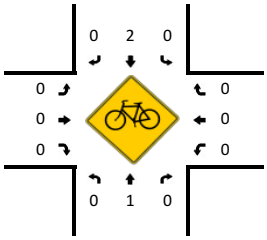


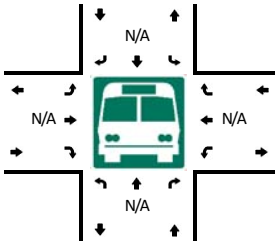
Quality Counts
DATA THAT DRIVES COMMUNITIES

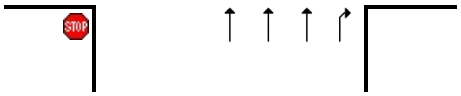


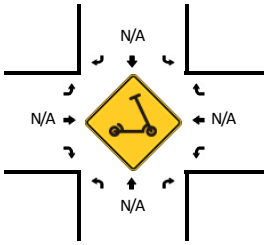












15-Min Count Period Beginning At	110080. OR-62 (Northbound)				110080. OR-62 (Southbound)				Rogue Valley Mall Ent (Eastbound)				Rogue Valley Mall Ent (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
2:00 PM	0	357	15	0	29	317	0	1	0	0	0	0	0	0	22	0	741	
2:15 PM	0	324	13	0	16	374	0	1	0	0	0	0	0	0	21	0	749	
2:30 PM	0	337	16	0	29	372	0	3	0	0	0	0	0	0	22	0	779	
2:45 PM	0	355	17	0	22	371	0	4	0	0	0	0	0	0	21	0	790	3059
3:00 PM	0	398	12	0	18	389	0	4	0	0	0	0	0	0	25	0	846	3164
3:15 PM	0	386	12	0	20	359	0	2	0	0	0	0	0	0	22	0	801	3216
3:30 PM	0	374	17	0	12	415	0	3	0	0	0	0	0	0	24	0	845	3282
3:45 PM	0	400	5	0	17	367	0	5	0	0	0	0	0	0	18	0	812	3304
4:00 PM	0	429	16	0	15	358	0	3	0	0	0	0	0	0	17	0	838	3296
4:15 PM	0	392	21	0	20	411	0	2	0	0	0	0	0	0	21	0	867	3362
4:30 PM	0	401	23	0	23	396	0	2	0	0	0	0	0	0	23	0	868	3385
4:45 PM	0	358	14	0	22	402	0	4	0	0	0	0	0	0	27	0	827	3400
5:00 PM	0	452	11	0	16	439	0	2	0	0	0	0	0	0	19	0	939	3501
5:15 PM	0	400	16	0	26	430	0	3	0	0	0	0	0	0	23	0	898	3532
5:30 PM	0	393	20	0	24	402	0	2	0	0	0	0	0	0	22	0	863	3527
5:45 PM	0	298	14	0	12	334	0	2	0	0	0	0	0	0	10	0	670	3370

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	1808	44	0	64	1756	0	8	0	0	0	0	0	0	76	0	3756
Heavy Trucks	0	24	0		0	52	0		0	0	0		0	0	0		76
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 12/10/2019 12:22 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

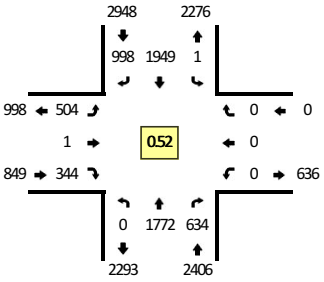
Type of peak hour being reported: Intersection Peak

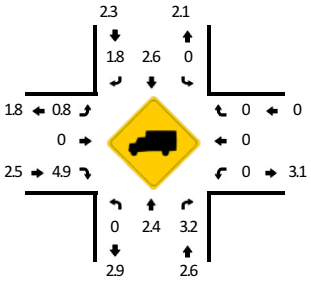
Method for determining peak hour: Total Entering Volume

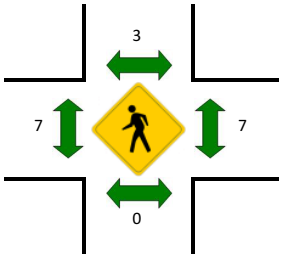
LOCATION: 37160. OR-62 -- I-5 SB Ramps
CITY/STATE: Jackson, OR

QC JOB #: 15143701
DATE: Wed, Aug 9 2017

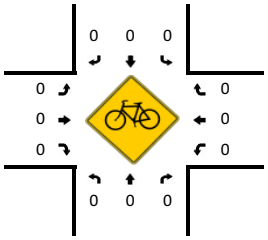
Peak-Hour: 5:15 PM -- 6:15 PM
Peak 15-Min: 6:00 PM -- 6:15 PM

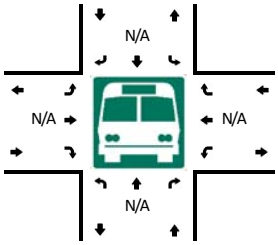


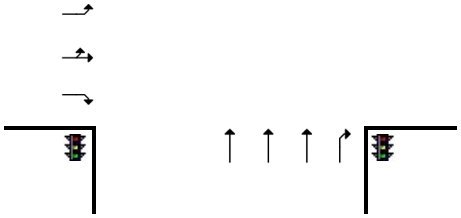


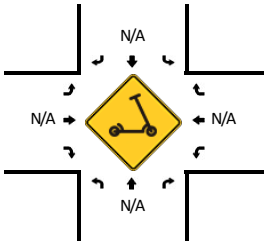












15-Min Count Period Beginning At	37160. OR-62 (Northbound)				37160. OR-62 (Southbound)				I-5 SB Ramps (Eastbound)				I-5 SB Ramps (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	0	336	192	0	0	399	264	0	128	0	142	0	0	0	0	0	1461	
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1461
7:00 AM	0	687	359	0	0	801	534	0	357	2	259	0	0	0	0	0	2999	2999
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2999
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2999
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2999
8:00 AM	0	740	335	0	0	777	496	0	337	3	184	0	0	0	0	0	2872	2872
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2872
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2872
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2872
9:00 AM	0	849	286	0	0	807	458	0	279	1	192	0	0	0	0	0	2872	2872
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2872
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2872
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2872
10:00 AM	0	932	287	0	0	994	438	0	298	1	180	0	0	0	0	0	3130	3130
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3130
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3130
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3130
11:00 AM	0	1108	365	0	0	1146	433	0	276	4	202	0	0	0	0	0	3534	3534
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3534
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3534
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3534
12:00 PM	0	1202	394	0	0	1263	551	0	288	1	209	0	0	0	0	0	3908	3908
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3908
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3908
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3908
1:00 PM	0	1216	431	0	0	1236	568	0	296	0	182	0	0	0	0	0	3929	3929
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3929
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3929
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3929
2:00 PM	0	292	97	0	0	316	161	0	66	1	37	0	0	0	0	0	970	970
2:15 PM	0	318	97	0	0	337	142	0	69	0	55	0	0	0	0	0	1018	1988
2:30 PM	0	279	109	0	0	336	138	0	101	0	59	0	0	0	0	0	1022	3010
2:45 PM	0	331	100	0	0	330	152	0	86	1	76	0	0	0	0	0	1076	4086
3:00 PM	0	326	89	0	0	321	133	0	62	1	45	0	0	0	0	0	977	4093
3:15 PM	0	304	107	0	0	359	167	0	69	1	54	0	0	0	0	0	1061	4136
3:30 PM	0	324	107	0	0	347	187	0	85	0	57	0	0	0	0	0	1107	4221

15-Min Count Period Beginning At	37160. OR-62 (Northbound)				37160. OR-62 (Southbound)				I-5 SB Ramps (Eastbound)				I-5 SB Ramps (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:45 PM	0	317	84	0	0	328	164	0	82	0	75	0	0	0	0	0	1050	4195
4:00 PM	0	329	92	0	0	393	155	0	91	0	38	0	0	0	0	0	1098	4316
4:15 PM	0	296	91	0	0	366	168	0	81	0	56	0	0	0	0	0	1058	4313
4:30 PM	0	308	117	0	1	388	218	0	85	0	53	0	0	0	0	0	1170	4376
4:45 PM	0	329	110	0	0	340	179	0	77	0	63	0	0	0	0	0	1098	4424
5:00 PM	0	346	119	0	0	390	216	0	70	0	49	0	0	0	0	0	1190	4516
5:15 PM	0	308	123	0	0	364	209	0	66	0	42	0	0	0	0	0	1112	4570
5:30 PM	0	258	92	0	0	295	199	0	102	0	55	0	0	0	0	0	1001	4401
5:45 PM	0	271	89	0	0	317	163	0	147	0	103	0	0	0	0	0	1090	4393
6:00 PM	0	935	330	0	1	973	427	0	189	1	144	0	0	0	0	0	3000	6203
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5091
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4090
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3000
7:00 PM	0	741	238	0	0	713	370	0	135	0	86	0	0	0	0	0	2283	2283
7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2283
7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2283
7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2283
8:00 PM	0	688	166	0	0	520	237	0	98	0	71	0	0	0	0	0	1780	1780
8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1780
8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1780
8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1780
9:00 PM	0	522	138	0	0	325	159	0	75	1	61	0	0	0	0	0	1281	1281
9:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1281
9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1281
9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1281

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	3740	1320	0	4	3892	1708	0	756	4	576	0	0	0	0	0	12000
Heavy Trucks	0	112	44		0	88	24		12	0	32		0	0	0		312
Buses																	
Pedestrians		0				12				12				16			40
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 12/10/2019 12:22 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

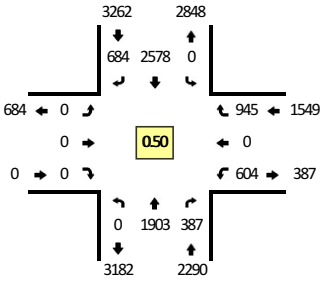
Type of peak hour being reported: Intersection Peak

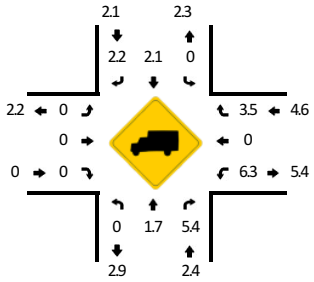
Method for determining peak hour: Total Entering Volume

LOCATION: 37161. OR-62 -- I-5 NB Ramps
CITY/STATE: Jackson, OR

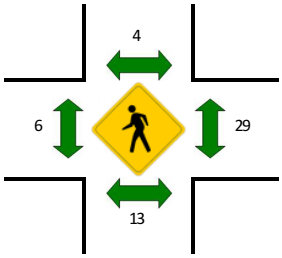
QC JOB #: 15143702
DATE: Wed, Aug 9 2017

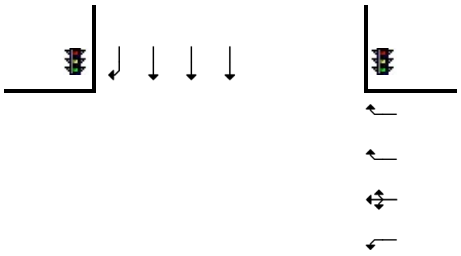
Peak-Hour: 5:15 PM -- 6:15 PM
Peak 15-Min: 6:00 PM -- 6:15 PM

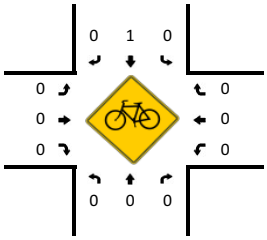


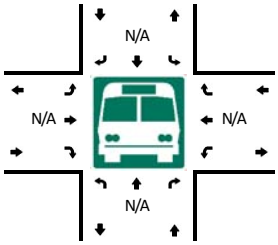


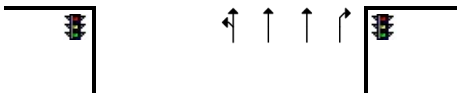
Quality Counts
DATA THAT DRIVES COMMUNITIES

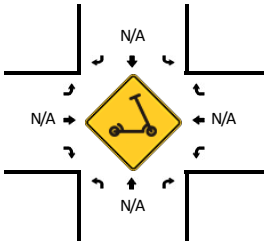












15-Min Count Period Beginning At	37161. OR-62 (Northbound)				37161. OR-62 (Southbound)				I-5 NB Ramps (Eastbound)				I-5 NB Ramps (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	0	446	69	0	0	663	124	0	0	0	0	0	104	1	312	0	1719	
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1719
7:00 AM	0	897	102	0	0	1050	209	0	0	0	0	0	179	0	557	0	2994	2994
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2994
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2994
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2994
8:00 AM	1	930	104	0	0	1086	214	0	0	0	0	0	208	1	656	0	3200	3200
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3200
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3200
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3200
9:00 AM	0	982	152	0	0	1107	208	0	0	0	0	0	220	1	619	0	3289	3289
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3289
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3289
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3289
10:00 AM	0	1096	146	0	0	1271	265	0	0	0	0	0	262	3	561	0	3604	3604
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3604
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3604
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3604
11:00 AM	0	1253	194	0	0	1493	298	0	0	0	0	0	345	3	661	0	4247	4247
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4247
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4247
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4247
12:00 PM	0	1292	195	0	0	1589	328	0	0	0	0	0	351	0	645	0	4400	4400
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4400
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4400
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4400
1:00 PM	0	1348	202	0	0	1568	358	0	0	0	0	0	327	1	642	0	4446	4446
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4446
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4446
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4446
2:00 PM	0	308	49	0	0	362	97	0	0	0	0	0	90	1	131	0	1038	1038
2:15 PM	0	318	61	0	0	415	91	0	0	0	0	0	75	0	167	0	1127	2165
2:30 PM	0	346	50	0	0	404	111	0	0	0	0	0	100	0	144	0	1155	3320
2:45 PM	0	302	70	0	0	429	98	0	0	0	0	0	95	0	199	0	1193	4513
3:00 PM	0	333	70	0	0	396	135	0	0	0	0	0	70	0	156	0	1160	4635
3:15 PM	0	287	68	0	0	362	118	0	0	0	0	0	124	1	176	0	1136	4644
3:30 PM	0	347	65	0	0	431	89	0	0	0	0	0	98	1	159	0	1190	4679

15-Min Count Period Beginning At	37161. OR-62 (Northbound)				37161. OR-62 (Southbound)				I-5 NB Ramps (Eastbound)				I-5 NB Ramps (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:45 PM	0	349	67	0	0	412	117	0	0	0	0	0	91	0	170	0	1206	4692
4:00 PM	0	292	79	0	0	419	102	0	0	0	0	0	112	2	183	0	1189	4721
4:15 PM	0	355	75	0	0	457	109	0	0	0	0	0	89	1	181	0	1267	4852
4:30 PM	0	319	62	0	0	469	136	0	0	0	0	0	106	0	186	0	1278	4940
4:45 PM	0	323	71	0	0	467	118	0	0	0	0	0	85	1	170	0	1235	4969
5:00 PM	0	331	87	0	0	467	145	0	0	0	0	0	90	2	147	0	1269	5049
5:15 PM	0	294	73	0	0	431	143	0	0	0	0	0	138	0	174	0	1253	5035
5:30 PM	0	299	72	0	0	447	103	0	0	0	0	0	122	0	145	0	1188	4945
5:45 PM	0	319	49	0	0	395	104	0	0	0	0	0	82	0	153	0	1102	4812
6:00 PM	0	991	193	0	0	1305	334	0	0	0	0	0	262	0	473	0	3558	7101
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5848
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4660
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3558
7:00 PM	0	767	142	0	0	984	223	0	0	0	0	0	174	1	320	0	2611	2611
7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2611
7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2611
7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2611
8:00 PM	0	645	144	0	0	864	201	0	0	0	0	0	134	0	277	0	2265	2265
8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2265
8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2265
8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2265
9:00 PM	0	522	107	0	0	590	152	0	0	0	0	0	104	0	176	0	1651	1651
9:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1651
9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1651
9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1651

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	3964	772	0	0	5220	1336	0	0	0	0	0	1048	0	1892	0	14232
Heavy Trucks	0	92	52		0	92	32		0	0	0		76	0	56		400
Buses																	
Pedestrians		28				16				24				68			136
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 12/10/2019 12:22 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: 37166. OR-62 -- Biddle Rd Ramp

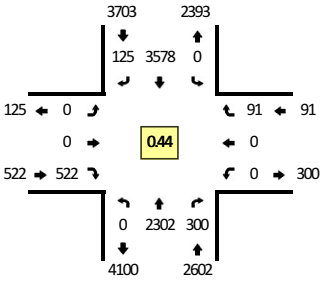
CITY/STATE: Jackson, OR

QC JOB #: 15143704

DATE: Wed, Mar 22 2017

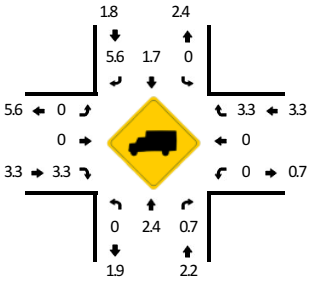
Peak-Hour: 5:15 PM -- 6:15 PM

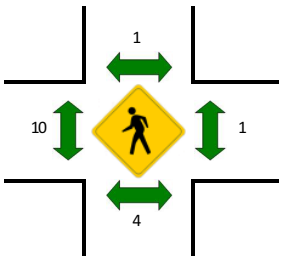
Peak 15-Min: 6:00 PM -- 6:15 PM



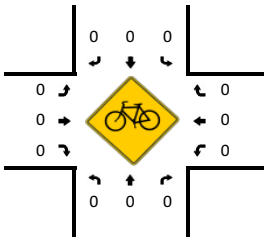
Quality Counts

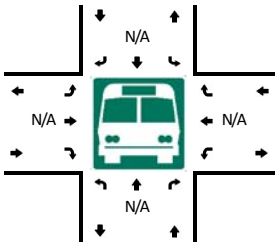
DATA THAT DRIVES COMMUNITIES



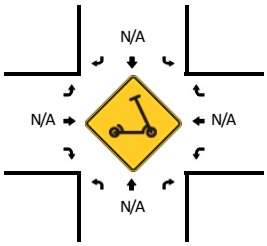












15-Min Count Period Beginning At	37166. OR-62 (Northbound)				37166. OR-62 (Southbound)				Biddle Rd Ramp (Eastbound)				Biddle Rd Ramp (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	0	615	35	0	0	708	46	0	0	0	78	0	0	0	3	0	1485	
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1485
7:00 AM	0	1360	84	0	0	1233	120	0	0	0	198	0	0	0	21	0	3016	3016
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3016
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3016
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3016
8:00 AM	0	1137	109	0	0	2105	101	0	0	0	247	0	0	0	14	0	3713	3713
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3713
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3713
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3713
9:00 AM	0	1116	148	0	0	1062	61	0	0	0	248	0	0	0	37	0	2672	2672
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2672
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2672
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2672
10:00 AM	0	1255	173	0	0	1164	82	0	0	0	244	0	0	0	31	0	2949	2949
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2949
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2949
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2949
11:00 AM	0	1452	206	0	0	1422	102	0	0	0	317	0	0	0	41	0	3540	3540
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3540
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3540
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3540
12:00 PM	0	1443	223	0	0	1504	129	0	0	0	300	0	0	0	73	0	3672	3672
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3672
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3672
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3672
1:00 PM	0	1498	207	0	0	1420	121	0	0	0	346	0	0	0	44	0	3636	3636
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3636
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3636
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3636
2:00 PM	0	394	55	0	0	383	23	0	0	0	75	0	0	0	13	0	943	943
2:15 PM	0	386	57	0	0	380	22	0	0	0	82	0	0	0	9	0	936	1879
2:30 PM	0	407	55	0	0	435	29	0	0	0	71	0	0	0	7	0	1004	2883
2:45 PM	0	349	51	0	0	416	18	0	0	0	83	0	0	0	12	0	929	3812
3:00 PM	0	418	70	0	0	405	30	0	0	0	94	0	0	0	7	0	1024	3893
3:15 PM	0	422	59	0	0	445	39	0	0	0	147	0	0	0	20	0	1132	4089
3:30 PM	0	413	53	0	0	450	32	0	0	0	95	0	0	0	7	0	1050	4135

15-Min Count Period Beginning At	37166. OR-62 (Northbound)				37166. OR-62 (Southbound)				Biddle Rd Ramp (Eastbound)				Biddle Rd Ramp (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:45 PM	0	407	48	0	0	429	33	0	0	0	102	0	0	0	12	0	1031	4237
4:00 PM	0	430	62	0	0	473	29	0	0	0	153	0	0	0	12	0	1159	4372
4:15 PM	0	413	45	0	0	437	26	0	0	0	118	0	0	0	11	0	1050	4290
4:30 PM	0	386	52	0	0	471	34	0	0	0	119	0	0	0	12	0	1074	4314
4:45 PM	0	374	58	0	0	502	20	0	0	0	105	0	0	0	19	0	1078	4361
5:00 PM	0	397	48	0	0	476	11	0	0	0	161	0	0	0	15	0	1108	4310
5:15 PM	0	437	48	0	0	508	23	0	0	0	112	0	0	0	15	0	1143	4403
5:30 PM	0	414	59	0	0	435	16	0	0	0	87	0	0	0	12	0	1023	4352
5:45 PM	0	318	45	0	0	378	19	0	0	0	75	0	0	0	20	0	855	4129
6:00 PM	0	1133	148	0	0	2257	67	0	0	0	248	0	0	0	44	0	3897	6918
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5775
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4752
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3897
7:00 PM	0	900	113	0	0	1934	56	0	0	0	207	0	0	0	39	0	3249	3249
7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3249
7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3249
7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3249
8:00 PM	0	647	86	0	0	1770	30	0	0	0	145	0	0	0	25	0	2703	2703
8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2703
8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2703
8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2703
9:00 PM	0	445	71	0	0	472	19	0	0	0	84	0	0	0	24	0	1115	1115
9:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1115
9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1115
9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1115

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	4532	592	0	0	9028	268	0	0	0	992	0	0	0	176	0	15588
Heavy Trucks	0	108	4		0	120	8		0	0	36		0	0	4		280
Buses																	
Pedestrians		12				4				32				4			52
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 12/10/2019 12:22 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: 110086. Biddle Rd Conn 1 -- South End of Jug Handle

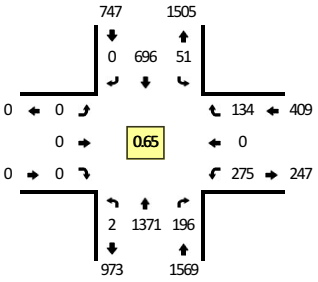
QC JOB #: 15143706

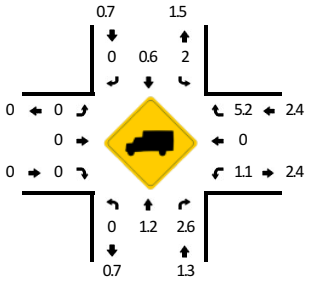
CITY/STATE: Jackson, OR

DATE: Mon, Mar 20 2017

Peak-Hour: 4:15 PM -- 5:15 PM

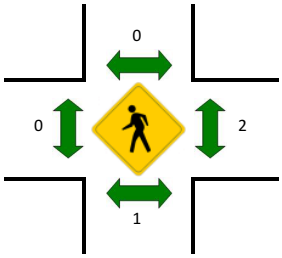
Peak 15-Min: 4:15 PM -- 4:30 PM

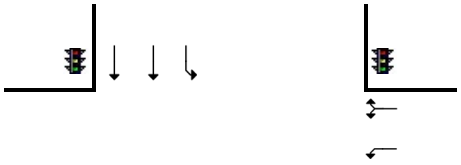


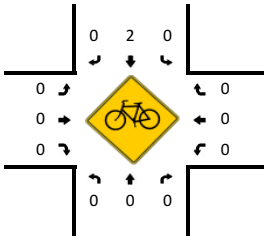


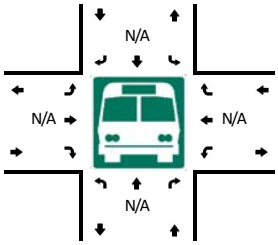
Quality Counts

DATA THAT DRIVES COMMUNITIES

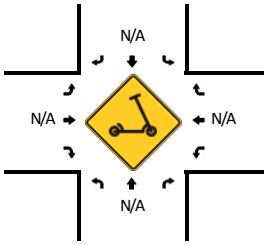












15-Min Count Period Beginning At	110086. Biddle Rd Conn 1 (Northbound)				110086. Biddle Rd Conn 1 (Southbound)				South End of Jug Handle (Eastbound)				South End of Jug Handle (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	0	236	28	0	7	134	0	0	0	0	0	0	71	0	94	0	570	
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	570
7:00 AM	0	513	41	0	21	425	0	0	0	0	0	0	218	0	264	0	1482	1482
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1482
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1482
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1482
8:00 AM	0	514	60	1	27	445	0	1	0	0	0	0	234	0	230	0	1512	1512
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1512
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1512
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1512
9:00 AM	0	424	114	0	31	410	0	0	0	0	0	0	214	0	145	0	1338	1338
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1338
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1338
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1338
10:00 AM	0	448	159	0	40	389	0	1	0	0	0	0	232	0	149	0	1418	1418
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1418
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1418
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1418
11:00 AM	0	552	169	1	42	495	0	0	0	0	0	0	231	0	149	1	1640	1640
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1640
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1640
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1640
12:00 PM	0	726	210	1	59	613	0	0	0	0	0	0	285	0	171	0	2065	2065
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2065
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2065
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2065
1:00 PM	0	737	212	0	49	514	0	1	0	0	0	0	232	0	173	1	1919	1919
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1919
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1919
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1919
2:00 PM	0	181	43	0	6	137	0	0	0	0	0	0	66	0	37	0	470	470
2:15 PM	0	185	46	0	8	130	0	0	0	0	0	0	62	0	25	0	456	926
2:30 PM	0	177	42	0	6	119	0	0	0	0	0	0	68	0	45	0	457	1383
2:45 PM	0	176	37	0	8	124	0	0	0	0	0	0	74	0	37	1	457	1840
3:00 PM	0	203	48	0	10	98	0	0	0	0	0	0	75	0	36	0	470	1840
3:15 PM	0	213	55	0	14	177	0	0	0	0	0	0	61	0	42	0	562	1946
3:30 PM	0	171	43	0	11	173	0	0	0	0	0	0	67	0	46	0	511	2000

15-Min Count Period Beginning At	110086. Biddle Rd Conn 1 (Northbound)				110086. Biddle Rd Conn 1 (Southbound)				South End of Jug Handle (Eastbound)				South End of Jug Handle (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:45 PM	0	184	51	1	11	144	0	0	0	0	0	0	77	0	57	0	525	2068
4:00 PM	0	242	50	0	14	142	0	0	0	0	0	0	61	0	21	0	530	2128
4:15 PM	0	717	52	0	8	167	0	0	0	0	0	0	63	0	40	0	1047	2613
4:30 PM	0	215	38	0	8	153	0	0	0	0	0	0	92	0	32	0	538	2640
4:45 PM	0	201	53	1	13	150	0	0	0	0	0	0	53	0	27	0	498	2613
5:00 PM	0	238	53	1	22	226	0	0	0	0	0	0	67	0	35	0	642	2725
5:15 PM	0	189	40	0	8	162	0	0	0	0	0	0	47	0	30	0	476	2154
5:30 PM	0	180	52	0	5	127	0	0	0	0	0	0	54	0	24	0	442	2058
5:45 PM	0	142	37	0	8	86	0	0	0	0	0	0	60	0	30	0	363	1923
6:00 PM	0	463	161	2	23	306	0	1	0	0	0	0	150	0	68	0	1174	2455
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1979
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1537
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1174
7:00 PM	0	329	97	1	25	230	0	0	0	0	0	0	109	0	49	0	840	840
7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	840
7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	840
7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	840
8:00 PM	0	253	81	1	17	130	0	1	0	0	0	0	74	0	36	0	593	593
8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	593
8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	593
8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	593
9:00 PM	0	175	60	0	5	76	0	0	0	0	0	0	50	0	29	0	395	395
9:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	395
9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	395
9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	395

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	2868	208	0	32	668	0	0	0	0	0	0	252	0	160	0	4188
Heavy Trucks	0	16	4		4	8	0		0	0	0		0	0	12		44
Buses																	
Pedestrians		0				0				0				4			4
Bicycles	0	0	0		0	1	0		0	0	0		0	0	0		1
Scooters																	

Comments:

Report generated on 12/10/2019 12:22 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: 110088. Biddle Rd Conn 1 -- Hilton Ct

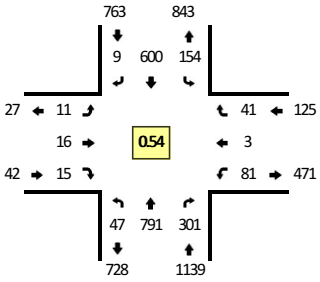
CITY/STATE: Jackson, OR

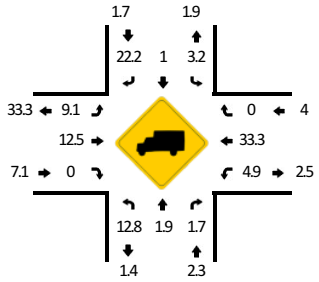
QC JOB #: 15143707

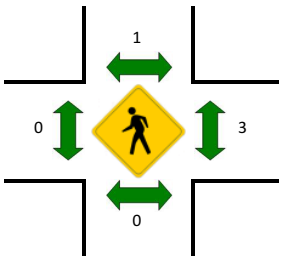
DATE: Mon, Mar 20 2017

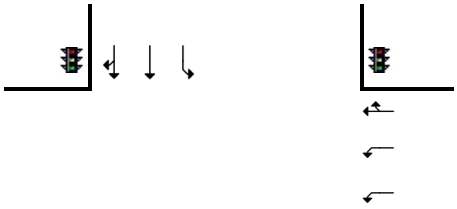
Peak-Hour: 5:15 PM -- 6:15 PM

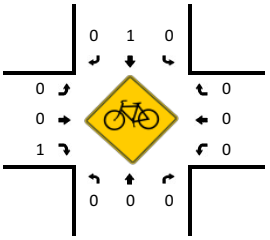
Peak 15-Min: 6:00 PM -- 6:15 PM

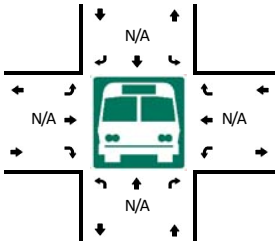


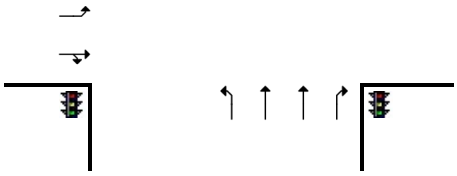


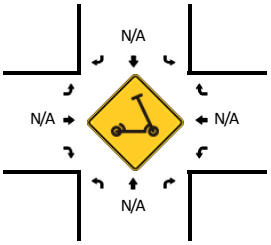












15-Min Count Period Beginning At	110088. Biddle Rd Conn 1 (Northbound)				110088. Biddle Rd Conn 1 (Southbound)				Hilton Ct (Eastbound)				Hilton Ct (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	10	277	65	10	23	126	7	0	1	0	0	0	15	2	20	0	556	
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	556
7:00 AM	42	666	74	11	93	420	13	0	7	2	7	0	32	12	60	0	1439	1439
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1439
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1439
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1439
8:00 AM	35	554	125	17	74	397	9	0	19	13	12	0	56	6	36	0	1353	1353
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1353
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1353
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1353
9:00 AM	22	411	134	21	93	376	8	0	22	10	12	0	43	3	27	0	1182	1182
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1182
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1182
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1182
10:00 AM	27	404	163	25	100	341	12	0	30	9	12	0	41	9	35	0	1208	1208
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1208
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1208
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1208
11:00 AM	20	511	170	25	112	463	13	1	13	12	15	0	55	8	47	0	1465	1465
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1465
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1465
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1465
12:00 PM	43	650	202	33	114	526	18	0	16	26	27	0	52	5	62	0	1774	1774
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1774
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1774
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1774
1:00 PM	22	672	204	20	136	466	17	0	26	14	9	0	51	8	57	0	1702	1702
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1702
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1702
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1702
2:00 PM	3	145	63	5	23	121	2	0	5	1	5	0	18	4	10	0	405	405
2:15 PM	12	135	61	8	27	122	5	0	9	4	3	0	7	1	9	0	403	808
2:30 PM	7	171	48	4	36	106	1	0	6	2	5	0	9	2	9	0	406	1214
2:45 PM	8	165	46	4	44	113	4	0	7	3	3	0	14	1	4	0	416	1630
3:00 PM	7	169	53	5	28	87	6	0	7	3	7	0	16	0	10	0	398	1623
3:15 PM	5	198	44	5	72	169	2	0	4	5	4	0	7	1	14	0	530	1750
3:30 PM	11	161	53	5	33	163	5	0	3	0	3	0	16	0	17	0	470	1814

15-Min Count Period Beginning At	110088. Biddle Rd Conn 1 (Northbound)				110088. Biddle Rd Conn 1 (Southbound)				Hilton Ct (Eastbound)				Hilton Ct (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:45 PM	9	166	51	6	37	128	4	0	5	2	8	0	12	1	21	0	450	1848
4:00 PM	5	187	72	4	36	139	6	0	9	2	6	0	13	1	19	0	499	1949
4:15 PM	6	160	71	6	55	137	4	2	5	8	3	0	23	0	10	0	490	1909
4:30 PM	6	164	67	8	41	153	2	0	9	2	6	0	15	0	17	0	490	1929
4:45 PM	5	166	71	6	37	147	3	0	7	7	10	0	17	1	5	0	482	1961
5:00 PM	5	174	85	11	57	203	2	0	9	6	15	0	13	0	13	0	593	2055
5:15 PM	3	159	70	3	35	134	3	0	3	4	7	0	14	0	11	0	446	2011
5:30 PM	2	137	56	5	30	107	0	0	1	1	3	0	20	1	10	0	373	1894
5:45 PM	3	127	39	2	23	81	0	0	3	3	0	0	11	1	2	0	295	1707
6:00 PM	7	368	136	22	66	278	6	0	4	8	5	0	36	1	18	0	955	2069
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1623
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1250
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	955
7:00 PM	6	256	105	11	61	223	6	0	8	4	6	0	34	1	9	0	730	730
7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	730
7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	730
7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	730
8:00 PM	6	192	71	8	41	118	1	0	4	5	6	0	26	0	9	0	487	487
8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	487
8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	487
8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	487
9:00 PM	4	143	51	8	22	63	0	0	2	2	1	0	12	0	6	0	314	314
9:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	314
9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	314
9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	314

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	28	1472	544	88	264	1112	24	0	16	32	20	0	144	4	72	0	3820
Heavy Trucks	4	36	8		12	4	8		0	4	0		4	0	0		80
Buses																	
Pedestrians		0				4				0				4			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 12/10/2019 12:22 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

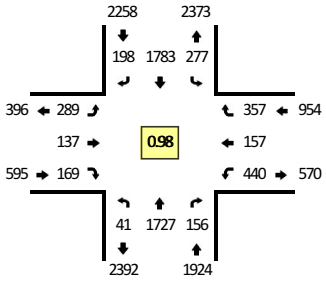
Type of peak hour being reported: Intersection Peak

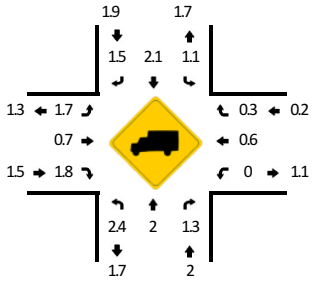
Method for determining peak hour: Total Entering Volume

LOCATION: 37163. OR-62 -- Poplar Dr
CITY/STATE: Medford, OR

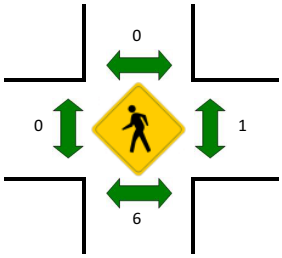
QC JOB #: 15143712
DATE: Wed, Jul 10 2019

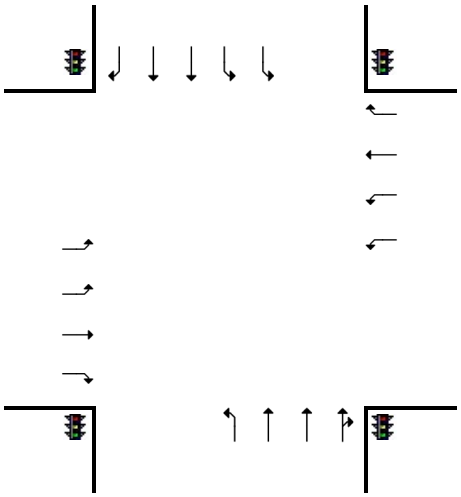
Peak-Hour: 4:45 PM -- 5:45 PM
Peak 15-Min: 5:00 PM -- 5:15 PM

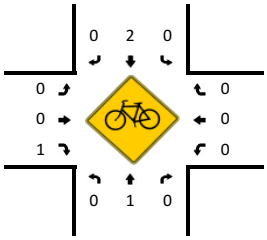


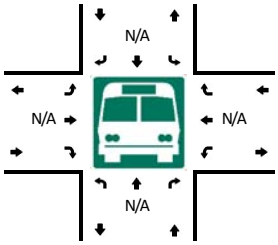


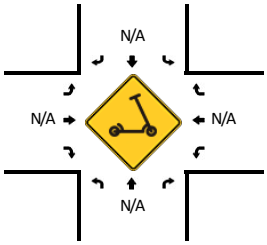
Quality Counts
DATA THAT DRIVES COMMUNITIES











15-Min Count Period Beginning At	37163. OR-62 (Northbound)				37163. OR-62 (Southbound)				Poplar Dr (Eastbound)				Poplar Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	5	107	7	0	16	144	15	0	10	5	2	0	30	3	6	0	350	
6:15 AM	4	140	5	0	16	165	5	0	10	5	1	0	27	12	15	0	405	
6:30 AM	5	177	20	0	29	259	19	0	8	1	2	0	37	10	18	0	585	
6:45 AM	13	215	20	0	31	228	33	0	19	8	1	0	41	11	18	0	638	1978
7:00 AM	20	209	25	0	34	243	18	0	15	4	1	0	48	9	16	0	642	2270
7:15 AM	16	201	12	0	53	263	37	0	29	10	4	0	55	17	24	0	721	2586
7:30 AM	15	306	33	0	50	371	34	0	39	14	6	0	55	17	32	0	972	2973
7:45 AM	14	380	33	0	72	382	45	0	27	20	8	0	62	24	37	0	1104	3439
8:00 AM	14	217	18	0	47	264	47	0	26	17	7	0	66	20	23	0	766	3563
8:15 AM	9	281	22	0	57	312	40	0	39	9	8	0	43	14	23	0	857	3699
8:30 AM	11	220	18	0	57	238	40	0	47	9	6	0	63	30	30	0	769	3496
8:45 AM	17	277	35	0	45	261	45	0	36	29	4	0	52	31	31	0	863	3255
9:00 AM	6	226	36	0	39	238	28	0	42	20	16	0	54	21	30	0	756	3245
9:15 AM	12	313	30	0	61	252	31	0	42	16	15	0	57	17	44	0	890	3278
9:30 AM	14	306	31	0	62	295	40	0	34	26	8	0	62	38	40	0	956	3465
9:45 AM	16	314	32	0	71	302	46	0	46	15	25	0	47	27	40	0	981	3583
10:00 AM	10	253	33	0	54	258	37	0	55	31	13	0	67	27	55	0	893	3720
10:15 AM	15	276	43	0	74	277	44	0	48	21	11	0	69	38	51	0	967	3797
10:30 AM	14	353	43	0	64	293	57	0	47	31	11	0	72	28	49	0	1062	3903
10:45 AM	17	316	47	0	64	322	51	0	61	25	9	0	74	31	58	0	1075	3997
11:00 AM	22	314	36	0	62	291	46	0	51	29	12	0	86	23	71	0	1043	4147
11:15 AM	11	312	44	0	75	318	45	0	59	21	16	0	86	34	60	0	1081	4261
11:30 AM	30	306	42	0	75	350	47	0	53	36	18	0	79	27	66	0	1129	4328
11:45 AM	18	342	40	0	82	363	49	0	62	27	16	0	73	34	64	0	1170	4423
12:00 PM	10	362	51	0	82	317	45	0	59	29	27	0	95	36	74	0	1187	4567
12:15 PM	13	346	46	0	91	325	54	0	82	31	19	0	87	36	95	0	1225	4711
12:30 PM	14	337	57	0	74	353	48	0	62	32	23	0	123	38	74	0	1235	4817
12:45 PM	21	400	52	0	74	327	66	0	52	23	16	0	91	32	72	0	1226	4873
1:00 PM	14	371	49	0	79	373	46	0	53	30	17	0	93	39	91	0	1255	4941
1:15 PM	15	349	49	0	90	365	51	0	62	15	10	0	87	37	99	0	1229	4945
1:30 PM	9	341	42	0	88	303	65	0	65	31	13	0	105	30	96	0	1188	4898
1:45 PM	14	341	41	0	89	346	51	0	52	32	12	0	102	41	68	0	1189	4861
2:00 PM	21	376	50	0	70	349	50	0	55	24	15	0	96	35	79	0	1220	4826
2:15 PM	19	374	39	0	72	401	43	0	50	24	9	0	79	37	82	0	1229	4826
2:30 PM	14	347	42	0	82	351	52	0	68	31	18	0	107	40	91	0	1243	4881
2:45 PM	17	428	55	0	61	335	43	0	76	25	19	0	83	43	80	0	1265	4957
3:00 PM	17	384	37	0	78	370	45	0	55	30	20	0	100	45	74	0	1255	4992
3:15 PM	18	353	45	0	68	337	39	0	66	34	17	0	110	32	92	0	1211	4974
3:30 PM	20	452	44	0	83	391	48	0	68	22	15	0	88	28	78	0	1337	5068

15-Min Count Period Beginning At	37163. OR-62 (Northbound)				37163. OR-62 (Southbound)				Poplar Dr (Eastbound)				Poplar Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:45 PM	21	396	40	0	100	413	46	0	52	30	15	0	117	35	77	0	1342	5145
4:00 PM	9	406	45	0	64	352	45	0	89	36	26	0	133	51	88	0	1344	5234
4:15 PM	13	452	51	0	74	390	45	0	60	27	16	0	81	29	89	0	1327	5350
4:30 PM	11	325	37	0	84	415	50	0	91	34	35	0	126	50	99	0	1357	5370
4:45 PM	13	475	41	0	66	409	43	0	75	32	34	0	110	33	70	0	1401	5429
5:00 PM	5	415	31	0	81	485	44	0	72	41	55	0	99	38	95	0	1461	5546
5:15 PM	11	405	42	0	65	414	49	0	78	35	37	0	123	53	101	0	1413	5632
5:30 PM	12	432	42	0	65	475	62	0	64	29	43	0	108	33	91	0	1456	5731
5:45 PM	11	352	45	0	62	338	55	0	53	20	11	0	108	34	89	0	1178	5508
6:00 PM	8	307	35	0	47	306	49	0	65	27	13	0	91	38	76	0	1062	5109
6:15 PM	10	347	45	0	62	284	40	0	46	10	8	0	77	28	58	0	1015	4711
6:30 PM	7	245	40	0	57	247	28	0	48	17	12	0	93	36	38	0	868	4123
6:45 PM	5	230	36	0	47	213	45	0	43	17	8	0	70	19	53	0	786	3731
7:00 PM	6	212	22	0	56	214	32	0	33	17	7	0	71	19	51	0	740	3409
7:15 PM	9	198	30	0	31	200	25	0	34	12	5	0	64	19	42	0	669	3063
7:30 PM	7	213	37	0	44	170	27	0	34	11	1	0	71	23	36	0	674	2869
7:45 PM	4	189	30	0	44	165	23	0	31	10	4	0	43	15	37	0	595	2678
8:00 PM	6	201	16	0	24	170	19	0	35	9	3	0	50	8	30	0	571	2509
8:15 PM	8	180	16	0	21	165	30	0	35	4	4	0	44	19	27	0	553	2393
8:30 PM	5	172	20	0	29	142	23	0	27	15	5	0	30	10	33	0	511	2230
8:45 PM	1	181	21	0	27	160	12	0	22	17	9	0	43	7	33	0	533	2168
9:00 PM	6	168	19	0	37	136	24	0	28	10	6	0	41	3	24	0	502	2099
9:15 PM	3	138	17	0	26	131	13	0	20	13	1	0	37	7	24	0	430	1976
9:30 PM	6	121	12	0	27	112	17	0	26	7	4	0	31	8	26	0	397	1862
9:45 PM	6	107	13	0	13	122	11	0	19	6	2	0	36	8	17	0	360	1689

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	20	1660	124	0	324	1940	176	0	288	164	220	0	396	152	380	0	5844
Heavy Trucks	0	16	4		4	28	0		0	4	4		0	0	4		64
Buses																	
Pedestrians		8				0				0				0			8
Bicycles	0	0	0		0	0	0		0	0	1		0	0	0		1
Scooters																	

Comments:

Report generated on 1/6/2020 11:21 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

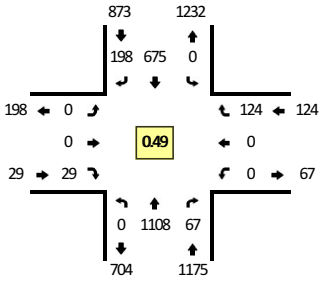
Type of peak hour being reported: Intersection Peak

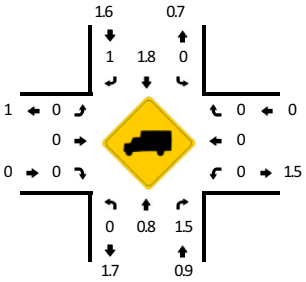
Method for determining peak hour: Total Entering Volume

LOCATION: 110089. Poplar Dr -- Hilton Rd
CITY/STATE: Jackson, OR

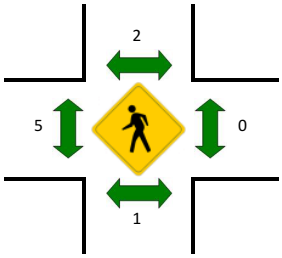
QC JOB #: 15143708
DATE: Wed, Mar 22 2017

Peak-Hour: 5:15 PM -- 6:15 PM
Peak 15-Min: 6:00 PM -- 6:15 PM

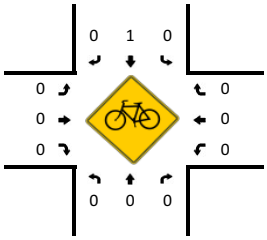


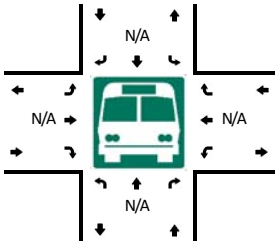


Quality Counts
DATA THAT DRIVES COMMUNITIES

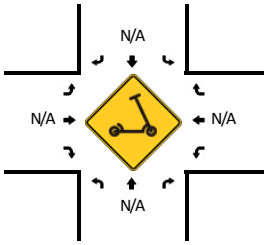












15-Min Count Period Beginning At	110089. Poplar Dr (Northbound)				110089. Poplar Dr (Southbound)				Hilton Rd (Eastbound)				Hilton Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	0	125	3	0	0	95	21	0	0	0	2	0	0	0	58	0	304	
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	304
7:00 AM	0	272	29	0	0	354	55	0	0	0	5	0	0	0	119	0	834	834
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	834
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	834
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	834
8:00 AM	0	302	33	0	0	307	57	0	0	0	5	0	0	0	88	0	792	792
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	792
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	792
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	792
9:00 AM	0	327	17	0	0	307	95	0	0	0	9	0	0	0	75	0	830	830
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	830
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	830
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	830
10:00 AM	0	464	19	0	0	367	103	0	0	0	10	0	0	0	58	0	1021	1021
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1021
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1021
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1021
11:00 AM	0	587	20	0	0	450	139	0	0	0	23	0	0	0	58	0	1277	1277
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1277
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1277
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1277
12:00 PM	0	625	14	0	0	447	135	0	0	0	26	0	0	0	54	1	1302	1302
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1302
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1302
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1302
1:00 PM	0	661	13	0	0	462	129	0	0	0	17	0	0	0	63	0	1345	1345
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1345
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1345
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1345
2:00 PM	0	165	2	0	0	109	35	0	0	0	5	0	0	0	11	0	327	327
2:15 PM	0	172	2	0	0	119	33	0	0	0	6	0	0	0	12	0	344	671
2:30 PM	0	181	11	0	0	107	20	0	0	0	9	0	0	0	9	0	337	1008
2:45 PM	0	166	3	0	0	137	33	0	0	0	6	0	0	0	14	0	359	1367
3:00 PM	0	157	5	0	0	147	40	0	0	0	6	0	0	0	22	0	377	1417
3:15 PM	0	190	9	0	0	120	25	0	0	0	4	0	0	0	12	0	360	1433
3:30 PM	0	199	1	0	0	150	32	0	0	0	5	0	0	0	20	0	407	1503

15-Min Count Period Beginning At	110089. Poplar Dr (Northbound)				110089. Poplar Dr (Southbound)				Hilton Rd (Eastbound)				Hilton Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:45 PM	0	166	6	0	0	128	27	0	0	0	7	0	0	0	22	0	356	1500
4:00 PM	0	186	3	0	0	109	34	0	0	0	5	0	0	0	17	0	354	1477
4:15 PM	0	189	11	0	0	136	38	0	0	0	7	0	0	0	24	0	405	1522
4:30 PM	0	181	5	0	0	102	28	0	0	0	3	0	0	0	16	0	335	1450
4:45 PM	0	162	2	0	0	136	43	0	0	0	6	0	0	0	22	0	371	1465
5:00 PM	0	201	3	0	0	126	39	0	0	0	2	0	0	0	18	0	389	1500
5:15 PM	0	184	8	0	0	127	32	0	0	0	6	0	0	0	20	0	377	1472
5:30 PM	0	188	10	0	0	114	37	0	0	0	10	0	0	0	19	0	378	1515
5:45 PM	0	178	9	0	0	91	33	0	0	0	4	0	0	0	16	0	331	1475
6:00 PM	0	558	40	0	0	343	96	0	0	0	9	0	0	0	69	0	1115	2201
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1824
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1446
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1115
7:00 PM	0	421	23	0	0	261	83	0	0	0	12	0	0	0	53	0	853	853
7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	853
7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	853
7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	853
8:00 PM	0	316	17	0	0	184	64	0	0	0	7	0	0	0	41	0	629	629
8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	629
8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	629
8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	629
9:00 PM	0	214	17	0	0	96	40	0	0	0	7	0	0	0	40	0	414	414
9:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	414
9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	414
9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	414

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	2232	160	0	0	1372	384	0	0	0	36	0	0	0	276	0	4460
Heavy Trucks	0	20	4		0	28	4		0	0	0		0	0	0		56
Buses																	
Pedestrians		0				4				8				0			12
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 12/10/2019 12:22 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

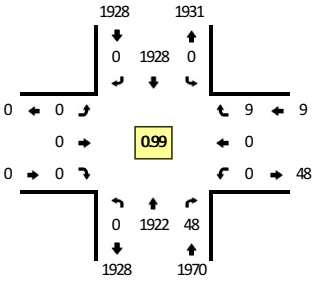
Type of peak hour being reported: Intersection Peak

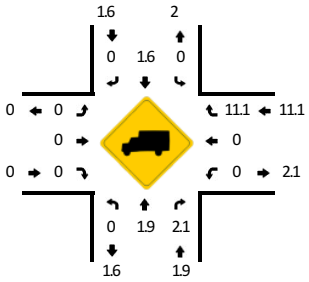
Method for determining peak hour: Total Entering Volume

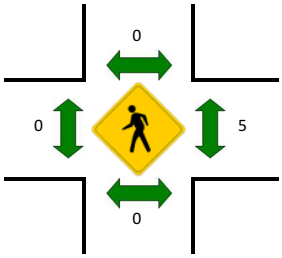
LOCATION: 110083. OR-62 -- Sky Park Dr
CITY/STATE: Jackson, OR

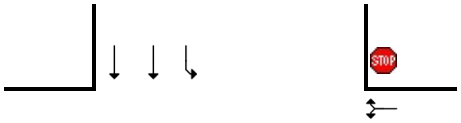
QC JOB #: 15143710
DATE: Mon, Mar 20 2017

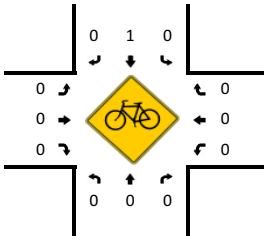
Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 5:00 PM -- 5:15 PM

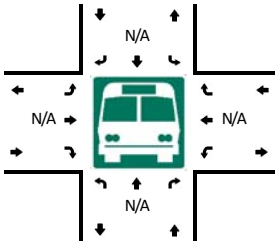




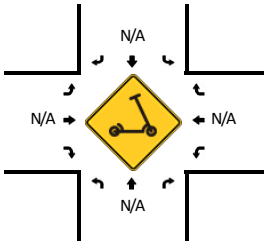












15-Min Count Period Beginning At	110083. OR-62 (Northbound)				110083. OR-62 (Southbound)				Sky Park Dr (Eastbound)				Sky Park Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
2:00 PM	0	421	8	0	0	404	0	0	0	0	0	0	0	0	8	0	841	
2:15 PM	0	412	6	0	0	448	0	0	0	0	0	0	0	0	2	0	868	
2:30 PM	0	423	9	0	0	447	0	0	0	0	0	0	0	0	4	0	883	
2:45 PM	0	443	5	0	0	437	0	0	0	0	0	0	0	0	2	0	887	3479
3:00 PM	0	404	8	0	0	458	0	0	0	0	0	0	0	0	5	0	875	3513
3:15 PM	0	458	10	0	0	418	0	0	0	0	0	0	0	0	4	0	890	3535
3:30 PM	0	455	13	0	0	447	0	0	0	0	0	0	0	0	5	0	920	3572
3:45 PM	0	453	10	0	0	448	0	0	0	0	0	0	0	0	7	0	918	3603
4:00 PM	0	489	11	0	0	463	0	0	0	0	0	0	0	0	1	0	964	3692
4:15 PM	0	447	14	0	0	497	0	0	0	0	0	0	0	0	6	0	964	3766
4:30 PM	0	450	15	0	0	506	0	0	0	0	0	0	0	0	1	0	972	3818
4:45 PM	0	499	10	0	0	461	0	0	0	0	0	0	0	0	5	0	975	3875
5:00 PM	0	446	10	0	0	524	0	0	0	0	0	0	0	0	3	0	983	3894
5:15 PM	0	527	13	0	0	437	0	0	0	0	0	0	0	0	0	0	977	3907
5:30 PM	0	469	9	0	0	395	0	0	0	0	0	0	0	0	3	0	876	3811
5:45 PM	0	406	6	0	0	364	0	0	0	0	0	0	0	0	1	0	777	3613

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	1784	40	0	0	2096	0	0	0	0	0	0	0	0	12	0	3932
Heavy Trucks	0	24	0		0	36	0		0	0	0		0	0	4		64
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 12/10/2019 12:22 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

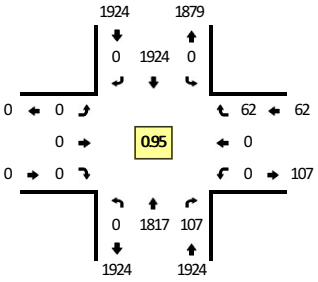
Type of peak hour being reported: Intersection Peak

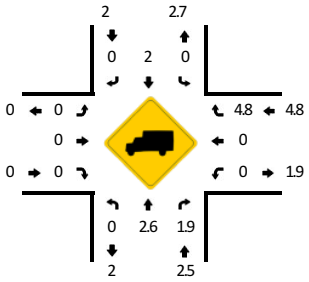
Method for determining peak hour: Total Entering Volume

LOCATION: 110084. OR-62 -- Whittle Ave
CITY/STATE: Jackson, OR

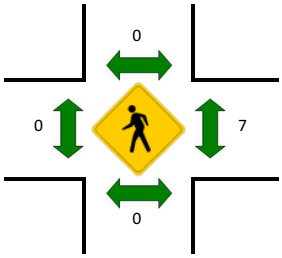
QC JOB #: 15143711
DATE: Fri, Mar 17 2017

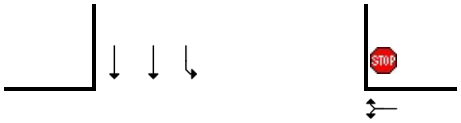
Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 5:15 PM -- 5:30 PM

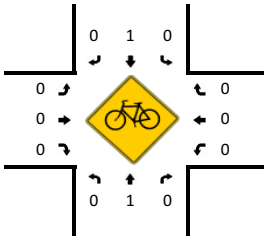


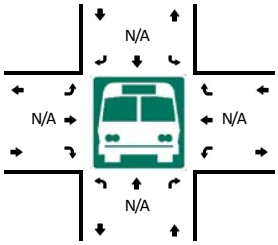


Quality Counts
DATA THAT DRIVES COMMUNITIES

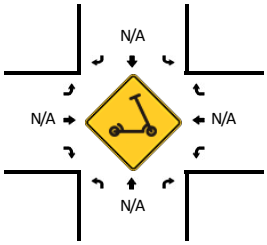












15-Min Count Period Beginning At	110084. OR-62 (Northbound)				110084. OR-62 (Southbound)				Whittle Ave (Eastbound)				Whittle Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
2:00 PM	0	440	13	0	0	419	0	0	0	0	0	0	0	0	13	0	885	
2:15 PM	0	429	15	0	0	419	0	0	0	0	0	0	0	0	9	0	872	
2:30 PM	0	388	16	0	0	445	0	0	0	0	0	0	0	0	10	0	859	
2:45 PM	0	429	8	0	0	420	0	0	0	0	0	0	0	0	21	0	878	3494
3:00 PM	0	439	23	0	0	403	0	0	0	0	0	0	0	0	12	0	877	3486
3:15 PM	0	396	20	0	0	452	0	0	0	0	0	0	0	0	15	0	883	3497
3:30 PM	0	449	25	0	0	486	0	0	0	0	0	0	0	0	12	0	972	3610
3:45 PM	0	451	18	0	0	414	0	0	0	0	0	0	0	0	15	0	898	3630
4:00 PM	0	445	25	0	0	473	0	0	0	0	0	0	0	0	9	0	952	3705
4:15 PM	0	479	22	0	0	445	0	0	0	0	0	0	0	0	12	0	958	3780
4:30 PM	0	445	21	0	0	456	0	0	0	0	0	0	0	0	21	0	943	3751
4:45 PM	0	465	31	0	0	442	0	0	0	0	0	0	0	0	14	0	952	3805
5:00 PM	0	457	31	0	0	484	0	0	0	0	0	0	0	0	12	0	984	3837
5:15 PM	0	450	24	0	0	542	0	0	0	0	0	0	0	0	15	0	1031	3910
5:30 PM	0	451	20	0	0	426	0	0	0	0	0	0	0	0	16	0	913	3880
5:45 PM	0	392	24	0	0	351	0	0	0	0	0	0	0	0	11	0	778	3706

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	1800	96	0	0	2168	0	0	0	0	0	0	0	0	60	0	4124
Heavy Trucks	0	24	0		0	52	0		0	0	0		0	0	0		76
Buses																	
Pedestrians		0				0				0				8			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 12/10/2019 12:22 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: 140087. Crater Lake Hwy -- Delta Waters Rd

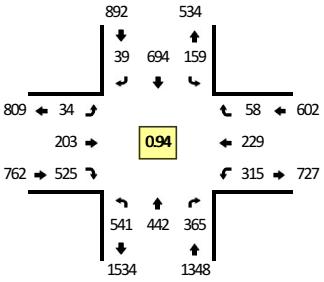
CITY/STATE: Medford, OR

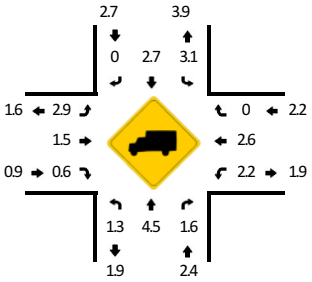
QC JOB #: 15143714

DATE: Wed, Jul 10 2019

Peak-Hour: 4:30 PM -- 5:30 PM

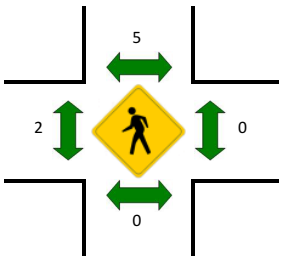
Peak 15-Min: 5:00 PM -- 5:15 PM

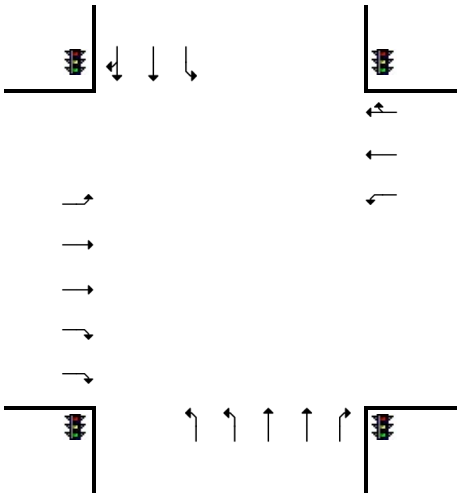


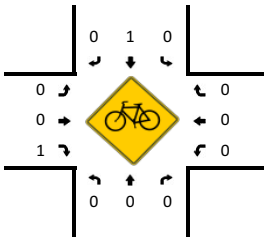


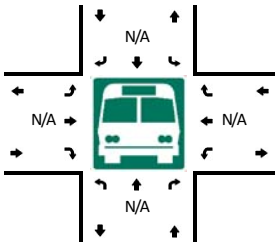
Quality Counts

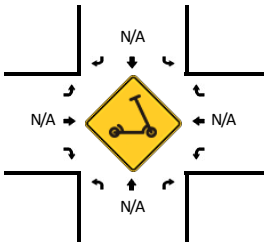
DATA THAT DRIVES COMMUNITIES











15-Min Count Period Beginning At	140087. Crater Lake Hwy (Northbound)				140087. Crater Lake Hwy (Southbound)				Delta Waters Rd (Eastbound)				Delta Waters Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	25	28	12	0	8	23	0	0	0	5	6	0	38	15	3	0	163	
6:15 AM	34	40	17	0	13	30	0	0	3	2	11	0	38	16	5	0	209	
6:30 AM	38	61	16	0	8	47	3	0	3	2	13	0	69	18	8	0	286	
6:45 AM	66	77	26	0	5	47	1	0	0	11	17	0	58	31	14	0	353	1011
7:00 AM	56	42	35	0	8	70	2	0	7	3	19	0	49	28	3	0	322	1170
7:15 AM	94	73	37	0	12	59	2	0	3	37	22	0	70	29	8	0	446	1407
7:30 AM	112	83	36	0	20	91	2	0	3	14	25	0	70	37	9	0	502	1623
7:45 AM	146	124	33	0	19	73	1	0	3	16	47	0	94	69	7	0	632	1902
8:00 AM	91	93	28	0	12	93	2	0	2	14	44	0	73	38	4	0	494	2074
8:15 AM	80	79	49	0	13	87	1	0	3	17	46	0	79	43	9	0	506	2134
8:30 AM	78	84	44	0	24	77	7	0	5	21	40	0	63	45	14	0	502	2134
8:45 AM	113	91	47	0	27	91	3	0	6	22	54	0	60	49	7	0	570	2072
9:00 AM	82	63	38	0	19	93	6	0	5	26	66	0	50	44	6	0	498	2076
9:15 AM	132	63	54	0	18	84	5	0	5	16	65	0	61	55	10	0	568	2138
9:30 AM	90	91	43	0	29	91	5	0	2	34	76	0	81	50	9	0	601	2237
9:45 AM	124	93	44	0	26	136	3	0	7	29	56	0	64	59	13	0	654	2321
10:00 AM	119	83	53	0	22	118	5	0	3	33	68	0	59	49	12	0	624	2447
10:15 AM	130	89	38	0	35	124	7	0	8	23	93	0	41	48	17	0	653	2532
10:30 AM	145	97	44	0	33	135	11	0	8	18	82	0	69	64	17	0	723	2654
10:45 AM	158	120	51	0	26	128	4	0	6	39	89	0	61	59	7	0	748	2748
11:00 AM	149	109	44	0	26	151	7	0	12	34	86	0	58	42	10	0	728	2852
11:15 AM	158	110	51	0	42	171	5	0	17	42	90	0	52	66	17	0	821	3020
11:30 AM	134	98	42	0	40	164	8	0	7	40	102	0	70	68	12	0	785	3082
11:45 AM	139	121	49	0	41	146	10	0	11	41	123	0	68	73	17	0	839	3173
12:00 PM	152	96	67	0	45	168	10	0	11	40	105	0	48	64	11	0	817	3262
12:15 PM	183	139	67	0	36	168	10	0	15	43	101	0	66	59	10	0	897	3338
12:30 PM	179	112	64	0	38	188	10	0	13	41	101	0	48	58	17	0	869	3422
12:45 PM	149	136	50	0	39	168	12	0	8	33	111	0	69	81	12	0	868	3451
1:00 PM	163	127	63	0	28	162	6	0	11	48	113	0	81	53	10	0	865	3499
1:15 PM	187	141	65	0	22	149	10	0	17	42	103	0	62	65	11	0	874	3476
1:30 PM	181	123	31	0	28	131	11	0	8	42	104	0	69	59	15	0	802	3409
1:45 PM	142	106	56	0	38	199	20	0	12	37	106	0	65	64	10	0	855	3396
2:00 PM	131	104	55	0	52	190	11	0	11	37	110	0	84	66	14	0	865	3396
2:15 PM	148	117	47	0	34	164	2	0	19	34	118	0	81	63	13	0	840	3362
2:30 PM	135	128	63	0	29	166	14	0	12	41	136	0	69	65	12	0	870	3430
2:45 PM	155	112	61	0	38	132	3	0	10	45	102	0	51	66	17	0	792	3367
3:00 PM	127	108	63	0	34	150	7	0	17	48	125	0	57	65	15	0	816	3318
3:15 PM	155	101	72	0	37	186	10	0	5	44	102	0	68	56	13	0	849	3327
3:30 PM	157	117	78	0	29	163	12	0	10	54	108	0	70	61	19	0	878	3335

15-Min Count Period Beginning At	140087. Crater Lake Hwy (Northbound)				140087. Crater Lake Hwy (Southbound)				Delta Waters Rd (Eastbound)				Delta Waters Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:45 PM	153	101	80	0	45	199	7	0	11	39	106	0	83	64	7	0	895	3438
4:00 PM	144	128	86	0	37	158	13	0	8	46	136	0	66	49	12	0	883	3505
4:15 PM	122	108	94	0	53	143	10	0	9	35	116	0	65	60	10	0	825	3481
4:30 PM	141	116	93	0	39	184	9	0	6	38	111	0	80	49	11	0	877	3480
4:45 PM	153	122	92	0	39	159	9	0	7	50	118	0	73	60	15	0	897	3482
5:00 PM	134	86	83	0	46	177	10	0	6	70	181	0	76	65	20	0	954	3553
5:15 PM	113	118	97	0	35	174	11	0	15	45	115	0	86	55	12	0	876	3604
5:30 PM	118	97	112	0	27	121	9	0	11	52	101	0	89	61	10	0	808	3535
5:45 PM	125	79	67	0	33	127	13	0	11	34	88	0	80	58	15	0	730	3368
6:00 PM	134	101	81	0	34	131	10	0	12	52	111	0	75	34	9	0	784	3198
6:15 PM	86	77	79	0	36	114	6	0	16	42	68	0	77	55	13	0	669	2991
6:30 PM	90	78	51	0	28	104	4	0	8	23	66	0	64	44	6	0	566	2749
6:45 PM	95	77	53	0	16	102	7	0	7	43	54	0	68	50	4	0	576	2595
7:00 PM	89	74	56	0	19	74	5	0	7	43	59	0	57	34	8	0	525	2336
7:15 PM	56	55	58	0	19	81	2	0	4	28	50	0	54	36	6	0	449	2116
7:30 PM	79	64	54	0	11	71	6	0	9	35	49	0	44	33	4	0	459	2009
7:45 PM	73	45	48	0	21	62	4	0	7	22	61	0	32	31	12	0	418	1851
8:00 PM	75	38	50	0	7	57	4	0	9	34	62	0	47	22	11	0	416	1742
8:15 PM	63	37	52	0	11	72	7	0	4	31	50	0	38	40	6	0	411	1704
8:30 PM	49	50	46	0	8	48	3	0	8	20	43	0	34	27	5	0	341	1586
8:45 PM	53	41	48	0	15	51	4	0	5	16	52	0	35	26	8	0	354	1522
9:00 PM	42	37	54	0	9	65	2	0	5	21	45	0	34	17	6	0	337	1443
9:15 PM	43	41	50	0	9	41	0	0	4	15	44	0	31	19	4	0	301	1333
9:30 PM	36	38	39	0	9	52	2	0	3	19	42	0	33	9	5	0	287	1279
9:45 PM	28	46	22	0	12	44	2	0	5	24	19	0	28	6	5	0	241	1166

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	536	344	332	0	184	708	40	0	24	280	724	0	304	260	80	0	3816
Heavy Trucks	8	20	4		4	20	0		0	4	0		4	0	0		64
Buses																	
Pedestrians		0				4				4				0			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 1/6/2020 11:21 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Appendix B Synchro and SimTraffic Reports

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	574	86	25	951	586	52	263	11	435	360	32
Future Volume (veh/h)	45	574	86	25	951	586	52	263	11	435	360	32
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1573	1723	1723	1750	1723	1750	1750	1736	1736	1750	1723	1723
Adj Flow Rate, veh/h	47	598	90	26	991	610	54	274	11	453	375	33
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	13	2	2	0	2	0	0	1	1	0	2	2
Cap, veh/h	60	1246	187	45	1392	890	72	434	17	586	425	37
Arrive On Green	0.04	0.44	0.44	0.03	0.43	0.43	0.04	0.13	0.13	0.18	0.27	0.27
Sat Flow, veh/h	1498	2844	427	1667	3273	1462	1667	3233	129	3233	1558	137
Grp Volume(v), veh/h	47	343	345	26	991	610	54	139	146	453	0	408
Grp Sat Flow(s),veh/h/ln	1498	1637	1635	1667	1637	1462	1667	1650	1712	1617	0	1695
Q Serve(g_s), s	2.6	12.3	12.3	1.3	20.5	23.1	2.6	6.6	6.6	11.0	0.0	18.9
Cycle Q Clear(g_c), s	2.6	12.3	12.3	1.3	20.5	23.1	2.6	6.6	6.6	11.0	0.0	18.9
Prop In Lane	1.00		0.26	1.00		1.00	1.00		0.08	1.00		0.08
Lane Grp Cap(c), veh/h	60	717	716	45	1392	890	72	221	230	586	0	462
V/C Ratio(X)	0.78	0.48	0.48	0.57	0.71	0.69	0.75	0.63	0.63	0.77	0.00	0.88
Avail Cap(c_a), veh/h	246	717	716	274	1415	901	396	512	532	1083	0	692
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	39.1	16.4	16.4	39.5	19.5	10.9	38.8	33.6	33.6	32.0	0.0	28.6
Incr Delay (d2), s/veh	15.1	0.8	0.8	8.2	1.9	2.5	11.0	2.2	2.1	1.6	0.0	8.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	4.4	4.4	0.6	7.5	6.7	1.3	2.7	2.8	4.2	0.0	8.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.1	17.2	17.2	47.6	21.3	13.4	49.9	35.8	35.8	33.6	0.0	36.6
LnGrp LOS	D	B	B	D	C	B	D	D	D	C	A	D
Approach Vol, veh/h		735			1627			339			861	
Approach Delay, s/veh		19.5			18.8			38.0			35.0	
Approach LOS		B			B			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.7	40.5	8.0	26.9	7.8	39.4	19.4	15.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	13.5	35.5	19.5	33.5	13.5	35.5	27.5	25.5
Max Q Clear Time (g_c+I1), s	3.3	14.3	4.6	20.9	4.6	25.1	13.0	8.6
Green Ext Time (p_c), s	0.0	10.4	0.1	1.4	0.1	9.8	1.9	1.0

Intersection Summary	
HCM 6th Ctrl Delay	24.7
HCM 6th LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	389	601	30	64	929	585	55	754	73	406	785	578
Future Volume (veh/h)	389	601	30	64	929	585	55	754	73	406	785	578
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.97	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1736	1736	1736	1723	1736	1723	1695	1709	1736	1709	1723
Adj Flow Rate, veh/h	409	633	32	67	978	616	58	794	77	427	826	608
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	1	1	1	2	1	2	4	3	1	3	2
Cap, veh/h	483	1249	63	85	1367	1130	73	826	369	496	1190	754
Arrive On Green	0.15	0.39	0.39	0.05	0.29	0.29	0.04	0.26	0.26	0.15	0.37	0.37
Sat Flow, veh/h	3183	3193	161	1654	4703	2510	1641	3221	1438	3208	3247	1453
Grp Volume(v), veh/h	409	327	338	67	978	616	58	794	77	427	826	608
Grp Sat Flow(s),veh/h/ln	1591	1650	1705	1654	1568	1255	1641	1611	1438	1604	1624	1453
Q Serve(g_s), s	15.4	18.5	18.5	4.9	22.9	22.2	4.3	29.9	5.2	15.9	26.5	42.6
Cycle Q Clear(g_c), s	15.4	18.5	18.5	4.9	22.9	22.2	4.3	29.9	5.2	15.9	26.5	42.6
Prop In Lane	1.00		0.09	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	483	645	667	85	1367	1130	73	826	369	496	1190	754
V/C Ratio(X)	0.85	0.51	0.51	0.79	0.72	0.55	0.79	0.96	0.21	0.86	0.69	0.81
Avail Cap(c_a), veh/h	661	652	673	182	1398	1146	180	826	369	614	1190	754
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.7	28.4	28.4	57.6	39.0	25.0	58.1	45.0	35.9	50.6	33.1	24.5
Incr Delay (d2), s/veh	6.8	0.9	0.9	11.5	1.9	0.7	13.1	22.1	0.2	9.6	1.7	6.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.5	7.4	7.6	2.3	8.9	6.6	2.0	14.3	1.8	7.0	10.5	15.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.5	29.3	29.3	69.1	40.9	25.8	71.2	67.2	36.1	60.2	34.7	30.8
LnGrp LOS	E	C	C	E	D	C	E	E	D	E	C	C
Approach Vol, veh/h		1074			1661			929			1861	
Approach Delay, s/veh		40.0			36.5			64.8			39.3	
Approach LOS		D			D			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.8	52.5	10.0	49.5	23.1	40.2	23.5	36.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	13.5	48.5	13.5	41.5	25.5	36.5	23.5	31.5
Max Q Clear Time (g_c+I1), s	6.9	20.5	6.3	44.6	17.4	24.9	17.9	31.9
Green Ext Time (p_c), s	0.1	11.8	0.1	0.0	1.3	10.8	1.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	42.9
HCM 6th LOS	D



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	131	205	1650	78	147	1638
Future Volume (veh/h)	131	205	1650	78	147	1638
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.98	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1736	1736	1709	1736	1750	1695
Adj Flow Rate, veh/h	138	216	1737	82	155	1724
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	3	1	0	4
Cap, veh/h	198	500	2969	917	236	2468
Arrive On Green	0.12	0.12	0.64	0.64	0.07	0.77
Sat Flow, veh/h	1654	2590	4820	1441	3233	3306
Grp Volume(v), veh/h	138	216	1737	82	155	1724
Grp Sat Flow(s),veh/h/ln	1654	1295	1555	1441	1617	1611
Q Serve(g_s), s	6.3	5.8	17.1	1.7	3.7	21.3
Cycle Q Clear(g_c), s	6.3	5.8	17.1	1.7	3.7	21.3
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	198	500	2969	917	236	2468
V/C Ratio(X)	0.70	0.43	0.58	0.09	0.66	0.70
Avail Cap(c_a), veh/h	345	729	2969	917	470	2626
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.4	28.1	8.3	5.5	35.7	4.6
Incr Delay (d2), s/veh	3.2	0.4	0.4	0.1	2.3	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	1.8	4.6	0.5	1.5	4.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	36.7	28.6	8.7	5.6	38.0	5.6
LnGrp LOS	D	C	A	A	D	A
Approach Vol, veh/h	354		1819			1879
Approach Delay, s/veh	31.7		8.6			8.2
Approach LOS	C		A			A

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	10.3	54.9			65.1	14.0
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5
Max Green Setting (Gmax), s	11.5	48.5			64.5	16.5
Max Q Clear Time (g_c+I1), s	5.7	19.1			23.3	8.3
Green Ext Time (p_c), s	0.3	27.2			37.3	1.2

Intersection Summary	
HCM 6th Ctrl Delay	10.4
HCM 6th LOS	B

Intersection	
Int Delay, s/veh	3.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	95	1789	66	97	1785
Future Vol, veh/h	0	95	1789	66	97	1785
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	100	200	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	1	2	0	1	3
Mvmt Flow	0	101	1903	70	103	1899

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	952	0	0	1973	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.12	-	-	5.32	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.91	-	-	3.11	-
Pot Cap-1 Maneuver	0	225	-	-	131	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	225	-	-	131	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	33.4	0	4.9
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	225	131	-
HCM Lane V/C Ratio	-	-	0.449	0.788	-
HCM Control Delay (s)	-	-	33.4	94.4	-
HCM Lane LOS	-	-	D	F	-
HCM 95th %tile Q(veh)	-	-	2.1	4.7	-

HCM 6th Edition methodology does not support turning movements with shared & exclusive lanes.

HCM 6th Edition methodology does not support turning movements with shared & exclusive lanes.

Intersection	
Int Delay, s/veh	6.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↱	↑↑↑	↱		↑↑↑
Traffic Vol, veh/h	0	242	1766	138	0	2803
Future Vol, veh/h	0	242	1766	138	0	2803
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	Free	-	Free
Storage Length	-	0	-	75	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	2	4	6	0	2
Mvmt Flow	0	252	1840	144	0	2920

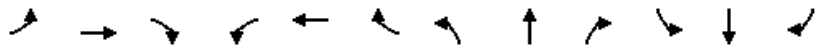
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	920	0	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	~ 234	-	0	0	-
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	-	~ 234	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	125.9	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	WBLn1	SBT
Capacity (veh/h)	-	234	-
HCM Lane V/C Ratio	-	1.077	-
HCM Control Delay (s)	-	125.9	-
HCM Lane LOS	-	F	-
HCM 95th %tile Q(veh)	-	10.9	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

HCM 6th Edition methodology does not support turning movements with shared & exclusive lanes.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	21	39	61	1	47	48	710	311	180	683	10
Future Volume (veh/h)	29	21	39	61	1	47	48	710	311	180	683	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1750	1682	1682	1682	1750	1750	1723	1709	1750	1723	1736	1736
Adj Flow Rate, veh/h	34	25	46	72	1	55	56	835	366	212	804	12
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	0	5	5	5	0	0	2	3	0	2	1	1
Cap, veh/h	268	41	75	501	3	145	442	1488	764	419	1706	25
Arrive On Green	0.04	0.08	0.08	0.06	0.10	0.10	0.05	0.46	0.46	0.11	0.51	0.51
Sat Flow, veh/h	1667	528	971	3107	26	1452	1641	3247	1478	1641	3326	50
Grp Volume(v), veh/h	34	0	71	72	0	56	56	835	366	212	399	417
Grp Sat Flow(s),veh/h/ln	1667	0	1499	1554	0	1478	1641	1624	1478	1641	1650	1726
Q Serve(g_s), s	1.1	0.0	2.7	1.2	0.0	2.1	1.0	11.2	9.5	3.8	9.3	9.3
Cycle Q Clear(g_c), s	1.1	0.0	2.7	1.2	0.0	2.1	1.0	11.2	9.5	3.8	9.3	9.3
Prop In Lane	1.00		0.65	1.00		0.98	1.00		1.00	1.00		0.03
Lane Grp Cap(c), veh/h	268	0	116	501	0	148	442	1488	764	419	846	885
V/C Ratio(X)	0.13	0.00	0.61	0.14	0.00	0.38	0.13	0.56	0.48	0.51	0.47	0.47
Avail Cap(c_a), veh/h	639	0	388	1124	0	382	921	1653	839	808	846	885
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.0	0.0	26.8	23.0	0.0	25.2	7.8	11.8	9.3	8.4	9.4	9.4
Incr Delay (d2), s/veh	0.2	0.0	3.8	0.1	0.0	1.2	0.1	0.5	0.7	0.7	0.6	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	1.1	0.4	0.0	0.8	0.3	3.6	2.7	1.1	2.9	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.2	0.0	30.5	23.1	0.0	26.4	7.9	12.4	10.0	9.1	10.0	10.0
LnGrp LOS	C	A	C	C	A	C	A	B	B	A	A	A
Approach Vol, veh/h		105			128			1257			1028	
Approach Delay, s/veh		28.5			24.5			11.5			9.8	
Approach LOS		C			C			B			A	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.5	35.2	6.7	10.5	10.8	32.0	8.0	9.2
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	20.5	30.5	15.5	15.5	20.5	30.5	15.5	15.5
Max Q Clear Time (g_c+I1), s	3.0	11.3	3.1	4.1	5.8	13.2	3.2	4.7
Green Ext Time (p_c), s	0.1	11.8	0.0	0.1	0.7	14.2	0.2	0.1

Intersection Summary	
HCM 6th Ctrl Delay	12.2
HCM 6th LOS	B

Intersection	
Int Delay, s/veh	125.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↱			↱		↑↑↑	↱		↑↑↑	↱
Traffic Vol, veh/h	0	0	512	0	0	66	0	1796	212	0	2291	109
Future Vol, veh/h	0	0	512	0	0	66	0	1796	212	0	2291	109
Conflicting Peds, #/hr	0	0	0	0	0	0	4	0	2	2	0	4
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Stop	-	-	None	-	-	None	-	-	Free
Storage Length	-	-	0	-	-	0	-	-	90	-	-	140
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	0	4	0	0	2	0	2	1	0	2	5
Mvmt Flow	0	0	533	0	0	69	0	1871	221	0	2386	114

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	1193	-	-	938	-	0	0	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.18	-	-	7.14	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.94	-	-	3.92	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	~ 152	0	0	228	0	-	-	0	-	0
Stage 1	0	0	-	0	0	-	0	-	-	0	-	0
Stage 2	0	0	-	0	0	-	0	-	-	0	-	0
Platoon blocked, %								-	-		-	
Mov Cap-1 Maneuver	-	-	~ 152	-	-	228	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, $	1189.8	27.5	0	0
HCM LOS	F	D		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBT
Capacity (veh/h)	-	-	152	228	-
HCM Lane V/C Ratio	-	-	3.509	0.302	-
HCM Control Delay (s)	-	-	$ 1189.8	27.5	-
HCM Lane LOS	-	-	F	D	-
HCM 95th %tile Q(veh)	-	-	51.5	1.2	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	319	143	163	463	176	369	40	1669	153	299	1775	188
Future Volume (veh/h)	319	143	163	463	176	369	40	1669	153	299	1775	188
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1736	1709	1750	1736	1736	1723	1723	1723	1750	1723	1709
Adj Flow Rate, veh/h	332	149	170	482	183	384	42	1739	159	311	1849	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	1	3	0	1	1	2	2	2	0	2	3
Cap, veh/h	519	220	181	537	217	181	53	2020	184	376	2545	
Arrive On Green	0.16	0.13	0.13	0.16	0.13	0.13	0.01	0.15	0.15	0.11	0.54	0.00
Sat Flow, veh/h	3183	1736	1424	3333	1736	1447	1641	4386	400	3333	4703	1448
Grp Volume(v), veh/h	332	149	170	482	183	384	42	1242	656	311	1849	0
Grp Sat Flow(s),veh/h/ln	1591	1736	1424	1667	1736	1447	1641	1568	1650	1667	1568	1448
Q Serve(g_s), s	12.7	10.7	15.4	18.4	13.4	12.9	3.3	50.2	50.5	11.9	38.6	0.0
Cycle Q Clear(g_c), s	12.7	10.7	15.4	18.4	13.4	12.9	3.3	50.2	50.5	11.9	38.6	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.24	1.00		1.00
Lane Grp Cap(c), veh/h	519	220	181	537	217	181	53	1444	760	376	2545	
V/C Ratio(X)	0.64	0.68	0.94	0.90	0.84	2.12	0.79	0.86	0.86	0.83	0.73	
Avail Cap(c_a), veh/h	519	220	181	577	247	206	170	1444	760	551	2545	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	50.8	54.2	56.3	53.5	55.6	35.7	63.9	51.0	51.1	56.4	22.6	0.0
Incr Delay (d2), s/veh	2.4	7.4	49.6	15.7	19.5	522.4	17.7	6.9	12.4	5.7	1.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.2	5.1	8.0	8.8	7.0	30.8	1.7	22.5	25.0	5.2	13.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.2	61.6	105.9	69.2	75.2	558.0	81.6	57.9	63.6	62.1	24.4	0.0
LnGrp LOS	D	E	F	E	E	F	F	E	E	E	C	
Approach Vol, veh/h		651			1049			1940			2160	A
Approach Delay, s/veh		68.9			249.2			60.4			29.8	
Approach LOS		E			F			E			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.2	64.4	25.5	21.0	8.7	74.9	25.7	20.8
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	21.5	51.5	22.5	16.5	13.5	59.5	20.5	18.5
Max Q Clear Time (g_c+I1), s	13.9	52.5	20.4	17.4	5.3	40.6	14.7	15.4
Green Ext Time (p_c), s	0.8	0.0	0.5	0.0	0.0	17.7	0.8	0.9

Intersection Summary	
HCM 6th Ctrl Delay	84.1
HCM 6th LOS	F

Notes

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	9	1406	49	0	0
Future Vol, veh/h	0	9	1406	49	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	0	11	2	2	0	2
Mvmt Flow	0	9	1420	49	0	0

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	735	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.12	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.41	-	-	-	-
Pot Cap-1 Maneuver	0	343	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	343	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.8	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	343	-
HCM Lane V/C Ratio	-	-	0.027	-
HCM Control Delay (s)	-	-	15.8	-
HCM Lane LOS	-	-	C	-
HCM 95th %tile Q(veh)	-	-	0.1	-

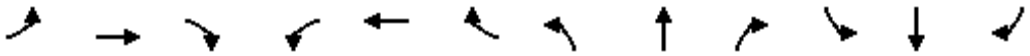
Intersection	
Int Delay, s/veh	0.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	64	1306	110	0	0
Future Vol, veh/h	0	64	1306	110	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	650	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	5	3	2	0	2
Mvmt Flow	0	67	1375	116	0	0

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	746	0	0	1491	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7	-	-	4.1	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.35	-	-	2.2	-
Pot Cap-1 Maneuver	0	349	-	-	456	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	349	-	-	456	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	17.8	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	349	456	-
HCM Lane V/C Ratio	-	-	0.193	-	-
HCM Control Delay (s)	-	-	17.8	0	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	0.7	0	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	34	205	530	318	231	59	546	455	369	161	715	39
Future Volume (veh/h)	34	205	530	318	231	59	546	455	369	161	715	39
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1709	1736	1736	1723	1709	1709	1736	1682	1723	1709	1709	1709
Adj Flow Rate, veh/h	34	205	530	318	231	59	546	455	369	161	715	39
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	3	1	1	2	3	3	1	5	2	3	3	3
Cap, veh/h	67	543	913	346	860	215	611	1101	502	189	845	46
Arrive On Green	0.04	0.16	0.16	0.21	0.33	0.33	0.19	0.34	0.34	0.12	0.27	0.27
Sat Flow, veh/h	1628	3299	2550	1641	2571	642	3208	3195	1457	1628	3128	171
Grp Volume(v), veh/h	34	205	530	318	144	146	546	455	369	161	371	383
Grp Sat Flow(s),veh/h/ln	1628	1650	1275	1641	1624	1590	1604	1598	1457	1628	1624	1675
Q Serve(g_s), s	2.2	6.1	18.0	20.7	7.1	7.4	18.2	11.9	24.3	10.6	23.6	23.7
Cycle Q Clear(g_c), s	2.2	6.1	18.0	20.7	7.1	7.4	18.2	11.9	24.3	10.6	23.6	23.7
Prop In Lane	1.00		1.00	1.00		0.40	1.00		1.00	1.00		0.10
Lane Grp Cap(c), veh/h	67	543	913	346	543	532	611	1101	502	189	439	452
V/C Ratio(X)	0.51	0.38	0.58	0.92	0.27	0.27	0.89	0.41	0.73	0.85	0.85	0.85
Avail Cap(c_a), veh/h	112	543	913	450	601	589	763	1192	544	347	566	584
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.3	40.7	28.7	42.2	26.6	26.7	43.2	27.4	31.4	47.4	37.7	37.8
Incr Delay (d2), s/veh	2.2	0.2	0.6	18.0	0.1	0.1	9.8	0.1	3.9	4.2	7.4	7.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	2.4	5.6	10.0	2.7	2.8	7.7	4.3	8.8	4.4	9.8	10.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.5	40.8	29.3	60.2	26.7	26.8	53.0	27.5	35.4	51.6	45.2	45.1
LnGrp LOS	D	D	C	E	C	C	D	C	D	D	D	D
Approach Vol, veh/h		769			608			1370			915	
Approach Delay, s/veh		33.5			44.2			39.8			46.3	
Approach LOS		C			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.7	43.1	27.1	22.5	24.8	34.9	8.5	41.1
Change Period (Y+Rc), s	4.0	* 5.4	4.0	4.5	4.0	* 5.4	4.0	4.5
Max Green Setting (Gmax), s	23.3	* 41	30.0	18.0	26.0	* 38	7.5	40.5
Max Q Clear Time (g_c+I1), s	12.6	26.3	22.7	20.0	20.2	25.7	4.2	9.4
Green Ext Time (p_c), s	0.1	2.4	0.3	0.0	0.7	3.7	0.0	2.0

Intersection Summary	
HCM 6th Ctrl Delay	40.8
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	18	0	0	95	0	912	19	0	462	133
Future Vol, veh/h	0	0	18	0	0	95	0	912	19	0	462	133
Conflicting Peds, #/hr	1	0	1	1	0	1	0	0	4	4	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	1	0	1	0	0	1	1
Mvmt Flow	0	0	19	0	0	100	0	960	20	0	486	140

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	314	-	-	495	-	0	0	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.9	-	-	7.12	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.3	-	-	3.91	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	688	0	0	447	0	-	-	0	-	-
Stage 1	0	0	-	0	0	-	0	-	-	0	-	-
Stage 2	0	0	-	0	0	-	0	-	-	0	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	687	-	-	445	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.4	15.4	0	0
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	-	-	687	445	-	-
HCM Lane V/C Ratio	-	-	0.028	0.225	-	-
HCM Control Delay (s)	-	-	10.4	15.4	-	-
HCM Lane LOS	-	-	B	C	-	-
HCM 95th %tile Q(veh)	-	-	0.1	0.9	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	574	86	25	951	586	52	263	11	435	360	32
Future Volume (vph)	45	574	86	25	951	586	52	263	11	435	360	32
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		0.97	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.99	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1471	3191		1662	3260	1474	1662	3272		3225	1684	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1471	3191		1662	3260	1474	1662	3272		3225	1684	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	47	598	90	26	991	610	54	274	11	453	375	33
RTOR Reduction (vph)	0	8	0	0	0	153	0	2	0	0	3	0
Lane Group Flow (vph)	47	680	0	26	991	457	54	283	0	453	405	0
Confl. Peds. (#/hr)	1					1			2	2		
Confl. Bikes (#/hr)			1			3						2
Heavy Vehicles (%)	13%	2%	1%	0%	2%	0%	0%	1%	0%	0%	2%	9%
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6	7	3	8		7	4	
Permitted Phases						6						
Actuated Green, G (s)	6.7	39.9		4.1	37.3	55.1	6.7	18.1		17.8	29.2	
Effective Green, g (s)	6.7	39.9		4.1	37.3	55.1	6.7	18.1		17.8	29.2	
Actuated g/C Ratio	0.07	0.41		0.04	0.38	0.56	0.07	0.18		0.18	0.30	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	2.5	4.2		2.5	4.2	2.5	2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	100	1300		69	1242	897	113	604		586	502	
v/s Ratio Prot	c0.03	c0.21		0.02	c0.30	0.09	0.03	0.09		c0.14	c0.24	
v/s Ratio Perm						0.22						
v/c Ratio	0.47	0.52		0.38	0.80	0.51	0.48	0.47		0.77	0.81	
Uniform Delay, d1	43.9	21.8		45.7	26.9	13.1	43.9	35.6		38.1	31.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.5	0.5		2.5	4.0	0.3	2.3	0.4		6.0	9.0	
Delay (s)	46.4	22.4		48.2	30.9	13.4	46.2	36.0		44.2	40.7	
Level of Service	D	C		D	C	B	D	D		D	D	
Approach Delay (s)		23.9			24.6			37.6			42.5	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	30.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	97.9	Sum of lost time (s)	18.0
Intersection Capacity Utilization	74.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	389	601	30	64	929	585	55	754	73	406	785	578
Future Volume (vph)	389	601	30	64	929	585	55	754	73	406	785	578
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	0.97	0.95		1.00	0.91	0.88	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.99	1.00	1.00	0.98	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3162	3263		1646	4684	2569	1630	3197	1422	3193	3228	1443
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3162	3263		1646	4684	2569	1630	3197	1422	3193	3228	1443
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	409	633	32	67	978	616	58	794	77	427	826	608
RTOR Reduction (vph)	0	3	0	0	0	0	0	0	56	0	0	68
Lane Group Flow (vph)	409	662	0	67	978	616	58	794	21	427	826	540
Confl. Peds. (#/hr)	3		18	18		3	6		3	3		6
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	2%	1%	2%	1%	2%	1%	2%	4%	3%	1%	3%	2%
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	pm+ov
Protected Phases	5	2		1	6	7	3	8		7	4	5
Permitted Phases						6			8			4
Actuated Green, G (s)	20.5	44.4		8.3	32.2	51.8	7.9	33.0	33.0	19.6	44.7	65.2
Effective Green, g (s)	20.5	44.4		8.3	32.2	51.8	7.9	33.0	33.0	19.6	44.7	65.2
Actuated g/C Ratio	0.17	0.36		0.07	0.26	0.42	0.06	0.27	0.27	0.16	0.36	0.53
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	2.5	4.2		2.5	4.2	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Lane Grp Cap (vph)	525	1174		110	1223	1173	104	855	380	507	1170	815
v/s Ratio Prot	c0.13	0.20		0.04	c0.21	0.08	0.04	c0.25		c0.13	0.26	c0.11
v/s Ratio Perm						0.16			0.01			0.26
v/c Ratio	0.78	0.56		0.61	0.80	0.53	0.56	0.93	0.05	0.84	0.71	0.66
Uniform Delay, d1	49.2	31.7		55.9	42.5	26.6	56.0	44.0	33.6	50.3	33.7	21.1
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.9	0.8		7.8	4.1	0.3	5.1	16.0	0.0	11.9	1.8	1.8
Delay (s)	56.1	32.5		63.7	46.6	26.9	61.1	60.0	33.6	62.2	35.5	22.9
Level of Service	E	C		E	D	C	E	E	C	E	D	C
Approach Delay (s)		41.5			40.0			57.8			37.5	
Approach LOS		D			D			E			D	

Intersection Summary			
HCM 2000 Control Delay	42.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	123.3	Sum of lost time (s)	18.0
Intersection Capacity Utilization	81.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	131	205	1650	78	147	1638
Future Volume (vph)	131	205	1650	78	147	1638
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.88	0.91	1.00	0.97	0.95
Frpb, ped/bikes	1.00	0.99	1.00	0.99	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1646	2572	4638	1454	3225	3197
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1646	2572	4638	1454	3225	3197
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	138	216	1737	82	155	1724
RTOR Reduction (vph)	0	17	0	27	0	0
Lane Group Flow (vph)	138	199	1737	55	155	1724
Confl. Peds. (#/hr)		3				
Confl. Bikes (#/hr)				1		
Heavy Vehicles (%)	1%	1%	3%	1%	0%	4%
Turn Type	Prot	pm+ov	NA	Perm	Prot	NA
Protected Phases	3	1	2		1	6
Permitted Phases		3		2		
Actuated Green, G (s)	8.6	17.2	34.0	34.0	8.6	47.1
Effective Green, g (s)	8.6	17.2	34.0	34.0	8.6	47.1
Actuated g/C Ratio	0.13	0.27	0.53	0.53	0.13	0.73
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	2.5	2.5	4.2	4.2	2.5	4.2
Lane Grp Cap (vph)	218	862	2437	764	428	2327
v/s Ratio Prot	c0.08	0.03	0.37		0.05	c0.54
v/s Ratio Perm		0.05		0.04		
v/c Ratio	0.63	0.23	0.71	0.07	0.36	0.74
Uniform Delay, d1	26.6	18.6	11.6	7.6	25.6	5.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.2	0.1	1.1	0.1	0.4	1.4
Delay (s)	31.7	18.7	12.8	7.6	25.9	6.6
Level of Service	C	B	B	A	C	A
Approach Delay (s)	23.8		12.5			8.2
Approach LOS	C		B			A

Intersection Summary			
HCM 2000 Control Delay	11.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	64.7	Sum of lost time (s)	13.5
Intersection Capacity Utilization	64.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	95	1789	66	97	1785
Future Volume (Veh/h)	0	95	1789	66	97	1785
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	101	1903	70	103	1899
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			833			508
pX, platoon unblocked	0.85	0.74			0.74	
vC, conflicting volume	3058	634			1973	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1260	0			1106	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	88			78	
cM capacity (veh/h)	109	810			471	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3
Volume Total	101	634	634	634	70	103	950	950
Volume Left	0	0	0	0	0	103	0	0
Volume Right	101	0	0	0	70	0	0	0
cSH	810	1700	1700	1700	1700	471	1700	1700
Volume to Capacity	0.12	0.37	0.37	0.37	0.04	0.22	0.56	0.56
Queue Length 95th (ft)	11	0	0	0	0	21	0	0
Control Delay (s)	10.1	0.0	0.0	0.0	0.0	14.8	0.0	0.0
Lane LOS	B					B		
Approach Delay (s)	10.1	0.0				0.8		
Approach LOS	B							

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	56.9%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	324	0	213	0	0	0	0	1401	483	0	1669	925
Future Volume (vph)	324	0	213	0	0	0	0	1401	483	0	1669	925
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.5	4.5	4.5					4.5	4.5		4.5	4.5
Lane Util. Factor	0.95	0.95	1.00					0.91	1.00		0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00					1.00	0.97		1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00					1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85					1.00	0.85		1.00	0.85
Flt Protected	0.95	0.95	1.00					1.00	1.00		1.00	1.00
Satd. Flow (prot)	1533	1533	1417					4684	1407		3228	1417
Flt Permitted	0.95	0.95	1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	1533	1533	1417					4684	1407		3228	1417
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	338	0	222	0	0	0	0	1459	503	0	1739	964
RTOR Reduction (vph)	0	0	33	0	0	0	0	0	63	0	0	225
Lane Group Flow (vph)	169	169	189	0	0	0	0	1459	440	0	1739	739
Confl. Peds. (#/hr)							12		7	7		12
Confl. Bikes (#/hr)									2			1
Heavy Vehicles (%)	3%	0%	5%	0%	0%	0%	0%	2%	3%	100%	3%	2%
Turn Type	Perm	NA	Perm					NA	Perm		NA	Perm
Protected Phases		4						2			6	
Permitted Phases	4		4						2			6
Actuated Green, G (s)	21.3	21.3	21.3					99.7	99.7		99.7	99.7
Effective Green, g (s)	21.3	21.3	21.3					99.7	99.7		99.7	99.7
Actuated g/C Ratio	0.16	0.16	0.16					0.77	0.77		0.77	0.77
Clearance Time (s)	4.5	4.5	4.5					4.5	4.5		4.5	4.5
Vehicle Extension (s)	2.5	2.5	2.5					4.2	4.2		4.2	4.2
Lane Grp Cap (vph)	251	251	232					3592	1079		2475	1086
v/s Ratio Prot								0.31			c0.54	
v/s Ratio Perm	0.11	0.11	c0.13						0.31			0.52
v/c Ratio	0.67	0.67	0.82					0.41	0.41		0.70	0.68
Uniform Delay, d1	51.1	51.1	52.5					5.1	5.1		7.7	7.4
Progression Factor	1.00	1.00	1.00					1.00	1.00		0.56	8.43
Incremental Delay, d2	6.3	6.3	19.0					0.3	1.1		1.2	2.5
Delay (s)	57.4	57.4	71.5					5.5	6.3		5.5	64.8
Level of Service	E	E	E					A	A		A	E
Approach Delay (s)		63.0			0.0			5.7			26.7	
Approach LOS		E			A			A			C	

Intersection Summary			
HCM 2000 Control Delay	22.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	71.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	432	3	481	0	1423	302	0	2164	639
Future Volume (vph)	0	0	0	432	3	481	0	1423	302	0	2164	639
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)				4.5	4.5	4.5		4.5	4.5		4.5	4.5
Lane Util. Factor				0.95	0.91	0.95		0.91	1.00		0.91	1.00
Frpb, ped/bikes				1.00	0.98	0.96		1.00	0.98		1.00	0.96
Flpb, ped/bikes				1.00	1.00	1.00		1.00	1.00		1.00	1.00
Frt				1.00	0.91	0.85		1.00	0.85		1.00	0.85
Flt Protected				0.95	0.98	1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)				1504	1345	1333		4684	1387		4638	1376
Flt Permitted				0.95	0.98	1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)				1504	1345	1333		4684	1387		4638	1376
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	0	0	441	3	491	0	1452	308	0	2208	652
RTOR Reduction (vph)	0	0	0	0	31	31	0	0	39	0	0	212
Lane Group Flow (vph)	0	0	0	322	282	269	0	1452	269	0	2208	440
Confl. Peds. (#/hr)						12			1			24
Confl. Bikes (#/hr)									1			1
Heavy Vehicles (%)	2%	2%	2%	5%	5%	2%	0%	2%	5%	0%	3%	4%
Turn Type				Perm	NA	Perm		NA	Perm		NA	Perm
Protected Phases					8			2			6	
Permitted Phases				8		8			2			6
Actuated Green, G (s)				33.2	33.2	33.2		87.8	87.8		87.8	87.8
Effective Green, g (s)				33.2	33.2	33.2		87.8	87.8		87.8	87.8
Actuated g/C Ratio				0.26	0.26	0.26		0.68	0.68		0.68	0.68
Clearance Time (s)				4.5	4.5	4.5		4.5	4.5		4.5	4.5
Vehicle Extension (s)				2.5	2.5	2.5		4.2	4.2		4.2	4.2
Lane Grp Cap (vph)				384	343	340		3163	936		3132	929
v/s Ratio Prot								0.31			c0.48	
v/s Ratio Perm				c0.21	0.21	0.20			0.19			0.32
v/c Ratio				0.84	0.82	0.79		0.46	0.29		0.70	0.47
Uniform Delay, d1				45.9	45.6	45.2		9.9	8.5		13.1	10.1
Progression Factor				1.00	1.00	1.00		0.78	0.68		1.09	4.70
Incremental Delay, d2				14.5	14.4	11.6		0.4	0.7		1.1	1.4
Delay (s)				60.4	60.1	56.8		8.2	6.5		15.3	48.8
Level of Service				E	E	E		A	A		B	D
Approach Delay (s)		0.0			59.1			7.9			22.9	
Approach LOS		A			E			A			C	

Intersection Summary			
HCM 2000 Control Delay	24.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	71.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	242	1766	138	0	2803
Future Volume (Veh/h)	0	242	1766	138	0	2803
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	0	252	1840	144	0	2920
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			827			1005
pX, platoon unblocked	0.77	0.88			0.88	
vC, conflicting volume	2814	614			1841	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1218	63			1464	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	71			100	
cM capacity (veh/h)	135	865			409	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3
Volume Total	252	613	613	613	144	973	973	973
Volume Left	0	0	0	0	0	0	0	0
Volume Right	252	0	0	0	144	0	0	0
cSH	865	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.29	0.36	0.36	0.36	0.08	0.57	0.57	0.57
Queue Length 95th (ft)	30	0	0	0	0	0	0	0
Control Delay (s)	10.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B							
Approach Delay (s)	10.9	0.0				0.0		
Approach LOS	B							

Intersection Summary				
Average Delay	0.5			
Intersection Capacity Utilization	62.1%	ICU Level of Service		B
Analysis Period (min)	15			



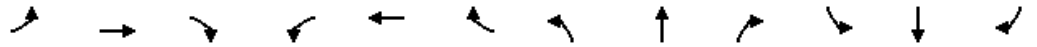
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	267	128	903	190	53	740
Future Volume (vph)	267	128	903	190	53	740
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.5		4.5		4.5	4.5
Lane Util. Factor	0.97		0.95		1.00	0.95
Frpb, ped/bikes	0.99		1.00		1.00	1.00
Flpb, ped/bikes	1.00		1.00		1.00	1.00
Frt	0.95		0.97		1.00	1.00
Flt Protected	0.97		1.00		0.95	1.00
Satd. Flow (prot)	3022		3169		1662	3292
Flt Permitted	0.97		1.00		0.95	1.00
Satd. Flow (perm)	3022		3169		1662	3292
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	318	152	1075	226	63	881
RTOR Reduction (vph)	64	0	18	0	0	0
Lane Group Flow (vph)	406	0	1283	0	63	881
Confl. Peds. (#/hr)		1				
Heavy Vehicles (%)	2%	4%	2%	3%	0%	1%
Turn Type	Prot		NA		Prot	NA
Protected Phases	8		2		1	6
Permitted Phases						
Actuated Green, G (s)	14.4		35.6		6.1	46.2
Effective Green, g (s)	14.4		35.6		6.1	46.2
Actuated g/C Ratio	0.21		0.51		0.09	0.66
Clearance Time (s)	4.5		4.5		4.5	4.5
Vehicle Extension (s)	2.5		4.2		2.5	4.2
Lane Grp Cap (vph)	625		1620		145	2185
v/s Ratio Prot	c0.13		c0.40		0.04	c0.27
v/s Ratio Perm						
v/c Ratio	0.65		0.79		0.43	0.40
Uniform Delay, d1	25.3		14.0		30.1	5.4
Progression Factor	1.00		1.00		1.00	1.00
Incremental Delay, d2	2.1		3.0		1.5	0.2
Delay (s)	27.3		16.9		31.6	5.6
Level of Service	C		B		C	A
Approach Delay (s)	27.3		16.9			7.3
Approach LOS	C		B			A

Intersection Summary			
HCM 2000 Control Delay	15.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	69.6	Sum of lost time (s)	13.5
Intersection Capacity Utilization	61.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	21	39	61	1	47	48	710	311	180	683	10
Future Volume (vph)	29	21	39	61	1	47	48	710	311	180	683	10
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	1.00		0.97	1.00		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.90		1.00	0.85		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1662	1535		3067	1492		1629	3228	1462	1630	3284	
Flt Permitted	0.72	1.00		0.49	1.00		0.34	1.00	1.00	0.18	1.00	
Satd. Flow (perm)	1261	1535		1590	1492		590	3228	1462	307	3284	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	34	25	46	72	1	55	56	835	366	212	804	12
RTOR Reduction (vph)	0	41	0	0	47	0	0	0	202	0	1	0
Lane Group Flow (vph)	34	30	0	72	9	0	56	835	164	212	815	0
Confl. Peds. (#/hr)			2	2			3		1	1		3
Confl. Bikes (#/hr)												2
Heavy Vehicles (%)	0%	5%	0%	5%	0%	0%	2%	3%	0%	2%	1%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	
Protected Phases	3	8		7	4		1	6	7	5	2	
Permitted Phases	8			4			6		6	2		
Actuated Green, G (s)	9.3	7.0		15.5	10.1		27.7	24.5	29.9	40.8	33.1	
Effective Green, g (s)	9.3	7.0		15.5	10.1		27.7	24.5	29.9	40.8	33.1	
Actuated g/C Ratio	0.14	0.10		0.23	0.15		0.42	0.37	0.45	0.61	0.50	
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.5	2.5		2.5	2.5		2.5	4.2	2.5	2.5	4.2	
Lane Grp Cap (vph)	189	161		489	225		294	1185	754	421	1629	
v/s Ratio Prot	0.01	0.02		c0.01	0.01		0.01	c0.26	c0.02	c0.09	0.25	
v/s Ratio Perm	0.02			c0.02			0.07		0.09	0.22		
v/c Ratio	0.18	0.19		0.15	0.04		0.19	0.70	0.22	0.50	0.50	
Uniform Delay, d1	25.2	27.2		20.2	24.2		11.8	18.0	11.2	8.0	11.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.3	0.4		0.1	0.1		0.2	2.1	0.1	0.7	0.4	
Delay (s)	25.5	27.7		20.3	24.2		12.0	20.1	11.4	8.7	11.6	
Level of Service	C	C		C	C		B	C	B	A	B	
Approach Delay (s)		27.0			22.0			17.2			11.0	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	15.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	66.7	Sum of lost time (s)	18.0
Intersection Capacity Utilization	51.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	512	0	0	66	0	1796	212	0	2291	109
Future Volume (Veh/h)	0	0	512	0	0	66	0	1796	212	0	2291	109
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	0	0	533	0	0	69	0	1871	221	0	2386	114
Pedestrians		4			2							
Lane Width (ft)		12.0			12.0							
Walking Speed (ft/s)		3.5			3.5							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								1229			603	
pX, platoon unblocked	0.74	0.74	0.70	0.74	0.74	0.91	0.70			0.91		
vC, conflicting volume	3083	4484	799	2668	4263	626	2390			2094		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1819	3701	0	1263	3404	262	1494			1868		
tC, single (s)	7.5	6.5	7.0	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	29	100	100	90	100			100		
cM capacity (veh/h)	33	3	754	28	6	672	318			298		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	SB 4
Volume Total	533	69	624	624	624	221	795	795	795	114
Volume Left	0	0	0	0	0	0	0	0	0	0
Volume Right	533	69	0	0	0	221	0	0	0	114
cSH	754	672	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.71	0.10	0.37	0.37	0.37	0.13	0.47	0.47	0.47	0.07
Queue Length 95th (ft)	149	9	0	0	0	0	0	0	0	0
Control Delay (s)	20.5	11.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	C	B								
Approach Delay (s)	20.5	11.0	0.0				0.0			
Approach LOS	C	B								

Intersection Summary				
Average Delay	2.2			
Intersection Capacity Utilization	89.1%	ICU Level of Service	E	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	319	143	163	463	176	369	40	1669	153	299	1775	188
Future Volume (vph)	319	143	163	463	176	369	40	1669	153	299	1775	188
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5
Lane Util. Factor	0.97	1.00	1.00	*1.00	1.00	1.00	1.00	0.91		*1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.97	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3162	1733	1444	3325	1733	1433	1630	4629		3325	4684	1413
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3162	1733	1444	3325	1733	1433	1630	4629		3325	4684	1413
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	332	149	170	482	183	384	42	1739	159	311	1849	196
RTOR Reduction (vph)	0	0	151	0	0	201	0	8	0	0	0	92
Lane Group Flow (vph)	332	149	19	482	183	183	42	1890	0	311	1849	104
Confl. Peds. (#/hr)	7					7	1					1
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	2%	1%	3%	0%	1%	1%	2%	2%	1%	0%	2%	3%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	18.4	14.5	14.5	21.5	17.6	17.6	7.2	59.2		16.8	68.8	68.8
Effective Green, g (s)	18.4	14.5	14.5	21.5	17.6	17.6	7.2	59.2		16.8	68.8	68.8
Actuated g/C Ratio	0.14	0.11	0.11	0.17	0.14	0.14	0.06	0.46		0.13	0.53	0.53
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	4.2		2.5	4.2	4.2
Lane Grp Cap (vph)	447	193	161	549	234	194	90	2107		429	2478	747
v/s Ratio Prot	c0.10	0.09		c0.14	0.11		0.03	c0.41		c0.09	0.39	
v/s Ratio Perm			0.01			0.13						0.07
v/c Ratio	0.74	0.77	0.12	0.88	0.78	0.95	0.47	0.90		0.72	0.75	0.14
Uniform Delay, d1	53.5	56.1	52.0	53.0	54.3	55.7	59.5	32.6		54.4	23.8	15.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.82	1.17		1.00	1.00	1.00
Incremental Delay, d2	6.2	16.6	0.2	14.6	15.0	48.7	2.6	6.1		5.6	2.1	0.4
Delay (s)	59.8	72.8	52.2	67.6	69.4	104.4	51.3	44.1		60.0	25.9	15.9
Level of Service	E	E	D	E	E	F	D	D		E	C	B
Approach Delay (s)		60.8			81.4			44.3			29.6	
Approach LOS		E			F			D			C	

Intersection Summary			
HCM 2000 Control Delay	46.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	85.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	9	1406	49	0	0
Future Volume (Veh/h)	0	9	1406	49	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	0	9	1420	49	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			Raised			Raised
Median storage veh)			2			2
Upstream signal (ft)			998			
pX, platoon unblocked	0.68	0.68			0.68	
vC, conflicting volume	1444	734			1469	
vC1, stage 1 conf vol	1444					
vC2, stage 2 conf vol	0					
vCu, unblocked vol	698	0			734	
tC, single (s)	6.8	7.1			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.4			2.2	
p0 queue free %	100	99			100	
cM capacity (veh/h)	303	713			595	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	9	947	522	0	0	0
Volume Left	0	0	0	0	0	0
Volume Right	9	0	49	0	0	0
cSH	713	1700	1700	1700	1700	1700
Volume to Capacity	0.01	0.56	0.31	0.00	0.00	0.00
Queue Length 95th (ft)	1	0	0	0	0	0
Control Delay (s)	10.1	0.0	0.0	0.0	0.0	0.0
Lane LOS	B					
Approach Delay (s)	10.1	0.0		0.0		
Approach LOS	B					

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	53.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	64	1306	110	0	0
Future Volume (Veh/h)	0	64	1306	110	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	67	1375	116	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			Raised			Raised
Median storage veh)			2			2
Upstream signal (ft)						917
pX, platoon unblocked						
vC, conflicting volume	1433	746			1491	
vC1, stage 1 conf vol	1433					
vC2, stage 2 conf vol	0					
vCu, unblocked vol	1433	746			1491	
tC, single (s)	6.8	7.0			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	81			100	
cM capacity (veh/h)	185	350			456	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	67	917	574	0	0	0
Volume Left	0	0	0	0	0	0
Volume Right	67	0	116	0	0	0
cSH	350	1700	1700	1700	1700	1700
Volume to Capacity	0.19	0.54	0.34	0.00	0.00	0.00
Queue Length 95th (ft)	17	0	0	0	0	0
Control Delay (s)	17.7	0.0	0.0	0.0	0.0	0.0
Lane LOS	C					
Approach Delay (s)	17.7	0.0		0.0		
Approach LOS	C					

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	54.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	205	530	318	231	59	546	455	369	161	715	39
Future Volume (vph)	34	205	530	318	231	59	546	455	369	161	715	39
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.5	4.0	4.0	4.5		4.0	5.4	5.4	4.0	5.4	
Lane Util. Factor	1.00	0.95	0.88	1.00	0.95		0.97	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00		1.00	1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1614	3292	2567	1630	3148		3193	3167	1438	1614	3206	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1614	3292	2567	1630	3148		3193	3167	1438	1614	3206	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	36	218	564	338	246	63	581	484	393	171	761	41
RTOR Reduction (vph)	0	0	100	0	17	0	0	0	257	0	3	0
Lane Group Flow (vph)	36	218	464	338	292	0	581	484	136	171	799	0
Confl. Peds. (#/hr)			5	5					2	2		
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	3%	1%	1%	2%	3%	0%	1%	5%	2%	3%	3%	0%
Turn Type	Prot	NA	pm+ov	Prot	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4						2			
Actuated Green, G (s)	3.9	12.5	35.8	26.4	35.0		23.3	38.3	38.3	15.3	30.3	
Effective Green, g (s)	3.9	12.5	35.8	26.4	35.0		23.3	38.3	38.3	15.3	30.3	
Actuated g/C Ratio	0.04	0.11	0.32	0.24	0.32		0.21	0.35	0.35	0.14	0.27	
Clearance Time (s)	4.0	4.5	4.0	4.0	4.5		4.0	5.4	5.4	4.0	5.4	
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lane Grp Cap (vph)	57	372	832	389	998		673	1098	498	223	879	
v/s Ratio Prot	0.02	c0.07	0.12	c0.21	0.09		c0.18	0.15		0.11	c0.25	
v/s Ratio Perm			0.06						0.09			
v/c Ratio	0.63	0.59	0.56	0.87	0.29		0.86	0.44	0.27	0.77	0.91	
Uniform Delay, d1	52.5	46.5	30.8	40.3	28.4		42.0	27.8	26.0	45.8	38.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	15.5	1.5	0.5	17.7	0.1		10.8	0.1	0.1	13.2	12.8	
Delay (s)	68.1	48.0	31.2	58.0	28.4		52.8	27.9	26.1	59.0	51.5	
Level of Service	E	D	C	E	C		D	C	C	E	D	
Approach Delay (s)		37.3			43.9			37.3			52.8	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	42.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	110.4	Sum of lost time (s)	17.9
Intersection Capacity Utilization	80.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	18	0	0	95	0	912	19	0	462	133
Future Volume (Veh/h)	0	0	18	0	0	95	0	912	19	0	462	133
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	19	0	0	100	0	960	20	0	486	140
Pedestrians					4			1			1	
Lane Width (ft)					12.0			12.0			12.0	
Walking Speed (ft/s)					3.5			3.5			3.5	
Percent Blockage					0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											326	
pX, platoon unblocked												
vC, conflicting volume	977	1540	314	1237	1600	335	626			984		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	977	1540	314	1237	1600	335	626			984		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	97	100	100	85	100			100		
cM capacity (veh/h)	176	116	687	130	107	661	965			707		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	19	100	384	384	212	324	302
Volume Left	0	0	0	0	0	0	0
Volume Right	19	100	0	0	20	0	140
cSH	687	661	1700	1700	1700	1700	1700
Volume to Capacity	0.03	0.15	0.23	0.23	0.12	0.19	0.18
Queue Length 95th (ft)	2	13	0	0	0	0	0
Control Delay (s)	10.4	11.4	0.0	0.0	0.0	0.0	0.0
Lane LOS	B	B					
Approach Delay (s)	10.4	11.4	0.0			0.0	
Approach LOS	B	B					

Intersection Summary				
Average Delay	0.8			
Intersection Capacity Utilization	33.0%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM 6th Edition Analysis February 2020

Based on ODOT Analysis Procedures Manual, Volume 2, Chapter 13

INTERSECTION	1. OR 99/Table Rock Road				
CYCLE LENGTH	120				
TOTAL LOST TIME	18				
TOTAL LOST TIME (2025)					
CRITICAL MOVEMENTS	**EB (L)**	**WB (T)**	**NB (T)**	**SB (L)**	
	2020 EXISTING PM				
Adj Flow Rate, (veh/h)	47	991	274	453	
Sat Flow (veh/h)	1498	3273	3233	3233	
Flow Ratio	0.03	0.30	0.08	0.14	
CRITICAL INTERSECTION V/C RATIO	**0.66**				

INTERSECTION	2. OR 238-OR 62/OR 99-Court Road-N Riverside Drive				
CYCLE LENGTH	135				
TOTAL LOST TIME	18				
TOTAL LOST TIME (2025)					
CRITICAL MOVEMENTS	**EB (L)**	**WB (T)**	**NB (T)**	**SB (L)**	
	2020 EXISTING PM				
Adj Flow Rate, (veh/h)	409	978	794	427	
Sat Flow (veh/h)	3183	4703	3221	3208	
Flow Ratio	0.13	0.21	0.25	0.13	
CRITICAL INTERSECTION V/C RATIO	**0.83**				

INTERSECTION	3. OR 62/RVM Main Entrance				
CYCLE LENGTH	90				
TOTAL LOST TIME	13.5				
TOTAL LOST TIME (2025)					
CRITICAL MOVEMENTS	**WB (L)**	**EB (T)**	**NB (T)**	**SB (L)**	
	2020 EXISTING PM				
Adj Flow Rate, (veh/h)	138	0	1737	155	
Sat Flow (veh/h)	1654	0	4820	3233	
Flow Ratio	0.08	0.00	0.36	0.05	
CRITICAL INTERSECTION V/C RATIO	**0.58**				

INTERSECTION	9. Biddle Road/Hilton Court				
CYCLE LENGTH	100				
TOTAL LOST TIME	18				
TOTAL LOST TIME (2025)					
CRITICAL MOVEMENTS	**EB (T)**	**WB (L)**	**NB (T)**	**SB (L)**	
	2020 EXISTING PM				
Adj Flow Rate, (veh/h)	25	72	835	212	
Sat Flow (veh/h)	528	3107	3247	1641	
Flow Ratio	0.05	0.02	0.26	0.13	
CRITICAL INTERSECTION V/C RATIO	**0.56**				

INTERSECTION	11. OR 62/Bullock Road-Poplar Drive				
CYCLE LENGTH	130				
TOTAL LOST TIME	18				
TOTAL LOST TIME (2025)					
CRITICAL MOVEMENTS	**EB (T)**	**WB (L)**	**NB (TR)**	**SB (L)**	
	2020 EXISTING PM				
Adj Flow Rate, (veh/h)	149	482	1898	311	
Sat Flow (veh/h)	1736	3333	4786	3333	
Flow Ratio	0.09	0.14	0.40	0.09	
CRITICAL INTERSECTION V/C RATIO	**0.84**				

INTERSECTION	14. OR 62/Delta Waters Road				
CYCLE LENGTH	130				
TOTAL LOST TIME	18				
TOTAL LOST TIME (2025)					
CRITICAL MOVEMENTS	**EB (T)**	**WB (L)**	**NB (L)**	**SB (T)**	
	2020 EXISTING PM				
Adj Flow Rate, (veh/h)	218	338	581	761	
Sat Flow (veh/h)	3299	1641	3208	3131	
Flow Ratio	0.07	0.21	0.18	0.24	
CRITICAL INTERSECTION V/C RATIO	**0.81**				

1: Table Rock Rd & Hwy 63/N Pacific Hwy/OR 99 Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.4	3.8	0.4	0.3	8.0	2.0	0.7	2.1	0.0	3.5	2.3	0.2
Stop Delay (hr)	0.4	2.7	0.3	0.2	5.3	0.6	0.6	1.8	0.0	2.9	1.6	0.1

1: Table Rock Rd & Hwy 63/N Pacific Hwy/OR 99 Performance by movement

Movement	All
Denied Delay (hr)	0.1
Total Delay (hr)	23.6
Stop Delay (hr)	16.7

2: OR 62 & OR 99/Riverside/Court Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	7.2	7.0	0.4	1.1	12.6	0.9	5.4	81.3	7.0	4.9	5.5	2.3
Stop Delay (hr)	6.2	5.3	0.3	1.0	10.5	0.0	4.8	75.1	6.6	4.4	4.1	1.3

2: OR 62 & OR 99/Riverside/Court Performance by movement

Movement	All
Denied Delay (hr)	0.1
Total Delay (hr)	135.6
Stop Delay (hr)	119.7

3: OR 62 & RVM Main Ent Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.8	0.7	12.3	0.5	0.8	3.2	18.2
Stop Delay (hr)	0.7	0.7	7.3	0.3	0.6	0.8	10.4

4: OR 62 & RVM East Ent Performance by movement

Movement	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	1.1	2.4	0.1	0.9	1.0	5.5
Stop Delay (hr)	1.1	0.1	0.0	0.9	0.0	2.1

5: OR 62 & I-5 SB Ramps Performance by movement

Movement	EBL	EBR	NBT	NBR	SBT	SBR	All
Denied Delay (hr)	0.3	0.1	0.0	0.0	0.0	0.0	0.4
Total Delay (hr)	4.7	1.8	4.0	1.9	3.5	2.3	18.2
Stop Delay (hr)	4.2	1.6	2.0	0.8	1.2	0.0	9.8

6: OR 62 & I-5 NB Ramps Performance by movement

Movement	WBL	WBT	WBR	NBT	NBR	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Total Delay (hr)	8.4	0.2	14.9	6.0	1.3	8.4	1.6	40.8
Stop Delay (hr)	7.5	0.1	14.4	3.5	0.6	4.2	0.5	30.8

7: OR 62 & Biddle NB Jug Performance by movement

Movement	WBT	WBR	NBT	NBR	SBT	All
Denied Delay (hr)	0.0	1.9	6.2	1.4	0.0	9.5
Total Delay (hr)	0.9	13.6	44.8	2.5	3.1	64.8
Stop Delay (hr)	0.9	13.7	36.7	1.7	1.8	54.7

8: Biddle Rd/ Biddle Rd & South End of Jug Handle Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	101.3	24.9	0.0	0.0	126.3
Total Delay (hr)	2.2	0.9	31.5	22.7	6.4	1.3	64.9
Stop Delay (hr)	2.0	0.8	30.2	22.7	6.3	0.5	62.5

9: Biddle Rd/Biddle Rd & Hilton Ct/Biddle Rd Ramp Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	3.7	2.5	14.8	60.0	0.6
Total Delay (hr)	0.1	0.5	0.3	0.4	0.0	0.1	1.9	28.2	51.3	32.7	16.2	0.2
Stop Delay (hr)	0.1	0.5	0.3	0.3	0.0	0.1	1.7	26.2	52.1	32.8	15.1	0.2

9: Biddle Rd/Biddle Rd & Hilton Ct/Biddle Rd Ramp Performance by movement

Movement	All
Denied Delay (hr)	81.7
Total Delay (hr)	132.0
Stop Delay (hr)	129.3

10: OR 62 & Biddle Rd Ramp/Fred Meyer Ent Performance by movement

Movement	EBT	EBR	WBR	NBT	NBR	SBT	SBR	All
Denied Delay (hr)	0.0	11.5	12.0	0.9	0.2	0.0	0.0	24.5
Total Delay (hr)	2.3	40.4	8.2	30.3	2.0	2.7	0.2	86.1
Stop Delay (hr)	2.4	42.1	8.2	25.4	1.5	0.1	0.0	79.7

11: OR 62 & Poplar Dr Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.3	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.3	0.2
Total Delay (hr)	5.3	2.2	2.0	12.1	4.0	2.7	0.4	41.0	3.0	5.9	12.8	0.4
Stop Delay (hr)	4.8	2.0	1.9	11.3	3.8	2.6	0.4	33.6	2.4	5.5	9.4	0.2

11: OR 62 & Poplar Dr Performance by movement

Movement	All
Denied Delay (hr)	2.2
Total Delay (hr)	92.0
Stop Delay (hr)	77.8

12: OR 62 & Sky Park Dr Performance by movement

Movement	WBR	NBT	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0
Total Delay (hr)	0.0	0.5	0.0	0.5
Stop Delay (hr)	0.0	0.0	0.0	0.0

13: OR 62/110084. OR-62 & Whittle Ave Performance by movement

Movement	WBR	NBT	NBR	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.1	0.3	0.0	3.5	4.0
Stop Delay (hr)	0.1	0.0	0.0	1.9	2.0

14: 140087. Crater Lake Hwy/Crater Lake Hwy & Delta Waters Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay (hr)	0.5	6.6	1.8	3.3	3.1	0.8	4.2	3.6	0.8	1.6	9.9	0.3
Stop Delay (hr)	0.5	6.1	1.0	2.9	2.8	0.7	3.6	2.8	0.5	1.3	7.4	0.2

14: 140087. Crater Lake Hwy/Crater Lake Hwy & Delta Waters Rd Performance by movement

Movement	All
Denied Delay (hr)	0.5
Total Delay (hr)	36.6
Stop Delay (hr)	29.7

15: Poplar Dr & Hilton Rd Performance by movement

Movement	EBR	WBR	NBT	NBR	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	29.9	0.7	0.0	0.0	30.7
Total Delay (hr)	0.0	0.7	13.6	0.1	0.2	0.1	14.8
Stop Delay (hr)	0.0	0.7	12.3	0.1	0.0	0.0	13.2

Total Network Performance

Denied Delay (hr)	276.1
Total Delay (hr)	775.5
Stop Delay (hr)	658.3

Intersection: 1: Table Rock Rd & Hwy 63/N Pacific Hwy/OR 99

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	TR	L	L
Maximum Queue (ft)	267	256	282	289	469	447	413	85	189	148	170	204
Average Queue (ft)	44	142	151	32	261	265	130	47	80	67	96	142
95th Queue (ft)	125	228	231	120	466	449	290	87	139	127	175	199
Link Distance (ft)		1924	1924		852	852	852		2093	2093		1571
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	250			200				340			500	
Storage Blk Time (%)		0			10							
Queuing Penalty (veh)		0			3							

Intersection: 1: Table Rock Rd & Hwy 63/N Pacific Hwy/OR 99

Movement	SB
Directions Served	TR
Maximum Queue (ft)	332
Average Queue (ft)	170
95th Queue (ft)	272
Link Distance (ft)	1571
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 2: OR 62 & OR 99/Riverside/Court

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	L	T	TR	L	T	T	T	R	L	T	T
Maximum Queue (ft)	247	300	446	514	108	334	385	325	249	315	2109	2097
Average Queue (ft)	149	207	267	269	47	206	240	205	9	156	1509	1575
95th Queue (ft)	228	271	365	397	100	299	342	309	84	375	2106	2137
Link Distance (ft)			852	852	686	686	686	686			4693	4693
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	380	380							250	150		
Storage Blk Time (%)			1						0	1	67	84
Queuing Penalty (veh)			4						1	4	37	61

Intersection: 2: OR 62 & OR 99/Riverside/Court

Movement	NB	SB	SB	SB	SB	SB
Directions Served	R	L	L	T	T	R
Maximum Queue (ft)	500	224	414	382	350	376
Average Queue (ft)	348	128	165	199	221	171
95th Queue (ft)	691	212	271	333	346	334
Link Distance (ft)				524	524	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	390	315	315			400
Storage Blk Time (%)	0			1		
Queuing Penalty (veh)	0			5		

Intersection: 3: OR 62 & RVM Main Ent

Movement	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	R	R	T	T	T	R	L	L	T	T
Maximum Queue (ft)	132	78	101	343	641	634	180	124	135	227	264
Average Queue (ft)	65	42	36	133	210	273	41	19	60	98	126
95th Queue (ft)	113	75	75	230	480	485	148	70	98	193	228
Link Distance (ft)	338	338	338	524	524	524				766	766
Upstream Blk Time (%)					1	1					
Queuing Penalty (veh)					3	7					
Storage Bay Dist (ft)							100	280	280		
Storage Blk Time (%)						28					
Queuing Penalty (veh)						22					

Intersection: 4: OR 62 & RVM East Ent

Movement	WB	NB	NB	NB	SB
Directions Served	R	T	T	R	L
Maximum Queue (ft)	152	172	283	26	162
Average Queue (ft)	71	6	17	1	63
95th Queue (ft)	133	58	108	9	122
Link Distance (ft)	341	766	766		
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)				100	200
Storage Blk Time (%)			1		
Queuing Penalty (veh)			0		

Intersection: 5: OR 62 & I-5 SB Ramps

Movement	EB	EB	EB	NB	NB	NB	NB	SB	SB
Directions Served	L	LT	R	T	T	T	R	T	T
Maximum Queue (ft)	269	285	305	202	280	451	75	203	201
Average Queue (ft)	150	189	136	94	146	267	64	119	125
95th Queue (ft)	251	271	250	193	266	440	94	190	192
Link Distance (ft)			1196	438	438	438		551	551
Upstream Blk Time (%)						1			
Queuing Penalty (veh)						4			
Storage Bay Dist (ft)	195	195					50		
Storage Blk Time (%)	0	12	4			19	3		
Queuing Penalty (veh)	0	26	12			94	15		

Intersection: 6: OR 62 & I-5 NB Ramps

Movement	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	LTR	R	T	T	T	R	T	T	T	R
Maximum Queue (ft)	890	952	965	290	384	445	88	357	400	403	280
Average Queue (ft)	313	408	389	144	168	256	71	224	248	228	83
95th Queue (ft)	694	807	822	237	282	411	85	351	354	364	174
Link Distance (ft)	3096	3096	3096	551	551	551		749	749	749	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)							50				290
Storage Blk Time (%)						29	3			2	0
Queuing Penalty (veh)						89	16			11	0

Intersection: 7: OR 62 & Biddle NB Jug

Movement	WB	B44	NB	NB	NB	NB
Directions Served	R	T	T	T	T	R
Maximum Queue (ft)	606	637	766	798	804	100
Average Queue (ft)	496	513	580	614	610	76
95th Queue (ft)	736	897	936	973	990	140
Link Distance (ft)	476	618	749	749	749	
Upstream Blk Time (%)	84	71	2	5	9	
Queuing Penalty (veh)	198	161	13	34	54	
Storage Bay Dist (ft)						75
Storage Blk Time (%)					45	1
Queuing Penalty (veh)					62	4

Intersection: 8: Biddle Rd/ Biddle Rd & South End of Jug Handle

Movement	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	LR	T	TR	L	T	T
Maximum Queue (ft)	197	272	1214	1194	125	366	383
Average Queue (ft)	116	114	842	875	100	199	137
95th Queue (ft)	177	202	1591	1576	156	384	323
Link Distance (ft)	618	618	1175	1175		1967	1967
Upstream Blk Time (%)			57	58			
Queuing Penalty (veh)			0	0			
Storage Bay Dist (ft)					100		
Storage Blk Time (%)					66	2	
Queuing Penalty (veh)					229	1	

Intersection: 9: Biddle Rd/Biddle Rd & Hilton Ct/Biddle Rd Ramp

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	L	TR	L	T	T	R	L	T	TR
Maximum Queue (ft)	58	178	31	108	49	70	1992	2055	330	285	1119	1134
Average Queue (ft)	20	48	7	27	15	25	1447	1525	321	262	929	902
95th Queue (ft)	47	117	27	61	36	62	2441	2400	394	358	1472	1486
Link Distance (ft)	849	849			1196		1967	1967			1100	1100
Upstream Blk Time (%)							7	8			64	60
Queuing Penalty (veh)							34	40			0	0
Storage Bay Dist (ft)			220	220		320			220	175		
Storage Blk Time (%)							2	10	96	89	1	
Queuing Penalty (veh)							1	30	336	297	2	

Intersection: 10: OR 62 & Biddle Rd Ramp/Fred Meyer Ent

Movement	EB	WB	NB	NB	NB	NB	SB
Directions Served	R	R	T	T	T	R	T
Maximum Queue (ft)	1211	256	396	414	478	140	50
Average Queue (ft)	1205	210	352	373	411	120	2
95th Queue (ft)	1210	320	416	438	510	199	17
Link Distance (ft)	1196	237	347	347	347		507
Upstream Blk Time (%)	58	53	41	47	91		
Queuing Penalty (veh)	293	0	272	313	607		
Storage Bay Dist (ft)						90	
Storage Blk Time (%)					51		
Queuing Penalty (veh)					108		

Intersection: 11: OR 62 & Poplar Dr

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	L	T	R	L	L	T	R	L	T	T	TR
Maximum Queue (ft)	260	448	465	160	230	304	285	297	506	539	560	549
Average Queue (ft)	147	189	164	122	199	251	200	204	46	523	532	523
95th Queue (ft)	225	321	317	179	271	282	295	316	197	536	555	542
Link Distance (ft)			1187			230	230	230		507	507	507
Upstream Blk Time (%)					1	61	23	15	0	48	52	42
Queuing Penalty (veh)					0	203	76	49	0	299	325	257
Storage Bay Dist (ft)	350	350		135	250				450			
Storage Blk Time (%)		0	14	9	1	61				63		
Queuing Penalty (veh)		0	65	43	2	140				25		

Intersection: 11: OR 62 & Poplar Dr

Movement	SB	SB	SB	SB	SB	SB
Directions Served	L	L	T	T	T	R
Maximum Queue (ft)	309	322	319	315	317	315
Average Queue (ft)	194	213	266	271	287	135
95th Queue (ft)	280	358	369	378	385	372
Link Distance (ft)						
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	410	410				350
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 12: OR 62 & Sky Park Dr

Movement	WB	B19	B19	B19
Directions Served	R	T	T	
Maximum Queue (ft)	60	638	640	600
Average Queue (ft)	14	226	307	23
95th Queue (ft)	44	675	772	203
Link Distance (ft)	432	591	591	591
Upstream Blk Time (%)		0	1	0
Queuing Penalty (veh)		2	9	0
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 13: OR 62/110084. OR-62 & Whittle Ave

Movement	WB
Directions Served	R
Maximum Queue (ft)	109
Average Queue (ft)	38
95th Queue (ft)	75
Link Distance (ft)	479
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 14: 140087. Crater Lake Hwy/Crater Lake Hwy & Delta Waters Rd

Movement	EB	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	T	T	R	R	L	T	TR	L	L	T	T
Maximum Queue (ft)	81	251	245	378	367	304	245	254	228	253	303	312
Average Queue (ft)	35	151	151	139	67	176	161	130	116	138	119	143
95th Queue (ft)	75	228	236	288	241	245	227	215	186	211	229	235
Link Distance (ft)		1246	1246				1401	1401			823	823
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	225			450	450	400			500	500		
Storage Blk Time (%)		1										3
Queuing Penalty (veh)		0										10

Intersection: 14: 140087. Crater Lake Hwy/Crater Lake Hwy & Delta Waters Rd

Movement	NB	SB	SB	SB
Directions Served	R	L	T	TR
Maximum Queue (ft)	190	300	430	384
Average Queue (ft)	81	117	234	233
95th Queue (ft)	142	258	366	328
Link Distance (ft)			1423	1423
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	200	200		
Storage Blk Time (%)	0	0	18	
Queuing Penalty (veh)	0	0	30	

Intersection: 15: Poplar Dr & Hilton Rd

Movement	EB	WB	NB	NB	NB	SB
Directions Served	R	R	T	T	TR	T
Maximum Queue (ft)	34	186	279	280	279	33
Average Queue (ft)	13	63	264	256	246	1
95th Queue (ft)	38	123	342	359	380	11
Link Distance (ft)	464	466	260	260	260	230
Upstream Blk Time (%)			70	75	62	
Queuing Penalty (veh)			0	0	0	
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Network Summary

Network wide Queuing Penalty: 5042

Appendix C Multimodal LOS Analysis Sheets

Segment LOS Output Summary

Roadway	Dir	From-To	Pedestrian LOS	Bicycle LOS	Transit LOS
OR 238	EB	Sage Road to Central Avenue	E	D	D
OR 238	EB	Central Avenue to OR 99	E	F	D
OR 62	EB	OR 99 to RV Mall Entrance (west)	E	F	
OR 62	EB	RV Mall Entrance (west) to RV Mall Entrance (east, at Target)	E	D	
OR 62	EB	RV Mall Entrance (east, at Target) to I-5 SB Ramp Terminal	E	D	
OR 62	EB	I-5 SB Ramp Terminal to I-5 NB Ramp Terminal	E	F	
OR 62	EB	I-5 NB Ramp Terminal to Biddle Road (north end of jug handle)	E	D	
OR 62	EB	Biddle Road (north end of jug handle) to Fred Meyer Driveway	E	D	F
OR 62	EB	Fred Meyer Driveway to Poplar Drive	E	D	F
OR 62	EB	Poplar Drive to Sky Park Drive	E	F	
OR 62	EB	Sky Park Drive to Whittle Avenue	E	F	
OR 62	EB	Whittle Avenue to Delta Waters Road	E	F	
OR 62	EB	Delta Waters Road to East end of IMSA	E	F	
OR 62	WB	East end of IMSA to Delta Waters Road	E	D	
OR 62	WB	Delta Waters Road to RI/RO Commercial Driveway	E	D	
OR 62	WB	RI/RO Commercial Driveway to Bullock Road	F	F	
OR 62	WB	Bullock Road to Hilton Court	E	D	
OR 62	WB	Hilton Court to I-5 NB Ramp Terminal	E	D	
OR 62	WB	I-5 NB Ramp Terminal to I-5 SB Ramp Terminal	E	D	
OR 62	WB	I-5 SB Ramp Terminal to RV Mall Entrance (west)	E	D	
OR 238	WB	RV Mall Entrance (west) to OR 99	E	D	
OR 238	WB	OR 99 to Central Avenue	E	F	
OR 238	WB	Central Avenue to Sage Road	E	D	
Table Rock Road	SB	Berrydale Avenue to Adams Lane	E	F	
Table Rock Road	SB	Adams Lane to Table Rock Road	C	D	
Table Rock Road	SB	Table Rock Road to OR 99	E	F	
Table Rock Road	NB	OR 99 to Table Rock Road	C	F	D
Table Rock Road	NB	Table Rock Road to Adams Lane	C	D	D
Table Rock Road	NB	Adams Lane to Berrydale Avenue	C	F	D
Central Avenue	SB	OR 99 to OR 238	C	C	C
Central Avenue	SB	OR 238 to Commercial Driveway	C	C	
Central Avenue	SB	Commercial Driveway to McAndrews (does not intersect)	C	C	

Segment LOS Output Summary

Roadway	Dir	From-To	Pedestrian LOS	Bicycle LOS	Transit LOS
Central Avenue	NB	McAndrews (does not intersect) to Commercial Driveway	E	C	
Central Avenue	NB	Commercial Driveway to OR 238	C	C	
Central Avenue	NB	OR 238 to OR 99	C	C	
OR 99	SB	Table Rock Road to OR 238	E	D	
OR 99	NB	OR 238 to Table Roock Road	F	F	B
Court Street	SB	OR 238 to Ohio Street	E	F	D
Court Street	SB	Ohio Street to McAndrews Road	E	F	D
Riverside Avenue	NB	McAndrews Road to Ohio Street	F	F	B
Riverside Avenue	NB	Ohio Street to OR 238	F	F	B
Biddle Road	SB	Knutson Avenue to Commercial Driveway	E	D	
Biddle Road	SB	Commercial Driveway to Hilton Court	E	D	
Biddle Road	SB	Hilton Court to OR 62 (does not intersect)	C	F	
Biddle Road	SB	OR 62 (does not intersect) to Biddle Road jug handle	C	D	
Biddle Road	SB	Biddle Road jug handle to North of Morrow Road	C	F	
Biddle Road	SB	North of Morrow Road to Progress Drive	E	F	
Biddle Road	SB	Progress Drive to McAndrews Road	E	F	
Biddle Road	NB	McAndrews Road to Progress Drive	E	F	D
Biddle Road	NB	Progress Drive to Morrow Road	E	F	D
Biddle Road	NB	Morrow Road to Biddle Road jug handle	C	F	F
Biddle Road	NB	Biddle Road jug handle to OR 62 (does not intersect)	C	D	
Biddle Road	NB	OR 62 to Hilton Court	C	F	
Biddle Road	NB	Hilton Court to Commercial Driveway	E	F	
Biddle Road	NB	Hilton Court to Knutson Avenue	E	F	
Hilton Court	EB	Biddle Road to OR 62	B	C	
Hilton Court	WB	OR 62 to Biddle Road	B	C	
Biddle Road jug handle	SB	OR 62 to Biddle Road	B	B	
Biddle Road jug handle	NB	Biddle Road to OR 62	B	B	E
Bullock Road	SB	North IMSA Boundary to OR 62	B	C	
Bullock Road	NB	OR 62 to North IMSA Boundary	B	C	E
Poplar Drive	SB	OR 62 to Hilton Road	C	F	F
Poplar Drive	SB	Hilton Road to Fred Meyer Driveway	C	F	F
Poplar Drive	SB	Fred Meyer Driveway to South IMSA Boundary	C	F	

Segment LOS Output Summary

Roadway	Dir	From-To	Pedestrian LOS	Bicycle LOS	Transit LOS
Poplar Drive	NB	South IMSA Bouundary to Fred Meyer Driveway	C	F	F
Poplar Drive	NB	Fred Meyer Driveway to Holton Road	E	F	F
Poplar Drive	NB	Hilton Road to OR 62	E	F	F
Hilton Road	EB	Poplar Road to East IMSA Boundary	B	C	
Hilton Road	WB	East IMSA Boundary to Poplar Road	B	C	
Sky Park Drive	EB	OR 62 to Wittle Road	B	C	
Sky Park Drive	WB	Whittle Road to OR 62	B	C	
Whittle Avenue	SB	OR 62 to Sky Park Drive	B	C	
Whittle Avenue	SB	Sky Park Drive to United Way	B	C	
Whittle Avenue	NB	United Way to Sky Park Drive	B	C	
Whittle Avenue	NB	Sky Park Drive to OR 62	B	C	
Delta waters Road	SB	Commercial Driveway to Commercial Driveway	C	F	
Delta waters Road	SB	Commercial Driveway to OR 62	E	D	
Delta Waters Road	SB	OR 62 to Crater Lake Avenue	C	D	
Delta Waters Road	NB	Craster Lake Avenue to OR 62	C	D	B
Delta Waters Road	NB	OR 62 to Commercial Driveway	C	F	B
Delta Waters Road	NB	Commercial Driveway to Commercial Driveway	C	F	B

Appendix D Raw Crash Data

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Intersectional Crashes at Biddle Rd & Hilton Rd / Hilton Ct
January 1, 2013 through December 31, 2017

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2017														
ANGLE	0	1	0	1	0	2	0	1	0	1	0	1	0	0
REAR-END	0	1	0	1	0	2	0	1	0	1	0	1	0	0
2017 TOTAL	0	2	0	2	0	4	0	2	0	2	0	2	0	0
YEAR: 2016														
REAR-END	0	1	1	2	0	1	0	1	1	0	2	2	0	0
TURNING MOVEMENTS	0	0	1	1	0	0	1	1	0	0	1	1	0	0
2016 TOTAL	0	1	2	3	0	1	1	2	1	0	3	3	0	0
YEAR: 2015														
ANGLE	0	1	0	1	0	3	0	1	0	0	1	1	0	0
TURNING MOVEMENTS	0	1	0	1	0	2	0	1	0	0	1	1	0	0
2015 TOTAL	0	2	0	2	0	5	0	2	0	0	2	2	0	0
YEAR: 2014														
NON-COLLISION	0	0	1	1	0	0	0	0	1	1	0	1	0	0
2014 TOTAL	0	0	1	1	0	0	0	0	1	1	0	1	0	0
YEAR: 2013														
TURNING MOVEMENTS	0	0	1	1	0	0	0	1	0	0	1	1	0	0
2013 TOTAL	0	0	1	1	0	0	0	1	0	0	1	1	0	0
FINAL TOTAL	0	5	4	9	0	10	1	7	2	3	6	9	0	0

Disclaimers: *Effective 2016,* ***collection of "Property Damage Only" (PDO) crash data elements was reduced for vehicles and participants.*** *Age, Gender, License, Error and other elements are no longer available for PDO crash reporting. Please keep this in mind when comparing 2016 PDO crash data to prior years.*

A higher number of crashes may be reported as of 2011 compared to prior years. This does not necessarily reflect an increase in annual crashes. The higher numbers may result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics. For all disclaimers, see https://www.oregon.gov/ODOT/Data/documents/Crash_Data_Disclaimers.pdf.

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Intersectional Crashes at Hwy 99, Rogue Valley Hwy (063) & W. Table Rock Rd / N Central Ave
January 1, 2013 through December 31, 2017

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2017														
ANGLE	0	1	0	1	0	2	0	1	0	1	0	1	0	0
FIXED / OTHER OBJECT	0	1	0	1	0	1	0	1	0	1	0	1	0	1
REAR-END	0	1	1	2	0	1	0	2	0	2	0	2	0	0
TURNING MOVEMENTS	0	2	0	2	0	2	0	2	0	2	0	2	0	0
2017 TOTAL	0	5	1	6	0	6	0	6	0	6	0	6	0	1
YEAR: 2016														
ANGLE	0	1	0	1	0	1	0	1	0	1	0	1	0	0
REAR-END	0	3	3	6	0	5	0	5	1	5	1	6	0	0
TURNING MOVEMENTS	0	1	0	1	0	1	0	1	0	1	0	1	0	0
2016 TOTAL	0	5	3	8	0	7	0	7	1	7	1	8	0	0
YEAR: 2015														
REAR-END	0	0	1	1	0	0	0	1	0	1	0	1	0	0
TURNING MOVEMENTS	0	0	1	1	0	0	0	0	1	1	0	1	0	0
2015 TOTAL	0	0	2	2	0	0	0	1	1	2	0	2	0	0
YEAR: 2014														
FIXED / OTHER OBJECT	0	1	0	1	0	1	0	1	0	0	1	1	0	1
REAR-END	0	1	0	1	0	3	0	1	0	1	0	1	0	0
2014 TOTAL	0	2	0	2	0	4	0	2	0	1	1	2	0	1
YEAR: 2013														
HEAD-ON	0	1	0	1	0	2	0	1	0	1	0	1	0	0
REAR-END	0	3	3	6	0	4	0	4	2	6	0	6	0	0
TURNING MOVEMENTS	0	0	1	1	0	0	0	1	0	1	0	1	0	0
2013 TOTAL	0	4	4	8	0	6	0	6	2	8	0	8	0	0
FINAL TOTAL	0	16	10	26	0	23	0	22	4	24	2	26	0	2

Disclaimers: *Effective 2016,* ***collection of "Property Damage Only" (PDO) crash data elements was reduced for vehicles and participants.*** *Age, Gender, License, Error and other elements are no longer available for PDO crash reporting. Please keep this in mind when comparing 2016 PDO crash data to prior years.*

A higher number of crashes may be reported as of 2011 compared to prior years. This does not necessarily reflect an increase in annual crashes. The higher numbers may result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics. For all disclaimers, see https://www.oregon.gov/ODOT/Data/documents/Crash_Data_Disclaimers.pdf.

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Intersectional Crashes at Hwy 99, Rogue Valley Hwy (272) / Riverside Ave / Court St & Crater Lake Highway (022) / Jacksonville Hwy (272)
January 1, 2013 through December 31, 2017

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2017														
ANGLE	0	1	1	2	0	1	1	1	1	1	1	2	0	0
REAR-END	0	2	1	3	0	2	0	2	1	3	0	3	0	0
TURNING MOVEMENTS	0	2	0	2	0	5	0	2	0	2	0	2	0	0
2017 TOTAL	0	5	2	7	0	8	1	5	2	6	1	7	0	0
YEAR: 2016														
ANGLE	0	1	2	3	0	2	0	2	1	2	1	3	0	0
REAR-END	0	2	2	4	0	6	1	3	1	2	2	4	0	0
TURNING MOVEMENTS	0	2	0	2	0	2	0	2	0	0	2	2	0	0
2016 TOTAL	0	5	4	9	0	10	1	7	2	4	5	9	0	0
YEAR: 2015														
ANGLE	0	2	0	2	0	2	0	2	0	2	0	2	0	0
FIXED / OTHER OBJECT	0	1	0	1	0	3	0	1	0	0	1	1	0	1
REAR-END	0	5	0	5	0	7	0	3	2	5	0	5	0	0
TURNING MOVEMENTS	0	1	0	1	0	1	0	1	0	0	1	1	0	0
2015 TOTAL	0	9	0	9	0	13	0	7	2	7	2	9	0	1
YEAR: 2014														
ANGLE	0	1	0	1	0	2	0	0	1	0	1	1	0	0
FIXED / OTHER OBJECT	0	1	0	1	0	1	0	1	0	1	0	1	0	1
REAR-END	0	4	3	7	0	4	0	7	0	7	0	6	0	0
TURNING MOVEMENTS	0	2	2	4	0	3	0	3	0	3	1	4	0	0
2014 TOTAL	0	8	5	13	0	10	0	11	1	11	2	12	0	1
YEAR: 2013														
ANGLE	0	1	0	1	0	2	0	1	0	1	0	1	0	0
REAR-END	0	2	6	8	0	2	0	7	1	8	0	8	0	0
SIDESWIPE - OVERTAKING	0	0	1	1	0	0	0	0	1	0	1	1	0	0
TURNING MOVEMENTS	0	2	0	2	0	2	0	0	2	1	1	2	0	0
2013 TOTAL	0	5	7	12	0	6	0	8	4	10	2	12	0	0
FINAL TOTAL	0	32	18	50	0	47	2	38	11	38	12	49	0	2

Disclaimers: *Effective 2016,* ***collection of "Property Damage Only" (PDO) crash data elements was reduced for vehicles and participants.*** *Age, Gender, License, Error and other elements are no longer available for PDO crash reporting. Please keep this in mind when comparing 2016 PDO crash data to prior years.*

A higher number of crashes may be reported as of 2011 compared to prior years. This does not necessarily reflect an increase in annual crashes. The higher numbers may result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics. For all disclaimers, see https://www.oregon.gov/ODOT/Data/documents/Crash_Data_Disclaimers.pdf.

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Intersectional Crashes at Hwy 62, Crater Lake Highway (022) & Delta Waters Rd
January 1, 2013 through December 31, 2017

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2017														
ANGLE	0	1	0	1	0	1	0	1	0	0	1	1	0	0
REAR-END	0	1	4	5	0	1	0	4	0	5	0	5	0	0
TURNING MOVEMENTS	0	2	3	5	0	3	0	5	0	3	2	5	0	0
2017 TOTAL	0	4	7	11	0	5	0	10	0	8	3	11	0	0
YEAR: 2016														
ANGLE	0	1	0	1	0	3	0	1	0	0	1	1	0	0
BACKING	0	0	1	1	0	0	0	1	0	1	0	1	0	0
HEAD-ON	0	1	0	1	0	2	0	0	1	1	0	1	0	0
REAR-END	0	5	3	8	0	7	0	4	3	6	2	8	0	0
TURNING MOVEMENTS	0	1	0	1	0	1	0	1	0	1	0	1	0	0
2016 TOTAL	0	8	4	12	0	13	0	7	4	9	3	12	0	0
YEAR: 2015														
ANGLE	0	0	1	1	0	0	0	1	0	1	0	1	0	0
BACKING	0	0	1	1	0	0	0	1	0	1	0	1	0	0
REAR-END	0	2	0	2	0	2	0	2	0	1	1	2	0	0
TURNING MOVEMENTS	0	1	1	2	0	1	0	1	1	1	1	2	0	0
2015 TOTAL	0	3	3	6	0	3	0	5	1	4	2	6	0	0
YEAR: 2014														
ANGLE	0	2	0	2	0	4	1	2	0	2	0	2	0	0
REAR-END	0	3	2	5	0	7	0	4	1	3	2	5	0	0
TURNING MOVEMENTS	0	0	3	3	0	0	0	3	0	2	1	3	0	0
2014 TOTAL	0	5	5	10	0	11	1	9	1	7	3	10	0	0
YEAR: 2013														
ANGLE	0	0	1	1	0	0	0	1	0	1	0	1	0	0
REAR-END	0	5	2	7	0	12	0	7	0	5	2	7	0	0
TURNING MOVEMENTS	0	1	3	4	0	1	1	4	0	4	0	4	0	0
2013 TOTAL	0	6	6	12	0	13	1	12	0	10	2	12	0	0
FINAL TOTAL	0	26	25	51	0	45	2	43	6	38	13	51	0	0

Disclaimers: *Effective 2016,* ***collection of "Property Damage Only" (PDO) crash data elements was reduced for vehicles and participants.*** *Age, Gender, License, Error and other elements are no longer available for PDO crash reporting. Please keep this in mind when comparing 2016 PDO crash data to prior years.*

A higher number of crashes may be reported as of 2011 compared to prior years. This does not necessarily reflect an increase in annual crashes. The higher numbers may result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics. For all disclaimers, see https://www.oregon.gov/ODOT/Data/documents/Crash_Data_Disclaimers.pdf.

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Intersectional Crashes at Hwy 62, Crater Lake Highway (022) & Skypark Dr
January 1, 2013 through December 31, 2017

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2016														
TURNING MOVEMENTS	0	1	0	1	0	4	0	1	0	1	0	1	0	0
2016 TOTAL	0	1	0	1	0	4	0	1	0	1	0	1	0	0
YEAR: 2015														
REAR-END	0	1	0	1	0	3	0	1	0	1	0	1	0	0
2015 TOTAL	0	1	0	1	0	3	0	1	0	1	0	1	0	0
YEAR: 2013														
SIDESWIPE - OVERTAKING	0	0	1	1	0	0	0	0	1	0	1	1	0	0
2013 TOTAL	0	0	1	1	0	0	0	0	1	0	1	1	0	0
FINAL TOTAL	0	2	1	3	0	7	0	2	1	2	1	3	0	0

Disclaimers: *Effective 2016,* ***collection of "Property Damage Only" (PDO) crash data elements was reduced for vehicles and participants.*** *Age, Gender, License, Error and other elements are no longer available for PDO crash reporting. Please keep this in mind when comparing 2016 PDO crash data to prior years.*

A higher number of crashes may be reported as of 2011 compared to prior years. This does not necessarily reflect an increase in annual crashes. The higher numbers may result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics. For all disclaimers, see https://www.oregon.gov/ODOT/Data/documents/Crash_Data_Disclaimers.pdf.

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Intersectional Crashes at Hwy 62, Crater Lake Highway (022) & Whittle Ave
January 1, 2013 through December 31, 2017

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2016														
TURNING MOVEMENTS	0	2	0	2	0	5	0	2	0	2	0	2	0	0
2016 TOTAL	0	2	0	2	0	5	0	2	0	2	0	2	0	0
YEAR: 2015														
REAR-END	0	0	1	1	0	0	0	1	0	1	0	1	0	0
TURNING MOVEMENTS	0	2	1	3	0	4	0	3	0	3	0	3	0	0
2015 TOTAL	0	2	2	4	0	4	0	4	0	4	0	4	0	0
YEAR: 2014														
TURNING MOVEMENTS	0	2	3	5	0	4	0	5	0	4	1	5	0	0
2014 TOTAL	0	2	3	5	0	4	0	5	0	4	1	5	0	0
YEAR: 2013														
REAR-END	0	0	1	1	0	0	0	1	0	1	0	1	0	0
TURNING MOVEMENTS	0	2	1	3	0	3	0	3	0	3	0	3	0	0
2013 TOTAL	0	2	2	4	0	3	0	4	0	4	0	4	0	0
FINAL TOTAL	0	8	7	15	0	16	0	15	0	14	1	15	0	0

Disclaimers: *Effective 2016,* ***collection of "Property Damage Only" (PDO) crash data elements was reduced for vehicles and participants.*** *Age, Gender, License, Error and other elements are no longer available for PDO crash reporting. Please keep this in mind when comparing 2016 PDO crash data to prior years.*

A higher number of crashes may be reported as of 2011 compared to prior years. This does not necessarily reflect an increase in annual crashes. The higher numbers may result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics. For all disclaimers, see https://www.oregon.gov/ODOT/Data/documents/Crash_Data_Disclaimers.pdf.

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Intersectional Crashes at Hwy 62, Crater Lake Highway (022) & Bullock Rd / Poplar Dr
January 1, 2013 through December 31, 2017

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2017														
REAR-END	0	2	1	3	0	2	0	2	1	2	1	3	0	0
TURNING MOVEMENTS	0	0	1	1	0	0	0	0	1	0	1	1	0	0
2017 TOTAL	0	2	2	4	0	2	0	2	2	2	2	4	0	0
YEAR: 2016														
FIXED / OTHER OBJECT	0	0	2	2	0	0	0	2	0	1	1	2	0	2
REAR-END	0	8	3	11	0	10	0	8	2	10	1	11	0	0
TURNING MOVEMENTS	0	4	0	4	0	9	0	3	1	2	2	4	0	0
2016 TOTAL	0	12	5	17	0	19	0	13	3	13	4	17	0	2
YEAR: 2015														
BACKING	0	0	2	2	0	0	0	2	0	1	1	2	0	0
REAR-END	0	9	0	9	0	15	0	8	1	7	2	9	0	0
TURNING MOVEMENTS	0	1	1	2	0	2	0	1	1	1	1	2	0	0
2015 TOTAL	0	10	3	13	0	17	0	11	2	9	4	13	0	0
YEAR: 2014														
REAR-END	0	1	2	3	0	1	1	3	0	2	1	3	0	0
TURNING MOVEMENTS	0	2	0	2	0	4	0	2	0	1	1	2	0	0
2014 TOTAL	0	3	2	5	0	5	1	5	0	3	2	5	0	0
YEAR: 2013														
ANGLE	0	0	1	1	0	0	0	1	0	1	0	1	0	0
BACKING	0	0	1	1	0	0	0	1	0	0	1	1	0	0
FIXED / OTHER OBJECT	0	1	0	1	0	1	0	1	0	1	0	1	0	1
MISCELLANEOUS	0	1	0	1	0	1	0	0	1	1	0	1	0	0
REAR-END	0	1	1	2	0	1	0	2	0	2	0	2	0	0
TURNING MOVEMENTS	0	0	2	2	0	0	0	1	1	1	1	2	0	0
2013 TOTAL	0	3	5	8	0	3	0	6	2	6	2	8	0	1
FINAL TOTAL	0	30	17	47	0	46	1	37	9	33	14	47	0	3

Disclaimers: *Effective 2016,* ***collection of "Property Damage Only" (PDO) crash data elements was reduced for vehicles and participants.*** *Age, Gender, License, Error and other elements are no longer available for PDO crash reporting. Please keep this in mind when comparing 2016 PDO crash data to prior years.*

A higher number of crashes may be reported as of 2011 compared to prior years. This does not necessarily reflect an increase in annual crashes. The higher numbers may result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics. For all disclaimers, see https://www.oregon.gov/ODOT/Data/documents/Crash_Data_Disclaimers.pdf.

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Intersectional Crashes at Poplar Dr & Hilton Rd
January 1, 2013 through December 31, 2017

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2016														
TURNING MOVEMENTS	0	0	1	1	0	0	0	1	0	1	0	1	0	0
2016 TOTAL	0	0	1	1	0	0	0	1	0	1	0	1	0	0
YEAR: 2015														
TURNING MOVEMENTS	0	1	0	1	0	2	0	1	0	0	1	1	0	0
2015 TOTAL	0	1	0	1	0	2	0	1	0	0	1	1	0	0
YEAR: 2014														
TURNING MOVEMENTS	0	0	1	1	0	0	0	1	0	1	0	1	0	0
2014 TOTAL	0	0	1	1	0	0	0	1	0	1	0	1	0	0
YEAR: 2013														
TURNING MOVEMENTS	0	1	1	2	0	1	0	2	0	2	0	2	0	0
2013 TOTAL	0	1	1	2	0	1	0	2	0	2	0	2	0	0
FINAL TOTAL	0	2	3	5	0	3	0	5	0	4	1	5	0	0

Disclaimers: *Effective 2016,* ***collection of "Property Damage Only" (PDO) crash data elements was reduced for vehicles and participants.*** *Age, Gender, License, Error and other elements are no longer available for PDO crash reporting. Please keep this in mind when comparing 2016 PDO crash data to prior years.*

A higher number of crashes may be reported as of 2011 compared to prior years. This does not necessarily reflect an increase in annual crashes. The higher numbers may result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics. For all disclaimers, see https://www.oregon.gov/ODOT/Data/documents/Crash_Data_Disclaimers.pdf.

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Crashes on Mainline Crater Lake Hwy (022), from MP 0.28 to MP 0.30
January 1, 2013 through December 31, 2017

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2015														
FIXED / OTHER OBJECT	0	0	1	1	0	0	0	1	0	0	1	0	0	1
TURNING MOVEMENTS	0	1	0	1	0	1	0	0	1	1	0	0	0	0
2015 TOTAL	0	1	1	2	0	1	0	1	1	1	1	0	0	1
YEAR: 2014														
FIXED / OTHER OBJECT	0	1	0	1	0	1	0	1	0	1	0	0	0	1
REAR-END	0	0	1	1	0	0	1	0	0	1	0	0	0	0
2014 TOTAL	0	1	1	2	0	1	1	1	0	2	0	0	0	1
YEAR: 2013														
REAR-END	0	1	0	1	0	4	0	1	0	1	0	0	0	0
2013 TOTAL	0	1	0	1	0	4	0	1	0	1	0	0	0	0
FINAL TOTAL	0	3	2	5	0	6	1	3	1	4	1	0	0	2

Disclaimers: *Effective 2016,* ***collection of "Property Damage Only" (PDO) crash data elements was reduced for vehicles and participants.*** *Age, Gender, License, Error and other elements are no longer available for PDO crash reporting. Please keep this in mind when comparing 2016 PDO crash data to prior years.*

A higher number of crashes may be reported as of 2011 compared to prior years. This does not necessarily reflect an increase in annual crashes. The higher numbers may result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics. For all disclaimers, see https://www.oregon.gov/ODOT/Data/documents/Crash_Data_Disclaimers.pdf.

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Crashes on Mainline Crater Lake Hwy (022), from MP 0.17 to MP 0.19
January 1, 2013 through December 31, 2017

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2017														
TURNING MOVEMENTS	0	1	1	2	0	1	0	2	0	2	0	0	0	0
2017 TOTAL	0	1	1	2	0	1	0	2	0	2	0	0	0	0
YEAR: 2016														
REAR-END	0	1	1	2	0	3	0	1	1	1	1	0	0	0
TURNING MOVEMENTS	0	2	3	5	0	3	0	4	1	4	1	0	0	0
2016 TOTAL	0	3	4	7	0	6	0	5	2	5	2	0	0	0
YEAR: 2015														
REAR-END	0	1	1	2	0	1	0	2	0	2	0	0	1	0
SIDESWIPE - OVERTAKING	0	0	1	1	0	0	0	1	0	1	0	0	0	0
TURNING MOVEMENTS	0	0	2	2	0	0	1	2	0	2	0	0	0	0
2015 TOTAL	0	1	4	5	0	1	1	5	0	5	0	0	1	0
YEAR: 2014														
REAR-END	0	0	1	1	0	0	0	1	0	1	0	0	0	0
TURNING MOVEMENTS	0	0	2	2	0	0	0	1	1	1	1	0	0	0
2014 TOTAL	0	0	3	3	0	0	0	2	1	2	1	0	0	0
YEAR: 2013														
REAR-END	0	0	2	2	0	0	0	1	1	1	1	0	0	0
TURNING MOVEMENTS	0	3	2	5	0	4	0	4	1	3	2	0	0	0
2013 TOTAL	0	3	4	7	0	4	0	5	2	4	3	0	0	0
FINAL TOTAL	0	8	16	24	0	12	1	19	5	18	6	0	1	0

Disclaimers: *Effective 2016,* ***collection of "Property Damage Only" (PDO) crash data elements was reduced for vehicles and participants.*** *Age, Gender, License, Error and other elements are no longer available for PDO crash reporting. Please keep this in mind when comparing 2016 PDO crash data to prior years.*

A higher number of crashes may be reported as of 2011 compared to prior years. This does not necessarily reflect an increase in annual crashes. The higher numbers may result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics. For all disclaimers, see https://www.oregon.gov/ODOT/Data/documents/Crash_Data_Disclaimers.pdf.

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Intersectional Crashes at Hwy 62, Crater Lake Hwy (022) & Biddle Rd Off Ramp
January 1, 2013 through December 31, 2017

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2017														
REAR-END	0	2	0	2	0	3	0	2	0	2	0	2	0	0
TURNING MOVEMENTS	0	3	0	3	0	3	0	2	1	2	1	3	0	0
2017 TOTAL	0	5	0	5	0	6	0	4	1	4	1	5	0	0
FINAL TOTAL	0	5	0	5	0	6	0	4	1	4	1	5	0	0

Disclaimers: *Effective 2016,* ***collection of "Property Damage Only" (PDO) crash data elements was reduced for vehicles and participants.*** *Age, Gender, License, Error and other elements are no longer available for PDO crash reporting. Please keep this in mind when comparing 2016 PDO crash data to prior years.*

A higher number of crashes may be reported as of 2011 compared to prior years. This does not necessarily reflect an increase in annual crashes. The higher numbers may result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics. For all disclaimers, see https://www.oregon.gov/ODOT/Data/documents/Crash_Data_Disclaimers.pdf.

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Intersectional Crashes at Biddle Rd & Biddle Rd Off/On Ramp
January 1, 2013 through December 31, 2017

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2017														
TURNING MOVEMENTS	0	0	1	1	0	0	1	1	0	1	0	1	0	0
2017 TOTAL	0	0	1	1	0	0	1	1	0	1	0	1	0	0
YEAR: 2016														
REAR-END	0	1	0	1	0	1	0	1	0	1	0	1	0	0
TURNING MOVEMENTS	0	0	1	1	0	0	0	0	0	1	0	1	0	0
2016 TOTAL	0	1	1	2	0	1	0	1	0	2	0	2	0	0
YEAR: 2015														
REAR-END	0	0	1	1	0	0	0	1	0	1	0	1	0	0
2015 TOTAL	0	0	1	1	0	0	0	1	0	1	0	1	0	0
YEAR: 2014														
TURNING MOVEMENTS	0	0	2	2	0	0	0	2	0	1	1	2	0	0
2014 TOTAL	0	0	2	2	0	0	0	2	0	1	1	2	0	0
YEAR: 2013														
TURNING MOVEMENTS	0	1	1	2	0	1	0	2	0	2	0	2	0	0
2013 TOTAL	0	1	1	2	0	1	0	2	0	2	0	2	0	0
FINAL TOTAL	0	2	6	8	0	2	1	7	0	7	1	8	0	0

Disclaimers: *Effective 2016,* ***collection of "Property Damage Only" (PDO) crash data elements was reduced for vehicles and participants.*** *Age, Gender, License, Error and other elements are no longer available for PDO crash reporting. Please keep this in mind when comparing 2016 PDO crash data to prior years.*

A higher number of crashes may be reported as of 2011 compared to prior years. This does not necessarily reflect an increase in annual crashes. The higher numbers may result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics. For all disclaimers, see https://www.oregon.gov/ODOT/Data/documents/Crash_Data_Disclaimers.pdf.

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Intersectional Crashes at Hwy 62, Crater Lake Hwy (022) & Hilton Rd
January 1, 2013 through December 31, 2017

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2016														
REAR-END	0	1	0	1	0	1	0	1	0	1	0	0	0	0
2016 TOTAL	0	1	0	1	0	1	0	1	0	1	0	0	0	0
YEAR: 2015														
REAR-END	0	1	0	1	0	3	0	1	0	1	0	0	0	0
TURNING MOVEMENTS	0	0	1	1	0	0	0	1	0	0	1	0	0	0
2015 TOTAL	0	1	1	2	0	3	0	2	0	1	1	0	0	0
YEAR: 2013														
REAR-END	0	1	0	1	0	1	0	1	0	1	0	1	0	0
2013 TOTAL	0	1	0	1	0	1	0	1	0	1	0	1	0	0
FINAL TOTAL	0	3	1	4	0	5	0	4	0	3	1	1	0	0

Disclaimers: *Effective 2016,* ***collection of "Property Damage Only" (PDO) crash data elements was reduced for vehicles and participants.*** *Age, Gender, License, Error and other elements are no longer available for PDO crash reporting. Please keep this in mind when comparing 2016 PDO crash data to prior years.*

A higher number of crashes may be reported as of 2011 compared to prior years. This does not necessarily reflect an increase in annual crashes. The higher numbers may result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics. For all disclaimers, see https://www.oregon.gov/ODOT/Data/documents/Crash_Data_Disclaimers.pdf.

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Intersectional Crashes at Hwy 62, Crater Lake Hwy (022) & Interstate 5, Pacific Hwy (001) NB Off/On Ramp(s)
January 1, 2013 through December 31, 2017

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2017														
REAR-END	0	2	4	6	0	4	0	5	1	5	1	6	0	0
TURNING MOVEMENTS	0	2	4	6	0	4	0	6	0	5	1	6	0	0
2017 TOTAL	0	4	8	12	0	8	0	11	1	10	2	12	0	0
YEAR: 2016														
REAR-END	0	2	2	4	0	2	1	3	1	4	0	4	0	0
SIDESWIPE - OVERTAKING	0	0	1	1	0	0	0	1	0	1	0	1	0	0
TURNING MOVEMENTS	0	4	1	5	0	9	1	5	0	5	0	5	0	0
2016 TOTAL	0	6	4	10	0	11	2	9	1	10	0	10	0	0
YEAR: 2015														
BACKING	0	1	0	1	0	2	0	1	0	1	0	1	0	0
REAR-END	0	4	2	6	0	7	0	6	0	5	1	6	0	0
TURNING MOVEMENTS	0	2	1	3	0	3	1	3	0	3	0	3	0	0
2015 TOTAL	0	7	3	10	0	12	1	10	0	9	1	10	0	0
YEAR: 2014														
PEDESTRIAN	0	1	0	1	0	1	0	0	1	0	1	1	0	0
REAR-END	0	2	2	4	0	2	0	4	0	3	1	4	0	0
TURNING MOVEMENTS	0	5	3	8	0	5	0	8	0	5	3	8	0	0
2014 TOTAL	0	8	5	13	0	8	0	12	1	8	5	13	0	0
YEAR: 2013														
REAR-END	0	1	2	3	0	1	0	3	0	2	1	3	0	0
TURNING MOVEMENTS	0	1	1	2	0	1	0	1	1	1	1	2	0	0
2013 TOTAL	0	2	3	5	0	2	0	4	1	3	2	5	0	0
FINAL TOTAL	0	27	23	50	0	41	3	46	4	40	10	50	0	0

Disclaimers: *Effective 2016,* ***collection of "Property Damage Only" (PDO) crash data elements was reduced for vehicles and participants.*** *Age, Gender, License, Error and other elements are no longer available for PDO crash reporting. Please keep this in mind when comparing 2016 PDO crash data to prior years.*

A higher number of crashes may be reported as of 2011 compared to prior years. This does not necessarily reflect an increase in annual crashes. The higher numbers may result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics. For all disclaimers, see https://www.oregon.gov/ODOT/Data/documents/Crash_Data_Disclaimers.pdf.

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Intersectional Crashes at Hwy 62, Crater Lake Hwy (022) & Interstate 5, Pacific Hwy (001) SB Off/On Ramp(s)
January 1, 2013 through December 31, 2017

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2017														
TURNING MOVEMENTS	0	1	0	1	0	2	0	0	1	0	1	1	0	0
2017 TOTAL	0	1	0	1	0	2	0	0	1	0	1	1	0	0
YEAR: 2016														
ANGLE	0	1	0	1	0	1	0	1	0	1	0	1	0	0
REAR-END	0	3	2	5	0	3	0	3	2	3	2	5	0	0
TURNING MOVEMENTS	0	0	3	3	0	0	0	2	1	1	2	3	0	0
2016 TOTAL	0	4	5	9	0	4	0	6	3	5	4	9	0	0
YEAR: 2015														
REAR-END	0	2	1	3	0	2	0	2	0	3	0	3	0	0
2015 TOTAL	0	2	1	3	0	2	0	2	0	3	0	3	0	0
YEAR: 2014														
REAR-END	0	1	3	4	0	1	0	4	0	4	0	4	0	0
TURNING MOVEMENTS	0	0	1	1	0	0	0	1	0	1	0	1	0	0
2014 TOTAL	0	1	4	5	0	1	0	5	0	5	0	5	0	0
YEAR: 2013														
REAR-END	0	1	3	4	0	1	0	3	0	3	1	4	0	0
2013 TOTAL	0	1	3	4	0	1	0	3	0	3	1	4	0	0
FINAL TOTAL	0	9	13	22	0	10	0	16	4	16	6	22	0	0

Disclaimers: *Effective 2016,* ***collection of "Property Damage Only" (PDO) crash data elements was reduced for vehicles and participants.*** *Age, Gender, License, Error and other elements are no longer available for PDO crash reporting. Please keep this in mind when comparing 2016 PDO crash data to prior years.*

A higher number of crashes may be reported as of 2011 compared to prior years. This does not necessarily reflect an increase in annual crashes. The higher numbers may result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics. For all disclaimers, see https://www.oregon.gov/ODOT/Data/documents/Crash_Data_Disclaimers.pdf.

Appendix E Crash Analysis Sheets

ID	Location	Collision Type										Severity		Total Crashes	90th Percentile Crash Rate	Observed Crash Rate	Does Observed Exceed 90th Rate?
		Rear-end	Turning	Angle	Fixed	Head	Ped	Side-Swipe	Backing	Non	Other	PDO	Injury				
1	OR 99 / Table Rock	16	5	2	2	1	0	0	0	0	0	10	16	26	0.86	0.42	No
2	OR 62 / OR 238 / OR 99 / Court Street / N. Riverside Avenue	27	11	9	2	0	0	1	0	0	0	18	32	50	0.86	0.51	No
3	OR 62 / Rogue Valley Mall entrance (west)	7	16	0	0	0	0	1	0	0	0	16	8	24	0.51	0.33	No
4	OR 62 / Rogue Valley Mall entrance (east, at Target)	2	1	0	2	0	0	0	0	0	0	2	3	5	0.29	0.07	No
5	OR 62 / I-5 Southbound Ramp Terminal	16	5	1	0	0	0	0	0	0	0	13	9	22	0.86	0.23	No
6	OR 62 / I-5 Northbound Ramp Terminal	23	24	0	0	0	1	1	1	0	0	23	27	50	0.86	0.48	No
7	OR 62 / Biddle Road (north end of jug handle)	2	3	0	0	0	0	0	0	0	0	0	5	5	0.29	0.05	No
8	OR 62 / Biddle Road (south end of jug handle)	2	6	0	0	0	0	0	0	0	0	6	2	8	0.51	0.19	No
9	Biddle Road / Hilton Court	3	3	2	0	0	0	0	0	1	0	4	5	9	0.86	0.23	No
10	OR 62/Hilton Court-Fred Meyer Parking Lot Entrance	3	1	0	0	0	0	0	0	0	0	1	3	4	0.41	0.04	No
11	OR 62 / Bullock Road / Poplar Drive	28	11	1	3	0	0	0	3	0	1	17	30	47	0.86	0.44	No
12	OR 62 / Sky Park Drive	1	1	0	0	0	0	1	0	0	0	1	2	3	0.29	0.11	No
13	OR 62 / Whittle Avenue	2	13	0	0	0	0	0	0	0	0	7	8	15	0.29	0.55	Yes
14	OR 62 / Delta Waters Road	27	15	6	0	1	0	0	2	0	0	25	26	51	0.86	0.76	No
15	Poplar Drive / Hilton Road	0	5	0	0	0	0	0	0	0	0	3	2	5	0.41	0.16	No
		132	100	15	9	1	1	4	4	1	1	118	150	268			

input required
from ODOT report
excel calculated

ID	Location	PM Peak							Intersection Class	90th Percentile Rate
		Day one	Day Two	Day Three	AVG	EST AADT	EST 5Y TEV	Crash Rate		
1	OR 99 / Table Rock				3422	34220	62451500	0.42	Urban 4SG	0.86
2	OR 62 / OR 238 / OR 99 / Court Street / N. Riverside Avenue				5370	53700	98002500	0.51	Urban 4SG	0.86
3	OR 62 / Rogue Valley Mall entrance (west)				3999	39990	72981750	0.33	Urban 3SG	0.509
4	OR 62 / Rogue Valley Mall entrance (east, at Target)				3997	39970	72945250	0.07	Urban 3ST	0.293
5	OR 62 / I-5 Southbound Ramp Terminal				5218	52180	95228500	0.23	Urban 4SG	0.86
6	OR 62 / I-5 Northbound Ramp Terminal				5715	57150	104298750	0.48	Urban 4SG	0.86
7	OR 62 / Biddle Road (north end of jug handle)				5221	52210	95283250	0.05	Urban 3ST	0.293
8	OR 62 / Biddle Road (south end of jug handle)				2282	22820	41646500	0.19	Urban 3SG	0.509
9	Biddle Road / Hilton Court				2141	21410	39073250	0.23	Urban 4SG	0.86
10	OR 62/Hilton Court-Fred Meyer Parking Lot Entrance				5002	50020	91286500	0.04	Urban 4ST	0.408
11	OR 62 / Bullock Road / Poplar Drive				5814	58140	106105500	0.44	Urban 4SG	0.86
12	OR 62 / Sky Park Drive				1478	14780	26973500	0.11	Urban 3ST	0.293
13	OR 62 / Whittle Avenue				1481	14810	27028250	0.55	Urban 3ST	0.293
14	OR 62 / Delta Waters Road				3663	36630	66849750	0.76	Urban 4SG	0.86
15	Poplar Drive / Hilton Road				1696	16960	30952000	0.16	Urban 4ST	0.408

PM Peak hour TEV from network tool.

$$Intersection\ Crash\ Rate\ per\ MEV = \frac{Annual\ Number\ of\ Crashes\ x\ 10^6}{(AADT)x\ (365\ days/year)}$$

The values shown in Exhibit 4-1 represent the 90th percentile crash rates from a study of 500 intersections in Oregon. The crash rates are grouped by rural/urban, signalized/unsignalized, and three-leg/four-leg intersections. Intersections with crash rates that exceed the 90th percentile values shown in the table should be flagged for further analysis. For more information on crash rates and using this table, see Section 4.3.4 Critical Crash Rate.

Exhibit 4-1: Intersection Crash Rates per MEV by Land Type and Traffic Control

	Rural				Urban			
	3SG	3ST	4SG	4ST	3SG	3ST	4SG	4ST
No. of Intersections	7	115	20	60	55	77	106	60
Mean Crash Rate	**0.226**	**0.196**	**0.324**	**0.434**	**0.275**	**0.131**	**0.477**	**0.198**
Median Crash Rate	0.163	0.092	0.320	0.267	0.252	0.105	0.420	0.145
Standard Deviation	0.185	0.314	0.223	0.534	0.155	0.121	0.273	0.176
Coefficient of Variation	0.819	1.602	0.688	1.230	0.564	0.924	0.572	0.889
90th Percentile Rate	**0.464**	**0.475**	**0.579**	**1.080**	**0.509**	**0.293**	**0.860**	**0.408**

Source: Assessment of Statewide Intersection Safety Performance, FHWA-OR-RD-18, Portland State University and Oregon State University, June 2011, Table 4.1, p. 47.

Note: Traffic control types include
3SG (three-leg signalized),
3ST (three-leg minor stop-control),
4SG (four-leg signalized),
4ST (four-leg minor stop-control).

General & Site Information	
Analyst:	Kittelson & Associates, Inc.
Agency/Company:	ODOT
Date:	2/21/2020
Project Name:	Exit 30 IAMP

Intersection Crash Data

Intersection	Intersection Type	Year					Total
		2013	2014	2015	2016	2017	
OR 99 / Table Rock	Urban 4SG	8	2	2	8	6	26
OR 62 / OR 238 / OR 99 / Court Street / N. Riverside Avenue	Urban 4SG	12	13	9	9	7	50
OR 62 / Rogue Valley Mall entrance (west)	Urban 3SG	7	3	5	7	2	24
OR 62 / Rogue Valley Mall entrance (east, at Target)	Urban 3ST	1	1	2	0	0	4
OR 62 / I-5 Southbound Ramp Terminal	Urban 4SG	4	5	3	9	1	22
OR 62 / I-5 Northbound Ramp Terminal	Urban 4SG	5	13	10	10	12	50
OR 62 / Biddle Road (north end of jug handle)	Urban 3ST	0	0	0	0	5	5
OR 62 / Biddle Road (south end of jug handle)	Urban 3SG	2	2	1	2	1	8
Biddle Road / Hilton Court	Urban 4SG	1	1	2	3	2	9
OR 62/Hilton Court-Fred Meyer Parking Lot Entrance	Urban 4ST	1	0	2	1	0	4
OR 62 / Bullock Road / Poplar Drive	Urban 4SG	8	5	13	17	4	47
OR 62 / Sky Park Drive	Urban 3ST	1	0	1	1	0	3
OR 62 / Whittle Avenue	Urban 3ST	4	5	4	2	0	15
OR 62 / Delta Waters Road	Urban 4SG	12	10	6	12	11	51
Poplar Drive / Hilton Road	Urban 4ST	2	1	1	1	0	5
							0
							0
							0
							0
							0
							0
							0
							0
							0
							0
							0
							0
							0
							0
							0
							0
							0
	Total	68	61	61	82	51	323

Intersection Population Type Crash Rate

Average Crash Rate per intersection type

Intersection Pop. Type	Sum of Crashes	Sum of 5-year MEV	Avg Crash Rate for Ref Pop.	INT in Pop
Rural 3SG	0	0		
Rural 3ST	0	0		
Rural 4SG	0	0		
Rural 4ST	0	0		
Urban 3ST	27	222	0.1215	4
Urban 3SG	32	115	0.2792	2
Urban 4ST	9	122	0.0736	2
Urban 4SG	255	572	0.4458	7

Critical Rate Calculation

Intersection	AADT Entering Intersection	5-year MEV	Crash Total	Intersection Population Type	Intersection Crash Rate	Reference Population Crash Rate	Critical Rate	Over Critical
OR 99 / Table Rock	34,220	62.5	26	Urban 4SG	0.42	0.45	0.59	Under
OR 62 / OR 238 / OR 99 / Court Street / N. Riverside Avenue	53,700	98.0	50	Urban 4SG	0.51	0.45	0.56	Under
OR 62 / Rogue Valley Mall entrance (west)	39,990	73.0	24	Urban 3SG	0.33	APM Exhibit 4-1		
OR 62 / Rogue Valley Mall entrance (east, at Target)	39,970	72.9	4	Urban 3ST	0.05	APM Exhibit 4-1		
OR 62 / I-5 Southbound Ramp Terminal	52,180	95.2	22	Urban 4SG	0.23	0.45	0.56	Under
OR 62 / I-5 Northbound Ramp Terminal	57,150	104.3	50	Urban 4SG	0.48	0.45	0.56	Under
OR 62 / Biddle Road (north end of jug handle)	52,210	95.3	5	Urban 3ST	0.05	APM Exhibit 4-1		
OR 62 / Biddle Road (south end of jug handle)	22,820	41.6	8	Urban 3SG	0.19	APM Exhibit 4-1		
Biddle Road / Hilton Court	21,410	39.1	9	Urban 4SG	0.23	0.45	0.63	Under
OR 62/Hilton Court-Fred Meyer Parking Lot Entrance	50,020	91.3	4	Urban 4ST	0.04	APM Exhibit 4-1		
OR 62 / Bullock Road / Poplar Drive	58,140	106.1	47	Urban 4SG	0.44	0.45	0.56	Under
OR 62 / Sky Park Drive	14,780	27.0	3	Urban 3ST	0.11	APM Exhibit 4-1		
OR 62 / Whittle Avenue	14,810	27.0	15	Urban 3ST	0.55	APM Exhibit 4-1		
OR 62 / Delta Waters Road	36,630	66.8	51	Urban 4SG	0.76	0.45	0.59	**Over**
Poplar Drive / Hilton Road	16,960	31.0	5	Urban 4ST	0.16	APM Exhibit 4-1		

General & Site Information	
Analyst:	Kittelson & Associates
Agency/Company:	ODOT, Jackson County, City of Medford
Date:	1/29/20
Project Name:	I-5 Exit 30 IAMP
Highway Number and Name:	OR 62
Mile Points:	
Crash Years Pulled:	2013-2017

Intersection Population Type Crash Rate

Sample Alpha

	Angle	Back	Bike	Fix	Head	NonCol	OTH	Park	Ped	SS-M	SS-O	Turn	Rear
3ST	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.437	2.101
3SG	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	74.218	109.266
4ST	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
4SG	7.541	8.288	N/A	10.448	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.594	21.827

Sample Beta

3ST	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.34074	4.65122
3SG	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	30.56019	294.17824
4ST	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
4SG	43.00252	152.57085	N/A	162.96667	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.10569	18.36873

Threshold Proportions

3ST	0.000	0.000	0.000	0.071	0.000	0.000	0.000	0.000	0.000	0.000	0.036	0.643	0.250
3SG	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.031	0.688	0.281
4ST	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.667	0.333
4SG	0.082	0.024	0.000	0.027	0.008	0.004	0.004	0.000	0.004	0.000	0.008	0.290	0.549

Excess Proportion with a probability of greater than 0.9

Type of Crash

MP	Reference Pop	Street 1	Street 2	Angle	Back	Bike	Fix	Head	NonCol	OTH	Park	Ped	SS-M	SS-O	Turn	Rear
1	4SG	OR 99	Table Rock				0.05									
2	4SG	OR 62 / OR 238	OR 99 / Court Street / N. Riverside Avenue	0.10			0.01									
3	3SG	OR 62	Rogue Valley Mall entrance (west)													
4	3ST	OR 62	Rogue Valley Mall entrance (east, at Target)													
5	4SG	OR 62	I-5 Southbound Ramp Terminal													
6	4SG	OR 62	I-5 Northbound Ramp Terminal												0.19	
7	3ST	OR 62	Biddle Road (north end of jug handle)													
8	3SG	OR 62	Biddle Road (south end of jug handle)													
9	4SG	Biddle Road	Hilton Court	0.14												
10	4ST	OR 62	Hilton Court-Fred Meyer Parking Lot Entrance													
11	4SG	OR 62	Bullock Road / Poplar Drive		0.04		0.04									
12	3ST	OR 62	Sky Park Drive													
13	3ST	OR 62	Whittle Avenue												0.22	
14	4SG	OR 62	Delta Waters Road	0.04	0.02											
15	4ST	Poplar Drive	Hilton Road													

Probability

Type of Crash

MP	Reference Pop	Street 1	Street 2	Angle	Back	Bike	Fix	Head	NonCol	OTH	Park	Ped	SS-M	SS-O	Turn	Rear
1	4SG	OR 99	Table Rock	0.88			0.99								0.15	0.65
2	4SG	OR 62 / OR 238	OR 99 / Court Street / N. Riverside Avenue	1.00			0.99								0.14	0.44
3	3SG	OR 62	Rogue Valley Mall entrance (west)												0.64	0.33
4	3ST	OR 62	Rogue Valley Mall entrance (east, at Target)													0.75
5	4SG	OR 62	I-5 Southbound Ramp Terminal												0.27	0.83
6	4SG	OR 62	I-5 Northbound Ramp Terminal												0.99	0.16
7	3ST	OR 62	Biddle Road (north end of jug handle)												0.65	0.75
8	3SG	OR 62	Biddle Road (south end of jug handle)												0.72	0.31
9	4SG	Biddle Road	Hilton Court	0.97											0.53	0.27
10	4ST	OR 62	Hilton Court-Fred Meyer Parking Lot Entrance													
11	4SG	OR 62	Bullock Road / Poplar Drive		0.99		0.99								0.20	0.67
12	3ST	OR 62	Sky Park Drive													
13	3ST	OR 62	Whittle Avenue												0.98	0.22
14	4SG	OR 62	Delta Waters Road	0.95	0.98										0.50	0.40
15	4ST	Poplar Drive	Hilton Road													

Observed Proportions

Type of Crash

MP	Reference Pop	Street 1	Street 2	Angle	Back	Bike	Fix	Head	NonCol	OTH	Park	Ped	SS-M	SS-O	Turn	Rear	
1	4SG	OR 99	Table Rock	0.08	0	0	0.08	0	0	0	0	0	0	0	0.19	0.62	
2	4SG	OR 62 / OR 238	OR 99 / Court Street / N. Riverside Avenue	0.18	0	0	0.04	0	0	0	0	0	0	0	0.22	0.54	
3	3SG	OR 62	Rogue Valley Mall entrance (west)	0	0	0	0	0	0	0	0	0	0	0	0.67	0.29	
4	3ST	OR 62	Rogue Valley Mall entrance (east, at Target)	0	0	0	0.40	0	0	0	0	0	0	0	0	0.40	
5	4SG	OR 62	I-5 Southbound Ramp Terminal	0	0	0	0	0	0	0	0	0	0	0	0.23	0.73	
6	4SG	OR 62	I-5 Northbound Ramp Terminal	0	0	0	0	0	0	0	0	0	0	0	0.48	0.46	
7	3ST	OR 62	Biddle Road (north end of jug handle)	0	0	0	0	0	0	0	0	0	0	0	0.60	0.40	
8	3SG	OR 62	Biddle Road (south end of jug handle)	0	0	0	0	0	0	0	0	0	0	0	0.75	0.25	
9	4SG	Biddle Road	Hilton Court	0.22	0	0	0	0	0	0	0	0	0	0	0.33	0.33	
10	4ST	OR 62	Hilton Court-Fred Meyer Parking Lot Entrance	0	0	0	0	0	0	0	0	0	0	0	0	0.75	
11	4SG	OR 62	Bullock Road / Poplar Drive	0	0.06	0	0.06	0	0	0	0	0	0	0	0.23	0.60	
12	3ST	OR 62	Sky Park Drive	0	0	0	0	0	0	0	0	0	0	0	0	0	
13	3ST	OR 62	Whittle Avenue	0	0	0	0	0	0	0	0	0	0	0	0.87	0.13	
14	4SG	OR 62	Delta Waters Road	0.12	0.04	0	0	0	0	0	0	0	0	0	0.29	0.53	
15	4ST	Poplar Drive	Hilton Road	0	0	0	0	0	0	0	0	0	0	0	1.00	0	
																	0
																	0

Intersection Crash Data

Type of Crash

MP	Reference Pop	Street 1	Street 2	Angle	Back	Bike	Fix	Head	NonCol	OTH	Park	Ped	SS-M	SS-O	Turn	Rear	Total
1	4SG	OR 99	Table Rock	2	0	0	2	1	0	0	0	0	0	0	5	16	26
2	4SG	OR 62 / OR 238	OR 99 / Court Street / N. Riverside Avenue	9	0	0	2	0	0	0	0	0	0	1	11	27	50
3	3SG	OR 62	Rogue Valley Mall entrance (west)	0	0	0	0	0	0	0	0	0	0	1	16	7	24
4	3ST	OR 62	Rogue Valley Mall entrance (east, at Target)	0	0	0	2	0	0	0	0	0	0	0	1	2	5
5	4SG	OR 62	I-5 Southbound Ramp Terminal	1	0	0	0	0	0	0	0	0	0	0	5	16	22
6	4SG	OR 62	I-5 Northbound Ramp Terminal	0	1	0	0	0	0	0	0	1	0	1	24	23	50
7	3ST	OR 62	Biddle Road (north end of jug handle)	0	0	0	0	0	0	0	0	0	0	0	3	2	5
8	3SG	OR 62	Biddle Road (south end of jug handle)	0	0	0	0	0	0	0	0	0	0	0	6	2	8
9	4SG	Biddle Road	Hilton Court	2	0	0	0	0	1	0	0	0	0	0	3	3	9
10	4ST	OR 62	Hilton Court-Fred Meyer Parking Lot Entrance	0	0	0	0	0	0	0	0	0	0	0	1	3	4
11	4SG	OR 62	Bullock Road / Poplar Drive	1	3	0	3	0	0	1	0	0	0	0	11	28	47
12	3ST	OR 62	Sky Park Drive	0	0	0	0	0	0	0	0	0	0	1	1	1	3
13	3ST	OR 62	Whittle Avenue	0	0	0	0	0	0	0	0	0	0	0	13	2	15
14	4SG	OR 62	Delta Waters Road	6	2	0	0	1	0	0	0	0	0	0	15	27	51
15	4ST	Poplar Drive	Hilton Road	0	0	0	0	0	0	0	0	0	0	0	5	0	5
																	0
																	0
																	0

ID	Street	From	To	Distance (ft)	Distance (mi)	EST. ADDT	Functional Classification	Collision Type									Total Crashes	State Highway System	it. 5-Year AAD	Observed Crash Rate	Does Observed Exceed 90th Rate?
								Backing	Fixed-Object	Head-On	Miscellaneous	Non-collision	Pedestrian	Rear-End	Sideswipe-meeting	Sideswipe-overtaking	Turning Movement				
1	OR 238	RxR Overpass	OR 99	2389	0.5	18180	Principal Arterial		6					8		4		18	1.61	15012014	1.20	No
2	OR 99	Table Rock Road	OR 62	938	0.2	25842	Principal Arterial		2					20		3	2	27	1.61	8378339	3.22	Yes
3	OR 62	OR 99	Poplar Dr/Bullock Rd	4401	0.8	42774	Principal Arterial	1	3	0	0	0	1	150	1	18	8	182	1.61	65067127	2.80	Yes
4	I-5 SB Off-Ramp	SB Off-Ramp Gore	OR 62	1768	0.3	6900	Interstate					1		4				5	0.54	4216580	1.19	Yes
5	Northerly SB On-Ramp	OR 62	Northerly SB On-Ramp Gore	1607	0.3	7900	Interstate		3			1						4	0.54	4388054	0.91	Yes
6	Southerly SB On-Ramp	OR 62	Southerly SB On-Ramp Gore	1780	0.3	4800	Interstate											0	0.54	2953182	0.00	No
7	I-5 NB Off-Ramp	NB Off-Ramp Gore	OR 62	1986	0.4	11900	Interstate		4					5	1	4	1	15	0.54	8168741	1.84	Yes
8	Southerly NB On-Ramp	OR 62	Southerly NB On-Ramp Gore	1037	0.2	2700	Interstate		1									1	0.54	967768	1.03	Yes
9	Northerly NB On-Ramp	OR 62	Northerly NB On-Ramp Gore	882	0.2	4400	Interstate											0	0.54	1341375	0.00	No
10	Biddle Road Jughandle	OR 62	Biddle Road	1175	0.2	6367	Principal Arterial		1					1				2	1.61	2585840	0.77	No
11	Biddle Road	north of Morrow Road	Greenway Trail	3288	0.6	18667	Minor Arterial	0	4	0	0	0	1	10	0	4	7	26	1.50	21214242	1.23	No
12	OR 62	Poplar Dr/Bullock Rd	Delta Waters	3918	0.7	38785	Principal Arterial	0	1	1	0	0	0	160	0	15	7	184	1.61	52523248	3.50	Yes
								1	25	1	0	2	2	358	2	48	25	464				

input required
from ODOT report
excel calculated

red: > 5 mi
green: < 5 mi

TEV
ODOT TransGIS

Crash Data Functional Class

TABLE II: Five-Year Comparison of State Highway Crash Rates

Table II lists crash rates for mainline state highways for the past five years, by federally defined urban and rural areas and functional classification. Data for highway connections and frontage roads are excluded. "Mile" figures are for the most recent year only. Refer to the 2017 Oregon Mileage Report for official figures on highway miles.

JURISDICTION AND FUNCTIONAL CLASSIFICATION	MILES*	2017 Rate	2016 Rate	2015 Rate	2014 Rate	2013 Rate
TOTAL STATE HWY SYSTEM	**7,434.46**	**1.14**	**1.15**	**1.08**	**1.04**	**0.98**
Interstate Freeways	729.57	0.61	0.59	0.51	0.51	0.47
Other Fwys/Expressways	60.36	1.04	1.05	1.05	0.89	0.92
Non-Freeways (combined)	6,644.53	1.63	1.68	1.62	1.53	1.45
Other Principal Arterials	3,267.87	1.65	1.70	1.65	1.56	1.47
Minor Arterials	1,988.03	1.58	1.60	1.50	1.42	1.39
Urban Collectors	50.29	1.74	2.13	1.72	2.40	2.30
Rural Major Collectors	1,301.42	1.50	1.57	1.50	1.43	1.36
Rural Minor Collectors	34.03	0.92	1.91	0.76	1.08	1.96
Rural Local	2.89	8.43	0.00	0.00	0.00	0.00
URBAN HWY SYSTEM	**1,155.99**	**1.39**	**1.45**	**1.40**	**1.41**	**1.35**
Interstate Freeways	234.35	0.71	0.71	0.64	0.65	0.63
Other Fwys/Expressways	60.36	1.04	1.05	1.05	0.89	0.92
Non-Freeways (combined)	861.28	2.34	2.50	2.45	2.63	2.50
Other Principal Arterials	626.86	2.39	2.55	2.52	2.64	2.48
Minor Arterials	184.13	2.09	2.17	2.10	2.55	2.75
Urban Collectors	50.29	1.74	2.13	1.72	2.40	2.30
Urban Cities	**632.51**	**1.67**	**1.76**	**1.67**	**1.55**	**1.50**
Interstate Freeways	116.08	0.86	0.87	0.77	0.73	0.70
Other Fwys/Expressways	48.50	1.10	1.12	1.07	0.89	0.94
Non-Freeways (combined)	467.93	2.92	3.15	3.07	2.95	2.86
Other Principal Arterials	371.10	2.95	3.20	3.11	2.93	2.82
Minor Arterials	77.60	2.77	2.86	2.82	3.14	3.38
Urban Collectors	19.23	1.70	2.23	1.91	3.14	6.30
Suburban Areas	**523.48**	**0.87**	**0.87**	**0.86**	**0.95**	**0.86**
Interstate Freeways	118.27	0.46	0.43	0.39	0.42	0.42
Other Fwys/Expressways	11.86	0.62	0.60	0.87	0.98	0.71
Non-Freeways (combined)	393.35	1.39	1.42	1.42	1.67	1.47
Other Principal Arterials	255.76	1.39	1.41	1.45	1.70	1.45
Minor Arterials	106.53	1.40	1.43	1.30	1.41	1.59
Urban Collectors	31.06	1.79	2.02	1.53	2.13	1.12

https://www.oregon.gov/ODOT/Data/Documents/Crash_Rate_Tables_2017.pdf

$$MVMT = \frac{AADT \times L \times 365 \times n}{1{,}000{,}000}$$

$MVMT = Million Vehicle - Miles of\ Travel$

$L = Segment\ Length$

$n = Number\ of\ Years$

MEMORANDUM

Date:	May 15, 2020	Project #: 23641.0
To:	Kittelson & Associates, Inc.	
From:	Austin Bloom, DOWL	
Project:	I-5 Exit 30 Interchange Area Management Plan (IAMP)	
Subject:	Final TM#2 Appendix: Land Use, Population and Demographics Inventory: Environmental Constraints	

LAND USE SUMMARY

This section summarizes Section 4(f) / Section 6(f) Resources and Cultural Sites that may be found within the study area. Information in this section was identified through a desktop review of existing information including maps, GIS data, published City of Medford (City) documents, the Jackson County website, and other state and federal online resources.

Section 4(f) / Section 6(f) Resources

Section 4(f) of the U.S. Department of Transportation (USDOT) Act of 1966 protects publicly-owned parks, recreational lands, wildlife and waterfowl refuges, and public and private historic sites of local, state, and national significance. Federally funded transportation projects cannot "use" Section 4(f) properties unless there are no feasible and prudent avoidance alternatives and all possible planning to minimize harm has occurred. A "feasible alternative" is defined as one that is possible to engineer, design, and build. A "use" that is subject to the provisions of Section 4(f) occurs:

- When land is permanently incorporated into a transportation facility;
- When there is a temporary occupancy of land that is adverse in terms of the statute's preservationist purpose; or
- When there is constructive use of the land.

Federal and statewide transportation departments must demonstrate that a proposed project will not use publicly-owned parks and recreation land. If use of a 4(f) resource cannot be avoided, there must be unique problems or unusual factors associated with the use of non-4(f) alternative options such as the cost; social, economic, and environmental impacts; and/or extensive community disruption. If a project proposes to use these resources, it must be well-documented and supported that alternatives were considered, no "feasible and prudent" alternative existed, and "all possible planning to minimize harm" occurred. Transportation projects that use public parks must fulfill the requirements of Title 23, USC Section 138, Section 4(f) of the USDOT Act of 1966, as amended.

Publicly owned parks and recreational Section 4(f) resources within the study area include two parks and one multi-use path (Appendix A, Figure 1). Railroad Park and Midway Park Area, adjacent to each other, are located on Bear Creek, west of I-5 and north of Crater Lake Highway. The Bear Creek Greenway trail system traverses the study area adjacent to I-5, following Bear Creek. Bear Creek Greenway is a 20-mile, paved, multi-use path that connects the cities of Ashland, Talent, Phoenix, Medford and Central Point (Jackson County, 2020). Within the City, the greenway crosses land within the public right-of-way and several parcels owned by the City, and it is managed by the City Parks, Recreation, and Facilities Department. The greenway trail system is an Oregon State-Designated Regional Trail.

No natural or wilderness areas, wildlife and waterfowl refuges, or other recreational lands are located within the study area or vicinity.

Section 6(f) of the Land, Water, and Conservation Fund (LWCF) Act protects federal investments and the quality of resources purchased or improved by the LWCF. 71 LWCF sites are located within Jackson County. Several parcels along the Bear Creek Greenway, within the study area, have been acquired with LWCF grants and are subject to Section 6(f) provisions. These parcels are west of I-5 and north of Crater Lake Highway and include portions of the greenway and the Midway Park area.

Historic Resources

According to the State Historic Preservation Office (SHPO), no resources listed or potentially eligible for listing on the National Register of Historic Places are located within the study area. Likewise, the Local Historic Society has not identified historic resources within this area. Furthermore, there are no archaeological sites recorded in the SHPO database within the study area. Hopkins Canal (Appendix A, Figure 2) traverses through the southwestern portion of the study area. It was built over 50 years ago and may be considered a historic resource. A National Register of Historic Places eligibility assessment of the canal may be required.

NATURAL RESOURCES

Natural resources were identified to determine potential design constraints. Additional resources considered in this study include air quality and hazardous materials. Information in this section was identified through a desktop review of existing information including maps, GIS data, published City documents, the Jackson County website, and other state and federal online resources. To determine the likelihood of wetlands or waterways in the study area, various mapping resources were used, including the United States Fish and Wildlife Service's (USFWS) National Wetland Inventory (NWI) maps, City Local Wetland Inventory (LWI) maps, United States Geological Survey (USGS) topographic quad maps, and aerial photographs. Other Oregon Wetlands is a subset of additional wetlands inventoried by the Oregon Natural Heritage Information Center Oregon Wetlands Cover (2009) that were not included in the NWI or LWI mapping.

Goal 5 Considerations

The Oregon Department of Land Conservation and Development (DLCD) is responsible for administering Oregon Administrative Rule (OAR) 660-023-000 which states that the purpose of Statewide Planning Goal 5 is, "… to conserve and protect significant Goal 5 resources." Goal 5 requires local jurisdictions to inventory riparian corridors, wetlands, wildlife habitat, wild and scenic waterways, and other natural resources and to consider these resources for protection before developing local projects. The City has adopted all statewide planning provisions for Statewide Goal 5 resources (City of Medford, 2018). These State Goal 5 resources include riparian corridors, wetlands, wildlife habitat, federal wild and scenic rivers, state scenic waterways, groundwater resources, approved Oregon recreation trails, natural areas, wilderness areas, mineral and aggregate resources, energy sources, and cultural areas (State of Oregon, 2020).

In compliance with Goal 5, the City Riparian Corridor Ordinance (2011-123) identifies two protected riparian corridors within the study area, the Bear Creek Corridor and Lone Pine Creek Corridor. These corridors are associated with Bear Creek and Lone Pine Creek, both tributaries of the Rogue River. The Medford Comprehensive Plan Riparian Corridor Map (Appendix A, Figure 2) identifies the location of the riparian corridors for both Bear Creek and Lone Pine Creek corridors. The code requirements for development within the riparian corridors can be found in the Medford Land Development Code, Sections 10.920-10.928. Development of the proposed project improvements within these Goal 5 resources would require an application for land use review with the City.

Based on the analysis of Goal 5 resources, six of the resources may require an application for land use review for development of the proposed project. These resources include locally significant wetlands and associated riparian corridors, groundwater resources, wildlife habitat, Section 4(f) resources, and soils.

FEMA Floodplain/Floodway

The Federal Emergency Management Agency (FEMA) maps and regulates development within floodplains. As shown in Table 1, the FEMA Flood Map Service Center has two FEMA Flood Insurance Rate Map panels for the study area (41029C1957F, Panel 1957 and 41029C1976F, Panel 1976); they show that the majority of the study area is designated an Area of Minimal Flood Hazard (Zone X), excluding areas along Bear Creek and Lone Pine Creek. Both Bear Creek and Lone Pine Creek are a Special Flood Hazard Area (Zone AE) surrounded by Other Areas of Flood Hazard (Zone X). FEMA Floodplain Mapping is located in Appendix B.

Table 1. FEMA Designated Flood Areas within the Study Area

Zone	Description
AE	Without Base Flood Elevation and Regulatory Floodway
X	0.2% Annual Chance Flood Hazard, Area of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile; Area of Minimal Flood Hazard

Source: Federal Emergency Management Agency

Soils

The Natural Resources Conservation Service (NRCS) Web Soil Survey shows nine soil units mapped within the study area (Appendix A, Figure 3). Parent materials for the soils primarily consists of alluvium. Two soil units within the study area have a hydric soil rating, Cove Clay, 0 to 3 percent slopes (35A) and Gregory Silty Clay Loam, 0 to 3 percent slopes (76A). All soils within the study area are classified as Farmland of Statewide Importance, All Areas are Prime Farmland, or Prime Farmland if Drained; however, all land within the study area has been previously disturbed and is not actively farmed (NRCS, 2020).

Wetlands and Waters

The study area is located within the Bear Creek Watershed (1710030801) within the Southern Oregon Coastal basin. However, Medford's water supply is sourced from Big Butte Springs, within the Big Butte Creek Watershed, approximately 30 miles northeast of Medford city limits.

Two creeks and three canals are located within the study area. Bear Creek flows centrally through the study area primarily west of I-5. Lone Pine Creek flows through the northeastern portion of the study area between the Crater Lake Highway/Whittle Avenue intersection and the Crater Lake Highway/Delta Waters Road intersection. Bear Creek and Lone Pine Creek are classified Essential Salmonid Habitat (ESH) by the Department of State Lands (DSL). Hopkins Canal traverses through the southwestern portion of the study area across OR99, Northgate Marketplace, and Rogue Valley Mall. Biddle Liner canal briefly flows through the southern portion of the study area, the Upton Lateral traverses the northeastern corner of the study area, and an unnamed canal connects Bear Creek and Hopkins Canal (Appendix A, Figure 2).

As noted above, the City's Riparian Corridor Ordinance (2011-123), identifies two riparian corridors within the study area, the Bear Creek Corridor and Lone Pine Creek Corridor. The Bear Creek Corridor is comprised of wetland vegetation, trees and shrubs, and herbaceous vegetation. The Lone Pine Creek riparian corridor has less vegetation diversity, as it primarily crosses commercial development within the study area.

The National Wild and Scenic Rivers System was created by Congress in 1968 (Public Law 90-542; 16 U.S.C. 1271 et seq.) to preserve certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations (Rivers, 2017). Wild and Scenic rivers in Oregon include the Deschutes River, North Umpqua River, and portions of the Rogue River. No rivers designated as Wild and Scenic are located within the project vicinity. The nearest river to the study area, the Rogue River, is classified as a Wild and Scenic River; however, the portion of the river nearest to the study area is not designated. Additionally, no Oregon Scenic Waterways occur within the study vicinity.

The study area is not located within an Oregon Water Resources Department (OWRD) Groundwater Restricted or Critical Area. The OWRD Groundwater Information System Mapping Tool shows no wells within the study area or immediate vicinity.

The City completed a Local Wetlands Inventory in September 2002 (Wetland Consulting, 2002). The inventory shows one palustrine emergent wetland (approximately 14.49 acres) located within the study area. The wetland is mapped in the northeastern portion of the study area, adjacent to Hopkins Canal. The City has classified the wetland as a Locally Significant Wetland, a Goal 5 Resource requiring an application for land use review for development of the proposed project.

The USFWS NWI mapping tool maps the majority of Lone Pine Creek within the study area as a palustrine emergent wetland. The Other Oregon Wetlands inventory shows a wetland fringe along the entirety of Bear Creek within the study area (Oregon National Heritage Information Center, 2009) (Appendix A, Figure 4). These wetlands were not classified as locally significant within the study area.

Threatened and Endangered Species

The USFWS maintains the federal list of threatened and endangered species as well as a list of species that are candidates or proposed for possible addition to the federal list. An endangered species is in danger of extinction throughout all or a significant portion of its range. A threatened species is likely to become endangered in the foreseeable future. Species on this list receive protection under the Endangered Species Act (ESA). The purpose of the ESA is to protect and recover imperiled animal and plant species and the ecosystems upon which they depend. Section 7 of the ESA requires federal agencies to ensure the actions they take, including those they fund or authorize, are not likely to jeopardize the continued existence of threatened or endangered species, or to destroy or adversely modify designated critical habitat that is essential to listed species. Section 9 of the ESA prohibits the take of any threatened or endangered species without a special permit.

A review of the United States Fish and Wildlife Service Information for Planning and Consultation (IPaC) database shows fourteen threatened and endangered species and five critical habitats occurring in Jackson County, Oregon; however, only seven threatened and endangered species and one critical habitat are located within the study vicinity.

Additionally, Oregon's Sensitive Species Rule (OAR 635-100-0040) requires a Sensitive Species List regarding fish and wildlife conservation and management to prevent species from becoming eligible for Threatened or Endangered Species listing. Under the Sensitive Species List, species are designated by ecoregion as Sensitive Species or Sensitive-Critical. Sensitive Species are included in the Oregon Conservation Strategy and Sensitive-Critical species are a sub-designated of species that may become Threatened or Endangered if management and conservation measures are not taken. Twenty-six Sensitive Species and twelve Critical-Sensitive species are listed for the Klamath Mountains Ecoregion. Threatened, Endangered, or Sensitive Species that may be found within the study area are listed in Table 2. The study area is not located within Core Sage Grouse Habitat.

Table 2. Federal and State listed Threatened, Endangered, or Sensitive Species

Common Name ***Scientific Name***	**USFWS** **Status**	**State** **Status**
Mammals		
Fisher *Pekania pennant*	Proposed Threatened	--
Gray wolf *Canis lupus*	Endangered	--
Townsend's big-eared bat *Corynorhinus townsendii*	--	Critical-Sensitive
Birds		
Lewis's woodpecker *Melanerpes lewis*	--	Critical-Sensitive
Oregon vesper sparrow *Pooecetes gramineus affinis*	--	Critical-Sensitive
Western purple martin *Progne subis*	--	Critical-Sensitive
Yellow-breasted chat *Icteria virens*	--	Critical-Sensitive
Northern spotted owl *Strix occidentalis caurina*	Threatened	--
Amphibians		
Foothill yellow-legged frog *Rana boylii*	--	Critical-Sensitive
Reptiles		
Western pond turtle *Actinemys marmorata*	--	Critical-Sensitive
Fish		
Umpqua chub *Oregonichthys kalawatseti*	--	Critical-Sensitive
Invertebrates		
Vernal pool fairy shrimp *Branchinecta lynchi*	Threatened	--

Common Name *Scientific Name*	USFWS Status	State Status
Plants		
Cook's lomatium *Lomatium cookii*	Endangered *Final Critical Habitat*	--
Gentner's fritillary *Fritillaria gentneri*	Endangered	--
Large-flowered woolly meadowfoam *Limnanthes pumila ssp. Grandiflora*	Endangered	--

Source: USFWS and Oregon Department of Fish and Wildlife (ODFW)

The ODFW Fish Habitat Distribution and Barriers web map identifies seven fish species as occurring in Bear Creek and two species occurring in Lone Pine Creek. Species identified within Bear Creek include fall Chinook salmon, coho, Pacific lamprey, rainbow trout, steelhead, and coastal cutthroat trout. Habitat includes spawning and rearing habitat. Spawning habitat for summer steelhead and residential habitat for coastal cutthroat trout were identified in Lone Pine Creek.

Wildlife Habitat

The study area is within the Urban Growth Boundary of Medford city limits, with elevations that range from 1,308 to 1,340 feet above mean sea level. USGS GAP Land Cover mapping shows land cover within the project limits consists primarily of Suburban, Urban and Rural Residential development. Small portions of the study area include Pasture or Hay, Open Water, Lowland Wetlands, Coastal and Valley Riparian, Mixed Oak, and Siskiyou Mixed Coniferous (Appendix A, Figure 5). As the study area is highly developed, minimal suitable wildlife habitat occurs. Suitable habitat would be limited to Railroad and Midway Park, the Bear Creek and Lone Pine Creek riparian corridors, dispersed wetlands, and landscape vegetation.

ODFW designates strategy species within Oregon ecoregions. The study area is within the Klamath Mountains Ecoregion for Oregon Conservation Strategy. Strategy species are species determined to have the greatest conservation need through factors including declining populations and management concerns (ODFW, 2016). Eighteen birds, three mammals, one reptile, two invertebrates, and five plants have observed strategy habitat within the study vicinity. Strategy habitats include oak woodlands, ponderosa pine woodlands, flowing water and riparian habitats, and wetlands. The majority of habitat for strategy species within the study area is along Bear Creek. A complete list of strategy species habitat within the study area can be found in the Oregon Conservation Strategy Report in Appendix C.

Air Quality

Particulate matter (PM) is a mixture of solid and liquid particles, such as dust, that contribute to air pollution. PM10 (approximately 10 micrometers) and PM2.5 (approximately 2.5 micrometers) are

inhalable particles that can be harmful to humans, as the PM can enter the lungs or bloodstream. PM is comprised of hundreds of different chemicals. Common sources of PM are construction sites, smokestacks, and industrial activities.

Carbon monoxide (CO) is a colorless, odorless gas that is harmful to humans when inhaled at high levels. High concentrations of CO can enter the bloodstream, reaching critical organs. Common sources of outdoor CO pollution are primarily motor vehicles, machinery, and other activities that burn fossil fuels.

The study area is located within the Medford-Ashland Maintenance Area and the Medford Urban Growth Boundary. The Medford-Ashland Maintenance Area, which includes Jackson County, Ashland, Phoenix, Talent, Medford, Central Point, White City, and Eagle Point, was developed under the 1990 Clean Air Act Amendments to address Particulate Matter 10 (PM_{10}) in the Rogue Valley. A plan to address PM_{10} concentrations was developed in 1991 to reduce PM_{10} pollution related to industry and residential wood stoves. Currently, the Medford-Ashland Maintenance Area is in attainment of National Ambient Air Quality Standards, including PM_{10} and $PM_{2.5}$.

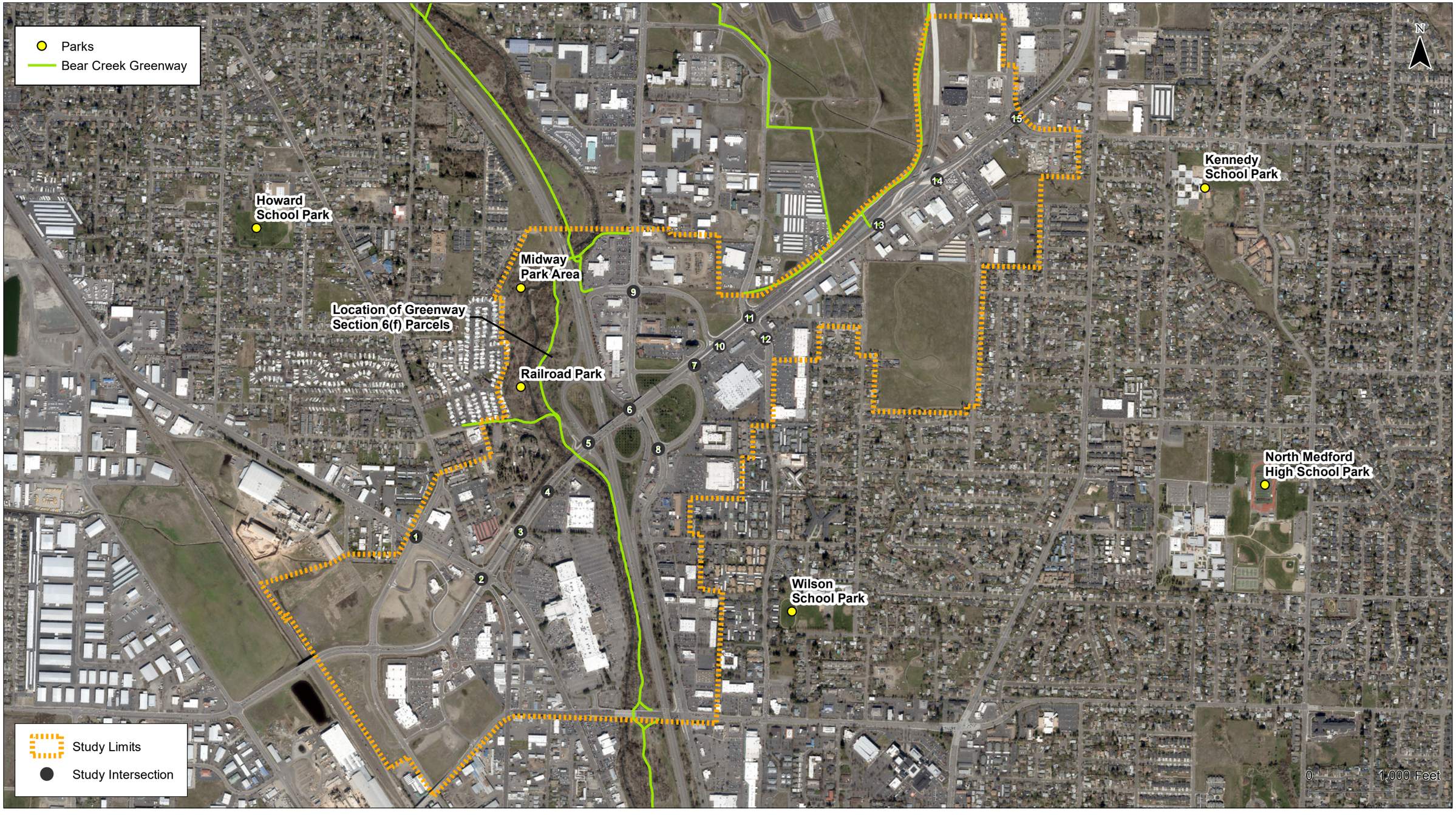
Additionally, the City was in non-attainment for Carbon Monoxide (CO) standards between the 1970s and 1980s. In 2002, a State Implementation Plan for CO Maintenance was approved by the Environmental Protection Agency (EPA). A second CO Maintenance Plan was prepared by the Oregon Department of Environmental Quality (DEQ). The plan is valid through September 2022.

The Rogue Valley Metropolitan Planning Organization (RVMPO) Air Quality Conformity Determination found that the 2017-2042 Regional Transportation Plan and 2018-21 Transportation Improvement Program would meet air quality requirements for the Medford CO Maintenance Area and Medford-Ashland PM_{10} Maintenance Area.

Hazardous Materials / Substances

The National Pipeline Management Database shows no pipelines containing hazardous materials crossing the study area. According to the DEQ, six environmental cleanup sites, twelve hazardous waste sites, nineteen leaking underground storage tanks (LUST), and one underground storage tank (UST) are located within the study area. Of the six environmental cleanup sites, four are listed as No Further Action Required, two are Listed on Confirmed Release List or Inventory, and one is a Suspect Site Requiring Further Investigation. Additionally, fifteen of the LUST sites cleanups has been completed (Appendix A Figure 6).

Appendix A: Figure 1-6



Section 4(f) and 6(f) Resources

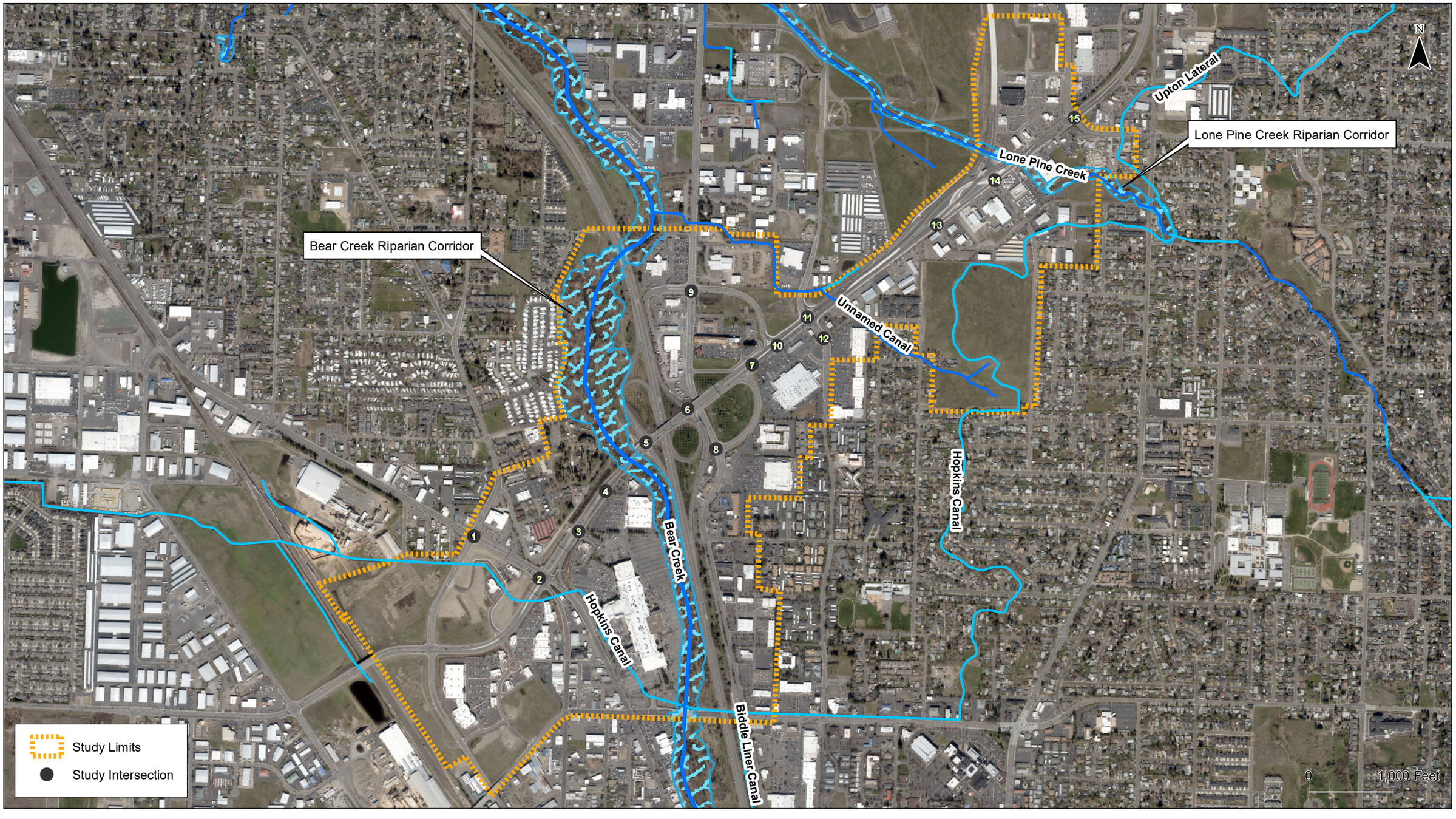
Interchange Management Study Area
Medford, Oregon

Figure
1

DOWL

Coordinate System: NAD 1983 2011 StatePlane Oregon South FIPS 3602 Ft Intl
Data Source: Jackson County, 2020
Service Layer Credits: City of Medford

C:\Users\EPeterson\Desktop\GIS_LT\Exhibits\Section 4-f.mxd - epeterson - 10:02 AM 5/15/2020



Waterways & Riparian Corridors

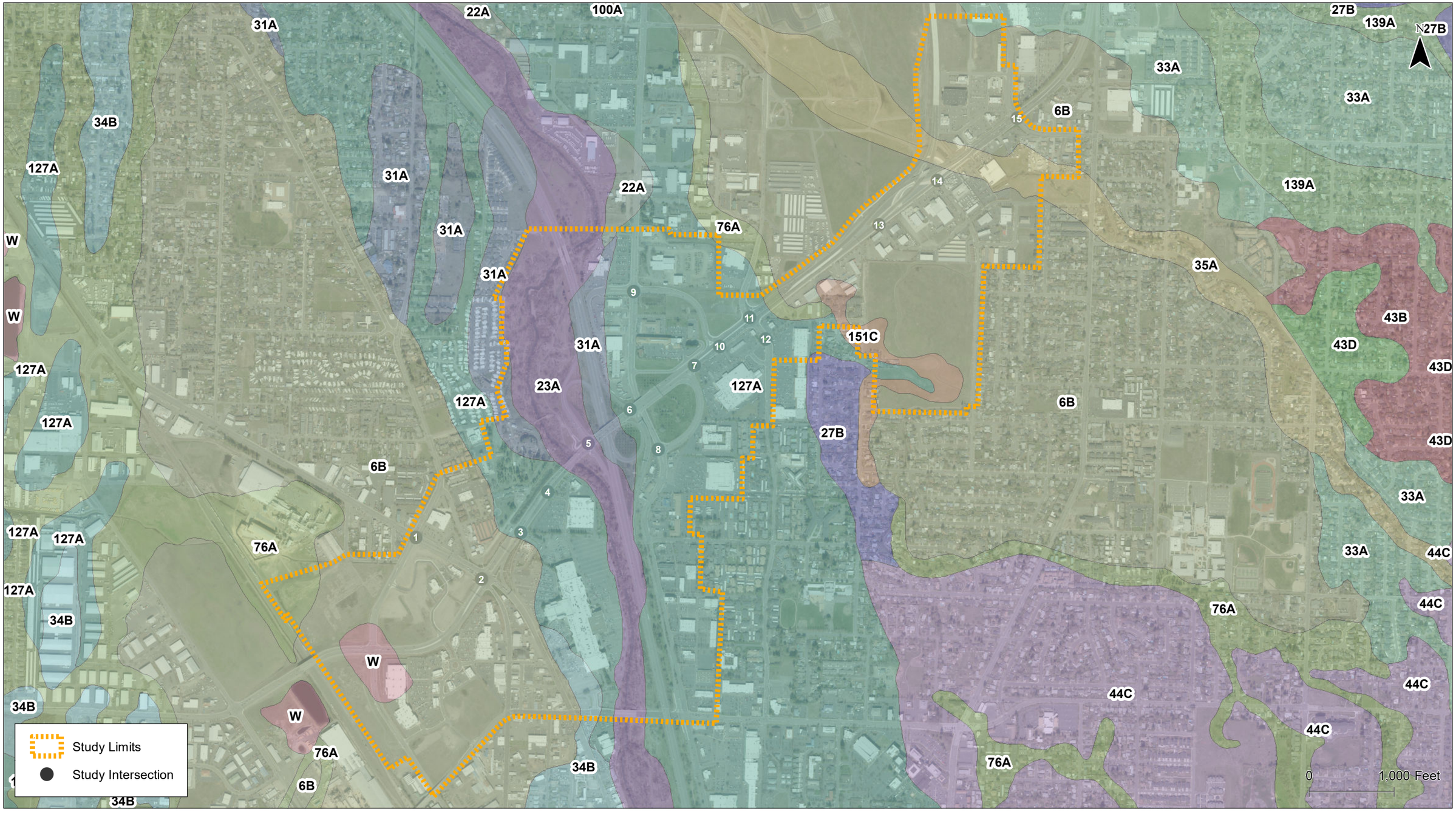
Interchange Management Study Area
Medford, Oregon

Figure
2

DOWL

Coordinate System: NAD 1983 2011 StatePlane Oregon South FIPS 3602 Ft Intl
Data Source: City of Medford, 2020
Service Layer Credits: City of Medford

C:\Users\EPetersonDesktop\GIS_I-5\Exhibits\Waterways.mxd - epeterson - 10:06 AM 5/15/2020



NRCS Soil Survey

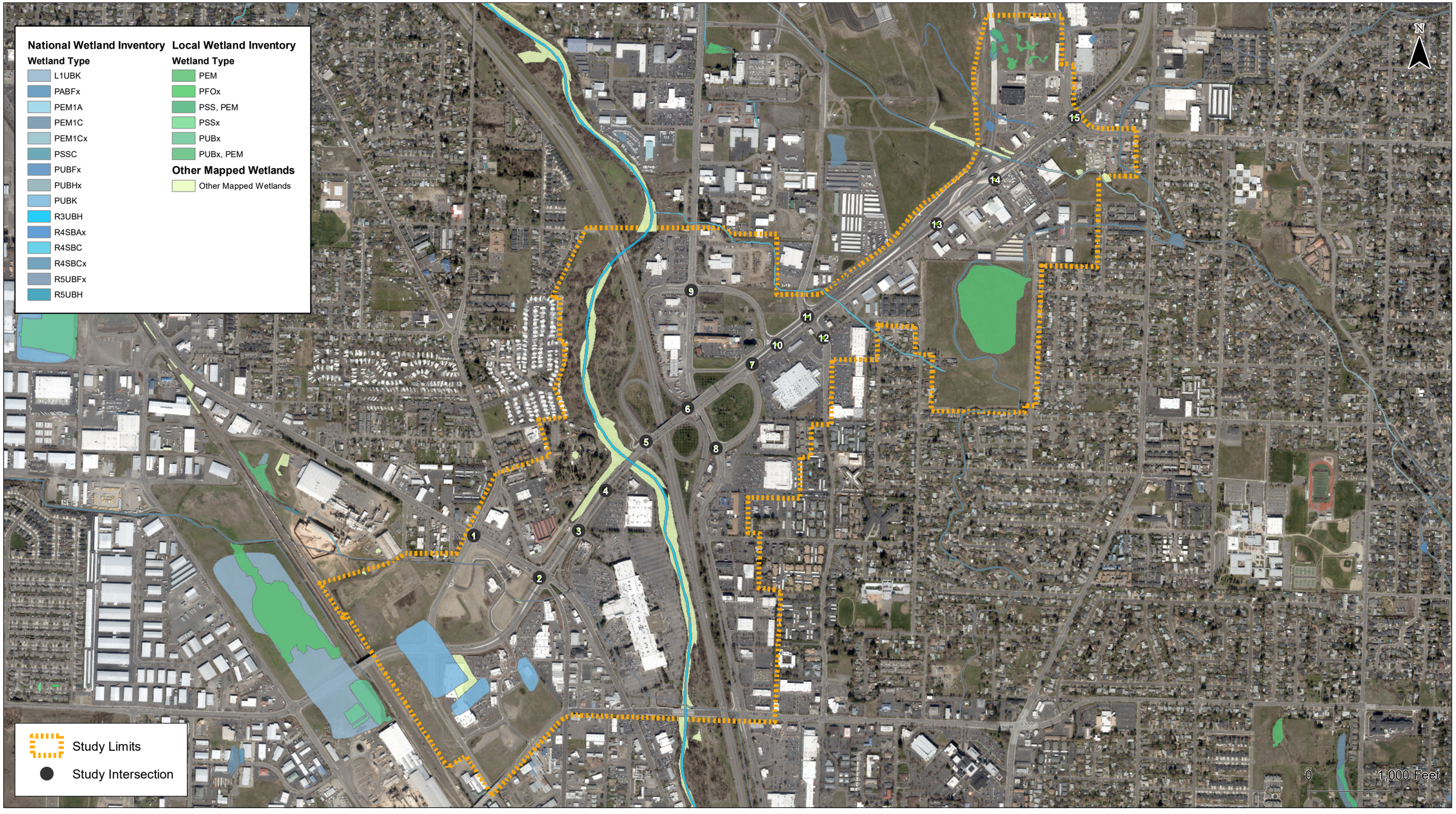
Interchange Management Study Area
Medford, Oregon

Figure
3

C:\Users\EPeterson\Desktop\GIS_LT\Exhibits\Soils.mxd - epeterson - 10:09 AM 5/15/2020

DOWL

Coordinate System: NAD 1983 2011 StatePlane Oregon South FIPS 3602 Ft Intl
Data Source: Natural Resources Conservation Service, 2020
Service Layer Credits: City of Medford ; Natural Resources Conservation Service



Wetlands

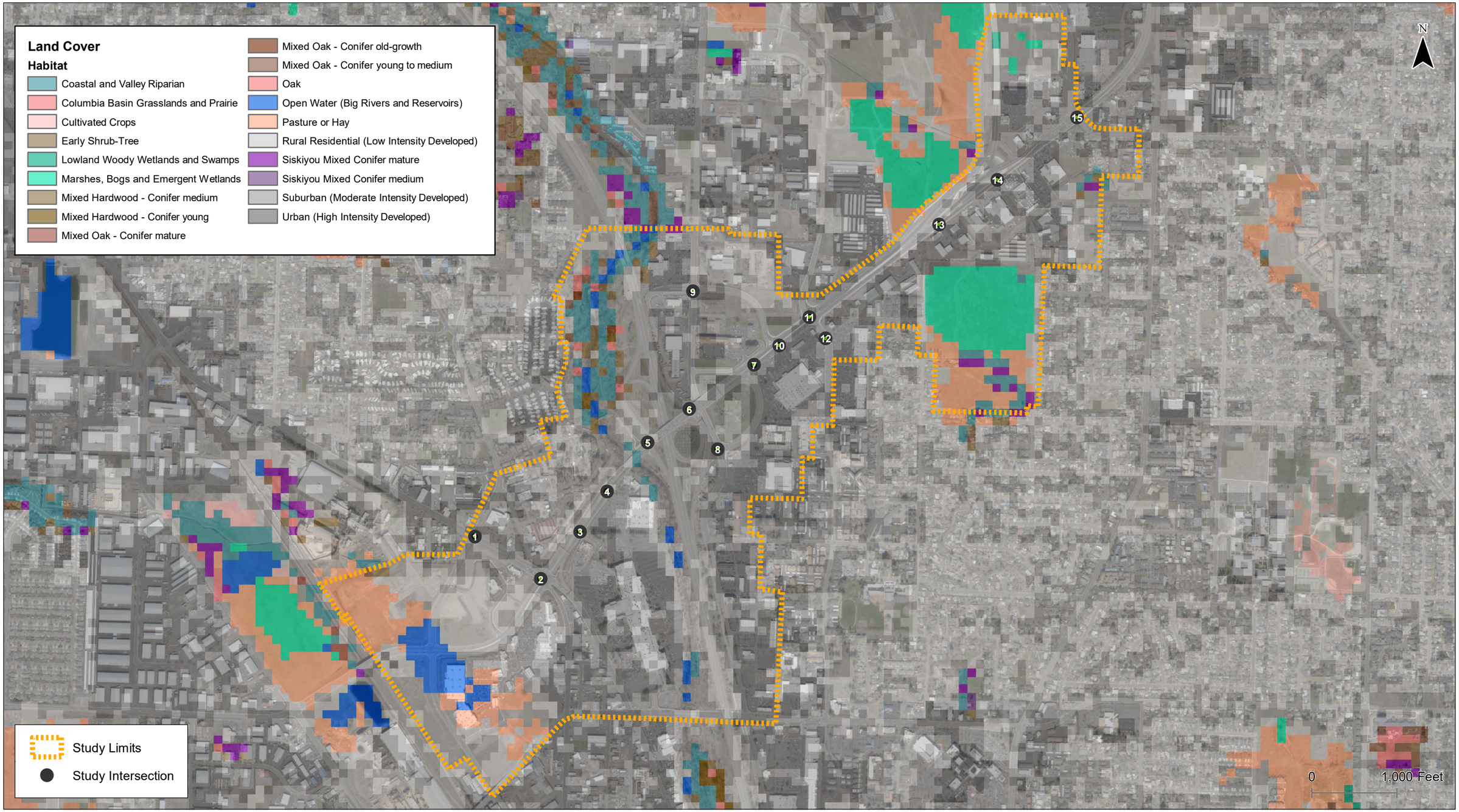
Interchange Management Study Area
Medford, Oregon

Figure
4

C:\Users\EPeterson\Desktop\GIS_LT\Exhibits\Wetlands.mxd - epeterson - 10:11 AM 5/15/2020

DOWL

Coordinate System: NAD 1983 2011 StatePlane Oregon South FIPS 3602 Ft Intl
Data Source: USFWS, 2020; Wetland Consulting, 2002; and ONHIC, 2009
Service Layer Credits: City of Medford ; City of Medford



Habitat / Land Cover

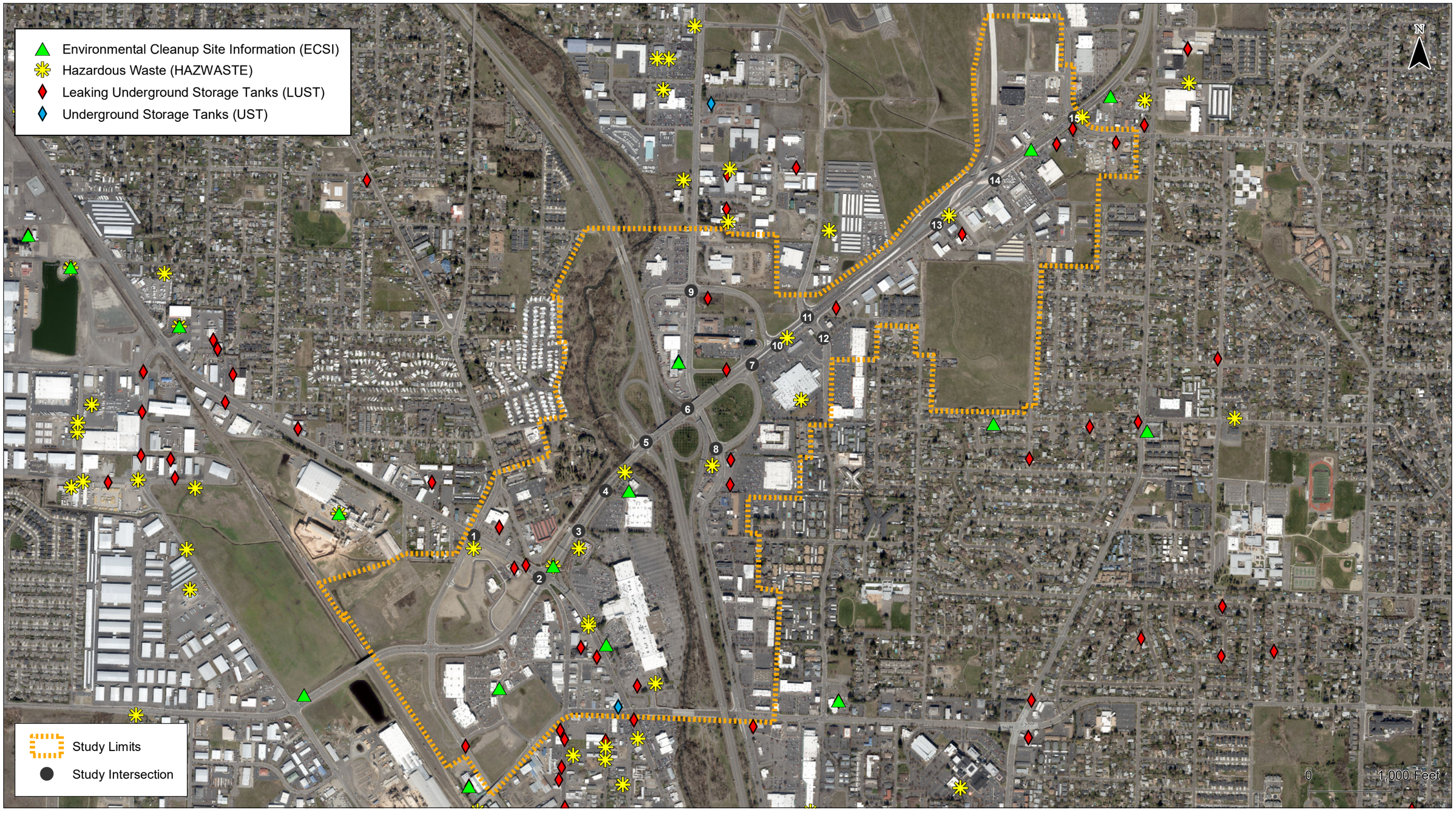
Interchange Management Study Area
Medford, Oregon

Figure
5

C:\Users\EPeterson\Desktop\GIS_LT\Exhibits\Habitat Cover.mxd - epeterson - 10:14 AM 5/15/2020

DOWL

Coordinate System: NAD 1983 2011 StatePlane Oregon South FIPS 3602 Ft Intl
Data Source: City of Medford, 2020
Service Layer Credits: City of Medford ; USGS GAP Data



C:\Users\EPeterson\Desktop\GIS_LT\Exhibits\Hazardous Materials.mxd - epeterson - 10:15 AM 5/15/2020

Hazardous Materials

Interchange Management Study Area
Medford, Oregon

Figure
6

DOWL

Coordinate System: NAD 1983 2011 StatePlane Oregon South FIPS 3602 Ft Intl
Data Source: ODEQ, 2020
Service Layer Credits: City of Medford ; Oregon DEQ Facility Porfiler-Lite Permitted Sites

Appendix B: Flood Mapping

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures.** Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 10. The **horizontal datum** was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum.** For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC- 3, #9202
1315 East- West Highway
Silver Spring, MD 20910- 3282

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713- 3242**, or visit its website at http://www.ngs.noaa.gov/.

Base map information shown on this FIRM was derived from multiple sources. Base map files were provided in digital format by Jackson County GIS Services, State of Oregon OLCD, and the National Geodetic Survey. This information was compiled at various map scales during the time period 2003-2006.

This map reflects more detailed and up- to- date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables *in the Flood Insurance Study report (which contains authoritative hydraulic data)* may reflect stream channel distances that differ from what is shown on this map.

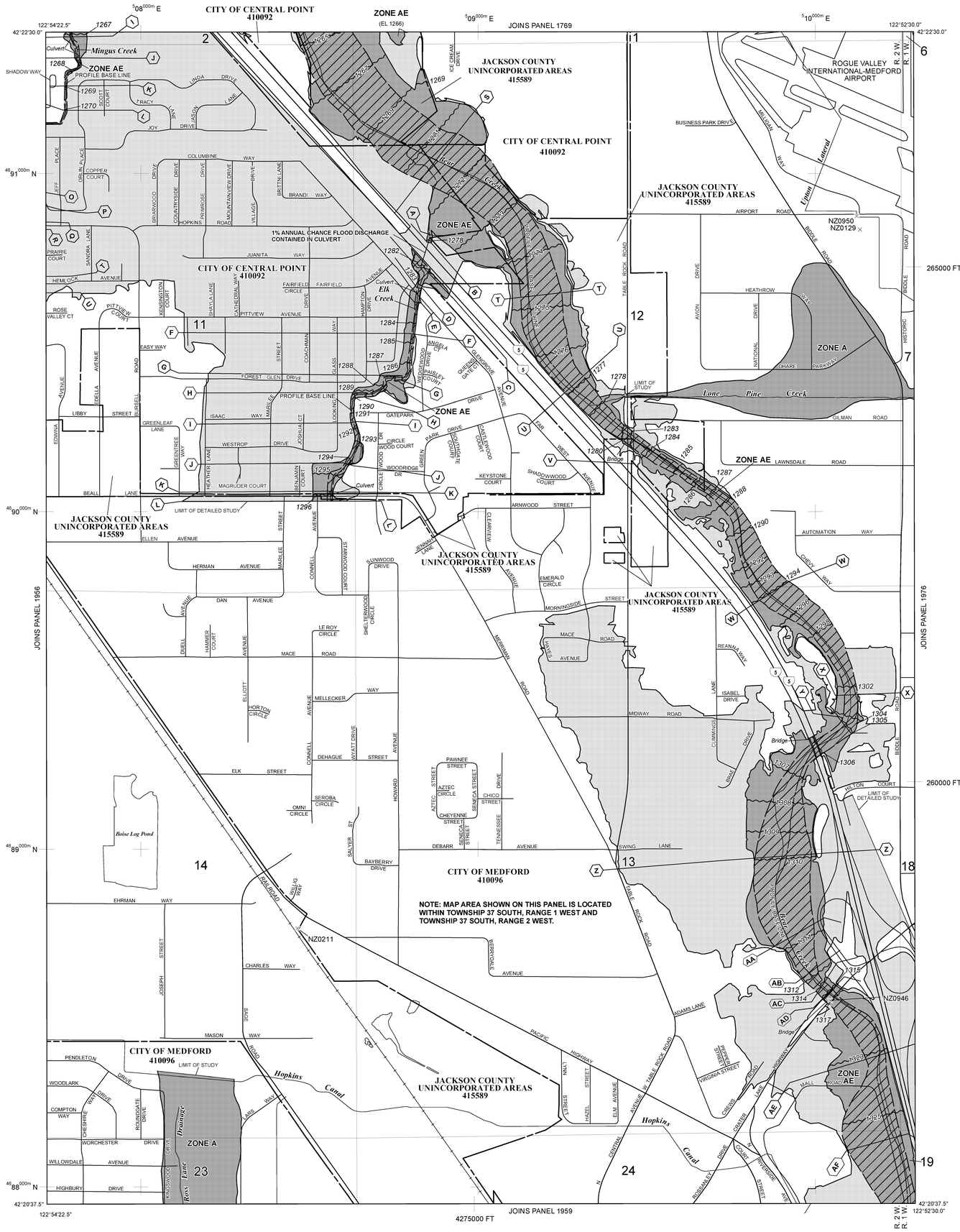
Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de- annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Information eXchange** at **1-877-FEMA MAP** (1-877-336-2627) for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and /or digital versions of this map. The FEMA Map Information eXchange may also be reached by Fax at 1-800-358-9620 and its website at http://www.msc.fema.gov/.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1- 877- FEMA MAP** (1- 877- 336- 2627) or visit the FEMA website at http://www.fema.gov/.

The **profile baselines** depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the profile baseline, in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A No Base Flood Elevations determined.

ZONE AE Base Flood Elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

ZONE A99 Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.

ZONE V Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

ZONE VE Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

Floodplain boundary

Floodway boundary

Zone D boundary

CBRS and OPA boundary

Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.

513 Base Flood Elevation line and value; elevation in feet*

(EL 987) Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988 (NAVD 88)

A–A Cross section line

23–23 Transect line

97°07'30", 32°22'30" Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)

4275000 FT N 1000-meter Universal Transverse Mercator grid ticks, zone 10

6000000 FT 5000-foot grid ticks: Oregon State Plane coordinate system, south zone (FIPSZONE 3602), Lambert Conformal Conic

DX5510 Bench mark (see explanation in Notes to Users section of this FIRM panel)

M1.5 River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
May 3, 2011
EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1- 800- 638- 6620.

MAP SCALE 1" = 500'
250 0 500 1000 FEET
150 0 150 300 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1957F

FIRM
FLOOD INSURANCE RATE MAP
JACKSON COUNTY, OREGON
AND INCORPORATED AREAS

PANEL 1957 OF 2327
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
JACKSON COUNTY	415589	1957	F
CENTRAL POINT, CITY OF	410092	1957	F
MEDFORD, CITY OF	410096	1957	F

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
41029C1957F

EFFECTIVE DATE
MAY 3, 2011

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures.** Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 10. The **horizontal datum** was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum.** For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC- 3, #9202
1315 East- West Highway
Silver Spring, MD 20910- 3282

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713- 3242**, or visit its website at http://www.ngs.noaa.gov/.

Base map information shown on this FIRM was derived from multiple sources. Base map files were provided in digital format by Jackson County GIS Services, State of Oregon OLCD, and the National Geodetic Survey. This information was compiled at various map scales during the time period 2003-2006.

This map reflects more detailed and up- to- date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables *in the Flood Insurance Study report (which contains authoritative hydraulic data)* may reflect stream channel distances that differ from what is shown on this map.

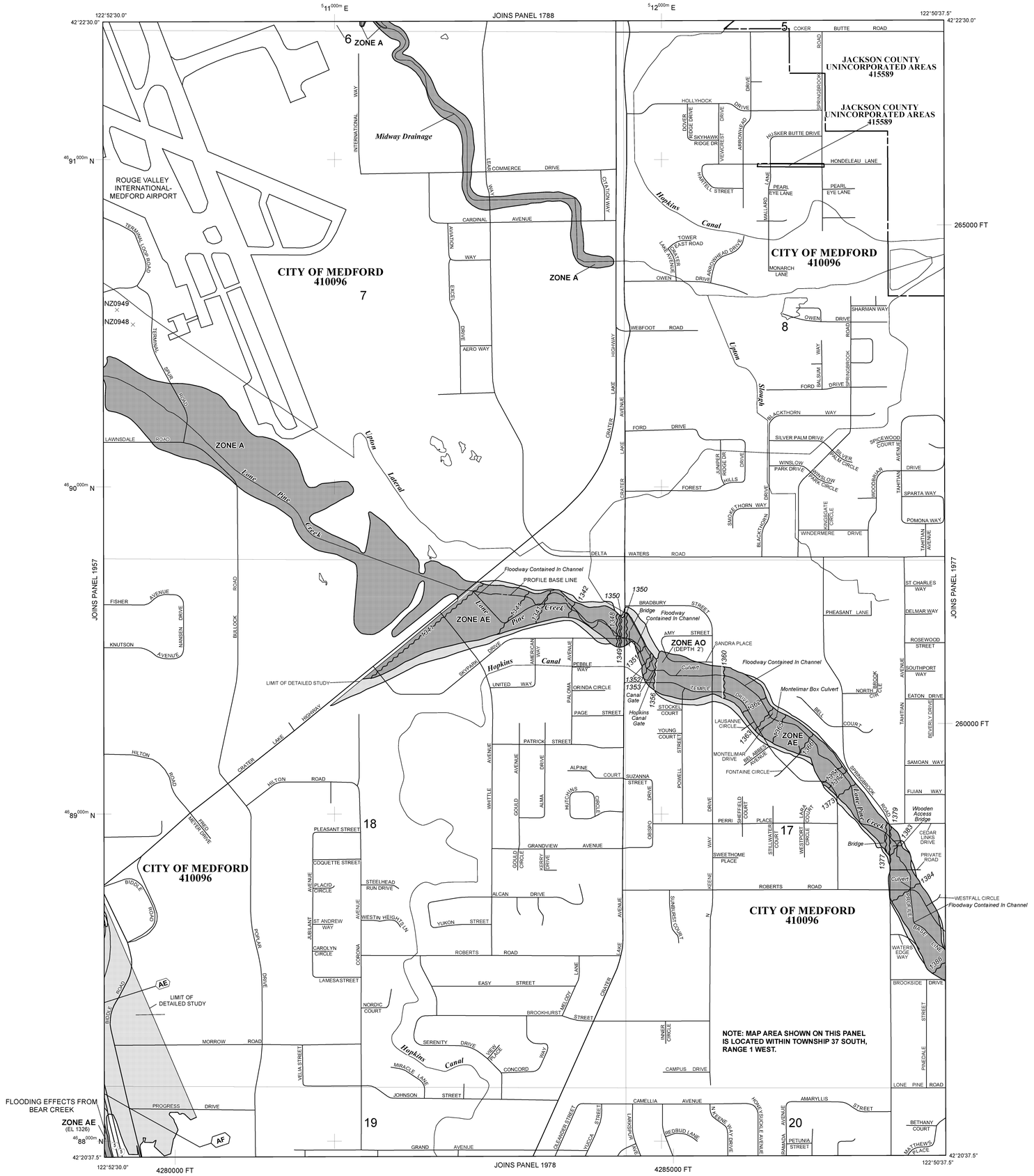
Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de- annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Information eXchange** at **1-877-FEMA MAP** (1-877-336-2627) for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and /or digital versions of this map. The FEMA Map Information eXchange may also be reached by Fax at 1-800-358-9620 and its website at http://www.msc.fema.gov/.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1- 877- FEMA MAP** (1- 877- 336- 2627) or visit the FEMA website at http://www.fema.gov/.

The **profile baselines** depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the profile baseline, in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A No Base Flood Elevations determined.

ZONE AE Base Flood Elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

ZONE A99 Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.

ZONE V Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

ZONE VE Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988 (NAVD 88)

- A–A — Cross section line
- 23–23 — Transect line
- 97°07'30", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
- 4275 000m N — 1000-meter Universal Transverse Mercator grid ticks, zone 10
- 6000000 FT — 5000-foot grid ticks: Oregon State Plane coordinate system, south zone (FIPSZONE 3602), Lambert Conformal Conic
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
May 3, 2011
EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1- 800- 638- 6620.

MAP SCALE 1" = 500'
250 0 500 1000 FEET
150 0 150 300 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1976F

FIRM
FLOOD INSURANCE RATE MAP
JACKSON COUNTY, OREGON
AND INCORPORATED AREAS

PANEL 1976 OF 2327
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
JACKSON COUNTY	415589	1976	F
MEDFORD, CITY OF	410096	1976	F

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
41029C1976F
EFFECTIVE DATE
MAY 3, 2011

Federal Emergency Management Agency

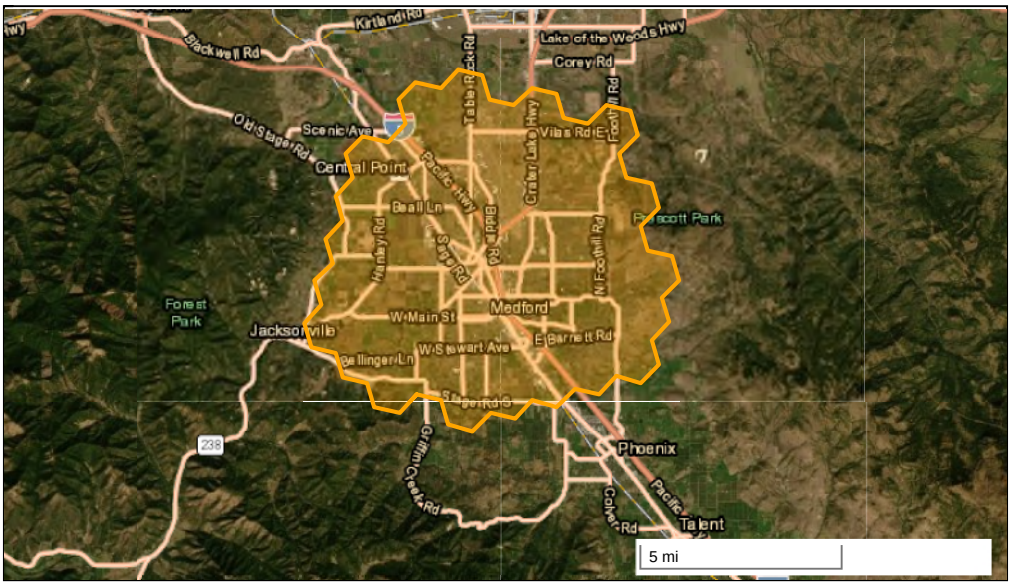
Appendix C: Special Status Species

ODFW Compass

Oregon Conservation Strategy Report

I-5 Exit 30 Study Area

Feb 07, 2020



Leaflet | Sources: ESRI, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), © OpenStreetMap contributors, and the GIS User Community

---

Area mi²: 57

Ecoregions:

- Klamath Mountains

Conservation Opportunity Areas:

- Antelope Creek-Paynes Cliffs, COA 099

Strategy Habitats:

- Oak Woodlands
- Ponderosa Pine Woodlands
- Flowing Water and Riparian Habitats
- Wetlands

Documented Strategy Fish:

- Oregon Basin Redband Trout
- Coastal Cutthroat Trout
- Coho Salmon

Observed Strategy Wildlife:

- Acorn Woodpecker
- Peregrine Falcon (American)
- American White Pelican
- Big-flowered Wooly Meadowfoam
- Chipping Sparrow
- Common Nighthawk
- Cook's Desert Parsley
- Dwarf Meadowfoam
- Ferruginous Hawk
- Fisher
- Fringed Myotis
- Gentner's Fritillary
- Grasshopper Sparrow
- Lewis's Woodpecker
- Loggerhead Shrike
- Northern Spotted Owl
- Olive-sided Flycatcher
- Pileated Woodpecker
- Snowy Egret
- Townsend's Big-eared Bat
- Vernal Pool Fairy Shrimp
- Wayside Aster

Western Bluebird
Western Bumble Bee
Western Meadowlark
Western Pond Turtle
White-headed Woodpecker
Willow Flycatcher
Yellow-Breasted Chat

Modeled Strategy Wildlife Habitat :

Acorn Woodpecker
Peregrine Falcon (American)
American White Pelican
Black-backed Woodpecker
Brewer's Sparrow
California Mountain Kingsnake
California Myotis
Chipping Sparrow
Clouded Salamander
Coastal Tailed Frog
Common Nighthawk
Ferruginous Hawk
Fisher
Flammulated Owl
Fringed Myotis
Grasshopper Sparrow
Great Gray Owl
Hoary Bat
Lewis's Woodpecker
Loggerhead Shrike
Long-legged Myotis
Mountain Quail
Northern Goshawk
Northern Sagebrush Lizard
Northern Spotted Owl
Olive-sided Flycatcher
Oregon Vesper Sparrow
Pallid Bat
Pileated Woodpecker
Ringtail
Short-Eared Owl
Silver-haired Bat
Snowy Egret
Townsend's Big-eared Bat
Western Bluebird
Burrowing Owl (Western)
Western Gray Squirrel
Western Meadowlark
Western Pond Turtle
Western Rattlesnake
Western Toad
White-headed Woodpecker
Willow Flycatcher
Yellow-Breasted Chat

For information on data sources see http://dfw.state.or.us/maps/compass/reportingtool.asp

Compass
dfw.state.or.us/maps/compass
OREGON Fish & Wildlife
www.dfw.state.or.us
the OREGON CONSERVATION STRATEGY
oregonconservationstrategy.org

Oregon Department of Fish and Wildlife
SENSITIVE SPECIES LIST

Frequently Asked Questions

It is Oregon's policy "to prevent the serious depletion of any indigenous species" (ORS 496.012). The Oregon Administrative Rules (OAR) for threatened and endangered species (OAR 635-100-0080 to 0194) are intended to help implement this policy. In accordance with these rules, species can be classified as "threatened" (any native species likely to become endangered within the foreseeable future throughout any significant part of its range within the state) or "endangered" (any native species determined to be in danger of extinction). However, recovering species when their populations are severely depleted can be difficult and expensive. In addition, designation of such species can be socially and economically divisive.

To provide a positive, proactive approach to species conservation, a "sensitive" species classification was created under Oregon's Sensitive Species Rule (OAR 635-100-0040). The Sensitive Species List focuses fish and wildlife conservation, management, and research and monitoring activities on species that need conservation attention. It serves as an early warning system for biologists, land managers, policy makers, and the public. It helps to ensure that conservation actions are prioritized, cost-efficient, and effective. Although the intent of the Sensitive Species List is to prevent species from declining to the point of qualifying as threatened or endangered, this list is not used as a "candidate" list for species to be considered for listing on Oregon's State List of Threatened and Endangered Species (OAR 635-100-0125).

What is a "Sensitive Species"?

"Sensitive" refers to fish and wildlife that are facing one or more threats to their populations and/or habitats. Consistent with OAR 635-100-0040(2), "Sensitive Species" are defined as having small or declining populations, are at-risk, and/or are of management concern. Implementation of appropriate conservation measures to address existing or potential threats may prevent them from declining to the point of qualifying for threatened or endangered status.

For the purpose of the Sensitive Species List, "species" refers to any group (taxon) of fish or wildlife that interbreeds and is substantially reproductively isolated. This interpretation of the term "species" may include species, subspecies, or a geographically-specific population grouping of a species or subspecies.

What factors are considered in designating a "Sensitive Species"?

The factors considered for designating a "Sensitive Species" include: declining population; imminent or active deterioration of primary habitat; populations impacted by Key Conservation Issues (see the Oregon Conservation Strategy (2016) for details), disease, predation, contaminants, and other natural or human-caused factors; over-utilization; inadequate existing state or federal programs for management or conservation of species and/or primary habitats; and naturally limited range or rare occurrence.

What does the "Sensitive-Critical" designation mean?

The Sensitive Species List consists of two categories, "Sensitive" and "Sensitive-Critical". Species or taxa with a "Sensitive-Critical" sub-designation are Sensitive Species of particular conservation

concern. “Sensitive-Critical” species have current or legacy threats that are significantly impacting their abundance, distribution, diversity, and/or habitat. They may decline to the point of qualifying for threatened or endangered status if conservation actions are not taken.

Are species on the list considered “Sensitive” statewide?

Species are designated as “Sensitive” by geographic groupings of population segments or habitats, or by ecoregion, depending on the taxa. Species Management Units (SMU) are the listing unit for fish (Figure 1; per the Native Fish Conservation Policy; OAR 535-007-0504(6)). Ecoregions are the listing unit for amphibians, reptiles, birds, and mammals (Figure 2). Oregon has nine ecoregions, including the: Blue Mountains, Coast Range, Columbia Plateau, East Cascades, Klamath Mountains, Northern Basin and Range, West Cascades, Willamette Valley, and Nearshore. A species may be designated as both “Sensitive” and “Sensitive-Critical” in different SMUs or ecoregions, depending on the regional level of conservation concern.

How is the Sensitive Species List used?

The Oregon Department of Fish and Wildlife (ODFW) uses the Sensitive Species List, in conjunction with the Oregon Conservation Strategy, to promote and guide conservation actions. These actions are also designed to encourage voluntary efforts that will improve species’ status. Once threats to species are identified, conservation opportunities and strategies can be developed. These actions may include:

- monitoring populations to detect either positive or negative changes in populations;
- conducting further research to identify threats and methods to address the threats;
- educating people about what these species need to persist and what actions people can take to assist in species’ conservation.
- partnering with land management agencies to maintain, improve, and restore habitat;
- providing technical expertise, incentives, and recognition to landowners who provide habitat;
- creating cooperative agreements with assurances for private landowners who provide habitat;
- cooperatively incorporating species’ needs into activities that could negatively affect them; and
- bringing together land managers, researchers, and other people to share information.

Although the Sensitive Species List is primarily a non-regulatory tool, it is referenced in the Department’s Chemical Process Mining Consolidated Application and Permit Review Standards (OAR 635 Division 420) and In-Water Blasting Permits (OAR 635 Division 425). Also, the Department’s biologists provide reviews of a variety of proposed land and water management actions based, in part, on Oregon Conservation Strategy Strategy Species and Sensitive Species list priorities. Being included on the Sensitive Species List also provides additional regulatory oversight, landowner incentives, and public records limits with other state agencies, which reference them in their Oregon Administrative Rules. These agencies include the Columbia River Gorge Commission, Department of Energy, Energy Facility Siting Council, Department of Forestry, Department of Geology and Mineral Industries, Department of Land Conservation and Development, Department of State Lands, Parks and Recreation Department, State Marine Board, and Water Resources Department.

How does the Sensitive Species List relate to the Oregon Conservation Strategy?

The Oregon Conservation Strategy (OCS) is the state’s overarching strategy for conserving fish and wildlife, and provides a shared set of priorities for addressing Oregon’s conservation needs. It serves as the official State Wildlife Action Plan for Oregon and is a requirement of the federal State Wildlife Grant Program. The OCS brings together the best available scientific information, and presents a menu of recommended voluntary actions and tools for all Oregonians to define their own conservation role. The goals of the OCS are to maintain healthy fish and wildlife populations by maintaining and restoring

functioning habitats, preventing declines of at-risk species, and reversing declines in these resources where possible. The OCS Strategy Species are species of greatest conservation need that include wildlife (i.e., amphibians, birds, mammals, and reptiles), fish, invertebrates, plants, and algae.

The Sensitive Species List is, for the most part, a subset of the species identified in the OCS. Although very similar in purpose, there are some important distinctions between the OCS Strategy Species List and the Sensitive Species List. The OCS Strategy Species List has a broader scope and is not limited by ODFW's management authorities. The Sensitive Species List is limited to fish, amphibians, reptiles, birds, and mammals; it does not include: 1) invertebrates, plants, algae, or fish and marine mammals that occur only in the nearshore ecoregion, that are identified in the OCS or 2) species already listed by the state as threatened or endangered.

For more information on the special needs, limiting factors, data gaps, recommended conservation actions, and resources available for each OCS Strategy Species, visit the Oregon Conservation Strategy website. For information on the legal status of invertebrate species, contact the Oregon Department of Agriculture and Oregon Biodiversity Information Center. For information on the legal status of plants, contact the Oregon Department of Agriculture.

What if there is not enough information to determine whether a species should be "Sensitive"?

The status of some species cannot be determined because basic information on distribution, abundance, and/or habitat associations is not known. This basic information is needed before population status or threats can be evaluated. These species are identified in the Oregon Conservation Strategy as Data Gap Species and are listed by ecoregion.

How is the Sensitive Species List updated?

The Sensitive Species List is reviewed and updated every five years. Each taxonomic group of animals is reviewed by ODFW biologists and scientific experts from other agencies, universities, and private organizations. The scientists are asked to consider new and historical information on species distribution, population trends, and biological needs; changes in threats; gaps in knowledge and data; recent conservation actions; and state and federal programs or regulations. The scientists may propose to remove, add, or re-classify species based on this information. The draft list is then peer-reviewed by state, federal, university, and consulting biologists. The Sensitive Species List is an administrative list and is not formally adopted through a rule-making process.

In addition, any person may request that a species be added to or removed from the Sensitive Species List through a written request that outlines the status of the species and how its condition meets the criteria cited in OAR 635-100-0040(6).

Why are species that are "threatened" or "endangered" under the federal Endangered Species Act included on the Sensitive Species List?

The State of Oregon and the federal government maintain separate lists of threatened and endangered species under different federal and state laws. Some species are listed as threatened or endangered under federal law but not under state law and may be included as state "Sensitive Species".

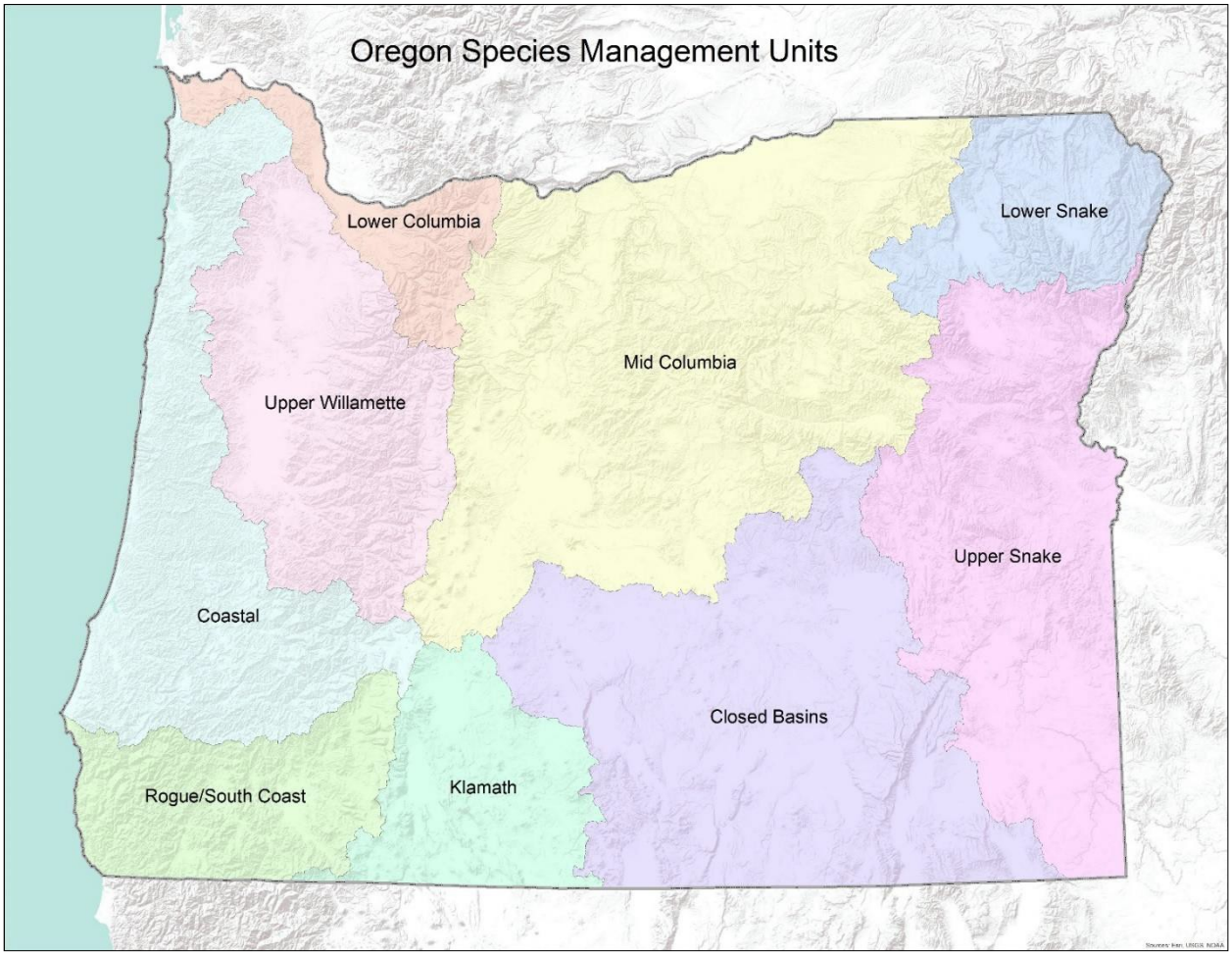


Figure 1. General location of Species Management Units (SMUs) used for determining status of fish. Note that actual SMU boundaries identified in the Sensitive Species List are species-specific and may vary between species or be at a smaller scale than indicated in this figure (especially in the Closed Basins SMU, which encompasses numerous smaller SMUs identified on the list).

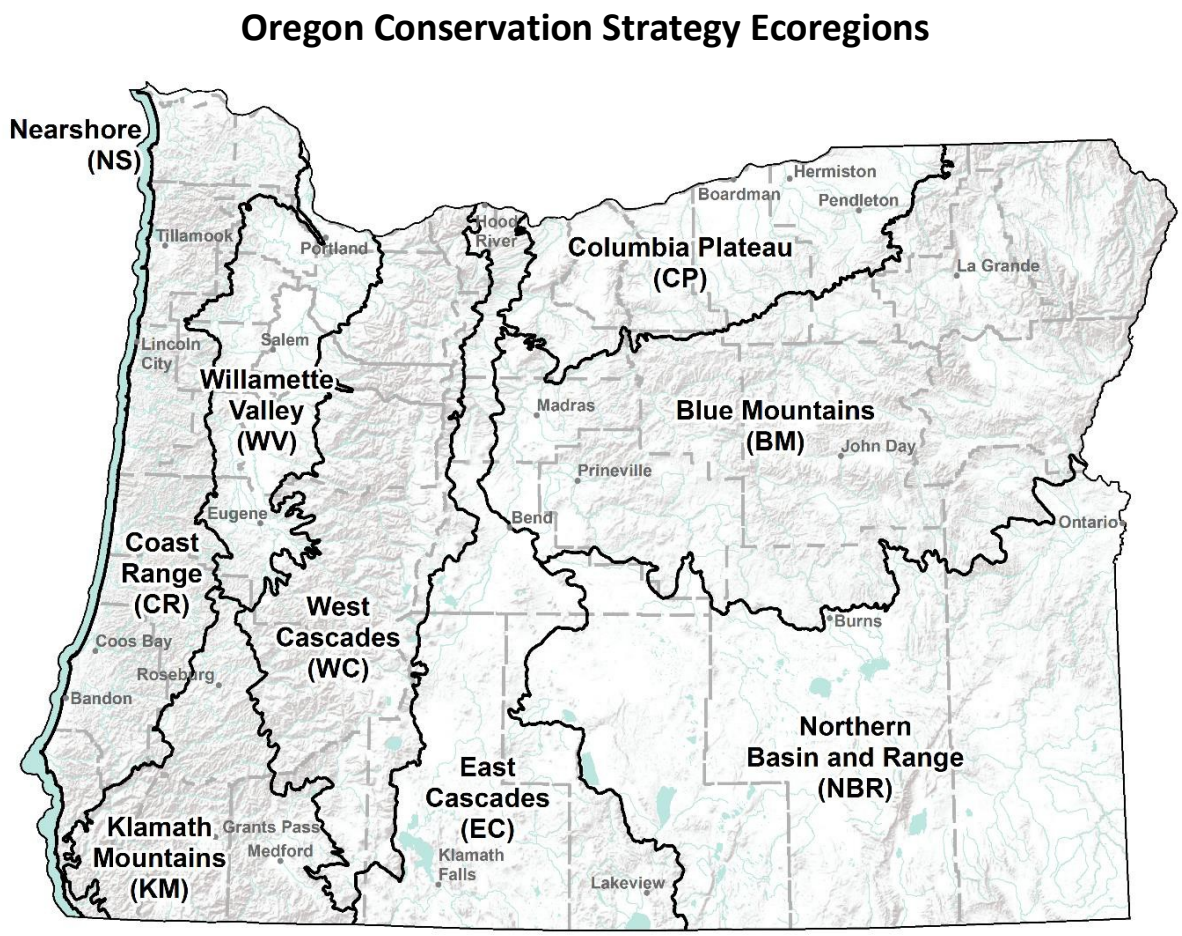


Figure 2. Ecoregions used for determining status of wildlife (i.e., amphibians, reptiles, birds, and mammals). More information about Oregon's ecoregions is available at http://www.oregonconservationstrategy.org/ecoregions/. Map produced by ODFW, Oregon Conservation Strategy GIS Analyst. Data sources: ODFW, Oregon Biodiversity Information Center, ESRI, USGS.

Oregon Department of Fish and Wildlife
SENSITIVE SPECIES LIST

The 2019 Sensitive Species List has 152 taxa, including 95 wildlife taxa (32 “Sensitive-Critical”, 71 “Sensitive”) and 57 fish taxa (17 “Sensitive-Critical”, 40 “Sensitive”). Note that some species may be designated as “Sensitive” in one ecoregion and “Sensitive-Critical” in another ecoregion. Refer to the table below (organized by taxon) for more information.

FISH

Common Name	Scientific Name	Sensitive	Sensitive-Critical
Alvord Chub	*Siphateles alvordensis*	Range-Wide (NBR)	
Bull Trout	*Salvelinus confluentus*	Deschutes SMU (BM, EC, WC)	Hells Canyon SMU (BM)
		Grande Ronde SMU (BM)	John Day SMU (BM, CP)
		Hood River SMU (WC)	Klamath Lake SMU (EC, WC)
		Imnaha SMU (BM)	Malheur River SMU (BM, NBR)
		Walla Walla SMU (BM)	Odell Lake SMU (EC, WC)
		Willamette SMU (WC, WV)	Umatilla SMU (BM, CP)
Chinook Salmon - Fall	*Oncorhynchus tshawytscha*	Mid-Columbia River SMU/ Deschutes ESU (BM, CP, EC)	Lower Columbia River SMU/ESU (CR, WC, WV, NS)
Chinook Salmon - Spring	*Oncorhynchus tshawytscha*	Coastal SMU/ESU (CR, KM, WC, NS)	Lower Columbia River SMU/ESU (WC, WV, NS)
		Middle Columbia SMU/ESU (BM, CP, EC, NS)	Willamette SMU/Upper Willamette River ESU (WC, WV, NS)
		Rogue SMU/Southern Oregon/Northern California Coasts ESU (CR, KM, WC, NS)	
Chum Salmon	*Oncorhynchus keta*		Coastal SMU/Pacific Coast ESU (CR, NS)
			Lower Columbia SMU, Columbia River ESU (CR, WV, NS)

Common Name	Scientific Name	Sensitive	Sensitive-Critical
Coastal Cutthroat Trout	*Oncorhynchus clarkii clarkii*	Lower Columbia SMU/ Southwestern Washington/Columbia River ESU (CR, WC, WV, NS)	
Coho Salmon	*Oncorhynchus kisutch*	Coastal Coho Salmon SMU/Oregon Coast ESU (CR, NS)	
		Klamath SMU/Southern Oregon/Northern California Coasts ESU (EC, KM, NS)	
		Rogue SMU/Southern Oregon/Northern California Coasts ESU (CR, KM, WC, NS)	
Foskett Speckled Dace	*Rhinichthys osculus robustus*	Range-Wide (NBR)	
Goose Lake Sucker	*Catostomus occidentalis lacusanserinus*	Range-Wide (EC)	
Great Basin Redband Trout	*Oncorhynchus mykiss newberrii*	Catlow Valley SMU (NBR)	
		Chewaucan SMU (NBR)	
		Fort Rock SMU (NBR)	
		Goose Lake SMU (EC)	
		Malheur Lakes SMU (BM, NBR)	
		Upper Klamath Basin SMU (EC, WC)	
		Warner Lakes SMU (NBR)	
Green Sturgeon	*Acipenser medirostris*	Northern DPS (CR, KM, NS)	
			Southern DPS (CR, KM, NS)
Miller Lake Lamprey	*Entosphenus minimus*	Range-Wide (EC)	
Millicoma Dace	*Rhinichthys cataractae*	Range-Wide (CR)	
Modoc Sucker	*Catostomus microps*	Range-Wide (EC)	
Oregon Chub	*Oregonichthys crameri*	Range-Wide (WC, WV)	
Pacific Brook Lamprey	*Lampetra pacifica*	Range-Wide (WV)	
Pacific Lamprey	*Entosphenus tridentata*	Range-Wide (CR, CP, EC, KM, WC, WV, NS)	
Pit Sculpin	*Cottus pitensis*	Range-Wide (EC, NBR)	
Steelhead - Summer / Coastal Rainbow Trout	*Oncorhynchus mykiss / irideus*	Coastal SMU/Oregon Coast ESU (CR, KM, WC)	Lower Columbia SMU/ESU (CR, WC, WV)
		Rogue SMU/Klamath Mountains Province ESU (CR, KM, WC)	

Common Name	Scientific Name	Sensitive	Sensitive-Critical
Steelhead - Summer / Columbia Basin Rainbow Trout	*Oncorhynchus mykiss / gairdneri*	Lower Snake SMU/Snake River Basin ESU (BM)	Middle Columbia SMU/ESU (BM, CP, EC)
		Upper Snake SMU/Snake River Basin ESU (BM)	
Steelhead - Winter / Coastal Rainbow Trout	*Oncorhynchus mykiss / irideus*	Willamette SMU/Upper Willamette River ESU (WC, WV)	Lower Columbia SMU/ESU (CR, WC, WV)
Umpqua Chub	*Oregonichthys kalawatseti*		Range-Wide (CR, KM, WC)
Western Brook Lamprey	*Lampetra richardsoni*	Range-Wide (BM, CR, CP, WC, WV)	
Western River Lamprey	*Lampetra ayresii*	Range-Wide (CR, CP, WV, NS)	
Westslope Cutthroat Trout	*Oncorhynchus clarki lewisi*		Range-Wide (BM, CP)
White Sturgeon	*Acipenser transmontanus*	Lower Columbia/Coastal Population (NS, CR, WV, WC)	

AMPHIBIANS

Common Name	Scientific Name	Sensitive	Sensitive-Critical
Cascade Torrent Salamander	*Rhyacotriton cascadae*	WC, WV	
Cascades Frog	*Rana cascadae*	EC, WC	
Clouded Salamander	*Aneides ferreus*	CR, KM, WC, WV	
Coastal Tailed Frog	*Ascaphus truei*	CR, KM, WC	
Columbia Spotted Frog	*Rana luteiventris*		BM, NBR
Columbia Torrent Salamander	*Rhyacotriton kezeri*	CR, WV	
Cope's Giant Salamander	*Dicamptodon copei*	CR, EC, WC	
Del Norte Salamander	*Plethodon elongatus*	CR, KM	
Foothill Yellow-legged Frog	*Rana boylii*		CR, KM, WC, WV
Larch Mountain Salamander	*Plethodon larselli*		WC
Northern Red-legged Frog	*Rana aurora*	CR, KM, WC, WV	
Oregon Slender Salamander	*Batrachoseps wrighti*	WC, WV	
Oregon Spotted Frog	*Rana pretiosa*		EC, WC
Rocky Mountain Tailed Frog	*Ascaphus montanus*	BM	
Siskiyou Mountains Salamander	*Plethodon stormi*		KM
Southern Torrent Salamander	*Rhyacotriton variegatus*	CR, KM, WV	
Western Toad	*Anaxyrus boreas*	BM, CR, EC, KM, NBR, WC	

REPTILES

Common Name	Scientific Name	Sensitive	Sensitive-Critical
California Mountain Kingsnake	*Lampropeltis zonata*	CR, CP, EC, KM, WC	
Northern Sagebrush Lizard	*Sceloporus graciosus graciosus*	CP	
Western Painted Turtle	*Chrysemys picta bellii*		BM, CR, CP, EC, WC, WV
Western Pond Turtle	*Actinemys marmorata*		CR, EC, KM, WC, WV
Western Rattlesnake	*Crotalus oreganus*		WV

BIRDS

Common Name	Scientific Name	Sensitive	Sensitive-Critical
Acorn Woodpecker	*Melanerpes formicivorus*	KM, WV	
American Three-toed Woodpecker	*Picoides dorsalis*	BM, EC	
American White Pelican	*Pelecanus erythrorhynchos*	EC, NBR	
Black Brant	*Branta bernicla nigricans*	CR, NS	
Black Oystercatcher	*Haematopus bachmani*	NS	
Black Swift	*Cypseloides niger borealis*	WC	
Black-backed Woodpecker	*Picoides arcticus*	BM, EC	
Black-necked Stilt	*Himantopus mexicanus*	NBR	
Bobolink	*Dolichonyx oryzivorus*	BM, NBR	
Brewer's Sparrow	*Spizella breweri breweri*	CP	
Burrowing Owl (Western)	*Athene cunicularia hypugaea*	NBR	BM, CP
Caspian Tern	*Hydroprogne caspia*	CR, EC, NBR, NS	
Chipping Sparrow	*Spizella passerina*	WV	
Columbian Sharp-tailed Grouse	*Tympanuchus phasianellus columbianus*		BM
Common Nighthawk	*Chordeiles minor*	CP, KM	WV
Dusky Canada Goose	*Branta canadensis occidentalis*	WV	
Ferruginous Hawk	*Buteo regalis*	BM, NBR	CP
Flammulated Owl	*Psiloscops flammeolus*	BM, EC, KM, WC	
Fork-tailed Storm-Petrel	*Oceanodroma furcata*	NS	
Franklin's Gull	*Leucophaeus pipixcan*	NBR	
Grasshopper Sparrow	*Ammodramus savannarum perpallidus*	CP, KM	WV
Great Gray Owl	*Strix nebulosa*	BM, EC, KM, WC	
Greater Sage-Grouse	*Centrocercus urophasianus*	NBR	BM
Greater Sandhill Crane	*Antigone canadensis tabida*	EC, NBR, WC	
Harlequin Duck	*Histrionicus histrionicus*	CR, WC	
Juniper Titmouse	*Baeolophus ridgwayi*	NBR	

Common Name	Scientific Name	Sensitive	Sensitive-Critical
Leach's Storm-Petrel	*Oceanodroma leucorhoa leucorhoa*	NS	
Lewis's Woodpecker	*Melanerpes lewis*		BM, CP, EC, KM, WC
Loggerhead Shrike	*Lanius ludovicianus*	BM, CP	
Long-billed Curlew	*Numenius americanus*	BM, EC, NBR	CP
Mountain Quail	*Oreortyx pictus*	NBR	
Northern Goshawk	*Accipiter gentilis atricapillus*	EC, WC	
Olive-sided Flycatcher	*Contopus cooperi*	BM, CR, WC, WV	EC
Oregon Vesper Sparrow	*Pooecetes gramineus affinis*		KM, WV
Peregrine Falcon (American)	*Falco peregrinus anatum*	CR, NBR	
Pileated Woodpecker	*Dryocopus pileatus*	BM	
Purple Martin (Western)	*Progne subis arboricola*		CR, KM, WC, WV
Red-necked Grebe	*Podiceps grisegena*		EC
Rock Sandpiper	*Calidris ptilocnemis tschuktschorum*	NS	
Sagebrush Sparrow	*Artemisiospiza nevadensis*		CP
Short-eared Owl	*Asio flammeus flammeus*	WV	
Snowy Egret	*Egretta thula*	NBR	
Streaked Horned Lark	*Eremophila alpestris strigata*		WV
Swainson's Hawk	*Buteo swainsoni*	BM, CP, EC, NBR	
Trumpeter Swan	*Cygnus buccinator*	BM, EC, NBR	
Tufted Puffin	*Fratercula cirrhata*		CR, NS
Upland Sandpiper	*Bartramia longicauda*		BM
Western Bluebird	*Sialia mexicana*	WV	
Western Meadowlark	*Sturnella neglecta*		WV
White-breasted (Slender-billed) Nuthatch	*Sitta carolinensis aculeata*	WV	
White-headed Woodpecker	*Picoides albolarvatus*		BM, EC, KM
Willow Flycatcher	*Empidonax traillii*	NBR	WV
Yellow Rail	*Coturnicops noveboracensis noveboracensis*		EC
Yellow-breasted Chat	*Icteria virens auricollis*		KM, WV

MAMMALS

Common Name	Scientific Name	Sensitive	Sensitive-Critical
American Pika	*Ochotona princeps*	BM, EC, NBR, WC	
California Myotis	*Myotis californicus*	BM, CR, EC, KM, NBR, WC, WV	
Columbian White-tailed Deer	*Odocoileus virginianus leucurus*		CR, WV
Fisher	*Pekania pennanti*		CR, KM, WC
Fringed Myotis	*Myotis thysanodes*	BM, CR, EC, KM, NBR, WC, WV	
Hoary Bat	*Lasiurus cinereus*	BM, CR, CP, EC, KM, NBR, WC, WV	
Long-legged Myotis	*Myotis volans*	BM, CR, EC, KM, NBR, WC	
Pacific Marten	*Martes caurina*	BM, CR, EC, KM, WC	
Pallid Bat	*Antrozous pallidus*	BM, CP, EC, KM, NBR	
Pygmy Rabbit	*Brachylagus idahoensis*	NBR	
Red Tree Vole	*Arborimus longicaudus*	CR, KM, WC	
Ringtail	*Bassariscus astutus*	CR, KM, WC	
Rocky Mountain Bighorn Sheep	*Ovis canadensis canadensis*	BM	
Sierra Nevada Red Fox	*Vulpes vulpes necator*	EC, KM, WC	
Silver-haired Bat	*Lasionycteris noctivagans*	BM, CR, CP, EC, KM, NBR, WC, WV	
Spotted Bat	*Euderma maculatum*	BM, CP, EC, KM, NBR	
Townsend's Big-eared Bat	*Corynorhinus townsendii*		BM, CR, CP, EC, KM, NBR, WC, WV
Western Gray Squirrel	*Sciurus griseus*	WV	
White-tailed Jackrabbit	*Lepus townsendii*	NBR	

Ecoregions: BM: Blue Mountains**,** CR: Coast Range**,** CP: Columbia Plateau**,** EC: East Cascades**,** KM: Klamath Mountains**,** NBR: Northern Basin and Range**,** WC: West Cascades**,** WV: Willamette Valley**,** NS: Nearshore

IPaC Information for Planning and Consultation **U.S. Fish & Wildlife Service**

IPaC resource list

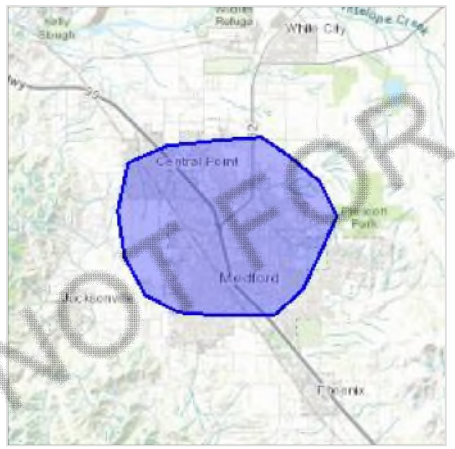
This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

NOT FOR CONSULTATION

Location

Jackson County, Oregon



Local office

Oregon Fish And Wildlife Office

(503) 231-6179
(503) 231-6195

2600 Southeast 98th Avenue, Suite 100
Portland, OR 97266-1398

https://www.fws.gov/oregonfwo/articles.cfm?id=149489416

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species

[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

---

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information.
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

NOT FOR CONSULTATION

Mammals

NAME	STATUS
Fisher Pekania pennanti No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/3651	Proposed Threatened
Gray Wolf Canis lupus There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/4488	Endangered

Birds

NAME	STATUS
Northern Spotted Owl Strix occidentalis caurina There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/1123	Threatened

Crustaceans

NAME	STATUS
Vernal Pool Fairy Shrimp Branchinecta lynchi There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/498	Threatened

Flowering Plants

NAME	STATUS
Cook's Lomatium Lomatium cookii There is **final** critical habitat for this species. Your location overlaps the critical habitat. https://ecos.fws.gov/ecp/species/1583	Endangered
Gentner's Fritillary Fritillaria gentneri No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/8120	Endangered
Large-flowered Woolly Meadowfoam Limnanthes pumila ssp. grandiflora There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/1090	Endangered

NOT FOR CONSULTATION

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

This location overlaps the critical habitat for the following species:

NAME	TYPE
Cook's Lomatium Lomatium cookii https://ecos.fws.gov/ecp/species/1583#crithab	Final

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act

[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

NOT FOR CONSULTATION

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
Allen's Hummingbird Selasphorus sasin This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9637	Breeds Feb 1 to Jul 15
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Jan 1 to Sep 30
California Thrasher Toxostoma redivivum This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Jan 1 to Jul 31
Clark's Grebe Aechmophorus clarkii This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Jan 1 to Dec 31
Golden Eagle Aquila chrysaetos This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds Jan 1 to Aug 31

NOT FOR CONSULTATION

Great Blue Heron Ardea herodias fannini This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Mar 15 to Aug 15
Lesser Yellowlegs Tringa flavipes This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Marbled Godwit Limosa fedoa This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9481	Breeds elsewhere
Olive-sided Flycatcher Contopus cooperi This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3914	Breeds May 20 to Aug 31
Rufous Hummingbird selasphorus rufus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8002	Breeds Apr 15 to Jul 15
Semipalmated Sandpiper Calidris pusilla This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Short-billed Dowitcher Limnodromus griseus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9480	Breeds elsewhere
Western Screech-owl Megascops kennicottii kennicottii This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Mar 1 to Jun 30
Whimbrel Numenius phaeopus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9483	Breeds elsewhere

Probability of Presence Summary

NOT FOR CONSULTATION

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (▪)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

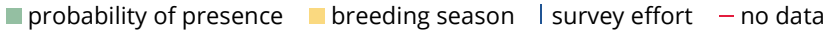
Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

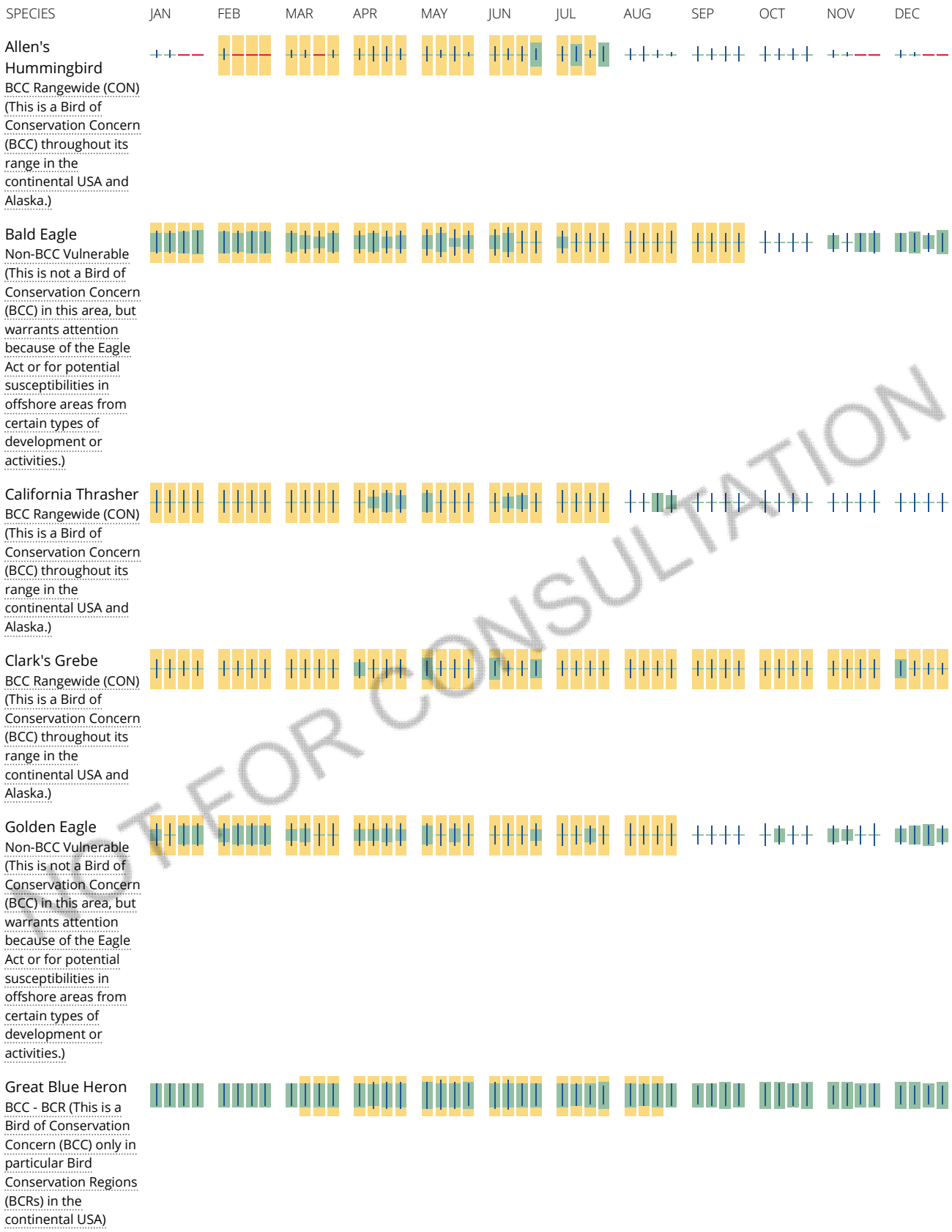
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



NOT FOR CONSULTATION



DRAFT FOR CONSULTATION

Lesser Yellowlegs
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

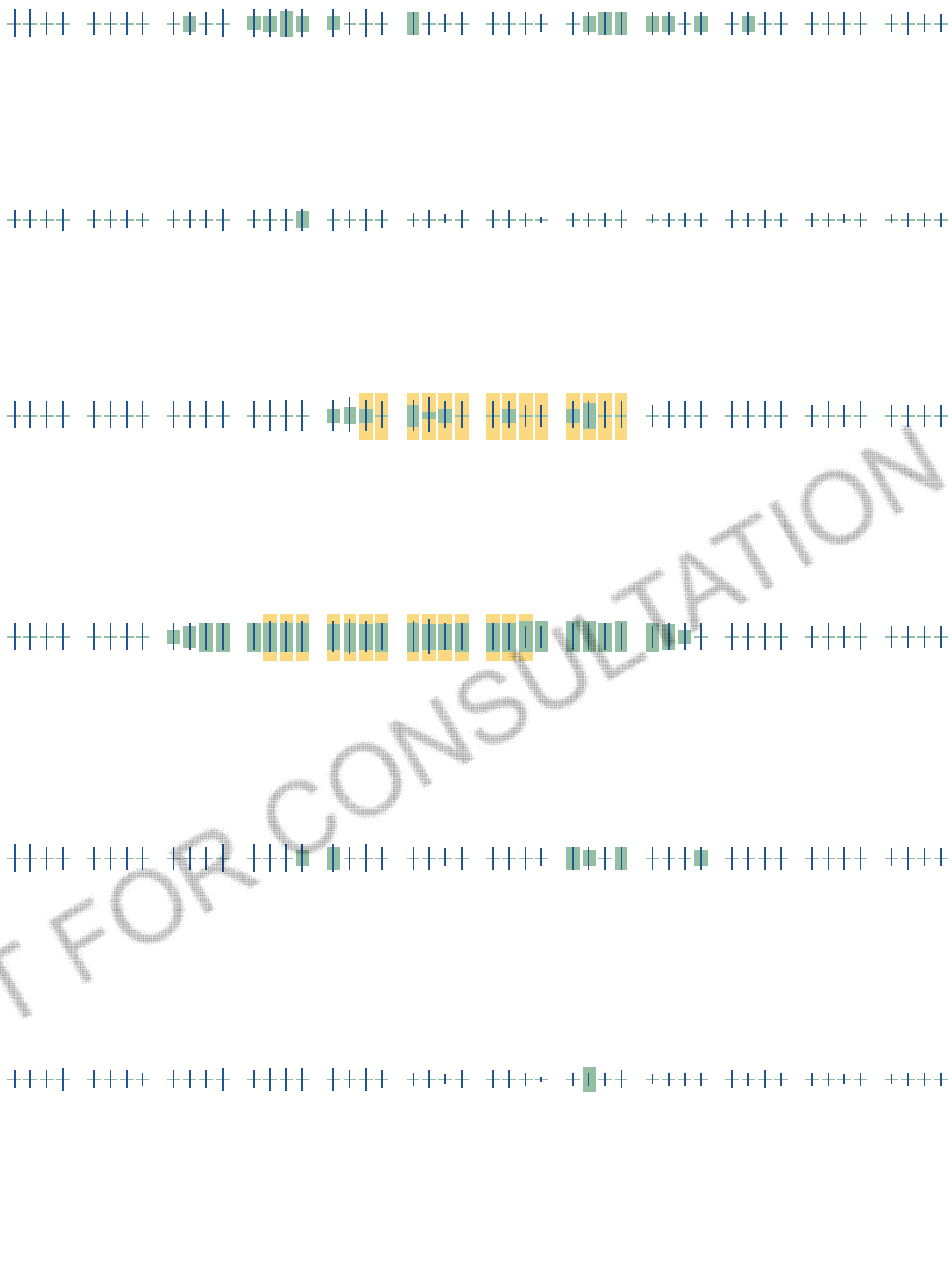
Marbled Godwit
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Olive-sided Flycatcher
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Rufous Hummingbird
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Semipalmated Sandpiper
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Short-billed Dowitcher
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Western Screech-owl
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

NOT FOR CONSULTATION

Whimbrel
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures and/or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

NOT FOR CONSULTATION

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ “What does IPaC use to generate the migratory birds potentially occurring in my specified location”. Please be aware this report provides the “probability of presence” of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the “no data” indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ “Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds” at the bottom of your migratory bird trust resources page.

NOT FOR CONSULTATION

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

WETLAND INFORMATION IS NOT AVAILABLE AT THIS TIME

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the NWI map to view wetlands at this location.

NOT FOR CONSULTATION

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

NOT FOR CONSULTATION

Appendix C Tech Memo #3: Methodology Memo

[This page left blank intentionally]

KITTELSON & ASSOCIATES
851 SW 6th AVENUE, SUITE 600
PORTLAND, OR 97204
P 503.228.5230 F 503.273.8169

MEMORANDUM

Date: February 28, 2020 Project #: 23641.0

To: Virginia Elandt, Oregon Department of Transportation
Karl MacNair, City of Medford

From: Matt Bell, Miranda Barrus, and Matt Hughart, AICP, Kittelson & Associates, Inc.

Project: I-5 Exit 30 Interchange Area Management Plan (IAMP)

Subject: Draft TM#3: Methodology Memorandum

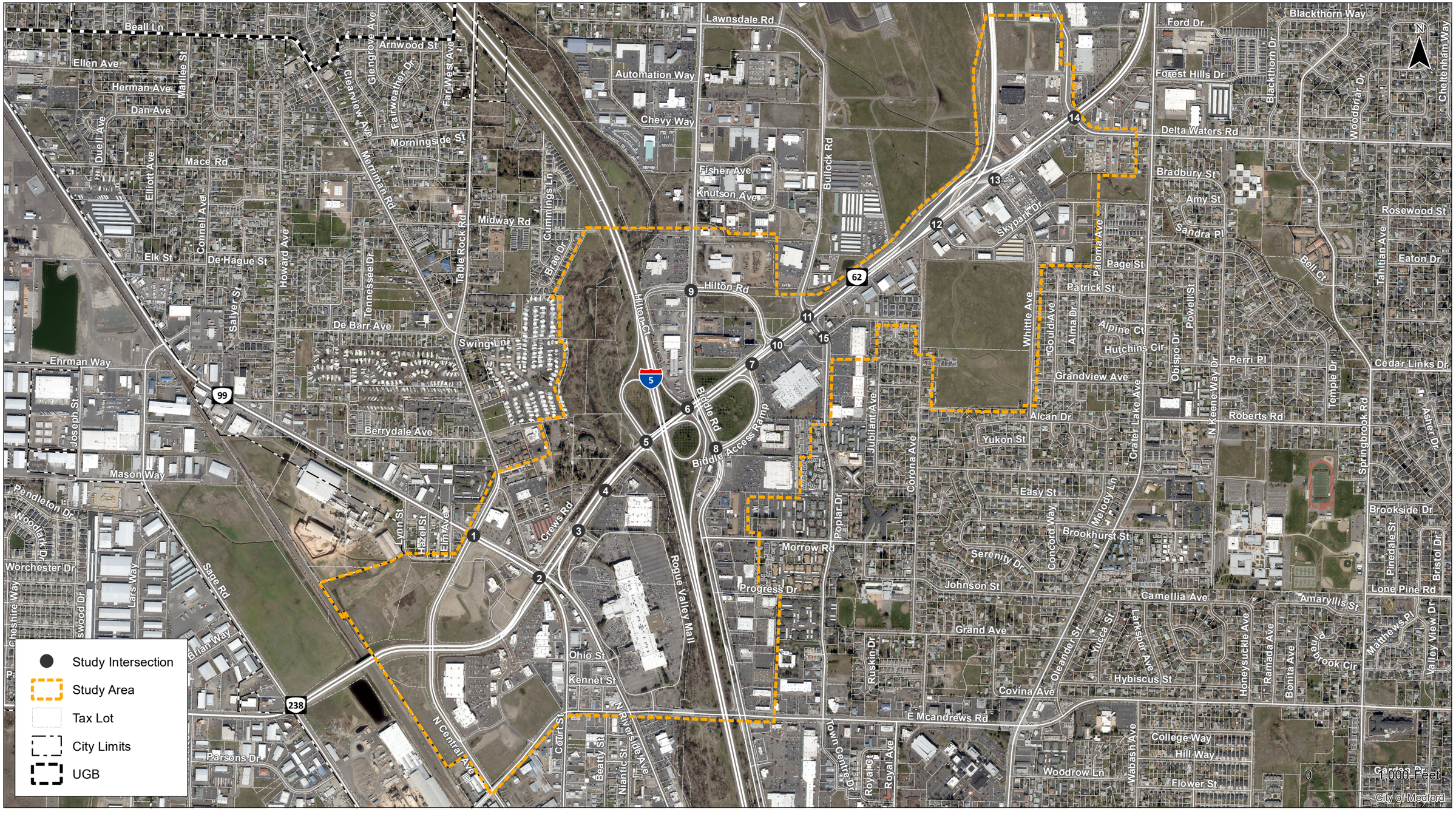
This memorandum documents the methodology and assumptions associated with the existing and future transportation conditions analyses for the Interstate 5 (I-5) Exit 30 Interchange Area Management Plan (IAMP). The methodology and assumptions included in this memorandum are based on guidance provided in the Oregon Department of Transportation (ODOT) *Interchange Area Management Plan Guidelines* (IAMP Guidelines – Reference 1), the *ODOT Analysis Procedures Manual* (APM – Reference 2), and direction provided by City of Medford (City) and ODOT staff. The methodology and assumptions described in this memorandum will help identify gaps and deficiencies in the interchange area, including:

- Traffic operations at the study intersections and along study area roadways under existing and future build and no-build traffic conditions,
- Traffic safety at the study intersections and along study area roadways,
- Gaps and deficiencies in the bicycle and pedestrian network,
- Gaps and deficiencies in the transit service (service frequency, hours, coverage, etc.), and
- Gaps and deficiencies in other travel modes.

This information will serve as a baseline for identifying a comprehensive list of needs to be addressed by the I-5 Exit 30 IAMP. It will also serve as a baseline for identifying and evaluating potential alternatives to address the needs on an incremental basis.

STUDY AREA

The Interchange Management Study Area (IMSA) for the I-5 Exit 30 IAMP and the existing and future conditions analyses includes the I-5 Exit 30 interchange (ramps, ramp terminal, etc.) and the segments of OR 62, OR 99, and OR 238 within ½ mile of the ramp terminals as defined by the IAMP Guidelines. Figure 1 illustrates the IMSA.



Interchange Management Study Area
Medford, Oregon

Figure
1

H:\23\23641 - Exit 30 IAMP\gis\Method1_IMSA.mxd - mbell - 2:58 PM 12/27/2019

KITTELSON & ASSOCIATES

Coordinate System: NAD 1983 2011 StatePlane Oregon South FIPS 3602 Ft Intl
Data Source: Delete if there isn't one.

STUDY INTERSECTIONS

The study intersections for the I-5 Exit 30 IAMP were determined based on direction provided by City and ODOT staff. These intersections are expected to be impacted by proposed changes to the I-5 Exit 30 interchange as well as future development within the IMSA. There are a total of 15 study intersections, including 14 intersections (10 signalized, 4 unsignalized) along State facilities and one intersection along Local facilities. Figure 1 illustrates the location of the study intersections.

State Facilities[1]

1. OR 99 / Table Rock Road
2. OR 62 / OR 238 / OR 99 / Court Street / N. Riverside Avenue
3. OR 62 / Rogue Valley Mall entrance (west)
4. OR 62 / Rogue Valley Mall entrance (east, at Target)
5. OR 62 / I-5 Southbound Ramp Terminal
6. OR 62 / I-5 Northbound Ramp Terminal
7. OR 62 / Biddle Road (north end of jug handle)
8. OR 62 / Biddle Road (south end of jug handle)
9. Biddle Road / Hilton Court
10. OR 62/Hilton Court-Fred Meyer Parking Lot Entrance
11. OR 62 / Bullock Road / Poplar Drive
12. OR 62 / Sky Park Drive
13. OR 62 / Whittle Avenue
14. OR 62 / Delta Waters Road

Local Facilities

15. Poplar Drive / Hilton Road

VOLUME DEVELOPMENT

The following sections describe the traffic counts conducted at the study intersections and how they will be used to develop existing and future traffic volumes.

[1] 1. ODOT is currently in the process of transferring the jurisdiction of OR 62, east of the OR 62 Bypass, to the City of Medford. The transfer will impact the jurisdiction of the OR 62/Delta Waters Road intersections.

Traffic Counts

Traffic counts were conducted at the majority of study intersections in March and August 2017, prior to opening of the OR 62 bypass. Because these counts are primarily located west of the bypass, they would not be subject to significant fluctuations in traffic patterns related to opening of the bypass. The remaining counts were conducted in July 2019 and reflect traffic conditions following opening of the bypass – these counts will be used to calibrate the seasonal adjustment factors, historical growth factors, and other potential changes to the other (somewhat older) counts. Ten of the counts were conducted over a 16-hour period (6:00 AM to 10:00 PM) and four were conducted over a 4-hour period (2:00 to 6:00 PM). All the counts include the total number of pedestrians, bicyclists, and motor vehicles that entered the intersections in 15-minute intervals from 2:00 to 6:00 p.m. and in 60-minute intervals throughout all other time periods as applicable. Table 1 summarizes the traffic count information for the I-5 Exit 30 IAMP. *The traffic count worksheets are provided in Attachment A.*

Table 1: Traffic Count Summary

Map ID	Intersection	Count Date	Count Type	Duration
State Facilities				
1	OR 99 / Table Rock	July 10, 2019	16-hour	6 AM to 10 PM
2	OR 62-OR 238 / OR 99-Court Street-N Riverside Avenue	March 14, 2017	16-hour	6 AM to 10 PM
3	OR 62 / Rogue Valley Mall entrance (west)	March 13, 2017	16-hour	6 AM to 10 PM
4	OR 62 / Rogue Valley Mall entrance (east, at Target)	March 15, 2017	4-hour	2 PM to 6 PM
5	OR 62 / I-5 Southbound Ramp Terminal	August 9, 2017	16-hour	6 AM to 10 PM
6	OR 62 / I-5 Northbound Ramp Terminal	August 9, 2017	16-hour	6 AM to 10 PM
7	OR 62 / Biddle Road (north end of jug handle)	N/A	N/A	N/A
8	OR 62 / Biddle Road (south end of jug handle)	March 20, 2017	16-hour	6 AM to 10 PM
9	Biddle Road / Hilton Court	March 20, 2017	16-hour	6 AM to 10 PM
10	OR 62/Hilton Court-Fred Meyer Parking Lot Entrance	March 22, 2017	4-hour	2 PM to 6 PM
11	OR 62 / Bullock Road-Poplar Drive	July 10, 2019	16-hour	6 AM to 10 PM
12	OR 62 / Sky Park Drive	March 20, 2017	4-hour	2 PM to 6 PM
13	OR 62 / Whittle Avenue	March 17, 2017	4-hour	2 PM to 6 PM
14	OR 62 / Delta Waters Road	July 10, 2019	16-hour	6 AM to 10 PM
Local Facilities				
15	Poplar Drive / Hilton Road	March 22, 2017	16-hour	6 AM to 10 PM

1. Traffic volumes at the OR 62/Biddle Road (north end of jug handle) intersection will be derived from the traffic volumes developed for the OR 62/Biddle Road (south end of jug handle) and other intersections, east and west of Biddle Road.

Peak Hour Development

The traffic counts obtained from ODOT were reviewed in an effort to identify a system-wide peak hour for the operational analyses. However, as indicated above, the counts were conducted in March and August of 2017 (before the OR 62 Bypass was open) and in July of 2019 (after opening the Bypass) and there is little consistency between the peak hours of the individual intersections. Therefore, the peak hour of the OR 62/Bullock Road-Poplar Road intersection will be used as the basis for the operational analyses. The traffic counts conducted at the intersection are among the most recent and the intersection is among the most central to the overall network. Also, the traffic counts show that the peak hour of the

intersection occurs from 4:30 to 5:30 PM, which generally coincides with the peak hours of the individual intersections. This peak hour will be used to complete the operational analyses at the study intersections.

Seasonal Adjustment Factor

30th Hour Volumes (30 HV) for the I-5 Exit 30 IAMP will be developed based on the traffic counts collected at the study intersections and the application of seasonal adjustment factors consistent with the methodologies identified in the APM. The APM provides three methods for identifying seasonal adjustment factors for highway traffic volumes. All three methods utilize information provided by Automatic Traffic Recorders (ATRs) positioned in select locations throughout the State Highway System that collect traffic data 24-hours a day, 365 days a year. Each method was evaluated to determine the most appropriate method for the study intersections. Based on the evaluations and input from ODOT staff, the On-Site ATR method will be used for the study intersections located east of I-5 (including the ramp terminals) and the Seasonal Trend Table method will be used for the study intersections located west of I-5. The results of the evaluations and proposed approach are summarized below.

On-Site ATR Method

The On-Site ATR method requires that the ATR be located within or near the project area. If the ATR is located outside the project area, there should be no major intersections between the ATR and the project area and the Average Annual Daily Traffic (AADT) collected by the ATR must be within 10 percent of the AADT within the project area. Information on AADT for highway segments throughout Oregon can be found in ODOT's Traffic Volume Tables (TVT). Based on a review of ATR stations within the IMSA, the North Medford ATR (#15-017) was selected for the study intersections located east of I-5. The following provides a summary of the ATR and associated seasonal adjustment factor.

The North Medford ATR (#15-017) is located along OR 62, approximately 0.60 miles east of I-5. The ATR was installed in July 1995 and has traffic count data for the last 24 years. Based on data provided by the ATR, the peak month varies from June to August to October between 2014 and 2018. The highest percent of Average Daily Traffic between these months was in August, and therefore, August was selected as the peak month. Given that the traffic counts were collected at the study intersections in March, July, and August, the seasonal adjustment factors for intersections will also vary. Table 2 summarizes the percent of Average Daily Traffic (ADT) at the ATR for the past five years and the seasonal adjustment factors by month based on the data from the North Medford ATR (#15-017).

Table 2: Seasonal Adjustment Factors - North Medford ATR (#15-017)

Year	2014	2015	2016	2017	2018	Average	Seasonal Adjustment
Peak Month (August)	105	102	99	100	105	102.33	N/A
Count Month (March)	98	98	98	97	98	98.00	1.04
Count Month (July)	101	102	100	100	100	100.33	1.02
Count Month (August)	105	102	99	100	105	102.33	1.00

Note: Shaded values dropped from average calculation per ODOT methodology. Calculations are based on the percentage of ADT from the peak month divided by the percentage of ADT from the count month.

Seasonal Trend Table Method

The Seasonal Trend Table Method uses average values from ATRs with similar seasonal traffic trends to develop seasonal adjustment factors. Based on a review of regional and local traffic trends and input from ODOT staff, the average values for the Commuter seasonal traffic trend were used to develop seasonal adjustment factors for the study intersections located west of I-5. Table 3 summarizes the count date, daily/monthly factor, peak period seasonal factor, and seasonal adjustment factor for the study intersections based on date provided in ODOT's 2018 Seasonal Trend Table.

Table 3: Seasonal Adjustment Factors – 2018 Seasonal Trend Table, Commuter

Intersection	Count Date	Daily/Monthly Factor	Peak Period Seasonal Factor	Seasonal Adjustment Factor
1. OR 99 / Table Rock	July 10, 2019	0.9614	0.9438	1.0186
2. OR 62-OR 238 / OR 99-Court Street-N Riverside Avenue	March 14, 2017	1.0189	0.9438	1.0795
3. OR 62 / Rogue Valley Mall entrance (west)	March 13, 2017	1.0201	0.9438	1.0812
4. OR 62 / Rogue Valley Mall entrance (east, at Target)	March 15, 2017	1.0173	0.9438	1.0779

Historical Growth Factor

As indicated above, traffic counts were conducted at 11 of the 15 study intersections in 2017 and at the remaining three study intersections in 2019. Therefore, all the traffic counts will require an adjustment to reflect the current year, 2020. Per the APM, the adjustment process utilizes data from the Future Volume Tables (FVT), which are updated annually. Although an R-squared value of 0.75 is preferred, an R-squared value of 0.5 or higher is acceptable. If the R-square value is unacceptable, then the location with similar characteristics and within a nearby location should be substituted. In areas covered by a Travel Demand Model, the R-square value is replaced by the word "model" and requires a growth rate determined by the model. Based on the data provided in ODOT's FVT, the annual growth rate for all study intersections will be calculated based on the growth in intersection approach volumes obtained from the currently accepted Rogue Valley Metropolitan Planning Organization (RVMPO) travel demand model.

Forecast Traffic Volumes

The horizon year for the I-5 Exit 30 IAMP will be 2042. Forecast traffic volumes for the study intersections will be developed based on the existing traffic counts and information provide in the RVMPO travel demand model. The RVMPO travel demand model provides base year 2010 and forecast year 2040 traffic volume projections for study area roadways that reflect anticipated land use changes and planned transportation improvements within the study area. The forecast traffic volumes will be developed by applying the post-processing methodology identified in the National Cooperative Highway Research Program (NCHRP) Report 255 Highway Traffic Data for Urbanized Area Project Planning and Design, in conjunction with engineering judgment and knowledge of the study area. The methodology combines the existing traffic counts with base and future year traffic volume projections and derives forecast traffic volumes along the study area roadways and at the study intersections.

TRAFFIC ANALYSIS

This section documents the mobility standards and targets that will be used to evaluate the performance of the study intersections and to identify potential alternatives to address operational issues on ODOT and local facilities.

ODOT Mobility Targets

ODOT uses volume-to-capacity (v/c) ratios (mobility targets) to assess intersection operations. Table 6 of the *Oregon Highway Plan* (OHP – Reference 3) and Table 10-2 of the *Oregon Highway Design Manual* (HDM – Reference 4) provide maximum v/c ratios for all signalized and unsignalized intersections located outside the Portland metropolitan area. The OHP ratios are used to evaluate existing and future no-build conditions, while the HDM ratios are used in the creation of future alternatives which involve projects along state highways. The ODOT controlled intersections within the study area are located along OR 62, OR 99, and OR 238. The following provides a summary of the state highway classifications, freight route designations, and other roadway characteristics at each of the study intersection that help determine the v/c ratio.

1. OR 99/Table Rock Road – The east and west legs of OR 99 are classified as District Highways within an MPO. The north and south legs are City facilities. Therefore, ODOT's District/Local Interest Road mobility target will be applied.
2. OR 62/OR 238/OR 99/Court Street/N. Riverside Avenue – The west and south legs of the intersection (OR 99 and OR 238) are classified as District Highways and the north leg (OR 62) is classified as a Statewide Highway within an MPO. The east legs are City facilities. Therefore, ODOT's Statewide (not a Freight Route) mobility target will be applied.
3. OR 62/Rogue Valley Mall entrance (west) – The north and south legs of the intersection are classified as Statewide Highways within an MPO. The east leg is a private entrance to the Rogue Valley Mall. Therefore, ODOT's Statewide (not a Freight Route) mobility target will be applied.
4. OR 62/Rogue Valley Mall entrance (east, at Target) – The north and south legs of the intersection are classified as Statewide Highways within an MPO. The east leg is a private entrance to Target and the Rogue Valley Mall. The intersection is also unsignalized. Therefore, ODOT's Statewide (not a Freight Route) mobility target will be applied to the north and south approaches and ODOT's District/Local Interest Roads mobility target will be applied to the east approach.
5. OR 62/I-5 Southbound Ramp Terminal – The north and south legs of the intersection are classified as Statewide Highways within an MPO. The east and west legs are the I-5 southbound on and off ramps. The intersection is a ramp terminal, therefore, ODOT's interchange ramp terminals mobility target will be applied.
6. OR 62/I-5 Northbound Ramp Terminal – The north and south legs of the intersection are classified as Statewide Highways and designated OHP freight routes within an MPO. The east and west legs are the I-5 northbound on and off ramps. The intersection is a ramp terminal, therefore, ODOT's interchange ramp terminal mobility target will be applied.

7. OR 62/Biddle Road (north end of the jug handle) – The north and south legs of the intersection are classified as Statewide Highways and designated OHP freight routes within an MPO. The east leg is classified as Local Interest Road within an MPO. The intersection is also unsignalized. Therefore, ODOT's Freight Route on a Statewide Highway mobility target will be applied to the north and south approaches and ODOT's District/Local Interest Roads mobility target will be applied to the east approach.
8. OR 62/Biddle Road (south end of the jug handle) - The north, south, and east legs of the intersection are classified as Local Interest Roads within an MPO. Therefore, ODOT's District/Local Interest Road mobility target will be applied.
9. Biddle Road/Hilton Court – The north, south, east, and west legs of the intersection are classified as Local Interest Roads within an MPO. Therefore, ODOT's District/Local Interest Roads mobility target will be applied.
10. OR 62/Hilton Court-Fred Meyer Parking Lot Entrance – The north and south legs of the intersection are classified as Statewide Highways and designated OHP freight routes within an MPO. The east and west legs are classified as Local Interest Roads within an MPO. The intersection is also unsignalized. Therefore, ODOT's Freight Route on a Statewide Highway mobility target will be applied at the north and south approaches and ODOT's District/Local Interest Roads mobility target will be applied at the east and west approaches.
11. OR 62/Bullock Road/Poplar Drive – The north and south legs of the intersection are classified as Statewide Highways and designated OHP freight routes within an MPO. The north leg is also classified as an OHP Expressway. The east and west legs are City facilities. Therefore, ODOT's Statewide Expressways mobility target will be applied.
12. OR 62/Sky Park Drive – The north and south legs of the intersection are classified as Statewide Highways, OHP Expressways, and designated OHP freight routes within an MPO. The east leg is a City facility. The intersection is also unsignalized. Therefore, ODOT's Statewide Expressway mobility target will be applied to the north and south approaches and ODOT's District/Local Interest Roads mobility target will be applied to the east approach.
13. OR 62/Whittle Avenue – The north and south legs of the intersection are classified as Statewide Highways within an MPO. The east leg is a City facility. The intersection is also unsignalized. Therefore, ODOT's Statewide (not a Freight Route) mobility target will be applied to the north and south approaches and ODOT's District/Local Interest Roads mobility target will be applied to the east approach.
14. OR 62/Delta Waters Road – The north and south legs of the intersection are classified as Statewide Highways within an MPO. The east and west legs are City facilities. Therefore, ODOT's Statewide (not a Freight Route) mobility target will be applied.

Table 4 summarizes the v/c ratios that will be used to identify the existing and potential future operational issues at the ODOT study intersections.

Table 4: ODOT Mobility Targets

Map ID	Intersection	Traffic Control	OHP Mobility Target	HDM Standard
1	OR 99 / Table Rock	Signal	0.95	0.85

2	OR 62-OR 238 / OR 99-Court Street-N Riverside Avenue	Signal	0.90	0.80
3	OR 62 / Rogue Valley Mall entrance (west)	Signal	0.90	0.80
4	OR 62 / Rogue Valley Mall entrance (east, at Target)	Unsignalized	0.90 N-S/0.95 E-W	0.80 N-S/0.85 E-W
5	OR 62 / I-5 Southbound Ramp Terminal	Signal (Terminal)	0.85[1]	0.75
6	OR 62 / I-5 Northbound Ramp Terminal	Signal (Terminal)	0.85[1]	0.75
7	OR 62 / Biddle Road (north end of jug handle)	Unsignalized	0.85 N-S/0.95 E-W	0.75 N-S/0.85 E-W
8	OR 62 / Biddle Road (south end of jug handle)	Signal	0.95	0.85
9	Biddle Road / Hilton Court	Signal	0.95	0.85
10	OR 62/Hilton Court-Fred Meyer Parking Lot Entrance	Unsignalized	0.85 N-S/0.9 5E-W	0.75 N-S/0.85 E-W
11	OR 62 / Bullock Road-Poplar Drive	Signal	0.85	0.75
12	OR 62 / Sky Park Drive	Unsignalized	0.85 N-S/0.95 E-W	0.80 N-S/0.85 E-W
13	OR 62 / Whittle Avenue	Unsignalized	0.90 N-S/0.95 E-W	0.80 N-S/0.85 E-W
14	OR 62 / Delta Waters Road	Signal	0.90	0.80

1. This mobility target may be increased to as much as 0.90 through the IAMP adoption process.

City of Medford Mobility Standards

The City of Medford uses Level of Service (LOS) to assess intersection operations. The City's current TSP sets a maximum LOS Standard of D for all the signalized and unsignalized intersections within the IMSA. Table 5 summarizes the LOS standards that will be used to identify existing and potential future operational issues at the City study intersection.

Table 5: City Mobility Standards

Map ID	Intersection	Traffic Control	Mobility Standard
15	Poplar Drive / Hilton Road	Unsignalized	LOS D

Traffic operations at the study intersections will be evaluated based on the mobility targets and standards shown in Table 4 and Table 5. Potential solutions will be identified and evaluated for the study intersections that are found to exceed the mobility targets and standards under existing and future traffic conditions.

ANALYSIS PARAMETERS

The bullets below identify the specific sources of data and methodologies proposed to conduct the operational analysis. Analysis of all state facilities will be conducted according to the APM, unless otherwise agreed upon by the City and ODOT.

1. *Intersection/Roadway Geometry* (number of lanes, lane configurations, cross-section elements, etc.) will be collected through aerial photography and confirmed through a site visit. Available as-built data may also be used to verify existing roadway geometry. The analysis models will be built on scaled roadway line work from GIS or aerial photography.
2. *Operational Data* (posted speeds, intersection control, parking maneuvers, transit operations, rail crossings, right-turn on red, etc.) will be collected through aerial photography and confirmed through Oregon digital video log, straight line charts, GIS data, and local knowledge

3. *Peak Hour Factors* (PHF) will be calculated for each intersection and applied to the existing conditions analysis. Per the APM, PHF's of 0.95 will be used for the year 2042 analysis for major arterial to major arterial facilities, with 0.92 applied to major arterial to minor arterial facilities, 0.90 applied to minor arterial to minor arterial facilities, 0.88 applied to minor arterial to collector arterials, and 0.85 applied to collector to collector or lower classification roads. If the existing PHF is greater than these default future values, the existing PHF will be applied.
4. *Traffic Volume* development is described above.
5. *Signal Timing Data* (phasing, coordination, clearance timing, etc.) will be obtained from ODOT and the City for signalized intersections on State and City facilities.
6. *Traffic Operations*
    a. The methodologies identified in the Highway Capacity Manual 6th Edition (HCM – Reference 5) will be used to analyze traffic operations at the study intersections, along mainline segments, and merge/diverge/weaving sections on I-5.
    b. Synchro 10 will be used to conduct the traffic operations analyses. Synchro 10 is a software tool designed to assist with operations analyses in accordance with HCM 6th Edition methodologies. Level-of-service (LOS), Delay (del), and Volume to Capacity (v/c) will be reported at all intersections regardless of jurisdiction. The LOS, del, and v/c will be reported for the overall intersection at signalized intersections and the critical movement at unsignalized intersections – the overall intersection v/c ratios will be calculated manually in accordance with the methodology identified in the APM. Failing, unsignalized intersections will be evaluated using ODOT's ADT-based preliminary signal warrants and the Manual on Uniform Traffic Control Devices (MUTCD Warrant 1).
    c. Microsimulation (SimTraffic) will be used to evaluate corridor delays and 95th-percentile queues. The SimTraffic model will be calibrated in accordance with the methodology identified in the APM.

TRAFFIC ANALYSIS SOFTWARE AND INPUT ASSUMPTIONS

Synchro 10 will be used for the traffic analysis. The reported results will include LOS, delay, and v/c ratios generated by the HCM report. Analysis assumptions are listed in Table 6.

Table 6: Operations Parameters/Assumptions

Arterial Intersection Parameters	Existing Conditions
Peak Hour Factor	From traffic counts
Conflicting Bikes and Pedestrian per Hour	From traffic counts, as available
Area Type	Other
Ideal Saturation Flow Rate (for all movements)	1,750 passenger cars per hour per lane
Lane Width	12 feet unless field observations suggest otherwise
Percent Heavy Vehicles	From traffic counts by movement, as available
Percent Grade	Estimated based on field observations
Parking Maneuvers per Hour	Estimated based on field observations
Bus Blockages	Estimated based on frequency of service
95th percentile vehicle queues	Synchro/SimTraffic summary output

CRASH ANALYSIS

The five most recent years of crash data will be obtained from ODOT's crash database and reviewed at the study intersections and along state and non-state roadway segments within the IMSA, consistent with the methodologies outlined in the APM.

The crash data will be analyzed to identify potential crash patterns (such as crash types and locations). Crash rates and critical crash rates will be developed as applicable. Intersection crash rates will be compared to the published 90th-percentile crash rates in Exhibit 4.1 of the APM, and segment crash rates will be compared to Table II in the current ODOT Crash Rate Tables. In addition, ODOT's top 10% ODOT Safety Priority System sites will be reviewed, as appropriate. Identified potential countermeasures (and resulting crash percentage reduction) will be taken from the All Roads Transportation Safety (ARTS) Crash Reduction Factors (CRF) listing or the CRF Appendix when available. Excess Proportion of Specific Crash Types methodologies will also be applied to the study intersections to identify crash types in excess.

MULTIMODAL ANALYSIS

The multimodal analysis will be performed in accordance with the simplified Multimodal Level-of-Service (LOS) analysis methodologies identified in Chapter 14 of the APM for pedestrian, bicycle, and public transportation facilities and services. Per the APM, these methodologies are intended for use when a detailed analysis is desired or when a no-build alternative is compared to one or more build alternatives. These methodologies are not meant for defining overall needs or making prioritization decisions, rather they are meant for evaluating alternatives.

Multimodal LOS scores are based on user perceptions (traveler satisfaction) and are graded from best (LOS A) to worst (LOS F). The following summarizes the variables used to develop the multimodal LOS scores for each mode:

- **Pedestrian LOS** – The simplified methodology uses four variables to estimate Pedestrian LOS. The analysis is intended to be applied on road segments on a per direction basis like most HCM-based methods. The variables and their category values include:
    - Sidewalk (Actual) Width (0-5 ft or >5 ft)
    - Directional Traffic Volume (0-500 vph, 500-1500 vph, or >1500 vph)
    - Number of (Through) Traffic Lanes per direction (1, 2, 3, or 4)
    - (Posted) Speed Limit (20-40 mph or >40 mph)
- **Bicycle LOS** – The simplified methodology uses four variables to estimate Bicycle LOS. The analysis is intended to be applied on road segments on a per direction basis like most HCM-based methods. Segments can be defined between major intersections or as desired. The variables and their category values include:
    - Number of Through Traffic Lanes per direction (1 or >1)
    - Bike Lane or Paved Shoulder Present (Yes or No)
    - (Posted) Speed Limit (<= 30 mph or >30 mph)
    - Unsignalized Conflicts (Yes or No)

- **Transit LOS** – The simplified methodology uses four variables to estimate Transit LOS. The analysis is intended to be applied on road segments within the study area that have applicable fixed-route transit service. The variables include:
    - Transit Schedule Speed
    - Transit Frequency
    - Passenger Load Factor
    - Pedestrian LOS

The data values for the multimodal LOS analysis will be obtained from inventories and aerial photographs of the study area. The data values will be entered into the simplified multimodal LOS calculator developed by ODOT to obtain the cumulative probabilities which are subtracted from one another to obtain the LOS probabilities. The highest probability will be chosen as the most-likely LOS. The calculator will highlight any probabilities that falls within 90% of the highest value. If the next highest probability is within this range, assume that this is a LOS range (i.e. LOS E-F) with a total probability that is the sum of the individual probabilities. The results will be shown in tables and in GIS-created maps.

REFERENCES

1. Oregon Department of Transportation. *Interchange Area Management Plan Guidelines,* 2013.
2. Oregon Department of Transportation. *Analysis Procedures Manual*, 2018.
3. Oregon Department of Transportation. *Oregon Highway Plan*, 2015.
4. Oregon Department of Transportation. *Highway Design Manual*, 2012.
5. Transportation Research Board. *Highway Capacity Manual, 6th Edition*, 2016.

ATTACHMENTS

A. Traffic Counts

Attachment A Traffic Counts

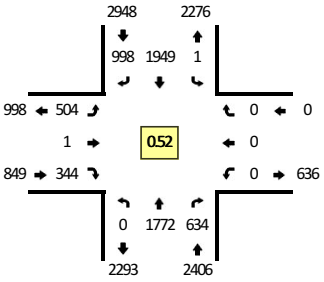
Type of peak hour being reported: Intersection Peak

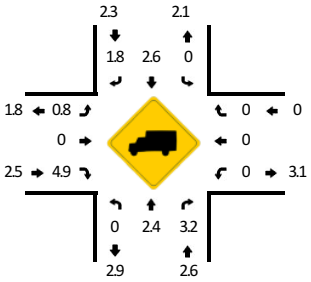
Method for determining peak hour: Total Entering Volume

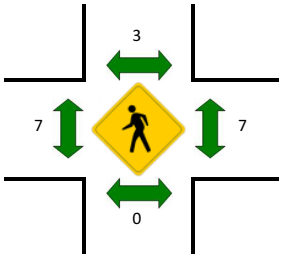
LOCATION: 37160. OR-62 -- I-5 SB Ramps
CITY/STATE: Jackson, OR

QC JOB #: 15143701
DATE: Wed, Aug 9 2017

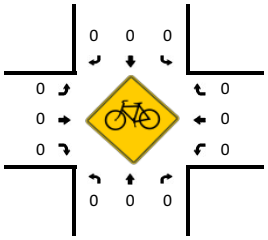
Peak-Hour: 5:15 PM -- 6:15 PM
Peak 15-Min: 6:00 PM -- 6:15 PM

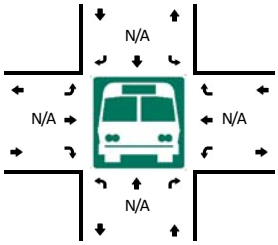


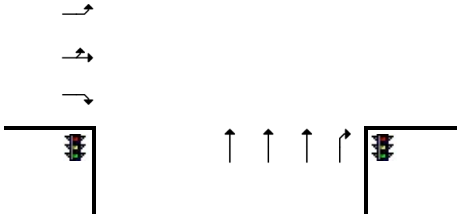


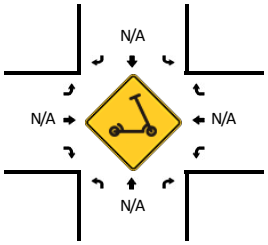












15-Min Count Period Beginning At	37160. OR-62 (Northbound)				37160. OR-62 (Southbound)				I-5 SB Ramps (Eastbound)				I-5 SB Ramps (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	0	336	192	0	0	399	264	0	128	0	142	0	0	0	0	0	1461	
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1461
7:00 AM	0	687	359	0	0	801	534	0	357	2	259	0	0	0	0	0	2999	2999
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2999
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2999
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2999
8:00 AM	0	740	335	0	0	777	496	0	337	3	184	0	0	0	0	0	2872	2872
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2872
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2872
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2872
9:00 AM	0	849	286	0	0	807	458	0	279	1	192	0	0	0	0	0	2872	2872
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2872
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2872
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2872
10:00 AM	0	932	287	0	0	994	438	0	298	1	180	0	0	0	0	0	3130	3130
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3130
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3130
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3130
11:00 AM	0	1108	365	0	0	1146	433	0	276	4	202	0	0	0	0	0	3534	3534
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3534
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3534
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3534
12:00 PM	0	1202	394	0	0	1263	551	0	288	1	209	0	0	0	0	0	3908	3908
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3908
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3908
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3908
1:00 PM	0	1216	431	0	0	1236	568	0	296	0	182	0	0	0	0	0	3929	3929
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3929
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3929
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3929
2:00 PM	0	292	97	0	0	316	161	0	66	1	37	0	0	0	0	0	970	970
2:15 PM	0	318	97	0	0	337	142	0	69	0	55	0	0	0	0	0	1018	1988
2:30 PM	0	279	109	0	0	336	138	0	101	0	59	0	0	0	0	0	1022	3010
2:45 PM	0	331	100	0	0	330	152	0	86	1	76	0	0	0	0	0	1076	4086
3:00 PM	0	326	89	0	0	321	133	0	62	1	45	0	0	0	0	0	977	4093
3:15 PM	0	304	107	0	0	359	167	0	69	1	54	0	0	0	0	0	1061	4136
3:30 PM	0	324	107	0	0	347	187	0	85	0	57	0	0	0	0	0	1107	4221

15-Min Count Period Beginning At	37160. OR-62 (Northbound)				37160. OR-62 (Southbound)				I-5 SB Ramps (Eastbound)				I-5 SB Ramps (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:45 PM	0	317	84	0	0	328	164	0	82	0	75	0	0	0	0	0	1050	4195
4:00 PM	0	329	92	0	0	393	155	0	91	0	38	0	0	0	0	0	1098	4316
4:15 PM	0	296	91	0	0	366	168	0	81	0	56	0	0	0	0	0	1058	4313
4:30 PM	0	308	117	0	1	388	218	0	85	0	53	0	0	0	0	0	1170	4376
4:45 PM	0	329	110	0	0	340	179	0	77	0	63	0	0	0	0	0	1098	4424
5:00 PM	0	346	119	0	0	390	216	0	70	0	49	0	0	0	0	0	1190	4516
5:15 PM	0	308	123	0	0	364	209	0	66	0	42	0	0	0	0	0	1112	4570
5:30 PM	0	258	92	0	0	295	199	0	102	0	55	0	0	0	0	0	1001	4401
5:45 PM	0	271	89	0	0	317	163	0	147	0	103	0	0	0	0	0	1090	4393
6:00 PM	0	935	330	0	1	973	427	0	189	1	144	0	0	0	0	0	3000	6203
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5091
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4090
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3000
7:00 PM	0	741	238	0	0	713	370	0	135	0	86	0	0	0	0	0	2283	2283
7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2283
7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2283
7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2283
8:00 PM	0	688	166	0	0	520	237	0	98	0	71	0	0	0	0	0	1780	1780
8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1780
8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1780
8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1780
9:00 PM	0	522	138	0	0	325	159	0	75	1	61	0	0	0	0	0	1281	1281
9:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1281
9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1281
9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1281

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	3740	1320	0	4	3892	1708	0	756	4	576	0	0	0	0	0	12000
Heavy Trucks	0	112	44		0	88	24		12	0	32		0	0	0		312
Buses																	
Pedestrians		0				12				12				16			40
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 12/10/2019 12:22 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: 140087. Crater Lake Hwy -- Delta Waters Rd

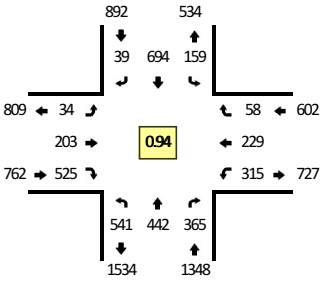
CITY/STATE: Medford, OR

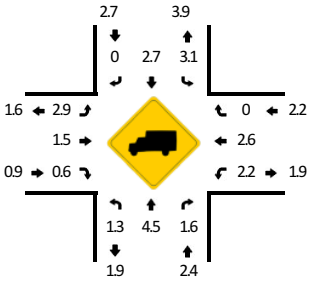
QC JOB #: 15143714

DATE: Wed, Jul 10 2019

Peak-Hour: 4:30 PM -- 5:30 PM

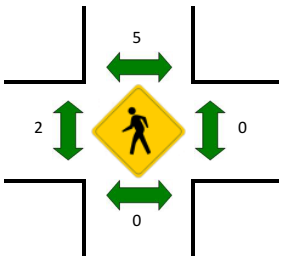
Peak 15-Min: 5:00 PM -- 5:15 PM

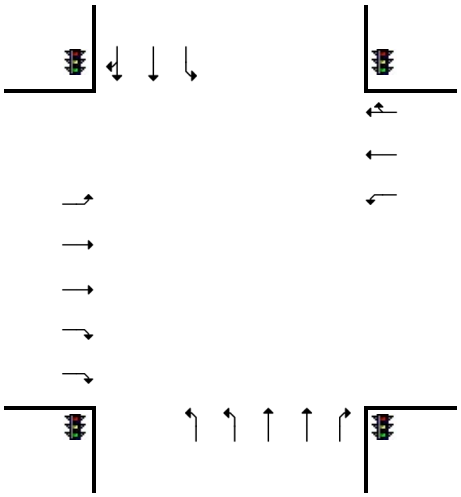


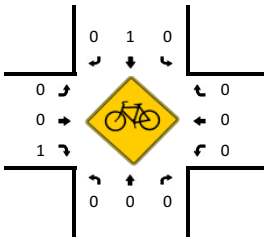


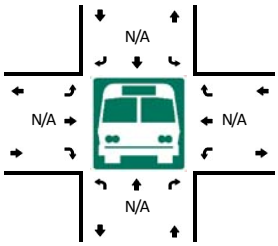
Quality Counts

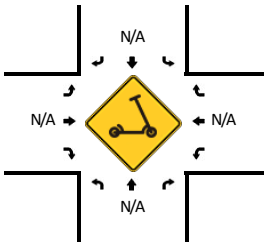
DATA THAT DRIVES COMMUNITIES











15-Min Count Period Beginning At	140087. Crater Lake Hwy (Northbound)				140087. Crater Lake Hwy (Southbound)				Delta Waters Rd (Eastbound)				Delta Waters Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	25	28	12	0	8	23	0	0	0	5	6	0	38	15	3	0	163	
6:15 AM	34	40	17	0	13	30	0	0	3	2	11	0	38	16	5	0	209	
6:30 AM	38	61	16	0	8	47	3	0	3	2	13	0	69	18	8	0	286	
6:45 AM	66	77	26	0	5	47	1	0	0	11	17	0	58	31	14	0	353	1011
7:00 AM	56	42	35	0	8	70	2	0	7	3	19	0	49	28	3	0	322	1170
7:15 AM	94	73	37	0	12	59	2	0	3	37	22	0	70	29	8	0	446	1407
7:30 AM	112	83	36	0	20	91	2	0	3	14	25	0	70	37	9	0	502	1623
7:45 AM	146	124	33	0	19	73	1	0	3	16	47	0	94	69	7	0	632	1902
8:00 AM	91	93	28	0	12	93	2	0	2	14	44	0	73	38	4	0	494	2074
8:15 AM	80	79	49	0	13	87	1	0	3	17	46	0	79	43	9	0	506	2134
8:30 AM	78	84	44	0	24	77	7	0	5	21	40	0	63	45	14	0	502	2134
8:45 AM	113	91	47	0	27	91	3	0	6	22	54	0	60	49	7	0	570	2072
9:00 AM	82	63	38	0	19	93	6	0	5	26	66	0	50	44	6	0	498	2076
9:15 AM	132	63	54	0	18	84	5	0	5	16	65	0	61	55	10	0	568	2138
9:30 AM	90	91	43	0	29	91	5	0	2	34	76	0	81	50	9	0	601	2237
9:45 AM	124	93	44	0	26	136	3	0	7	29	56	0	64	59	13	0	654	2321
10:00 AM	119	83	53	0	22	118	5	0	3	33	68	0	59	49	12	0	624	2447
10:15 AM	130	89	38	0	35	124	7	0	8	23	93	0	41	48	17	0	653	2532
10:30 AM	145	97	44	0	33	135	11	0	8	18	82	0	69	64	17	0	723	2654
10:45 AM	158	120	51	0	26	128	4	0	6	39	89	0	61	59	7	0	748	2748
11:00 AM	149	109	44	0	26	151	7	0	12	34	86	0	58	42	10	0	728	2852
11:15 AM	158	110	51	0	42	171	5	0	17	42	90	0	52	66	17	0	821	3020
11:30 AM	134	98	42	0	40	164	8	0	7	40	102	0	70	68	12	0	785	3082
11:45 AM	139	121	49	0	41	146	10	0	11	41	123	0	68	73	17	0	839	3173
12:00 PM	152	96	67	0	45	168	10	0	11	40	105	0	48	64	11	0	817	3262
12:15 PM	183	139	67	0	36	168	10	0	15	43	101	0	66	59	10	0	897	3338
12:30 PM	179	112	64	0	38	188	10	0	13	41	101	0	48	58	17	0	869	3422
12:45 PM	149	136	50	0	39	168	12	0	8	33	111	0	69	81	12	0	868	3451
1:00 PM	163	127	63	0	28	162	6	0	11	48	113	0	81	53	10	0	865	3499
1:15 PM	187	141	65	0	22	149	10	0	17	42	103	0	62	65	11	0	874	3476
1:30 PM	181	123	31	0	28	131	11	0	8	42	104	0	69	59	15	0	802	3409
1:45 PM	142	106	56	0	38	199	20	0	12	37	106	0	65	64	10	0	855	3396
2:00 PM	131	104	55	0	52	190	11	0	11	37	110	0	84	66	14	0	865	3396
2:15 PM	148	117	47	0	34	164	2	0	19	34	118	0	81	63	13	0	840	3362
2:30 PM	135	128	63	0	29	166	14	0	12	41	136	0	69	65	12	0	870	3430
2:45 PM	155	112	61	0	38	132	3	0	10	45	102	0	51	66	17	0	792	3367
3:00 PM	127	108	63	0	34	150	7	0	17	48	125	0	57	65	15	0	816	3318
3:15 PM	155	101	72	0	37	186	10	0	5	44	102	0	68	56	13	0	849	3327
3:30 PM	157	117	78	0	29	163	12	0	10	54	108	0	70	61	19	0	878	3335

15-Min Count Period Beginning At	140087. Crater Lake Hwy (Northbound)				140087. Crater Lake Hwy (Southbound)				Delta Waters Rd (Eastbound)				Delta Waters Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:45 PM	153	101	80	0	45	199	7	0	11	39	106	0	83	64	7	0	895	3438
4:00 PM	144	128	86	0	37	158	13	0	8	46	136	0	66	49	12	0	883	3505
4:15 PM	122	108	94	0	53	143	10	0	9	35	116	0	65	60	10	0	825	3481
4:30 PM	141	116	93	0	39	184	9	0	6	38	111	0	80	49	11	0	877	3480
4:45 PM	153	122	92	0	39	159	9	0	7	50	118	0	73	60	15	0	897	3482
5:00 PM	134	86	83	0	46	177	10	0	6	70	181	0	76	65	20	0	954	3553
5:15 PM	113	118	97	0	35	174	11	0	15	45	115	0	86	55	12	0	876	3604
5:30 PM	118	97	112	0	27	121	9	0	11	52	101	0	89	61	10	0	808	3535
5:45 PM	125	79	67	0	33	127	13	0	11	34	88	0	80	58	15	0	730	3368
6:00 PM	134	101	81	0	34	131	10	0	12	52	111	0	75	34	9	0	784	3198
6:15 PM	86	77	79	0	36	114	6	0	16	42	68	0	77	55	13	0	669	2991
6:30 PM	90	78	51	0	28	104	4	0	8	23	66	0	64	44	6	0	566	2749
6:45 PM	95	77	53	0	16	102	7	0	7	43	54	0	68	50	4	0	576	2595
7:00 PM	89	74	56	0	19	74	5	0	7	43	59	0	57	34	8	0	525	2336
7:15 PM	56	55	58	0	19	81	2	0	4	28	50	0	54	36	6	0	449	2116
7:30 PM	79	64	54	0	11	71	6	0	9	35	49	0	44	33	4	0	459	2009
7:45 PM	73	45	48	0	21	62	4	0	7	22	61	0	32	31	12	0	418	1851
8:00 PM	75	38	50	0	7	57	4	0	9	34	62	0	47	22	11	0	416	1742
8:15 PM	63	37	52	0	11	72	7	0	4	31	50	0	38	40	6	0	411	1704
8:30 PM	49	50	46	0	8	48	3	0	8	20	43	0	34	27	5	0	341	1586
8:45 PM	53	41	48	0	15	51	4	0	5	16	52	0	35	26	8	0	354	1522
9:00 PM	42	37	54	0	9	65	2	0	5	21	45	0	34	17	6	0	337	1443
9:15 PM	43	41	50	0	9	41	0	0	4	15	44	0	31	19	4	0	301	1333
9:30 PM	36	38	39	0	9	52	2	0	3	19	42	0	33	9	5	0	287	1279
9:45 PM	28	46	22	0	12	44	2	0	5	24	19	0	28	6	5	0	241	1166

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	536	344	332	0	184	708	40	0	24	280	724	0	304	260	80	0	3816
Heavy Trucks	8	20	4		4	20	0		0	4	0		4	0	0		64
Buses																	
Pedestrians		0				4				4				0			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 1/6/2020 11:21 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

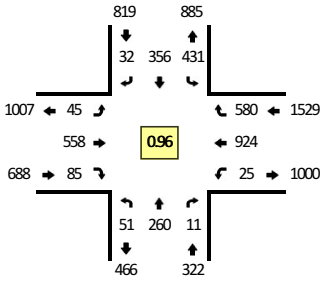
Type of peak hour being reported: Intersection Peak

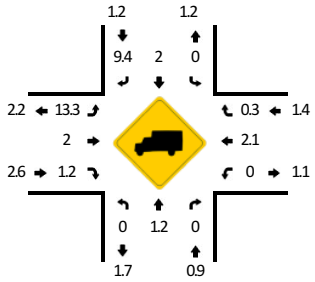
Method for determining peak hour: Total Entering Volume

LOCATION: 48748. Table Rock Rd -- Hwy 63/N Pacific Hwy
CITY/STATE: Medford, OR

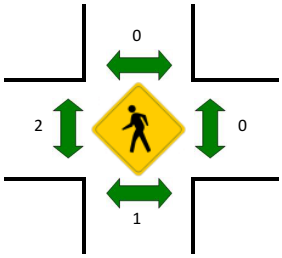
QC JOB #: 15143713
DATE: Wed, Jul 10 2019

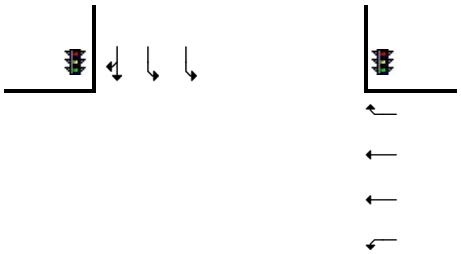
Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 5:15 PM -- 5:30 PM

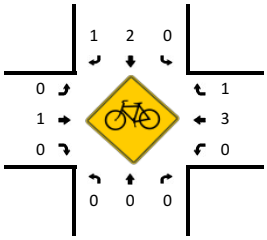


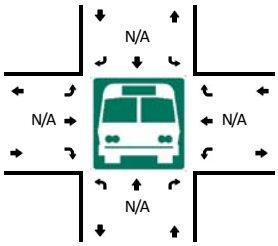


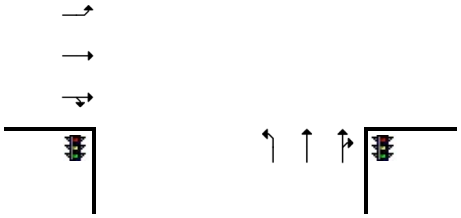
Quality Counts
DATA THAT DRIVES COMMUNITIES

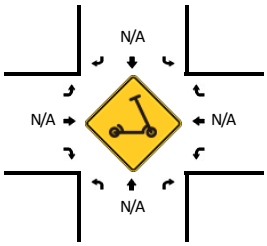












15-Min Count Period Beginning At	48748. Table Rock Rd (Northbound)				48748. Table Rock Rd (Southbound)				Hwy 63/N Pacific Hwy (Eastbound)				Hwy 63/N Pacific Hwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	7	37	2	0	28	28	3	0	1	37	6	0	1	24	18	0	192	
6:15 AM	4	18	3	0	46	26	3	0	2	66	7	0	2	53	22	0	252	
6:30 AM	6	47	1	0	65	30	5	0	2	87	11	0	1	67	28	0	350	
6:45 AM	8	41	7	0	50	69	13	0	4	87	18	0	1	75	29	0	402	1196
7:00 AM	9	47	2	0	62	46	4	0	8	85	13	0	2	61	21	0	360	1364
7:15 AM	12	52	4	0	81	63	7	0	4	101	14	0	2	96	30	0	466	1578
7:30 AM	11	53	8	0	102	74	8	0	4	175	30	0	2	79	34	0	580	1808
7:45 AM	15	45	16	0	109	59	13	0	2	186	34	0	0	128	42	0	649	2055
8:00 AM	8	55	9	0	79	56	7	0	7	117	21	0	4	91	39	0	493	2188
8:15 AM	7	52	7	0	91	45	8	0	6	139	23	0	3	107	36	0	524	2246
8:30 AM	19	40	2	0	92	55	9	0	6	133	22	0	3	108	37	0	526	2192
8:45 AM	15	35	7	0	80	36	17	0	8	150	20	0	2	119	53	0	542	2085
9:00 AM	13	39	6	0	64	36	10	0	8	112	13	0	4	101	46	0	452	2044
9:15 AM	9	34	12	0	89	43	6	0	19	107	9	0	0	106	52	0	486	2006
9:30 AM	9	25	6	0	85	38	9	0	5	109	16	0	4	110	59	0	475	1955
9:45 AM	12	46	8	0	69	41	16	0	13	134	31	0	2	118	58	0	548	1961
10:00 AM	21	55	5	0	80	41	10	0	9	127	19	0	2	140	79	0	588	2097
10:15 AM	13	42	5	0	68	57	13	0	13	130	16	0	3	130	69	0	559	2170
10:30 AM	20	37	6	0	86	54	10	0	9	127	24	0	3	124	79	0	579	2274
10:45 AM	13	40	8	0	92	56	18	0	12	131	24	0	4	165	85	0	648	2374
11:00 AM	12	38	7	0	80	64	13	0	12	111	13	0	2	178	77	0	607	2393
11:15 AM	11	39	8	0	84	48	12	0	17	154	16	0	7	158	84	0	638	2472
11:30 AM	10	64	4	0	106	60	16	0	12	153	23	0	8	176	87	0	719	2612
11:45 AM	26	48	13	0	84	57	20	0	21	163	19	0	8	196	91	0	746	2710
12:00 PM	18	65	10	0	100	58	16	0	23	160	20	0	7	195	99	0	771	2874
12:15 PM	15	56	8	0	97	63	15	0	16	144	27	0	5	195	96	0	737	2973
12:30 PM	19	51	3	0	108	61	19	0	16	159	13	0	4	193	102	0	748	3002
12:45 PM	15	49	2	0	141	66	20	0	18	169	19	0	3	195	108	0	805	3061
1:00 PM	15	55	6	0	110	61	17	0	14	153	20	0	10	182	101	0	744	3034
1:15 PM	15	42	7	0	107	56	13	0	13	151	33	0	4	205	92	0	738	3035
1:30 PM	12	64	3	0	98	73	13	0	20	153	26	0	5	177	91	0	735	3022
1:45 PM	13	44	7	0	96	56	9	0	15	160	28	0	6	196	118	0	748	2965
2:00 PM	20	47	4	0	90	80	16	0	18	129	19	0	9	203	108	0	743	2964
2:15 PM	10	48	5	0	81	79	10	0	19	129	26	0	9	179	105	0	700	2926
2:30 PM	9	34	8	0	92	84	10	0	12	136	23	0	4	196	132	0	740	2931
2:45 PM	11	73	6	0	114	67	20	0	12	144	22	0	4	168	105	0	746	2929
3:00 PM	9	61	7	0	105	81	12	0	13	120	17	0	6	202	102	0	735	2921
3:15 PM	18	71	3	0	90	67	15	0	17	140	18	0	12	203	115	0	769	2990
3:30 PM	18	44	2	0	100	66	11	0	12	137	23	0	6	195	122	0	736	2986

15-Min Count Period Beginning At	48748. Table Rock Rd (Northbound)				48748. Table Rock Rd (Southbound)				Hwy 63/N Pacific Hwy (Eastbound)				Hwy 63/N Pacific Hwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:45 PM	21	72	1	0	98	83	15	0	19	148	28	0	5	236	143	0	869	3109
4:00 PM	15	63	6	0	95	83	12	0	14	146	12	0	5	230	132	0	813	3187
4:15 PM	20	52	4	0	91	81	7	0	9	150	28	0	6	177	124	0	749	3167
4:30 PM	13	54	1	0	121	83	5	0	5	152	16	0	8	220	129	0	807	3238
4:45 PM	9	71	4	0	94	79	11	0	19	137	34	0	8	230	142	0	838	3207
5:00 PM	15	73	3	0	110	109	7	0	8	144	20	0	7	209	129	0	834	3228
5:15 PM	14	62	3	0	106	85	9	0	13	125	15	0	2	265	180	0	879	3358
5:30 PM	22	62	0	0	93	81	9	0	12	108	25	0	7	173	125	0	717	3268
5:45 PM	9	67	1	0	80	69	4	0	10	107	14	0	5	199	128	0	693	3123
6:00 PM	7	51	2	0	103	64	4	0	15	109	8	0	7	162	120	0	652	2941
6:15 PM	13	53	1	0	80	66	7	0	4	101	19	0	0	149	82	0	575	2637
6:30 PM	13	56	3	0	69	62	2	0	6	81	8	0	5	147	117	0	569	2489
6:45 PM	13	34	1	0	65	51	5	0	4	66	19	0	10	126	91	0	485	2281
7:00 PM	3	32	4	0	55	47	9	0	2	58	12	0	6	136	86	0	450	2079
7:15 PM	4	23	3	0	53	34	4	0	5	66	3	0	4	110	76	0	385	1889
7:30 PM	3	35	1	0	52	42	7	0	2	51	13	0	5	104	77	0	392	1712
7:45 PM	6	24	4	0	56	40	3	0	2	50	8	0	4	108	68	0	373	1600
8:00 PM	1	27	1	0	51	30	3	0	5	54	8	0	2	104	63	0	349	1499
8:15 PM	2	26	1	0	34	41	4	0	3	45	10	0	2	77	78	0	323	1437
8:30 PM	3	33	4	0	51	38	2	0	4	60	3	0	2	105	57	0	362	1407
8:45 PM	7	27	2	0	48	34	3	0	2	56	14	0	3	91	57	0	344	1378
9:00 PM	6	12	1	0	60	24	2	0	7	38	3	0	3	82	69	0	307	1336
9:15 PM	8	26	4	0	46	20	2	0	3	39	7	0	0	82	76	0	313	1326
9:30 PM	0	14	3	0	42	36	2	0	5	38	13	0	1	69	50	0	273	1237
9:45 PM	0	23	0	0	29	25	2	0	0	39	4	0	1	73	56	0	252	1145

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	56	248	12	0	424	340	36	0	52	500	60	0	8	1060	720	0	3516
Heavy Trucks	0	4	0		0	4	0		12	4	0		0	12	0		36
Buses																	
Pedestrians		0				0				4				0			4
Bicycles	0	0	0		0	1	0		0	1	0		0	2	0		4
Scooters																	

Comments:

Report generated on 1/6/2020 11:21 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

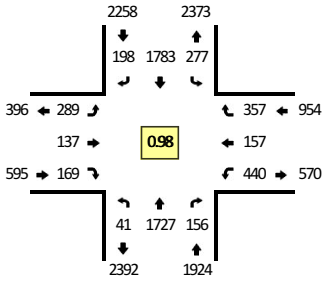
Type of peak hour being reported: Intersection Peak

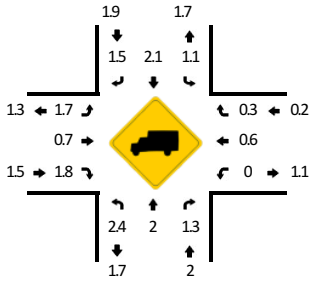
Method for determining peak hour: Total Entering Volume

LOCATION: 37163. OR-62 -- Poplar Dr
CITY/STATE: Medford, OR

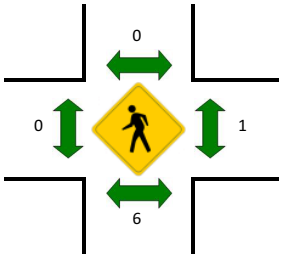
QC JOB #: 15143712
DATE: Wed, Jul 10 2019

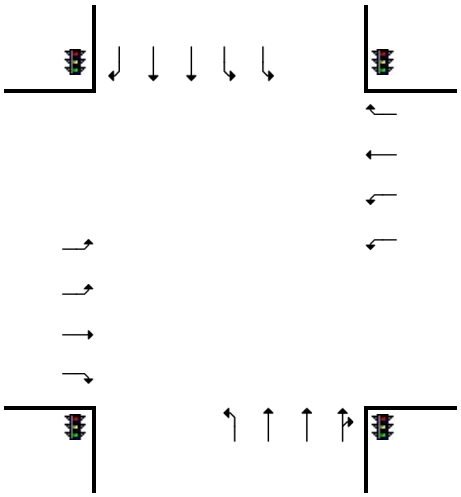
Peak-Hour: 4:45 PM -- 5:45 PM
Peak 15-Min: 5:00 PM -- 5:15 PM

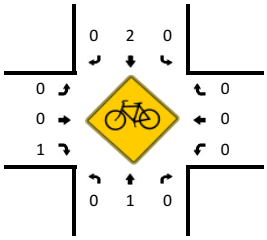


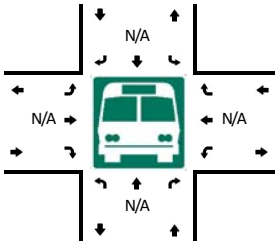


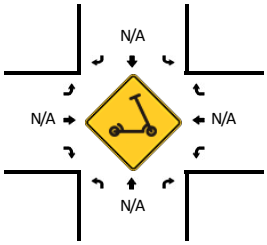
Quality Counts
DATA THAT DRIVES COMMUNITIES











15-Min Count Period Beginning At	37163. OR-62 (Northbound)				37163. OR-62 (Southbound)				Poplar Dr (Eastbound)				Poplar Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	5	107	7	0	16	144	15	0	10	5	2	0	30	3	6	0	350	
6:15 AM	4	140	5	0	16	165	5	0	10	5	1	0	27	12	15	0	405	
6:30 AM	5	177	20	0	29	259	19	0	8	1	2	0	37	10	18	0	585	
6:45 AM	13	215	20	0	31	228	33	0	19	8	1	0	41	11	18	0	638	1978
7:00 AM	20	209	25	0	34	243	18	0	15	4	1	0	48	9	16	0	642	2270
7:15 AM	16	201	12	0	53	263	37	0	29	10	4	0	55	17	24	0	721	2586
7:30 AM	15	306	33	0	50	371	34	0	39	14	6	0	55	17	32	0	972	2973
7:45 AM	14	380	33	0	72	382	45	0	27	20	8	0	62	24	37	0	1104	3439
8:00 AM	14	217	18	0	47	264	47	0	26	17	7	0	66	20	23	0	766	3563
8:15 AM	9	281	22	0	57	312	40	0	39	9	8	0	43	14	23	0	857	3699
8:30 AM	11	220	18	0	57	238	40	0	47	9	6	0	63	30	30	0	769	3496
8:45 AM	17	277	35	0	45	261	45	0	36	29	4	0	52	31	31	0	863	3255
9:00 AM	6	226	36	0	39	238	28	0	42	20	16	0	54	21	30	0	756	3245
9:15 AM	12	313	30	0	61	252	31	0	42	16	15	0	57	17	44	0	890	3278
9:30 AM	14	306	31	0	62	295	40	0	34	26	8	0	62	38	40	0	956	3465
9:45 AM	16	314	32	0	71	302	46	0	46	15	25	0	47	27	40	0	981	3583
10:00 AM	10	253	33	0	54	258	37	0	55	31	13	0	67	27	55	0	893	3720
10:15 AM	15	276	43	0	74	277	44	0	48	21	11	0	69	38	51	0	967	3797
10:30 AM	14	353	43	0	64	293	57	0	47	31	11	0	72	28	49	0	1062	3903
10:45 AM	17	316	47	0	64	322	51	0	61	25	9	0	74	31	58	0	1075	3997
11:00 AM	22	314	36	0	62	291	46	0	51	29	12	0	86	23	71	0	1043	4147
11:15 AM	11	312	44	0	75	318	45	0	59	21	16	0	86	34	60	0	1081	4261
11:30 AM	30	306	42	0	75	350	47	0	53	36	18	0	79	27	66	0	1129	4328
11:45 AM	18	342	40	0	82	363	49	0	62	27	16	0	73	34	64	0	1170	4423
12:00 PM	10	362	51	0	82	317	45	0	59	29	27	0	95	36	74	0	1187	4567
12:15 PM	13	346	46	0	91	325	54	0	82	31	19	0	87	36	95	0	1225	4711
12:30 PM	14	337	57	0	74	353	48	0	62	32	23	0	123	38	74	0	1235	4817
12:45 PM	21	400	52	0	74	327	66	0	52	23	16	0	91	32	72	0	1226	4873
1:00 PM	14	371	49	0	79	373	46	0	53	30	17	0	93	39	91	0	1255	4941
1:15 PM	15	349	49	0	90	365	51	0	62	15	10	0	87	37	99	0	1229	4945
1:30 PM	9	341	42	0	88	303	65	0	65	31	13	0	105	30	96	0	1188	4898
1:45 PM	14	341	41	0	89	346	51	0	52	32	12	0	102	41	68	0	1189	4861
2:00 PM	21	376	50	0	70	349	50	0	55	24	15	0	96	35	79	0	1220	4826
2:15 PM	19	374	39	0	72	401	43	0	50	24	9	0	79	37	82	0	1229	4826
2:30 PM	14	347	42	0	82	351	52	0	68	31	18	0	107	40	91	0	1243	4881
2:45 PM	17	428	55	0	61	335	43	0	76	25	19	0	83	43	80	0	1265	4957
3:00 PM	17	384	37	0	78	370	45	0	55	30	20	0	100	45	74	0	1255	4992
3:15 PM	18	353	45	0	68	337	39	0	66	34	17	0	110	32	92	0	1211	4974
3:30 PM	20	452	44	0	83	391	48	0	68	22	15	0	88	28	78	0	1337	5068

15-Min Count Period Beginning At	37163. OR-62 (Northbound)				37163. OR-62 (Southbound)				Poplar Dr (Eastbound)				Poplar Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:45 PM	21	396	40	0	100	413	46	0	52	30	15	0	117	35	77	0	1342	5145
4:00 PM	9	406	45	0	64	352	45	0	89	36	26	0	133	51	88	0	1344	5234
4:15 PM	13	452	51	0	74	390	45	0	60	27	16	0	81	29	89	0	1327	5350
4:30 PM	11	325	37	0	84	415	50	0	91	34	35	0	126	50	99	0	1357	5370
4:45 PM	13	475	41	0	66	409	43	0	75	32	34	0	110	33	70	0	1401	5429
5:00 PM	5	415	31	0	81	485	44	0	72	41	55	0	99	38	95	0	1461	5546
5:15 PM	11	405	42	0	65	414	49	0	78	35	37	0	123	53	101	0	1413	5632
5:30 PM	12	432	42	0	65	475	62	0	64	29	43	0	108	33	91	0	1456	5731
5:45 PM	11	352	45	0	62	338	55	0	53	20	11	0	108	34	89	0	1178	5508
6:00 PM	8	307	35	0	47	306	49	0	65	27	13	0	91	38	76	0	1062	5109
6:15 PM	10	347	45	0	62	284	40	0	46	10	8	0	77	28	58	0	1015	4711
6:30 PM	7	245	40	0	57	247	28	0	48	17	12	0	93	36	38	0	868	4123
6:45 PM	5	230	36	0	47	213	45	0	43	17	8	0	70	19	53	0	786	3731
7:00 PM	6	212	22	0	56	214	32	0	33	17	7	0	71	19	51	0	740	3409
7:15 PM	9	198	30	0	31	200	25	0	34	12	5	0	64	19	42	0	669	3063
7:30 PM	7	213	37	0	44	170	27	0	34	11	1	0	71	23	36	0	674	2869
7:45 PM	4	189	30	0	44	165	23	0	31	10	4	0	43	15	37	0	595	2678
8:00 PM	6	201	16	0	24	170	19	0	35	9	3	0	50	8	30	0	571	2509
8:15 PM	8	180	16	0	21	165	30	0	35	4	4	0	44	19	27	0	553	2393
8:30 PM	5	172	20	0	29	142	23	0	27	15	5	0	30	10	33	0	511	2230
8:45 PM	1	181	21	0	27	160	12	0	22	17	9	0	43	7	33	0	533	2168
9:00 PM	6	168	19	0	37	136	24	0	28	10	6	0	41	3	24	0	502	2099
9:15 PM	3	138	17	0	26	131	13	0	20	13	1	0	37	7	24	0	430	1976
9:30 PM	6	121	12	0	27	112	17	0	26	7	4	0	31	8	26	0	397	1862
9:45 PM	6	107	13	0	13	122	11	0	19	6	2	0	36	8	17	0	360	1689

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	20	1660	124	0	324	1940	176	0	288	164	220	0	396	152	380	0	5844
Heavy Trucks	0	16	4		4	28	0		0	4	4		0	0	4		64
Buses																	
Pedestrians		8				0				0				0			8
Bicycles	0	0	0		0	0	0		0	0	1		0	0	0		1
Scooters																	

Comments:

Report generated on 1/6/2020 11:21 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

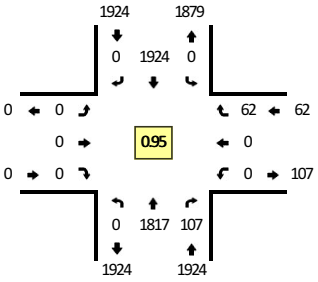
Type of peak hour being reported: Intersection Peak

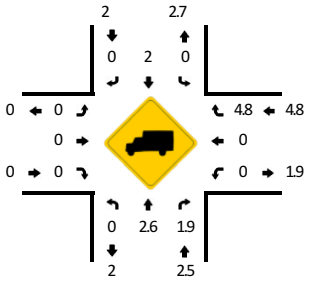
Method for determining peak hour: Total Entering Volume

LOCATION: 110084. OR-62 -- Whittle Ave
CITY/STATE: Jackson, OR

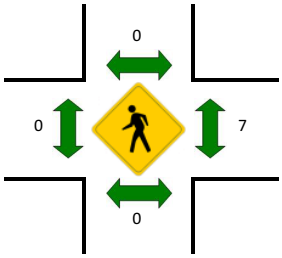
QC JOB #: 15143711
DATE: Fri, Mar 17 2017

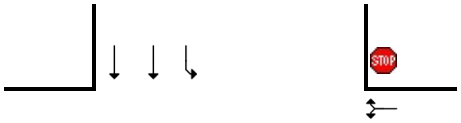
Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 5:15 PM -- 5:30 PM

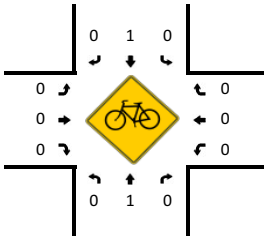


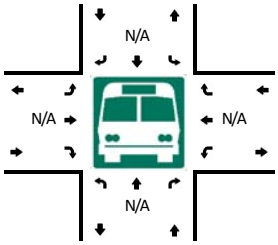


Quality Counts
DATA THAT DRIVES COMMUNITIES

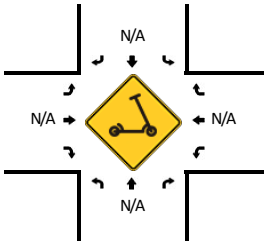












15-Min Count Period Beginning At	110084. OR-62 (Northbound)				110084. OR-62 (Southbound)				Whittle Ave (Eastbound)				Whittle Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
2:00 PM	0	440	13	0	0	419	0	0	0	0	0	0	0	0	13	0	885	
2:15 PM	0	429	15	0	0	419	0	0	0	0	0	0	0	0	9	0	872	
2:30 PM	0	388	16	0	0	445	0	0	0	0	0	0	0	0	10	0	859	
2:45 PM	0	429	8	0	0	420	0	0	0	0	0	0	0	0	21	0	878	3494
3:00 PM	0	439	23	0	0	403	0	0	0	0	0	0	0	0	12	0	877	3486
3:15 PM	0	396	20	0	0	452	0	0	0	0	0	0	0	0	15	0	883	3497
3:30 PM	0	449	25	0	0	486	0	0	0	0	0	0	0	0	12	0	972	3610
3:45 PM	0	451	18	0	0	414	0	0	0	0	0	0	0	0	15	0	898	3630
4:00 PM	0	445	25	0	0	473	0	0	0	0	0	0	0	0	9	0	952	3705
4:15 PM	0	479	22	0	0	445	0	0	0	0	0	0	0	0	12	0	958	3780
4:30 PM	0	445	21	0	0	456	0	0	0	0	0	0	0	0	21	0	943	3751
4:45 PM	0	465	31	0	0	442	0	0	0	0	0	0	0	0	14	0	952	3805
5:00 PM	0	457	31	0	0	484	0	0	0	0	0	0	0	0	12	0	984	3837
5:15 PM	0	450	24	0	0	542	0	0	0	0	0	0	0	0	15	0	1031	3910
5:30 PM	0	451	20	0	0	426	0	0	0	0	0	0	0	0	16	0	913	3880
5:45 PM	0	392	24	0	0	351	0	0	0	0	0	0	0	0	11	0	778	3706

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	1800	96	0	0	2168	0	0	0	0	0	0	0	0	60	0	4124
Heavy Trucks	0	24	0		0	52	0		0	0	0		0	0	0		76
Buses																	
Pedestrians		0				0				0				8			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 12/10/2019 12:22 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

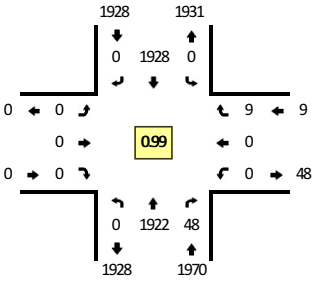
Type of peak hour being reported: Intersection Peak

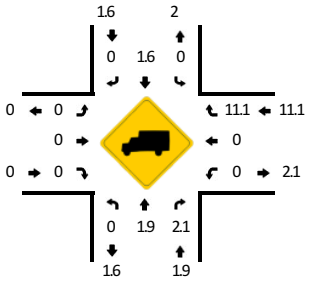
Method for determining peak hour: Total Entering Volume

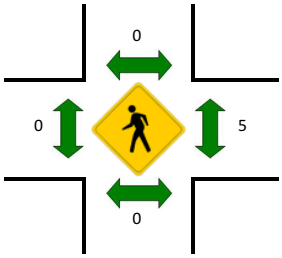
LOCATION: 110083. OR-62 -- Sky Park Dr
CITY/STATE: Jackson, OR

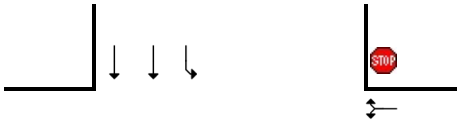
QC JOB #: 15143710
DATE: Mon, Mar 20 2017

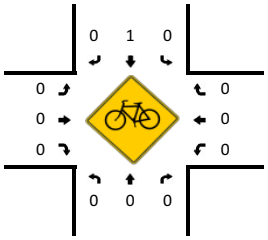
Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 5:00 PM -- 5:15 PM

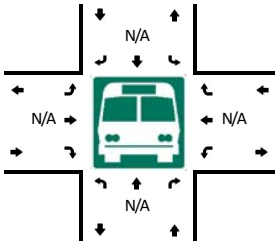




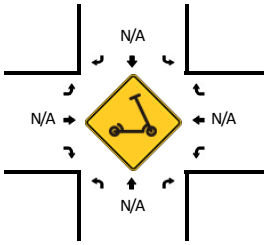












15-Min Count Period Beginning At	110083. OR-62 (Northbound)				110083. OR-62 (Southbound)				Sky Park Dr (Eastbound)				Sky Park Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
2:00 PM	0	421	8	0	0	404	0	0	0	0	0	0	0	0	8	0	841	
2:15 PM	0	412	6	0	0	448	0	0	0	0	0	0	0	0	2	0	868	
2:30 PM	0	423	9	0	0	447	0	0	0	0	0	0	0	0	4	0	883	
2:45 PM	0	443	5	0	0	437	0	0	0	0	0	0	0	0	2	0	887	3479
3:00 PM	0	404	8	0	0	458	0	0	0	0	0	0	0	0	5	0	875	3513
3:15 PM	0	458	10	0	0	418	0	0	0	0	0	0	0	0	4	0	890	3535
3:30 PM	0	455	13	0	0	447	0	0	0	0	0	0	0	0	5	0	920	3572
3:45 PM	0	453	10	0	0	448	0	0	0	0	0	0	0	0	7	0	918	3603
4:00 PM	0	489	11	0	0	463	0	0	0	0	0	0	0	0	1	0	964	3692
4:15 PM	0	447	14	0	0	497	0	0	0	0	0	0	0	0	6	0	964	3766
4:30 PM	0	450	15	0	0	506	0	0	0	0	0	0	0	0	1	0	972	3818
4:45 PM	0	499	10	0	0	461	0	0	0	0	0	0	0	0	5	0	975	3875
5:00 PM	0	446	10	0	0	524	0	0	0	0	0	0	0	0	3	0	983	3894
5:15 PM	0	527	13	0	0	437	0	0	0	0	0	0	0	0	0	0	977	3907
5:30 PM	0	469	9	0	0	395	0	0	0	0	0	0	0	0	3	0	876	3811
5:45 PM	0	406	6	0	0	364	0	0	0	0	0	0	0	0	1	0	777	3613

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	1784	40	0	0	2096	0	0	0	0	0	0	0	0	12	0	3932
Heavy Trucks	0	24	0		0	36	0		0	0	0		0	0	4		64
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

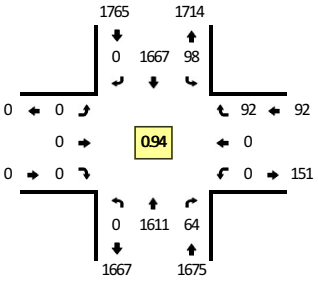
Report generated on 12/10/2019 12:22 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

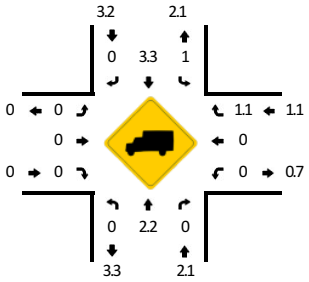
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

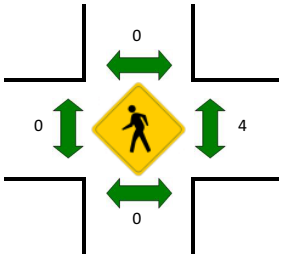
LOCATION: 110080. OR-62 -- Rogue Valley Mall Ent | **QC JOB #:** 15143709
CITY/STATE: Jackson, OR | **DATE:** Wed, Mar 15 2017

Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 5:00 PM -- 5:15 PM

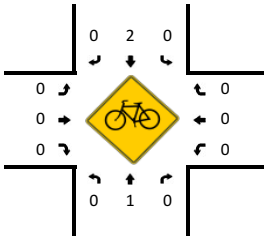


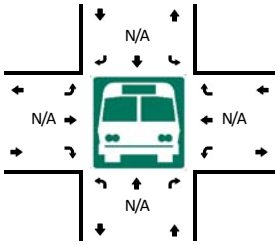
Quality Counts
DATA THAT DRIVES COMMUNITIES

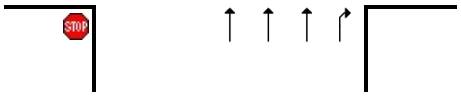


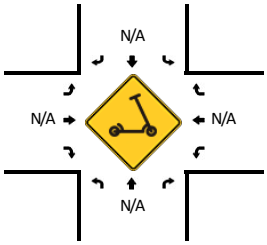












15-Min Count Period Beginning At	110080. OR-62 (Northbound)				110080. OR-62 (Southbound)				Rogue Valley Mall Ent (Eastbound)				Rogue Valley Mall Ent (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
2:00 PM	0	357	15	0	29	317	0	1	0	0	0	0	0	0	22	0	741	
2:15 PM	0	324	13	0	16	374	0	1	0	0	0	0	0	0	21	0	749	
2:30 PM	0	337	16	0	29	372	0	3	0	0	0	0	0	0	22	0	779	
2:45 PM	0	355	17	0	22	371	0	4	0	0	0	0	0	0	21	0	790	3059
3:00 PM	0	398	12	0	18	389	0	4	0	0	0	0	0	0	25	0	846	3164
3:15 PM	0	386	12	0	20	359	0	2	0	0	0	0	0	0	22	0	801	3216
3:30 PM	0	374	17	0	12	415	0	3	0	0	0	0	0	0	24	0	845	3282
3:45 PM	0	400	5	0	17	367	0	5	0	0	0	0	0	0	18	0	812	3304
4:00 PM	0	429	16	0	15	358	0	3	0	0	0	0	0	0	17	0	838	3296
4:15 PM	0	392	21	0	20	411	0	2	0	0	0	0	0	0	21	0	867	3362
4:30 PM	0	401	23	0	23	396	0	2	0	0	0	0	0	0	23	0	868	3385
4:45 PM	0	358	14	0	22	402	0	4	0	0	0	0	0	0	27	0	827	3400
5:00 PM	0	452	11	0	16	439	0	2	0	0	0	0	0	0	19	0	939	3501
5:15 PM	0	400	16	0	26	430	0	3	0	0	0	0	0	0	23	0	898	3532
5:30 PM	0	393	20	0	24	402	0	2	0	0	0	0	0	0	22	0	863	3527
5:45 PM	0	298	14	0	12	334	0	2	0	0	0	0	0	0	10	0	670	3370

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	1808	44	0	64	1756	0	8	0	0	0	0	0	0	76	0	3756
Heavy Trucks	0	24	0		0	52	0		0	0	0		0	0	0		76
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 12/10/2019 12:22 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

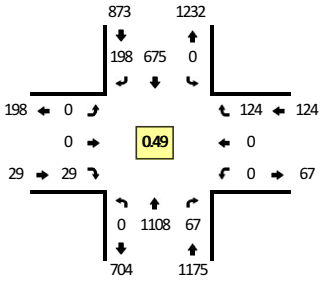
Type of peak hour being reported: Intersection Peak

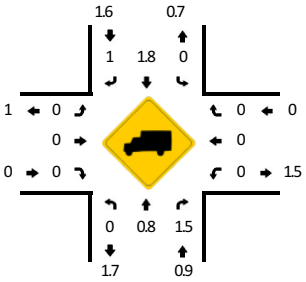
Method for determining peak hour: Total Entering Volume

LOCATION: 110089. Poplar Dr -- Hilton Rd
CITY/STATE: Jackson, OR

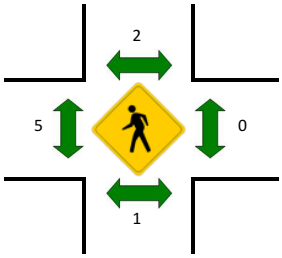
QC JOB #: 15143708
DATE: Wed, Mar 22 2017

Peak-Hour: 5:15 PM -- 6:15 PM
Peak 15-Min: 6:00 PM -- 6:15 PM

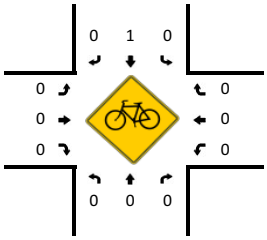


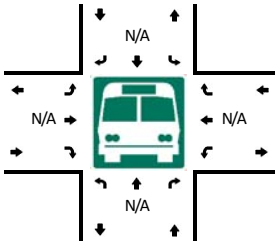


Quality Counts
DATA THAT DRIVES COMMUNITIES

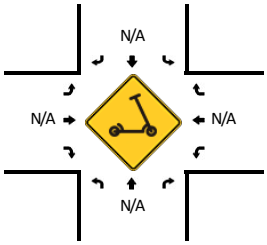












15-Min Count Period Beginning At	110089. Poplar Dr (Northbound)				110089. Poplar Dr (Southbound)				Hilton Rd (Eastbound)				Hilton Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	0	125	3	0	0	95	21	0	0	0	2	0	0	0	58	0	304	
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	304
7:00 AM	0	272	29	0	0	354	55	0	0	0	5	0	0	0	119	0	834	834
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	834
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	834
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	834
8:00 AM	0	302	33	0	0	307	57	0	0	0	5	0	0	0	88	0	792	792
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	792
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	792
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	792
9:00 AM	0	327	17	0	0	307	95	0	0	0	9	0	0	0	75	0	830	830
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	830
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	830
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	830
10:00 AM	0	464	19	0	0	367	103	0	0	0	10	0	0	0	58	0	1021	1021
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1021
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1021
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1021
11:00 AM	0	587	20	0	0	450	139	0	0	0	23	0	0	0	58	0	1277	1277
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1277
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1277
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1277
12:00 PM	0	625	14	0	0	447	135	0	0	0	26	0	0	0	54	1	1302	1302
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1302
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1302
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1302
1:00 PM	0	661	13	0	0	462	129	0	0	0	17	0	0	0	63	0	1345	1345
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1345
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1345
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1345
2:00 PM	0	165	2	0	0	109	35	0	0	0	5	0	0	0	11	0	327	327
2:15 PM	0	172	2	0	0	119	33	0	0	0	6	0	0	0	12	0	344	671
2:30 PM	0	181	11	0	0	107	20	0	0	0	9	0	0	0	9	0	337	1008
2:45 PM	0	166	3	0	0	137	33	0	0	0	6	0	0	0	14	0	359	1367
3:00 PM	0	157	5	0	0	147	40	0	0	0	6	0	0	0	22	0	377	1417
3:15 PM	0	190	9	0	0	120	25	0	0	0	4	0	0	0	12	0	360	1433
3:30 PM	0	199	1	0	0	150	32	0	0	0	5	0	0	0	20	0	407	1503

15-Min Count Period Beginning At	110089. Poplar Dr (Northbound)				110089. Poplar Dr (Southbound)				Hilton Rd (Eastbound)				Hilton Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:45 PM	0	166	6	0	0	128	27	0	0	0	7	0	0	0	22	0	356	1500
4:00 PM	0	186	3	0	0	109	34	0	0	0	5	0	0	0	17	0	354	1477
4:15 PM	0	189	11	0	0	136	38	0	0	0	7	0	0	0	24	0	405	1522
4:30 PM	0	181	5	0	0	102	28	0	0	0	3	0	0	0	16	0	335	1450
4:45 PM	0	162	2	0	0	136	43	0	0	0	6	0	0	0	22	0	371	1465
5:00 PM	0	201	3	0	0	126	39	0	0	0	2	0	0	0	18	0	389	1500
5:15 PM	0	184	8	0	0	127	32	0	0	0	6	0	0	0	20	0	377	1472
5:30 PM	0	188	10	0	0	114	37	0	0	0	10	0	0	0	19	0	378	1515
5:45 PM	0	178	9	0	0	91	33	0	0	0	4	0	0	0	16	0	331	1475
6:00 PM	0	558	40	0	0	343	96	0	0	0	9	0	0	0	69	0	1115	2201
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1824
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1446
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1115
7:00 PM	0	421	23	0	0	261	83	0	0	0	12	0	0	0	53	0	853	853
7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	853
7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	853
7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	853
8:00 PM	0	316	17	0	0	184	64	0	0	0	7	0	0	0	41	0	629	629
8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	629
8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	629
8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	629
9:00 PM	0	214	17	0	0	96	40	0	0	0	7	0	0	0	40	0	414	414
9:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	414
9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	414
9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	414

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	2232	160	0	0	1372	384	0	0	0	36	0	0	0	276	0	4460
Heavy Trucks	0	20	4		0	28	4		0	0	0		0	0	0		56
Buses																	
Pedestrians		0				4				8				0			12
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 12/10/2019 12:22 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: 110088. Biddle Rd Conn 1 -- Hilton Ct

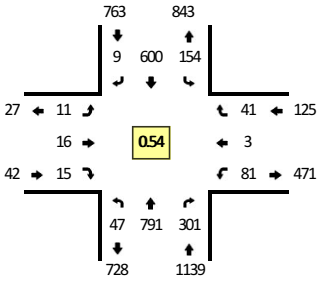
CITY/STATE: Jackson, OR

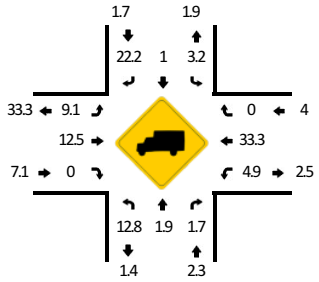
QC JOB #: 15143707

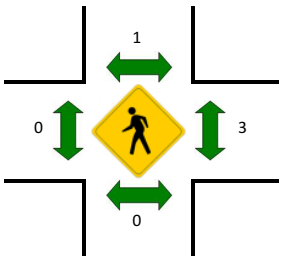
DATE: Mon, Mar 20 2017

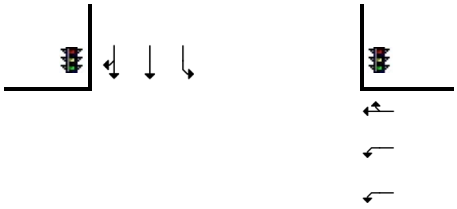
Peak-Hour: 5:15 PM -- 6:15 PM

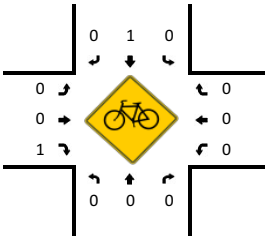
Peak 15-Min: 6:00 PM -- 6:15 PM

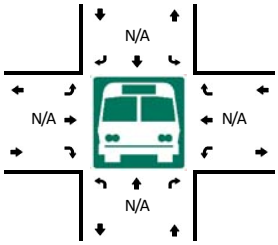


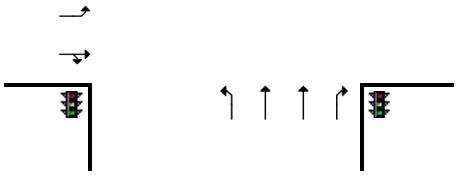


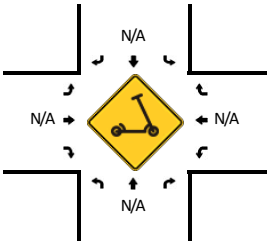












15-Min Count Period Beginning At	110088. Biddle Rd Conn 1 (Northbound)				110088. Biddle Rd Conn 1 (Southbound)				Hilton Ct (Eastbound)				Hilton Ct (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	10	277	65	10	23	126	7	0	1	0	0	0	15	2	20	0	556	
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	556
7:00 AM	42	666	74	11	93	420	13	0	7	2	7	0	32	12	60	0	1439	1439
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1439
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1439
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1439
8:00 AM	35	554	125	17	74	397	9	0	19	13	12	0	56	6	36	0	1353	1353
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1353
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1353
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1353
9:00 AM	22	411	134	21	93	376	8	0	22	10	12	0	43	3	27	0	1182	1182
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1182
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1182
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1182
10:00 AM	27	404	163	25	100	341	12	0	30	9	12	0	41	9	35	0	1208	1208
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1208
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1208
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1208
11:00 AM	20	511	170	25	112	463	13	1	13	12	15	0	55	8	47	0	1465	1465
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1465
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1465
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1465
12:00 PM	43	650	202	33	114	526	18	0	16	26	27	0	52	5	62	0	1774	1774
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1774
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1774
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1774
1:00 PM	22	672	204	20	136	466	17	0	26	14	9	0	51	8	57	0	1702	1702
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1702
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1702
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1702
2:00 PM	3	145	63	5	23	121	2	0	5	1	5	0	18	4	10	0	405	405
2:15 PM	12	135	61	8	27	122	5	0	9	4	3	0	7	1	9	0	403	808
2:30 PM	7	171	48	4	36	106	1	0	6	2	5	0	9	2	9	0	406	1214
2:45 PM	8	165	46	4	44	113	4	0	7	3	3	0	14	1	4	0	416	1630
3:00 PM	7	169	53	5	28	87	6	0	7	3	7	0	16	0	10	0	398	1623
3:15 PM	5	198	44	5	72	169	2	0	4	5	4	0	7	1	14	0	530	1750
3:30 PM	11	161	53	5	33	163	5	0	3	0	3	0	16	0	17	0	470	1814

15-Min Count Period Beginning At	110088. Biddle Rd Conn 1 (Northbound)				110088. Biddle Rd Conn 1 (Southbound)				Hilton Ct (Eastbound)				Hilton Ct (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:45 PM	9	166	51	6	37	128	4	0	5	2	8	0	12	1	21	0	450	1848
4:00 PM	5	187	72	4	36	139	6	0	9	2	6	0	13	1	19	0	499	1949
4:15 PM	6	160	71	6	55	137	4	2	5	8	3	0	23	0	10	0	490	1909
4:30 PM	6	164	67	8	41	153	2	0	9	2	6	0	15	0	17	0	490	1929
4:45 PM	5	166	71	6	37	147	3	0	7	7	10	0	17	1	5	0	482	1961
5:00 PM	5	174	85	11	57	203	2	0	9	6	15	0	13	0	13	0	593	2055
5:15 PM	3	159	70	3	35	134	3	0	3	4	7	0	14	0	11	0	446	2011
5:30 PM	2	137	56	5	30	107	0	0	1	1	3	0	20	1	10	0	373	1894
5:45 PM	3	127	39	2	23	81	0	0	3	3	0	0	11	1	2	0	295	1707
6:00 PM	7	368	136	22	66	278	6	0	4	8	5	0	36	1	18	0	955	2069
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1623
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1250
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	955
7:00 PM	6	256	105	11	61	223	6	0	8	4	6	0	34	1	9	0	730	730
7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	730
7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	730
7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	730
8:00 PM	6	192	71	8	41	118	1	0	4	5	6	0	26	0	9	0	487	487
8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	487
8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	487
8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	487
9:00 PM	4	143	51	8	22	63	0	0	2	2	1	0	12	0	6	0	314	314
9:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	314
9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	314
9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	314

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	28	1472	544	88	264	1112	24	0	16	32	20	0	144	4	72	0	3820
Heavy Trucks	4	36	8		12	4	8		0	4	0		4	0	0		80
Buses																	
Pedestrians		0				4				0				4			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 12/10/2019 12:22 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: 110086. Biddle Rd Conn 1 -- South End of Jug Handle

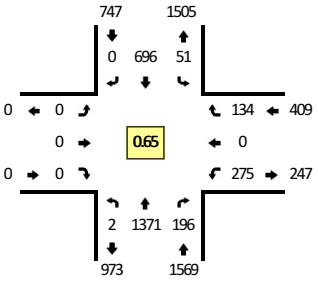
QC JOB #: 15143706

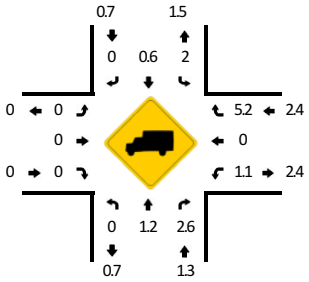
CITY/STATE: Jackson, OR

DATE: Mon, Mar 20 2017

Peak-Hour: 4:15 PM -- 5:15 PM

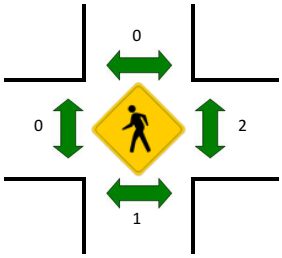
Peak 15-Min: 4:15 PM -- 4:30 PM

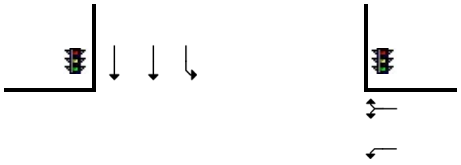


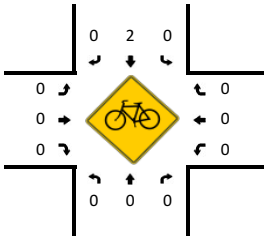


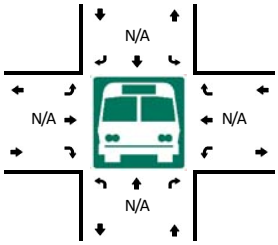
Quality Counts

DATA THAT DRIVES COMMUNITIES

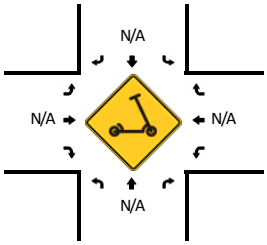












15-Min Count Period Beginning At	110086. Biddle Rd Conn 1 (Northbound)				110086. Biddle Rd Conn 1 (Southbound)				South End of Jug Handle (Eastbound)				South End of Jug Handle (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	0	236	28	0	7	134	0	0	0	0	0	0	71	0	94	0	570	
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	570
7:00 AM	0	513	41	0	21	425	0	0	0	0	0	0	218	0	264	0	1482	1482
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1482
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1482
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1482
8:00 AM	0	514	60	1	27	445	0	1	0	0	0	0	234	0	230	0	1512	1512
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1512
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1512
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1512
9:00 AM	0	424	114	0	31	410	0	0	0	0	0	0	214	0	145	0	1338	1338
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1338
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1338
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1338
10:00 AM	0	448	159	0	40	389	0	1	0	0	0	0	232	0	149	0	1418	1418
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1418
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1418
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1418
11:00 AM	0	552	169	1	42	495	0	0	0	0	0	0	231	0	149	1	1640	1640
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1640
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1640
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1640
12:00 PM	0	726	210	1	59	613	0	0	0	0	0	0	285	0	171	0	2065	2065
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2065
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2065
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2065
1:00 PM	0	737	212	0	49	514	0	1	0	0	0	0	232	0	173	1	1919	1919
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1919
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1919
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1919
2:00 PM	0	181	43	0	6	137	0	0	0	0	0	0	66	0	37	0	470	470
2:15 PM	0	185	46	0	8	130	0	0	0	0	0	0	62	0	25	0	456	926
2:30 PM	0	177	42	0	6	119	0	0	0	0	0	0	68	0	45	0	457	1383
2:45 PM	0	176	37	0	8	124	0	0	0	0	0	0	74	0	37	1	457	1840
3:00 PM	0	203	48	0	10	98	0	0	0	0	0	0	75	0	36	0	470	1840
3:15 PM	0	213	55	0	14	177	0	0	0	0	0	0	61	0	42	0	562	1946
3:30 PM	0	171	43	0	11	173	0	0	0	0	0	0	67	0	46	0	511	2000

15-Min Count Period Beginning At	110086. Biddle Rd Conn 1 (Northbound)				110086. Biddle Rd Conn 1 (Southbound)				South End of Jug Handle (Eastbound)				South End of Jug Handle (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:45 PM	0	184	51	1	11	144	0	0	0	0	0	0	77	0	57	0	525	2068
4:00 PM	0	242	50	0	14	142	0	0	0	0	0	0	61	0	21	0	530	2128
4:15 PM	0	717	52	0	8	167	0	0	0	0	0	0	63	0	40	0	1047	2613
4:30 PM	0	215	38	0	8	153	0	0	0	0	0	0	92	0	32	0	538	2640
4:45 PM	0	201	53	1	13	150	0	0	0	0	0	0	53	0	27	0	498	2613
5:00 PM	0	238	53	1	22	226	0	0	0	0	0	0	67	0	35	0	642	2725
5:15 PM	0	189	40	0	8	162	0	0	0	0	0	0	47	0	30	0	476	2154
5:30 PM	0	180	52	0	5	127	0	0	0	0	0	0	54	0	24	0	442	2058
5:45 PM	0	142	37	0	8	86	0	0	0	0	0	0	60	0	30	0	363	1923
6:00 PM	0	463	161	2	23	306	0	1	0	0	0	0	150	0	68	0	1174	2455
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1979
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1537
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1174
7:00 PM	0	329	97	1	25	230	0	0	0	0	0	0	109	0	49	0	840	840
7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	840
7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	840
7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	840
8:00 PM	0	253	81	1	17	130	0	1	0	0	0	0	74	0	36	0	593	593
8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	593
8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	593
8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	593
9:00 PM	0	175	60	0	5	76	0	0	0	0	0	0	50	0	29	0	395	395
9:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	395
9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	395
9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	395

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	2868	208	0	32	668	0	0	0	0	0	0	252	0	160	0	4188
Heavy Trucks	0	16	4		4	8	0		0	0	0		0	0	12		44
Buses																	
Pedestrians		0				0				0				4			4
Bicycles	0	0	0		0	1	0		0	0	0		0	0	0		1
Scooters																	

Comments:

Report generated on 12/10/2019 12:22 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: 110085. OR-62 -- Rogue Valley Mall Main Ent

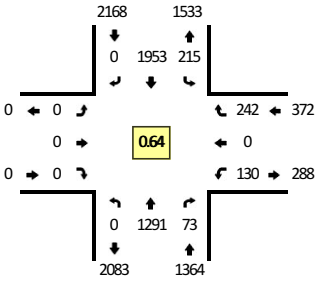
QC JOB #: 15143705

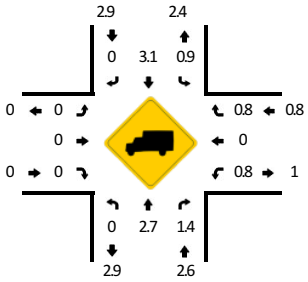
CITY/STATE: Jackson, OR

DATE: Mon, Mar 13 2017

Peak-Hour: 5:15 PM -- 6:15 PM

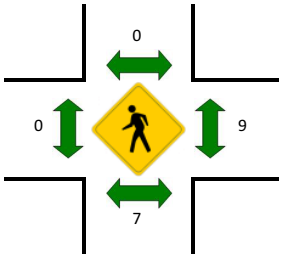
Peak 15-Min: 6:00 PM -- 6:15 PM

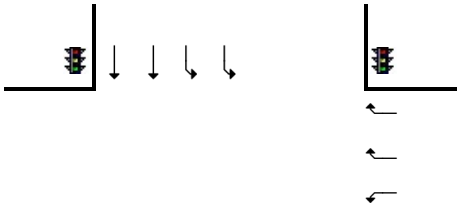


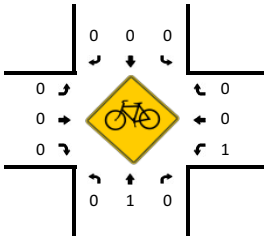


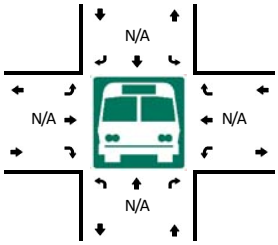
Quality Counts

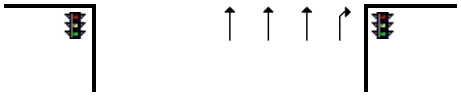
DATA THAT DRIVES COMMUNITIES

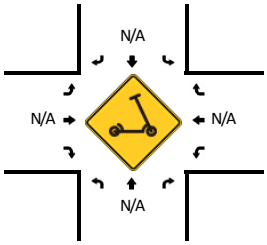












15-Min Count Period Beginning At	110085. OR-62 (Northbound)				110085. OR-62 (Southbound)				Rogue Valley Mall Main Ent (Eastbound)				Rogue Valley Mall Main Ent (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	0	533	25	0	14	510	0	0	0	0	0	0	8	0	3	0	1093	
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1093
7:00 AM	0	1057	15	0	18	1014	0	0	0	0	0	0	7	0	18	0	2129	2129
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2129
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2129
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2129
8:00 AM	0	1094	20	0	34	951	0	0	0	0	0	0	20	0	19	0	2138	2138
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2138
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2138
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2138
9:00 AM	0	976	39	0	87	871	0	0	0	0	0	0	37	0	26	0	2036	2036
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2036
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2036
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2036
10:00 AM	0	1067	48	0	132	1005	0	0	0	0	0	0	48	0	100	0	2400	2400
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2400
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2400
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2400
11:00 AM	0	1246	107	0	183	1087	0	0	0	0	0	0	74	0	153	0	2850	2850
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2850
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2850
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2850
12:00 PM	0	1269	116	0	210	1208	0	0	0	0	0	0	116	0	202	0	3121	3121
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3121
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3121
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3121
1:00 PM	0	1274	90	0	178	1205	0	0	0	0	0	0	109	0	249	0	3105	3105
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3105
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3105
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3105
2:00 PM	0	335	24	0	32	308	0	0	0	0	0	0	25	0	63	0	787	787
2:15 PM	0	267	16	0	36	305	0	0	0	0	0	0	36	0	48	0	708	1495
2:30 PM	0	326	19	0	34	331	0	0	0	0	0	0	20	0	51	0	781	2276
2:45 PM	0	309	10	0	64	334	0	0	0	0	0	0	20	0	51	0	788	3064
3:00 PM	0	364	23	0	32	306	0	0	0	0	0	0	34	0	54	0	813	3090
3:15 PM	0	363	29	0	36	346	0	0	0	0	0	0	23	0	54	0	851	3233
3:30 PM	0	382	22	0	42	371	0	0	0	0	0	0	24	0	50	0	891	3343

15-Min Count Period Beginning At	110085. OR-62 (Northbound)				110085. OR-62 (Southbound)				Rogue Valley Mall Main Ent (Eastbound)				Rogue Valley Mall Main Ent (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:45 PM	0	335	21	0	30	330	0	0	0	0	0	0	30	0	34	0	780	3335
4:00 PM	0	366	29	0	46	388	0	0	0	0	0	0	34	0	44	0	907	3429
4:15 PM	0	355	19	0	38	363	0	0	0	0	0	0	22	0	78	0	875	3453
4:30 PM	0	359	21	0	41	375	0	0	0	0	0	0	28	0	51	0	875	3437
4:45 PM	0	330	22	0	31	366	0	0	0	0	0	0	34	0	50	0	833	3490
5:00 PM	0	381	17	0	39	335	0	0	0	0	0	0	33	0	46	0	851	3434
5:15 PM	0	385	16	0	32	397	0	0	0	0	0	0	32	0	48	0	910	3469
5:30 PM	0	341	15	0	41	291	0	0	0	0	0	0	24	0	47	0	759	3353
5:45 PM	0	261	21	0	31	318	0	0	0	0	0	0	23	0	45	0	699	3219
6:00 PM	0	304	21	0	111	947	0	0	0	0	0	0	51	0	102	0	1536	3904
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2994
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2235
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1536
7:00 PM	0	701	51	0	82	684	0	0	0	0	0	0	77	0	130	0	1725	1725
7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1725
7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1725
7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1725
8:00 PM	0	523	55	0	61	509	0	0	0	0	0	0	65	0	99	0	1312	1312
8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1312
8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1312
8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1312
9:00 PM	0	338	23	0	44	325	0	0	0	0	0	0	53	0	98	0	881	881
9:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	881
9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	881
9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	881

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	1216	84	0	444	3788	0	0	0	0	0	0	204	0	408	0	6144
Heavy Trucks	0	32	0		8	104	0		0	0	0		0	0	0		144
Buses																	
Pedestrians		16				0				0				16			32
Bicycles	0	1	0		0	0	0		0	0	0		0	0	0		1
Scooters																	

Comments:

Report generated on 12/10/2019 12:22 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: 37166. OR-62 -- Biddle Rd Ramp

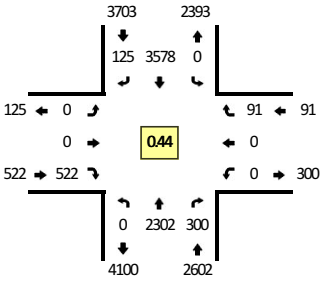
CITY/STATE: Jackson, OR

QC JOB #: 15143704

DATE: Wed, Mar 22 2017

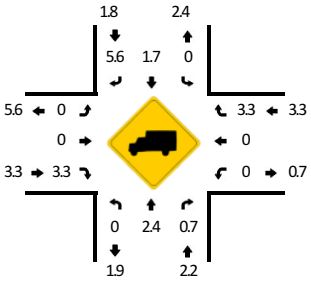
Peak-Hour: 5:15 PM -- 6:15 PM

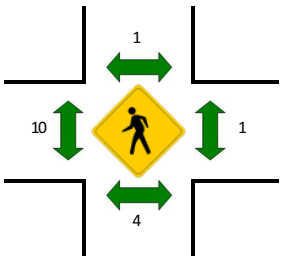
Peak 15-Min: 6:00 PM -- 6:15 PM



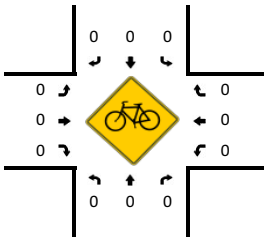
Quality Counts

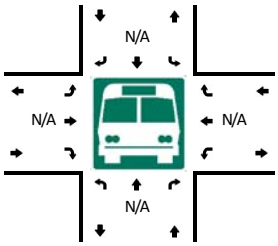
DATA THAT DRIVES COMMUNITIES



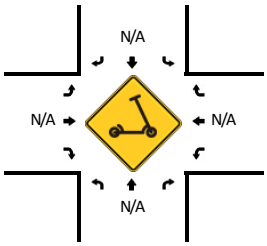












15-Min Count Period Beginning At	37166. OR-62 (Northbound)				37166. OR-62 (Southbound)				Biddle Rd Ramp (Eastbound)				Biddle Rd Ramp (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	0	615	35	0	0	708	46	0	0	0	78	0	0	0	3	0	1485	
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1485
7:00 AM	0	1360	84	0	0	1233	120	0	0	0	198	0	0	0	21	0	3016	3016
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3016
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3016
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3016
8:00 AM	0	1137	109	0	0	2105	101	0	0	0	247	0	0	0	14	0	3713	3713
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3713
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3713
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3713
9:00 AM	0	1116	148	0	0	1062	61	0	0	0	248	0	0	0	37	0	2672	2672
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2672
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2672
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2672
10:00 AM	0	1255	173	0	0	1164	82	0	0	0	244	0	0	0	31	0	2949	2949
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2949
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2949
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2949
11:00 AM	0	1452	206	0	0	1422	102	0	0	0	317	0	0	0	41	0	3540	3540
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3540
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3540
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3540
12:00 PM	0	1443	223	0	0	1504	129	0	0	0	300	0	0	0	73	0	3672	3672
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3672
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3672
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3672
1:00 PM	0	1498	207	0	0	1420	121	0	0	0	346	0	0	0	44	0	3636	3636
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3636
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3636
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3636
2:00 PM	0	394	55	0	0	383	23	0	0	0	75	0	0	0	13	0	943	943
2:15 PM	0	386	57	0	0	380	22	0	0	0	82	0	0	0	9	0	936	1879
2:30 PM	0	407	55	0	0	435	29	0	0	0	71	0	0	0	7	0	1004	2883
2:45 PM	0	349	51	0	0	416	18	0	0	0	83	0	0	0	12	0	929	3812
3:00 PM	0	418	70	0	0	405	30	0	0	0	94	0	0	0	7	0	1024	3893
3:15 PM	0	422	59	0	0	445	39	0	0	0	147	0	0	0	20	0	1132	4089
3:30 PM	0	413	53	0	0	450	32	0	0	0	95	0	0	0	7	0	1050	4135

15-Min Count Period Beginning At	37166. OR-62 (Northbound)				37166. OR-62 (Southbound)				Biddle Rd Ramp (Eastbound)				Biddle Rd Ramp (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:45 PM	0	407	48	0	0	429	33	0	0	0	102	0	0	0	12	0	1031	4237
4:00 PM	0	430	62	0	0	473	29	0	0	0	153	0	0	0	12	0	1159	4372
4:15 PM	0	413	45	0	0	437	26	0	0	0	118	0	0	0	11	0	1050	4290
4:30 PM	0	386	52	0	0	471	34	0	0	0	119	0	0	0	12	0	1074	4314
4:45 PM	0	374	58	0	0	502	20	0	0	0	105	0	0	0	19	0	1078	4361
5:00 PM	0	397	48	0	0	476	11	0	0	0	161	0	0	0	15	0	1108	4310
5:15 PM	0	437	48	0	0	508	23	0	0	0	112	0	0	0	15	0	1143	4403
5:30 PM	0	414	59	0	0	435	16	0	0	0	87	0	0	0	12	0	1023	4352
5:45 PM	0	318	45	0	0	378	19	0	0	0	75	0	0	0	20	0	855	4129
6:00 PM	0	1133	148	0	0	2257	67	0	0	0	248	0	0	0	44	0	3897	6918
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5775
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4752
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3897
7:00 PM	0	900	113	0	0	1934	56	0	0	0	207	0	0	0	39	0	3249	3249
7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3249
7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3249
7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3249
8:00 PM	0	647	86	0	0	1770	30	0	0	0	145	0	0	0	25	0	2703	2703
8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2703
8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2703
8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2703
9:00 PM	0	445	71	0	0	472	19	0	0	0	84	0	0	0	24	0	1115	1115
9:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1115
9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1115
9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1115

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	4532	592	0	0	9028	268	0	0	0	992	0	0	0	176	0	15588
Heavy Trucks	0	108	4		0	120	8		0	0	36		0	0	4		280
Buses																	
Pedestrians		12				4				32				4			52
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 12/10/2019 12:22 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

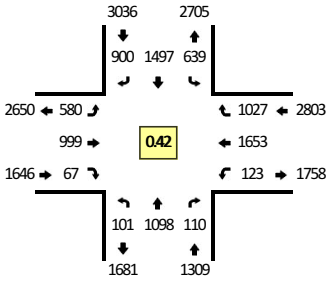
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

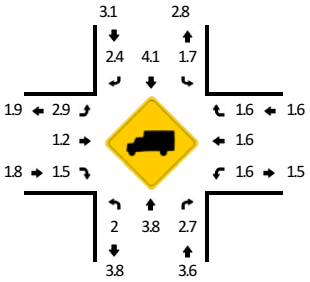
LOCATION: 37165. OR-62 -- OR-99
CITY/STATE: Jackson, OR

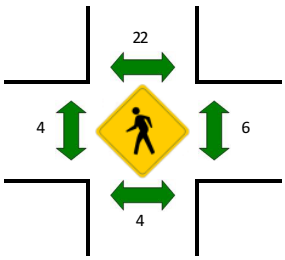
QC JOB #: 15143703
DATE: Tue, Mar 14 2017

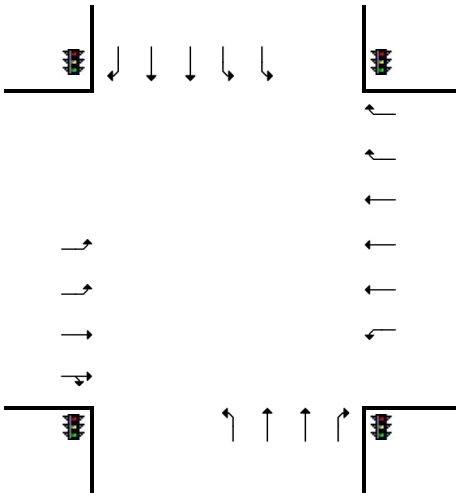
Peak-Hour: 4:15 PM -- 5:15 PM
Peak 15-Min: 5:00 PM -- 5:15 PM

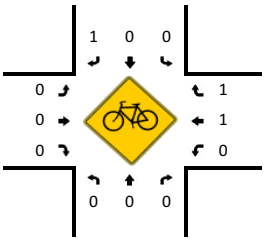


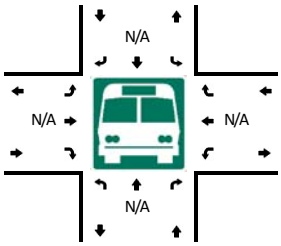


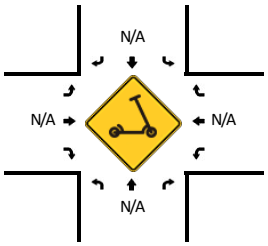












15-Min Count Period Beginning At	37165. OR-62 (Northbound)				37165. OR-62 (Southbound)				OR-99 (Eastbound)				OR-99 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	10	292	26	0	161	264	148	0	210	229	3	0	9	263	100	0	1715	
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1715
7:00 AM	3	556	31	0	396	443	217	0	372	676	4	0	30	348	210	2	3288	3288
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3288
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3288
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3288
8:00 AM	12	500	65	0	393	400	271	0	361	706	6	0	35	406	247	1	3403	3403
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3403
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3403
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3403
9:00 AM	9	444	49	0	360	391	238	0	262	492	14	0	40	428	299	3	3029	3029
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3029
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3029
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3029
10:00 AM	26	435	87	0	344	421	283	0	290	486	22	1	49	470	349	2	3265	3265
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3265
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3265
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3265
11:00 AM	55	485	63	2	468	511	376	0	327	538	26	0	46	607	445	3	3952	3952
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3952
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3952
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3952
12:00 PM	70	508	99	1	418	530	404	1	375	594	18	1	61	721	470	2	4273	4273
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4273
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4273
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4273
1:00 PM	68	543	63	1	358	496	372	0	363	553	23	0	55	714	518	3	4130	4130
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4130
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4130
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4130
2:00 PM	17	150	14	1	85	142	90	0	66	134	4	0	13	201	126	0	1043	1043
2:15 PM	4	123	18	0	99	164	93	0	90	144	2	0	34	392	115	0	1278	2321
2:30 PM	14	114	20	1	89	157	116	1	86	144	1	0	13	208	114	2	1080	3401
2:45 PM	11	164	17	0	92	146	130	0	98	178	9	0	13	158	139	0	1155	4556
3:00 PM	7	163	24	1	104	177	111	0	84	142	7	0	18	230	135	0	1203	4716
3:15 PM	15	170	15	1	84	126	113	0	113	153	10	0	16	195	119	1	1131	4569
3:30 PM	16	176	9	0	120	150	122	0	83	149	6	0	12	209	151	1	1204	4693

15-Min Count Period Beginning At	37165. OR-62 (Northbound)				37165. OR-62 (Southbound)				OR-99 (Eastbound)				OR-99 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:45 PM	17	123	15	1	115	168	116	0	104	166	2	0	13	246	126	0	1212	4750
4:00 PM	13	160	19	2	80	160	129	0	91	127	5	0	15	227	138	1	1167	4714
4:15 PM	13	151	14	1	103	188	124	0	87	159	13	0	16	256	135	0	1260	4843
4:30 PM	14	145	22	1	102	149	123	0	94	170	4	0	20	240	125	0	1209	4848
4:45 PM	14	173	18	0	83	162	148	0	78	140	8	0	13	181	129	0	1147	4783
5:00 PM	56	629	56	2	351	998	505	0	321	530	42	0	64	976	638	10	5178	8794
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7534
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6325
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5178
6:00 PM	69	393	33	3	216	487	386	0	305	414	32	0	40	625	401	3	3407	3407
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3407
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3407
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3407
7:00 PM	65	286	26	0	176	337	277	0	211	288	22	0	29	421	309	1	2448	2448
7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2448
7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2448
7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2448
8:00 PM	43	206	19	1	93	255	225	1	147	172	13	0	23	376	267	2	1843	1843
8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1843
8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1843
8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1843
9:00 PM	18	133	10	0	81	176	171	0	79	105	7	0	0	266	135	2	1183	1183
9:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1183
9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1183
9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1183

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	224	2516	224	8	1404	3992	2020	0	1284	2120	168	0	256	3904	2552	40	20712
Heavy Trucks	4	96	4		28	104	44		28	32	0		4	68	28		440
Buses																	
Pedestrians		8				36				4				20			68
Bicycles	0	0	0		0	0	1		0	0	0		0	0	1		2
Scooters																	

Comments:

Report generated on 12/10/2019 12:22 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

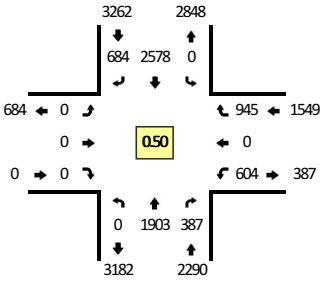
Type of peak hour being reported: Intersection Peak

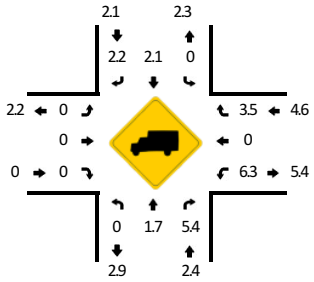
Method for determining peak hour: Total Entering Volume

LOCATION: 37161. OR-62 -- I-5 NB Ramps
CITY/STATE: Jackson, OR

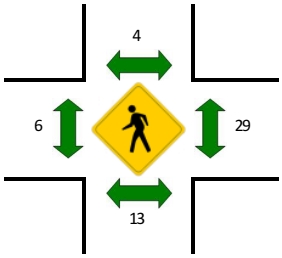
QC JOB #: 15143702
DATE: Wed, Aug 9 2017

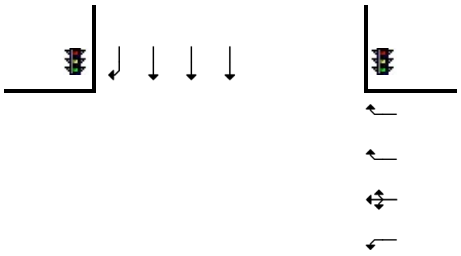
Peak-Hour: 5:15 PM -- 6:15 PM
Peak 15-Min: 6:00 PM -- 6:15 PM

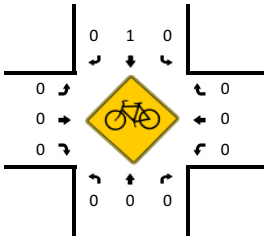


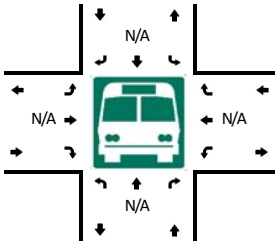


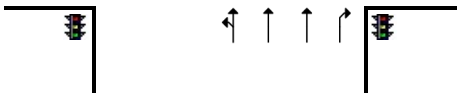
Quality Counts
DATA THAT DRIVES COMMUNITIES

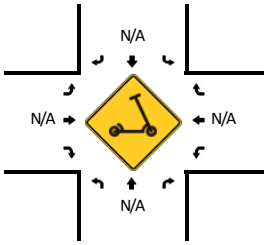












15-Min Count Period Beginning At	37161. OR-62 (Northbound)				37161. OR-62 (Southbound)				I-5 NB Ramps (Eastbound)				I-5 NB Ramps (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	0	446	69	0	0	663	124	0	0	0	0	0	104	1	312	0	1719	
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1719
7:00 AM	0	897	102	0	0	1050	209	0	0	0	0	0	179	0	557	0	2994	2994
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2994
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2994
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2994
8:00 AM	1	930	104	0	0	1086	214	0	0	0	0	0	208	1	656	0	3200	3200
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3200
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3200
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3200
9:00 AM	0	982	152	0	0	1107	208	0	0	0	0	0	220	1	619	0	3289	3289
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3289
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3289
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3289
10:00 AM	0	1096	146	0	0	1271	265	0	0	0	0	0	262	3	561	0	3604	3604
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3604
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3604
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3604
11:00 AM	0	1253	194	0	0	1493	298	0	0	0	0	0	345	3	661	0	4247	4247
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4247
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4247
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4247
12:00 PM	0	1292	195	0	0	1589	328	0	0	0	0	0	351	0	645	0	4400	4400
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4400
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4400
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4400
1:00 PM	0	1348	202	0	0	1568	358	0	0	0	0	0	327	1	642	0	4446	4446
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4446
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4446
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4446
2:00 PM	0	308	49	0	0	362	97	0	0	0	0	0	90	1	131	0	1038	1038
2:15 PM	0	318	61	0	0	415	91	0	0	0	0	0	75	0	167	0	1127	2165
2:30 PM	0	346	50	0	0	404	111	0	0	0	0	0	100	0	144	0	1155	3320
2:45 PM	0	302	70	0	0	429	98	0	0	0	0	0	95	0	199	0	1193	4513
3:00 PM	0	333	70	0	0	396	135	0	0	0	0	0	70	0	156	0	1160	4635
3:15 PM	0	287	68	0	0	362	118	0	0	0	0	0	124	1	176	0	1136	4644
3:30 PM	0	347	65	0	0	431	89	0	0	0	0	0	98	1	159	0	1190	4679

15-Min Count Period Beginning At	37161. OR-62 (Northbound)				37161. OR-62 (Southbound)				I-5 NB Ramps (Eastbound)				I-5 NB Ramps (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:45 PM	0	349	67	0	0	412	117	0	0	0	0	0	91	0	170	0	1206	4692
4:00 PM	0	292	79	0	0	419	102	0	0	0	0	0	112	2	183	0	1189	4721
4:15 PM	0	355	75	0	0	457	109	0	0	0	0	0	89	1	181	0	1267	4852
4:30 PM	0	319	62	0	0	469	136	0	0	0	0	0	106	0	186	0	1278	4940
4:45 PM	0	323	71	0	0	467	118	0	0	0	0	0	85	1	170	0	1235	4969
5:00 PM	0	331	87	0	0	467	145	0	0	0	0	0	90	2	147	0	1269	5049
5:15 PM	0	294	73	0	0	431	143	0	0	0	0	0	138	0	174	0	1253	5035
5:30 PM	0	299	72	0	0	447	103	0	0	0	0	0	122	0	145	0	1188	4945
5:45 PM	0	319	49	0	0	395	104	0	0	0	0	0	82	0	153	0	1102	4812
6:00 PM	0	991	193	0	0	1305	334	0	0	0	0	0	262	0	473	0	3558	7101
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5848
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4660
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3558
7:00 PM	0	767	142	0	0	984	223	0	0	0	0	0	174	1	320	0	2611	2611
7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2611
7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2611
7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2611
8:00 PM	0	645	144	0	0	864	201	0	0	0	0	0	134	0	277	0	2265	2265
8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2265
8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2265
8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2265
9:00 PM	0	522	107	0	0	590	152	0	0	0	0	0	104	0	176	0	1651	1651
9:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1651
9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1651
9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1651

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	3964	772	0	0	5220	1336	0	0	0	0	0	1048	0	1892	0	14232
Heavy Trucks	0	92	52		0	92	32		0	0	0		76	0	56		400
Buses																	
Pedestrians		28				16				24				68			136
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 12/10/2019 12:22 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Appendix D Tech Memo #4: Future No-Build Conditions

[This page left blank intentionally]

KITTELSON & ASSOCIATES
851 SW 6th AVENUE, SUITE 600
PORTLAND, OR 97204
P 503.228.5230 F 503.273.8169

MEMORANDUM

Date: August 14, 2020 Project #: 23641.0

To: Virginia Elandt, Oregon Department of Transportation
Karl MacNair, City of Medford

From: Matt Hughart, AICP, Matt Bell, and Miranda Barrus, Kittelson & Associates, Inc.

Project: I-5 Exit 30 Interchange Area Management Plan (IAMP)

Subject: Final Tech Memo #4: Future Baseline (No-Build) Conditions

This memorandum summarizes future year 2042 no-build traffic conditions in the Interchange Management Study Area (IMSA) for the I-5 Exit 30 Interchange Area Management Plan (IAMP). Figure 1 illustrates the IMSA. This memorandum includes information on the results of the future no-build traffic operations analysis, future multimodal analysis, and future freight analysis, and summarizes information on areas of safety concern. This memorandum is supplemented by a memorandum prepared by Angelo Planning Group on future land use in the IMSA. The information in these memos serves as a basis for identifying future deficiencies and for developing transportation system alternatives for the IAMP

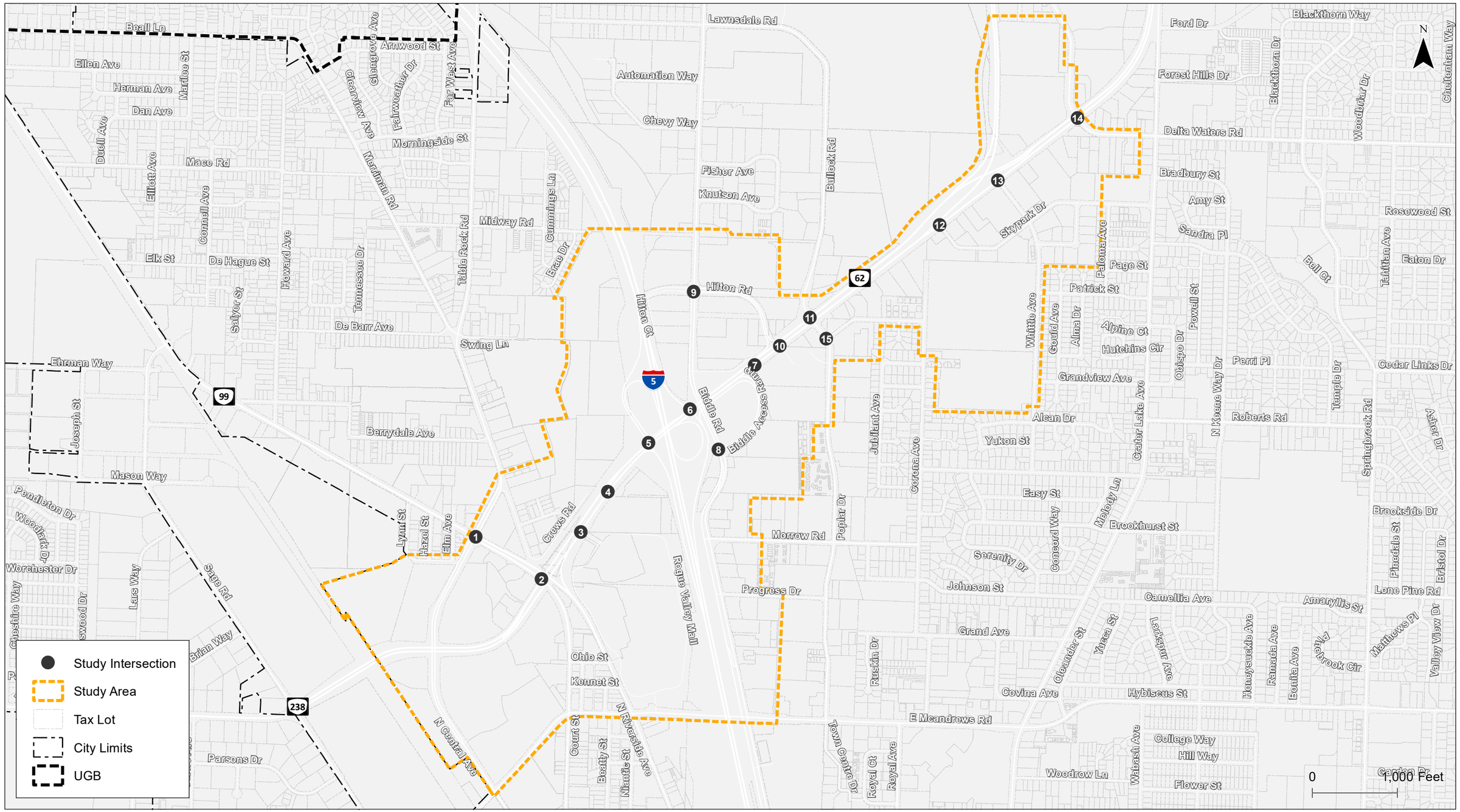
FUTURE NO-BUILD TRAFFIC OPERATIONS ANALYSIS

The future no-build traffic operations analysis identifies how the study intersections will operate under year 2042 traffic conditions during the weekday PM peak hour, assuming no improvements have been made to the transportation system in the IMSA beyond any currently planned and funded projects.

Traffic Volume Development

Forecast traffic volumes were developed for the study intersections based on existing traffic volumes and information provided in the Rogue Valley Metropolitan Planning Organization (RVMPO) travel demand model. The RVMPO travel demand model provides base year 2010 and forecast year 2042 traffic volume projections for study area roadways that reflect anticipated land use changes and planned transportation improvements in the IMSA.1 Forecast traffic volumes were developed by applying the post-processing

[1] The household and employment growth assumptions included in the RVMPO travel demand model were compared to household and employment growth estimates developed by the project team. The project team's growth estimates are based on developable and redevelopable lands within each TAZ and an assessment of potential land use. When compared to the RVMPO travel demand model, the project team's estimates were shown to exceed the assumptions included in the RVMPO model in a limited number of TAZs. Notably, the project team assumed the Rogue Valley Mall has some redevelopment potential over the planning horizon that resulted in comparatively higher employment growth. However, given the conservative nature of the regional travel demand model, there does not appear to be a need to assess the cumulative impact of the growth in the surrounded TAZs.



Study Intersections
Medford, Oregon

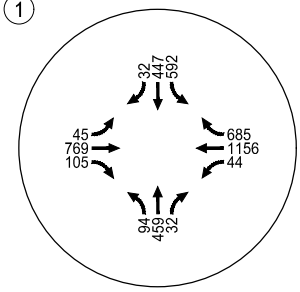
Figure
1

H:\23\23641 - Exit 30 IAMP\gis\TM41_Study Intersections.mxd - mbell - 3:30 PM 8/13/2020

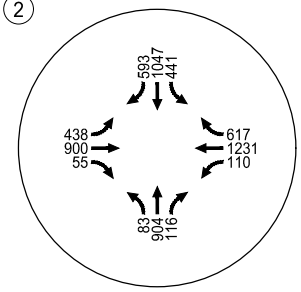
KITTELSON & ASSOCIATES

Coordinate System: NAD 1983 2011 StatePlane Oregon South FIPS 3602 Ft Intl
Data Source: Delete if there isn't one.

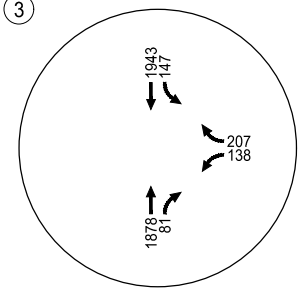
Table Rock Road/OR 99



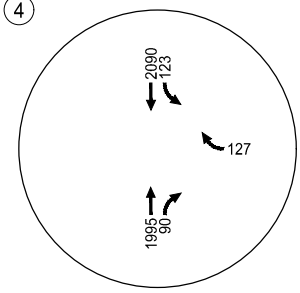
OR 238/OR 62/OR 99/Riverside/Court



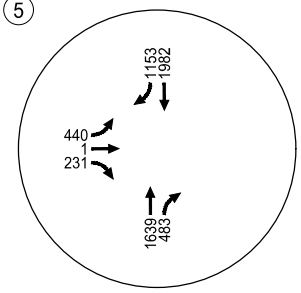
OR 62/RVM (south)



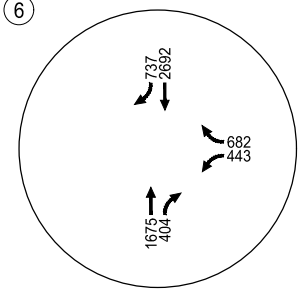
OR 62/RVM (north)



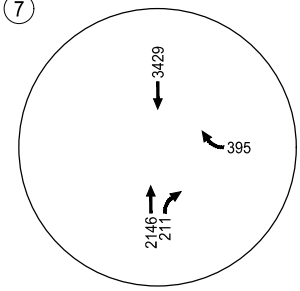
OR 62/I-5 SB Ramps



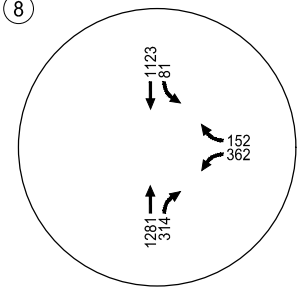
OR 62/I-5 NB Ramps



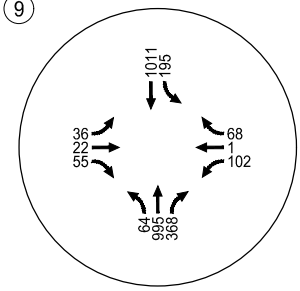
OR 62/Biddle Jughandle (north)



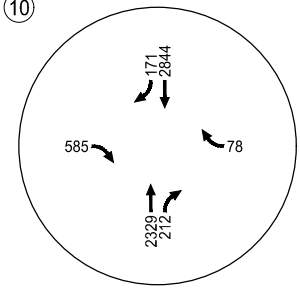
Biddle Road/OR 62 Ramp



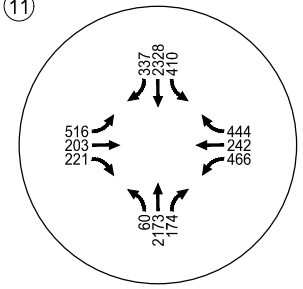
Biddle Road/Hilton Court



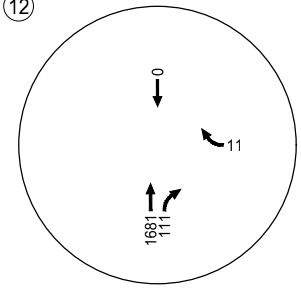
OR 62/Hilton Court/Fred Meyer



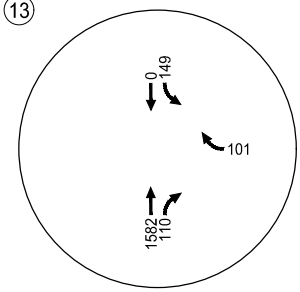
OR 62/Bullock Road/Poplar Drive



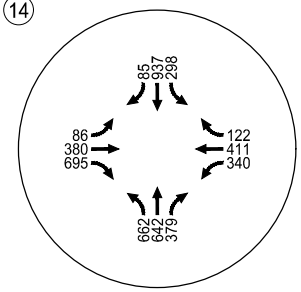
OR 62/Sky Park Drive



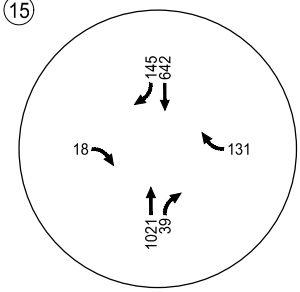
OR 62/Whittle Avenue



OR 62/Delta Waters Road



Poplar Drive/Hilton Road/Fred Meyer



Future 2042 Traffic Volumes
Weekday PM Peak Hour
Medford, Oregon

Figure
2

H:\23\23641 - Exit 30 IAMP\gis\TM4\Turning Movements.dwg Aug 14, 2020 - 1:40pm - mbell Layout Tab: Fig02

methodology identified in the National Cooperative Highway Research Program (NCHRP) Report 765 *Analytical Travel Forecasting Approaches for Project-Level Planning and Design*, in conjunction with engineering judgment and knowledge of the study area. The methodology combines existing traffic volumes with base and future year traffic volume projections and derives forecast traffic volumes along the study area roadways and at the study intersections. Figure 2 summarizes the year 2042 traffic volumes developed at the study intersections for the traffic operations analysis.

Intersection Operations Analysis

The intersection operations analysis was conducted using Synchro 10, which is a software tool designed to assist with operations analyses in accordance with Highway Capacity Manual (HCM) methodologies. The analysis results include level-of-service (LOS), delay (del), and volume-to-capacity (v/c) at all intersections regardless of jurisdiction. The LOS, del, and v/c are reported for the overall intersection at signalized intersections and the critical movement at unsignalized intersections – the overall intersection v/c ratios were developed in accordance with the methodologies outlined in ODOT's Analysis Procedures Manual (APM).

Table 1 summarizes the intersection operations analysis results and compares them to applicable mobility standards and targets. As shown, several study intersections are forecast to exceed their applicable mobility standards and targets. *Attachment A contains the future no-build traffic conditions HCM 6th and HCM 2000 worksheets.*

Table 1: Future Intersection Operations

Map ID	Location	Control Type	Mobility Standard/Target	CM	V/C	Del	LOS
1	OR 99 / Table Rock Road	Signal	0.95	N/A	0.87	42.1	D
2	OR 62-OR 238 / OR 99-Court Street-N Riverside Avenue	Signal	0.90	N/A	**0.99**	67.3	E
3	OR 62 / Rogue Valley Mall entrance (west)	Signal	0.90	N/A	0.83	12.0	B
4	OR 62 / Rogue Valley Mall entrance (east, at Target)	Unsignalized	0.90 N-S/0.95 E-W	SBL	**>1.0**	>80.0	F
5[1]	OR 62 / I-5 Southbound Ramp Terminal	Signal	0.85[3]	N/A	**0.89**	28.9	C
6[1]	OR 62 / I-5 Northbound Ramp Terminal	Signal	0.85[3]	N/A	**0.98**	37.2	D
7[2]	OR 62 / Biddle Road (north end of jug handle)	Unsignalized	0.85 N-S/0.95 E-W	WBR	0.48	13.1	B
8[1]	OR 62 / Biddle Road (south end of jug handle)	Signal	0.95	N/A	0.90	26.0	C
9	Biddle Road / Hilton Court	Signal	0.95	N/A	0.65	14.5	B
10[2]	OR 62 / Hilton Court-Fred Meyer Parking Lot Entrance	Unsignalized	0.85 N-S/0.9 5E-W	EBR	**>1.0**	>80.0	F
11	OR 62 / Bullock Road-Poplar Drive	Signal	0.85	N/A	**>1.0**	>80.0	F
12	OR 62 / Sky Park Drive	Unsignalized	0.85 N-S/0.95 E-W	WBL	0.04	19.5	C
13	OR 62 / Whittle Avenue	Unsignalized	0.90 N-S/0.95 E-W	SBL	0.45	23.5	C
14	OR 62 / Delta Waters Road	Signal	0.90/LOS D[4]	N/A	**>1.0**	>80.0	F
15	Poplar Drive / Hilton Road	Unsignalized	LOS D	WBL	0.34	18.5	C

[1]Lane configurations not supported by HCM 2010 or 6th Edition methodologies, therefore, HCM 2000 results are reported.
[2]The HCM 2010 and HCM 6th Edition analysis results do not reflect field observations. Therefore, the HCM 2000 analysis results are reported.
[3]This mobility target may be increased to as much as 0.90 through the IAMP adoption process.
[4]City and State mobility standards and targets are shown given the upcoming jurisdictional transfer.

The following intersections currently exceed their respective mobility standards and targets:

- OR 62-OR 238 / OR 99-Court Street-N Riverside Avenue
- OR 62 / Rogue Valley Mall entrance (east, at Target)
- OR 62 / I-5 Southbound Ramp Terminal
- OR 62 / I-5 Northbound Ramp Terminal
- OR 62 / Hilton Court-Fred Meyer Parking Lot Entrance
- OR 62 / Bullock Road-Poplar Drive
- OR 62 / Delta Waters Road

Queueing Analysis

A queuing analysis was conducted at the study intersections using SimTraffic microsimulation software within Synchro 10. Table 2 summarizes the 95th percentile queues during the weekday PM peak hour under future year 2042 traffic conditions and indicates if existing storage can accommodate future queues. The vehicle queue and storage lengths were rounded to the nearest 25-feet. The turning movement storage lengths reflect the striped storage for each turn-lane pocket at the intersections and the through movement storage lengths reflect the distance from the intersections to the nearest adjacent intersection and/or driveway. *Attachment B contains the SimTraffic reports.*

Table 2: Future Queuing Analysis

Map ID	Location	Movement[1]	Storage Length (Feet)	95th Percentile Queue (Feet)	Adequate?
1	OR 99 /Table Rock Road	NBL	340	150	Yes
		NBT	525	275	Yes
		NBTR	340	275	Yes
		SBL (x2)	500	450-525	Yes[6]
		SBTR	160	675	Yes[2]
		EBL	250	200	Yes
		EBT-TR	150	550-575	Yes[2]
		WBL	200	275	**No**
		WBT (x2)	190	675-700	**No**
		WBR	975	600	Yes
2	OR 62-OR 238 / OR 99-Court Street-N Riverside Avenue	NBL	150	400	**No**
		NBT (x2)	750	5,425-5,475	**No**
		NBR	400	700	**No**
		SBL (x2)	325	225-325	Yes
		SBT (x2)	530	450-475	Yes
		SBR	400	400	Yes
		EBL (x2)	400	350-625	**No**
		EBT-TR	810	875-900	**No**
		WBL	385	775	Yes[2]
		WBT (x3)	385	875-900	Yes[2]

Map ID	Location	Movement[1]	Storage Length (Feet)	95th Percentile Queue (Feet)	Adequate?
		WBR (x2)	680	75-725	**No**
3	OR 62 / Rogue Valley Mall entrance (west)	NBT (x3)	530	325-550	**No**
		NBR	100	200	**No**
		SBL (x2)	300	75-150	Yes
		SBT (x2)	1215	275-300	Yes
		WBL	175	150	Yes
		WBR (x2)	175	100	Yes
4	OR 62 / Rogue Valley Mall entrance (east, at Target)	NBR	125	75	Yes
		SBL	200	175	Yes
		WBR	180	275	**No[7]**
5	OR 62 / I-5 Southbound Ramp Terminal	NBT (x3)	670	250-525	Yes
		NBR	75	100	**No**
		SBT (x2)	530	175-200	Yes
		SBR	625	100	Yes
		EBL	200	325	Yes[3]
		EBTL	200	375	Yes[3]
		EBR	350	700	Yes[3]
6	OR 62 / I-5 Northbound Ramp Terminal	NBT (x3)	530	550-650	**No**
		SBT (x3)	1,100	400-450	Yes
		SBR	295	250	Yes
		WBL	675	3,975	**No**
		WBLTR	675	3,925	**No**
		WBR	675	3,900	**No**
7	OR 62 / Biddle Road (north end of jug handle)	WBR	1,125	600	Yes
8	OR 62 / Biddle Road (south end of jug handle)	NBT-TR	275	1,475-1,500	**No**
		SBL	100	175	**No**
		SBT (x2)	640	1,100	Yes[2]
		WBL	875	225	Yes
		WBLR	875	250	Yes
9	Biddle Road / Hilton Court	NBL	320	150	Yes
		NBT (x2)	425	1,150-1,225	**No**
		NBR	220	425	**No**
		SBL	175	350	Yes[5]
		SBT-TR	540	1,450	Yes[2]
		EBL	375	250	Yes
		EBTR	300	600	Yes[2]
		WBL (x2)	220	50-75	Yes
		WBTR	220	50	Yes
10	OR 62 / Hilton Court-Fred Meyer Parking Lot Entrance	NBR	90	225	**No**
		EBR	1,200	1,350	Yes[6]
		WBR	200	325	**No[7]**
11	OR 62 / Bullock Road-Poplar Drive	NBL	450	400	Yes
		NBT (x2)	360	550-575	Yes[2]
		NBTR	360	550	Yes[2]
		SBL (x2)	410	350	Yes

Map ID	Location	Movement[1]	Storage Length (Feet)	95th Percentile Queue (Feet)	Adequate?
		SBT (x3)	2200	350	Yes
		SBR	425	425	Yes
		EBL (x2)	350	450-550	**No**
		EBT	165	1,500	Yes[2]
		EBR	150	200	**No**
		WBL (x2)	250	275	Yes[6]
		WBT	930	300	Yes
		WBR	450	300	Yes
12	OR 62 / Sky Park Drive	WBR	100	50	Yes
13	OR 62 / Whittle Avenue	WBR	135	100	Yes
14	OR 62 / Delta Waters Road	NBL (x2)	500	325-350	Yes
		NBT (x2)	620	300	Yes
		NBR	500	225	Yes
		SBL	200	350	Yes[6]
		SBT-TR	1190	1,625-1,650	Yes[2]
		EBL	225	275	Yes[8]
		EBT (x2)	400	350-375	Yes
		EBR (x2)	415	400	Yes
		WBL	400	500	Yes[8]
		WBT-TR	130	525-575	Yes[2]

[1] WB= Westbound, SB = Southbound, EB = Eastbound, NB = Northbound, L = Left, T = Through, R = Right
[2]Sufficient storage is available, but queue blocks nearest driveway or minor street intersection.
[3]Additional storage is available on the southbound ramp, outside of the deceleration lane.
[5]Additional storage is available in the center two-way left-turn lane on Biddle Road.
[6]Additional storage is available in the through lane(s).
[7]Queue extends onto private property.
[8]Sufficient storage is available for this queue beyond the striped storage.

As shown in Table 2, 95th percentile queues for one or more movements at the following study intersections exceed their current striped storage in 2042:

- 1: OR 99 / Table Rock Road – the westbound left-turn queue exceeds its striped storage and the westbound through queues block the upstream signalized intersection.
- 2: OR 62-OR 238 / OR 99-Court Street-N Riverside Avenue – the northbound left-, northbound right-, eastbound left-, and westbound right-turn queues exceed their striped storage and the northbound through and eastbound through-through/right queues block the upstream signalized intersections.
- 3: OR 62 / Rogue Valley Mall entrance (west) – the northbound through queues block the upstream signalized intersection and the northbound right-turn queue exceeds its striped storage.
- 4: OR 62 / Rogue Valley Mall entrance (east, at Target) – the westbound right-turn queue exceeds its striped storage.
- 5: OR 62 / I-5 Southbound Ramp Terminal – the northbound right-turn queue exceeds its striped storage.

- 6: OR 62 / I-5 Northbound Ramp Terminal – the northbound through queues block the upstream signalized intersection and the westbound left- and right-turn and through queues block the outside (right) northbound lane of I-5.
- 8: OR 62 / Biddle Road (south end of jug handle) – the northbound through-through/right queues block the upstream signalized intersection and the southbound left-turn queue exceeds its striped storage.
- 9: Biddle Road / Hilton Court – the northbound through queues block the upstream signalized intersection and the northbound right-turn queue exceeds its striped storage.
- 10: OR 62 / Hilton Court-Fred Meyer Parking Lot Entrance – the northbound and westbound right-turn queues exceed their striped storage.
- 11: OR 62 / Bullock Road-Poplar Drive – the eastbound left and right-turn queues exceed their striped storage.

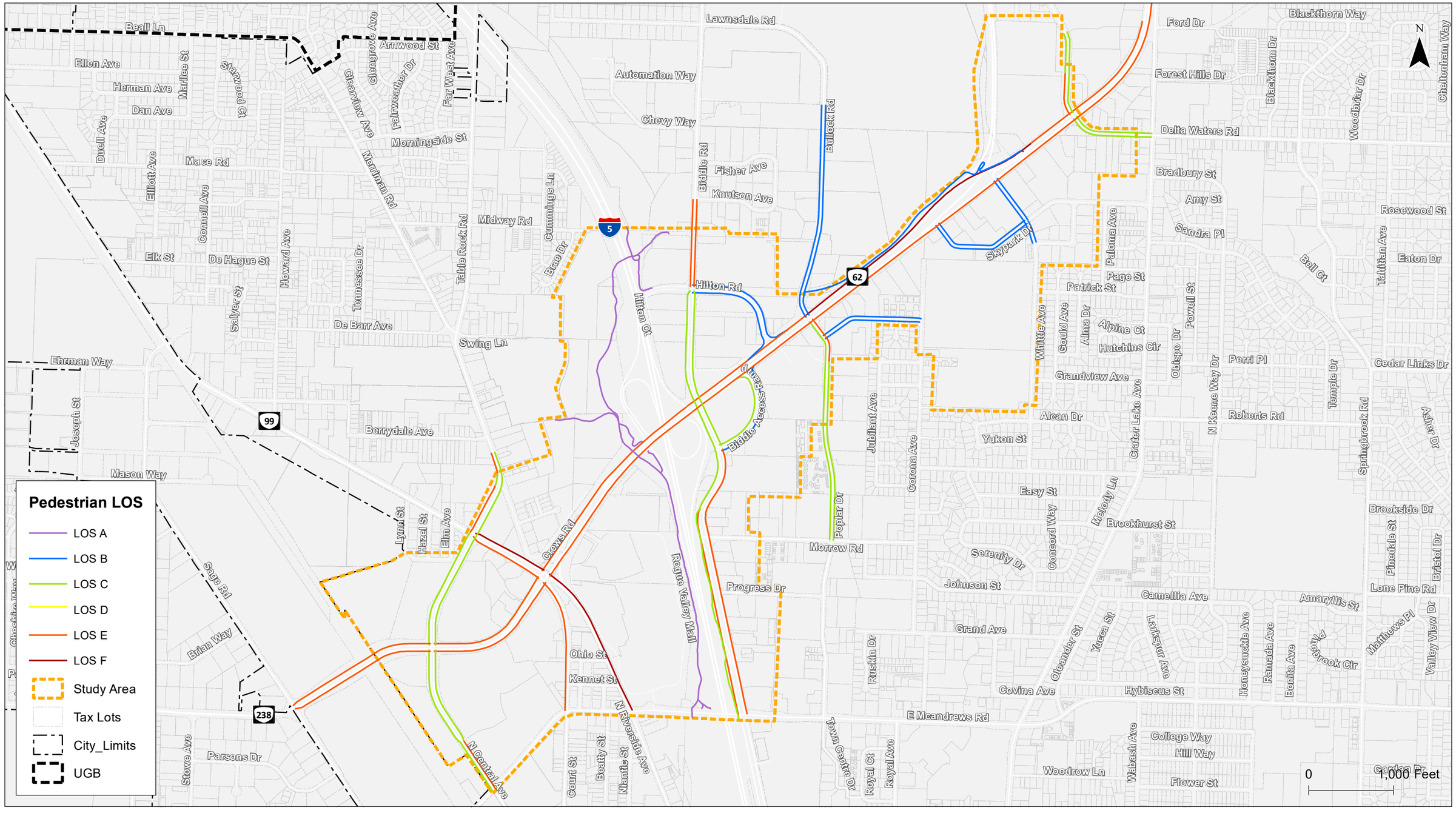
FUTURE MULTIMODAL ANALYSIS

The pedestrian, bicycle, and transit facilities and services within the IMSA were evaluated under year 2042 no-build traffic conditions in accordance with the simplified Multimodal Level-of-Service (LOS) analysis methodologies identified in Chapter 14 of the ODOT Analysis Procedures Manual (APM). Per the APM, these methodologies are intended for use when a detailed analysis is desired or when a no-build alternative is compared to one or more build alternatives. These methodologies are not meant for defining overall needs or making prioritization decisions, rather they are meant for evaluating alternatives. Multimodal LOS scores are based on user perceptions (traveler satisfaction) and are graded from best (LOS A) to worst (LOS F). A more detailed description of how the scores were developed is provided in *Tech Memo 2 Appendix C: Traffic Operations Analysis.* The results of the future multimodal analysis are summarized below.

Pedestrian Level of Service

As described in *Tech Memo 2C: Traffic Operations Analysis*, the simplified multimodal LOS analysis methodology uses four variables to estimate Pedestrian LOS. The only variable that is expected to change under year 2042 no-build conditions is directional traffic volume.

Figure 3 illustrates the future Pedestrian LOS analysis results for major roadways (collector and above) in the IMSA. As shown, most facilities are expected to continue to operate at LOS E with the exception of the segments with relatively low traffic volumes and/or travel speeds, such as Biddle Road, Bullock Road, and Poplar Drive. The segment of OR 62 from Bullock Road to the right-in/right-out commercial driveway is shown as LOS F; however, the shared-use path that runs parallel to OR 62 is LOS A. The segments that changed relative to existing conditions include Biddle Road from Morrow Road to the Jug Handle (the northbound segment changed from LOS C to LOS E) and the Jug Handle from OR 62 to Biddle Road (the southbound segment changed from LOS B to LOS C). *A tabulated summary of the Pedestrian LOS analysis results is provided in Attachment C*.



Pedestrian Level of Service (LOS)
Medford, Oregon

Figure **3**

H:\23123641 - Exit 30 IAMP\gis\TM\43_Ped LOS.mxd - mbell - 4:55 PM 8/13/2020

KITTELSON & ASSOCIATES

Coordinate System: NAD 1983 2011 StatePlane Oregon South FIPS 3602 Ft Intl

Bicycle Level of Service

As described in *Tech Memo 2C: Traffic Operations Analysis*, the simplified multimodal LOS analysis methodology uses four variables to estimate Bicycle LOS. However, none of the variables are expected to change under year 2042 no-build traffic conditions.

Figure 4 illustrates the future Bicycle LOS analysis results for major roadways (collector and above) in the IMSA. As shown, most facilities are expected to continue to operate at LOS D with the exception of the segments with relatively low traffic volumes and/or travel speeds, such as Bullock Road. The segment of OR 62 from Poplar Road to Delta Waters Road is show as LOS F, despite buffered bike lanes, due to the number of unsignalized conflicts along the roadway. *A tabulated summary of the Bicycle LOS analysis results is provided in Attachment C.*

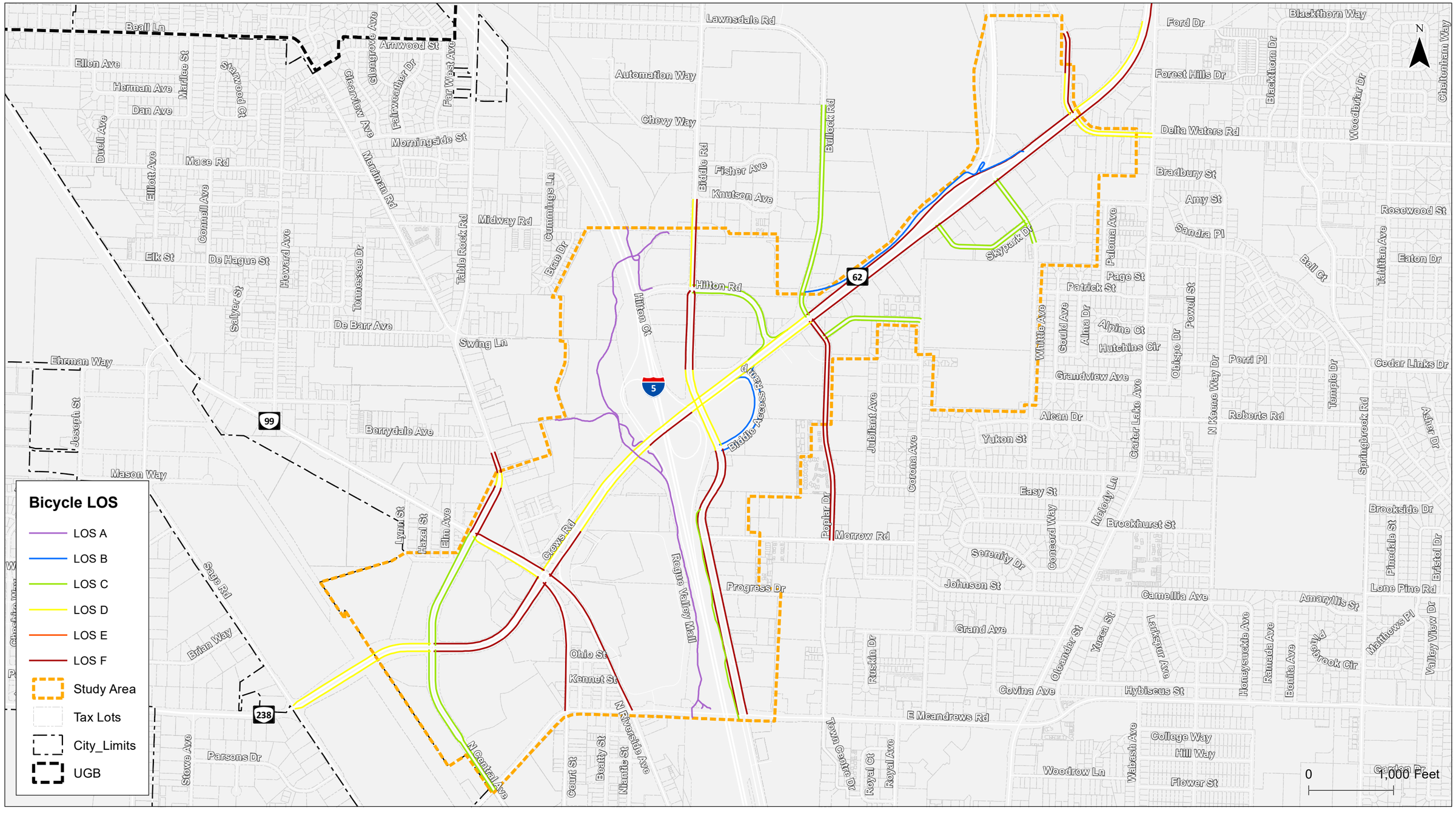
Transit Level of Service

As described in *Tech Memo 2C: Traffic Operations Analysis*, the simplified multimodal LOS analysis methodology uses four variables to estimate Transit LOS. The only variable that is expected to change under year 2042 traffic conditions is Pedestrian LOS. However, as indicated above, the changes are expected to be minimal.

Figure 5 illustrates the future Transit LOS analysis results for roadways in the IMSA with fixed-route transit service. As shown, the TLOS results continue to vary significantly between the roadways. Roadways that are served by multiple bus lines or by bus lines with shorter headways and/or travel times have better LOS. *A tabulated summary of the Transit LOS analysis results is provided in Attachment C.*

FUTURE FREIGHT ANALYSIS

The future freight analysis identifies potential issues with freight movements on designated freight routes within the IMSA, including freight route restrictions, bottlenecks, over-dimension load pinch points. As indicated in *Tech Memo 2B: Transportation Inventory*, the majority of state highways within the IMSA are designated freight routes and/or National Highway System (NHS) routes. Therefore, they have been designed to accommodate large trucks and the intersections have been designed to accommodate large truck turning movements. The Motor Carrier Transportation Division (MCTD) Freight Mobility Map also identifies the majority of state highways in the IMSA as *Orange Routes*, or generally unrestricted freight and oversize/overweight routes; OR 238 is identified as a *Magenta Route*, which is a route with some restrictions for both length and width. The inventory also indicates that there are no freight bottlenecks or over dimension load pinch points within the IMSA. Therefore, the only potential issues with future freight movements are the traffic operations and safety issues identified previously in this report.



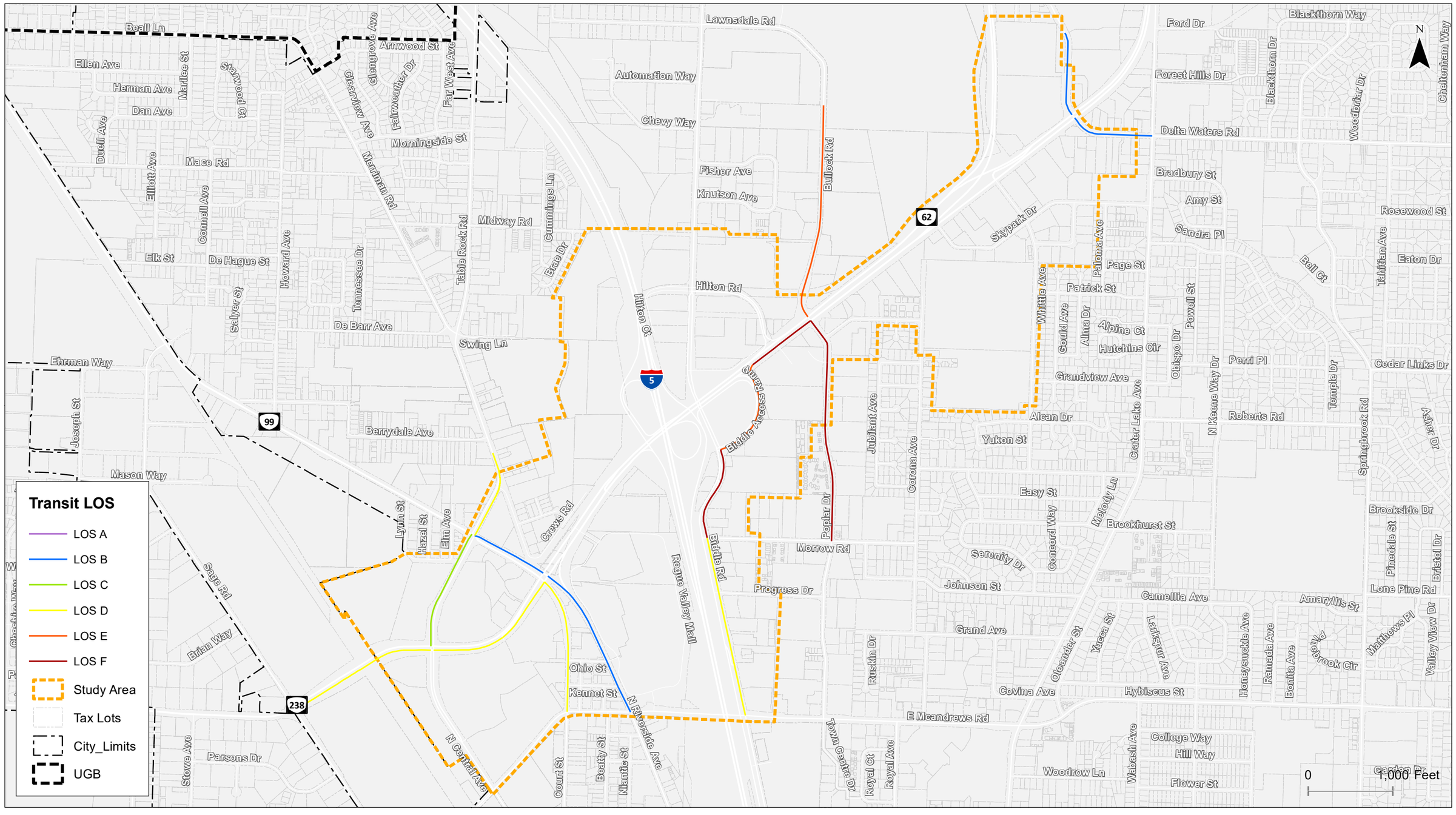
Bicycle Level of Service (LOS)
Medford, Oregon

Figure
4

H:\23123641 - Exit 30 IAMP\gis\TM4\4_Bike LOS.mxd - mbell - 4:54 PM 8/13/2020

KITTELSON & ASSOCIATES

Coordinate System: NAD 1983 2011 StatePlane Oregon South FIPS 3602 Ft Intl



Transit Level of Service (LOS)
Medford, Oregon

Figure **5**

H:\23123641 - Exit 30 IAMP\gis\TM45_Transit LOS.mxd - mbell - 3:34 PM 8/13/2020

KITTELSON & ASSOCIATES

Coordinate System: NAD 1983 2011 StatePlane Oregon South FIPS 3602 Ft Intl

AREAS OF SAFETY CONCERN

The crash analysis in *Tech Memo 2C: Traffic Operations Analysis* provides crash rates for intersections and roadway segments in the IMSA. The crash rates that exceed those of similar facilities throughout the state and within the IMSA highlight areas of potential safety concern. The following summarize the characteristics of the intersections and roadways segments with potential safety concerns.

- Intersection Crash Rate Analysis – The OR 62 / Whittle Avenue intersection was found to exceed the 90th percentile rate for similar facilities throughout Oregon based on the most recently available historical crash data. It is important to note that most of the crashes occurred prior to the OR 62 bypass opening. This infrastructure improvement may result in future changes to the crash patterns at Whittle Road and should be monitored by ODOT and the City of Medford.
- Critical Crash Rate Analysis – The OR 62/Delta Waters Road intersection was found to exceed the critical crash rate for the reference population of 4-leg, signalized intersections within the IMSA. It is important to note that, like the OR 62/Whittle Avenue intersection, most of the crashes occurred prior to the OR 62 bypass opening. This infrastructure improvement may result in future changes to the crash patterns at Delta Waters Road and should be monitored by ODOT and the City of Medford.
- Excess Proportion of Specific Crash Types Analysis – Seven intersections were identified with excess proportions of specific crash types. The intersections, crash types, and probability of future occurrences are summarized below:
    - OR 99 / Table Rock – fixed-object (99%)
    - OR 62-OR 238 / OR 99-Court St-N Riverside Av – angle (100%)/fixed-object (99%)
    - OR 62 / I-5 Northbound Ramp Terminal – turning movement (99%)
    - Biddle Road / Hilton Court – Angle (97%)
    - OR 62 / Bullock Road-Poplar Drive – backing (99%)/fixed-object (99%)
    - OR 62 / Whittle Avenue – turning movement (98%)
    - OR 62 / Delta Waters Road – angle (95%)/backing (98%)
- Segment Crash Analysis – 15 segments within the IMSA have crash rates that currently exceed the 90th percentile rate for similar facilities throughout Oregon. The segments include:
    - OR 99 from Table Rock Road to OR 62
    - OR 62 from OR 99 to RVM Main Entrance
    - OR 62 from Target Entrance to I-5 SB Ramp Terminal
    - I-5 SB Off-Ramp from SB Off-Ramp Gore to OR 62
    - Northerly SB On-Ramp from OR 62 to Northerly SB On-Ramp Gore
    - I-5 NB Off-Ramp from NB Off-Ramp Gore to OR 62
    - Southerly NB On-Ramp from OR 62 to Southerly NB On-Ramp Gore

- OR 62 from I-5 SB Ramp Terminal to I-5 NB Ramp Terminal
- OR 62 from I-5 NB Ramp Terminal to Biddle Road Jug handle (north)
- Biddle Road from north of Morrow Road to Biddle Road Jug handle
- OR 62 from Biddle Road Jug handle (north) to Fred Meyer Entrance
- OR 62 from Fred Meyer Entrance to Bullock Road-Poplar Drive
- OR 62 from Bullock Road-Poplar Drive to Sky Park Drive
- OR 62 from Sky Park Drive to Whittle Avenue
- OR 62 from Whittle Avenue to Delta Waters Road

These areas of safety concern will likely be exacerbated with the anticipated growth in traffic volumes within the IMSA so long that countermeasures are not provided.

PLANNED PROJECTS

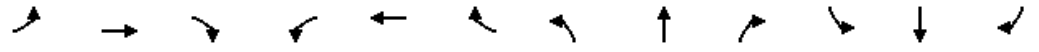
Table 3 summarizes the projects listed in the 2018-2021 Active Statewide Transportation Improvement Program (STIP) that are located within the IMSA. While these projects are expected to improve access and circulation within the IMSA, the improvements are not reflected in the 2042 no-build analysis.

Table 3: Planned Projects

Name	Description	Key	Location	Category	Year
OR 99/I-5/OR 238/OR 62 curb ramps	Design and construct curb ramps to meet compliance with the American with Disabilities Act (ADA) standards on state highways in various locations in the cities of… Medford…	21492	OR 238: milepost 33.38 to 38.42 (includes OR 238/ N Central Ave)	Construction	2020
OR 62: Corridor Solutions unit 2 (Medford) Phase 4	Construct footings and structures to install agency supplied signs, radios, cameras, Bluetooth sensors, Ethernet switches, blank-out sign, traffic sensors, and traffic signal controllers.	21511	OR 62: milepost 1.22 to 5.13 (includes expressway and Delta Waters)	• Prelim. Engineering • Right of Way • Utility Relocation • Construction	2021

Attachment A Future No-build Traffic Conditions Worksheets

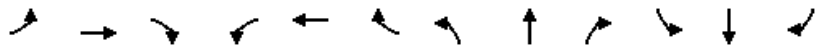
HCM 6th Worksheets



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	769	105	44	1156	685	94	459	32	592	447	32
Future Volume (veh/h)	45	769	105	44	1156	685	94	459	32	592	447	32
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1573	1723	1723	1750	1723	1750	1750	1736	1736	1750	1723	1723
Adj Flow Rate, veh/h	47	801	109	46	1204	714	98	478	33	617	466	33
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	13	2	2	0	2	0	0	1	1	0	2	2
Cap, veh/h	56	1064	145	61	1204	870	125	576	40	725	529	37
Arrive On Green	0.04	0.37	0.37	0.04	0.37	0.37	0.07	0.18	0.18	0.22	0.33	0.33
Sat Flow, veh/h	1498	2885	393	1667	3273	1461	1667	3131	216	3233	1588	112
Grp Volume(v), veh/h	47	454	456	46	1204	714	98	251	260	617	0	499
Grp Sat Flow(s),veh/h/ln	1498	1637	1641	1667	1637	1461	1667	1650	1697	1617	0	1700
Q Serve(g_s), s	3.0	23.4	23.4	2.6	35.5	35.5	5.6	14.2	14.2	17.7	0.0	26.7
Cycle Q Clear(g_c), s	3.0	23.4	23.4	2.6	35.5	35.5	5.6	14.2	14.2	17.7	0.0	26.7
Prop In Lane	1.00		0.24	1.00		1.00	1.00		0.13	1.00		0.07
Lane Grp Cap(c), veh/h	56	603	605	61	1204	870	125	303	312	725	0	567
V/C Ratio(X)	0.83	0.75	0.75	0.75	1.00	0.82	0.78	0.83	0.83	0.85	0.00	0.88
Avail Cap(c_a), veh/h	209	603	605	233	1204	870	337	436	448	921	0	590
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	46.2	26.6	26.6	46.1	30.5	15.7	43.9	37.9	38.0	35.9	0.0	30.4
Incr Delay (d2), s/veh	20.3	5.8	5.8	12.8	26.0	6.6	7.8	7.5	7.7	5.8	0.0	13.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	9.7	9.7	1.3	17.5	12.5	2.5	6.2	6.4	7.3	0.0	12.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	66.5	32.4	32.4	58.9	56.5	22.4	51.7	45.5	45.6	41.7	0.0	44.2
LnGrp LOS	E	C	C	E	F	C	D	D	D	D	A	D
Approach Vol, veh/h		957			1964			609			1116	
Approach Delay, s/veh		34.1			44.2			46.5			42.8	
Approach LOS		C			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.0	40.1	11.7	36.7	8.1	40.0	26.2	22.3
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	13.5	35.5	19.5	33.5	13.5	35.5	27.5	25.5
Max Q Clear Time (g_c+I1), s	4.6	25.4	7.6	28.7	5.0	37.5	19.7	16.2
Green Ext Time (p_c), s	0.1	7.5	0.2	1.0	0.1	0.0	2.0	1.5

Intersection Summary	
HCM 6th Ctrl Delay	42.1
HCM 6th LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	438	900	55	110	1231	617	83	904	116	441	1047	593
Future Volume (veh/h)	438	900	55	110	1231	617	83	904	116	441	1047	593
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.97	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1736	1736	1736	1723	1736	1723	1695	1709	1736	1709	1723
Adj Flow Rate, veh/h	461	947	58	116	1296	649	87	952	122	464	1102	624
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	1	1	1	2	1	2	4	3	1	3	2
Cap, veh/h	527	1156	71	139	1340	1137	108	792	354	523	1115	741
Arrive On Green	0.17	0.37	0.37	0.08	0.28	0.28	0.07	0.25	0.25	0.16	0.34	0.34
Sat Flow, veh/h	3183	3154	193	1654	4703	2509	1641	3221	1438	3208	3247	1452
Grp Volume(v), veh/h	461	495	510	116	1296	649	87	952	122	464	1102	624
Grp Sat Flow(s),veh/h/ln	1591	1650	1698	1654	1568	1254	1641	1611	1438	1604	1624	1452
Q Serve(g_s), s	18.1	34.8	34.8	8.9	34.8	24.7	6.7	31.5	9.0	18.1	43.2	44.0
Cycle Q Clear(g_c), s	18.1	34.8	34.8	8.9	34.8	24.7	6.7	31.5	9.0	18.1	43.2	44.0
Prop In Lane	1.00		0.11	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	527	605	622	139	1340	1137	108	792	354	523	1115	741
V/C Ratio(X)	0.87	0.82	0.82	0.84	0.97	0.57	0.81	1.20	0.35	0.89	0.99	0.84
Avail Cap(c_a), veh/h	634	624	643	174	1340	1137	173	792	354	588	1115	741
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.2	36.7	36.7	57.8	45.2	26.3	59.1	48.3	39.8	52.4	41.8	27.1
Incr Delay (d2), s/veh	10.9	8.8	8.6	22.2	17.4	0.9	10.5	102.8	0.4	13.7	24.0	8.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.0	15.2	15.6	4.5	15.5	7.4	3.1	23.8	3.2	8.2	20.6	17.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	63.0	45.5	45.3	80.0	62.6	27.2	69.5	151.1	40.2	66.1	65.8	35.6
LnGrp LOS	E	D	D	E	E	C	E	F	D	E	E	D
Approach Vol, veh/h		1466			2061			1161			2190	
Approach Delay, s/veh		50.9			52.4			133.4			57.2	
Approach LOS		D			D			F			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.3	51.5	12.9	48.5	25.7	41.0	25.4	36.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	13.5	48.5	13.5	41.5	25.5	36.5	23.5	31.5
Max Q Clear Time (g_c+I1), s	10.9	36.8	8.7	46.0	20.1	36.8	20.1	33.5
Green Ext Time (p_c), s	0.1	9.0	0.1	0.0	1.1	0.0	0.8	0.0

Intersection Summary	
HCM 6th Ctrl Delay	67.3
HCM 6th LOS	E



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	138	207	1878	81	147	1943
Future Volume (veh/h)	138	207	1878	81	147	1943
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.98	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1736	1736	1709	1736	1750	1695
Adj Flow Rate, veh/h	145	218	1977	85	155	2045
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	3	1	0	4
Cap, veh/h	202	503	2999	926	233	2478
Arrive On Green	0.12	0.12	0.64	0.64	0.07	0.77
Sat Flow, veh/h	1654	2590	4820	1440	3233	3306
Grp Volume(v), veh/h	145	218	1977	85	155	2045
Grp Sat Flow(s),veh/h/ln	1654	1295	1555	1440	1617	1611
Q Serve(g_s), s	7.0	6.1	21.7	1.9	3.9	33.2
Cycle Q Clear(g_c), s	7.0	6.1	21.7	1.9	3.9	33.2
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	202	503	2999	926	233	2478
V/C Ratio(X)	0.72	0.43	0.66	0.09	0.66	0.83
Avail Cap(c_a), veh/h	330	703	2999	926	449	2510
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.0	29.3	9.2	5.6	37.4	6.0
Incr Delay (d2), s/veh	3.5	0.4	0.6	0.1	2.4	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	1.9	6.0	0.5	1.6	7.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	38.5	29.8	9.8	5.7	39.8	8.5
LnGrp LOS	D	C	A	A	D	A
Approach Vol, veh/h	363		2062			2200
Approach Delay, s/veh	33.3		9.6			10.7
Approach LOS	C		A			B

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	10.5	57.7			68.2	14.6
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5
Max Green Setting (Gmax), s	11.5	48.5			64.5	16.5
Max Q Clear Time (g_c+I1), s	5.9	23.7			35.2	9.0
Green Ext Time (p_c), s	0.3	23.9			28.5	1.1

Intersection Summary	
HCM 6th Ctrl Delay	12.0
HCM 6th LOS	B

Intersection	
Int Delay, s/veh	9.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	127	1995	90	123	2090
Future Vol, veh/h	0	127	1995	90	123	2090
Conflicting Peds, #/hr	0	0	0	4	4	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	100	200	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	1	2	0	1	3
Mvmt Flow	0	135	2122	96	131	2223

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	1065	0	0	2222	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.12	-	-	5.32	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.91	-	-	3.11	-
Pot Cap-1 Maneuver	0	189	-	-	~ 98	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	188	-	-	~ 98	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	61.8	0	15.8
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	188	~ 98	-
HCM Lane V/C Ratio	-	-	0.719	1.335	-
HCM Control Delay (s)	-	-	61.8	283.8	-
HCM Lane LOS	-	-	F	F	-
HCM 95th %tile Q(veh)	-	-	4.5	9.4	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

HCM 6th Edition methodology does not support turning movements with shared & exclusive lanes.

HCM 6th Edition methodology does not support turning movements with shared & exclusive lanes.

Intersection	
Int Delay, s/veh	43.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↱	↑↑↑	↱		↑↑↑
Traffic Vol, veh/h	0	395	2146	211	0	3429
Future Vol, veh/h	0	395	2146	211	0	3429
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	Free	-	Free
Storage Length	-	0	-	75	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	6	0	0
Mvmt Flow	0	411	2235	220	0	3572

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	1118	0	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.1	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.9	-	-	-	-
Pot Cap-1 Maneuver	0	~ 176	-	0	0	-
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	-	~ 176	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	$ 661.3	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	WBLn1	SBT
Capacity (veh/h)	-	176	-
HCM Lane V/C Ratio	-	2.338	-
HCM Control Delay (s)	-	$ 661.3	-
HCM Lane LOS	-	F	-
HCM 95th %tile Q(veh)	-	34	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

HCM 6th Edition methodology does not support turning movements with shared & exclusive lanes.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	36	22	55	102	1	68	64	995	368	195	1011	12
Future Volume (veh/h)	36	22	55	102	1	68	64	995	368	195	1011	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1750	1682	1682	1682	1750	1750	1723	1709	1750	1723	1736	1736
Adj Flow Rate, veh/h	38	23	58	107	1	72	67	1047	387	205	1064	13
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	5	5	5	0	0	2	3	0	2	1	1
Cap, veh/h	267	35	89	512	2	164	350	1507	785	357	1703	21
Arrive On Green	0.04	0.08	0.08	0.07	0.11	0.11	0.05	0.46	0.46	0.10	0.51	0.51
Sat Flow, veh/h	1667	421	1061	3107	20	1458	1641	3247	1478	1641	3337	41
Grp Volume(v), veh/h	38	0	81	107	0	73	67	1047	387	205	526	551
Grp Sat Flow(s),veh/h/ln	1667	0	1482	1554	0	1478	1641	1624	1478	1641	1650	1728
Q Serve(g_s), s	1.3	0.0	3.4	1.9	0.0	2.9	1.3	16.2	10.5	3.9	14.5	14.5
Cycle Q Clear(g_c), s	1.3	0.0	3.4	1.9	0.0	2.9	1.3	16.2	10.5	3.9	14.5	14.5
Prop In Lane	1.00		0.72	1.00		0.99	1.00		1.00	1.00		0.02
Lane Grp Cap(c), veh/h	267	0	125	512	0	166	350	1507	785	357	842	882
V/C Ratio(X)	0.14	0.00	0.65	0.21	0.00	0.44	0.19	0.69	0.49	0.57	0.62	0.62
Avail Cap(c_a), veh/h	610	0	362	1064	0	361	791	1562	810	722	842	882
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.0	0.0	28.1	23.8	0.0	26.3	8.9	13.4	9.4	11.2	11.2	11.2
Incr Delay (d2), s/veh	0.2	0.0	4.2	0.1	0.0	1.3	0.2	1.5	0.7	1.1	1.8	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	1.3	0.7	0.0	1.0	0.4	5.4	3.0	1.2	4.8	5.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.2	0.0	32.3	23.9	0.0	27.6	9.1	14.9	10.2	12.2	12.9	12.8
LnGrp LOS	C	A	C	C	A	C	A	B	B	B	B	B
Approach Vol, veh/h		119			180			1501			1282	
Approach Delay, s/veh		30.0			25.4			13.4			12.8	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.0	36.9	6.9	11.6	10.9	33.9	8.7	9.8
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	20.5	30.5	15.5	15.5	20.5	30.5	15.5	15.5
Max Q Clear Time (g_c+I1), s	3.3	16.5	3.3	4.9	5.9	18.2	3.9	5.4
Green Ext Time (p_c), s	0.2	11.2	0.1	0.2	0.7	11.3	0.3	0.2

Intersection Summary	
HCM 6th Ctrl Delay	14.5
HCM 6th LOS	B

Intersection	
Int Delay, s/veh	241.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↱			↱		↑↑↑	↱		↑↑↑	↱
Traffic Vol, veh/h	0	0	585	0	0	78	0	2329	212	0	2844	171
Future Vol, veh/h	0	0	585	0	0	78	0	2329	212	0	2844	171
Conflicting Peds, #/hr	0	0	0	0	0	0	4	0	2	2	0	4
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Stop	-	-	None	-	-	None	-	-	Free
Storage Length	-	-	0	-	-	0	-	-	90	-	-	140
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	0	4	0	0	2	0	2	1	0	2	5
Mvmt Flow	0	0	609	0	0	81	0	2426	221	0	2963	178

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	1482	-	-	1215	-	0	0	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.18	-	-	7.14	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.94	-	-	3.92	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	~ 96	0	0	149	0	-	-	0	-	0
Stage 1	0	0	-	0	0	-	0	-	-	0	-	0
Stage 2	0	0	-	0	0	-	0	-	-	0	-	0
Platoon blocked, %								-	-		-	
Mov Cap-1 Maneuver	-	-	~ 96	-	-	149	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, $	2492.7	54.9	0	0
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBT
Capacity (veh/h)	-	-	96	149	-
HCM Lane V/C Ratio	-	-	6.348	0.545	-
HCM Control Delay (s)	-	-	$ 2492.7	54.9	-
HCM Lane LOS	-	-	F	F	-
HCM 95th %tile Q(veh)	-	-	67.6	2.7	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	516	203	221	466	242	444	60	2173	174	410	2328	337
Future Volume (veh/h)	516	203	221	466	242	444	60	2173	174	410	2328	337
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1736	1709	1750	1736	1736	1723	1723	1723	1750	1723	1709
Adj Flow Rate, veh/h	538	211	230	485	252	462	62	2264	181	427	2425	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	1	3	0	1	1	2	2	2	0	2	3
Cap, veh/h	502	240	197	540	247	206	79	1848	146	486	2416	
Arrive On Green	0.16	0.14	0.14	0.16	0.14	0.14	0.02	0.14	0.14	0.15	0.51	0.00
Sat Flow, veh/h	3183	1736	1426	3333	1736	1450	1641	4443	351	3333	4703	1448
Grp Volume(v), veh/h	538	211	230	485	252	462	62	1589	856	427	2425	0
Grp Sat Flow(s),veh/h/ln	1591	1736	1426	1667	1736	1450	1641	1568	1659	1667	1568	1448
Q Serve(g_s), s	20.5	15.5	17.9	18.6	18.5	13.9	4.9	54.1	54.1	16.3	66.8	0.0
Cycle Q Clear(g_c), s	20.5	15.5	17.9	18.6	18.5	13.9	4.9	54.1	54.1	16.3	66.8	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.21	1.00		1.00
Lane Grp Cap(c), veh/h	502	240	197	540	247	206	79	1304	690	486	2416	
V/C Ratio(X)	1.07	0.88	1.17	0.90	1.02	2.24	0.79	1.22	1.24	0.88	1.00	
Avail Cap(c_a), veh/h	502	240	197	577	247	206	170	1304	690	551	2416	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	54.8	55.0	56.0	53.4	55.8	31.3	63.3	56.1	56.1	54.4	31.6	0.0
Incr Delay (d2), s/veh	60.8	28.8	116.8	16.0	62.5	573.0	12.2	105.8	120.1	13.4	19.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.4	8.6	12.8	8.9	12.3	37.7	2.4	41.9	47.1	7.6	27.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	115.6	83.8	172.9	69.4	118.2	604.3	75.5	161.8	176.2	67.8	50.8	0.0
LnGrp LOS	F	F	F	E	F	F	E	F	F	E	F	
Approach Vol, veh/h		979			1199			2507			2852	A
Approach Delay, s/veh		122.2			285.8			164.6			53.4	
Approach LOS		F			F			F			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.4	58.6	25.6	22.4	10.7	71.3	25.0	23.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	21.5	51.5	22.5	16.5	13.5	59.5	20.5	18.5
Max Q Clear Time (g_c+I1), s	18.3	56.1	20.6	19.9	6.9	68.8	22.5	20.5
Green Ext Time (p_c), s	0.6	0.0	0.5	0.0	0.1	0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	136.3
HCM 6th LOS	F

Notes

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	11	1681	111	0	0
Future Vol, veh/h	0	11	1681	111	0	0
Conflicting Peds, #/hr	0	0	0	5	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	0	11	2	2	0	2
Mvmt Flow	0	11	1698	112	0	0

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	910	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.12	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.41	-	-	-	-
Pot Cap-1 Maneuver	0	260	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	259	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	19.5	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	259	-
HCM Lane V/C Ratio	-	-	0.043	-
HCM Control Delay (s)	-	-	19.5	-
HCM Lane LOS	-	-	C	-
HCM 95th %tile Q(veh)	-	-	0.1	-

Intersection	
Int Delay, s/veh	3.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	101	1582	110	149	0
Future Vol, veh/h	0	101	1582	110	149	0
Conflicting Peds, #/hr	0	0	0	7	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	650	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	5	3	2	0	2
Mvmt Flow	0	106	1665	116	157	0

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	898	0	0	1788	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7	-	-	4.1	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.35	-	-	2.2	-
Pot Cap-1 Maneuver	0	277	-	-	351	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	275	-	-	349	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	26.1	0	23.5
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	275	349	-
HCM Lane V/C Ratio	-	-	0.387	0.449	-
HCM Control Delay (s)	-	-	26.1	23.5	-
HCM Lane LOS	-	-	D	C	-
HCM 95th %tile Q(veh)	-	-	1.7	2.2	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	86	380	695	340	411	122	662	642	379	298	937	85
Future Volume (veh/h)	86	380	695	340	411	122	662	642	379	298	937	85
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1709	1736	1736	1723	1709	1709	1736	1682	1723	1709	1709	1709
Adj Flow Rate, veh/h	91	400	732	358	433	128	697	676	399	314	986	89
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	1	1	2	3	3	1	5	2	3	3	3
Cap, veh/h	94	457	871	378	770	225	642	1003	458	292	882	80
Arrive On Green	0.06	0.14	0.14	0.23	0.31	0.31	0.20	0.31	0.31	0.18	0.29	0.29
Sat Flow, veh/h	1628	3299	2543	1641	2474	724	3208	3195	1457	1628	3008	271
Grp Volume(v), veh/h	91	400	732	358	283	278	697	676	399	314	532	543
Grp Sat Flow(s),veh/h/ln	1628	1650	1272	1641	1624	1575	1604	1598	1457	1628	1624	1655
Q Serve(g_s), s	7.2	15.4	18.0	27.9	18.9	19.2	26.0	23.9	33.6	23.3	38.1	38.1
Cycle Q Clear(g_c), s	7.2	15.4	18.0	27.9	18.9	19.2	26.0	23.9	33.6	23.3	38.1	38.1
Prop In Lane	1.00		1.00	1.00		0.46	1.00		1.00	1.00		0.16
Lane Grp Cap(c), veh/h	94	457	871	378	505	490	642	1003	458	292	476	485
V/C Ratio(X)	0.97	0.88	0.84	0.95	0.56	0.57	1.09	0.67	0.87	1.08	1.12	1.12
Avail Cap(c_a), veh/h	94	457	871	379	506	491	642	1003	458	292	476	485
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	61.1	54.9	39.8	49.2	37.3	37.4	52.0	38.8	42.1	53.3	45.9	45.9
Incr Delay (d2), s/veh	81.9	16.4	7.0	32.5	0.8	1.0	61.0	1.5	16.0	74.3	77.5	77.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.1	7.4	11.5	14.7	7.6	7.5	15.6	9.3	13.9	15.3	25.0	25.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	143.0	71.3	46.9	81.7	38.2	38.4	112.9	40.2	58.1	127.6	123.4	123.2
LnGrp LOS	F	E	D	F	D	D	F	D	E	F	F	F
Approach Vol, veh/h		1223			919			1772			1389	
Approach Delay, s/veh		62.0			55.2			72.9			124.3	
Approach LOS		E			E			E			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	27.3	46.2	33.9	22.5	30.0	43.5	11.5	44.9
Change Period (Y+Rc), s	4.0	* 5.4	4.0	4.5	4.0	* 5.4	4.0	4.5
Max Green Setting (Gmax), s	23.3	* 41	30.0	18.0	26.0	* 38	7.5	40.5
Max Q Clear Time (g_c+I1), s	25.3	35.6	29.9	20.0	28.0	40.1	9.2	21.2
Green Ext Time (p_c), s	0.0	2.1	0.0	0.0	0.0	0.0	0.0	3.8

Intersection Summary	
HCM 6th Ctrl Delay	80.8
HCM 6th LOS	F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	18	0	0	131	0	1021	39	0	642	145
Future Vol, veh/h	0	0	18	0	0	131	0	1021	39	0	642	145
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	4	4	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	1	0	1	0	0	1	1
Mvmt Flow	0	0	19	0	0	138	0	1075	41	0	676	153

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	415	-	-	562	-	0	0	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.9	-	-	7.12	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.3	-	-	3.91	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	592	0	0	405	0	-	-	0	-	-
Stage 1	0	0	-	0	0	-	0	-	-	0	-	-
Stage 2	0	0	-	0	0	-	0	-	-	0	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	592	-	-	403	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.3	18.5	0	0
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	-	-	592	403	-	-
HCM Lane V/C Ratio	-	-	0.032	0.342	-	-
HCM Control Delay (s)	-	-	11.3	18.5	-	-
HCM Lane LOS	-	-	B	C	-	-
HCM 95th %tile Q(veh)	-	-	0.1	1.5	-	-

HCM 2000 Worksheets

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	769	105	44	1156	685	94	459	32	592	447	32
Future Volume (vph)	45	769	105	44	1156	685	94	459	32	592	447	32
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		0.97	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.99	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1471	3196		1662	3260	1476	1662	3262		3225	1689	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1471	3196		1662	3260	1476	1662	3262		3225	1689	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	47	801	109	46	1204	714	98	478	33	617	466	33
RTOR Reduction (vph)	0	9	0	0	0	112	0	4	0	0	2	0
Lane Group Flow (vph)	47	901	0	46	1204	602	98	507	0	617	497	0
Confl. Peds. (#/hr)			1	1			2					2
Confl. Bikes (#/hr)			1			3						2
Heavy Vehicles (%)	13%	2%	1%	0%	2%	0%	0%	1%	0%	0%	2%	9%
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6	7	3	8		7	4	
Permitted Phases						6						
Actuated Green, G (s)	7.0	36.8		6.6	36.4	60.2	9.4	22.1		23.8	36.5	
Effective Green, g (s)	7.0	36.8		6.6	36.4	60.2	9.4	22.1		23.8	36.5	
Actuated g/C Ratio	0.07	0.34		0.06	0.34	0.56	0.09	0.21		0.22	0.34	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	2.5	4.2		2.5	4.2	2.5	2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	95	1096		102	1105	890	145	671		715	574	
v/s Ratio Prot	c0.03	0.28		0.03	c0.37	0.15	0.06	0.16		c0.19	c0.29	
v/s Ratio Perm						0.26						
v/c Ratio	0.49	0.82		0.45	1.09	0.68	0.68	0.76		0.86	0.87	
Uniform Delay, d1	48.4	32.3		48.6	35.5	16.7	47.5	40.1		40.2	33.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.9	5.4		2.3	54.9	1.9	10.8	4.6		10.4	12.8	
Delay (s)	51.4	37.7		50.9	90.3	18.5	58.2	44.7		50.6	45.9	
Level of Service	D	D		D	F	B	E	D		D	D	
Approach Delay (s)		38.4			63.3			46.9			48.5	
Approach LOS		D			E			D			D	

Intersection Summary			
HCM 2000 Control Delay	52.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	107.3	Sum of lost time (s)	18.0
Intersection Capacity Utilization	85.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	438	900	55	110	1231	617	83	904	116	441	1047	593
Future Volume (vph)	438	900	55	110	1231	617	83	904	116	441	1047	593
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	0.97	0.95		1.00	0.91	0.88	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.99	1.00	1.00	0.98	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3162	3259		1646	4684	2568	1630	3197	1416	3193	3228	1445
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3162	3259		1646	4684	2568	1630	3197	1416	3193	3228	1445
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	461	947	58	116	1296	649	87	952	122	464	1102	624
RTOR Reduction (vph)	0	3	0	0	0	0	0	0	92	0	0	48
Lane Group Flow (vph)	461	1002	0	116	1296	649	87	952	30	464	1102	576
Confl. Peds. (#/hr)	18		3	18		3	3		6	6		3
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	2%	1%	2%	1%	2%	1%	2%	4%	3%	1%	3%	2%
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	pm+ov
Protected Phases	5	2		1	6	7	3	8		7	4	5
Permitted Phases						6			8			4
Actuated Green, G (s)	22.8	47.3		12.1	36.6	57.9	11.0	31.8	31.8	21.3	42.1	64.9
Effective Green, g (s)	22.8	47.3		12.1	36.6	57.9	11.0	31.8	31.8	21.3	42.1	64.9
Actuated g/C Ratio	0.17	0.36		0.09	0.28	0.44	0.08	0.24	0.24	0.16	0.32	0.50
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	2.5	4.2		2.5	4.2	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Lane Grp Cap (vph)	552	1181		152	1313	1227	137	779	345	521	1041	768
v/s Ratio Prot	c0.15	0.31		0.07	c0.28	0.09	0.05	c0.30		c0.15	c0.34	c0.13
v/s Ratio Perm						0.17			0.02			0.27
v/c Ratio	0.84	0.85		0.76	0.99	0.53	0.64	1.22	0.09	0.89	1.06	0.75
Uniform Delay, d1	52.0	38.3		57.8	46.7	26.4	57.8	49.4	38.1	53.5	44.2	26.3
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	10.4	6.2		19.3	21.6	0.3	8.1	111.3	0.1	17.1	44.8	3.8
Delay (s)	62.4	44.5		77.1	68.3	26.7	66.0	160.7	38.2	70.6	89.0	30.1
Level of Service	E	D		E	E	C	E	F	D	E	F	C
Approach Delay (s)		50.1			55.7			140.7			68.3	
Approach LOS		D			E			F			E	

Intersection Summary			
HCM 2000 Control Delay	72.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	130.5	Sum of lost time (s)	18.0
Intersection Capacity Utilization	95.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	138	207	1878	81	147	1943
Future Volume (vph)	138	207	1878	81	147	1943
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.88	0.91	1.00	0.97	0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.99	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1646	2592	4638	1454	3225	3197
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1646	2592	4638	1454	3225	3197
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	145	218	1977	85	155	2045
RTOR Reduction (vph)	0	9	0	23	0	0
Lane Group Flow (vph)	145	209	1977	62	155	2045
Confl. Peds. (#/hr)	3			1	1	
Confl. Bikes (#/hr)				1		
Heavy Vehicles (%)	1%	1%	3%	1%	0%	4%
Turn Type	Prot	pm+ov	NA	Perm	Prot	NA
Protected Phases	3	1	2		1	6
Permitted Phases		3		2		
Actuated Green, G (s)	11.5	20.2	39.7	39.7	8.7	52.9
Effective Green, g (s)	11.5	20.2	39.7	39.7	8.7	52.9
Actuated g/C Ratio	0.16	0.28	0.54	0.54	0.12	0.72
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	2.5	2.5	4.2	4.2	2.5	4.2
Lane Grp Cap (vph)	257	872	2508	786	382	2304
v/s Ratio Prot	c0.09	0.03	0.43		0.05	c0.64
v/s Ratio Perm		0.05		0.04		
v/c Ratio	0.56	0.24	0.79	0.08	0.41	0.89
Uniform Delay, d1	28.6	20.6	13.5	8.1	30.0	7.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.3	0.1	1.9	0.1	0.5	4.7
Delay (s)	30.9	20.7	15.3	8.1	30.5	12.7
Level of Service	C	C	B	A	C	B
Approach Delay (s)	24.8		15.0			13.9
Approach LOS	C		B			B

Intersection Summary			
HCM 2000 Control Delay	15.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	73.4	Sum of lost time (s)	13.5
Intersection Capacity Utilization	74.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	127	1995	90	123	2090
Future Volume (Veh/h)	0	127	1995	90	123	2090
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	135	2122	96	131	2223
Pedestrians	4					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			833			508
pX, platoon unblocked	0.62	0.68			0.68	
vC, conflicting volume	3500	711			2222	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	704	0			1142	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	82			68	
cM capacity (veh/h)	160	735			415	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3
Volume Total	135	707	707	707	96	131	1112	1112
Volume Left	0	0	0	0	0	131	0	0
Volume Right	135	0	0	0	96	0	0	0
cSH	735	1700	1700	1700	1700	415	1700	1700
Volume to Capacity	0.18	0.42	0.42	0.42	0.06	0.32	0.65	0.65
Queue Length 95th (ft)	17	0	0	0	0	33	0	0
Control Delay (s)	11.0	0.0	0.0	0.0	0.0	17.6	0.0	0.0
Lane LOS	B					C		
Approach Delay (s)	11.0	0.0				1.0		
Approach LOS	B							

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	66.1%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	440	1	231	0	0	0	0	1639	483	0	1982	1153
Future Volume (vph)	440	1	231	0	0	0	0	1639	483	0	1982	1153
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.5	4.5	4.5					4.5	4.5		4.5	4.5
Lane Util. Factor	0.95	0.95	1.00					0.91	1.00		0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00					1.00	0.97		1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00					1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85					1.00	0.85		1.00	0.85
Flt Protected	0.95	0.95	1.00					1.00	1.00		1.00	1.00
Satd. Flow (prot)	1533	1538	1417					4684	1407		3228	1417
Flt Permitted	0.95	0.95	1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	1533	1538	1417					4684	1407		3228	1417
Peak-hour factor, PHF	0.90	0.90	0.90	0.96	0.96	0.96	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	489	1	257	0	0	0	0	1725	508	0	2086	1214
RTOR Reduction (vph)	0	0	15	0	0	0	0	0	61	0	0	286
Lane Group Flow (vph)	244	246	242	0	0	0	0	1725	447	0	2086	928
Confl. Peds. (#/hr)							12		7	7		12
Confl. Bikes (#/hr)									2			1
Heavy Vehicles (%)	3%	0%	5%	0%	0%	0%	0%	2%	3%	100%	3%	2%
Turn Type	Perm	NA	Perm					NA	Perm		NA	Perm
Protected Phases		4						2			6	
Permitted Phases	4		4						2			6
Actuated Green, G (s)	25.1	25.1	25.1					95.9	95.9		95.9	95.9
Effective Green, g (s)	25.1	25.1	25.1					95.9	95.9		95.9	95.9
Actuated g/C Ratio	0.19	0.19	0.19					0.74	0.74		0.74	0.74
Clearance Time (s)	4.5	4.5	4.5					4.5	4.5		4.5	4.5
Vehicle Extension (s)	2.5	2.5	2.5					4.2	4.2		4.2	4.2
Lane Grp Cap (vph)	295	296	273					3455	1037		2381	1045
v/s Ratio Prot								0.37			0.65	
v/s Ratio Perm	0.16	0.16	c0.17						0.32			c0.65
v/c Ratio	0.83	0.83	0.89					0.50	0.43		0.88	0.89
Uniform Delay, d1	50.4	50.4	51.0					7.1	6.6		12.6	13.0
Progression Factor	1.00	1.00	1.00					1.00	1.00		0.31	6.09
Incremental Delay, d2	16.7	17.4	26.9					0.5	1.3		1.5	3.7
Delay (s)	67.1	67.8	77.9					7.6	7.9		5.4	82.6
Level of Service	E	E	E					A	A		A	F
Approach Delay (s)		71.1			0.0			7.7			33.8	
Approach LOS		E			A			A			C	

Intersection Summary			
HCM 2000 Control Delay	28.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	82.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	443	3	682	0	1675	404	0	2692	737
Future Volume (vph)	0	0	0	443	3	682	0	1675	404	0	2692	737
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)				4.5	4.5	4.5		4.5	4.5		4.5	4.5
Lane Util. Factor				0.95	0.91	0.95		0.91	1.00		0.91	1.00
Frpb, ped/bikes				1.00	1.00	1.00		1.00	0.96		1.00	0.98
Flpb, ped/bikes				0.97	1.00	1.00		1.00	1.00		1.00	1.00
Frt				1.00	0.87	0.85		1.00	0.85		1.00	0.85
Flt Protected				0.95	0.99	1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)				1465	1309	1346		4684	1360		4638	1400
Flt Permitted				0.95	0.99	1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)				1465	1309	1346		4684	1360		4638	1400
Peak-hour factor, PHF	0.98	0.98	0.98	0.88	0.88	0.88	0.93	0.93	0.93	0.97	0.97	0.97
Adj. Flow (vph)	0	0	0	503	3	775	0	1801	434	0	2775	760
RTOR Reduction (vph)	0	0	0	0	11	11	0	0	53	0	0	254
Lane Group Flow (vph)	0	0	0	443	409	407	0	1801	381	0	2775	506
Confl. Peds. (#/hr)			12	12			1		24	24		1
Confl. Bikes (#/hr)									1			1
Heavy Vehicles (%)	0%	0%	0%	5%	0%	5%	0%	2%	5%	0%	3%	4%
Turn Type				Perm	NA	Perm		NA	Perm		NA	Perm
Protected Phases					8			2			6	
Permitted Phases				8		8			2			6
Actuated Green, G (s)				42.2	42.2	42.2		78.8	78.8		78.8	78.8
Effective Green, g (s)				42.2	42.2	42.2		78.8	78.8		78.8	78.8
Actuated g/C Ratio				0.32	0.32	0.32		0.61	0.61		0.61	0.61
Clearance Time (s)				4.5	4.5	4.5		4.5	4.5		4.5	4.5
Vehicle Extension (s)				2.5	2.5	2.5		4.2	4.2		4.2	4.2
Lane Grp Cap (vph)				475	424	436		2839	824		2811	848
v/s Ratio Prot								0.38			c0.60	
v/s Ratio Perm				0.30	0.31	0.30			0.28			0.36
v/c Ratio				0.93	0.97	0.93		0.63	0.46		0.99	0.60
Uniform Delay, d1				42.5	43.2	42.5		16.4	14.0		25.1	15.8
Progression Factor				1.00	1.00	1.00		0.85	0.68		1.07	2.92
Incremental Delay, d2				25.4	34.4	27.1		0.9	1.6		10.1	1.7
Delay (s)				67.9	77.6	69.7		14.8	11.1		36.9	47.8
Level of Service				E	E	E		B	B		D	D
Approach Delay (s)		0.0			71.6			14.1			39.3	
Approach LOS		A			E			B			D	

Intersection Summary			
HCM 2000 Control Delay	37.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	91.6%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	395	2146	211	0	3429
Future Volume (Veh/h)	0	395	2146	211	0	3429
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	0	411	2235	220	0	3572
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			827			1005
pX, platoon unblocked	0.64	0.78			0.78	
vC, conflicting volume	3427	746			2236	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	525	0			1606	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	52			100	
cM capacity (veh/h)	312	852			322	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3
Volume Total	411	745	745	745	220	1191	1191	1191
Volume Left	0	0	0	0	0	0	0	0
Volume Right	411	0	0	0	220	0	0	0
cSH	852	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.48	0.44	0.44	0.44	0.13	0.70	0.70	0.70
Queue Length 95th (ft)	67	0	0	0	0	0	0	0
Control Delay (s)	13.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B							
Approach Delay (s)	13.1	0.0				0.0		
Approach LOS	B							

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	78.2%	ICU Level of Service	D
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	362	152	1281	314	81	1123
Future Volume (vph)	362	152	1281	314	81	1123
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.5		4.5		4.5	4.5
Lane Util. Factor	0.97		0.95		1.00	0.95
Frpb, ped/bikes	0.99		1.00		1.00	1.00
Flpb, ped/bikes	1.00		1.00		1.00	1.00
Frt	0.96		0.97		1.00	1.00
Flt Protected	0.97		1.00		0.95	1.00
Satd. Flow (prot)	3035		3143		1662	3292
Flt Permitted	0.97		1.00		0.95	1.00
Satd. Flow (perm)	3035		3143		1662	3292
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	381	160	1348	331	85	1182
RTOR Reduction (vph)	52	0	20	0	0	0
Lane Group Flow (vph)	489	0	1659	0	85	1182
Confl. Peds. (#/hr)		1				
Confl. Bikes (#/hr)				4		
Heavy Vehicles (%)	2%	4%	2%	3%	0%	1%
Turn Type	Prot		NA		Prot	NA
Protected Phases	8		2		1	6
Permitted Phases						
Actuated Green, G (s)	16.3		43.7		7.5	55.7
Effective Green, g (s)	16.3		43.7		7.5	55.7
Actuated g/C Ratio	0.20		0.54		0.09	0.69
Clearance Time (s)	4.5		4.5		4.5	4.5
Vehicle Extension (s)	2.5		4.2		2.5	4.2
Lane Grp Cap (vph)	610		1695		153	2263
v/s Ratio Prot	c0.16		c0.53		0.05	c0.36
v/s Ratio Perm						
v/c Ratio	0.80		0.98		0.56	0.52
Uniform Delay, d1	30.8		18.2		35.2	6.2
Progression Factor	1.00		1.00		1.00	1.00
Incremental Delay, d2	7.3		17.0		3.5	0.3
Delay (s)	38.1		35.2		38.6	6.5
Level of Service	D		D		D	A
Approach Delay (s)	38.1		35.2			8.6
Approach LOS	D		D			A

Intersection Summary			
HCM 2000 Control Delay	26.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	81.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	81.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	22	55	102	1	68	64	995	368	195	1011	12
Future Volume (vph)	36	22	55	102	1	68	64	995	368	195	1011	12
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	1.00		0.97	1.00		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.98		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.89		1.00	0.85		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1658	1540		3072	1466		1630	3228	1459	1630	3286	
Flt Permitted	0.71	1.00		0.55	1.00		0.21	1.00	1.00	0.14	1.00	
Satd. Flow (perm)	1238	1540		1771	1466		368	3228	1459	244	3286	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	38	23	58	107	1	72	67	1047	387	205	1064	13
RTOR Reduction (vph)	0	53	0	0	64	0	0	0	184	0	0	0
Lane Group Flow (vph)	38	28	0	107	9	0	67	1047	203	205	1077	0
Confl. Peds. (#/hr)	2					2	1		3	3		1
Confl. Bikes (#/hr)												2
Heavy Vehicles (%)	0%	5%	0%	5%	0%	0%	2%	3%	0%	2%	1%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	
Protected Phases	3	8		7	4		1	6	7	5	2	
Permitted Phases	8			4			6		6	2		
Actuated Green, G (s)	10.1	6.3		13.7	8.1		37.0	32.2	37.8	46.8	37.5	
Effective Green, g (s)	10.1	6.3		13.7	8.1		37.0	32.2	37.8	46.8	37.5	
Actuated g/C Ratio	0.14	0.09		0.19	0.11		0.51	0.45	0.52	0.65	0.52	
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.5	2.5		2.5	2.5		2.5	4.2	2.5	2.5	4.2	
Lane Grp Cap (vph)	195	134		436	164		272	1439	854	352	1706	
v/s Ratio Prot	0.01	0.02		0.02	0.01		0.02	c0.32	c0.02	c0.08	0.33	
v/s Ratio Perm	0.02			c0.03			0.11		0.12	0.30		
v/c Ratio	0.19	0.21		0.25	0.06		0.25	0.73	0.24	0.58	0.63	
Uniform Delay, d1	27.3	30.6		24.6	28.6		9.3	16.4	9.4	8.9	12.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.4	0.6		0.2	0.1		0.3	2.1	0.1	2.0	0.9	
Delay (s)	27.7	31.2		24.8	28.7		9.6	18.5	9.5	11.0	13.3	
Level of Service	C	C		C	C		A	B	A	B	B	
Approach Delay (s)		30.1			26.4			15.7			12.9	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	15.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	72.2	Sum of lost time (s)	18.0
Intersection Capacity Utilization	62.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	585	0	0	78	0	2329	212	0	2844	171
Future Volume (Veh/h)	0	0	585	0	0	78	0	2329	212	0	2844	171
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	0	0	609	0	0	81	0	2426	221	0	2963	178
Pedestrians		4			2							
Lane Width (ft)		12.0			12.0							
Walking Speed (ft/s)		3.5			3.5							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								1229			603	
pX, platoon unblocked	0.61	0.61	0.52	0.61	0.61	0.82	0.52			0.82		
vC, conflicting volume	3857	5616	992	3416	5395	811	2967			2649		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1454	4331	0	733	3969	0	1559			2241		
tC, single (s)	7.5	6.5	7.0	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	0	0	100	91	100			100		
cM capacity (veh/h)	51	1	560	0	2	887	223			191		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	SB 4
Volume Total	609	81	809	809	809	221	988	988	988	178
Volume Left	0	0	0	0	0	0	0	0	0	0
Volume Right	609	81	0	0	0	221	0	0	0	178
cSH	560	887	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	1.09	0.09	0.48	0.48	0.48	0.13	0.58	0.58	0.58	0.10
Queue Length 95th (ft)	463	8	0	0	0	0	0	0	0	0
Control Delay (s)	90.8	9.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	F	A								
Approach Delay (s)	90.8	9.5	0.0				0.0			
Approach LOS	F	A								

Intersection Summary				
Average Delay	8.7			
Intersection Capacity Utilization	105.7%	ICU Level of Service	G	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	516	203	221	466	242	444	60	2173	174	410	2328	337
Future Volume (vph)	516	203	221	466	242	444	60	2173	174	410	2328	337
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5
Lane Util. Factor	0.97	1.00	1.00	*1.00	1.00	1.00	1.00	0.91		*1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3162	1733	1405	3325	1733	1473	1630	4631		3325	4684	1414
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3162	1733	1405	3325	1733	1473	1630	4631		3325	4684	1414
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	538	211	230	485	252	462	62	2264	181	427	2425	351
RTOR Reduction (vph)	0	0	151	0	0	189	0	7	0	0	0	153
Lane Group Flow (vph)	538	211	79	485	252	274	63	2438	0	427	2425	198
Confl. Peds. (#/hr)			7	7					1	1		
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	2%	1%	3%	0%	1%	1%	2%	2%	1%	0%	2%	3%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	20.5	17.5	17.5	21.5	18.5	18.5	8.6	53.0		20.0	64.4	64.4
Effective Green, g (s)	20.5	17.5	17.5	21.5	18.5	18.5	8.6	53.0		20.0	64.4	64.4
Actuated g/C Ratio	0.16	0.13	0.13	0.17	0.14	0.14	0.07	0.41		0.15	0.50	0.50
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	4.2		2.5	4.2	4.2
Lane Grp Cap (vph)	498	233	189	549	246	209	107	1888		511	2320	700
v/s Ratio Prot	c0.17	0.12		0.15	0.15		0.04	c0.53		c0.13	c0.52	
v/s Ratio Perm			0.06			c0.19						0.14
v/c Ratio	1.08	0.91	0.42	0.88	1.02	1.31	0.59	1.29		0.84	1.05	0.28
Uniform Delay, d1	54.8	55.4	51.6	53.0	55.8	55.8	59.0	38.5		53.4	32.8	19.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.12		1.00	1.00	1.00
Incremental Delay, d2	63.7	34.4	1.1	15.4	63.8	170.5	5.5	134.4		11.1	31.8	1.0
Delay (s)	118.5	89.8	52.6	68.5	119.6	226.2	59.4	177.4		64.5	64.6	20.3
Level of Service	F	F	D	E	F	F	E	F		E	E	C
Approach Delay (s)		96.8			140.1			174.4			59.8	
Approach LOS		F			F			F			E	

Intersection Summary			
HCM 2000 Control Delay	113.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.19		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	107.3%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	11	1681	111	0	0
Future Volume (Veh/h)	0	11	1681	111	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	0	11	1698	112	0	0
Pedestrians	5					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type			Raised			Raised
Median storage veh)			2			2
Upstream signal (ft)			998			
pX, platoon unblocked	0.62	0.62			0.62	
vC, conflicting volume	1759	910			1815	
vC1, stage 1 conf vol	1759					
vC2, stage 2 conf vol	0					
vCu, unblocked vol	1007	0			1097	
tC, single (s)	6.8	7.1			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.4			2.2	
p0 queue free %	100	98			100	
cM capacity (veh/h)	193	654			399	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	11	1132	678	0	0	0
Volume Left	0	0	0	0	0	0
Volume Right	11	0	112	0	0	0
cSH	654	1700	1700	1700	1700	1700
Volume to Capacity	0.02	0.67	0.40	0.00	0.00	0.00
Queue Length 95th (ft)	1	0	0	0	0	0
Control Delay (s)	10.6	0.0	0.0	0.0	0.0	0.0
Lane LOS	B					
Approach Delay (s)	10.6	0.0		0.0		
Approach LOS	B					

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	64.3%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	101	1582	110	149	0
Future Volume (Veh/h)	0	101	1582	110	149	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	106	1665	116	157	0
Pedestrians	7					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	1					
Right turn flare (veh)						
Median type			Raised			Raised
Median storage veh)			2			2
Upstream signal (ft)						917
pX, platoon unblocked						
vC, conflicting volume	2044	898			1788	
vC1, stage 1 conf vol	1730					
vC2, stage 2 conf vol	314					
vCu, unblocked vol	2044	898			1788	
tC, single (s)	6.8	7.0			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	61			55	
cM capacity (veh/h)	121	275			349	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	106	1110	671	157	0	0
Volume Left	0	0	0	157	0	0
Volume Right	106	0	116	0	0	0
cSH	275	1700	1700	349	1700	1700
Volume to Capacity	0.39	0.65	0.39	0.45	0.00	0.00
Queue Length 95th (ft)	43	0	0	56	0	0
Control Delay (s)	26.1	0.0	0.0	23.5	0.0	0.0
Lane LOS	D			C		
Approach Delay (s)	26.1	0.0		23.5		
Approach LOS	D					

Intersection Summary				
Average Delay	3.2			
Intersection Capacity Utilization	67.0%	ICU Level of Service	C	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	86	380	695	340	411	122	662	642	379	298	937	85
Future Volume (vph)	86	380	695	340	411	122	662	642	379	298	937	85
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.5	4.0	4.0	4.5		4.0	5.4	5.4	4.0	5.4	
Lane Util. Factor	1.00	0.95	0.88	1.00	0.95		0.97	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1614	3292	2592	1630	3126		3193	3167	1458	1614	3192	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1614	3292	2592	1630	3126		3193	3167	1458	1614	3192	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	91	400	732	358	433	128	697	676	399	314	986	89
RTOR Reduction (vph)	0	0	74	0	22	0	0	0	272	0	5	0
Lane Group Flow (vph)	91	400	658	358	539	0	697	676	127	314	1070	0
Confl. Peds. (#/hr)	5					5	2					2
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	3%	1%	1%	2%	3%	0%	1%	5%	2%	3%	3%	0%
Turn Type	Prot	NA	pm+ov	Prot	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4						2			
Actuated Green, G (s)	7.5	16.8	42.8	29.0	38.3		26.0	40.8	40.8	23.3	38.1	
Effective Green, g (s)	7.5	16.8	42.8	29.0	38.3		26.0	40.8	40.8	23.3	38.1	
Actuated g/C Ratio	0.06	0.13	0.33	0.23	0.30		0.20	0.32	0.32	0.18	0.30	
Clearance Time (s)	4.0	4.5	4.0	4.0	4.5		4.0	5.4	5.4	4.0	5.4	
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lane Grp Cap (vph)	94	432	868	369	936		649	1011	465	294	951	
v/s Ratio Prot	0.06	c0.12	0.15	c0.22	0.17		c0.22	c0.21		0.19	c0.34	
v/s Ratio Perm			0.10						0.09			
v/c Ratio	0.97	0.93	0.76	0.97	0.58		1.07	0.67	0.27	1.07	1.13	
Uniform Delay, d1	60.0	54.9	37.9	49.0	37.9		50.9	37.6	32.5	52.2	44.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	81.1	25.3	3.4	38.7	0.5		56.9	1.3	0.1	71.7	70.0	
Delay (s)	141.1	80.2	41.3	87.6	38.4		107.8	39.0	32.6	123.9	114.9	
Level of Service	F	F	D	F	D		F	D	C	F	F	
Approach Delay (s)		61.4			57.6			64.6			116.9	
Approach LOS		E			E			E			F	

Intersection Summary			
HCM 2000 Control Delay	76.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	127.8	Sum of lost time (s)	17.9
Intersection Capacity Utilization	98.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	18	0	0	131	0	1021	39	0	642	145
Future Volume (Veh/h)	0	0	18	0	0	131	0	1021	39	0	642	145
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	19	0	0	138	0	1075	41	0	676	153
Pedestrians					4							
Lane Width (ft)					12.0							
Walking Speed (ft/s)					3.5							
Percent Blockage					0							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											326	
pX, platoon unblocked												
vC, conflicting volume	1249	1872	414	1456	1928	383	829			1120		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1249	1872	414	1456	1928	383	829			1120		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	97	100	100	78	100			100		
cM capacity (veh/h)	102	73	592	89	67	616	811			629		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	19	138	430	430	256	451	378
Volume Left	0	0	0	0	0	0	0
Volume Right	19	138	0	0	41	0	153
cSH	592	616	1700	1700	1700	1700	1700
Volume to Capacity	0.03	0.22	0.25	0.25	0.15	0.27	0.22
Queue Length 95th (ft)	2	21	0	0	0	0	0
Control Delay (s)	11.3	12.5	0.0	0.0	0.0	0.0	0.0
Lane LOS	B	B					
Approach Delay (s)	11.3	12.5	0.0			0.0	
Approach LOS	B	B					

Intersection Summary				
Average Delay	0.9			
Intersection Capacity Utilization	37.8%	ICU Level of Service	A	
Analysis Period (min)	15			

Attachment B SimTraffic Reports

1: 48748. Table Rock Rd & Hwy 63/N Pacific Hwy Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay (hr)	0.7	10.6	1.3	0.8	17.6	3.9	1.3	5.4	0.3	10.5	7.0	0.5
Stop Delay (hr)	0.6	8.2	1.1	0.6	12.8	1.8	1.2	4.5	0.2	8.9	5.4	0.4

1: 48748. Table Rock Rd & Hwy 63/N Pacific Hwy Performance by movement

Movement	All
Denied Delay (hr)	0.2
Total Delay (hr)	59.8
Stop Delay (hr)	45.8

2: 37165. OR-62 & OR-99 Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.8	9.2	1.2	0.0	0.0	0.0
Total Delay (hr)	11.9	19.9	1.3	2.9	55.0	1.7	15.3	185.4	21.3	5.6	9.2	2.5
Stop Delay (hr)	10.2	15.4	1.1	2.8	49.2	0.5	15.1	183.7	21.3	5.0	7.2	1.7

2: 37165. OR-62 & OR-99 Performance by movement

Movement	All
Denied Delay (hr)	11.3
Total Delay (hr)	332.1
Stop Delay (hr)	313.1

3: 110085. OR-62 & Rogue Valley Mall Main Ent Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	1.0	0.7	14.4	0.4	0.8	3.8	21.0
Stop Delay (hr)	0.9	0.7	9.1	0.2	0.6	1.1	12.6

4: 110080. OR-62 & Rogue Valley Mall Ent Performance by movement

Movement	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.1	0.0	0.0	0.0	0.0	0.1
Total Delay (hr)	2.4	3.0	0.2	1.5	1.0	8.0
Stop Delay (hr)	2.5	0.4	0.0	1.4	0.1	4.4

5: 37160. OR-62 & I-5 SB Ramps Performance by movement

Movement	EBL	EBT	EBR	NBT	NBR	SBT	SBR	All
Denied Delay (hr)	0.4	0.0	0.2	0.0	0.0	0.0	0.0	0.7
Total Delay (hr)	8.8	0.0	3.2	5.6	2.1	2.9	2.7	25.2
Stop Delay (hr)	7.8	0.0	2.8	2.9	1.0	0.8	0.0	15.4

6: 37161. OR-62 & I-5 NB Ramps Performance by movement

Movement	WBL	WBT	WBR	NBT	NBR	SBT	SBR	All
Denied Delay (hr)	19.3	0.2	30.5	0.2	0.1	0.0	0.1	50.4
Total Delay (hr)	65.7	0.9	127.0	16.1	3.5	10.2	1.4	224.8
Stop Delay (hr)	65.4	0.9	128.6	10.8	2.3	5.0	0.3	213.3

7: north-south street name & east-west street name Performance by movement

Movement	WBT	WBR	NBT	NBR	SBT	All
Denied Delay (hr)	0.0	4.1	11.5	1.7	0.0	17.3
Total Delay (hr)	0.3	17.5	55.4	3.8	3.1	80.0
Stop Delay (hr)	0.3	17.6	45.9	2.8	1.8	68.3

8: 110086. Biddle Rd Conn 1 & South End of Jug Handle Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	372.1	92.0	0.0	0.1	464.2
Total Delay (hr)	3.2	0.9	33.7	30.8	12.6	7.3	88.6
Stop Delay (hr)	2.9	0.8	32.2	30.8	12.6	5.5	84.7

9: 110088. Biddle Rd Conn 1 & Hilton Ct Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	42.3	224.9	2.2
Total Delay (hr)	0.2	1.5	4.2	0.6	0.0	0.1	0.4	7.7	11.8	27.3	29.6	0.5
Stop Delay (hr)	0.2	1.4	4.1	0.4	0.0	0.1	0.4	6.6	11.9	27.4	28.0	0.5

9: 110088. Biddle Rd Conn 1 & Hilton Ct Performance by movement

Movement	All
Denied Delay (hr)	269.5
Total Delay (hr)	83.9
Stop Delay (hr)	81.2

10: 37166. OR-62 & Biddle Rd Ramp Performance by movement

Movement	EBT	EBR	WBR	NBT	NBR	SBT	SBR	All
Denied Delay (hr)	0.0	8.8	18.0	8.0	0.3	0.0	0.0	35.2
Total Delay (hr)	0.8	40.5	9.0	33.1	1.6	3.0	0.3	88.4
Stop Delay (hr)	0.9	42.3	9.1	27.7	1.2	0.1	0.0	81.2

11: 37163. OR-62 & Poplar Dr Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	25.2	10.4	12.0	0.0	0.0	0.0	0.0	0.0	0.0	63.5	372.5	56.8
Total Delay (hr)	26.0	11.1	11.5	10.5	7.0	4.3	0.6	41.1	2.7	6.5	20.1	1.6
Stop Delay (hr)	22.4	9.6	10.0	9.9	6.6	4.2	0.5	33.4	2.1	6.1	16.1	1.2

11: 37163. OR-62 & Poplar Dr Performance by movement

Movement	All
Denied Delay (hr)	540.3
Total Delay (hr)	143.1
Stop Delay (hr)	122.3

12: 110083. OR-62 & Sky Park Dr Performance by movement

Movement	WBR	NBT	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0
Total Delay (hr)	0.0	0.6	0.0	0.6
Stop Delay (hr)	0.0	0.0	0.0	0.0

13: 110084. OR-62 & Whittle Ave Performance by movement

Movement	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.3	0.4	0.0	5.0	4.6	10.2
Stop Delay (hr)	0.2	0.0	0.0	4.7	2.7	7.6

14: 140087. Crater Lake Hwy & Delta Waters Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.1	0.4	0.0	0.0	0.0	0.0	0.0	0.0	12.2	41.6	3.8
Total Delay (hr)	3.1	10.6	5.8	11.1	6.3	1.5	8.1	5.3	1.0	20.7	62.1	5.2
Stop Delay (hr)	2.9	9.4	3.9	10.3	5.2	1.2	7.1	4.2	0.7	18.3	53.3	4.5

14: 140087. Crater Lake Hwy & Delta Waters Rd Performance by movement

Movement	All
Denied Delay (hr)	58.2
Total Delay (hr)	140.7
Stop Delay (hr)	121.0

15: 110089. Poplar Dr & Hilton Rd Performance by movement

Movement	EBR	WBR	NBT	NBR	SBT	SBR	All
Denied Delay (hr)	0.0	11.1	55.5	2.2	0.0	0.0	68.8
Total Delay (hr)	0.0	14.1	16.0	0.5	0.2	0.0	30.8
Stop Delay (hr)	0.0	14.3	14.5	0.4	0.0	0.0	29.3

Total Network Performance

Denied Delay (hr)	1516.3
Total Delay (hr)	1390.5
Stop Delay (hr)	1228.7

Intersection: 1: 48748. Table Rock Rd & Hwy 63/N Pacific Hwy

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	TR	L	L
Maximum Queue (ft)	274	621	622	290	705	725	644	176	301	303	431	520
Average Queue (ft)	69	299	306	84	423	445	291	81	175	174	249	285
95th Queue (ft)	196	550	551	251	655	678	599	149	264	268	437	514
Link Distance (ft)		1924	1924		852	852	852		2093	2093		1571
Upstream Blk Time (%)					0	0						
Queuing Penalty (veh)					0	0						
Storage Bay Dist (ft)	250			200				340			500	
Storage Blk Time (%)	0	17			38				0		1	3
Queuing Penalty (veh)	0	8			17				0		2	8

Intersection: 1: 48748. Table Rock Rd & Hwy 63/N Pacific Hwy

Movement	SB
Directions Served	TR
Maximum Queue (ft)	682
Average Queue (ft)	373
95th Queue (ft)	656
Link Distance (ft)	1571
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 2: 37165. OR-62 & OR-99

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	WB	B26	B26
Directions Served	L	L	T	TR	L	T	T	T	R	R	T	T
Maximum Queue (ft)	362	540	840	855	737	772	763	739	735	101	236	340
Average Queue (ft)	225	397	563	577	337	619	635	612	223	3	48	75
95th Queue (ft)	338	621	869	878	763	878	888	864	717	52	278	345
Link Distance (ft)			852	852	686	686	686	686	686		4343	4343
Upstream Blk Time (%)			1	2	9	25	30	20	0			
Queuing Penalty (veh)			7	11	0	0	0	0	0			
Storage Bay Dist (ft)	380	380								250		
Storage Blk Time (%)	0	1	33							0		
Queuing Penalty (veh)	0	4	143							0		

Intersection: 2: 37165. OR-62 & OR-99

Movement	B26	B26	NB	NB	NB	NB	SB	SB	SB	SB	SB	
Directions Served	T	T	L	T	T	R	L	L	T	T	R	
Maximum Queue (ft)	415	438	315	4742	4737	500	237	394	492	509	452	
Average Queue (ft)	105	112	188	3386	3395	349	142	179	278	290	198	
95th Queue (ft)	419	455	400	5451	5412	693	217	309	441	455	382	
Link Distance (ft)	4343	4343		4693	4693				524	524		
Upstream Blk Time (%)				26	25				0	0		
Queuing Penalty (veh)				0	0				3	3		
Storage Bay Dist (ft)			150			390	315	315			400	
Storage Blk Time (%)			2	73	83	0		0	6	2	0	
Queuing Penalty (veh)			8	60	97	0		0	28	14	2	

Intersection: 3: 110085. OR-62 & Rogue Valley Mall Main Ent

Movement	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB	
Directions Served	L	R	R	T	T	T	R	L	L	T	T	
Maximum Queue (ft)	153	105	112	426	625	639	180	68	200	356	350	
Average Queue (ft)	74	43	40	149	244	320	66	19	58	132	151	
95th Queue (ft)	131	85	86	316	510	538	192	56	129	263	280	
Link Distance (ft)	338	338	338	524	524	524				766	766	
Upstream Blk Time (%)					1	1						
Queuing Penalty (veh)					8	7						
Storage Bay Dist (ft)							100	280	280			
Storage Blk Time (%)						30				0		
Queuing Penalty (veh)						25				1		

Intersection: 4: 110080. OR-62 & Rogue Valley Mall Ent

Movement	WB	NB	NB	NB	SB	SB	SB
Directions Served	R	T	T	R	L	T	T
Maximum Queue (ft)	268	67	353	130	202	192	103
Average Queue (ft)	112	4	58	9	88	11	4
95th Queue (ft)	251	63	231	70	175	115	75
Link Distance (ft)	341	766	766			438	438
Upstream Blk Time (%)	2					0	0
Queuing Penalty (veh)	0					1	1
Storage Bay Dist (ft)				100	200		
Storage Blk Time (%)			4		2	0	
Queuing Penalty (veh)			3		23	0	

Intersection: 5: 37160. OR-62 & I-5 SB Ramps

Movement	EB	EB	EB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	LT	R	T	T	T	R	T	T	R
Maximum Queue (ft)	270	344	696	265	404	468	88	216	222	281
Average Queue (ft)	208	261	275	114	175	313	69	73	77	5
95th Queue (ft)	309	371	692	233	332	514	89	173	185	90
Link Distance (ft)			1196	438	438	438		551	551	551
Upstream Blk Time (%)			1		0	2				0
Queuing Penalty (veh)			0		0	11				0
Storage Bay Dist (ft)	195	195					50			
Storage Blk Time (%)	9	29	11			25	3			
Queuing Penalty (veh)	19	66	50			119	16			

Intersection: 6: 37161. OR-62 & I-5 NB Ramps

Movement	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	LTR	R	T	T	T	R	T	T	T	R
Maximum Queue (ft)	3154	3134	3134	554	577	578	86	436	467	511	383
Average Queue (ft)	2059	2102	2083	298	332	405	73	266	286	263	93
95th Queue (ft)	3968	3908	3884	542	590	629	83	398	421	437	248
Link Distance (ft)	3096	3096	3096	551	551	551		749	749	749	
Upstream Blk Time (%)	39	38	38	2	2	5					
Queuing Penalty (veh)	0	0	0	11	11	36					
Storage Bay Dist (ft)							50				290
Storage Blk Time (%)						41	5			3	
Queuing Penalty (veh)						165	28			25	

Intersection: 7: north-south street name & east-west street name

Movement	WB	B44	NB	NB	NB	NB
Directions Served	R	T	T	T	T	R
Maximum Queue (ft)	558	637	775	809	791	100
Average Queue (ft)	548	599	693	708	710	83
95th Queue (ft)	588	798	912	916	920	139
Link Distance (ft)	476	618	749	749	749	
Upstream Blk Time (%)	97	85	13	20	23	
Queuing Penalty (veh)	382	336	97	152	174	
Storage Bay Dist (ft)						75
Storage Blk Time (%)					47	1
Queuing Penalty (veh)					99	7

Intersection: 8: 110086. Biddle Rd Conn 1 & South End of Jug Handle

Movement	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	LR	T	TR	L	T	T
Maximum Queue (ft)	252	294	1218	1220	125	931	916
Average Queue (ft)	137	141	1109	1117	106	429	405
95th Queue (ft)	208	241	1480	1470	157	1089	1081
Link Distance (ft)	618	618	1175	1175		1967	1967
Upstream Blk Time (%)			81	86		3	3
Queuing Penalty (veh)			0	0		19	18
Storage Bay Dist (ft)					100		
Storage Blk Time (%)					79	1	
Queuing Penalty (veh)					438	1	

Intersection: 9: 110088. Biddle Rd Conn 1 & Hilton Ct

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	L	TR	L	T	T	R	L	T	TR
Maximum Queue (ft)	224	568	63	84	51	286	1041	1059	330	285	1136	1147
Average Queue (ft)	39	201	15	32	19	24	340	416	195	264	1025	1020
95th Queue (ft)	239	577	44	66	42	126	1146	1215	415	349	1436	1450
Link Distance (ft)	849	849			1196		1967	1967			1100	1100
Upstream Blk Time (%)	1	2					0	0			82	79
Queuing Penalty (veh)	0	0					0	0			0	0
Storage Bay Dist (ft)			220	220		320			220	175		
Storage Blk Time (%)							1	3	43	90	6	
Queuing Penalty (veh)							0	13	218	451	11	

Intersection: 10: 37166. OR-62 & Biddle Rd Ramp

Movement	EB	WB	NB	NB	NB	NB	SB
Directions Served	R	R	T	T	T	R	T
Maximum Queue (ft)	1214	256	397	405	423	140	6
Average Queue (ft)	1190	234	365	371	422	101	0
95th Queue (ft)	1328	301	388	396	428	202	4
Link Distance (ft)	1196	237	347	347	347		507
Upstream Blk Time (%)	52	81	44	50	99		
Queuing Penalty (veh)	305	0	375	421	835		
Storage Bay Dist (ft)						90	
Storage Blk Time (%)					56	0	
Queuing Penalty (veh)					119	0	

Intersection: 11: 37163. OR-62 & Poplar Dr

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	L	T	R	L	L	T	R	L	T	T	TR
Maximum Queue (ft)	405	460	1236	160	230	277	282	299	460	557	562	568
Average Queue (ft)	300	444	1151	151	201	239	239	251	117	524	530	525
95th Queue (ft)	441	534	1478	196	274	274	284	284	396	545	553	547
Link Distance (ft)			1187			230	230	230		507	507	507
Upstream Blk Time (%)			53		1	42	58	47	0	47	53	43
Queuing Penalty (veh)			0		0	161	223	179	0	376	423	346
Storage Bay Dist (ft)	350	350		135	250				450			
Storage Blk Time (%)	10	19	51	38	1	42			0	62		
Queuing Penalty (veh)	43	79	376	272	3	98			0	37		

Intersection: 11: 37163. OR-62 & Poplar Dr

Movement	SB	SB	SB	SB	SB	SB
Directions Served	L	L	T	T	T	R
Maximum Queue (ft)	321	345	346	342	355	352
Average Queue (ft)	187	311	315	314	317	293
95th Queue (ft)	335	347	331	329	334	412
Link Distance (ft)						
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	410	410				350
Storage Blk Time (%)					1	0
Queuing Penalty (veh)					2	0

Intersection: 12: 110083. OR-62 & Sky Park Dr

Movement	WB	B19	B19	B19
Directions Served	R	T	T	
Maximum Queue (ft)	46	624	651	596
Average Queue (ft)	9	185	252	32
95th Queue (ft)	35	622	727	251
Link Distance (ft)	432	591	591	591
Upstream Blk Time (%)		0	1	0
Queuing Penalty (veh)		3	10	1
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 13: 110084. OR-62 & Whittle Ave

Movement	WB	NB	NB	SB	SB
Directions Served	R	T	TR	L	T
Maximum Queue (ft)	107	12	79	453	268
Average Queue (ft)	50	1	7	172	17
95th Queue (ft)	83	11	39	397	189
Link Distance (ft)	479	409	409		823
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)				650	
Storage Blk Time (%)				0	0
Queuing Penalty (veh)				0	0

Intersection: 14: 140087. Crater Lake Hwy & Delta Waters Rd

Movement	EB	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	T	T	R	R	L	T	TR	L	L	T	T
Maximum Queue (ft)	304	412	444	443	431	485	552	516	354	361	355	349
Average Queue (ft)	129	236	244	283	245	336	338	310	200	215	169	177
95th Queue (ft)	267	346	366	392	387	498	562	521	321	335	293	279
Link Distance (ft)		1246	1246				1401	1401			823	823
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	225			450	450	400			500	500		
Storage Blk Time (%)	5	16	0	0	0	12	10		0	0	0	7
Queuing Penalty (veh)	9	13	0	0	0	24	34		0	0	0	27

Intersection: 14: 140087. Crater Lake Hwy & Delta Waters Rd

Movement	NB	SB	SB	SB
Directions Served	R	L	T	TR
Maximum Queue (ft)	314	300	1493	1490
Average Queue (ft)	100	290	1403	1390
95th Queue (ft)	206	345	1615	1633
Link Distance (ft)			1423	1423
Upstream Blk Time (%)			73	60
Queuing Penalty (veh)			0	0
Storage Bay Dist (ft)	200	200		
Storage Blk Time (%)	0	38	65	
Queuing Penalty (veh)	1	178	193	

Intersection: 15: 110089. Poplar Dr & Hilton Rd

Movement	EB	WB	NB	NB	NB
Directions Served	R	R	T	T	TR
Maximum Queue (ft)	44	487	295	298	298
Average Queue (ft)	15	392	262	264	269
95th Queue (ft)	43	615	345	341	325
Link Distance (ft)	464	466	260	260	260
Upstream Blk Time (%)		62	61	71	62
Queuing Penalty (veh)		0	0	0	0
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 26: Bend

Movement	SE
Directions Served	T
Maximum Queue (ft)	7
Average Queue (ft)	0
95th Queue (ft)	5
Link Distance (ft)	686
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 8630

Attachment C Pedestrian, Bicycle, and Transit LOS Analysis Results

Segment LOS Output Summary

Roadway	Dir	From-To	Pedestrian LOS	Bicycle LOS	Transit LOS
OR 238	EB	Sage Road to Central Avenue	E	D	D
OR 238	EB	Central Avenue to OR 99	E	F	D
OR 62	EB	OR 99 to RV Mall Entrance (west)	E	F	
OR 62	EB	RV Mall Entrance (west) to RV Mall Entrance (east, at Target)	E	D	
OR 62	EB	RV Mall Entrance (east, at Target) to I-5 SB Ramp Terminal	E	D	
OR 62	EB	I-5 SB Ramp Terminal to I-5 NB Ramp Terminal	E	F	
OR 62	EB	I-5 NB Ramp Terminal to Biddle Road (north end of jug handle)	E	D	
OR 62	EB	Biddle Road (north end of jug handle) to Fred Meyer Driveway	E	D	F
OR 62	EB	Fred Meyer Driveway to Poplar Drive	E	D	F
OR 62	EB	Poplar Drive to Sky Park Drive	E	F	
OR 62	EB	Sky Park Drive to Whittle Avenue	E	F	
OR 62	EB	Whittle Avenue to Delta Waters Road	E	F	
OR 62	EB	Delta Waters Road to East end of IMSA	E	F	
OR 62	WB	East end of IMSA to Delta Waters Road	E	D	
OR 62	WB	Delta Waters Road to RI/RO Commercial Driveway	E	D	
OR 62	WB	RI/RO Commercial Driveway to Bullock Road	F	F	
OR 62	WB	Bullock Road to Hilton Court	E	D	
OR 62	WB	Hilton Court to I-5 NB Ramp Terminal	E	D	
OR 62	WB	I-5 NB Ramp Terminal to I-5 SB Ramp Terminal	E	D	
OR 62	WB	I-5 SB Ramp Terminal to RV Mall Entrance (west)	E	D	
OR 238	WB	RV Mall Entrance (west) to OR 99	E	D	
OR 238	WB	OR 99 to Central Avenue	E	F	
OR 238	WB	Central Avenue to Sage Road	E	D	
Table Rock Road	SB	Berrydale Avenue to Adams Lane	E	F	
Table Rock Road	SB	Adams Lane to Table Rock Road	C	D	
Table Rock Road	SB	Table Rock Road to OR 99	E	F	
Table Rock Road	NB	OR 99 to Table Rock Road	C	F	D
Table Rock Road	NB	Table Rock Road to Adams Lane	C	D	D
Table Rock Road	NB	Adams Lane to Berrydale Avenue	C	F	D
Central Avenue	SB	OR 99 to OR 238	C	C	C
Central Avenue	SB	OR 238 to Commercial Driveway	C	C	
Central Avenue	SB	Commercial Driveway to McAndrews (does not intersect)	C	C	

Segment LOS Output Summary

Roadway	Dir	From-To	Pedestrian LOS	Bicycle LOS	Transit LOS
Central Avenue	NB	McAndrews (does not intersect) to Commercial Driveway	E	C	
Central Avenue	NB	Commercial Driveway to OR 238	C	C	
Central Avenue	NB	OR 238 to OR 99	C	C	
OR 99	SB	Table Rock Road to OR 238	E	D	
OR 99	NB	OR 238 to Table Roock Road	F	F	B
Court Street	SB	OR 238 to Ohio Street	E	F	D
Court Street	SB	Ohio Street to McAndrews Road	E	F	D
Riverside Avenue	NB	McAndrews Road to Ohio Street	F	F	B
Riverside Avenue	NB	Ohio Street to OR 238	F	F	B
Biddle Road	SB	Knutson Avenue to Commercial Driveway	E	D	
Biddle Road	SB	Commercial Driveway to Hilton Court	E	D	
Biddle Road	SB	Hilton Court to OR 62 (does not intersect)	C	F	
Biddle Road	SB	OR 62 (does not intersect) to Biddle Road jug handle	C	D	
Biddle Road	SB	Biddle Road jug handle to North of Morrow Road	C	F	
Biddle Road	SB	North of Morrow Road to Progress Drive	E	F	
Biddle Road	SB	Progress Drive to McAndrews Road	E	F	
Biddle Road	NB	McAndrews Road to Progress Drive	E	F	D
Biddle Road	NB	Progress Drive to Morrow Road	E	F	D
Biddle Road	NB	Morrow Road to Biddle Road jug handle	E	F	F
Biddle Road	NB	Biddle Road jug handle to OR 62 (does not intersect)	C	D	
Biddle Road	NB	OR 62 to Hilton Court	C	F	
Biddle Road	NB	Hilton Court to Commercial Driveway	E	F	
Biddle Road	NB	Hilton Court to Knutson Avenue	E	F	
Hilton Court	EB	Biddle Road to OR 62	B	C	
Hilton Court	WB	OR 62 to Biddle Road	B	C	
Biddle Road jug handle	SB	OR 62 to Biddle Road	C	B	
Biddle Road jug handle	NB	Biddle Road to OR 62	B	B	E
Bullock Road	SB	North IMSA Boundary to OR 62	B	C	
Bullock Road	NB	OR 62 to North IMSA Boundary	B	C	E
Poplar Drive	SB	OR 62 to Hilton Road	C	F	F
Poplar Drive	SB	Hilton Road to Fred Meyer Driveway	C	F	F
Poplar Drive	SB	Fred Meyer Driveway to South IMSA Boundary	C	F	

Segment LOS Output Summary

Roadway	Dir	From-To	Pedestrian LOS	Bicycle LOS	Transit LOS
Poplar Drive	NB	South IMSA Bouundary to Fred Meyer Driveway	C	F	F
Poplar Drive	NB	Fred Meyer Driveway to Holton Road	E	F	F
Poplar Drive	NB	Hilton Road to OR 62	E	F	F
Hilton Road	EB	Poplar Road to East IMSA Boundary	B	C	
Hilton Road	WB	East IMSA Boundary to Poplar Road	B	C	
Sky Park Drive	EB	OR 62 to Wittle Road	B	C	
Sky Park Drive	WB	Whittle Road to OR 62	B	C	
Whittle Avenue	SB	OR 62 to Sky Park Drive	B	C	
Whittle Avenue	SB	Sky Park Drive to United Way	B	C	
Whittle Avenue	NB	United Way to Sky Park Drive	B	C	
Whittle Avenue	NB	Sky Park Drive to OR 62	B	C	
Delta waters Road	SB	Commercial Driveway to Commercial Driveway	C	F	
Delta waters Road	SB	Commercial Driveway to OR 62	E	D	
Delta Waters Road	SB	OR 62 to Crater Lake Avenue	C	D	
Delta Waters Road	NB	Craster Lake Avenue to OR 62	C	D	B
Delta Waters Road	NB	OR 62 to Commercial Driveway	C	F	B
Delta Waters Road	NB	Commercial Driveway to Commercial Driveway	C	F	B

Bike LOS Calculation

Total Meetings per Min=	0.24
Total Active Passings per Min=	0.07
Total Weighted Events per Min=	0.91
Delayed Passings per Min =	0.00

Bike LOS Score = 3.45 LOS = C

Final LOS adjustment for low volume= A

Pedestrian LOS Calculation

Pedestrian Events/hr = 5

Pedestrian LOS = A

LOS	Pedestrian LOS description	Bicycle LOS Description
A	Optimum conditions, bicycle conflicts rare	Optimum conditions, ample ability to absorb more riders
B	Good conditions, few bicycle conflicts	Good conditions, some ability to absorb more riders
C	Difficult to walk two abreast	Meets current demand, marginal ability to absorb more riders
D	Frequent bicycle conflicts	Many conflicts, some reduction in bicycle travel speed
E	Frequent and disruptive bicycle conflicts	Very crowded, significant reduction in bicycle travel speed
F	Significant conflicts, diminished experience	Significant conflicts, diminished experience

Bike LOS Calculation

Total Meetings per Min=	0.24
Total Active Passings per Min=	0.07
Total Weighted Events per Min=	0.91
Delayed Passings per Min =	0.00

Bike LOS Score = 3.83 LOS = B

Final LOS adjustment for low volume= A

LOS	Pedestrian LOS description	Bicycle LOS Description
A	Optimum conditions, bicycle conflicts rare	Optimum conditions, ample ability to absorb more riders
B	Good conditions, few bicycle conflicts	Good conditions, some ability to absorb more riders
C	Difficult to walk two abreast	Meets current demand, marginal ability to absorb more riders
D	Frequent bicycle conflicts	Many conflicts, some reduction in bicycle travel speed
E	Frequent and disruptive bicycle conflicts	Very crowded, significant reduction in bicycle travel speed
F	Significant conflicts, diminished experience	Significant conflicts, diminished experience

Pedestrian LOS Calculation

Pedestrian Events/hr = 5

Pedestrian LOS = A

MEMORANDUM

Future Land Use Analysis (Task 5.2)

Exit 30 Interchange Area Management Plan (IAMP)

DATE August 14, 2020

TO Matt Bell and Matt Hughart, KAI

FROM Darci Rudzinski, Clinton "CJ" Doxsee, Emma Porricolo, APG

OVERVIEW

This memorandum presents assumptions and analysis for future land uses in the Interchange Management Study Area (study area). It addresses Task 5.2 of the I-5 Exit 30 Interchange Area Management Plan (IAMP). The following land use assumptions are based on the development potential of vacant and underdeveloped parcels in the study area, the development patterns demonstrated in Medford and other Oregon communities, and anticipated development resulting from the completion of the OR 62 bypass. The assumptions will be used to inform modeling of future traffic conditions in the study area over the course of the year 20-year planning horizon.

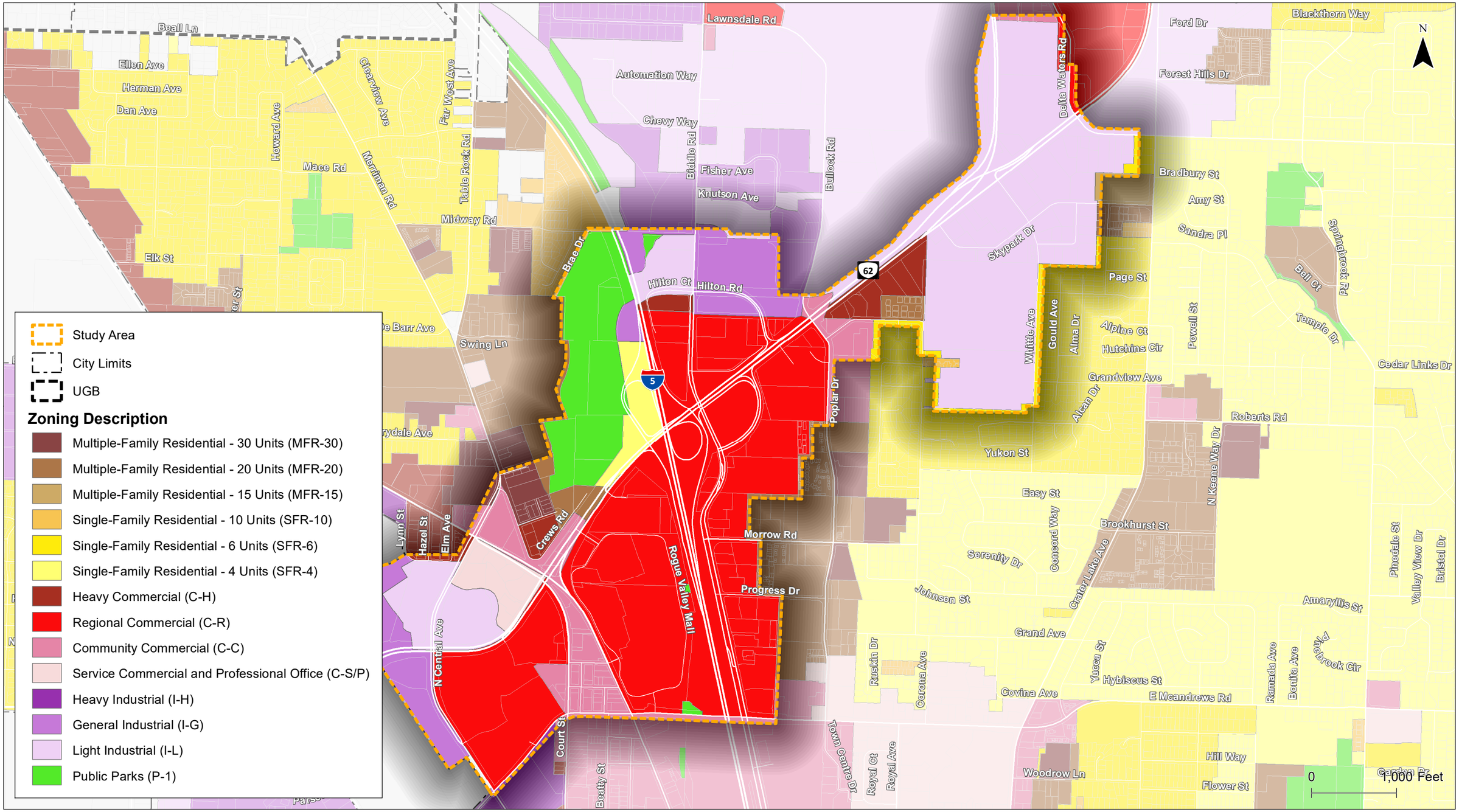
EXISTING CONDITIONS

Current Uses and Zoning

As identified in *Technical Memorandum #2: Existing Inventory and Land Use Assumption – Land Use, Population, and Demographic Inventory*, there are areas of vacant and underdeveloped land within the study area. As summarized in that memorandum, vacant and redevelopable properties were identified based on Jackson County's tax assessor data.[1] These vacant and redevelopable properties represent the most significant development potential in the study area. New development and redevelopment over time will result in increased demand on the surrounding transportation network, including the Exit 30 interchange.

As shown in Figure 1, parcels within the study area all have City of Medford zoning applied to them. The figure shows the location of zoning within the study area, including land designated for commercial, industrial, and parks uses. Residential zones are located adjacent to the study area boundary.

[1] Vacant properties were identified based on County property class codes. Redevelopable properties are shown using a basic value ratio based on a land value to improvement value ratio of 2:1. Minimal, parcel-specific adjustments were made based on information and future development assumptions provided by City staff.



City of Medford Zoning
Medford, Oregon

Figure
1

C:\Users\cdoxsee\Desktop\Medford GIS\MXDs\Exit30_FC_WORKING_CJ.mxd - cdoxsee - 10:37 AM 5/29/2020

Coordinate System: NAD 1983 2011 StatePlane Oregon South FIPS 3602 Ft Intl

The City of Medford Land Development Code (LDC) implements the policies established in the Comprehensive Plan and regulates development through zoning designations and related requirements. These apply generally to all development and specifically to land divisions. The zoning requirements establish allowed uses and associated development regulations, permitted uses, and lot standards. The following zones are found within the study area. Table 1 provides a list of specific zones found in the study area, organized by quadrants created by the intersection of I-5 and Crater Lake Highway.

Table 1. Study Area Zones by Quadrant

Study Area Quadrant	Zones
Northeast	• General Industrial (I-G) • Light Industrial (I-L) • Regional Commercial (C-R) • Heavy Commercial (C-H) • Community Commercial (C-C) • Public Parks (P-1)
Northwest	• General Industrial (I-G) • Light Industrial (I-L) • Heavy Commercial (C-H) • Service Commercial and Professional Office (C-S/P) • Community Commercial (C-C) • Public Parks (P-1) • Single-Family Residential – 4 units (SFR-4) • Multi-family Residential – 20 units (MFR-20)
Southwest	• General Industrial (I-G) • Regional Commercial (C-R) • Community Commercial (C-C) • Public Parks (P-1)
Southeast	• Regional Commercial (C-R) • Community Commercial (C-C) • Light Industrial (I-L) • Single-Family Residential – 6 units (SFR-6) • Multi-family Residential – 30 units (MFR-30) • Multi-family Residential – 20 units (MFR-20)

As reflected in Table 1 and illustrated in Figure 1, land in the northeast quadrant of the interchange is primarily zoned commercial (C-R and C-H) and industrial (I-L and I-G). The southeast quadrant is primarily commercial (C-R and C-C) near the interchange and transitions to multi-family housing (MFR-20) further out. Southwest of the interchange is primarily commercial (C-R and C-S/P) with a few industrial (I-G) and parks (P-1) parcels. Northwest of the interchange is comprised of parks (P-1) and multi-family (MFR-20 and MFR-30) with a few industrial (I-G and I-L) and commercial parcels (C-C). The northwest quadrant also has a single-family zone (SFR-4) adjacent to the freeway, however land with this designation is currently occupied by the southbound interchange ramp.

Land Use Designations and Development Standards

All development in the vicinity of the interchange will have some impact on the facility, so it is important to review the zoning for parcels surrounding the interchange and local connecting roads. Permitted land uses and the applicable standards associated with the zone designations are an indicator of the potential growth in the area. Recommendations for restricting uses or modifying development standards (e.g. restricting uses with high traffic generation rates or limiting building size) are possible outcomes of the IAMP process.

Residential Uses

There are three residential zones in the study area – two multi-family zones (MFR-20 and MFR-30) and one single-family zones (SFR-6). The multi-family zones are located away from the interchange on OR 62, both to the east and west. There is a pocket of multi-family zoning (MFR-20 and MFR-30) at the intersection of OR 99 and Crews Road. Another cluster of multi-family zoning (MFR-20) is located east of the interchange just east of Poplar Dr, south of OR 62. Additionally, there are single-family and multi-family zones abutting, but outside of, the study area border.

In the Multi-family Residential-20 dwellings per gross acre (MFR-20), the permitted uses are single-family detached dwellings, duplexes, townhouse/rowhouses, accessory dwelling units, boarding/lodging houses, residential facilities, childcare centers, institutional uses, community services, transit, and utility distribution systems. The minimum permitted density is 15 dwelling units per gross acre, and the maximum is 20 dwelling units per gross acre.

The Multi-family Residential – 30 dwellings per gross area (MFR-30) zone has the same permitted uses as the MFR-20 zone but has slightly different density allowances. The minimum density required is 20 dwelling units per gross acres, and the maximum density permitted is 30 dwelling units per gross acre.

In the Single-Family Residential – 6 dwelling units per gross acre (SFR-6), the permitted uses are single-family detached dwellings, small residential care homes, duplexes, cottage clusters, institutional uses, community services, and transit facilities. In the zone, the minimum density required is four (4) dwelling units per acre, and the maximum permitted is six (6) dwelling units per acre. For duplexes, the maximum density permitted is nine (9) dwelling units per acre. Other site development standards in residential zones are governed by the type of housing development rather than the zoning designation.

Commercial Uses

Commercial zones cover a large portion of the study area with four commercial zones. The Regional Commercial (C-R) zone covers most of the study area directly south of the interchange. The zone also abuts the interchange at its northeast quadrant. The other commercials zones are primarily found in smaller pockets on OR 99, west of the interchange.

The Community Commercial (C-C) zone is intended to provide land for development of the services the shopping needs of the community. Permitted uses in the C-C zone are business offices, public parks/recreation services, laboratories, retail trades, eating and drinking places, finance, insurance, real estate, and other similar services. In the zone, the minimum lot size is 15,000 square feet, and the maximum lot size is 50,000 square feet. The maximum permitted coverage of structures is 40% of a site.

The Service Commercial and Professional Office (C-S/P) zone provides land for professional offices, hospitals, and limited service commercial uses. Permitted uses are business offices, public

parks/recreation services, laboratory, eating and drinking places finance, insurance, real estate, personal, and business services. There are no lot size or density standards for the C-S/P zone. In the zone, the minimum lot area permitted is 15,000 square feet, and the maximum lot coverage permitted is 40%.

The Regional Commercial (C-R) zone provides land for service and commercial uses, which serve shoppers from the surrounding region and the local community. Permitted uses are: business offices, public parks/recreation services, laboratory, retail, retail trade, eating and drinking places, finance, insurance, and real estate services. In the zone, the minimum lot area is 15,000 square feet, and the maximum lot coverage permitted is 40%.

The Heavy Commercial (C-H) zone is intended to provide land for heavier commercial and service commercial uses, which may produce a greater degree of noise or pollution than other commercial zones. Permitted uses in the zone include business offices, public parks, retail, agricultural services, contracting offices, transportation facilities, some utility services, office services, hotels and lodging, personal services, business services, auto repair shops, medical offices, and residential dwelling units. For the C-H zone, the minimum lot area required is 7,000 square feet, and the maximum site coverage permitted is 60%.

Industrial Uses

Industrial zones are located along the east, west, and north borders of the study area. There are two industrial zones in the study area – General Industrial and Light Industrial. Along the east edge of the study area is a light industrial area. The industrial areas at the west and north edges of the study area are a mix of general and light industrial zones.

The General Industrial (I-G) zone provides land for industrial uses. Permitted uses in the zone include production, processing, wholesale, laboratory, agricultural production-crops, agricultural services, construction, special trade contractors, manufacturing, apparel and textile mill products, furniture and fixtures, paper and allied products, printing and publishing, manufacturing, wholesale trade, eating and drinking places. Offices are permitted in the I-G zone, only where they are an accessory or a subordinate use to a principal permitted use. There are no lot size or density standards for the I-G zone. In the zone, the minimum lot area required is 10,000 square feet, and the maximum coverage of structures permitted is 90%.

The Light Industrial District (I-L) provides land for warehouse, office, and low-intensity industrial offices in areas near residential and commercial zones. Permitted uses in the zone are business offices, public parks/recreation services, production, processing, wholesale, agricultural production-crops, agricultural services, construction/special trade contractors, manufacturing, apparel and textile mill products, furniture and fixtures, printing and publishing, manufacturing, wholesale trade, auto dealers, eating and drinking places, finance, insurance, and real estate services. In the zone, the minimum lot area required is 20,000 square feet, and the maximum coverage permitted is 50%.

Other Uses

The Public Park (P-1) zone is also located in the study area where Railroad Park is located, directly northwest of the interchange. The zone is also located along some portions of the Bear Creek Greenway.

The P-1 zone provides land for publicly owned open space, parkland, and trails. Permitted uses in the zone include public parks, recreation, and leisure facilities and services, beekeeping, US Postal Service, wireless communication structures and facilities, electric services, gas production and distribution, utility and sanitary service, water supply, eating place, temporary food vendor, cemetery, camp and recreational vehicle park, commercial sports, amusement recreation services, elementary and secondary schools, child daycare services, museums and art galleries, dwelling units for caretakers/watchman, and police and fire stations. There are no lot size standards or density requirements for properties in the P-1 zone.

Restricted Zoning

The Restricted Zoning Overlay applies to parcels where a zone change was approved with conditions of approval or stipulations as set forth in the LDC. The applicable conditions or stipulations are recorded by deed restriction or covenant and are available at the Planning Department.

The Northgate shopping center development and adjacent undeveloped parcels located west of OR 99 (N Pacific Hwy) at the intersection with OR 238 (Crater Lake Hwy) have a Restricted Zoning Overlay designation. Focused on mitigating transportation-related impacts associated with new development, the conditions/stipulations include a maximum trip restriction and other mitigation measures such as transportation demand management (TDM) requirements and off-site capital improvements. The maximum trip restriction associated with development in the overlay area is approximately 18,000 daily trips and 1,800 peak hour trips.[2]

Despite "capping" the number of trips in the area, the Restricted Zoning Overlay is not anticipated to factor into future growth assumptions for purposes of this analysis. This analysis estimates lower overall employment growth in the TAZ when compared to the regional growth model. Additionally, it is possible for the trip restriction and other transportation mitigation measures to be modified in the future, as part of a zone change pursuant to Section 10.204(C) of the Land Development Code and supported by the findings of a traffic impact analysis.

[2] Additional development has occurred since the overlay was applied. As such, understanding the current trip conditions would require the City to review development that has occurred to date.

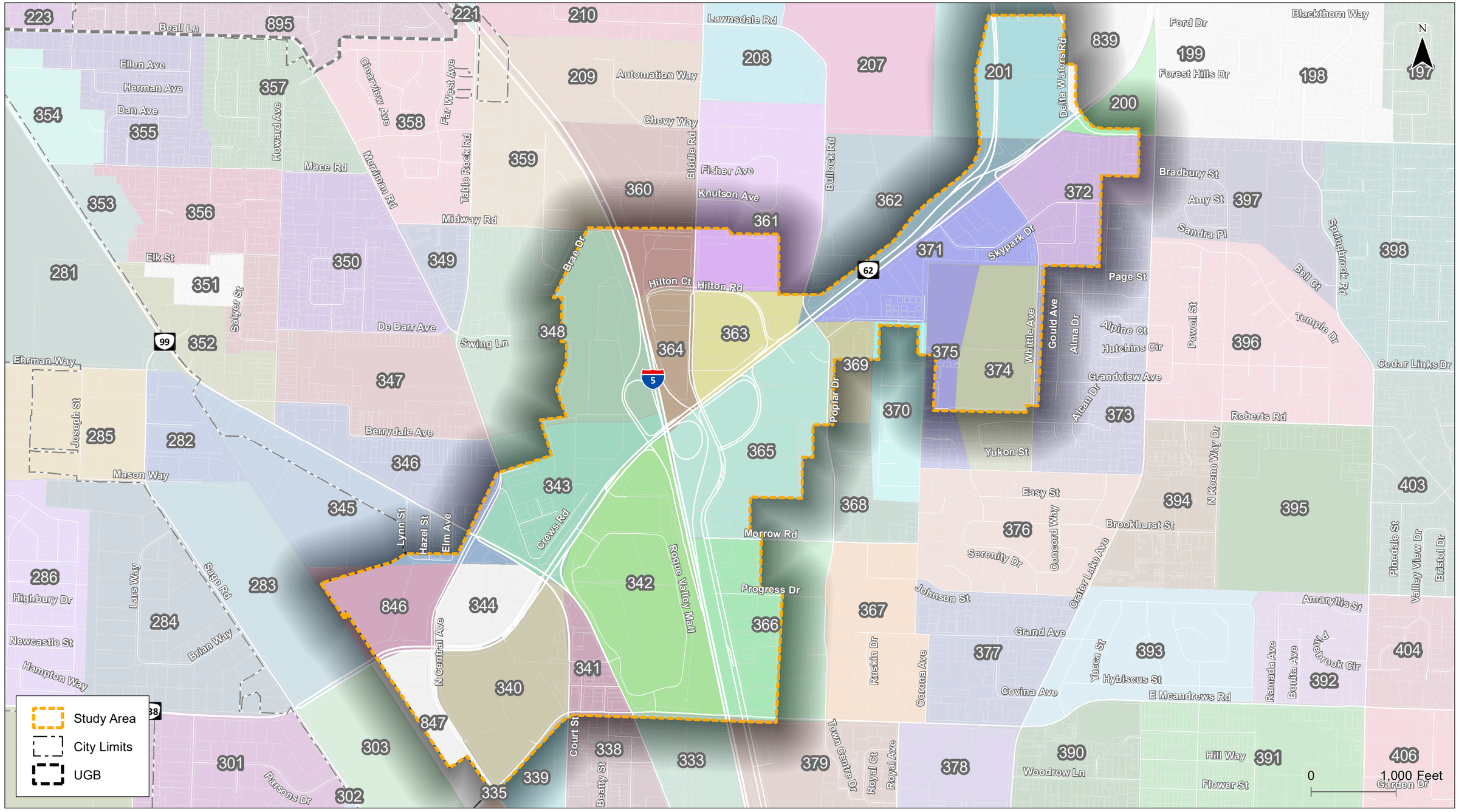
FUTURE LAND USES AND ASSUMPTIONS

The study area includes a variety of land uses, including residential, commercial, industrial, and parks and open space. For the purpose of forecasting the future development potential, the study area was divided into 18 subareas, as illustrated in Figure 2. Each subarea corresponds to a transportation analysis zone (TAZ). The boundaries of some subareas do not fit precisely within the study area and extend beyond the study area boundary.

The analysis of future land uses within the study area focused on parcels that were identified as vacant or expected to have some form of redevelopment potential as part of *Technical Memorandum #2: Existing Inventory and Land Use Assumption – Land Use, Population, and Demographic Inventory.* Figure 3 illustrates the location of the vacant and redevelopable properties. These areas have the greatest potential to generate traffic and increase demand on the transportation system.

The analysis factored the following assumptions to determine buildout potential growth:

- The net vacant residential, commercial, and industrial areas were calculated assuming a 20% reduction to account for utilities and right-of-way dedications.
- The floor-area-ratio (FAR) for commercial zones (C-C, C-H, C-N, C-R, and C-S/P) is assumed to be 0.25. A FAR of 0.25 reflects a range of typical auto-oriented commercial development types.
- The floor-area-ratio (FAR) for industrial zones (GI, I-G, I-H, I-L, and LI) is assumed to be 0.05. A FAR of 0.05 reflects low-density industrial development types.
- Redevelopment capacity for underdeveloped commercial and industrial sites deducted existing buildings and environmental constraints when calculating the FAR estimates. This reflects the assumption that existing development would seek to maximize unused portions of the lot for employment activity.
- Standard employee per square foot ratios were used to estimate the number of employees associated with the amount of new development. The ratio assumed 400 square feet per employee for commercial development and 2,000 square feet per employee for industrial development.
- Single-family residential dwellings were calculated based on the minimum lot size standards required by code.
- Multi-family residential dwellings were calculated based on the minimum units per acre allowed by code.
- Redevelopment capacity for single-family and multi-family sites deducted existing dwellings and structures from the potential infill capacity. This reflects that property owners would seek to maximize unused space on the lot for additional housing.

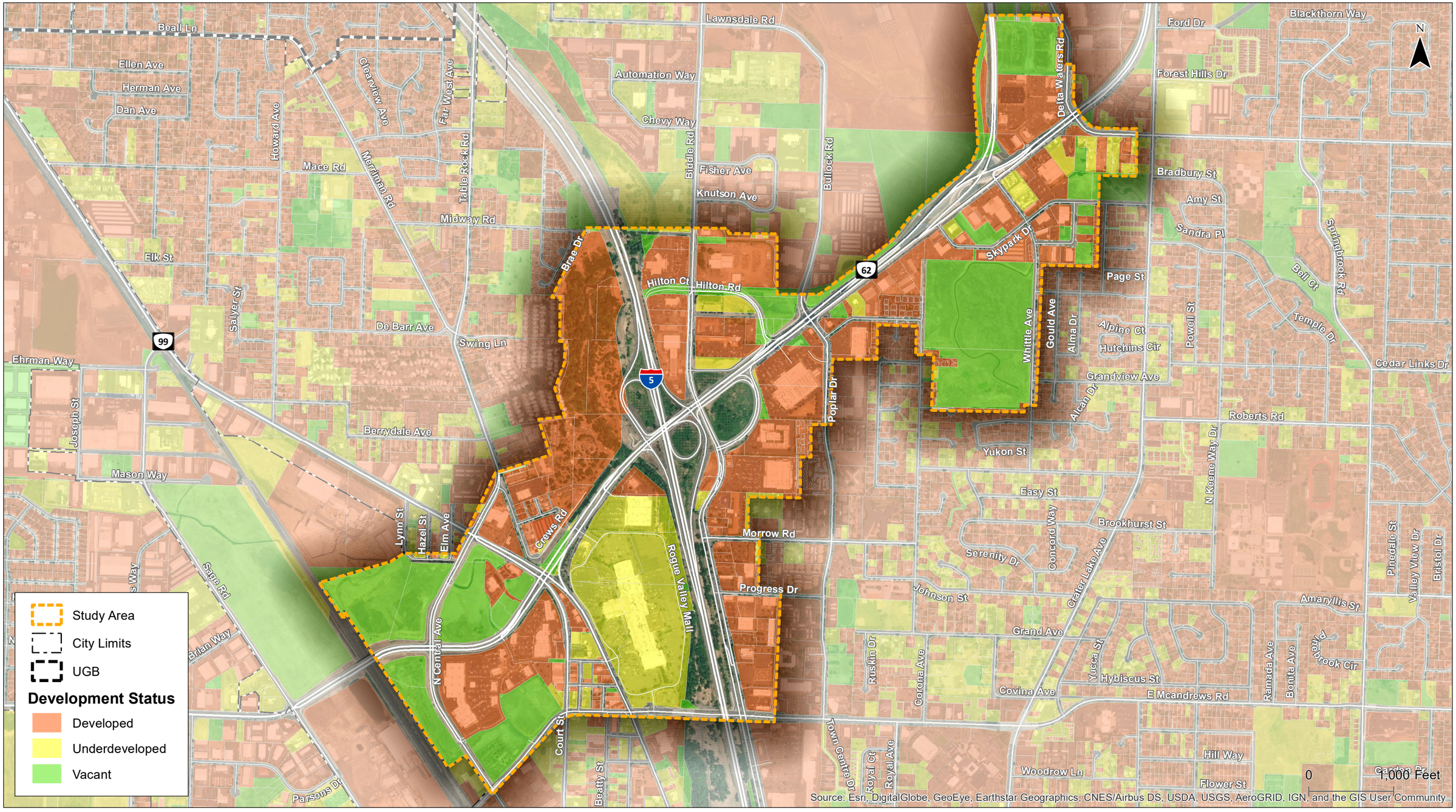


Transportation Analysis Zones (Study Sub-areas)
Medford, Oregon

Figure **2**

Coordinate System: NAD 1983 2011 StatePlane Oregon South FIPS 3602 Ft Intl

C:\Users\cdoxsee\Desktop\Medford GIS\MXDs\Exit30_FC_WORKING_CJ.mxd - cdoxsee - 10:33 AM 5/29/2020



Development Status
Medford, Oregon

Figure **3**

Coordinate System: NAD 1983 2011 StatePlane Oregon South FIPS 3602 Ft Intl
Data Source: Jackson County Tax Assessor.

C:\Users\cdoxsee\Desktop\Medford GIS\MXDs\Exit30_FC_WORKING_CJ.mxd - cdoxsee - 10:26 AM 5/29/2020

As summarized in Table 2, the full buildout of vacant and underdeveloped commercial and industrial land within the study area would create jobs for more than 1,000 employees.[3] The bulk of this growth (438 employees) would occur in Subarea 342. The Rogue-Valley Mall is in this subarea and meets the underdeveloped threshold requirement. The site does not currently meet the maximum 40% lot coverage limitation provisions in the C-R zone. City staff has indicated that there has been interest in redeveloping areas of the site. Altogether, this suggests that the site has the potential to provide large employment growth over the planning horizon, likely through developing portions of the surface parking areas with new development.

The subarea with the next largest potential employment growth is Subarea 340 (330 employees). The subarea has large vacant areas that are primarily zoned C-R which generally permits large retail establishments, such as a Home Depot or Walmart, that attract and support smaller retail establishments nearby. Subarea 344 and is also estimated to generate the high amounts of new employment with 86 additional employees. This area is almost entirely vacant, but it's lower employment estimates are due to a mix commercial (C-S/P) and industrial zoning (I-L); commercially zoned areas generally employ more people given the same amount space. Both subareas are located on the western side of the interchange, with all or some portion of the TAZ subject to the Restricted Zoning Overlay. For purposes of this analysis, the Restricted Zoning Overlay is not considered a limiting factor to the employment growth in these TAZs in part because the projected growth is less than the regional growth model and the ability to modify the overlay requirements through a zone change process pursuant to Section 10.204(C) of the Land Development Code.

New employment in all other subareas is expected to be minimal. Two of the subareas are not anticipated to generate new employment through new development or redevelopment. The remaining subareas are expected to employ fewer than 60 additional jobs for employees. This is generally consistent with existing development patterns as most of the commercial or industrial areas within the IMSA are currently developed. For areas that are underdeveloped, new employment in these areas are expected to be mixed due to a combination maximum building coverage standards and FAR assumptions described above.

New residential dwellings in the IMSA are anticipated to be minimal overall. Only one subarea is expected to add additional housing. Subarea 372 has the capacity to accommodate seven (7) new single-family dwelling units. Subarea 372 is located at the far northeastern limit of the IMSA.

Table 2: Residential & Commercial/Industrial Full Buildout Forecast

Subarea & Zone	Vacant/Underdeveloped Acres		Employees	Dwelling Units
	Gross	Net		
201*	**27.0**	**19.3**	**104**	**0**
C-C	3.0	2.5	66	0
C-S/P	1.2	1.0	25	0

[3] Subareas (TAZs) do not fit precisely to the study area boundary. Portions of some subareas extend beyond the study area boundary. The information shown in Table 2 includes the entire subarea, even if only a portion of it is located in the study area. Overall, this results in an estimated 159 additional employees and 46 additional dwelling units that are physically located outside of the study area, but within the subarea. The employment results are mostly located in Subareas 201 and 345. The dwelling unit results are mostly located in Subareas 365 and 372.

Subarea & Zone	Vacant/Underdeveloped Acres		Employees	Dwelling Units
	Gross	Net		
I-G	0.1	0.1	0	0
I-L	22.8	15.8	13	0
340	**15.2**	**12.3**	**330**	**0**
C-C	0.6	0.6	12	0
C-R	14.6	11.7	318	0
341	**3.8**	**3.8**	**25**	**0**
C-C	3.8	3.8	25	0
342	**60.2**	**58.0**	**438**	**0**
C-R	59.8	57.9	438	0
P-1	0.4	0.1	0	0
343*	**2.5**	**2.2**	**5**	**1**
C-C	1.9	1.6	5	0
C-H	0.3	0.3	0	0
MFR-30	0.3	0.3	0	1
344	**14.4**	**11.5**	**86**	**0**
C-S/P	3.6	2.9	77	0
I-L	10.8	8.6	9	0
345*	**14.7**	**14.3**	**87**	**0**
C-H	3.6	3.5	45	0
C-S/P	1.6	1.2	33	0
GI	8.6	8.6	9	0
I-G	1.0	1.0	0	0
I-H	0.0	0.0	0	0
360*	**24.6**	**14.0**	**5**	**0**
I-G	8.1	5.8	0	0
I-L	15.3	7.8	5	0
P-1	1.2	0.3	0	0
361*	**21.7**	**18.8**	**7**	**0**
I-G	9.1	9.0	2	0
I-L	12.6	9.8	5	0
362*	**34.1**	**3.4**	**1**	**0**
C-C	0.6	0.5	0	0
I-L	33.5	2.9	1	0
363	**11.4**	**10.0**	**59**	**0**
C-R	3.2	2.9	53	0
I-G	8.2	7.1	6	0
364	**1.4**	**1.1**	**0**	**0**
I-L	1.4	1.1	0	0
365*	**5.1**	**4.9**	**17**	**25**
C-R	1.5	1.3	17	0
MFR-20	3.5	3.5	0	25

Subarea & Zone	Vacant/Underdeveloped Acres		Employees	Dwelling Units
	Gross	Net		
371	**4.8**	**1.5**	**19**	**0**
C-H	1.6	1.5	19	0
I-L	3.2	0.0	0	0
372*	**19.3**	**11.5**	**2**	**27**
I-L	12.8	7.7	2	0
MFR-15	4.8	2.1	0	20
SFR-6	1.7	1.7	0	7
374*	**48.1**	**0.7**	**0**	**0**
I-L	47.1	0.0	0	0
SFR-6	0.9	0.7	0	0
846*	**24.5**	**19.6**	**20**	**0**
GI	1.6	1.3	1	0
I-G	14.3	11.5	12	0
I-L	8.5	6.8	7	0
847*	**12.0**	**10.1**	**7**	**0**
GI	2.2	2.2	0	0
I-G	9.8	7.8	7	0
Grand Total	**344.9**	**216.8**	**1,212**	**53**

* Portions of the subarea extend outside of the study area.

Appendix E Tech Memo #5: Future Build Conditions

[This page left blank intentionally]

KITTELSON & ASSOCIATES
851 SW 6th AVENUE, SUITE 600
PORTLAND, OR 97204
P 503.228.5230 F 503.273.8169

MEMORANDUM

Date: January 7, 2021 Project #: 23641.0

To: Virginia Elandt, Oregon Department of Transportation
Karl Macnair, City of Medford

From: Matt Hughart, AICP, Matt Bell, and Miranda Barrus, Kittelson & Associates, Inc.

Project: I-5 Exit 30 Interchange Area Management Plan (IAMP)

Subject: Final Tech Memo #5: Future Full-Build Conditions

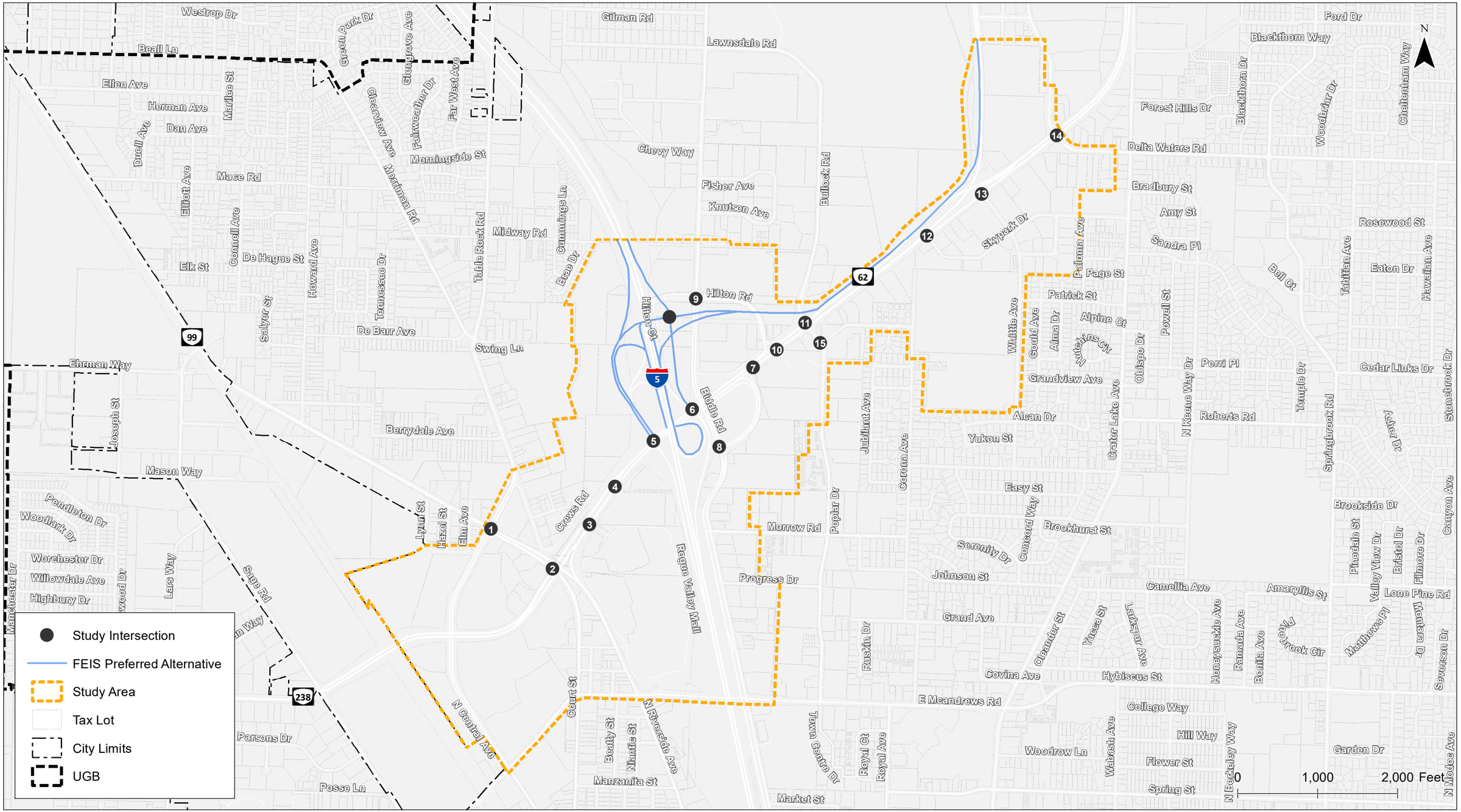
This memorandum summarizes future year 2042 full-build traffic conditions in the Interchange Management Study Area (IMSA) for the I-5 Exit 30 Interchange Area Management Plan (IAMP). Figure 1 illustrates the IMSA. This memorandum includes the results of the future full-build traffic operations analysis, future multimodal analysis, and future freight analysis. This memorandum also includes potential solutions to address transportation system deficiencies. For the purpose of this memorandum, full-build refers to full build-out of the Final Environmental Impact Statement (FEIS) Split Diamond Interchange form without any additional intersection modifications other than those necessary to accommodate new turning movements.

FUTURE FULL BUILD TRAFFIC OPERATIONS ANALYSIS

FEIS – Split Diamond Interchange Description

In 2013, an FEIS was adopted by ODOT and area agencies that determined a new alignment for an OR 62 bypass. The bypass was constructed and opened to traffic in early 2020 as documented in previous technical memorandums. Also included in the FEIS were a number of improvement concepts that were identified to address forecast longer-term regional circulation and capacity constraints. One such improvement is a new split diamond interchange that would directly connect the southern extent of the bypass to I-5 Exit 30. Graphical illustrations are included in Exhibit 1 that show how the recently constructed bypass and existing interchange are envisioned to be modified with inclusion of the FEIS Split Diamond Interchange concept. Major circulation changes associated with the FEIS include:

- Closure of the cut-and-cover: The bypass will no longer have a direct connection to OR 62. Instead, all bypass traffic will connect to the new interchange ramps and frontage roads. As a result, most intersections within the interchange vicinity would see significant traffic pattern and volume changes.
- Changes at the I-5 ramp terminals: The I-5 southbound off-ramp and I-5 northbound on-ramp will be significantly modified to accommodate the split diamond interchange form and to accommodate traffic to/from the new bypass.



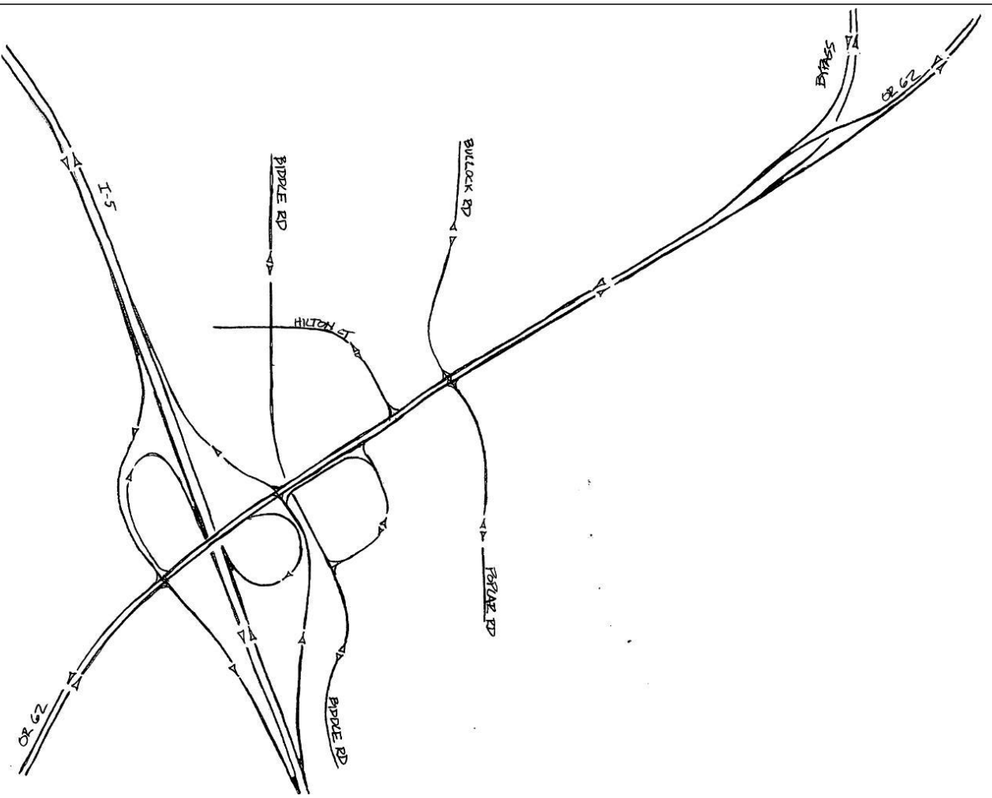
Study Intersections
Medford, Oregon

Figure
1

KITTELSON & ASSOCIATES

Coordinate System: NAD 1983 2011 StatePlane Oregon South FIPS 3602 Ft Intl
Data Source: Delete if there isn't one.

H:\23\23641 - Exit 30 IAMP\gis\TM\51_Study Intersections.mxd - mbell - 1:55 PM 1/7/2021



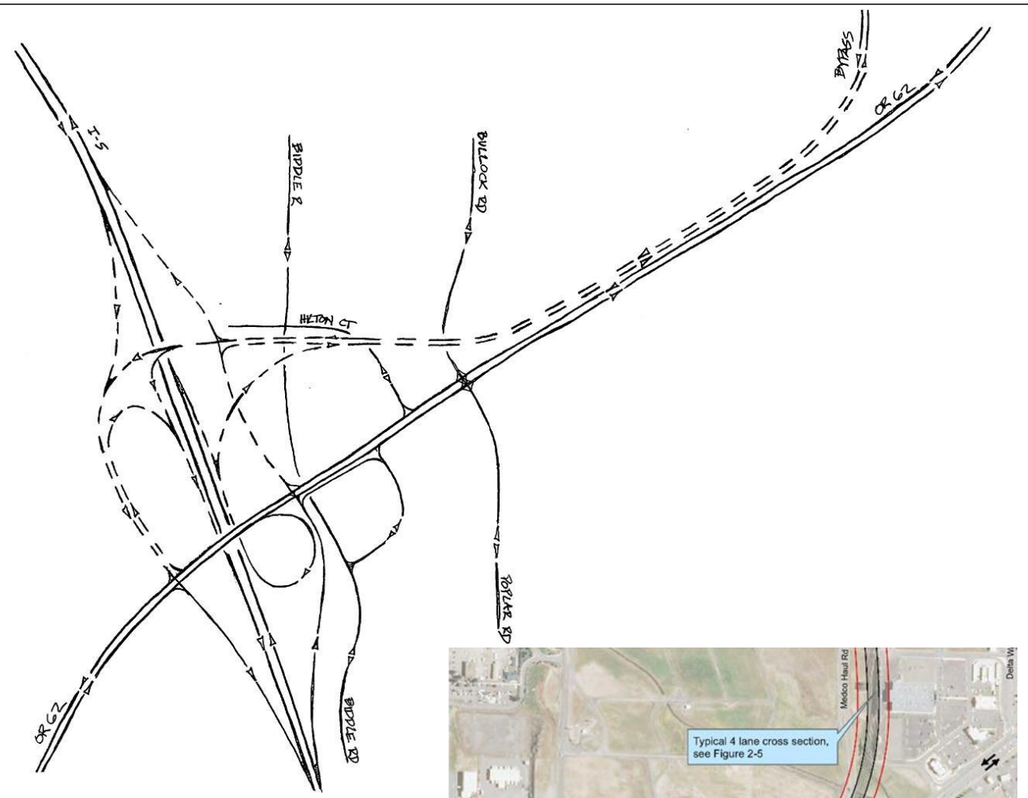
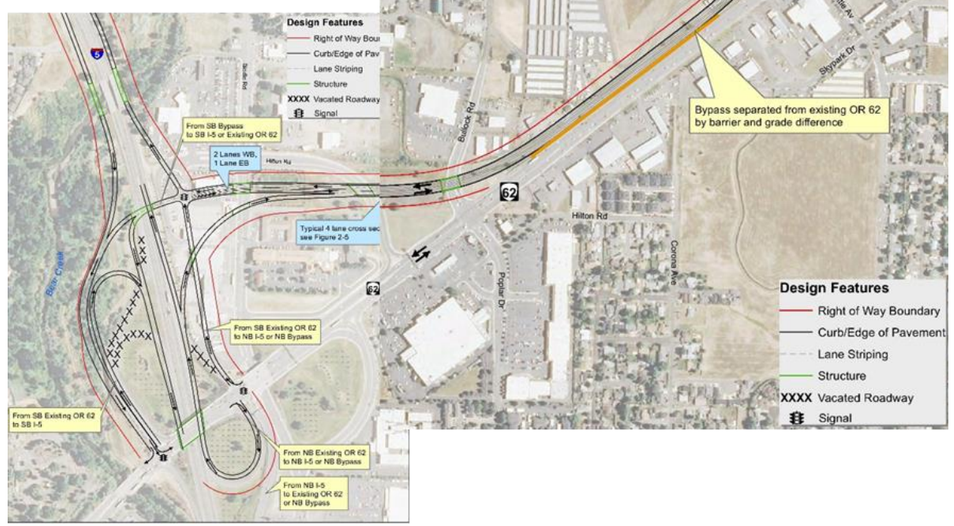


Exhibit 1:

- Single line drawing of the existing Exit 30 interchange, OR 62 corridor, and bypass
- Single line drawing of how the Exit 30 interchange, OR 62 corridor, and bypass would be conceptually modified with the inclusion of the FEIS Split Diamond Interchange (dashed lines represent new roadway connections)
- Conceptual double line drawing of the modified Exit 30 interchange, OR 62 corridor, and bypass with the FEIS Split Diamond Interchange



Traffic Volume Redistribution with FEIS Split Diamond Interchange

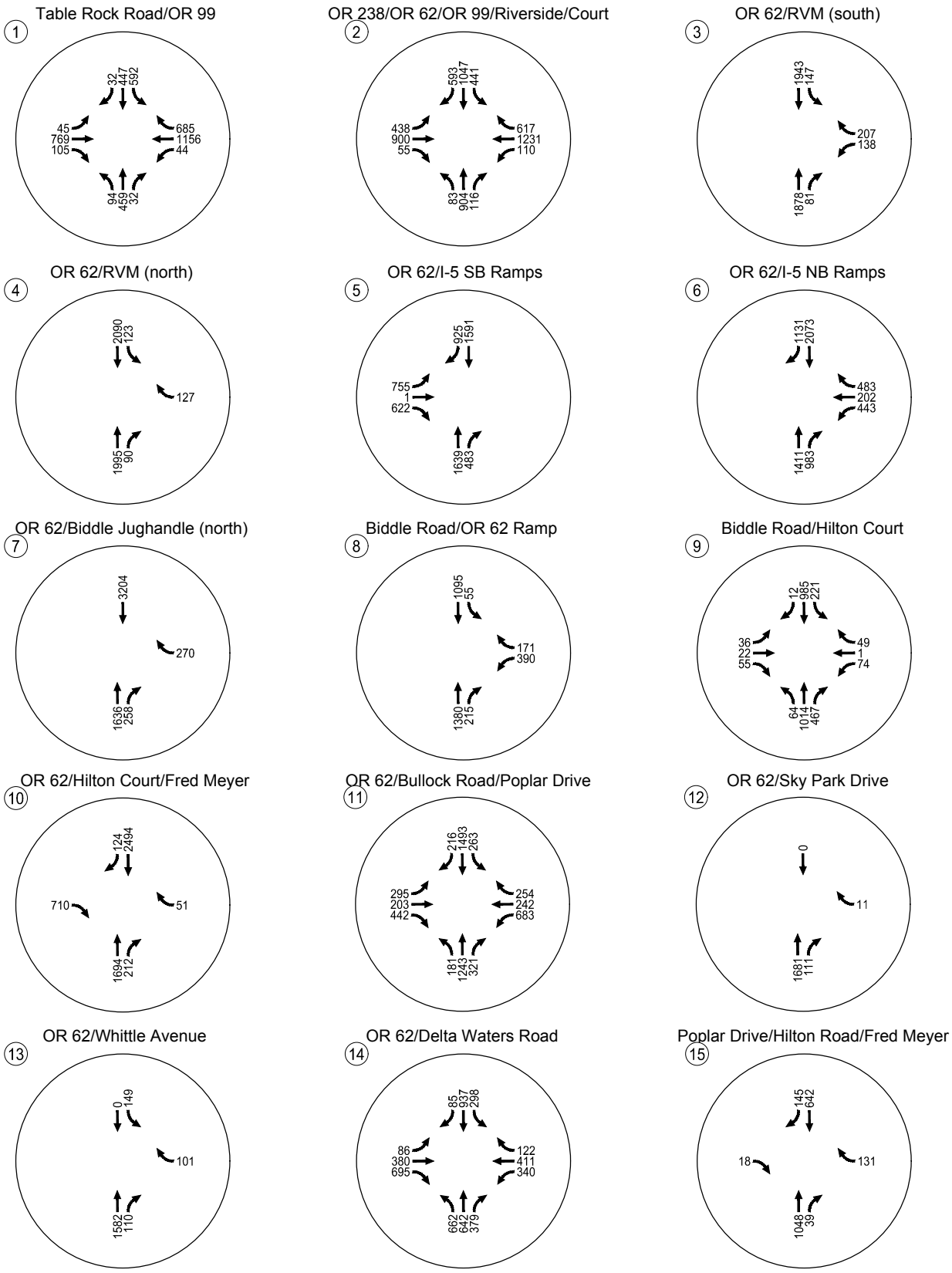
As noted in Technical Memorandum #4, forecast 2042 traffic volumes were developed for the study area intersections based on anticipated growth in the local and regional study area. With the inclusion of the FEIS Split Diamond Interchange shown in Exhibit 1, it is recognized that some of the forecast traffic movements will redistribute within the study area and at individual intersections. This redistribution is anticipated to result in the following significant changes:

- Through traffic volumes on OR 62 west of the Bullock Road-Poplar Drive intersection will reduce as the highway will no longer have a direct connection to the bypass.
- Bypass related traffic volumes to/from Bullock Road-Poplar Drive will experience a directional shift at OR 62 due to new travel patterns.
- The I-5 southbound ramp terminal at OR 62 will experience a significant increase in traffic volumes as it will be the new portal for southbound bypass-related travel demand.
- The I-5 northbound ramp terminal at OR 62 will experience a significant increase in traffic volumes as it will be the new portal for northbound bypass-related travel demand.

While these roadway segments and intersections are projected to see significant changes, it should be noted that most of the other major study area intersections such as the OR 62-OR 238 / OR 99-Court Street-N Riverside Avenue (Big X) and OR 62 / Delta Waters intersections will remain unchanged. Figure 1 shows the study intersections and Figure 2 shows the resulting volume redistribution assumptions.

Intersection Operations Analysis with FEIS Split Diamond Interchange

While the 2013 FEIS identified the Split Diamond Interchange in conceptual form, it did not provide a detailed assessment of operational impacts at the study intersections when accounting for the anticipated redistribution of traffic volumes shown in Figure 2. To test these operational impacts, no traffic control or geometric enhancements were assumed with the inclusion of volumes shown in Figure 2 other than those necessary to accommodate routing changes. Table 1 summarizes the resulting intersection operations analysis results and compares them to applicable mobility standards and targets. As shown, several study intersections are forecast to exceed their applicable mobility standards and targets. *Attachment A contains the future full-build traffic conditions HCM 6th Edition and HCM 2000 worksheets.*



Redistribution of Future 2042 Full Build Traffic Volumes with FEIS Split Diamond Interchange, Weekday PM Peak Hour
Medford, Oregon

Figure 2

H:\23\23641 - Exit 30 IAMP\gis\TM5\Turning Movements.dwg Jan 07, 2021 - 3:26pm - mbarrus Layout Tab: Fig02 - Full Build

Table 1: Future Full-Build Intersection Operations with FEIS Split Diamond Interchange

Map ID	Location	Control Type	Mobility Standard/Target	CM	V/C	Del	LOS
1	OR 99 / Table Rock Road	Signal	0.95	N/A	0.87	42.1	D
2	OR 62-OR 238 / OR 99-Court Street-N Riverside Avenue	Signal	0.90	N/A	**0.99**	67.3	E
3	OR 62 / Rogue Valley Mall entrance (west)	Signal	0.90	N/A	0.83	12.0	B
4	OR 62 / Rogue Valley Mall entrance (east, at Target)	Unsignalized	0.90 N-S/0.95 E-W	SBL	**>1.0**	>80.0	F
5[1]	OR 62 / I-5 Southbound Ramp Terminal	Signal	0.85[3]	N/A	**>1.0**	>80.0	F
6[1]	OR 62 / I-5 Northbound Ramp Terminal	Signal	0.85[3]	N/A	**>1.0**	48.6	D
7[2]	OR 62 / Biddle Road (north end of jug handle)	Unsignalized	0.85 N-S/0.95 E-W	WBR	0.30	10.5	B
8[1]	OR 62 / Biddle Road (south end of jug handle)	Signal	0.95	N/A	0.91	25.5	C
9	Biddle Road / Hilton Court	Signal	0.95	N/A	0.67	14.4	B
10[2]	OR 62 / Hilton Court-Fred Meyer Parking Lot Entrance	Unsignalized	0.85 N-S/0.90 5E-W	EBR	**0.93**	39.7	F
11	OR 62 / Bullock Road-Poplar Drive	Signal	0.85	N/A	**0.89**	>80.0	F
12	OR 62 / Sky Park Drive	Unsignalized	0.85 N-S/0.95 E-W	WBL	0.04	19.3	C
13	OR 62 / Whittle Avenue	Unsignalized	0.90 N-S/0.95 E-W	SBL	0.44	23.1	C
14	OR 62 / Delta Waters Road	Signal	0.90/LOS D[4]	N/A	**>1.0**	>80.0	F
15	Poplar Drive / Hilton Road	Unsignalized	LOS D	WBR	0.35	19.0	C

[1]Lane configurations not supported by HCM 2010 or 6th Edition methodologies, therefore, HCM 2000 results are reported.
[2]The HCM 2010 and HCM 6th Edition analysis results do not reflect field observations. Therefore, the HCM 2000 analysis results are reported.
[3]This mobility target may be increased to as much as 0.90 through the IAMP adoption process.
[4]City and State mobility standards and targets are shown given recent jurisdictional transfer of infrastructure within the study corridor.

The following intersections are forecast to exceed their respective mobility standards and targets under these conditions:

- OR 62-OR 238 / OR 99-Court Street-N Riverside Avenue – intersection operations are consistent with the previously documented 2042 no-build analysis.
- OR 62 / Rogue Valley Mall entrance (east, at Target) – intersection operations are consistent with the previously documented 2042 no-build analysis.
- OR 62 / I-5 Southbound Ramp Terminal – intersection operations diminish from the previously documented 2042 no-build analysis and capacity is exceeded due to the increase in bypass-related travel demand on the modified I-5 SB off-ramp.
- OR 62 / I-5 Northbound Ramp Terminal – intersection operations diminish from the previously documented 2042 no-build analysis and capacity is exceeded due to the increase in travel demand generated by OR 62 traffic destined to the new bypass connection.
- OR 62 / Hilton Court-Fred Meyer Parking Lot Entrance – intersection operations improve from the previously documented 2042 no-build analysis due to the decrease in travel demand on OR 62.
- OR 62 / Bullock Road-Poplar Drive – intersection operations improve from the previously documented 2042 no-build analysis due to the decrease in travel demand on OR 62.
- OR 62 / Delta Waters Road – intersection operations are consistent with the previously documented 2042 no-build analysis.

Potential solutions are investigated later in this memorandum for the signalized intersections listed above not meeting their mobility standard and target.

Queueing Analysis

Provided that select study intersections within the IMSA are forecast to be impacted by full build-out of the FEIS Split Diamond Interchange project, it is expected that unaffected study intersections will experience similar traffic queues. Therefore, a queuing analysis was conducted using SimTraffic microsimulation software within Synchro 10 for the study intersections forecasted to experience changes in traffic volume. Table 2 summarizes the 95th percentile queues during the weekday PM peak hour under future year 2042 full-build traffic conditions and indicates if existing storage can accommodate future queues. The vehicle queue and storage lengths were rounded to the nearest 25-feet. The turning movement storage lengths reflect the striped storage for each turn-lane pocket at the intersections and the through movement storage lengths reflect the distance to the nearest adjacent intersection and/or driveway. *Attachment B contains the SimTraffic reports.*

Table 2: Future Full-Build Queuing Analysis

Map ID	Location	Movement[1]	Storage Length (Feet)	95th Percentile Queue (Feet)	Adequate?
5	OR 62 / I-5 Southbound Ramp Terminal	NBT (x3)	670	200-475	Yes
		NBR	75	100	**No**
		SBT (x2)	530	225	Yes
		SBR	625	50	Yes
		EBL	200	350	Yes[3]
		EBTL	200	375	Yes[3]
		EBR	350	1,250	**No**
6	OR 62 / I-5 Northbound Ramp Terminal	NBT (x3)	530	325-725	**No**
		SBT (x3)	1,100	425-1,025	Yes
		SBR	295	575	Yes[6]
		WBL	675	525	Yes
		WBLTR	675	650	Yes
		WBR	675	475	Yes
7	OR 62 / Biddle Road (north end of jug handle)	WBR	1,125	50	Yes
8	OR 62 / Biddle Road (south end of jug handle)	NBT-TR	275	1,525	**No**
		SBL	100	75	Yes
		SBT (x2)	640	175-200	Yes
		WBL	875	450	Yes
		WBLR	875	625	Yes
9	Biddle Road / Hilton Court	NBL	320	200	Yes
		NBT (x2)	425	2,375-2,400	**No**
		NBR	220	350	**No**
		SBL	175	300	Yes[5]
		SBT-TR	540	1,325-1,350	Yes[2]
		EBL	375	575	Yes[6]
		EBTR	300	775	Yes[2]
		WBL (x2)	220	50-75	Yes
		WBTR	220	50	Yes
10	OR 62 / Hilton Court-Fred Meyer Parking Lot Entrance	NBR	90	0	Yes
		EBR	1,200	1,225	Yes[6]

Map ID	Location	Movement[1]	Storage Length (Feet)	95th Percentile Queue (Feet)	Adequate?
		WBR	200	50	Yes
11	OR 62 / Bullock Road-Poplar Drive	NBL	450	375	Yes
		NBT (x2)	360	425	Yes[2]
		NBTR	360	350	Yes
		SBL (x2)	410	275-425	Yes[8]
		SBT (x3)	2200	375-450	Yes
		SBR	425	450	Yes[8]
		EBL (x2)	350	175-600	**No**
		EBT	165	1,250	Yes[2]
		EBR	150	200	**No**
		WBL (x2)	250	275	Yes[6]
		WBT	930	300	Yes
		WBR	450	350	Yes

[1]WB= Westbound, SB = Southbound, EB = Eastbound, NB = Northbound, L = Left, T = Through, R = Right
[2]Sufficient storage is available, but queue blocks nearest driveway or minor street intersection.
[3]Additional storage is available on the southbound ramp, outside of the deceleration lane.
[5]Additional storage is available in the center two-way left-turn lane on Biddle Road.
[6]Additional storage is available in the through lane(s).
[7]Queue extends onto private property.
[8]Sufficient storage is available for this queue beyond the striped storage.

As shown in Table 2, 95th percentile queues for one or more movements at the following study intersections are forecast to exceed their current striped storage in 2042:[1]

- 5: OR 62 / I-5 Southbound Ramp Terminal – the northbound right-turn queue exceeds its striped storage and the eastbound right-turn queue exceeds its striped storage, blocking the outside (right) southbound lane of I-5.
- 6: OR 62 / I-5 Northbound Ramp Terminal – the northbound through queues block the upstream signalized intersection.
- 8: OR 62 / Biddle Road (south end of jug handle) – the northbound through-through/right queues block the upstream signalized intersection.
- 9: Biddle Road / Hilton Court – the northbound through queues block the upstream signalized intersection and the northbound right-turn queue exceeds its striped storage.
- 11: OR 62 / Bullock Road-Poplar Drive – the eastbound left- and right-turn queues exceed their striped storage.

[1] While it is important to be mindful of vehicle queues potentially impacting upstream signalized intersections, it is equally important to consider the trade-offs associated with capacity improvements intended to solve long queues. These improvements (e.g. adding lanes, providing free movements, etc.) have the potential to negatively impact other transportation modes, particularly walking and biking. Further, traffic modeling software such as Synchro is more effective for analyzing improvements for an existing deficiency, rather a long-range, forecasted deficiency. It is likely that as queues lengthen over time, drivers will choose alternate routes on the system, but this cannot be emulated in the modeling software.

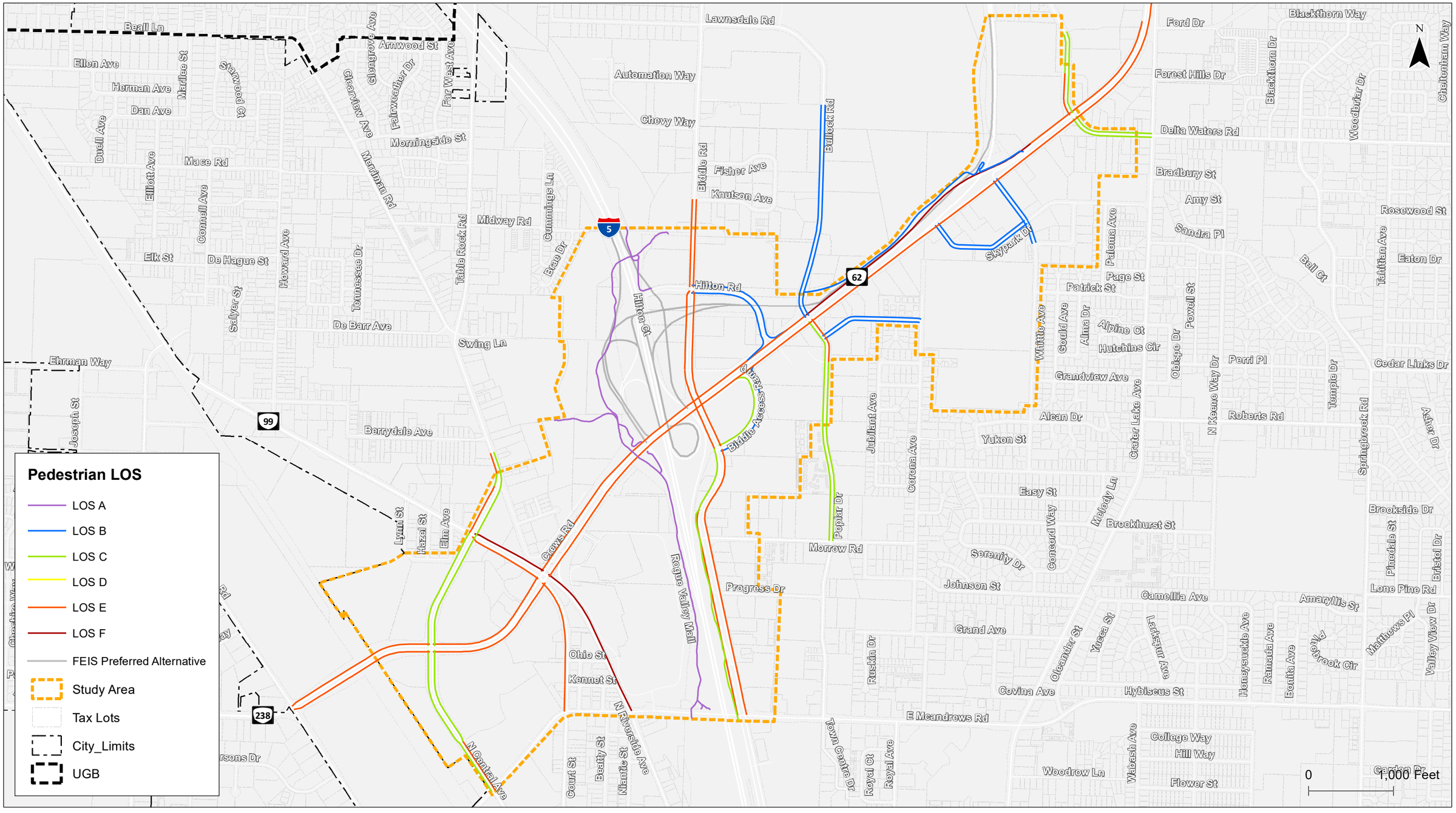
FUTURE MULTIMODAL ANALYSIS

The pedestrian, bicycle, and transit facilities and services within the IMSA were evaluated under year 2042 full-build traffic conditions in accordance with the simplified Multimodal Level-of-Service (LOS) analysis methodologies identified in Chapter 14 of the ODOT Analysis Procedures Manual (APM). Per the APM, these methodologies are intended for use when a detailed analysis is desired or when a no-build alternative is compared to one or more build alternatives. These methodologies are not meant for defining overall needs or making prioritization decisions, rather they are meant for evaluating alternatives. Multimodal LOS scores are based on user perceptions (traveler satisfaction) and are graded from best (LOS A) to worst (LOS F). A more detailed description of how the scores were developed is provided in *Tech Memo 2 Appendix C: Traffic Operations Analysis.* The results of the future multimodal analysis are summarized below.

Pedestrian Level of Service

As described in *Tech Memo 2C: Traffic Operations Analysis*, the simplified multimodal LOS analysis methodology uses four variables to estimate Pedestrian LOS. The only variable that is expected to change under year 2042 full-build conditions is directional traffic volume. Directional traffic volumes along OR 62 are expected to decrease between the I-5 SB Ramp Terminal and Skypark Drive as all traffic to/from the bypass will travel through the interchange; the only exception is the segment between the I-5 SB and NB Ramp Terminals where northbound traffic volumes are expected to increase. Turning movement volumes at the study intersection are also expected to increase and decrease along the corridor as traffic redistributes; however, the net difference is an overall decrease, except as noted above.

Figure 3 illustrates the future Pedestrian LOS analysis results for major roadways (collector and above) in the IMSA. As shown, most facilities are expected to continue to operate at LOS E with the exception of the segments with relatively low traffic volumes and/or travel speeds, such as Biddle Road, Bullock Road, and Poplar Drive. The segment of OR 62 from Bullock Road to the right-in/right-out commercial driveway is shown as LOS F; however, the shared-use path that runs parallel to OR 62 is LOS A. The segments that changed relative to existing conditions include Biddle Road from Morrow Road to the Jug Handle (the northbound segment changed from LOS C to LOS E) and the Jug Handle from OR 62 to Biddle Road (the southbound segment changed from LOS B to LOS C). *A tabulated summary of the Pedestrian LOS analysis results is provided in Attachment C*.



Pedestrian Level of Service (LOS)
Future Full-build Traffic Conditions
Medford, Oregon

Figure
3

H:\23123641 - Exit 30 IAMP\gis\TM\S3_Ped LOS.mxd - mbell - 1:56 PM 1/7/2021

KITTELSON & ASSOCIATES

Coordinate System: NAD 1983 2011 StatePlane Oregon South FIPS 3602 Ft Intl

Bicycle Level of Service

As described in *Tech Memo 2C: Traffic Operations Analysis*, the simplified multimodal LOS analysis methodology uses four variables to estimate Bicycle LOS. However, none of the variables are expected to change under year 2042 full-build conditions.

Figure 4 illustrates the future Bicycle LOS analysis results for major roadways (collector and above) in the IMSA. As shown, most facilities are expected to continue to operate at LOS D with the exception of the segments with relatively low traffic volumes and/or travel speeds, such as Bullock Road. The segment of OR 62 from Poplar Road to Delta Waters Road is show as LOS F, despite buffered bike lanes, due to the number of unsignalized conflicts along the roadway. *A tabulated summary of the Bicycle LOS analysis results is provided in Attachment C.*

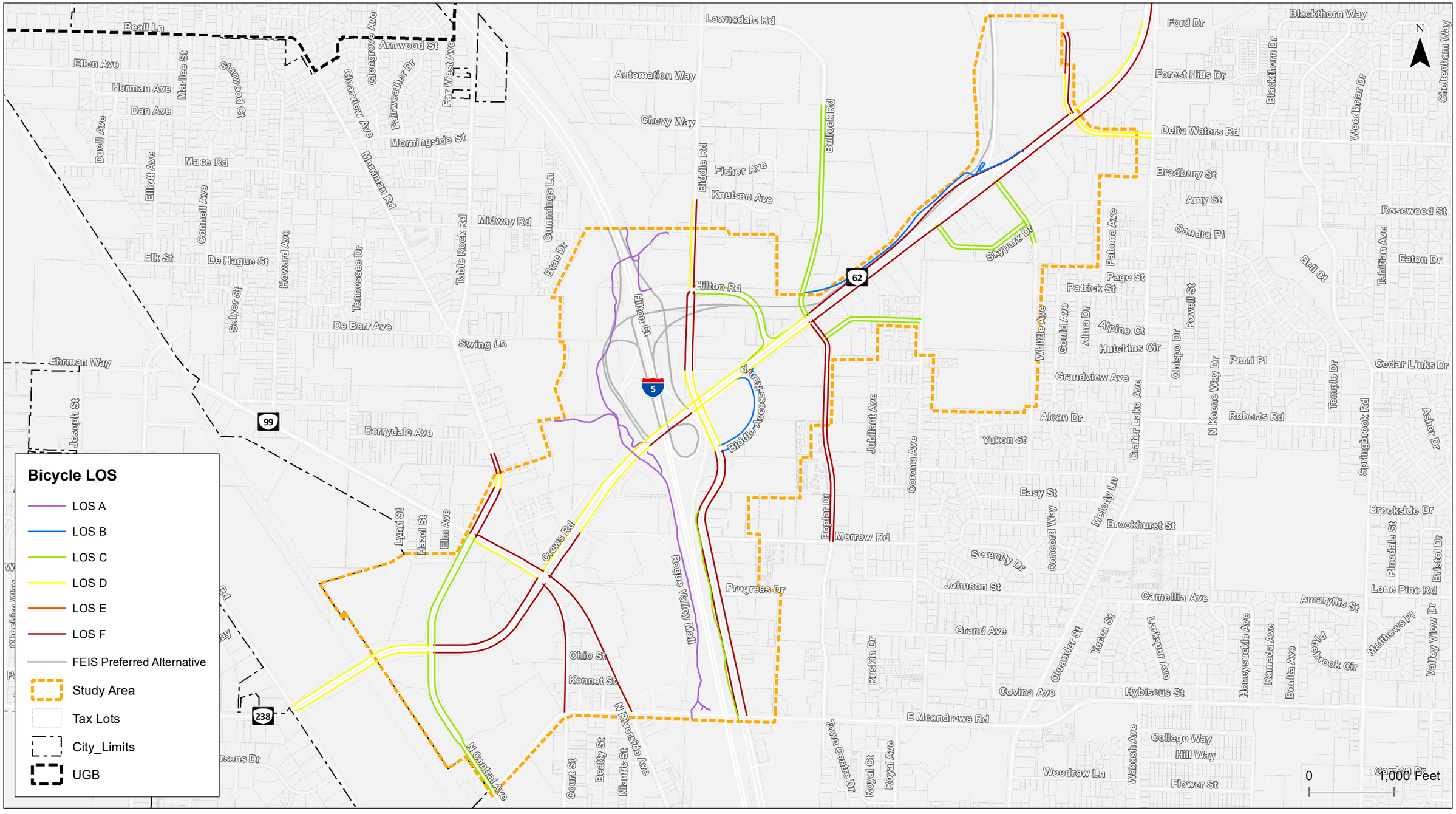
Transit Level of Service

As described in *Tech Memo 2C: Traffic Operations Analysis*, the simplified multimodal LOS analysis methodology uses four variables to estimate Transit LOS. The only variable that is expected to change under year 2042 full-build conditions is Pedestrian LOS. However, as indicated above, the changes are expected to be minimal.

Figure 5 illustrates the future Transit LOS analysis results for roadways in the IMSA with fixed-route transit service. As shown, the TLOS results continue to vary significantly between the roadways. Roadways that are served by multiple bus lines or by bus lines with shorter headways and/or travel times have better LOS. *A tabulated summary of the Transit LOS analysis results is provided in Attachment C.*

FUTURE FREIGHT ANALYSIS

The future freight analysis identifies potential issues with freight movements on designated freight routes within the IMSA, including freight route restrictions, bottlenecks, over-dimension load pinch points. As indicated in *Tech Memo 2B: Transportation Inventory*, the majority of state highways within the IMSA are designated freight routes and/or National Highway System (NHS) routes. Therefore, they have been designed to accommodate large trucks and the intersections have been designed to accommodate large truck turning movements. The Motor Carrier Transportation Division (MCTD) Freight Mobility Map also identifies the majority of state highways in the IMSA as *Orange Routes*, or generally unrestricted freight and oversize/overweight routes; OR 238 is identified as a *Magenta Route*, which is a route with some restrictions for both length and width. The inventory also indicates that there are no freight bottlenecks or over dimension load pinch points within the IMSA. Therefore, the only potential issues with future freight movements are the traffic operations and safety issues identified in this memo.



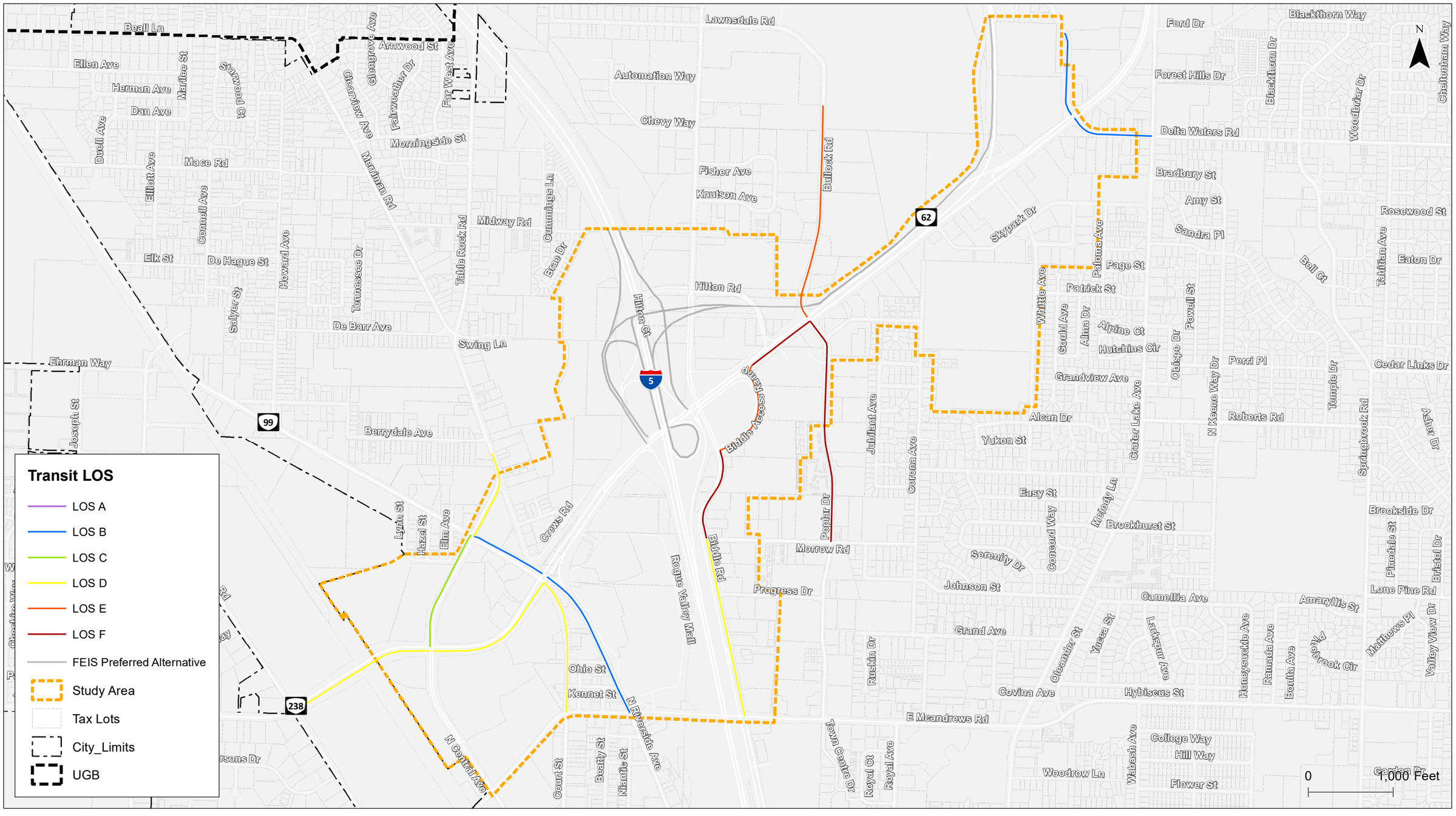
Bicycle Level of Service (LOS)
Future Full-build Traffic Conditions
Medford, Oregon

Figure **4**

H:\23123641 - Exit 30 IAMP\gis\TM\S4_Bike LOS.mxd - mbell - 1:57 PM 1/7/2021

KITTELSON & ASSOCIATES

Coordinate System: NAD 1983 2011 StatePlane Oregon South FIPS 3602 Ft Intl



Transit Level of Service (LOS)
Future Full-build Traffic Conditions
Medford, Oregon

Figure **5**

Coordinate System: NAD 1983 2011 StatePlane Oregon South FIPS 3602 Ft Intl

H:\23123641 - Exit 30 IAMP\gis\TM\5S_Transit LOS.mxd - mbell - 1:57 PM 1/7/2021

KITTELSON & ASSOCIATES

POTENTIAL SOLUTIONS

This section presents potential solutions to address transportation system deficiencies identified by the future full-build analysis. This section includes solutions that can be implemented on an incremental basis, prior to full build-out of the FEIS, and solutions that can be implemented along with the FEIS to address traffic operations. Potential solutions are provided for the following study intersections, which are forecast to exceed their applicable mobility standards and targets:

- OR 62-OR 238 / OR 99-Court Street-N Riverside Avenue
- OR 62 / Delta Waters Road
- OR 62 / I-5 SB Terminal
- OR 62 / I-5 NB Terminal
- OR 62 / Bullock Road-Poplar Drive

The intersection operations analysis of these potential solutions was conducted following the same methodology used in the intersection operations analysis described earlier in this memorandum. The following sections describe the approach to developing potential solutions at these intersections for the year 2042 following construction of the FEIS Split Diamond Interchange project.

The potential solutions evaluated through the intersection operations analysis aimed to increase capacity and achieve applicable mobility targets at the study intersections. While capacity improvements may provide benefit to vehicular traffic, such as lane additions or enabling turn movements to be free, they may also impact other modes such as walking, biking, and taking transit. Therefore, multimodal solutions are presented following the intersection capacity solutions. In instances where solutions may increase intersection capacity but do not achieve applicable mobility targets, alternative mobility targets are required as part of the solution where allowed.

Potential Solutions Uninfluenced by the FEIS Split Diamond Interchange

The signalized intersections within the study area listed below are expected to be uninfluenced by the FEIS Split Diamond Interchange project and have similar flows in traffic volumes after its construction:

- OR 62-OR 238 / OR 99-Court Street-N Riverside Avenue
- OR 62 / Delta Waters Road

The following sections summarize the deficiencies and potential solutions at these study intersections and tabulate the intersection operations analysis results associated with each potential solution.

OR 62-OR 238 / OR 99-Court Street-N Riverside Avenue

The OR 62-OR 238 / OR 99-Court Street-N Riverside Avenue intersection is expected to exceed its applicable mobility standard and target and operate near capacity in 2042 with or without full build-out of the FEIS. This is primarily driven by the northbound, southbound, and westbound through movements. Further, the northbound left-, northbound right-, eastbound left-, and westbound right-turn queues

exceed their striped storage and the northbound through and eastbound through-through/right queues block upstream signalized intersections. The following potential solutions were evaluated to increase capacity and storage for these movements.

- **Solution #1:** Convert the northbound (OR 238) right-turn lane into a shared through-right turn; and construct a third, outside receiving lane on the north leg (OR 62). This solution requires modification to the existing signal pole and mast arm for northbound traffic.
- **Solution #2:** Construct a third southbound (OR 62) left-turn lane and a third receiving lane on the east leg (Court Street). This solution potentially requires property acquisition.
- **Solution #3:** Convert the northbound (OR 238) right-turn lane into a shared through-right turn and construct a third, outside receiving lane on the north leg (OR 62); Construct a third southbound (OR 62) left-turn lane and a third receiving lane on the east leg (Court Street). This solution requires modification to the existing signal pole and mast arm for northbound traffic and potential property acquisition.
- **Solution #4:** Restrict the eastbound (OR 99) left-turn movements by removing the turn lanes. This solution does not improve capacity because it assumes that the eastbound (OR 99) left-turn volumes are reassigned to the northbound (OR 238) through lanes.
- **Solution #5:** Solution #1 + Solution #2; convert the eastbound (OR 99) shared through-right turn lane into a right-turn lane; and convert the outside eastbound (OR 99) left-turn lane into a through lane.
- **Solution #6:** Construct a second exclusive southbound (OR 62) right-turn lane. This improvement was identified in the Northgate Center Development Agreement in May of 2012.
- **Solution #7:** Construct a flyover for the eastbound (OR 99) left-turn movements.
- **Solution #8:** Construct flyovers for the eastbound (OR 99) and westbound (N Riverside Avenue) left-turn movements.
- **Solution #9:** Construct a flyover for the southbound (OR 62) left-turn movements.
- **Solution #10:** Construct flyovers for the southbound (OR 62) and northbound (OR 238) left-turn movements.

Table 3 summarizes the intersection operations analysis results for the potential solutions listed above.

Table 3: Potential Solutions - OR 62-OR 238 / OR 99-Court Street-N Riverside Avenue

Solution	V/C	Delay (sec)	LOS	Mobility Standard/Target	Meets Standard/Target
#1	0.92	56.6	E	0.90	No
#2	0.94	57.8	E		No
#3	0.86	54.4	D		Yes
#4	*No Improvement*				No
#5	0.95	58.5	E		No
#6	0.99	61.0	E		No
#7	0.83	56.4	E		Yes
#8	0.82	39.9	D		Yes

#9	0.93	52.3	D		No
#10	0.47	40.6	D		Yes

OR 62 / Delta Waters Road

While the OR 62 / Delta Waters Road intersection was not identified in the City of Medford Transportation System Plan (TSP) to need improvements by the year 2038, the intersection is expected to exceed its applicable mobility standard and operate over capacity in 2042 with or without full build-out of the FEIS. This is primarily driven by the northbound left-turn movements and the southbound approach. The following potential solutions were evaluated to increase capacity for these movements.

- **Solution #1:** Construct a second southbound (OR 62) left-turn lane and a second southbound (OR 62) right-turn lane.
- **Solution #2:** Construct a second southbound (OR 62) left-turn lane and a second westbound (Delta Waters Road) left-turn lane and restripe the westbound approach as two left-turn lanes, a through lane, and a right-turn lane.
- **Solution #3:** Construct a second southbound (OR 62) left-turn lane and a second southbound (OR 62) right-turn lane; and provide flashing yellow for the westbound and eastbound (Delta Waters Road) left-turn movements.
- **Solution #4:** Construct a second southbound (OR 62) left-turn lane and a second westbound (Delta Waters Road) left-turn lane; and construct a southbound (OR 62) right-turn lane.

Table 4 summarizes the intersection operations analysis results for the potential solutions listed above.

Table 4: Potential Solutions - OR 62 / Delta Waters Road

Solution	V/C	Delay (sec)	LOS	Mobility Standard/Target	Meets Standard/Target
#1	0.95	56.2	E	0.90	No
#2	0.86	54.4	D		Yes
#3	0.95	47.3	D		No
#4	0.83	47.3	D		Yes

Converting the traffic signal to a roundabout was also evaluated based on Exhibit 3-12 from the National Cooperative Highway Research Program (NCHRP) Report 672, *Roundabouts: An Informational Guide, Second Edition* (Reference 1 – NCHRP Report 672). The exhibit illustrates the vehicular demand at an intersection that is appropriate for a single- or double-lane roundabout by comparing the daily traffic volumes with the percentage of left-turn volumes. According to the exhibit, a roundabout at the OR 62 / Delta Waters Road intersection would require more than two lanes to provide sufficient capacity for the forecast 2042 traffic volumes. While a roundabout has the potential to improve level of stress for people walking and biking, more than two lanes introduces safety obstacles for vehicles by increasing the number of conflict points within the intersection and counteracts one of the primary goals: to improve intersection safety. For these reasons, a roundabout is not considered a feasible option.

Potential Solutions Influenced by the FEIS Split Diamon Interchange

The signalized intersections within the study area listed below are expected to be influenced by the FEIS Split Diamond Interchange project and have different flows in traffic volumes after its construction:

- OR 62 / I-5 Southbound Ramp Terminal
- OR 62 / I-5 Northbound Ramp Terminal
- OR 62 / Bullock Road-Poplar Drive

The following sections summarize the deficiencies and potential solutions at these study intersections and tabulate the intersection operations analysis results associated with each solution. The solutions that can be implemented on an incremental basis, prior to full build-out of the FEIS, are highlighted below.

OR 62 / I-5 Southbound Ramp Terminal

The OR 62 / I-5 Southbound Ramp Terminal intersection is expected to be significantly impacted by the FEIS Split Diamond Interchange project if the off-ramp location and lane configurations do not change. The intersection is expected to exceed its applicable mobility target but operate below capacity in 2042 with the FEIS. This is primarily driven by the eastbound approach, which includes volumes from the I-5 southbound off-ramp and the OR 62 bypass under full build-out of the FEIS. Further, the northbound right-turn queue is expected to exceed its striped storage and the eastbound right-turn queue is expected to exceed its striped storage, blocking the outside (right) southbound lane of I-5. All of the following solutions reflect a ramp terminal footprint that does not change before or after the FEIS Split Diamond Interchange project and can be implemented on an interim basis. However, the intersection would continue to exceed its applicable mobility target; therefore, an alternative mobility standard would be required for approval.

- **Solution #1:** Channelize the eastbound (I-5 SB Off-Ramp) right-turn lane and make the right-turn a free-flow movement. This would require a receiving lane on the south leg (OR 62) that merges back into traffic north of the downstream signal.
- **Solution #2:** Construct a second eastbound (I-5 Off-Ramp) right-turn lane.
- **Solution #3:** Construct a second eastbound (I-5 Off-Ramp) right-turn lane; and restripe the eastbound (I-5 Off-Ramp) approach as a right-turn lane, shared through-right-turn lane, and dual left-turn lanes.
- **Solution #4:** Construct a second eastbound (I-5 Off-Ramp) right-turn lane; restripe the eastbound (I-5 Off-Ramp) approach as a right-turn lane, shared through-right-turn lane, and dual left-turn lanes; and construct a second southbound (OR 62) right-turn lane.

Table 5Table 5 summarizes the intersection operations analysis results for the potential solutions listed above.

Table 5: Potential Solutions - OR 62 / I-5 Southbound Ramp Terminal

Solution	V/C	Delay (sec)	LOS	Mobility Standard/Target	Meets Standard/Target
#1	0.85	21.6	C	0.85	Yes
#2	0.85	63.4	E		Yes
#3	0.85	57.0	E		Yes
#4	0.85	50.5	D		Yes

OR 62 / I-5 Northbound Ramp Terminal

The OR 62 / I-5 Northbound Ramp Terminal intersection is expected to exceed its applicable mobility target and operate over capacity in 2042 with the FEIS. This is primarily driven by the northbound and southbound right-turn movements. Today, the off-ramp experiences queues that cause safety issues with I-5 through traffic. The issue is expected to be exacerbated in the future by traffic growth. Further, the northbound through queues block the upstream signalized intersection. The following potential solutions were evaluated to increase capacity and storage for these movements.

- **Solution #1:** Convert the southbound (OR 62) right-turn lane into a shared through-right turn lane; and construct an additional receiving lane on the south leg. This solution does not fully mitigate the intersection.
- **Solution #2:** Channelize and yield-control the southbound (OR 62) right-turn lane; and add a lane to the westbound (I-5 Off-Ramp) approach and restripe as a left-turn lane, shared left-through turn lane, and dual right-turn lanes. This solution does not fully mitigate the intersection.
- **Solutions #3-5:** Channelize and yield-control the southbound (OR 62) right-turn lane; and add a lane to the westbound (I-5 Off-Ramp) approach and restripe (#3: dual left-turn lanes, shared through-right turn lane, and right-turn lane; #4: left-turn lane, through lane, and dual right-turn lanes; #5: left-turn lane, shared left-through lane, shared through-right lane, and right-turn lane). These solutions do not fully mitigate the intersection.
- **Solution #6:** Channelize and yield-control the southbound (OR 62) right-turn lane; construct a southbound (OR 62) right-turn lane; and add a lane to the westbound (I-5 Off-Ramp) approach and restripe as a left-turn lane, a shared left-through lane, a shared through-right lane, and a right-turn lane. This solution does not fully mitigate the intersection.
- **Solution #7:** Channelize and yield-control the southbound (OR 62) right-turn lane; construct a southbound (OR 62) right-turn lane; add a lane to the westbound (I-5 Off-Ramp) approach and restripe as a left-turn lane, a shared left-through lane, a shared through-right lane, and a right-turn lane; and restripe the northbound (OR 62) approach as two through lanes, a shared through-right turn lane, and a right-turn lane.
- **Solution #8:** Restripe the southbound (OR 62) approach as two through lanes, a shared through-right turn lane, and a right-turn lane; add a lane to the westbound (I-5 Off-Ramp) approach and restripe as a left-turn lane, a shared left-through lane, a shared through-right lane, and a right-turn lane; and restripe the northbound (OR 62) approach as two through lanes, a shared through-right turn lane, and a right-turn lane.

- **Solution #9:** Construct an additional southbound (OR 62) through lane; channelize and yield-control the southbound (OR 62) right-turn lane; add a lane to the westbound (I-5 Off-Ramp) approach and restripe as a left-turn lane, a shared left-through lane, a shared through-right lane, and a right-turn lane; and restripe the northbound (OR 62) approach as two through lanes, a shared through-right turn lane, and a right-turn lane (this solution could be implemented on an interim basis to address traffic operations prior to full build-out of the FEIS). This solution does not fully mitigate the intersection.
- **Solution #10:** Construct a shared southbound (OR 62) through-right turn lane; add a lane to the westbound (I-5 Off-Ramp) approach and restripe as a left-turn lane, a shared left-through lane, a shared through-right lane, and a right-turn lane; and restripe the northbound (OR 62) approach as two through lanes, a shared through-right turn lane, and a right-turn lane (this solution could be implemented on an interim basis; however, the intersection would continue to exceed its applicable mobility target; therefore, an alternative mobility target would be required for approval).
- **Solution #11:** Make the southbound (OR 62) right-turn lane a free movement and construct a second receiving lane on the west leg (I-5 On-Ramp).
- **Solution #12:** Make the southbound (OR 62) right-turn lane a free movement and construct a second receiving lane on the west leg (I-5 On-Ramp); and remove the Biddle Road jug-handle connection and add a second westbound (I-5 Off-Ramp) right-turn lane (incorporates Biddle Road jug-handle traffic volumes).

Table 6 summarizes the intersection operations analysis results for the potential solutions listed above.

Table 6: Potential Solutions - OR 62 / I-5 Northbound Ramp Terminal

Solution	V/C	Delay (sec)	LOS	Mobility Standard/Target	Meets Standard/Target
#1	>1.00	>80.0	F	0.85	No
#2	>1.00	40.2	D		No
#3	>1.00	42.4	D		No
#4	>1.00	52.2	D		No
#5	>1.00	39.2	D		No
#6	0.98	27.8	C		No
#7	0.75	21.6	C		Yes
#8	0.89	25.9	C		Yes[1]
#9	>1.00	30.5	C		No
#10	0.79	21.8	C		Yes
#11	0.89	20.1	C		Yes[1]
#12	0.90	20.5	C		Yes[1]

[1] Policy 1F of the Oregon Highway Plan (OHP) allows a ramp terminal to have a v/c ratio of up to 0.90 if vehicle queues do not extend into the deceleration lane.

OR 62 / Bullock Road-Poplar Drive

The OR 62 / Bullock Road-Poplar Drive intersection is expected to exceed its applicable mobility standard and target but operate below capacity in 2042 with the FEIS. This is primarily driven by the eastbound and northbound right-turn movements and the westbound approach. Further, the eastbound left- and

right-turn queues exceed their striped storage. The following potential solutions were evaluated to increase capacity and storage for these movements.

- **Solution #1:** Allow the eastbound (Bullock Road) right-turn movements to overlap with non-conflicting left-turn movements.
- **Solution #2:** Restripe the eastbound (Bullock Road) approach as a left-turn lane, a through lane, and dual right-turn lanes.
- **Solution #3:** Construct a second eastbound (Bullock Road) right-turn lane.
- **Solution #4:** Construct a second eastbound (Bullock Road) right-turn lane and restripe the eastbound approach as a left-turn lane, a through lane, and dual right-turn lanes; channelize eastbound (Bullock Road) right-turn movements and allow them to overlap with non-conflicting left-turn movements; construct a northbound (OR 62) right-turn lane; and construct a second northbound (OR 62) left-turn lane and add a second receiving lane on the west leg (Bullock Road).
- **Solution #5:** Reconstruct the intersection, with its current mainline lane configurations, as a Restricted Crossing U-Turn (RCUT) intersection form; minor street right-turns include only two lanes.

Table 7 summarizes the intersection operations analysis results for the potential solutions listed above.

Table 7: Potential Solutions - OR 62 / Bullock Road-Poplar Drive

Solution	V/C	Delay (sec)	LOS	Mobility Standard/Target	Meets Standard/Target
#1	0.91	70.7	E	0.85	No
#2	0.91	75.7	E		No
#3	0.91	76.2	E		No
#4	0.84	58.0	E		Yes
#5	0.89 (Bullock Road Signal) 0.96 (Poplar Drive Signal	24.6 (Bullock Road Signal) 38.0 (Poplar Drive Signal	C (Bullock Road Signal) D (Poplar Drive Signal		No (Bullock Road Signal) No (Poplar Drive Signal

It should be noted that none of these solutions could be implemented on an interim basis to address traffic operations prior to full build-out of the FEIS. If the FEIS is not completed, other alternatives will need to be explored.

Converting the traffic signal to a roundabout was evaluated based on Exhibit 3-12 from *NCHRP Report 672*. According to the exhibit, a roundabout at the OR 62 / Bullock Road-Poplar Drive intersection would require more than two lanes to provide sufficient capacity for the forecast 2042 traffic volumes. While a roundabout has the potential to improve level of stress for people walking and biking, more than two lanes introduces safety obstacles for vehicles by increasing the number of conflict points within the intersection and counteracts one of the primary goals: to improve intersection safety. For these reasons, a roundabout is not considered a feasible option.

Multimodal Solutions

Multimodal solutions are needed along OR 62 as well as many other roadways within the study area to provide a comfortable environment for people to walk, bike, and take transit. As indicated above, most facilities are expected to operate at LOS E or LOS F, including those with existing sidewalks and on-street bike lanes. This is primarily due to relatively high traffic volumes and travel speeds as well as the number of through lanes in each direction and the widths (and type) of existing facilities. The following potential solutions were evaluated to improve multimodal LOS along the corridor.

- **Solution #1:** Fill in the gaps in the sidewalks and on-street bike lanes along study area roadways consistent with adjacent facilities. While this solution would not significantly improve multimodal LOS in all areas, it is sufficient in some areas and would provide continuous facilities along both sides of study area roadways.
- **Solution #2:** Widen the existing sidewalks and on-street bike lanes along study area roadways (and fill in the gaps). This solution would improve multimodal LOS; however, some facilities would continue to operate at LOS E or LOS F. This is due, in part, to the methodology, but also to the physical and operational characteristics of the roadways.
- **Solution #3:** Install shared-use paths along one or two sides of the study area roadways. This solution would significantly improve multimodal LOS but would likely require additional right-of-way and may not be feasible (or needed) in some areas.
- **Solution #4:** Implement a mix of Solutions #1, #2, and #3 based on the individual characteristics of the study areas roadways.

The following summarize the potential solutions along study area roadways. Given the nature of these solutions, all of them can be implemented on an incremental basis, prior to full build-out of the FEIS.

OR 62

- Install a 12-foot (min) shared-use path on the north/west side of the roadway from Central Avenue to Delta Waters Road consistent with the Rogue Valley Active Transportation Plan (RVATP) – this may require reconfiguring the north/west side of the roadway (e.g., reallocating the space currently used by the westbound bike lane to the path).
- Install enhanced crossing treatments and wayfinding along the shared-use path.
- Install a 7-foot (min) buffered bike lane on the south/east side of the roadway – this may require reconfiguring the south/east side of the roadway (e.g., narrowing the travel lanes).
- Install skip striping through major intersections and across on- and off-ramps.
- Install 1-2 enhanced crossings between the RV Mall Driveway and I-5 NB Ramp Terminal.

OR 99

- Widen the existing sidewalks on both sides of the roadway to 8-foot curb tight sidewalks or reconstruct the existing sidewalks as 6-foot sidewalks with 4-foot (min) buffers.
- Install 7-foot (min) buffered bike lanes on both sides of the roadway – this may require reconfiguring the roadway (e.g., narrowing the travel lanes).

Court Street

- Widen the existing sidewalks on both sides of the roadway to 8-foot curb tight sidewalks or reconstruct the existing sidewalks as 6-foot sidewalks with 4-foot (min) buffers.
- Install a 7-foot (min) buffered bike lane/separated bike lane on the west side of the roadway consistent with the RVATP – this may require reconfiguring the roadway (e.g., eliminating a travel lane).

Riverside Avenue

- Widen the existing sidewalks on both sides of the roadway to 8-foot curb tight sidewalks or reconstruct the existing sidewalks as 6-foot sidewalks with 4-foot (min) buffers.
- Install a 7-foot (min) buffered bike lane/separated bike lane on the east side of the roadway consistent with the RVATP – this may require reconfiguring the roadway (e.g., eliminating a travel lane).

Biddle Road

- Install 8-foot curb tight sidewalks or 6-foot sidewalks with 4-foot (min) buffers on the west side of the roadway from Knutson Avenue to Hilton Court.
- Widen the existing sidewalks on both sides of the roadway from Knutson Avenue to Hilton Court to 8-foot curb tight sidewalks and/or reconstruct the existing sidewalks as 6-foot sidewalks with 4-foot (min) buffers.
- Fill in the gaps in the sidewalks on the west side of the roadway from North of Morrow Road to McAndrews Road
- Reconstruct the shared-use path on the west side of the roadway to a 12-foot shared-use path from north of Morrow Road to McAndrews Road.
- Install 7-foot (min) buffered bike lanes on both sides of the roadway from Knutson Avenue to Hilton Court – this may require reconfiguring the roadway (e.g., narrowing the travel lanes).
- Install 6-foot bike lanes on both sides of the roadway from Hilton Court to McAndrews Road – this may require reconfiguring the roadway (e.g., narrowing the travel lanes).

Table Rock Road

- Fill in the gaps in the sidewalks on the west side of the roadway from Berrydale Avenue to Adams Lane consistent with City standards.
- Install 6-foot bike lanes on both sides of the roadway from Berrydale Avenue to OR 99 – this may require reconfiguring the roadway (e.g., narrowing the travel lanes).

Central Avenue

- Widen the sidewalks on the east side of the roadway from the commercial driveway to McAndrews Road consistent with City standards – maintain buffer if feasible.

Poplar Drive

- Install 6-foot bike lanes on both sides of the roadway from OR 62 to the south – this may require reconfiguring the roadway (e.g., narrowing the travel lanes).

Sky Park Drive

- Fill in the gaps in the sidewalks on both sides of the roadway from OR 62 to Whittle Avenue

Whittle Avenue

- Fill in the gaps in the sidewalks on the east side of the roadway from OR 62 to Skypark Drive

The improvements shown above would significantly improve multimodal level of services along study area roadways. Additional consideration should be given to enhanced crossing treatments at all major intersections to ensure they accommodate bicycle and pedestrian movements.

REFERENCES

1. National Highway Cooperative Research Program. *Report 672 – Roundabouts: An Informational Guide, Second Edition,* 2010.

2. Oregon Department of Transportation. *Oregon Highway Plan*, 2015.

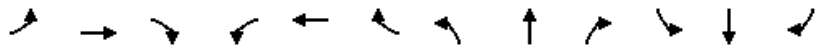
Attachment A Future Build Traffic Conditions Worksheets

HCM 6th Edition Worksheets

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	769	105	44	1156	685	94	459	32	592	447	32
Future Volume (veh/h)	45	769	105	44	1156	685	94	459	32	592	447	32
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1573	1723	1736	1750	1723	1750	1750	1736	1750	1750	1723	1627
Adj Flow Rate, veh/h	47	801	109	46	1204	714	98	478	33	617	466	33
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	13	2	1	0	2	0	0	1	0	0	2	9
Cap, veh/h	56	1064	145	61	1204	870	125	576	40	725	529	37
Arrive On Green	0.04	0.37	0.37	0.04	0.37	0.37	0.07	0.18	0.18	0.22	0.33	0.33
Sat Flow, veh/h	1498	2885	393	1667	3273	1461	1667	3131	216	3233	1588	112
Grp Volume(v), veh/h	47	454	456	46	1204	714	98	251	260	617	0	499
Grp Sat Flow(s),veh/h/ln	1498	1637	1641	1667	1637	1461	1667	1650	1697	1617	0	1700
Q Serve(g_s), s	3.0	23.4	23.4	2.6	35.5	35.5	5.6	14.2	14.2	17.7	0.0	26.7
Cycle Q Clear(g_c), s	3.0	23.4	23.4	2.6	35.5	35.5	5.6	14.2	14.2	17.7	0.0	26.7
Prop In Lane	1.00		0.24	1.00		1.00	1.00		0.13	1.00		0.07
Lane Grp Cap(c), veh/h	56	603	605	61	1204	870	125	303	312	725	0	567
V/C Ratio(X)	0.83	0.75	0.75	0.75	1.00	0.82	0.78	0.83	0.83	0.85	0.00	0.88
Avail Cap(c_a), veh/h	209	603	605	233	1204	870	337	436	448	921	0	590
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	46.2	26.6	26.6	46.1	30.5	15.7	43.9	37.9	38.0	35.9	0.0	30.4
Incr Delay (d2), s/veh	20.3	5.8	5.8	12.8	26.0	6.6	7.8	7.5	7.7	5.8	0.0	13.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	9.7	9.7	1.3	17.5	12.5	2.5	6.2	6.4	7.3	0.0	12.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	66.5	32.4	32.4	58.9	56.5	22.4	51.7	45.5	45.6	41.7	0.0	44.2
LnGrp LOS	E	C	C	E	F	C	D	D	D	D	A	D
Approach Vol, veh/h		957			1964			609			1116	
Approach Delay, s/veh		34.1			44.2			46.5			42.8	
Approach LOS		C			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.0	40.1	11.7	36.7	8.1	40.0	26.2	22.3
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	13.5	35.5	19.5	33.5	13.5	35.5	27.5	25.5
Max Q Clear Time (g_c+I1), s	4.6	25.4	7.6	28.7	5.0	37.5	19.7	16.2
Green Ext Time (p_c), s	0.1	7.5	0.2	1.0	0.1	0.0	2.0	1.5

Intersection Summary	
HCM 6th Ctrl Delay	42.1
HCM 6th LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	438	900	55	110	1231	617	83	904	116	441	1047	593
Future Volume (veh/h)	438	900	55	110	1231	617	83	904	116	441	1047	593
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.97	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1736	1723	1736	1723	1736	1723	1695	1709	1736	1709	1723
Adj Flow Rate, veh/h	461	947	58	116	1296	649	87	952	122	464	1102	624
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	1	2	1	2	1	2	4	3	1	3	2
Cap, veh/h	527	1156	71	139	1340	1137	108	792	354	523	1115	741
Arrive On Green	0.17	0.37	0.37	0.08	0.28	0.28	0.07	0.25	0.25	0.16	0.34	0.34
Sat Flow, veh/h	3183	3154	193	1654	4703	2509	1641	3221	1438	3208	3247	1452
Grp Volume(v), veh/h	461	495	510	116	1296	649	87	952	122	464	1102	624
Grp Sat Flow(s),veh/h/ln	1591	1650	1698	1654	1568	1254	1641	1611	1438	1604	1624	1452
Q Serve(g_s), s	18.1	34.8	34.8	8.9	34.8	24.7	6.7	31.5	9.0	18.1	43.2	44.0
Cycle Q Clear(g_c), s	18.1	34.8	34.8	8.9	34.8	24.7	6.7	31.5	9.0	18.1	43.2	44.0
Prop In Lane	1.00		0.11	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	527	605	622	139	1340	1137	108	792	354	523	1115	741
V/C Ratio(X)	0.87	0.82	0.82	0.84	0.97	0.57	0.81	1.20	0.35	0.89	0.99	0.84
Avail Cap(c_a), veh/h	634	624	643	174	1340	1137	173	792	354	588	1115	741
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.2	36.7	36.7	57.8	45.2	26.3	59.1	48.3	39.8	52.4	41.8	27.1
Incr Delay (d2), s/veh	10.9	8.8	8.6	22.2	17.4	0.9	10.5	102.8	0.4	13.7	24.0	8.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.0	15.2	15.6	4.5	15.5	7.4	3.1	23.8	3.2	8.2	20.6	17.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	63.0	45.5	45.3	80.0	62.6	27.2	69.5	151.1	40.2	66.1	65.8	35.6
LnGrp LOS	E	D	D	E	E	C	E	F	D	E	E	D
Approach Vol, veh/h		1466			2061			1161			2190	
Approach Delay, s/veh		50.9			52.4			133.4			57.2	
Approach LOS		D			D			F			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.3	51.5	12.9	48.5	25.7	41.0	25.4	36.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	13.5	48.5	13.5	41.5	25.5	36.5	23.5	31.5
Max Q Clear Time (g_c+I1), s	10.9	36.8	8.7	46.0	20.1	36.8	20.1	33.5
Green Ext Time (p_c), s	0.1	9.0	0.1	0.0	1.1	0.0	0.8	0.0

Intersection Summary	
HCM 6th Ctrl Delay	67.3
HCM 6th LOS	E



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	138	207	1878	81	147	1943
Future Volume (veh/h)	138	207	1878	81	147	1943
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.98	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1736	1736	1709	1736	1750	1695
Adj Flow Rate, veh/h	145	218	1977	85	155	2045
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	3	1	0	4
Cap, veh/h	202	503	2999	926	233	2478
Arrive On Green	0.12	0.12	0.64	0.64	0.07	0.77
Sat Flow, veh/h	1654	2590	4820	1441	3233	3306
Grp Volume(v), veh/h	145	218	1977	85	155	2045
Grp Sat Flow(s),veh/h/ln	1654	1295	1555	1441	1617	1611
Q Serve(g_s), s	7.0	6.1	21.7	1.9	3.9	33.2
Cycle Q Clear(g_c), s	7.0	6.1	21.7	1.9	3.9	33.2
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	202	503	2999	926	233	2478
V/C Ratio(X)	0.72	0.43	0.66	0.09	0.66	0.83
Avail Cap(c_a), veh/h	330	703	2999	926	449	2510
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.0	29.3	9.2	5.6	37.4	6.0
Incr Delay (d2), s/veh	3.5	0.4	0.6	0.1	2.4	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	1.9	6.0	0.5	1.6	7.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	38.5	29.8	9.8	5.7	39.8	8.5
LnGrp LOS	D	C	A	A	D	A
Approach Vol, veh/h	363		2062			2200
Approach Delay, s/veh	33.3		9.6			10.7
Approach LOS	C		A			B

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	10.5	57.7			68.2	14.6
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5
Max Green Setting (Gmax), s	11.5	48.5			64.5	16.5
Max Q Clear Time (g_c+I1), s	5.9	23.7			35.2	9.0
Green Ext Time (p_c), s	0.3	23.9			28.5	1.1

Intersection Summary	
HCM 6th Ctrl Delay	12.0
HCM 6th LOS	B

Intersection	
Int Delay, s/veh	9.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	127	1995	90	123	2090
Future Vol, veh/h	0	127	1995	90	123	2090
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	100	200	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	1	2	0	1	3
Mvmt Flow	0	135	2122	96	131	2223

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	1061	0	0	2218	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.12	-	-	5.32	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.91	-	-	3.11	-
Pot Cap-1 Maneuver	0	190	-	-	~ 98	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	190	-	-	~ 98	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	60.4	0	15.8
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	190	~ 98	-
HCM Lane V/C Ratio	-	-	0.711	1.335	-
HCM Control Delay (s)	-	-	60.4	283.8	-
HCM Lane LOS	-	-	F	F	-
HCM 95th %tile Q(veh)	-	-	4.5	9.4	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

HCM 6th Edition methodology does not support turning movements with shared & exclusive lanes.

HCM 6th Edition methodology does not support turning movements with shared & exclusive lanes.

Intersection	
Int Delay, s/veh	6.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↱	↑↑↑	↱		↑↑↑
Traffic Vol, veh/h	0	270	1636	258	0	3204
Future Vol, veh/h	0	270	1636	258	0	3204
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	Free	-	Free
Storage Length	-	0	-	75	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	6	0	0
Mvmt Flow	0	281	1704	269	0	3338

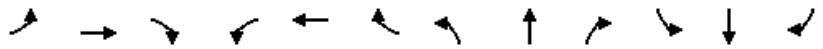
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	852	0	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.1	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.9	-	-	-	-
Pot Cap-1 Maneuver	0	~ 263	-	0	0	-
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	-	~ 263	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	117	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	WBLn1	SBT
Capacity (veh/h)	-	263	-
HCM Lane V/C Ratio	-	1.069	-
HCM Control Delay (s)	-	117	-
HCM Lane LOS	-	F	-
HCM 95th %tile Q(veh)	-	11.5	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

HCM 6th Edition methodology does not support turning movements with shared & exclusive lanes.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	36	22	55	74	1	49	64	1014	467	221	985	12
Future Volume (veh/h)	36	22	55	74	1	49	64	1014	467	221	985	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1750	1682	1750	1682	1750	1750	1723	1709	1750	1723	1736	1750
Adj Flow Rate, veh/h	38	23	58	78	1	52	67	1067	492	233	1037	13
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	5	0	5	0	0	2	3	0	2	1	0
Cap, veh/h	272	35	88	482	3	150	367	1515	777	361	1740	22
Arrive On Green	0.04	0.08	0.08	0.06	0.10	0.10	0.05	0.47	0.47	0.11	0.52	0.52
Sat Flow, veh/h	1667	421	1061	3107	28	1451	1641	3247	1478	1641	3335	42
Grp Volume(v), veh/h	38	0	81	78	0	53	67	1067	492	233	513	537
Grp Sat Flow(s),veh/h/ln	1667	0	1482	1554	0	1479	1641	1624	1478	1641	1650	1728
Q Serve(g_s), s	1.3	0.0	3.4	1.4	0.0	2.1	1.3	16.7	15.1	4.3	13.8	13.8
Cycle Q Clear(g_c), s	1.3	0.0	3.4	1.4	0.0	2.1	1.3	16.7	15.1	4.3	13.8	13.8
Prop In Lane	1.00		0.72	1.00		0.98	1.00		1.00	1.00		0.02
Lane Grp Cap(c), veh/h	272	0	123	482	0	153	367	1515	777	361	861	902
V/C Ratio(X)	0.14	0.00	0.66	0.16	0.00	0.35	0.18	0.70	0.63	0.65	0.60	0.60
Avail Cap(c_a), veh/h	613	0	360	1054	0	359	804	1552	794	708	861	902
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.2	0.0	28.4	24.2	0.0	26.6	8.6	13.5	10.8	11.7	10.6	10.6
Incr Delay (d2), s/veh	0.2	0.0	4.4	0.1	0.0	1.0	0.2	1.6	1.9	1.4	1.4	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	1.3	0.5	0.0	0.8	0.4	5.6	4.5	1.5	4.5	4.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.4	0.0	32.8	24.3	0.0	27.6	8.7	15.1	12.7	13.1	12.0	11.9
LnGrp LOS	C	A	C	C	A	C	A	B	B	B	B	B
Approach Vol, veh/h		119			131			1626			1283	
Approach Delay, s/veh		30.4			25.7			14.1			12.2	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.0	37.8	7.0	11.1	11.5	34.3	8.2	9.8
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	20.5	30.5	15.5	15.5	20.5	30.5	15.5	15.5
Max Q Clear Time (g_c+I1), s	3.3	15.8	3.3	4.1	6.3	18.7	3.4	5.4
Green Ext Time (p_c), s	0.2	11.6	0.1	0.1	0.8	11.1	0.2	0.2

Intersection Summary	
HCM 6th Ctrl Delay	14.4
HCM 6th LOS	B

Intersection	
Int Delay, s/veh	305.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↱			↱		↑↑↑	↱		↑↑↑	↱
Traffic Vol, veh/h	0	0	710	0	0	51	0	1694	212	0	2494	124
Future Vol, veh/h	0	0	710	0	0	51	0	1694	212	0	2494	124
Conflicting Peds, #/hr	4	0	0	0	0	4	4	0	2	2	0	4
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Stop	-	-	None	-	-	None	-	-	Free
Storage Length	-	-	0	-	-	0	-	-	90	-	-	140
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	0	4	0	0	2	0	2	1	0	2	5
Mvmt Flow	0	0	740	0	0	53	0	1765	221	0	2598	129

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	1299	-	-	889	-	0	0	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.18	-	-	7.14	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.94	-	-	3.92	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	~ 128	0	0	246	0	-	-	0	-	0
Stage 1	0	0	-	0	0	-	0	-	-	0	-	0
Stage 2	0	0	-	0	0	-	0	-	-	0	-	0
Platoon blocked, %								-	-		-	
Mov Cap-1 Maneuver	-	-	~ 128	-	-	245	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, $	2216.7	23.7	0	0
HCM LOS	F	C		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBT
Capacity (veh/h)	-	-	128	245	-
HCM Lane V/C Ratio	-	-	5.778	0.217	-
HCM Control Delay (s)	-	-	$ 2216.7	23.7	-
HCM Lane LOS	-	-	F	C	-
HCM 95th %tile Q(veh)	-	-	79.9	0.8	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	295	203	442	683	242	254	181	1243	321	263	1493	216
Future Volume (veh/h)	295	203	442	683	242	254	181	1243	321	263	1493	216
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1736	1709	1750	1736	1736	1723	1723	1736	1750	1723	1709
Adj Flow Rate, veh/h	307	211	460	711	252	265	189	1295	334	274	1555	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	1	3	0	1	1	2	2	1	0	2	3
Cap, veh/h	502	220	181	577	247	206	170	1713	441	339	2153	
Arrive On Green	0.16	0.13	0.13	0.17	0.14	0.14	0.03	0.15	0.15	0.10	0.46	0.00
Sat Flow, veh/h	3183	1736	1424	3333	1736	1450	1641	3725	960	3333	4703	1448
Grp Volume(v), veh/h	307	211	460	711	252	265	189	1090	539	274	1555	0
Grp Sat Flow(s),veh/h/ln	1591	1736	1424	1667	1736	1450	1641	1568	1549	1667	1568	1448
Q Serve(g_s), s	11.7	15.7	16.5	22.5	18.5	14.8	13.5	43.3	43.4	10.5	34.8	0.0
Cycle Q Clear(g_c), s	11.7	15.7	16.5	22.5	18.5	14.8	13.5	43.3	43.4	10.5	34.8	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.62	1.00		1.00
Lane Grp Cap(c), veh/h	502	220	181	577	247	206	170	1442	712	339	2153	
V/C Ratio(X)	0.61	0.96	2.54	1.23	1.02	1.28	1.11	0.76	0.76	0.81	0.72	
Avail Cap(c_a), veh/h	502	220	181	577	247	206	170	1442	712	551	2153	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	51.0	56.4	56.8	53.7	55.8	35.7	62.8	48.1	48.2	57.1	28.6	0.0
Incr Delay (d2), s/veh	1.9	48.4	711.0	119.1	62.5	159.6	101.3	3.7	7.4	3.4	2.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.8	9.8	41.6	18.9	12.3	14.4	10.8	19.0	19.5	4.5	12.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.0	104.8	767.8	172.9	118.2	195.3	164.0	51.9	55.5	60.6	30.7	0.0
LnGrp LOS	D	F	F	F	F	F	F	D	E	E	C	
Approach Vol, veh/h		978			1228			1818			1829	A
Approach Delay, s/veh		400.4			166.5			64.6			35.2	
Approach LOS		F			F			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.7	64.3	27.0	21.0	18.0	64.0	25.0	23.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	21.5	51.5	22.5	16.5	13.5	59.5	20.5	18.5
Max Q Clear Time (g_c+I1), s	12.5	45.4	24.5	18.5	15.5	36.8	13.7	20.5
Green Ext Time (p_c), s	0.8	5.9	0.0	0.0	0.0	19.6	0.8	0.0

Intersection Summary	
HCM 6th Ctrl Delay	132.9
HCM 6th LOS	F

Notes

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	11	1681	111	0	0
Future Vol, veh/h	0	11	1681	111	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	0	11	2	2	0	2
Mvmt Flow	0	11	1698	112	0	0

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	905	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.12	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.41	-	-	-	-
Pot Cap-1 Maneuver	0	263	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	263	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	19.3	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	263	-
HCM Lane V/C Ratio	-	-	0.042	-
HCM Control Delay (s)	-	-	19.3	-
HCM Lane LOS	-	-	C	-
HCM 95th %tile Q(veh)	-	-	0.1	-

Intersection	
Int Delay, s/veh	3.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	101	1582	110	149	0
Future Vol, veh/h	0	101	1582	110	149	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	650	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	5	3	2	0	2
Mvmt Flow	0	106	1665	116	157	0

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	891	0	0	1781	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7	-	-	4.1	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.35	-	-	2.2	-
Pot Cap-1 Maneuver	0	280	-	-	353	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	280	-	-	353	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	25.5	0	23.1
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	280	353	-
HCM Lane V/C Ratio	-	-	0.38	0.444	-
HCM Control Delay (s)	-	-	25.5	23.1	-
HCM Lane LOS	-	-	D	C	-
HCM 95th %tile Q(veh)	-	-	1.7	2.2	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	86	380	695	340	411	122	662	642	379	298	937	85
Future Volume (veh/h)	86	380	695	340	411	122	662	642	379	298	937	85
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1709	1736	1736	1723	1709	1750	1736	1682	1723	1709	1709	1750
Adj Flow Rate, veh/h	91	400	732	358	433	128	697	676	399	314	986	89
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	1	1	2	3	0	1	5	2	3	3	0
Cap, veh/h	94	457	871	378	770	225	642	1003	458	292	882	80
Arrive On Green	0.06	0.14	0.14	0.23	0.31	0.31	0.20	0.31	0.31	0.18	0.29	0.29
Sat Flow, veh/h	1628	3299	2543	1641	2474	724	3208	3195	1457	1628	3008	271
Grp Volume(v), veh/h	91	400	732	358	283	278	697	676	399	314	532	543
Grp Sat Flow(s),veh/h/ln	1628	1650	1272	1641	1624	1575	1604	1598	1457	1628	1624	1655
Q Serve(g_s), s	7.2	15.4	18.0	27.9	18.9	19.2	26.0	23.9	33.6	23.3	38.1	38.1
Cycle Q Clear(g_c), s	7.2	15.4	18.0	27.9	18.9	19.2	26.0	23.9	33.6	23.3	38.1	38.1
Prop In Lane	1.00		1.00	1.00		0.46	1.00		1.00	1.00		0.16
Lane Grp Cap(c), veh/h	94	457	871	378	505	490	642	1003	458	292	476	485
V/C Ratio(X)	0.97	0.88	0.84	0.95	0.56	0.57	1.09	0.67	0.87	1.08	1.12	1.12
Avail Cap(c_a), veh/h	94	457	871	379	506	491	642	1003	458	292	476	485
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	61.1	54.9	39.8	49.2	37.3	37.4	52.0	38.8	42.1	53.3	45.9	45.9
Incr Delay (d2), s/veh	81.9	16.4	7.0	32.5	0.8	1.0	61.0	1.5	16.0	74.3	77.5	77.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.1	7.4	11.5	14.7	7.6	7.5	15.6	9.3	13.9	15.3	25.0	25.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	143.0	71.3	46.9	81.7	38.2	38.4	112.9	40.2	58.1	127.6	123.4	123.2
LnGrp LOS	F	E	D	F	D	D	F	D	E	F	F	F
Approach Vol, veh/h		1223			919			1772			1389	
Approach Delay, s/veh		62.0			55.2			72.9			124.3	
Approach LOS		E			E			E			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	27.3	46.2	33.9	22.5	30.0	43.5	11.5	44.9
Change Period (Y+Rc), s	4.0	* 5.4	4.0	4.5	4.0	* 5.4	4.0	4.5
Max Green Setting (Gmax), s	23.3	* 41	30.0	18.0	26.0	* 38	7.5	40.5
Max Q Clear Time (g_c+I1), s	25.3	35.6	29.9	20.0	28.0	40.1	9.2	21.2
Green Ext Time (p_c), s	0.0	2.1	0.0	0.0	0.0	0.0	0.0	3.8

Intersection Summary	
HCM 6th Ctrl Delay	80.8
HCM 6th LOS	F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	18	0	0	131	0	1048	39	0	642	145
Future Vol, veh/h	0	0	18	0	0	131	0	1048	39	0	642	145
Conflicting Peds, #/hr	1	0	1	1	0	1	0	0	4	4	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	1	0	1	0	0	1	1
Mvmt Flow	0	0	19	0	0	138	0	1103	41	0	676	153

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	416	-	-	577	-	0	0	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.9	-	-	7.12	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.3	-	-	3.91	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	591	0	0	396	0	-	-	0	-	-
Stage 1	0	0	-	0	0	-	0	-	-	0	-	-
Stage 2	0	0	-	0	0	-	0	-	-	0	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	590	-	-	394	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.3	19	0	0
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	-	-	590	394	-	-
HCM Lane V/C Ratio	-	-	0.032	0.35	-	-
HCM Control Delay (s)	-	-	11.3	19	-	-
HCM Lane LOS	-	-	B	C	-	-
HCM 95th %tile Q(veh)	-	-	0.1	1.5	-	-

HCM 6th Edition Analysis September 2020
Based on ODOT Analysis Procedures Manual, Volume 2, Chapter 13

INTERSECTION	1. OR 99/Table Rock Road				
CYCLE LENGTH	120				
TOTAL LOST TIME	18				
TOTAL LOST TIME (2025)					
CRITICAL MOVEMENTS	**EB (L)**	**WB (T)**	**NB (TR)**	**SB (L)**	
	2042 FUTURE PM - FULL BUILD				
Adj Flow Rate, (veh/h)	47	1204	511	617	
Sat Flow (veh/h)	1498	3273	3347	3233	
Flow Ratio	0.03	0.37	0.15	0.19	
CRITICAL INTERSECTION V/C RATIO	**0.87**				

INTERSECTION	2. OR 238-OR 62/OR 99-Court Road-N Riverside Drive				
CYCLE LENGTH	135				
TOTAL LOST TIME	18				
TOTAL LOST TIME (2025)					
CRITICAL MOVEMENTS	**EB (L)**	**WB (T)**	**NB (T)**	**SB (L)**	
	2042 FUTURE PM - FULL BUILD				
Adj Flow Rate, (veh/h)	461	1296	952	464	
Sat Flow (veh/h)	3183	4703	3221	3208	
Flow Ratio	0.14	0.28	0.30	0.14	
CRITICAL INTERSECTION V/C RATIO	**0.99**				

INTERSECTION	3. OR 62/RVM Main Entrance				
CYCLE LENGTH	90				
TOTAL LOST TIME	13.5				
TOTAL LOST TIME (2025)					
CRITICAL MOVEMENTS	**WB (L)**	**EB (T)**	**NB (L)**	**SB (T)**	
	2042 FUTURE PM - FULL BUILD				
Adj Flow Rate, (veh/h)	145	0	0	2045	
Sat Flow (veh/h)	1654	0	0	3306	
Flow Ratio	0.09	0.00	0.00	0.62	
CRITICAL INTERSECTION V/C RATIO	**0.83**				

INTERSECTION	9. Biddle Road/Hilton Court				
CYCLE LENGTH	100				
TOTAL LOST TIME	18				
TOTAL LOST TIME (2025)					
CRITICAL MOVEMENTS	**EB (TR)**	**WB (L)**	**NB (T)**	**SB (L)**	
	2042 FUTURE PM - FULL BUILD				
Adj Flow Rate, (veh/h)	81	78	1067	233	
Sat Flow (veh/h)	1482	3107	3247	1641	
Flow Ratio	0.05	0.03	0.33	0.14	
CRITICAL INTERSECTION V/C RATIO	**0.67**				

INTERSECTION	11. OR 62/Bullock Road-Poplar Drive				
CYCLE LENGTH	130				
TOTAL LOST TIME	18				
TOTAL LOST TIME (2025)					
CRITICAL MOVEMENTS	**EB (T)**	**WB (L)**	**NB (TR)**	**SB (L)**	
	2042 FUTURE PM - FULL BUILD				
Adj Flow Rate, (veh/h)	211	711	1629	274	
Sat Flow (veh/h)	1736	3333	4685	3333	
Flow Ratio	0.12	0.21	0.35	0.08	
CRITICAL INTERSECTION V/C RATIO	**0.89**				

INTERSECTION	14. OR 62/Delta Waters Road				
CYCLE LENGTH	130				
TOTAL LOST TIME	17.9				
TOTAL LOST TIME (2025)					
CRITICAL MOVEMENTS	**EB (T)**	**WB (L)**	**NB (L)**	**SB (TR)**	
	2042 FUTURE PM - FULL BUILD				
Adj Flow Rate, (veh/h)	400	358	697	1075	
Sat Flow (veh/h)	3299	1641	3208	3279	
Flow Ratio	0.12	0.22	0.22	0.33	
CRITICAL INTERSECTION V/C RATIO	**1.03**				

HCM 2000 Worksheets

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	769	105	44	1156	685	94	459	32	592	447	32
Future Volume (vph)	45	769	105	44	1156	685	94	459	32	592	447	32
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		0.97	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.99	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1471	3197		1662	3260	1475	1662	3259		3225	1690	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1471	3197		1662	3260	1475	1662	3259		3225	1690	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	47	801	109	46	1204	714	98	478	33	617	466	33
RTOR Reduction (vph)	0	9	0	0	0	112	0	4	0	0	2	0
Lane Group Flow (vph)	47	901	0	46	1204	602	98	507	0	617	497	0
Confl. Peds. (#/hr)	1					1			2	2		
Confl. Bikes (#/hr)			1			3						2
Heavy Vehicles (%)	13%	2%	1%	0%	2%	0%	0%	1%	0%	0%	2%	9%
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6	7	3	8		7	4	
Permitted Phases						6						
Actuated Green, G (s)	7.0	36.8		6.6	36.4	60.2	9.4	22.1		23.8	36.5	
Effective Green, g (s)	7.0	36.8		6.6	36.4	60.2	9.4	22.1		23.8	36.5	
Actuated g/C Ratio	0.07	0.34		0.06	0.34	0.56	0.09	0.21		0.22	0.34	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	2.5	4.2		2.5	4.2	2.5	2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	95	1096		102	1105	889	145	671		715	574	
v/s Ratio Prot	c0.03	0.28		0.03	c0.37	0.15	0.06	0.16		c0.19	c0.29	
v/s Ratio Perm						0.26						
v/c Ratio	0.49	0.82		0.45	1.09	0.68	0.68	0.76		0.86	0.87	
Uniform Delay, d1	48.4	32.3		48.6	35.5	16.7	47.5	40.1		40.2	33.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.9	5.4		2.3	54.9	1.9	10.8	4.6		10.4	12.8	
Delay (s)	51.4	37.7		50.9	90.3	18.5	58.2	44.7		50.6	45.9	
Level of Service	D	D		D	F	B	E	D		D	D	
Approach Delay (s)		38.4			63.3			46.9			48.5	
Approach LOS		D			E			D			D	

Intersection Summary			
HCM 2000 Control Delay	52.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	107.3	Sum of lost time (s)	18.0
Intersection Capacity Utilization	85.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	438	900	55	110	1231	617	83	904	116	441	1047	593
Future Volume (vph)	438	900	55	110	1231	617	83	904	116	441	1047	593
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	0.97	0.95		1.00	0.91	0.88	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.99	1.00	1.00	0.98	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3162	3257		1646	4684	2568	1630	3197	1422	3193	3228	1444
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3162	3257		1646	4684	2568	1630	3197	1422	3193	3228	1444
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	461	947	58	116	1296	649	87	952	122	464	1102	624
RTOR Reduction (vph)	0	3	0	0	0	0	0	0	92	0	0	48
Lane Group Flow (vph)	461	1002	0	116	1296	649	87	952	30	464	1102	576
Confl. Peds. (#/hr)	3		18	18		3	6		3	3		6
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	2%	1%	2%	1%	2%	1%	2%	4%	3%	1%	3%	2%
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	pm+ov
Protected Phases	5	2		1	6	7	3	8		7	4	5
Permitted Phases						6			8			4
Actuated Green, G (s)	22.8	47.3		12.1	36.6	57.9	11.0	31.8	31.8	21.3	42.1	64.9
Effective Green, g (s)	22.8	47.3		12.1	36.6	57.9	11.0	31.8	31.8	21.3	42.1	64.9
Actuated g/C Ratio	0.17	0.36		0.09	0.28	0.44	0.08	0.24	0.24	0.16	0.32	0.50
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	2.5	4.2		2.5	4.2	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Lane Grp Cap (vph)	552	1180		152	1313	1227	137	779	346	521	1041	767
v/s Ratio Prot	c0.15	0.31		0.07	c0.28	0.09	0.05	c0.30		c0.15	c0.34	c0.13
v/s Ratio Perm						0.17			0.02			0.27
v/c Ratio	0.84	0.85		0.76	0.99	0.53	0.64	1.22	0.09	0.89	1.06	0.75
Uniform Delay, d1	52.0	38.3		57.8	46.7	26.4	57.8	49.4	38.1	53.5	44.2	26.3
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	10.4	6.2		19.3	21.6	0.3	8.1	111.3	0.1	17.1	44.8	4.0
Delay (s)	62.4	44.5		77.1	68.3	26.7	66.0	160.7	38.2	70.6	89.0	30.3
Level of Service	E	D		E	E	C	E	F	D	E	F	C
Approach Delay (s)		50.1			55.7			140.7			68.4	
Approach LOS		D			E			F			E	

Intersection Summary			
HCM 2000 Control Delay	72.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	130.5	Sum of lost time (s)	18.0
Intersection Capacity Utilization	95.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	138	207	1878	81	147	1943
Future Volume (vph)	138	207	1878	81	147	1943
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.88	0.91	1.00	0.97	0.95
Frpb, ped/bikes	1.00	0.99	1.00	0.99	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1646	2570	4638	1454	3225	3197
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1646	2570	4638	1454	3225	3197
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	145	218	1977	85	155	2045
RTOR Reduction (vph)	0	9	0	23	0	0
Lane Group Flow (vph)	145	209	1977	62	155	2045
Confl. Peds. (#/hr)		3				
Confl. Bikes (#/hr)				1		
Heavy Vehicles (%)	1%	1%	3%	1%	0%	4%
Turn Type	Prot	pm+ov	NA	Perm	Prot	NA
Protected Phases	3	1	2		1	6
Permitted Phases		3		2		
Actuated Green, G (s)	11.5	20.2	39.7	39.7	8.7	52.9
Effective Green, g (s)	11.5	20.2	39.7	39.7	8.7	52.9
Actuated g/C Ratio	0.16	0.28	0.54	0.54	0.12	0.72
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	2.5	2.5	4.2	4.2	2.5	4.2
Lane Grp Cap (vph)	257	864	2508	786	382	2304
v/s Ratio Prot	c0.09	0.03	0.43		0.05	c0.64
v/s Ratio Perm		0.05		0.04		
v/c Ratio	0.56	0.24	0.79	0.08	0.41	0.89
Uniform Delay, d1	28.6	20.7	13.5	8.1	30.0	7.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.3	0.1	1.9	0.1	0.5	4.7
Delay (s)	30.9	20.8	15.3	8.1	30.5	12.7
Level of Service	C	C	B	A	C	B
Approach Delay (s)	24.8		15.0			13.9
Approach LOS	C		B			B

Intersection Summary			
HCM 2000 Control Delay	15.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	73.4	Sum of lost time (s)	13.5
Intersection Capacity Utilization	74.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	127	1995	90	123	2090
Future Volume (Veh/h)	0	127	1995	90	123	2090
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	135	2122	96	131	2223
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			833			508
pX, platoon unblocked	0.84	0.68			0.68	
vC, conflicting volume	3496	707			2218	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1321	0			1136	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	82			69	
cM capacity (veh/h)	86	738			418	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3
Volume Total	135	707	707	707	96	131	1112	1112
Volume Left	0	0	0	0	0	131	0	0
Volume Right	135	0	0	0	96	0	0	0
cSH	738	1700	1700	1700	1700	418	1700	1700
Volume to Capacity	0.18	0.42	0.42	0.42	0.06	0.31	0.65	0.65
Queue Length 95th (ft)	17	0	0	0	0	33	0	0
Control Delay (s)	11.0	0.0	0.0	0.0	0.0	17.5	0.0	0.0
Lane LOS	B					C		
Approach Delay (s)	11.0	0.0				1.0		
Approach LOS	B							

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	66.1%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	755	1	622	0	0	0	0	1639	483	0	1591	925
Future Volume (vph)	755	1	622	0	0	0	0	1639	483	0	1591	925
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.5	4.5	4.5					4.5	4.5		4.5	4.5
Lane Util. Factor	0.95	0.95	1.00					0.91	1.00		0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00					1.00	0.97		1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00					1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85					1.00	0.85		1.00	0.85
Flt Protected	0.95	0.95	1.00					1.00	1.00		1.00	1.00
Satd. Flow (prot)	1533	1537	1417					4684	1407		3228	1416
Flt Permitted	0.95	0.95	1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	1533	1537	1417					4684	1407		3228	1416
Peak-hour factor, PHF	0.90	0.90	0.90	0.96	0.96	0.96	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	839	1	691	0	0	0	0	1725	508	0	1675	974
RTOR Reduction (vph)	0	0	34	0	0	0	0	0	67	0	0	281
Lane Group Flow (vph)	419	421	657	0	0	0	0	1725	441	0	1675	693
Confl. Peds. (#/hr)							12		7	7		12
Confl. Bikes (#/hr)									2			1
Heavy Vehicles (%)	3%	0%	5%	0%	0%	0%	0%	2%	3%	100%	3%	2%
Turn Type	Perm	NA	Perm					NA	Perm		NA	Perm
Protected Phases		4						2			6	
Permitted Phases	4		4						2			6
Actuated Green, G (s)	28.5	28.5	28.5					92.5	92.5		92.5	92.5
Effective Green, g (s)	28.5	28.5	28.5					92.5	92.5		92.5	92.5
Actuated g/C Ratio	0.22	0.22	0.22					0.71	0.71		0.71	0.71
Clearance Time (s)	4.5	4.5	4.5					4.5	4.5		4.5	4.5
Vehicle Extension (s)	2.5	2.5	2.5					4.2	4.2		4.2	4.2
Lane Grp Cap (vph)	336	336	310					3332	1001		2296	1007
v/s Ratio Prot								0.37			c0.52	
v/s Ratio Perm	0.27	0.27	c0.46						0.31			0.49
v/c Ratio	1.25	1.25	2.12					0.52	0.44		0.73	0.69
Uniform Delay, d1	50.8	50.8	50.8					8.6	7.9		11.2	10.6
Progression Factor	1.00	1.00	1.00					1.00	1.00		0.52	7.67
Incremental Delay, d2	133.7	136.0	514.0					0.6	1.4		1.3	2.4
Delay (s)	184.4	186.8	564.7					9.1	9.3		7.1	83.7
Level of Service	F	F	F					A	A		A	F
Approach Delay (s)		356.7			0.0			9.2			35.3	
Approach LOS		F			A			A			D	

Intersection Summary			
HCM 2000 Control Delay	102.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	97.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	443	202	483	0	1411	983	0	2073	1131
Future Volume (vph)	0	0	0	443	202	483	0	1411	983	0	2073	1131
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)				4.5	4.5	4.5		4.5	4.5		4.5	4.5
Lane Util. Factor				0.95	0.91	0.95		0.91	1.00		0.91	1.00
Frpb, ped/bikes				1.00	0.99	0.96		1.00	0.98		1.00	0.96
Flpb, ped/bikes				1.00	1.00	1.00		1.00	1.00		1.00	1.00
Frt				1.00	0.95	0.85		1.00	0.85		1.00	0.85
Flt Protected				0.95	0.99	1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)				1504	1448	1295		4684	1386		4638	1374
Flt Permitted				0.95	0.99	1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)				1504	1448	1295		4684	1386		4638	1374
Peak-hour factor, PHF	0.98	0.98	0.98	0.88	0.88	0.88	0.93	0.93	0.93	0.97	0.97	0.97
Adj. Flow (vph)	0	0	0	503	230	549	0	1517	1057	0	2137	1166
RTOR Reduction (vph)	0	0	0	0	14	24	0	0	150	0	0	157
Lane Group Flow (vph)	0	0	0	443	424	377	0	1517	907	0	2137	1009
Confl. Peds. (#/hr)	12					12	24		1	1		24
Confl. Bikes (#/hr)									1			1
Heavy Vehicles (%)	0%	0%	0%	5%	0%	5%	0%	2%	5%	0%	3%	4%
Turn Type				Perm	NA	Perm		NA	Perm		NA	Perm
Protected Phases					8			2			6	
Permitted Phases				8		8			2			6
Actuated Green, G (s)				40.9	40.9	40.9		80.1	80.1		80.1	80.1
Effective Green, g (s)				40.9	40.9	40.9		80.1	80.1		80.1	80.1
Actuated g/C Ratio				0.31	0.31	0.31		0.62	0.62		0.62	0.62
Clearance Time (s)				4.5	4.5	4.5		4.5	4.5		4.5	4.5
Vehicle Extension (s)				2.5	2.5	2.5		4.2	4.2		4.2	4.2
Lane Grp Cap (vph)				473	455	407		2886	853		2857	846
v/s Ratio Prot								0.32			0.46	
v/s Ratio Perm				c0.29	0.29	0.29			0.65			c0.73
v/c Ratio				0.94	0.93	0.93		0.53	1.06		0.75	1.19
Uniform Delay, d1				43.3	43.2	43.1		14.2	25.0		17.8	25.0
Progression Factor				1.00	1.00	1.00		0.83	0.99		0.82	0.84
Incremental Delay, d2				26.1	25.9	26.8		0.4	43.3		1.2	94.4
Delay (s)				69.4	69.0	69.9		12.1	68.1		15.8	115.5
Level of Service				E	E	E		B	E		B	F
Approach Delay (s)		0.0			69.4			35.1			51.0	
Approach LOS		A			E			D			D	

Intersection Summary			
HCM 2000 Control Delay	48.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	110.4%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	270	1636	258	0	3204
Future Volume (Veh/h)	0	270	1636	258	0	3204
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	0	281	1704	269	0	3338
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			827			1005
pX, platoon unblocked	0.82	0.86			0.86	
vC, conflicting volume	2818	569			1705	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1267	0			1234	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	70			100	
cM capacity (veh/h)	134	933			489	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3
Volume Total	281	568	568	568	269	1113	1113	1113
Volume Left	0	0	0	0	0	0	0	0
Volume Right	281	0	0	0	269	0	0	0
cSH	933	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.30	0.33	0.33	0.33	0.16	0.65	0.65	0.65
Queue Length 95th (ft)	32	0	0	0	0	0	0	0
Control Delay (s)	10.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B							
Approach Delay (s)	10.5	0.0				0.0		
Approach LOS	B							

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	70.5%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	390	171	1380	215	55	1095
Future Volume (vph)	390	171	1380	215	55	1095
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.5		4.5		4.5	4.5
Lane Util. Factor	0.97		0.95		1.00	0.95
Frpb, ped/bikes	0.99		1.00		1.00	1.00
Flpb, ped/bikes	1.00		1.00		1.00	1.00
Frt	0.95		0.98		1.00	1.00
Flt Protected	0.97		1.00		0.95	1.00
Satd. Flow (prot)	3031		3190		1662	3292
Flt Permitted	0.97		1.00		0.95	1.00
Satd. Flow (perm)	3031		3190		1662	3292
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	411	180	1453	226	58	1153
RTOR Reduction (vph)	54	0	12	0	0	0
Lane Group Flow (vph)	537	0	1667	0	58	1153
Confl. Peds. (#/hr)		1				
Heavy Vehicles (%)	2%	4%	2%	3%	0%	1%
Turn Type	Prot		NA		Prot	NA
Protected Phases	8		2		1	6
Permitted Phases						
Actuated Green, G (s)	17.3		43.5		6.4	54.4
Effective Green, g (s)	17.3		43.5		6.4	54.4
Actuated g/C Ratio	0.21		0.54		0.08	0.67
Clearance Time (s)	4.5		4.5		4.5	4.5
Vehicle Extension (s)	2.5		4.2		2.5	4.2
Lane Grp Cap (vph)	649		1719		131	2219
v/s Ratio Prot	c0.18		c0.52		0.03	c0.35
v/s Ratio Perm						
v/c Ratio	0.83		0.97		0.44	0.52
Uniform Delay, d1	30.3		18.0		35.4	6.6
Progression Factor	1.00		1.00		1.00	1.00
Incremental Delay, d2	8.3		15.3		1.7	0.3
Delay (s)	38.6		33.2		37.2	6.9
Level of Service	D		C		D	A
Approach Delay (s)	38.6		33.2			8.3
Approach LOS	D		C			A

Intersection Summary			
HCM 2000 Control Delay	25.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	80.7	Sum of lost time (s)	13.5
Intersection Capacity Utilization	75.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	22	55	74	1	49	64	1014	467	221	985	12
Future Volume (vph)	36	22	55	74	1	49	64	1014	467	221	985	12
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	1.00		0.97	1.00		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.89		1.00	0.85		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1662	1519		3065	1492		1630	3228	1461	1630	3285	
Flt Permitted	0.72	1.00		0.54	1.00		0.24	1.00	1.00	0.13	1.00	
Satd. Flow (perm)	1264	1519		1739	1492		408	3228	1461	225	3285	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	38	23	58	78	1	52	67	1067	492	233	1037	13
RTOR Reduction (vph)	0	53	0	0	46	0	0	0	239	0	0	0
Lane Group Flow (vph)	38	28	0	78	7	0	67	1067	253	233	1050	0
Confl. Peds. (#/hr)			2	2			3		1	1		3
Confl. Bikes (#/hr)												2
Heavy Vehicles (%)	0%	5%	0%	5%	0%	0%	2%	3%	0%	2%	1%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	
Protected Phases	3	8		7	4		1	6	7	5	2	
Permitted Phases	8			4			6		6	2		
Actuated Green, G (s)	10.0	6.2		13.8	8.1		36.8	32.1	37.8	48.0	38.8	
Effective Green, g (s)	10.0	6.2		13.8	8.1		36.8	32.1	37.8	48.0	38.8	
Actuated g/C Ratio	0.14	0.08		0.19	0.11		0.50	0.44	0.51	0.65	0.53	
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.5	2.5		2.5	2.5		2.5	4.2	2.5	2.5	4.2	
Lane Grp Cap (vph)	192	128		429	164		282	1411	841	365	1736	
v/s Ratio Prot	0.01	0.02		0.01	0.00		0.02	c0.33	c0.02	c0.10	0.32	
v/s Ratio Perm	0.02			c0.02			0.10		0.15	0.32		
v/c Ratio	0.20	0.22		0.18	0.04		0.24	0.76	0.30	0.64	0.60	
Uniform Delay, d1	28.0	31.3		24.9	29.2		9.7	17.4	10.2	10.5	12.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.4	0.6		0.1	0.1		0.3	2.6	0.1	3.2	0.7	
Delay (s)	28.4	32.0		25.0	29.3		10.0	19.9	10.4	13.7	12.7	
Level of Service	C	C		C	C		A	B	B	B	B	
Approach Delay (s)		30.8			26.7			16.6			12.9	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	16.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	73.4	Sum of lost time (s)	18.0
Intersection Capacity Utilization	63.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	710	0	0	51	0	1694	212	0	2494	124
Future Volume (Veh/h)	0	0	710	0	0	51	0	1694	212	0	2494	124
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	0	0	740	0	0	53	0	1765	221	0	2598	129
Pedestrians		4			2						4	
Lane Width (ft)		12.0			12.0						12.0	
Walking Speed (ft/s)		3.5			3.5						3.5	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								1229			603	
pX, platoon unblocked	0.79	0.79	0.74	0.79	0.79	0.91	0.74			0.91		
vC, conflicting volume	3247	4590	870	2633	4369	594	2602			1988		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2167	3876	0	1384	3595	227	1943			1752		
tC, single (s)	7.5	6.5	7.0	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	7	100	100	92	100			100		
cM capacity (veh/h)	19	3	797	6	4	705	226			331		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	SB 4
Volume Total	740	53	588	588	588	221	866	866	866	129
Volume Left	0	0	0	0	0	0	0	0	0	0
Volume Right	740	53	0	0	0	221	0	0	0	129
cSH	797	705	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.93	0.08	0.35	0.35	0.35	0.13	0.51	0.51	0.51	0.08
Queue Length 95th (ft)	337	6	0	0	0	0	0	0	0	0
Control Delay (s)	39.7	10.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	E	B								
Approach Delay (s)	39.7	10.5	0.0				0.0			
Approach LOS	E	B								

Intersection Summary				
Average Delay	5.4			
Intersection Capacity Utilization	106.7%	ICU Level of Service	G	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	295	203	442	683	242	254	181	1243	321	263	1493	216
Future Volume (vph)	295	203	442	683	242	254	181	1243	321	263	1493	216
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5
Lane Util. Factor	0.97	1.00	1.00	*1.00	1.00	1.00	1.00	0.91		*1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.97	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3162	1733	1444	3325	1733	1434	1630	4549		3325	4684	1413
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3162	1733	1444	3325	1733	1434	1630	4549		3325	4684	1413
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	307	211	460	711	252	265	189	1295	334	274	1555	225
RTOR Reduction (vph)	0	0	154	0	0	207	0	32	0	0	0	122
Lane Group Flow (vph)	307	211	306	711	252	58	189	1597	0	274	1555	103
Confl. Peds. (#/hr)	7					7	1					1
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	2%	1%	3%	0%	1%	1%	2%	2%	1%	0%	2%	3%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	20.5	16.5	16.5	22.5	18.5	18.5	13.5	57.6		15.4	59.5	59.5
Effective Green, g (s)	20.5	16.5	16.5	22.5	18.5	18.5	13.5	57.6		15.4	59.5	59.5
Actuated g/C Ratio	0.16	0.13	0.13	0.17	0.14	0.14	0.10	0.44		0.12	0.46	0.46
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	4.2		2.5	4.2	4.2
Lane Grp Cap (vph)	498	219	183	575	246	204	169	2015		393	2143	646
v/s Ratio Prot	c0.10	0.12		c0.21	0.15		c0.12	c0.35		0.08	0.33	
v/s Ratio Perm			c0.21			0.04						0.07
v/c Ratio	0.62	0.96	1.67	1.24	1.02	0.29	1.12	0.79		0.70	0.73	0.16
Uniform Delay, d1	51.1	56.5	56.8	53.8	55.8	49.8	58.2	31.1		55.1	28.6	20.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.78	1.18		1.00	1.00	1.00
Incremental Delay, d2	1.9	50.1	326.0	120.8	63.8	0.6	99.9	2.9		4.9	2.2	0.5
Delay (s)	53.0	106.6	382.8	174.6	119.6	50.4	145.4	39.6		60.0	30.8	21.1
Level of Service	D	F	F	F	F	D	F	D		E	C	C
Approach Delay (s)		219.7			136.5			50.6			33.6	
Approach LOS		F			F			D			C	

Intersection Summary			
HCM 2000 Control Delay	89.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	93.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	11	1681	111	0	0
Future Volume (Veh/h)	0	11	1681	111	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	0	11	1698	112	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			Raised			Raised
Median storage veh)			2			2
Upstream signal (ft)			998			
pX, platoon unblocked	0.68	0.68			0.68	
vC, conflicting volume	1754	905			1810	
vC1, stage 1 conf vol	1754					
vC2, stage 2 conf vol	0					
vCu, unblocked vol	1158	0			1241	
tC, single (s)	6.8	7.1			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.4			2.2	
p0 queue free %	100	98			100	
cM capacity (veh/h)	175	714			384	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	11	1132	678	0	0	0
Volume Left	0	0	0	0	0	0
Volume Right	11	0	112	0	0	0
cSH	714	1700	1700	1700	1700	1700
Volume to Capacity	0.02	0.67	0.40	0.00	0.00	0.00
Queue Length 95th (ft)	1	0	0	0	0	0
Control Delay (s)	10.1	0.0	0.0	0.0	0.0	0.0
Lane LOS	B					
Approach Delay (s)	10.1	0.0		0.0		
Approach LOS	B					

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	64.3%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	101	1582	110	149	0
Future Volume (Veh/h)	0	101	1582	110	149	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	106	1665	116	157	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			Raised			Raised
Median storage veh)			2			2
Upstream signal (ft)						917
pX, platoon unblocked						
vC, conflicting volume	2037	890			1781	
vC1, stage 1 conf vol	1723					
vC2, stage 2 conf vol	314					
vCu, unblocked vol	2037	890			1781	
tC, single (s)	6.8	7.0			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	62			56	
cM capacity (veh/h)	123	280			353	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	106	1110	671	157	0	0
Volume Left	0	0	0	157	0	0
Volume Right	106	0	116	0	0	0
cSH	280	1700	1700	353	1700	1700
Volume to Capacity	0.38	0.65	0.39	0.44	0.00	0.00
Queue Length 95th (ft)	42	0	0	55	0	0
Control Delay (s)	25.5	0.0	0.0	23.1	0.0	0.0
Lane LOS	D			C		
Approach Delay (s)	25.5	0.0		23.1		
Approach LOS	D					

Intersection Summary				
Average Delay	3.1			
Intersection Capacity Utilization	66.9%	ICU Level of Service	C	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	86	380	695	340	411	122	662	642	379	298	937	85
Future Volume (vph)	86	380	695	340	411	122	662	642	379	298	937	85
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.5	4.0	4.0	4.5		4.0	5.4	5.4	4.0	5.4	
Lane Util. Factor	1.00	0.95	0.88	1.00	0.95		0.97	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00		1.00	1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1614	3292	2564	1630	3139		3193	3167	1437	1614	3192	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1614	3292	2564	1630	3139		3193	3167	1437	1614	3192	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	91	400	732	358	433	128	697	676	399	314	986	89
RTOR Reduction (vph)	0	0	74	0	22	0	0	0	272	0	5	0
Lane Group Flow (vph)	91	400	658	358	539	0	697	676	127	314	1070	0
Confl. Peds. (#/hr)			5	5					2	2		
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	3%	1%	1%	2%	3%	0%	1%	5%	2%	3%	3%	0%
Turn Type	Prot	NA	pm+ov	Prot	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4						2			
Actuated Green, G (s)	7.5	16.8	42.8	29.0	38.3		26.0	40.8	40.8	23.3	38.1	
Effective Green, g (s)	7.5	16.8	42.8	29.0	38.3		26.0	40.8	40.8	23.3	38.1	
Actuated g/C Ratio	0.06	0.13	0.33	0.23	0.30		0.20	0.32	0.32	0.18	0.30	
Clearance Time (s)	4.0	4.5	4.0	4.0	4.5		4.0	5.4	5.4	4.0	5.4	
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lane Grp Cap (vph)	94	432	858	369	940		649	1011	458	294	951	
v/s Ratio Prot	0.06	c0.12	0.16	c0.22	0.17		c0.22	c0.21		0.19	c0.34	
v/s Ratio Perm			0.10						0.09			
v/c Ratio	0.97	0.93	0.77	0.97	0.57		1.07	0.67	0.28	1.07	1.13	
Uniform Delay, d1	60.0	54.9	38.0	49.0	37.8		50.9	37.6	32.5	52.2	44.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	81.1	25.3	3.7	38.7	0.5		56.9	1.3	0.1	71.7	70.0	
Delay (s)	141.1	80.2	41.7	87.6	38.4		107.8	39.0	32.6	123.9	114.9	
Level of Service	F	F	D	F	D		F	D	C	F	F	
Approach Delay (s)		61.7			57.6			64.6			116.9	
Approach LOS		E			E			E			F	

Intersection Summary			
HCM 2000 Control Delay	76.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	127.8	Sum of lost time (s)	17.9
Intersection Capacity Utilization	98.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	18	0	0	131	0	1048	39	0	642	145
Future Volume (Veh/h)	0	0	18	0	0	131	0	1048	39	0	642	145
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	19	0	0	138	0	1103	41	0	676	153
Pedestrians					4			1			1	
Lane Width (ft)					12.0			12.0			12.0	
Walking Speed (ft/s)					3.5			3.5			3.5	
Percent Blockage					0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											326	
pX, platoon unblocked												
vC, conflicting volume	1259	1900	416	1486	1956	393	829			1148		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1259	1900	416	1486	1956	393	829			1148		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	97	100	100	77	100			100		
cM capacity (veh/h)	100	70	591	85	64	606	811			614		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	19	138	441	441	262	451	378
Volume Left	0	0	0	0	0	0	0
Volume Right	19	138	0	0	41	0	153
cSH	591	606	1700	1700	1700	1700	1700
Volume to Capacity	0.03	0.23	0.26	0.26	0.15	0.27	0.22
Queue Length 95th (ft)	2	22	0	0	0	0	0
Control Delay (s)	11.3	12.7	0.0	0.0	0.0	0.0	0.0
Lane LOS	B	B					
Approach Delay (s)	11.3	12.7	0.0			0.0	
Approach LOS	B	B					

Intersection Summary				
Average Delay	0.9			
Intersection Capacity Utilization	38.7%	ICU Level of Service	A	
Analysis Period (min)	15			

Attachment B SimTraffic Reports

1: 48748. Table Rock Rd & Hwy 63/N Pacific Hwy Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.8	15.2	2.0	0.0	0.0	0.0	0.0	0.0	0.0	28.7	22.6	1.7
Total Delay (hr)	4.0	65.3	8.2	0.7	14.5	3.8	1.2	6.0	0.4	57.9	20.7	1.3
Stop Delay (hr)	3.8	62.1	7.9	0.6	10.3	1.7	1.1	5.0	0.4	56.1	18.7	1.2

1: 48748. Table Rock Rd & Hwy 63/N Pacific Hwy Performance by movement

Movement	All
Denied Delay (hr)	71.1
Total Delay (hr)	184.0
Stop Delay (hr)	168.9

2: 37165. OR-62 & OR-99 Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.1	0.1	0.1	0.0	0.0	0.0	3.0	32.6	3.8	0.0	0.0	0.0
Total Delay (hr)	21.4	32.9	1.9	2.7	45.4	3.7	15.3	197.9	23.0	4.9	8.5	2.2
Stop Delay (hr)	19.9	28.9	1.7	2.5	39.9	2.6	15.1	197.1	23.1	4.4	6.6	1.5

2: 37165. OR-62 & OR-99 Performance by movement

Movement	All
Denied Delay (hr)	39.6
Total Delay (hr)	359.9
Stop Delay (hr)	343.2

3: 110085. OR-62 & Rogue Valley Mall Main Ent Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	1.3	1.2	23.3	1.1	0.9	2.7	30.5
Stop Delay (hr)	1.1	1.1	19.0	0.9	0.8	0.8	23.9

4: 110080. OR-62 & Rogue Valley Mall Ent Performance by movement

Movement	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	25.4	0.5	0.1	0.0	0.0	26.1
Total Delay (hr)	12.8	15.0	0.8	1.1	0.8	30.5
Stop Delay (hr)	13.0	9.4	0.5	1.0	0.1	24.0

5: 37160. OR-62 & I-5 SB Ramps Performance by movement

Movement	EBL	EBT	EBR	NBT	NBR	SBT	SBR	All
Denied Delay (hr)	215.4	0.0	174.1	0.8	0.4	0.0	0.0	390.7
Total Delay (hr)	23.5	0.0	15.8	7.9	3.1	3.0	1.5	55.0
Stop Delay (hr)	20.1	0.0	13.6	4.5	1.8	1.4	0.0	41.5

6: 37161. OR-62 & I-5 NB Ramps Performance by movement

Movement	WBL	WBT	WBR	NBT	NBR	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.1	0.7	0.0	0.1	1.0
Total Delay (hr)	7.0	4.0	4.0	6.2	6.6	7.4	10.0	45.1
Stop Delay (hr)	5.8	3.2	3.1	3.5	3.2	4.2	6.0	28.9

7: north-south street name & east-west street name Performance by movement

Movement	WBT	WBR	NBT	NBR	SBT	All
Denied Delay (hr)	0.0	0.0	0.3	0.1	0.6	1.0
Total Delay (hr)	0.0	0.1	1.6	1.0	5.6	8.2
Stop Delay (hr)	0.0	0.0	0.4	0.6	3.1	4.2

8: 110086. Biddle Rd Conn 1 & South End of Jug Handle Performance by movement

Movement	WBL	WBT	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	17.7	0.0	7.0	345.1	54.5	0.0	0.0	424.3
Total Delay (hr)	4.5	0.0	8.9	62.8	11.4	0.3	1.2	89.0
Stop Delay (hr)	4.0	0.0	9.0	62.6	11.4	0.2	0.5	87.7

9: 110088. Biddle Rd Conn 1 & Hilton Ct Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	1.8	0.6	2.5	0.0	0.0	0.0	0.0	0.0	0.0	55.7	277.1	3.8
Total Delay (hr)	0.1	4.5	6.8	0.3	0.0	0.1	3.0	54.2	57.7	33.0	27.0	0.1
Stop Delay (hr)	0.1	4.4	6.8	0.2	0.0	0.0	3.0	52.7	58.6	33.1	25.8	0.1

9: 110088. Biddle Rd Conn 1 & Hilton Ct Performance by movement

Movement	All
Denied Delay (hr)	341.4
Total Delay (hr)	187.0
Stop Delay (hr)	185.0

10: 37166. OR-62 & Biddle Rd Ramp Performance by movement

Movement	EBT	EBR	WBR	NBT	NBR	SBT	SBR	All
Denied Delay (hr)	0.0	13.3	0.0	0.0	0.0	0.0	0.0	13.3
Total Delay (hr)	0.6	42.4	0.1	0.9	0.1	4.1	0.2	48.5
Stop Delay (hr)	0.6	44.1	0.1	0.4	0.1	0.9	0.0	46.2

11: 37163. OR-62 & Poplar Dr Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	56.2	40.9	83.7	0.0	0.0	0.0	0.0	0.0	0.0	11.5	77.7	11.0
Total Delay (hr)	10.5	11.2	20.6	12.6	4.9	0.9	4.4	6.5	0.9	4.5	16.3	1.1
Stop Delay (hr)	9.3	10.1	18.8	12.0	4.6	0.8	4.2	4.4	0.6	4.2	13.3	0.8

11: 37163. OR-62 & Poplar Dr Performance by movement

Movement	All
Denied Delay (hr)	281.1
Total Delay (hr)	94.3
Stop Delay (hr)	83.0

12: 110083. OR-62 & Sky Park Dr Performance by movement

Movement	WBR	NBT	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0
Total Delay (hr)	0.0	0.6	0.0	0.7
Stop Delay (hr)	0.0	0.0	0.0	0.0

13: 110084. OR-62 & Whittle Ave Performance by movement

Movement	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.3	0.6	0.0	1.9	4.5	7.3
Stop Delay (hr)	0.3	0.0	0.0	1.6	2.6	4.5

14: 140087. Crater Lake Hwy & Delta Waters Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.1	0.4	0.0	0.0	0.0	0.0	0.0	0.0	12.3	37.6	3.3
Total Delay (hr)	2.6	11.9	5.5	10.6	6.6	1.6	7.6	5.8	1.3	20.9	60.3	5.4
Stop Delay (hr)	2.5	10.7	3.7	9.8	5.5	1.3	6.7	4.6	0.9	18.5	51.6	4.7

14: 140087. Crater Lake Hwy & Delta Waters Rd Performance by movement

Movement	All
Denied Delay (hr)	53.7
Total Delay (hr)	140.3
Stop Delay (hr)	120.5

15: 110089. Poplar Dr & Hilton Rd Performance by movement

Movement	EBR	WBR	NBT	NBR	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	293.0	9.4	0.0	0.0	302.4
Total Delay (hr)	0.0	1.2	16.2	0.1	0.2	0.0	17.8
Stop Delay (hr)	0.0	1.2	15.3	0.1	0.0	0.0	16.7

Total Network Performance

Denied Delay (hr)	1945.8
Total Delay (hr)	1324.3
Stop Delay (hr)	1183.8

Intersection: 1: 48748. Table Rock Rd & Hwy 63/N Pacific Hwy

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	TR	L	L
Maximum Queue (ft)	275	1848	1846	289	603	622	549	178	328	329	525	1610
Average Queue (ft)	131	1220	1211	61	363	387	271	77	175	179	484	1174
95th Queue (ft)	327	2223	2212	195	583	599	542	142	267	274	626	1985
Link Distance (ft)		1924	1924		852	852	852		2093	2093		1571
Upstream Blk Time (%)		29	27									42
Queuing Penalty (veh)		0	0									0
Storage Bay Dist (ft)	250			200				340			500	
Storage Blk Time (%)	0	73			30				1		18	65
Queuing Penalty (veh)	0	32			13				1		52	191

Intersection: 1: 48748. Table Rock Rd & Hwy 63/N Pacific Hwy

Movement	SB
Directions Served	TR
Maximum Queue (ft)	1609
Average Queue (ft)	1112
95th Queue (ft)	1997
Link Distance (ft)	1571
Upstream Blk Time (%)	40
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 2: 37165. OR-62 & OR-99

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	WB	B26	B26
Directions Served	L	L	T	TR	L	T	T	T	R	R	T	T
Maximum Queue (ft)	455	540	879	891	516	740	756	737	705	220	216	270
Average Queue (ft)	294	519	836	836	243	554	581	558	244	52	22	61
95th Queue (ft)	492	618	947	952	616	817	833	806	717	226	206	339
Link Distance (ft)			852	852	686	686	686	686	686		4343	4343
Upstream Blk Time (%)			21	22	2	15	18	11	7			
Queuing Penalty (veh)			146	154	0	0	0	0	0			
Storage Bay Dist (ft)	380	380								250		
Storage Blk Time (%)	0	30	75						7	2		
Queuing Penalty (veh)	1	133	326						21	7		

Intersection: 2: 37165. OR-62 & OR-99

Movement	B26	B26	NB	NB	NB	NB	SB	SB	SB	SB	SB	
Directions Served	T	T	L	T	T	R	L	L	T	T	R	
Maximum Queue (ft)	336	350	315	4742	4760	500	241	335	450	477	442	
Average Queue (ft)	91	98	133	3598	3613	382	132	159	264	278	172	
95th Queue (ft)	430	467	338	5711	5682	709	207	267	392	411	342	
Link Distance (ft)	4343	4343		4693	4693				524	524		
Upstream Blk Time (%)				40	40				0	0		
Queuing Penalty (veh)				0	0				0	1		
Storage Bay Dist (ft)			150			390	315	315			400	
Storage Blk Time (%)			0	50	89	0			3	1	0	
Queuing Penalty (veh)			1	42	103	0			15	5	1	

Intersection: 3: 110085. OR-62 & Rogue Valley Mall Main Ent

Movement	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB	
Directions Served	L	R	R	T	T	T	R	L	L	T	T	
Maximum Queue (ft)	176	122	184	517	692	686	180	95	109	264	293	
Average Queue (ft)	90	42	63	207	522	535	88	23	55	109	137	
95th Queue (ft)	156	92	138	466	828	804	226	66	95	227	258	
Link Distance (ft)	338	338	338	524	524	524				766	766	
Upstream Blk Time (%)				1	30	38						
Queuing Penalty (veh)				7	192	248						
Storage Bay Dist (ft)							100	280	280			
Storage Blk Time (%)						53	0			0		
Queuing Penalty (veh)						43	0			0		

Intersection: 4: 110080. OR-62 & Rogue Valley Mall Ent

Movement	WB	NB	NB	NB	NB	SB	SB
Directions Served	R	T	T	T	R	L	T
Maximum Queue (ft)	373	490	791	800	200	148	57
Average Queue (ft)	340	41	328	647	95	67	2
95th Queue (ft)	440	269	825	933	258	131	41
Link Distance (ft)	341	766	766	766			438
Upstream Blk Time (%)	89	0	0	5			
Queuing Penalty (veh)	0	0	2	37			
Storage Bay Dist (ft)					100	200	
Storage Blk Time (%)				46			
Queuing Penalty (veh)				41			

Intersection: 5: 37160. OR-62 & I-5 SB Ramps

Movement	EB	EB	EB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	LT	R	T	T	T	R	T	T	R
Maximum Queue (ft)	270	345	1268	275	446	466	80	241	227	35
Average Queue (ft)	228	342	1222	88	176	443	66	126	128	2
95th Queue (ft)	339	375	1244	196	381	468	87	207	210	28
Link Distance (ft)			1196	438	438	438		551	551	551
Upstream Blk Time (%)			60		0	16				
Queuing Penalty (veh)			0		2	111				
Storage Bay Dist (ft)	195	195					50			
Storage Blk Time (%)	8	59	48			34	2			
Queuing Penalty (veh)	50	366	368			163	12			

Intersection: 6: 37161. OR-62 & I-5 NB Ramps

Movement	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	LTR	R	T	T	T	R	T	T	T	R
Maximum Queue (ft)	575	691	535	528	560	589	88	714	781	817	440
Average Queue (ft)	252	402	228	150	212	461	73	200	340	514	355
95th Queue (ft)	513	648	475	321	436	706	91	405	717	1007	563
Link Distance (ft)	3096	3096	3096	551	551	551		749	749	749	
Upstream Blk Time (%)				0	0	8		0	0	14	
Queuing Penalty (veh)				0	1	67		0	5	154	
Storage Bay Dist (ft)							50				290
Storage Blk Time (%)						27	10			1	25
Queuing Penalty (veh)						263	49			12	174

Intersection: 7: north-south street name & east-west street name

Movement	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	R	T	T	T	R	T	T	T
Maximum Queue (ft)	45	128	151	154	94	188	358	427
Average Queue (ft)	2	8	21	33	11	12	74	231
95th Queue (ft)	32	121	211	282	58	109	301	562
Link Distance (ft)	476	749	749	749		347	347	347
Upstream Blk Time (%)			0	2		0	0	6
Queuing Penalty (veh)			0	12		0	4	59
Storage Bay Dist (ft)					75			
Storage Blk Time (%)				0	0			
Queuing Penalty (veh)				0	1			

Intersection: 8: 110086. Biddle Rd Conn 1 & South End of Jug Handle

Movement	WB	WB	B44	NB	NB	SB	SB	SB
Directions Served	L	LR	T	T	TR	L	T	T
Maximum Queue (ft)	494	525	112	1230	1220	97	251	272
Average Queue (ft)	230	343	54	1094	1094	24	50	67
95th Queue (ft)	444	612	304	1521	1510	72	155	179
Link Distance (ft)	618	618	476	1175	1175		1967	1967
Upstream Blk Time (%)		12	6	80	83			
Queuing Penalty (veh)		15	14	0	0			
Storage Bay Dist (ft)						100		
Storage Blk Time (%)						0	2	
Queuing Penalty (veh)						1	1	

Intersection: 9: 110088. Biddle Rd Conn 1 & Hilton Ct

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	L	TR	L	T	T	R	L	T	TR
Maximum Queue (ft)	383	566	39	64	34	355	2009	1997	330	285	1140	1138
Average Queue (ft)	124	327	6	23	12	40	1881	1885	329	276	1061	1053
95th Queue (ft)	568	771	26	54	32	190	2388	2373	334	296	1322	1333
Link Distance (ft)	849	849			1196		1967	1967			1100	1100
Upstream Blk Time (%)	11	13					39	52			84	81
Queuing Penalty (veh)	0	0					300	397			0	0
Storage Bay Dist (ft)			220	220		320			220	175		
Storage Blk Time (%)							3	7	99	99	3	
Queuing Penalty (veh)							2	35	502	489	6	

Intersection: 10: 37166. OR-62 & Biddle Rd Ramp

Movement	EB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	R	R	T	T	T	R	T	T	T	R
Maximum Queue (ft)	1212	61	100	65	21	7	192	375	439	151
Average Queue (ft)	1204	26	10	6	2	0	14	38	82	14
95th Queue (ft)	1211	50	62	50	19	0	109	207	329	96
Link Distance (ft)	1196	237	347	347	347		507	507	507	
Upstream Blk Time (%)	64							0	0	
Queuing Penalty (veh)	457							0	2	
Storage Bay Dist (ft)						90				140
Storage Blk Time (%)									7	
Queuing Penalty (veh)									8	

Intersection: 11: 37163. OR-62 & Poplar Dr

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	L	T	R	L	L	T	R	L	T	T	TR
Maximum Queue (ft)	204	460	1243	160	230	295	285	289	349	438	445	421
Average Queue (ft)	88	425	1211	158	204	246	230	207	177	256	263	197
95th Queue (ft)	162	596	1230	181	269	271	284	334	369	425	415	344
Link Distance (ft)			1187			230	230	230		507	507	507
Upstream Blk Time (%)			78		2	69	38	29	1	1	0	0
Queuing Penalty (veh)			0		0	270	151	115	0	8	1	0
Storage Bay Dist (ft)	350	350		135	250				450			
Storage Blk Time (%)	0	0	35	64	2	69			5	1		
Queuing Penalty (veh)	0	0	257	317	8	234			19	1		

Intersection: 11: 37163. OR-62 & Poplar Dr

Movement	SB	SB	SB	SB	SB	SB
Directions Served	L	L	T	T	T	R
Maximum Queue (ft)	290	332	334	327	333	316
Average Queue (ft)	130	251	296	298	276	215
95th Queue (ft)	265	401	360	361	443	436
Link Distance (ft)						
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	410	410				350
Storage Blk Time (%)					0	
Queuing Penalty (veh)					1	

Intersection: 12: 110083. OR-62 & Sky Park Dr

Movement	WB	NB	NB	B19	B19
Directions Served	R	T	TR	T	T
Maximum Queue (ft)	45	10	12	327	437
Average Queue (ft)	11	0	1	15	22
95th Queue (ft)	39	7	12	163	200
Link Distance (ft)	432	275	275	591	591
Upstream Blk Time (%)					0
Queuing Penalty (veh)					0
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 13: 110084. OR-62 & Whittle Ave

Movement	WB	NB	NB	SB
Directions Served	R	T	TR	L
Maximum Queue (ft)	105	23	16	262
Average Queue (ft)	49	1	1	94
95th Queue (ft)	86	12	8	220
Link Distance (ft)	479	409	409	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				650
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 14: 140087. Crater Lake Hwy & Delta Waters Rd

Movement	EB	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	T	T	R	R	L	T	TR	L	L	T	T
Maximum Queue (ft)	309	432	448	413	407	466	598	571	340	356	417	436
Average Queue (ft)	127	251	259	271	227	325	330	307	193	204	178	187
95th Queue (ft)	262	372	400	389	375	498	614	584	303	314	322	331
Link Distance (ft)		1246	1246				1401	1401			823	823
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	225			450	450	400			500	500		
Storage Blk Time (%)	1	24	0	0	0	11	9				0	9
Queuing Penalty (veh)	1	20	1	0	0	22	31				0	34

Intersection: 14: 140087. Crater Lake Hwy & Delta Waters Rd

Movement	NB	SB	SB	SB
Directions Served	R	L	T	TR
Maximum Queue (ft)	333	300	1470	1486
Average Queue (ft)	118	290	1386	1378
95th Queue (ft)	250	345	1668	1678
Link Distance (ft)			1423	1423
Upstream Blk Time (%)			72	59
Queuing Penalty (veh)			0	0
Storage Bay Dist (ft)	200	200		
Storage Blk Time (%)	1	38	63	
Queuing Penalty (veh)	4	176	187	

Intersection: 15: 110089. Poplar Dr & Hilton Rd

Movement	EB	WB	NB	NB	NB	SB	SB
Directions Served	R	R	T	T	TR	T	TR
Maximum Queue (ft)	40	216	301	296	290	12	43
Average Queue (ft)	17	81	280	279	278	0	1
95th Queue (ft)	44	175	293	289	287	9	14
Link Distance (ft)	464	466	260	260	260	230	230
Upstream Blk Time (%)			90	92	75		
Queuing Penalty (veh)			0	0	0		
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Network Summary

Network wide Queuing Penalty: 7778

Attachment C Pedestrian, Bicycle, and Transit LOS Analysis Results

Segment LOS Output Summary

Roadway	Dir	From-To	Pedestrian LOS	Bicycle LOS	Transit LOS
OR 238	EB	Sage Road to Central Avenue	E	D	D
OR 238	EB	Central Avenue to OR 99	E	F	D
OR 62	EB	OR 99 to RV Mall Entrance (west)	E	F	
OR 62	EB	RV Mall Entrance (west) to RV Mall Entrance (east, at Target)	E	D	
OR 62	EB	RV Mall Entrance (east, at Target) to I-5 SB Ramp Terminal	E	D	
OR 62	EB	I-5 SB Ramp Terminal to I-5 NB Ramp Terminal	E	F	
OR 62	EB	I-5 NB Ramp Terminal to Biddle Road (north end of jug handle)	E	D	
OR 62	EB	Biddle Road (north end of jug handle) to Fred Meyer Driveway	E	D	F
OR 62	EB	Fred Meyer Driveway to Poplar Drive	E	D	F
OR 62	EB	Poplar Drive to Sky Park Drive	E	F	
OR 62	EB	Sky Park Drive to Whittle Avenue	E	F	
OR 62	EB	Whittle Avenue to Delta Waters Road	E	F	
OR 62	EB	Delta Waters Road to East end of IMSA	E	F	
OR 62	WB	East end of IMSA to Delta Waters Road	E	D	
OR 62	WB	Delta Waters Road to RI/RO Commercial Driveway	E	D	
OR 62	WB	RI/RO Commercial Driveway to Bullock Road	F	F	
OR 62	WB	Bullock Road to Hilton Court	E	D	
OR 62	WB	Hilton Court to I-5 NB Ramp Terminal	E	D	
OR 62	WB	I-5 NB Ramp Terminal to I-5 SB Ramp Terminal	E	D	
OR 62	WB	I-5 SB Ramp Terminal to RV Mall Entrance (west)	E	D	
OR 238	WB	RV Mall Entrance (west) to OR 99	E	D	
OR 238	WB	OR 99 to Central Avenue	E	F	
OR 238	WB	Central Avenue to Sage Road	E	D	
Table Rock Road	SB	Berrydale Avenue to Adams Lane	C	F	
Table Rock Road	SB	Adams Lane to Table Rock Road	C	D	
Table Rock Road	SB	Table Rock Road to OR 99	E	F	
Table Rock Road	NB	OR 99 to Table Rock Road	C	F	D
Table Rock Road	NB	Table Rock Road to Adams Lane	C	D	D
Table Rock Road	NB	Adams Lane to Berrydale Avenue	C	F	D
Central Avenue	SB	OR 99 to OR 238	C	C	C
Central Avenue	SB	OR 238 to Commercial Driveway	C	C	
Central Avenue	SB	Commercial Driveway to McAndrews (does not intersect)	C	C	
Central Avenue	NB	McAndrews (does not intersect) to Commercial Driveway	C	C	

Segment LOS Output Summary

Roadway	Dir	From-To	Pedestrian LOS	Bicycle LOS	Transit LOS
Central Avenue	NB	Commercial Driveway to OR 238	C	C	
Central Avenue	NB	OR 238 to OR 99	C	C	
OR 99	EB	Table Rock Road to OR 238	E	D	
OR 99	WB	OR 238 to Table Roock Road	F	F	B
Court Street	SB	OR 238 to Ohio Street	E	F	D
Court Street	SB	Ohio Street to McAndrews Road	E	F	D
Riverside Avenue	NB	McAndrews Road to Ohio Street	F	F	B
Riverside Avenue	NB	Ohio Street to OR 238	F	F	B
Biddle Road	SB	Knutson Avenue to Commercial Driveway	E	D	
Biddle Road	SB	Commercial Driveway to Hilton Court	E	D	
Biddle Road	SB	Hilton Court to OR 62 (does not intersect)	C	F	
Biddle Road	SB	OR 62 (does not intersect) to Biddle Road jug handle	C	D	
Biddle Road	SB	Biddle Road jug handle to North of Morrow Road	C	F	
Biddle Road	SB	North of Morrow Road to Progress Drive	C	F	
Biddle Road	SB	Progress Drive to McAndrews Road	C	F	
Biddle Road	NB	McAndrews Road to Progress Drive	E	F	D
Biddle Road	NB	Progress Drive to Morrow Road	E	F	D
Biddle Road	NB	Morrow Road to Biddle Road jug handle	E	F	F
Biddle Road	NB	Biddle Road jug handle to OR 62 (does not intersect)	E	D	
Biddle Road	NB	OR 62 to Hilton Court	E	F	
Biddle Road	NB	Hilton Court to Commercial Driveway	E	F	
Biddle Road	NB	Hilton Court to Knutson Avenue	E	F	
Hilton Court	EB	Biddle Road to OR 62	B	C	
Hilton Court	WB	OR 62 to Biddle Road	B	C	
Biddle Road jug handle	SB	OR 62 to Biddle Road	C	B	
Biddle Road jug handle	NB	Biddle Road to OR 62	B	B	E
Bullock Road	SB	North IMSA Boundary to OR 62	B	C	
Bullock Road	NB	OR 62 to North IMSA Boundary	B	C	E
Poplar Drive	SB	OR 62 to Hilton Road	C	F	F
Poplar Drive	SB	Hilton Road to Fred Meyer Driveway	C	F	F
Poplar Drive	SB	Fred Meyer Driveway to South IMSA Boundary	C	F	
Poplar Drive	NB	South IMSA Bouundary to Fred Meyer Driveway	C	F	F

Segment LOS Output Summary

Roadway	Dir	From-To	Pedestrian LOS	Bicycle LOS	Transit LOS
Poplar Drive	NB	Fred Meyer Driveway to Holton Road	E	F	F
Poplar Drive	NB	Hilton Road to OR 62	E	F	F
Hilton Road	EB	Poplar Road to East IMSA Boundary	B	C	
Hilton Road	WB	East IMSA Boundary to Poplar Road	B	C	
Sky Park Drive	EB	OR 62 to Wittle Road	B	C	
Sky Park Drive	WB	Whittle Road to OR 62	B	C	
Whittle Avenue	SB	OR 62 to Sky Park Drive	B	C	
Whittle Avenue	SB	Sky Park Drive to United Way	B	C	
Whittle Avenue	NB	United Way to Sky Park Drive	B	C	
Whittle Avenue	NB	Sky Park Drive to OR 62	B	C	
Delta waters Road	SB	Commercial Driveway to Commercial Driveway	C	F	
Delta waters Road	SB	Commercial Driveway to OR 62	E	D	
Delta Waters Road	SB	OR 62 to Crater Lake Avenue	C	D	
Delta Waters Road	NB	Craster Lake Avenue to OR 62	C	D	B
Delta Waters Road	NB	OR 62 to Commercial Driveway	C	F	B
Delta Waters Road	NB	Commercial Driveway to Commercial Driveway	C	F	B

[This page left blank intentionally]

Appendix F Tech Memo #6: Proposed Plan and Code Amendments

[This page left blank intentionally]

MEMORANDUM

Technical Memorandum 6: Proposed Plan and Code Amendments (Task 8.1)

I-5 Exit 30 Interchange Area Management Plan (IAMP)

DATE	September 16, 2021
TO	Virginia Elandt, Oregon Department of Transportation Karl MacNair, City of Medford
FROM	Darci Rudzinski, Clinton "CJ" Doxsee, and Emma Porricolo, APG
CC	Matt Bell and Matt Hughart, Kittelson

1. INTRODUCTION

The purpose of the I-5 Exit 30 Interchange Area Management Plan (IAMP) is to maintain the function and safe operation of the interchange and the surrounding area for all travel modes. The IAMP is an outgrowth of the OR 62, I-5 to Dutton Road Final Environmental Impact Statement (FEIS), in which the preferred alternative is a split diamond interchange. The I-5 Exit 30 IAMP is a refinement of the FEIS, addressing key intersections with traffic impacts on the interchange, including some that were not evaluated in the FEIS. Those intersections and future development of properties surrounding the interchange and intersections identified have an impact on the interchange.

The function and the capacity of the interchange is well documented in the IAMP. The foundation for the proposed improvements in the IAMP is Policy 3C of the Oregon Highway Plan, "(*i)t is the policy of the State of Oregon to plan for and manage grade-separated interchange areas to ensure safe and efficient operation between connecting roadways*."

The draft IAMP identifies management and implementation strategies, some of which are anticipated to result in amendments to local policy and regulatory documents. This memorandum addresses policy steps for implementation consistent with the IAMP preferred alternative and identifies how local development ordinances can support planned transportation improvements associated with the interchange. Local comprehensive plans, transportation system plans (TSPs), and development codes have been reviewed for consistency with the draft IAMP. This document review and subsequent recommendations are for the jurisdictions involved in the IAMP – Rogue Valley Metropolitan Planning Organization (RVMPO), Jackson County, and the City of Medford.

Section 2 of this memorandum summarizes the proposed improvements in the IAMP. Section 3 describes the adoption process, and identifies how IAMP implementation will amend local plans. Section 4 identifies potential areas of local planning documents that will need to be consistent with IAMP recommendations. The details of both the potential local plan amendments and the timing for approval will need to be verified by City of Medford, Jackson County, and the RVMPO. Section 5 summarizes the necessary next steps for each jurisdiction to take towards adopting and implementing the IAMP.

2. IAMP RECOMMENDATIONS

The purpose of the I-5 Exit 30 IAMP is to maintain the function and safe operation of the interchange and the surrounding area for all travel modes. This section identifies recommended improvements to the interchange and local street network within the interchange management study area (IMSA). Elements of these improvements meet the goals of reducing congestion and increasing safety in and around the interchange. Most projects shown in the table below can completed prior to implementation of the FEIS split diamond interchange while the remaining projects (those shown highlighted in grey) should be implemented with the new interchange.

Project ID	Location	Improvement Description
I-1	OR 62-OR 238 / OR 99-Court Street-N Riverside Avenue (Big X)	Reconfigure the eastbound (OR 238) exclusive right-turn lane as a shared through/right-turn lane and construct a third, outside receiving lane on the east leg (OR 62).
I-2A	OR 62 / Target Entrance	Extend the westbound (OR 62) left-turn lane access by utilizing space within the existing raised median. May minimize potential safety deficiency related to queue spill back into the adjacent westbound through lanes.
I-2B	OR 62 / Target Entrance	Remove the westbound (OR 62) left-turn lane access to Target by filling in the raised median with concrete or landscaping. Increases intersection capacity to accommodate future traffic growth and eliminates potential safety deficiency related to queue spill back into the adjacent westbound through lanes.
I-3A	OR 62 / I-5 Southbound Ramp Terminal (prior to implementation of the FEIS)	Construct a second southbound (I-5 Off-Ramp) right-turn lane. Maintain existing multimodal infrastructure that serves people walking, biking, and taking transit.
I-3B	OR 62 / I-5 Southbound Ramp Terminal (with implementation of the FEIS)	Construct a second southbound (I-5 Off-Ramp) right-turn lane. Maintain existing multimodal infrastructure that serves people walking, biking, and taking transit.
I-4	OR 62 / I-5 Northbound Ramp Terminal	Make the westbound (OR 62) right-turn lane a free movement and construct a second receiving lane on the north leg (I-5 On-Ramp). Maintain existing multimodal infrastructure that serves people walking, biking, and taking transit.
I-5A	OR 62 / Bullock Road-Poplar Drive	Reconstruct the southbound Bullock Road and northbound Poplar Drive approaches to prohibit left-turn and through movements

Project ID	Location	Improvement Description
		and to provide dual right-turn lanes; triple right-turn lanes may be considered based on further evaluation. *Further analysis is needed to determine additional impacts to the local system.*
I-5B	OR 62 / Bullock Road-Poplar Drive	Reconfigure the southbound Bullock Road approach with channelized dual right-turn lanes, one through lane, and one left-turn lane – allow the right-turn lanes to overlap with non-conflicting left-turn movements; construct an eastbound (OR 62) right-turn lane; and construct a second eastbound (OR 62) left-turn lane and add a second receiving lane on the north leg (Bullock Road).
I-6	Crater Lake Highway / Delta Waters Road	Reconfigure the northbound Delta Waters Road approach to include dual left-turn lanes, one through lane, and construct a separate right-turn lane. Reconfigure the westbound Crater Lake Highway approach to include dual left-turn lanes.
R-1	I-5 Exit 30 Northbound Off-Ramp	Extend off-ramp gore approximately 475 feet south and widen off-ramp to provide additional queue storage for the OR 62 / I-5 Northbound Ramp Terminal signalized intersection.
M-1	OR 62: OR 99 to Bullock Road-Poplar Drive	Construct a shared-use path on the north side of OR 62 from OR 99 to Bullock Road consistent with Rogue Valley Active Transportation Plan (RVATP). Provide enhanced crossing treatments at major intersections. Provide wayfinding at major intersections. Reconfigure the bike lane on the south side of OR 62 to an 8-foot buffered bike lane and provide skip striping through intersections.
M-2	OR 62: Retail / Commercial Driveway to Delta Waters Road	Construct a shared-use path on the north side of OR 62 from retail/ commercial driveway (Starbucks), near the end of the existing shared-use path to Delta Waters Road, consistent with RVATP. Provide enhanced crossing treatments at major intersections. Provide wayfinding at major intersections. Reconfigure the bike lane on the south side of OR 62 to an 8-foot buffered bike lane and provide skip striping through intersections.

3. IAMP ADOPTION PROCESS

The IAMP will not be adopted by any jurisdiction at this time. Recommendations from the IAMP will be further analyzed under the OR 62 Corridor Plan, a project scheduled for 2022 – 2024. The draft IAMP ultimately will be presented to the Oregon Transportation Commission (OTC) for adoption as a state facility plan and amendment to the Oregon Highway Plan (OHP). Prior to adoption of the IAMP by the OTC, ODOT, City of Medford, Jackson County, and the RVMPO will work collaboratively on developing amendments to local policy documents that are necessary to support the proposed project and to

ensure recommendations are consistent with local plans and development codes. While both the State and the local government take action to adopt the recommendations of a facility plan, the processes for each are different, as are the roles and responsibilities at the two levels of government.

The OTC adoption will entail amending the OHP to include the OR 62 Corridor Plan as a state facility plan, including associated alternate mobility targets. Upon adoption, the OR 62 Corridor Plan becomes the planning document that governs future improvements in the defined interchange area. Future changes to local plans and development codes will need to be found consistent with the adopted the OR 62 Corridor Plan and alternate mobility targets.

All jurisdictions responsible for transportation and land use decisions in the vicinity of the interchange should memorialize their agreement with the policy foundation and conclusions of the IAMP, as verified in the upcoming OR 62 Corridor Plan. For local jurisdictions, specific elements that may modify local plans and policies include new transportation-related policies, access management requirements, and improvement projects on local roadways within the I-5 Exit 30 IAMP area. In addition, new ordinances or amendments to existing ordinances, resolutions, and Inter-Governmental Agreements (IGAs) may be required to ensure that the access management, land use management, and coordination elements of the IAMP are achieved. As necessary, IAMP monitoring and future updates are also addressed in the IAMP and policies to ensure so are recommended in this memorandum.

Amending local policy documents by adopting a facility plan as a refinement to an adopted TSP can ensure consistency between State and local plans. Amendments to a TSP, as the transportation element of the local comprehensive plan, require legislative plan amendment notice and adoption hearings before local Planning Commissions, City Council, and County Board of Commissioners. A public adoption process before the RVMPO Policy Committee would amend the Regional Transportation Plan.

4. OVERVIEW OF LOCAL PLANNING ACTIONS

As part of adoption, the I-5 Exit 30 IAMP recommendations will need to be further analyzed during the development of the OR 62 Corridor Plan and found to be consistent with local plans, including those governing transportation and land use planning in the City of Medford and Jackson County, as well as in the region, as overseen by the RVMPO. The recommendation is to further review the IAMP recommendations for consideration under the OR 62 Corridor Plan. The facility plan will be a refinement to locally adopted TSPs to ensure consistency between State and local plans. Amendments to a TSP, as the transportation element of the local comprehensive plan, requires legislative amendment notice and adoption hearings before local Planning Commissions, City Council, and County Board of Commissioners. A similar adoption process would amend the Regional Transportation Plan.

Through local adoption, jurisdictions are agreeing to the proposed improvements of the facility plan and any policies and objectives associated with updating and maintaining the interchange's function and capacity. Local plan amendments to implement the objectives and proposed projects in the I-5 Exit 30 IAMP can memorialize future intent to improve transportation conditions in the vicinity of the

interchange.[1] The following local amendments are recommended, pending IAMP review and refinement through the future OR 62 Corridor Plan process:

RVMPO

Once refined by the upcoming OR 62 Corridor Plan planning process and adopted, the IAMP will serve as the policy and planning document for transportation improvements within the interchange area. Update the RTP as follows to ensure consistency with the facility plan:

- Amend *Chapter 8.3: RTP Project List* to include the I-5 Exit 30 IAMP improvement(s) in the project list.
- Update associated maps as necessary.

Jackson County

Once refined by the upcoming OR 62 Corridor Plan planning process and adopted, the IAMP will serve as the policy and planning document for transportation improvements within the interchange area. Update the TSP as follows to ensure consistency with the facility plan:

- Amend TSP *Section 5* to include the IAMP in the list of ODOT IAMP Projects.
- Consider amending the TSP to include the following policy statement supporting the IAMP goals, objectives, and recommendations:
  Jackson County recognizes the importance of Interstate 5 and Oregon Highway 62 in the movement of people and goods to and from the region and is committed to protecting the function of the interchange as defined in the IAMP.

City of Medford

Once refined by the upcoming OR 62 Corridor Plan planning process and adopted, the IAMP will serve as the policy and planning document for transportation improvements within the interchange area. Update TSP Section 5 as follows to ensure consistency with the facility plan.

- Under *Projects on ODOT Facilities*, update the description of the OR 62 Bypass Project and amend Table 9, *OR 62 Corridor Projects in Medford*, to reflect the completion of the IAMP.
- Under ODOT Intersection Projects, describe IAMP-recommended improvements and append Table 12, *Other ODOT Roadway and Intersection Projects*.
- Consider amending the TSP to include the following policy statement supporting the IAMP goals, objectives, and recommendations:
  The primary function of the I-5 Exit 30 interchange is providing safe and efficient access to various land uses in its vicinity, including the commercial properties along OR 62, the Rogue Valley International-Medford Airport, and surrounding residences, as well as regional areas beyond the interchange. Anticipated growth within the City of Medford and other areas of Jackson County also relies on the interchange. The City of Medford will coordinate with ODOT in evaluating land use actions that could affect the function of an interchange.

[1] Note that many of the IAMP improvements are located on state facilities (e.g., interstate ramps, state highways, etc.), and therefore are subject to state policies and standards.

Proposed amendments to each local plan referenced above can be found in the attachment to this memorandum.

5. NEXT STEPS

Through the final stages of the IAMP draft document and review, ODOT, City of Medford, Jackson County, and RVMPO will work collaboratively on proposed improvements for further analysis and inclusion in an upcoming OR 62 Corridor Plan. In addition, future actions associated with the build phase(s) of the project will necessitate that ODOT work closely with the City of Medford and Jackson County to determine what local permits, if any, are needed to construct the proposed improvements described in the IAMP.

ATTACHMENT

LOCAL PLAN AMENDMENTS

The following amendments to local plans and codes are proposed. Text that is ~~struck-through~~ is proposed to be deleted. Underlined text indicates new language.

Rouge Valley MPO

RVMPO Regional Transportation Plan (RTP)

Chapter 8.3: RTP Project List

Chapter 8.3 of the Rouge Valley RTP includes the project list identifying all regional transportation actions anticipated to occur within the RVMPO planning area through 2042. It also includes Maps showing project locations by RTP number are located at the end of this chapter, beginning on page 8.18.

Table 8.3.1 Project List by Jurisdiction

Project Number	*Location*	*Description*	*Timing*	*Cost*	*Cost by Range*	*Funds Available*	*Federal Funds*	*Conformity Status*	*Within PM 10/CO Maintenance Areas*
ODOT									
~~903~~	*~~OR 62: I-5 to Dutton Rd. (Medford), ITA Phase~~*	*~~Right-of-way acquisition and construct phase funded by Oregon Jobs and Transportation Act, 2.76 miles~~*	*~~Short~~*	*~~$118,485,000~~*				*~~Non-Exempt~~*	*~~PM10/CO~~*
961	*I-5 Exit 30 IAMP*	*Split diamond interchange, bypass, and right-of-way acquisition*	*Long*	*$450,565,000*					
Medford									
~~5025~~	*~~Crater Lane at Delta Waters~~*	*~~Add EBL and WBL turn lanes and protect movements. Add EBR lane~~*						*~~5025~~*	*~~Crater Lane at Delta Waters~~*

[Amend Map 8.3.2 RTP Project Locations, Northern MPO Area on Page 8.19 to include the IAMP.]

Jackson County

Jackson County Transportation System Plan (2017)
Section 5 Transportation System Plan

PROJECTS ON ODOT FACILITIES

The Projects on ODOT Facilities project list identifies the transportation system improvement projects along ODOT facilities that were evaluated as part of the Alternatives Analysis for the TSP update. These projects are largely not identified in the existing Interchange Area Management Plans (IAMPs) or the Corridor Plans. Table 28 summarizes the Projects on ODOT Facilities project list for the Jackson County TSP update. As shown, the list includes a mix of roadway and intersection projects along ODOT facilities. The projects are organized based on the outcome of the prioritization process from highest priority score to lowest priority score based on the County's transportation system plan goals. Opportunities to implement the projects shown in Table 28 should be evaluated in coordination with ODOT.

ODOT Interchange Area Management Plan (IAMP) Projects
ODOT has completed ~~four~~ five Interchange Area Management Plans (IAMPs) within Jackson County and has ~~two~~ one in the plan development process. The following identifies ~~the~~ only those IAMPs and any identified projects on County facilities:

…

- ***I-5 Exit 24 (Fern Valley) IAMP (February 2011)** – This IAMP does not include any projects on County facilities or any projects in addition to the interchange improvements currently under construction.*
- ***I-5 Exit 30 (Medford) IAMP (TBD) –** This IAMP identifies recommended improvements to the split diamond interchange at Exit 30, with a bypass to OR 62 and improvements at several intersections along OR 62 in the vicinity of the interchange. Recommendations from this IAMP will be further analyzed under the OR 62 Corridor Plan, a project scheduled for 2022 – 2024, prior to state adoption as an amendment to the Oregon Highway Plan. Implementation on County roadways includes the reconstruction of turn lanes on Bullock Road and the Poplar Drive intersection.*
- *I-5 Exit 33 (Central Point) IAMP (June 2015) – This IAMP primarily identifies improvements to East Pine Street and its intersections, including the I-5 ramp terminals, to improve operations on E. Pine Street and …*

City of Medford

Medford Transportation System Plan

Section 5 Transportation System Plan

Table 8: Intersection Projects

Project #	*Location*	*Description*	*Tier*	*Timeframe*	*Cost ($1,000)*
I-72	*Crater Later Highway & Delta Waters Road*	*Install a second westbound left-turn lane on OR 62, a second northbound left-turn turn-lane on Delta Waters Road, and a separate northbound right-turn lane on Delta Waters Road*	*2*	*When warranted*	*$900*

Projects on ODOT Facilities

…

OR 62 Bypass Project

The OR 62 Bypass Project will result in a new four-lane access-controlled expressway from I-5 to OR 62 north of White City. Phase 1 ~~is under construction and~~, known as the JTA Phase, was completed in 2019 and is reflected in the TSP ~~maps~~. It ~~will~~ start<u>s</u> on OR 62 east of Bullock Road and Poplar Drive and extend<u>s</u> north on the west side of OR 62 up to Corey Road, north of the Medford city limits. ~~When the bypass opens, it will have~~ The <u>bypass</u> has a grade separated crossing at Vilas Road with no interchange. An interchange at Vilas Road was anticipated as part of Phase 1 but was not funded for construction with Phase 1 and is not currently in the financially constrained RTP. The Phase 2 improvements ~~are~~ documented in the OR 62: I-5 to Dutton Road Project Final Environmental Impact Statement (2013) ~~and~~ include <u>an</u> extension of the bypass further north from Corey Road to Dutton Road, north of White City, and a split-diamond interchange for ~~OR 62, the OR 62 Bypass, and~~ I-5 (exit 30). Interchange Area Management Plans ~~are planned~~ for a future interchange of the OR 62 Bypass and Vilas Road and for the ~~proposed~~ Exit 30 split-diamond interchange with the OR 62 Bypass <u>are complete</u>. <u>The preferred alternative of the Vilas interchange plan is to not build the interchange due to significant local network costs and impacts.</u> The <u>preferred alternative for the Exit 30</u> split-diamond interchange will result in reduced traffic volumes at the intersections of OR 62 at Biddle Road Ramp, Hilton Road, Poplar Drive and Bullock Road.

Table 9 OR 62 Corridor Projects in Medford

Project #	*Location*	*Description*	*Tier*	*Timeframe*	*Cost ($1,000)*
~~*OR62-1*~~	~~*OR62 Bypass/Vilas Road*~~	~~*Prepare and Interchange Area Management Plan for the planned interchange at OR 62 Bypass and Vilas Road*~~	~~*ODOT Tier 1*~~	~~*Near-term*~~	~~*$150*~~
~~*OR62-3*~~	~~*1-5/OR 62*~~	~~*Prepare an Interchange Area Management Plan for the planned split-diamond interchange at I-5/OR 62 that incorporates the OR 62 Bypass*~~	~~*ODOT Tier 1*~~	~~*Near-term*~~	~~*$300*~~
OR62-4	*I-5/OR 62*	*Construct a split-diamond interchange at I-5/OR 62/OR 62 Bypass*	*ODOT Tier 2*	*Long-term*	*$188-$440*

…

ODOT Intersection Projects

The following includes intersection projects on ODOT facilities that were identified through the TSP update process and refined~~. As described in Section 3 Existing Conditions and Future Needs Assessment, the following intersections require further analysis~~ as part of the I-5, Exit 30 ~~an~~ IAMP. As indicated below, a few of the intersections will require ~~and/or~~ an alternative mobility target.

…

- ~~***OR62 (Crater Lake Highway)/Bullock Road/Poplar Drive** - This intersection is projected to operate at a volume-to-capacity ratio above 1.0 with Phase 1 of the OR62 Bypass. ODOT has a split diamond interchange planned for the I-5/OR62 interchange as part of a future phase of the OR62 Bypass. This will significantly reduce the traffic volumes at this location and it is not included in the modeling for the TSP. ODOT will be conducting an IAMP at this location (Exit 30). This intersection may need an alternative mobility target until the split diamond interchange is considered part of the financially constrained Regional Transportation Plan (Project I-81).~~
- ~~***OR 99 (Pacific Highway)/Table Rock Road –** This intersection is projected to operate at a volume-to-capacity ratio above 1.0. It would be improved but still not meet ODOT's mobility targets by converting the second southbound left-turn lane to a shared through-left with split phasing. This intersection needs to be studied as part of the Exit 30 IAMP and may need alternative mobility target (Project I-79).~~
- ~~***OR99/OR62/OR238** - This intersection is projected to operate at a volume-to-capacity ratio above 1.0 . This intersection needs to be studied as part of the Exit 30 IAMP and may need alternative mobility target (Project I-80).~~
- ***OR 62-OR 238 / OR 99-Court Street-N Riverside Avenue (Big X)** – This intersection is forecast to operate at capacity by the year 2042 with or without the FEIS Split Diamond interchange project. To address this long-term intersection capacity constraint, an improvement plan has been identified that converts the eastbound right-turn lane into a shared through/right-turn lane. This*

improvement along with associated receiving lane and other signal modifications provides another lane for eastbound through traffic traveling from OR 238 to OR 62 without major intersection reconfiguration. The existing eastbound bike lane on OR 238 is relocated to the outside travel lane and becomes buffered. People biking eastbound are guided through the intersection as normal and across the Riverside Avenue turn-lane crosswalk. This will improve bicycle safety by reducing conflicts with vehicles and utilizing the signalized pedestrian crossing.

- ***OR 62 / Target Entrance*** *– This intersection is not expected to be impacted by the traffic pattern changes caused by the FEIS Split Diamond interchange. As such, there are no improvements that would specifically be necessary under an FEIS Split Diamond interchange improvement. However, this intersection is located within the immediate I-5 interchange functional area where private property accesses are ideally restricted or at least limited to right-in/right-out access. In these situations, IAMPs typically identify a range of intersection actions or modifications that could be implemented depending upon safety concerns or changing traffic profiles associated with modified land use patterns.*

  The OR 62/Target Entrance driveway currently accommodates left-in access off of OR 62. Under current traffic conditions, westbound left-turn demand into the Target driveway can occasionally back up and exceed the left-turn storage capacity in the existing median. Given the access is currently permitted and serving an active and foreseeably consistent land use, a near-term improvement has been identified that modifies the median to provide additional left-turn vehicle storage for current traffic demand. This relatively low-cost improvement could be implemented in the near-term under the existing land use pattern.

  In recognition that land uses and their associated traffic profiles can change over time, a potential access-restriction modification has been identified for the OR 62/Target Entrance that could be implemented under a future land use or traffic profile change. If determined to be warranted through a future safety analysis or development-based traffic impact study on the current Target property, the westbound left-turn movement could potentially be closed and the access limited to right-in/right-out access. Such a modification would eliminate a potential capacity or safety issue related to eastbound left-turning vehicles and allow ODOT to meet its access spacing standards within an interchange area.

- ***OR 62 / I-5 Southbound Ramp Terminal*** *– This intersection is a critical intersection serving both the I-5 and OR 62 corridors. Assuming anticipated levels of regional traffic growth without the FEIS Split Diamond interchange, the intersection is forecast to exceed its performance target by the year 2042. If the FEIS Split Diamond interchange improvements are constructed, the intersection is expected to experience significant traffic volume increases to certain approaches including the existing I-5 off-ramp. As such, the intersection is forecast to exceed its capacity. To address this long-term intersection capacity constraint, an improvement plan has been identified that widens the I-5 off-ramp to include a second southbound right-turn lane. Increasing the intersection's capacity can prevent potential safety issues with vehicle spillback onto I-5.*

- ***OR 62 / I-5 Northbound Ramp Terminal*** *– This intersection is another critical intersection serving both the I-5 and OR 62 corridors. Assuming anticipated levels of regional traffic growth without the FEIS Split Diamond interchange, the intersection is forecast to exceed its ODOT performance target by the year 2042. If the FEIS Split Diamond interchange improvements are constructed, the intersection is expected to experience increased traffic volumes and serve new movements.*

To address the forecast long-term intersection capacity constraint and better meet the demands associated with the FEIS Split Diamond interchange, an improvement plan has been identified that includes a new free westbound right-turn lane on OR 62, lane reassignments on the northbound on-ramp, and other affiliated geometric enhancements. The layout of these improvements will ultimately be determined through detailed design efforts during design phases of the FEIS Split Diamond interchange.

- ***OR 62 / Bullock Road-Poplar Drive*** *– This intersection is forecast to exceed its capacity by 2042 with or without the FEIS Split Diamond interchange. However, the intersection is expected to experience the greatest levels of traffic volume redistribution under an FEIS Split Diamond interchange. To address the various levels of anticipated operational challenges, two separate improvement concepts have been identified.*
    - *This first concept assumes FEIS Split Diamond interchange improvements are not constructed in the near- to mid-term horizon and local/regional traffic growth continues. To address the resulting capacity constraints, the Bullock Road and Poplar Drive approaches could be reconstructed to only allow right-turn movements onto OR 62 and left-turn movements from OR 62. This means that anyone needing to cross OR 62 or make left turns onto the highway would need to find alternate routes. The impacts associated with the re-routing of traffic from these turn restrictions has not been analyzed. Since this would be a temporary mitigation until the FEIS improvements are constructed, other solutions need to be studied.*
    - *This second concept assumes FEIS Split Diamond interchange improvements are constructed and traffic volumes redistribute accordingly. The resulting improvement plan would include a second eastbound left-turn lane and an exclusive eastbound right-turn lane are added to OR 62. Bullock Road is reconfigured to provide two channelized right-turn lanes (similar to the OR 62 / Delta Waters Road intersection), one through lane, and one left-turn lane.*
- ***I-5, Exit 30 Northbound Off-Ramp*** *– As traffic grows at the interchange with or without the FEIS Split Diamond interchange, vehicle queues on the northbound off-ramp are forecast to increase. To address the safety concerns associated with off-ramp queues spilling back to the I-5 mainlines, an improvement plan has been identified that extends and widens the off-ramp. This improvement would likely be constructed with the FEIS Split Diamond interchange or when vehicle queues show signs of extending onto the I-5 mainline.*
- ***Multimodal Improvements*** *– Today, bike lanes and sidewalks are provided along both sides of OR 62 through most of the study area. However, the existing facilities in combination with the level of traffic volumes, number of travel lanes, and posted speed limits create a stressful environment for people walking and biking. This stressful environment will only worsen as traffic volumes grow and lanes are added at intersections. A continuous shared-use path has been identified along the north side of OR 62 and the existing bike lane on the south side is continuously buffered. Enhanced crossing treatments and signage would also be provided at major intersections and pedestrian-scale lighting should be added to the route.*

Table 12 summarizes the above intersection projects ~~along with one safety project identified in the Jackson County TSP~~.

Other ODOT Roadway Projects

Table 12 also identifies two urban upgrade projects on ODOT facilities that are not identified in any of the corridor projects described above. These include OR 99 (North Pacific Highway) north of OR 62 and OR 238 (Rossanley Drive) near the western city limits.

Table 12 Other ODOT Roadway and Intersection Projects

ODOT Intersection Projects					
Project #	*Location*	*Description*	*Tier*	*Timeframe*	*Cost ($1,000)*
…					
I85	OR 62-OR 238 / OR 99-Court Street-N Riverside Avenue (Big X)	Reconfigure the eastbound (OR 238) exclusive right-turn lane as a shared through/right-turn lane and construct a third, outside receiving lane on the east leg (OR 62).	*2*	*TBD*	*$550*
I86	OR 62 / Target Entrance	Extend the westbound (OR 62) left-turn lane access by utilizing space within the existing raised median. May minimize potential safety deficiency related to queue spill back into the adjacent westbound through lanes.	*2*	*TBD*	*$140*
I87	OR 62 / Target Entrance	Remove the westbound (OR 62) left-turn lane access to Target by filling in the raised median with concrete or landscaping. Increases intersection capacity to accommodate future traffic growth and eliminates potential safety deficiency related to queue spill back into the adjacent westbound through lanes.	*2*	*TBD*	*$225*
I88	OR 62 / I-5 Southbound Ramp Terminal	Construct a second southbound (I-5 Off-Ramp) right-turn lane. Maintain existing multimodal infrastructure that serves people walking, biking, and taking transit.	*2*	*TBD*	*$925*
I89	OR 62 / I-5 Northbound Ramp Terminal	Make the westbound (OR 62) right-turn lane a free movement and construct a second receiving lane on the north leg (I-5 On-Ramp). Maintain existing multimodal infrastructure that serves people walking, biking, and taking transit.	*2*	*TBD*	*TBD*
I90	OR 62 / Bullock Road-Poplar Drive (Before FEIS Implementation)	Reconstruct the southbound Bullock Road and northbound Poplar Drive approaches to prohibit left-turn and through movements and to provide dual right-turn lanes; triple right-turn	*2*	*TBD*	*$750*

		lanes may be considered based on further evaluation. *Further analysis is needed to determine additional impacts to the local system.*			
I91	OR 62 / Bullock Road-Poplar Drive (After FEIS Implementation)	Reconfigure the southbound Bullock Road approach with channelized dual right-turn lanes, one through lane, and one left-turn lane – allow the right-turn lanes to overlap with non-conflicting left-turn movements; construct an eastbound (OR 62) right-turn lane; and construct a second eastbound (OR 62) left-turn lane and add a second receiving lane on the north leg (Bullock Road).	*2*	*TBD*	*$1,350*
I93	I-5 Exit 30 Northbound Off-Ramp	Extend off-ramp gore approximately 475 feet south and widen off-ramp to provide additional queue storage for the OR 62 / I-5 Northbound Ramp Terminal signalized intersection.	*2*	*TBD*	*$1,900*
I94	OR 62: OR 99 to Bullock Road-Poplar Drive	Construct a shared-use path on the north side of OR 62 from OR 99 to Bullock Road consistent with Rogue Valley Active Transportation Plan (RVATP). Provide enhanced crossing treatments at major intersections. Provide wayfinding at major intersections. Reconfigure the bike lane on the south side of OR 62 to an 8-foot buffered bike lane and provide skip striping through intersections.	*2*	*TBD*	*$2,700*
195	OR 62: Retail / Commercial Driveway to Delta Waters Road	Construct a shared-use path on the north side of OR 62 from retail/ commercial driveway (Starbucks), near the end of the existing shared-use path to Delta Waters Road, consistent with RVATP. Provide enhanced crossing treatments at major intersections. Provide wayfinding at major intersections. Reconfigure the bike lane on the south side of OR 62 to an 8-foot buffered bike lane and provide skip striping through intersections.	*2*	*TBD*	*$200*
…					

[Update Maps in Figure 19 and 20 showing project locations for I-5 Exit 30 IAMP Projects]

Appendix G Preferred Solutions Traffic Operations Worksheets

[This page left blank intentionally]

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	438	900	55	110	1231	617	83	904	116	441	1047	593
Future Volume (veh/h)	438	900	55	110	1231	617	83	904	116	441	1047	593
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.97	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1736	1723	1736	1723	1736	1723	1695	1709	1736	1709	1723
Adj Flow Rate, veh/h	461	947	58	116	1296	649	87	952	122	464	1102	624
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	1	2	1	2	1	2	4	3	1	3	2
Cap, veh/h	503	1183	72	138	1412	1160	99	1044	133	502	1130	736
Arrive On Green	0.16	0.38	0.38	0.08	0.30	0.30	0.06	0.25	0.25	0.16	0.35	0.35
Sat Flow, veh/h	3183	3155	193	1654	4703	2511	1641	4151	530	3208	3247	1452
Grp Volume(v), veh/h	461	495	510	116	1296	649	87	707	367	464	1102	624
Grp Sat Flow(s),veh/h/ln	1591	1650	1698	1654	1568	1256	1641	1543	1595	1604	1624	1452
Q Serve(g_s), s	19.2	36.1	36.1	9.3	35.9	25.5	7.1	30.0	30.1	19.2	45.1	46.9
Cycle Q Clear(g_c), s	19.2	36.1	36.1	9.3	35.9	25.5	7.1	30.0	30.1	19.2	45.1	46.9
Prop In Lane	1.00		0.11	1.00		1.00	1.00		0.33	1.00		1.00
Lane Grp Cap(c), veh/h	503	619	637	138	1412	1160	99	776	401	502	1130	736
V/C Ratio(X)	0.92	0.80	0.80	0.84	0.92	0.56	0.88	0.91	0.91	0.92	0.98	0.85
Avail Cap(c_a), veh/h	508	619	637	157	1413	1160	99	776	401	502	1130	736
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.9	37.6	37.6	60.9	45.5	26.8	62.9	49.0	49.0	56.0	43.3	28.8
Incr Delay (d2), s/veh	21.2	7.9	7.7	28.1	10.0	0.8	54.2	14.7	24.9	22.7	20.9	9.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.1	15.7	16.1	5.0	15.1	7.7	4.4	13.0	14.7	9.3	21.0	18.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	77.1	45.5	45.3	89.0	55.5	27.6	117.1	63.7	73.9	78.8	64.2	37.8
LnGrp LOS	E	D	D	F	E	C	F	E	E	E	E	D
Approach Vol, veh/h		1466			2061			1161			2190	
Approach Delay, s/veh		55.3			48.6			70.9			59.8	
Approach LOS		E			D			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.7	55.0	12.6	51.4	25.8	45.0	25.6	38.4
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	12.8	49.2	8.1	46.9	21.5	40.5	21.1	33.9
Max Q Clear Time (g_c+I1), s	11.3	38.1	9.1	48.9	21.2	37.9	21.2	32.1
Green Ext Time (p_c), s	0.0	8.6	0.0	0.0	0.1	2.6	0.0	1.0

Intersection Summary	
HCM 6th Ctrl Delay	57.4
HCM 6th LOS	E

Intersection	
Int Delay, s/veh	9.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			↑↑↑			↑↑
Traffic Vol, veh/h	0	127	1995	90	123	2090
Future Vol, veh/h	0	127	1995	90	123	2090
Conflicting Peds, #/hr	0	0	0	4	4	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	100	250	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	1	2	0	1	3
Mvmt Flow	0	135	2122	96	131	2223

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	1065	0	0	2222	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.12	-	-	5.32	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.91	-	-	3.11	-
Pot Cap-1 Maneuver	0	189	-	-	~ 98	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	188	-	-	~ 98	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	61.8	0	15.8
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	188	~ 98	-
HCM Lane V/C Ratio	-	-	0.719	1.335	-
HCM Control Delay (s)	-	-	61.8	283.8	-
HCM Lane LOS	-	-	F	F	-
HCM 95th %tile Q(veh)	-	-	4.5	9.4	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	1.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↱	↑↑↑	↱		↑↑
Traffic Vol, veh/h	0	127	1995	90	0	2090
Future Vol, veh/h	0	127	1995	90	0	2090
Conflicting Peds, #/hr	0	0	0	4	4	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	100	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	1	2	0	1	3
Mvmt Flow	0	135	2122	96	0	2223

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	1065	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.12	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.91	-	-	-	-
Pot Cap-1 Maneuver	0	189	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	188	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	61.8	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	188	-
HCM Lane V/C Ratio	-	-	0.719	-
HCM Control Delay (s)	-	-	61.8	-
HCM Lane LOS	-	-	F	-
HCM 95th %tile Q(veh)	-	-	4.5	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	440	1	231	0	0	0	0	1639	483	0	1982	1153
Future Volume (vph)	440	1	231	0	0	0	0	1639	483	0	1982	1153
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.5	4.5	4.5					4.5	4.5		4.5	4.0
Lane Util. Factor	0.95	0.95	0.88					0.91	1.00		0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00					1.00	0.97		1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00					1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85					1.00	0.85		1.00	0.85
Flt Protected	0.95	0.95	1.00					1.00	1.00		1.00	1.00
Satd. Flow (prot)	1533	1538	2493					4684	1407		3228	1420
Flt Permitted	0.95	0.95	1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	1533	1538	2493					4684	1407		3228	1420
Peak-hour factor, PHF	0.90	0.90	0.90	0.96	0.96	0.96	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	489	1	257	0	0	0	0	1725	508	0	2086	1214
RTOR Reduction (vph)	0	0	29	0	0	0	0	0	60	0	0	0
Lane Group Flow (vph)	244	246	228	0	0	0	0	1725	448	0	2086	1214
Confl. Peds. (#/hr)							12		7	7		12
Confl. Bikes (#/hr)									2			1
Heavy Vehicles (%)	3%	0%	5%	0%	0%	0%	0%	2%	3%	100%	3%	2%
Turn Type	Perm	NA	Perm					NA	Perm		NA	Free
Protected Phases		4						2			6	
Permitted Phases	4		4						2			Free
Actuated Green, G (s)	24.0	24.0	24.0					97.0	97.0		97.0	130.0
Effective Green, g (s)	24.0	24.0	24.0					97.0	97.0		97.0	130.0
Actuated g/C Ratio	0.18	0.18	0.18					0.75	0.75		0.75	1.00
Clearance Time (s)	4.5	4.5	4.5					4.5	4.5		4.5	
Vehicle Extension (s)	2.5	2.5	2.5					4.2	4.2		4.2	
Lane Grp Cap (vph)	283	283	460					3494	1049		2408	1420
v/s Ratio Prot								0.37			0.65	
v/s Ratio Perm	0.16	0.16	0.09						0.32			c0.85
v/c Ratio	0.86	0.87	0.50					0.49	0.43		0.87	0.85
Uniform Delay, d1	51.4	51.5	47.6					6.6	6.1		11.8	0.0
Progression Factor	1.00	1.00	1.00					1.00	1.00		0.29	1.00
Incremental Delay, d2	22.4	23.3	0.6					0.5	1.3		1.4	2.1
Delay (s)	73.8	74.7	48.2					7.1	7.4		4.8	2.1
Level of Service	E	E	D					A	A		A	A
Approach Delay (s)		65.3			0.0			7.2			3.8	
Approach LOS		E			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	12.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	80.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	755	1	622	0	0	0	0	1639	483	0	1591	925
Future Volume (vph)	755	1	622	0	0	0	0	1639	483	0	1591	925
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.5	4.5	4.5					4.5	4.5		4.5	4.0
Lane Util. Factor	0.95	0.95	0.88					0.91	1.00		0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00					1.00	0.97		1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00					1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85					1.00	0.85		1.00	0.85
Flt Protected	0.95	0.95	1.00					1.00	1.00		1.00	1.00
Satd. Flow (prot)	1533	1537	2493					4684	1406		3228	1420
Flt Permitted	0.95	0.95	1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	1533	1537	2493					4684	1406		3228	1420
Peak-hour factor, PHF	0.90	0.90	0.90	0.96	0.96	0.96	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	839	1	691	0	0	0	0	1725	508	0	1675	974
RTOR Reduction (vph)	0	0	26	0	0	0	0	0	61	0	0	0
Lane Group Flow (vph)	419	421	665	0	0	0	0	1725	447	0	1675	974
Confl. Peds. (#/hr)							12		7	7		12
Confl. Bikes (#/hr)									2			1
Heavy Vehicles (%)	3%	0%	5%	0%	0%	0%	0%	2%	3%	100%	3%	2%
Turn Type	Perm	NA	Perm					NA	Perm		NA	Free
Protected Phases		4						2			6	
Permitted Phases	4		4						2			Free
Actuated Green, G (s)	40.1	40.1	40.1					80.9	80.9		80.9	130.0
Effective Green, g (s)	40.1	40.1	40.1					80.9	80.9		80.9	130.0
Actuated g/C Ratio	0.31	0.31	0.31					0.62	0.62		0.62	1.00
Clearance Time (s)	4.5	4.5	4.5					4.5	4.5		4.5	
Vehicle Extension (s)	2.5	2.5	2.5					4.2	4.2		4.2	
Lane Grp Cap (vph)	472	474	768					2914	874		2008	1420
v/s Ratio Prot								0.37			c0.52	
v/s Ratio Perm	0.27	0.27	0.27						0.32			0.69
v/c Ratio	0.89	0.89	0.87					0.59	0.51		0.83	0.69
Uniform Delay, d1	42.8	42.8	42.4					14.7	13.6		19.3	0.0
Progression Factor	1.00	1.00	1.00					1.00	1.00		0.42	1.00
Incremental Delay, d2	17.9	17.9	9.9					0.9	2.1		2.7	1.7
Delay (s)	60.7	60.7	52.4					15.6	15.7		10.7	1.7
Level of Service	E	E	D					B	B		B	A
Approach Delay (s)		56.9			0.0			15.6			7.4	
Approach LOS		E			A			B			A	

Intersection Summary			
HCM 2000 Control Delay	22.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	78.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	443	202	483	0	1411	983	0	2073	1131
Future Volume (vph)	0	0	0	443	202	483	0	1411	983	0	2073	1131
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)				4.5	4.5			4.5	4.0		4.5	4.0
Lane Util. Factor				0.91	0.91			0.91	1.00		0.91	1.00
Frpb, ped/bikes				1.00	0.98			1.00	0.98		1.00	0.98
Flpb, ped/bikes				1.00	1.00			1.00	1.00		1.00	1.00
Frt				1.00	0.90			1.00	0.85		1.00	0.85
Flt Protected				0.95	1.00			1.00	1.00		1.00	1.00
Satd. Flow (prot)				1441	2693			4684	1387		4638	1403
Flt Permitted				0.95	1.00			1.00	1.00		1.00	1.00
Satd. Flow (perm)				1441	2693			4684	1387		4638	1403
Peak-hour factor, PHF	0.98	0.98	0.98	0.88	0.88	0.88	0.93	0.93	0.93	0.97	0.97	0.97
Adj. Flow (vph)	0	0	0	503	230	549	0	1517	1057	0	2137	1166
RTOR Reduction (vph)	0	0	0	0	16	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	448	818	0	0	1517	1057	0	2137	1166
Confl. Peds. (#/hr)	12					12	24		1	1		24
Confl. Bikes (#/hr)									1			1
Heavy Vehicles (%)	0%	0%	0%	5%	0%	5%	0%	2%	5%	0%	3%	4%
Turn Type				Perm	NA			NA	Free		NA	Free
Protected Phases					8			2			6	
Permitted Phases				8					Free			Free
Actuated Green, G (s)				45.4	45.4			75.6	130.0		75.6	130.0
Effective Green, g (s)				45.4	45.4			75.6	130.0		75.6	130.0
Actuated g/C Ratio				0.35	0.35			0.58	1.00		0.58	1.00
Clearance Time (s)				4.5	4.5			4.5			4.5	
Vehicle Extension (s)				2.5	2.5			4.2			4.2	
Lane Grp Cap (vph)				503	940			2723	1387		2697	1403
v/s Ratio Prot								0.32			0.46	
v/s Ratio Perm				0.31	0.30				0.76			c0.83
v/c Ratio				0.89	1.16dr			0.56	0.76		0.79	0.83
Uniform Delay, d1				40.0	39.6			16.8	0.0		21.1	0.0
Progression Factor				1.00	1.00			0.75	1.00		0.93	1.00
Incremental Delay, d2				17.6	8.8			0.6	3.0		1.9	4.6
Delay (s)				57.6	48.4			13.2	3.0		21.5	4.6
Level of Service				E	D			B	A		C	A
Approach Delay (s)		0.0			51.6			9.0			15.6	
Approach LOS		A			D			A			B	

Intersection Summary			
HCM 2000 Control Delay	19.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	76.1%	ICU Level of Service	D
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	221	0	0	444	60	2361	248	410	2458	404
Future Volume (vph)	0	0	221	0	0	444	60	2361	248	410	2458	404
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)			4.5			4.5	4.5	4.5		4.5	4.5	4.5
Lane Util. Factor			0.88			0.88	1.00	0.91		*1.00	0.91	1.00
Frpb, ped/bikes			0.97			1.00	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes			1.00			1.00	1.00	1.00		1.00	1.00	1.00
Frt			0.85			0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected			1.00			1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)			2456			2592	1630	4616		3325	4684	1415
Flt Permitted			1.00			1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)			2456			2592	1630	4616		3325	4684	1415
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	230	0	0	462	62	2459	258	427	2560	421
RTOR Reduction (vph)	0	0	206	0	0	275	0	9	0	0	0	109
Lane Group Flow (vph)	0	0	24	0	0	188	63	2708	0	427	2560	312
Confl. Peds. (#/hr)			7	7					1	1		
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	2%	1%	3%	0%	1%	1%	2%	2%	1%	0%	2%	3%
Turn Type			Perm			Perm	Prot	NA		Prot	NA	Perm
Protected Phases							5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)			12.2			12.2	8.0	85.3		19.0	96.3	96.3
Effective Green, g (s)			12.2			12.2	8.0	85.3		19.0	96.3	96.3
Actuated g/C Ratio			0.09			0.09	0.06	0.66		0.15	0.74	0.74
Clearance Time (s)			4.5			4.5	4.5	4.5		4.5	4.5	4.5
Vehicle Extension (s)			2.5			2.5	2.5	4.2		2.5	4.2	4.2
Lane Grp Cap (vph)			230			243	100	3028		485	3469	1048
v/s Ratio Prot							0.04	c0.59		c0.13	0.55	
v/s Ratio Perm			0.01			c0.07						0.22
v/c Ratio			0.11			0.78	0.63	0.89		0.88	0.74	0.30
Uniform Delay, d1			53.9			57.6	59.6	18.6		54.4	9.6	5.6
Progression Factor			1.00			1.00	1.05	0.56		1.00	1.00	1.00
Incremental Delay, d2			0.1			13.8	9.3	4.0		16.8	1.4	0.7
Delay (s)			54.1			71.3	71.7	14.4		71.1	11.1	6.3
Level of Service			D			E	E	B		E	B	A
Approach Delay (s)		54.1			71.3			15.7			18.0	
Approach LOS		D			E			B			B	

Intersection Summary			
HCM 2000 Control Delay	21.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	79.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	295	203	442	683	242	254	181	1243	321	263	1493	216
Future Volume (veh/h)	295	203	442	683	242	254	181	1243	321	263	1493	216
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1736	1709	1750	1736	1736	1723	1723	1736	1750	1723	1709
Adj Flow Rate, veh/h	307	211	460	711	252	265	189	1295	334	274	1555	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	1	3	0	1	1	2	2	1	0	2	3
Cap, veh/h	692	271	583	774	297	249	237	1768	553	325	1875	
Arrive On Green	0.22	0.16	0.16	0.23	0.17	0.17	0.07	0.38	0.38	0.10	0.40	0.00
Sat Flow, veh/h	3183	1736	2515	3333	1736	1453	3183	4703	1470	3333	4703	1448
Grp Volume(v), veh/h	307	211	460	711	252	265	189	1295	334	274	1555	0
Grp Sat Flow(s),veh/h/ln	1591	1736	1257	1667	1736	1453	1591	1568	1470	1667	1568	1448
Q Serve(g_s), s	10.9	15.2	20.3	27.1	18.3	17.8	7.6	30.8	23.8	10.5	38.6	0.0
Cycle Q Clear(g_c), s	10.9	15.2	20.3	27.1	18.3	17.8	7.6	30.8	23.8	10.5	38.6	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	692	271	583	774	297	249	237	1768	553	325	1875	
V/C Ratio(X)	0.44	0.78	0.79	0.92	0.85	1.07	0.80	0.73	0.60	0.84	0.83	
Avail Cap(c_a), veh/h	692	271	583	821	441	369	267	1768	553	354	1875	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	44.1	52.7	47.1	48.7	52.3	34.4	59.2	34.9	32.8	57.7	35.1	0.0
Incr Delay (d2), s/veh	0.3	12.9	7.0	14.6	8.5	60.2	13.3	2.7	4.8	15.3	4.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	7.5	7.5	12.7	8.6	10.4	3.5	12.0	9.1	5.0	14.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.4	65.6	54.1	63.3	60.7	94.6	72.5	37.7	37.6	73.0	39.5	0.0
LnGrp LOS	D	E	D	E	E	F	E	D	D	E	D	
Approach Vol, veh/h		978			1228			1818			1829	A
Approach Delay, s/veh		53.5			69.6			41.3			44.5	
Approach LOS		D			E			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.2	53.4	34.7	24.8	14.2	56.3	32.7	26.7
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	13.8	45.9	32.0	20.3	10.9	48.8	19.3	33.0
Max Q Clear Time (g_c+I1), s	12.5	32.8	29.1	22.3	9.6	40.6	12.9	20.3
Green Ext Time (p_c), s	0.2	11.7	1.1	0.0	0.1	7.6	0.8	1.9

Intersection Summary	
HCM 6th Ctrl Delay	50.3
HCM 6th LOS	D

Notes

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	86	380	695	340	411	122	662	642	379	298	937	85
Future Volume (veh/h)	86	380	695	340	411	122	662	642	379	298	937	85
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1709	1736	1736	1723	1709	1750	1736	1682	1723	1709	1709	1750
Adj Flow Rate, veh/h	86	380	695	340	411	122	662	642	379	298	937	85
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	3	1	1	2	3	0	1	5	2	3	3	0
Cap, veh/h	100	653	1055	389	442	382	680	1370	625	350	985	89
Arrive On Green	0.06	0.20	0.20	0.12	0.26	0.26	0.21	0.43	0.43	0.11	0.33	0.33
Sat Flow, veh/h	1628	3299	2557	3183	1709	1474	3208	3195	1458	3158	3006	273
Grp Volume(v), veh/h	86	380	695	340	411	122	662	642	379	298	506	516
Grp Sat Flow(s),veh/h/ln	1628	1650	1279	1591	1709	1474	1604	1598	1458	1579	1624	1655
Q Serve(g_s), s	6.7	13.3	25.2	13.4	29.9	8.5	26.1	18.3	25.6	11.8	38.8	38.8
Cycle Q Clear(g_c), s	6.7	13.3	25.2	13.4	29.9	8.5	26.1	18.3	25.6	11.8	38.8	38.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.16
Lane Grp Cap(c), veh/h	100	653	1055	389	442	382	680	1370	625	350	532	542
V/C Ratio(X)	0.86	0.58	0.66	0.87	0.93	0.32	0.97	0.47	0.61	0.85	0.95	0.95
Avail Cap(c_a), veh/h	100	653	1055	440	470	405	680	1370	625	481	539	550
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.3	46.3	30.5	54.9	46.1	38.2	49.8	26.0	28.1	55.6	41.8	41.8
Incr Delay (d2), s/veh	47.9	0.9	1.2	14.8	23.6	0.2	27.8	0.1	1.2	8.0	26.6	26.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	5.5	8.7	6.1	15.4	3.1	12.8	6.7	9.0	5.0	18.8	19.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	107.1	47.2	31.7	69.8	69.7	38.3	77.7	26.1	29.3	63.6	68.4	68.1
LnGrp LOS	F	D	C	E	E	D	E	C	C	E	E	E
Approach Vol, veh/h		1161			873			1683			1320	
Approach Delay, s/veh		42.4			65.4			47.1			67.2	
Approach LOS		D			E			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.1	60.0	19.6	29.7	31.0	47.1	11.8	37.5
Change Period (Y+Rc), s	4.0	* 5.4	4.0	4.5	4.0	* 5.4	4.0	4.5
Max Green Setting (Gmax), s	19.4	* 50	17.6	25.2	27.0	* 42	7.8	35.0
Max Q Clear Time (g_c+I1), s	13.8	27.6	15.4	27.2	28.1	40.8	8.7	31.9
Green Ext Time (p_c), s	0.3	4.0	0.2	0.0	0.0	0.9	0.0	0.9

Intersection Summary	
HCM 6th Ctrl Delay	54.4
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Edition Analysis July 2021
Based on ODOT Analysis Procedures Manual, Volume 2, Chapter 13

INTERSECTION	I-1: OR 238-OR 62/OR 99-Court Road-N Riverside Drive				
CYCLE LENGTH	135				
TOTAL LOST TIME	18				
TOTAL LOST TIME (2025)					
CRITICAL MOVEMENTS	**EB (L)**	**WB (T)**	**NB (TR)**	**SB (L)**	
	2042 FUTURE PM - PREFERRED SOLUTION				
Adj Flow Rate, (veh/h)	461	1296	1074	464	
Sat Flow (veh/h)	3183	4703	4681	3208	
Flow Ratio	0.14	0.28	0.23	0.14	
CRITICAL INTERSECTION V/C RATIO	**0.92**				

INTERSECTION	I-5B: OR 62/Bullock Road-Poplar Drive				
CYCLE LENGTH	130				
TOTAL LOST TIME	18				
TOTAL LOST TIME (2025)					
CRITICAL MOVEMENTS	**EB (T)**	**WB (L)**	**NB (L)**	**SB (T)**	
	2042 FUTURE PM - PREFERRED SOLUTION				
Adj Flow Rate, (veh/h)	211	711	189	1555	
Sat Flow (veh/h)	1736	3333	3183	4703	
Flow Ratio	0.12	0.21	0.06	0.33	
CRITICAL INTERSECTION V/C RATIO	**0.84**				

INTERSECTION	I-6: OR 62/Delta Waters Road				
CYCLE LENGTH	130				
TOTAL LOST TIME	17.9				
TOTAL LOST TIME (2025)					
CRITICAL MOVEMENTS	**EB (T)**	**WB (L)**	**NB (L)**	**SB (TR)**	
	2042 FUTURE PM - PREFERRED SOLUTION				
Adj Flow Rate, (veh/h)	380	340	662	1022	
Sat Flow (veh/h)	3299	3183	3208	3279	
Flow Ratio	0.12	0.11	0.21	0.31	
CRITICAL INTERSECTION V/C RATIO	**0.86**				*LOS D*