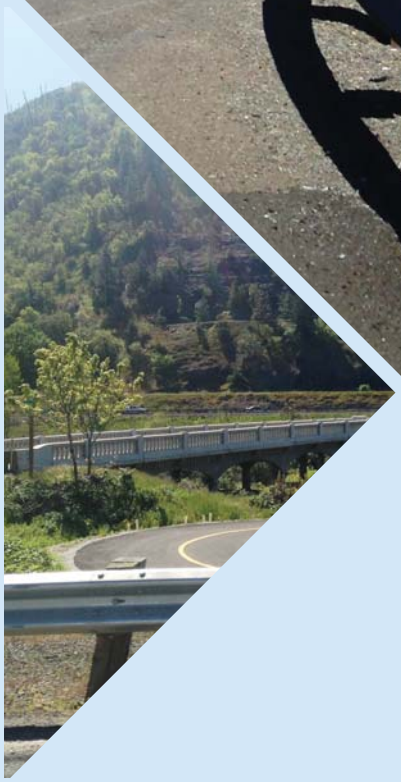

Interchange Area Management Plans VOLUME 2

I-5 Exits 40 and 43

Prepared For:
Oregon Department of Transportation

Prepared By:
David Evans and Associates, Inc.

March 2016

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I-5 EXITS 40 & 43

INTERCHANGE AREA MANAGEMENT PLANS

VOLUME 2

Prepared for

Oregon Department of Transportation, Region 3
3500 NW Stewart Parkway
Roseburg, Oregon 97470

Prepared by

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MARCH 2016

ACKNOWLEDGEMENTS

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VOLUME 2: REFERENCE MATERIAL (COMPANION DOCUMENT)

Technical Memorandum #1: Review of Plans and Policies

Technical Memorandum #2: Goals, Objectives, and Evaluation Criteria

Technical Memorandum #3: Study Area Inventory

Technical Memorandum #4: Existing Conditions Analysis

Technical Memorandum #5: Future Baseline Traffic Conditions

Technical Memorandum #6: Alternatives Analysis

Technical Memorandum #7: Potential Management Actions*

Technical Memorandum #8: Policy and Code Amendments*

Technical Memorandum #9: Preferred Concept

Comment Log – Final Draft IAMP

**Because the analysis found no capacity or operational issues within the Interchange Management Study Areas, this memorandum was not required for inclusion in the IAMPs.*

This companion document to the I-5 Exits 40 & 43 Interchange Area Management Plans contains the technical memorandums and analysis that was prepared during the development of the plans. The IAMPs have been revised and refined several times since these documents were finalized and may include some new data, projects, and ideas that are not addressed in the reference material.

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I-5 Exits 40 and 43 (Gold Hill)
Interchange Area Management Plans

Technical Memorandum #1
Review of Plans and Policies

Prepared for

Oregon Department of Transportation, Region 3
3500 NW Stewart Parkway
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TABLE OF CONTENTS

1. REVIEW OF PLANS AND POLICIES 1
1.1. Review of Adopted State Plans 1
1.1.1. Statewide Planning Goals 2
1.1.2. Oregon Transportation Plan (2006) 7
1.1.3. Oregon Highway Plan (Updated 2012) 9
1.1.4. Oregon Bicycle and Pedestrian Plan (updated 2011) 13
1.1.5. Oregon Freight Plan (2011) 14
1.1.6. Oregon Public Transportation Plan (1997) 15
1.1.7. OAR Chapter 731 Division 15 16
1.1.8. OAR Chapter 734 Division 51 (Division 51) 17
1.1.9. OAR 660 Division 12 18
1.1.10. ODOT Right-of Way-Section 19
1.1.11. ODOT Title VI 20
1.1.12. Interchange Area Management Plan Guidelines (2011) 21
1.1.13. Highway Design Manual (HDM) 21
1.1.14. Statewide Transportation Improvement Program (STIP) 21
1.1.15. Interstate 5 State of the Interstate Report 22
1.2. Local Plans and Ordinances 22
1.2.1. Jackson County Comprehensive Plan 23
1.2.2. Jackson County Transportation System Plan 24
1.2.3. Jackson County Land Development Ordinance 27
1.2.4. City of Gold Hill Comprehensive Plan (1984) 28
1.2.5. City of Gold Hill/Jackson County Urban Growth Boundary and Policy Agreement 30
1.2.6. Rogue River Recreational Corridor and Greenway Maps 31
1.3. Middle Rogue Metropolitan Planning Organization 31
1.3.1. MRMPO Regional Transportation Plan (RTP) 32
1.3.2. MRMPO Metropolitan Transportation Improvement Program (MTIP) 32

1. REVIEW OF PLANS AND POLICIES

The purpose of this review is to provide a regulatory framework for the Interchange Area Management Plan (IAMP) by identifying the required state and local plans with which the IAMP must be compatible or consistent with as required by state law and Oregon Department of Transportation (ODOT) policy. This review will be used to guide development of the IAMP's goals and objectives and decisions regarding selection of preferred alternatives, management actions and land use measures. The interchange management study areas (IMSAs) for I-5 Exits 40 and 43 are shown in Figure 1-1a and Figure 1-1b, respectively.

After the IAMP draft is completed, this review will be used to make findings of compatibility and compliance with state and local policies and regulations. It will be used to identify where policy changes and plan amendments and/or local development code changes are needed to implement the IAMP. According to OAR 734-051-7010, IAMPs must be adopted by the Oregon Transportation Commission (OTC) as a transportation facility plan consistent with the provisions of OAR 731-015-0065. Prior to adoption by the OTC, Jackson County and the City of Gold Hill may need to amend their comprehensive plans, transportation system plans and/or local land use and subdivision codes to ensure consistency with the IAMP. The OTC adoption package will include the findings of consistency.

Each state and local policy, plan, and regulation is summarized and the relevance and requirement for the IAMP identified. Although each document reviewed contains many policies, only the pertinent policies are included. The standards and polices that most directly affect the planning or design of the interchange are indicated in **bold type**.

1.1. Review of Adopted State Plans

The following statewide planning documents are included:

- Statewide Planning Goals 1, 2, 3, 4, 5, 6, 7, 9, 11, 12, & 14
- Oregon Transportation Plan (2006)
- Oregon Highway Plan (Updated 2012)
- Oregon Bicycle and Pedestrian Plan (updated 2011)
- Oregon Freight Plan (2011)
- Oregon Public Transportation Plan (1997)
- OAR Chapter 731 Division 15
- OAR Chapter 734 Division 51 (Division 51)
- OAR 660 Division 12 ODOT Right-of Way-Section
- ODOT Title VI
- Interchange Area Management Plan Guidelines (2011)
- Highway Design Manual (HDM)
- Statewide Transportation Improvement Program (STIP)
- Interstate 5 State of the Interstate Report

1.1.1. Statewide Planning Goals

Since 1973, Oregon has maintained a strong statewide program for land use planning. The foundation of that program is a set of 19 statewide planning goals. Most of the goals are accompanied by guidelines, which are suggestions about how a goal may be applied. The goals express the state's policies on land use and related topics, such as citizen involvement, housing, and natural resources. Oregon's statewide goals are achieved through local comprehensive planning. State law requires each city and county to adopt a comprehensive plan, of which transportation system plans are a part, and the zoning and land-division ordinances needed to put the plan into effect. Thus, the local comprehensive plans must be consistent with the Statewide Planning Goals. When the state's Land Conservation and Development Commission (LCDC) officially approves a local government's plan, the plan is said to be acknowledged. It then becomes the controlling document for land use in the area covered by that plan. Oregon's planning laws strongly emphasize coordination – keeping plans and programs consistent with each other, with the statewide planning goals, and with acknowledged local plans. The goals most pertinent to transportation system planning, and thus IAMPs, are described below.

Statewide Planning Goal 1 (Citizen Involvement)

Goal 1, Citizen Involvement, ensures the opportunity for all citizens to be involved in all phases of the planning process. The citizen involvement program must be appropriate to the scale of the planning effort. The program must provide for continuity of citizen participation and of information that enables citizens to identify and understand the issues.

The citizen involvement program needs to incorporate the following components:

1. Citizen Involvement – To provide for widespread citizen involvement.
2. Communication – To assure effective two-way communication with citizens.
3. Citizen Influence – To provide the opportunity for citizens to be involved in all phases of the planning process.
4. Technical Information – To assure that technical information is available in an understandable form.
5. Feedback Mechanisms – To assure that citizens will receive a response from policy-makers.
6. Financial Support – To insure funding for the citizen involvement program.

Project Relevance

Goal 1 requires state, local, and special district agencies to coordinate their planning efforts, which in this case are ODOT, the City of Gold Hill (City), and Jackson County (County). The scale of the public involvement program outlined for the IAMP is appropriate for the project. It includes four Technical Advisory Committee (TAC) meetings and two open houses. The TAC will include local, regional, and state staff representing a variety of disciplines and interests. The TAC provides technical and policy guidance to the project team during preparation of the IAMP. The public open houses allow the general public at large to learn about and offer their

comments and feedback on the development of IAMP. Additional components of the public involvement plan include preparing displays to clearly convey project information during public involvement meetings and comment forms for meeting attendees to fill-out. Outreach efforts through the development of the IAMP will be documented as part of the IAMP.

Statewide Planning Goal 2 (Land Use Planning)

Goal 2 outlines the basic procedures of Oregon's statewide planning program related to use of land. A land use planning process and policy framework must be established as a basis for all decisions and actions relating to the use of land. All local governments and state agencies involved in the land use action must coordinate with each other. City, county, and state agency and special district plans and actions related to land use shall be consistent with the comprehensive plans of cities and counties and regional plans adopted under ORS Chapter 268. Additionally, land use decisions and actions must be supported by an "adequate factual base." Evidence must be provided that a reasonable person would find sufficient to support a finding of fact that a land use action complies with the applicable review standards. Goal 2 also contains standards for taking exceptions to statewide goals. An exception may be taken when a statewide goal cannot or should not be applied to a particular area or situation.

Project Relevance

This memorandum serves as a policy framework for the development of the IAMP. The project's TAC will provide technical and policy guidance throughout the development of the IAMP to ensure consistency with applicable land use policy. Although the IAMP will not amend land use designations, it may require county and/or city comprehensive plan, Transportation System Plan or development code amendments in order to incorporate facility improvements or other management actions into the plans to protect the interchange and to make the IAMP and plans consistent. The technical memoranda prepared for the project will document the adequate factual base for any recommended plan changes.

Statewide Planning Goal 3 (Agricultural Lands)

Goal 3's intent is to preserve and maintain agricultural lands. Agricultural lands must be preserved and maintained for farm use, consistent with existing and future needs for agricultural products, forest, and open space and with the state's agricultural land use policy expressed in ORS 215.243. Zoning applied to agricultural land limits uses which can have significant adverse effects on agricultural and forest land, farm and forest uses or accepted farming or forest practices.

Project Relevance

Portions of both of the study areas (40 and 43) are zoned as agricultural lands. A major task of the IAMP is to complete an existing conditions analysis that summarizes the comprehensive plan and zoning designations, including any overlays, and the land uses allowed within each zoning district within the study area. OAR 660-012-0065 identifies transportation improvements permitted on rural lands consistent with Statewide Planning Goals 3, 4, 11 and 14 without the

requirement of a goal exception. IAMP implementation measures will address consistency with designated agricultural lands and the allowed uses as described in ORS 215.243.

Statewide Planning Goal 4 (Forest Lands)

This goal defines forest lands and requires counties to inventory them and adopt policies and ordinances that will "conserve forest lands for forest uses."

Project Relevance

Areas adjacent to the IAMP study areas are zoned as forest land. Improvements proposed in the corridor must comply with city and county policies, programs, and permitting that implement this goal. In general, the IAMP will be developed in respect of this goal. OAR 660-012-0065 identifies transportation improvements permitted on rural lands consistent with Statewide Planning Goals 3, 4, 11 and 14 without the requirement of a goal exception. IAMP implementation measures will address consistency with designated forest lands and the allowed uses as described in ORS 215.243.

Statewide Planning Goal 5 (Natural Resources)

The purpose of Goal 5, Natural Resources, Scenic and Historic Areas, and Open Spaces, is to “protect natural resources and conserve scenic and historic areas and open spaces.” This goal requires local governments to inventory natural and cultural resources in their jurisdictions and to develop and adopt programs to conserve and protect them. Among the resources to be inventoried are: riparian corridors, wetlands, federal Wild and Scenic Rivers, state Scenic Waterways, groundwater resources, wildlife habitat, natural areas, wilderness areas, open spaces, scenic views and sites, mineral and aggregate resource areas, energy sources, and historic and cultural areas. If a resource or site is found to be significant, a local government has three policy choices: preserve the resource, allow proposed uses that conflict with it, or strike some sort of a balance between the resource and the uses that would conflict with it.

Project Relevance

Goal 5 resources on land in the study area will be inventoried in Technical Memorandum #2: Existing Conditions Analysis. Improvements proposed in the study area must comply with City and County policies, programs, and permitting that implement this goal. In general, the IAMP must be developed in respect of this goal.

Statewide Planning Goal 6 (Resources Quality)

This goal requires local comprehensive plans and implementing measures to be consistent with state and federal regulations on matters such as groundwater pollution.

Project Relevance

The IAMP will be developed to be consistent with this goal. Improvements proposed in the study area must comply with federal, state, city and county policies, programs, and permitting that implement this goal.

Statewide Planning Goal 7 (Natural Hazards)

Goal 7 deals with development in places subject to natural hazards such as floods or landslides. It requires that jurisdictions apply "appropriate safeguards" (floodplain zoning, for example) when planning for development in areas of natural hazards.

Project Relevance

The IAMP will be developed to be consistent with this goal. Goal 7 resources on land in the study area will be identified in Technical Memorandum #2: Existing Conditions Analysis. Improvements proposed as part of the IAMP must comply with city and county policies, programs, and permitting that implement this goal.

Statewide Planning Goal 9 (Economic Development)

The intent of Goal 9, Economic Development, is to "provide adequate opportunities throughout the state for a variety of economic activities vital to the health, welfare, and prosperity of Oregon's citizens." Local comprehensive plans and policies must support this goal and include policies addressing economic development and development opportunities. Plans must also identify an adequate supply of land with characteristics suitable for a variety of employment and economic development. Development should be limited around identified industrial sites to that which is compatible with uses allowed on the sites.

Project Relevance

The IAMP will be developed consistently with this goal. The existing, intended, and allowed uses of land will be identified in Technical Memorandums #2: Existing Conditions Analysis and #3: Future Baseline Conditions Report and considered during the development of the IAMP.

Statewide Planning Goal 11 (Public Facilities and Services)

Goal 11 calls for efficient planning of public services such as sewers, water, law enforcement, and fire protection. The goal's central concept is that local governments should plan public services in accordance with its community's needs and capacities rather than being forced to respond to development as it occurs. The goal requires that urban and rural development be "guided and supported by types and levels of urban and rural public facilities and services appropriate for, but limited to, the needs and requirements of the urban, urbanizable and rural areas to be served."

Project Relevance

The IAMP will be developed consistently with this goal.

Statewide Planning Goal 12 (Transportation)

Goal 12 requires cities, counties, metropolitan planning organizations (MPOs), and ODOT to provide and encourage a safe, convenient, and economic transportation system. This is partially

accomplished through development of Transportation System Plans (TSPs) based on inventories of local, regional, and state transportation needs.

The implementation portion of the Goal states that:

1. The number and location of major transportation facilities should conform to applicable state or local land use plans and policies designed to direct urban expansion to areas identified as necessary and suitable for urban development. The planning and development of transportation facilities in rural areas should discourage urban growth while providing transportation service necessary to sustain rural and recreational uses in those areas so designated in the comprehensive plan.
7. Plans for new or for the improvement of major transportation facilities should identify the positive and negative impacts on: (1) local land use patterns, (2) environmental quality, (3) energy use and resources, (4) existing transportation systems and (5) fiscal resources in a manner sufficient to enable local governments to rationally consider the issues posed by the construction and operation of such facilities.
8. **Lands adjacent to major mass transit stations, freeway interchanges, and other major air, land and water terminals should be managed and controlled so as to be consistent with and supportive of the land use and development patterns identified in the comprehensive plan of the jurisdiction within which the facilities are located.**
9. **Plans should provide for a detailed management program to assign respective implementation roles and responsibilities to those governmental bodies operating in the planning area and having interests in carrying out the goal.**

Project Relevance

The IAMP will recommend interchange improvements, transportation system network improvements, and management measures to support 20-year traffic growth and future development of planned land uses within the study areas which are within unincorporated Jackson County jurisdiction and outside of, but adjacent to, the City of Gold Hill Urban Growth Boundary (UGB). Therefore, it meets the intent of Goal 12. The IAMP's Implementation section will assign measures and responsibilities.

Statewide Planning Goal 14 (Urbanization)

This goal requires cities to estimate future growth and needs for land and then plan and zone enough land to meet those needs. It calls for each city to establish a UGB to identify and separate urbanizable land from rural land. Land uses permitted within the urban areas are more urban in nature and higher intensity than in rural areas, which primarily include farm and forest uses. Goal 14 specifies seven factors that must be considered in establishing a UGB. It also lists four criteria to be applied when undeveloped land within a UGB is to be converted to urban uses. Compact development helps contain the costs of public facilities such as transportation and helps jurisdictions better anticipate where growth will occur.

Project Relevance

The location, type, and intensity of development within the study area could affect future use and operation of the interchanges. Exit 40 is adjacent to the UGB. The IAMP will be developed consistently with Goal 14 and in consideration of local land use zoning designations and projected future development patterns.

1.1.2. Oregon Transportation Plan (2006)

The Oregon Transportation Plan (OTP) is the state's long-range multimodal transportation plan. The OTP considers all modes of Oregon's transportation system as a single system. The current OTP assesses state, regional, and local public and private transportation facilities through 2030. The OTP establishes goals, policies, strategies, and initiatives that address the core challenges and opportunities facing Oregon. It also provides the framework for prioritizing transportation improvements based on varied future revenue conditions.

Relevant goals and policies are:

Goal 1 – Mobility and Accessibility

Policy 1.1 – Development of an Integrated Multimodal System: It is the policy of the State of Oregon to plan and develop a balanced, integrated transportation system with modal choices for the movement of people and goods.

Policy 1.2 – Equity, Efficiency and Travel Choices: It is the policy of the State of Oregon to promote a transportation system with multiple travel choices that are easy to use, reliable, cost-effective and accessible to all potential users, including the transportation disadvantaged.

Policy 1.3 – Relationship of Interurban and Urban Mobility: It is the policy of the State of Oregon to provide intercity mobility through and near urban areas in a manner that minimizes adverse effects on urban land use and travel patterns and provides for efficient long distance travel.

Goal 2 – Management of the System

Policy 2.1 - Capacity and Operational Efficiency: It is the policy of the State of Oregon to manage the transportation system to improve its capacity and operational efficiency for the long-term benefit of people and goods movement.

Policy 2.2 - Management of Assets: It is the policy of the State of Oregon to manage transportation assets to extend their life and reduce maintenance costs.

Goal 3 – Economic Vitality

Policy 3.1 – An Integrated and Efficient Freight System: It is the policy of the State of Oregon to promote an integrated, efficient, and reliable freight system involving air, barges, pipelines, rail, ships, and trucks to provide Oregon a competitive advantage by moving goods faster and more reliably to regional, national, and international markets.

Policy 3.2 – Moving People to Support Economic Vitality: It is the policy of the State of Oregon to develop an integrated system of transportation facilities, services, and

information so that intrastate, interstate, and international travelers can travel easily for business and recreation.

Policy 3.3 – Downtowns and Economic Development: It is the policy of the State of Oregon to provide transportation improvements to support downtowns and to coordinate transportation and economic development strategies.

Goal 4 – Sustainability

Policy 4.1 – Environmentally Responsible Transportation System: It is the policy of the State of Oregon to provide a transportation system that is environmentally responsible and encourages conservation and protection of natural resources.

Policy 4.3 – Creating Communities: It is the policy of the State of Oregon to increase access to goods and services and promote health by encouraging the development of compact communities and neighborhoods that integrate residential, commercial, and employment land uses to help make shorter trips, transit, walking, and bicycling feasible, and that integrate features that support the use of transportation choices.

Goal 5 – Safety and Security

Policy 5.1 – Safety and Security: It is the policy of the State of Oregon to continually improve the safety and security of all modes and transportation facilities for system users including operators, passengers, pedestrians, recipients of goods and services, and property owners.

Policy 5.2 – Security: It is the policy of the State of Oregon to provide transportation security consistent with the leadership of federal, state, and local homeland security entities.

Goal 7 – Coordination, Communication and Cooperation

Policy 7.1 - A Coordinated Transportation System: It is the policy of the State of Oregon to work collaboratively with other jurisdictions and agencies with the objective of removing barriers so the transportation system can function as one system.

Policy 7.3 – Public Involvement and Consultation: It is the policy of the State of Oregon to involve Oregonians to the fullest practical extent in transportation planning and implementation in order to deliver a transportation system that meets the diverse needs of the state.

Policy 7.4 – Environmental Justice: It is the policy of the State of Oregon to provide all Oregonians, regardless of race, culture or income, equal access to transportation decision-making so all Oregonians may fairly share in benefits and burdens and enjoy the same degree of protection from disproportionate adverse impacts.

Project Relevance

The development of this IAMP is integral to maintaining the highway facility and optimizing system performance. Transportation improvements identified in the IAMP will be developed consistent with and to implement the goals of the OTP.

1.1.3. Oregon Highway Plan (Updated 2012)

The Oregon Highway Plan (OHP) establishes policies and investment strategies for Oregon's state highway system over a 20-year period and refines the goals and policies found in the OTP. Policies in the OHP emphasize the efficient management of the highway system to increase safety and to extend highway capacity, partnerships with other agencies and local governments, and the use of new techniques to improve road safety and capacity. 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.

I-5 is an interstate highway and part of the National Highway System (NHS). The OHP describes this designation as:

> Interstate Highways (NHS) provide connections to major cities, regions of the state, and other states. A secondary function in urban areas is to provide connections for regional trips within the metropolitan area. The Interstate Highways are major freight routes and their objective is to provide mobility. The management objective is to provide for safe and efficient high-speed continuous-flow operation in urban and rural areas.

The OHP policies applicable to IAMPs include:

Goal 1 – System Definition

<u>Policy 1A: State Highway Classification System</u>: It is the policy of the State of Oregon to develop and apply the state highway classification system to guide ODOT priorities for system investment and management.

<u>Policy 1B: Land Use and Transportation</u>: This policy recognizes the role of both State and local governments related to the state highway system:

- State and local government must work together to provide safe and efficient roads for livability and economic viability for all citizens.
- State and local government must share responsibility for the road system.
- State and local government must work collaboratively in planning and decision-making relating to transportation system management.

It is the policy of the State of Oregon to coordinate land use and transportation decisions to efficiently use public infrastructure investments to:

- Maintain the mobility and safety of the highway system;
- Foster compact development patterns in communities;
- Encourage the availability and use of transportation alternatives;
- Enhance livability and economic competitiveness; and
- Support acknowledged regional, city and county transportation system plans that are consistent with this Highway Plan.

Policy 1C: State Highway Freight System: It is the policy of the State of Oregon to balance the need for movement of goods with other uses of the highway system, and to recognize the importance of maintaining efficient through movement on major truck freight routes.

Policy 1E: Lifeline Routes: It is the policy of the State of Oregon to provide a secure lifeline network of streets, highways, and bridges to facilitate emergency services response and to support rapid economic recovery after a disaster.

Policy 1F: Highway Mobility Policy[1]: It is the policy of the State of Oregon to maintain acceptable and reliable levels of mobility on the state highway system, consistent with the expectations for each facility type, location and functional objectives. Highway mobility targets will be the initial tool to identify deficiencies and consider solutions for vehicular mobility on the state system. Specifically, mobility targets shall be used for:

- Identifying state highway mobility performance expectations for planning and plan implementation;
- Evaluating the impacts on state highways of amendments to transportation plans, acknowledged comprehensive plans and land use regulations pursuant to the Transportation Planning Rule (OAR 660-12-0060); and
- Guiding operational decisions such as managing access and traffic control systems to maintain acceptable highway performance.

Policy 1G: Major Improvements: It is the policy of the State of Oregon to maintain highway performance and improve safety by improving system efficiency and management before adding capacity. ODOT will work in partnership with regional and local governments to address highway performance and safety needs.

Goal 2 – System Management

Policy 2A: Partnerships: It is the policy of the State of Oregon to establish cooperative partnerships to make more efficient and effective use of limited resources to develop, operate, and maintain the highway and road system. These partnerships are relationships among ODOT and state and federal agencies, regional governments, cities, counties, tribal governments, and the private sector.

Policy 2B: Off-System Improvements: It is the policy of the State of Oregon to provide state financial assistance to local jurisdictions to develop, enhance, and maintain improvements on local transportation systems when they are a cost-effective way to improve the operation of the state highway system if:

- The off-system costs are less than or equal to on-system costs, and/or the benefits to the state system are equal to or greater than those achieved by investing in on-system improvements;

[1] This excerpt is abbreviated.

- **Local jurisdictions adopt land use, access management and other policies and ordinances to assure the continued benefit of the off-system improvement to the state highway system;**
- **Local jurisdictions agree to provide advance notice to ODOT of any land use decisions that may impact the off-system improvement in such a way as to adversely impact the state highway system; and**
- **Local jurisdictions agree to a minimum maintenance level for the off-system improvement that will assure the continued benefit of the off-system improvement to the state highway system.**

Policy 2F: Traffic Safety: It is the policy of the State of Oregon to continually improve safety for all users of the highway system using solutions involving engineering, education, enforcement, and emergency medical services.

Policy 2G: Rail and Highway Compatibility: It is the policy of the State of Oregon to increase safety and transportation efficiency through the reduction and prevention of conflicts between railroad and highway users.

Goal 3 - Access Management

Policy 3A: Classification and Spacing Standards: It is the policy of the State of Oregon to manage the location, spacing and type of road and street intersections and approach roads on state highways to assure the safe and efficient operation of state highways consistent with the classification of the highways.

Action 3A.2: Establish spacing standards on state highways based on highway classification, type of area and speed. The tables in Appendix C show the access spacing standards which consider urban and rural highway classification, traffic volumes, speed, safety, and operational needs.

Policy 3C: Interchange Access Management Areas: 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.

Action 3C.1: Develop interchange area management plans to protect the function of interchanges to provide safe and efficient operations between connecting roadways and to minimize the need for major improvements of existing interchanges.

Action 3C.2: To improve an existing interchange or construct a new interchange:

- **The interchange access management spacing standards are shown in Appendix C;**
- **The standards do not apply retroactively to interchanges existing prior to adoption of this Oregon Highway Plan, except or until any redevelopment, change of use, or highway construction, reconstruction or modernization project affecting these existing interchanges occurs. It is the goal at that time to meet the appropriate spacing standards, if possible, but, at the very least, to improve the current conditions by moving in the direction of the spacing standards;**

- **Necessary supporting improvements, such as road networks, channelization, medians and access control in the interchange management area must be identified in the local comprehensive plan and committed with an identified funding source, or must be in place;**
- **Access to cross streets shall be consistent with established standards for a distance on either side of the ramp connections so as to reduce conflicts and manage ramp operations. The Interchange Access Management Spacing Standards supersede the Access Management Classification and Spacing Standards (Policy 3A), unless the latter distance standards are greater (see Appendix C);**
- **Where possible, interchanges on Freeways and Expressways shall connect to state highways, or major or minor arterials;**
- **Interchanges on Statewide, Regional or District Highways may connect to state highways, major or minor arterials, other county or city roads, or private roads, as appropriate;**
- **The design of urban interchanges must consider the need for transit and park-and-ride facilities, along with the interchange's effect on pedestrian and bicycle traffic; and**
- **When possible, access control shall be purchased on crossroads for a minimum distance of 1320 feet (400 meters) from a ramp intersection or the end of a free flow ramp terminal merge lane taper.**

<u>Action 3C.3</u>: Establish criteria for when deviations to the interchange access management spacing standards may be considered. The kinds of considerations likely to be included are:

- **Location of existing parallel roadways (e.g., Highways 99W or 99E which parallel Interstate 5);**
- **Use of traffic controls;**
- **Potential queuing, increased delays and safety impacts; and**
- **Possible use of nontraversable medians for right-in/right-out movements.**

<u>Action 3C.4</u>: When new approach roads or intersections are planned or constructed near existing interchanges, property is redeveloped or there is a change of use, wherever possible, the access spacing and operation standards in the Access Management Rule should be applied within the influence area of the interchange (measurements are from ramp intersection or the end of a free flow ramp terminal merge lane taper).

<u>Action 3C.5</u>: As opportunities arise, rights of access shall be purchased on crossroads around existing interchanges. Whenever possible, this protective buying should be for a distance of 1320 feet (400 meters) on the crossroads.

<u>Action 3C.6</u>: Plan for and operate traffic controls within the influence area of an interchange with the priority of moving traffic off the main highway, Freeway or Expressway and away from the interchange area. Within the Interchange Access

Management Area, priority shall be given to operating signals for the safe and efficient operation of the interchange.

<u>Action 3C.7</u>: Use grade-separated crossings without connecting ramps to provide crossing corridors that relieve traffic crossing demands through interchanges.

Goal 4 – Travel Alternatives

<u>Policy 4A: Efficiency of Freight Movement</u>: It is the policy of the State of Oregon to maintain and improve the efficiency of freight movement on the state highway system and access to intermodal connections. The State shall seek to balance the needs of long distance and through freight movements with local transportation needs on highway facilities in both urban areas and rural communities.

<u>Policy 4D: Transportation Demand Management</u>: It is the policy of the State of Oregon to support the efficient use of the state transportation system through investment in transportation demand management strategies.

While development of an IAMP must be consistent with the entirety of the OHP, Goal 3 and it's polices provide direct guidance and requirements for development of an IAMP such as access spacing standards. Access spacing standards for interchanges are listed in Tables 16-19 of OHP Appendix C. Most applicable to this IAMP is Table 17, Minimum Spacing Standards Applicable to Freeway Interchanges with Two-Lane Crossroads for rural area:

- Distance between the start and end of tapers of adjacent interchanges = 2 miles
- Distance to the first approach on the right, right in/right out only = 1,320 feet
- Distance to first intersections where left turns are allowed = 1,320 feet
- Distance between the last right in/right out approach road and the start of the taper for the on-ramp = 1,320 feet

Project Relevance

The OHP establishes the state highway classification system to guide ODOT priorities for system investment and management. In addition, the OHP provides interchange spacing requirements, investment priorities, access management policy, and mobility standards. A TAC will provide technical and policy guidance during preparation of the IAMP. The TAC will include representatives from Jackson County, the City of Gold Hill, ODOT, and other agencies.

Additionally, Policy 2B: Off-System Improvements provides the policy requirements local jurisdictions must comply with if they are going to use state money for off-system, or off state-system improvements. If these policies currently are not included in adopted local jurisdiction plans and policies, they may be included in an IAMP as necessary amendments to implement an IAMP.

1.1.4. Oregon Bicycle and Pedestrian Plan (updated 2011)

The Oregon Bicycle and Pedestrian Plan (OBPP) was originally prepared in 1995 to implement the Actions recommended by the OTP; guide ODOT and local governments in developing

bikeway and walkway systems; explain the laws pertaining to the establishment of bikeways and walkways; fulfill the requirements of the TPR; and provide standards for planning, designing, and maintaining bikeways and walkways.

The OBPP policies applicable to IAMPs include:

Goal: To provide safe, accessible and convenient bicycling and walking facilities and to support and encourage increased level of bicycling and walking.

- Action 1: Provide bikeway and walkway systems that are integrated with other transportation systems.
- Strategy 1A: Integrate bicycle and pedestrian facility needs into all planning, design, construction and maintenance activities of the Oregon Department of Transportation, local governments and other transportation providers.

The 2011 updated design portion of the OBPP focuses on the importance of good design and understanding the context of facilities. The document includes chapters addressing on-road bikeways, restriping, bicycle parking, walkways, street crossings, intersections, shared-use paths. Both standards and minimums are recommended in the manual along with innovative designs that have been implemented successfully in Oregon or other parts of the county.

Project Relevance

Pedestrian and bicycle facility needs will be assessed and designed in respect of the standards of the OBPP and integrated into the IAMP as required.

1.1.5. Oregon Freight Plan (2011)

The purpose of the Oregon Freight Plan (OFP), which is an Element of the OTP, is to "improve freight connections to local, state, tribal, regional, national and international markets with the goal of increasing trade-related jobs and income for Oregon workers and businesses". The plan documents the economic importance of freight movement in Oregon, identifies transportation networks important to freight-dependent industries and recommends multimodal strategies to increase strategic freight system efficiency. The plan identifies sixteen freight issues and strategies with action steps to address the issues.

The study areas are in the Western Corridor, Strategic Freight Corridors and Connectivity of the state. According to the Freight Plan, the Western Freight Corridor contains some of the major intermodal facilities in the state, which move both heavy and valuable goods to markets around the world. Transportation facilities are also identified as necessary to support resource based industries as those found in the study areas and the area surrounding the study areas. Additionally, the plan states that agriculture, forestry and fishing related shipments are expected to grow at a high rate of around 2.1 percent annually through 2035.

Interstate 5 carries the majority of north/south freight traffic in Oregon and connects the Oregon freight system with national and international destinations. In the eastern portion of the study area, Central Oregon & Pacific (CORP) rail lines maintained to a FRA Class 1 and Class

2, condition run north to south. There is one rail crossing in the Exit 43 study area east of N River Road and just north of where OR 99 intersects N River Road.

Project Relevance

Maintaining and enhancing freight system efficiency will be integrated into the IAMP in consideration of the motor vehicle, aviation and rail freight networks in the study area.

1.1.6. Oregon Public Transportation Plan (1997)

The Oregon Public Transportation Plan (OPTP) forms the transit modal plan of the Oregon Transportation Plan (OTP). The vision guiding the public transportation plan calls for the following:

- A comprehensive, interconnected and dependable public transportation system, with stable funding, that provides access and mobility in and between communities of Oregon in a convenient, reliable and safe manner that encourages people to ride.
- A public transportation system that provides appropriate service in each area of the state, including service in urban areas that is an attractive alternative to the single-occupant vehicle, and high-quality, dependable service in suburban, rural, and frontier (remote) areas.
- A system that enables those who do not drive to meet their daily needs.
- A public transportation system that plays a critical role in improving the livability and economic prosperity for Oregonians. The plan contains goals, policies, and strategies relating to the whole of the state's public transportation system. The plan is intended to provide guidance for ODOT and public transportation agencies regarding the development of public transportation systems. The OPTP also identifies minimum levels of service, by size of jurisdiction, for fulfilling its goals and policies.

The Public Transportation 2015 Section of the plan identifies minimum levels of service, by size of jurisdiction, for fulfilling its goals and policies. The OPTP also recognizes, however, that the achievements of these levels of service is dependent upon the availability of resources and therefore are not to be understood as performance mandates placed upon other jurisdictions.

For a smaller community such as Gold Hill but one that is closer to urban areas, the following public transportation service should be provided:

> "Public transportation would provide mobility-related connections within communities through a dial-a-ride and local bus services and would provide connections between communities with intercity bus services. Commuter connections would also be available but on a more limited basis than in Oregon's larger communities."

Minimum level of service for public transportation services in the project vicinity should include:

- Provide public transportation service to the general public based on locally established service and funding priorities.

- Provide an accessible ride to anyone requesting service.
- Provide a coordinated centralized scheduling system.
- Connect local public transpiration and senior and disabled services to intercity bus services.
- Provide at least 1.7 annual hours of public transpirations service per-capita with fixed-route, dial-a-ride or other service types.

Project Relevance

Public transit service goals will be considered throughout development of the IAMP.

1.1.7. OAR Chapter 731 Division 15

OAR 731 Division 15 establishes the procedures used by ODOT to implement the provisions of its State Agency Coordination Program which assure that ODOT programs are carried out in compliance with the statewide planning goals and in a manner compatible with acknowledged comprehensive plans, as required by ORS 197.180 and OAR 660, Divisions 30 and 31.

The section most applicable to IAMPs is section 731-015-0065 Coordination Procedures for Adopting Final Facility Plans:

(1) Except in the case of minor amendments, the Department shall involve DLCD and affected metropolitan planning organizations, cities, counties, state and federal agencies, special districts and other interested parties in the development or amendment of a facility plan. This involvement may take the form of mailings, meetings or other means that the Department determines are appropriate for the circumstances. The Department shall hold at least one public meeting on the plan prior to adoption.

(2) The Department shall provide a draft of the proposed facility plan to planning representatives of all affected cities, counties and metropolitan planning organization and shall request that they identify any specific plan requirements which apply, any general plan requirements which apply and whether the draft facility plan is compatible with the acknowledged comprehensive plan. If no reply is received from an affected city, county or metropolitan planning organization within 30 days of the Department's request for a compatibility determination, the Department shall deem that the draft plan is compatible with that jurisdiction's acknowledged comprehensive plan. The Department may extend the reply time if requested to do so by an affected city, county or metropolitan planning organization.

(3) If any statewide goal or comprehensive plan conflicts are identified, the Department shall meet with the local government planning representatives to discuss ways to resolve the conflicts. These may include:

   (a) Changing the draft facility plan to eliminate the conflicts;

   (b) Working with the local governments to amend the local comprehensive plans to eliminate the conflicts; or

(c) Identifying the conflicts in the draft facility plan and including policies that commit the Department to resolving the conflicts prior to the conclusion of the transportation planning program for the affected portions of the transportation facility.

(4) The Department shall evaluate and write draft findings of compatibility with acknowledged comprehensive plans of affected cities and counties, findings of compliance with any statewide planning goals which specifically apply as determined by OAR 660-030-0065(3)(d), and findings of compliance with all provisions of other statewide planning goals that can be clearly defined if the comprehensive plan of an affected city or county contains no conditions specifically applicable or any general provisions, purposes or objectives that would be substantially affected by the facility plan.

(5) The Department shall present to the Transportation Commission the draft plan, findings of compatibility with the acknowledged comprehensive plans of affecting cities and counties and findings of compliance with applicable statewide planning goals.

(6) The Transportation Commission shall adopt findings of compatibility with the acknowledged comprehensive plans of affected cities and counties and findings of compliance with applicable statewide planning goals when it adopts the final facility plan.

(7) The Department shall provide copies of the adopted final facility plan and findings to DLCD, to affected metropolitan planning organizations, cities, counties, state and federal agencies, special districts and to others who request to receive a copy.

Project Relevance

The technical advisory committee (TAC) convened for this IAMP includes representatives of the City and County. The TAC will meet at key points during the development of the IAMP to review and provide input on existing conditions, future conditions, development and evaluation of improvement projects and other implementation measures, and the draft IAMP. The IAMP Findings will document compliance with the above procedures 1 through 4. ODOT will follow procedures 5 through7 during the facility plan adoption process.

1.1.8. OAR Chapter 734 Division 51 (Division 51)

The purpose of Division 51 is to balance development needs with transportation safety and access management objectives of state highways in a manner consistent with local transportation system plans and the land uses permitted in applicable local comprehensive plan(s). Division 51 provides standards to govern highway approaches, access control, spacing standards, medians, and restriction of turning movements, in compliance with statewide planning goals and in a manner compatible with acknowledged comprehensive plans and consistent with Oregon Revised Statutes (ORS), Oregon Administrative Rules (OAR), and the Oregon Highway Plan (OHP). The Oregon Highway Plan serves as the policy basis for implementing Division 51, and guides the administration of access management rules, including mitigation and public involvement.

Section 734-051-7010 Access Management Plans and Interchange Area Management Plans provides a framework of criteria that need to be addressed in an IAMP:

(7) Interchange Area Management Plan Criteria. An interchange area management plan must comply with the following criteria, unless the plan documents why compliance with a criterion is not applicable:

(a) Be developed no later than the time an interchange is designed or is being redesigned.

(b) Identify opportunities to improve operations and safety in conjunction with roadway projects and property development or redevelopment and adopt policies, provisions, and development standards to capture those opportunities.

(c) Include short, medium, and long-range actions to improve operations and safety within the designated study area.

(d) Consider current and future traffic volumes and flows, roadway geometry, traffic control devices, current and planned land uses and zoning, and the location of all current and planned approaches.

(e) Provide adequate assurance of the safe operation of the facility through the design traffic forecast period, typically twenty (20) years.

(f) Consider existing and proposed uses of all the property within the designated study area consistent with its comprehensive plan designations and zoning.

(g) Be consistent with any applicable access management plan, corridor plan or other facility plan adopted by the commission.

(h) Include polices, provisions and standards from local comprehensive plans, transportation system plans, and land use and subdivision codes that are relied upon for consistency and that are relied upon to implement the interchange area management plan.

Project Relevance

The IAMP will evaluate access control, spacing standards, and other applicable standards and will be developed in respect of the applicable criteria of Division 51 including Section 734-051-7010(7).

1.1.9. OAR 660 Division 12

Goal 12 is implemented through OAR 660, Division 12, the Transportation Planning Rule (TPR). The TPR contains numerous requirements governing transportation planning and project development. The TPR requires local governments to adopt land use regulations consistent with state and federal requirements "to protect transportation facilities, corridors and sites for their identified functions OAR 660-012-0045(2)." This policy is achieved through a variety of measures, including:

- Access control measures which are consistent with the functional classification of roads and consistent with limiting development on rural lands to rural uses and densities.

- Standards to protect future operations of roads.
- A process for coordinated review of future land use decisions affecting transportation facilities, corridors or sites.
- A process to apply conditions to development proposals in order to minimize impacts and protect transportation facilities, corridors or sites.
- Regulations to provide notice to ODOT of land use applications that require public hearings, involve land divisions, or affect private access to roads.

OAR 660-012-0065 identifies transportation improvements on rural lands which may be permitted on rural lands consistent with Goals 3, 4, 11 and 14 without requiring a goal exception. OAR 660-012-0070, exceptions for transportation improvements on rural lands, applies if improvements do not meet OAR 660-012-0065 requirements.

The TPR was amended in 2011 in response to the Department of Land Conservation and Development and ODOT recognizing that the TPR and OHP were having unintended consequences on planning and development objectives including economic goals. Therefore, amendments to the TPR were made to:

- Streamline the regulatory process to allow local governments to rezone land without analyzing traffic if the rezoning is consistent with the comprehensive plan map designation and the transportation system plan.
- Allow for local decisions to be made without traffic analysis if the action includes conditions to prevent any increase in traffic generated at the site.
- Adjust the balance between multiple objectives for economic development projects to reduce the burden of mitigating traffic impacts.
- Allow local governments to designate areas where compact urban development is desirable and thus traffic congestion will not be a factor in zoning decisions.

Project Relevance

The IAMP will be developed in consideration of OAR 660 Division 12 and its governing principles and will be consistent.

1.1.10. ODOT Right-of Way-Section

The ODOT Right-of-Way Section provides expertise in real estate and other right-of-way matters for ODOT and implements Public Law 91-646, the Uniform Relocation Assistance, and Real Property Policies of 1970, as amended. In general, the Right-of-Way section provides guidance regarding Federal, State, and local laws that govern public project and program activities as they pertain to the process of acquiring private property for public purposes.

Project Relevance

The project team will consider the federal, state and local laws governing right-of-way acquisition as the IAMP is developed and potential right-of-way needs are generally identified. Specific right-of-way locations and needs are identified during project design and delivery.

1.1.11. ODOT Title VI

The Title VI Program was established to carry out the Oregon Department of Transportation's commitment to ensure that the most fundamental principles of equality of opportunity and human dignity are upheld in all decisions and in any activity or process as ODOT conducts its business, sets it policy, delivers its projects, and provides its services to any member of the public that it serves.

In order to receive federal financial assistance, ODOT instituted a Title VI Program to address nondiscrimination laws that impact transportation investment decision making. Title VI of the Civil Rights Act of 1964 and related statutes and policies prohibit discrimination on the basis of race, color, national origin, gender, age, and disability in ODOT's programs, activities and services. The purpose of the Title VI and related statutes and policies is to ensure that public funds are not spent in a way that encourages, subsidizes or results, in discrimination.

Planning, design, construction, and operations and maintenance projects across all travel modes have well defined Title VI and Environmental Justice compliance components. ODOT and its transportation partners are committed to developing and refining its technical capability to assess the benefits and adverse effects of all of its transportation activities, among different population groups, and use that capability to develop appropriate procedures, goals, and performance measures in all aspects of its mission.

Projects that use federal funding or that require federal permits are required to comply with Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, and the U.S. Department of Transportation (USDOT) and Federal Highway Administration (FHWA) orders regarding environmental justice. Not all ODOT projects require federal funding or permits, nevertheless, ODOT is committed to meeting the intent of the orders by:

1. Avoiding, minimizing or mitigating disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations.
2. Ensuring the full and fair participation by all potentially affected communities in the transportation decision-making process.
3. Preventing the denial of, reduction in, or significant delay in the receipt of benefits by minority and/or low-income populations.

Project Relevance

The development of the IAMP includes consideration of Title VI and Environmental Justice requirements throughout the process. Public outreach targeted at these protected populations will be performed by ODOT and a memorandum documenting the steps taken for identification of, outreach to, and inclusion of Title VI and Environmental Justice populations will be included in the IAMP. In the inventory phases of developing the IAMP, protected populations for the study area will be mapped and summarized based on US Census Data. Existing transportation barriers (motorized and non-motorized) for Title VI and Environmental Justice populations will be identified. When evaluating improvement concepts, the mapping and land use data to identify land use and transportation impacts and benefits of alternatives to Title VI and Environmental Justice populations will be used.

1.1.12. Interchange Area Management Plan Guidelines (2011)

The Interchange Area Management Plan Guidelines provide a guiding resource for preparation of IAMPs. The Guidelines provide a background to why IAMPS are prepared, what they are, what their regulatory significance is, and their purpose. Additionally, the Guidelines identify the general process to develop an IAMP. The Guidelines describe the elements of an IAMP, what an IAMP should accomplish, and how to meet expectations and objectives.

Project Relevance

The project team will use the Guidelines as a tool during development of the IAMP.

1.1.13. Highway Design Manual (HDM)

The HDM provides design standards for state highways and associated highway elements. These standards are dependent on the highway's functional classification and project type (e.g., Modernization, Preservation, Safety, Operations, or Maintenance). The purpose of the HDM is to establish mobility standards when evaluating potential design configurations.

Project Relevance

The IAMP alternatives will be developed to be consistent with the applicable HDM Standards for an Interstate.

1.1.14. Statewide Transportation Improvement Program (STIP)

The Statewide Transportation Improvement Program, known as the STIP, is Oregon's four-year transportation capital improvement program. It is the document that identifies the funding for, and scheduling of, transportation projects and programs. It includes multimodal projects (highway, passenger rail, freight, public transit, bicycle, and pedestrian) projects on the federal, state, city, and county transportation systems, and projects in the National Parks, National Forests, and Indian tribal lands.

The 2012-2015 STIP identified the following project outside but near the study area:

Rogue River Trail: Sardine Creek -Rock Point Bridge - Key #: 16814, Project Description: Design and Construction of Multi-Use Path, Timing: Construction scheduled to begin in 2013

Project Relevance

The IAMP will assume the project listed in the 2012-2015 STIP is constructed as part of the future baseline conditions.

1.1.15. Interstate 5 State of the Interstate Report

The Interstate 5 State of the Interstate Report (2000) describes the existing and forecasted operating, geometric, safety, and physical conditions for the Interstate 5 mainline and interchanges within Oregon.

Below is a description of Interchange 41 based on the Interstate 5 State of the Interstate Report:

Geometric Conditions: This interchange provides access to and from the City of Gold Hill. The interchange was constructed in 1954 and underwent major modifications in 1963 into a full diamond. The existing geometric design of the interchange is common to older interchanges and does not meet some of today's updated design guidelines. The location of access points close to ramp terminals can create congestion, and unchannelized ramp terminals can work against driver expectancy creating a potential for wrong way movements. Deficiencies include:

- The existing pavement width on the crossroad bridge structure does not provide adequate shoulders for emergency stops or safe pedestrian and bicycle movements.
- The northbound and southbound exit ramps do not provide adequate distances for deceleration.
- The northbound and southbound entrance ramps do not provide adequate distances for acceleration.

Operational Conditions: All of the intersections at or near the interchange function substantially below the State Highway volume-to-capacity standard and are expected to continue to operate acceptably by year 2020.

Safety Conditions: There were 14 reported accidents within a 5-year period (1994-1998) with one fatality. However, there appeared to be no apparent pattern to the collisions.

Bridge Conditions: The bridge is classified as "functionally obsolete" by National Bridge Inventory inspection criteria and was identified as a medium priority for improvements.

Project Relevance

Information regarding the conditions of the interchanges will be used throughout IAMP development.

1.2. Local Plans and Ordinances

The following local planning documents were reviewed:

- Jackson County Comprehensive Plan
- Jackson County Transportation System Plan
- Jackson County Land Development Ordinance
- City of Gold Hill Comprehensive Plan (1984)
- City of Gold Hill/Jackson County Urban Growth Boundary and Policy Agreement
- Rogue River Recreational Corridor and Greenway Maps

1.2.1. Jackson County Comprehensive Plan

The Jackson County Comprehensive Plan, adopted in 2004 with subsequent amendments through 2008, is the official long-range land use policy document for Jackson County. The plan sets forth general land use planning policies and allocates land uses to resource, residential, commercial and industrial categories. The plan serves as the basis for the coordinated development of physical resources and the development or redevelopment of the county based on physical, social, economic and environmental factors.

The comprehensive plan establishes the purpose, map designation criteria, and the basis for determining the appropriate zoning district for each land use.

Goals applicable to IAMP 40/43 include:

- Agricultural Goal: To Preserve and Maintain Agricultural Land.
- Citizen Involvement Goal: To provide opportunities for Citizens to be involved in all phases of the Jackson County Planning Process.
- Economy Goal**:** To improve and diversify the economic base of Jackson County in balance with Air, Water, Land and Human Resources.
- Energy Goal: To affect the optimum conservation of energy and use of local renewable resources.
- Environmental Quality Goal: To ensure and improve the quality of Jackson County's natural environment and resources in a responsible manner which will maintain and enhance the life sustaining environment.
- Forest Uses Goal: To conserve forest lands for forest uses and to ensure a continued yield of forest products.
- Natural and Historic Goal: To preserve and conserve open space lands; protect and maintain existing and establish new, historic and scenic and wildlife areas and ensure the wise utilization of natural resources.
- Natural Hazards Goal: To protect life and property from natural disasters and hazards.

The Jackson County Comprehensive Plan map (see Figure 1-2a and b) identifies most of the parcels immediately around I-5 Exit 40 interchange as Rural Residential. There are areas of agricultural land in the southeastern and southwestern section of the study area. In addition, there is an area designated limited use between I-5 and Old Stage Road. Land use surrounding Exit 43 consists of agricultural south of the interchange except for the area where N River Road

and OR 99 intersect which has parcels designated rural residential. North of the interchange, there is commercial land north of Main Street along OR 99 with rural residential parcels past the commercial area. In the northwestern study area there is a lot zoned industrial with rural residential parcels north of it.

Aerial observations show undeveloped land adjacent and southeast of Exit 40. Beyond the undeveloped areas to the east are agricultural and rural residential uses. To the south, is a KOA Kampground. Northeast of the interchange is a church east of Lampman Road and rural and agricultural uses to the north and east. There is a fire station along Access Road. The Rogue River is approximately a quarter of a mile east of the interchange. Southwest of the interchange are rural residential uses including a mobile home park and a golf course west of the mobile home park. Northwest of the interchange is undeveloped land and a creek with rural agricultural uses east of Old Stage Road. West of Old Stage Road is the Rogue Valley Zipline Adventure and Moose Family Center with rural and agricultural use beyond.

Exit 43Aerial observations surrounding Exit 43 show undeveloped land, and primarily rural residential uses east of the interchange and undeveloped land with one commercial use west of Exit 43. The Rogue River is less than 0.15 miles from I-5 in the vicinity of Exit 43.

Project Relevance

Upon completion, the County may need to adopt the IAMP before ODOT can present the plan to the OTC for adoption. After adoption of the IAMP, subsequent amendments to the county's Comprehensive Plan will need to be compatible with the IAMP.

1.2.2. Jackson County Transportation System Plan

The Jackson County TSP, adopted in 2005, consists of all areas of Jackson County located outside the UGBs of incorporated cities, although it does include issues identified in local TSPs or the Regional Transportation Plan (RTP) that affect state and county facilities inside UGBs. The OR 140 Corridor Plan transportation improvements are required to be compatible with Jackson County TSP goals and policies.

The TSP has three primary goals: livability, modal components, and integration. The TSP includes associated policies that provide direction for accomplishment of the goals and that "have the force of law."

The goals and policies most applicable to IAMP 40/43 are described below:

> Goal 4.1 – Livability: To develop and maintain a safe multi-modal transportation system capable of meeting the diverse transportation needs of Jackson County while minimizing adverse impacts to the environment and to the County's quality of life.
>
> > Policy 4.1.1 A Mobility Policies: Eliminate barriers to the handicapped in transportation facilities under County jurisdiction and control. Jackson County will meet or exceed state and federal regulations for the transportation disadvantaged.

Policy 4.1.2-A – Connectivity: Jackson County will promote a well-connected street and road system to minimize travel distances

Policy 4.1.4-A – Safety: Jackson County will provide a transportation system that supports access for emergency vehicles and provides for evaluation in the event of a wildfire hazard or other emergency.

Goal 4.2 – Modal Components: To plan an integrated transportation system that maintains existing facilities and responds to the changing needs of Jackson County by providing effective multi-modal transportation options.

Policy 4.2.1-A – Vehicular System: Jackson County will prioritize preservation and maintenance of the existing road system rather than increasing vehicular capacity.

Policy 4.2.1-G – Truck Freight: Balance the need for movement of goods with other uses of county arterials and state highways by maintaining efficient through movement on major truck routes.

Policy 4.2.1-P – Coordination: Jackson County will coordinate with ODOT to ensure that highway designations and management policies are appropriate and meet the Goals and Policies of the OHP and the Jackson County TSP. Jackson County will work with ODOT for effective management of highway capacity.

Policy 4.2.1-R – Jackson County will coordinate with cities on transportation planning and transportation projects to provide well-connected transitions from city to County transportation systems.

Policy 4.2.1-T – Jackson County will engineer traffic flow to provide efficient transportation system management.

Policy 4.2.1-U – Jackson County will manage road approaches to preserve the safe and efficient operation of the County's roadways, consistent with their functional classification.

Goal 4.3 Integration**:** To achieve the livability and modal elements goals by integrating land use planning, system financial planning, environmental planning and application of policies to address transportation needs in specific locations.

In addition, Jackson County Access Management Guidelines incorporate the following property structure:

- Priority Level #1: Avoid Negative Effects on Intersection Operations
- Priority Level #2: Minimize Access Points, Access Alignments, Shared Access
- Priority Level #3: Access Spacing

Along with guiding goals and policies, the TSP has standards for both rural and urban roads standards. Table 5-2 Rural County Roadway Standards and Specifications, includes the standards most applicable to roads in the interchange study areas. The table includes standards and specifications for: design speed, land width, shoulder width, pavement width, access spacing, surface type, ROW width, curve radius, stopping sight distance, grade, vertical distance, load design, and applicable specifications.

Identified projects in the TSP or near the interchange study areas are all in support of bicycle improvements:

Tier1 Short and Medium Range (Financially constrained 2004 – 2013)

7. **Old Stage Road (Winter Brook to Blackwell)**

   This Tier 1 RTP project adds paved shoulders on Old Stage Road between Winterbrook Road and the MPO boundary. In reviewing the TSP, the Bike committee ranked Old Stage Road among the 5 highest priority projects. The Bicycle Master Plan identifies Old Stage Road as needing bicycle facilities. This project completes the bicycle connection between Central Point and Gold Hill. A continuous bicycle facility on Old Stage Road provides a major north-south connection on the western edge of the MPO boundary and serves recreational needs.

Tier 2 (Unfunded):

24. **Highway 234**

    This project widens shoulders on Highway 234 between Antioch Road and 4th Avenue in Gold Hill. This project completes the bicycle network between Central Point, Gold Hill, and Eagle Point. In reviewing the TSP, the Bike committee ranked Highway 234 among the 5 highest priority projects.

28. **Highway 99 (Josephine County Line to Gold Hill)**

    Identified as one of the bicycle needs in the Bicycle Master Plan, this project widens shoulders on Highway 99 from the Josephine County line to the I-5 Rogue River Road interchange. This project would extend the project identified in the Bicycle Master Plan all the way to Gold Hill to provide a safer bicycling environment along a scenic stretch of the Rogue River and offers the potential for an eventual bicycle link to Grants Pass.

32. **North River Road (Gold Hill to Rogue River)**

    The Communities of Rogue River and Gold Hill identified this project to improve bicycle facilities between Gold Hill and Rogue River. This facility is a major collector, but is outside the MPO. The traffic volumes on this road segment do not currently meet the threshold (3,000 ADT) set in the TSP whereby a lack of shoulders would be considered a deficiency. However, the volumes toward the end of the planning horizon are expected to be approaching the applicable threshold. As such, the project has been added the unfunded project list.

Planning Horizon:

- Greenway Extension to County Line (Table 6-2)

Project Relevance

Upon completion, the County may need to adopt the IAMP before ODOT can present the plan to the OTC for adoption. After adoption of the IAMP, subsequent amendments to the county's TSP will need to be compatible with the IAMP.

1.2.3. Jackson County Land Development Ordinance

The Jackson County Land Development Ordinance (LDO) was originally adopted in 2004 with subsequent amendments through 2012. It regulates uses, activities, and structures on lands within the unincorporated areas of the county. The LDO provides the standards for construction of improvements that are monitored through the land use approvals/permitting process. These standards are included in the following sections:

CHAPTER 2. REVIEW AND DECISION-MAKING – Outlines the administration of the ordinance and the applicable approval authority.

CHAPTER 3. APPLICATION REVIEW AND DECISION – Provides the types of land use permits, and related procedures and approval criteria.

CHAPTER 9. GENERAL DEVELOPMENT REGULATIONS – provides the regulations development comply with including access design standards (section 9.5).

CHAPTER 10. LAND DIVISION - Establishes minimum requirements and standards necessary for land divisions. Authorization and minimum standards for the Ordinance are provided by Oregon Revised Statutes (ORS) Chapters 92 and 215.

The zoning designations within the study area generally correspond to the comprehensive plan designations as shown on Figure 1-3a and b.

The purpose of each zoning designation is described below:

- EFU: The purpose of the Exclusive Farm Use (EFU) District (Section 4.2) is to conserve agricultural land and to implement the Oregon Agricultural Land Use Policy, ORS 215.243, Statewide Planning Goal 3 (Agricultural Lands), and OAR 660-033. Depending on the type of transportation improvement, a Type 1 to Type 4 permitting review is required.
- FR, WR: Forest Resource (FR); Woodland Resource (WR). These districts are intended to conserve forest lands and implement the Oregon Administrative Rules, and Statewide Planning Goal 4 (Forest Lands) (Section 4.3).
- IC: The purpose of the Interchange Commercial district (Section 5.5.2) is provide for commercial uses that serve the immediate needs of the traveling public, and are located at freeway interchanges with state highways or county roads. Depending on the type of transportation improvement, the project may be permitted outright or require a Type 1 to Type 2 permitting review.
- RR : The purpose of the rural residential zoning districts is to provide for large-lot residential areas, consistent with the predominant rural character of the area and the physical capability of the land.
- AR: The purpose of the Aggregate Removal (AR) District (Section 4.4) is to allow for the protection and utilization of aggregate and other mineral resources, and to ensure the reclamation of mined land. Transportation improvements typically require a Type I review.

- RLI: The purpose of the Rural Light Industrial district is to provide for industrial uses that rely on site-specific natural resources for their processes and activities, or create a byproduct of substantial direct benefit to resource-producing lands or uses.
- LU: The purpose of the Limited Use (LU) (Section 5.7.1) district is to limit uses and activities to those justified in a Comprehensive Plan Amendment "Reasons" exception statement adopted by the County and acknowledged by the state pursuant to ORS 197.732(1)(c) as required by OAR 660-004-0018(4)(a), or to recognize existing lawfully established nonconformities as permitted uses.

Section 7.1 of the LDO addresses Environmental and Cultural Overlays include the following zoning sections which may apply to the interchange study areas:

7.1.1 Areas of Special Concern

- ASC 90-1 Deer and Elk Habitat
- ASC 90-4 Historic Resources
- ASC 90-6 Archaeological Sites
- ASC 90-10 Ecologically or Scientifically Significant Natural Areas

7.4 Urban Overlays

7.4.1 Areas of Mutual Planning Concern and Urban Growth Boundaries

Incorporated communities may agree with the County to designate lands lying immediately beyond their urban growth boundaries as areas where the County and city will coordinate planning activities, including those pertaining to requests for changes in land use. All such agreements will be subject to mutual review and adoption by the governing bodies of the affected city and the County. Agreements currently in effect are hereby adopted by reference and govern County land use actions in their respective areas. Development standards adopted through such agreements supersede the development standards of this Ordinance when specified in the agreement.

Project Relevance

Upon completion, the County may need to adopt the IAMP before ODOT can present the plan to the OTC for adoption. Amendments to the LDO may be necessary to implement the IAMP. After adoption of the IAMP, subsequent amendments to the county's ordinance will need to be compatible with the plan.

1.2.4. City of Gold Hill Comprehensive Plan (1984)

The purpose of the City of Gold Hill Comprehensive Plan is to:

1. To guide the future growth and development.
2. To correct problems and maximize potentials.
3. To act as a guide to decision-making.

Some of the applicable policies for the IAMP include:

Information and Technical Assistance

Policy A-2: The City shall remain aware of ongoing plans and activities of Jackson County and other communities with the region that pertain to economic development planning and promotion.

Planning and Regulation

Policy B-1: The City shall strive to maximize the use of major existing facilities that are in place but underutilized, including the railroad, Highway 234, and vacant lots within the city limits.

Policy B-3: The City shall continue to review and update the zoning ordinance requirements pertaining to land use buffering to ensure that all land uses will be compatible with neighboring uses.

Public Facilities and Services

Policy C-1: The City shall ensure that all future plans for public facilities or utilities improvements are designed in accordance with proposed land uses as shown on the City's Comprehensive Plan map.

Site Development

Policy D-1: The City shall ensure, through its Plan Review process, that all new development will be consistent with the Comprehensive Plan and will be of the highest physical and aesthetic quality.

Policy D-4: The City shall ensure that all new development is in conformance with applicable state and federal requirements as well as with city codes.

Efficient Patterns of Land Use

Policy 3. The City will discourage suburban sprawl development that is not consistent with the Comprehensive Plan and City/County urbanization agreement, and that might put an undue strain on the City's ability to provide needed services and facilities.

Transportation Polices

Policy 4. The City will strive to site industrial and major commercial facilities on or near major highways and rail facilities, to maximize the use of these facilities and meet the transportation needs of those business and their patrons.

Policy 5. The City shall coordinate its transportation plans with those the County, State, and other affected agencies as appropriate.

Project Relevance

The IMSAs for the IAMPs are located entirely outside of the City of Gold Hill UGB (Figure 1-1a and b). However, in consideration of the close proximity of the UGB, a review of the Comprehensive Plan has been conducted.

1.2.5. City of Gold Hill/Jackson County Urban Growth Boundary and Policy Agreement

The agreement was entered into on September 26, 1984. The Gold Hill Urbanizable Area includes lands currently within the City and encompasses selected lands around the City which are planned for future urban growth, and which are likely to require the extension of City services. The area is delineated by an Urban Growth Boundary imposed on the official Comprehensive Plan and Zoning Map of Jackson County. Applicable polices from the agreement to planning for interchange improvements include:

4) The City, County and affected agencies shall coordinate the expansion and development of all urban facilities and services within the Gold Hill urbanizable area.
6) Long-range transportation and air and water quality planning for the urbanizable area shall be a joint City/County process coordinated with all affected agencies.
7) All County road construction and reconstruction resulting from new development, redevelopment, or land division, in the urbanizable area shall be to urban standards, except that the term "reconstruction" does not include normal road maintenance by the County.
8) The City of Gold Hill and Jackson County acknowledge the importance of protecting resource lands, specifically agricultural lands zoned Exclusive Farm Use (EFU) and forest lands zoned Woodland Resource (WR), other than those that may be within the urbanizable area or in the identified direction of urban growth. Both jurisdictions will continue to maintain policies pertaining to the buffering of such lands. Urban development may be allowed to occur on lands adjacent to resource lands when the controlling jurisdiction determines that such development will be compatible with the resource land's use or character. Buffering shall occur on the urbanizable lands adjacent to the UGB as required to protect the resource lands. Buffering options may include:
    A) Special setbacks for new urban structures adjacent to the Urban Growth Boundary;
    B) Acquisition by public agencies;
    C) Lower densities at the periphery of the Urban Growth Boundary than allowed elsewhere in the City;
    D) Strategic location of roads, golf courses, or other major public areas or facilities; and/or
    E) Use of vegetative screens, earthen berms, and fences of sufficient height and substance to help reduce trespass of people, animals, and vehicles.
    F) A deed declaration recognizing common, customary, and accepted farming practices shall be required for all development that is allowed to occur within three-hundred (300) feet of any land that is zoned for Exclusive Farm Use.
    G) The City shall request the County's recommendations concerning the buffering of any EFU lands from adjacent urban development.

AMENDMENTS AND CORRECTIONS

1) Amendment Procedures for UGB and Urbanization Policies:
   E) Major revision proposals shall be subject to a mutual City and County review and an agreement process that involves affected agencies, citizen advisory committees, and the general public.

Project Relevance

The IMSAs for the IAMPs are located entirely outside of the City of Gold Hill UGB (Figure 1-1a and b). However, in consideration of the close proximity of the UGB, a review of the Policy Agreement has been conducted.

1.2.6. Rogue River Recreational Corridor and Greenway Maps

The Rogue River Greenway trail will connect with the Bear Creek Greenway in Central Point, and then will follow the Rogue River to Gold Hill. It will connect with an existing section of the trail and continue along the Rogue River to the Valley of the Rogue State Park and the City of Rogue River. Then the Greenway trail will continue north along the river to Grants Pass. When completed, the combined Rogue River Greenway Trail and Bear Creek Greenway will extend more than 50 miles and connect 2 counties and 8 cities. The completion of the Bear Creek Greenway Project will span 20 miles from Ashland through Talent, Phoenix and Medford to Central Point. Southern Oregon has been working for over 30 years to connect its communities with a Greenway corridor.

Within the IMSA, a new portion of the Greenway trail was recently constructed. The new segment begins near the intersection of North River Road at OR 99/Highway 234 and extends east along the south side of Highway 234 until just east of Sardine Creek.

Project Relevance

The Rogue River Greenway Trail map shows the trail passing the interchanges east of the river and I-5. However, it crosses the river and I-5 just north of Exit 43. Old Stage Road in the Exit 40 study area is an identified bike route which provides connections to downtown Gold Hill and the Greenway trail via Access Road.

1.3. Middle Rogue Metropolitan Planning Organization

The Middle Rogue Metropolitan Planning Organization (MRMPO), formed in 2013, includes the cities of Gold Hill, Grants Pass, and Rogue River and adjacent parts of Jackson and Josephine Counties which could become urbanized over the next 20 years. MRMPO coordinates the transportation planning for this urbanized area. This effort includes preparing the area's long-range regional transportation plan (RTP) and the Metropolitan Transportation Improvement Program (MTIP). The Rogue Valley Council of Governments is serving as the MPO for the Middle Rogue area.

1.3.1. MRMPO Regional Transportation Plan (RTP)

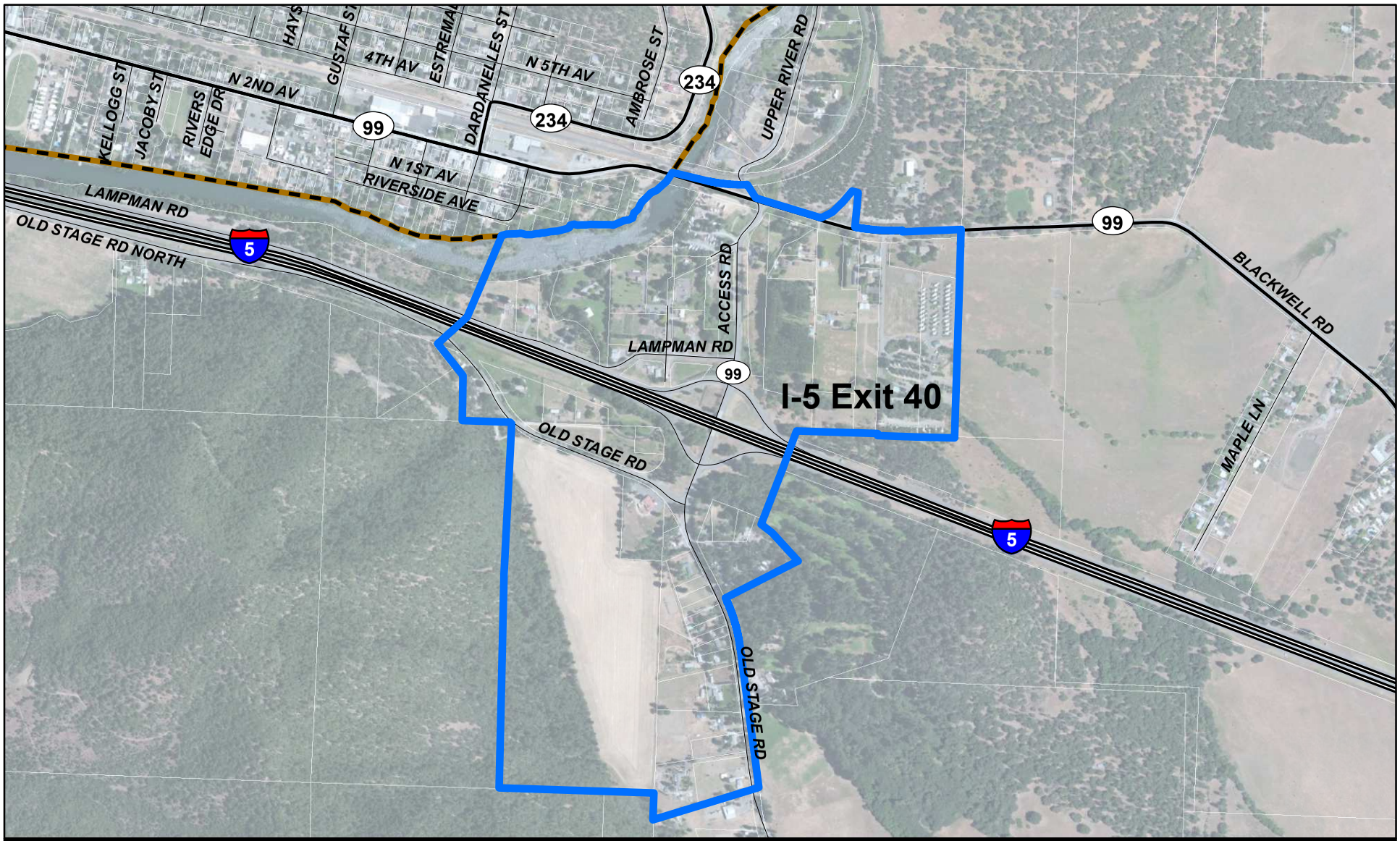
At this time, MRMPO is developing the 2016-2040 RTP to meet federal planning requirements. Adoption of the RTP is anticipated in March 2016.

1.3.2. MRMPO Metropolitan Transportation Improvement Program (MTIP)

An interim MTIP has been prepared for the MRMPO boundary for the 2015 to 2018 time period. At this time, there are no projects in the interim MTIP for either Jackson County or Gold Hill.

Attachments:

Figure 1-1. Project Vicinity and Study Area
Figure 1-2. Jackson County Comprehensive Plan Designations
Figure 1-3. Jackson County Zoning Designations



I-5 Exits 40 and 43 Interchange Area Management Plans

N

1,000 500 0 1,000

Feet

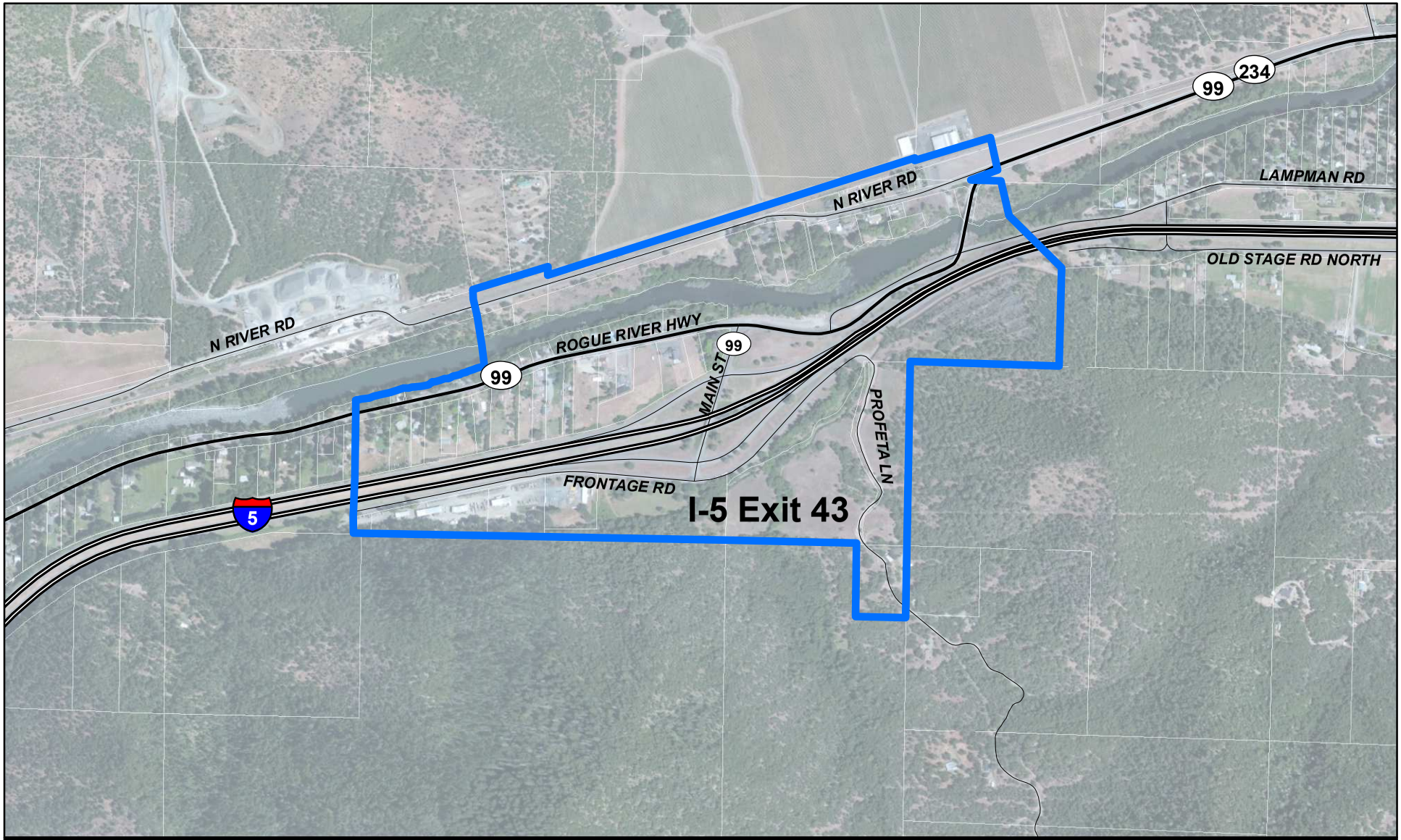
Source Data: ESRI, Jackson County, NAIP 2009

Legend

- Interchange Management Study Area (IMSA)
- Urban Growth Boundary (UGB)
- Taxlot Boundaries indicated in white
- Interstate
- Highway
- Local Road

Figure 1-1a

Project Vicinity and Study Area
I-5 Exit 40



I-5 Exits 40 and 43 Interchange Area Management Plans

N

1,000 500 0 1,000

Feet

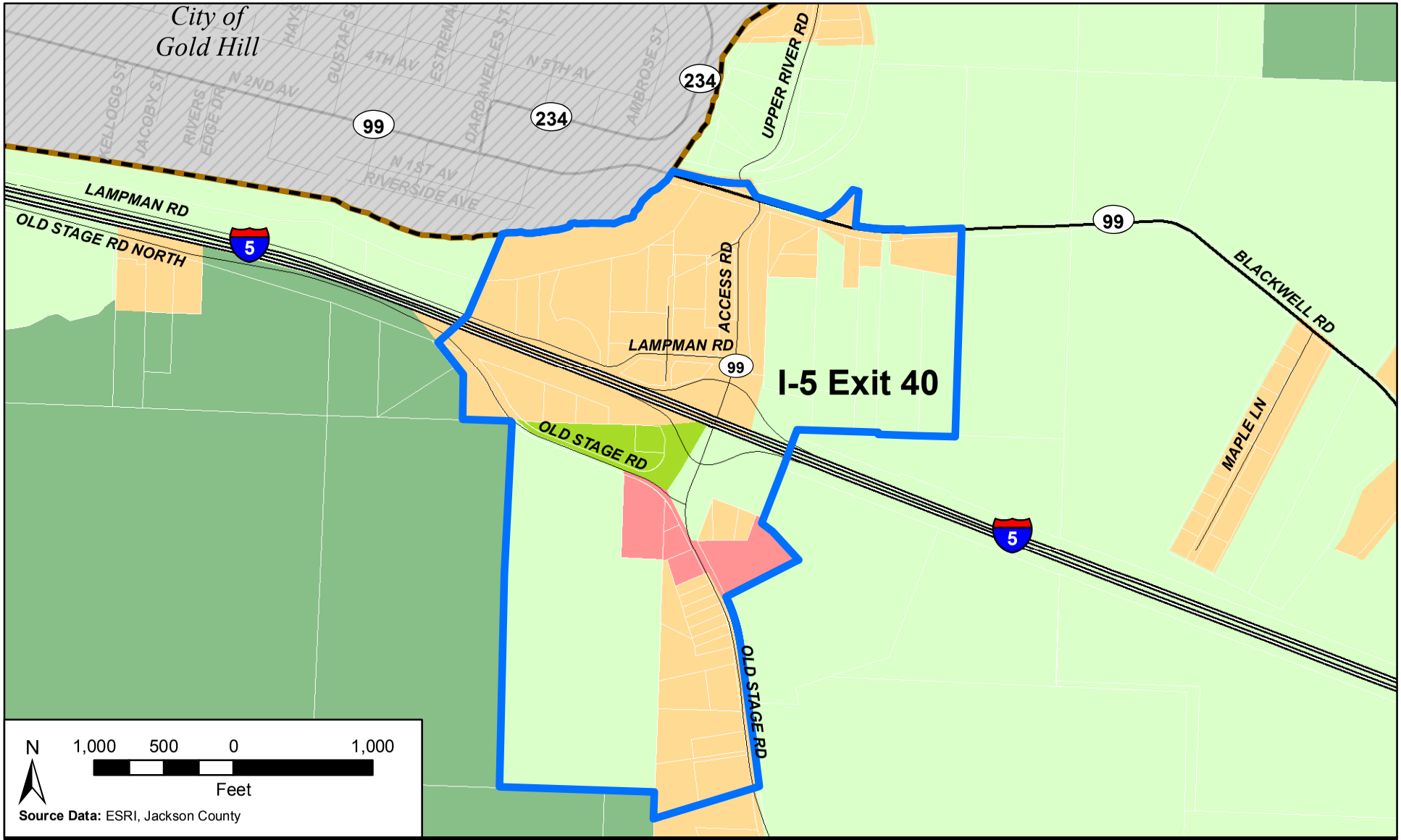
Source Data: ESRI, Jackson County, NAIP 2009

Legend

- Interchange Management Study Area (IMSA)
- Urban Growth Boundary (UGB)
- Taxlot Boundaries indicated in white
- Interstate
- Highway
- Local Road

Figure 1-1b

Project Vicinity and Study Area
I-5 Exit 43



I-5 Exits 40 and 43 Interchange Area Management Plans

Legend

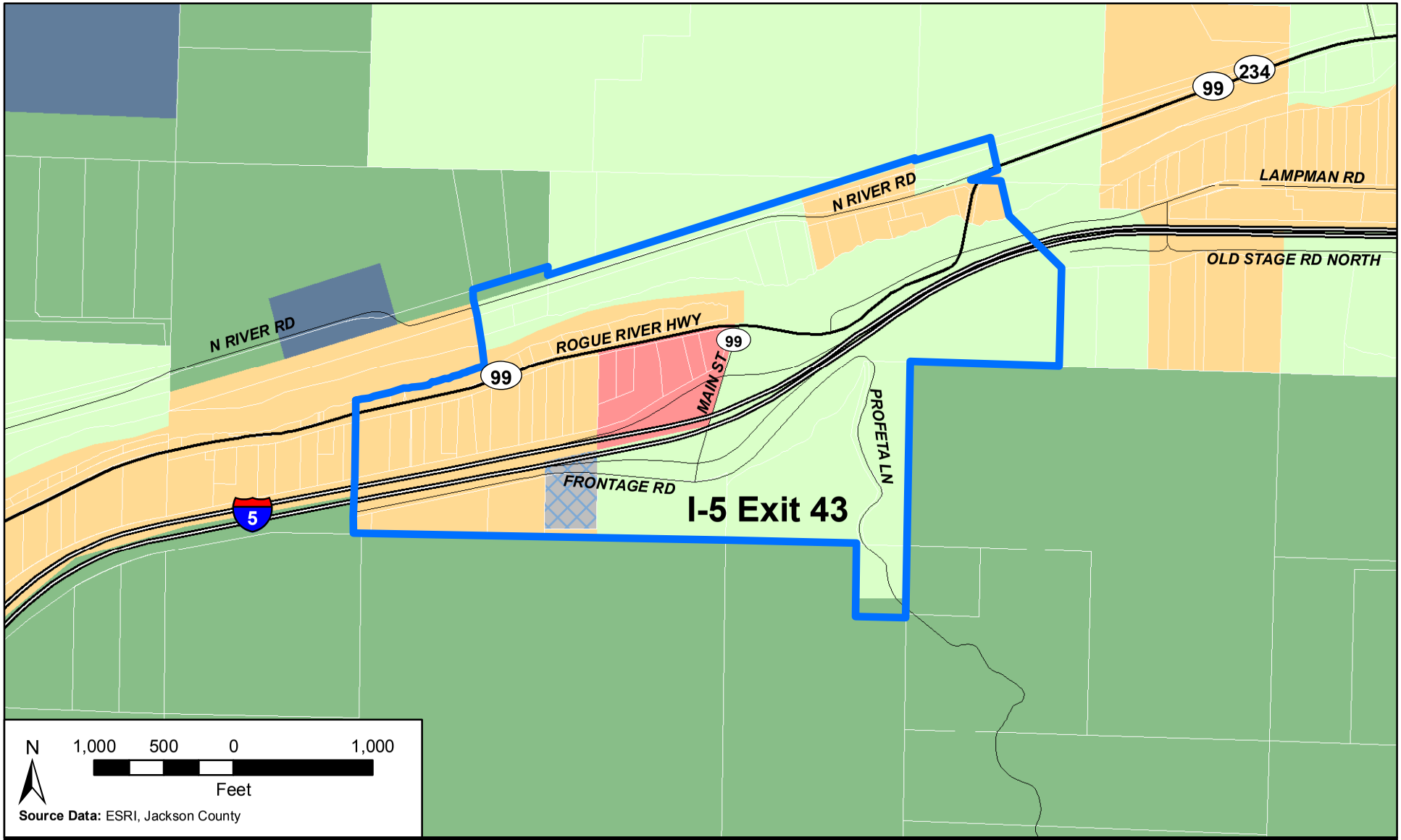
- Interchange Management Study Area (IMSA)
- Urban Growth Boundary (UGB)
- Taxlot Boundaries indicated in white
- Interstate
- Highway
- Local Road

Jackson County Comprehensive Plan Designations

- Agricultural Land
- Commercial Land
- Forestry / Open Space Land
- Limited Use Land
- Rural Residential Land
- No Data

Figure 1-2a

Jackson County Comprehensive Plan Designations
I-5 Exit 40



I-5 Exits 40 and 43 Interchange Area Management Plans

Legend

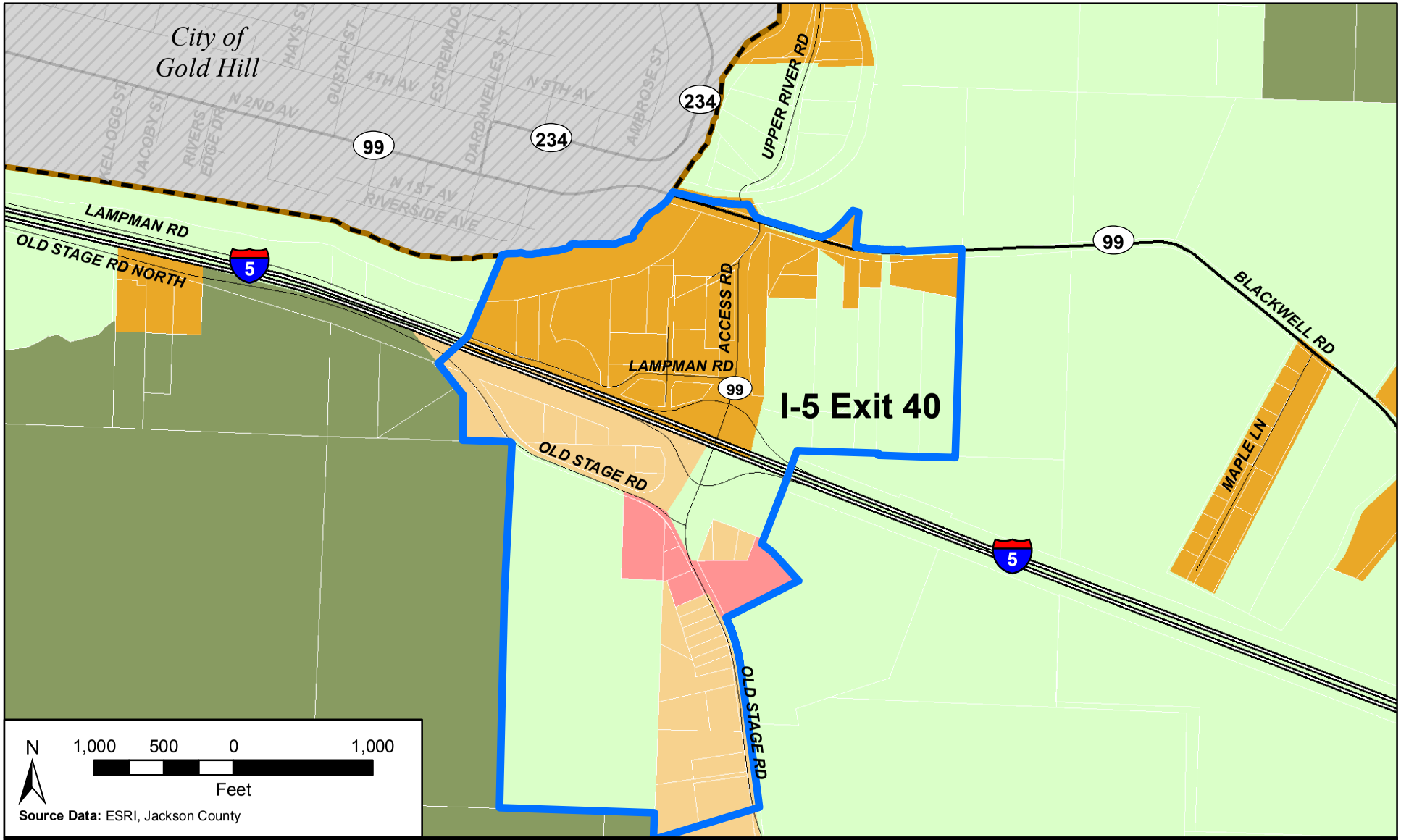
- Interchange Management Study Area (IMSA)
- Urban Growth Boundary (UGB)
- Taxlot Boundaries indicated in white
- Interstate
- Highway
- Local Road

Jackson County Comprehensive Plan Designations

- Aggregate Removal Land
- Agricultural Land
- Commercial Land
- Forestry / Open Space Land
- Industrial Land
- Rural Residential Land

Figure 1-2b

Jackson County Comprehensive Plan Designations
I-5 Exit 43



I-5 Exits 40 and 43 Interchange Area Management Plans

Legend

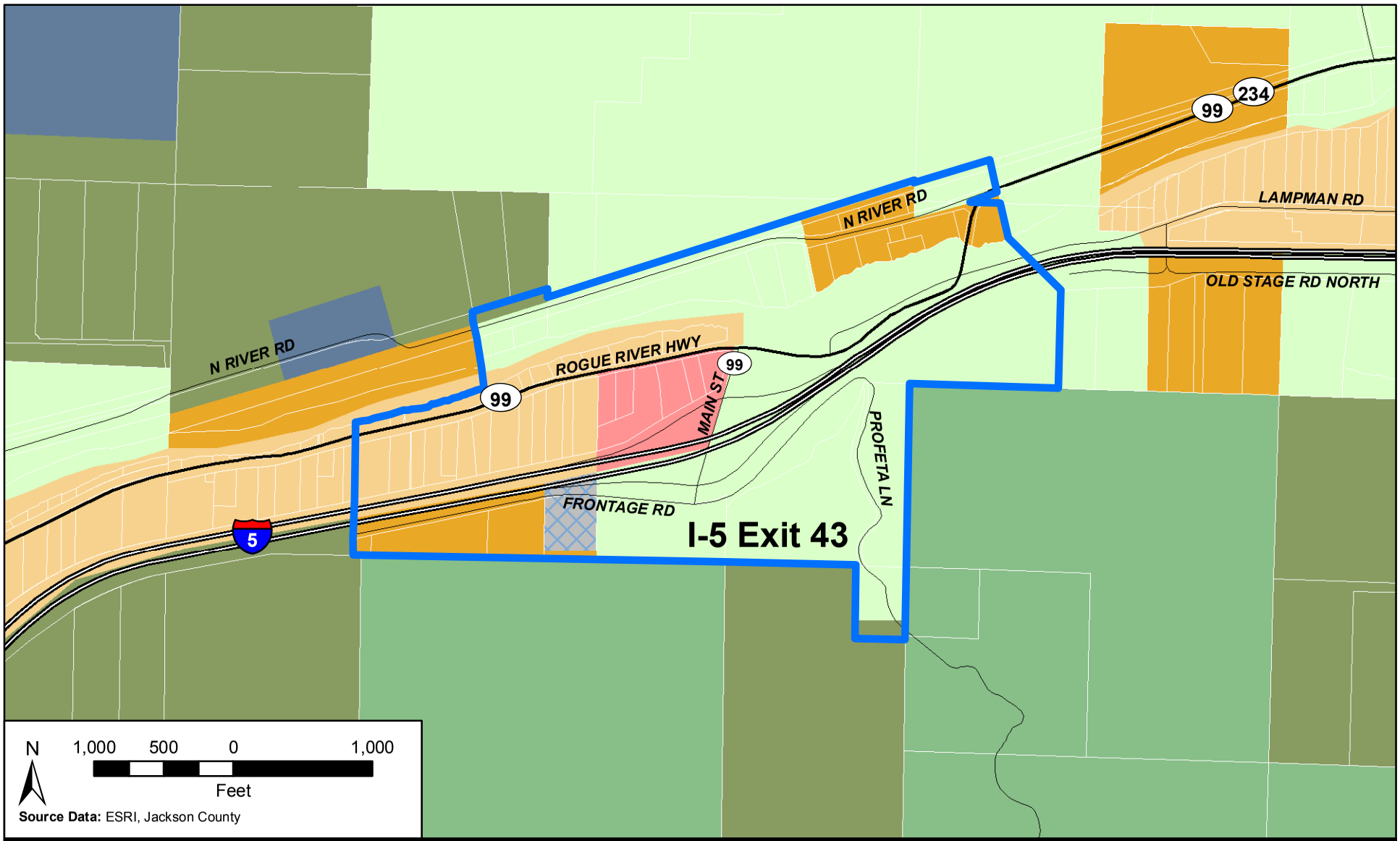
- Interchange Management Study Area (IMSA)
- Urban Growth Boundary (UGB)
- Taxlot Boundaries indicated in white
- Interstate
- Highway
- Local Road

Jackson County Zoning Designations

- Exclusive Farm Use (EFU)
- Interchange Commercial (IC)
- Rural Residential - 2.5 (RR-2.5)
- Rural Residential - 5 (RR-5)
- Woodland Resource (WR)

Figure 1-3a

Jackson County Zoning Designations
I-5 Exit 40



I-5 Exits 40 and 43 Interchange Area Management Plans

Legend

- Interchange Management Study Area (IMSA)
- Urban Growth Boundary (UGB)
- Taxlot Boundaries indicated in white
- Interstate
- Highway
- Local Road

Jackson County Zoning Designations

- Aggregate Removal (AR)
- Exclusive Farm Use (EFU)
- Forest Resource (FR)
- Interchange Commercial (IC)
- Rural Light Industrial (RLI)
- Rural Residential - 2.5 (RR-2.5)
- Rural Residential - 5 (RR-5)
- Woodland Resource (WR)

Figure 1-3b

Jackson County Zoning Designations
I-5 Exit 43

I-5 Exits 40 and 43 (Gold Hill)
Interchange Area Management Plans

Technical Memorandum #2
Goals, Objectives, and Evaluation Criteria

Prepared for

Oregon Department of Transportation, Region 3
3500 NW Stewart Parkway
Roseburg, Oregon 97470

Prepared by

David Evans and Associates, Inc.
2100 SW River Parkway
Portland, Oregon

February 2015

TABLE OF CONTENTS

2. DEFINITION AND BACKGROUND 1
2.1. Purpose 1
2.2. Interchange Function 2
2.2.1. I-5 Exit 40 2
2.2.2. I-5 Exit 43 2
2.3. Problem Statement 3
2.4. IAMP Goals and Objectives 3
2.5. IAMP Planning Area 4
2.6. IAMP Evaluation Criteria 5

2. DEFINITION AND BACKGROUND

The Oregon Department of Transportation (ODOT) encourages the development of Interchange Area Management Plans (IAMP) to maintain and improve highway performance and safety by improving system efficiency and management before adding capacity. Public investments for major interchange improvements are very costly, and it is in the interest of the State, local governments, citizens of Oregon, and the traveling public to ensure that the interchanges function as they are designed for as long as possible.

2.1. Purpose

As described in ODOT's Interchange Area Management Plan Guidelines, the objectives of an IAMP are:

- Protect the state and local investment in major facilities
- Establish the desired function of interchanges
- Protect the function of interchanges by maximizing the capacity of the interchanges for safe movement from the mainline highway facility
- Balance the need for efficient interstate and state travel with local use
- Preserve and improve safety of existing interchanges
- Provide safe and efficient operation between connecting roadways
- Adequately protect interchanges from unintended and unexpected development while accommodating planned community development
- Manage the existing interchange capacity and new capacity provided through interchange improvements
- Establish how future land use and transportation decisions will be coordinated in interchange areas between ODOT and the local governments
- Minimize impacts to farm and forest lands and other resource lands around rural interchanges in accordance with adopted Statewide Planning Goals
- Time development with appropriate improvements to the local system after the interchange improvement is in place

The IAMP planning process examines existing and potential future land use and transportation conditions along with opportunities and limitations and identifies long-range needs. Outcomes may include improvements to the local street network in the vicinity of the interchange needed to accommodate anticipated growth in the region and land use actions and/or management measures to be applied in the management area.

State and local regulations, policies, and transportation and land use plans provide the framework for preparing the IAMP. The language contained within these documents provides guidance to the state and local jurisdictions on how to manage transportation and land uses in the interchange influence area to protect the interchange function, provide for safe and efficient operations, and minimize the need and expense for making major improvement to the

interchange through the planning horizon. Hence, the IAMP documents relevant plans and policies, and identifies how they influence planning for the Interchange 40 and 43 areas. The purpose of the review is to ensure the necessary compatibility, consistency, and compliance required by state law and ODOT policy. A review of plans and policies was prepared in Technical Memorandum #1.

2.2. Interchange Function

This IAMP address two rural interchanges that serve Gold Hill and Jackson County. The function of each is described below.

2.2.1. I-5 Exit 40

I-5 Exit 40 is a rural interchange that currently functions as the southern of two access points to the City of Gold Hill in Jackson County. Additionally, it serves nearby outdoor recreation areas such as Ben Hur Lampman Park, Gold Nugget Recreation Area, multiple County parks, and campgrounds. It connects to the Tolo area, an identified Central Point urban reserve area envisioned to provide employment lands, via Blackwell Road (to the southeast).

The interchange ramps connect with an unnamed road, which will be referred to as Access Road in this report. To the south, Access Road intersects Old Stage Road and serves farm lands including Granger Reservoir, and partially developed suburban and commercial lands. To the north Access Road serves rural and farm lands until it reaches OR 99/2nd Avenue/Blackwell Road near the Rogue River/Urban Growth Boundary (UGB) for the City of Gold Hill.

In general, accesses (i.e., driveways and streets) are well spaced with emphasis on through traffic. However, the first intersection to the south (Old Stage Road) is approximately 300 feet south of the southbound ramp terminal. It serves suburban and commercial lands adjacent to the interchange and provides an alternative route to the freeway for local trips on the south side of I-5 between Exits 40 and 43.

The north side of the interchange has similar concerns with the Lampman Road intersection located approximately 200 feet north of the northbound ramp terminal. Lampman Road serves rural and farm lands adjacent to the interchange. It also provides a local connection for trips on the north side of I-5 between Exits 40 and 43. Outside the interchange management study area, Lampman Road provides access to residential development and Ben Hur Lampman Park.

The interchange layout is a standard diamond with approximately 600 feet between northbound and southbound ramp terminals. The ramp terminals provide STOP-control for traffic exiting I-5. The bridge over I-5 is two lanes with minimal shoulders and no bicycle or pedestrian facilities.

2.2.2. I-5 Exit 43

I-5 Exit 43 is a rural interchange that currently functions as the northern of two access points to the City of Gold Hill in Jackson County. However, it primarily provides access to outdoor

recreation areas such as Cypress Grove RV Park, Del Rio Vineyards, House of Mystery, and the Old Stage Road Historic Corridor, and associated commercial activities and nearby gravel pits (via North River Road).

The interchange ramps connect with Main Street. To the south Main Street serves farm, rural industrial and rural residential lands. To the north Main Street serves interchange commercial, rural residential and farm lands.

In general, accesses are well spaced with emphasis on through traffic. However, the first intersection to the south (Frontage Road/Profetta Lane) is approximately 150 feet south of the southbound ramp terminal. Frontage Road/Profetta Lane serves rural residential, industrial and farm lands adjacent to the interchange and provides an alternative route to the freeway for local trips on the south side of I-5 between Exits 40 and 43.

The north side of the interchanges has similar concerns with Rogue River Highway (OR 99) located approximately 375 feet north of the northbound ramp terminal. Rogue River Highway serves rural residential, interchange commercial, and farm lands and provides an alternative route to the freeway on the north side of the interchange.

The interchange layout is a standard diamond with approximately 650 feet between northbound and southbound ramp terminals. The ramp terminals provide STOP-control for traffic exiting I-5. The bridge over I-5 is two lanes with minimal shoulders and no bicycle or pedestrian facilities.

2.3. Problem Statement

I-5 Exit 40 primarily provides access to the city and nearby outdoor recreation areas, while Exit 43 primarily provides access to outdoor recreation areas and associated commercial activities. The recreational areas are used by local residents as well as tourists in the area. While bicycling is a popular recreational activity, the bicycle and pedestrian facilities in the vicinity of the interchanges are limited. Travel options for all modes and connections to the Rogue River Greenway need to be integrated into the plan.

Geometrically, the interchange overpasses (both Exits 40 and 43) have limited cross-section width and do not provide adequate shoulders for emergency stops or bicycle/pedestrian movements. Both Exits 40 and 43 have a limited deceleration (off-ramp) length. Exit 40 also has limited acceleration (on-ramp) lengths. Both interchanges have nearby frontage roads which intersect the cross street and do not meet current access management spacing standards. Exit 40 is located closer to interchange 43 than desired.

2.4. IAMP Goals and Objectives

The goal of this IAMP is to maintain the function of both I-5 Exits 40 and 43 and maximize their safety and efficiency for all modes of travel.

The objectives of the IAMP are to:

- Protect the function of the interchanges as specified in the Oregon Highway Plan (OHP) and Jackson County Transportation System Plan (TSP).
- Provide safe and efficient operations on I-5, Access Road, and Main Street as specified in the OHP and Jackson County TSP.
- Facilitate freight travel to the interchange from nearby resource lands.
- Maintain existing emergency routes and identify improvements to the transportation system that may enhance emergency vehicle access.
- Identify safe and convenient bicycle and pedestrian improvements to connect and enhance non-motorized travel at and around the interchanges, including access to the Rogue River Greenway.
- Incorporate bicycle and pedestrian elements, such as sidewalks and bike lanes or shoulders, in roadway upgrades.
- Incorporate current and planned land uses into the design and management systems for Exits 40 and 43, including recommended strategies for land use control.
- Consider the Greater Bear Creek Valley Regional Problem Solving Plan (specifically inclusion and buildout of the adjacent Tolo industrial area) when evaluating design modifications and management systems for Exits 40 and 43, including recommended strategies for land use control.
- Develop an access management plan that provides for safe and acceptable operations on the transportation network, and meet OHP requirements and the access spacing standards in Oregon Administrative Rule (OAR) 734-051.
- Provide a process to educate and involve the public in the planning and funding for future transportation system improvements.

2.5. IAMP Planning Area

The IAMP planning area delineates the vicinity in which transportation facilities, land uses, and approaches may affect operations at the interchange. The planning area includes the existing interchange, the immediate surrounding area where ramp modifications could be constructed, and parcels adjacent to each interchange. This area is under Jackson County jurisdiction. The boundaries are based on zoning designation boundaries and generally described below.

The IAMP planning area for Exit 40, illustrated in Figure 2-1a, is roughly bound by:

- **East**: approximately 500 feet southeast along I-5and approximately 1,250 feet along OR 99
- **West**: approximately 2,000 feet northwest along I-5
- **North**: the City of Gold Hill Urban Growth Boundary (UGB) and approximately 300 feet north of OR 99
- **South**: approximately 4,000 feet south of the southbound ramp terminal

The IAMP planning area for Exit 43, illustrated in Figure 2-1b, is roughly bound by:

- **East**: approximately 2,000 feet east (south along I-5)
- **West**: approximately 3,000 feet west (north along I-5)
- **North:** approximately 1000 feet north of the northbound ramp terminal (to North River Road)
- **South:** approximately 600 feet south of the southbound ramp terminal

2.6. IAMP Evaluation Criteria

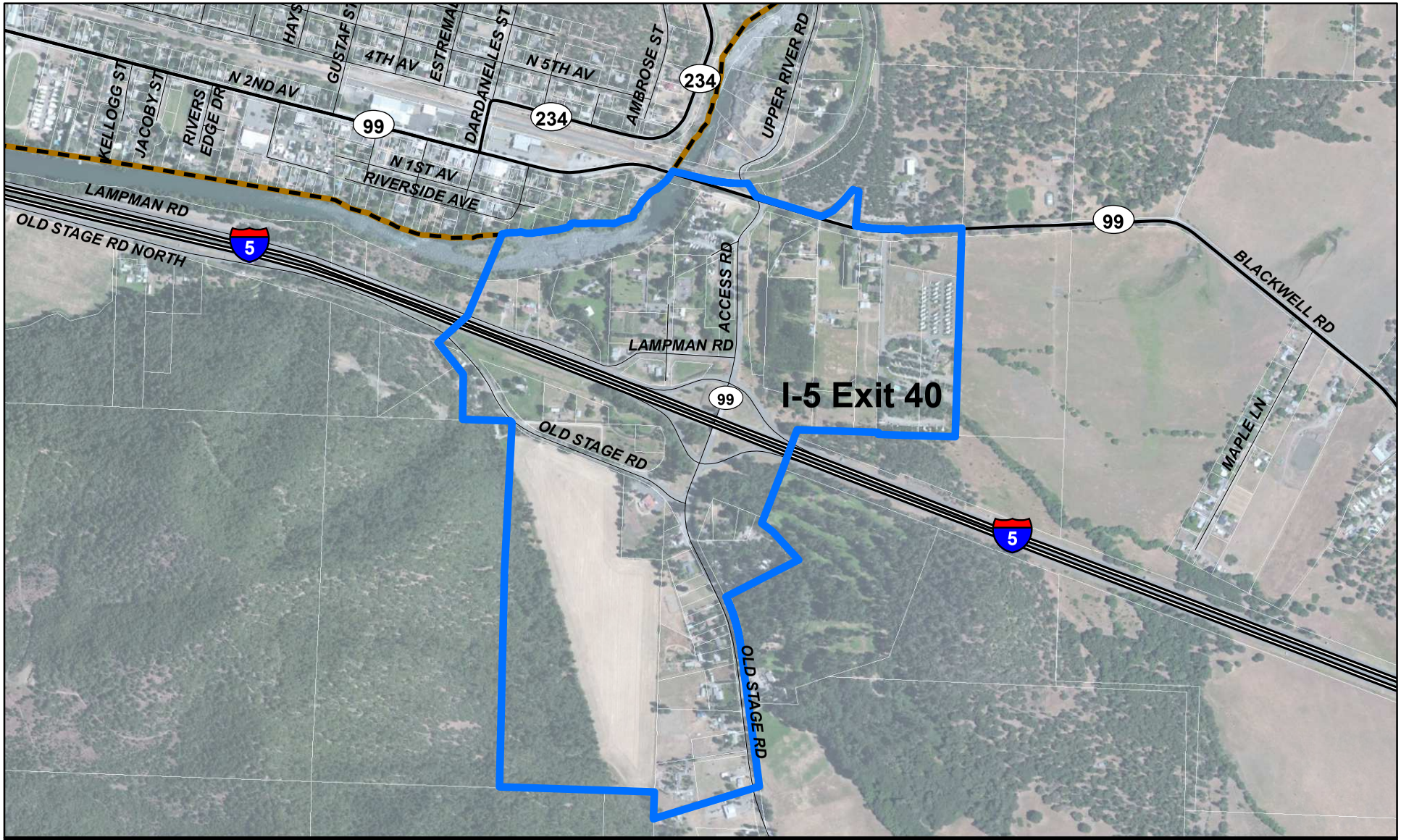
The evaluation of the goals and objectives will focus on quantitative and qualitative measures to assess potential future impacts to the roadway system such as:

1. Operations: such as v/c ratio and queuing
2. Safety: such as existing crash patterns, crash potential of concepts, multimodal assessment
3. Right-of-way/roadway geometry
4. Environmental, and land use impacts (as applicable)
5. Access spacing: move in the direction of the spacing standards
6. Project cost opinion

A sample of the evaluation matrix is shown in Table 2-1.

Attachments:

Figure 2-1. Project Vicinity and Study Area
Table 2-1. Draft Evaluation Matrix



I-5 Exits 40 and 43 Interchange Area Management Plans

N

1,000 500 0 1,000

Feet

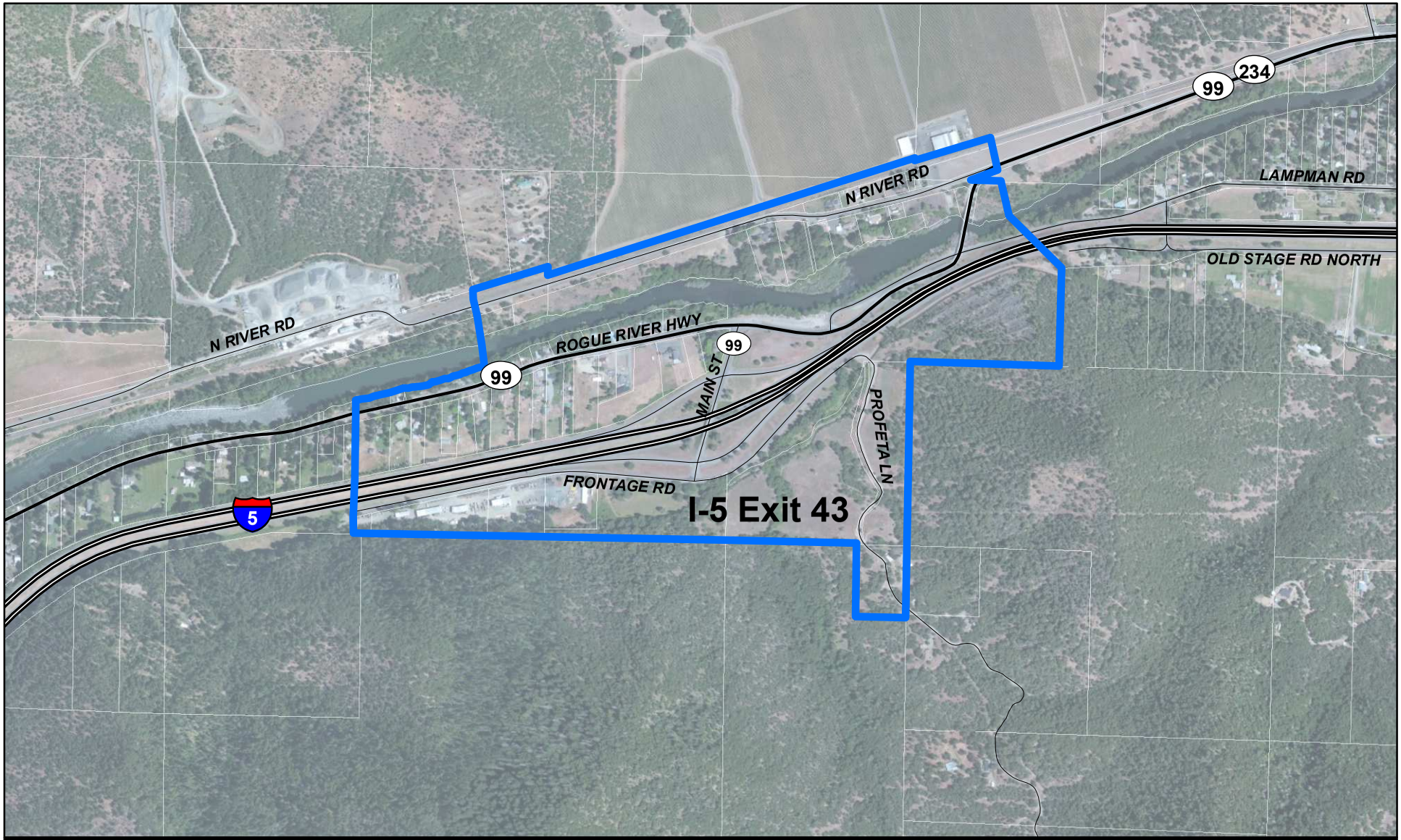
Source Data: ESRI, Jackson County, NAIP 2009

Legend

- Interchange Management Study Area (IMSA)
- Urban Growth Boundary (UGB)
- Taxlot Boundaries indicated in white
- Interstate
- Highway
- Local Road

Figure 2-1a

Project Vicinity and Study Area
I-5 Exit 40



I-5 Exits 40 and 43 Interchange Area Management Plans

N

1,000 500 0 1,000

Feet

Source Data: ESRI, Jackson County, NAIP 2009

Legend

- Interchange Management Study Area (IMSA)
- Urban Growth Boundary (UGB)
- Taxlot Boundaries indicated in white
- Interstate
- Highway
- Local Road

Figure 2-1b

Project Vicinity and Study Area
I-5 Exit 43

Table 2-1. IAMPs 40 & 43 Improvement Concepts – Summary Evaluation Matrix

ID	Location	General Description	Milepoints	Purpose	Traffic Operations and Safety[1,2,3]	Basic Roadway Geometry and Right of Way[4]	Environmental and Land Use[5]	Cost Opinion[6]	Related Concepts
ROADWAY SEGMENT IMPROVEMENTS									
RS-1	X Road	Proposed Concept description (widen, add X, modify Y) ▪ Number of lanes, type of facility (rural, urban)	X to Y	Mobility, Safety, Freight, Multimodal, Economic	▪ Current ADT ▪ Forecast ADT ▪ Description of how project impacts operations ▪ Description of how project impacts safety ▪ Address all related travel modes	▪ Existing roadway width (ROW) ▪ Number of travel lanes, median, shoulder, total ROW	▪ Identify nearby structures, environmental and/or natural elements, water bodies/flood zone, etc. ▪ Check for consistency between plans	▪ Cost Opinion ▪ No ROW costs included ▪ Applicable notes	Identify nearby concepts, if any
INTERSECTION IMPROVEMENTS									
I-1	Roadway X & Roadway Y	Proposed Concept description (ex. install traffic signal or change traffic control when warranted, add turn lane, channelize turn lane)	MP	Mobility, Safety, Freight, Multimodal, Economic	▪ Current intersection control ▪ Current and proposed project v/c ▪ Forecast and proposed project v/c ▪ Identify if warrants are met ▪ Safety concerns (ex. Potential change to crash frequently including type and severity) ▪ Potential Trigger ▪ Address all related travel modes	▪ Will geometric improvements be needed ▪ Can it be installed within ROW ▪ Additional considerations (e.g., restriping) ▪ Applicable implementation notes (identified guidelines to follow)	▪ Identify nearby structures, environmental and/or natural elements, water bodies/flood zone, etc. ▪ Nearby access points within influence of queues ▪ Check for consistency between plans	▪ Cost Opinion ▪ No ROW costs included ▪ Applicable notes	Identify nearby concepts, if any

Notes:

1. Traffic operations were evaluated for concepts that were identified to address operational deficiencies. The operational assessment focuses on the volume-to-capacity (v/c) ratio and level of service (LOS) for the X existing and X future condition.
2. At intersections where potential changes in traffic control or turn lanes were considered, the procedures in the ODOT Analysis Procedures Manual (APM) were followed. For traffic signal concepts, the ODOT preliminary traffic signal warrants[a] were evaluated. For potential turn lanes on the rural sections of the highway, the APM turn lane criteria[b] were evaluated. Existing traffic volumes were applied to determine if warrants for traffic signals or criteria for turn lanes might be met today. Year X traffic volumes were also evaluated to determine potential need in the future.
3. Some improvements are focused on addressing safety concerns or may address safety as well as traffic operations deficiencies. Crash patterns from the five-year analysis period (X through Y) are discussed for those improvements that address safety.
4. Illustrations of basic roadway geometry and right-of-way needs were developed for concepts that involve infrastructure improvements. The drawings approximate roadway centerlines, edge of roadway and right of way using available base mapping.
5. Impacts to resources were qualitatively assessed based on the data assembled for the environmental and land use reconnaissance. The level of analysis of the study area is designed to identify those areas judged to have considerable potential for conflict.
6. Rough order of magnitude cost opinions were developed using present day dollars and are consistent with standard estimating methods. The estimates include a contingency factor but do not include right-of-way costs. The cost opinions are intended to help differentiate alternatives by approximating the relative costs of each project.

[a] Section 7.4 Traffic Signal Warrants, Analysis Procedures Manual, April 2006, Updated January 2011, online reference: http://www.oregon.gov/ODOT/TD/TPAU/docs/A_APM/APM.pdf

[b] Section 7.2 Turn Lane Criteria, Analysis Procedures Manual, April 2006, Updated January 2011, online reference: http://www.oregon.gov/ODOT/TD/TPAU/docs/A_APM/APM.pdf. Note: These criteria are also consistent with the criteria in Appendix F of the Highway Design Manual.

I-5 Exits 40 and 43 (Gold Hill)
Interchange Area Management Plans

Technical Memorandum #3
Study Area Inventory

Prepared for

Oregon Department of Transportation, Region 3
3500 NW Stewart Parkway
Roseburg, Oregon 97470

Prepared by

David Evans and Associates, Inc.
2100 SW River Parkway
Portland, Oregon

May 2015

Table of Contents

3. EXISTING CONDITIONS 1
3.1. Transportation System Inventory 1
3.1.1. Roadway Inventory 1
3.1.2. Interchange Geometry 2
3.1.3. Truck Turning Movement Inventory 3
3.1.4. Pavement Conditions 4
3.1.5. Pedestrian and Bicycle Facilities Inventory 4
3.1.6. Transit Inventory 5
3.1.7. Bridge Inventory 5
3.1.8. Access Inventory 6
3.1.9. Rail Inventory 9
3.1.10. Summary of Existing Transportation System Deficiencies 9
3.2. Existing Environmental Summary 11
3.2.1. Wildlife Habitat and Wetlands 11
3.2.2. Threatened and Endangered Species 12
3.2.3. Hazardous Materials 14
3.2.4. Historic and Archaeological Resources 16
3.2.5. Floodplains and Floodways 17
3.3. Existing Land Use Summary 18
3.3.1. Socioeconomic and Environmental Justice 18
3.3.2. Land Use and Zoning 21
3.3.3. Section 4(f) Resources 23
3.3.4. Section 6(f) Resources 24
3.3.5. Potential Design Constraints 24

List of Tables

Table 3-1. Roadway Inventory 1
Table 3-2. Truck Turning Movement Inventory 3
Table 3-3. Pavement Conditions 4
Table 3-4. Bridge Conditions 6
Table 3-5. IMSA Access Inventory 7
Table 3-6. Summary of Existing Deficiencies 10
Table 3-7. ONHIC-Identified Federal and State Listed Threatened or Endangered Species 13
Table 3-8. IMSA State Hazardous Material Sites and Incidences 15
Table 3-9. NRHP-listed Resources 16
Table 3-10. Population and % Population Change, 2000, 2010, 2040 19
Table 3-11. Age of Census Tracts, 2010 19
Table 3-12. Race and Ethnicity, 2010 20
Table 3-13. Poverty, Disability, Female Head of Household, 2010 20
Table 3-14. Environmental and Land Use Summary 25

List of Figures (Attached at End)

Figure 3-1 (a & b). Access Management Inventory
Figure 3-2 (a & b). Natural Features
Figure 3-3 (a & b). Hazardous Sites
Figure 3-4 (a & b). Community Features
Figure 3-5 (a & b). Tax Lot Maps
Figure 3-6 (a & b). Comprehensive Plan Designations
Figure 3-7 (a & b). Zoning Map Designations
Figure 3-8 (a & b). Miscellaneous Landmarks and Features

3. EXISTING CONDITIONS

This memorandum summarizes the inventory of existing conditions within the Interstate 5 (I-5) Exits 40 and 43 Interchange Management IMSA (IMSA). The existing conditions assessment includes system inventories for roadway, bicycle/pedestrian, transit, bridge conditions, access and rail. Existing environmental and land use conditions are reviewed in the project IMSAs, with the intent to help inform the conceptual alternatives development process in a subsequent phase of the project.

3.1. Transportation System Inventory

The transportation system inventory examines the highway and intersecting roadways, truck intersection turning movements, bicycle and pedestrian facilities, transit facilities, bridge conditions, access locations, and rail facilities.

3.1.1. Roadway Inventory

I-5 Exits 40 and 43 are rural interchanges that currently function as the main access to the City of Gold Hill and the unincorporated community of Rock Point, respectively. The roadways within the IMSA are largely rural without any on-street parking. Table 3-1 provides an inventory of the roadway characteristics. The inventory reviews the state and local (Jackson County) functional classification as well as posted speed, number of lanes, and widths of the travel lanes, travel surface and paved surface. The majority of the inventory was constructed from ODOT mapping and online databases, specifically TransGIS.

Table 3-1. Roadway Inventory

Roadway/ Highway Name	Jurisdiction[1,2]	ODOT/Federal Functional Classification[1, 2]	City/County Functional Classification[1,2]	Posted Speed	No. of Lanes	Width (ft)	
						Travel Surface	Paved Surface
Interstate 5							
Mainline	ODOT	Interstate, FR, NHS	-	65	4	48	86
I-5 Exit 40 Ramps	ODOT	Interstate, NHS	Minor Arterial (SB ramps only)	45[3]	1	16	26
I-5 Exit 43 Ramps	ODOT	Interstate, NHS	Minor Arterial (all except NB on ramp)	45	1	16	26
I-5 Exit 40							
Access Rd (OR 99)	ODOT	Rural Minor Arterial	Minor Arterial	35	2	24-26	24-34
Blackwell Rd	Jackson County	Rural Major Collector	Major Collector	40	2	24	28
2nd Ave (OR 99)	ODOT	Rural Minor Arterial	Minor Arterial	40	2	22	24
Lampman Rd	Jackson County	Local	Local	45	2	18-22	18-22
Old Stage Rd	Jackson County	Local / Rural Major Collector[4]	Local / Rural Major Collector[4]	45	2	21	21

Table 3-1. Roadway Inventory

Roadway/ Highway Name	Jurisdiction[1,2]	ODOT/Federal Functional Classification[1, 2]	City/County Functional Classification[1,2]	Posted Speed	No. of Lanes	Width (ft)	
						Travel Surface	Paved Surface
I-5 Exit 43							
OR 234 / Rogue River Hwy (OR 99)	ODOT	Rural Minor Arterial	Minor Arterial	45	2	18-28	18-38
Main St (OR 99)	ODOT	Rural Minor Arterial	Minor Arterial	Basic Rule	2	26	26-36
N River Rd	Jackson County	Rural Major Collector	Minor Collector	45	2	24	24
Profetta Ln	Jackson County	Local	Local	Basic Rule	2	20-22	20-22
Frontage Rd	Jackson County	Local	Local	45	2	22	22

Acronyms: NHS = National Highway System; FR = Freight Route; TR = Truck Route

Notes:
1. State functional classification maps and TransGIS mapping tool
2. Jackson County Transportation System Plan, 2005
3. The Exit 40 southbound off ramp has a posted speed of 35 mph
4. The Jackson County Transportation System Plan (TSP) classifies Old Stage Rd. as a local road west of Access Rd, and a rural major collector south of Access Rd

3.1.2. Interchange Geometry

Both the Exit 40 and Exit 43 interchanges have a standard diamond layout. All ramp terminal intersections are STOP-controlled with single lane off-ramps that flare at the approaches to the local roadway system.

I-5 Exit 40

The existing interchange geometric design at Exit 40, as summarized by ODOT in the *I-5 State of the Interstate Report,* does not meet some of the current design guidelines, which raises potential safety concerns. The geometric assessment, conducted in 2000 and visually confirmed using aerial imaging, showed the following deficiencies:

- Northbound Off Ramp: Does not have adequate deceleration distance before horizontal curves on ramp (200 feet versus desired 460 feet for 35 mph curve)
- Southbound Off Ramp: Does not have adequate deceleration distance before horizontal curves on ramp (280 feet versus desired 500 feet for 30 mph curve)
- Northbound On Ramp: Does not have adequate acceleration length after horizontal curves on ramp (770 feet versus desired 1,100 feet after a 30 mph curve)
- Southbound On Ramp: Does not have adequate acceleration length after horizontal curves on ramp (710 feet versus desired 1,100 feet after a 30 mph curve)

The bridge over I-5 at Exit 40 was repaired as part of the Oregon Transportation Investment Act (OTIA) with construction completed in 2009. The bridge is now two lanes wide with a paved width of approximately 36 feet. This allows for 12-foot travel lanes and 5- to 6-foot shoulders on both sides of the road.

I-5 Exit 43

The existing interchange geometric design at Exit 43 also has safety concerns summarized by ODOT in the *I-5 State of the Interstate Report*. The geometric deficiency assessment, conducted in 2000 and visually confirmed using aerial imaging, showed the following deficiencies:

- Northbound Off Ramp: Does not have adequate deceleration distance before horizontal curves on ramp (305 feet versus desired 350 feet for 55 mph curve)
- Southbound Off Ramp: Does not have adequate deceleration distance before horizontal curves on ramp (280 feet versus desired 350 feet for 65 mph curve)
- Northbound Off Ramp Intersection: Cross street does not meet desired stopping sight distance (165 feet versus 250-280 feet for 55 mph speed and crest vertical curve)
- Southbound Off Ramp Intersection: Cross street does not meet desired stopping sight distance (165 feet versus 250-280 feet for 55 mph speed and crest vertical curve)

Although the stopping sight distance at the off ramp intersections with Main Street does not meet the standard for a 55 mph speed, few vehicles are likely to be traveling at that speed on Main Street because of the nearby intersections and the upgrade at the overpass.

The bridge over I-5 at Exit 43 is two lanes wide with a paved width of approximately 30 feet. This provides 12-foot travel lanes and 2-foot shoulders with raised curbs on both sides of the road.

3.1.3. Truck Turning Movement Inventory

The truck turning movement inventory assesses the level of difficulty for truck traffic to navigate I-5 Exit 40 and Exit 43 study area intersections. Table 3-2 provides an inventory of existing truck turning deficiencies (i.e., truck needs portion of opposing travel lane to complete turning movement) at major study area intersections. Intersections that primarily serve residential traffic were not assessed for truck accessibility.

Table 3-2. Truck Turning Movement Inventory

Intersections	Deficient Movements	
I-5 Exit 40		
Access Rd & Blackwell Rd (OR 99)	Access Rd: NBL, NBR	Blackwell Rd: WBL, EBR
Access Rd & I-5 NB Ramps	Access Rd: None	I-5 NB Ramps: WBL, WBR
Access Rd & I-5 SB Ramps	Access Rd: SBL	I-5 SB Ramps: EBL
Access Rd & Old Stage Rd	Access Rd: NBL, SBR	Old Stage Rd: None
I-5 Exit 43		
OR 99/OR 234 & N. River Rd	OR 99/OR 234: NBL	N. River Rd: EBR
OR 99/OR 234 & Main St	OR 99/OR 234: WBL, EBR	Main St: NBL, NBR
Main St & I-5 NB Ramps	Main St: NBL	I-5 NB Ramps: WBL, WBR
Main St & I-5 SB Ramps	Main St: SBL	I-5 SB Ramps: EBL

Acronyms: EB = eastbound; WB = westbound; NB = northbound; and SB = southbound. L = left; T = through; and R = right.

All intersections assessed in each IMSA have at least two turning movements that will not allow a WB-67 (design vehicle) to execute a turning maneuver without crossing into oncoming traffic or tracking onto the roadway shoulder. In some cases, both are necessary when a WB-67 is making a turn. Truck turning movement diagrams can be found in Appendix B.

3.1.4. Pavement Conditions

Inside the IMSA, pavement type and conditions vary. Table 3-3 summarizes the pavement conditions of roads within the IMSA.

Table 3-3. Pavement Conditions

Roadway / Highway Name	Pavement Type	Pavement Condition[1]	Shoulder Width (ft)	
			Left	Right
Interstate 5				
Mainline	Paved	Fair	7	12
Exit 40 Ramps	Paved	Fair/Poor[2]	5	5
Exit 43 Ramps	Paved	Fair	5	5
I-5 Exit 40				
Access Rd (OR 99)	Paved	Fair	0-5	0-5
Blackwell Rd	Paved	Fair	0-2	0-2
2nd Ave (OR 99)	Paved	Poor	0-1	0-1
Lampman Rd	Paved	Fair	0	0
Old Stage Rd	Paved / Gravel	Good	0	0
I-5 Exit 43				
OR 234 / Rogue River Hwy (OR 99)	Paved	Fair – Poor	0-6	0-6
Main St	Paved	Poor	0-2	0-2
N River Rd	Paved	Fair	0	0
Profetta Ln	Paved	Poor	0	0
Frontage Rd	Paved	Fair	0	0

Notes:
1. From ODOT TransGIS database
2. I-5 Exit 40 southbound on ramp is rated as Poor; all other ramps at this interchange are rated as Fair.

3.1.5. Pedestrian and Bicycle Facilities Inventory

Traditional pedestrian and bicycle facilities do not exist within the IMSAs; none of the IMSA roadways have paved sidewalks or bicycle lanes. In addition to the lack of established pedestrian and bicycle facilities, many of the roads have substandard shoulder width and pavement quality, as discussed in the previous section.

I-5 Exit 40

The IMSA for Exit 40 includes or abuts several popular bike routes. One route runs along Old Stage Road from Gold Hill, across the freeway (through the IMSA), and continuing southward towards Medford and Jacksonville. The nearby Rogue River Greenway Trail (RRGT) runs

through Gold Hill on a combination of city streets and a multi-use path that runs along the Rogue River northeast of the city. Several bicycling websites identify loops that use both the RRGT and Old Stage Road.

I-5 Exit 43

The IMSA for Exit 43 includes the RRGT, which runs on-street along OR 234 to N River Road. This on-street segment of the RRGT connects between two multi-use paths and the Valley of the Rogue State Park, making it a popular route for cyclists.

3.1.6. Transit Inventory

Transit is limited through the IMSA, with the only stops being in Gold Hill for the Southwest Point Shuttle and the Rogue Valley Commuter Line. The Southwest Point Shuttle (operated by Klamath Shuttle) makes a daily round trip between Brookings and Klamath Falls, with a westbound morning and eastbound afternoon stop in Gold Hill. Klamath Shuttle is interlined with Greyhound Lines, Inc., and Greyhound tickets can be purchased through them. The Rogue Valley Commuter Line is a three-year demonstration project that provides round-trip bus service from Grants Pass to Medford. The commuter bus makes five trips per day in each direction and will only stop in Gold Hill if the user calls ahead. The Gold Hill stop is on Access Road north of interchange 40 at the Jackson County Fire District parking lot.

3.1.7. Bridge Inventory

The 2012 bridge inventory data was obtained from ODOT's Bridge Maintenance Section and reviewed. One element used to evaluate bridge conditions is the sufficiency rating, which is a complex formula that takes into account four separate factors to obtain a numeric value rating the ability of a bridge to service demand. The result of this method is a percentage in which 100 percent would represent an entirely sufficient bridge and zero percent would represent an entirely insufficient or deficient bridge. Those bridges with a sufficiency rating of 80 or less are eligible for rehabilitation. Those bridges with a sufficiency of 50 or less are eligible for replacement. Bridges lose their eligibility status for a period of ten years after a (Highway Bridge Program) project is completed.

Two additional elements are used to rate bridge conditions: structural deficiency and functional obsolescence. Structural deficiency is determined based on the condition rating for the deck, superstructure, substructure, or culvert and retaining walls. It may also be based on the appraisal rating of the structural condition or waterway adequacy. Functional obsolescence is determined based on the appraisal rating for the bridge deck geometry, underclearances, and approach roadway alignment. It may also be based on the appraisal rating of the structural condition or waterway adequacy.

There are four bridges located within or near the IMSA, as listed in Table 3-4 and shown on Figure 3-8a and Figure 3-8b.

I-5 Exit 40

The Access Road Bridge (07601B) over I-5 at Exit 40 was repaired as part of OTIA III with construction completed in 2009. The bridge is now two lanes wide with a paved width of approximately 36 feet. There are no deficiencies listed for the bridge and the sufficiency rating is 69.2, an improvement over previous ratings before repairs and widening.

Table 3-4. Bridge Conditions

Bridge ID	Milepoint	Name	No. of Lanes	Sufficiency Rating	Deficiencies
I-5 Exit 40					
07601B	3.07	OR 234 spur over I-5 (Hwy 271 Spur over Hwy 1 [S Gold Hill])	2	69.2	ND
00576	2.65	OR 234 across the Rogue River (Rogue River, Hwy 271 [Gold Hill])	2	57.9	SD
I-5 Exit 43					
08382	14.64	OR 99 over I-5 (Hwy 60 over Hwy 1)	2	59.2	ND
00332A	0.09	OR 234/OR 99 across Rogue River & Lampman Rd (Rogue River +, Hwy 271 [Rock point])	2	43.3*	OD: LC, LSL

Acronyms: ND = Not Deficient; SD = Structurally Deficient; OD = Other Deficiencies; LC = Load Capacity; LSL = Low Service Life

* New book for rating bridges used. Sufficiency rating of 53.4 on August 5, 2013

Source: ODOT, 2012 Bridge Condition Report

Just outside of the IMSA, the bridge (00576) crossing the Rogue River east of Gold Hill is identified as structurally deficient with a sufficiency rating of 57.9. The travel lanes are 10 feet wide and there is no shoulder; advanced warning signs on either side of the bridge indicate to users that it is narrow.

I-5 Exit 43

The Main Street Bridge (08382) over I-5 at Exit 43 is two lanes wide with a paved width of approximately 30 feet. There are no deficiencies listed for the bridge and the sufficiency rating is 59.2.

The OR 234/OR 99 Bridge (00332A) crossing a narrow strait of the Rogue River is identified as having low service life and load capacity deficiencies. This historic bridge was rehabilitated in 2001 with new railing and a deck overlay. No load restrictions are posted. However, the travel lanes are still only 9 feet wide and advanced warning signs on either side of the bridge indicate to users that it is narrow.

3.1.8. Access Inventory

Access inventory data was obtained from aerial photography and site visits. This data includes public street intersections, as well as both public and private access points to businesses and residences. For Exit 40, 34 access points were identified along the IMSA roads, while 21 access points were identified for Exit 43.

Figure 3-1a and Figure 3-1b provides aerial maps depicting existing access locations for each interchange. Table 3-5 corresponds to the figures and provides details for all relevant approaches in the IMSA including: roadway, type of use, width, side of the road and distance to next access point. Access spacing is measured along one side of the roadway without regard for connections on the opposite side.

At Exit 40, the northbound and southbound ramp terminals are spaced approximately 615 feet apart with accesses located as close as 185 feet from the ramps. At Exit 43, the northbound and southbound ramp terminals are spaced approximately 650 feet apart with accesses located as close as 140 feet from the ramps. The Oregon Highway Plan (OHP) recommends a minimum spacing of 1,320 feet (¼ mile) on either side of freeway ramps. As traffic volumes continue to grow, the proximity of these intersections could affect the safe and efficient function of the interchange area.

Outside the ¼-mile influence area of the ramp terminals, Jackson County uses spacing standards for minor collectors (150 feet), major collectors (225 feet), and arterials (300 feet), as identified in their TSP[1].

Table 3-5. IMSA Access Inventory

ID	Main Roadway	Access Type	Tax Lot	Site Use	Width (ft)	Distance to Next Point (ft)
I-5 Exit 40						
Access Points along South/East Side of Road						
2	Old Stage Rd	Private	300	Residential	12	693
4	Old Stage Rd	Public	--	Medford Moose Lodge #178 LO	30	410
7	Old Stage Rd	Private	500	Residential	30	359
11	Old Stage Rd	Private	500	Residential	20	552
17	Access Rd	Public	--	I-5 Exit 40 Southbound On Ramp	80	614
18	Access Rd	Public	--	I-5 Exit 40 Northbound Off Ramp	70	187
19	Access Rd	Public	--	Lampman Rd	80	755
21	Access Rd	Private	1500	Residential	18	210
24	Access Rd	Private	1500	Residential	15	103
25	Access Rd	Private	1800	Residential	12	121
26	Blackwell Rd	Public	--	Access Rd	80	472
27	Blackwell Rd	Private	2000	Residential	20	294
29	Blackwell Rd	Private	2300	Residential	20	158
30	Blackwell Rd	Private	2400	Residential	14	25
31	Blackwell Rd	Private	2600	Residential	30	216
33	Blackwell Rd	Private	2800	Residential	15	51
34	Blackwell Rd	Private	2800	Residential	15	51
40	Lampman Rd	Private	600	Residential	20	225
42	Lampman Rd	Public	--	Chavenor Rd	45	145

[1] Jackson County Transportation System Plan Table 5-2, 2005.

Table 3-5. IMSA Access Inventory

ID	Main Roadway	Access Type	Tax Lot	Site Use	Width (ft)	Distance to Next Point (ft)
Access Points along North/West Side of Road						
1	Old Stage Rd	Private	200	Residential	30	649
3	Old Stage Rd	Private	200	Residential	12	687
5	Old Stage Rd	Public	--	Access Rd	60	92
6	Old Stage Rd	Private	1100	Residential	260	218
8	Old Stage Rd	Private	1100	Residential	260	118
9	Old Stage Rd	Private	1200	Residential	10	215
10	Old Stage Rd	Private	1300	Residential	25	125
12	Old Stage Rd	Private	1600	Residential	12	83
13	Old Stage Rd	Private	1700	Residential	12	101
14	Old Stage Rd	Private	1800	Residential	12	39
15	Old Stage Rd	Private	1900	Residential	10	90
16	Old Stage Rd	Private	2000	Residential	18	90
17	Access Rd	Public	--	I-5 Exit 40 Southbound Off Ramp	60	614
18	Access Rd	Public	--	I-5 Exit 40 Northbound On Ramp	90	187
20	Access Rd	Public	--	Jackson County Fire District #3	60	333
22	Garden Row	Public	--	Running Salmon RV Park	45	23
23	Garden Row	Public	--	Running Salmon RV Park	25	328
28	Blackwell Rd	Private	300	Residential	30	487
32	Blackwell Rd	Private	201	Residential	25	487
35	Lampman Rd	Private	1100	Residential	12	178
36	Lampman Rd	Private	900	Residential	18	314
37	Lampman Rd	Private	800	Residential	18	320
38	Lampman Rd	Private	700	Residential	25	171
39	Lampman Rd	Private	500	Residential	18	282
41	Lampman Rd	Public	--	Chavenor Rd	60	145
43	Lampman Rd	Private	1201	Residential	25	345
I-5 Exit 43						
Access Points along South/East Side of Road						
44	OR 99	Private	2100	Residential	20	177
46	OR 99	Private	2200	Residential	15	193
47	OR 99	Private	2300	Residential	18	88
49	OR 99	Private	2400	Residential	110	50
50	OR 99	Private	2500	Residential	20	122
51	OR 99	Private	2500	Residential	40	368
53	OR 99	Private	2703	Residential	30	212
55	OR 99	Public	2702	Rowley & Rowley Inc.	12	218
56	OR 99	Public	--	Access Rd	95	384
58	Access Rd	Public	--	I-5 Exit 43 Northbound Off Ramp	46	648
59	Access Rd	Public	--	I-5 Exit 43 Southbound On Ramp	65	138
61	Frontage Rd	Private	3000	Brotherton Pipeline, Inc.	35	410
62	Frontage Rd	Private	2801	Brotherton Pipeline, Inc.	25	406
63	Frontage Rd	Private	2800	Brotherton Pipeline, Inc.	70	218
64	Frontage Rd	Private	2800	Brotherton Pipeline, Inc.	90	218

Table 3-5. IMSA Access Inventory

ID	Main Roadway	Access Type	Tax Lot	Site Use	Width (ft)	Distance to Next Point (ft)
Access Points along North/West Side of Road						
45	OR 99	Private	1900	Residential	30	299
48	OR 99	Private	1700	Residential	12	236
51	OR 99	Private	1600	Residential	14	269
52	OR 99	Private	1600	Residential	30	223
54	OR 99	Private	1500	Residential	14	972
57	OR 99	Public	--	Lampman Rd	75	972
58	Access Rd	Public	--	I-5 Exit 43 Northbound On Ramp	50	648
59	Access Rd	Public	--	I-5 Exit 43 Southbound Off Ramp	35	138
60	Frontage Rd	Public	--	Frontage Rd	65	913

Shaded cells indicate ramp terminals; Acronyms: TBD = To be determined with site visit

Source David Evans and Associates, Inc.

3.1.9. Rail Inventory

One railroad line passes through the IMSA. The Central Oregon and Pacific (CORP) Railroad is a short line railroad owned by RailAmerica, Inc., which is based in Jacksonville, Florida. Currently, the railroad line is exclusively for freight, with 90 percent of their delivery consisting of forest products.

CORP, headquartered in Roseburg, Oregon, has 389 miles of track between Eugene, Oregon and Black Butte, California. CORP tracks are maintained to Federal Railroad Administration (FRA) Class 1 (47 miles) and Class 2 (200 miles) conditions, which limits maximum speeds to 10 mph for Class 1 or 25 mph for Class 2. Figure 3-8a and Figure 3-8b show how the rail line moves near through IMSA. Current service includes one northbound and one southbound train five days a week on four routes:

- Medford and Grants Pass
- Glendale and Medford
- Medford and Black Butte
- White City and Medford

No passenger rail service is available in the IMSA; the closest available is AMTRAK located in Klamath Falls, OR.

3.1.10. Summary of Existing Transportation System Deficiencies

Existing deficiencies identified through the interchange inventory and analyses are summarized in Table 3-6.

Table 3-6. Summary of Existing Deficiencies

Deficiency	Location	Related Goals
Geometry		
Ramp Deficiencies	***I-5 Exit 40*** ▪ Northbound and Southbound Off Ramps: Does not have adequate deceleration distance before horizontal curves on ramp ▪ Northbound and Southbound On Ramps: Does not have adequate acceleration length after horizontal curves on ramp ***I-5 Exit 43*** ▪ Northbound and Southbound Off Ramps – Does not have adequate deceleration distance before horizontal curves on ramp ▪ Northbound and Southbound Off Ramp Intersections: Cross street does not meet desired stopping sight distance	▪ Mobility ▪ Freight Operations ▪ Safety
Inadequate Truck Turning Radius	***I-5 Exit 40*** ▪ Access Rd & Blackwell Rd (OR 99): NBL, NBR on Access Rd and WBL, EBR on Blackwell Rd ▪ Access Rd & I-5 NB Ramp: WBL, WBR on I-5 NB Ramps ▪ Access Rd & I-5 SB Ramps: SBL on Access Rd and EBL on I-5 SB Ramps ▪ Access Rd & Old Stage Rd: NBL, SBR on Access Rd ***I-5 Exit 43*** ▪ OR 99/OR 234 & N. River Rd: NBL on OR 99/OR 234 and EBR on N. River Rd ▪ OR 99/OR 234 & Main St: WBL, EBR on OR 99/OR 234 and NBL, NBR on Main St ▪ Main St & I-5 NB Ramps: NBL on Main St and WBL, WBR on I-5 NB Ramps ▪ Main St & I-5 SB Ramps: SBL on Main St and EBL on I-5 SB Ramps	▪ Mobility ▪ Freight Operations ▪ Safety
Access Spacing	▪ Multiple accesses within ½ mile of ramps for both interchanges	▪ Safety
Pavement		
Poor Pavement	▪ 2nd Avenue (OR 99) ▪ OR 234/Rogue River Hwy (OR 99) ▪ Main Street ▪ Profetta Lane	▪ Mobility
Bridge		
Structurally Deficient	***I-5 Exit 40*** ▪ OR 234 across the Rogue River (sufficiency rating: 57.9)	▪ Mobility ▪ Freight Operations
Other Deficiency	***I-5 Exit 43*** ▪ OR 234/OR 99 across Rogue River and Lampman Rd (sufficiency rating: 43.3 and identified as load capacity, low service life)	▪ Mobility ▪ Freight Operations ▪ Safety
Pedestrian Facilities		
Limited Sidewalks	▪ No designated sidewalk areas are present within the I-5 Exit 40 or I-5 Exit 43 IMSAs.	▪ Safety
Limited Bike Lanes	▪ No bike lanes are striped within the I-5 Exit 40 or I-5 Exit 43 IMSAs. ▪ Shoulder widths for bicycle usage are insufficient along most roadways.	▪ Safety

3.2. Existing Environmental Summary

To understand the potential existing environmental conditions and to help inform the subsequent conceptual alternatives development process for improvements in the IMSAs, this section identifies and reviews the existing environmental conditions in the IMSAs. The information gathered was taken primarily from published documents and maps, GIS data, and email correspondence with appropriate professional contacts. A summary of the research that includes the mapped known environmental resources is provided. It identifies areas where existing conditions may constrain transportation improvement projects.

3.2.1. Wildlife Habitat and Wetlands

The IMSAs are within the Middle Rogue River Watershed. The Rogue River runs south to north through the eastern section of both IMSAs (see Figure 3-2a Figure 3-2b). The Rogue River supports Summer and Winter steelhead and Fall and Spring Chinook salmon, Coho salmon, and Pacific Lamprey. In the Exit 40 IMSA, Kane Creek flows from southwest to northeast and supports Summer and Winter steelhead. Blackwell Creek is east of I-5 just north of Lampman Road and flows from the south into the Rogue River. Other than the Rogue River, there are no creeks or streams in the Exit 43 IMSA; the Gold Hill Irrigation Canal is not considered wildlife habitat.

The Jackson County Goal 5 Resources Background Document 1990 (Open Spaces, Scenic and Natural Areas and Historic Resources), identifies the West Valley Wildlife Area west of I-5 in both IMSAs. The Wildlife Area is described as:

> *Unit locates south and west of the Interstate-5 corridor on generally north-facing slopes drained by tributaries of the Rogue River and Bear Creek. Supports low densities of resident deer throughout the year, with annual movement fluctuating according to weather severity. Its slope space, predominance of conifers and hardwoods, and limited browse species make this extended range relatively poor habitat and of least importance in comparison to other range units in the county.*

Outside of the IMSAs to the east of the Rogue River is the Sardine Creek Wildlife Area. This unit is described as:

> *Unit is located to the south and east of the Evans Creek Unit, generally north of Rogue River and the City of Gold Hill. This unit is similar to the Evans Creek Unit in that it supports a resident deer population, where animal movement fluctuates elevationally with weather severity. Slope space and vegetative variety make the Sardine Creek Unit a relatively more desirable habitat.*

Other wildlife potentially found in the IMSAs are mourning dove, valley quail, blue grouse, ruffled grouse, mountain quail, band-tailed pigeon, western gray squirrel, ducks, geese, American coot, common snipe, black bear, cougar, fox, coyote, otter, mink, muskrat, raccoon, and beaver.

Wildlife needs the ability to move to access food, water, shelter, mates, and wintering habitat and to disperse to maintain healthy populations. Loss of habitat connectivity due to manmade barriers is a major contributor to loss of species and degradation of ecosystems. In the IMSAs, the water resources (Rogue River, Kane and Blackwell creeks) provide linear wildlife habitat and connections between the upland wildlife areas and water resources. However, I-5 creates a barrier between wildlife areas to the west and east and the Rogue River. The Oregon Department of Fish and Wildlife (ODFW), under the Oregon Wildlife Movement Strategy and in partnership with other government agencies, produces data for wildlife linkages, which are key movement areas for wildlife, specifically across roads. For Exit 43, the entire IMSA has a moderate to high wildlife movement threat value based on roadkill data (ODOT's Wildlife Collision Hotspots dataset), and areas identified during the workshops by ODFW and other agency staff, areas important for multiple species, and areas connected to public lands. A more detailed qualitative explanation of ranking process can be found in the ODFW linkages report.[2]

In the Exit 40 IMSA, there is a small area of Freshwater Forested/Shrub Wetlands at the river bend on the east side of the Rogue River. There is a Freshwater Emergent Wetland west of Old Stage Road. Wetland areas can be found along both Kane and Blackwell Creeks. In the Exit 43 IMSA, there is a Freshwater Emergent Wetland on the eastern and western side of the Rogue River. In addition to the mapped wetlands, there are likely unmapped wetland areas in the Exit 40 and 43 IMSAs due to the topography of the IMSAs which is a valley floor with the Rogue River and supporting streams.

IAMP Considerations: *To preserve wildlife habitat, disturbances to undeveloped areas should be avoided or minimized if possible**.*** *Wildlife movement and passage should be considered in project design. Erosion control and water quality Best Management Practices can protect impacts to aquatic habitat. Wetland permits will be required if impacts to wetlands are unavoidable. Wetland impacts could be minimized or avoided and protective measures and/or mitigation integrated into project design and construction.*

3.2.2. Threatened and Endangered Species

The Oregon Natural Heritage Information Center (ONHIC) database documents the federally listed and state listed threatened and endangered (T&E) species. The State of Oregon and the federal government maintain separate lists of T&E species. These are species whose status is such that they are at some degree of risk of becoming extinct. The ONHIC information, based on reported historic sightings within two miles of the IMSAs, is summarized in Table 3-7. There is only one federally-listed threatened species, the Coho salmon, and no state-listed T&E species. However, there are both state and federal species listed as sensitive or species of concern.

Under state law (Oregon Revised Statutes 496.171 to 496.192) the Fish and Wildlife Commission, through the ODFW, maintains the list of native wildlife species in Oregon that

[2] https://nrimp.dfw.state.or.us/web%20stores/data%20libraries/files/ODFW/ODFW_806_2_Linkages_Report_Final_2009.pdf).

have been determined to be either threatened or endangered according to criteria set forth by rule (Oregon Administrative Rule [OAR] 635-100-0105). Plant listings are handled through the Oregon Department of Agriculture, while most invertebrate listings are conducted through the Oregon Natural Heritage Program.

Under federal law, the U.S. Fish and Wildlife Service (USFWS) and National Oceanic and Atmospheric Administration (NOAA) share responsibility for implementing the federal Endangered Species Act (ESA) of 1973 (Public Law 93-205, 16 United States Code (USC) § 1531), as amended. In general, USFWS has oversight for land and freshwater species and NOAA for marine and anadromous fish species. In addition to information about listed species listed, the USFWS Oregon Field Office maintains a list of Species of Concern.

Table 3-7. ONHIC-Identified Federal and State Listed Threatened or Endangered Species

Common Name	Scientific Name	Status	
		Federal[1]	State[2]
Vertebrate Animal			
Common kingsnake	*Lampropeltis getula*	SOC	SV
Townsend's big-eared bat	*Corynorhinus townsendii*	SOC	SV
California mountain kingsnake	*Lampropeltis zonata*	SOC	SC
Steelhead (Klamath Mountains Province ESU, summer run)	*Oncorhynchus mykiss pop. 24*	-	SC/SV
Chinook salmon (Southern Oregon/Northern California Coast ESU, spring run)	*Oncorhynchus tshawytscha pop. 25*	-	SV
Chinook salmon (Southern Oregon/Northern California Coast ESU, fall run)	*Oncorhynchus tshawytscha pop. 26*	-	SV
Coho salmon (Southern Oregon/Northern California Coasts ESU)	*Oncorhynchus kisutch pop. 2*	LT	SV
Invertebrate Animal			
Franklin's bumblebee	*Bombus franklini*	SOC	-
Vascular Plant			
Slender meadow-foam	*Limnanthes gracilis ssp. gracilis*	SOC	C
Red-root yampah	*Perideridia erythrorhiza*	SOC	C

Acronyms: SOC = Species of Concern; LT = Listed Threatened; SV = Sensitive-Vulnerable; SC = Sensitive-Critical; C Candidate for Listing as Threatened or Endangered)

Source: Oregon Natural Heritage Information Center (ONHIC) database, 2012

Once it is listed as T&E, a species is afforded the full range of protections available under the ESA, including prohibitions on killing, harming or otherwise "taking" a species. In some instances, the listing of a species can be avoided by the development of Candidate Conservation Agreements that may remove threats facing the candidate species.

A species is listed as one of two categories, endangered or threatened, depending on its status and the degree of threat it faces. An "endangered species" is one that is in danger of extinction throughout all or a significant portion of its range. A "threatened species" is one that is likely to

become endangered in the foreseeable future throughout all or a significant portion of its range. "Species of Concern" is an informal term under the federal listing that is not specifically defined in the federal ESA. The term commonly refers to species that are declining or appear to be in need of conservation.

Under Oregon's Sensitive Species Rule (OAR 635-100-040), a "sensitive" species classification was created that focuses fish and wildlife management and research activities on species that need conservation attention. "Sensitive" refers to naturally reproducing fish and wildlife species, subspecies, or populations that are facing one or more threats to their populations and/or habitats. Implementation of appropriate conservation measures to address the threats may prevent them from declining to the point of qualifying for threatened or endangered status.

Sensitive species are assigned one of two subcategories. "Critical" sensitive species are imperiled with extirpation from a specific geographical area of the state because of small population sizes, habitat loss or degradation, and/or immediate threats. Critical sensitive species may decline to the point of qualifying for threatened or endangered status if conservation actions are not taken. "Vulnerable" sensitive species are facing one or more threats to their populations and/or habitats. Although not currently imperiled with extirpation from a specific geographical area of the state, vulnerable species could, however, become so with continued or increased threats to populations and/or habitats. For plants, there are no sensitive species candidates for listing as threatened or endangered.

NOAA Fisheries released a Southern Oregon/Northern California Coast (SONCC) Coho Salmon Recovery Plan[3] on September 30, 2014 to restore the SONCC coho salmon to healthy, self-sustaining numbers so that the protections of the Endangered Species Act are no longer necessary. This includes the Upper Rogue River cohos salmon population including Kane Creek. The recovery plan provides identified actions to organize and coordinate recovery of the species such as: increase regulatory oversight to reduce pollutants and increase instream flows.

IAMP Considerations: *During project development, surveys should be conducted for Species of Concern in order to avoid habitat areas. Measures must be incorporated into project design and construction alternatives to protect water quality for listed aquatic species.*

3.2.3. Hazardous Materials

On January 15, 2013, federal and state databases were searched for identified hazardous waste sites and incidences within or near the IMSAs.

None of the federal databases identified any sites or incidences in the IMSAs:

[3]http://www.westcoast.fisheries.noaa.gov/publications/recovery_planning/salmon_steelhead/domains/southern_oregon_northern_california/SONCC%20Final%20Sept%202014/sonccfinal_ch32_upperrogueriver.pdf

- National Priority List (NPL)—List of national priorities among the known releases or threatened releases of hazardous substances, pollutants, or contaminants
- Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS)—Abandoned hazardous waste sites—"Superfund"
- Resource Conservation and Recovery Act (RCRA) Generators—Generate or store defined amount of hazardous waste in any one calendar month and are subject to regulatory control
- Emergency Response Notification System (ERNS)—Releases or potential releases reported to the National Response Center, which acts as a reporting center for the Environmental Protection Agency and U.S. Coast Guard

Table 3-8 and Figure 3-3a and Figure 3-3b summarize sites identified within the IMSA. Background data files for each identified site are in Appendix C.

All of the identified sites, incidents, and permitted facilities have been remediated, are being monitored, have been investigated and found not to be contaminated to the point of needing further action, or are a permitted facility. The land within the IMSAs has been previously disturbed by transportation uses that may include undocumented spills or an accumulation of many years of roadway runoff. It has been historically disturbed by agricultural uses that may include the use of chemical pesticides therefore undocumented hazardous materials may be present. Mercury vapor lamps and treated timbers may be present in the IMSAs and would require special handling if they need to be removed or replaced.

IAMP Considerations: *Known hazardous material sites are likely avoidable. However, a Phase I Environmental Site Assessment is recommended depending on the type of improvement and construction activities and because additional sites may be created before construction begins.*

Table 3-8. IMSA State Hazardous Material Sites and Incidences

Database	Description	Total Sites Found	
		IC 40	IC 43
Underground Storage Tanks (USTs) - Registration, installation, operation, and removal of USTs; cleanup of soil and groundwater contamination from petroleum leaks	Two sites at one location: 9625 Old Stage Road	2	--
TRAACS - Air Quality Permit	Gasoline Service Station Site Location: 9625 Old Stage Road Underground Natural Gas Site Location: 11 Frontage Road	1	1
Water Quality Permits (WQSIS)	RV Trailer Parks and Campsites – Onsite Vineyard Site Location: 58 N River Road	--	1

3.2.4. Historic and Archaeological Resources

Under Section 106 of the National Historic Preservation Act of 1966 (Public Law 89-665), 16 USC 470, and under federal regulations governing the protection of historic and cultural resources (36 Code of Federal Regulations [CFR] 800), federal agencies, and the state and local agencies to which the federal agency has delegated responsibility, are directed to avoid undertakings that adversely affect properties that are included in or are eligible for inclusion in the National Register of Historic Places (NRHP). The NRHP identifies and documents (in partnership with state, federal, and tribal preservation programs) districts, sites, buildings, structures, and objects that are significant in American history, architecture, archaeology, engineering, and culture. This section summarizes NRHP resources near the IMSA, as well as other historic, prehistoric, and cultural resources.

For the IMSAs, the State Historic Preservation Office (SHPO) database shows historical resources listed on the NRHP as shown in Table 3-9 and shown in Figure 3-2a and Figure 3-2b.

Table 3-9. NRHP-listed Resources

Map ID No.	Historic Name	Location Description	Resource Type	Primary Construction Date	Original Use	Eligibility Evaluation
I-5 Exit 40						
1	Vroman, Cyrenus & Ellen House	Old Stage & Blackwell Roads	Building	1915	Single Dwelling	Eligible/ Contributing
2	Crawford, Joshua M & Mina S, House	95 Garden Row	Building	1890	Single Dwelling	Undetermined
3	Stickel, Hunter, House	9437 Old Stage Road	Building	1905	Single Dwelling	Eligible/ Contributing
I-5 Exit 43						
4	Nye, HB House	41 Hwy 99	Building	1910	Single Dwelling	Eligible/ Contributing
5	Gray, Charles House	54 Hwy 99	Building	1925	Single Dwelling	Eligible/ Contributing
6	Del Rio Orchard Packing House	40 N River Rd	Building	1910	Agricultural Processing	Eligible/ Contributing
7	White, John B, House	86 N River Rd	Building	1859	Single Dwelling	Eligible/ Significant

Source: SHPO NRHP database, 2012

Jessica Bochart, ODOT's Rogue Valley Office Archaeologist, was contacted to identify recorded archaeological locations within the IMSAs. Ms. Bochart identified known archaeological sites in the Exit 40 IMSA and indicated there is a high probability overall for archaeological and historical resources in both Exit 40 and 43 IMSAs. The location of known archaeological sites is not disclosed to prevent tampering or scavenging of sites. Ms. Bochart provided the following basis for her conclusion for cultural resources and the potential for cultural resources in the IMSA:

- At Exit 40 there is a significant archaeological site known as the Gold Hill Burial Site. The exact site boundaries have never been established. Areas that are not significantly disturbed would have a high probability for containing intact cultural resource deposits.
- There is a high potential for encountering human remains within the IMSAs, which would require careful and close coordination with the applicable Native American tribes.

As mentioned above, it is likely that historical and archaeological resources are in the IMSAs including resources that have not been identified and surveyed and structures that have not been determined for eligibility and entered into the SHPO database. Due to the high potential for resources in numerous areas within the IMSAs, historical and cultural resources surveys by professionals should be conducted during the development of specific transportation improvement projects. The cultural surveys potentially could provide project design parameters if resources, their values, and their locations have been identified.

IAMP Considerations: *Cultural resources and a high probability for cultural resources have been identified for the IMSAs. Improvements should be designed to avoid ground disturbing actions in areas that have not been previously disturbed. Cultural Resources field investigations should be conducted before any ground disturbing actions.*

3.2.5. Floodplains and Floodways

Acting through the local planning agencies, the Federal Emergency Management Agency (FEMA) regulates development within Regulated Floodways and Special Flood Hazard Areas (SFHA). A "Regulatory Floodway" means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height. SFHA are defined as the areas that will be inundated by the flood event having a one-percent chance of being equaled or exceeded in any given year. The one-percent annual chance flood is also referred to as the base flood or 100-year flood. Development in the regulated floodway typically requires a project to demonstrate no net rise and could require an amendment to the FEMA regulated floodway boundaries.

FEMA-designated regulated floodways and SFHA in the vicinity of the IMSA are displayed in Figure 3-2a and Figure 3-2b. In the Exit 40 IMSA (FEMA Map Panel: 41029C1736F, May 3, 2011), Kane Creek and its associated floodplain transect the Exit 40 IMSA from the southwest to northeast, crossing Old Stage Road from the southwest, then under I-5 just south of the interchange and flowing east until it empties into the Rogue River. The Rogue River floodplain extends to I-5 past Lampman Road in the Exit 40 IMSA. The Rogue River floodway is approximately 1,000 feet from the I-5 northbound on-ramp at its closets point in the IMSA.

In the Exit 43 IMSA (FEMA Map Panel: 41029C1736F and 41029C1737F, May 3, 2011), the Rogue River floodplain and floodway are in the eastern portion IMSA. The floodplain crosses west of OR 99 in much of the IMSA and west of I-5 in the southern portion of the IMSA.

IAMP Considerations: *Depending on the location of the improvement, Jackson County standards require no-net rise in the floodway and/or or limited rise to one foot above base flood elevation in the floodplain as documented through a floodplain development permit.*

3.3. Existing Land Use Summary

To understand the existing land use issues, and to help inform the subsequent conceptual alternatives development process for improvements in the IMSAs, this section identifies and reviews the land use and population in the IMSAs. The information gathered was taken primarily from published documents and maps, GIS data, and email correspondence with appropriate professional contacts. A summary of the research that includes the mapped known environmental resources is provided. It identifies areas where existing conditions may constrain transportation improvement projects.

3.3.1. Socioeconomic and Environmental Justice

Executive Order (EO) 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations of February 11, 1994, requires agencies undertaking federal projects to identify low-income and minority populations; assess whether high and adverse human health or environmental impacts would result from the alternatives; and ensure participation of low-income and minority populations in the transportation decision making process. The Federal Highway Administration (FHWA) defines a disproportionately high and adverse impact on minority and low-income populations as one that:

- Is predominantly borne by a minority population and/or a low-income population; or
- Will be suffered by the minority population and/or low-income population and is appreciably more severe or greater in magnitude than the adverse effect that will be suffered by the non-minority population and/or non-low-income population.

EO 12898 states that agencies must consider whether human health effects, in terms of risks and rates, are significant or above accepted norms.

Additional underserved populations are the “transportation disadvantaged.” The “transportation disadvantaged” are those persons who because of physical or mental disability, income status, or age are unable to transport themselves or to purchase transportation and are, therefore, dependent upon others to obtain access to health care, employment, education, shopping, social activities, or other life-sustaining activities. Projects receiving federal assistance must also evaluate impacts to these populations to comply with the Age Discrimination Act of 1975, Federal-Aid Highways Act, Rehabilitation Act of 1973 and Americans with Disabilities Act of 1990.

Socioeconomic data for the IMSA was drawn primarily from the U.S. Census Bureau 2000 Census, 2010 Census, and American Community Survey (ACS) 2007 to 2011. The census tracts reviewed for this memorandum (seen in Figure 3-2a and Figure 3-2b) represent the following geographical areas:

- Census tract 1100 represents the south eastern edge of the Exit 40 IMSA, south of Access Road and Upper River Road and extending to Central Point.
- Census tract 2800 represents the north eastern edge of the Exit 40 IMSA.
- Census tract 2900 represents the Exit 43 IMSA east of the Rogue River.
- Census tract 3001 represents most of the areas west of the Rogue River in both IMSAs.

The census data documents a 12 percent population increase in Jackson County between 2000 and 2010 which is the same as the state's increase, see Table 3-10. The City of Gold Hill had a slightly larger population between 2000 and 2010 increase at 14 percent. Surrounding census tracts vary from an increase of 49 percent in census tract 1100 to a decrease of 3 percent in census tract 3001. These variances could be attributed to population losses in rural areas and gains in urban areas.

Table 3-10. Population and % Population Change, 2000, 2010, 2040

Geography		2000 Population	% Population Change	2010 Population	Estimated 2040 Population	% Population Change
Oregon		3,421,399	12%	3,831,074	5,425,408	42%
Jackson County		181,269	12%	203,206	297,496	46%
Gold Hill		1,073	14%	1,220	1,901	56%
Census Tract	1100	3,829	49%	5,689		
	2800	4,605	2%	4,686		
	2900	7,078	2%	7,258		
	3001	3,961	-3%	3,822		

Sources: 2010 Census, Census 2000 Summary File 1 (SF 1) 100-Percent Data, P001: TOTAL POPULATION [1] - Universe: Total population, Portland State Population Research Center

Jackson County and Gold Hill have an older population than the state as a whole as shown in Table 3-11. Within the IMSAs, the more urban census tract 1100 has a substantially younger population than the rural census tracts (2800, 2900, and 3001).

Table 3-11. Age of Census Tracts, 2010

Geography		Median Age; Total (Estimate)	19 and under	20 to 39 years	40 to 64 years	65 and older
Oregon		38.4	25.4%	26.9%	33.9%	13.8%
Jackson County		42.1	24.4%	23.1%	34.8%	17.7%
Gold Hill		43.9	22.2%	23.2%	40.2%	14.4%
Census Tract	1100	41.1	25.7%	22.6%	36.7%	15.1%
	2800	48.9	20.7%	17.5%	43.3%	18.7%
	2900	52.2	18.6%	15.9%	39.7%	25.8%
	3001	52.0	17.2%	15.8%	44.6%	22.5%

Source: 2010 Census QT-P1-Geography Age Groups and Sex

The U.S. Bureau of Census identifies minorities as individuals who identify themselves as Black or African American, American Indian and Alaska Native, Asian, Native Hawaiian and other

Pacific Islander, other race, two or more races, and of Hispanic origin. Based on U.S. Census 2010 data, Jackson County, Gold Hill, and the IMSAs, are less diverse than the state as shown in Table 3-12. In particular, the more rural census tracts are less diverse than the state and the county.

Table 3-12. Race and Ethnicity, 2010

Geography		White	Black or African American	American Indian and Alaska Native	Asian	Native Hawaiian and Other Pacific Islander	Some Other Race	Two or More Races	Not Hispanic	Hispanic
Oregon		83.6%	1.8%	1.4%	3.7%	0.3%	5.3%	3.8%	88.3%	11.7%
Jackson County		88.7%	0.7%	1.2%	1.2%	0.3%	4.5%	3.5%	89.3%	10.7%
Gold Hill		93.5%	0.2%	1.6%	0.5%	0.0%	0.7%	3.6%	97.3%	2.7%
Census Tract	1100	91.3%	0.3%	1.6%	0.9%	0.2%	2.8%	2.9%	91.5%	8.5%
	2800	93.6%	0.3%	1.0%	0.6%	0.1%	1.1%	3.4%	96.2%	3.8%
	2900	94.0%	0.5%	1.2%	0.5%	0.0%	1.2%	2.7%	95.8%	4.2%
	3001	94.3%	0.3%	0.8%	0.5%	0.1%	1.0%	2.9%	96.1%	3.9%

Source: 2010 Census QT-P4-Geography-Oregon: Race, Combinations of Two Races, and Not Hispanic or Latino: 2010, QT-P10-Geography-Census Tract

Persons are considered to be in poverty status when income earned is less than the income threshold. As shown in the Table 3-13, the census tracts in the IMSA and Gold Hill have a lower percentage of individuals living in poverty than Jackson County or the state. However, except for Census Tract 3001 which as the same percent of persons with disability than the state, Jackson County, Gold Hill and all the other census tracts the IMSA have more persons with disability than the state. Census tract 1200 has a higher percentage of persons with disability and female head of households with children. Gold Hill has more Female Head of Households than the County and State. However, the rural IMSA census tracts have less. Census tract 1100 is the same as the state and a little lower than the County.

Table 3-13. Poverty, Disability, Female Head of Household, 2010

Geography		Percent Population for Whom Poverty Status is Determined	% Persons with Disability over the Age of 5	% Female Head of Household w/Children
Oregon		14.8%	18.8%	10.1%
Jackson County		15.8%	20.2%	11.0%
Gold Hill		13.7%	22.4%	12.3%
Census Tract	1100	4.4%	21.6%	10.1%
	2800	8.5%	25.1%	8.5%
	2900	12.4%	24.5%	7.5%
	3001	10.9%	18.8%	6.8%

Source: 2010 Census, QT-P11 Households and Families, ACS S1701. Poverty Status in the Past 12 Months by Sex by Age - Universe: Population for Whom Poverty Status Is Determined, Source: Census 2000 (SF 3) QT-P21: Disability by Sex 2000

IAMP Considerations: *Disproportionate impacts to environmental justice populations by potential projects may be avoided. Potentially affected populations, businesses, and impacts to public resources should be determined through more thorough site analysis, interviews, and other public outreach efforts, as appropriate.*

3.3.2. Land Use and Zoning

Both IMSAs are located within Jackson County, Oregon, one east and one west of the City of Gold Hill Urban Growth Boundary (UGB), between Grants Pass and Medford Oregon. The Rogue River runs west to east through the both IMSAs. The City of Gold Hill lies north of the river, between the two interchanges. The immediate area around the interchanges and I-5 is a narrow valley floor with largely undeveloped hills to the west and east.

Community Features

Figure 3-4a and Figure 3-4b shows community features overlaid on aerial photography of the Exit 40 IMSA Observations show undeveloped land adjacent and southeast of Exit 40. Beyond the undeveloped areas, to the east, are agricultural and rural residential uses. To the east is a KOA Kampground. Outside of the IMSA to the northeast, is the Gold Hill Sports Park.

North of the interchange is the Lampman Road Baptist Church and a fire station along Access Road along with rural and agricultural uses. Ben Hur Lampman is just north of the IMSA alongside the Rogue River. The Rogue River is approximately one-quarter-mile north of the interchange. Blackwell and Kane Creeks flow from the southwest into the Rogue River. Southeast of the interchange are rural residential uses including a mobile home park and Laurel Hill Golf Course. Southwest of the interchange is undeveloped land and a creek with rural agricultural uses. West of Old Stage Road is the Rogue Valley Zipline Adventure and Moose Family Center with rural and agricultural use beyond.

Aerial observations surrounding Exit 43 show rural residential uses east of the interchange and undeveloped land with one commercial use west of Exit 43. No community features are highlighted at this interchange. The Rogue River is less than 0.15 miles from I-5 in the vicinity of Exit 43 and is used for recreational opportunities such as fishing and rafting.

The Rogue River Greenway includes portions of constructed recreation trails including a recently completed section on the west side of the river between the IMSA 40 and 43 near Sardine Creek. Eventually, the Greenway will span an area roughly 30 miles in length from the City of Grants Pass through the cities of Rogue River and Gold Hill and on to Central Point where it will connect to the existing 20 miles of the Bear Creek Greenway and Ashland and Medford. The trail was deemed a State Designated Regional Trail, a non-motorized public trail that serves as a connecting route between communities and recreational sites, in September 2014 by the Oregon Parks & Recreation Department.

Tax Lots

Figure 3-5a and Figure 3-5b show the tax lots and estimated right-of-way in the IMSAs. Lots are mostly larger to support the rural uses in the area.

Jacksons County Comprehensive Plan

Most of the land surrounding the interchanges is undeveloped and designated for rural uses, as shown in Figure 3-6a and Figure 3-6b. Because of the terrain in the area, property with development potential is adjacent to major roads and highways, in particular those south of Gold Hill along Blackwell Road.

The Jackson County Comprehensive Plan map identifies most of the parcels immediately around I-5 Exit 40 interchange as Rural Residential or Agricultural land. There are some Commercial lands to either side of Old Stage Road, where it intersects the Access Road. In addition, there is an area designated limited use between I-5 and Old Stage Road.

Land use surrounding Exit 43 is primarily Agricultural but includes some other uses as well, as seen in Figure 3-6a. Rural Residential designations are located on both sides of I-5, mostly west of the interchange but also in the northeast corner of the IMSA. Northwest of the interchange there is commercial land. There is also an area designated industrial southwest of the interchange.

Jackson County Zoning

The zoning designations within the IMSAs generally correspond to the comprehensive plan designations as shown on Figure 3-7a and Figure 3-7b.

The purpose of each zoning designation is described below:

- EFU: The purpose of the Exclusive Farm Use (EFU) District (Section 4.2) is to conserve agricultural land and to implement the Oregon Agricultural Land Use Policy, ORS 215.243, Statewide Planning Goal 3 (Agricultural Lands), and OAR 660-033. Depending on the type of transportation improvement, a Type 1 to Type 4 permitting review is required.
- FR, WR: Forest Resource (FR); Woodland Resource (WR). These districts are intended to conserve forest lands and implement the Oregon Administrative Rules, and Statewide Planning Goal 4 (Forest Lands) (Section 4.3).
- IC: The purpose of the Interchange Commercial district is provide for commercial uses that serve the immediate needs of the traveling public, and are located at freeway interchanges with state highways or county roads. Depending on the type of transportation improvement, the project may be permitted outright or require a Type 1 to Type 2 permitting review.
- RR: The purpose of the rural residential zoning districts is to provide for large-lot residential areas, consistent with the predominant rural character of the area and the physical capability of the land.

- AR: The purpose of the Aggregate Removal (AR) District is to allow for the protection and utilization of aggregate and other mineral resources, and to ensure the reclamation of mined land. Transportation improvements typically require a Type I review.
- RLI: The purpose of the Rural Light Industrial district is to provide for industrial uses that rely on site-specific natural resources for their processes and activities, or create a byproduct of substantial direct benefit to resource-producing lands or uses.
- LU: The purpose of the Limited Use (LU) district is to limit uses and activities to those justified in a Comprehensive Plan Amendment "Reasons" exception statement adopted by the County and acknowledged by the state pursuant to ORS 197.732(1)(c) as required by OAR 660-004-0018(4)(a), or to recognize existing lawfully established nonconformities as permitted uses.

IAMP Considerations: *During project development, ODOT will need to determine whether any prime, unique, or statewide importance farmland may be converted to nonagricultural (e.g. transportation facilities) uses, and may need to comply with the federal Farmland Protection Policy Act. Conversion of farmland also may require a Goal Exception to the Oregon Statewide Planning Goals, depending on the type and function of a proposed transportation improvement. OAR 660-012-0065 identifies transportation facilities, services and improvements which may be permitted on rural lands consistent with Goals 3, 4, 11, and 14 without a goal exception. OAR 660-012-0070 outlines the exception process for transportation improvements on rural land.*

3.3.3. Section 4(f) Resources

Section 4(f) refers to a part of federal law that protects public parks, recreation lands, wildlife and waterfowl refuges, and public or private historic sites. Section 4(f) applies only to Departments of Transportation (DOTs) and their agencies. Highway projects that use public parks must fulfill the requirements of Title 23, USC, Section 138, Section 4(f) of the Department of Transportation Act of 1966, as amended.

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.

DOTs must demonstrate that a proposed project will not "use" the publicly owned parks and recreation land, where "use" can mean both actual conversion of recreation lands into a transportation use, or a "constructive use," where off-site impacts of the transportation project substantially impair the site's vital functions. Findings of "no feasible and prudent alternatives" and "all possible planning to minimize harm" must be well-documented and supported. A feasible alternative is an alternative that is possible to engineer, design, and build. To find that an alternative that avoids a Section 4(f) resource is not "prudent," one must document that there are unique problems or unusual factors involved with the use of such an alternative. This

means that the cost, the social, economic, and environmental impacts, and/or community disruption resulting from such alternatives reach extraordinary magnitudes.

Section 4(f) resource lands within the IMSA consist of the resources identified in *Section 3.2. Existing Environmental Summary*. Future resources north of the Rogue River include the Rogue River Greenway Trail. In addition, structures and resources eligible or potentially eligible for inclusion on the NRHP within the IMSA but not yet identified may be potential candidates for Section 4(f) status.

IAMP Considerations: *Transportation improvements should try to avoid areas of new ground disturbance due to the identified and potential cultural resources in the IMSAs. A Section 4(f) evaluation will require ODOT to assess all reasonable alternatives that adversely affect protected lands. If every potential alternative that can meet the purpose and need for the project would impact some Section 4(f) property, then the alternative with the least impact must be selected unless it is not feasible and prudent.*

3.3.4. Section 6(f) Resources

The Land and Water Conservation Fund (LWCF) Act of 1965 established grants-in-aid funding to assist states in the planning, acquisition, and development of outdoor recreational land and water areas and facilities. Section 6(f) of the LWCF Act prohibits the conversion of property acquired or developed with the assistance of the LWCF for anything other than public outdoor recreation use without the approval of the Secretary of the U.S. Department of the Interior.

Section 6(f) of the LWCF Act applies to transportation projects that propose impacts to, or the permanent conversion of, outdoor recreation property that was acquired or developed with LWCF Act grant assistance. Section 6(f) requires that replacement lands of equal value, location, and usefulness are provided as conditions to approval of land conversions.

IAMP Considerations: *No Section 6(f) resources were identified in the IMSAs.*

3.3.5. Potential Design Constraints

This review identified a “red flag” for ground disturbing transportation improvement actions in the I-5 Exit 40 IMSA due to the cultural resources in the area. In addition, the baseline data identifies several other land use and environmental conditions that could potentially be affected by transportation improvements. Special attention should be given to avoiding or minimizing:

- Cultural Resources
- Habitat and riparian corridor impacts
- Wetlands impacts
- Impacts to T&E species
- Exclusive Farm Use or other resource lands

Table 3-14 summarizes resources that may present potential design constraints. These resources are also summarized in the figures presented in this memorandum. The table considers federal regulations and standards because potential projects identified in the IAMP may be partially federally funded or require federal permits, and therefore would need to comply with federal regulations and standards.

Other design constraints which were not reviewed in this memorandum may include fish passage at stream crossings and stormwater treatment requirements.

This memo identifies baseline resource information in the IMSA from a "visual windshield validation" perspective. ODOT will need to undertake detailed studies of specific areas to determine design limitations for specific proposed projects. Potential projects identified in the IAMP may require permits, regulatory requirements, or authorizations.

Table 3-14. Environmental and Land Use Summary

Feature	Summary of Key Resources and Concept Guidance	Key Potential Conflict Location(s)	Potential Approval/Permit If Resource Impacted
Wildlife Habitat & Wetlands	Riparian corridors, aquatic habitat, wildlife habitat and wetlands along the Rogue River and Kane and Blackwell Creek. *Disturbance to undeveloped areas should be avoided if possible. Wetland delineations should be conducted once concept areas are identified. Impacts to wetlands should be avoided. Mitigation and permitting will be necessary if impacts cannot be avoided. BMPs incorporated into project design and construction can help minimize impacts.*	Rogue River and Kane and Blackwell Creek	U.S. Army Corps of Engineers Oregon Department of State Lands Oregon Department of Fish and Wildlife Local land use approvals
Threatened and Endangered Species	T&E Species are found in the IMSA. *Concepts should avoid disturbance of areas where the species are found and water quality impacts and physical impediments in T&E species contributing waterways.*	Rogue River and Kane and Blackwell Creek	Oregon Department of Fish and Wildlife NMFS, USFWS, ODA (State and Federal Endangered Species Act Consultation)
Floodplains and Floodways	Rogue River floodway and floodplain, Kane Creek floodplain. *Fill in floodways and floodplains should be avoided. No net rise will have to be demonstrated if improvements involve any sort of fill in floodways. Cut and fill requirements will need to be adhered to in floodplains.*	Rogue River and Kane Creek	FEMA regulations administered through local land use approvals
Socioeconomic and Environmental Justice	Community resource and potential for EJ populations. *Displacements should be avoided or minimized.*	Throughout IMSAs: (Additional information necessary to determine if there are potential EJ populations.) Moose Family Center and Church (Exit 40).	The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Uniform Act) Title VI Compliance
Land Use and Zoning	EFU, Areas of Special Concern Overlays. *Impacts to resource zones should be avoided. Impacts to EFU zones may require goal exception.*	Throughout IMSAs	Local land use approvals Potential goal exception for use of Agricultural lands
Historical and Archaeological Resources	Historical and cultural resources. *Further surveys will need to be completed, especially if improvements will include ground-disturbing activities and or right-of-way acquisition of lots with potential historical resources.*	Throughout IMSAs	Local land use approvals State Historic Preservation Office, and FHWA – 4(f)

Table 3-14. Environmental and Land Use Summary

Feature	Summary of Key Resources and Concept Guidance	Key Potential Conflict Location(s)	Potential Approval/Permit If Resource Impacted
Parks and Recreation and Section 4(f) Resources	Parks and Historical/Cultural Resources. *Avoid resources if possible. Any "use" of Section 4(f) lands will need to demonstrate that it is either a "de minimis" impact or that there was no alternative for the impact.*	Throughout IMSAs	Federal Highway Administration Consultation and Approval Local land use approvals Oregon Parks and Rec/National Parks Service
Section 6(f) Resources	None.	N/A	National Parks Service Consultation and Approval
Hazmat	Areas along highly traveled roads and highways.	Throughout IMSAs	Coordination with DEQ

Attachments:
Figure 3-1 (a & b). Access Management Inventory
Figure 3-2 (a & b). Natural Features
Figure 3-3 (a & b). Hazardous Sites
Figure 3-4 (a & b). Community Features
Figure 3-5 (a & b). Tax Lot Maps
Figure 3-6 (a & b). Comprehensive Plan Designations
Figure 3-7 (a & b). Zoning Map Designations
Figure 3-8 (a & b). Miscellaneous Landmarks and Features

Appendix A. Methodology Memorandum
Appendix B. Truck Turning Movement Diagrams
Appendix C. Hazardous Materials

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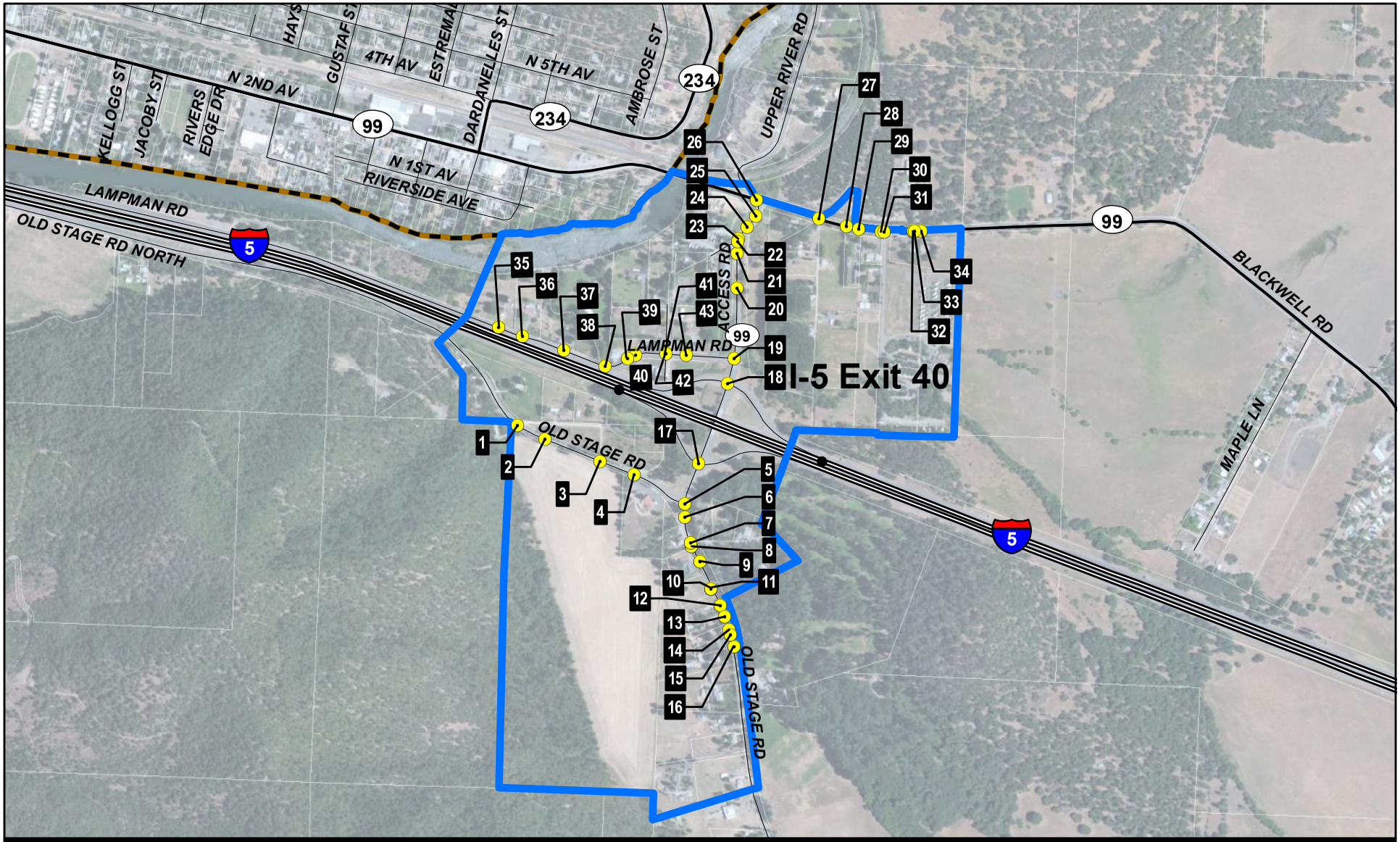


I-5 Exits 40 and 43 Interchange Area Management Plans

N

1,000 500 0 1,000

Feet

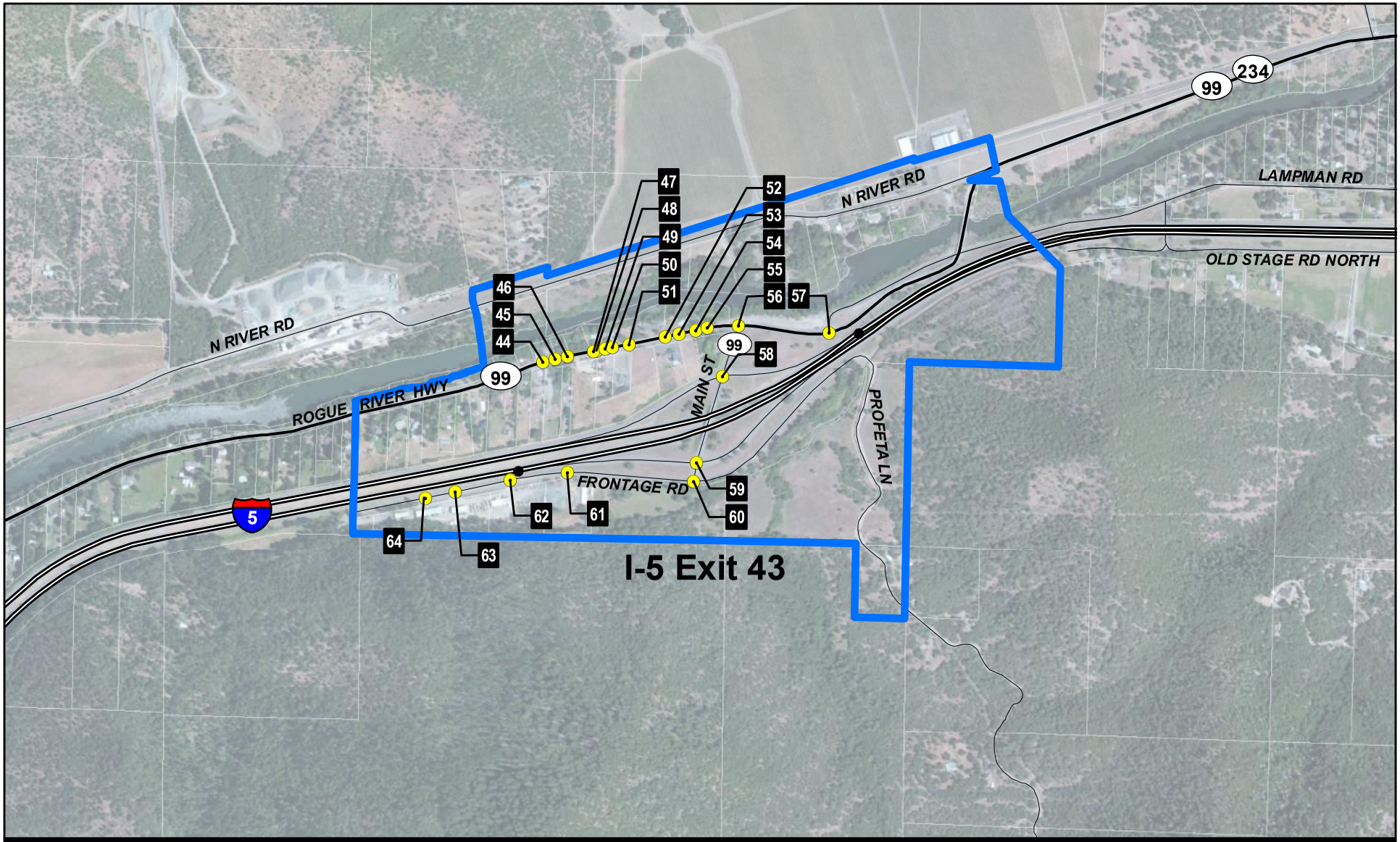
Source Data: ESRI, Jackson County, NAIP 2009

Legend

- Interchange Management Study Area (IMSA)
- Urban Growth Boundary (UGB)
- Taxlot Boundaries indicated in white
- Interstate
- Highway
- Local Road
- Access Points

Figure 3-1a

Access Management
I-5 Exit 40



I-5 Exits 40 and 43 Interchange Area Management Plans

1,000 500 0 1,000
Feet

N

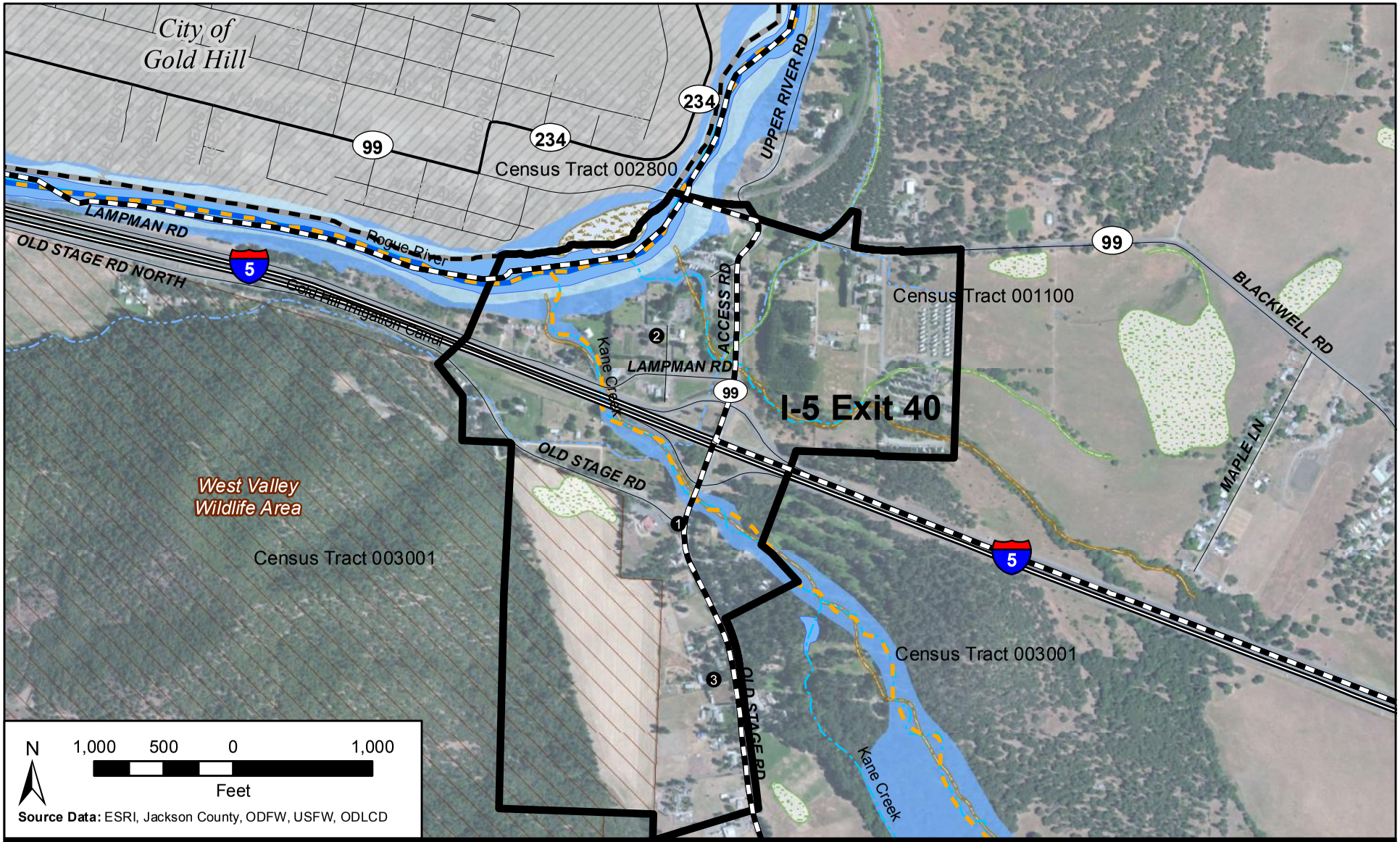
Source Data: ESRI, Jackson County, NAIP 2009

Legend

- Interchange Management Study Area (IMSA)
- Urban Growth Boundary (UGB)
- Taxlot Boundaries indicated in white
- Interstate
- Highway
- Local Road
- Access Points

Figure 3-1b

Access Management
I-5 Exit 43



I-5 Exits 40 and 43 Interchange Area Management Plans

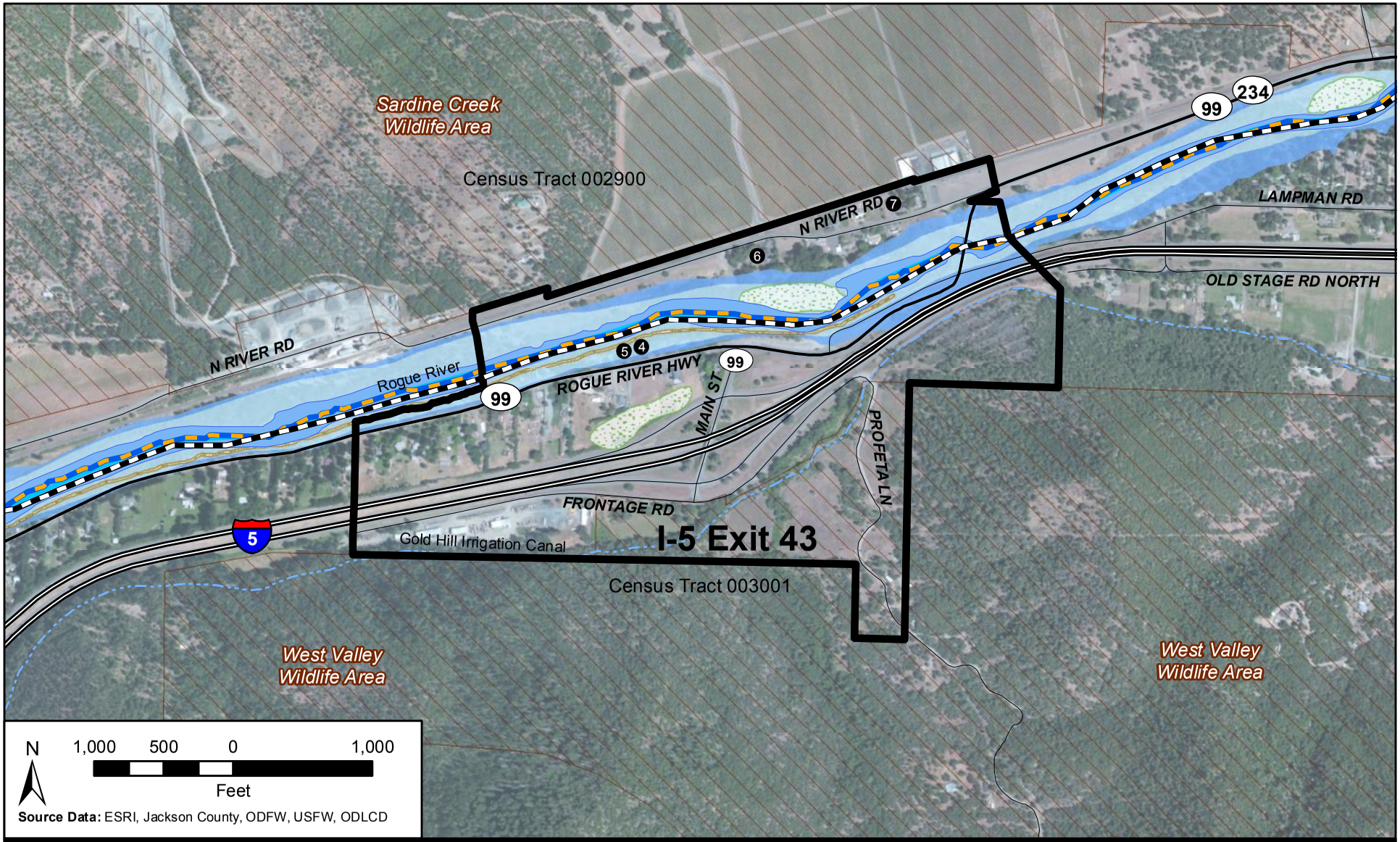
Interchange Management Study Area
Urban Growth Boundary
City Limits
Interstate
Highway
Local Road
River
Creek/Stream
Ditch/Irrigation Canal
100-Year Floodplain
Floodway
Wildlife Areas
Census Tract Boundary

Wetland Classifications
Freshwater Emergent Wetland
Freshwater Forested/ Shrub Wetland

ODFW Habitat Distribution
Summer & Winter Steelhead
Fall & Spring Chinook Salmon, Summer & Winter Steelhead, Coho Salmon, and Pacific Lamprey

Historic Site

Figure 3-2a
Natural Features
I-5 Exit 40



I-5 Exits 40 and 43 Interchange Area Management Plans

Interchange Management Study Area
Urban Growth Boundary
City Limits
Interstate
Highway
Local Road
River
Creek/Stream
Ditch/Irrigation Canal
100-Year Floodplain
Floodway
Wildlife Areas
Census Tract Boundary

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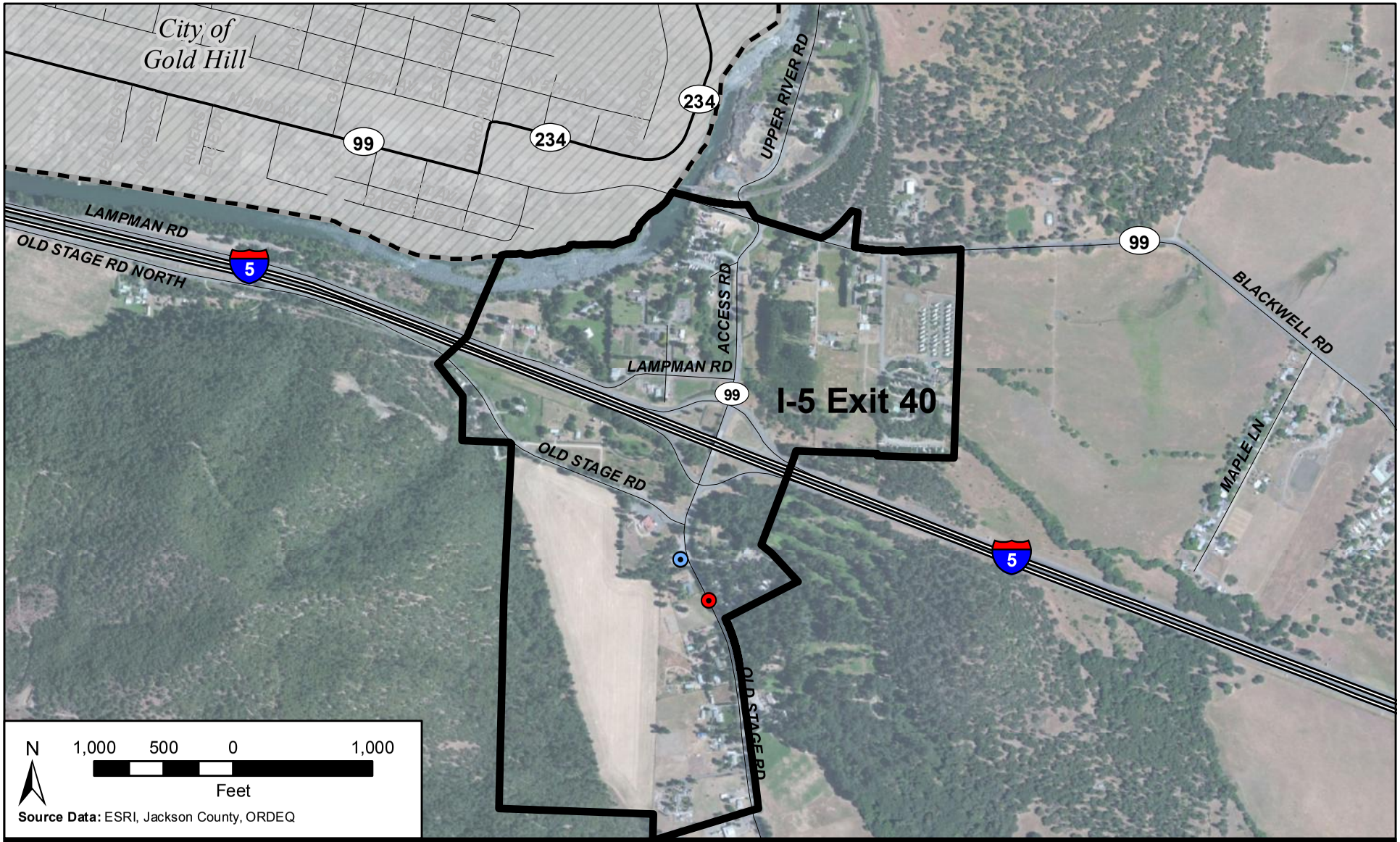
Freshwater Emergent Wetland
Freshwater Forested/ Shrub Wetland

ODFW Habitat Distribution

Summer & Winter Steelhead
Fall & Spring Chinook Salmon, Summer & Winter Steelhead, Coho Salmon, and Pacific Lamprey

Historic Site

Figure 3-2b
Natural Features
I-5 Exit 43



I-5 Exits 40 and 43 Interchange Area Management Plans

Legend

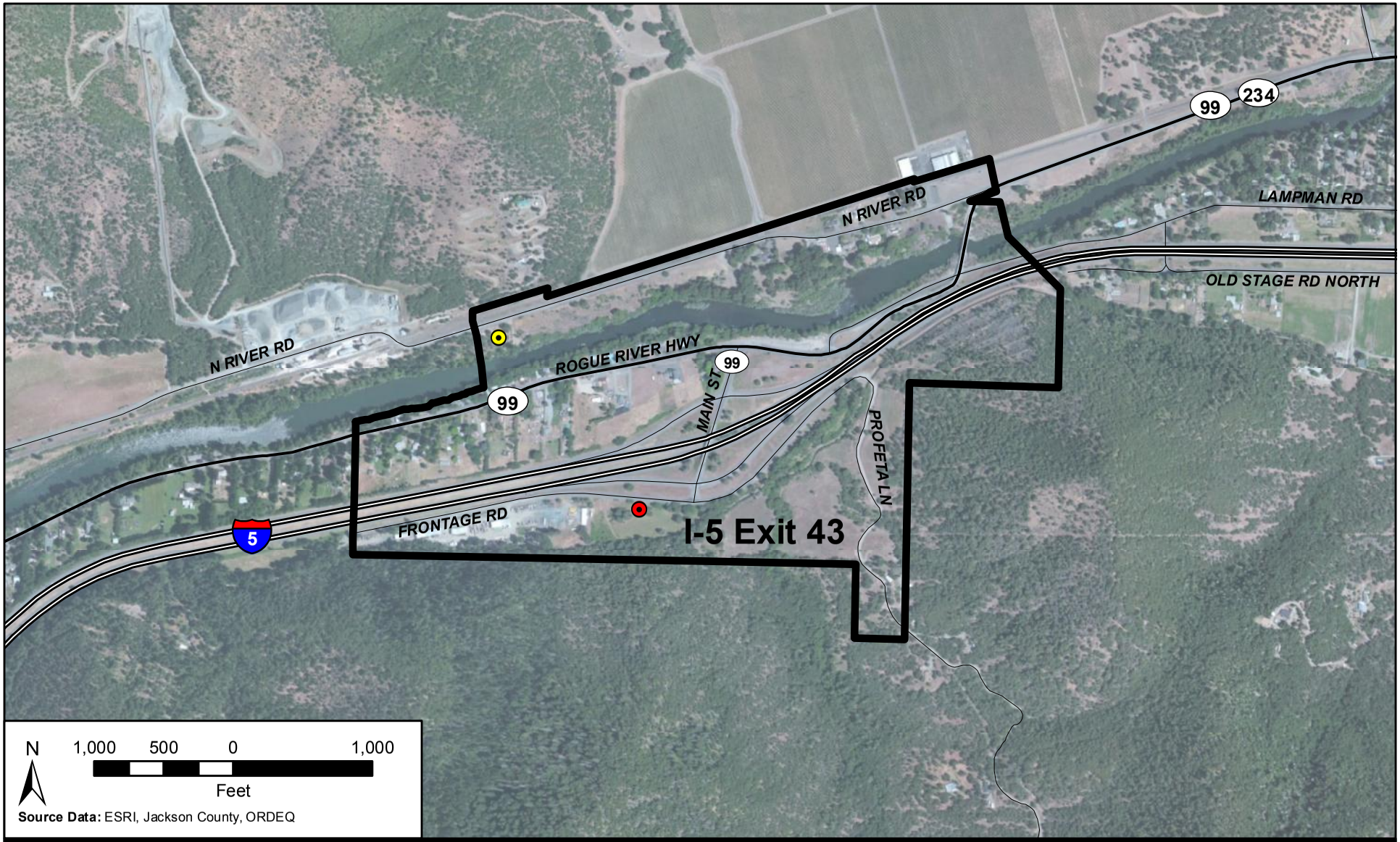
- Interchange Management Study Area
- Urban Growth Boundary
- City Limits
- Interstate
- Highway
- Local Road

Hazardous Sites *(by status and type)*

- Active, WQSIS
- Active, TRAACS
- Active, UST

Figure 3-3a

Hazardous Sites
I-5 Exit 40



I-5 Exits 40 and 43 Interchange Area Management Plans

Legend

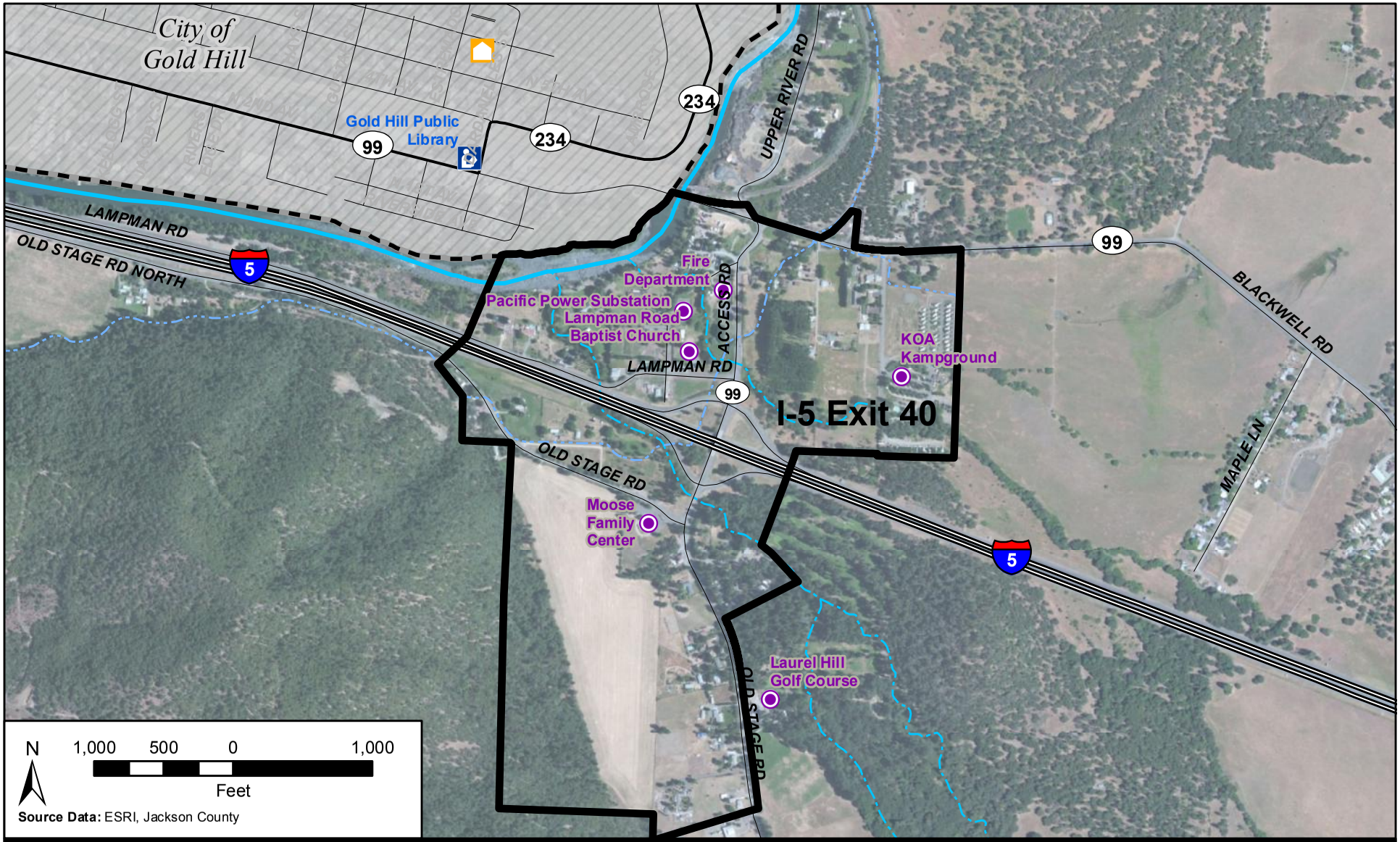
- Interchange Management Study Area
- Urban Growth Boundary
- City Limits
- Interstate
- Highway
- Local Road

Hazardous Sites *(by status and type)*

- Active, WQSIS
- Active, TRAACS
- Active, UST

Figure 3-3b

Hazardous Sites
I-5 Exit 43



I-5 Exits 40 and 43 Interchange Area Management Plans

Legend

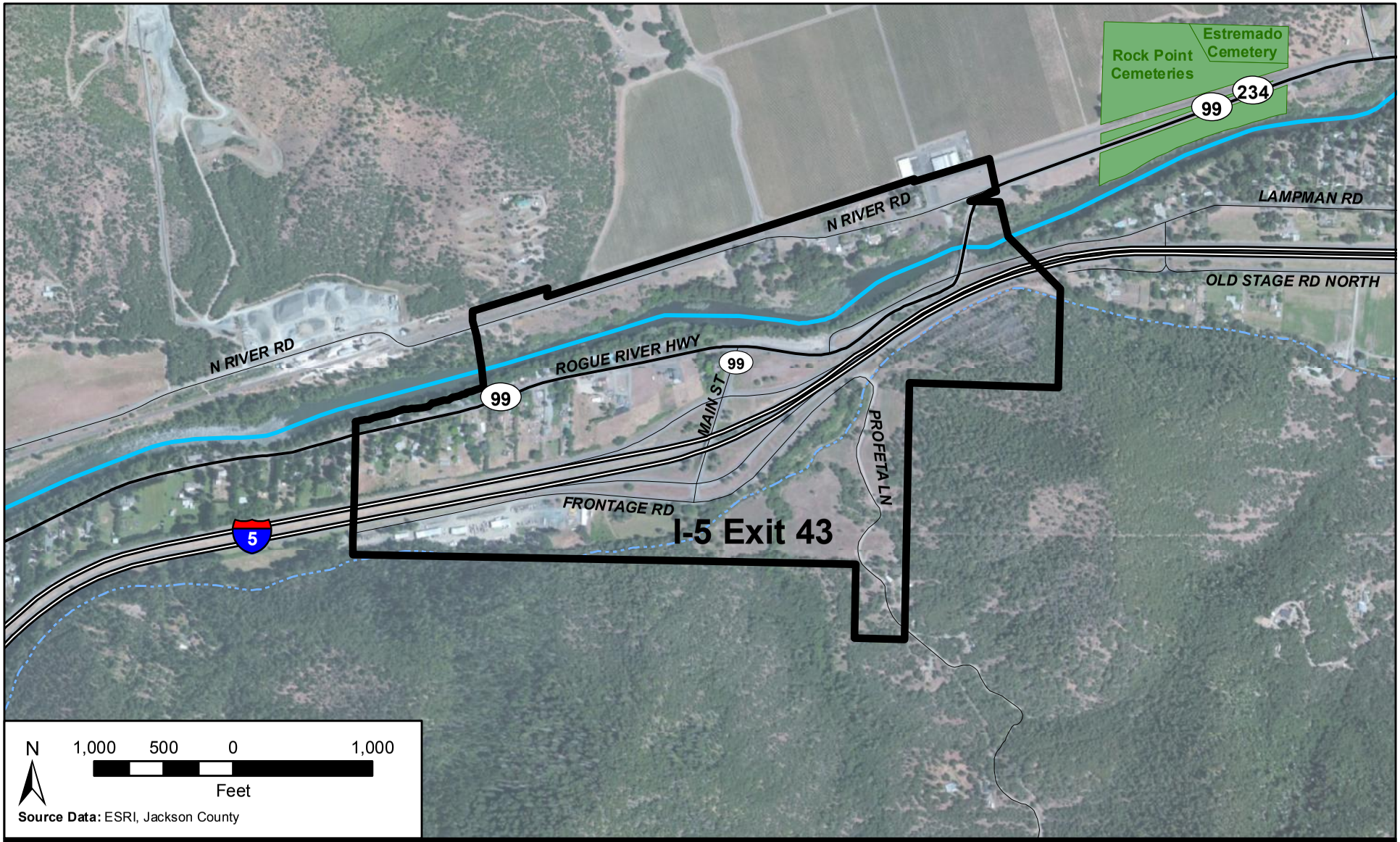
- Interchange Management Study Area
- Urban Growth Boundary
- City Limits
- Interstate
- Highway
- Local Road

Community Features

- City Hall
- Library
- Cemetery
- Other Points of Interest

Figure 3-4a

Community Features
I-5 Exit 40



I-5 Exits 40 and 43 Interchange Area Management Plans

Legend

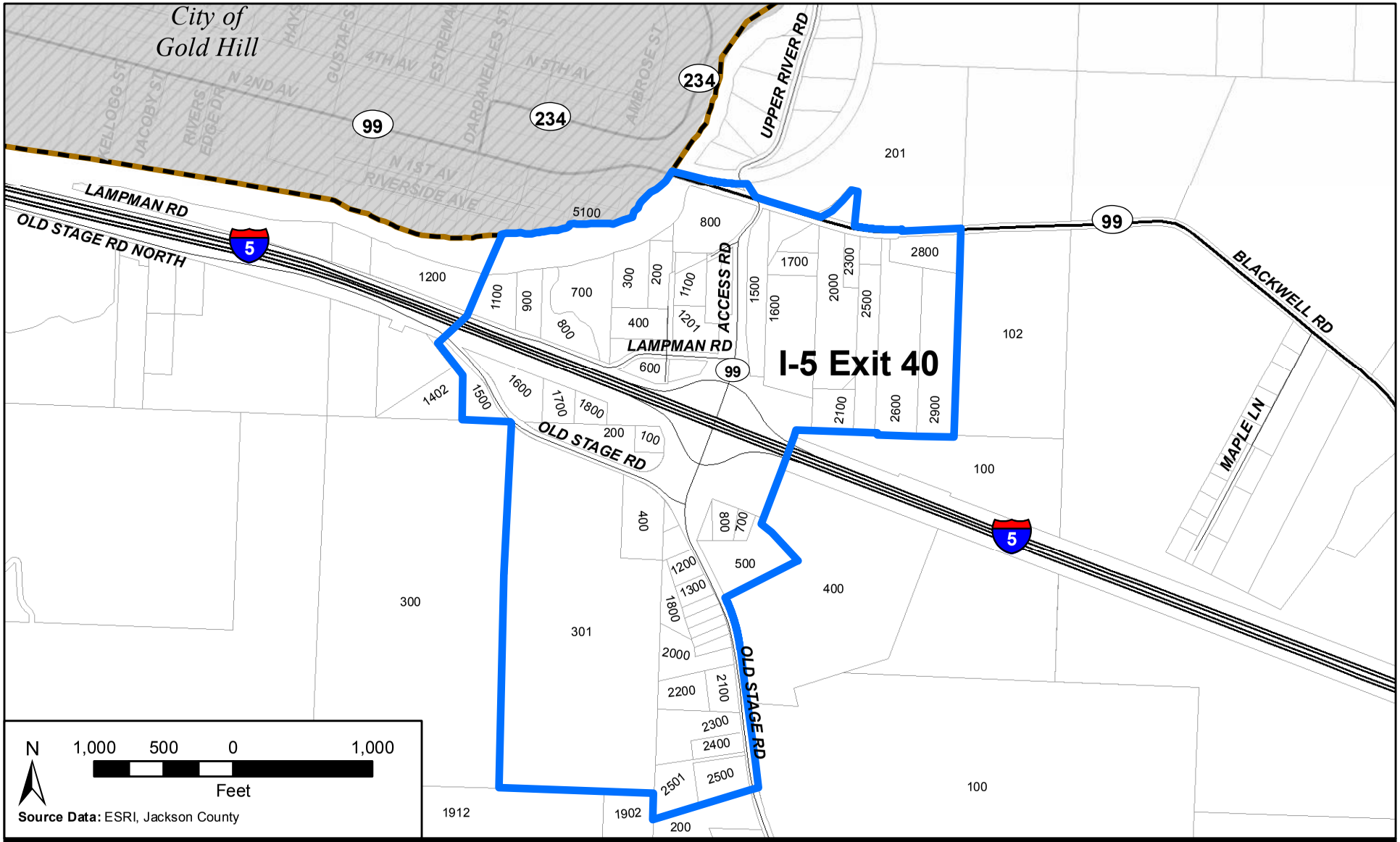
- Interchange Management Study Area
- Urban Growth Boundary
- City Limits
- Interstate
- Highway
- Local Road

Community Features

- City Hall
- Library
- Cemetery
- Other Points of Interest

Figure 3-4b

Community Features
I-5 Exit 43



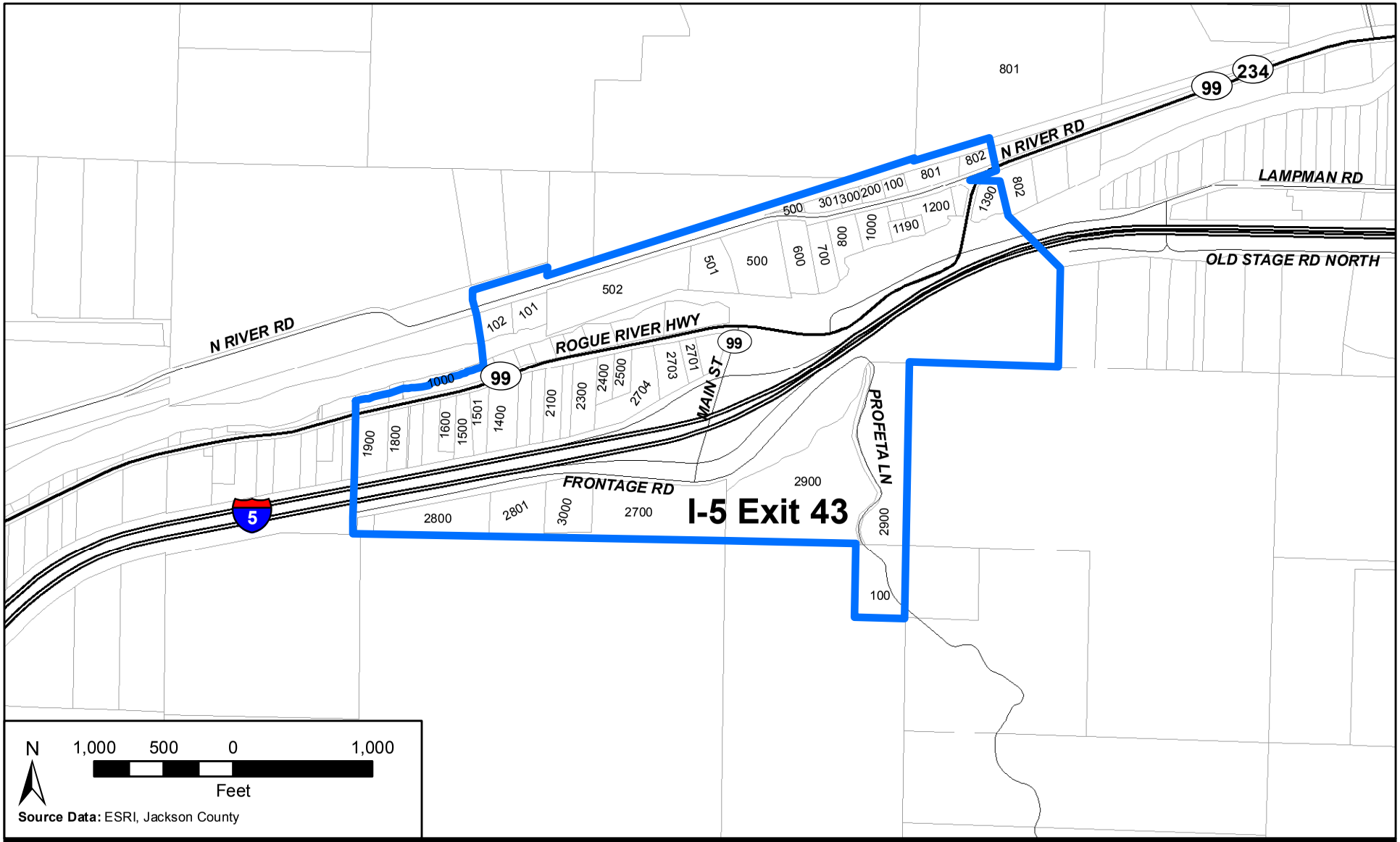
I-5 Exits 40 and 43 Interchange Area Management Plans

Legend

- Interchange Management Study Area (IMSA)
- Urban Growth Boundary (UGB)
- City Limits
- Interstate
- Highway
- Local Road
- Tax Lot Boundaries

Figure 3-5a

Tax Lots
I-5 Exit 40



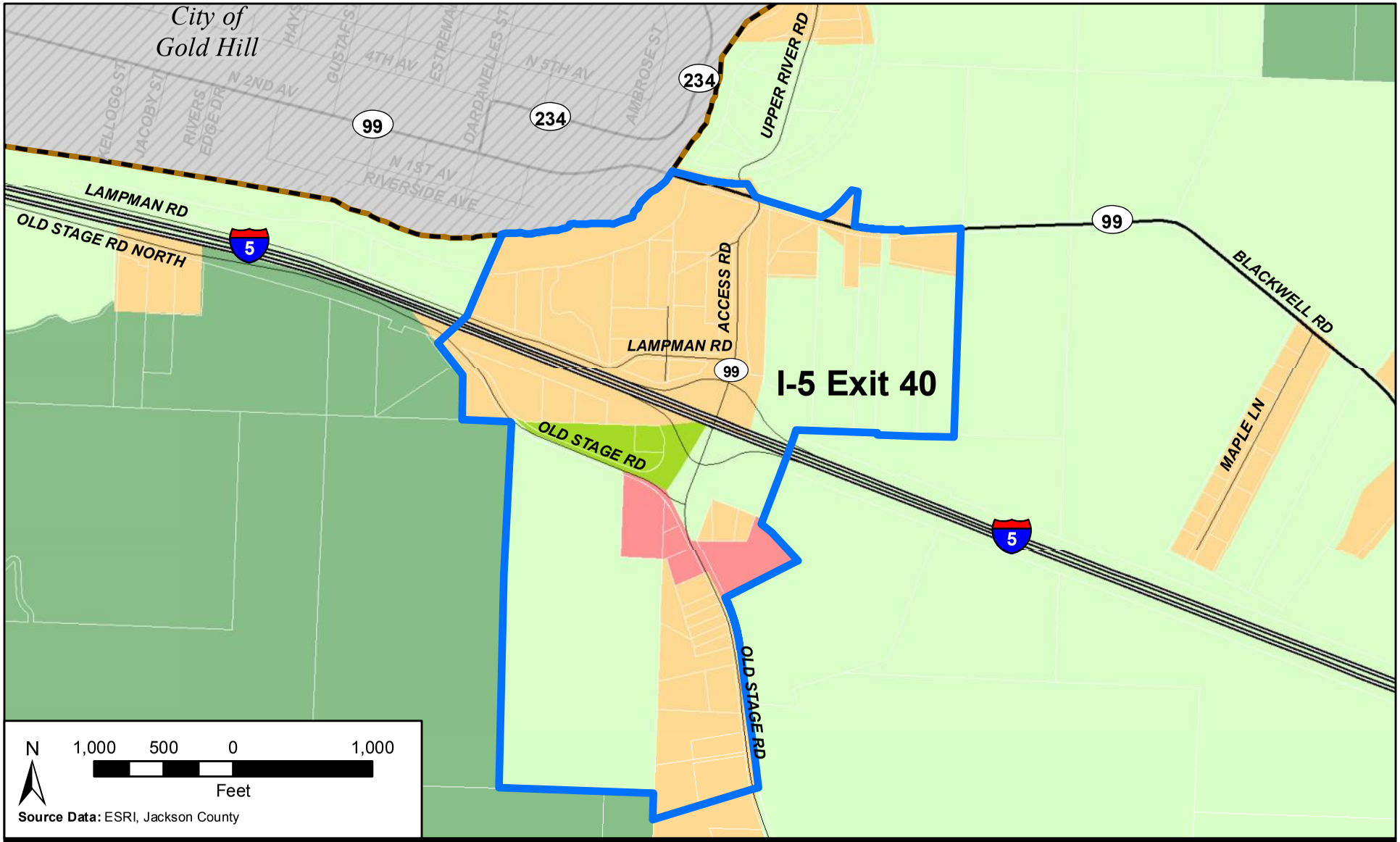
I-5 Exits 40 and 43 Interchange Area Management Plans

Legend

- Interchange Management Study Area (IMSA)
- Urban Growth Boundary (UGB)
- City Limits
- Interstate
- Highway
- Local Road
- Tax Lot Boundaries

Figure 3-5b

Tax Lots
I-5 Exit 43



I-5 Exits 40 and 43 Interchange Area Management Plans

Legend

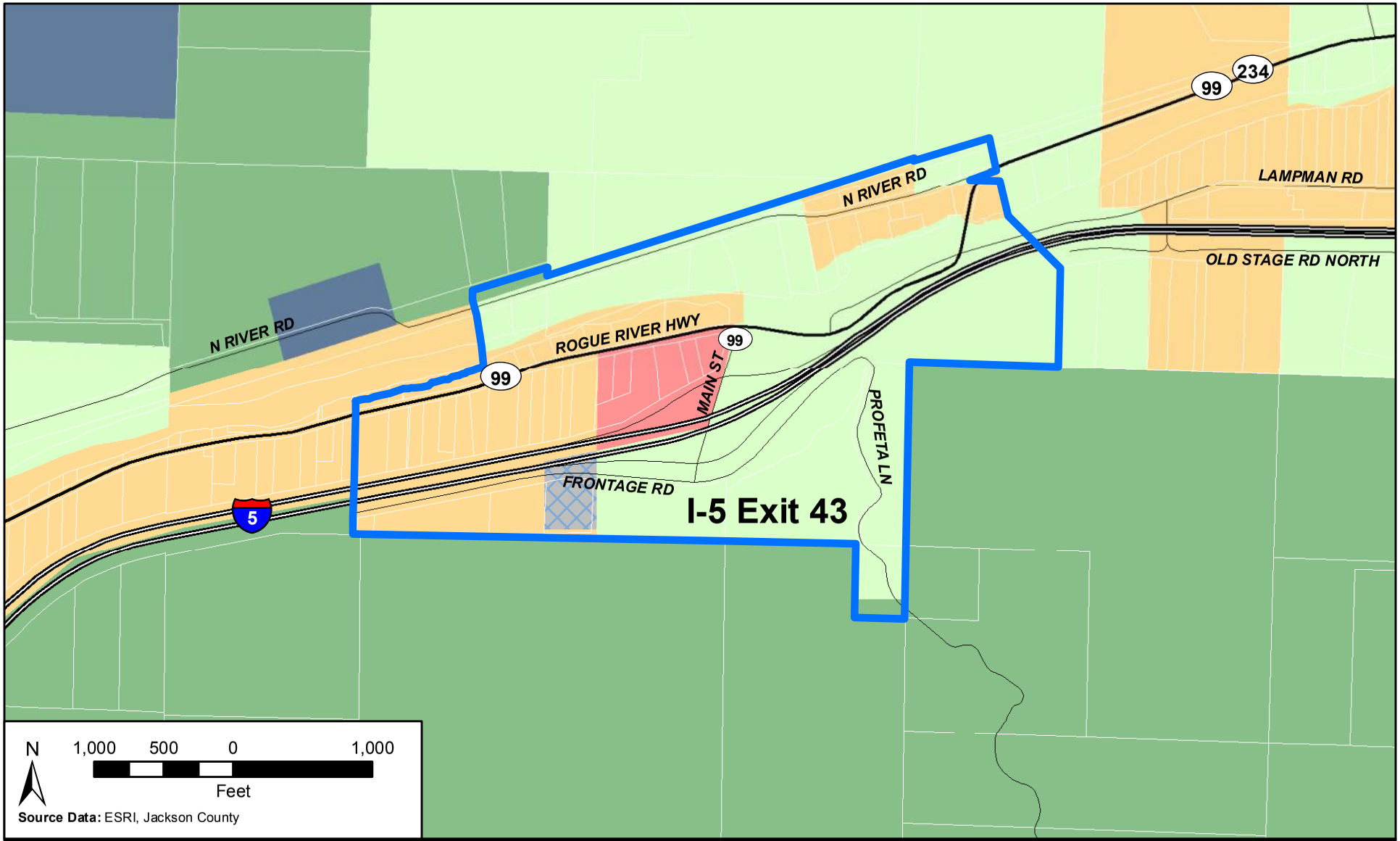
- Interchange Management Study Area (IMSA)
- Urban Growth Boundary (UGB)
- Taxlot Boundaries indicated in white
- Interstate
- Highway
- Local Road

Jackson County Comprehensive Plan Designations

- Agricultural Land
- Commercial Land
- Forestry / Open Space Land
- Limited Use Land
- Rural Residential Land
- No Data

Figure 3-6a

Jackson County Comprehensive Plan Designations
I-5 Exit 40



I-5 Exits 40 and 43 Interchange Area Management Plans

Legend

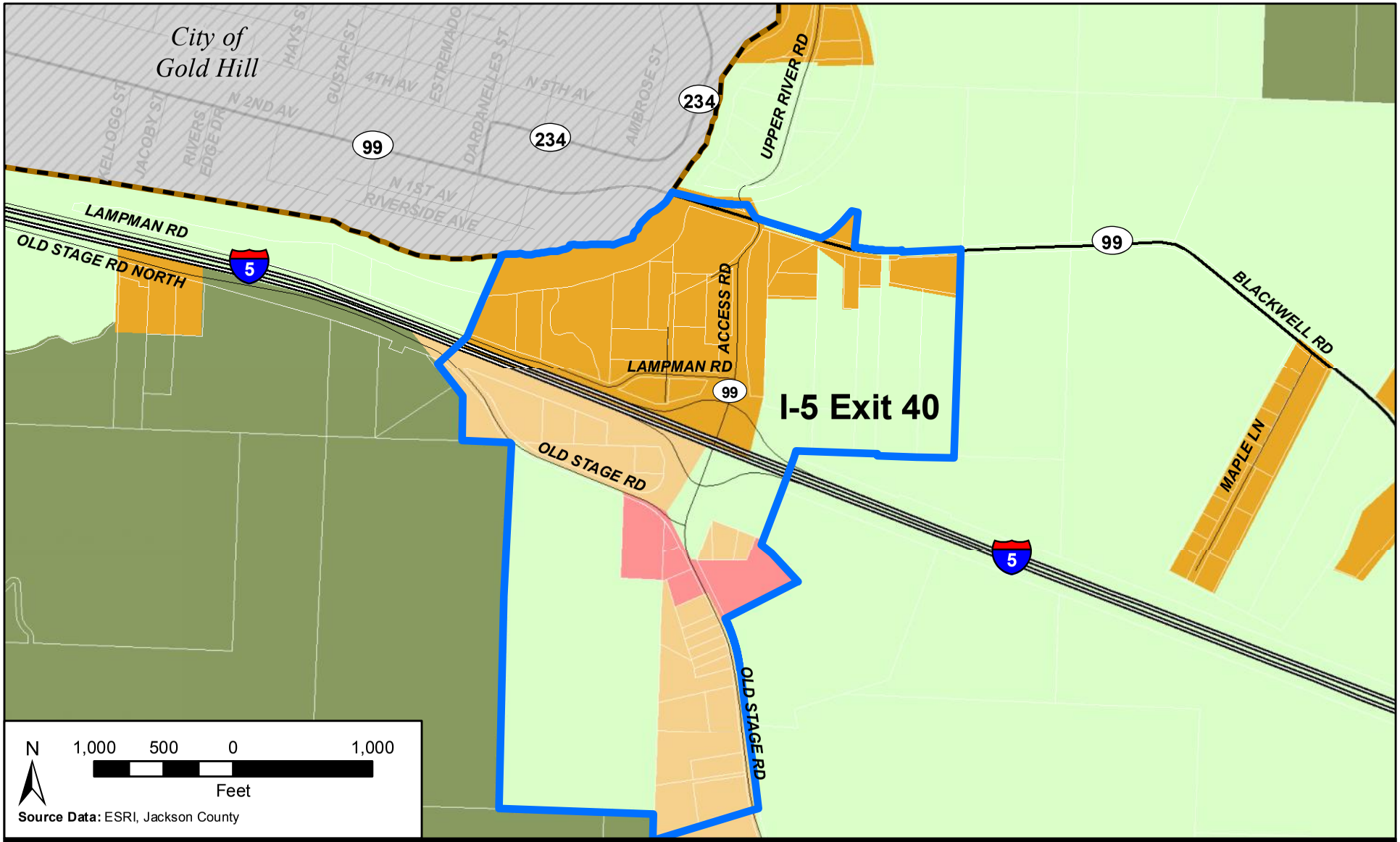
- Interchange Management Study Area (IMSA)
- Urban Growth Boundary (UGB)
- Taxlot Boundaries indicated in white
- Interstate
- Highway
- Local Road

Jackson County Comprehensive Plan Designations

- Aggregate Removal Land
- Agricultural Land
- Commercial Land
- Forestry / Open Space Land
- Industrial Land
- Rural Residential Land

Figure 3-6b

Jackson County Comprehensive Plan Designations
I-5 Exit 43



I-5 Exits 40 and 43 Interchange Area Management Plans

Legend

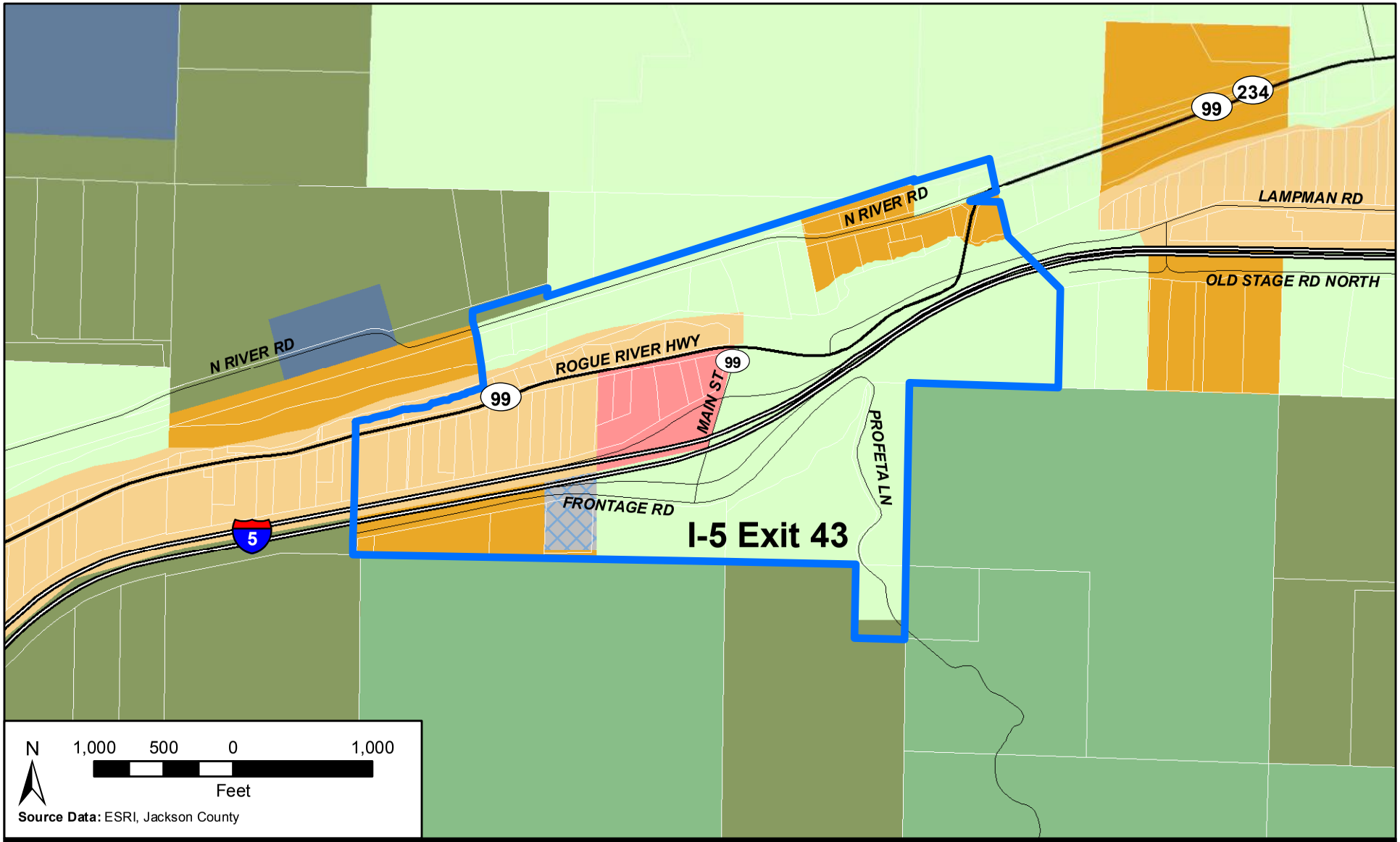
- Interchange Management Study Area (IMSA)
- Urban Growth Boundary (UGB)
- Taxlot Boundaries indicated in white
- Interstate
- Highway
- Local Road

Jackson County Zoning Designations

- Exclusive Farm Use (EFU)
- Interchange Commercial (IC)
- Rural Residential - 2.5 (RR-2.5)
- Rural Residential - 5 (RR-5)
- Woodland Resource (WR)

Figure 3-7a

Jackson County Zoning Designations
I-5 Exit 40



I-5 Exits 40 and 43 Interchange Area Management Plans

Legend

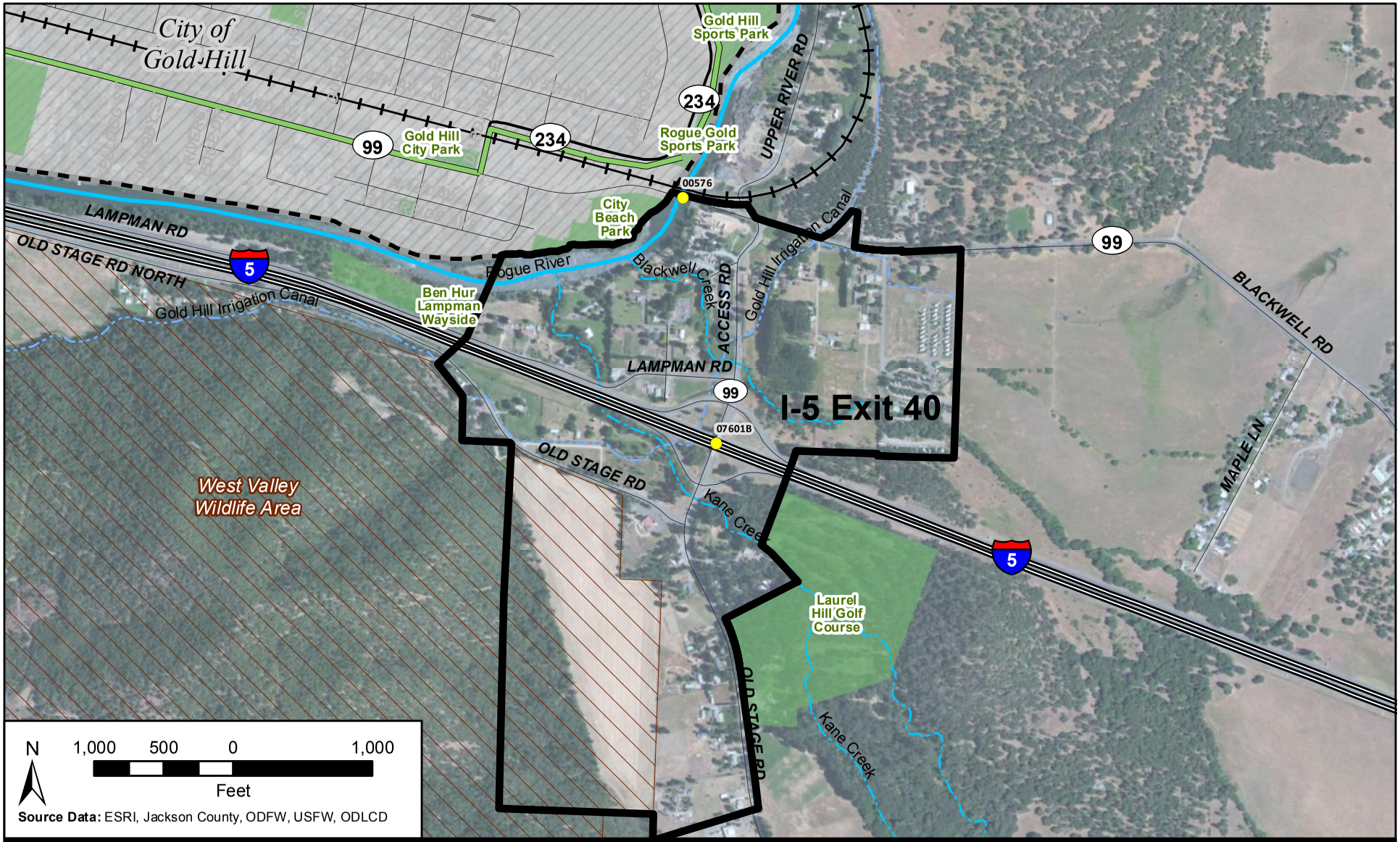
- Interchange Management Study Area (IMSA)
- Urban Growth Boundary (UGB)
- Taxlot Boundaries indicated in white
- Interstate
- Highway
- Local Road

Jackson County Zoning Designations

- Aggregate Removal (AR)
- Exclusive Farm Use (EFU)
- Forest Resource (FR)
- Interchange Commercial (IC)
- Rural Light Industrial (RLI)
- Rural Residential - 2.5 (RR-2.5)
- Rural Residential - 5 (RR-5)
- Woodland Resource (WR)

Figure 3-7b

Jackson County Zoning Designations
I-5 Exit 43



I-5 Exits 40 and 43 Interchange Area Management Plans

Interchange Management Study Area
Urban Growth Boundary
City Limits

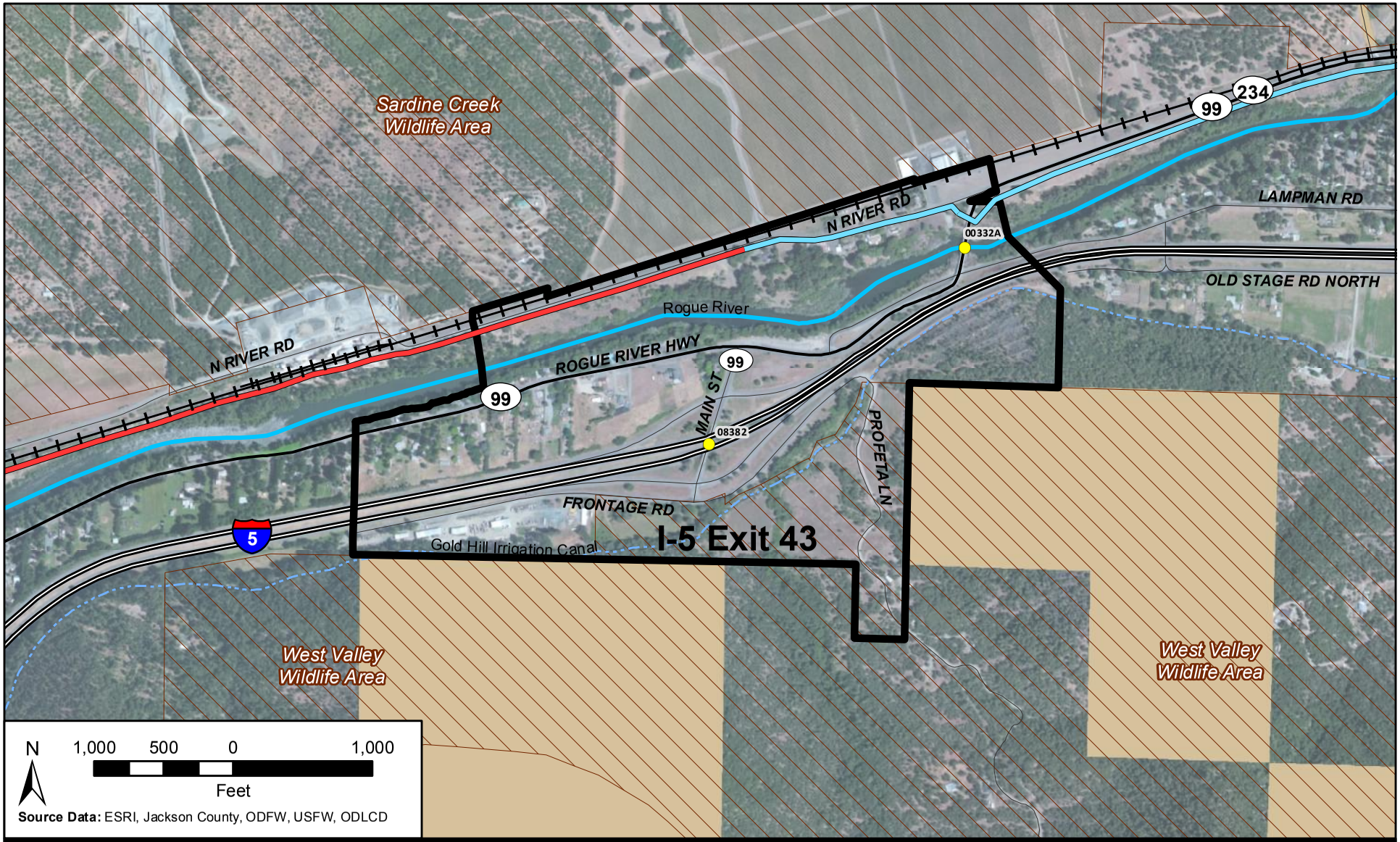
Interstate
Highway
Local Road
Railroad

River
Creek/Stream
Ditch/Irrigation Canal
Wildlife Areas

Open Space
BLM Lands
Federal Lands
ODOT Bridges

Rogue River Greenway
Complete
Funded
Planned

Figure 3-8a
Miscellaneous Landmarks and Features I-5 Exit 40



I-5 Exits 40 and 43 Interchange Area Management Plans

Interchange Management Study Area
Urban Growth Boundary
City Limits

Interstate
Highway
Local Road
Railroad

River
Creek/Stream
Ditch/Irrigation Canal
Wildlife Areas

Open Space
BLM Lands
Federal Lands
ODOT Bridges

Rogue River Greenway
Complete
Funded
Planned

Figure 3-8b
Miscellaneous Landmarks and Features I-5 Exit 43

I-5 Exits 40 and 43 (Gold Hill)
Interchange Area Management Plans

DRAFT Technical Memorandum #3
Appendix A: Methodology Memorandum

Prepared for

Oregon Department of Transportation, Region 3
3500 NW Stewart Parkway
Roseburg, Oregon 97470

Prepared by

David Evans and Associates, Inc.
2100 SW River Parkway
Portland, Oregon 97201

June 2013

Table of Contents

A.1. Introduction 1
A.2. Study Area 1
A.3. Study Period 1
A.4. Data Collection 1
A.5. Inventory of Existing Facilities 2
A.6. Traffic Volumes 2
A.6.1. Existing 2013 Volumes 2
A.6.2. Future Design Year 2038 Volumes 2
A.7. Evaluation Comparison Tools 2
A.7.1. Traffic Operations Standards 3
A.7.2. Arterial and Intersection Operations 3
A.8. Crash History Analysis 3
A.9. Non-Auto Modes Evaluation 3

A.1. Introduction

This methodology report summarizes the approach for data collection, impacts analysis, and mitigation that the IAMP for I-5 Exits 40 and 43 will use for traffic analysis.

A.2. Study Area

The study area includes I-5 Exits 40 and 43, extending about ½-mile from each interchange, but remaining outside of both Gold Hill city limits and the urban growth boundary.

IAMP 40 includes five intersections for analysis:

- OR 99/2nd Ave / Blackwell Rd at Access Rd
- Lampman Rd at Access Rd
- I-5 Northbound Ramps at Access Rd
- I-5 Southbound Ramps at Access Rd
- Old Stage Rd at Access Rd

IAMP 43 includes seven intersections for analysis:

- N River Rd at Hwy 234/OR 99
- Lampman Rd at Hwy 234/OR 99
- Main St at Hwy 234/OR 99
- I-5 Northbound Ramps at Main St
- I-5 Southbound Ramps at Main St
- Main St at Frontage Rd/Profetta Ln
- Profetta Ln at Old Stage Rd

A.3. Study Period

The transportation and traffic analysis will be based on existing year 2013 conditions for the design hour (30th highest) volumes.

Future analysis will focus on design hour conditions for the year 2038 to correspond with the forecast period for the nearby Rogue Valley Metropolitan Planning Organization (MPO).

A.4. Data Collection

ODOT will provide current manual 16-hour vehicle classification counts for all of the study area intersections listed above, except for Lampman Rd at Hwy 234/OR 99, N River Rd at Hwy 234/OR 99, and Profetta Ln at Old Stage Rd, which ODOT will provide 4-hour classification counts for. Data for existing weekday counts will be reviewed to determine which hour is the highest traffic demand hour for each interchange management area. Turning movements, peak hour factors, vehicle classification, and other data describing demand in the corridor will be derived for this peak hour.

Crash data will be obtained from the ODOT Crash Analysis and Reporting Unit for the most recent five complete years for the study area. Data will be requested for the following locations:

Interchange 40:

- Access Rd: Old Stage Rd to OR 99/Hwy 234/Blackwell Rd
- I-5: Mile Points 40 to 41.5
- I-5 Interchange 40 northbound and southbound ramps

Interchange 43:

- Frontage Rd/Profetta Lane: Main St to Old Stage Rd
- Main St: Frontage Rd/Profetta Ln to Rogue River Hwy/OR 99/Hwy 234
- Rogue River Hwy/OR 99/Hwy 234: Main St to N River Rd/Hwy 234
- Lampman Rd: Section between the 2 intersections with OR 99
- I-5: Mile Points 42 to 44.5
- I-5 Interchange 43 northbound and southbound ramps

A.5. Inventory of Existing Facilities

The transportation system inventory examines the highway and intersecting roadways, bicycle and pedestrian facilities, transit facilities, bridges conditions, access locations, and rail facilities.

A.6. Traffic Volumes

Traffic volumes will be developed for two study periods: existing 2013 and design year 2038.

A.6.1. Existing 2013 Volumes

The existing peak hour volumes will be determined from the existing weekday counts and adjusted to design hourly volumes following the methodologies outlined in the ODOT Transportation Planning and Analysis Unit's (TPAU) Analysis Procedures Manual (APM).

A.6.2. Future Design Year 2038 Volumes

Forecast traffic volumes will be developed for the 2038 forecast year based on TPAU's cumulative analysis process. Calculation of volumes on I-5 will use ODOT's Future Volume Tables to estimate through trips.

A.7. Evaluation Comparison Tools

Tools and techniques used to evaluate and compare the alternatives include traffic operations analysis tools for more detailed assessment of future conditions.

A.7.1. Traffic Operations Standards

The operational standards from the Oregon Highway Plan (OHP) and the Highway Design Manual (HDM) will be used in the assessment of intersection operations. Both documents base their mobility standards on the calculation of volume-to-capacity (v/c) ratios; however, the standards in the HDM are based on higher performance levels than those in the OHP. The mobility standards from the OHP will be applied to the existing and no build analysis while the standards from the HDM will be applied to the design alternatives. The HDM standards are used for build alternatives to reflect the expectation that an investment in the highway system should result in better operations than the no build alternative, where no investment is made.

A.7.2. Arterial and Intersection Operations

The operational analysis will evaluate v/c ratios along with delay and queuing using the Synchro/SimTraffic software program. Throughout the analysis process, TPAU staff will review modeling assumptions, analysis settings, and other assumptions to help ensure consistency of data with other studies under way.

An assessment of adding traffic signals may be needed. Any traffic signal assessments will use ODOT's traffic signal warrants. Analysis results must be compared with ODOT's mobility standards and specific recommendations for mitigation improvements needed to meet standards must be identified and verified by TPAU.

A.8. Crash History Analysis

The study area evaluation will include an analysis of the most recent five-year crash history to identify any patterns amongst the crashes that are indicative of existing geometric or operational deficiencies. The analysis will also identify any recent changes in the crash patterns over the five-year period. Based on the crash patterns, the analysis may identify improvements for the build alternatives that could mitigate safety issues.

A.9. Non-Auto Modes Evaluation

Non-auto modes will also be evaluated to identify improvements included in the build alternatives that would impact bicycle and pedestrian facilities.

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I-5 Exits 40 and 43 (Gold Hill)
Interchange Area Management Plans

DRAFT Technical Memorandum #3
Appendix B: Truck Turning Movement Diagrams

Prepared for

Oregon Department of Transportation, Region 3
3500 NW Stewart Parkway
Roseburg, Oregon 97470

Prepared by

David Evans and Associates, Inc.
2100 SW River Parkway
Portland, Oregon 97201

June 2013

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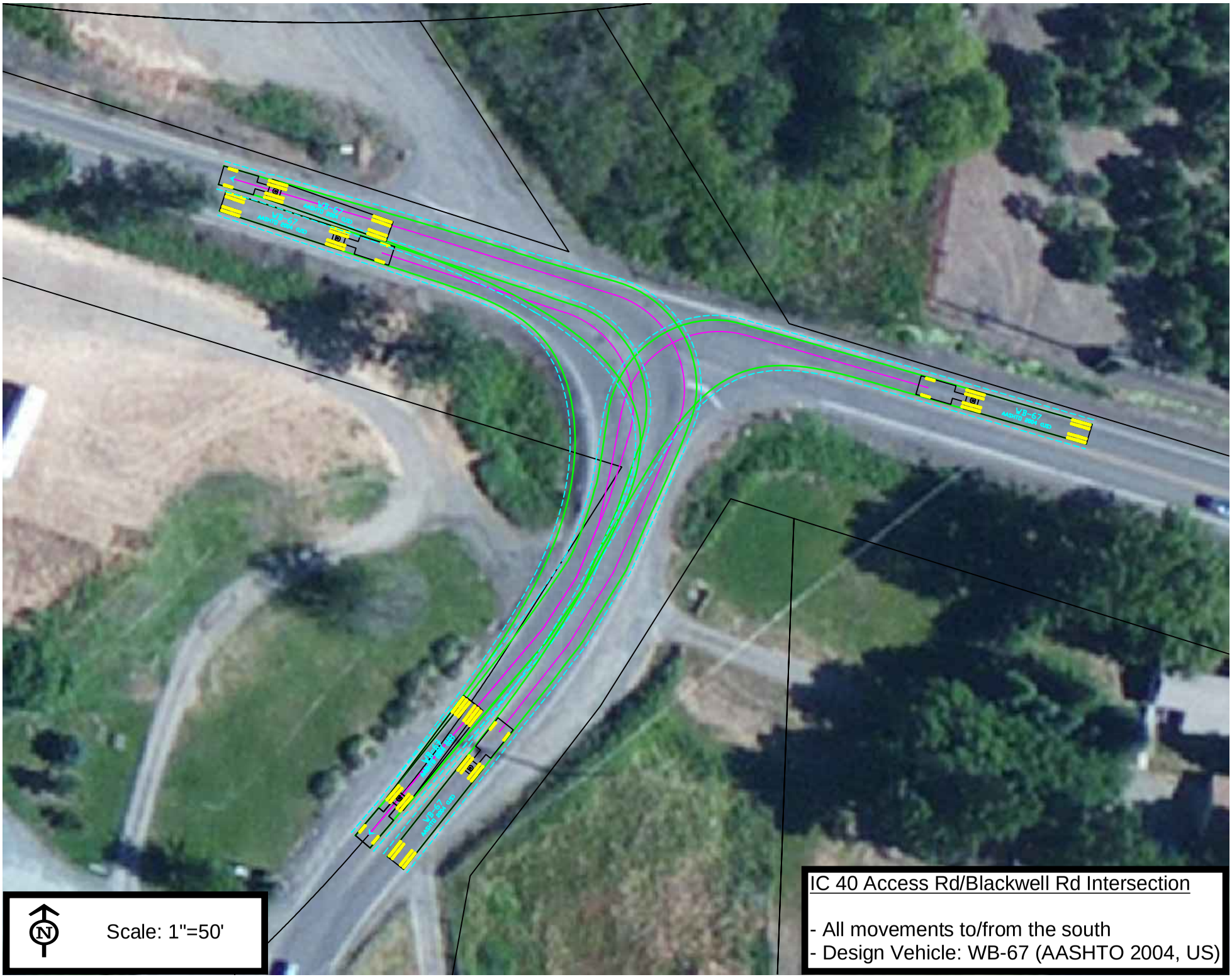
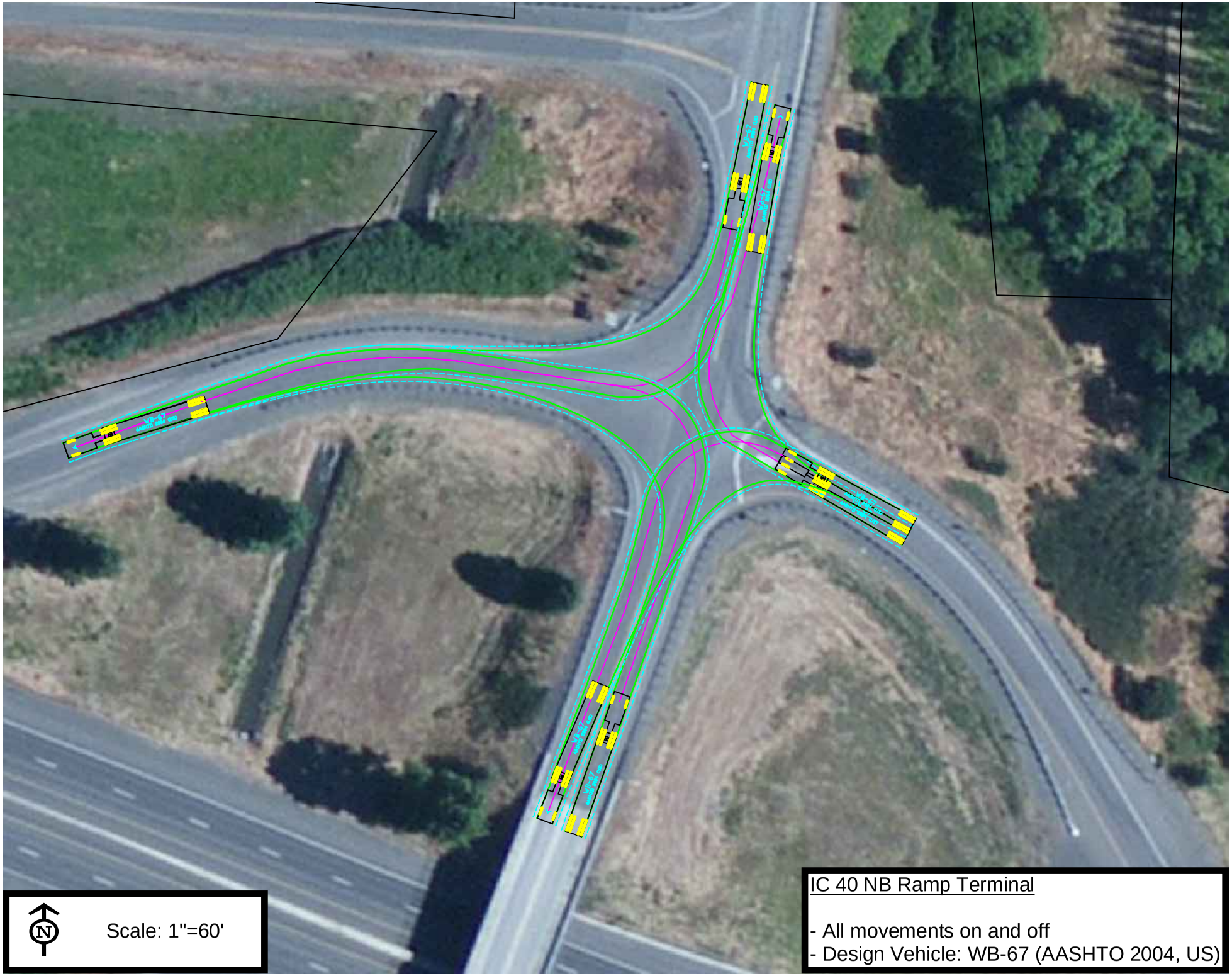
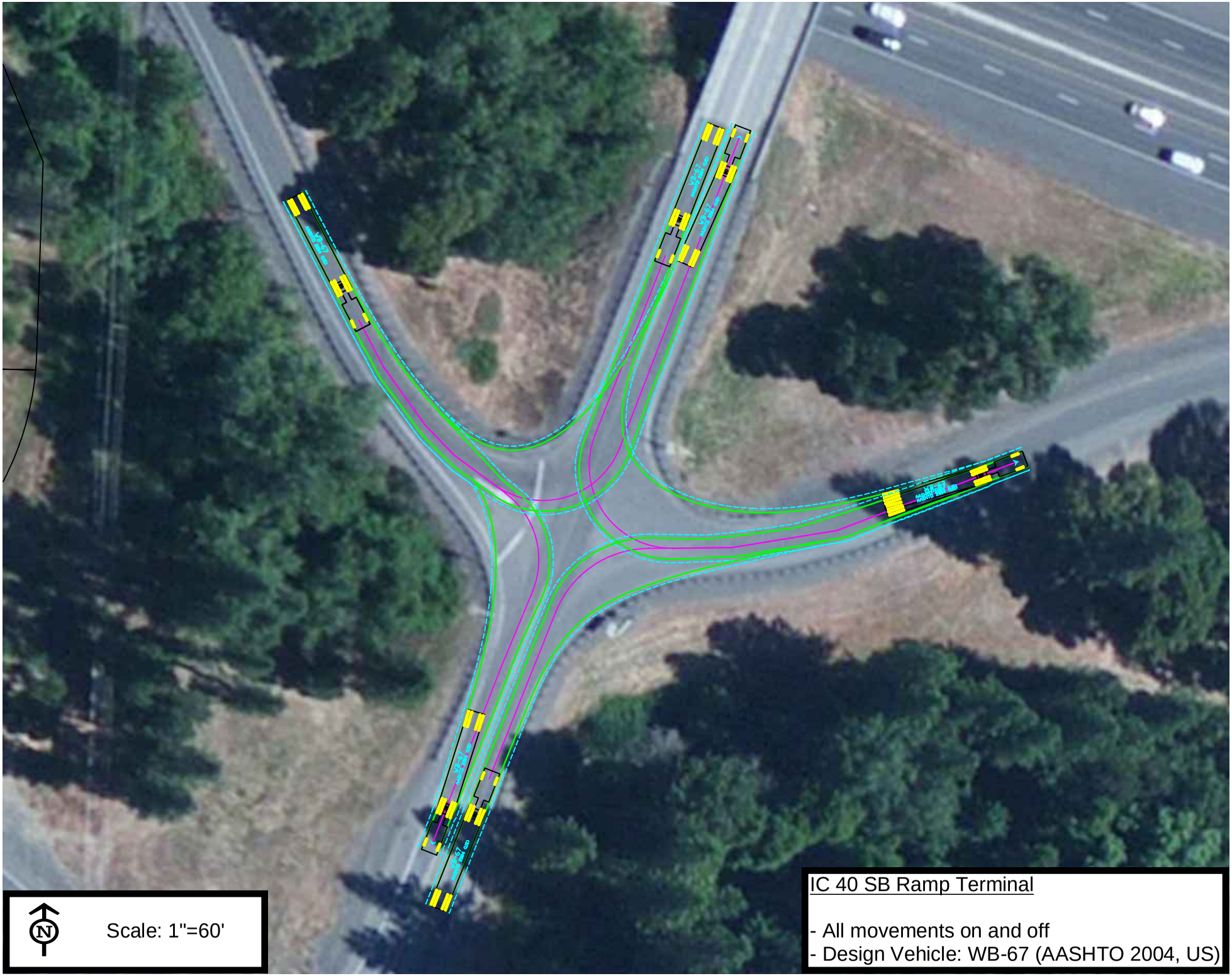
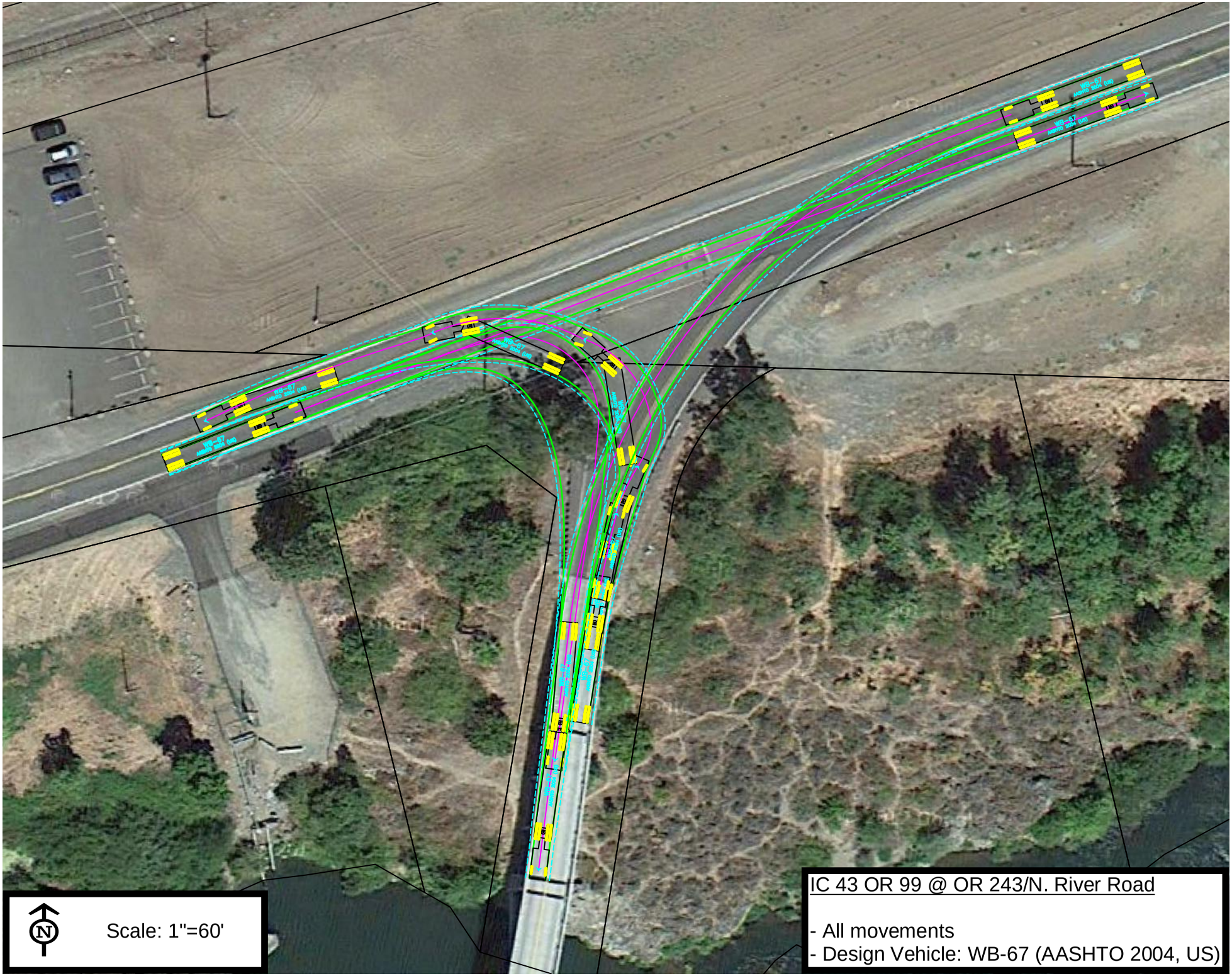
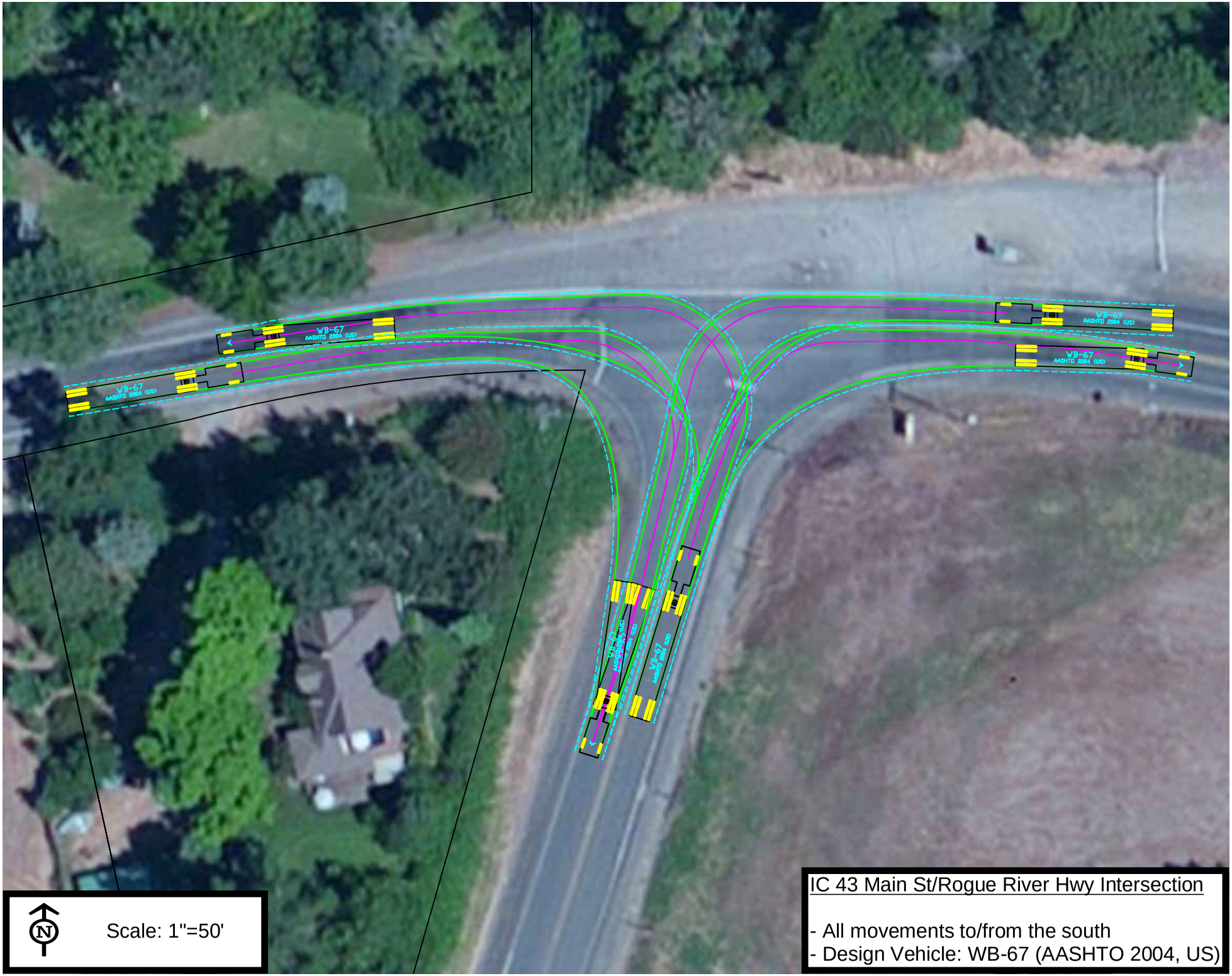

IC 40 Access Rd/Blackwell Rd Intersection
- All movements to/from the south
- Design Vehicle: WB-67 (AASHTO 2004, US)
Scale: 1"=50'
N


Scale: 1"=60'
N
IC 40 NB Ramp Terminal
- All movements on and off
- Design Vehicle: WB-67 (AASHTO 2004, US)


Scale: 1"=60'
N
IC 40 SB Ramp Terminal
- All movements on and off
- Design Vehicle: WB-67 (AASHTO 2004, US)

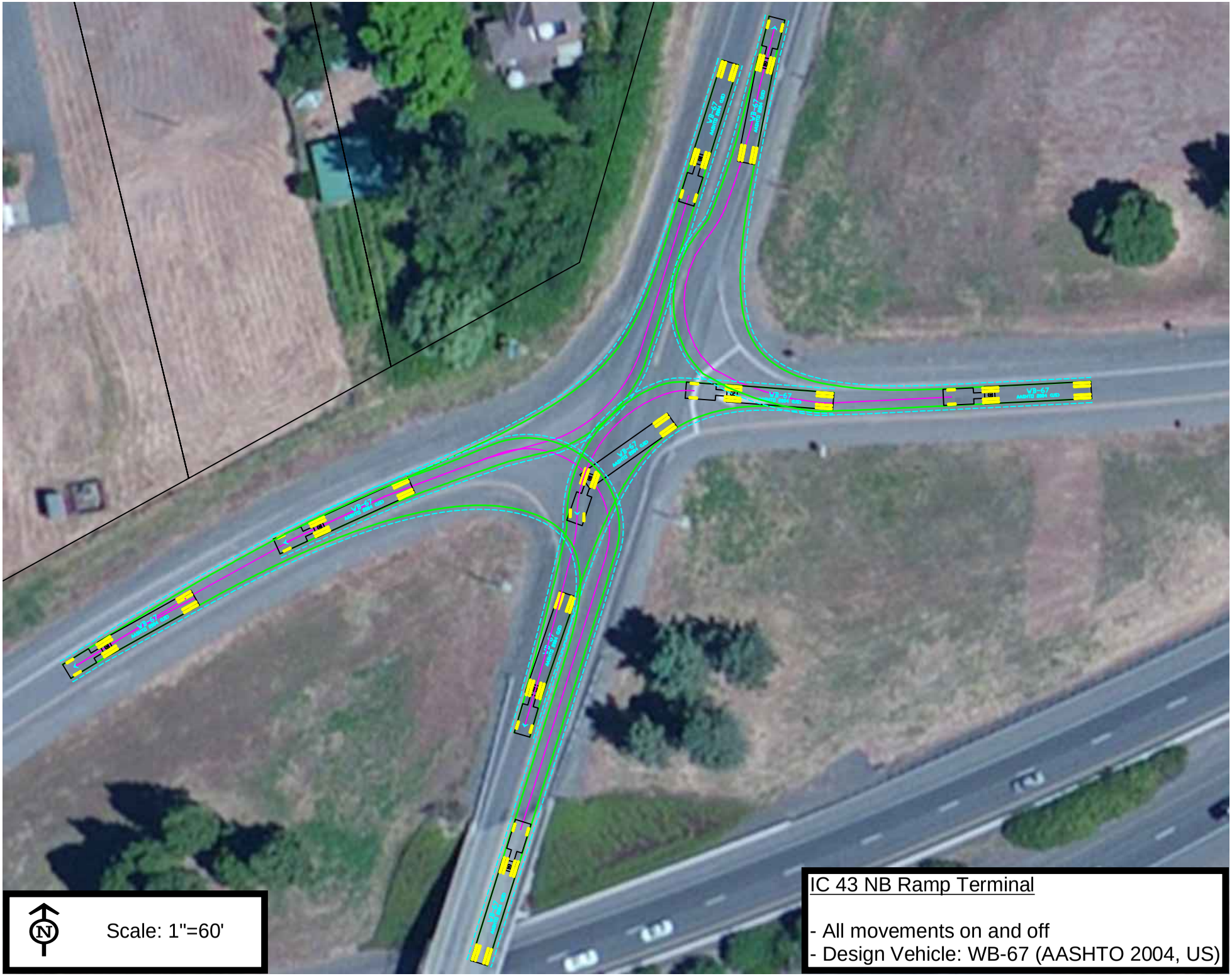
IC 40 Access Rd/Old Stage Rd Intersection
- All movements to/from the north
- Design Vehicle: WB-67 (AASHTO 2004, US)
Scale: 1"=50'
N

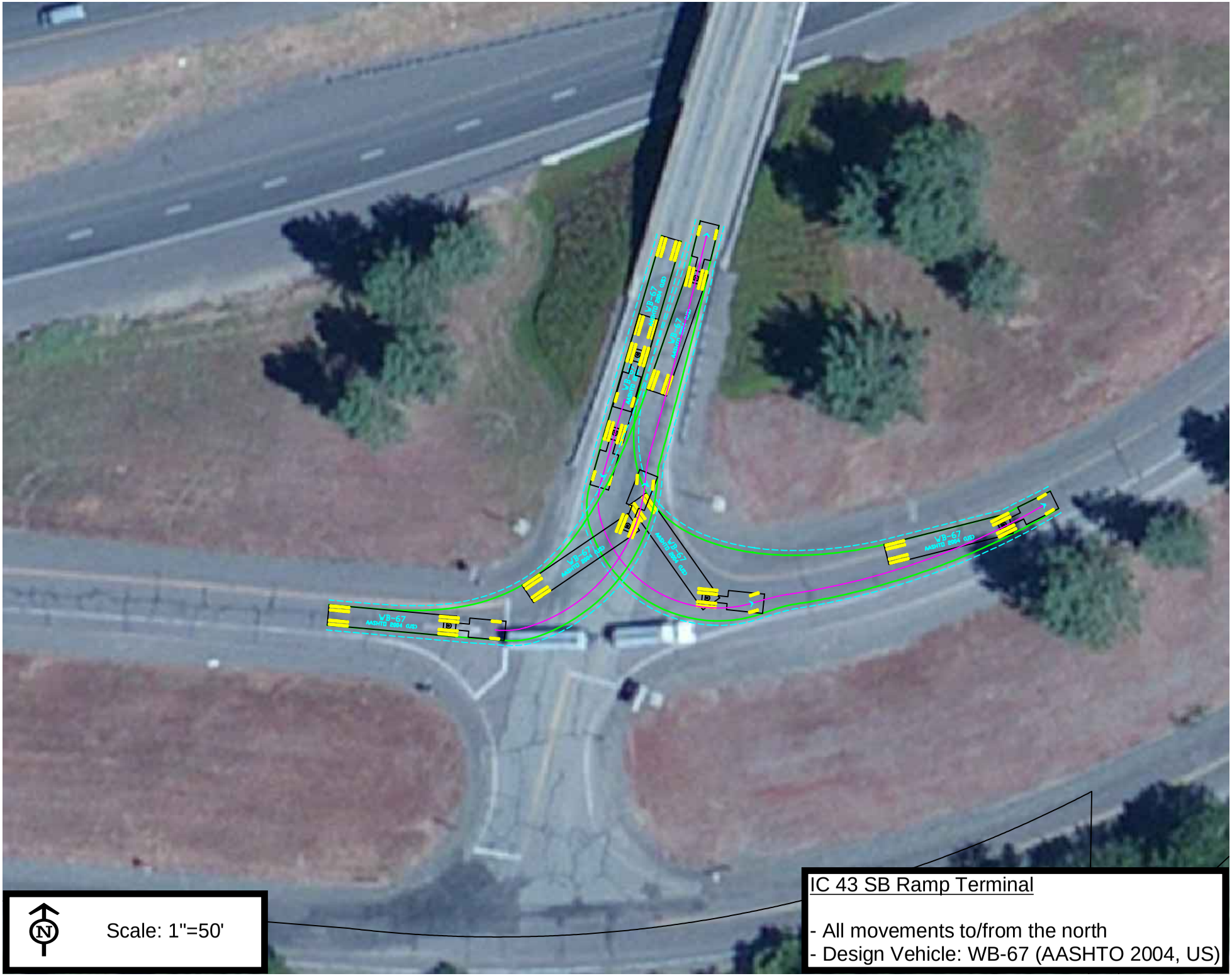

Scale: 1"=60'
N
IC 43 OR 99 @ OR 243/N. River Road
- All movements
- Design Vehicle: WB-67 (AASHTO 2004, US)



IC 43 Main St/Rogue River Hwy Intersection

- All movements to/from the south
- Design Vehicle: WB-67 (AASHTO 2004, US)


Scale: 1"=60'
N
IC 43 NB Ramp Terminal
- All movements on and off
- Design Vehicle: WB-67 (AASHTO 2004, US)


IC 43 SB Ramp Terminal
- All movements to/from the north
- Design Vehicle: WB-67 (AASHTO 2004, US)
Scale: 1"=50'
N

I-5 Exits 40 and 43 (Gold Hill)
Interchange Area Management Plans

DRAFT Technical Memorandum #3
Appendix C: Hazardous Materials

Prepared for

Oregon Department of Transportation, Region 3
3500 NW Stewart Parkway
Roseburg, Oregon 97470

Prepared by

David Evans and Associates, Inc.
2100 SW River Parkway
Portland, Oregon 97201

June 2013

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Incident City	Incident Date	Incident Number	Incident Street Number	Incident Street Name	Service Name	Incident Type	Remarks
GOLD HILL	3/18/2010	1000322	450	INTERSTATE 5 NB	ROGUE RIVER RFP	Oil or other combustible liquid spill	S - Walk-in report (Paul Netters) of a diesel fuel spill on the I-5 NB off ramp at Exit 45B. O - Small amount, estimated at about one gallon, of diesel has been spilled and tracked by traffic on the off ramp. Most of the product has evaporated. Assessed as not being a hazard. A - Good intent, small spill evaporating. P - Respond, investigate, return. NOTE: J. Webb later took a phone call from ODOT reporting there had been a larger spill about MP 43 that had absorbent spread on it. ODOT was looking for any information we might have that would help locate the person responsible for the spill.
Gold Hill	1/16/2010	1000199	496	JUANITA	JACKSON CO FD #3	Gas leak (natural gas or LPG)	RESPONDED TO A NATURAL GAS LEAK. ARRIVED ON SCENE AND NOTED A NEXT DOOR BARBEQUE WITH FOOD AND GAS ODOR FROM IT. R/P SAID THEY COULDN'T SMELL ANYTHING AFTER OUR ARRIVAL. ODOR FROM NEIGHBORS WENT AWAY, NO MORE ODOR NOTED. ALARM TERMINATED.
GOLD HILL	8/18/2011	1101071	205	ROGUE RIVER	ROGUE RIVER RFP	Gas leak (natural gas or LPG)	CALLED TO A REPORT OF A SMELL OF GAS IN IN A CLOSED BUILDING. 7400 HAD NO RESPONDING UNIT DUE TO THE NORTH RIVER ROAD FIRE. 6600 WAS REQUESTED TO RESPOND BUT COULD NOT RESPOPND A UNIT DO TO NO PERSONNEL. AV ISTA RESPONDED AND HANDLED THE INCIDENT.
GOLD HILL	10/8/2001	10236		I-5 AT MP 40	HAZMAT TEAM SOUTHERN O	HYDROGEN FLUORIDE	HM 8 RESPONDED AT THE REQUEST OF JACKSON COUNTY FIRE DIST NO 3 TO I-5 AT MP 40 GOLD HILL EXIT. FOUND ACID TANK TRUCK PARKED ON THE ROADSIDE AT EXIT 40, I-5 NB. SMALL WHITE VAPOR CLOUD WAS OBSERVED EMITTING FROM TOP CENTER OF TRAILER. HM 8 MADE ENTRY & DETERMINED THE LEAK WAS AT A FITTING IN THE VAPOR RECOVERY TUBE OF THE TOP FILLING PIPING. HM 8 PATCHED THE LEAK WITH A NEOPRENE PATCH AND STAINLESS STEEL BOND. ASSISTED ODOT & OSP IN MOVING THE VEHICLE TO A SECURE LOCATION AT I-5 MP 66, ODOT GRAVEL PIT. VEHICLE WAS SECURED & GUARDED BY ODOT PERSONNEL. MET WITH ODOT, OSP, KVS & FIRST STRIKE ENVIRONMENTAL AT MP 66 AT 0900. ASSISTED IN DEVELOPING TRANSPORT PLAN & CONTINGENCY PLANS TO GET THE LOAD TO ITS DESTINATION IN TACOMA, WA. ADDITIONAL TIME NOT NOTED ON FRONT IN TIME SECTION IS 6.5 HRS.

Incident City	Incident Date	Incident Number	Incident Street Number	Incident Street Name	Service Name	Incident Type	Remarks
GOLD HILL	6/23/1989	890269		I-5 N @ MP #43	ROGUE RIVER RFPD	GASOLINE	REPORTED MVA UNKNOWN IF INJURY.ALSO REPORTED THAT IT WAS A MOTOR HOME WHICH WAS ON FIRE.DISPOSITION:RESPONDED 1 ENGINE WITH 1 ++ RESCURE WITH 3 CODE 3 TO SCENE.UPON ARRIVAL, WE FOUND A MOTOR HOME WHICH HAD DRIFTED OFF SIDE OF ROAD STRUCK A LARGE ROAD SIGN &THEN HIT BEGINNING OF A GUARD RAIL.FUEL TANK & LPG TANK WERE DISLODGED FROM UNDERCARRIAGE.FUEL TANK HAD BEEN PUNCTURED & WAS LEAKING ONTO SHOULDER GRAVEL.LPG TANK WAS CRACKED AT VALVE STEM NECK & CONTENTS WERE ESCAPING INTO ATMO- SPHERE.ALSO NOTE MOTOR HOME WAS ON TOP OF LPG R REAR DUALS.BYSTANDERS STATE LPG TANK WAS ON FIRE, BUT THEY EXTINGUISHED IT WITH FIRE EXTINGUISHERS.DRIVER STATED HE WAS NOT INJURED.OUR ACTIONS INCLUDED ESTABLISHING A COMMAND HOT & WARM ZONES.PER- SONNEL PULLED A PRECONNECT, 2 PERSONNEL PUT ON SCBA'S & HOSED AREA & DISSIPATE LEAKING PROPANE WITH WATER.NB TRAFFIC WAS CLOSED BY OSP & HWY DEPT.A WATER TENDER WAS ORDERED FOR WATER SUPPLY.IT RESPONDED CODE 1 WITH 2 PERSONNEL.CREWS WERE ROTATED ON HOSE LINE BECAUSE OF HEAT.WE ALSO REQUESTED AN ENGINE FROM 6600 TO STANDBY AT OUR STATION & AN ENGINE WITH 3 PERSONNEL & SPARE BA BOTTLES TO SCENE CODE 1.WE THEN MADE CONTACT
GOLD HILL	4/8/1992	920208		I-5 NB MP #4B	ROGUE RIVER RFPD	DIESEL FUEL	DIESEL FUEL WAS RELEASED WHEN MAIN FUEL TANK RUPTURED DURING A MOTOR VEHICLE ACCIDENT.THERE WERE FOUR FUEL TANKS.ALL TANKS FED MAIN TANK VIA ELECTRIC FUEL PUMP. DIESEL FUEL RELEASED INTO DITCH. OSP CONTACTED OARS & DEQ.DEQ CONTACTED A CLEAN UP COMPANY.VEHICLE WAS RECOVERED BY TOW COMPANY.SEE STATE MARSHAL REPORT FOR ADDITIONAL INFO.
	7/13/1989	890292		I-5 NEAR MP #38	JACKSON CO RFPD #3	DRUG LAB CHEMICALS	THIS INCIDENT WAS A MOTOR VEHICLE ACCIDENT. A FORD VAN TRANSPORTING CHEMICALS INVOLVED IN DRUG LABS. THERE WAS EXPLOSION & FIRE IN THE VAN ON IMPACT. TWO OCCUPANTS OF THE VAN PULLED FREE; ONE FLED THE SCENE THE OTHER RECEIVED BURNS & TRAUMA INJURIES. ONLY KNOWN CHEMICAL INVOLVED WAS SOME QUANTITY OF RED PHOSPHOROUS. VEHICLE & CONTENTS WERE TOWED TO OSP LOT ON HWY 99 IN MEDFORD.

Incident City	Incident Date	Incident Number	Incident Street Number	Incident Street Name	Service Name	Incident Type	Remarks
GOLD HILL	7/18/1991	910333		I-5 SB @ EXIT 43	ROGUE RIVER RFPD	GASOLINE	RESPONDED TO A ROLL OVER MVA.ON ARRIVAL WE FOUND A VEHICLE ON ITS ROOF.APPROX. 5 GAL GASOLINE LEAKED OUT OF THE FILL SPOUT ON THE PASSING LANE OF INTERSTATE.THE FUEL WAS EVAPORATED PRIOR TO FD ARRIVAL.LEFT SCENE.NO ACTION TAKEN.
GOLD HILL	4/7/1990	900100		I-5 SOUTH @ MP#42	ROGUE RIVER RFPD	GASOLINE	THE OWNER OF THE VEHICLE WAS NOT TO BE FOUND. THE GASOLINE WAS HEADED FOR THE DRAINAGE DITCH. THE FUEL WAS DIKED UP & STATE POLICE NOTIFIED WHO STATED THEY WOULD IN RETURN WOULD NOTIFY THE ROAD DEPARTMENT. THE FUEL TANK WAS PLUGGED & OSP HAD THE VEHICLE TOWED AWAY.
GOLD HILL	8/20/1991	910440		MP#40 I-5 SB	JACKSON CO RFPD #3	DUPLICATING FLUID	

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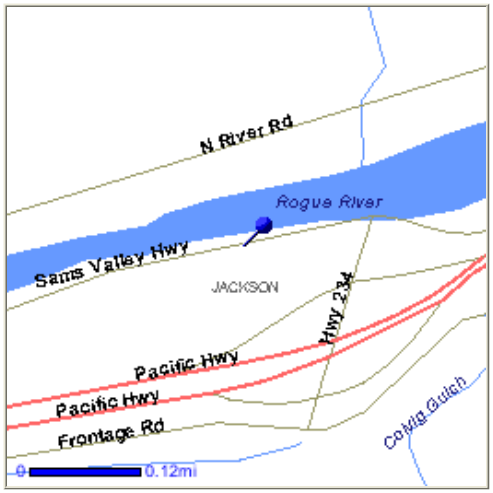

Facility / Site Information for Location 15854

Facility/Site Name:	DODD, DENNIS & PEGGY	**Latitude:**	42° 25' 46.9"
Address:	97 ROGUE RIVER HIGHWAY	**Longitude:**	-123° 5' 55.7"
City State Zip:	GOLD HILL OR 97525	**Location Accuracy:**	HIGH
		Last Updated:	3/21/2002 4:35:00 PM

Aliases

DODD, DENNIS & PEGGY	WQSIS	THE OLD BARN RESTAURANT	WQSIS

Geographic Features

Township:	T36S-R3W-S19	**Congress Dist:**	2	**Forest Type:**	
County:	JACKSON	**OR Senate Dist:**	02	**Vegetation:**	Siskiyou mixed evergreen forest
Watershed:	MIDDLE ROGUE	**OR House Dist:**	04	**Agricultural Land:**	N/A
Drinking Water Source:	CITY OF ROGUE RIVER				

Oregon DEQ Program Information

Water Quality Permits (WQSIS)

File Number	Permit Number	Start date	Effective Date	Review Date	Permit Type	Permit SubType	Comments	Status	Detail Information[1]	Permit Status
109828	15750	04/21/1998	04/24/1998	05/31/2000	DOMESTIC	WPCF General Permit - Domestic on-site sewage system	GEN52A Recirculating gravel filter on-site system less than 5,000 gpd	Active Admin extended	SIS Detail Report	Permit Status

SIC CODE	SIC Description	PRIMARY
4952	SEWERAGE SYSTEMS	N
5812	EATING PLACES	Y

[1] Linked reports may be unavailable from 9:00pm to 7:00am PST due to system maintenance.
[2] DEQ does not maintain air discharge permit information for Lane County.

More Information on this location

Oregon DEQ Neighborhood Info (by region/county)
See wells in the same Township Range Section from the Oregon Water Resources Department Well logs Application
See county's scanned assessor maps through ORMAP

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Facility Summary Report

Facility Profiler Print Report

Maps

Facility / Site Information for Location 18190

Facility/Site Name:	DARDANELLE SERVICE	**Latitude:**	42° 25' 25.3"
Address:	9625 OLD STAGE RD	**Longitude:**	-123° 2' 35.5"
City State Zip:	CENTRAL POINT OR 97502	**Location Accuracy:**	HIGH
		Last Updated:	5/18/2007 4:27:07 PM

Aliases

DARDANELLE SERVICE	LUST	DARDANELLES COMMUNITY STORE	UST

Geographic Features

Township:	T36S-R3W-S22	**Congress Dist:**	2	**Forest Type:**	
County:	JACKSON	**OR Senate Dist:**	02	**Vegetation:**	Siskiyou mixed evergreen forest
Watershed:	MIDDLE ROGUE	**OR House Dist:**	04	**Agricultural Land:**	N/A
Drinking Water Source:	CITY OF ROGUE RIVER				

Oregon DEQ Program Information

Leaking Underground Storage Tanks (LUST)

Log Number	Received	Cleanup Initiated	Cleanup Complete	Type	Heating Oil Tank	UST Facility ID	Status	Detail Information[1]
15-97-0068		09/08/1997		REGULATED		359	CLEANUP_COMPLETED	LUST Site Report

Underground Storage Tanks (UST)

UST Facility ID	Permit Number	Installed	Content	Gallons	Status	Reg Cert NO
359	BECCE	09/01/1997	Gasoline	3000	Active	15-359-2012-OPER
359	BECCF	09/01/1997	Gasoline	9000	Active	15-359-2012-OPER

SIC CODE	SIC Description	PRIMARY
5541	GASOLINE SERVICE STATIONS	N

[1] Linked reports may be unavailable from 9:00pm to 7:00am PST due to system maintenance.
[2] DEQ does not maintain air discharge permit information for Lane County.

More Information on this location

Oregon DEQ Neighborhood Info (by region/county)
See wells in the same Township Range Section from the Oregon Water Resources Department Well logs Application
See county's scanned assessor maps through ORMAP

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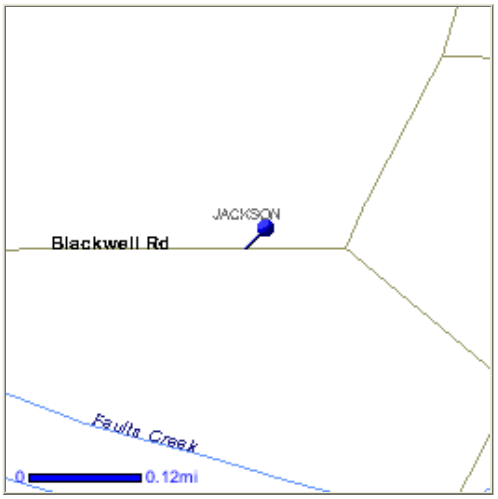

Facility / Site Information for Location 45793

Facility/Site Name:	FERRIS, KENNETH JAY	**Latitude:**	42° 25' 48"
Address:	12297 BLACKWELL RD.	**Longitude:**	-123° 1' 55.92"
City State Zip:	CENTRAL POINT OR 97502	**Location Accuracy:**	HIGH
		Last Updated:	1/23/2003 8:05:00 AM

Aliases

FERRIS, KENNETH JAY	WQSIS	GOLD'N ROGUE KOA CAMPGROUND	WQSIS

Geographic Features

Township:	T36S-R3W-S23	**Congress Dist:**	2	**Forest Type:**	
County:	JACKSON	**OR Senate Dist:**	02	**Vegetation:**	Siskiyou mixed evergreen forest
Watershed:	MIDDLE ROGUE	**OR House Dist:**	04	**Agricultural Land:**	N/A
Drinking Water Source:	CITY OF ROGUE RIVER				

Oregon DEQ Program Information

Water Quality Permits (WQSIS)

File Number	Permit Number	Start date	Effective Date	Review Date	Permit Type	Permit SubType	Comments	Status	Detail Information[1]	Permit Status
111895	102583	07/11/2002	09/03/2002	08/31/2010	DOMESTIC	Individual WPCF - Domestic on-site sewage system	WPCFOS-BiiiRGF> Recirculating Gravel Filter, 2,500 gpd or more	Active Admin extended	SIS Detail Report	Permit Status

SIC CODE	SIC Description	PRIMARY
4952	SEWERAGE SYSTEMS	N
7033	RV TRAILER PARKS AND CAMPSITES	Y

[1] Linked reports may be unavailable from 9:00pm to 7:00am PST due to system maintenance.
[2] DEQ does not maintain air discharge permit information for Lane County.

More Information on this location

Oregon DEQ Neighborhood Info (by region/county)
See wells in the same Township Range Section from the Oregon Water Resources Department Well logs Application
See county's scanned assessor maps through ORMAP

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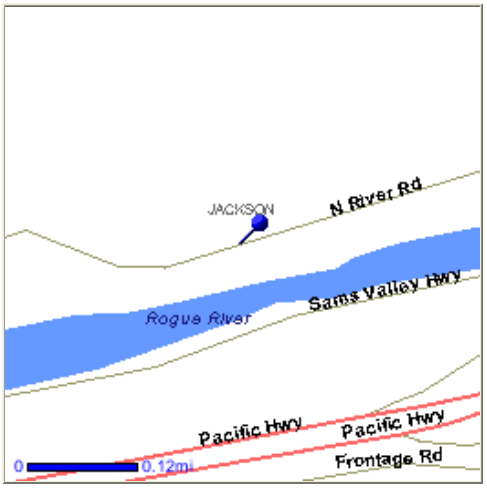

Facility / Site Information for Location 82983

Facility/Site Name:	DEL RIO VINEYARDS LLC	**Latitude:**	42° 25' 49.1"
Address:	58 N RIVER RD	**Longitude:**	-123° 6' 10.1"
City State Zip:	GOLD HILL OR 97525	**Location Accuracy:**	HIGH
		Last Updated:	4/27/2004 12:00:00 AM

Aliases

DEL RIO VINEYARDS, LLC WQSIS

Geographic Features

Township:	T36S-R3W-S19	**Congress Dist:**	2	**Forest Type:**	
County:	JACKSON	**OR Senate Dist:**	02	**Vegetation:**	Siskiyou mixed evergreen forest
Watershed:	MIDDLE ROGUE	**OR House Dist:**	04	**Agricultural Land:**	N/A
Drinking Water Source:	CITY OF ROGUE RIVER				

Oregon DEQ Program Information

Water Quality Permits (WQSIS)

File Number	Permit Number	Start date	Effective Date	Review Date	Permit Type	Permit SubType	Comments	Status	Detail Information[1]	Permit Status
112923	18365	04/27/2004	04/28/2004	10/31/2017	INDUSTRIAL	WPCF General Permit - Industrial wastewater discharges	GEN14A Wineries and seasonal fresh pack operations whose wastewater flow does not exceed 25,000 gpd*	Active Renew no eff mod	SIS Detail Report	Permit Status

SIC CODE	SIC Description	PRIMARY
2084	WINES, BRANDY & BRANDY SPIRITS	Y

[1] Linked reports may be unavailable from 9:00pm to 7:00am PST due to system maintenance.
[2] DEQ does not maintain air discharge permit information for Lane County.

More Information on this location

Oregon DEQ Neighborhood Info (by region/county)
See wells in the same Township Range Section from the Oregon Water Resources Department Well logs Application
See county's scanned assessor maps through ORMAP

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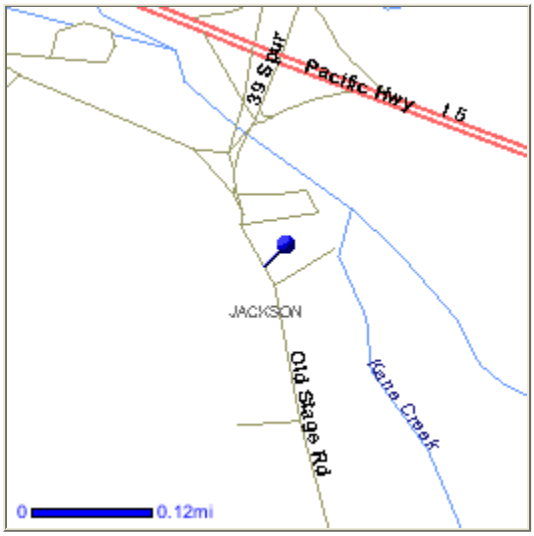

Facility / Site Information for Location 117780

Facility/Site Name:	DARDANELLES COMMUNITY STORE, LLC	**Latitude:**	42° 25' 22.4"
Address:	9625 OLD STAGE RD	**Longitude:**	-123° 2' 32.6"
City State Zip:	CENTRAL POINT OR 97502-9645	**Location Accuracy:**	HIGH
		Last Updated:	10/18/2010 9:28:03 AM

Aliases

Dardanelles Community Store, LLC TRAACS

Geographic Features

Township:	T36S-R3W-S22	**Congress Dist:**	2	**Forest Type:**	
County:	JACKSON	**OR Senate Dist:**	02	**Vegetation:**	Siskiyou mixed evergreen forest
Watershed:	MIDDLE ROGUE	**OR House Dist:**	04	**Agricultural Land:**	N/A
Drinking Water Source:					

Oregon DEQ Program Information

Air Quality Permits (TRAACS)

Air Quality Permit	Start Date	Effective Date	Review Date	Closed Date	Status	Type	Sub Type	Detail Information[1]	EPA Number
15-9641-22-01	12/08/2010	10/18/2010	03/01/2020		Active	ACDP	General	AQ Report	OR02909641

SIC CODE	SIC Description	PRIMARY
5541	GASOLINE SERVICE STATIONS	Y

[1] Linked reports may be unavailable from 9:00pm to 7:00am PST due to system maintenance.
[2] DEQ does not maintain air discharge permit information for Lane County.

More Information on this location

Oregon DEQ Neighborhood Info (by region/county)
See wells in the same Township Range Section from the Oregon Water Resources Department Well logs Application
See county's scanned assessor maps through ORMAP

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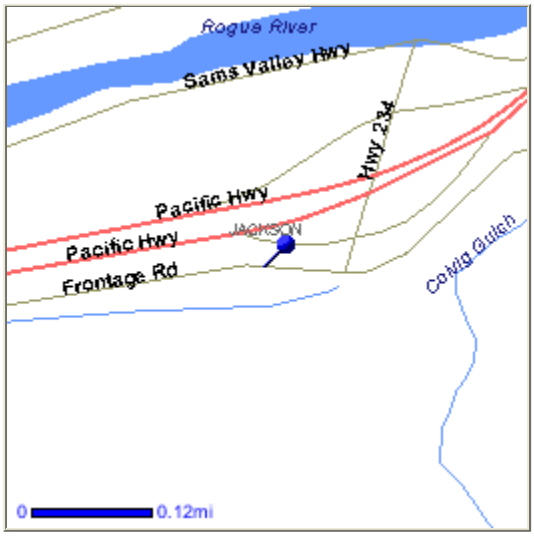

Facility / Site Information for Location 119791

Facility/Site Name:	BROTHERTON PIPELINE, INC.	**Latitude:**	42° 25' 37.2"
Address:	11 FRONTAGE RD	**Longitude:**	-123° 5' 56"
City State Zip:	GOLD HILL OR 97525-9766	**Location Accuracy:**	HIGH
		Last Updated:	4/20/2011 2:15:08 PM

Aliases

Brotherton Pipeline, Inc. TRAACS

Geographic Features

Township:	T36S-R3W-S19	**Congress Dist:**	2	**Forest Type:**	
County:	JACKSON	**OR Senate Dist:**	02	**Vegetation:**	Siskiyou mixed evergreen forest
Watershed:	MIDDLE ROGUE	**OR House Dist:**	04	**Agricultural Land:**	N/A
Drinking Water Source:					

Oregon DEQ Program Information

Air Quality Permits (TRAACS)

Air Quality Permit	Start Date	Effective Date	Review Date	Closed Date	Status	Type	Sub Type	Detail Information[1]	EPA Number
15-0081-27-01	05/19/2011	04/20/2011	04/01/2021		Active	ACDP	General	AQ Report	OR02900081

SIC CODE	SIC Description	PRIMARY
7532	TOP, BODY, UPHOLSTERY REPAIR	Y

[1] Linked reports may be unavailable from 9:00pm to 7:00am PST due to system maintenance.
[2] DEQ does not maintain air discharge permit information for Lane County.

More Information on this location

Oregon DEQ Neighborhood Info (by region/county)
See wells in the same Township Range Section from the Oregon Water Resources Department Well logs Application
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I-5 Exits 40 and 43 (Gold Hill)
Interchange Area Management Plans

Technical Memorandum #4
Existing Conditions Analysis

Prepared for

Oregon Department of Transportation, Region 3
3500 NW Stewart Parkway
Roseburg, Oregon 97470

Prepared by

David Evans and Associates, Inc.
2100 SW River Parkway
Portland, Oregon

May 2015

Table of Contents

4. EXISTING CONDITIONS ANALYSIS 1
4.1. Average Daily Traffic Volumes 1
4.2. Turning Movement Counts 1
4.3. Design Hourly Volumes 2
4.4. Operational Criteria 3
4.5. Operational Standards 4
4.6. Traffic Operations Analysis Procedures 5
4.7. Existing Traffic Operations 6
4.7.1. Intersection Operations 6
4.7.2. Merge and Diverge Operations 8
4.8. Safety Analysis 9
4.8.1. Crash History 9
4.8.2. Network Screening of Crash Sites 13
4.8.3. Safety Priority Index System (SPIS) 13
4.9. Summary of Existing Deficiencies 14

List of Tables

Table 4-1. Average Daily Traffic Volumes (2011) 1
Table 4-2. Vehicle Count Locations and Types 2
Table 4-3. Performance Measures 5
Table 4-4. Existing (Year 2012) PM Peak Hour Traffic Operations 7
Table 4-5. Existing (Year 2012) 95th Percentile Queues 8
Table 4-6. Existing (Year 2012) Freeway Operations 9
Table 4-7. I-5 Exit 40 IMSA Crash Summary (2007-2011) 10
Table 4-8. I-5 Exit 43 IMSA Crash Summary (2007-2011) 12
Table 4-9. Summary of Existing Deficiencies 14

List of Figures (Attached at End)

Figure 4-1 (a&b). Project Vicinity and Study Area
Figure 4-2 (a&b). Existing Conditions (2012) PM Peak Hour Volumes
Figure 4-3 (a&b). Existing Conditions (2012) Traffic Operations and Lane Configurations

4. EXISTING CONDITIONS ANALYSIS

This memorandum summarizes the existing traffic conditions for I-5 Exits 40 and 43. It also identifies potential constraints found within the interchange management study area (IMSA). The IMSAs, shown in Figure 4-1a and Figure 4-1b, generally encompass the existing interchanges and the surrounding areas they serve.

The assessment of traffic conditions includes development of existing traffic volumes, assessment of traffic operations, a review of historical crash patterns, and a summary of operational and geometric deficiencies.

4.1. Average Daily Traffic Volumes

The average daily traffic (ADT) volumes for the I-5 mainline and interchange ramps are currently available for the year 2011 and are summarized in Table 4-1. As the primary access to the City of Gold Hill, ramp volumes at Exit 40 are higher than Exit 43.

Table 4-1. Average Daily Traffic Volumes (2011)

Location Description	Volume
Interstate 5	
North of I-5 Exit 43	33,100 vpd
Between I-5 Exits 40 and 43	32,800 vpd
South of I-5 Exit 40	33,900 vpd
I-5 Exit 40	
Northbound Off-Ramp	1,780 vpd
Northbound On-Ramp	1,320 vpd
Southbound Off-Ramp	1,140 vpd
Southbound On-Ramp	1,800 vpd
I-5 Exit 43	
Northbound Off-Ramp	310 vpd
Northbound On-Ramp	480 vpd
Southbound Off-Ramp	410 vpd
Southbound On-Ramp	310 vpd

vpd = vehicles per day

Source: 2011 Transportation Volume Tables, Oregon Department of Transportation

4.2. Turning Movement Counts

Traffic volume data collected for this project consisted of 16-hour turning movement classification counts[1] collected at 15-minute intervals during the 6:00 to 9:00 AM and 2:00 to

[1] The classification counts included full Federal Highway Administration (FHWA) 13-class vehicle classifications.

6:00 PM periods and hourly intervals the remainder of the time. Table 4-2 below provides a list of all intersection count locations, the type of count and the date they were collected.

Traffic counts at the five Interchange 40 management area intersections were conducted on October 24 and November 14, 2012. Traffic counts at the six Interchange 43 management area intersections were conducted on October 22 and 23, 2012 and January 8, 2013.

Table 4-2. Vehicle Count Locations and Types

Location	Type of Count	Count Date
I-5 Exit 40		
Access Rd & Blackwell Rd (OR 99)	16-hour (06:00 - 22:00), turning movement, classification	10/24/2012
Access Rd & Lampman Rd	16-hour (06:00 - 22:00), turning movement, classification	10/24/2012
Access Rd & I-5 NB Ramps	16-hour (06:00 - 22:00), turning movement, classification	11/14/2012
Access Rd & I-5 SB Ramps	16-hour (06:00 - 22:00), turning movement, classification	10/24/2012
Access Rd & Old Stage Rd	16-hour (06:00 - 22:00), turning movement, classification	10/24/2012
I-5 Exit 43		
OR 99/OR 234 & N. River Rd	16-hour (06:00 - 22:00), turning movement, classification	10/23/2012
OR 99/OR 234 & Lampman Rd	16-hour (06:00 - 22:00), turning movement, classification	1/8/2013
OR 99/OR 234 & Main St	16-hour (06:00 - 22:00), turning movement, classification	10/22/2012
Main St & I-5 NB Ramps	16-hour (06:00 - 22:00), turning movement, classification	10/22/2012
Main St & I-5 SB Ramps	16-hour (06:00 - 22:00), turning movement, classification	10/22/2012
Main St & Profetta Ln	16-hour (06:00 - 22:00), turning movement, classification	10/22/2012

The traffic volume data from both interchange management areas was examined to determine a common peak hour for all of the intersections at each interchange, which is the one-hour period when the sum of volumes entering at all management area intersections is highest. The common peak hour for both IMSAs was found to occur between 3:30 and 4:30 pm. The peak hour at each intersection may or may not correspond to the common peak hour but were generally within 15 minutes of the common peak.

4.3. Design Hourly Volumes

ODOT generally requires that transportation facilities be analyzed under design hourly volumes (DHVs), known as 30th highest hour volumes. The 30th highest hour volumes are used in traffic operations analysis so that results are valid for all but a few hours of the year. The procedure for determining 30th highest hour volumes is specified in ODOT's Analysis Procedures Manual (APM)[2] and briefly described below.

The 30th highest hour traffic volumes are calculated by multiplying the peak hour volumes by a seasonal factor. The seasonal factor for I-5 mainline volumes was derived from on-site

[2] Analysis Procedures Manual, Oregon Department of Transportation, Transportation Development Division Planning Section, Transportation Planning and Analysis Unit, Salem, Oregon, April, 2006, Section 4.3.

automatic traffic recorder (ATR) data from station 15-001 located between I-5 Exits 40 and 43. Local road seasonal factors were derived from a combination of data from ATRs for comparable facilities (stations 36-005 and 22-012) since no appropriate sources were available in the study area. Ramp-related movements used a combination of mainline factors and local road factors calculated from on-site and characteristic ATR data. The data used in calculating the seasonal factors is included in Appendix A (available upon request).

Peak hour count data was seasonally adjusted and volumes were balanced to achieve a uniform dataset for analysis. Because all but one count was conducted in 2012 (the baseline analysis year), an annual growth adjustment was not applied. The one intersection count collected in January 2013 was balanced to match the other data collected in the fall of 2012. Figure 4-2a and Figure 4-2b show the existing balanced PM peak hour volumes developed for this project.

4.4. Operational Criteria

Transportation engineers have established various methods for measuring traffic operations of roadways and intersections. Most jurisdictions use either volume-to-capacity (v/c) ratio or level of service (LOS) to establish performance criteria. Both the LOS and v/c ratio concepts require consideration of factors that include traffic demand, capacity of the intersection or roadway, delay, frequency of interruptions in traffic flow, relative freedom for traffic maneuvers, driving comfort, convenience, and operating cost.

Volume-to-Capacity (V/C) Ratio

A comparison of traffic volume demand to intersection capacity is one method of evaluating how well an intersection is operating. This comparison is presented as a v/c ratio. A v/c ratio of less than 1.00 indicates that the volume is less than capacity. When it is closer to 0, traffic conditions are generally good, with little congestion and low delays for most intersection movements. As the v/c ratio approaches 1.00, traffic becomes more congested and unstable, with longer delays.

Level of Service (LOS)

Level of service is also a widely recognized and accepted measure and descriptor of traffic operations. At both stop-controlled and signalized intersections, LOS is a function of control delay, which includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. Six standards have been established, ranging from LOS A, where there is little or no delay, to LOS F, where there is delay of more than 50 seconds at unsignalized intersections, or more than 80 seconds at signalized intersections.

It should be noted that, although delays can sometimes be long for some movements at a STOP-controlled intersection, the v/c ratio may indicate that there is adequate capacity to process the demand for that movement. For this reason, it is important to examine both v/c ratio and LOS when evaluating overall intersection operations. Both are reported in the following section.

95th Percentile Queues

In addition to the operational criteria that measure intersection performance, it is also important to examine queuing and where demand may exceed available storage. Queues that spill out of storage bays and into adjacent travel lanes impair intersection performance by reducing capacity and creating potential safety concerns. Queues may also extend from one intersection through another upstream intersection which also impairs performance. The 95th percentile queue length (meaning 95 percent of all queues will be shorter) is used for this analysis.

4.5. Operational Standards

The OHP has established several policies that enforce general objectives and approaches for maintaining highway mobility. Of these policies, the Highway Mobility Policy (1F) establish maximum v/c ratio targets[3] for peak hour operating conditions for all highways in Oregon based on the location and classification of the highway segment being examined. The OHP policy also specifies that the v/c ratio targets be maintained for ODOT facilities through a 20-year horizon.

The three state highways within the study area are all are located within the recently formed Middle Rogue Metropolitan Planning Organization (MPO): I-5 (interstate highway), OR 234 Spur/Access Road (district level highway), and Main Street (local interest road). The ODOT v/c ratio target assumed for I-5 and the ramp terminals is 0.85 while the target for OR 234 Spur/Access Road and Main Street is 0.95.

Jackson County has also established performance standards based on v/c ratio. These standards are outlined in the Jackson County TSP (0.95 inside the MPO boundary and 0.85 outside the MPO boundary). The County TSP language states that "where one or more approaches is maintained by a city or ODOT, the more restrictive of the County's or other agency's performance standards will be applied." Since the management area intersections are assumed to be within the MPO boundary, the state target for district and local roads (0.95) is equivalent to the County standard. However, at the ramp terminals the more restrictive ramp terminal target (0.85) will be applied. Table 4-3 presents the applicable jurisdictional performance measures.

[3] Oregon Highway Plan Policy 1F Revisions (Adopted December 21, 2011), ODOT, Table 6: Volume to Capacity Ratio Targets for Peak Hour Operating Conditions

Table 4-3. Performance Measures

Location	Applicable Jurisdictional Performance Measures	
	ODOT[1]	Jackson County[2]
I-5 Exit 40		
Access Rd & Blackwell Rd (OR 99)	Not applicable	V/C <= 0.95
Access Rd & Lampman Rd	Not applicable	V/C <= 0.95
I-5 NB Ramp Terminal	V/C <= 0.85	V/C <= 0.95
I-5 SB Ramp Terminal	V/C <= 0.85	V/C <= 0.95
Access Rd & Lampman Rd	Not applicable	V/C <= 0.95
I-5 Exit 43		
OR 99/OR 234 & N. River Rd	V/C <= 0.95	V/C <= 0.95
OR 99/OR 234 & Lampman Rd	V/C <= 0.95	V/C <= 0.95
OR 99/OR 234 & Main St	V/C <= 0.95	V/C <= 0.95
I-5 NB Ramp Terminal	V/C <= 0.85	V/C <= 0.95
I-5 SB Ramp Terminal	V/C <= 0.85	V/C <= 0.95
Main St & Profetta Ln	Not Applicable	V/C <= 0.95

Notes:
1. Table 6: Volume to Capacity Ratio Targets for Peak Hour Operating Conditions, 1999 Oregon Highway Plan, Mobility Policy Revisions, 2011.
2. Jackson County Transportation System Plan.

4.6. Traffic Operations Analysis Procedures

All operations were evaluated using the methodology outlined in the *2010 Highway Capacity Manual* (HCM) along with the procedures outlined in ODOT's Analysis Procedures Manual (APM). The Synchro/SimTraffic analysis software was selected to perform the intersection analysis since it can provide the v/c ratio and LOS output of an HCM analysis and consider the systematic interaction of the intersections with regard to queuing and delays.

Synchro is a macroscopic model similar to the Highway Capacity Software (HCS), and like the HCS, is based on the 2010 HCM. The Synchro model evaluates traffic operations for signalized and unsignalized intersections under coordinated and uncoordinated traffic control . The v/c ratios and LOS presented in this report are based on the Synchro model output. None of the intersections are currently signalized.

SimTraffic animates traffic flow based on input volumes and signal timing and allows viewing of traffic flow under saturated traffic conditions where traffic may spill over from one intersection to another. It is particularly effective at evaluating closely spaced intersections. The SimTraffic model was run multiple times using different arrival patterns to determine how sensitive traffic operations are to subtle variations in traffic flows. The 95th percentile queues from the SimTraffic model are presented in this report.

As noted above, the results from both Synchro and SimTraffic are reported in this document. Because these programs evaluate operations using different methodologies, the analysis results

sometimes vary; however, the differences are generally minor unless saturated or congested conditions are present. Under saturated conditions, SimTraffic queuing and delays present results that reflect how congested intersections impact each other, while Synchro represents intersection performance in isolation and may reflect better performance results.

4.7. Existing Traffic Operations

Existing (2012) PM peak hour traffic operations were evaluated at the management area intersections and for the freeway segments where ramp traffic is entering (i.e., merging) or exiting (i.e., diverging) the mainline traffic stream. Operations are described in the following sections and the detailed analysis worksheets are presented in Appendix B (available upon request).

4.7.1. Intersection Operations

Table 4-4 summarizes the results of the traffic operations analysis and Figure 4-3a and Figure 4-3b presents v/c ratios and LOS performance by lane group for the area intersections. While all lane groups are shown in the figure, only the controlling movement[4] is shown in the table. Controlling movements at unsignalized intersections are typically the minor-street left turns or, in the case of single-lane approaches, the minor street approaches. These movements are required to yield to all other movements at the intersection and thus are subject to the longest delays and have the least capacity. Left turns from the major street are also subject to delays, since motorists making these maneuvers must also yield to oncoming major-street traffic.

Analysis for the PM peak period shows that all of the intersections in both the Exit 40 and 43 IMSAs currently meet applicable mobility thresholds.

Based on the SimTraffic simulation, none of the 95th percentile queues exceed available storage or extend beyond the nearest upstream intersection at any of the IMSA intersections. The lane group with the most significant queuing is the northbound approach to the intersection of Access Road and Blackwell Road (OR 99) near Exit 40. For this lane group, the 95th percentile queue extends 125 feet, short of the nearest public access with Access Road (300 feet south of the intersection). Existing storage on interchange ramps provides adequate distance for safe stopping sight distance based on the 95th percentile queues. The ramp with the longest queuing is the southbound off-ramp at Exit 43 with queues extending 75 ft.

[4] The movement with the worst v/c ratio

Table 4-4. Existing (Year 2012) PM Peak Hour Traffic Operations

Intersection	Controlling Movement[1]	V/C Ratio[2]	LOS[2]	Operational Targets[3]
I-5 Exit 40				
Access Rd at Blackwell Rd (OR 99)	NB L/R	0.55	C	V/C <= 0.95
Access Rd at Lampman Rd	EB L/R	0.06	B	V/C <= 0.95
Access Rd at I-5 NB Ramps	WB L/T/R	0.29	B	V/C <= 0.85
Access Rd at I-5 SB Ramps	EB L/T/R	0.20	B	V/C <= 0.85
Access Rd at Old Stage Rd	EB L/R	0.07	B	V/C <= 0.95
I-5 Exit 43				
OR 99/OR 234 at N. River Rd [4]	EB T/R	0.05	A	V/C <= 0.95
OR 99/OR 234 at Lampman Rd	SB L/R	0.02	A	V/C <= 0.95
OR 99/OR 234 at Main St [4,5]	NB L/R	0.09	A	V/C <= 0.95
Main St at I-5 NB Ramps	WB L/T/R	0.03	A	V/C <= 0.85
Main St at I-5 SB Ramps	EB L/T/R	0.07	A	V/C <= 0.85
Main St at Profetta Ln	EB L/T	0.02	A	V/C <= 0.95

Acronyms: EB = eastbound; WB = westbound; NB = northbound; and SB = southbound. L = left; T = through; and R = right.

Notes:
1. At unsignalized intersections the results are reported for the movement with the worst v/c ratio.
2. The v/c ratios and LOS are based on the results of the macrosimulation analysis using Synchro, which cannot account for the influence of adjacent intersection operations.
3. The Jackson County Transportation System Plan (TSP) designates the traffic operations standard as the more restrictive of County and ODOT targets for intersections with one or more approaches maintained by ODOT.
4. .Intersection operations analyzed with alternative geometric configurations to meet HCM methodology.
5. Intersection operations based on HCM 2000 methodology.

Source: David Evans and Associates, Inc.

Queuing

Table 4-5 summarizes queuing results for intersection movements that must stop or yield the right of travel to other traffic flows. The study intersections appear to have adequate capacity and storage for the current demand.

Preliminary Signal Warrants

Although there are no existing operational deficiencies, preliminary signal warrants were evaluated at the two locations whose volumes approached the 70% warrant volume level: Access Road at Blackwell Road (OR 99) and Access Road at the I-5 Northbound Ramps. Neither location satisfied the preliminary signal warrants.

Table 4-5. Existing (Year 2012) 95th Percentile Queues

Intersection	Approach & Movement	95th Percentile Queue (ft.)	Available Storage (ft.)[1]
I-5 Exit 40			
Access Rd at Blackwell Rd (OR 99)	WB L/T	50	600
	NB L/R	125	300
Access Rd at Lampman Rd	EB L/R	50	350
	NB L/T	25	150
Access Rd at I-5 NB Ramps	WB L/T/R	100	850[2]
	NB L/T	25	540
Access Rd at I-5 SB Ramps	EB L/T/R	75	800[2]
	SB L/T	50	540
Access Rd at Old Stage Rd	EB L/R	75	425
	NB L	25	40[2]
I-5 Exit 43			
OR 99/OR 234 at N. River Rd	EB T	50	250
	EB R	25	50[2]
	NB L	25	25[2]
OR 99/OR 234 at Lampman Rd	EB L/T	25	650
	SB L/R	50	>1200
OR 99/OR 234 at Main St	EB T/R	50	380
	NB L/R	50	330
Main St at I-5 NB Ramps	WB L/T/R	50	1000[2]
	NB L/T	25	600
Main St at I-5 SB Ramps	EB L/T/R	75	1100[2]
	NB T/R	50	75
Main St at Profetta Ln	EB L/T	25	>1200
	SB L/T	25	75

Acronyms: EB = eastbound; WB = westbound; NB = northbound; and SB = southbound. L = left; T = through; and R = right.

Notes:

1. Storage distance reflects spacing to the next public access point.
2. Storage distance reflects length of travel lane or turn bay.

Source: David Evans and Associates, Inc.

4.7.2. Merge and Diverge Operations

It is also important to evaluate how the interchange ramps interact with the mainline freeway traffic on I-5 through an analysis of the points where traffic enters, or merges, onto the highway and where it exits, or diverges, from the highway. Analyses of freeway sections at both interchanges were conducted in accordance with the methodology prescribed in ODOT's APM to determine v/c ratio performance for the design hour between 3:30 and 4:30 PM.

Table 4-6 summarizes the results of the freeway operations analysis for both interchanges**.** The merge and diverge analyses show that the freeway and the merge and diverge points

associated with the both interchanges are currently operating well below the mobility target of 0.85.

Table 4-6. Existing (Year 2012) Freeway Operations

I-5 Northbound		I-5 Southbound	
Direction/Location	**V/C Ratio[1,2]**	**Direction/Location**	**V/C Ratio[1,2]**
I-5 Exit 40			
Mainline: South of Exit 40	0.34	Mainline: North of Exit 40	0.28
Diverge: Exit 40 Northbound Off Ramp	0.09	Diverge: Exit 40 Southbound Off Ramp	0.29
Mainline: Between Exit 40 Ramps	0.30	Mainline: Between Exit 40 Ramps	0.02
Merge: Exit 40 Northbound On Ramp	0.33	Merge: Exit 40 Southbound On Ramp	0.28
Mainline : North of Exit 40	0.32	Mainline: South of Exit 40	0.29
I-5 Exit 43			
Mainline : South of Exit 43	0.32	Mainline: North of Exit 43	0.29
Diverge: Exit 43 Northbound Off Ramp	0.01	Diverge: Exit 43 Southbound Off Ramp	0.02
Mainline: Between Exit 43 Ramps	0.31	Mainline: Between Exit 43 Ramps	0.28
Merge: Exit 40 Northbound On Ramp	0.33	Merge: Exit 43 Southbound On Ramp	0.29
Mainline: North of Exit 43	0.32	Mainline: South of Exit 43	0.28

Notes:
1. The v/c ratios for the merge/diverge analysis are calculated based on the methodologies outlined in ODOT's Analysis Procedures Manual.
2. The design hour is the hour between 3:30 and 4:30 PM, which coincides with non-freeway system peaking.

Source: David Evans and Associates, Inc.

4.8. Safety Analysis

A safety analysis was conducted to determine whether any significant, documented safety issues exist within the management area and to inform future measures or general strategies for improving overall safety. This analysis includes a review of crash records, critical crash rates, and ODOT Safety Priority Index System (SPIS) data.

4.8.1. Crash History

The crash analysis included a review of crash history data supplied by the ODOT Crash Analysis and Reporting Unit for the period between January 1, 2007, and December 31, 2011, which were the five most recent full years for which crash data were available at the time of the analysis. The reports are contained in Appendix C (available upon request).

I-5 Exit 40

There were 39 crashes reported within in the Exit 40 IMSA during the 5-year analysis period as summarized in Table 4-7. Two of the reported crashes resulted in a fatality, one resulted in a serious injury, and 19 resulted in a minor injury(s). Very few (2) of the reported crashes were attributed to alcohol, but approximately one-third of crashes were attributed to speed.

Table 4-7. I-5 Exit 40 IMSA Crash Summary (2007-2011)

Intersection	Total	% of Total	Severity			Crash Type								Intersection or Segment Crash Rate
			Property Damage Only	Minor Injury Crashes	Fatal & Serious Injury	Rear End	Fixed Object	Other	Turning	Sideswipe - Opposite	Sideswipe - Meeting	Head On	Non-Collision	
Intersections														
Access Rd & Blackwell Rd	4	10%	1	3	0	0	1	0	2	0	0	0	1	0.32
Access Rd & Lampman Rd	0	0%	0	0	0	0	0	0	0	0	0	0	0	0.00
Access Rd & I-5 NB Ramps	7	18%	3	3	1[2]	2	4	0	1	0	0	0	0	0.61
Access Rd & I-5 SB Ramps	0	0%	0	0	0	0	0	0	0	0	0	0	0	0.00
Access Rd & Old Stage Rd	0	0%	0	0	0	0	0	0	0	0	0	0	0	0.00
Subtotal	*11*	*28%*	*4*	*6*	*1*	*2*	*5*	*0*	*3*	*0*	*0*	*0*	*1*	-
Segments														
Between Blackwell & Lampman Rd	2	5%	1	1	0	0	1	0	1	0	0	0	0	1.66
I-5 Northbound														
Mainline south of I-5 NB Off Ramp	6	15%	4	1	1	2	2	1	0	1	0	0	0	-
I-5 NB Off Ramp	5	13%	1	4	0	2	2	0	0	1	0	0	0	-
Mainline between Off & On Ramp	1	3%	1	0	0	0	0	1	0	0	0	0	0	-
I-5 NB On Ramp	1	3%	1	0	0	0	1	0	0	0	0	0	0	-
Mainline north of I-5 NB Ramp	*0*	*0%*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	-
Subtotal	*13*	*33%*	*7*	*5*	*1*	*4*	*5*	*2*	*0*	*2*	*0*	*0*	*0*	*0.50*
I-5 Southbound														
Mainline north of I-5 SB Off Ramp	1	3%	0	1	0	0	0	1	0	0	0	0	0	-
I-5 SB Off Ramp	1	3%	0	0	1	0	1	0	0	0	0	0	0	-
Mainline between Off & On Ramp	0	0%	0	0	0	0	0	0	0	0	0	0	0	-
I-5 SB On Ramp	3	8%	2	1	0	1	2	0	0	0	0	0	0	-
Mainline south of I-5 On Ramp	8	21%	3	5	0	0	8	0	0	0	0	0	0	-
Subtotal	*13*	*33%*	*5*	*7*	*1*	*1*	*11*	*1*	*0*	*0*	*0*	*0*	*0*	*0.56*
Totals	**39**	**100%**	**17**	**19**	**3**	**7**	**22**	**3**	**4**	**2**	**0**	**0**	**1**	**-**
Percent of Total Crashes			**44%**	**49%**	**8%**	**18%**	**56%**	**8%**	**10%**	**5%**	**0%**	**0%**	**3%**	**-**

Notes:
1. Highway Safety Manual Part B methodology was used to calculate critical crash rates for signalized and unsignalized intersections. Where the observed rate exceeds the critical crash rate, the observed rate is shaded.
2. A serious injury crash occurred and is combined with fatal crashes due to the severity.

Source: ODOT Transportation Development Division, Transportation Data Section, Crash Analysis and Reporting Unit

Only two of the study area intersections had reported crashes during the 5-year analysis period: Access Road at Blackwell Road (4 crashes) and Access Road at I-5 Northbound Ramps (7 crashes). One crash resulted in a severe (debilitating) injury and six others resulted in minor injuries. Crash types varied at both intersections with no consistent patterns.

The segment of Access Road between Blackwell Road and Lampman Road was the only stretch of roadway with crashes between intersections. The calculated crash rate for this segment is

1.66 crashes per million vehicle miles of travel. While only 2 crashes occurred on this segment, the higher rate is large due to the short distance and relatively low volumes of traffic between Blackwell Road and Lampman Road.

Along I-5 within the IMSA, there was a relatively low frequency of crashes. In the 5-year analysis period, there were 26 freeway crashes, 13 in the northbound direction, and 13 in the southbound. The 5-year crash rate for the northbound freeway segment is 0.50 crashes per million vehicle miles traveled (crashes/mvmt), and the southbound segment is 0.56 crashes/mvmt. These crash rates are comparable with the statewide average crash rates for interstate freeways of 0.40 crashes/mvmt; however, higher rates are typically expected adjacent to ramp connections when compared to mainline segments. The most common crash type reported for mainline crashes was fixed object collisions (62%). Eleven of the fixed object crashes occurred in the southbound direction, with the remaining 5 occurring in the northbound direction. Four of these fixed object crashes occurred during icy conditions, five were attributed to excessive speed for roadway conditions, and two involved both ice and excessive speed. One fatal injury, fixed object crash occurred just past the southbound off ramp, which was attributed to driver fatigue. Another fatal injury, rear-end crash occurred south of the northbound off ramp. Neither of the fatal injury crashes was alcohol related.

I-5 Exit 43

There were 32 crashes reported within in the IMSA during the 5-year analysis period. Table 4-8 summarizes the crash data for I-5 Exit 43. One of the reported crashes resulted in a serious injury, and 8 resulted in a minor injury(s). Similar to I-5 Exit 40, approximately one-third of crashes were attributed to speed.

None of the intersection had reported crashes in the 5-year analysis period.

Only one non-freeway segment, OR 99/OR 234 between Lampman Road and N. River Road, had 2 reported fixed object crashes. The calculated crash rate for this segment is 3.72 crashes per million vehicle miles of travel. While only 2 crashes occurred on this segment, the higher rate is large due to the short distance and relatively low volumes of traffic on this segment. The two crashes occurred at the bridge, with no injuries reported.

Table 4-8. I-5 Exit 43 IMSA Crash Summary (2007-2011)

Intersection	Total	% of Total	Severity			Crash Type									Intersection or Segment Crash Rate
			Property Damage Only	Minor Injury Crashes	Fatal & Serious Injury [2]	Rear End	Fixed Object	Angle	Other	Backing	Turning	Sideswipe - Opposite	Sideswipe - Meeting	Non-Collision	
Intersections															
OR 99/OR 234 & N. River Rd	0	0%	0	0	0	0	0	0	0	0	0	0	0	0	0.00
OR 99/OR 234 & Lampman Rd	0	0%	0	0	0	0	0	0	0	0	0	0	0	0	0.00
OR 99/OR 234 & Main St	0	0%	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Main St & I-5 NB Ramp Terminal	0	0%	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Main St & I-5 SB Ramp Terminal	0	0%	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Main St & Profetta Ln	0	0%	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Subtotal	*0*	*0%*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	-
Segments															
Between N. River & Lampman Rd	2	6%	2	0	0	0	2	0	0	0	0	0	0	0	3.72
I-5 Northbound															
Mainline south of I-5 NB Off Ramp	8	25%	6	2	0	1	3	0	1	0	0	3	0	0	-
I-5 NB Off Ramp	0	0%	0	0	0	0	0	0	0	0	0	0	0	0	-
Mainline between Off & On Ramp	3	9%	2	1	0	0	1	0	2	0	0	0	0	0	-
I-5 NB On Ramp	3	9%	2	0	1	1	2	0	0	0	0	0	0	0	-
Mainline north of I-5 NB Ramp	0	0%	0	0	0	0	0	0	0	0	0	0	0	0	-
Subtotal	*14*	*44%*	*10*	*3*	*1*	*2*	*6*	*0*	*3*	*0*	*0*	*3*	*0*	*0*	*0.34*
I-5 Southbound															
Mainline north of I-5 SB Off Ramp	2	6%	0	2	0	0	2	0	0	0	0	0	0	0	-
I-5 SB Off Ramp	4	13%	2	2	0	1	1	0	1	0	0	1	0	0	-
Mainline between Off & On Ramp	1	3%	1	0	0	0	1	0	0	0	0	0	0	0	-
I-5 SB On Ramp	0	0%	0	0	0	0	0	0	0	0	0	0	0	0	-
Mainline south of I-5 On Ramp	9	28%	7	2	0	3	2	0	2	0	0	1	0	1	-
Subtotal	*16*	*50%*	*3*	*5*	*0*	*4*	*6*	*0*	*3*	*0*	*0*	*2*	*0*	*1*	*0.44*
Totals	**32**	**100%**	**15**	**8**	**1**	**6**	**14**	**0**	**6**	**0**	**0**	**5**	**0**	**1**	**-**
Percent of Total Crashes			**47%**	**25%**	**3%**	**19%**	**44%**	**0%**	**19%**	**0%**	**0%**	**16%**	**0%**	**3%**	**-**

Notes:

Highway Safety Manual Part B methodology was used to calculate critical crash rates for signalized and unsignalized intersections. Where the observed rate exceeds the critical crash rate, the observed rate is shaded

A serious injury crash occurred and is combined with fatal crashes due to the severity.

Source: ODOT Transportation Development Division, Transportation Data Section, Crash Analysis and Reporting Unit

Along Interstate 5 within the IMSA, there was a low frequency crashes. In the 5-year analysis period, there were 30 freeway crashes with 14 in the northbound direction, and 16 in the southbound. This translates to 6 freeway crashes per year, both directions combined. The 5-year crash rate for the northbound freeway segment is 0.34 crashes per million vehicle miles traveled (crashes/mvmt), and the southbound segment is 0.44 crashes/mvmt. These crash rates are comparable with the statewide average crash rates for interstate freeways of 0.40 crashes/mvmt; however, higher rates are typically expected adjacent to ramp connections when compared to mainline segments. Fixed object collisions were the most common crash type among mainline crashes (40%). Six fixed object crashes occurred in each of the southbound and northbound directions. Three of these fixed object crashes occurred during icy conditions, and 4 were attributed to excessive speed for roadway conditions or reckless behavior. One serious injury, fixed object crash occurred near the northbound off ramp.

4.8.2. Network Screening of Crash Sites

The Highway Safety Manual (HSM) provides guidance on how to identify crash sites within a study area that have greatest potential "to realize a reduction in crash frequency with implementation of a countermeasure." A variety of network screening techniques are provided for study areas. These techniques rely on grouping crash sites by general characteristics (intersection, segment) and by specific features, such as traffic control (signal versus STOP sign) number of approaches, or travel lanes. Once grouped, the various screening techniques rank the individual locations using statistical analysis of the data within that specific sample of crash sites. The selection of the applicable screening process depends on a variety of data factors but most screening options provide similar results.

The two interchanges have relatively small sets of crash data with 39 crashes in the entire Exit 40 IMSA and 32 crashes in the entire Exit 43 IMSA. Most of these crashes occurred on mainline freeway or on the freeway ramps. At Exit 40, two intersections had a combined 11 crashes and one segment had 2 crashes. At Exit 43, one segment had 2 crashes. No other locations had reported crashes.

With this small number of crash sites, the network screening methods cannot effectively be applied because, once sorted, there are too few locations with similar characteristics to effectively apply the formulas. Therefore, application of countermeasures will be considered for all of the reported crash sites as well as locations with other identified safety deficiencies.

4.8.3. Safety Priority Index System (SPIS)

The SPIS is a method used in Oregon to identify safety problem areas along state highways. Highways are evaluated in approximately one-tenth mile increments (often grouped into larger segments). Each year these segments are ranked by assigning a SPIS score based on the frequency and severity of crashes observed, while taking traffic volume into account. When a segment is ranked in the worst (top) 10% of the index, a crash analysis is typically warranted and corrective actions are considered. There are no segments of Interstate 5 within the IMSA that are identified in the worst 10% of the most recent (2011) SPIS rankings.

4.9. Summary of Existing Deficiencies

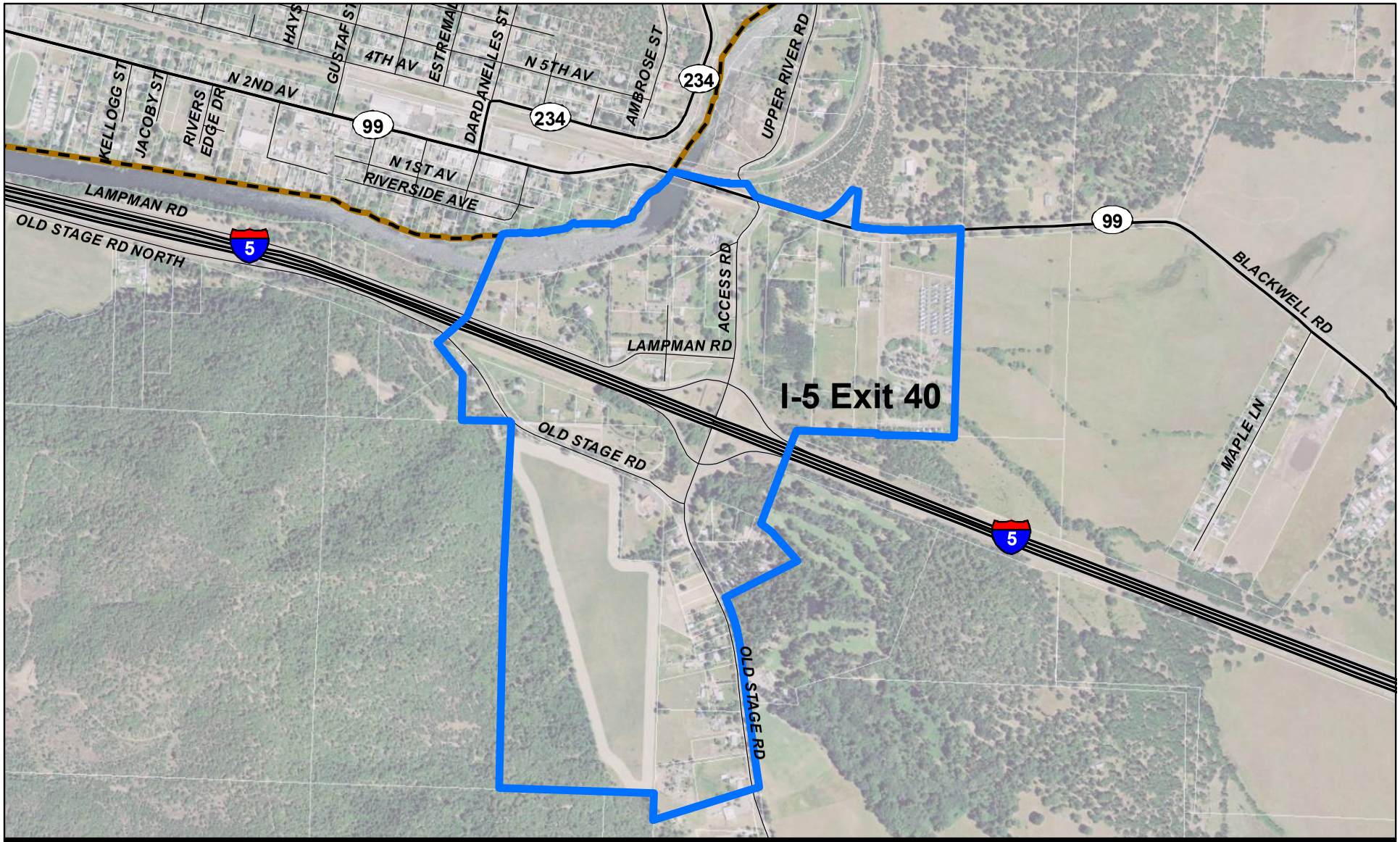
Existing deficiencies identified through the operational and safety analyses are summarized in Table 4-9.

Table 4-9. Summary of Existing Deficiencies

Deficiency	Location	Related Goals
Safety		
Safety	***I-5 Exit 40*** ▪ 4 fixed object crashes on the I-5 Northbound off ramp, one resulting in a serious injury crash during the 5-year analysis period ▪ 8 fixed object crashes occurred south of the I-5 Southbound on ramp during the 5-year analysis period: ▪ Highest crash segments/Intersections: - I-5 mainline south of I-5 Southbound on ramp (8 crashes) - I-5 mainline south of I-5 Northbound off ramp (6 crashes – 1 fatal) - I-5 Northbound Ramp Terminal intersection with Access Road(7 crashes) ***I-5 Exit 43*** ▪ Highest crash segments/Intersections: - I-5 mainline south of I-5 Northbound off ramp (8 crashes) - I-5 mainline south of I-5 Southbound on ramp (9 crashes)	▪ Safety

Attachments:
Figure 4-1 (a&b). Project Vicinity and Study Area
Figure 4-2 (a&b). Existing Conditions (2012) PM Peak Hour Volumes
Figure 4-3 (a&b). Existing Conditions (2012) Traffic Operations and Lane Configurations

Appendix A. Traffic Seasonal Factor
Appendix B. Traffic Operations Worksheets
Appendix C. ODOT Crash Analysis Reports (January 1, 2007 through December 31, 2011)



I-5 Exits 40 and 43 Interchange Area Management Plans

N

1,000 500 0 1,000

Feet

Source Data: ESRI, Jackson County, NAIP 2009

Legend

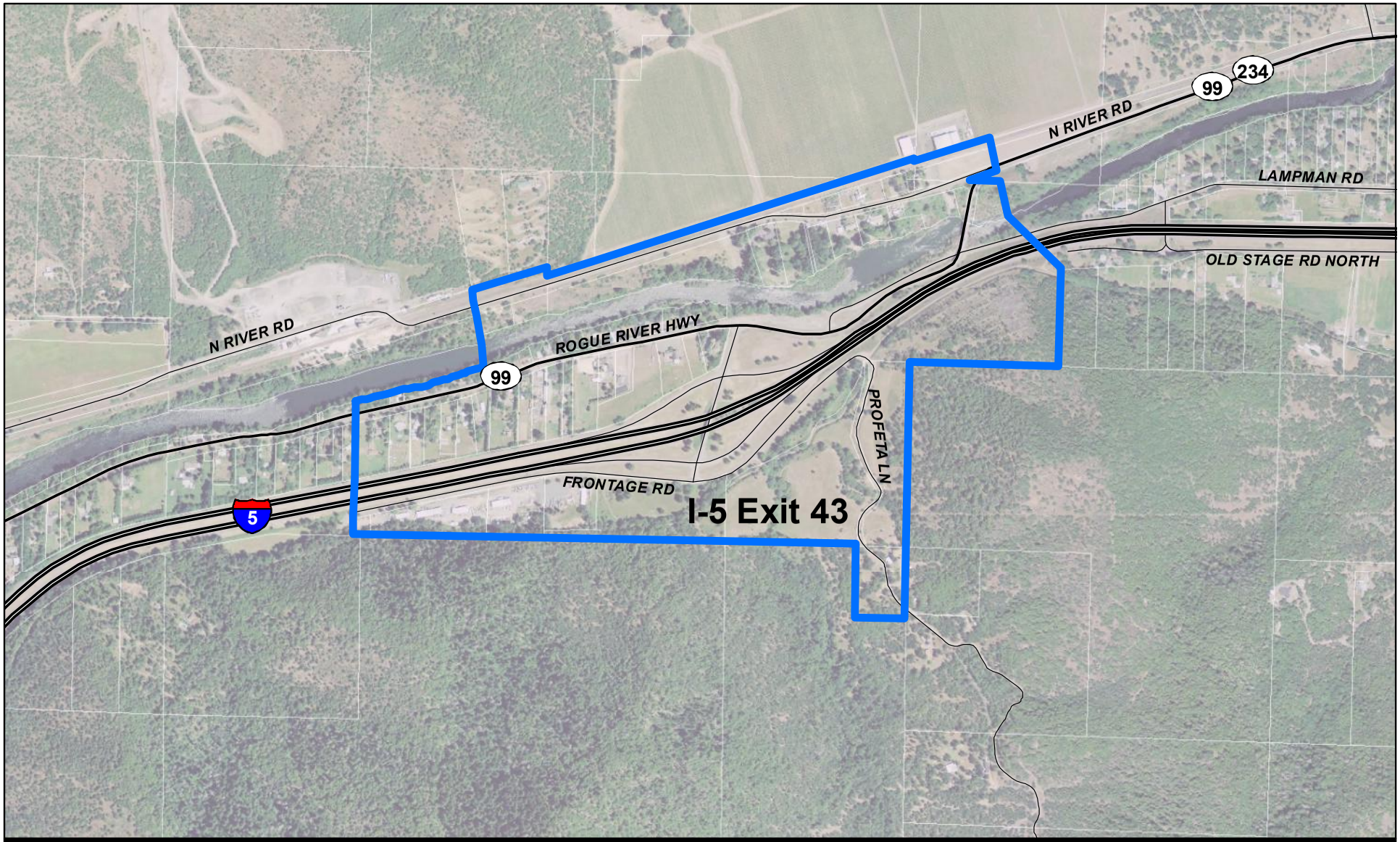
- Interchange Management Study Area (IMSA)
- Urban Growth Boundary (UGB)
- Taxlot Boundaries indicated in white
- Interstate
- Highway
- Local Road

DRAFT Figure 4-1a

Project Vicinity and Study Area

I-5 Exit 40

Document Path: P:\O\ODOT00000783\0600INFO\GS\Maps\Fig_1a_and_1b_Project_Vicinity_and_Study_Area.mxd Date: 1/15/2013 Time: 2:11:33 PM User Name: mmf



I-5 Exits 40 and 43 Interchange Area Management Plans

1,000 500 0 1,000
Feet

Source Data: ESRI, Jackson County, NAIP 2009

Legend

- Interchange Management Study Area (IMSA)
- Urban Growth Boundary (UGB)
- Taxlot Boundaries indicated in white
- Interstate
- Highway
- Local Road

DRAFT Figure 4-1b
Project Vicinity and Study Area
I-5 Exit 43

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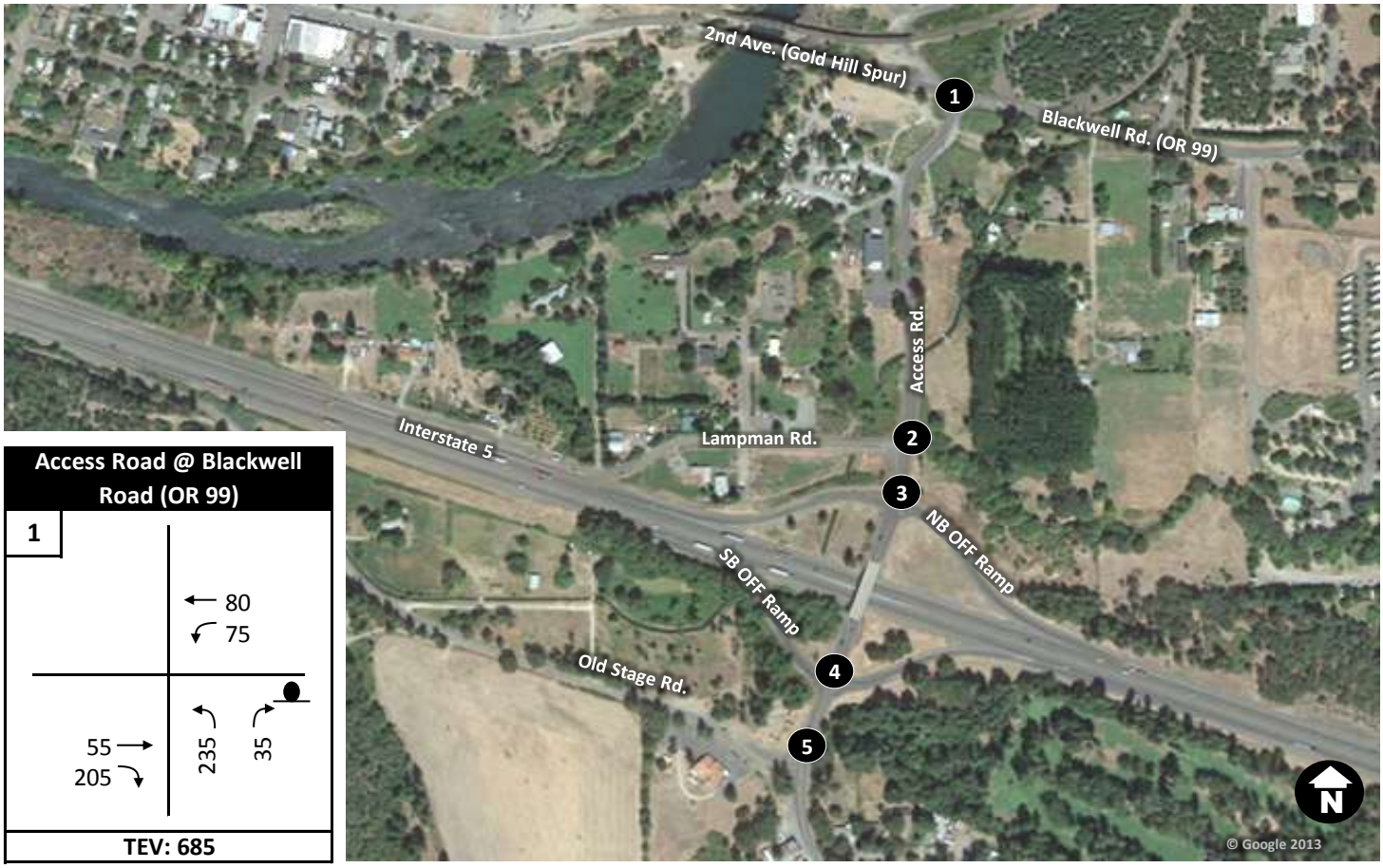


Access Road @ Blackwell Road (OR 99)

1

80
75
55
205
235
35

TEV: 685

Access Road @ Lampman Road

2

20
260
10
15
10
260

TEV: 575

Access Road @ I-5 NB Ramps

3

170
2
55
75
200
25
100

TEV: 627

Access Road @ I-5 SB Ramps

4

115
140
50
0
25
75
40

TEV: 445

Access Road @ Old Stage Road

5

40
100
35
5
10
80

TEV: 270

I-5 Exits 40 and 43 Interchange Area Management Plans

Legend

Allowable Movement

TEV: Total Entering Volume

PM Peak Hour Turning Movement Volume

STOP Controlled Approach

Yield Controlled Movement

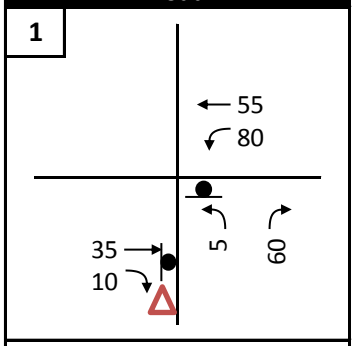
DRAFT Figure 4-2a

Existing (2012)

PM Peak Hour Volumes

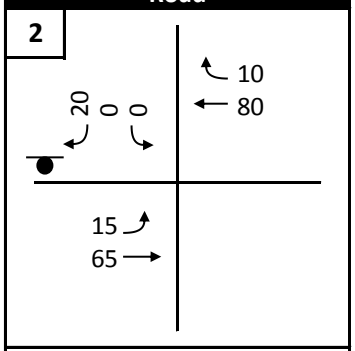
I-5 Exit 40

OR 99/OR 234 @ N. River Road



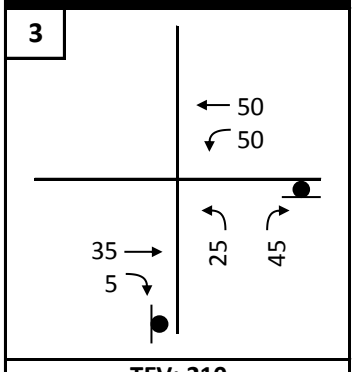
TEV: 230

OR 99/OR 234 @ Lampman Road



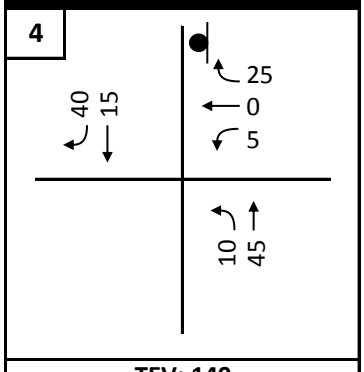
TEV: 190

Main Street @ OR 99/OR 234



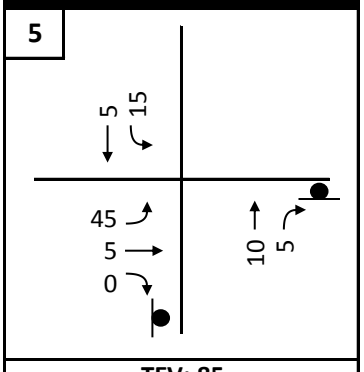
TEV: 210

Main Street @ I-5 NB Ramps



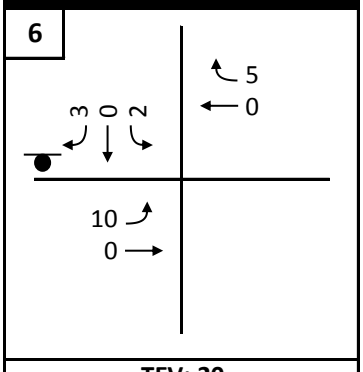
TEV: 140

Main Street @ I-5 SB Ramps



TEV: 85

Main Street @ Profetta Lane



TEV: 20

I-5 Exits 40 and 43 Interchange Area Management Plans

Legend

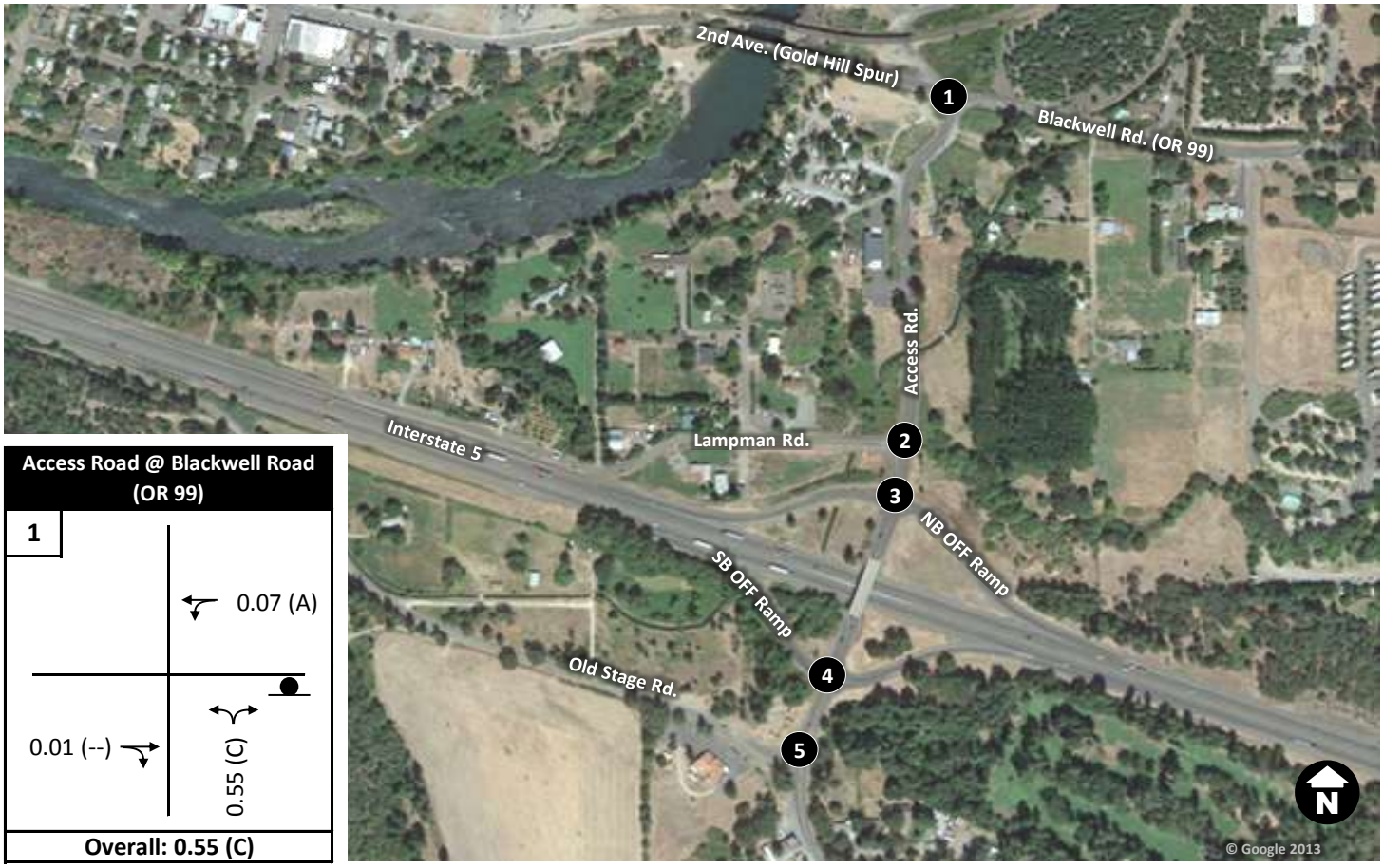
- Allowable Movement
- TEV: Total Entering Volume
- ### PM Peak Hour Turning Movement Volume
- STOP Controlled Approach
- Yield Controlled Movement

DRAFT Figure 4-2b

Existing (2012)

PM Peak Hour Volumes

I-5 Exit 43



Access Road @ Blackwell Road (OR 99)

1

0.07 (A)

0.01 (--)

0.55 (C)

Overall: 0.55 (C)

Access Road @ Lampman Road

2

0.01 (--)

0.06 (B)

0.01 (A)

Overall: 0.06 (B)

Access Road @ I-5 NB Ramps

3

0.01 (--)

0.29 (B)

0.02 (A)

Overall: 0.29 (B)

Access Road @ I-5 SB Ramps

4

0.12 (A)

0.20 (B)

0.01 (--)

Overall: 0.20 (B)

Access Road @ Old Stage Road

5

0.01 (--)

0.07 (B)

0.01 (A)

0.01 (--)

Overall: 0.07 (B)

I-5 Exits 40 and 43 Interchange Area Management Plans

Legend

Lane Configuration

0.01 (A) Lane Group V/C (LOS)
Volume-to-Capacity Ratio (Level of Service)

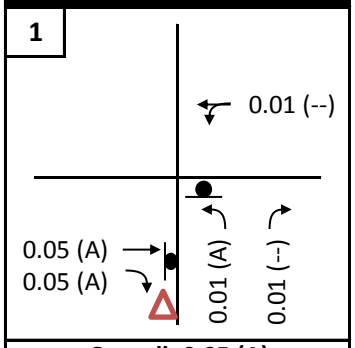
(--) LOS only reported for stopped or yielding movement

STOP Controlled Approach

Yield Controlled Movement

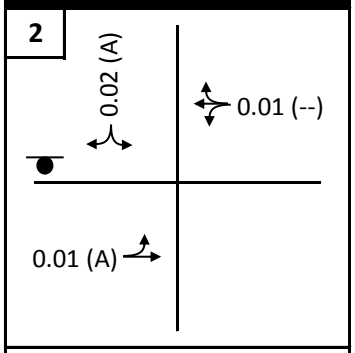
DRAFT Figure 4-3a
Existing (2012)
PM Peak Hour Operations
I-5 Exit 40

OR 99 / OR 234 @ N. River Road [1]



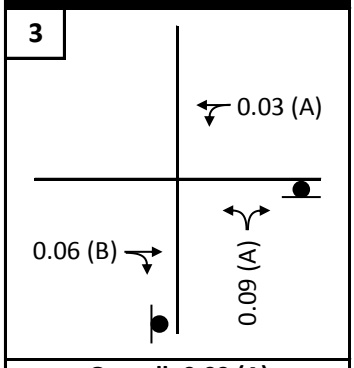
Overall: 0.05 (A)

OR 99/OR 234 @ Lampman Road



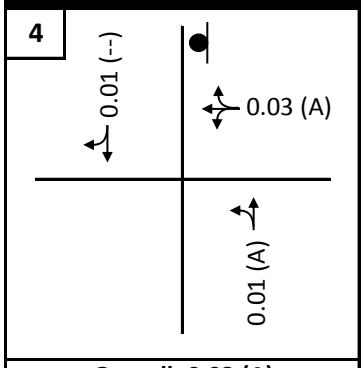
Overall: 0.02 (A)

Main Street @ OR 99/OR 234 [1,2]



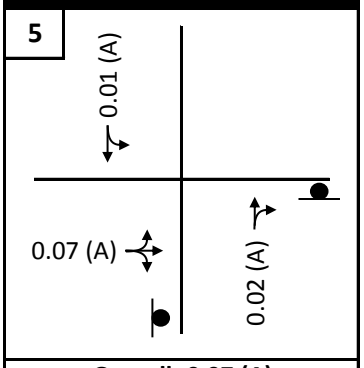
Overall: 0.09 (A)

Main Street @ I-5 NB Ramps



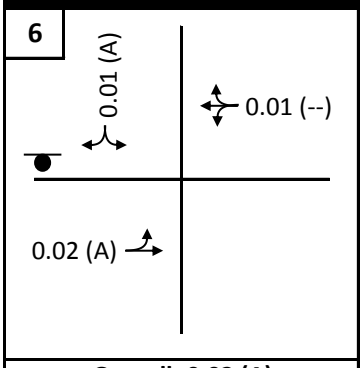
Overall: 0.03 (A)

Main Street @ I-5 SB Ramps [1]



Overall: 0.07 (A)

Main Street @ Profetta Lane



Overall: 0.02 (A)

I-5 Exits 40 and 43 Interchange Area Management Plans

Legend

Lane Configuration

0.01 (A) Lane Group V/C (LOS)
Volume-to-Capacity Ratio (Level of Service)

(--) LOS only reported for stopped or yielding movement

STOP Controlled Approach

Yield Controlled Movement

1 Intersection operations analyzed with alternative geometry

2 Intersection operations based on HCM 2000 Methodology

DRAFT Figure 4-3b
Existing (2012)
PM Peak Hour Operations
I-5 Exit 43

I-5 Exits 40 and 43 (Gold Hill)
Interchange Area Management Plans

DRAFT Technical Memorandum #4
Appendix A: Traffic Seasonal Factors

Prepared for

Oregon Department of Transportation, Region 3
3500 NW Stewart Parkway
Roseburg, Oregon 97470

Prepared by

David Evans and Associates, Inc.
2100 SW River Parkway
Portland, Oregon 97201

June 2013

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I-5

MP	2006 ADT	2007 ADT	2008 ADT	2009 ADT	2010 ADT	2011 ADT	Description
36.04	39200	38800	34500	35300	35700	33900	0.60 mile north of Seven Oaks Interchange
42.84	35500	35200	32400	33200	34100	32800	Gold Hill Automatic Traffic Recorder, Sta. 15-001, 2.77 miles south of the Valley of the Rogue Bridge
44.97	35900	35600	31400	33300	34300	33100	0.50 mile east of Rogue River Highway (OR99), Homestead Interchange

ON-SITE SEASONAL ADJUSTMENT METHOD: ATR 15-00

Location: I-5; MP 42.84; Pacific Highway No. 1; 2.77 miles south of the Valley of the Rogue Bridge

ATR Trend Summary (AWT Percent of ADT)

		2007	2008	2009	2010	2011
Peak Month	July	115	116	117	118	116
Count Months	January	87	90	87	88	92
	October	102	102	103	103	102
	November	101	99	101	98	100

Highest and Lowest Percentages Removed as per APM On-Site ATR Methodology

Average Peak	July	116 %
Average Count Months:	January	90 %
	October	102 %
	November	100 %

Seasonal Adjust	January	1.30
	October	1.14
	November	1.16

	MP	2009	2010	2011	2031	R^2
I-5 (001)	36.04			33900	50300	model
				48.4%	2.42%	
	42.84			32800	43800	0.7247
				33.5%	1.68%	
	44.97			33100	4200	0.646
OR 234 (271)	-0.2		1900		2000	0.7048
			5.3%		0.25%	
	0.09		2000		2100	0.3358
			5.0%		0.24%	
	0.19		2300		2400	0.7244
			4.3%		0.21%	
OR 234 (271), Spur (not 486)	2.38		3300		3400	0.1067
			3.0%		0.14%	
	2.95					
OR 99 (060)	14.4		1100		1200	0.5306
			9.1%		0.43%	
	14.55		1500		1600	0.7245
			6.7%		0.32%	

Similar Characteristic SEASONAL ADJUSTMENT METHOD: ATR 36-005

Amity

Location:

OR99W; MP 47.45; PACIFIC HIGHWAY WEST NO. 91; 0.07 mile north of Yamhill-Polk County Line

ATR Trend Summary (AWT Percent of ADT)

		2007	2008	2009	2010	2011
Peak Mont	August	114	110	109	109	110
Count Mon	January	87	92	94	93	96
	October	104	107	105	108	107
	November	101	101	102	100	104

Average Pe	July	110 %
Average Count Months:	January	92 %
	October	107 %
	November	102 %

Seasonal A	January	1.19
	October	1.03
	November	1.09

Commuter

1-Jan	15-Jan	1-Oct	15-Oct	1-Nov	15-Nov	1-Dec	15-Dec	
0.9994	1.0053	0.9312	0.9329	0.9565	0.9802	0.9906	1.0009	0.9004
1.11	1.12	1.03	1.04	1.06	1.09	1.10	1.11	
1.39	1.41	1.13	1.17	1.23	1.29			
1.40	1.43	1.07	1.11	1.17	1.23			

Similar Characteristic SEASONAL ADJUSTMENT METHOD: ATR 22-01

Crabtree

Location:

OR226; MP 0.43; ALBANY-LYONS HIGHWAY NO. 211; 0.43 mile east of Santiam

ATR Trend Summary (AWT Percent of ADT)

		2007	2008	2010	2011
Peak Month		119	123	117	120
Count Mon	January	92	91	96	103
	October	106	110	115	107
	November	101	100	96	102

2009

Average Pe	July	120 %
Average Count Months:	January	96 %
	October	110 %
	November	100 %

Seasonal A	January	1.25
	October	1.09
	November	1.20

SEASONAL FACTORS

Seasonal Factors	*On Site ATR*	*Commuter ATR*	*Summer ATR*
January	1.30	1.19	1.25
October	1.14	1.03	1.09
November	1.16	1.09	1.20

Seasonal Factors	*I-5 Vols*	*Ramp Movements*	*Local Roads*
January	1.30	1.25	1.22
October	1.14	1.09	1.06
November	1.16	1.15	1.15

GROWTH RATES

IC 43	*I-5 Growth*	*Local Roads*	*Ramp Growth*
	1.68%	0.30%	0.99%

IC 40	*I-5 Growth*	*Local Roads*	*Ramp Growth*
NB Ramp to the North*	1.68%	0.87%	1.28%
SB Ramp to the South	1.68%	0.30%	0.99%

**Applied 0.30% rate to movements to/from eastbound approach on Blackwell Rd*

I-5 Exits 40 and 43 (Gold Hill)
Interchange Area Management Plans

DRAFT Technical Memorandum #4
Appendix B: Traffic Operations Worksheets

Prepared for

Oregon Department of Transportation, Region 3
3500 NW Stewart Parkway
Roseburg, Oregon 97470

Prepared by

David Evans and Associates, Inc.
2100 SW River Parkway
Portland, Oregon 97201

June 2013

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HCM 2010 TWSC
10: Access Rd & 2nd Ave (OR 99 and OR 234)/Blackwell Rd (OR 99)

3/13/2013

Intersection	
Intersection Delay, s/veh	8.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	55	205	75	80	235	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	None	None	None	None	None	None
Storage Length		0	0		0	0
Median Width	0			0	12	
Grade, %	0%			0%	0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	0	0	2	3	1	0
Mvmt Flow	62	233	85	91	267	40
Number of Lanes	1	0	0	1	1	0

Major/Minor	Major 1			Major 2		
Conflicting Flow All	0	0	295	0	440	179
Stage 1	-	-	-	-	179	-
Stage 2	-	-	-	-	261	-
Follow-up Headway	-	-	2.218	-	3.509	3.3
Pot Capacity-1 Maneuver	-	-	1266	-	576	869
Stage 1	-	-	-	-	854	-
Stage 2	-	-	-	-	785	-
Time blocked-Platoon, %	-	-	0	-	0	0
Mov Capacity-1 Maneuver	-	-	1266	-	535	869
Mov Capacity-2 Maneuver	-	-	-	-	535	-
Stage 1	-	-	-	-	854	-
Stage 2	-	-	-	-	729	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.9	18.8
HCM LOS	-	-	C

Minor Lane / Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Cap, veh/h	563	-	-	1266	-
HCM Control Delay, s	18.8	-	-	8.049	0
HCM Lane V/C Ratio	0.55	-	-	0.07	-
HCM Lane LOS	C	-	-	A	A
HCM 95th-tile Q, veh	3.3	-	-	0.2	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	10	15	10	260	260	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	None	None	None	None	None	None
Storage Length	0	0	0			0
Median Width	12			0	0	
Grade, %	0%			0%	0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles, %	0	0	0	1	0	0
Mvmt Flow	12	19	12	325	325	25
Number of Lanes	1	0	0	1	1	0

Major/Minor				Major 1	Major 2	
Conflicting Flow All	688	338	350	0	-	0
Stage 1	338	-	-	-	-	-
Stage 2	350	-	-	-	-	-
Follow-up Headway	3.5	3.3	2.2	-	-	-
Pot Capacity-1 Maneuver	415	709	1220	-	-	-
Stage 1	727	-	-	-	-	-
Stage 2	718	-	-	-	-	-
Time blocked-Platoon, %	0	0	0	-	-	-
Mov Capacity-1 Maneuver	410	709	1220	-	-	-
Mov Capacity-2 Maneuver	410	-	-	-	-	-
Stage 1	727	-	-	-	-	-
Stage 2	709	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12	0.3	0
HCM LOS	B	-	-

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Cap, veh/h	1220	-	549	-	-
HCM Control Delay, s	7.981	0	12	-	-
HCM Lane V/C Ratio	0.01	-	0.06	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th-tile Q, veh	0.0	-	0.2	-	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	4.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	0	55	2	170	25	100	0	0	200	75
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade, %		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles, %	0	0	0	0	50	1	0	1	0	0	1	3
Mvmt Flow	0	0	0	59	2	181	27	106	0	0	213	80
Number of Lanes	0	0	0	0	1	0	0	1	0	0	1	0

Major/Minor	Minor 1			Major 1			Major 2		
Conflicting Flow All	413	453	106	293	0	0	106	0	0
Stage 1	160	160	-	-	-	-	-	-	-
Stage 2	253	293	-	-	-	-	-	-	-
Follow-up Headway	3.5	4.45	3.309	2.2	-	-	2.2	-	-
Pot Capacity-1 Maneuver	599	438	951	1280	-	-	1498	-	-
Stage 1	874	683	-	-	-	-	-	-	-
Stage 2	794	592	-	-	-	-	-	-	-
Time blocked-Platoon, %	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	586	# 0	951	1280	-	-	1498	-	-
Mov Capacity-2 Maneuver	586	# 0	-	-	-	-	-	-	-
Stage 1	855	# 0	-	-	-	-	-	-	-
Stage 2	794	# 0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.2	1.6	0
HCM LOS	B	-	-

Minor Lane / Major Mvmt	NBL	NBT	NBR	WBLn1	SBL	SBT	SBR
Cap, veh/h	1280	-	-	825	1498	-	-
HCM Control Delay, s	7.872	0	-	11.2	0	-	-
HCM Lane V/C Ratio	0.02	-	-	0.29	-	-	-
HCM Lane LOS	A	A	-	B	A	-	-
HCM 95th-tile Q, veh	0.1	-	-	1.2	0.0	-	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

HCM 2010 TWSC
40: Access Rd & IC 40 SB OFF Ramp

3/13/2013

Intersection	
Intersection Delay, s/veh	4.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	50	0	25	0	0	0	0	75	40	140	115	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free	Free	Free
RT Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade, %		0%			0%			0%			0%	
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	63	0	32	0	0	0	0	95	51	177	146	0
Number of Lanes	0	1	0	0	0	0	0	1	0	0	1	0

Major/Minor		Minor 2					Major 1			Major 2	
Conflicting Flow All	620	646	146			146	0	0	146	0	0
Stage 1	500	500	-			-	-	-	-	-	-
Stage 2	120	146	-			-	-	-	-	-	-
Follow-up Headway	3.5	4	3.3			2.2	-	-	2.2	-	-
Pot Capacity-1 Maneuver	455	393	906			1448	-	-	1448	-	-
Stage 1	613	546	-			-	-	-	-	-	-
Stage 2	910	780	-			-	-	-	-	-	-
Time blocked-Platoon, %	0	0	0			0	-	-	0	-	-
Mov Capacity-1 Maneuver	394	0	906			1448	-	-	1448	-	-
Mov Capacity-2 Maneuver	394	0	-			-	-	-	-	-	-
Stage 1	531	0	-			-	-	-	-	-	-
Stage 2	910	0	-			-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.2	0	4.3
HCM LOS	B	-	-

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	SBL	SBT	SBR
Cap, veh/h	1448	-	-	485	1448	-	-
HCM Control Delay, s	0	-	-	14.2	7.833	0	-
HCM Lane V/C Ratio	-	-	-	0.20	0.12	-	-
HCM Lane LOS	A	-	-	B	A	A	-
HCM 95th-tile Q, veh	0.0	-	-	0.7	0.4	-	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	1.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	35	5	10	80	100	40
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	None	None	None	None	None	None
Storage Length	0	0	40			0
Median Width	12			12	12	
Grade, %	0%			0%	0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles, %	0	0	0	0	0	3
Mvmt Flow	44	6	12	100	125	50
Number of Lanes	1	0	1	1	1	0

Major/Minor				Major 1	Major 2	
Conflicting Flow All	275	150	175	0	-	0
Stage 1	150	-	-	-	-	-
Stage 2	125	-	-	-	-	-
Follow-up Headway	3.5	3.3	2.2	-	-	-
Pot Capacity-1 Maneuver	719	902	1414	-	-	-
Stage 1	883	-	-	-	-	-
Stage 2	906	-	-	-	-	-
Time blocked-Platoon, %	0	0	0	-	-	-
Mov Capacity-1 Maneuver	712	902	1414	-	-	-
Mov Capacity-2 Maneuver	712	-	-	-	-	-
Stage 1	883	-	-	-	-	-
Stage 2	898	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.3	0.8	0
HCM LOS	B	-	-

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Cap, veh/h	1414	-	731	-	-
HCM Control Delay, s	7.569	-	10.3	-	-
HCM Lane V/C Ratio	0.01	-	0.07	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th-tile Q, veh	0.0	-	0.2	-	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection: 10: Access Rd & 2nd Ave (OR 99 and OR 234)/Blackwell Rd (OR 99)

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	15	63	136
Average Queue (ft)	1	17	66
95th Queue (ft)	7	47	115
Link Distance (ft)	923	1032	267
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 20: Access Rd & Lampman Rd

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	33	44
Average Queue (ft)	17	4
95th Queue (ft)	40	23
Link Distance (ft)	627	129
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 30: Access Rd & IC 40 NB OFF Ramp

Movement	WB	NB
Directions Served	LTR	LT
Maximum Queue (ft)	102	39
Average Queue (ft)	46	4
95th Queue (ft)	77	23
Link Distance (ft)	868	566
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 40: Access Rd & IC 40 SB OFF Ramp

Movement	EB	SB
Directions Served	LTR	LT
Maximum Queue (ft)	58	54
Average Queue (ft)	31	17
95th Queue (ft)	51	49
Link Distance (ft)	813	566
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 50: Old Stage Rd & Access Rd

Movement	EB	NB
Directions Served	LR	L
Maximum Queue (ft)	62	24
Average Queue (ft)	27	1
95th Queue (ft)	55	11
Link Distance (ft)	997	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		40
Storage Blk Time (%)		0
Queuing Penalty (veh)		0

Zone Summary

Zone wide Queuing Penalty: 0

HCM 2010 TWSC
63: Rogue R Hwy/OR 234 (OR 99) & OR 234 (OR 99) Realign

3/13/2013

Intersection realigned due to non-standard stop-control in order to produce HCM results.

Intersection	
Intersection Delay, s/veh	1.8

EB approach represents existing NB approach. SB approach represents existing EB approach.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	5	60	80	55	35	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	None	None	None	None	Yield	Yield
Storage Length	25			0	0	50
Median Width		12	12		12	
Grade, %		0%	0%		0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	0	4	0	0	0	0
Mvmt Flow	6	68	91	62	40	11
Number of Lanes	1	1	1	0	1	0

Major/Minor	Major 1		Major 2			
Conflicting Flow All	153	0	-	0	202	122
Stage 1	-	-	-	-	122	-
Stage 2	-	-	-	-	80	-
Follow-up Headway	2.2	-	-	-	3.5	3.3
Pot Capacity-1 Maneuver	1440	-	-	-	791	935
Stage 1	-	-	-	-	908	-
Stage 2	-	-	-	-	948	-
Time blocked-Platoon, %	0	-	-	-	0	0
Mov Capacity-1 Maneuver	1440	-	-	-	788	935
Mov Capacity-2 Maneuver	-	-	-	-	788	-
Stage 1	-	-	-	-	908	-
Stage 2	-	-	-	-	944	-

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	8.7
HCM LOS	-	-	A

Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Cap, veh/h	1440	-	-	-	1013
HCM Control Delay, s	7.51	-	-	-	8.7
HCM Lane V/C Ratio	0.00	-	-	-	0.05
HCM Lane LOS	A	-	-	-	A
HCM 95th-tile Q, veh	0.0	-	-	-	0.2

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	1.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	15	65	80	10	0	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	None	None	None	None	None	None
Storage Length	0			0	0	0
Median Width		0	0		12	
Grade, %		0%	0%		0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	17	74	91	11	0	23
Number of Lanes	0	1	1	0	1	0

Major/Minor	Major 1		Major 2			
Conflicting Flow All	102	0	-	0	205	97
Stage 1	-	-	-	-	97	-
Stage 2	-	-	-	-	108	-
Follow-up Headway	2.2	-	-	-	3.5	3.3
Pot Capacity-1 Maneuver	1503	-	-	-	788	965
Stage 1	-	-	-	-	932	-
Stage 2	-	-	-	-	921	-
Time blocked-Platoon, %	0	-	-	-	0	0
Mov Capacity-1 Maneuver	1503	-	-	-	779	965
Mov Capacity-2 Maneuver	-	-	-	-	779	-
Stage 1	-	-	-	-	932	-
Stage 2	-	-	-	-	910	-

Approach	EB	WB	SB
HCM Control Delay, s	1.4	0	8.8
HCM LOS	-	-	A

Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Cap, veh/h	1503	-	-	-	965
HCM Control Delay, s	7.423	0	-	-	8.8
HCM Lane V/C Ratio	0.01	-	-	-	0.02
HCM Lane LOS	A	A	-	-	A
HCM 95th-tile Q, veh	0.0	-	-	-	0.1

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

HCM Unsignalized Intersection Capacity Analysis
81: Main St./OR 99 EB Realign & OR 99 WB

3/13/2013

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	50	50	25	45	35	5
Sign Control	Free		Stop			Stop
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	56	56	28	50	39	6
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	0		167	0	203	139
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		167	0	203	139
tC, single (s)	4.1		6.5	6.2	7.1	6.5
tC, 2 stage (s)						
tF (s)	2.2		4.0	3.3	3.5	4.0
p0 queue free %	97		96	95	94	99
cM capacity (veh/h)	1636		705	1085	685	730

Intersection realigned due to non-standard stop-control in order to produce HCM results.

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	111	78	44
Volume Left	56	0	39
Volume Right	56	50	0
cSH	1636	910	690
Volume to Capacity	0.03	0.09	0.06
Queue Length 95th (ft)	3	7	5
Control Delay (s)	3.8	9.3	10.6
Lane LOS	A	A	B
Approach Delay (s)	3.8	9.3	10.6
Approach LOS		A	B

SB approach represents existing EB approach.

Intersection Summary			
Average Delay	6.9		
Intersection Capacity Utilization	22.1%	ICU Level of Service	A
Analysis Period (min)	15		

HCM 2010 TWSC
90: Main St & IC 43 NB OFF Ramp

3/13/2013

Intersection	
Intersection Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	0	5	0	25	10	45	0	0	15	40
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
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
Heavy Vehicles, %	0	0	0	0	0	0	0	3	0	0	0	0
Mvmt Flow	0	0	0	5	0	26	11	47	0	0	16	42
Number of Lanes	0	0	0	0	1	0	0	1	0	0	1	0

Major/Minor	Minor 1				Major 1		Major 2		
Conflicting Flow All	105	126	47	58	0	0	47	0	0
Stage 1	68	68	-	-	-	-	-	-	-
Stage 2	37	58	-	-	-	-	-	-	-
Follow-up Headway	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Capacity-1 Maneuver	898	768	1028	1559	-	-	1573	-	-
Stage 1	960	842	-	-	-	-	-	-	-
Stage 2	991	851	-	-	-	-	-	-	-
Time blocked-Platoon, %	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	892	0	1028	1559	-	-	1573	-	-
Mov Capacity-2 Maneuver	892	0	-	-	-	-	-	-	-
Stage 1	953	0	-	-	-	-	-	-	-
Stage 2	991	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.7	1.3	0
HCM LOS	A	-	-

Minor Lane / Major Mvmt	NBL	NBT	NBR	WBLn1	SBL	SBT	SBR
Cap, veh/h	1559	-	-	1003	1573	-	-
HCM Control Delay, s	7.325	0	-	8.7	0	-	-
HCM Lane V/C Ratio	0.01	-	-	0.03	-	-	-
HCM Lane LOS	A	A	-	A	A	-	-
HCM 95th-tile Q, veh	0.0	-	-	0.1	0.0	-	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

HCM 2010 TWSC
101: Main St (FREE)/Main St & IC 43 SB OFF Ramp

3/13/2013

Intersection realigned due to non-standard stop-control in order to produce HCM results.

Intersection		
Intersection Delay, s/veh	6.7	Two-way stop-control intersection used to produce operations for EB and SB approaches.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	45	5	0	0	0	0	0	10	5	15	5	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade, %		0%			0%			0%			0%	
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Heavy Vehicles, %	2	67	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	59	7	0	0	0	0	0	13	7	20	7	0
Number of Lanes	0	1	0	0	0	0	0	1	0	0	1	0

Major/Minor	Minor 2			Major 1			Major 2		
Conflicting Flow All	62	66	7	7	0	0	20	0	0
Stage 1	46	46	-	-	-	-	-	-	-
Stage 2	16	20	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.603	3.3	2.2	-	-	2.2	-	-
Pot Capacity-1 Maneuver	944	715	1081	1627	-	-	1609	-	-
Stage 1	976	744	-	-	-	-	-	-	-
Stage 2	1007	765	-	-	-	-	-	-	-
Time blocked-Platoon, %	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	933	# 0	1081	1627	-	-	1609	-	-
Mov Capacity-2 Maneuver	933	# 0	-	-	-	-	-	-	-
Stage 1	964	# 0	-	-	-	-	-	-	-
Stage 2	1007	# 0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.2	0	5.4
HCM LOS	A	-	-

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	SBL	SBT	SBR
Cap, veh/h	1627	-	-	933	1609	-	-
HCM Control Delay, s	0	-	-	9.2	7.265	0	-
HCM Lane V/C Ratio	-	-	-	0.07	0.01	-	-
HCM Lane LOS	A	-	-	A	A	A	-
HCM 95th-tile Q, veh	0.0	-	-	0.2	0.0	-	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

HCM 2010 AWSC

102: Main St (STOP Controlled)/Main St & IC 43 SB OFF Ramp

3/13/2013

Intersection realigned due to non-standard stop-control in order to produce HCM results.

Intersection		
Intersection Delay, s/veh	7.4	All-way stop-control intersection used to produce operations for NB approach.
Intersection LOS	A	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	45	5	0	0	0	0	0	10	5	15	5	0
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Heavy Vehicles, %	2	67	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	59	7	0	0	0	0	0	13	7	20	7	0
Number of Lanes	0	1	0	0	0	0	0	1	0	0	1	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	1	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	1	0	1
HCM Control Delay	7.6	7	7.4
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	SBLn1
Vol Left, %	0%	90%	75%
Vol Thru, %	67%	10%	25%
Vol Right, %	33%	0%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	15	50	20
LT Vol	10	5	5
Through Vol	5	0	0
RT Vol	0	45	15
Lane Flow Rate	20	66	26
Geometry Grp	1	1	1
Degree of Util (X)	0.021	0.077	0.031
Departure Headway (Hd)	3.834	4.194	4.18
Convergence, Y/N	Yes	Yes	Yes
Cap	929	855	853
Service Time	1.878	2.215	2.22
HCM Lane V/C Ratio	0.022	0.077	0.03
HCM Control Delay	7	7.6	7.4
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.1	0.2	0.1

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	5.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	10	0	0	5	2	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	None	None	None	None	None	None
Storage Length	0			0	0	0
Median Width		0	0		12	
Grade, %		0%	0%		0%	
Peak Hour Factor	0.38	0.38	0.38	0.38	0.38	0.38
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	26	0	0	13	5	8
Number of Lanes	0	1	1	0	1	0

Major/Minor	Major 1		Major 2			
Conflicting Flow All	13	0	-	0	60	7
Stage 1	-	-	-	-	7	-
Stage 2	-	-	-	-	53	-
Follow-up Headway	2.2	-	-	-	3.5	3.3
Pot Capacity-1 Maneuver	1619	-	-	-	952	1081
Stage 1	-	-	-	-	1021	-
Stage 2	-	-	-	-	975	-
Time blocked-Platoon, %	0	-	-	-	0	0
Mov Capacity-1 Maneuver	1619	-	-	-	937	1081
Mov Capacity-2 Maneuver	-	-	-	-	937	-
Stage 1	-	-	-	-	1021	-
Stage 2	-	-	-	-	959	-

Approach	EB	WB	SB
HCM Control Delay, s	7.3	0	8.6
HCM LOS	-	-	A

Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Cap, veh/h	1619	-	-	-	1018
HCM Control Delay, s	7.26	0	-	-	8.6
HCM Lane V/C Ratio	0.02	-	-	-	0.01
HCM Lane LOS	A	A	-	-	A
HCM 95th-tile Q, veh	0.1	-	-	-	0.0

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection: 24: Main St (STOP Controlled)/Main St & IC 43 SB OFF Ramp

Movement	EB	NB	SB
Directions Served	LTR	TR	LT
Maximum Queue (ft)	81	35	38
Average Queue (ft)	29	11	15
95th Queue (ft)	61	34	41
Link Distance (ft)	990	83	627
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Realigned intersections not used for queuing simulations.

Intersection: 60: Rogue River Hwy (OR 99 and OR 234) & N River Rd/State Hwy 234 (OR 99)

Movement	EB
Directions Served	T
Maximum Queue (ft)	39
Average Queue (ft)	21
95th Queue (ft)	47
Link Distance (ft)	117
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 62: N River Rd/Rogue River Hwy (OR 99 and OR 234)

Movement	EB	NB
Directions Served	R	LR
Maximum Queue (ft)	13	12
Average Queue (ft)	0	0
95th Queue (ft)	7	6
Link Distance (ft)	47	528
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 65: N River Rd

Movement	NB
Directions Served	L
Maximum Queue (ft)	31
Average Queue (ft)	5
95th Queue (ft)	23
Link Distance (ft)	47
Upstream Blk Time (%)	0
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 70: Rogue River Hwy (OR99 and OR234) & Lampman Rd

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	13	28
Average Queue (ft)	1	12
95th Queue (ft)	9	32
Link Distance (ft)	622	642
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 80: Main St & Rogue River Hwy (OR99)/Rogue River Hwy (OR99 and OR234)

Movement	EB	NB
Directions Served	TR	LR
Maximum Queue (ft)	44	40
Average Queue (ft)	26	24
95th Queue (ft)	48	37
Link Distance (ft)	1083	295
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 90: Main St & IC 43 NB OFF Ramp

Movement	WB	NB
Directions Served	LTR	LT
Maximum Queue (ft)	36	22
Average Queue (ft)	16	1
95th Queue (ft)	39	10
Link Distance (ft)	937	585
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 100: Main St & IC 43 SB OFF Ramp

Movement	EB	NB
Directions Served	LTR	TR
Maximum Queue (ft)	73	29
Average Queue (ft)	25	10
95th Queue (ft)	52	32
Link Distance (ft)	1135	60
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 110: Frontage Rd/Profetta Ln & Main St

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	6	26
Average Queue (ft)	0	2
95th Queue (ft)	4	15
Link Distance (ft)	1212	60
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Zone Summary

Zone wide Queuing Penalty: 0

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I-5 Exits 40 and 43 (Gold Hill)
Interchange Area Management Plans

DRAFT Technical Memorandum #4
Appendix C: ODOT Crash Analysis Reports

Prepared for

Oregon Department of Transportation, Region 3
3500 NW Stewart Parkway
Roseburg, Oregon 97470

Prepared by

David Evans and Associates, Inc.
2100 SW River Parkway
Portland, Oregon 97201

June 2013

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OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Profetta Lane from Main Street to Old Stage Road
January 1, 2007 through December 31, 2011

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:														
TOTAL														
FINAL TOTAL														

Disclaimer: A higher number of crashes are reported for the 2011 data file compared to previous years. This does not reflect an increase in annual crashes. The higher numbers 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.

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Main Street (Hwy 060) from Profetta Lane to Highway 234 (Hwy 271)
January 1, 2007 through December 31, 2011

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:														
TOTAL														
FINAL TOTAL														

Disclaimer: A higher number of crashes are reported for the 2011 data file compared to previous years. This does not reflect an increase in annual crashes. The higher numbers 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.

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CONTINUOUS SYSTEM CRASH LISTING

271 SAMS VALLEY

OR 99 (Hwy 060) MP 14.45 to 14.50 and OR 234 (Hwy 271) MP -0.30 to 0.16
January 1, 2007 through December 31, 2011

SER# INVEST	SPEED	ALCOHOL	DRUGS	SCHOOL	WORK	DATE DAY TIME	COUNTY CITY URBAN AREA	RD# COMPNT MLG MILEPNT	FC TYP	CONN # FIRST SECOND	STREET STREET	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CNTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
02242	N	N	N	N	N	11/24/2011	JACKSON	1	06			BRIDGE		N	Y	RAIN	FIX OBJ	01	NONE	STRGHT										046,029	32,25
STATE						Thu		0	0			UN	(NONE)	UNKNOWN	N	WET	FIX		PRVTE	W E									000	046,029	25
						3P		0.04				01			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	33	M	OR-Y		052,081	017		32
													(02)													OR<25					
01550	N	N	N			08/18/2011	JACKSON	1	06			BRIDGE		N	Y	CLR	FIX OBJ	01	NONE	STRGHT										046,092	10,26
NONE						Thu		0	0			UN	(NONE)	UNKNOWN	N	DRY	FIX		PRVTE	E W									000	046,092	26
						5P		0.06				06			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	73	M	OR-Y		080	017		10
													(02)													OR<25					

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Lampman Road (Hwy 001 Frontage Rd) between 2 intersections with OR 99 plus 265 ft to the east
January 1, 2007 through December 31, 2011

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:														
TOTAL														
FINAL TOTAL														

Disclaimer: A higher number of crashes are reported for the 2011 data file compared to previous years. This does not reflect an increase in annual crashes. The higher numbers 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.

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

CONTINUOUS SYSTEM CRASH LISTING

001 PACIFIC

I-5 (Hwy 001) MP 42.00 to 44.50 plus 265 feet on side streets

January 1, 2007 through December 31, 2011

SER# INVEST	S P E D	A L C	R U S	S G H	W O R K	DATE DAY TIME	COUNTY CITY URBAN AREA	RD# COMPNT MLG MILEPNT	FC TYP	CONN # FIRST SECOND	STREET STREET	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF- CNTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00205	Y	N	N			01/16/2007	JACKSON	1	01			STRGHT		N		N	SNOW S-STRGHT	01	NONE	STRGHT										124	01,13
NO RPT						Tue		0	0			UN	(RSDMD)	MEDIAN BAR		N	ICE SS-O		PRVTE	N S									000	124	00
						6P		42.00				05				N	DARK PDO		PSNGR CAR		01	DRVR	NONE	37	M	OR-Y		045,047	017		01,13
													(04)													OR<25					
																		02	NONE	STRGHT											
																			PRVTE	N S									000		00
																			PSNGR CAR		01	DRVR	NONE	44	M	OR-Y		000	000		00
																										OR>25					
01805	N	N	N	N	N	09/12/2007	JACKSON	1	01			STRGHT		N		N	CLR S-1STOP	01	NONE	STRGHT											07
STATE						Wed		0	0			UN	(RSDMD)	MEDIAN BAR		N	DRY REAR		PRVTE	N S									000		00
						2P		42.00				05				N	DAY PDO		PSNGR CAR		01	DRVR	NONE	74	M	OR-Y		043	000		07
													(04)													OR>25					
																		02	NONE	STOP											
																			PRVTE	N S									011		00
																			PSNGR CAR		01	DRVR	NONE	27	M	OR-Y		000	000		00
																										OR<25					
02327	N	N	N	N	N	12/07/2011	JACKSON	1	01			STRGHT		N		N	CLR S-1STOP	01	NONE 0	STRGHT										092	07,26
STATE						Wed		0	0			UN	(RSDMD)	ONE-WAY		N	DRY REAR		PRVTE	N S									000		00
						5P		42.00				05				N	DARK PDO		PSNGR CAR		01	DRVR	NONE	49	F	OR-Y		043,026	000		07
													(04)													OR<25					
																		02	NONE 0	STOP											
																			PRVTE	N S									011	092	26
																			PSNGR CAR		01	DRVR	NONE	22	M	OR-Y		000	000		00
																										OR>25					
01206	N	N	N	N	N	07/23/2008	JACKSON	1	01			STRGHT		N		N	CLR ANIMAL	01	NONE	STRGHT										035	12
STATE						Wed		0	0			UN	(RSDMD)	MEDIAN BAR		N	DRY OTH		PRVTE	N S									000	035	00
						7A		42.00				06				N	DAY PDO		PSNGR CAR		01	DRVR	NONE	42	F	OR-Y		000	000		12
													(04)													OR<25					
00446	N	N	N	N	N	03/07/2009	JACKSON	1	01			STRGHT		N		Y	CLD FIX OBJ	01	NONE	STRGHT										044,029	10,25
STATE						Sat		0	0			UN	(RSDMD)	MEDIAN BAR		N	DRY FIX		PRVTE	N S									088	044,029	25
						8A		42.02				08				N	DAY INJ		PSNGR CAR		01	DRVR	INJC	24	F	OR-Y		081	017		10
													(04)													OR>25					
02210	Y	N	N	N	N	12/25/2008	JACKSON	1	01			STRGHT		N		Y	CLD FIX OBJ	01	NONE	STRGHT										044	01
STATE						Thu		0	0			UN	(RSDMD)	MEDIAN BAR		N	ICE FIX		PRVTE	N S									001	044	00
						6A		42.45				05				N	DARK PDO		PSNGR CAR		01	DRVR	NONE	26	M	OR-Y		047,081	017		01
													(04)													OR<25					
01750	Y	N	N	N	N	09/17/2010	JACKSON	2	01			STRGHT		N		N	RAIN S-STRGHT	01	NONE	STRGHT										044	01
STATE						Fri		0	0			UN	(RSDMD)	MEDIAN BAR		N	WET SS-O		PRVTE	S N									001	044	00
						4P		42.60				03				N	DAY INJ		PSNGR CAR		01	DRVR	NONE	26	F	OR-Y		047,080	017		01
													(04)													OR<25					
																		02	NONE	STRGHT											
																			PRVTE	S N									000		00
																			PSNGR CAR		01	DRVR	INJC	67	M	OR-Y		000	000		00
																										OR<25					

001 PACIFIC

I-5 (Hwy 001) MP 42.00 to 44.50 plus 265 feet on side streets
January 1, 2007 through December 31, 2011

SER# INVEST	S P E D	A L C	R S U G S	C H L	W O R K	DATE DAY TIME	COUNTY CITY URBAN AREA	RD# FC COMPNT MLG TYP MILEPNT	CONN # FIRST STREET SECOND STREET	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CNTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
																			02	PSNG	INJC	58	F			000	000		00
00218	N	N	N			01/16/2007	JACKSON	2 01		STRGHT		N		N	SNOW S-1STOP	01	NONE 1	STRGHT											07
NONE						Tue		0 0		UN	(RSDMD)	UNKNOWN		N	SNO REAR		PRVTE	S N									000		00
						11A		42.75		03				N	DAY PDO		PSNGR CAR		01	DRVR	NONE	00	F	UNK		026	000		07
											(04)													UNK					
																02	NONE	STOP											
																	PRVTE	S N									011		00
																	PSNGR CAR		01	DRVR	NONE	62	M	OR-Y		000	000		00
																								OR<25					
00461	N	N	N			02/26/2007	JACKSON	1 01		STRGHT		N		Y	CLD FIX OBJ	01	NONE	STRGHT										044,124	10
STATE						Mon		0 0		UN	(RSDMD)	MEDIAN BAR		N	ICE FIX		PRVTE	N S									000	044,124	00
						9P		42.80		05				N	DARK INJ		PSNGR CAR		01	DRVR	INJC	28	F	OR-Y		081	017		10
											(04)													OR<25					
00462	Y	N	N			02/26/2007	JACKSON	1 01		STRGHT		N		N	CLD S-STRGHT	01	NONE	STRGHT										044	01,10
STATE						Mon		0 0		UN	(RSDMD)	MEDIAN BAR		N	ICE REAR		PRVTE	N S									001	044	00
						9P		42.80		06				N	DARK PDO		PSNGR CAR		01	DRVR	NONE	46	F	OR-Y		042	000		01
											(04)													OR<25					
																02	NONE 1	STRGHT											
																	PRVTE	N S									000		00
																	SEMI TOW		01	DRVR	NONE	00	U	UNK		080	000		10
																								UNK					
01984	N	N	N			10/15/2011	JACKSON	2 01		STRGHT		N		N	CLR S-STRGHT	01	NONE	STRGHT											13
NONE						Sat		0 0		UN	(RSDMD)	MEDIAN BAR		N	DRY SS-O		PRVTE	S N									000		00
						8P		43.00		03				N	DARK PDO		PSNGR CAR		01	DRVR	NONE	00	M	UNK		045	000		13
											(04)													UNK					
																02	NONE	STRGHT											
																	PRVTE	S N									000		00
																	PSNGR CAR		01	DRVR	NONE	19	F	OTH-Y		000	000		00
																								N-RES					
00459	Y	N	N			02/26/2007	JACKSON	2 01		STRGHT		N		Y	SNOW FIX OBJ	01	NONE	STRGHT										044,124	01
NO RPT						Mon		0 0		UN	(RSDMD)	MEDIAN BAR		N	ICE FIX		PRVTE	S N									000	044,124	00
						9P		43.00		04				N	DARK PDO		PSNGR CAR		01	DRVR	NONE	46	F	OR-Y		047,081	017		01
											(04)													OR>25					
																			02	PSNG	NO<5	04	M			000	000		00
00995	N	N	N	N	N	06/06/2010	JACKSON	2 01		STRGHT		N		N	CLD ANIMAL	01	NONE	STRGHT										035	12
STATE						Sun		0 0		UN	(RSDMD)	MEDIAN BAR		N	DRY OTH		PRVTE	S N									031	035	00
						11P		43.00		04				N	DARK PDO		PSNGR CAR		01	DRVR	NONE	42	F	OR-Y		000	000		12
											(04)													OR<25					
02213	N	N	N	N	N	11/18/2010	JACKSON	2 01		STRGHT		N		N	RAIN S-STRGHT	01	NONE 1	STRGHT											13
STATE						Thu		0 0		UN	(RSDMD)	MEDIAN BAR		N	WET SS-O		PRVTE	S N									000		00
						9A		43.00		04				N	DAY PDO		SEMI TOW		01	DRVR	NONE	30	M	OTH-Y		045,080	000		13
											(04)													N-RES					

001 PACIFIC

I-5 (Hwy 001) MP 42.00 to 44.50 plus 265 feet on side streets
January 1, 2007 through December 31, 2011

SER# INVEST	S P E D	A L C	R S L	U G S	C H L	O R K	DATE DAY TIME	COUNTY CITY URBAN AREA	RD# COMPNT MLG MILEPNT	FC TYP	CONN # FIRST STREET SECOND STREET	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CNTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
																		02	NONE	STRGHT											
																			PUBLC	S N									000		00
																			PSNGR CAR		01	DRVR	NONE	44	M	OR-Y		000	000		00
																										OR<25					
00961	N	N	N	N	N		05/30/2009	JACKSON	1	01		STRGHT		N	N	CLR	NON-COLL	01	NONE	STRGHT											10
STATE							Sat		0	0		UN	(RSDMD)	MEDIAN BAR	N	DRY	NCOL		PRVTE	N S									000		00
							7A		43.00			05			N	DAY	INJ		MTRCYCLE		01	DRVR	INJB	48	M	OR-Y		080	028		10
													(04)													OR<25					
01373	N	N	N	N	N		07/25/2011	JACKSON	1	01		STRGHT		N	N	CLR	ANIMAL	01	NONE	STRGHT										035	12
STATE							Mon		0	0		UN	(RSDMD)	MEDIAN BAR	N	DRY	OTH		PRVTE	N S									000	035	00
							10P		43.00			05			N	DARK	PDO		PSNGR CAR		01	DRVR	NONE	16	M	OR-Y		000	000		12
													(04)													OR<25					
01405	N	N	N	N	N		07/30/2011	JACKSON	2	01		STRGHT		N	Y	CLR	FIX OBJ	01	NONE	STRGHT										044,043,029	10,25
STATE							Sat		0	0		UN	(RSDMD)	MEDIAN BAR	N	DRY	FIX		PRVTE	S N									000	044,043,029	25
							8A		43.10			04			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	20	M	OTH-Y		080	017		10
													(04)													N-RES					
01968	N	Y	N	N	N		10/07/2009	JACKSON	2	01		STRGHT		N	Y	CLR	FIX OBJ	01	NONE 0	STRGHT										044	33
STATE							Wed		0	0		UN	(DIVMD)	UNKNOWN	N	DRY	FIX		PRVTE	S N									029	044	00
							1A		43.77			06			N	DARK	PDO		OTHER		01	DRVR	NONE	21	M	OR-Y		051	017		33
													(04)													OR<25					
01625	N	N	N	N	N		08/29/2011	JACKSON	2	01		STRGHT		N	N	CLR	ANIMAL	01	NONE	STRGHT										035	12
STATE							Mon		0	0		UN	(DIVMD)	UNKNOWN	N	DRY	OTH		PRVTE	S N									000	035	00
							6A		43.81			04			N	DAWN	INJ		MTRCYCLE		01	DRVR	INJB	58	M	OR-Y		000	000		12
													(04)													OR<25					
00147	N	N	N	N	N		01/23/2011	JACKSON	1	01		STRGHT		N	Y	CLR	FIX OBJ	01	NONE	STRGHT										096,029	10,25
STATE							Sun		0	0		UN	(DIVMD)	UNKNOWN	N	DRY	FIX		PRVTE	N S									031	096,029	25
							11A		43.85			06			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	21	F	OTH-Y		080	017		10
													(04)													N-RES					
01508	N	N	N	N	N		08/10/2010	JACKSON	2	01		STRGHT		N	N	CLR	ANIMAL	01	NONE	STRGHT										035	12
STATE							Tue		0	0		UN	(DIVMD)	UNKNOWN	N	DRY	OTH		PRVTE	S N									000	035	00
							9P		43.90			03			N	DARK	PDO		PSNGR CAR		01	DRVR	NONE	65	F	OR-Y		000	000		12
													(04)													OR>25					
02026	N	N	N	N	N		10/11/2009	JACKSON	1	01		STRGHT		N	N	CLR	S-1STOP	01	NONE 0	STRGHT										089	07
STATE							Sun		0	0		UN	(DIVMD)	UNKNOWN	N	DRY	REAR		PRVTE	N S									000		00
							9P		44.00			03			N	DARK	PDO		PSNGR CAR		01	DRVR	NONE	25	M	OTH-Y		026	000		07
													(04)													N-RES					
																		02	NONE 0	STOP											
																			PRVTE	N S									011		00
																			PSNGR CAR		01	DRVR	NONE	31	F	OR-Y		000	000		00
																										OR<25					
02426	N	N	Y	N	N		12/15/2010	JACKSON	2	01		STRGHT		N	N	CLR	S-STRGHT	01	NONE	STRGHT											33,07,13
STATE							Wed		0	0		UN	(DIVMD)	UNKNOWN	N	DRY	REAR		PRVTE	S N									000		00
							11A		44.00			03			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	59	M	OR-Y		051,043,045	000		33,07,13
													(04)													OR<25					

001 PACIFIC

I-5 (Hwy 001) MP 42.00 to 44.50 plus 265 feet on side streets
January 1, 2007 through December 31, 2011

SER# INVEST	S P E D	A R L S	U C G H	O S L K	W R K	DATE DAY TIME	COUNTY CITY URBAN AREA	RD# COMPNT MLG MILEPNT	FC TYP	CONN # FIRST STREET SECOND STREET	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CNTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
																	02	NONE 1 PRVTE SEMI TOW	STRGHT S N									000		00
																				01	DRVR	NONE	35	M	OTH-Y N-RES		000	000		00
01977	Y	N	N	N	N	10/17/2010	JACKSON	2	01		STRGHT		N		Y	CLR FIX OBJ	01	NONE	STRGHT										079,101	01
STATE						Sun		0	0		UN	(DIVMD)	UNKNOWN		N	DRY FIX		PRVTE	S N									007	079,101	00
						12A		44.00			06				N	DARK PDO		PSNGR CAR		01	DRVR	NONE	53	M	OR-Y OR<25		047,080	017		01
												(04)																		
01553	N	N	N	N	N	08/18/2007	JACKSON	2	01		STRGHT		N		N	CLR OTH OBJ	01	NONE	STRGHT										081,062	12
STATE						Sat		0	0		UN	(DIVMD)	UNKNOWN		N	DRY FIX		PRVTE	S N									000	081,062	00
						9A		44.05			03				N	DAY INJ		PSNGR CAR		01	DRVR	INJB	59	M	OTH-Y N-RES		000	000		12
												(04)																		
																				02	PSNG	INJA	54	F			000	000		00
01922	N	N	N	N	N	10/04/2008	JACKSON	1	01		STRGHT		N		N	RAIN ANIMAL	01	NONE	STRGHT										035	12
STATE						Sat		0	0		UN	(RSDMD)	MEDIAN BAR		N	WET OTH		PRVTE	N S									000	035	00
						2A		44.10			05				N	DARK PDO		PSNGR CAR		01	DRVR	NONE	31	M	OR-Y OR<25		000	000		12
												(04)																		
00481	N	N	N			03/08/2007	JACKSON	1	01		STRGHT		N		Y	CLD FIX OBJ	01	NONE	STRGHT										079,062,029	10,25
STATE						Thu		0	0		UN	(DIVMD)	UNKNOWN		N	DRY FIX		PRVTE	N S									088	079,062,029	25
						7P		44.15			01				N	DARK INJ		PSNGR CAR		01	DRVR	INJB	51	F	OR-Y OR<25		081	017		10
												(02)																		
00925	N	Y	N	N	N	05/14/2007	JACKSON	1	01		STRGHT		N		N	CLR S-STRGHT	01	NONE	STRGHT											13
STATE						Mon		0	0		UN	(DIVMD)	UNKNOWN		N	DRY SS-O		PRVTE	N S									088		00
						8P		44.25			03				N	DAY INJ		PSNGR CAR		01	DRVR	NONE	42	M	OR-Y OR<25		080,045	017		13
												(04)																		
																	02	NONE PRVTE	STRGHT N S									000		00
																		PSNGR CAR		01	DRVR	INJC	45	M	OR-Y OR<25		000	000		00
01055	N	N	N	N	N	05/17/2007	JACKSON	1	01		CURVE		N		Y	CLR FIX OBJ	01	NONE	STRGHT										079,010	27
STATE						Thu		0	0		UN	(DIVMD)	UNKNOWN		N	DRY FIX		PRVTE	N S									088	079,010	00
						8P		44.50			01				N	DUSK INJ		PSNGR CAR		01	DRVR	INJC	22	F	OR-Y OR<25		016,083,081	038		27
												(04)																		
00976	N	N	N	N	N	06/07/2010	JACKSON	1	01		STRGHT		N		Y	CLR FIX OBJ	01	NONE	STRGHT										079,010	16
STATE						Mon		0	0		UN	(DIVMD)	UNKNOWN		N	DRY FIX		PRVTE	N S									088	079,010	00
						9P		44.50			06				N	DARK INJ		PSNGR CAR		01	DRVR	INJC	66	F	OR-Y OR<25		083,081	025		16
												(04)																		

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

I-5 (Hwy 001) Rock Point Interchange #43 NB and SB ramps
January 1, 2007 through December 31, 2011

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:														
TOTAL														
FINAL TOTAL														

Disclaimer: A higher number of crashes are reported for the 2011 data file compared to previous years. This does not reflect an increase in annual crashes. The higher numbers 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.

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

CONTINUOUS SYSTEM CRASH LISTING

001 PACIFIC

Access Road from Old Stage Road to OR 99/Hwy 234/ Blackwell Road

January 1, 2007 through December 31, 2011

SER# INVEST	SPEED	ALCOHOL	DRUG	SCHOOL	WORK	DATE DAY TIME	COUNTY CITY URBAN AREA	RD# COMPNT MLG MILEPNT	FC TYP	CONN # FIRST SECOND	STREET STREET	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CNTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00794	Y	N	N	N	N	05/03/2009	JACKSON	1	07			CURVE		N	Y	CLR	FIX OBJ	01	NONE	STRGHT										042,062	32,01
COUNTY						Sun		3	0			UN	(NONE)	UNKNOWN	N	DRY	FIX		PRVTE	S N									088	042,062	00
						10P		40.86				01			N	DARK	INJ		PSNGR CAR		01	DRVR	INJC	19	M	OR-Y		047,081,052	017		32,01
													(02)													OR<25					
																					02	PSNG	INJC	16	F			000	000		00
01684	N	N	N			09/28/2009	JACKSON	1	09			STRGHT		N	N	CLR	S-1STOP	01	NONE	STRGHT										003	27
NO RPT						Mon		3	0			UN	(NONE)	UNKNOWN	N	DRY	REAR		PRVTE	W E									000		00
						4P		40.91				03			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	67	M	OR-Y		016,026	038	003	27
													(02)													OR<25					
																		02	NONE	STOP											
																			PRVTE	W E									011		00
																			PSNGR CAR		01	DRVR	NONE	31	M	OR-Y		000	000		00
																										OR<25					
02311	Y	Y	N	N	N	09/21/2009	JACKSON	1	09			CURVE		N	Y	CLR	FIX OBJ	01	NONE	STRGHT										079,010,001	01
COUNTY						Mon		3	0			UN	(NONE)	NONE	N	DRY	FIX		PRVTE	N S									088	079,010	00
						4A		40.96				06			N	DARK	FAT		PSNGR CAR		01	DRVR	KILL	39	M	OR-Y		047,081	017	001	01
													(02)													OR<25					
																					02	PSNG	INJB	29	F			000	000		00

271 SAMS VALLEY

Access Road from Old Stage Road to OR 99/Hwy 234/ Blackwell Road
January 1, 2007 through December 31, 2011

SER# INVEST	S P E D	A L C	R U C S	S G H L	W O R K	DATE DAY TIME	COUNTY CITY URBAN AREA	RD# COMPNT MLG MILEPNT	FC TYP	CONN # FIRST SECOND	STREET STREET	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CNTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
02352	N	N	N	N	N	11/04/2009	JACKSON	1	06			BRIDGE		N	Y	CLR	FIX OBJ	01	FIRE 0	STRGHT										092,046	26
NONE						Wed		0	Y			UN	(NONE)	UNKNOWN	N	DRY	FIX		PUBLC	S N								000	092,046	26
						6P		2.75				05			N	DUSK	PDO		TRUCK		01	DRVR	NONE	45	M	OR-Y	000	000		00
													(02)													OR-?				
01028	N	N	N	N	N	06/30/2008	JACKSON	1	06			INTER	3-LEG	N	N	CLR	OVERTURN	01	NONE	STRGHT										092	26
STATE						Mon		0	Y			W		UNKNOWN	N	DRY	NCOL		PRVTE	W E								007	092	26
						5P		2.76				06	0		N	DAY	INJ		MTRCYCLE		01	DRVR	INJB	43	M	OR-Y	000	000		00
																										OR<25				
00065	N	Y	N			01/21/2007	JACKSON	1	06			CURVE		N	Y	CLR	FIX OBJ	01	NONE	STRGHT										058,062	32
COUNTY						Sun		0	Y			UN	(NONE)	UNKNOWN	N	DRY	FIX		PRVTE	E W								000	058,062	00
						7P		2.85				01			N	DARK	PDO		PSNGR CAR		01	DRVR	NONE	59	M	OR-Y	081,052	017		32
													(02)													OR<25				
01052	N	N	N			06/14/2009	JACKSON	1	06			STRGHT		N	N	CLR	S-OTHER	01	NONE	STRGHT											08
NO RPT						Sun		0	Y			UN	(NONE)	UNKNOWN	N	DRY	TURN		PRVTE	S N								000		00
						4P		2.88				03			N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	35	M	OTH-Y	000	000		00
													(02)													N-RES				
																		02	NONE	U-TURN											
																			PRVTE	S S								051		00
																			PSNGR CAR		01	DRVR	INJC	27	M	OR-Y	008	000		08
																										OR<25				
00480	N	N	N	N	N	03/05/2008	JACKSON	1	06			INTER	CROSS	N	Y	CLR	FIX OBJ	01	NONE 1	TURN-R										043	08
STATE						Wed		0	Y			E		STOP SIGN	N	DRY	FIX		PRVTE	S E								000	043	00
						3P		3.02				05	0		N	DAY	PDO		SEMI TOW		01	DRVR	NONE	47	M	OTH-Y	002	000		08
																										N-RES				
00430	N	N	N			02/23/2007	JACKSON	1	06			INTER	CROSS	N	N	FOG	S-1STOP	01	NONE	STRGHT											07
NO RPT						Fri		0	Y			W		UNKNOWN	N	ICE	REAR		PRVTE	W E								001		00
						7A		3.02				06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	35	F	OR-Y	026	000		07
																										OR<25				
																		02	NONE	STOP											
																			PRVTE	W E								012		00
																			PSNGR CAR		01	DRVR	INJC	38	M	OR-Y	000	000		00
																										OR<25				

486 GOLD HILL SPUR

Access Road from Old Stage Road to OR 99/Hwy 234/ Blackwell Road
January 1, 2007 through December 31, 2011

SER# INVEST	S P E D	A L C	R S U C S L	W O G H L K	DATE DAY TIME	COUNTY CITY URBAN AREA	RD# FC COMPNT MLG TYP MILEPNT	CONN # FIRST STREET SECOND STREET	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CNTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
02004	N	N	N	N	10/19/2011	JACKSON	1 06		INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 0	TURN-R										079	08
STATE					Wed		0 0		E		STOP SIGN	N	DRY	TURN		PRVTE	S E								000	079	00
					5P		2.76		05	0		N	DUSK	INJ		MTRCYCLE		01	DRVR	INJB	61	M	OR-Y	001,080	000		08
																							OR<25				
															02	NONE 0	STRGHT										
																PRVTE	E W								000		00
																PSNGR CAR		01	DRVR	NONE	72	M	OR-Y	000	000		00
																							OR<25				
02425	N	N	N		12/19/2011	JACKSON	1 06		INTER	4-LEG	N	N	CLR	ANGL-OTH	01	NONE 0	TURN-L											04
NO RPT					Mon		0 0		CN		STOP SIGN	N	DRY	TURN		PRVTE	S W								000		00
					4P		2.76		04	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	81	F	OR-Y	021	000		03
																							OR<25				
															02	NONE 0	STRGHT										
																PRVTE	W E								000		00
																PSNGR CAR		01	DRVR	INJC	66	F	OR-Y	000	000		00
																							OR<25				
01989	N	N	N	N	10/15/2010	JACKSON	1 06		INTER	CROSS	N	N	CLR	O-1TURN	01	NONE	STRGHT											08
STATE					Fri		0 0		CN		UNKNOWN	N	DRY	TURN		PRVTE	E W								000		00
					2P		3.02		02	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJB	60	M	OR-Y	000	000		00
																							OR<25				
																		02	PSNG	INJA	52	F		000	000		00
															02	NONE	TURN-L										
																PRVTE	W N								000		00
																PSNGR CAR		01	DRVR	NONE	64	M	OTH-Y	008	000		04
																							N-RES				

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

CONTINUOUS SYSTEM CRASH LISTING

001 PACIFIC

I-5 (Hwy 001) MP 40.00 to 41.50

January 1, 2007 through December 31, 2011

SER# INVEST	SPEED	ALCOHOL	DRUG	SCHOOL	WORK	DATE DAY TIME	COUNTY CITY URBAN AREA	RD# COMPNT MLG MILEPNT	FC TYP	CONN # FIRST STREET SECOND STREET	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CNTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00747	N	N	N			04/23/2009	JACKSON	2	01		STRGHT		N	N	CLR	OTH OBJ	01	NONE	STRGHT										101	12
NONE						Thu		0	0		UN	(DIVMD)	UNKNOWN	N	DRY	FIX		PRVTE	S N								000	101	00
						7P		40.00			03			N	DUSK	PDO		PSNGR CAR		01	DRVR	NONE	23	F	OR-Y		000	000		12
												(04)													OR<25					
02253	N	N	N			11/18/2011	JACKSON	2	01		STRGHT		N	N	RAIN	S-STRGHT	01	NONE	STRGHT										028,080	10,24
NONE						Fri		0	0		UN	(RSDMD)	MEDIAN BAR	N	WET	OTH		PRVTE	S N								000	028	24
						2P		40.00			03			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		085	000		10
												(04)													UNK					
																	02	NONE	STRGHT											
																		PRVTE	S N								000	080	00
																		PSNGR CAR		01	DRVR	NONE	21	F	OR-Y		000	000		00
																									OR>25					
00418	N	N	N	N	N	02/27/2009	JACKSON	2	01		STRGHT		N	Y	CLR	FIX OBJ	01	NONE 1	STRGHT										044,035	10
STATE						Fri		0	0		UN	(RSDMD)	MEDIAN BAR	N	DRY	FIX		PRVTE	N S								007	044,035	00
						3A		40.00			04			N	DARK	PDO		SEMI TOW		01	DRVR	NONE	40	M	OR-Y		081	017		10
												(04)													OR<25					
00554	N	N	N	N	N	03/23/2009	JACKSON	2	01		STRGHT		N	N	RAIN	S-STRGHT	01	NONE	STRGHT											07
STATE						Mon		0	0		UN	(RSDMD)	MEDIAN BAR	N	WET	REAR		PRVTE	S N								000		00
						5P		40.00			04			N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	27	M	OR-Y		042,043	000		07
												(04)													OR>25					
																	02	NONE	STRGHT											
																		PRVTE	S N								006		00
																		PSNGR CAR		01	DRVR	NONE	30	M	OR-Y		000	000		00
																									OR<25					
00419	N	N	N	N	N	02/27/2009	JACKSON	1	01		STRGHT		N	N	CLR	OTH OBJ	01	NONE	STRGHT										101,089	12
STATE						Fri		0	0		UN	(RSDMD)	MEDIAN BAR	N	DRY	FIX		PRVTE	N S								088	101,089	00
						3A		40.00			05			N	DARK	INJ		PSNGR CAR		01	DRVR	INJB	42	M	OR-Y		000	000		12
												(04)													OR<25					
00420	N	N	N	N	N	02/27/2009	JACKSON	1	01		STRGHT		N	N	CLR	OTH OBJ	01	NONE 1	STRGHT										101,089,092	12,26
STATE						Fri		0	0		UN	(RSDMD)	MEDIAN BAR	N	DRY	FIX		PRVTE	N S								007	101,089,092	26
						3A		40.00			05			N	DARK	PDO		SEMI TOW		01	DRVR	NONE	52	M	OTH-Y		000	000		12
												(04)													N-RES					
01349	N	N	N	N	N	07/09/2007	JACKSON	1	01		STRGHT		N	Y	CLR	FIX OBJ	01	NONE	STRGHT										079,058,029	10,25
STATE						Mon		0	0		UN	(RSDMD)	MEDIAN BAR	N	DRY	FIX		PRVTE	N S								088	079,058,029	25
						7P		40.00			08			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	24	M	OR-Y		081	017		10
												(04)													OR<25					
00526	Y	N	N	N	N	03/27/2008	JACKSON	1	01		STRGHT		N	Y	CLR	FIX OBJ	01	NONE	STRGHT										079	01
STATE						Thu		0	0		UN	(RSDMD)	MEDIAN BAR	N	ICE	FIX		PRVTE	N S								001	079	00
						5A		40.00			08			N	DARK	INJ		PSNGR CAR		01	DRVR	INJC	58	F	OR-Y		047,081	017		01
												(04)													OR<25					
01115	N	N	N	N	N	06/20/2011	JACKSON	1	01		STRGHT		N	Y	CLR	FIX OBJ	01	NONE 1	STRGHT										062	10
STATE						Mon		0	0		UN	(RSDMD)	UNKNOWN	N	DRY	FIX		PRVTE	N S								000	062,010	00
						8A		40.10			08			N	DAY	INJ		PSNGR CAR		01	DRVR	INJB	33	M	OR-Y		081	017		10
												(04)													OR>25					

001 PACIFIC

I-5 (Hwy 001) MP 40.00 to 41.50
January 1, 2007 through December 31, 2011

SER# INVEST	S P E D	A L C	R S L	U G S	C H K	W O R	DATE DAY TIME	COUNTY CITY URBAN AREA	RD# COMPNT MLG MILEPNT	FC TYP	CONN # FIRST STREET SECOND STREET	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CNTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00535	N	N	N	N	N		03/25/2011	JACKSON	2	01		STRGHT		N		N CLD	S-STRGHT	01	NONE	STRGHT										079	32,13
STATE							Fri		0	0		UN	(RSDMD)	MEDIAN BAR		N WET	SS-O		PRVTE	S N									000	079	00
							7P		40.17			04				N DUSK	PDO		PSNGR CAR		01	DRVR	NONE	19	F	OR-Y		052,045,080	017		32,13
													(04)													OR<25					
																					02	PSNG	NO<5	03	F			000	000		00
																		02	NONE	STRGHT											
																			PRVTE	S N									000		00
																			PSNGR CAR		01	DRVR	NONE	68	M	OR-Y		000	000		00
																										OR<25					
00328	Y	N	N	N	N		02/09/2009	JACKSON	1	01		STRGHT		N		Y CLD	FIX OBJ	01	NONE	STRGHT										043,010	01
STATE							Mon		0	0		UN	(RSDMD)	MEDIAN BAR		N ICE	FIX		PRVTE	N S									001	043,010	00
							4A		40.20			08				N DARK	INJ		PSNGR CAR		01	DRVR	INJC	52	F	OR-Y		047,081	017		01
													(04)													OR<25					
00234	Y	N	N	N	N		01/30/2008	JACKSON	1	01		STRGHT		N		Y SNOW	FIX OBJ	01	NONE	STRGHT										043,010,092	01,26
STATE							Wed		0	0		UN	(RSDMD)	MEDIAN BAR		N ICE	FIX		PRVTE	N S									001	043,010,092	26
							6A		40.23			08				N DARK	PDO		PSNGR CAR		01	DRVR	NONE	77	M	OR-Y		081,047	017		01
													(04)													OR<25					
01182	N	N	N		Y		08/13/2009	JACKSON	2	01		GRADE		N		N CLR	S-STRGHT	01	NONE 0	STRGHT										010	10
STATE							Thu		0	0		UN	(RSDMD)	UNKNOWN		N DRY	REAR		PRVTE	S N									000	010	00
							10A		40.24			03				N DAY	FAT		PSNGR CAR		01	DRVR	KILL	76	M	OTH-Y		042	000		10
													(04)													N-RES					
																		02	NONE 0	STRGHT											
																			PRVTE	S N									000		00
																			PSNGR CAR		01	DRVR	INJC	23	M	OR-Y		000	000		00
																										OR<25					
00197	Y	N	N				01/17/2007	JACKSON	1	01		STRGHT		N		Y CLD	FIX OBJ	01	NONE	STRGHT										079,124	01
STATE							Wed		0	0		UN	(RSDMD)	MEDIAN BAR		N ICE	FIX		PRVTE	N S									000	079,124	00
							9A		40.34			08				N DAY	INJ		PSNGR CAR		01	DRVR	NONE	54	M	OTH-Y		081,047	017		01
													(04)													N-RES					
																					02	PSNG	INJB	21	F			000	000		00
																					03	PSNG	INJB	50	F			000	000		00
00208	Y	N	N				01/16/2007	JACKSON	2	01		STRGHT		N		Y SLT	FIX OBJ	01	NONE	STRGHT										044,092	01,26
NONE							Tue		0	0		UN	(RSDMD)	MEDIAN BAR		N WET	FIX		PRVTE	S N									001	044,092	26
							11A		40.43			04				N DAY	INJ		PSNGR CAR		01	DRVR	INJC	34	F	OR-Y		083,047,081	017		01
													(04)													OR<25					
01044	Y	N	N	N	N		06/12/2008	JACKSON	1	01		STRGHT		N		N CLR	S-STRGHT	01	NONE	STRGHT										020,044	01
STATE							Thu		0	0		UN	(RSDMD)	MEDIAN BAR		N DRY	REAR		PRVTE	N S									000		00
							7A		40.50			05				N DAY	INJ		PSNGR CAR		01	DRVR	NONE	63	M	OR-Y		042	000		01
													(04)													OR<25					
																		02	NONE 1	STRGHT											
																			PRVTE	N S									006	020,044	00
																			PSNGR CAR		01	DRVR	INJB	41	M	OR-Y		000	000		00
																										OR>25					
																					02	PSNG	INJB	07	M			000	000		00

001 PACIFIC

I-5 (Hwy 001) MP 40.00 to 41.50
January 1, 2007 through December 31, 2011

SER# INVEST	SPEED	ALCOHOL	DRUG	CSLK	WORK	DATE DAY TIME	COUNTY CITY URBAN AREA	RD# COMPNT MLG MILEPNT	FC TYP	CONN # FIRST STREET SECOND STREET	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CNTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00672	N	N	N	N	N	04/01/2008	JACKSON	2	01		STRGHT		N	N	CLR	S-STRGHT	01	NONE	STRGHT										022	07,32
STATE						Tue		0	0		UN	(RSDMD)	MEDIAN BAR	N	DRY	REAR		PRVTE	S N								000		00
						1P		40.55			03			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	64	M	OR-Y	043,052	000		07,32
												(04)													OR>25					
																	02	NONE 1	STRGHT											
																		PRVTE	S N								000	022	00
																		PSNGR CAR		01	DRVR	NONE	54	M	OR-Y	000	000		00
																									OR<25					
01796	N	N	N			09/22/2011	JACKSON	2	01		STRGHT		N	N	CLR	S-STRGHT	01	NONE	STRGHT											07
NO RPT						Thu		0	0		UN	(RSDMD)	MEDIAN BAR	N	DRY	REAR		PRVTE	S N								000		00
						8P		40.56			03			N	DARK	INJ		PSNGR CAR		01	DRVR	NONE	23	M	UNK	042	000		07
												(04)													UNK					
																	02	NONE	STRGHT											
																		PRVTE	S N								000		00
																		PSNGR CAR		01	DRVR	INJC	25	F	OR-Y	000	000		00
																									OR<25					
																				02	PSNG	INJC	30	M		000	000		00
																				03	PSNG	NO<5	04	M		000	000		00
																				04	PSNG	INJC	01	M		000	000		00
00223	Y	N	N	N	N	02/13/2010	JACKSON	1	01		STRGHT		N	Y	FOG	FIX OBJ	01	NONE 0	STRGHT										079,088,010	01
STATE						Sat		0	0		UN	(RSDMD)	NONE	N	WET	FIX		PRVTE	N S								007	079,088,010	00
						9P		40.61			01			N	DARK	PDO		PSNGR CAR		01	DRVR	NONE	16	M	OR-Y	083,047,080	017		01
												(04)													OR-?					
00192	Y	N	N			01/16/2007	JACKSON	2	01		STRGHT		N	Y	SNOW	FIX OBJ	01	NONE	STRGHT										044,020,013	06,01
STATE						Tue		0	0		UN	(RSDMD)	MEDIAN BAR	N	SNO	FIX		PRVTE	S N								031	044,013	00
						11A		40.63			04			N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	19	F	OR-Y	047,032	017		01,06
												(04)													OR<25					
																	02	NONE 1	STRGHT											
																		PRVTE	S N								000	020	00
																		SEMI TOW		01	DRVR	NONE	68	M	OTH-Y	000	000		00
																									N-RES					
00154	N	N	N			01/27/2007	JACKSON	1	01		INTER	3-LEG	N	Y	CLR	FIX OBJ	01	NONE	TURN-R										044,124	10
STATE						Sat		0	0		S		MEDIAN BAR	N	ICE	FIX		PRVTE	W S								000	044,124	00
						7P		40.66			06	0		N	DARK	PDO		PSNGR CAR		01	DRVR	NONE	59	M	OR-Y	081	017		10
																									OR<25					
02054	N	N	N			10/11/2009	JACKSON	2	01		STRGHT		N	N	CLR	ANIMAL	01	NONE 0	STRGHT										034	12
NONE						Sun		0	0		UN	(RSDMD)	UNKNOWN	N	DRY	OTH		PRVTE	S N								000	034	00
						1A		40.85			03			N	DARK	PDO		PSNGR CAR		01	DRVR	NONE	38	M	OTH-Y	000	000		12
												(04)													N-RES					
01209	N	N	N	N	N	07/07/2011	JACKSON	1	01		STRGHT		N	Y	CLR	FIX OBJ	01	NONE	STRGHT										058,096,010	16
STATE						Thu		0	0		UN	(RSDMD)	MEDIAN BAR	N	DRY	FIX		PRVTE	N S								000	058,096,010	00
						12P		40.88			08			N	DAY	FAT		PSNGR CAR		01	DRVR	INJC	80	M	OTH-Y	081	025		16
												(04)													N-RES					
																				02	PSNG	KILL	79	F		000	000		00

001 PACIFIC

I-5 (Hwy 001) MP 40.00 to 41.50
January 1, 2007 through December 31, 2011

SER# INVEST	SPEED	ALCOHOL	DRUGS	SCHOOL	WORK	DATE DAY TIME	COUNTY CITY URBAN AREA	RD# COMPNT MLG MILEPNT	FC TYP	CONN # FIRST SECOND	STREET STREET	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CNTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00753	N	N	N	N	N	04/26/2010	JACKSON	2	01			STRGHT		N	Y	CLR	FIX OBJ	01	NONE	STRGHT										043,092	10,26
STATE						Mon		0	0			UN	(RSDMD)	MEDIAN BAR	N	DRY	FIX		PRVTE	S N								007	043,092	26
						12P		41.16				04			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	32	F	OR-Y	081	017		10
													(04)													OR<25					
00503	N	N	N			03/19/2008	JACKSON	1	01			STRGHT		N	N	RAIN	ANIMAL	01	NONE	STRGHT										035	12
NO RPT						Wed		0	0			UN	(NONE)	MEDIAN BAR	N	WET	OTH		PRVTE	N S								000	035	00
						9P		41.50				06			N	DARK	INJ		PSNGR CAR		01	DRVR	INJC	28	F	OR-Y	000	000		12
													(04)													OR>25					

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

CONTINUOUS SYSTEM CRASH LISTING

001 PACIFIC

I-5 (Hwy 001) Interchange 40 NB and SB ramps

January 1, 2007 through December 31, 2011

SER# INVEST	SPEED	ALCOHOL	DRUG	SCHOOL	WORK	DATE DAY TIME	COUNTY CITY URBAN AREA	RD# COMPNT MLG MILEPNT	FC TYP	CONN # FIRST SECOND	STREET STREET	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CNTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00899	N	N	N	N	N	05/19/2011	JACKSON	1	09	1		STRGHT		N		N CLR	S-STRGHT	01	NONE	STRGHT											13
STATE						Thu		6	0			UN	(NONE)	UNKNOWN		N DRY	SS-O		PRVTE	S N									000		00
						5P		40.68				03				N DAY	INJ		PSNGR CAR		01	DRVR	NONE	47	M	OR-Y		045,080	000		13
													(01)													OR<25					
																		02	NONE	STRGHT											
																			PRVTE	S N									000		00
																			PSNGR CAR		01	DRVR	INJC	36	F	OR-Y		000	000		00
																										OR<25					
00945	Y	N	N			05/14/2007	JACKSON	1	09	1		CURVE		N		Y CLR	FIX OBJ	01	NONE	STRGHT										043	01
STATE						Mon		6	0			UN	(NONE)	UNKNOWN		N DRY	FIX		PRVTE	S N									088	043	00
						5P		40.78				05				N DAY	INJ		PSNGR CAR		01	DRVR	NONE	17	F	OR-Y		047,081	017		01
													(01)													OR<25					
																					02	PSNG	INJC	17	F			000	000		00
01333	Y	N	N	N	N	07/11/2009	JACKSON	1	09	1		CURVE		N		Y CLR	FIX OBJ	01	NONE	STRGHT										043	01
STATE						Sat		6	0			UN	(NONE)	UNKNOWN		N DRY	FIX		PRVTE	S N									088	043	00
						6P		40.80				01				N DAY	PDO		PSNGR CAR		01	DRVR	NONE	41	F	OR-Y		047,081	017		01
													(01)													OR<25					
00822	N	N	N	N	N	05/07/2008	JACKSON	1	09	1		CURVE		N		Y CLR	FIX OBJ	01	NONE	STRGHT										043	10
STATE						Wed		6	0			UN	(NONE)	UNKNOWN		N DRY	FIX		PRVTE	S N									088	043	00
						9P		40.80				05				N DARK	PDO		PSNGR CAR		01	DRVR	NONE	18	F	OR-Y		080,081	017		10
													(01)													OR>25					
00265	Y	N	N			02/03/2007	JACKSON	1	09	1		STRGHT		N		N CLR	S-1STOP	01	NONE	STRGHT										029	01,25
STATE						Sat		6	0			UN	(NONE)	UNKNOWN		N DRY	REAR		PRVTE	S N									001	029	25
						4P		40.81				03				N DAY	INJ		PSNGR CAR		01	DRVR	NONE	49	M	OR-Y		047	017		01
													(01)													OR<25					
																		02	NONE	STOP											
																			PRVTE	S N									011		00
																			PSNGR CAR		01	DRVR	INJC	55	M	OR-Y		000	000		00
																										OR<25					
																					02	PSNG	INJC	55	F			000	000		00

ACTION CODE TRANSLATION LIST

ACTION CODE	SHORT DESCRIPTION	LONG DESCRIPTION
000	NONE	NO ACTION OR NON-WARRANTED
001	SKIDDED	SKIDDED
002	ON/OFF V	GETTING ON OR OFF STOPPED OR PARKED VEHICLE
003	LOAD OVR	OVERHANGING LOAD STRUCK ANOTHER VEHICLE, ETC.
006	SLOW DN	SLOWED DOWN
007	AVOIDING	AVOIDING MANEUVER
008	PAR PARK	PARALLEL PARKING
009	ANG PARK	ANGLE PARKING
010	INTERFERE	PASSENGER INTERFERING WITH DRIVER
011	STOPPED	STOPPED IN TRAFFIC NOT WAITING TO MAKE A LEFT TURN
012	STP/L TRN	STOPPED BECAUSE OF LEFT TURN SIGNAL OR WAITING, ETC.
013	STP TURN	STOPPED WHILE EXECUTING A TURN
015	GO A/STOP	PROCEED AFTER STOPPING FOR A STOP SIGN/FLASHING RED.
016	TRN A/RED	TURNED ON RED AFTER STOPPING
017	LOSTCTRL	LOST CONTROL OF VEHICLE
018	EXIT DWY	ENTERING STREET OR HIGHWAY FROM ALLEY OR DRIVEWAY
019	ENTR DWY	ENTERING ALLEY OR DRIVEWAY FROM STREET OR HIGHWAY
020	STR ENTR	BEFORE ENTERING ROADWAY, STRUCK PEDESTRIAN, ETC. ON SIDEWALK OR SHOULDER
021	NO DRVR	CAR RAN AWAY - NO DRIVER
022	PREV COL	STRUCK, OR WAS STRUCK BY, VEHICLE OR PEDESTRIAN IN PRIOR COLLISION BEFORE ACC. STABILIZED
023	STALLED	VEHICLE STALLED
024	DRVR DEAD	DEAD BY UNASSOCIATED CAUSE
025	FATIGUE	FATIGUED, SLEEPY, ASLEEP
026	SUN	DRIVER BLINDED BY SUN
027	HDLGHTS	DRIVER BLINDED BY HEADLIGHTS
028	ILLNESS	PHYSICALLY ILL
029	THRU MED	VEHICLE CROSSED, PLUNGED OVER, OR THROUGH MEDIAN BARRIER
030	PURSUIT	PURSUING OR ATTEMPTING TO STOP ANOTHER VEHICLE
031	PASSING	PASSING SITUATION
032	PRKOFFRD	VEHICLE PARKED BEYOND CURB OR SHOULDER
033	CROS MED	VEHICLE CROSSED EARTH OR GRASS MEDIAN
034	X N/SGNL	CROSSING AT INTERSECTION - NO TRAFFIC SIGNAL PRESENT
035	X W/ SGNL	CROSSING AT INTERSECTION - TRAFFIC SIGNAL PRESENT
036	DIAGONAL	CROSSING AT INTERSECTION - DIAGONALLY
037	BTWN INT	CROSSING BETWEEN INTERSECTIONS
038	DISTRACT	DRIVER'S ATTENTION DISTRACTED
039	W/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER WITH TRAFFIC
040	A/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER FACING TRAFFIC
041	W/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT WITH TRAFFIC
042	A/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT FACING TRAFFIC
043	PLAYINRD	PLAYING IN STREET OR ROAD
044	PUSH MV	PUSHING OR WORKING ON VEHICLE IN ROAD OR ON SHOULDER
045	WORK ON	WORKING IN ROADWAY OR ALONG SHOULDER
050	LAY ON RD	STANDING OR LYING IN ROADWAY
051	ENT OFFRD	ENTERING / STARTING IN TRAFFIC LANE FROM OFF-ROAD
088	OTHER	OTHER ACTION
099	UNK	UNKNOWN ACTION

CAUSE CODE TRANSLATION LIST

CAUSE CODE	SHORT DESCRIPTION	LONG DESCRIPTION
00	NO CODE	NO CAUSE ASSOCIATED AT THIS LEVEL
01	TOO-FAST	TOO FAST FOR CONDITIONS (NOT EXCEED POSTED SPEED
02	NO-YIELD	DID NOT YIELD RIGHT-OF-WAY
03	PAS-STOP	PASSED STOP SIGN OR RED FLASHER
04	DIS--RAG	DISREGARDED R-A-G TRAFFIC SIGNAL.
05	LEFT-CTR	DROVE LEFT OF CENTER ON TWO-WAY ROAD
06	IMP-OVER	IMPROPER OVERTAKING
07	TOO-CLOS	FOLLOWED TOO CLOSELY
08	IMP-TURN	MADE IMPROPER TURN
09	DRINKING	ALCOHOL OR DRUG INVOLVED
10	OTHR-IMP	OTHER IMPROPER DRIVING
11	MECH-DEF	MECHANICAL DEFECT
12	OTHER	OTHER (NOT IMPROPER DRIVING)
13	IMP LN C	IMPROPER CHANGE OF TRAFFIC LANES
14	DIS TCD	DISREGARDED OTHER TRAFFIC CONTROL DEVICE
15	WRNG WAY	WRONG WAY ON ONE-WAY ROADWAY
16	FATIGUE	DRIVER DROWSY/FATIGUED/SLEEPY
18	IN RDWY	NON-MOTORIST ILLEGALLY IN ROADWAY
19	NT VISBL	NON-MOTORIST CLOTHING NOT VISIBLE
20	IMP PKNG	VEHICLE IMPROPERLY PARKED
21	DEF STER	DEFECTIVE STEERING MECHANISM
22	DEF BRKE	INADEQUATE OR NO BRAKES
24	LOADSHFT	VEHICLE LOST LOAD OR LOAD SHIFTED
25	TIREFAIL	TIRE FAILURE
26	PHANTOM	PHANTOM / NON-CONTACT VEHICLE
27	INATTENT	INATTENTION
30	SPEED	DRIVING IN EXCESS OF POSTED SPEED
31	RACING	SPEED RACING (PER PAR)
32	CARELESS	CARELESS DRIVING (PER PAR)
33	RECKLESS	RECKLESS DRIVING (PER PAR)
34	AGGRESV	AGGRESSIVE DRIVING (PER PAR)
35	RD RAGE	ROAD RAGE (PER PAR)

COLLISION TYPE CODE TRANSLATION LIST

COLL CODE	SHORT DESCRIPTION	LONG DESCRIPTION
&	OTH	MISCELLANEOUS
-	BACK	BACKING
0	PED	PEDESTRIAN
1	ANGL	ANGLE
2	HEAD	HEAD-ON
3	REAR	REAR-END
4	SS-M	SIDESWIPE - MEETING
5	SS-O	SIDESWIPE - OVERTAKING
6	TURN	TURNING MOVEMENT
7	PARK	PARKING MANEUVER
8	NCOL	NON-COLLISION
9	FIX	FIXED OBJECT OR OTHER OBJECT

CRASH TYPE CODE TRANSLATION LIST

CRASH TYPE	SHORT DESCRIPTION	LONG DESCRIPTION
&	OVERTURN	OVERTURNED
0	NON-COLL	OTHER NON-COLLISION
1	OTH RDWY	MOTOR VEHICLE ON OTHER ROADWAY
2	PRKD MV	PARKED MOTOR VEHICLE
3	PED	PEDESTRIAN
4	TRAIN	RAILWAY TRAIN
6	BIKE	PEDALCYCLIST
7	ANIMAL	ANIMAL
8	FIX OBJ	FIXED OBJECT
9	OTH OBJ	OTHER OBJECT
A	ANGL-STP	ENTERING AT ANGLE - ONE VEHICLE STOPPED
B	ANGL-OTH	ENTERING AT ANGLE - ALL OTHERS
C	S-STRGHT	FROM SAME DIRECTION - BOTH GOING STRAIGHT
D	S-1TURN	FROM SAME DIRECTION - ONE TURN, ONE STRAIGHT
E	S-1STOP	FROM SAME DIRECTION - ONE STOPPED
F	S-OTHER	FROM SAME DIRECTION-ALL OTHERS, INCLUDING PARKING
G	O-STRGHT	FROM OPPOSITE DIRECTION - BOTH GOING STRAIGHT
H	O-1TURN	FROM OPPOSITE DIRECTION - ONE TURN, ONE STRAIGHT
I	O-1STOP	FROM OPPOSITE DIRECTION - ONE STOPPED
J	O-OTHER	FROM OPPOSITE DIRECTION-ALL OTHERS INCL. PARKING

DRIVER LICENSE CODE TRANSLATION LIST

LIC CODE	SHORT DESC	LONG DESCRIPTION
0	NONE	NOT LICENSED (HAD NEVER BEEN LICENSED)
1	OR-Y	VALID OREGON LICENSE
2	OTH-Y	VALID LICENSE, OTHER STATE OR COUNTRY
3	SUSP	SUSPENDED/REVOKED

DRIVER RESIDENCE CODE TRANSLATION LIST

RES CODE	SHORT DESC	LONG DESCRIPTION
1	OR<25	OREGON RESIDENT WITHIN 25 MILE OF HOME
2	OR>25	OREGON RESIDENT 25 OR MORE MILES FROM HOME
3	OR-?	OREGON RESIDENT - UNKNOWN DISTANCE FROM HOME
4	N-RES	NON-RESIDENT
9	UNK	UNKNOWN IF OREGON RESIDENT

ERROR CODE TRANSLATION LIST

ERROR CODE	SHORT DESCRIPTION	FULL DESCRIPTION
000	NONE	NO ERROR
001	WIDE TRN	WIDE TURN
002	CUT CORN	CUT CORNER ON TURN
003	FAIL TRN	FAILED TO OBEY MANDATORY TRAFFIC TURN SIGNAL, SIGN OR LANE MARKINGS
004	L IN TRF	LEFT TURN IN FRONT OF ONCOMING TRAFFIC
005	L PROHIB	LEFT TURN WHERE PROHIBITED
006	FRM WRNG	TURNED FROM WRONG LANE
007	TO WRONG	TURNED INTO WRONG LANE
008	ILLEG U	U-TURNED ILLEGALLY
009	IMP STOP	IMPROPERLY STOPPED IN TRAFFIC LANE
010	IMP SIG	IMPROPER SIGNAL OR FAILURE TO SIGNAL
011	IMP BACK	BACKING IMPROPERLY (NOT PARKING)
012	IMP PARK	IMPROPERLY PARKED
013	UNPARK	IMPROPER START LEAVING PARKED POSITION
014	IMP STRT	IMPROPER START FROM STOPPED POSITION
015	IMP LGHT	IMPROPER OR NO LIGHTS (VEHICLE IN TRAFFIC)
016	INATTENT	FAILED TO DIM LIGHTS (UNTIL 4/1/97) / INATTENTION (AFTER 4/1/97)
017	UNSF VEH	DRIVING UNSAFE VEHICLE (NO OTHER ERROR APPARENT)
018	OTH PARK	ENTERING/EXITING PARKED POSITION W/ INSUFFICIENT CLEARANCE; OTHER IMPROPER PARKING MANEUVER
019	DIS DRIV	DISREGARDED OTHER DRIVER'S SIGNAL
020	DIS SGNL	DISREGARDED TRAFFIC SIGNAL
021	RAN STOP	DISREGARDED STOP SIGN OR FLASHING RED
022	DIS SIGN	DISREGARDED WARNING SIGN, FLARES OR FLASHING AMBER
023	DIS OFCR	DISREGARDED POLICE OFFICER OR FLAGMAN
024	DIS EMER	DISREGARDED SIREN OR WARNING OF EMERGENCY VEHICLE
025	DIS RR	DISREGARDED RR SIGNAL, RR SIGN, OR RR FLAGMAN
026	REAR-END	FAILED TO AVOID STOPPED OR PARKED VEHICLE AHEAD OTHER THAN SCHOOL BUS
027	BIKE ROW	DID NOT HAVE RIGHT-OF-WAY OVER PEDALCYCLIST
028	NO ROW	DID NOT HAVE RIGHT-OF-WAY
029	PED ROW	FAILED TO YIELD RIGHT-OF-WAY TO PEDESTRIAN
030	PAS CURV	PASSING ON A CURVE
031	PAS WRNG	PASSING ON THE WRONG SIDE
032	PAS TANG	PASSING ON STRAIGHT ROAD UNDER UNSAFE CONDITIONS
033	PAS X-WK	PASSED VEHICLE STOPPED AT CROSSWALK FOR PEDESTRIAN
034	PAS INTR	PASSING AT INTERSECTION
035	PAS HILL	PASSING ON CREST OF HILL
036	N/PAS ZN	PASSING IN "NO PASSING" ZONE
037	PAS TRAF	PASSING IN FRONT OF ONCOMING TRAFFIC
038	CUT-IN	CUTTING IN (TWO LANES - TWO WAY ONLY)
039	WRNGSIDE	DRIVING ON WRONG SIDE OF THE ROAD
040	THRU MED	DRIVING THROUGH SAFETY ZONE OR OVER ISLAND
041	F/ST BUS	FAILED TO STOP FOR SCHOOL BUS

ERROR CODE TRANSLATION LIST

ERROR CODE	SHORT DESCRIPTION	FULL DESCRIPTION
042	F/SLO MV	FAILED TO DECREASE SPEED FOR SLOWER MOVING VEHICLE
043	TO CLOSE	FOLLOWING TOO CLOSELY (MUST BE ON OFFICER'S REPORT)
044	STRDL LN	STRADDLING OR DRIVING ON WRONG LANES
045	IMP CHG	IMPROPER CHANGE OF TRAFFIC LANES
046	WRNG WAY	WRONG WAY ON ONE-WAY ROADWAY (DELIBERATELY TRAVELING ON WRONG SIDE)
047	BASCRULE	DRIVING TOO FAST FOR CONDITIONS (NOT EXCEEDING POSTED SPEED)
048	OPN DOOR	OPENED DOOR INTO ADJACENT TRAFFIC LANE
049	IMPEDING	IMPEDING TRAFFIC
050	SPEED	DRIVING IN EXCESS OF POSTED SPEED
051	RECKLESS	RECKLESS DRIVING (PER PAR)
052	CARELESS	CARELESS DRIVING (PER PAR)
053	RACING	SPEED RACING (PER PAR)
054	X N/SGNL	CROSSING AT INTERSECTION, NO TRAFFIC SIGNAL PRESENT
055	X W/SGNL	CROSSING AT INTERSECTION, TRAFFIC SIGNAL PRESENT
056	DIAGONAL	CROSSING AT INTERSECTION - DIAGONALLY
057	BTWN INT	CROSSING BETWEEN INTERSECTIONS
059	W/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER WITH TRAFFIC
060	A/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER FACING TRAFFIC
061	W/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT WITH TRAFFIC
062	A/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT FACING TRAFFIC
063	PLAYINRD	PLAYING IN STREET OR ROAD
064	PUSH MV	PUSHING OR WORKING ON VEHICLE IN ROAD OR ON SHOULDER
065	WK IN RD	WORKING IN ROADWAY OR ALONG SHOULDER
070	LAYON RD	STANDING OR LYING IN ROADWAY
073	ELUDING	ELUDING
080	FAIL LN	FAILED TO MAINTAIN LANE
081	OFF RD	RAN OFF ROAD
082	NO CLEAR	DRIVER MISJUDGED CLEARANCE
083	OVRSTEER	OVERCORRECTING
084	NOT USED	CODE NOT IN USE
085	OVRLOAD	OVERLOADING OR IMPROPER LOADING OF VEHICLE WITH CARGO OR PASSENGERS
097	UNA DIS TC	UNABLE TO DETERMINE WHICH DRIVER DISREGARDED TRAFFIC CONTROL DEVICE

EVENT CODE TRANSLATION LIST

EVENT CODE	SHORT DESCRIPTION	LONG DESCRIPTION
001	FEL/JUMP	OCCUPANT FELL, JUMPED OR WAS EJECTED FROM MOVING VEHICLE
002	INTERFER	PASSENGER INTERFERED WITH DRIVER
003	BUG INTF	ANIMAL OR INSECT IN VEHICLE INTERFERED WITH DRIVER
004	PED INV	PEDESTRIAN INVOLVED (NON-PEDESTRIAN ACCIDENT)
005	SUB-PED	"SUB-PED": PEDESTRIAN INJURED SUBSEQUENT TO COLLISION, ETC.
006	BIKE INV	TRICYCLE-BICYCLE INVOLVED
007	HITCHIKR	HITCHHIKER (SOLICITING A RIDE)
008	PSNGR TOW	PASSENGER BEING TOWED OR PUSHED ON CONVEYANCE
009	ON/OFF V	GETTING ON OR OFF STOPPED OR PARKED VEHICLE (OCCUPANTS ONLY)
010	SUB OTRN	OVERTURNED AFTER FIRST HARMFUL EVENT
011	MV PUSHD	VEHICLE BEING PUSHED
012	MV TOWED	VEHICLE TOWED OR HAD BEEN TOWING ANOTHER VEHICLE
013	FORCED	VEHICLE FORCED BY IMPACT INTO ANOTHER VEHICLE, PEDALCYCLIST OR PEDESTRIAN
014	SET MOTN	VEHICLE SET IN MOTION BY NON-DRIVER (CHILD RELEASED BRAKES, ETC.)
015	RR ROW	AT OR ON RAILROAD RIGHT-OF-WAY (NOT LIGHT RAIL)
016	LT RL ROW	AT OR ON LIGHT-RAIL RIGHT-OF-WAY
017	RR HIT V	TRAIN STRUCK VEHICLE
018	V HIT RR	VEHICLE STRUCK TRAIN
019	HIT RR CAR	VEHICLE STRUCK RAILROAD CAR ON ROADWAY
020	JACKNIFE	JACKKNIFE; TRAILER OR TOWED VEHICLE STRUCK TOWING VEHICLE
021	TRL OTRN	TRAILER OR TOWED VEHICLE OVERTURNED
022	CN BROKE	TRAILER CONNECTION BROKE
023	DETACH TRL	DETACHED TRAILING OBJECT STRUCK OTHER VEHICLE, NON-MOTORIST, OR OBJECT
024	V DOOR OPN	VEHICLE DOOR OPENED INTO ADJACENT TRAFFIC LANE
025	WHEELOFF	WHEEL CAME OFF
026	HOOD UP	HOOD FLEW UP
028	LOAD SHIFT	LOST LOAD, LOAD MOVED OR SHIFTED
029	TIREFAIL	TIRE FAILURE
030	PET	PET: CAT, DOG AND SIMILAR
031	LVSTOCK	STOCK: COW, CALF, BULL, STEER, SHEEP, ETC.
032	HORSE	HORSE, MULE, OR DONKEY
033	HRSE&RID	HORSE AND RIDER
034	GAME	WILD ANIMAL, GAME (INCLUDES BIRDS; NOT DEER OR ELK)
035	DEER ELK	DEER OR ELK, WAPITI
036	ANML VEH	ANIMAL-DRAWN VEHICLE
037	CULVERT	CULVERT, OPEN LOW OR HIGH MANHOLE
038	ATENUATN	IMPACT ATTENUATOR
039	PK METER	PARKING METER
040	CURB	CURB (ALSO NARROW SIDEWALKS ON BRIDGES)
041	JIGGLE	JIGGLE BARS OR TRAFFIC SNAKE FOR CHANNELIZATION
042	GDRL END	LEADING EDGE OF GUARDRAIL
043	GARDRAIL	GUARD RAIL (NOT METAL MEDIAN BARRIER)
044	BARRIER	MEDIAN BARRIER (RAISED OR METAL)
045	WALL	RETAINING WALL OR TUNNEL WALL
046	BR RAIL	BRIDGE RAILING (ON BRIDGE AND APPROACH)
047	BR ABUT	BRIDGE ABUTMENT (APPROACH ENDS)
048	BR COLMN	BRIDGE PILLAR OR COLUMN (EVEN THOUGH STRUCK PROTECTIVE GUARD RAIL FIRST)
049	BR GIRDR	BRIDGE GIRDER (HORIZONTAL STRUCTURE OVERHEAD)
050	ISLAND	TRAFFIC RAISED ISLAND
051	GORE	GORE
052	POLE UNK	POLE - TYPE UNKNOWN
053	POLE UTL	POLE - POWER OR TELEPHONE
054	ST LIGHT	POLE - STREET LIGHT ONLY
055	TRF SGNL	POLE - TRAFFIC SIGNAL AND PED SIGNAL ONLY
056	SGN BRDG	POLE - SIGN BRIDGE
057	STOPSIGN	STOP OR YIELD SIGN
058	OTH SIGN	OTHER SIGN, INCLUDING STREET SIGNS
059	HYDRANT	HYDRANT

EVENT CODE TRANSLATION LIST

EVENT CODE	SHORT DESCRIPTION	LONG DESCRIPTION
060	MARKER	DELINEATOR OR MARKER (REFLECTOR POSTS)
061	MAILBOX	MAILBOX
062	TREE	TREE, STUMP OR SHRUBS
063	VEG OHED	TREE BRANCH OR OTHER VEGETATION OVERHEAD, ETC.
064	WIRE/CBL	WIRE OR CABLE ACROSS OR OVER THE ROAD
065	TEMP SGN	TEMPORARY SIGN OR BARRICADE IN ROAD, ETC.
066	PERM SGN	PERMANENT SIGN OR BARRICADE IN/OFF ROAD
067	SLIDE	SLIDES, ROCKS OFF OR ON ROAD, FALLING ROCKS
068	FRGN OBJ	FOREIGN OBSTRUCTION/DEBRIS IN ROAD (NOT GRAVEL)
069	EQP WORK	EQUIPMENT WORKING IN/OFF ROAD
070	OTH EQP	OTHER EQUIPMENT IN OR OFF ROAD (INCLUDES PARKED TRAILER, BOAT)
071	MAIN EQP	WRECKER, STREET SWEEPER, SNOW PLOW OR SANDING EQUIPMENT
072	OTHER WALL	ROCK, BRICK OR OTHER SOLID WALL
073	IRRGL PVMT	SPEED BUMP, OTHER BUMP, POTHOLE OR PAVEMENT IRREGULARITY (PER PAR)
075	CAVE IN	BRIDGE OR ROAD CAVE IN
076	HI WATER	HIGH WATER
077	SNO BANK	SNOW BANK
078	HOLE	CHUCKHOLE IN ROAD, LOW OR HIGH SHOULDER AT PAVEMENT EDGE
079	DITCH	CUT SLOPE OR DITCH EMBANKMENT
080	OBJ F MV	STRUCK BY ROCK OR OTHER OBJECT SET IN MOTION BY OTHER VEHICLE (INCL. LOST LOADS)
081	FLY-OBJ	STRUCK BY OTHER MOVING OR FLYING OBJECT
082	VEH HID	VEHICLE OBSCURED VIEW
083	VEG HID	VEGETATION OBSCURED VIEW
084	BLDG HID	VIEW OBSCURED BY FENCE, SIGN, PHONE BOOTH, ETC.
085	WIND GUST	WIND GUST
086	IMMERSED	VEHICLE IMMERSED IN BODY OF WATER
087	FIRE/EXP	FIRE OR EXPLOSION
088	FENC/BLD	FENCE OR BUILDING, ETC.
089	OTH ACDT	ACCIDENT RELATED TO ANOTHER SEPARATE ACCIDENT
090	TO 1 SIDE	TWO-WAY TRAFFIC ON DIVIDED ROADWAY ALL ROUTED TO ONE SIDE
092	PHANTOM	OTHER (PHANTOM) NON-CONTACT VEHICLE (ON PAR OR REPORT)
093	CELL-POL	CELL PHONE (ON PAR OR DRIVER IN USE)
094	VIOL GDL	TEENAGE DRIVER IN VIOLATION OF GRADUATED LICENSE PGM
095	GUY WIRE	GUY WIRE
096	BERM	BERM (EARTHEN OR GRAVEL MOUND)
097	GRAVEL	GRAVEL IN ROADWAY
098	ABR EDGE	ABRUPT EDGE
099	CELL-WTN	CELL PHONE USE WITNESSED BY OTHER PARTICIPANT
100	UNK FIXD	UNKNOWN TYPE OF FIXED OBJECT
101	OTHER OBJ	OTHER OR UNKNOWN OBJECT, NOT FIXED
104	OUTSIDE V	PASSENGER RIDING ON VEHICLE EXTERIOR
105	PEDAL PSGR	PASSENGER RIDING ON PEDALCYCLE
106	MAN WHLCHR	PEDESTRIAN IN NON-MOTORIZED WHEELCHAIR
107	MTR WHLCHR	PEDESTRIAN IN MOTORIZED WHEELCHAIR
110	N-MTR	NON-MOTORIST STRUCK VEHICLE
111	S CAR VS V	STREET CAR/TROLLEY (ON RAILS AND/OR OVERHEAD WIRE SYSTEM) STRUCK VEHICLE
112	V VS S CAR	VEHICLE STRUCK STREET CAR/TROLLEY (ON RAILS AND/OR OVERHEAD WIRE SYSTEM)
113	S CAR ROW	AT OR ON STREET CAR/TROLLEY RIGHT-OF-WAY
114	RR EQUIP	VEHICLE STRUCK RAILROAD EQUIPMENT (NOT TRAIN) ON TRACKS
120	WIRE BAR	WIRE OR CABLE MEDIAN BARRIER
124	SLIPPERY	SLIDING OR SWERVING DUE TO WET, ICY, SLIPPERY OR LOOSE SURFACE
125	SHLDR	SHOULDER GAVE WAY

FUNCTIONAL CLASSIFICATION TRANSLATION LIST

FUNC CLASS	DESCRIPTION
01	RURAL PRINCIPAL ARTERIAL - INTERSTATE
02	RURAL PRINCIPAL ARTERIAL - OTHER
06	RURAL MINOR ARTERIAL
07	RURAL MAJOR COLLECTOR
08	RURAL MINOR COLLECTOR
09	RURAL LOCAL
11	URBAN PRINCIPAL ARTERIAL - INTERSTATE
12	URBAN PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXP
14	URBAN PRINCIPAL ARTERIAL - OTHER
16	URBAN MINOR ARTERIAL
17	URBAN COLLECTOR
19	URBAN LOCAL
78	UNKNOWN RURAL SYSTEM
79	UNKNOWN RURAL NON-SYSTEM
98	UNKNOWN URBAN SYSTEM
99	UNKNOWN URBAN NON-SYSTEM

HIGHWAY COMPONENT TRANSLATION LIST

CODE	DESCRIPTION
0	MAINLINE STATE HIGHWAY
1	COUPLET
3	FRONTAGE ROAD
6	CONNECTION
8	HIGHWAY - OTHER

INJURY SEVERITY CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
1	KILL	FATAL INJURY
2	INJA	INCAPACITATING INJURY - BLEEDING, BROKEN BONES
3	INJB	NON-INCAPACITATING INJURY
4	INJC	POSSIBLE INJURY - COMPLAINT OF PAIN
5	PRI	DIED PRIOR TO CRASH
7	NO<5	NO INJURY - 0 TO 4 YEARS OF AGE

LIGHT CONDITION CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	DAY	DAYLIGHT
2	DLIT	DARKNESS - WITH STREET LIGHTS
3	DARK	DARKNESS - NO STREET LIGHTS
4	DAWN	DAWN (TWILIGHT)
5	DUSK	DUSK (TWILIGHT)

MEDIAN TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	NONE	NO MEDIAN
1	RSDMD	SOLID MEDIAN BARRIER
2	DIVMD	EARTH, GRASS OR PAVED MEDIAN

MILEAGE TYPE CODE TRANSLATION LIST

CODE	LONG DESCRIPTION
0	REGULAR MILEAGE
T	TEMPORARY
Y	SPUR
Z	OVERLAPPING

MOVEMENT TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	STRGHT	STRAIGHT AHEAD
2	TURN-R	TURNING RIGHT
3	TURN-L	TURNING LEFT
4	U-TURN	MAKING A U-TURN
5	BACK	BACKING
6	STOP	STOPPED IN TRAFFIC
7	PRKD-P	PARKED - PROPERLY
8	PRKD-I	PARKED - IMPROPERLY

PARTICIPANT TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	OCC	UNKNOWN OCCUPANT TYPE
1	DRVR	DRIVER
2	PSNG	PASSENGER
3	PED	PEDESTRIAN
4	CONV	PEDESTRIAN USING A PEDESTRIAN CONVEYA
5	PTOW	PEDESTRIAN TOWING OR TRAILERING AN OB
6	BIKE	PEDALCYCLIST
7	BTOW	PEDALCYCLIST TOWING OR TRAILERING AN
8	PRKD	OCCUPANT OF A PARKED MOTOR VEHICLE
9	UNK	UNKNOWN TYPE OF NON-MOTORIST

PEDESTRIAN LOCATION CODE TRANSLATION LIST

CODE	LONG DESCRIPTION
00	AT INTERSECTION - NOT IN ROADWAY
01	AT INTERSECTION - INSIDE CROSSWALK
02	AT INTERSECTION - IN ROADWAY, OUTSIDE CROSSWALK
03	AT INTERSECTION - IN ROADWAY, XWALK AVAIL UNKNWN
04	NOT AT INTERSECTION - IN ROADWAY
05	NOT AT INTERSECTION - ON SHOULDER
06	NOT AT INTERSECTION - ON MEDIAN
07	NOT AT INTERSECTION - WITHIN TRAFFIC RIGHT-OF-WAY
08	NOT AT INTERSECTION - IN BIKE PATH
09	NOT-AT INTERSECTION - ON SIDEWALK
10	OUTSIDE TRAFFICWAY BOUNDARIES
15	NOT AT INTERSECTION - INSIDE MID-BLOCK CROSSWALK
18	OTHER, NOT IN ROADWAY
99	UNKNOWN LOCATION

TRAFFIC CONTROL DEVICE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
000	NONE	NO CONTROL
001	TRF SIGNAL	TRAFFIC SIGNALS
002	FLASHBCN-R	FLASHING BEACON - RED (STOP)
003	FLASHBCN-A	FLASHING BEACON - AMBER (SLOW)
004	STOP SIGN	STOP SIGN
005	SLOW SIGN	SLOW SIGN
006	REG-SIGN	REGULATORY SIGN
007	YIELD	YIELD SIGN
008	WARNING	WARNING SIGN
009	CURVE	CURVE SIGN
010	SCHL X-ING	SCHOOL CROSSING SIGN OR SPECIAL SIGNAL
011	OFCR/FLAG	POLICE OFFICER, FLAGMAN - SCHOOL PATROL
012	BRDG-GATE	BRIDGE GATE - BARRIER
013	TEMP-BARR	TEMPORARY BARRIER
014	NO-PASS-ZN	NO PASSING ZONE
015	ONE-WAY	ONE-WAY STREET
016	CHANNEL	CHANNELIZATION
017	MEDIAN BAR	MEDIAN BARRIER
018	PILOT CAR	PILOT CAR
019	SP PED SIG	SPECIAL PEDESTRIAN SIGNAL
020	X-BUCK	CROSSBUCK
021	THR-GN-SIG	THROUGH GREEN ARROW OR SIGNAL
022	L-GRN-SIG	LEFT TURN GREEN ARROW, LANE MARKINGS, OR SIGNAL
023	R-GRN-SIG	RIGHT TURN GREEN ARROW, LANE MARKINGS, OR SIGNAL
024	WIGWAG	WIGWAG OR FLASHING LIGHTS W/O DROP-ARM GATE
025	X-BUCK WRN	CROSSBUCK AND ADVANCE WARNING
026	WW W/ GATE	FLASHING LIGHTS WITH DROP-ARM GATES
027	OVRHD SGNL	SUPPLEMENTAL OVERHEAD SIGNAL (RR XING ONLY)
028	SP RR STOP	SPECIAL RR STOP SIGN
029	ILUM GRD X	ILLUMINATED GRADE CROSSING
037	RAMP METER	METERED RAMPS
038	RUMBLE STR	RUMBLE STRIP
090	L-TURN REF	LEFT TURN REFUGE (WHEN REFUGE IS INVOLVED)
091	R-TURN ALL	RIGHT TURN AT ALL TIMES SIGN, ETC.
092	EMR SGN/FL	EMERGENCY SIGNS OR FLARES
093	ACCEL LANE	ACCELERATION OR DECELERATION LANES
094	R-TURN PRO	RIGHT TURN PROHIBITED ON RED AFTER STOPPING

ROAD CHARACTER CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	INTER	INTERSECTION
2	ALLEY	DRIVEWAY OR ALLEY
3	STRGHT	STRAIGHT ROADWAY
4	TRANS	TRANSITION
5	CURVE	CURVE (HORIZONTAL CURVE)
6	OPENAC	OPEN ACCESS OR TURNOUT
7	GRADE	GRADE (VERTICAL CURVE)
8	BRIDGE	BRIDGE STRUCTURE
9	TUNNEL	TUNNEL

VEHICLE TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
01	PSNGR CAR	PASSENGER CAR, PICKUP, ETC.
02	BOBTAIL	TRUCK TRACTOR WITH NO TRAILERS (BOBTAIL)
03	FARM TRCTR	FARM TRACTOR OR SELF-PROPELLED FARM EQUIPMENT
04	SEMI TOW	TRUCK TRACTOR WITH TRAILER/MOBILE HOME IN TOW
05	TRUCK	TRUCK WITH NON-DETACHABLE BED, PANEL, ETC.
06	MOPED	MOPED, MINIBIKE, MOTOR SCOOTER, OR MOTOR BICYCLE
07	SCHL BUS	SCHOOL BUS (INCLUDES VAN)
08	OTH BUS	OTHER BUS
09	MTRCYCLE	MOTORCYCLE
10	OTHER	OTHER: FORKLIFT, BACKHOE, ETC.
11	MOTRHOME	MOTORHOME
12	TROLLEY	MOTORIZED STREET CAR/TROLLEY (NO RAILS/WIRES)
13	ATV	ATV
14	MTRSCTR	MOTORIZED SCOOTER
15	SNOWMOBILE	SNOWMOBILE
99	UNKNOWN	UNKNOWN VEHICLE TYPE

095	BUS STPSGN	BUS STOP SIGN AND RED LIGHTS
099	UNKNOWN	UNKNOWN OR NOT DEFINITE

WEATHER CONDITION CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	CLR	CLEAR
2	CLD	CLOUDY
3	RAIN	RAIN
4	SLT	SLEET
5	FOG	FOG
6	SNOW	SNOW
7	DUST	DUST
8	SMOK	SMOKE
9	ASH	ASH

I-5 Exits 40 and 43 (Gold Hill)
Interchange Area Management Plans

Technical Memorandum #5
Future Baseline Traffic Conditions

Prepared for

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Table of Contents

5. FUTURE BASELINE TRAFFIC CONDITIONS 1
5.1. Future Land Use 1
5.2. Future Traffic Volume Development 1
5.2.1. Baseline Traffic Forecasts 1
5.2.2. Alternative Land Use Scenario (ALUS) 2
5.3. Future Transportation Network 2
5.4. Future Baseline Traffic Operations 3
5.4.1. Intersection Analysis 3
5.4.2. Freeway Analysis 5
5.5. Future Baseline ALUS Traffic Operations 6
5.5.1. Intersection Analysis 6
5.5.2. Freeway Analysis 10
5.6. Summary of Future Deficiencies 10
5.7. Conclusions 11

List of Tables

Table 5-1. Population and % Population Change, 2005-2040 1
Table 5-2. Future (2038) Baseline Intersection Operations 3
Table 5-3. Future (2038) Baseline 95th Percentile Queues 5
Table 5-4. Future (Year 2038) Baseline Freeway Operations 6
Table 5-5. Future (2038) Baseline ALUS Intersection Operations 7
Table 5-6. Future (2038) Baseline ALUS 95th Percentile Queues 9
Table 5-7. Future (2038) Baseline ALUS Freeway Operations 10

List of Figures (Attached at End)

Figure 5-1 (a&b). Future Baseline (2038) Conditions – PM Hour Traffic Volumes
Figure 5-2 (a&b). Future Baseline (2038) ALUS Conditions – PM Hour Traffic Volumes
Figure 5-3 (a&b). Future Baseline (2038) Conditions – PM Peak Hour Operations
Figure 5-4 (a&b). Future Baseline (2038) ALUS Conditions – PM Peak Hour Operations

5. FUTURE BASELINE TRAFFIC CONDITIONS

This technical memorandum presents the future baseline traffic conditions at the I-5 Exits 40 and 43 interchange management study areas (IMSAs) for the Year 2038. The analysis examines conditions where the transportation system has been improved by projects with programmed funding sources and where traffic volumes continue to grow based on current trends and land use assumptions in Jackson County and the nearby city of Gold Hill community. The analysis identifies anticipated operational deficiencies and serves as the basis for later evaluation to compare project alternatives that address deficiencies.

5.1. Future Land Use

The long-range population forecasts presented in the Jackson County Comprehensive Plan are based on the 2005 estimates of population prepared by Portland State University (PSU) for Jackson County. Future land use is not anticipated to be significantly different from the existing land use. The population projections associated with the current land use is presented in Table 5-1. The population growth forecasts assume an annual growth rate of 1.63 percent within the city of Gold Hill and 1.31 percent outside the city.

Table 5-1. Population and % Population Change, 2005-2040

Geography	2005 Population	2026 Population	2040 Pop.	2005-2026 % Change (AAGR)	2005-2040 % Change (AAGR)
Jackson County	194,515	264,419	306,421	36% (1.47%)	58% (1.31%)
Gold Hill	1,080	1,476	1,901	37% (1.50%)	76% (1.63%)

Source: David Evans and Associates, Inc. Excerpt from Jackson County Comprehensive Plan, Table 6. (Amended on 7-18-2007)

There are no approved and/or pending developments within the study areas at this time; however, recurring discussions regarding the potential development of a truck stop at one of the two study interchanges has prompted the evaluation of an alternative land use scenario (ALUS). Development assumptions and volume development methods for this land use alternative are discussed further in Section 5.2.2 Alternative Land Use Scenario (ALUS). Not considered as a part of this analysis was the proposed resort on Highway 234 near the Lower Table Rock (project shelved), the existing golf course on Old Stage Road, as well as the Senior Living developments.

5.2. Future Traffic Volume Development

Two future traffic volume scenarios were developed for each interchange. The baseline scenario is derived from current growth trends on the existing transportation system. The ALUS is a land use alternative that considers how a truck stop developed at one of the two interchanges would affect future traffic conditions.

5.2.1. Baseline Traffic Forecasts

Future baseline traffic volume forecasts for the year 2038 were developed using historical traffic trends. The trend-based forecasting process is generally used for small urban areas that

are growing at a fairly uniform rate or for areas where only minor changes are expected to take place.

Traffic forecasts for the 2038 future baseline scenario at the study area intersections were developed from growth rates calculated from the 2031 Future Volume Tables for I-5 and OR 99 and OR 234 as well as Jackson County historic traffic volumes (along Blackwell Road). These growth rates were applied to the 2012 existing traffic data. The process followed the procedures from ODOT's Analysis Procedures Manual (APM)[1]. There are no approved and/or pending developments within the study areas at this time; therefore, no additional development traffic was included in the baseline forecasts.

Traffic volumes for the year 2038 future baseline scenario are presented in Figure 5-1a and Figure 5-1b. The detailed volume development worksheets are presented in Appendix A.

5.2.2. Alternative Land Use Scenario (ALUS)

Traffic forecasts for the ALUS are based on volumes developed for the future baseline scenario as well as trip generation for a potential truck stop development. Although forecasts were developed for a truck stop at each interchange, it is unlikely that development of such closely situated truck stops would occur in these relatively rural areas.

From data collected about nearby truck stops, it was assumed that the potential truck stop would include 8 auto fuel pumps, 8 truck fueling stations, a 6,000 square foot high turnover sit-down restaurant, 100 truck parking spaces, and a minimum lot size of 8 acres. With these assumptions, trip generation methods based on ITE Trip Generation Manual, 9th Edition Land Use Categories were applied to determine the additional traffic volumes to be applied to the future baseline network. As part of the proposed truck stop, one unsignalized driveway is assumed along Old Stage Road for Exit 40 and along Rogue River Highway east of Main Street for Exit 43.

The ALUS volumes are shown in Figure 5-2a and Figure 5-2b. For further information regarding the methodology used for development of the land use alternative see Appendix A.

5.3. Future Transportation Network

The future network used in the forecasts for Exits 40 and 43 should include roadway projects that are expected to occur by year 2038. In the next 25 years, there are no new projects with known funding or with a reasonable expectation of being funded within either of the IMSAs. Other planned projects that do not have identified funding sources are addressed in the alternatives analysis portion of this project.

[1] Analysis Procedures Manual, Oregon Department of Transportation, Transportation Development Division Planning Section, Transportation Planning and Analysis Unit, Salem, Oregon, April, 2006, Section 4.3.

5.4. Future Baseline Traffic Operations

Traffic analysis for the 2038 future baseline scenario was performed for all of the study area intersections and for the merge-diverge sections of the freeway.

5.4.1. Intersection Analysis

Table 5-2 summarizes the results of the traffic operations analysis for I-5 Exits 40 and 43 with respect to the 2038 future baseline scenario. Figure 5-3a and Figure 5-3b presents the v/c ratios and LOS performance by lane group for the area intersections and compares them to the Oregon Highway Plan (OHP) mobility targets. While all lane groups are shown in the figures, only the controlling movement[2] is shown in the table. All Synchro and SimTraffic output worksheets are provided in Appendix B.

Table 5-2. Future (2038) Baseline Intersection Operations

Intersection	Controlling Movement[1]	V/C Ratio[2]	LOS[2]	Operational Targets[3]
I-5 Exit 40				
Access Rd at Blackwell Rd (OR 99)	NB L/R	0.76	D	V/C <= 0.95
Access Rd at Lampman Rd	EB L/R	0.06	B	V/C <= 0.95
Access Rd at I-5 NB Ramps	WB L/T/R	0.41	B	V/C <= 0.85
Access Rd at I-5 SB Ramps	EB L/T/R	0.24	C	V/C <= 0.85
Access Rd at Old Stage Rd	EB L/R	0.07	B	V/C <= 0.95
I-5 Exit 43				
OR 99/OR 234 at N. River Rd [4]	EB T/R	0.06	A	V/C <= 0.95
OR 99/OR 234 at Lampman Rd	SB L/R	0.03	A	V/C <= 0.95
OR 99/OR 234 at Main St [4,5]	NB L/R	0.09	A	V/C <= 0.95
Main St at I-5 NB Ramps	WB L/T/R	0.04	A	V/C <= 0.85
Main St at I-5 SB Ramps	EB L/T/R	0.07	A	V/C <= 0.85
Main St at Profetta Ln	EB L/T	0.01	A	V/C <= 0.95

Acronyms: EB = eastbound; WB = westbound; NB = northbound; and SB = southbound. L = left; T = through; and R = right.

Notes:
1. At unsignalized intersections the results are reported for the movement with the worst v/c ratio.
2. The v/c ratios and LOS are based on the results of the macrosimulation analysis using Synchro, which cannot account for the influence of adjacent intersection operations.
3. The Jackson County Transportation System Plan (TSP) designates the traffic operations standard as the more restrictive of County and ODOT targets for intersections with one or more approaches maintained by ODOT. 1999 Oregon Highway Plan (OHP), Policy 1F applies to existing and no-build conditions through the planning horizon.
4. Intersection operations analyzed with alternative geometric configurations to meet HCM methodology.
5. Intersection operations based on HCM 2000 methodology.

Source: David Evans and Associates, Inc.

[2] Controlling movements at unsignalized intersections are typically the minor-street left turns or, in the case of single-lane approaches, the minor street approaches.

I-5 Exit 40

The analysis results show that under the 2038 future baseline conditions, all five of the IMSA intersections would meet operational targets during the PM peak period. The intersection with the worst operations is Access Road at Blackwell Road (OR 99), though the controlling movement still meets operational targets with a v/c ratio of 0.76.

Based on the SimTraffic simulation, none of the 95th percentile queues for the future baseline condition are expected to exceed available storage or extend beyond the nearest public access. The lane group with the longest queue is the northbound left-right movement on Access Road at Blackwell Road. The queues for this lane are approximately 175 feet compared with 300 feet to the public access point. The existing storage on the northbound and southbound ramps provides adequate stopping sight distance for the forecast queues.

I-5 Exit 43

Similar to the Exit 40 results under the 2038 future baseline conditions; all study area intersections (6) would meet operational targets during the PM peak period. The intersection with the worst operations is OR 99/OR 234 at Main Street, though the controlling movement (v/c ratio of 0.09) still operates well below operational targets.

Based on the SimTraffic simulation, none of the 95th percentile queues for the future baseline condition are expected to exceed available storage or extend beyond the nearest public access. The lane group with the most severe queuing is the eastbound through movement at the intersection of OR 99/OR 234 and North River Road. The 95th percentile queue for this lane is approximately 50 feet compared with 250 feet to the next public access point. The existing storage on the northbound and southbound ramps provides adequate stopping sight distance for the forecast 95th percentile queues.

Queuing

Table 5-3 summarizes queuing results for intersection movements that must stop or yield the right of travel to other traffic flows. The study intersections appear to have adequate capacity and storage for the anticipated demand, except for the northbound left-turn at Access Road at Old Stage Road, although there is potential for vehicles to utilize the two-way left-turn lane storage.

Preliminary Signal Warrants

None of the unsignalized intersections at would meet ODOT's preliminary signal warrants. Preliminary signal warrants are based on traffic volumes and were only investigated at Exit 40 where traffic volumes are highest. Therefore, intersections were assumed to remain STOP-controlled through the study planning horizon. See Appendix C for details.

Table 5-3. Future (2038) Baseline 95th Percentile Queues

Intersection	Approach & Movement	95th Percentile Queue (ft.)	Available Storage (ft.)[1]
I-5 Exit 40			
Access Rd at Blackwell Rd (OR 99)	WB L/T	75	600
	NB L/R	175	300
Access Rd at Lampman Rd	EB L/R	50	350
	NB L/T	50	150
Access Rd at I-5 NB Ramps	WB L/T/R	100	850[2]
	NB L/T	50	540
Access Rd at I-5 SB Ramps	EB L/T/R	75	800[2]
	SB L/T	75	540
Access Rd at Old Stage Rd	EB L/R	75	425
	NB L	25	40[2]
I-5 Exit 43			
OR 99/OR 234 at N. River Rd	EB T	50	250
	EB R	50	50[2]
	NB L	**50**	25[2]
OR 99/OR 234 at Lampman Rd	EB L/T	25	650
	SB L/R	50	>1200
OR 99/OR 234 at Main St	EB T/R	50	380
	NB L/R	50	330
Main St at I-5 NB Ramps	WB L/T/R	50	1000[2]
	NB L/T	25	600
Main St at I-5 SB Ramps	EB L/T/R	50	1100[2]
	NB T/R	50	75
Main St at Profetta Ln	EB L/T	25	>1200
	SB L/T	25	75

Acronyms: EB = eastbound; WB = westbound; NB = northbound; and SB = southbound. L = left; T = through; and R = right.

Notes:

1. Storage distance reflects spacing to the next public access point.
2. Storage distance reflects length of travel lane or turn bay.

Source: David Evans and Associates, Inc.

5.4.2. Freeway Analysis

The 2038 operations of the interchange ramp merge and diverge interactions with the mainline highway traffic were also evaluated. These analyses were conducted in accordance with the methodology prescribed in ODOT's APM to determine v/c ratio performance for the design hour between 3:30 to 4:30 PM. The results of the future freeway operations analysis are summarized in Table 5-4.

The merge and diverge analyses for the future baseline show that the freeway and the merge and diverge points for both freeway exits are expected to continue operating well below the mobility target of 0.85 through the planning horizon.

Table 5-4. Future (Year 2038) Baseline Freeway Operations

I-5 Northbound		I-5 Southbound	
Direction/Location	**V/C Ratio[1,2]**	**Direction/Location**	**V/C Ratio[1,2]**
I-5 Exit 40			
Mainline: South of Exit 40	0.49	Mainline: North of Exit 40	0.40
Diverge: Exit 40 Northbound Off Ramp	0.14	Diverge: Exit 40 Southbound Off Ramp	0.05
Mainline: Between Exit 40 Ramps	0.43	Mainline: Between Exit 40 Ramps	0.38
Merge: Exit 40 Northbound On Ramp	0.47	Merge: Exit 40 Southbound On Ramp	0.44
Mainline : North of Exit 40	0.46	Mainline: South of Exit 40	0.43
I-5 Exit 43			
Mainline : South of Exit 43	0.46	Mainline: North of Exit 43	0.41
Diverge: Exit 43 Northbound Off Ramp	0.02	Diverge: Exit 43 Southbound Off Ramp	0.03
Mainline: Between Exit 43 Ramps	0.45	Mainline: Between Exit 43 Ramps	0.39
Merge: Exit 40 Northbound On Ramp	0.47	Merge: Exit 43 Southbound On Ramp	0.41
Mainline: North of Exit 43	0.46	Mainline: South of Exit 43	0.40

Notes:
1. The v/c ratios for the merge/diverge analysis are calculated based on the methodologies outlined in ODOT's Analysis Procedures Manual.
2. The design hour is the hour between 3:30 and 4:30 PM, which coincides with non-freeway system peaking.

Source: David Evans and Associates, Inc.

5.5. Future Baseline ALUS Traffic Operations

Traffic analysis for the 2038 future baseline ALUS was performed for all of the study area intersections and for the merge-diverge sections of the freeway.

5.5.1. Intersection Analysis

Table 5-5 summarizes the results of the traffic operations analysis for I-5 Exit 40 and Exit 43 with respect to the 2038 future baseline ALUS. Figure 5-4a and Figure 5-4b present the v/c ratios and LOS performance by lane group for the area intersections and compares them to the Oregon Highway Plan (OHP) mobility targets. While all lane groups are shown in the figures, only the controlling movement[3] is shown in the table. All Synchro and SimTraffic output worksheets are provided in Appendix B.

[3] Controlling movements at unsignalized intersections are typically the minor-street left turns or, in the case of single-lane approaches, the minor street approaches.

I-5 Exit 40

The truck stop in the ALUS would have the greatest impact on the unsignalized freeway ramp intersections but all IMSA intersections would meet operational targets during the PM peak period. The driveway to the potential truck stop would also be well below the v/c ratio threshold. The intersection with the worst operations would still be the Access Road at Blackwell Road (OR 99), though the controlling movement still meets operational targets with a V/C of 0.78.

The SimTraffic simulations with the truck stop show minimal impacts on future baseline queuing, most likely because of the relatively low v/c ratios in the IMSA. No queuing issues are anticipated on the freeway ramps or at any of the other IMSA intersections.

Table 5-5. Future (2038) Baseline ALUS Intersection Operations

Intersection	Controlling Movement[1]	V/C Ratio[2]	LOS[2]	Operational Targets[3]
I-5 Exit 40				
Access Rd at Blackwell Rd (OR 99)	NB L/R	0.78	D	V/C <= 0.95
Access Rd at Lampman Rd	EB L/R	0.06	B	V/C <= 0.95
Access Rd at I-5 NB Ramps	WB L/T/R	0.60	C	V/C <= 0.85
Access Rd at I-5 SB Ramps	EB L/T/R	0.47	C	V/C <= 0.85
Access Rd at Old Stage Rd	EB L/R	0.12	B	V/C <= 0.95
Access Rd at Potential Truck Stop	EB L	0.36	B	V/C <= 0.95
I-5 Exit 43				
OR 99/OR 234 at N. River Rd [4]	EB T/R	0.06	A	V/C <= 0.95
OR 99/OR 234 at Lampman Rd	SB L/R	0.03	A	V/C <= 0.95
OR 99/OR 234 at Main St [4,5]	NB L/R	0.30	B	V/C <= 0.95
Main St at I-5 NB Ramps	WB L/T/R	0.09	A	V/C <= 0.85
Main St at I-5 SB Ramps	EB L/T/R	0.26	B	V/C <= 0.85
Main St at Profetta Ln	EB L/T	0.01	A	V/C <= 0.95
Potential Truck Stop at Rogue River Hwy	NB R	0.18	A	V/C <= 0.95

Acronyms: EB = eastbound; WB = westbound; NB = northbound; and SB = southbound. L = left; T = through; and R = right.

Notes:
1. At unsignalized intersections the results are reported for the movement with the worst v/c ratio.
2. The v/c ratios and LOS are based on the results of the macrosimulation analysis using Synchro, which cannot account for the influence of adjacent intersection operations.
3. The Jackson County Transportation System Plan (TSP) designates the traffic operations standard as the more restrictive of County and ODOT targets for intersections with one or more approaches maintained by ODOT. 1999 Oregon Highway Plan (OHP), Policy 1F applies to existing and no-build conditions through the planning horizon.
4. Intersection operations analyzed with alternative geometric configurations to meet HCM methodology.
5. Intersection operations based on HCM 2000 methodology.

Source: David Evans and Associates, Inc.

I-5 Exit 43

Similar to the Exit 40 results under the 2038 future baseline ALUS, all study area intersections and the driveway to the potential truck stop would meet operational targets during the PM peak period. The truck stop in the ALUS would have the greatest impact on Main Street at the intersections with OR 99/OR 234 and with the freeway. The driveway to the potential truck stop would also be well below the v/c ratio threshold. The intersection with the worst operations is Main Street at OR 99/OR 234, though the controlling movement (v/c ratio of 0.30) still operates well below operational targets.

The SimTraffic simulations with the truck stop show minimal impacts on future baseline queuing, most likely because of the relatively low v/c ratios in the IMSA. No queuing issues are anticipated on the freeway ramps or at any of the other IMSA intersections.

Queuing

Table 5-3 summarizes queuing results for intersection movements that must stop or yield the right of travel to other traffic flows. The study intersections appear to have adequate capacity and storage for the anticipated demand, except for the northbound left-turn at Access Road at Old Stage Road, although there is potential for vehicles to utilize the two-way left-turn lane storage.

Preliminary Signal Warrants

None of the unsignalized intersections at would meet ODOT's preliminary signal warrants with the ALUS traffic volume forecasts. See Appendix C for details.

Table 5-6. Future (2038) Baseline ALUS 95th Percentile Queues

Intersection	Approach & Movement	95th Percentile Queue (ft.)	Available Storage (ft.)[1]
I-5 Exit 40			
Access Rd at Blackwell Rd (OR 99)	WB L/T	75	600
	NB L/R	175	300
Access Rd at Lampman Rd	EB L/R	50	350
	NB L/T	50	150
Access Rd at I-5 NB Ramps	WB L/T/R	150	850[2]
	NB L/T	75	540
Access Rd at I-5 SB Ramps	EB L/T/R	125	800[2]
	SB L/T	75	540
Access Rd at Old Stage Rd	EB L/R	75	425
	NB L	**50**	40[2]
Access Rd at Potential Truck Stop	EB L	100	150
	EB R	25	150
	NB L/T	25	>1200
I-5 Exit 43			
OR 99/OR 234 at N. River Rd	EB T	75	250
	EB R	50	50[2]
	NB L	50	50[2]
OR 99/OR 234 at Lampman Rd	EB L/T	25	650
	SB L/R	50	>1200
OR 99/OR 234 at Main St	EB T/R	75	380
	NB L/R	50	330
Main St at I-5 NB Ramps	WB L/T/R	50	1000[2]
	NB L/T	25	600
Main St at I-5 SB Ramps	EB L/T/R	75	1100[2]
	NB T/R	50	75
Main St at Profetta Ln	EB L/T	--	>1200
	SB L/T	25	75
Potential Truck Stop at Rogue River Hwy	WB L/T	50	>1200
	NB L	50	150
	NB R	75	150

Acronyms: EB = eastbound; WB = westbound; NB = northbound; and SB = southbound. L = left; T = through; and R = right.

Notes:

1. Storage distance reflects spacing to the next public access point.
2. Storage distance reflects length of travel lane or turn bay.

Source: David Evans and Associates, Inc.

5.5.2. Freeway Analysis

The 2038 operations of the interchange ramp merge and diverge interactions with the mainline highway traffic were also evaluated for the land use alternative scenario. These analyses were conducted in accordance with the methodology prescribed in ODOT's APM to determine v/c ratio performance for the design hour between 3:30 to 4:30 PM. The results of the future freeway operations analysis are summarized in Table 5-7.

Table 5-7. Future (2038) Baseline ALUS Freeway Operations

I-5 Northbound		I-5 Southbound	
Direction/Location	**V/C Ratio[1,2]**	**Direction/Location**	**V/C Ratio[1,2]**
I-5 Exit 40			
Mainline: South of Exit 40	0.49	Mainline: North of Exit 40	0.40
Diverge: Exit 40 Northbound Off Ramp	0.16	Diverge: Exit 40 Southbound Off Ramp	0.10
Mainline: Between Exit 40 Ramps	0.42	Mainline: Between Exit 40 Ramps	0.36
Merge: Exit 40 Northbound On Ramp	0.47	Merge: Exit 40 Southbound On Ramp	0.44
Mainline : North of Exit 40	0.46	Mainline: South of Exit 40	0.43
I-5 Exit 43			
Mainline : South of Exit 43	0.46	Mainline: North of Exit 43	0.41
Diverge: Exit 43 Northbound Off Ramp	0.04	Diverge: Exit 43 Southbound Off Ramp	0.07
Mainline: Between Exit 43 Ramps	0.44	Mainline: Between Exit 43 Ramps	0.38
Merge: Exit 40 Northbound On Ramp	0.48	Merge: Exit 43 Southbound On Ramp	0.41
Mainline: North of Exit 43	0.47	Mainline: South of Exit 43	0.40

Notes:
1. The v/c ratios for the merge/diverge analysis are calculated based on the methodologies outlined in ODOT's Analysis Procedures Manual.
2. The design hour is the hour between 3:30 and 4:30 PM, which coincides with non-freeway system peaking.

Source: David Evans and Associates, Inc.

The merge and diverge analyses for the future baseline show that the freeway and the merge and diverge points for both freeway exits are expected to continue operating well below the mobility target of 0.85 under future baseline with the ALUS. Although the truck stops would add some traffic to the freeway ramps, the mainline traffic volumes are not expected to change significantly as most traffic destined to use one of the potential truck stops would already be on the freeway.

5.6. Summary of Future Deficiencies

No significant operational deficiencies are anticipated under future (year 2038) baseline conditions, even with the potential trucks stops considered with the ALUS. None of the intersections within either of the IMSAs would exceed current mobility targets. Only one intersection is expected to approach the operational threshold of a v/c of 0.95, and that is Access Road at Blackwell Road (OR 99) with an anticipated LOS D and v/c of 0.76 for the future baseline scenario, and LOS D and v/c of 0.78 with the alternative land use.

An increase in truck use on the existing ramps will affect storage in the off ramps in particular. The speed reduction between decelerating truck traffic to use the ramps has potential to affect overall speed on the freeway. Although volumes may not change the expected service levels during peak, traffic may cause speeds to reduce increasing delays on the system.

5.7. Conclusions

All of the study area intersections are expected to operate within operational targets and with minimal queues for future baseline conditions. If a truck stop is constructed, additional improvements may be warranted to accommodate the additional truck traffic. Future conditions are summarized below:

I-5 Exit 40

- Access Road at Blackwell Road (OR 99) is expected to meet operational targets for future baseline conditions. Although volumes approach the threshold for 70% volumes for signal warrant analysis, preliminary signal warrants are not met.
- Although the I-5 northbound ramp terminal approach to Access Road has volumes that approach 70% signal warrant levels, preliminary signal warrants are not met for future baseline conditions, and the intersection is expected to operate well below mobility targets with the current STOP control.
- 95th percentile queues are not expected to exceed available storage or block public access points for any intersection approaches.

I-5 Exit 43

- Operations at all study area intersections are expected to operate well below mobility targets.
- Future baseline volumes would not meet preliminary signal warrants for any of the unsignalized intersections. Study area intersections are expected to operate below mobility targets with existing STOP control.
- 95th percentile queues are not expected to exceed available storage or block public access points for any intersection approaches.

Attachments:

Figure 5-1 (a&b). Future Baseline (2038) Conditions – PM Hour Traffic Volumes
Figure 5-2 (a&b). Future Baseline (2038) ALUS Conditions – PM Hour Traffic Volumes
Figure 5-3 (a&b). Future Baseline (2038) Conditions – PM Peak Hour Operations
Figure 5-4 (a&b). Future Baseline (2038) ALUS Conditions – PM Peak Hour Operations

Appendix A. Future Traffic Volume Development
Appendix B. Synchro Output Worksheets
Appendix C. ODOT's Preliminary Traffic Signal Warrants

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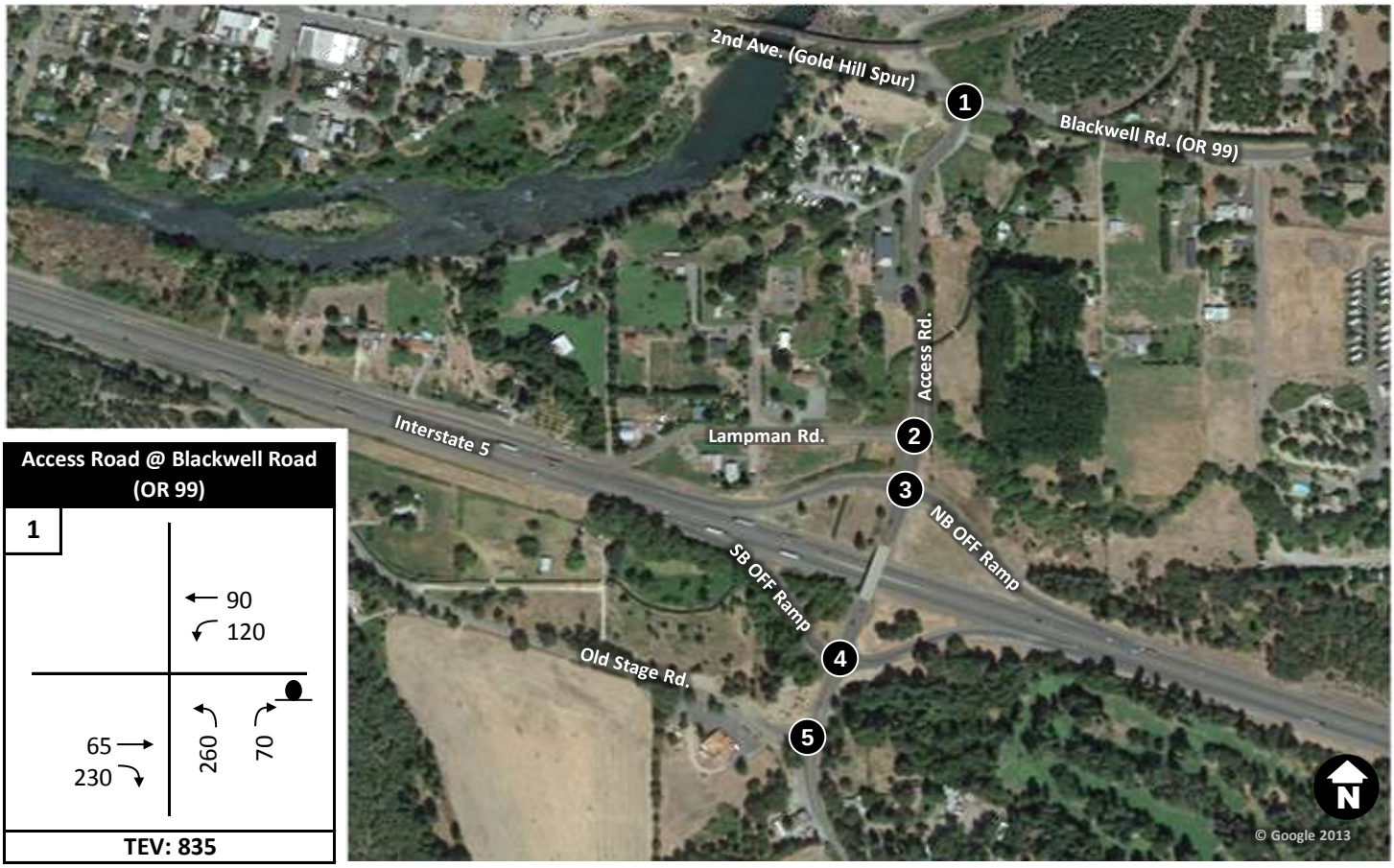


Access Road @ Blackwell Road (OR 99)

1

90
120
65
230
260
70

TEV: 835

Access Road @ Lampman Road

2

25
325
10
20
15
320

TEV: 715

Access Road @ I-5 NB Ramps

3

95
250
210
5
70
30
125

TEV: 785

Access Road @ I-5 SB Ramps

4

145
175
60
0
30
95
50

TEV: 555

Access Road @ Old Stage Road

5

50
125
40
5
10
105

TEV: 335

I-5 Exits 40 and 43 Interchange Area Management Plans

DRAFT Figure 5-1a
Future (2038) Baseline
PM Peak Hour Volumes
I-5 Exit 40

Legend

Allowable Movement

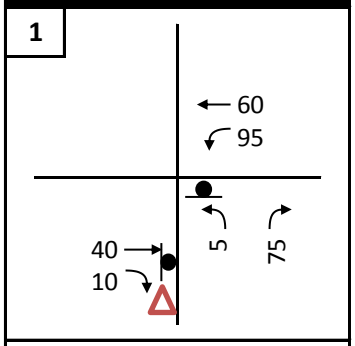
STOP Controlled Approach

TEV: Total Entering Volume

Yield Controlled Movement

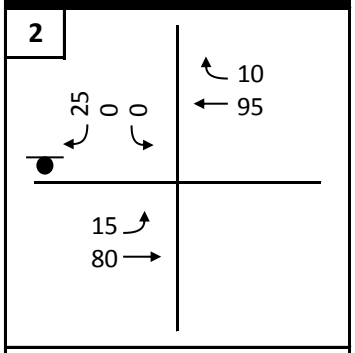
PM Peak Hour Turning Movement Volume

OR 99/OR 234 @ N. River Road



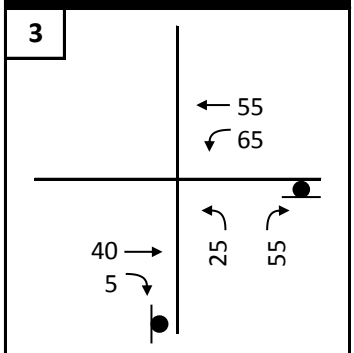
TEV: 270

OR 99/OR 234 @ Lampman Road



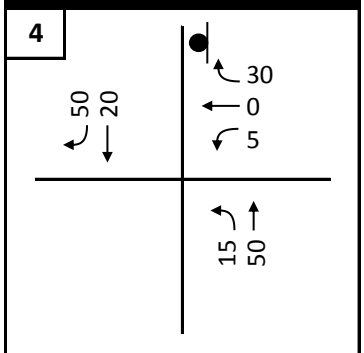
TEV: 225

Main Street @ OR 99/OR 234



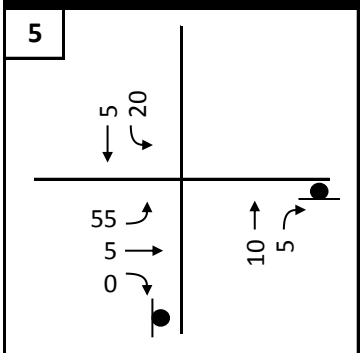
TEV: 245

Main Street @ I-5 NB Ramps



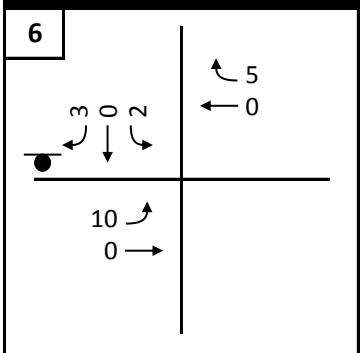
TEV: 170

Main Street @ I-5 SB Ramps



TEV: 100

Main Street @ Profetta Lane



TEV: 20

I-5 Exits 40 and 43 Interchange Area Management Plans

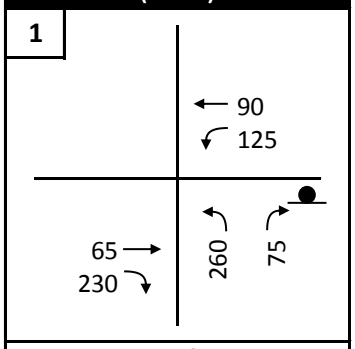
Legend

- Allowable Movement
- TEV: Total Entering Volume
- ### PM Peak Hour Turning Movement Volume
- STOP Controlled Approach
- Yield Controlled Movement

DRAFT Figure 5-1b

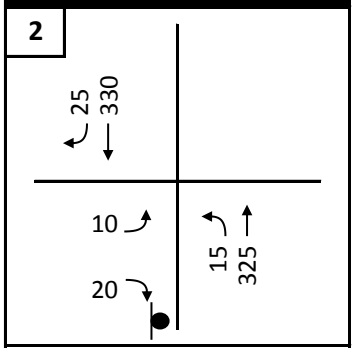
Future (2038) Baseline
PM Peak Hour Volumes
I-5 Exit 43

Access Road @ Blackwell Road (OR 99)



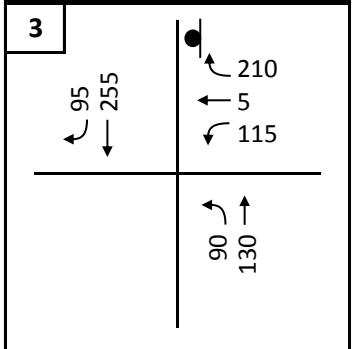
TEV: 845

Access Road @ Lampman Road



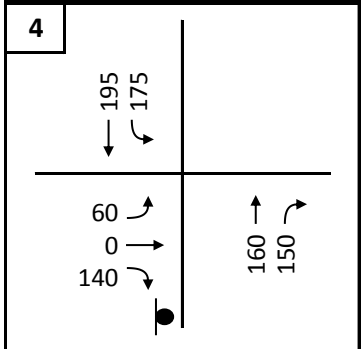
TEV: 725

Access Road @ I-5 NB Ramps



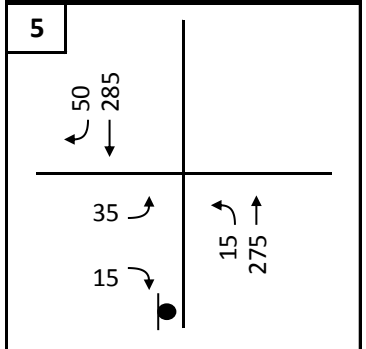
TEV: 900

Access Road @ I-5 SB Ramps



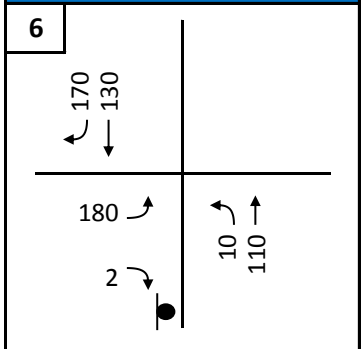
TEV: 880

Access Road @ Old Stage Road



TEV: 675

Potential Truck Stop @ Access Road



TEV: 602

I-5 Exits 40 and 43 Interchange Area Management Plans

DRAFT Figure 5-2a

Future (2038) Baseline ALUS
PM Peak Hour Volumes
I-5 Exit 40

Legend

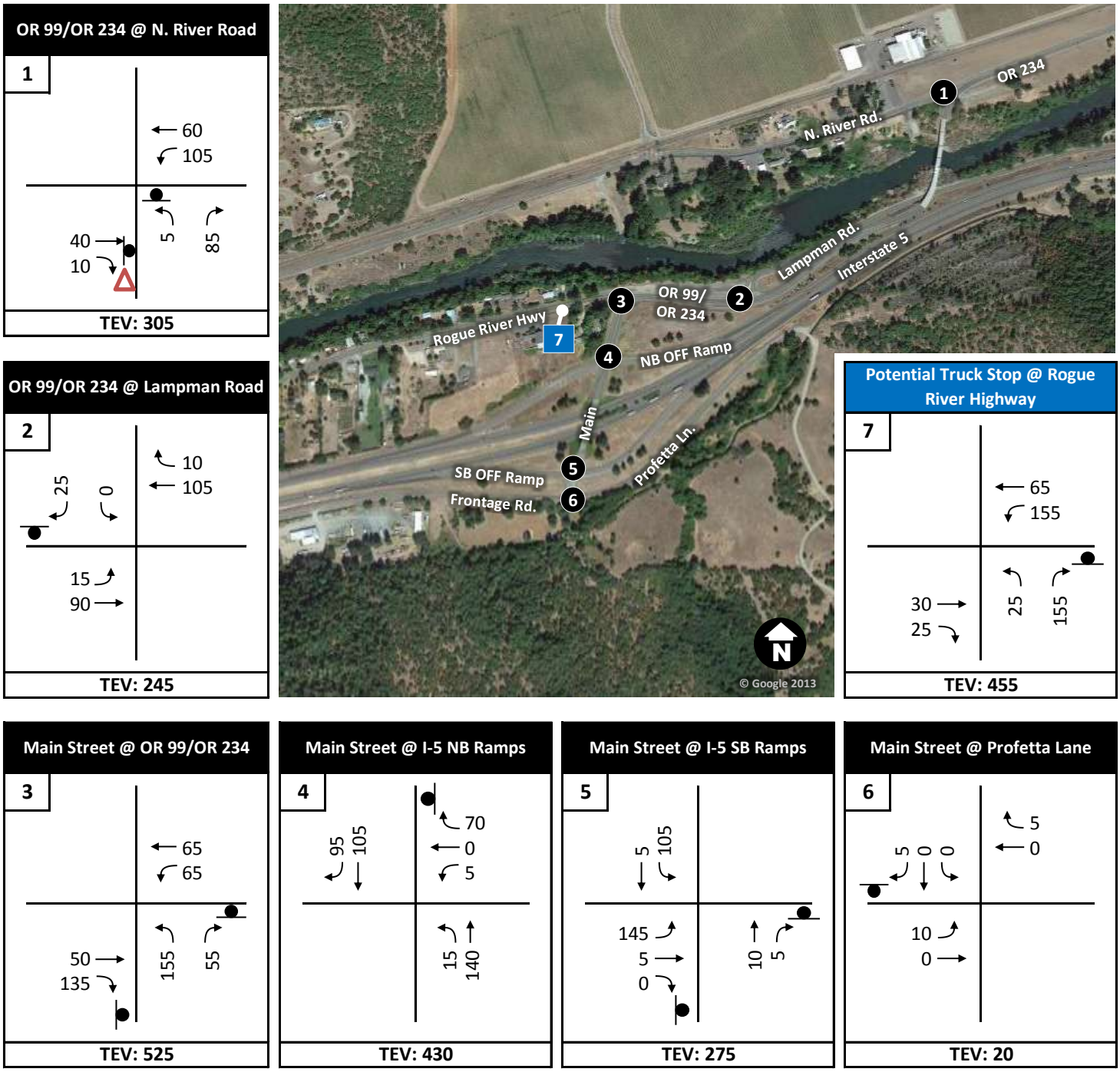
Allowable Movement

TEV: Total Entering Volume

PM Peak Hour Turning Movement Volume

STOP Controlled Approach

Yield Controlled Movement



I-5 Exits 40 and 43 Interchange Area Management Plans

DRAFT Figure 5-2b

Future (2038) Baseline ALUS
PM Peak Hour Volumes
I-5 Exit 43

Legend

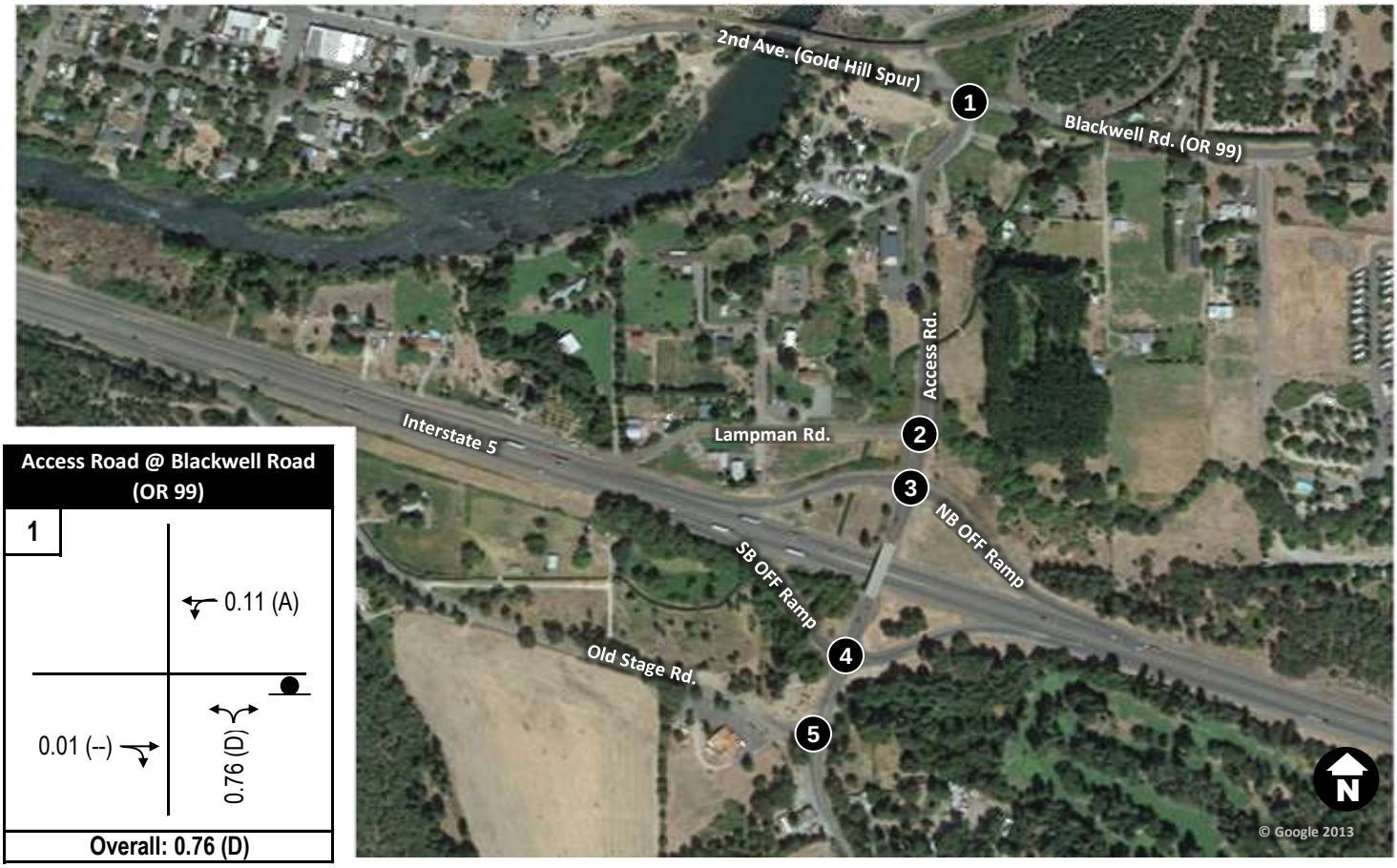
Allowable Movement

TEV: Total Entering Volume

PM Peak Hour Turning Movement Volume

STOP Controlled Approach

Yield Controlled Movement



Access Road @ Blackwell Road (OR 99)

1

0.11 (A)

0.01 (--)

0.76 (D)

Overall: 0.76 (D)

Access Road @ Lampman Road

2

0.01 (--)

0.06 (B)

0.01 (A)

Overall: 0.06 (B)

Access Road @ I-5 NB Ramps

3

0.01 (--)

0.41 (B)

0.03 (A)

Overall: 0.41 (B)

Access Road @ I-5 SB Ramps

4

0.14 (A)

0.24 (C)

0.01 (--)

Overall: 0.24 (C)

Access Road @ Old Stage Road

5

0.01 (--)

0.07 (B)

0.01 (A)

0.01 (--)

Overall: 0.07 (B)

I-5 Exits 40 and 43 Interchange Area Management Plans

DRAFT Figure 5-3a
Future (2038) Baseline
PM Peak Hour Operations
I-5 Exit 40

Legend

Lane Configuration

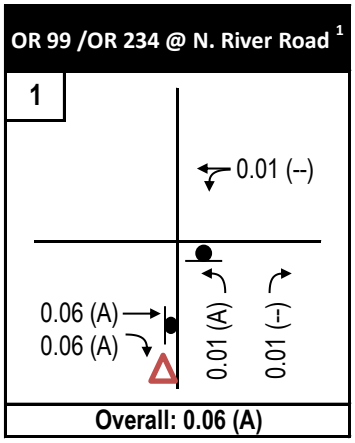
0.01 (A) Lane Group V/C (LOS)
Volume-to-Capacity Ratio (Level of Service)

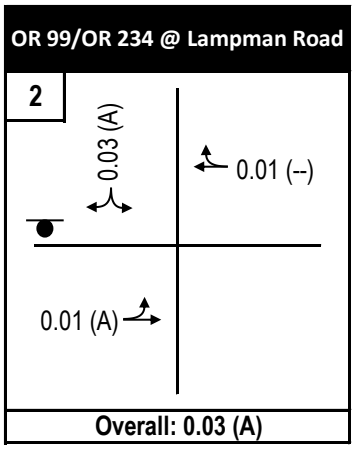
(--) LOS only reported for stopped or yielding movement

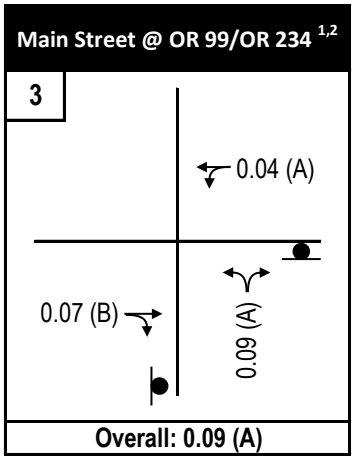
STOP Controlled Approach

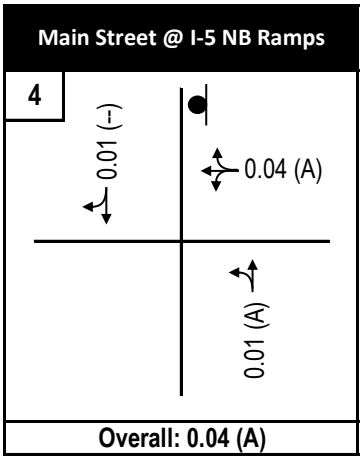
Yield Controlled Movement

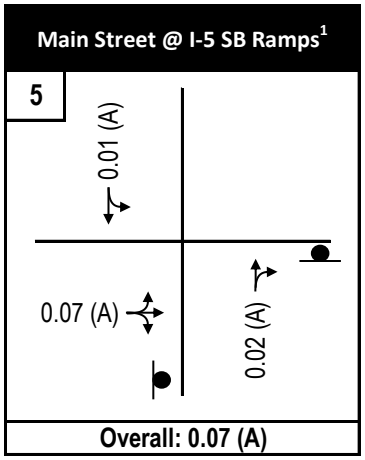
**Intersection operations based on HCM 2000 Methodology*

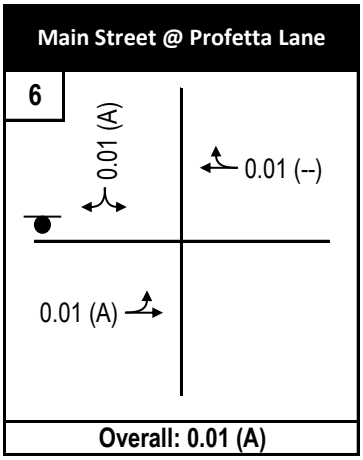












I-5 Exits 40 and 43 Interchange Area Management Plans

Legend

Lane Configuration

0.01 (A) Lane Group V/C (LOS)
Volume-to-Capacity Ratio (Level of Service)

(--) LOS only reported for stopped or yielding movement

STOP Controlled Approach

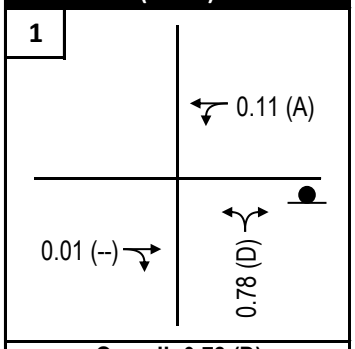
Yield Controlled Movement

[1] *Intersection operations analyzed with alternative geometry*

[2] *Intersection operations based on HCM 2000 Methodology*

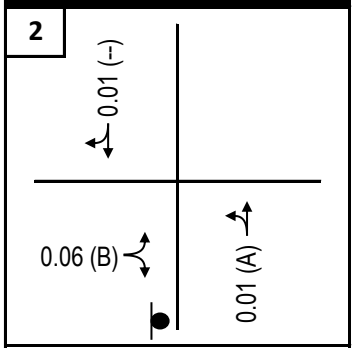
DRAFT Figure 5-3b
Future (2038) Baseline
PM Peak Hour Operations
I-5 Exit 43

Access Road @ Blackwell Road (OR 99)



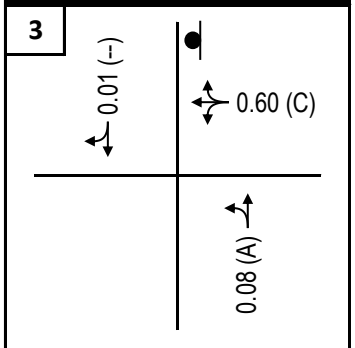
Overall: 0.78 (D)

Access Road @ Lampman Road



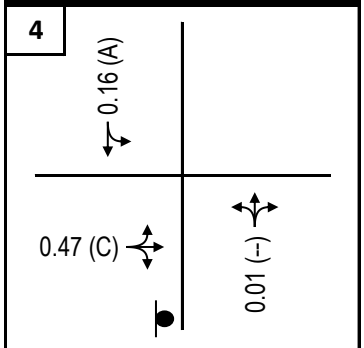
Overall: 0.06 (B)

Access Road @ I-5 NB Ramps



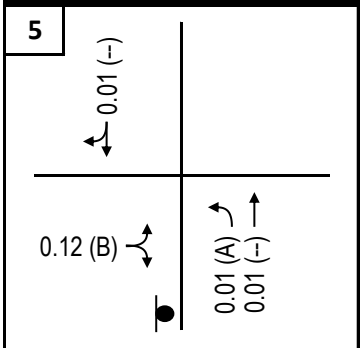
Overall: 0.60 (C)

Access Road @ I-5 SB Ramps



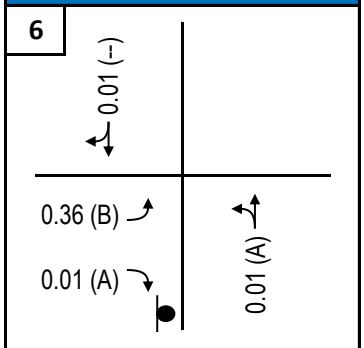
Overall: 0.47 (C)

Access Road @ Old Stage Road



Overall: 0.12 (B)

Potential Truck Stop @ Access Road



Overall: 0.36 (B)

I-5 Exits 40 and 43 Interchange Area Management Plans

Legend

Lane Configuration

0.01 (A) Lane Group V/C (LOS)
Volume-to-Capacity Ratio (Level of Service)

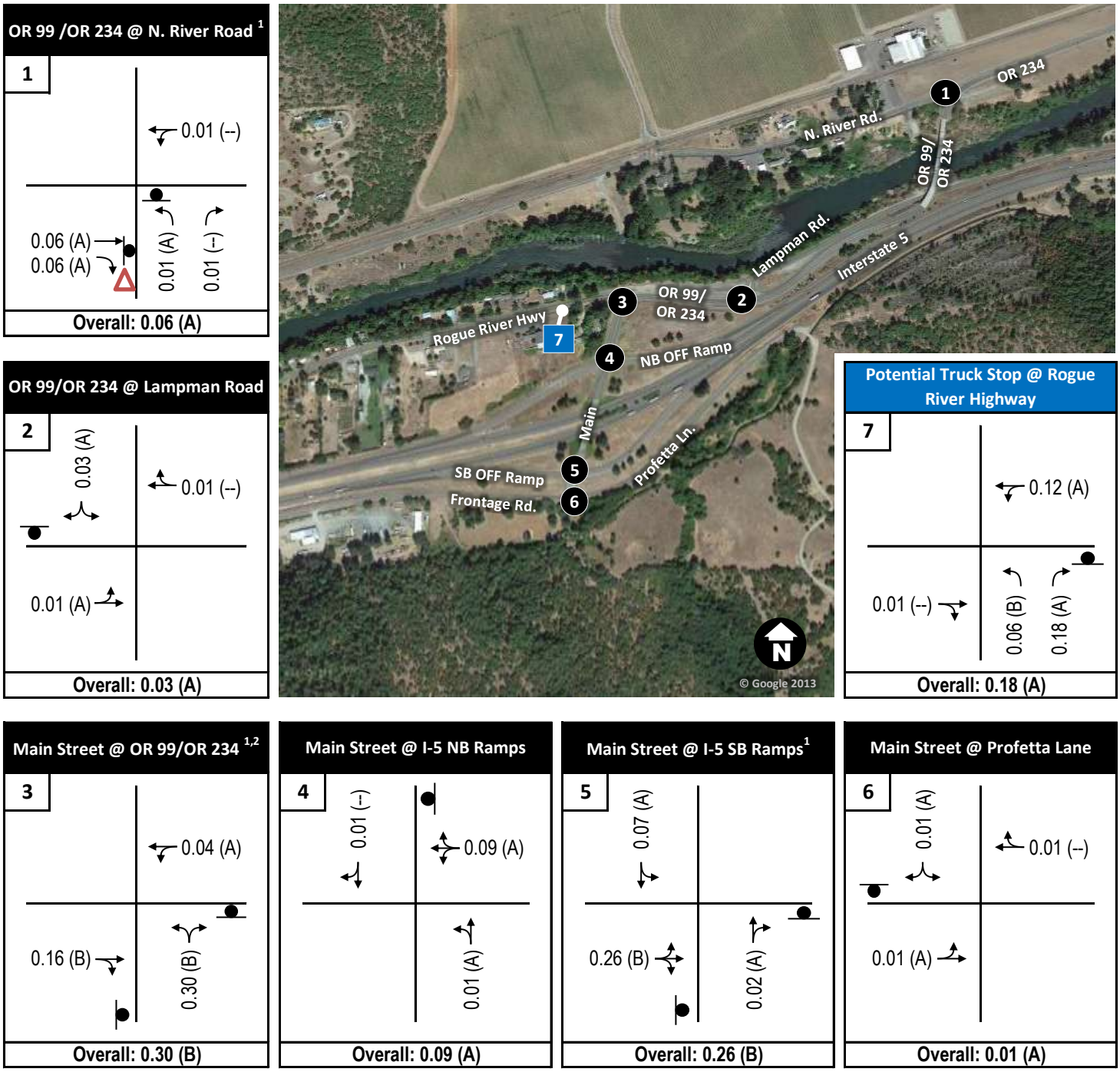
(--) LOS only reported for stopped or yielding movement

STOP Controlled Approach

Yield Controlled Movement

**Intersection operations based on HCM 2000 Methodology*

DRAFT Figure 5-4a
Future (2038) Baseline ALUS
PM Peak Hour Operations
I-5 Exit 40



I-5 Exits 40 and 43 Interchange Area Management Plans

Legend

Lane Configuration

0.01 (A) Lane Group V/C (LOS)
Volume-to-Capacity Ratio (Level of Service)

(--) LOS only reported for stopped or yielding movement

STOP Controlled Approach

Yield Controlled Movement

[1] *Intersection operations analyzed with alternative geometry*

[2] *Intersection operations based on HCM 2000 Methodology*

DRAFT Figure 5-4b

Future (2038) Baseline ALUS
PM Peak Hour Operations
I-5 Exit 43

I-5 Exits 40 and 43 (Gold Hill)
Interchange Area Management Plans

DRAFT Technical Memorandum #5
Appendix A: Future Traffic Volume Development

Prepared for

Oregon Department of Transportation, Region 3
3500 NW Stewart Parkway
Roseburg, Oregon 97470

Prepared by

David Evans and Associates, Inc.
2100 SW River Parkway
Portland, Oregon 97201

June 2013

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Project: Interchange 40/43 Area Management Plans
Job #: ODOT0000-0783
Subject:
Created:
Rev. Date: 6/5/2013

6/5/2013

UPDATED

N-S ID	Synchro ID	Intersection	Movement	Existing Counts 1-Hr Volume PM Peak	Existing Heavy Vehicle Count	Existing Heavy Vehicle Percentage	Seasonal Adjustment Factor	Existing Seasonally Adj. 1-Hr Volume Peak	Volume Balancing Adjustments	2012 Balanced Volumes Peak	
1	10	Access Road @ OR 99 (Blackwell Road/Upper River Road)	EBL	0		0%	1.06	0	0	0	
	10	16 hr PM Turning Movement Count	EBT	53		0%	1.06	55	0	55	
	10	Count Date: 10/24/12	EBR	165		0%	1.06	175	30	205	
	10	2012	WBL	55	1	2%	1.06	60	15	75	
	10		WBT	74	2	3%	1.06	80	0	80	
	10		WBR	0		0%	1.06	0	0	0	
	10	PM Peak Hour: 4:00 PM-5:00 PM	NBL	207	2	1%	1.06	220	15	235	
	10	PM Peak Hour Used: 3:30 PM-4:30 PM	NBT	0		0%	1.06	0	0	0	
	10		NBR	32	0	0%	1.06	35	0	35	345
	10		SBL	0		0%	1.06	0	0	0	
	10	PHF:	SBT	0		0%	1.06	0	0	0	
	10	0.88	SBR	0		0%	1.06	0	0	0	
			TEV	**586**	**5**			**625**	**60**	**685**	
2	20	Access Road @ Lampman Road	EBL	8		0%	1.06	10	0	10	
	20	16 hr PM Turning Movement Count	EBT	0		0%	1.06	0	0	0	
	20	Count Date: 10/24/12	EBR	12		0%	1.06	15	0	15	
	20	2012	WBL	0		0%	1.06	0	0	0	
	20		WBT	0		0%	1.06	0	0	0	
	20		WBR	0		0%	1.06	0	0	0	
	20	PM Peak Hour: 4:00 PM-5:00 PM	NBL	6		0%	1.06	5	5	10	
	20	PM Peak Hour Used: 3:30 PM-4:30 PM	NBT	234	2	1%	1.06	250	10	260	
	20		NBR	0		0%	1.06	0	0	0	
	20		SBL	0		0%	1.06	0	0	0	
	20	PHF:	SBT	205	1	0%	1.06	215	45	260	
	20	0.80	SBR	17		0%	1.06	20	0	20	
			TEV	**482**	**3**			**515**	**60**	**575**	
3	30	Access Road @ I-5 IC 40 NB Ramps	EBL	0		0%		0	0	0	
	30	16 hr PM Turning Movement Count	EBT	0		0%		0	0	0	
	30	Count Date: 11/14/2012	EBR	0		0%		0	0	0	
	30	2012	WBL	42		0%	1.15	50	5	55	
	30		WBT	2	1	50%	1.15	2	0	2	
	30		WBR	148	1	1%	1.15	170	0	170	
	30	PM Peak Hour: 4:45 PM-5:45 PM	NBL	25		0%	1.15	30	-5	25	
	30	PM Peak Hour Used: 3:30 PM-4:30 PM	NBT	89	1	1%	1.15	100	0	100	
	30		NBR	0		0%		0	0	0	
	30		SBL	0		0%		0	0	0	
	30	PHF:	SBT	165	2	1%	1.15	190	10	200	
	30	0.94	SBR	67	2	3%	1.15	75	0	75	
			TEV	**538**	**7**			**617**	**10**	**627**	
4	40	Access Road @ I-5 IC 40 SB Ramps	EBL	47		0%	1.09	50	0	50	
	40	16 hr PM Turning Movement Count	EBT	0		0%	1.09	0	0	0	
	40	Count Date: 10/24/2012	EBR	20		0%	1.09	20	5	25	
	40	2012	WBL	0		0%		0	0	0	
	40		WBT	0		0%		0	0	0	
	40		WBR	0		0%		0	0	0	
	40	PM Peak Hour: 3:00 PM-4:00 PM	NBL	0		0%		0	0	0	
	40	PM Peak Hour Used: 3:30 PM-4:30 PM	NBT	73		0%	1.06	75	0	75	
	40		NBR	37		0%	1.09	40	0	40	
	40		SBL	132		0%	1.09	145	-5	140	
	40	PHF:	SBT	109		0%	1.06	115	0	115	
	40	0.79	SBR	0		0%		0	0	0	
			TEV	**418**	**0**			**445**	**0**	**445**	
5	50	Access Road @ Old Stage Road	EBL	31		0%	1.06	35	0	35	
	50	16 hr PM Turning Movement Count	EBT	0		0%	1.06	0	0	0	
	50	Count Date: 10/24/2012	EBR	4		0%	1.06	5	0	5	
	50	2012	WBL	0		0%	1.06	0	0	0	
	50		WBT	0		0%	1.06	0	0	0	
	50		WBR	0		0%	1.06	0	0	0	
	50	PM Peak Hour: 4:00 PM-5:00 PM	NBL	10		0%	1.06	10	0	10	
	50	PM Peak Hour Used: 3:30 PM-4:30 PM	NBT	76		0%	1.06	80	0	80	
	50		NBR	0		0%	1.06	0	0	0	
	50		SBL	0		0%	1.06	0	0	0	
	50	PHF:	SBT	99		0%	1.06	105	-5	100	
	50	0.80	SBR	36	1	3%	1.06	40	0	40	
			TEV	**256**	**1**			**275**	**-5**	**270**	
20	200	Truck Stop Driveway @ Old Stage Rd (N-S)	EBL								
	200		EBT								
	200		EBR								
	200		WBL								
	200		WBT								
	200		WBR								
	200		NBL								
	200		NBT							90	
	200		NBR								
	200		SBL								
	200	Volume Difference: 0	SBT							105	
	200	0.00	SBR								
			TEV	**0**	**0**			**0**	**0**	**195**	
1	60	OR 99 (Rogue River Highway) @ OR 234 (2nd Avenue)/ N. River Road	EBL		0	0%	1.06	0	0	0	
	60		EBT	32	0	0%	1.06	35	0	35	
	60	VOLUMES SPLIT ACROSS 3 NODES	EBR		0	0%	1.06	0	0	0	
	60	Count Date: 10/23/2012	WBL	77	1	1%	1.06	80	0	80	
	60		WBT	53	1	2%	1.06	55	0	55	
	60		WBR		0	0%	1.06	0	0	0	
	60	PM Peak Hour: 3:15 PM-4:15 PM	NBL		0	0%	1.06	0	0	0	
	60	PM Peak Hour Used: 3:30 PM-4:30 PM	NBT		0	0%	1.06	0	0	0	
	60		NBR	56	2	4%	1.06	60	0	60	
	60		SBL		0	0%	1.06	0	0	0	
	60	PHF:	SBT		0	0%	1.06	0	0	0	
	60	0.88	SBR		0	0%	1.06	0	0	0	
			TEV	**218**	**4**			**230**	**0**	**230**	

Project: Interchange 40/43 Area Management Plans
Job #: ODOT0000-0783
Subject:
Created:
Rev. Date: 6/5/2013

UPDATED

N-S ID	Synchro ID	Intersection	Movement	Existing Counts 1-Hr Volume PM Peak	Existing Heavy Vehicle Count	Existing Heavy Vehicle Percentage	Seasonal Adjustment Factor	Existing Seasonally Adj. 1-Hr Volume Peak	Volume Balancing Adjustments	2012 Balanced Volumes Peak
	62	OR 99 (Rogue River Highway) @ N. River Road Connection	EBL		0	0%	1.06	0	0	0
	62		EBT		0	0%	1.06	0	0	0
	62	VOLUMES SPLIT ACROSS 3 NODES	EBR	11	0	0%	1.06	10	0	10
	62	Count Date: 10/23/2012	WBL	77	1	1%	1.06	80	0	80
	62		WBT		0	0%	1.06	0	0	0
	62		WBR		0	0%	1.06	0	0	0
	62	PM Peak Hour: 3:15 PM-4:15 PM	NBL	6	0	0%	1.06	5	0	5
	62	PM Peak Hour Used: 3:30 PM-4:30 PM	NBT			0%	1.06	0	0	0
	62		NBR	56	2	4%	1.06	60	0	60
	62		SBL		0	0%	1.06	0	0	0
	62	PHF:	SBT			0%	1.06	0	0	0
	62	0.88	SBR		0	0%	1.06	0	0	0
			TEV	**150**	**3**			**155**	**0**	**155**
	65	N. River Road @ N. River Road Connection	EBL		0	0%	1.06	0	0	0
	65		EBT	32		0%	1.06	35	0	35
	65	VOLUMES SPLIT ACROSS 3 NODES	EBR	11		0%	1.06	10	0	10
	65	Count Date: 10/23/2012	WBL			0%	1.06	0	0	0
	65		WBT	53	1	2%	1.06	55	0	55
	65		WBR		0	0%	1.06	0	0	0
	65	PM Peak Hour: 3:15 PM-4:15 PM	NBL	6	0	0%	1.06	5	0	5
	65	PM Peak Hour Used: 3:30 PM-4:30 PM	NBT		0	0%	1.06	0	0	0
	65		NBR		0	0%	1.06	0	0	0
	65		SBL			0%	1.06	0	0	0
	65	PHF:	SBT		0	0%	1.06	0	0	0
	65	0.88	SBR		0	0%	1.06	0	0	0
			TEV	**102**	**1**			**105**	**0**	**105**
2	70	OR 99 (Rogue River Highway) @ Lampman Road	EBL	12		0%	1.22	15	0	15
	70		EBT	141		0%	1.22	170	-105	65
	70		EBR	0		0%	1.22	0	0	0
	70	Count Date: 1/8/13	WBL	0		0%	1.22	0	0	0
	70		WBT	60		0%	1.22	75	5	80
	70		WBR	7		0%	1.22	10	0	10
	70	PM Peak Hour: 3:30 PM-4:30 PM	NBL	0		0%	1.22	0	0	0
	70	PM Peak Hour Used: 3:30 PM-4:30 PM	NBT	0		0%	1.22	0	0	0
	70		NBR	0		0%	1.22	0	0	0
	70		SBL	2		0%	1.22	0	0	0
	70	PHF:	SBT	0		0%	1.22	0	0	0
	70	~~0.59~~	SBR	19		0%	1.22	25	-5	20
		0.88	**TEV**	**241**	**0**			**295**	**-105**	**190**
3	80	Main Street @ OR 99 (Rogue River Highway)	EBL	0		0%	1.06	0	0	0
	80		EBT	28		0%	1.06	30	5	35
	80		EBR	3		0%	1.06	5	0	5
	80	Count Date: 10/22/2012	WBL	48		0%	1.06	50	0	50
	80		WBT	44		0%	1.06	45	5	50
	80		WBR	0		0%	1.06	0	0	0
	80	PM Peak Hour: 1:15 AM-2:15 AM	NBL	22		0%	1.06	25	0	25
	80	PM Peak Hour Used: 3:30 PM-4:30 PM	NBT	0		0%	1.06	0	0	0
	80		NBR	43	1	2%	1.06	45	0	45
	80		SBL	0		0%	1.06	0	0	0
	80	PHF:	SBT	0		0%	1.06	0	0	0
	80	0.90	SBR	0		0%	1.06	0	0	0
			TEV	**188**	**1**			**200**	**10**	**210**
4	90	Main Street @ I-5 IC 43 NB Ramps	EBL	0		0%		0	0	0
	90		EBT	0		0%		0	0	0
	90		EBR	0		0%		0	0	0
	90	Count Date: 10/22/2012	WBL	2		0%	1.09	2	3	5
	90		WBT	0		0%	1.09	0	0	0
	90		WBR	25		0%	1.09	25	0	25
	90	PM Peak Hour: 4:00 PM-5:00 PM	NBL	4		0%	1.09	5	5	10
	90	PM Peak Hour Used: 3:30 PM-4:30 PM	NBT	40	1	3%	1.06	40	5	45
	90		NBR	0		0%		0	0	0
	90		SBL	0		0%		0	0	0
	90	PHF:	SBT	9		0%	1.06	10	5	15
	90	0.95	SBR	34		0%	1.09	35	5	40
			TEV	**114**	**1**			**117**	**23**	**140**
5	100	Main Street @ I-5 IC 43 SB Ramps	EBL	41	1	2%	1.09	45	0	45
	100		EBT	3	2	67%	1.09	5	0	5
	100		EBR	1		0%	1.09	0	0	0
	100	Count Date: 10/22/2012	WBL	0		0%		0	0	0
	100		WBT	0		0%		0	0	0
	100		WBR	0		0%		0	0	0
	100	PM Peak Hour: 4:30 PM-5:30 PM	NBL	0		0%		0	0	0
	100	PM Peak Hour Used: 3:30 PM-4:30 PM	NBT	6		0%	1.06	5	5	10
	100		NBR	3		0%	1.09	5	0	5
	100		SBL	8		0%	1.09	10	5	15
	100	PHF:	SBT	2		0%	1.06	2	3	5
	100	0.76	SBR	0		0%		0	0	0
			TEV	**64**	**3**			**72**	**13**	**85**
6	110	Main Street @ Profetta Lane	EBL	8		0%	1.06	10	0	10
	110	0	EBT	0		0%	1.06	0	0	0
	110	0	EBR	0		0%	1.06	0	0	0
	110	Count Date: 10/22/2012	WBL	0		0%	1.06	0	0	0
	110		WBT	0		0%	1.06	0	0	0
	110		WBR	1		0%	1.06	2	3	5
	110	PM Peak Hour: 3:15 PM-4:15 PM	NBL	0		0%	1.06	0	0	0
	110	PM Peak Hour Used: 3:30 PM-4:30 PM	NBT	0		0%	1.06	0	0	0
	110		NBR	0		0%	1.06	0	0	0
	110		SBL	1		0%	1.06	2	0	2
	110	PHF:	SBT	0		0%	1.06	0	0	0
	110	0.38	SBR	2		0%	1.06	2	1	3
			TEV	**12**	**0**			**16**	**4**	**20**

Project: Interchange 40/43 Area Management Plans
Job #: ODOT0000-0783
Subject:
Created:
Rev. Date: 6/5/2013

UPDATED

N-S ID	Synchro ID	Intersection	Movement	Existing Counts 1-Hr Volume PM Peak	Existing Heavy Vehicle Count	Existing Heavy Vehicle Percentage	Seasonal Adjustment Factor	Existing Seasonally Adj. 1-Hr Volume Peak	Volume Balancing Adjustments	2012 Balanced Volumes Peak
21	210	Truck Stop Driveway @ Hwy 99/234	EBL							
	210		EBT							40
	210		EBR							
	210		WBL							
	210		WBT							75
	210		WBR							
	210	12:00 AM	NBL							
	210	12:00 AM	NBT							
	210		NBR							
	210		SBL							
	210	PHF:	SBT							
	210	0.00	SBR							
			TEV	**0**	**0**			**0**	**0**	**115**
7	70	I-5 PM Merge/Diverge	Main S	1597		0%	1.00	1595		1595
	70	***EXIT 40***	NB Off	192		0%	1.00	190		190
	70		Through	1405		0%	1.00	1405		1405
	70		NB On	94		0%	1.00	95		95
	70		**Main N**	**1499**	**0**	0%	1.00	1500		1500
	70		Main N	**1315**	**0**	0%	1.00	1315		1315
	70		SB Off	67		0%	1.00	65		65
	70		Through	1248		0%	1.00	1250		1250
	70		SB On	169		0%	1.00	170		170
	70		Main S	1417		0%	1.00	1415		1415
			TEV	**9003**	**0**					**9000**
7	70	I-5 PM Merge/Diverge	**Main S**	**1499**		0%	1.00	1500		1500
	70	***EXIT 43***	NB Off	27		0%	1.00	25		25
	70		Through	1472		0%	1.00	1470		1470
	70		NB On	38		0%	1.00	40		40
	70		Main N	1510	**0**	0%	1.00	1510		1510
	70		Main N	1346	**0**	0%	1.00	1345		1345
	70		SB Off	45		0%	1.00	45		45
	70		Through	1301		0%	1.00	1300		1300
	70		SB On	14		0%	1.00	15		15
	70		**Main S**	**1315**		0%	1.00	1315		1315
			TEV	**8567**	**0**					

From 2012 ATR Traffic Data

Northbound	1499
Southbound	1315

Seasonal Factor from October/July ATR data = 1.09

Project: Interchange 40/43 Area Management Plans
Job #: ODOT0000-0783
Subject:
Created:
Rev. Date: 6/5/2013

6/5/2013

Possible mvmts for balancing

N-S ID	Synchro ID	Intersection	Movement	2012 Balanced Volumes Peak	6 Future Baseline Background Growth (UPDATED)	7 2038 Future Baseline Background Growth (UPDATED)	8 2038 Future Baseline Rounded Volumes	9 Volume Balancing Adjustments	10 2038 Future Baseline Balanced Volumes	10 Delta Future-Existing Balanced Volumes	
1	10	Access Road @ OR 99 (Blackwell Road/Upper River Road)	EBL	0		0	0		0	0	
	10	16 hr PM Turning Movement Count	EBT	55	0.59%	63	65		65	10	
	10	Count Date: 10/24/12	EBR	205	0.30%	221	220	10	230	25	
	10	2012	WBL	75	0.59%	86	85	35	120	45	
	10		WBT	80	0.59%	92	90		90	10	
	10		WBR	0		0	0		0	0	
	10	PM Peak Hour: 4:00 PM-5:00 PM	NBL	235	0.30%	253	255	5	260	25	
	10	PM Peak Hour Used: 3:30 PM-4:30 PM	NBT	0		0	0		0	0	
	10		NBR	35	0.59%	40	40	30	70	35	345
	10		SBL	0		0	0		0	0	
	10	PHF:	SBT	0		0	0		0	0	
	10	0.88	SBR	0		0	0		0	0	
			TEV	685		757	755		835		
2	20	Access Road @ Lampman Road	EBL	10	0.59%	12	10		10	0	
	20	16 hr PM Turning Movement Count	EBT	0	0.59%	0	0		0	0	
	20	Count Date: 10/24/12	EBR	15	0.59%	17	15	5	20	5	
	20	2012	WBL	0		0	0		0	0	
	20		WBT	0		0	0		0	0	
	20		WBR	0		0	0		0	0	
	20	PM Peak Hour: 4:00 PM-5:00 PM	NBL	10	0.59%	12	10	5	15	5	
	20	PM Peak Hour Used: 3:30 PM-4:30 PM	NBT	260	0.59%	300	300	20	320	60	
	20		NBR	0	0.59%	0	0		0	0	
	20		SBL	0	0.59%	0	0		0	0	
	20	PHF:	SBT	260	0.59%	300	300	25	325	65	
	20	0.80	SBR	20	0.59%	23	25		25	5	
			TEV	575		662	660		715		
3	30	Access Road @ I-5 IC 40 NB Ramps	EBL	0		0	0		0	0	
	30	16 hr PM Turning Movement Count	EBT	0		0	0		0	0	
	30	Count Date: 11/14/2012	EBR	0		0	0		0	0	
	30	2012	WBL	55	0.99%	69	70		70	15	
	30		WBT	2	1.68%	3	5		5	3	
	30		WBR	170	0.95%	212	210		210	40	
	30	PM Peak Hour: 4:45 PM-5:45 PM	NBL	25	0.99%	31	30		30	5	
	30	PM Peak Hour Used: 3:30 PM-4:30 PM	NBT	100	0.95%	125	125		125	25	
	30		NBR	0		0	0		0	0	
	30		SBL	0		0	0		0	0	
	30	PHF:	SBT	200	0.87%	245	245	5	250	50	
	30	0.94	SBR	75	0.95%	94	95		95	20	
			TEV	627		779	780		785		
4	40	Access Road @ I-5 IC 40 SB Ramps	EBL	50	0.95%	62	60		60	10	
	40	16 hr PM Turning Movement Count	EBT	0	1.68%	0	0		0	0	
	40	Count Date: 10/24/2012	EBR	25	0.99%	31	30		30	5	
	40	2012	WBL	0		0	0		0	0	
	40		WBT	0		0	0		0	0	
	40		WBR	0		0	0		0	0	
	40	PM Peak Hour: 3:00 PM-4:00 PM	NBL	0		0	0		0	0	
	40	PM Peak Hour Used: 3:30 PM-4:30 PM	NBT	75	0.30%	81	80	15	95	20	
	40		NBR	40	0.99%	50	50		50	10	
	40		SBL	140	0.95%	175	175		175	35	
	40	PHF:	SBT	115	0.99%	145	145		145	30	
	40	0.79	SBR	0		0	0		0	0	
			TEV	445		544	540		555		
5	50	Access Road @ Old Stage Road	EBL	35	0.30%	38	40		40	5	
	50	16 hr PM Turning Movement Count	EBT	0	0.30%	0	0		0	0	
	50	Count Date: 10/24/2012	EBR	5	0.30%	5	5		5	0	
	50	2012	WBL	0		0	0		0	0	
	50		WBT	0		0	0		0	0	
	50		WBR	0		0	0		0	0	
	50	PM Peak Hour: 4:00 PM-5:00 PM	NBL	10	0.30%	11	10		10	0	
	50	PM Peak Hour Used: 3:30 PM-4:30 PM	NBT	80	0.30%	86	85	20	105	25	
	50		NBR	0		0	0		0	0	
	50		SBL	0		0	0		0	0	
	50	PHF:	SBT	100	0.99%	126	125		125	25	
	50	0.80	SBR	40	0.99%	50	50		50	10	
			TEV	270		316	315		335		
20	200	Truck Stop Driveway @ Old Stage Rd (N-S)	EBL						0	0	
	200		EBT						0	0	
	200		EBR						0	0	
	200		WBL						0	0	
	200		WBT						0	0	
	200		WBR						0	0	
	200		NBL						0	0	
	200		NBT	90					115	25	
	200		NBR							0	
	200		SBL							0	
	200	Volume Difference: 0	SBT	105					130	25	
	200	0.00	SBR							0	
			TEV	195		0	0		245		
1	60	OR 99 (Rogue River Highway) @ OR 234 (2nd Avenue)/ N. River Road	EBL	0	0.30%	0	0		0	0	
	60		EBT	35	0.30%	38	40		40	5	
	60	VOLUMES SPLIT ACROSS 3 NODES	EBR	0	0.30%	0	0		0	0	
	60	Count Date: 10/23/2012	WBL	80	0.30%	86	85	10	95	15	
	60		WBT	55	0.30%	59	60		60	5	
	60		WBR	0	0.30%	0	0		0	0	
	60	PM Peak Hour: 3:15 PM-4:15 PM	NBL	0	0.30%	0	0		0	0	
	60	PM Peak Hour Used: 3:30 PM-4:30 PM	NBT	0	0.30%	0	0		0	0	
	60		NBR	60	0.30%	65	65	10	75	15	
	60		SBL	0	0.30%	0	0		0	0	
	60	PHF:	SBT	0	0.30%	0	0		0	0	
	60	0.88	SBR	0	0.30%	0	0		0	0	
			TEV	230		248	250		270		

Project: Interchange 40/43 Area Management Plans
Job #: ODOT0000-0783
Subject:
Created:
Rev. Date: 6/5/2013

Possible mvmts for balancing

N-S ID	Synchro ID	Intersection	Movement	2012 Balanced Volumes Peak	6 Future Baseline Background Growth (UPDATED)	7 2038 Future Baseline Background Growth (UPDATED)	8 2038 Future Baseline Rounded Volumes	9 Volume Balancing Adjustments	10 2038 Future Baseline Balanced Volumes	10 Delta Future-Existing Balanced Volumes
	62	OR 99 (Rogue River Highway) @ N. River Road Connection	EBL	0	0.30%	0	0		0	0
	62		EBT	0	0.30%	0	0		0	0
	62	VOLUMES SPLIT ACROSS 3 NODES	EBR	10	0.30%	11	10		10	0
	62	Count Date: 10/23/2012	WBL	80	0.30%	86	85	10	95	15
	62		WBT	0	0.30%	0	0		0	0
	62		WBR	0	0.30%	0	0		0	0
	62	PM Peak Hour: 3:15 PM-4:15 PM	NBL	5	0.30%	5	5		5	0
	62	PM Peak Hour Used: 3:30 PM-4:30 PM	NBT	0	0.30%	0	0		0	0
	62		NBR	60	0.30%	65	65	10	75	15
	62		SBL	0	0.30%	0	0		0	0
	62	PHF:	SBT	0	0.30%	0	0		0	0
	62	0.88	SBR	0	0.30%	0	0		0	0
			TEV	**155**		**167**	**165**		**185**	
	65	N. River Road @ N. River Road Connection	EBL	0	0.30%	0	0		0	0
	65		EBT	35	0.30%	38	40		40	5
	65	VOLUMES SPLIT ACROSS 3 NODES	EBR	10	0.30%	11	10		10	0
	65	Count Date: 10/23/2012	WBL	0	0.30%	0	0		0	0
	65		WBT	55	0.30%	59	60		60	5
	65		WBR	0	0.30%	0	0		0	0
	65	PM Peak Hour: 3:15 PM-4:15 PM	NBL	5	0.30%	5	5		5	0
	65	PM Peak Hour Used: 3:30 PM-4:30 PM	NBT	0	0.30%	0	0		0	0
	65		NBR	0	0.30%	0	0		0	0
	65		SBL	0	0.30%	0	0		0	0
	65	PHF:	SBT	0	0.30%	0	0		0	0
	65	0.88	SBR	0	0.30%	0	0		0	0
			TEV	**105**		**113**	**115**		**115**	
2	70	OR 99 (Rogue River Highway) @ Lampman Road	EBL	15	0.30%	16	15		15	0
	70		EBT	65	0.30%	70	70	10	80	15
	70		EBR	0	0.30%	0	0		0	0
	70	Count Date: 1/8/13	WBL	0	0.30%	0	0		0	0
	70		WBT	80	0.30%	86	85	10	95	15
	70		WBR	10	0.30%	11	10		10	0
	70	PM Peak Hour: 3:30 PM-4:30 PM	NBL	0		0	0		0	0
	70	PM Peak Hour Used: 3:30 PM-4:30 PM	NBT	0		0	0		0	0
	70		NBR	0		0	0		0	0
	70		SBL	0	0.30%	0	0		0	0
	70	PHF:	SBT	0	0.30%	0	0		0	0
	70	~~0.59~~	SBR	20	0.30%	22	20	5	25	5
		0.88	**TEV**	**190**		**205**	**200**		**225**	
3	80	Main Street @ OR 99 (Rogue River Highway)	EBL	0	0.30%	0	0		0	0
	80		EBT	35	0.30%	38	40		40	5
	80		EBR	5	0.30%	5	5		5	0
	80	Count Date: 10/22/2012	WBL	50	0.30%	54	55	10	65	15
	80		WBT	50	0.30%	54	55		55	5
	80		WBR	0	0.30%	0	0		0	0
	80	PM Peak Hour: 1:15 AM-2:15 AM	NBL	25	0.30%	27	25		25	0
	80	PM Peak Hour Used: 3:30 PM-4:30 PM	NBT	0	0.30%	0	0		0	0
	80		NBR	45	0.30%	49	50	5	55	10
	80		SBL	0	0.30%	0	0		0	0
	80	PHF:	SBT	0	0.30%	0	0		0	0
	80	0.90	SBR	0	0.30%	0	0		0	0
			TEV	**210**		**226**	**230**		**245**	
4	90	Main Street @ I-5 IC 43 NB Ramps	EBL	0		0	0		0	0
	90		EBT	0		0	0		0	0
	90		EBR	0		0	0		0	0
	90	Count Date: 10/22/2012	WBL	5	0.99%	6	5		5	0
	90		WBT	0	1.68%	0	0		0	0
	90		WBR	25	0.99%	31	30		30	5
	90	PM Peak Hour: 4:00 PM-5:00 PM	NBL	10	0.99%	13	15		15	5
	90	PM Peak Hour Used: 3:30 PM-4:30 PM	NBT	45	0.30%	49	50		50	5
	90		NBR	0		0	0		0	0
	90		SBL	0		0	0		0	0
	90	PHF:	SBT	15	0.30%	16	15	5	20	5
	90	0.95	SBR	40	0.99%	50	50		50	10
			TEV	**140**		**165**	**165**		**170**	
5	100	Main Street @ I-5 IC 43 SB Ramps	EBL	45	0.99%	57	55		55	10
	100		EBT	5	1.68%	7	5		5	0
	100		EBR	0	0.99%	0	0		0	0
	100	Count Date: 10/22/2012	WBL	0		0	0		0	0
	100		WBT	0		0	0		0	0
	100		WBR	0		0	0		0	0
	100	PM Peak Hour: 4:30 PM-5:30 PM	NBL	0		0	0		0	0
	100	PM Peak Hour Used: 3:30 PM-4:30 PM	NBT	10	0.30%	11	10	0	10	0
	100		NBR	5	0.99%	6	5		5	0
	100		SBL	15	0.99%	19	20		20	5
	100	PHF:	SBT	5	0.30%	5	5		5	0
	100	0.76	SBR	0		0	0		0	0
			TEV	**85**		**105**	**100**		**100**	
6	110	Main Street @ Profetta Lane	EBL	10	0.30%	11	10	0	10	0
	110	0	EBT	0	0.30%	0	0		0	0
	110	0	EBR	0	0.30%	0	0		0	0
	110	Count Date: 10/22/2012	WBL	0	0.30%	0	0		0	0
	110		WBT	0	0.30%	0	0		0	0
	110		WBR	5	0.30%	5	5		5	0
	110	PM Peak Hour: 3:15 PM-4:15 PM	NBL	0		0	0		0	0
	110	PM Peak Hour Used: 3:30 PM-4:30 PM	NBT	0		0	0		0	0
	110		NBR	0		0	0		0	0
	110		SBL	2	0.30%	2	0	2	2	0
	110	PHF:	SBT	0	0.30%	0	0		0	0
	110	0.38	SBR	3	0.30%	3	5	-2	3	0
			TEV	**20**		**22**	**20**		**20**	

Project: Interchange 40/43 Area Management Plans
Job #: ODOT0000-0783
Subject:
Created:
Rev. Date: 6/5/2013

Possible mvmts for balancing

N-S ID	Synchro ID	Intersection	Movement	2012 Balanced Volumes Peak	6 Future Baseline Background Growth (UPDATED)	7 2038 Future Baseline Background Growth (UPDATED)	8 2038 Future Baseline Rounded Volumes	9 Volume Balancing Adjustments	10 2038 Future Baseline Balanced Volumes	10 Delta Future-Existing Balanced Volumes
21	210	Truck Stop Driveway @ Hwy 99/234	EBL						0	0
	210		EBT	40					45	5
	210		EBR						0	0
	210		WBL						0	0
	210		WBT	75					80	5
	210		WBR						0	0
	210	12:00 AM	NBL						0	0
	210	12:00 AM	NBT						0	0
	210		NBR						0	0
	210		SBL							0
	210	PHF:	SBT						0	0
	210	0.00	SBR							0
			TEV	**115**		**0**	**0**		**125**	
7	70	I-5 PM Merge/Diverge	Main S	1595		2311	2310		2310	715
	70	***EXIT 40***	NB Off	190		284	285		285	95
	70		Through	1405		2027	2025		2025	620
	70		NB On	95		128	130		130	35
	70		**Main N**	1500	1.68%	2155	2155		2155	655
	70		Main N	1315	1.68%	1889	1890		1890	575
	70		SB Off	65		94	95		95	30
	70		Through	1250		1796	1795		1795	545
	70		SB On	170		225	225		225	55
	70		Main S	1415		2020	2020		2020	605
			TEV	**9000**		**12930**	**12930**		**12930**	
7	70	I-5 PM Merge/Diverge	**Main S**	1500	1.68%	2155	2155		2155	655
	70	***EXIT 43***	NB Off	25		38	40		40	15
	70		Through	1470		2117	2115		2115	645
	70		NB On	40		63	65		65	25
	70		Main N	1510		2180	2180		2180	670
	70		Main N	1345		1921	1920		1920	575
	70		SB Off	45		64	65		65	20
	70		Through	1300		1857	1855		1855	555
	70		SB On	15		32	30		30	15
	70		**Main S**	1315	1.68%	1889	1890		1890	575
			TEV				**12315**		**12315**	**3750**

Project: Interchange 40/43 Area Management Plans
Job #: ODOT0000-0783
Subject:
Created:
Rev. Date: 6/5/2013

6/5/2013

N-S ID	Synchro ID	Intersection	Movement	ID	Truck Stop LU Diverted/Pass By Trip Distribution	IC 40 Truck Stop LU Diverted/Pass By Trips 135	IC 43 Truck Stop LU Diverted/Pass By Trips 135	IC 40/43 Truck Stop LU Primary Trips	IC 40/43 Truck Stop LU Alt. Scenario Volumes	IC 40/43 Truck Stop LU Alt. Scenario Volumes ROUNDED	Balancing Adjustments	IC 40/43 Truck Stop LU Alt. Scenario Volumes BALANCED	
1	10	Access Road @ OR 99 (Blackwell Road/Upper River Road)	EBL			0			0	0		0	
	10	16 hr PM Turning Movement Count	EBT			0			65	65		65	
	10	Count Date: 10/24/12	EBR			0			230	230		230	
	10	2012	WBL			0		5	125	125		125	
	10		WBT			0			90	90		90	
	10		WBR			0			0	0		0	
	10	PM Peak Hour: 4:00 PM-5:00 PM	NBL			0			260	260		260	
	10	PM Peak Hour Used: 3:30 PM-4:30 PM	NBT			0			0	0		0	
	10		NBR			0		5	75	75		75	345
	10		SBL			0			0	0		0	
	10	PHF:	SBT			0			0	0		0	
	10	0.88	SBR			0			0	0		0	
			TEV									845	
									-	-		-	
2	20	Access Road @ Lampman Road	EBL			0			10	10		10	
	20	16 hr PM Turning Movement Count	EBT			0			0	0		0	
	20	Count Date: 10/24/12	EBR			0			20	20		20	
	20	2012	WBL			0			0	0		0	
	20		WBT			0			0	0		0	
	20		WBR			0			0	0		0	
	20	PM Peak Hour: 4:00 PM-5:00 PM	NBL			0			15	15		15	
	20	PM Peak Hour Used: 3:30 PM-4:30 PM	NBT			0		5	325	325		325	
	20		NBR			0			0	0		0	
	20		SBL			0			0	0		0	
	20	PHF:	SBT			0		5	330	330		330	
	20	0.80	SBR			0			25	25		25	
			TEV									725	
3	30	Access Road @ I-5 IC 40 NB Ramps	EBL			0			0	0		0	
	30	16 hr PM Turning Movement Count	EBT			0			0	0		0	
	30	Count Date: 11/14/2012	EBR			0			0	0		0	
	30	2012	WBL		27%	36		11	117	115		115	
	30		WBT			0			5	5		5	
	30		WBR			0			210	210		210	
	30	PM Peak Hour: 4:45 PM-5:45 PM	NBL		27%	36		25	91	90		90	
	30	PM Peak Hour Used: 3:30 PM-4:30 PM	NBT			0		5	130	130		130	
	30		NBR			0			0	0		0	
	30		SBL			0			0	0		0	
	30	PHF:	SBT			0		5	255	255		255	
	30	0.94	SBR			0			95	95		95	
			TEV									900	
4	40	Access Road @ I-5 IC 40 SB Ramps	EBL			0			60	60		60	
	40	16 hr PM Turning Movement Count	EBT			0			0	0		0	
	40	Count Date: 10/24/2012	EBR		63%	85		25	140	140		140	
	40	2012	WBL			0			0	0		0	
	40		WBT			0			0	0		0	
	40		WBR			0			0	0		0	
	40	PM Peak Hour: 3:00 PM-4:00 PM	NBL			0			0	0		0	
	40	PM Peak Hour Used: 3:30 PM-4:30 PM	NBT		27%	36		30	161	160		160	
	40		NBR		63%	85		11	146	145	5	150	
	40		SBL			0			175	175		175	
	40	PHF:	SBT		27%	36		16	197	195		195	
	40	0.79	SBR			0			0	0		0	
			TEV									880	
5	50	Access Road @ Old Stage Road	EBL		-5%	-7			33	35		35	
	50	16 hr PM Turning Movement Count	EBT			0			0	0		0	
	50	Count Date: 10/24/2012	EBR		5%	7		2	14	15		15	
	50	2012	WBL			0			0	0		0	
	50		WBT			0			0	0		0	
	50		WBR			0			0	0		0	
	50	PM Peak Hour: 4:00 PM-5:00 PM	NBL			0		2	12	10	5	15	
	50	PM Peak Hour Used: 3:30 PM-4:30 PM	NBT		95%	128		41	274	275		275	
	50		NBR			0			0	0		0	
	50		SBL			0			0	0		0	
	50	PHF:	SBT		90%	122		41	288	290	-5	285	
	50	0.80	SBR			0			50	50		50	
			TEV									675	
20	200	Truck Stop Driveway @ Old Stage Rd (N-S)	EBL		100%	135		43	178	180		180	
	200		EBT			0			0	0		0	
	200		EBR		0%	0		2	2	2		2	
	200		WBL			0			0	0		0	
	200		WBT			0			0	0		0	
	200		WBR			0			0	0		0	
	200		NBL		5%	7		2	9	10		10	
	200		NBT		-5%	-7			108	110		110	
	200		NBR			0			0	0		0	
	200		SBL			0			0	0		0	
	200	Volume Difference: 0	SBT			0			130	130		130	
	200	0.00	SBR		95%	128		43	171	170		170	
			TEV									602	
												-	
1	60	OR 99 (Rogue River Highway) @ OR 234 (2nd Avenue)/ N. River Road	EBL				0		0	0		0	
	60		EBT				0		40	40		40	
	60	VOLUMES SPLIT ACROSS 3 NODES	EBR				0		0	0		0	
	60	Count Date: 10/23/2012	WBL				0	11	106	105		105	
	60		WBT				0		60	60		60	
	60		WBR				0		0	0		0	
	60	PM Peak Hour: 3:15 PM-4:15 PM	NBL				0		0	0		0	
	60	PM Peak Hour Used: 3:30 PM-4:30 PM	NBT				0		0	0		0	
	60		NBR				0	11	86	85		85	
	60		SBL				0		0	0		0	
	60	PHF:	SBT				0		0	0		0	
	60	0.88	SBR				0		0	0		0	
			TEV									290	

Project: Interchange 40/43 Area Management Plans
Job #: ODOT0000-0783
Subject:
Created:
Rev. Date: 6/5/2013

N-S ID	Synchro ID	Intersection	Movement	ID	Truck Stop LU Diverted/Pass By Trip Distribution	IC 40 Truck Stop LU Diverted/Pass By Trips 135	IC 43 Truck Stop LU Diverted/Pass By Trips 135	IC 40/43 Truck Stop LU Primary Trips	IC 40/43 Truck Stop LU Alt. Scenario Volumes	IC 40/43 Truck Stop LU Alt. Scenario Volumes ROUNDED	Balancing Adjustments	IC 40/43 Truck Stop LU Alt. Scenario Volumes BALANCED
									-	-		-
	62	OR 99 (Rogue River Highway) @ N. River Road Connection	EBL				0		0	0		0
	62		EBT				0		0	0		0
	62	VOLUMES SPLIT ACROSS 3 NODES	EBR				0		10	10		10
	62	Count Date: 10/23/2012	WBL				0	11	106	105		105
	62		WBT				0		0	0		0
	62		WBR				0		0	0		0
	62	PM Peak Hour: 3:15 PM-4:15 PM	NBL				0		5	5		5
	62	PM Peak Hour Used: 3:30 PM-4:30 PM	NBT				0		0	0		0
	62		NBR				0	11	86	85		85
	62		SBL				0		0	0		0
	62	PHF:	SBT				0		0	0		0
	62	0.88	SBR				0		0	0		0
			TEV									205
	65	N. River Road @ N. River Road Connection	EBL				0		0	0		0
	65		EBT				0		40	40		40
	65	VOLUMES SPLIT ACROSS 3 NODES	EBR				0		10	10		10
	65	Count Date: 10/23/2012	WBL				0		0	0		0
	65		WBT				0		60	60		60
	65		WBR				0		0	0		0
	65	PM Peak Hour: 3:15 PM-4:15 PM	NBL				0		5	5		5
	65	PM Peak Hour Used: 3:30 PM-4:30 PM	NBT				0		0	0		0
	65		NBR				0		0	0		0
	65		SBL				0		0	0		0
	65	PHF:	SBT				0		0	0		0
	65	0.88	SBR				0		0	0		0
			TEV									115
2	70	OR 99 (Rogue River Highway) @ Lampman Road	EBL				0		15	15		15
	70		EBT				0	11	91	90		90
	70		EBR				0		0	0		0
	70	Count Date: 1/8/13	WBL				0		0	0		0
	70		WBT				0	11	106	105		105
	70		WBR				0		10	10		10
	70	PM Peak Hour: 3:30 PM-4:30 PM	NBL				0		0	0		0
	70	PM Peak Hour Used: 3:30 PM-4:30 PM	NBT				0		0	0		0
	70		NBR				0		0	0		0
	70		SBL				0		0	0		0
	70	PHF:	SBT				0		0	0		0
	70	~~0.59~~	SBR				0		25	25		25
		0.88	TEV									245
3	80	Main Street @ OR 99 (Rogue River Highway)	EBL				0		0	0		0
	80		EBT				0	11	51	50		50
	80		EBR	80%			108	23	136	135		135
	80	Count Date: 10/22/2012	WBL				0		65	65		65
	80		WBT				0	11	66	65		65
	80		WBR				0		0	0		0
	80	PM Peak Hour: 1:15 AM-2:15 AM	NBL	80%			108	23	156	155		155
	80	PM Peak Hour Used: 3:30 PM-4:30 PM	NBT				0		0	0		0
	80		NBR				0		55	55		55
	80		SBL				0		0	0		0
	80	PHF:	SBT				0		0	0		0
	80	0.90	SBR				0		0	0		0
			TEV									525
4	90	Main Street @ I-5 IC 43 NB Ramps	EBL				0		0	0		0
	90		EBT				0		0	0		0
	90		EBR				0		0	0		0
	90	Count Date: 10/22/2012	WBL				0		5	5		5
	90		WBT				0		0	0		0
	90		WBR	24%			32	7	69	70		70
	90	PM Peak Hour: 4:00 PM-5:00 PM	NBL				0		15	15		15
	90	PM Peak Hour Used: 3:30 PM-4:30 PM	NBT	56%			76	16	142	140		140
	90		NBR				0		0	0		0
	90		SBL				0		0	0		0
	90	PHF:	SBT	56%			76	7	103	105		105
	90	0.95	SBR	24%			32	16	98	100	-5	95
			TEV									430
									-	-		-
5	100	Main Street @ I-5 IC 43 SB Ramps	EBL	56%			76	16	147	145		145
	100		EBT				0		5	5		5
	100		EBR				0		0	0		0
	100	Count Date: 10/22/2012	WBL				0		0	0		0
	100		WBT				0		0	0		0
	100		WBR				0		0	0		0
	100	PM Peak Hour: 4:30 PM-5:30 PM	NBL				0		0	0		0
	100	PM Peak Hour Used: 3:30 PM-4:30 PM	NBT				0		10	10		10
	100		NBR				0		5	5		5
	100		SBL	56%			76	7	103	105		105
	100	PHF:	SBT				0		5	5		5
	100	0.76	SBR				0		0	0		0
			TEV									275
									-	-		-
6	110	Main Street @ Profetta Lane	EBL				0		10	10		10
	110	0	EBT				0		0	0		0
	110	0	EBR				0		0	0		0
	110	Count Date: 10/22/2012	WBL				0		0	0		0
	110		WBT				0		0	0		0
	110		WBR				0		5	5		5
	110	PM Peak Hour: 3:15 PM-4:15 PM	NBL				0		0	0		0
	110	PM Peak Hour Used: 3:30 PM-4:30 PM	NBT				0		0	0		0
	110		NBR				0		0	0		0
	110		SBL				0		2	0		0
	110	PHF:	SBT				0		0	0		0
	110	0.38	SBR				0		3	5		5
			TEV							0		20

Project: Interchange 40/43 Area Management Plans
Job #: ODOT0000-0783
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Rev. Date: 6/5/2013

N-S ID	Synchro ID	Intersection	Movement	ID	Truck Stop LU Diverted/Pass By Trip Distribution	IC 40 Truck Stop LU Diverted/Pass By Trips 135	IC 43 Truck Stop LU Diverted/Pass By Trips 135	IC 40/43 Truck Stop LU Primary Trips	IC 40/43 Truck Stop LU Alt. Scenario Volumes	IC 40/43 Truck Stop LU Alt. Scenario Volumes ROUNDED	Balancing Adjustments	IC 40/43 Truck Stop LU Alt. Scenario Volumes BALANCED
									-	-		-
21	210	Truck Stop Driveway @ Hwy 99/234	EBL				0		0	0		0
	210		EBT		-10%		-14		31	30		30
	210		EBR		10%		14	11	25	25		25
	210		WBL		90%		122	34	156	155		155
	210		WBT		-10%		-14		66	65		65
	210		WBR				0		0	0		0
	210	12:00 AM	NBL		10%		14	11	25	25		25
	210	12:00 AM	NBT				0		0	0		0
	210		NBR		90%		122	34	156	155		155
	210		SBL				0		0	0		0
	210	PHF:	SBT				0		0	0		0
	210	0.00	SBR				0		0	0		0
			TEV									**455**
7	70	I-5 PM Merge/Diverge	Main S									2295
	70	***EXIT 40***	NB Off									330
	70		Through									1965
	70		NB On									190
	70		**Main N**									2155
	70		Main N									1890
	70		SB Off									200
	70		Through									1690
	70		SB On									325
	70		Main S									2015
			TEV									
7	70	I-5 PM Merge/Diverge	**Main S**									2155
	70	***EXIT 43***	NB Off									75
	70		Through									2080
	70		NB On									110
	70		Main N									2190
	70		Main N									1925
	70		SB Off									150
	70		Through									1775
	70		SB On									115
	70		**Main S**									1890
			TEV									

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I-5 Exits 40 and 43 (Gold Hill)
Interchange Area Management Plans

DRAFT Technical Memorandum #5
Appendix B: Traffic Operations Worksheets

Prepared for

Oregon Department of Transportation, Region 3
3500 NW Stewart Parkway
Roseburg, Oregon 97470

Prepared by

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2100 SW River Parkway
Portland, Oregon 97201

June 2013

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HCM 2010 TWSC
10: Access Rd & 2nd Ave (OR 99 and OR 234)/Blackwell Rd (OR 99)

5/21/2013

Intersection	
Intersection Delay (sec/veh):	14.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Volume (vph)	65	230	120	90	260	70
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None
Storage Length		0	0		0	0
Median Width	0			0	12	
Grade (%)	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles(%)	0	0	2	3	1	0
Movement Flow Rate	72	256	133	100	289	78
Number of Lanes	1	0	0	1	1	0

Major/Minor	Major 1			Major 2		
Conflicting Flow Rate - All	0	0	328	0	566	200
Stage 1	-	-	-	-	200	-
Stage 2	-	-	-	-	366	-
Follow-up Headway	-	-	2.218	-	3.509	3.3
Pot Capacity-1 Maneuver	-	-	1232	-	487	846
Stage 1	-	-	-	-	836	-
Stage 2	-	-	-	-	704	-
Time blocked-Platoon(%)	-	-	0	-	0	0
Mov Capacity-1 Maneuver	-	-	1232	-	431	846
Mov Capacity-2 Maneuver	-	-	-	-	431	-
Stage 1	-	-	-	-	836	-
Stage 2	-	-	-	-	624	-

Approach	EB	WB	NB
HCM Control Delay (s)	0	4.7	32.7
HCM LOS	A	A	D

Lane	NBLn1	EBT	EBR	WBL	WBT
Capacity (vph)	481				
HCM Control Delay (s)	32.7	-	-	8.276	-
HCM Lane VC Ratio	0.762	-	-	0.108	-
HCM Lane LOS	D	-	-	A	-
HCM 95th Percentile Queue (veh)	6.586	-	-	0.363	-

Intersection	
Intersection Delay (sec/veh):	0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Volume (vph)	10	20	15	320	325	25
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None
Storage Length	0	0	0			0
Median Width	12			0	0	
Grade (%)	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles(%)	0	0	0	1	0	0
Movement Flow Rate	11	22	17	356	361	28
Number of Lanes	1	0	0	1	1	0

Major/Minor				Major 1	Major 2	
Conflicting Flow Rate - All	765	375	389	0	0	0
Stage 1	375	-	-	-	-	-
Stage 2	390	-	-	-	-	-
Follow-up Headway	3.5	3.3	2.2	-	-	-
Pot Capacity-1 Maneuver	374	676	1181	-	-	-
Stage 1	699	-	-	-	-	-
Stage 2	689	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	-	-	-
Mov Capacity-1 Maneuver	367	676	1181	-	-	-
Mov Capacity-2 Maneuver	367	-	-	-	-	-
Stage 1	699	-	-	-	-	-
Stage 2	677	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay (s)	12.3	0.4	0
HCM LOS	B	A	A

Lane	NBL	NBT	EBLn1	SBT	SBR
Capacity (vph)			528		
HCM Control Delay (s)	8.092	-	12.3	-	-
HCM Lane VC Ratio	0.014	-	0.063	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th Percentile Queue (veh)	0.043	-	0.201	-	-

Intersection	
Intersection Delay (sec/veh):	5.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	0	0	70	5	210	30	125	0	0	250	95
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
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
Heavy Vehicles(%)	0	0	0	0	50	1	0	1	0	0	1	3
Movement Flow Rate	0	0	0	74	5	221	32	132	0	0	263	100
Number of Lanes	0	0	0	0	1	0	0	1	0	0	1	0

Major/Minor	Minor 1				Major 1		Major 2		
Conflicting Flow Rate - All	509	559	132	363	0	0	132	0	0
Stage 1	196	196	-	-	-	-	-	-	-
Stage 2	313	363	-	-	-	-	-	-	-
Follow-up Headway	3.5	4.45	3.309	2.2	-	-	2.2	-	-
Pot Capacity-1 Maneuver	478	378	920	1207	-	-	1466	-	-
Stage 1	810	657	-	-	-	-	-	-	-
Stage 2	702	548	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	467	367	920	1207	-	-	1466	-	-
Mov Capacity-2 Maneuver	467	367	-	-	-	-	-	-	-
Stage 1	787	638	-	-	-	-	-	-	-
Stage 2	702	548	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay (s)	13.4	1.6	0
HCM LOS	B	A	A

Lane	NBL	NBT	NBR	WBLn1	SBL	SBT	SBR
Capacity (vph)				727			
HCM Control Delay (s)	8.063	-	-	13.4	0	-	-
HCM Lane VC Ratio	0.026	-	-	0.413	-	-	-
HCM Lane LOS	A	-	-	B	A	-	-
HCM 95th Percentile Queue (veh)	0.081	-	-	2.03	0	-	-

HCM 2010 TWSC
40: Access Rd & IC 40 SB OFF Ramp

5/21/2013

Intersection	
Intersection Delay (sec/veh):	5.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	60	0	30	0	0	0	0	95	50	175	145	0
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles(%)	0	0	0	0	0	0	0	0	0	0	0	0
Movement Flow Rate	67	0	33	0	0	0	0	106	56	194	161	0
Number of Lanes	0	1	0	0	0	0	0	1	0	0	1	0

Major/Minor	Minor 2						Major 1			Major 2		
Conflicting Flow Rate - All	683	711	161				161	0	0	162	0	0
Stage 1	549	549	-				-	-	-	-	-	-
Stage 2	134	162	-				-	-	-	-	-	-
Follow-up Headway	3.5	4	3.3				2.2	-	-	2.2	-	-
Pot Capacity-1 Maneuver	366	361	889				1430	-	-	1429	-	-
Stage 1	524	520	-				-	-	-	-	-	-
Stage 2	874	768	-				-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0				0	-	-	0	-	-
Mov Capacity-1 Maneuver	324	307	889				1430	-	-	1429	-	-
Mov Capacity-2 Maneuver	324	307	-				-	-	-	-	-	-
Stage 1	524	443	-				-	-	-	-	-	-
Stage 2	874	768	-				-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay (s)	16.6	0	4.3
HCM LOS	C	A	A

Lane	NBL	NBT	NBR	EBLn1	SBL	SBT	SBR
Capacity (vph)				411			
HCM Control Delay (s)	0	-	-	16.6	7.916	-	-
HCM Lane VC Ratio	-	-	-	0.243	0.136	-	-
HCM Lane LOS	A	-	-	C	A	-	-
HCM 95th Percentile Queue (veh)	0	-	-	0.942	0.471	-	-

Intersection	
Intersection Delay (sec/veh):	1.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Volume (vph)	40	5	10	105	125	50
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None
Storage Length	0	0	40			0
Median Width	12			12	12	
Grade (%)	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles(%)	0	0	0	0	0	3
Movement Flow Rate	44	6	11	117	139	56
Number of Lanes	1	0	1	1	1	0

Major/Minor				Major 1	Major 2	
Conflicting Flow Rate - All	306	167	195	0	0	0
Stage 1	167	-	-	-	-	-
Stage 2	139	-	-	-	-	-
Follow-up Headway	3.5	3.3	2.2	-	-	-
Pot Capacity-1 Maneuver	690	882	1390	-	-	-
Stage 1	867	-	-	-	-	-
Stage 2	893	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	-	-	-
Mov Capacity-1 Maneuver	685	882	1390	-	-	-
Mov Capacity-2 Maneuver	685	-	-	-	-	-
Stage 1	867	-	-	-	-	-
Stage 2	886	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay (s)	10.5	0.7	0
HCM LOS	B	A	A

Lane	NBL	NBT	EBLn1	SBT	SBR
Capacity (vph)			702		
HCM Control Delay (s)	7.611	-	10.5	-	-
HCM Lane VC Ratio	0.008	-	0.071	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th Percentile Queue (veh)	0.024	-	0.229	-	-

Intersection: 10: Access Rd & 2nd Ave (OR 99 and OR 234)/Blackwell Rd (OR 99)

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	21	86	179
Average Queue (ft)	1	26	89
95th Queue (ft)	8	63	151
Link Distance (ft)	923	1032	267
Upstream Blk Time (%)			0
Queuing Penalty (veh)			0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 20: Access Rd & Lampman Rd

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	33	55
Average Queue (ft)	17	7
95th Queue (ft)	41	33
Link Distance (ft)	627	129
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 30: Access Rd & IC 40 NB OFF Ramp

Movement	WB	NB	SB
Directions Served	LTR	LT	TR
Maximum Queue (ft)	106	48	4
Average Queue (ft)	58	8	0
95th Queue (ft)	93	35	3
Link Distance (ft)	868	566	129
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 40: Access Rd & IC 40 SB OFF Ramp

Movement	EB	SB
Directions Served	LTR	LT
Maximum Queue (ft)	69	66
Average Queue (ft)	34	21
95th Queue (ft)	56	54
Link Distance (ft)	813	566
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 50: Old Stage Rd & Access Rd

Movement	EB	NB
Directions Served	LR	L
Maximum Queue (ft)	45	22
Average Queue (ft)	27	2
95th Queue (ft)	51	14
Link Distance (ft)	997	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		40
Storage Blk Time (%)		0
Queuing Penalty (veh)		0

Zone Summary

Zone wide Queuing Penalty: 0

HCM 2010 TWSC
63: Rogue R Hwy/OR 234 (OR 99) & OR 234 (OR 99) Realign

5/21/2013

Intersection realigned due to non-standard stop-control in order to produce HCM results.

Intersection	
Intersection Delay (sec/veh):	1.7

EB approach represents existing NB approach. SB approach represents existing EB approach.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Volume (vph)	5	75	95	60	40	10
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Right Turn Channelized	None	None	None	None	Yield	Yield
Storage Length	25			0	0	50
Median Width		12	12		12	
Grade (%)		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles(%)	0	4	0	0	0	0
Movement Flow Rate	6	83	106	67	44	11
Number of Lanes	1	1	1	0	1	0

Major/Minor	Major 1		Major 2			
Conflicting Flow Rate - All	173	0	0	0	235	140
Stage 1	-	-	-	-	140	-
Stage 2	-	-	-	-	95	-
Follow-up Headway	2.2	-	-	-	3.5	3.3
Pot Capacity-1 Maneuver	1416	-	-	-	758	913
Stage 1	-	-	-	-	892	-
Stage 2	-	-	-	-	934	-
Time blocked-Platoon(%)	0	-	-	-	0	0
Mov Capacity-1 Maneuver	1416	-	-	-	755	913
Mov Capacity-2 Maneuver	-	-	-	-	755	-
Stage 1	-	-	-	-	892	-
Stage 2	-	-	-	-	930	-

Approach	EB	WB	SB
HCM Control Delay (s)	0.5	0	9.1
HCM LOS	A	A	A

Lane	EBL	EBT	WBT	WBR	SBLn1
Capacity (vph)					944
HCM Control Delay (s)	7.552	-	-	-	9.1
HCM Lane VC Ratio	0.004	-	-	-	0.059
HCM Lane LOS	A	-	-	-	A
HCM 95th Percentile Queue (veh)	0.012	-	-	-	0.187

Intersection	
Intersection Delay (sec/veh):	1.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Volume (vph)	15	80	95	10	0	25
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None
Storage Length	0			0	0	0
Median Width		0	0		12	
Grade (%)		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles(%)	0	0	0	0	0	0
Movement Flow Rate	17	89	106	11	0	28
Number of Lanes	0	1	1	0	1	0

Major/Minor	Major 1		Major 2			
Conflicting Flow Rate - All	117	0	0	0	235	112
Stage 1	-	-	-	-	112	-
Stage 2	-	-	-	-	123	-
Follow-up Headway	2.2	-	-	-	3.5	3.3
Pot Capacity-1 Maneuver	1484	-	-	-	758	947
Stage 1	-	-	-	-	918	-
Stage 2	-	-	-	-	907	-
Time blocked-Platoon(%)	0	-	-	-	0	0
Mov Capacity-1 Maneuver	1484	-	-	-	749	947
Mov Capacity-2 Maneuver	-	-	-	-	749	-
Stage 1	-	-	-	-	918	-
Stage 2	-	-	-	-	896	-

Approach	EB	WB	SB
HCM Control Delay (s)	1.2	0	8.9
HCM LOS	A	A	A

Lane	EBL	EBT	WBT	WBR	SBLn1
Capacity (vph)					947
HCM Control Delay (s)	7.453	-	-	-	8.9
HCM Lane VC Ratio	0.011	-	-	-	0.029
HCM Lane LOS	A	-	-	-	A
HCM 95th Percentile Queue (veh)	0.034	-	-	-	0.091

HCM Unsignalized Intersection Capacity Analysis
81: Main St./OR 99 EB Realign & OR 99 WB

5/21/2013

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	65	55	25	55	40	5
Sign Control	Free		Stop			Stop
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	68	58	26	58	42	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	0		195	0	237	166
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		195	0	237	166
tC, single (s)	4.1		6.5	6.2	7.1	6.5
tC, 2 stage (s)						
tF (s)	2.2		4.0	3.3	3.5	4.0
p0 queue free %	96		96	95	93	99
cM capacity (veh/h)	1636		675	1085	642	700

Intersection realigned due to non-standard stop-control in order to produce HCM results.

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	126	84	47
Volume Left	68	0	42
Volume Right	58	58	0
cSH	1636	912	648
Volume to Capacity	0.04	0.09	0.07
Queue Length 95th (ft)	3	8	6
Control Delay (s)	4.1	9.3	11.0
Lane LOS	A	A	B
Approach Delay (s)	4.1	9.3	11.0
Approach LOS		A	B

SB approach represents existing EB approach.

Intersection Summary			
Average Delay	7.1		
Intersection Capacity Utilization	23.6%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Intersection Delay (sec/veh):	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	0	0	5	0	30	15	50	0	0	20	50
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
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
Heavy Vehicles(%)	0	0	0	0	0	0	0	3	0	0	0	0
Movement Flow Rate	0	0	0	5	0	32	16	53	0	0	21	53
Number of Lanes	0	0	0	0	1	0	0	1	0	0	1	0

Major/Minor	Minor 1				Major 1		Major 2		
Conflicting Flow Rate - All	133	159	53	74	0	0	53	0	0
Stage 1	85	85	-	-	-	-	-	-	-
Stage 2	48	74	-	-	-	-	-	-	-
Follow-up Headway	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Capacity-1 Maneuver	844	737	1020	1538	-	-	1566	-	-
Stage 1	928	828	-	-	-	-	-	-	-
Stage 2	971	837	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	837	729	1020	1538	-	-	1566	-	-
Mov Capacity-2 Maneuver	837	729	-	-	-	-	-	-	-
Stage 1	918	819	-	-	-	-	-	-	-
Stage 2	971	837	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay (s)	8.8	1.7	0
HCM LOS	A	A	A

Lane	NBL	NBT	NBR	WBLn1	SBL	SBT	SBR
Capacity (vph)				989			
HCM Control Delay (s)	7.365	-	-	8.8	0	-	-
HCM Lane VC Ratio	0.01	-	-	0.037	-	-	-
HCM Lane LOS	A	-	-	A	A	-	-
HCM 95th Percentile Queue (veh)	0.031	-	-	0.116	0	-	-

HCM 2010 TWSC
101: Main St (FREE)/Main St & IC 43 SB OFF Ramp

5/21/2013

Intersection realigned due to non-standard stop-control in order to produce HCM results.

Intersection		
Intersection Delay (sec/veh):	7	Two-way stop-control intersection used to produce operations for EB and SB approaches.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	55	5	0	0	0	0	0	10	5	20	5	0
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles(%)	2	67	0	0	0	0	0	0	0	0	0	0
Movement Flow Rate	61	6	0	0	0	0	0	11	6	22	6	0
Number of Lanes	0	1	0	0	0	0	0	1	0	0	1	0

Major/Minor	Minor 2			Major 1			Major 2		
Conflicting Flow Rate - All	64	67	6	6	0	0	17	0	0
Stage 1	50	50	-	-	-	-	-	-	-
Stage 2	14	17	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.603	3.3	2.2	-	-	2.2	-	-
Pot Capacity-1 Maneuver	930	714	1083	1628	-	-	1613	-	-
Stage 1	963	741	-	-	-	-	-	-	-
Stage 2	1006	768	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	920	704	1083	1628	-	-	1613	-	-
Mov Capacity-2 Maneuver	920	704	-	-	-	-	-	-	-
Stage 1	963	731	-	-	-	-	-	-	-
Stage 2	1006	768	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay (s)	9.3	0	5.8
HCM LOS	A	A	A

Lane	NBL	NBT	NBR	EBLn1	SBL	SBT	SBR
Capacity (vph)				897			
HCM Control Delay (s)	0	-	-	9.3	7.263	-	-
HCM Lane VC Ratio	-	-	-	0.074	0.014	-	-
HCM Lane LOS	A	-	-	A	A	-	-
HCM 95th Percentile Queue (veh)	0	-	-	0.24	0.042	-	-

Intersection realigned due to non-standard stop-control in order to produce HCM results.

Intersection		
Intersection Delay (sec/veh)	7.5	All-way stop-control intersection used to produce operations for NB approach.
Intersection LOS	A	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	55	5	0	0	0	0	0	10	5	20	5	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles(%)	2	67	0	0	0	0	0	0	0	0	0	0
Movement Flow Rate	61	6	0	0	0	0	0	11	6	22	6	0
Number of Lanes	0	1	0	0	0	0	0	1	0	0	1	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	1	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	1	0	1
HCM Control Delay	7.6	7	7.4
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	SBLn1
Volume Left (%)	0%	92%	80%
Volume Thru (%)	67%	8%	20%
Volume Right (%)	33%	0%	0%
Sign Control	Stop	Stop	Stop
Traffic Volume by Lane	15	60	25
Left Turning Volume	10	5	5
Through Volume	5	0	0
Right Turning Volume	0	55	20
Lane Flow Rate	17	67	28
Geometry Group	1	1	1
Degree of Utilization, X	0.018	0.078	0.032
Departure Headway, Hd	3.838	4.195	4.189
Convergence(Y/N)	Yes	Yes	Yes
Capacity	928	855	851
Service Time	1.881	2.215	2.23
HCM Lane V/C Ratio	0.018	0.078	0.033
HCM Control Delay	7	7.6	7.4
HCM Lane LOS	A	A	A
HCM 95th Percentile Queue	0.1	0.3	0.1

Intersection	
Intersection Delay (sec/veh):	5.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Volume (vph)	10	0	0	5	2	3
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None
Storage Length	0			0	0	0
Median Width		0	0		12	
Grade (%)		0%	0%		0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles(%)	0	0	0	0	0	0
Movement Flow Rate	12	0	0	6	2	4
Number of Lanes	0	1	1	0	1	0

Major/Minor	Major 1		Major 2			
Conflicting Flow Rate - All	6	0	0	0	27	3
Stage 1	-	-	-	-	3	-
Stage 2	-	-	-	-	24	-
Follow-up Headway	2.2	-	-	-	3.5	3.3
Pot Capacity-1 Maneuver	1628	-	-	-	993	1087
Stage 1	-	-	-	-	1025	-
Stage 2	-	-	-	-	1004	-
Time blocked-Platoon(%)	0	-	-	-	0	0
Mov Capacity-1 Maneuver	1628	-	-	-	986	1087
Mov Capacity-2 Maneuver	-	-	-	-	986	-
Stage 1	-	-	-	-	1025	-
Stage 2	-	-	-	-	997	-

Approach	EB	WB	SB
HCM Control Delay (s)	7.2	0	8.5
HCM LOS	A	A	A

Lane	EBL	EBT	WBT	WBR	SBLn1
Capacity (vph)					1044
HCM Control Delay (s)	7.227	-	-	-	8.5
HCM Lane VC Ratio	0.007	-	-	-	0.006
HCM Lane LOS	A	-	-	-	A
HCM 95th Percentile Queue (veh)	0.022	-	-	-	0.017

Intersection: 24: Main St (STOP Controlled)/Main St & IC 43 SB OFF Ramp

Movement	EB	NB	SB
Directions Served	LTR	TR	LT
Maximum Queue (ft)	68	28	42
Average Queue (ft)	33	11	18
95th Queue (ft)	58	34	45
Link Distance (ft)	990	83	627
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Realigned intersections not used for queuing simulations.

Intersection: 60: Rogue River Hwy (OR 99 and OR 234) & N River Rd/State Hwy 234 (OR 99)

Movement	EB
Directions Served	T
Maximum Queue (ft)	39
Average Queue (ft)	23
95th Queue (ft)	49
Link Distance (ft)	117
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 62: N River Rd/Rogue River Hwy (OR 99 and OR 234)

Movement	EB	NB
Directions Served	R	LR
Maximum Queue (ft)	25	6
Average Queue (ft)	1	0
95th Queue (ft)	11	4
Link Distance (ft)	47	528
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 65: N River Rd

Movement	NB
Directions Served	L
Maximum Queue (ft)	35
Average Queue (ft)	4
95th Queue (ft)	23
Link Distance (ft)	47
Upstream Blk Time (%)	0
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 70: Rogue River Hwy (OR99 and OR234) & Lampman Rd

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	31	34
Average Queue (ft)	2	15
95th Queue (ft)	14	35
Link Distance (ft)	622	642
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 80: Main St & Rogue River Hwy (OR99)/Rogue River Hwy (OR99 and OR234)

Movement	EB	NB
Directions Served	TR	LR
Maximum Queue (ft)	39	48
Average Queue (ft)	26	25
95th Queue (ft)	47	38
Link Distance (ft)	1083	295
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 90: Main St & IC 43 NB OFF Ramp

Movement	WB	NB
Directions Served	LTR	LT
Maximum Queue (ft)	32	19
Average Queue (ft)	18	1
95th Queue (ft)	39	10
Link Distance (ft)	937	585
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 100: Main St & IC 43 SB OFF Ramp

Movement	EB	NB
Directions Served	LTR	TR
Maximum Queue (ft)	60	29
Average Queue (ft)	26	8
95th Queue (ft)	49	29
Link Distance (ft)	1135	60
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 110: Frontage Rd/Profetta Ln & Main St

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	6	26
Average Queue (ft)	0	4
95th Queue (ft)	4	19
Link Distance (ft)	1212	60
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Zone Summary

Zone wide Queuing Penalty: 0

HCM 2010 TWSC
10: Access Rd & 2nd Ave (OR 99 and OR 234)/Blackwell Rd (OR 99)

5/21/2013

Intersection	
Intersection Delay (sec/veh):	15.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Volume (vph)	65	230	125	90	260	75
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None
Storage Length		0	0		0	0
Median Width	0			0	12	
Grade (%)	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles(%)	0	0	2	3	1	0
Movement Flow Rate	72	256	139	100	289	83
Number of Lanes	1	0	0	1	1	0

Major/Minor	Major 1			Major 2		
Conflicting Flow Rate - All	0	0	328	0	578	200
Stage 1	-	-	-	-	200	-
Stage 2	-	-	-	-	378	-
Follow-up Headway	-	-	2.218	-	3.509	3.3
Pot Capacity-1 Maneuver	-	-	1232	-	479	846
Stage 1	-	-	-	-	836	-
Stage 2	-	-	-	-	695	-
Time blocked-Platoon(%)	-	-	0	-	0	0
Mov Capacity-1 Maneuver	-	-	1232	-	422	846
Mov Capacity-2 Maneuver	-	-	-	-	422	-
Stage 1	-	-	-	-	836	-
Stage 2	-	-	-	-	612	-

Approach	EB	WB	NB
HCM Control Delay (s)	0	4.8	34.9
HCM LOS	A	A	D

Lane	NBLn1	EBT	EBR	WBL	WBT
Capacity (vph)	475				
HCM Control Delay (s)	34.9	-	-	8.293	-
HCM Lane VC Ratio	0.784	-	-	0.113	-
HCM Lane LOS	D	-	-	A	-
HCM 95th Percentile Queue (veh)	7.024	-	-	0.38	-

Intersection	
Intersection Delay (sec/veh):	0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Volume (vph)	10	20	15	325	330	25
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None
Storage Length	0	0	0			0
Median Width	12			0	0	
Grade (%)	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles(%)	0	0	0	1	0	0
Movement Flow Rate	11	22	17	361	367	28
Number of Lanes	1	0	0	1	1	0

Major/Minor				Major 1	Major 2	
Conflicting Flow Rate - All	776	381	395	0	0	0
Stage 1	381	-	-	-	-	-
Stage 2	395	-	-	-	-	-
Follow-up Headway	3.5	3.3	2.2	-	-	-
Pot Capacity-1 Maneuver	369	671	1175	-	-	-
Stage 1	695	-	-	-	-	-
Stage 2	685	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	-	-	-
Mov Capacity-1 Maneuver	362	671	1175	-	-	-
Mov Capacity-2 Maneuver	362	-	-	-	-	-
Stage 1	695	-	-	-	-	-
Stage 2	673	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay (s)	12.4	0.4	0
HCM LOS	B	A	A

Lane	NBL	NBT	EBLn1	SBT	SBR
Capacity (vph)			522		
HCM Control Delay (s)	8.108	-	12.4	-	-
HCM Lane VC Ratio	0.014	-	0.064	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th Percentile Queue (veh)	0.043	-	0.204	-	-

Intersection	
Intersection Delay (sec/veh):	8.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	0	0	115	5	210	90	130	0	0	255	95
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
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
Heavy Vehicles(%)	0	0	0	0	50	1	0	1	0	0	1	3
Movement Flow Rate	0	0	0	121	5	221	95	137	0	0	268	100
Number of Lanes	0	0	0	0	1	0	0	1	0	0	1	0

Major/Minor	Minor 1				Major 1		Major 2		
Conflicting Flow Rate - All	645	695	137	368	0	0	137	0	0
Stage 1	327	327	-	-	-	-	-	-	-
Stage 2	318	368	-	-	-	-	-	-	-
Follow-up Headway	3.5	4.45	3.309	2.2	-	-	2.2	-	-
Pot Capacity-1 Maneuver	388	312	914	1202	-	-	1459	-	-
Stage 1	690	570	-	-	-	-	-	-	-
Stage 2	698	545	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	362	285	914	1202	-	-	1459	-	-
Mov Capacity-2 Maneuver	362	285	-	-	-	-	-	-	-
Stage 1	631	521	-	-	-	-	-	-	-
Stage 2	698	545	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay (s)	19.8	3.4	0
HCM LOS	C	A	A

Lane	NBL	NBT	NBR	WBLn1	SBL	SBT	SBR
Capacity (vph)				584			
HCM Control Delay (s)	8.251	-	-	19.8	0	-	-
HCM Lane VC Ratio	0.079	-	-	0.595	-	-	-
HCM Lane LOS	A	-	-	C	A	-	-
HCM 95th Percentile Queue (veh)	0.256	-	-	3.892	0	-	-

HCM 2010 TWSC
40: Access Rd & IC 40 SB OFF Ramp

5/21/2013

Intersection	
Intersection Delay (sec/veh):	6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	60	0	140	0	0	0	0	160	150	175	195	0
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles(%)	0	0	0	0	0	0	0	0	0	0	0	0
Movement Flow Rate	67	0	156	0	0	0	0	178	167	194	217	0
Number of Lanes	0	1	0	0	0	0	0	1	0	0	1	0

Major/Minor	Minor 2						Major 1			Major 2		
Conflicting Flow Rate - All	867	950	217				217	0	0	345	0	0
Stage 1	605	605	-				-	-	-	-	-	-
Stage 2	262	345	-				-	-	-	-	-	-
Follow-up Headway	3.5	4	3.3				2.2	-	-	2.2	-	-
Pot Capacity-1 Maneuver	275	262	828				1365	-	-	1225	-	-
Stage 1	488	491	-				-	-	-	-	-	-
Stage 2	747	640	-				-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0				0	-	-	0	-	-
Mov Capacity-1 Maneuver	237	215	828				1365	-	-	1225	-	-
Mov Capacity-2 Maneuver	237	215	-				-	-	-	-	-	-
Stage 1	488	403	-				-	-	-	-	-	-
Stage 2	747	640	-				-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay (s)	19.1	0	4
HCM LOS	C	A	A

Lane	NBL	NBT	NBR	EBLn1	SBL	SBT	SBR
Capacity (vph)				474			
HCM Control Delay (s)	0	-	-	19.1	8.492	-	-
HCM Lane VC Ratio	-	-	-	0.469	0.159	-	-
HCM Lane LOS	A	-	-	C	A	-	-
HCM 95th Percentile Queue (veh)	0	-	-	2.456	0.564	-	-

Intersection	
Intersection Delay (sec/veh):	1.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Volume (vph)	35	15	15	275	285	50
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None
Storage Length	0	0	40			0
Median Width	12			12	12	
Grade (%)	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles(%)	0	0	0	0	0	3
Movement Flow Rate	39	17	17	306	317	56
Number of Lanes	1	0	1	1	1	0

Major/Minor				Major 1	Major 2	
Conflicting Flow Rate - All	685	345	373	0	0	0
Stage 1	345	-	-	-	-	-
Stage 2	340	-	-	-	-	-
Follow-up Headway	3.5	3.3	2.2	-	-	-
Pot Capacity-1 Maneuver	417	702	1197	-	-	-
Stage 1	722	-	-	-	-	-
Stage 2	725	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	-	-	-
Mov Capacity-1 Maneuver	411	702	1197	-	-	-
Mov Capacity-2 Maneuver	411	-	-	-	-	-
Stage 1	722	-	-	-	-	-
Stage 2	715	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay (s)	13.7	0.4	0
HCM LOS	B	A	A

Lane	NBL	NBT	EBLn1	SBT	SBR
Capacity (vph)			469		
HCM Control Delay (s)	8.05	-	13.7	-	-
HCM Lane VC Ratio	0.014	-	0.118	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th Percentile Queue (veh)	0.042	-	0.4	-	-

Intersection	
Intersection Delay (sec/veh):	4.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Volume (vph)	180	2	10	110	130	170
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None
Storage Length	0	0	0			0
Median Width	12			12	12	
Grade (%)	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles(%)	2	2	2	2	2	2
Movement Flow Rate	212	2	12	129	153	200
Number of Lanes	1	1	0	1	1	0

Major/Minor				Major 1	Major 2	
Conflicting Flow Rate - All	406	253	353	0	0	0
Stage 1	253	-	-	-	-	-
Stage 2	153	-	-	-	-	-
Follow-up Headway	3.518	3.318	2.218	-	-	-
Pot Capacity-1 Maneuver	601	786	1206	-	-	-
Stage 1	789	-	-	-	-	-
Stage 2	875	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	-	-	-
Mov Capacity-1 Maneuver	594	786	1206	-	-	-
Mov Capacity-2 Maneuver	594	-	-	-	-	-
Stage 1	789	-	-	-	-	-
Stage 2	865	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay (s)	14.3	0.7	0
HCM LOS	B	A	A

Lane	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (vph)			594	786		
HCM Control Delay (s)	8.014	-	14.4	9.6	-	-
HCM Lane VC Ratio	0.01	-	0.357	0.003	-	-
HCM Lane LOS	A	-	B	A	-	-
HCM 95th Percentile Queue (veh)	0.03	-	1.608	0.009	-	-

Intersection: 10: Access Rd & 2nd Ave (OR 99 and OR 234)/Blackwell Rd (OR 99)

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	20	79	185
Average Queue (ft)	1	30	89
95th Queue (ft)	11	68	152
Link Distance (ft)	923	1032	267
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 20: Access Rd & Lampman Rd

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	48	43
Average Queue (ft)	18	6
95th Queue (ft)	43	28
Link Distance (ft)	627	129
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 30: Access Rd & IC 40 NB OFF Ramp

Movement	WB	NB	SB
Directions Served	LTR	LT	TR
Maximum Queue (ft)	186	63	37
Average Queue (ft)	80	24	1
95th Queue (ft)	149	57	15
Link Distance (ft)	868	566	129
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 40: Access Rd & IC 40 SB OFF Ramp

Movement	EB	NB	SB
Directions Served	LTR	TR	LT
Maximum Queue (ft)	137	9	91
Average Queue (ft)	55	1	37
95th Queue (ft)	101	7	73
Link Distance (ft)	813	247	566
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 50: Old Stage Rd & Access Rd

Movement	EB	NB
Directions Served	LR	L
Maximum Queue (ft)	65	31
Average Queue (ft)	30	6
95th Queue (ft)	56	26
Link Distance (ft)	997	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		40
Storage Blk Time (%)		0
Queuing Penalty (veh)		1

Intersection: 200: Old Stage Rd & Driveway

Movement	EB	EB	NB	SB
Directions Served	L	R	LT	TR
Maximum Queue (ft)	89	35	37	4
Average Queue (ft)	52	4	4	0
95th Queue (ft)	79	22	21	3
Link Distance (ft)	237	237	326	210
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 1

Intersection	
Intersection Delay (sec/veh):	1.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Volume (vph)	5	85	105	60	40	10
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Right Turn Channelized	None	None	None	None	Yield	Yield
Storage Length	25			0	0	50
Median Width		12	12		12	
Grade (%)		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles(%)	0	4	0	0	0	0
Movement Flow Rate	6	94	117	67	44	11
Number of Lanes	1	1	1	0	1	0

Major/Minor	Major 1		Major 2			
Conflicting Flow Rate - All	184	0	0	0	257	151
Stage 1	-	-	-	-	151	-
Stage 2	-	-	-	-	106	-
Follow-up Headway	2.2	-	-	-	3.5	3.3
Pot Capacity-1 Maneuver	1403	-	-	-	736	901
Stage 1	-	-	-	-	882	-
Stage 2	-	-	-	-	923	-
Time blocked-Platoon(%)	0	-	-	-	0	0
Mov Capacity-1 Maneuver	1403	-	-	-	733	901
Mov Capacity-2 Maneuver	-	-	-	-	733	-
Stage 1	-	-	-	-	882	-
Stage 2	-	-	-	-	919	-

Approach	EB	WB	SB
HCM Control Delay (s)	0.4	0	9.2
HCM LOS	A	A	A

Lane	EBL	EBT	WBT	WBR	SBLn1
Capacity (vph)					916
HCM Control Delay (s)	7.576	-	-	-	9.2
HCM Lane VC Ratio	0.004	-	-	-	0.061
HCM Lane LOS	A	-	-	-	A
HCM 95th Percentile Queue (veh)	0.012	-	-	-	0.193

Intersection	
Intersection Delay (sec/veh):	1.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Volume (vph)	15	90	105	10	0	25
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None
Storage Length	0			0	0	0
Median Width		0	0		12	
Grade (%)		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles(%)	0	0	0	0	0	0
Movement Flow Rate	17	100	117	11	0	28
Number of Lanes	0	1	1	0	1	0

Major/Minor	Major 1		Major 2			
Conflicting Flow Rate - All	128	0	0	0	257	123
Stage 1	-	-	-	-	123	-
Stage 2	-	-	-	-	134	-
Follow-up Headway	2.2	-	-	-	3.5	3.3
Pot Capacity-1 Maneuver	1470	-	-	-	736	933
Stage 1	-	-	-	-	907	-
Stage 2	-	-	-	-	897	-
Time blocked-Platoon(%)	0	-	-	-	0	0
Mov Capacity-1 Maneuver	1470	-	-	-	727	933
Mov Capacity-2 Maneuver	-	-	-	-	727	-
Stage 1	-	-	-	-	907	-
Stage 2	-	-	-	-	886	-

Approach	EB	WB	SB
HCM Control Delay (s)	1.1	0	9
HCM LOS	A	A	A

Lane	EBL	EBT	WBT	WBR	SBLn1
Capacity (vph)					933
HCM Control Delay (s)	7.477	-	-	-	9
HCM Lane VC Ratio	0.011	-	-	-	0.03
HCM Lane LOS	A	-	-	-	A
HCM 95th Percentile Queue (veh)	0.034	-	-	-	0.092

HCM Unsignalized Intersection Capacity Analysis
81: Main St./OR 99 EB Realign & OR 99 WB

5/21/2013

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	65	65	155	55	50	35
Sign Control	Free		Stop			Stop
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	68	68	163	58	53	37
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	0		205	0	311	171
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		205	0	311	171
tC, single (s)	4.1		6.5	6.2	7.1	6.5
tC, 2 stage (s)						
tF (s)	2.2		4.0	3.3	3.5	4.0
p0 queue free %	96		75	95	89	95
cM capacity (veh/h)	1636		666	1085	481	695

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	137	221	89
Volume Left	68	0	53
Volume Right	68	58	0
cSH	1636	741	551
Volume to Capacity	0.04	0.30	0.16
Queue Length 95th (ft)	3	31	14
Control Delay (s)	3.8	11.9	12.8
Lane LOS	A	B	B
Approach Delay (s)	3.8	11.9	12.8
Approach LOS		B	B

Intersection Summary			
Average Delay	9.6		
Intersection Capacity Utilization	35.7%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Intersection Delay (sec/veh):	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	0	0	5	0	70	15	140	0	0	105	95
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
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
Heavy Vehicles(%)	0	0	0	0	0	0	0	3	0	0	0	0
Movement Flow Rate	0	0	0	5	0	74	16	147	0	0	111	100
Number of Lanes	0	0	0	0	1	0	0	1	0	0	1	0

Major/Minor	Minor 1				Major 1		Major 2		
Conflicting Flow Rate - All	340	390	147	211	0	0	147	0	0
Stage 1	179	179	-	-	-	-	-	-	-
Stage 2	161	211	-	-	-	-	-	-	-
Follow-up Headway	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Capacity-1 Maneuver	618	548	905	1372	-	-	1447	-	-
Stage 1	827	755	-	-	-	-	-	-	-
Stage 2	846	731	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	612	541	905	1372	-	-	1447	-	-
Mov Capacity-2 Maneuver	612	541	-	-	-	-	-	-	-
Stage 1	816	745	-	-	-	-	-	-	-
Stage 2	846	731	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay (s)	9.5	0.7	0
HCM LOS	A	A	A

Lane	NBL	NBT	NBR	WBLn1	SBL	SBT	SBR
Capacity (vph)				877			
HCM Control Delay (s)	7.654	-	-	9.5	0	-	-
HCM Lane VC Ratio	0.012	-	-	0.09	-	-	-
HCM Lane LOS	A	-	-	A	A	-	-
HCM 95th Percentile Queue (veh)	0.035	-	-	0.296	0	-	-

Intersection	
Intersection Delay (sec/veh):	9.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	145	5	0	0	0	0	0	10	5	105	5	0
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles(%)	2	67	0	0	0	0	0	0	0	0	0	0
Movement Flow Rate	161	6	0	0	0	0	0	11	6	117	6	0
Number of Lanes	0	1	0	0	0	0	0	1	0	0	1	0

Major/Minor	Minor 2						Major 1			Major 2	
Conflicting Flow Rate - All	254	257	6			6	0	0	17	0	0
Stage 1	240	240	-			-	-	-	-	-	-
Stage 2	14	17	-			-	-	-	-	-	-
Follow-up Headway	3.518	4.603	3.3			2.2	-	-	2.2	-	-
Pot Capacity-1 Maneuver	699	550	1083			1628	-	-	1613	-	-
Stage 1	763	602	-			-	-	-	-	-	-
Stage 2	1006	768	-			-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0			0	-	-	0	-	-
Mov Capacity-1 Maneuver	660	510	1083			1628	-	-	1613	-	-
Mov Capacity-2 Maneuver	660	510	-			-	-	-	-	-	-
Stage 1	763	558	-			-	-	-	-	-	-
Stage 2	1006	768	-			-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay (s)	12.4	0	7.1
HCM LOS	B	A	A

Lane	NBL	NBT	NBR	EBLn1	SBL	SBT	SBR
Capacity (vph)				654			
HCM Control Delay (s)	0	-	-	12.4	7.406	-	-
HCM Lane VC Ratio	-	-	-	0.255	0.072	-	-
HCM Lane LOS	A	-	-	B	A	-	-
HCM 95th Percentile Queue (veh)	0	-	-	1.009	0.234	-	-

Intersection	
Intersection Delay (sec/veh)	8.4
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	145	5	0	0	0	0	0	10	5	105	5	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles(%)	2	67	0	0	0	0	0	0	0	0	0	0
Movement Flow Rate	161	6	0	0	0	0	0	11	6	117	6	0
Number of Lanes	0	1	0	0	0	0	0	1	0	0	1	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	1	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	1	0	1
HCM Control Delay	8.6	7.3	8.3
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	SBLn1
Volume Left (%)	0%	97%	95%
Volume Thru (%)	67%	3%	5%
Volume Right (%)	33%	0%	0%
Sign Control	Stop	Stop	Stop
Traffic Volume by Lane	15	150	110
Left Turning Volume	10	5	5
Through Volume	5	0	0
Right Turning Volume	0	145	105
Lane Flow Rate	17	167	122
Geometry Group	1	1	1
Degree of Utilization, X	0.02	0.202	0.153
Departure Headway, Hd	4.234	4.369	4.508
Convergence(Y/N)	Yes	Yes	Yes
Capacity	850	808	801
Service Time	2.238	2.464	2.508
HCM Lane V/C Ratio	0.02	0.207	0.152
HCM Control Delay	7.3	8.6	8.3
HCM Lane LOS	A	A	A
HCM 95th Percentile Queue	0.1	0.8	0.5

Intersection	
Intersection Delay (sec/veh):	5.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Volume (vph)	10	0	0	5	0	5
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None
Storage Length	0			0	0	0
Median Width		0	0		12	
Grade (%)		0%	0%		0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles(%)	0	0	0	0	0	0
Movement Flow Rate	12	0	0	6	0	6
Number of Lanes	0	1	1	0	1	0

Major/Minor	Major 1		Major 2			
Conflicting Flow Rate - All	6	0	0	0	27	3
Stage 1	-	-	-	-	3	-
Stage 2	-	-	-	-	24	-
Follow-up Headway	2.2	-	-	-	3.5	3.3
Pot Capacity-1 Maneuver	1628	-	-	-	993	1087
Stage 1	-	-	-	-	1025	-
Stage 2	-	-	-	-	1004	-
Time blocked-Platoon(%)	0	-	-	-	0	0
Mov Capacity-1 Maneuver	1628	-	-	-	986	1087
Mov Capacity-2 Maneuver	-	-	-	-	986	-
Stage 1	-	-	-	-	1025	-
Stage 2	-	-	-	-	997	-

Approach	EB	WB	SB
HCM Control Delay (s)	7.2	0	8.3
HCM LOS	A	A	A

Lane	EBL	EBT	WBT	WBR	SBLn1
Capacity (vph)					1087
HCM Control Delay (s)	7.227	-	-	-	8.3
HCM Lane VC Ratio	0.007	-	-	-	0.005
HCM Lane LOS	A	-	-	-	A
HCM 95th Percentile Queue (veh)	0.022	-	-	-	0.016

Intersection	
Intersection Delay (sec/veh):	6.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Volume (vph)	30	25	155	65	25	155
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None
Storage Length		0	0		0	0
Median Width	0			0	12	
Grade (%)	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles(%)	2	2	2	2	2	2
Movement Flow Rate	35	29	182	76	29	182
Number of Lanes	1	0	0	1	1	1

Major/Minor	Major 1			Major 2		
Conflicting Flow Rate - All	0	0	64	0	490	50
Stage 1	-	-	-	-	50	-
Stage 2	-	-	-	-	440	-
Follow-up Headway	-	-	2.218	-	3.518	3.318
Pot Capacity-1 Maneuver	-	-	1538	-	537	1018
Stage 1	-	-	-	-	972	-
Stage 2	-	-	-	-	649	-
Time blocked-Platoon(%)	-	-	0	-	0	0
Mov Capacity-1 Maneuver	-	-	1538	-	470	1018
Mov Capacity-2 Maneuver	-	-	-	-	470	-
Stage 1	-	-	-	-	972	-
Stage 2	-	-	-	-	569	-

Approach	EB	WB	NB
HCM Control Delay (s)	0	5.4	9.8
HCM LOS	A	A	A

Lane	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (vph)	470	1018				
HCM Control Delay (s)	13.2	9.3	-	-	7.655	-
HCM Lane VC Ratio	0.063	0.179	-	-	0.119	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th Percentile Queue (veh)	0.2	0.651	-	-	0.403	-

Intersection: 24: Main St (STOP Controlled)/Main St & IC 43 SB OFF Ramp

Movement	EB	NB	SB
Directions Served	LTR	TR	LT
Maximum Queue (ft)	102	33	70
Average Queue (ft)	41	11	36
95th Queue (ft)	69	34	52
Link Distance (ft)	990	83	627
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Realigned intersections not used for queuing simulation.

Intersection: 60: Rogue River Hwy (OR 99 and OR 234) & N River Rd/State Hwy 234 (OR 99)

Movement	EB
Directions Served	T
Maximum Queue (ft)	58
Average Queue (ft)	26
95th Queue (ft)	52
Link Distance (ft)	117
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 62: N River Rd/Rogue River Hwy (OR 99 and OR 234)

Movement	EB	WB	NB
Directions Served	R	L	LR
Maximum Queue (ft)	32	7	5
Average Queue (ft)	2	0	0
95th Queue (ft)	13	0	4
Link Distance (ft)	47	78	528
Upstream Blk Time (%)	0		
Queuing Penalty (veh)	0		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 65: N River Rd

Movement	NB
Directions Served	L
Maximum Queue (ft)	31
Average Queue (ft)	4
95th Queue (ft)	21
Link Distance (ft)	47
Upstream Blk Time (%)	0
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 70: Rogue River Hwy (OR99 and OR234) & Lampman Rd

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	13	34
Average Queue (ft)	1	14
95th Queue (ft)	8	36
Link Distance (ft)	622	642
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 80: Main St & Rogue River Hwy (OR99)/Rogue River Hwy (OR99 and OR234)

Movement	EB	NB
Directions Served	TR	LR
Maximum Queue (ft)	77	58
Average Queue (ft)	41	29
95th Queue (ft)	62	48
Link Distance (ft)	246	286
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 90: Main St & IC 43 NB OFF Ramp

Movement	WB	NB
Directions Served	LTR	LT
Maximum Queue (ft)	51	26
Average Queue (ft)	26	2
95th Queue (ft)	43	14
Link Distance (ft)	937	585
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 100: Main St & IC 43 SB OFF Ramp

Movement	EB	NB
Directions Served	LTR	TR
Maximum Queue (ft)	95	29
Average Queue (ft)	41	11
95th Queue (ft)	70	33
Link Distance (ft)	1135	60
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 110: Frontage Rd/Profetta Ln & Main St

Movement	SB
Directions Served	LR
Maximum Queue (ft)	25
Average Queue (ft)	3
95th Queue (ft)	17
Link Distance (ft)	60
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 210: Driveway & Rogue River Hwy (OR99)

Movement	WB	NB	NB
Directions Served	LT	L	R
Maximum Queue (ft)	55	50	74
Average Queue (ft)	11	20	42
95th Queue (ft)	41	48	65
Link Distance (ft)	246	151	151
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Zone Summary

Zone wide Queuing Penalty: 0

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I-5 Exits 40 and 43 (Gold Hill)
Interchange Area Management Plans

DRAFT Technical Memorandum #5
Appendix C: Preliminary Traffic Signal Warrants

Prepared for

Oregon Department of Transportation, Region 3
3500 NW Stewart Parkway
Roseburg, Oregon 97470

Prepared by

David Evans and Associates, Inc.
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June 2013

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Oregon Department of Transportation

Transportation Development Branch

Transportation Planning Analysis Unit

Preliminary Traffic Signal Warrant Analysis[1]

Major Street:	Blackwell Rd	**Minor Street:**	Access Rd
Project:	IAMP 40	**City/County:**	Jackson County
Year:	2012 PM	**Alternative:**	Existing

Preliminary Signal Warrant Volumes

Number of Approach lanes		ADT on major street approaching from both directions		ADT on minor street, highest approaching volume	
Major Street	Minor Street	Percent of standard warrants 100	70	Percent of standard warrants 100	70
Case A: Minimum Vehicular Traffic					
1	1	8850	6200	2650	1850
2 or more	1	10600	7400	2650	1850
2 or more	2 or more	10600	7400	3550	2500
1	2 or more	8850	6200	3550	2500
Case B: Interruption of Continuous Traffic					
1	1	13300	9300	1350	950
2 or more	1	15900	11100	1350	950
2 or more	2 or more	15900	11100	1750	1250
1	2 or more	13300	9300	1750	1250
	100 percent of standard warrants				
X	70 percent of standard warrants[2]				

Preliminary Signal Warrant Calculation

	Street	Number of Lanes	Warrant Volumes	Approach Volumes	Warrant Met
Case A	Major	1	6200	4150	N
	Minor	1	1850	2350	
Case B	Major	1	9300	4150	N
	Minor	1	950	2350	

Analyst and Date:	Reviewer and Date:

[1] Meeting preliminary signal warrants does **not** guarantee that a signal will be installed. When preliminary signal warrants are met, project analysts need to coordinate with Region Traffic to initiate the traffic signal engineering investigation as outlined in the Traffic Manual. Before a signal can be installed, the engineering investigation must be conducted or reviewed by the Region Traffic Manager who will forward signal recommendations to headquarters. Traffic signal warrants must be met and the State Traffic Engineer's approval obtained before a traffic signal can be installed on a state highway.

[2] Used due to 85th percentile speed in excess of 40 mph or isolated community with population of less than 10,000.

Oregon Department of Transportation

Transportation Development Branch

Transportation Planning Analysis Unit

Preliminary Traffic Signal Warrant Analysis[1]

Major Street:	Blackwell Rd	**Minor Street:**	Access Rd
Project:	IAMP 40	**City/County:**	Jackson County
Year:	2012 PM	**Alternative:**	Existing

Preliminary Signal Warrant Volumes

Number of Approach lanes		ADT on major street approaching from both directions		ADT on minor street, highest approaching volume	
Major Street	Minor Street	Percent of standard warrants 100	70	Percent of standard warrants 100	70
Case A: Minimum Vehicular Traffic					
1	1	8850	6200	2650	1850
2 or more	1	10600	7400	2650	1850
2 or more	2 or more	10600	7400	3550	2500
1	2 or more	8850	6200	3550	2500
Case B: Interruption of Continuous Traffic					
1	1	13300	9300	1350	950
2 or more	1	15900	11100	1350	950
2 or more	2 or more	15900	11100	1750	1250
1	2 or more	13300	9300	1750	1250
	100 percent of standard warrants				
X	70 percent of standard warrants[2]				

Preliminary Signal Warrant Calculation

	Street	Number of Lanes	Warrant Volumes	Approach Volumes	Warrant Met
Case A	Major	1	6200	4000	N
	Minor	1	1850	570	
Case B	Major	1	9300	4000	N
	Minor	1	950	570	

Analyst and Date:	Reviewer and Date:

[1] Meeting preliminary signal warrants does **not** guarantee that a signal will be installed. When preliminary signal warrants are met, project analysts need to coordinate with Region Traffic to initiate the traffic signal engineering investigation as outlined in the Traffic Manual. Before a signal can be installed, the engineering investigation must be conducted or reviewed by the Region Traffic Manager who will forward signal recommendations to headquarters. Traffic signal warrants must be met and the State Traffic Engineer's approval obtained before a traffic signal can be installed on a state highway.

[2] Used due to 85th percentile speed in excess of 40 mph or isolated community with population of less than 10,000.

Oregon Department of Transportation

Transportation Development Branch

Transportation Planning Analysis Unit

Preliminary Traffic Signal Warrant Analysis[1]

Major Street:	Blackwell Rd	**Minor Street:**	Access Rd
Project:	IAMP 40	**City/County:**	Jackson County
Year:	2038 PM	**Alternative:**	Future Baseline

Preliminary Signal Warrant Volumes

Number of Approach lanes		ADT on major street approaching from both directions		ADT on minor street, highest approaching volume	
Major Street	Minor Street	Percent of standard warrants 100	70	Percent of standard warrants 100	70
Case A: Minimum Vehicular Traffic					
1	1	8850	6200	2650	1850
2 or more	1	10600	7400	2650	1850
2 or more	2 or more	10600	7400	3550	2500
1	2 or more	8850	6200	3550	2500
Case B: Interruption of Continuous Traffic					
1	1	13300	9300	1350	950
2 or more	1	15900	11100	1350	950
2 or more	2 or more	15900	11100	1750	1250
1	2 or more	13300	9300	1750	1250
	100 percent of standard warrants				
X	70 percent of standard warrants[2]				

Preliminary Signal Warrant Calculation

	Street	Number of Lanes	Warrant Volumes	Approach Volumes	Warrant Met
Case A	Major	1	6200	5050	N
	Minor	1	1850	2600	
Case B	Major	1	9300	5050	N
	Minor	1	950	2600	
Analyst and Date:			Reviewer and Date:		

[1] Meeting preliminary signal warrants does **not** guarantee that a signal will be installed. When preliminary signal warrants are met, project analysts need to coordinate with Region Traffic to initiate the traffic signal engineering investigation as outlined in the Traffic Manual. Before a signal can be installed, the engineering investigation must be conducted or reviewed by the Region Traffic Manager who will forward signal recommendations to headquarters. Traffic signal warrants must be met and the State Traffic Engineer's approval obtained before a traffic signal can be installed on a state highway.

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Oregon Department of Transportation

Transportation Development Branch

Transportation Planning Analysis Unit

Preliminary Traffic Signal Warrant Analysis[1]

Major Street:	Blackwell Rd	**Minor Street:**	Access Rd
Project:	IAMP 40	**City/County:**	Jackson County
Year:	2012 PM	**Alternative:**	Existing

Preliminary Signal Warrant Volumes

Number of Approach lanes		ADT on major street approaching from both directions		ADT on minor street, highest approaching volume	
Major Street	Minor Street	Percent of standard warrants 100	70	Percent of standard warrants 100	70
Case A: Minimum Vehicular Traffic					
1	1	8850	6200	2650	1850
2 or more	1	10600	7400	2650	1850
2 or more	2 or more	10600	7400	3550	2500
1	2 or more	8850	6200	3550	2500
Case B: Interruption of Continuous Traffic					
1	1	13300	9300	1350	950
2 or more	1	15900	11100	1350	950
2 or more	2 or more	15900	11100	1750	1250
1	2 or more	13300	9300	1750	1250
	100 percent of standard warrants				
X	70 percent of standard warrants[2]				

Preliminary Signal Warrant Calculation

	Street	Number of Lanes	Warrant Volumes	Approach Volumes	Warrant Met
Case A	Major	1	6200	5000	N
	Minor	1	1850	750	
Case B	Major	1	9300	5000	N
	Minor	1	950	750	

Analyst and Date:	Reviewer and Date:

[1] Meeting preliminary signal warrants does **not** guarantee that a signal will be installed. When preliminary signal warrants are met, project analysts need to coordinate with Region Traffic to initiate the traffic signal engineering investigation as outlined in the Traffic Manual. Before a signal can be installed, the engineering investigation must be conducted or reviewed by the Region Traffic Manager who will forward signal recommendations to headquarters. Traffic signal warrants must be met and the State Traffic Engineer's approval obtained before a traffic signal can be installed on a state highway.

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Oregon Department of Transportation

Transportation Development Branch

Transportation Planning Analysis Unit

Preliminary Traffic Signal Warrant Analysis[1]

Major Street:	Blackwell Rd	**Minor Street:**	Access Rd
Project:	IAMP 40	**City/County:**	Jackson County
Year:	2038 PM	**Alternative:**	Land Use Alternative

Preliminary Signal Warrant Volumes

Number of Approach lanes		ADT on major street approaching from both directions		ADT on minor street, highest approaching volume	
Major Street	Minor Street	Percent of standard warrants 100	70	Percent of standard warrants 100	70
Case A: Minimum Vehicular Traffic					
1	1	8850	6200	2650	1850
2 or more	1	10600	7400	2650	1850
2 or more	2 or more	10600	7400	3550	2500
1	2 or more	8850	6200	3550	2500
Case B: Interruption of Continuous Traffic					
1	1	13300	9300	1350	950
2 or more	1	15900	11100	1350	950
2 or more	2 or more	15900	11100	1750	1250
1	2 or more	13300	9300	1750	1250
	100 percent of standard warrants				
X	70 percent of standard warrants[2]				

Preliminary Signal Warrant Calculation

	Street	Number of Lanes	Warrant Volumes	Approach Volumes	Warrant Met
Case A	Major	1	6200	5100	N
	Minor	1	1850	2600	
Case B	Major	1	9300	5100	N
	Minor	1	950	2600	

Analyst and Date:	Reviewer and Date:

[1] Meeting preliminary signal warrants does **not** guarantee that a signal will be installed. When preliminary signal warrants are met, project analysts need to coordinate with Region Traffic to initiate the traffic signal engineering investigation as outlined in the Traffic Manual. Before a signal can be installed, the engineering investigation must be conducted or reviewed by the Region Traffic Manager who will forward signal recommendations to headquarters. Traffic signal warrants must be met and the State Traffic Engineer's approval obtained before a traffic signal can be installed on a state highway.

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Oregon Department of Transportation

Transportation Development Branch

Transportation Planning Analysis Unit

Preliminary Traffic Signal Warrant Analysis[1]

Major Street:	Access Rd	**Minor Street:**	NB Ramp
Project:	IAMP 40	**City/County:**	Jackson County
Year:	2038 PM	**Alternative:**	Land Use Alternative

Preliminary Signal Warrant Volumes

Number of Approach lanes		ADT on major street approaching from both directions		ADT on minor street, highest approaching volume	
Major Street	Minor Street	Percent of standard warrants 100	70	Percent of standard warrants 100	70
Case A: Minimum Vehicular Traffic					
1	1	8850	6200	2650	1850
2 or more	1	10600	7400	2650	1850
2 or more	2 or more	10600	7400	3550	2500
1	2 or more	8850	6200	3550	2500
Case B: Interruption of Continuous Traffic					
1	1	13300	9300	1350	950
2 or more	1	15900	11100	1350	950
2 or more	2 or more	15900	11100	1750	1250
1	2 or more	13300	9300	1750	1250
	100 percent of standard warrants				
X	70 percent of standard warrants[2]				

Preliminary Signal Warrant Calculation

	Street	Number of Lanes	Warrant Volumes	Approach Volumes	Warrant Met
Case A	Major	1	6200	5700	N
	Minor	1	1850	1200	
Case B	Major	1	9300	5700	N
	Minor	1	950	1200	

Analyst and Date:	Reviewer and Date:

[1] Meeting preliminary signal warrants does **not** guarantee that a signal will be installed. When preliminary signal warrants are met, project analysts need to coordinate with Region Traffic to initiate the traffic signal engineering investigation as outlined in the Traffic Manual. Before a signal can be installed, the engineering investigation must be conducted or reviewed by the Region Traffic Manager who will forward signal recommendations to headquarters. Traffic signal warrants must be met and the State Traffic Engineer's approval obtained before a traffic signal can be installed on a state highway.

[2] Used due to 85th percentile speed in excess of 40 mph or isolated community with population of less than 10,000.

Oregon Department of Transportation

Transportation Development Branch

Transportation Planning Analysis Unit

Preliminary Traffic Signal Warrant Analysis[1]

Major Street:	Access Rd	**Minor Street:**	SB Ramp
Project:	IAMP 40	**City/County:**	Jackson County
Year:	2038 PM	**Alternative:**	Land Use Alternative

Preliminary Signal Warrant Volumes

Number of Approach lanes		ADT on major street approaching from both directions		ADT on minor street, highest approaching volume	
Major Street	Minor Street	Percent of standard warrants 100	70	Percent of standard warrants 100	70
Case A: Minimum Vehicular Traffic					
1	1	8850	6200	2650	1850
2 or more	1	10600	7400	2650	1850
2 or more	2 or more	10600	7400	3550	2500
1	2 or more	8850	6200	3550	2500
Case B: Interruption of Continuous Traffic					
1	1	13300	9300	1350	950
2 or more	1	15900	11100	1350	950
2 or more	2 or more	15900	11100	1750	1250
1	2 or more	13300	9300	1750	1250
	100 percent of standard warrants				
X	70 percent of standard warrants[2]				

Preliminary Signal Warrant Calculation

	Street	Number of Lanes	Warrant Volumes	Approach Volumes	Warrant Met
Case A	Major	1	6200	6800	N
	Minor	1	1850	600	
Case B	Major	1	9300	6800	N
	Minor	1	950	600	
Analyst and Date:			Reviewer and Date:		

[1] Meeting preliminary signal warrants does **not** guarantee that a signal will be installed. When preliminary signal warrants are met, project analysts need to coordinate with Region Traffic to initiate the traffic signal engineering investigation as outlined in the Traffic Manual. Before a signal can be installed, the engineering investigation must be conducted or reviewed by the Region Traffic Manager who will forward signal recommendations to headquarters. Traffic signal warrants must be met and the State Traffic Engineer's approval obtained before a traffic signal can be installed on a state highway.

[2] Used due to 85th percentile speed in excess of 40 mph or isolated community with population of less than 10,000.

Oregon Department of Transportation

Transportation Development Branch

Transportation Planning Analysis Unit

Preliminary Traffic Signal Warrant Analysis[1]

Major Street:	Old Stage	**Minor Street:**	Driveway
Project:	IAMP 40	**City/County:**	Jackson County
Year:	2038 PM	**Alternative:**	Land Use Alternative

Preliminary Signal Warrant Volumes

Number of Approach lanes		ADT on major street approaching from both directions		ADT on minor street, highest approaching volume	
Major Street	Minor Street	Percent of standard warrants 100	70	Percent of standard warrants 100	70
Case A: Minimum Vehicular Traffic					
1	1	8850	6200	2650	1850
2 or more	1	10600	7400	2650	1850
2 or more	2 or more	10600	7400	3550	2500
1	2 or more	8850	6200	3550	2500
Case B: Interruption of Continuous Traffic					
1	1	13300	9300	1350	950
2 or more	1	15900	11100	1350	950
2 or more	2 or more	15900	11100	1750	1250
1	2 or more	13300	9300	1750	1250
	100 percent of standard warrants				
X	70 percent of standard warrants[2]				

Preliminary Signal Warrant Calculation

	Street	Number of Lanes	Warrant Volumes	Approach Volumes	Warrant Met
Case A	Major	1	6200	4200	N
	Minor	1	1850	1800	
Case B	Major	1	9300	4200	N
	Minor	1	950	1800	
Analyst and Date:			Reviewer and Date:		

[1] Meeting preliminary signal warrants does **not** guarantee that a signal will be installed. When preliminary signal warrants are met, project analysts need to coordinate with Region Traffic to initiate the traffic signal engineering investigation as outlined in the Traffic Manual. Before a signal can be installed, the engineering investigation must be conducted or reviewed by the Region Traffic Manager who will forward signal recommendations to headquarters. Traffic signal warrants must be met and the State Traffic Engineer's approval obtained before a traffic signal can be installed on a state highway.

[2] Used due to 85th percentile speed in excess of 40 mph or isolated community with population of less than 10,000.

I-5 Exits 40 and 43 (Gold Hill)

Interchange Area Management Plans

Revised Final Technical Memorandum #6

Alternative Analysis

Prepared for

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September 2015

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Table of Contents

6. ALTERNATIVE ANALYSIS 1

6.1. Concept Development 1

6.1.1. Interchange Ramp Improvements 2

6.1.2. Intersection Improvements 2

6.1.3. Multimodal Improvements 2

6.2. Concept Evaluation 3

6.2.1. Traffic Operations and Safety 3

6.2.2. Basic Roadway Geometries and Right-of-Way Requirements 4

6.2.3. Environmental and Land Use Assessment 4

6.2.4. Concepts Cost Opinions 4

6.3. Organization of Improvement Concepts 4

6.4. I-5 Exit 40 Concept Evaluation 4

6.4.1. Concept 40-R1: Southbound Off-ramp Extension 6

6.4.2. Concept 40-R2: Southbound On-ramp Extension 8

6.4.3. Concept 40-R3: Southbound Ramp Terminal Turning Radius Improvements 9

6.4.4. Concept 40-R4: Northbound Off-ramp Extension 11

6.4.5. Concept 40-R5: Northbound On-ramp Extension 12

6.4.6. Concept 40-R6: Northbound Ramp Terminal Turning Radius Improvements 13

6.4.7. Concept 40-R7: Southbound Off-ramp Guardrail Modification 15

6.4.8. Concept 40-I1: 2nd Avenue/OR 99 and Blackwell Road at Access Road Intersection Modifications 16

6.4.9. Concept 40-I2: 2nd Avenue/OR 99 and Blackwell Road at Access Road Turning Radius Improvements 19

6.4.10. Concept 40-I3: Access Road/Old Stage Road Turning Radii Improvements 20

6.4.11. Concept 40-MM1: Access Road – Widen to Provide Multimodal Access 22

6.4.12. Concept 40-MM2: Blackwell Road (OR 99)– Provide Multimodal Access 23

6.5. I-5 Exit 43 Concept Evaluation 25

6.5.1. Concept 43-R1: Southbound Off-ramp Extension 27

6.5.2. Concept 43-R2: Southbound Ramp Terminal Turning Radius Improvements 28

6.5.3. Concept 43-R3: Northbound Off-ramp Extension 29

6.5.4. Concept 43-R4: Northbound Ramp Terminal Turning Radius Improvements 31

6.5.5. Concept 43-I1: Rogue River Highway/Main Street Intersection Modifications 32

6.5.6. Concept 43-I2: Rogue River Highway/Main Street Turning Radius Improvements 34

6.5.7. Concept 43-I3: Rogue River Highway/2nd Avenue at N. River Road Intersection Enhancements 35
6.5.8. Concept 43-MM1: IMSA Roadways Multimodal Improvements 38
6.5.9. Concept 43-MM2: Rogue River Highway (Rock Point Bridge, 00332A) – Enhance Multimodal Access 40
6.5.10. Concept 43-MM3: Profetta Lane to Old Stage Road – I-5 Alternative Multimodal Crossing 42

List of Tables

Table 6-1. I-5 Exit 40 Improvement Concepts 5
Table 6-2. I-5 Exit 43 Improvement Concepts 26

Attachments:

Figure 6-1. Interchange 40 – Summary of Concepts
Figure 6-2. Concept 40-R1: Southbound Off-ramp Extension
Figure 6-3. Concept 40-R2: Southbound On-ramp Extension
Figure 6-4. Concept 40-R3: Southbound Ramp Terminal Turning Radius Improvements
Figure 6-5.Concept 40-R4: Northbound Off-Ramp Extension
Figure 6-6. Concept 40-R5: Northbound On-ramp Extension
Figure 6-7. Concept 40-R6: Northbound Ramp Terminal Turning Radius Improvements
Figure 6-8. Concept 40-R7: Southbound Off-ramp Guardrail Modification
Figure 6-9. Concept 40-I1: 2nd Avenue/Blackwell Road/Access Road Intersection Modifications
Figure 6-10. Concept 40-I2: 2nd Avenue/Blackwell Road/Access Road Turning Radius Improvements
Figure 6-11. Concept 40-I3: Access Road/Old Stage Road Turning Radius Improvements
Figure 6-12. Concept 40-MM1: 2nd Avenue (OR 99) Bridge Multimodal Improvements
Figure 6-13. Concept 40-MM2: Blackwell Road Multimodal Path
Figure 6-14. Interchange 43 – Summary of Concepts
Figure 6-15. Concepts 43-R1 & R2: Southbound Off-ramp and Turning Radius Improvements
Figure 6-16. Concepts 43-R3 & R4: Northbound Off-ramp and Turning Radius Improvements
Figure 6-17. Concept 43-I1: Rogue River Highway/Main Street Intersection Modifications
Figure 6-18. Concept 43-I2: Rogue River Highway/Main Street Turning Radius Improvements
Figure 6-19. Concept 43-I3: Rogue River Highway/2nd Avenue/N. River Road Intersection Enhancements
Figure 6-20. Concept 43-MM1: Study Area Roadways Multimodal Improvements
Figure 6-21. Concept 43-MM2: Rogue River Highway (OR 234/OR 99) Bridge Multimodal Improvements
Figure 6-22. Concept 43-MM3: I-5 Alternative Multimodal Crossing

6. ALTERNATIVE ANALYSIS

This memorandum presents the preliminary improvement concepts developed to address deficiencies in the I-5 Exits 40 and 43 interchange management study areas (IMSAs). The identified improvement concepts are intended to help achieve the goals and objectives set forth for this project while addressing identified deficiencies for all modes.

Once concepts are selected for further analysis, they will be combined to create a comprehensive improvement strategy. As the overall strategy is developed, concepts will be refined so that the improvements work well together.

6.1. Concept Development

Each improvement concept was developed to address specific deficiencies, safety issues, or access concerns. These concepts were developed based upon available standards, warrants, perceived need, safety data, traffic operations, and community livability. Concepts were not limited to roadway issues, and include many bicycle and pedestrian-related projects.

The concepts were developed keeping in mind the objectives developed in Technical Memorandum #2: Goals, Objectives, and Evaluation Criteria for these Interchange Area Management Plans (IAMP):

- Protect the function of the interchanges as specified in the Oregon Highway Plan (OHP) and Jackson County Transportation System Plan (TSP).
- Provide safe and efficient operations on I-5, Access Road, and Main Street as specified in the OHP and Jackson County TSP.
- Facilitate freight travel to the interchange from nearby resource lands.
- Maintain existing emergency routes and identify improvements to the transportation system that may enhance emergency vehicle access.
- Identify safe and convenient bicycle and pedestrian improvements to connect and enhance non-motorized travel at and around the interchanges, including access to the Rogue River Greenway.
- Incorporate bicycle and pedestrian elements, such as sidewalks and bike lanes or shoulders, in roadway upgrades.
- Incorporate current and planned land uses into the design and management systems for Exits 40 and 43, including recommended strategies for land use control.
- Consider the 2009 Regional Plan for the Greater Bear Creek Valley (specifically, inclusion and build-out of the adjacent Tolo industrial area) when evaluating design modifications and management systems for Exits 40 and 43, including recommended strategies for land use control.
- Develop an access management plan that provides for safe and acceptable operations on the transportation network, and meet OHP requirements and the access spacing standards in Oregon Administrative Rule (OAR) 734-051.

- Provide a process to educate and involve the public in the planning and funding for future transportation system improvements.

This memorandum considers changes/improvements in three general categories:

- **Interchange Ramp Improvements** – These concepts address concerns raised about driver expectation and safety on interchange ramps.
- **Intersection Improvements** – These concepts identify potential improvements to improve traffic flow and/or address safety concerns at individual intersections within the IMSA.
- **Multimodal Improvements** – These concepts identify potential improvements to enhance safety, desirability, and continuity of facilities for non-auto users in the IMSA.

The improvement concept categories often overlap or complement each other. For instance, a roadway segment improvement may include strategies to improve safety and could be combined with a number of pedestrian improvements. Linkages between concepts are discussed in the more detailed concept evaluations for each exit in Sections 6.4 and 6.5, below.

6.1.1. Interchange Ramp Improvements

A review of interchange ramp characteristics indicates inadequate acceleration and deceleration distances at all four I-5 Exit 40 ramps as well as the northbound and southbound off-ramps of Exit 43. Additionally, a detailed review of crash history data for the period between January 1, 2007, and December 31, 2011, shows multiple crashes along IMSA ramps. Collective evaluation of the Exit 40 ramps indicates multiple crashes with one fatality (southbound off-ramp). At Exit 43, multiple ramp crashes were reported for the northbound on-ramp and southbound off-ramp; one of the crashes at the northbound on-ramp was a fatality.

6.1.2. Intersection Improvements

The concepts developed for intersection improvements address operational and safety deficiencies at individual intersections within the IMSAs. Many of the intersection improvements address truck turning issues and sight distance concerns. Other suggested improvements may address queue storage lengths and multimodal connectivity at intersections where overall capacity is not expected to be of concern.

6.1.3. Multimodal Improvements

In alignment with the goals of these plans, the proposed improvements provide enhanced safety and crossing opportunities and improved visibility and awareness between modes, and move toward continuity of facilities for non-auto users in the IMSA. These multimodal improvements primarily serve pedestrians and cyclists; there is currently limited transit service within the IMSAs. The concepts focus on improving crossings where pedestrians and/or cyclists interact with motorized vehicles as well as improving access to the Rogue River Greenway.

The Oregon Bicycle and Pedestrian Plan recommends shoulders that are 6 feet wide for bicycle use, although a minimum 4-foot shoulder is considered adequate when there are physical width limitations. Wider shoulders allow a cyclist to ride far enough from the edge of pavement to avoid debris and conflicts with passing vehicles. Applicable guidelines, standards, environmental constraints, and costs were considered in the development of bicycle/shoulder improvements throughout the corridor.

The crossing improvements proposed include striped crosswalks, pathway connections, and other spot improvements.

6.2. Concept Evaluation

Not all of the concepts proposed in this memorandum will be recommended for implementation. Each improvement concept will be evaluated with regard to applicable impacts (e.g., traffic operations, safety, and environmental), feasibility, stakeholder feedback, and ability to meet the goals of the IAMP.

The concept analysis included traffic operations, road geometries and right-of-way (ROW) requirements, environmental and land use consequences, and cost opinions.

6.2.1. Traffic Operations and Safety

The I-5 Exit 40 and 43 IMSA intersections are forecast to meet operational targets in the future year (2038); however, traffic safety and a multimodal system that supports all forms of transportation are issues. Potential improvements include traffic control modifications, improved intersection turning radii, extensions of ramp lengths at the ramp terminals, and multimodal improvements/connections to local trails. The operational assessment focuses on the volume-to-capacity (v/c) ratio and level of service (LOS) for the 2038 future condition.

At intersections where potential changes in traffic control or turn lanes were considered, the procedures in the ODOT Analysis Procedures Manual (APM) were followed. For potential turn lanes on the rural sections of the highway, the APM turn lane criteria[1] were evaluated. Existing traffic volumes were applied to determine whether warrants for turn lanes might be met today.

Some improvements are focused on addressing safety concerns or may address safety as well as traffic operations deficiencies. Crash patterns from the five-year analysis period (2005 through 2009) are discussed for those improvements that address safety.

Multimodal improvements focus on addressing deficiencies or gaps in the system, so that all modes of travel are better accommodated.

[1] Section 7.2 Turn Lane Criteria, Analysis Procedures Manual, April 2006, Updated January 2011, online reference: http://www.oregon.gov/ODOT/TD/TPAU/docs/A_APM/APM.pdf. Note: These criteria are also consistent with the criteria in Appendix F of the Highway Design Manual.

6.2.2. Basic Roadway Geometries and Right-of-Way Requirements

Illustrations of basic roadway geometries and ROW needs were developed for concepts that involve infrastructure improvements. The drawings approximate roadway centerlines, edge of roadway, and ROW using available base mapping.

6.2.3. Environmental and Land Use Assessment

Impacts to resources were qualitatively assessed based on the data assembled for the environmental and land use reconnaissance. The level of analysis of the study area for this assessment is designed to identify those areas judged to have considerable potential for conflict.

Socioeconomic effects are also considered. Concept descriptions note if there is a potential for impacts or benefits to Title VI populations in the IMSAs.

6.2.4. Concepts Cost Opinions

Rough order-of-magnitude cost opinions were developed using present day dollars and are consistent with standard estimating methods. The cost opinions include a contingency factor but do not include ROW costs (unless noted otherwise). The cost opinions are intended to help differentiate alternatives by approximating the relative costs of each concept.

Cost opinions were prepared for all improvements associated with the I-5 Exits 40 and 43 IMSA, unless noted otherwise.

6.3. Organization of Improvement Concepts

The I-5 Exits 40 and 43 IAMPs include two interchanges and nearby intersections. For discussion purposes in this memorandum, the concepts have been grouped by interchange as they were discussed in previous memoranda. Each interchange focuses on the four primary improvement categories: intersection, interchange, multimodal, and safety. There are a total of 22 improvement concepts (12 within the Exit 40 IMSA, 10 within the Exit 43 IMSA).

Some improvement concepts have various options to consider, while others might have only one. Many of the concepts can be combined with others, and some provide different solutions to address the same issue. The 22 concepts are discussed in the following sections.

6.4. I-5 Exit 40 Concept Evaluation

I-5 Exit 40 provides access to the City of Gold Hill from the south, to the Tolo Industrial area (to the southeast, near Exit 35), and to surrounding recreational areas. The IMSA includes four roadways in addition to Access Road that serves the interchange. The roadways include (listed from north to south): 2nd Avenue/OR 99, Blackwell Road, Lampman Road, and Old Stage Road. Roadway characteristics are presented in Technical Memorandum #3: Study Area Inventory. In general, all roadways are two lanes with pavement width ranging from 18 to 34 feet. There are no signalized intersections in the IMSA. Posted speed, functional classification, and average

daily traffic (ADT) also influences the development of improvement concepts. IMSA characteristics include:

- Posted speed is 35 miles per hour (mph) along Access Road, 40 mph along 2nd Avenue/OR 99 and Blackwell Road, and 45 mph along Lampman and Old Stage Roads.
- Roadway classifications include rural minor arterial (both Access Road and 2nd Avenue/ OR 99), rural major collector (Blackwell Road), and local (Lampman and Old Stage Roads).
- Existing ADT is approximately 5,500 vehicles per day (vpd) along Access Road; the existing ADT along the side streets is: 2nd Avenue/OR 99 (~5,800 vpd), Blackwell Road (~2,500 vpd), Lampman Road (~600 vpd), and Old Stage Road (~900 vpd).
- Forecast ADT for year 2038 for area roadways is: Access Road (~6,800 vpd), 2nd Avenue/OR 99 (~6,500 vpd), Blackwell Road (~3,500), Lampman Road (~700 vpd), and Old Stage Road (~1,100).

There are 12 improvement concepts for this interchange, several of which have varying options to consider. A brief summary of the improvement concepts is presented in Table 6-1 and Figure 6-1. The following sections discuss in detail the potential changes and improvements that are specific to this interchange.

Table 6-1. I-5 Exit 40 Improvement Concepts

ID	Location	General Description	Purpose	Benefit
40-R1	Southbound Off-ramp	Extend southbound off-ramp: ▪ Option A: Extend southbound off-ramp ▪ Option B: Straighten and extend southbound off-ramp	Provide adequate deceleration distance and improve sight distance	Safety, Freight
40-R2	Southbound On-ramp	Extend southbound on-ramp	Provide adequate acceleration distance	Safety, Freight
40-R3	Southbound Ramp Terminal	Improve turning radius	Provide adequate turning radius (WB-67[1])	Safety, Freight
40-R4	Northbound Off-ramp	Extend northbound off-ramp	Provide adequate deceleration distance	Safety, Freight
40-R5	Northbound On-ramp	Extend northbound on-ramp	Provide adequate acceleration distance	Safety, Freight
40-R6	Northbound Ramp Terminal	Improve turning radius	Provide adequate turning radius (WB-67[1])	Safety, Freight
40-R7	Southbound Off-ramp	Move guardrail	Improve sight distance	Mobility, Safety

Table 6-1. I-5 Exit 40 Improvement Concepts

ID	Location	General Description	Purpose	Benefit
40-I1	2nd Avenue/OR 99 and Blackwell Road at Access Road	Modify intersection: ▪ Option A: Modify traffic control to all-way STOP ▪ Option B: Modify traffic control to all-way STOP and add westbound left-turn lane ▪ Option C: Realign to create a standard four-legged intersection, all-way STOP control	Better facilitate turning movements and pedestrian crossing	Mobility, Multimodal, Safety
40-I2	Access Road at 2nd Avenue/OR 99 and Blackwell Road	Improve turning radius	Provide adequate turning radius (WB-67[1])	Safety, Freight
40-I3	Access Road at Old Stage Road	Improve turning radii	Provide adequate turning radii (WB-67[1])	Safety, Freight
40-MM1	Access Road	Widen to provide 6-foot shoulders between Blackwell Road and Exit 40	Provide facilities along Access Road for all modes of travel, enhance access to the city, and improve safety	Multimodal, Fill System Gap, Safety
40-MM2	Blackwell Road/OR 99	Provide access for all modes of travel between Access Road and KOA campground: ▪ Option A: Widen to provide 6-foot shoulders ▪ Option B: Widen to provide a 10-foot multiuse path	Provide facilities along Blackwell Road and OR 99 for all modes of travel, enhance access to the city and downtown environment, and improve safety	Multimodal, Fill System Gap, Safety

1. WB – Wheelbase is the distance (in feet) between the front and rear axle of a vehicle, typically representative of the largest vehicle to use an intersection/facility. The wheelbase of a vehicle is one of the factors used during design to accommodate turning maneuvers.

6.4.1. Concept 40-R1: Southbound Off-ramp Extension

The southbound off-ramp is a single lane with an approximate width of 16 feet. It has a gradual incline to the ramp terminal intersection with Access Road. The advisory exit speed on the ramp is 35 mph and the current ramp deceleration length is approximately 280 feet with a taper of 185 feet. In addition to passenger vehicles, various larger vehicles use the ramp, including trucks and recreational vehicles (campers and vehicles with boat trailers).

The desired ramp deceleration distance is 500 feet and the taper is 400 feet (compared to the current 280 feet and 185 feet provided, respectively). The less than desirable ramp length and taper are noticed by all of the vehicles, and may become a safety issue if queues get longer or multiple trucks/recreational vehicles use the off-ramp at the same time. Access Road is the link between the interchange, the city, and recreational areas (including the nearby KOA and Laurel

Hill Golf Course), and it provides alternative access to the nearby intermodal hub at I-5 Exit 35 (Seven Oaks). Further development of the intermodal hub would likely result in increased use of Exit 40 by large vehicles and corresponding increased queue lengths.

Concept 40-R1 has two options:

- Option A would extend the southbound off-ramp with the purpose of providing adequate deceleration distance and improving safety. Option A would require extension of the existing culvert to support the ramp improvement.
- Option B would straighten out the southbound off-ramp to improve sight distance and also extend the off-ramp with the purpose of providing adequate deceleration distance. Two scenarios were looked at to do this. The first scenario shifts the bridge outside the path of Kane Creek but has a longer off-ramp and impacts more ROW, and the second scenario minimizes ROW impacts but requires more structure to clear Kane Creek.

Both options are shown in Figure 6-2. As an interim step, tree trimming (i.e., limbing) could be done in the short term to mitigate sight distance concerns.

Concept 40-R1 – Traffic Operations and Safety

Existing ADT volumes on the southbound off-ramp are approximately 750 vpd. Future 2038 off-ramp ADT volumes are estimated at 900 vpd. The ramp terminal critical movement is the eastbound left-through-right (EB L/T/R). The critical movement v/c ratio (and LOS) for the existing and future (2038) conditions would be 0.20 (LOS B) and 0.24 (LOS C), respectively. During the five-year analysis period, there was one fixed object crash attributed to the southbound ramps that resulted in a fatality. The crash was attributed to fatigue and resulted in the vehicle hitting a berm and sign before overturning.

- Option A would result in a more gradual elevation gain, a longer distance to stop, and thus, a more comfortable deceleration experience. It would include guardrail for the length of the improvement (comparable to current conditions) and overall would improve the safety of the off-ramp.
- Option B would have similar impacts as Option A, but would additionally improve safety concerns associated with sight distance.

Overall, the intersection capacity is not expected to change with this improvement. However, it would create additional distance between the ramp terminal and the interstate in order to provide additional storage for queued vehicles.

The southbound ramp terminal is a public access. This improvement would maintain the existing intersection location and is not expected to need additional access management or to impact existing access spacing.

Concept 40-R1 – Basic Roadway Geometries and Right-of-Way Requirements

Both options for Concept 40-R1 would extend the length of the southbound off-ramp to meet the applicable roadway design standards. The longer ramp length would result in a more gradual elevation gain and longer distance to stop. Guardrail would also be extended (Option A), while guardrail and barrier would match the recent construction (Option B). All of the improvements are anticipated to be within ODOT ROW for Option A, while ROW would be required for Option B.

Concept 40-R1 – Environmental and Land Use Assessment

Adjacent zoning includes rural residential and Exclusive Farm Use (EFU); one or both zones may be impacted depending on the final design. Statewide Planning Goals would need to be considered when impacting EFU zones. No additional ROW is required for the culvert extension (Option A). Option B would require additional ROW.

There are two nearby water features, Kane Creek and a ditch/irrigation canal. Kane Creek is listed as a summer and winter steelhead habitat by Oregon Department of Fish and Wildlife (ODFW). This improvement concept includes extension of the existing box culvert (or a new structure) and modifications to the irrigation canal. Any new work in areas of undisturbed soil have a high potential for archeological resource impacts.

The increased impervious surface area may produce additional stormwater that would need to be treated.

No socioeconomic impacts are anticipated.

Concept 40-R1 – Cost Opinions

The estimated cost of options for Concept 40-R1 are as follows:

- Option A: $1,470,000
- Option B: $4,190,000 (shorter bridge length but significantly longer ramp) or $7,579,000 (minimizes ROW impacts but has longer structure over Kane Creek)

6.4.2. Concept 40-R2: Southbound On-ramp Extension

Exit 40 has a single-lane southbound on-ramp with an approximate width of 17 feet. The current ramp acceleration length is approximately 700 feet, while the desired length is approximately 1,100. The current taper length is approximately 225 feet, though the desired length is 300 feet. Vehicles of various sizes (including trucks, campers, and vehicles with trailers) use the ramp; the larger vehicles may have issues getting up to speed before entering the interstate.

The concept would extend the southbound on-ramp to provide adequate acceleration distance with the purpose of improving safety, as shown in Figure 6-3.

Concept 40-R2 – Traffic Operations and Safety

Existing ADT traffic volumes on the southbound on-ramp are approximately 1,800 vpd, while the 2038 ADT volumes are 2,250 vpd. The ramp terminal critical movement is the eastbound left-through-right (EB L/T/R). The critical movement v/c ratio (and LOS) for the existing and future (2038) conditions would be 0.20 (LOS B) and 0.24 (LOS C), respectively. Three crashes were attributed to the southbound on-ramp during the five-year analysis period and included two collision types: rear end (1), and fixed object (2). One of the crashes resulted in minor injuries, while the other two were property damage only. The rear end collision may be attributable to a short acceleration distance, because the error was identified "as failure to decrease speed for slower moving vehicle."

While the on-ramp would be lengthened with this project, traffic operations are not expected to change within the merge area. There is no apparent crash pattern; however, the longer on-ramp, which would be consistent with design standards, would likely improve the vehicular safety and provide additional space for larger vehicles to get up to speed before merging with interstate traffic.

The southbound ramp terminal is a public access. This improvement is not expected to need additional access management or to impact existing access spacing.

Concept 40-R2 – Basic Roadway Geometries and Right-of-Way Requirements

Concept 40-R2 would extend the length of the southbound on-ramp to meet the applicable roadway design standards. All improvements are anticipated to be within ODOT ROW.

Concept 40-R2 – Environmental and Land Use Assessment

The southbound on-ramp and interstate are located on EFU-zoned land, and there are no natural features near the proposed concept. Statewide Planning Goals would need to be considered when impacting EFU zones. No land use or environmental impacts are anticipated.

The increased impervious surface area may produce additional stormwater that would need to be treated. Other environmental concerns are the fish-bearing stream and wetlands adjacent to the ramp. These should be identified for mitigation based on any future improvements. No socioeconomic impacts are anticipated.

Concept 40-R2 – Cost Opinions

The cost of the extended on-ramp in Concept 40-R2 is estimated at $850,000.

6.4.3. Concept 40-R3: Southbound Ramp Terminal Turning Radius Improvements

I-5 Exit 40 serves city and recreational traffic (including the nearby KOA and Laurel Hill Golf Course), and it provides alternative access to the nearby intermodal hub at Interchange 35 (Seven Oaks). Access Road is a two-lane facility with a posted speed of 35 mph and a paved

surface of 24 to 34 feet. The southbound ramps (on and off) have a single-lane approach that is approximately 16 feet wide.

Currently the configuration accommodates trucks; however, the ramp terminal turning radius is not designed for truck traffic design vehicles. This design challenge is predominantly focused on the northeast corner for the southbound left-turn movement from Access Road to the southbound on ramp. In addition to the difficulties experienced by trucks (causing them to occasionally create their own path in adjacent lanes), large and/or long recreational vehicles may also have difficulties navigating the ramp terminal.

Concept 40-R3 would modify the northeastern corner to provide a turning radius sufficient to handle a typical design truck (WB-67), as shown in Figure 6-4. The purpose of this improvement is to improve safety for larger loads.

Concept 40-R3 – Traffic Operations and Safety

Existing ADT traffic volumes on Access Road are 2,550 to 3,800 vpd, while the ramp is approximately 750 vpd. Future 2038 volumes on Access Road are estimated at 3,200 to 4,750 vpd; the forecast for the southbound ramp ADT is approximately 900 vpd. The ramp terminal critical movement is the eastbound left-through-right (EB L/T/R). The critical movement v/c ratio (and LOS) for the existing and future (2038) conditions would be 0.20 (LOS B) and 0.24 (LOS C), respectively. During the five-year analysis period there were no crashes reported along Access Road near the southbound ramp terminal.

The improvements associated with Concept 40-R3 would improve the overall safety of the intersection (less chance of semi-trailers tracking into other travel lanes) but are not anticipated to change the roadway capacity at the intersection. The increased turning radius would allow heavy vehicles to turn at higher speeds and accelerate more comfortably.

The wider width of the southbound on-ramp would increase the exposure time for bicycle and pedestrian traffic traveling along the east side of Access Road.

The southbound ramp terminal is a public access. This improvement is not expected to need additional access management, but providing a wider turning radius would widen the access and shorten access spacing to the north.

Concept 40-R3 – Basic Roadway Geometries and Right-of-Way Requirements

This improvement would widen the shoulder up to 24 feet with guardrail in the northeast corner of the southbound ramp terminal. The improvement would need significant fill for the steep slopes on Access Road and the southbound on-ramp. The existing land within the northeast corner of the ramp terminal is all ODOT jurisdiction and ROW.

Concept 40-R3 – Environmental and Land Use Assessment

The only adjacent land use is EFU. Statewide Planning Goals would need to be considered when impacting EFU zones.

There are no documented environmental resources near Concept 40-R3, though the increased impervious surface area may produce additional stormwater that would need to be treated. Any new work in areas of undisturbed soil have a high potential for archeological resource impacts.

No socioeconomic impacts are anticipated.

Concept 40-R3 – Cost Opinions

The cost estimate for this improvement concept is $110,000.

6.4.4. Concept 40-R4: Northbound Off-ramp Extension

The northbound off-ramp is a single lane with an approximate width of 16 feet. It has a gradual incline to the ramp terminal at the intersection with Access Road. The advisory exit speed on the ramp is 45 mph, and the current ramp deceleration length is approximately 200 feet. The taper length for this ramp is zero. Similar to the southbound off-ramp, this ramp is used by vehicles of various sizes (including trucks, campers, and vehicles with trailers).

The desired ramp deceleration distance is 460 feet and the desired taper length is 360 feet (a 200 feet deceleration distance is provided now, while a taper does not currently exist). Like the southbound off-ramp, the deceleration distance is less than the desirable length and may become a safety issue if the length of queues increases. Access Road links and serves multiple uses, including Interchange 35 and the nearby intermodal hub.

The improvement would extend the northbound off-ramp to provide adequate deceleration distance (include guardrail for the length of the improvement) with the purpose of improving safety. Figure 6-5 illustrates the concept.

Concept 40-R4 – Traffic Operations and Safety

The northbound off-ramp has an existing ADT of 2,300 vpd and a future (2038) ADT volume forecast of 2,900 vpd. The ramp terminal critical movement is the westbound left-through-right (WB L/T/R). The critical movement v/c ratio (and LOS) for the existing and future (2038) conditions would be 0.29 (LOS B) and 0.41 (LOS B), respectively. During the five-year analysis period, there were five crashes attributed to the northbound off-ramp. The crashes included three collisions types: rear end (2), fixed object (2), and sideswipe (1). Four of the crashes resulted in minor injuries, while the other one was property damage only.

The benefits of this improvement would be similar to the southbound off-ramp extension (40-R1): a more comfortable deceleration experience and additional storage for queuing at the

ramp terminal. Overall, the operations are not expected to change with this improvement, but safety would be enhanced.

The northbound ramp terminal is a public access. This improvement is not expected to need additional access management or impact existing access spacing.

Concept 40-R4 – Basic Roadway Geometries and Right-of-Way Requirements

Concept 40-R4 would extend the length of the northbound off-ramp to meet the applicable roadway design standards. All improvements are anticipated to be within ODOT ROW.

Concept 40-R4 – Environmental and Land Use Assessment

The adjacent land use is rural residential, and nearby Kane Creek is listed as a summer and winter steelhead habitat by ODFW. Kane Creek is located near the northbound on-ramp and the southbound off-ramp, and is south of the southbound on-ramp. No impacts to the resources are anticipated. No socioeconomic impacts are anticipated either.

The increased impervious surface area may produce additional stormwater that would need to be treated.

Concept 40-R4 – Cost Opinions

The cost estimate for this improvement concept is $620,000.

6.4.5. Concept 40-R5: Northbound On-ramp Extension

The northbound on-ramp at Exit 40 has a single lane with an approximate width of 17 feet. The current ramp acceleration length is approximately 765 feet, though the desired ramp acceleration distance is 1,100 feet. The on-ramp taper is also shorter than the desired length: The current taper is 190 feet versus the desired 295 feet. Vehicles of various sizes (including trucks, campers, and vehicles with trailers) use the ramp; the larger vehicles may have issues getting up to speed before entering the interstate.

This improvement would extend the northbound on-ramp to provide adequate acceleration distance, as shown in Figure 6-6. The extension would impact the adjacent frontage road, requiring guardrail and a drainage system (both are included in the cost opinion). The purpose of this improvement is to improve safety.

Concept 40-R5 – Traffic Operations and Safety

Existing ADT volumes on the northbound on-ramp are approximately 1,000 vpd, while the 2038 ADT volumes are forecast to be 1,300 vpd. The ramp terminal critical movement is the westbound left-through-right (WB L/T/R). The critical movement v/c ratio (and LOS) for the existing and future (2038) conditions would be 0.29 (LOS B) and 0.41 (LOS B), respectively. One crash was attributed to the northbound on-ramp during the five-year analysis period. The fixed

object collision resulted in property damage only. The interchange ramp spacing does not currently meet standards.

Similar to Concept 40-R2, with this improvement concept traffic operations are not expected to change within the merge area. There is no apparent crash pattern; however, the longer on-ramp, which would be consistent with design standards, would likely improve the vehicular safety and provide additional space for larger vehicles to get up to speed before merging with interstate traffic.

The northbound ramp terminal is a public access. This improvement is not expected to need additional access management or to impact existing access spacing.

Concept 40-R5 – Basic Roadway Geometries and Right-of-Way Requirements

Concept 40-R5 would extend the length of the northbound on-ramp to meet the applicable roadway design standards. Additional ROW would be required to extend the ramp.

Concept 40-R5 – Environmental and Land Use Assessment

The northbound on-ramp and interstate are located on land zoned rural residential. There are potential ROW impacts to properties adjacent to the on-ramp. No socioeconomic impacts are anticipated with the additional ROW acquisition.

Kane Creek runs nearby, but it is not anticipated to be impacted by this improvement concept.

The increased impervious surface area may produce additional stormwater that would need to be treated.

Concept 40-R5 – Cost Opinions

The cost of the on-ramp extension in Concept 40-R5 is estimated at $1,100,000, which does not include potential ROW impacts.

6.4.6. Concept 40-R6: Northbound Ramp Terminal Turning Radius Improvements

I-5 Exit 40 serves city and recreational traffic (including the nearby KOA and Laurel Hill Golf Course), and provides alternative access to the nearby intermodal hub at Interchange 35 (Seven Oaks).The northbound ramps (on and off) have a single-lane approach that is approximately 16 feet wide, while the crossroad, Access Road, is a two-lane facility with a posted speed of 35 mph and a paved surface of 24 to 34 feet.

Currently the configuration accommodates trucks; however, the ramp terminal turning radius is not designed for truck traffic design vehicles, meaning that turning maneuvers result in trucks crossing into other travel lanes. This design challenge is predominantly focused on the southwest corner for the northbound left-turn movement onto the northbound on-ramp. In addition to the difficulties experienced by trucks (causing them to occasionally create their own

path in adjacent lanes), large and/or long recreational vehicles may also have difficulties navigating the ramp terminal.

Concept 40-R6 would modify the southwest corner (northbound left turn) to provide a turning radius sufficient to handle a typical design truck (WB-67), as shown in Figure 6-7. The purpose of the improvement is to improve safety for larger loads.

Concept 40-R6 – Traffic Operations and Safety

Existing ADT traffic volumes on Access Road are 3,800 to 5,450 vpd, while the ADT for the ramp is approximately 2,250 vpd. Future (2038) ADT volumes on Access Road are estimated at 4,750 to 6,800 vpd; the forecast ADT for the northbound ramp is approximately 2,800 vpd. The ramp terminal critical movement is the westbound left-through-right (WB L/T/R). The critical movement v/c ratio (and LOS) for the existing and future (2038) conditions would be 0.29 (LOS B) and 0.41 (LOS B), respectively. There were seven crashes reported at the northbound ramp terminal during the five-year analysis period, including one serious injury. Four of the crashes included a collision with a fixed object, and three crashes were in the northbound direction and involved guardrail. The observed intersection crash rate exceeds the statewide critical crash rate.

The improvement associated with Concept 40-R6 would move the guardrail in the southwest corner back and improve the overall safety of the intersection (less chance of large trucks tracking into other travel lanes), but it is not anticipated to change the capacity of the intersection. The increased turning radius would allow heavy vehicles to turn at higher speeds and accelerate more comfortably.

The northbound ramp terminal is a public access. This improvement is not expected to require additional access management, but providing a wider turning radius would widen the access and shorten access spacing to the south.

Concept 40-R6 – Basic Roadway Geometries and Right-of-Way Requirements

The improvement would widen the shoulder up to 23 feet with guardrail in the southwest corner of the northbound ramp terminal. The existing land within the improvement area is all ODOT jurisdiction and ROW.

Concept 40-R6 – Environmental and Land Use Assessment

Rural residential is the only adjacent land use; however, no additional ROW is needed. No socioeconomic impacts are anticipated.

There are no documented environmental resources near Concept 40-R6, though the increased impervious surface area may produce additional stormwater that would need to be treated. Any new work in areas of undisturbed soil have a high potential for archeological resource impacts.

Concept 40-R6 – Cost Opinions

The cost estimate for this improvement concept is $160,000.

6.4.7. Concept 40-R7: Southbound Off-ramp Guardrail Modification

The southbound off-ramp is a single lane with an approximate width of 16 feet. It has a gradual incline to the ramp terminal intersection with Access Road. In addition to passenger vehicles, various larger vehicles use the ramp, including trucks and recreational vehicles (campers and vehicles with boat trailers).

If a driver is stopped on the southbound off-ramp and the driver's eye level is approximately 3.5 feet from the pavement (e.g., when driving a sedan), the driver's sight distance is obstructed to the north by the guardrail on the west side of Access Road. A passenger vehicle is more likely to experience this concern than a higher profile truck/recreational vehicle. Access Road is the link between the interchange, the city, and recreational areas (including the nearby KOA and Laurel Hill Golf Course), and provides alternative access to the nearby intermodal hub at I-5 Exit 35 (Seven Oaks).

This improvement would modify/reposition the guardrail on the southwest end of the interchange bridge with the purpose of providing adequate deceleration distance and improving safety, as shown in Figure 6-8.

Concept 40-R7 – Traffic Operations and Safety

Existing ADT volumes on the southbound off-ramp are approximately 750 vpd. Future (2038) off-ramp ADT volumes are estimated at 900 vpd. The ramp terminal critical movement is the eastbound left-through-right (EB L/T/R). The critical movement v/c ratio (and LOS) for the existing and future (2038) conditions would be 0.20 (LOS B) and 0.24 (LOS C), respectively. During the five-year analysis period, there was one fixed object crash attributed to the southbound ramps that resulted in a fatality. The crash was attributed to fatigue, and resulted in the vehicle hitting a berm and sign before overturning.

The Concept 40-R7 improvement would modify or move the guardrail to increase the sight distance available looking north of the southbound off-ramp. It could improve the safety of drivers stopped on the southbound off-ramp and possibly improve safety for traffic heading south on Access Road. However, the improvement would require moving the guardrail back approximately 16 feet, potentially creating an illusion that drivers on Access Road could enter I-5 at the off-ramp, creating a dangerous "Wrong-Way" situation. Clear signage could help mitigate this concern.

Overall, the intersection capacity is not expected to change with this improvement. However, it could decrease delays for vehicles turning onto Access Road from the Exit 40 southbound off-ramp, because these vehicles would have a clearer view of oncoming traffic from the north.

The southbound ramp terminal is a public access. This improvement is not expected to need additional access management or to impact existing access spacing. As previously mentioned, this improvement could require some additional signage or paint to ensure that drivers do not confuse this access as a freeway entrance.

Concept 40-R7 – Basic Roadway Geometries and Right-of-Way Requirements

Concept 40-R7 could potentially widen Access Road to the west in order to shift the guardrail in order to improve sight distance. All improvements are anticipated to be within ODOT ROW.

Concept 40-R7 – Environmental and Land Use Assessment

Adjacent land uses include rural residential and EFU. Statewide Planning Goals would need to be considered when impacting EFU zones. No additional ROW is required, and therefore no land use impacts are anticipated.

There are two nearby water features: Kane Creek and a ditch/irrigation canal. Kane Creek is listed as a summer and winter steelhead habitat by ODFW. There is a high potential for archeological resources should soil need to be disturbed.

The increased impervious surface area may produce additional stormwater that would need to be treated.

No socioeconomic impacts are anticipated.

Concept 40-R7 – Cost Opinions

The cost estimate for this improvement concept is $239,000.

6.4.8. Concept 40-I1: 2nd Avenue/OR 99 and Blackwell Road at Access Road Intersection Modifications

Second Avenue/Blackwell Road is a two-lane facility with a posted speed of 40 mph through the Access Road intersection. Access Road is also a two-lane facility and provides access between I-5, adjacent neighborhoods, and recreational facilities. Additionally, Upper River Road intersects Blackwell Road just west of Access Road, creating an off-set intersection. Upper River Road crosses under the Southern Pacific Railroad and runs parallel to the Rogue River, which is a recreational attraction.

Concept 40-I1 has three options:

- Option A would modify the intersection traffic control to an all-way STOP to make it easier to turn left from Access Road to 2nd Avenue.
- Option B would include the all-way STOP control and add a westbound left-turn lane to facilitate access to the I-5 interchange.
- Option C would realign the intersection, straighten Access Road, and include an all-way STOP control.

Figure 6-9 illustrates Option B of Concept 40-I1.

Concept 40-I1 – Traffic Operations and Safety

Existing traffic volumes on 2nd Avenue, Blackwell Road, and Access Road are 5,800 vpd, 2,500 vpd, and 5,500 vpd, respectively, and future (2038) traffic volumes are estimated at 6,500 vpd, 3,500 vpd, and 6,800 vpd, respectively. The critical northbound movement v/c ratio (and LOS) for the existing and future (2038) conditions would be 0.55 (LOS C) and 0.76 (LOS D), respectively. During the five-year analysis period, there were four crashes at this intersection, three of which resulted in minor injuries. The crashes were dispersed among the movements, with no apparent pattern. Traffic operations and safety for each of the three options are:

- Option A: The modification to a conventional all-way STOP would improve the overall safety of the intersection and meet driver expectation. The traffic control modification would slow all movements at the intersection and make it easier to turn left from Access Road towards Gold Hill. In turn, it would slow traffic through the area (not only through the intersection), making the off-set access to Upper River Road more noticeable and thus ingress and egress easier, thus improving safety. Furthermore, the all-way STOP would facilitate non-motorized crossings of 2nd Avenue/OR 99 and Blackwell Road for resident and recreational users alike, thus improving non-motorized safety as well. Existing intersection operations indicate that the critical northbound left-right movement v/c ratio is 0.44 (LOS B); well below capacity and standard. The future operations for the same movement, with the proposed all-way STOP, would be 0.55 and LOS B; well below standard and capacity.
- Option B: Adding the left-turn lane with the all-way STOP would provide similar benefits as Option A would, but would increase capacity on Blackwell Road by separating the left-turning movements from the through movements. The left-turn lane criteria were evaluated and met for the westbound left-turn movement. Installation of guardrail on the east side (Blackwell Road) would also improve safety for motorized traffic by providing protection from the steep ditch that runs parallel to 2nd Avenue/OR 99 and Blackwell Road. Operations would be similar to those under Option A, with v/c ratios of 0.44 (existing) and 0.55 (future), and LOS B for both existing and future (2038).
- Option C: Realigning the intersection would provide similar benefits as Option A, and also would improve driver expectancy and safety by aligning the intersection to a standard four-way stop. Operations would be similar to those under Option A, with v/c ratios of 0.44 (existing) and 0.55 (future), and LOS B for both years.

Any improvements to pedestrian facilities should follow the new standards for Americans with Disabilities Act (ADA) compliance.

The intersection of 2nd Avenue/OR 99 and Blackwell Road at Access Road is a public access. Option A would not impact existing accesses, or access spacing, near the intersection. Option B would impact residential driveways (east of Access Road) along Blackwell Road; however, the location of the access (and therefore the spacing) is not anticipated to change. Option C would

impact accesses along 2nd Avenue/OR 99 and Blackwell Road and Access Road. Specifically, the distances between the intersection and accesses on 2nd Avenue/OR 99 and Blackwell Road would change, and three residential accesses on Access Road would be impacted by the realignment.

Concept 40-I1 – Basic Roadway Geometries and Right-of-Way Requirements

Design and ROW needs vary with each option:

- Option A: The traffic control modification for Option A would not require any geometric modifications to the intersection.
- Option B would have geometric modifications. The existing cross section along 2nd Avenue/OR 99 and Blackwell Road includes two 11 to 12-foot travel lanes with up to 2-foot shoulder (for a paved width of 22 to 28 feet), while Access Road also has two 12 to 13-foot travel lanes but a shoulder width of only 1 foot in most places (for a paved width of 24 to 34 feet). Adequate ROW exists along both roadways (2nd Avenue and Blackwell Road) for improvements. Option B would construct a 14-foot left-turn lane and 8-foot (Blackwell Road) to 12-foot (2nd Avenue) shoulders. Significant fill may be needed to maintain slopes between the roadway and the ditch, and this could have some ROW impacts. Blackwell Road would also include guardrail, which would also be an improvement over existing conditions.
- Option C would require significant geometric changes (and fill to maintain slopes between the roadway and the ditch) to Access Road due to the realignment. Assumes a width along Access Road sufficient to accommodate either a left or right northbound turn lane. ROW impacts to the property on the SW corner will be significant but are not included in the estimate.

Concept 40-I1 – Environmental and Land Use Assessment

Adjacent land uses include EFU and rural residential.

- Option A would have no environmental impacts or land use impacts.
- While there appears to be no buildings in the vicinity of the improvements associated with Option B, the widening would impact EFU land, and therefore Statewide Planning Goals would need to be considered. The addition of impervious surface area may produce additional stormwater that would need to be treated.
- Option C: Drainage and water quality effects could be significant, but the existing roadway that would be abandoned is assumed to provide the space for necessary treatment.

The traffic control modification for all options could make pedestrian crossings at the intersection easier, which potentially could be considered a socioeconomic benefit. Improved pedestrian access generally benefits disadvantaged populations.

Concept 40-I1 – Cost Opinions

The estimated costs of the three options for Concept 40-I1 are:

- Option A: $10,000
- Option B: $850,000
- Option C: $711,000

The cost for Option A is considerably lower than the cost for Option B because it includes only pavement restriping and signs for the traffic control change, whereas Option B widens the roadway and constructs a new westbound left turn lane and wider shoulders. The estimated cost for Option C is lower than the cost for Option B due to the added cost for rehabilitation of an existing facility over the cost of new construction. However, the cost of ROW for Option C would be much greater. None of these estimates includes utility relocation or acquisition of additional ROW. Costs associated with these elements would increase the discrepancy between costs of the three options.

6.4.9. Concept 40-I2: 2nd Avenue/OR 99 and Blackwell Road at Access Road Turning Radius Improvements

The roadway characteristics for Concept 40-I2 are the same as those described for Concept 40-I1.

Currently, the intersection turning radius is not designed for truck traffic (WB-67). This design challenge is predominantly focused on the southwest corner. In addition to the difficulties experienced by trucks (causing them to occasionally create their own path in adjacent lanes), large and/or long recreational vehicles may also have difficulties navigating the intersection. This intersection is the link between the interchange, the city, and recreation (including the nearby KOA), and alternative access to the nearby intermodal hub at Interchange 35 (Seven Oaks).

Concept 40-I2 would modify the southwest corner (eastbound right turn) to provide a turning radius sufficient to handle a typical design truck (WB-67), as shown in Figure 6-10, and to include guardrail. The purpose of the improvement is to improve safety for larger loads. It is related to Concept 40-I1.

Concept 40-I2 – Traffic Operations and Safety

Existing traffic volumes on 2nd Avenue, Blackwell Road, and Access Road are 5,800 vpd, 2,500 vpd, and 5,500 vpd, respectively, and future (2038) traffic volumes are estimated at 6,500 vpd, 3,500 vpd, and 6,800 vpd. The critical northbound movement v/c ratio (and LOS) for the existing and future (2038) conditions would be 0.55 (LOS C) and 0.76 (LOS D), respectively. During the five-year analysis period, there were four crashes at this intersection, three of which resulted in minor injuries. None of the minor injury collisions was attributed to the eastbound right-turning movement.

The improvements associated with Concept 40-I2 would improve the overall safety of the intersection (less chance of large trucks tracking into other travel lanes), but they are not anticipated to change the roadway capacity at the intersection. The increased turning radius would allow heavy vehicles to turn at higher speeds and accelerate more comfortably; this improvement would be negated if 40-I1 (all-way STOP) is implemented. Although higher speeds improve travel time and the overall driver experience, at the intersection they are less safe for other modes of travel.

The intersection of 2nd Avenue/OR 99 and Blackwell Road at Access Road is a public access. This improvement is not expected to require additional access management, but providing a wider turning radius would widen the existing access and shorten access spacing slightly to the west.

Concept 40-I2 – Basic Roadway Geometries and Right-of-Way Requirements

The improvement includes a 12-foot shoulder with guardrail. The existing ROW along 2nd Avenue/OR 99 and Blackwell Road is approximately 80 feet (or greater), and the roadway width is 24 feet. Along Access Road the roadway width is approximately 24 feet, and the ROW is 40 feet. The improvement appears to be constructible within the existing ROW.

Concept 40-I2 – Environmental and Land Use Assessment

Adjacent land uses include rural residential and EFU. While there appear to be no buildings in the vicinity of the improvements, the widening would impact lands that are zoned rural residential.

The increased impervious surface area could have stormwater impacts that would need to be treated.

No socioeconomic impacts are anticipated.

Concept 40-I2 – Cost Opinions

The cost estimate for this concept is $225,000 and does not include any stormwater treatment that may be required.

6.4.10. Concept 40-I3: Access Road/Old Stage Road Turning Radii Improvements

Access Road is a two-lane roadway that changes to Old Stage Road after passing Old Stage Road (side street). Posted speed along the roadway is 45 mph (the posted speed south of the interchange is higher than the northern counterpart). Old Stage Road (side street) is a two-lane facility with a posted speed of 45 mph. Access Road provides access between I-5, adjacent neighborhoods, the Moose Family Center, Laurel Hill Golf Course, and recreational areas.

Currently the configuration accommodates trucks; however, the intersection turning radius is not designed for truck traffic design vehicles. This design challenge is predominantly focused west of the intersection on both the north and south corners. In addition to the difficulties experienced by trucks (causing them to occasionally create their own path in adjacent lanes),

large and/or long recreational vehicles may also have difficulties navigating the intersection. The intersection area provides an opportunity for new development, which may be affected by the configuration of this intersection. There were no crashes reported during the five-year analysis period at this intersection.

Concept 40-I3 would modify the northwest corner (southbound right turn) as well as the southwest corner (eastbound right turn and northbound left turn) to provide a turning radius sufficient to handle a typical design truck (WB-67), as shown Figure 6-11. The purpose of this improvement is to improve safety for larger loads and remove potential barriers to new commercial development at the interchange.

Concept 40-I3 – Traffic Operations and Safety

Current traffic volumes along Access Road are approximately 2,550 vpd, and they are 400 vpd along Old Stage Road. The forecast future (2038) daily volumes are anticipated to increase slightly to approximately 3,200 vpd and 450 vpd for Access Road and Old Stage Road, respectively. The critical movement (eastbound) v/c ratio (and LOS) for the existing and future (2038) conditions would be 0.07 (LOS B) and 0.07 (LOS B), respectively. The improvements associated with Concept 40-I3 would improve overall safety but are not anticipated to change the roadway capacity at the intersection. The increased turning radius would allow heavy vehicles to turn at higher speeds and accelerate more comfortably, and would reduce the delay for through vehicles. However, the higher speeds could have an adverse impact on pedestrian safety.

The intersection of Old Stage Road at Access Road is a public access. This improvement could impact the adjacent southern access on Old Stage Road due to its proximity to that access. Providing a wider turning radius would widen the existing access and shorten access spacing slightly to both the north and south.

Concept 40-I3 – Basic Roadway Geometries and Right-of-Way Requirements

This improvement considers two locations for improvement, the northwest corner and the southwest corner. Both corners include 12-foot shoulders without guardrail. The existing ROW along Access Road/Old Stage Road is 70 feet (or greater), while the roadway width is 34 feet. Along Old Stage Road (side street), the roadway width is approximately 21 feet, and the ROW is 65 feet (or more). The improvements appear to be constructible within the existing ROW at both of the locations for improvement.

Concept 40-I3 – Environmental and Land Use Assessment

The widening is located on land zoned EFU (northwest corner) and on interchange commercial land (southwest corner)—the Moose Family Center is located in the southwest corner. The bulk of the intersection appears to be within ODOT interchange ROW, but the improvement could have impacts to other adjacent land uses. Statewide Planning Goals would need to be considered when impacting EFU zones.

Environmental impacts are not anticipated, even though Kane Creek is nearby (to the north). However, the increased impervious surface area may produce additional stormwater that would need to be treated.

No socioeconomic impacts are anticipated.

Concept 40-I3 – Cost Opinions

The estimated cost associated with the improvement is $165,000 for the northwest corner improvements and $115,000 for the southwest corner. Cost estimates do not consider ROW acquisition, if needed.

6.4.11. Concept 40-MM1: Access Road – Widen to Provide Multimodal Access

Access Road is a two-lane facility with a posted speed of 35 mph. It includes narrow shoulders (0 to 5 feet) on both sides. It also provides access to Exit 40, area homes, recreational facilities, and a campground. Currently non-motorized traffic must travel on the edge of the roadway, pinched between the roadway edge and higher speed vehicles, which is a safety concern.

Concept 40-MM1 would provide 6-foot-wide shoulders on either side of Access Road between Blackwell Road and Lampman Road. This improvement concept would improve the pedestrian experience by providing a consistent shoulder (that meet the minimum Jackson County standard width) for non-motorized access along the roadway, as shown in Figure 6-12. The improvement enhances connectivity for non-motorized users and provides access to other multimodal facilities.

Note: This improvement stops short before the ramp terminals. While the I-5 overpass includes 5-foot shoulders (which meets the minimum Jackson County standard for a rural arterial), 6-foot shoulders would be consistent with state standards. Should the opportunity arise for a bridge replacement, the next phase of this improvement could consider widening/replacement of Access Road between the ramp terminals to provide full-width shoulders.

Concept 40-MM1 – Traffic Operations and Safety

Existing ADT volumes on Access Road are between 2,550 vpd and 5,500 vpd. Future (2038) volumes are estimated to be between 3,200 vpd and 6,800 vpd. Crash data for Access Road for the five-year analysis period showed two crashes on the segment proposed for improvement, though neither crash was pedestrian-related. The minimal area available as a shoulder (or the nonexistent shoulder, in some cases) forces non-motorized traffic onto the roadway, causing a safety concern.

The intersections of 2nd Avenue/OR 99 and Blackwell Road and Lampman Road at Access Road are public accesses. This improvement is expected to impact three residential driveways and the accesses to the Running Salmon RV Park and the Jackson County Fire District building. Although impacts would be minimal, coordination with residents and Jackson County Fire would be needed. There are no anticipated impacts to access spacing.

Concept 40-MM1 – Basic Roadway Geometries and Right-of-Way Requirements

The existing cross section along Access Road includes two 12-foot travel lanes with 0 to 5-foot shoulders (one in each direction). The shoulders for the improvement are assumed to be 5 feet wide. In some segments, the existing ROW along Access Road is approximately 50 feet (or greater), compared to the roadway width of 24 feet. The shoulders could possibly be constructed within existing ROW, although they may require shifting of the existing guardrail and fencing; however, some ROW will likely need to be purchased.

Concept 40-MM1 – Environmental and Land Use Assessment

Adjacent lands are zoned rural residential. While there appear to be no buildings in the vicinity of the improvements, the widening would impact adjacent properties. Any new work that occurred in areas of undisturbed soil would have a high potential for archeological resource impacts. The increased impervious surface area may require additional stormwater treatment.

Access Road crosses an irrigation channel where the culvert would have to be extended in order to have space for the widened shoulders on either side of the existing road and for the appropriate foreslopes and backslopes from the roadway. It is assumed that the guardrail from Lampman Road would need to be extended to protect the new culvert ends.

This improvement would improve non-motorized connectivity, which could potentially be considered a socioeconomic benefit, because improved pedestrian access generally benefits disadvantaged populations.

Concept 40-MM1 – Cost Opinions

The cost estimate for this improvement concept is $924,000 and includes the extension of the culvert.

6.4.12. Concept 40-MM2: Blackwell Road (OR 99)– Provide Multimodal Access

Blackwell Road is a two-lane facility with a posted speed of 40 mph (which reduces to 30 mph just west of the Access Road intersection). It includes narrow shoulders (2 feet wide) and drainage ditches on both sides. It also provides access to Exit 40, area homes, recreational facilities, and a campground. Currently non-motorized traffic must travel on the edge of the roadway, pinched between higher speed vehicles and a deep drainage ditch, which is a safety concern.

This concept would improve the pedestrian crossing experience and has two options, as shown in Figure 6-13:

- Option A would provide 6-foot shoulders (meeting the Jackson County rural standard) on either side of Blackwell Road between Access Road and the campground to provide space for non-motorized access along the roadway.
- Option B would provide a multi-use path adjacent to the roadway between Access Road and the campground, separate the vehicular traffic from the non-motorized traffic, and

enhance non-motorized access along the roadway. The path would be 10 feet wide and located on the south side of the roadway.

Concept 40-MM2 – Traffic Operations and Safety

Existing ADT volumes on Blackwell Road are 2,500 vpd. Future (2038) traffic volumes are estimated to be 3,500 vpd. Crash data for Blackwell Road was not assessed east of the intersection with Access Road. Traffic operations and safety for both of the options are:

- Option A: The addition of shoulders on each side of the roadway is not anticipated to affect vehicular operations, though it will improve the experience of non-motorized users and connectivity with other multimodal facilities. The separation of traffic modes would enhance overall safety.

  The intersection of 2nd Avenue/OR 99 and Blackwell Road at Access Road is a public access. This improvement is expected to cross two residential driveways on the north side of Blackwell Road and three residential driveways on the south side. The shoulders would be a part of public ROW.

- Option B: Traffic operations would be similar for Option B as for Option A; however, as an entirely separate facility from the roadway for non-motorized users, Option B would likely be safer than Option A.

  This improvement is expected to cross three residential driveways on the south side of Blackwell Road and may require coordination with property owners. The multi-use path would, however, travel through public ROW.

Concept 40-MM2 – Basic Roadway Geometries and Right-of-Way Requirements

The existing cross section along Blackwell Road includes two 12-foot travel lanes with 2-foot shoulders (one in each direction).

- Option A: The added shoulders are assumed to be 5 feet wide and could fit within existing ROW.
- Option B: The multi-use path is assumed to be 10 feet wide and would include 3-foot-wide gravel shoulders per the Oregon Bicycle and Pedestrian Guide. The existing ROW along Blackwell Road is approximately 80 feet (or greater), while the roadway width is 24 feet. The path could possibly be constructed within existing ROW but may require some ROW acquisition on the south side of the roadway.

Concept 40-MM2 – Environmental and Land Use Assessment

Adjacent lands are zoned rural residential.

- Option A: Although there appear to be no buildings in the vicinity of the improvements, the widening would impact adjacent properties. The increased impervious surface area may require additional stormwater treatment.
- Option B: The effects of Option B would be similar to those Option A, but the larger path would have more impact due to its location and larger surface area.

Both options for Concept 40-MM2 could provide socioeconomic benefits, because improved pedestrian and bicycle access generally benefits disadvantaged populations.

Concept 40-MM2 – Cost Opinions

The estimated cost of the options for Concept 40-MM2 are:

- Option A: Approximately $510,000
- Option B: Approximately $215,000

6.5. I-5 Exit 43 Concept Evaluation

I-5 Exit 43 provides access to the City of Gold Hill from the north and serves nearby recreational areas. This interchange includes five crossroads in addition to Main Street, the main roadway (listed from north to south): 2nd Avenue (OR 99), River Road, Lampman Road, Rogue River Highway, Frontage Road, and Profetta Lane. Roadway characteristic details are presented in Technical Memorandum #3: Study Area Inventory. In general, all roadways are two lanes with pavement width ranging from 18 feet to 28 feet. There are no signalized intersections in the IMSA. Posted speed, functional classification, and ADT also influence the development of improvement concepts. IMSA characteristics include:

- Posted speed is 45 mph along all IMSA roadways.
- Roadway classifications include rural minor arterial (both Main Street and OR 234/Rogue River Highway/OR 99), rural major collector (N. River Road), and local (Lampman Road, Profetta Lane, and Frontage Road).
- Existing ADT is approximately 200 vpd to 1,300 vpd along Main Street; the ADT along the side streets is: OR 234/Rogue River Highway/OR 99 (~1,600 to 2,300 vpd), River Road (~1,100 vpd), Lampman Road (~500 vpd), Frontage Road (~130 vpd), and Profetta Lane (~70 vpd).
- Forecast ADT for year 2038: Main Street (200 vpd to 1,500 vpd), OR 234/Rogue River Highway/OR 99 (~1,900 vpd to 2,700 vpd), River Road (~1,200 vpd), Lampman Road (~500 vpd), Frontage Road (~130 vpd), and Profetta Lane (~70 vpd).

There are ten improvement concepts for this interchange, several of which have varying options to consider. A brief summary of the concepts is presented in Table 6-2 and Figure 6-14. The following sections discuss in detail the potential changes and improvements that are specific to this interchange.

Table 6-2. I-5 Exit 43 Improvement Concepts

ID	Location	General Description	Purpose	Benefit
43-R1	Southbound Off-ramp	Extend southbound off-ramp	Provide adequate deceleration distance	Safety, Freight
43-R2	Southbound Ramp Terminal	Improve turning radius	Provide adequate turning radius (WB-67[1])	Safety, Freight
43-R3	Northbound Off-ramp	Extend northbound off-ramp	Provide adequate deceleration distance	Safety, Freight
43-R4	Northbound Ramp Terminal	Improve turning radius	Provide adequate turning radius (WB-67[1])	Safety, Freight
43-I1	Rogue River Highway at Main Street	Provide for all modes at the intersection ▪ Option A: Add crosswalk on west side of intersection and signage for oncoming traffic ▪ Option B: Modify the traffic control and add crosswalks on multiple approaches	Enhance opportunities and increase the safety of the pedestrian crossing of OR 99	Safety, Multimodal
43-I2	Main Street at Rogue River Highway (OR 99 and OR 234)	Improve turning radius	Provide adequate turning radius (WB-67[1])	Safety, Freight
43-I3	Rogue River Highway/2nd Avenue at N. River Road	Improve intersection function ▪ Option A: Improve turning radius ▪ Option B: Option A and realign intersection and update traffic control	Provide adequate turning radius (WB-67[1]) and enhance intersection function	Safety, Freight,
43-MM1	IMSA roadways	Enhance multimodal access between I-5 and the City of Gold Hill ▪ Option A: Add signage to roadway ▪ Option B: Widen shoulders where ROW permits ▪ Option C: Add signage and activated warning lights	Provide facilities along Main Street and Rogue River Highway for all modes of travel	Multimodal, Safety
43-MM2	Rogue River Highway (Rock Point Bridge, 00332A)	Enhance multimodal access across the bridge ▪ Option A: Add signage ▪ Option B: Construct 8' cantilevered paths on both sides of bridge ▪ Option C: Build a new structure (non-vehicular traffic) ▪ Option D: Build a new structure (all modes)	Provide facilities along Rock Point Bridge for all modes of travel	Multimodal, Safety

Table 6-2. I-5 Exit 43 Improvement Concepts

ID	Location	General Description	Purpose	Benefit
43-MM3	Profetta Lane to Old Stage Road – I-5 Alternative Multimodal Crossing	Provide alternate multimodal crossing of I-5 with multi-use path connection	Provide facilities across I-5 for all modes of travel	Multimodal, Safety
1. WB – Wheelbase is the distance (in feet) between the front and rear axle of a vehicle, typically representative of the largest vehicle to use an intersection/facility. The wheelbase of a vehicle is one of the factors used during design to accommodate turning maneuvers.				

6.5.1. Concept 43-R1: Southbound Off-ramp Extension

The southbound off-ramp is a single lane with an approximate width of 16 feet. It has a gradual incline to the intersection with Main Street (ramp terminal). The exit speed on the ramp is 45 mph, and the current ramp deceleration length is approximately 280 feet. Similar to Exit 40, there is a variety of vehicle types that use Exit 43, including trucks and recreational vehicles (campers and vehicles with boat trailers).

The desired ramp deceleration distance is 345 feet. The less than desirable ramp length is noticed by all of the vehicles and may become a safety issue if queues get longer or multiple trucks/recreational vehicles use the off-ramp at the same time. Main Street provides the link between the interchange and Rogue River Highway, which provides access to residential areas, area businesses, and recreational sites.

The improvement would extend the southbound off-ramp with the purpose of providing adequate deceleration distance and improving safety, as shown in Figure 6-15.

Concept 43-R1 – Traffic Operations and Safety

Existing ADT volumes on the southbound off-ramp are approximately 500 vpd. Future 2038 off-ramp ADT volumes are estimated at 600 vpd. The benefits of this improvement would be similar to those identified for the off ramp extension identified at Exit 40: enhanced safety, a more comfortable deceleration experience, and longer storage at the ramp terminal. Overall, the operations are not expected to change with this improvement. The ramp terminal critical movement is the eastbound left-through-right (EB L/T/R). The critical movement v/c ratio (and LOS) for the existing and future (2038) conditions would be 0.07 (LOS A) and 0.07 (LOS A), respectively. During the five-year analysis period, there were four crashes reported along the southbound off-ramp of Exit 43. There was no identifiable crash pattern, because each crash was a different collision type—rear-end, fixed object, side-swipe, and other. Half of the crashes resulted in minor injuries (2), while the other half resulted in property damage only (2).

The southbound ramp terminal is a public access. This improvement is not expected to impact existing access spacing or require additional access management.

Concept 43-R1 – Basic Roadway Geometries and Right-of-Way Requirements

Concept 43-R1 would extend the length of the southbound off-ramp to meet the applicable roadway design standards. The longer ramp length would result in a more gradual elevation gain and longer distance for stopping. All improvements are anticipated to be within ODOT ROW.

Concept 43-R1 – Environmental and Land Use Assessment

Adjacent land uses include rural residential, rural light industrial, and exclusive farm use (EFU), and the West Valley Wildlife Area is located to the south. Statewide Planning Goals would need to be considered when impacting EFU zones. No impacts are anticipated for the West Valley Wildlife Area lands. Any new work in areas of undisturbed soil have a high potential for impacts to archeological resources.

An unknown hazardous waste site has been identified near the off-ramp diverge from I-5. Additional investigation into the extent of hazardous materials in the area may be required.

The increased impervious surface area may produce additional stormwater that would need to be treated.

No socioeconomic impacts are anticipated.

Concept 43-R1 – Cost Opinions

The cost estimate for this concept is $370,000.

6.5.2. Concept 43-R2: Southbound Ramp Terminal Turning Radius Improvements

The southbound off-ramp is a single lane with an approximate width of 16 feet. Main Street is a two-lane facility that provides access between I-5, adjacent neighborhoods, and recreational facilities. There is no posted speed.

Currently the configuration accommodates trucks; however, the ramp terminal turning radius is not designed for truck traffic design vehicles (WB-67). This design deficiency is predominantly focused on the southwest corner. In addition to the difficulties experienced by trucks (causing them to occasionally create their own path in adjacent lanes), large and/or long recreational vehicles may also have difficulties navigating the ramp terminal.

Concept 43-R2 would modify the southwestern corner (for the eastbound right turn from the off-ramp) to provide a turning radius sufficient to accommodate a typical design truck (WB-67), as shown in Figure 6-15. The purpose of this improvement is to improve safety for larger loads.

Concept 43-R2 – Traffic Operations and Safety

Existing ADT volumes along Main Street range from 250 vpd to 700 vpd, while the southbound off-ramp ADT is approximately 500 vpd. Future (2038) ADT volumes along Main Street would range from 300 vpd to 900 vpd, while the southbound off-ramp ADT volumes are estimated at

600 vpd. The ramp terminal critical movement is the eastbound left-through-right (EB L/T/R). The critical movement v/c ratio (and LOS) for the existing and future (2038) conditions would be 0.07 (LOS A) and 0.07 (LOS A), respectively. During the five-year analysis period, there were no crashes reported along Main Street near the southbound ramp terminal.

The improvements associated with Concept 43-R2 would improve the overall safety of the intersection (less chance of semi-trailers tracking into other travel lanes) but are not anticipated to change the traffic operations at the intersection. The increased turning radius would allow heavy vehicles to turn at higher speeds and accelerate more comfortably.

The southbound ramp terminal is a public access. This improvement may trigger additional access management, because providing a wider turning radius would shorten the distance between the ramp terminal and the intersection to the south (Profetta Lane).

Concept 43-R2 – Basic Roadway Geometries and Right-of-Way Requirements

The improvement is located in the southwestern corner of the ramp terminal and would widen the paved section of roadway between the southbound off-ramp and Profetta Lane (parallel to Main Street) up to 28 feet to facilitate the eastbound right turn of a WB-67. All improvements are anticipated to be within ODOT ROW.

Concept 43-R2 – Environmental and Land Use Assessment

Adjacent land uses include rural residential, rural light industrial, and EFU. Statewide Planning Goals would need to be considered when impacting EFU zones. Any new work in areas of undisturbed soil have a high potential for archeological resource impacts. The West Valley Wildlife Area is located to the south, although impacts to the area are not anticipated.

An unknown hazardous waste site has been identified near the off-ramp diverge from I-5. Additional investigation into the extent of hazardous materials in the area may be required.

The increased turning radius would improve access to the light industrial lands on Frontage Road to the west.

The increased impervious surface area may produce additional stormwater that would need to be treated.

No socioeconomic impacts are anticipated.

Concept 43-R2 – Cost Opinions

The cost estimate for this concept is $150,000.

6.5.3. Concept 43-R3: Northbound Off-ramp Extension

The northbound off-ramp is a single lane with an approximate width of 16 feet. The exit speed on the ramp is 45 mph and the current ramp deceleration length is approximately 305 feet. The

taper length for this ramp is 187 feet. Similar to its southbound counterpart (Concept 43-R1: Southbound Off-ramp Extension), there are a variety of vehicle types that use the northbound ramp, including trucks and recreational vehicles (campers and vehicles with boat trailers).

The desired ramp deceleration distance is 345 feet and the taper is 215 feet. The deceleration distance is less than the desirable length and may become a safety issue if the length of queues increases. Main Street provides the link between the interchange and Rogue River Highway, which provides access to residential areas, area businesses, and recreational sites.

The improvement would extend the northbound off-ramp to provide adequate deceleration distance (include guardrail for the length of the improvement) with the purpose of improving safety, as shown in Figure 6-16.

Concept 43-R3 – Traffic Operations and Safety

The northbound off-ramp has an existing ADT of 300 vpd and future (2038) ADT volume forecast of 350 vpd. The ramp terminal critical movement is the westbound left-through-right (WB L/T/R). The critical movement v/c ratio (and LOS) for the existing and future (2038) conditions would be 0.03 (LOS A) and 0.04 (LOS A), respectively. During the five-year analysis period, there were no crashes reported for the northbound off-ramp.

The benefits of this improvement would be similar to those for the southbound off-ramp extension (Concept 43-R1): a more comfortable deceleration experience and additional storage for queuing at the ramp terminal. Overall, the operations are not expected to change with this improvement, but safety would be enhanced.

The northbound ramp terminal is a public access. This improvement is not expected to impact existing access spacing or require additional access management.

Concept 43-R3 – Basic Roadway Geometries and Right-of-Way Requirements

Concept 43-R3 would extend the length of the northbound off-ramp to meet the applicable roadway design standards. All improvements are anticipated to be within ODOT ROW.

Concept 43-R3 – Environmental and Land Use Assessment

The adjacent land use is EFU and the Rogue River is nearby. Statewide Planning Goals would need to be considered when impacting EFU zones. Any new work in areas of undisturbed soil have a high potential for archeological resource impacts. However, no impacts are anticipated to any of the aforementioned resources.

The increased impervious surface area may produce additional stormwater that would need to be treated.

No socioeconomic impacts are anticipated.

Concept 43-R3 – Cost Opinions

The cost estimate for this concept is $550,000.

6.5.4. Concept 43-R4: Northbound Ramp Terminal Turning Radius Improvements

The northbound off-ramp is a single lane with an approximate width of 16 feet. Main Street is a two-lane facility that provides access between I-5, adjacent neighborhoods, and recreational facilities. There is no posted speed.

The northeast corner (westbound right turn from the off-ramp) of the ramp terminal is not designed to provide a turning radius large enough for truck traffic design vehicles (WB-67), though it does accommodate the turns (meaning turning maneuvers result in trucks crossing into other travel lanes). In addition to the difficulties experienced by trucks (causing them to occasionally create their own path in adjacent lanes), large and/or long recreational vehicles may also have difficulties navigating the ramp terminal.

Concept 43-R4 would modify the northeast corner of the ramp terminal to provide a turning radius sufficient to handle a typical design truck (WB-67), as shown in Figure 6-16. The purpose of the improvement is to improve safety for larger loads.

Concept 43-R4 – Traffic Operations and Safety

Existing ADT volumes along Main Street range from 750 vpd to 1,250 vpd, while the northbound off-ramp ADT is approximately 300 vpd. Future 2038 ADT volumes along Main Street would range from 900 to 1,500 vpd, while the northbound off-ramp ADT volumes are estimated at 350 vpd. The ramp terminal critical movement is the westbound left-through-right (WB L/T/R). The critical movement v/c ratio (and LOS) for the existing and future (2038) conditions would be 0.03 (LOS A) and 0.04 (LOS A), respectively. During the five-year analysis period, there were no crashes reported along Main Street near the southbound ramp terminal.

As with Concept 43-R2: Southbound Ramp Terminal Turning Radius Improvements, Concept 43-R4 would improve the overall safety of the intersection (less chance of semi-trailers tracking into other travel lanes), but it is not anticipated to change the intersection capacity or traffic operations. The increased turning radius would allow heavy vehicles to turn at higher speeds and accelerate more comfortably.

The northbound ramp terminal is a public access. This improvement is not expected to require additional access management, but providing a wider turning radius would widen the access and shorten access spacing to the north.

Concept 43-R4 – Basic Roadway Geometries and Right-of-Way Requirements

The improvement is located in the northeastern corner of the ramp terminal and would widen the paved section of roadway between the northbound off-ramp and the Rogue River Highway (parallel to Main Street) up to 17 feet to facilitate the westbound right turn of a WB-67. All improvements are anticipated to be within ODOT ROW.

Concept 43-R4 – Environmental and Land Use Assessment

The adjacent land use is interchange commercial and EFU. Statewide Planning Goals would need to be considered when impacting EFU zones. Any new work in areas of undisturbed soil have a high potential for archeological resource impacts. Nearby is the Rogue River and a freshwater emergent wetland; no impacts to those resources are anticipated.

The increased turning radius would improve access to the Rogue River Highway and adjacent interchange commercial lands.

The increased impervious surface area may produce additional stormwater that would need to be treated.

No socioeconomic impacts are anticipated.

Concept 43-R4 – Cost Opinions

The estimated cost of Concept 43-R4 is approximately $60,000.

6.5.5. Concept 43-I1: Rogue River Highway/Main Street Intersection Modifications

Rogue River Highway (also known as OR 99 and OR 234, parallel alignment) is a two-lane facility with a posted speed of 45 mph through the Main Street intersection. Main Street is also a two-lane facility that provides access between I-5, adjacent neighborhoods, and recreational facilities.

Currently, the intersection has a unconventional arrangement: The intersection functions with STOP-controlled movements in the eastbound direction (all movements) and for the northbound left-turn movement of the shared approach (northbound right turns and westbound movements do not need to stop). Although pedestrians can legally cross at an intersection, it is confusing to do so at an unconventional intersection, particularly if there is no marked crosswalk.

This concept would improve the pedestrian crossing experience and has two options, as shown in Figure 6-17:

- Option A would stripe a crosswalk on the west side of the intersection and add signage to alert users to look for oncoming westbound traffic.
- Option B would modify the intersection traffic control to a conventional all-way STOP configuration as well as add marked crosswalks.

The purpose of the project is to enhance crossing opportunities and overall safety.

Concept 43-I1 – Traffic Operations and Safety

Existing ADT volumes on Rogue River Highway range from 400 vpd (west of the intersection) to 1,800 vpd (to the east), while Main Street ADT is 1,250 vpd. Future (2038) volumes are estimated at 450 vpd to 2,150 vpd along the Rogue River Highway and 1,500 vpd along Main Street. The intersection critical movement is the northbound left-right (NB L/R). The critical movement v/c ratio (and LOS) for the existing and future (2038) conditions would be 0.09 (LOS A) and 0.09 (LOS A), respectively. Pedestrian data is not available at this time. There were no crashes reported at this intersection during the five-year analysis period. Traffic operations and safety for each of the two options are:

- Option A, adding the crosswalk striping along the west side, would have nominal operational impacts to westbound traffic and no additional operational impacts to the currently stopped movements. While Option A provides a clearly marked crosswalk, it may also provide a false sense of security to pedestrians and potentially make the intersection less safe. Although no crashes were reported for the existing intersection, the potential for crashes is higher at unconventional intersections.
- Option B, modifying traffic control to a conventional all-way STOP, would result in more of an operational impact than would Option A, because all westbound traffic would have to stop, not just those waiting for a pedestrian. Overall, Option B (all-way STOP) would operate acceptably, with an existing v/c ratio of 0.13 (westbound left-through movement, worst movement) and of 0.15 (same movement). A traffic control modification such as Option B would slow all movements, meet driver expectancy, provide a designated crosswalk, and improve the safety of the intersection. By slowing drivers down in a conflict area and facilitating non-motorized crossings of Rogue River Highway for residents and recreational users alike, Option B also improves non-motorized safety.

The intersection of Rogue River Highway at Main Street is a public access. This improvement is not expected to impact existing access spacing or require additional access management.

Concept 43-I1 – Basic Roadway Geometries and Right-of-Way Requirements

The existing cross section along Rogue River Highway includes two 12-foot travel lanes with minimal shoulder (approximately 2 feet). Neither Option A nor Option B would require additional pavement or lane width; therefore, no additional ROW would be required.

Concept 43-I1 – Environmental and Land Use Assessment

The adjacent land uses are rural residential, interchange commercial, and EFU. No environmental or land use impacts have been identified for this improvement concept. The improvement could provide socioeconomic benefits by improving non-motorized access in the IMSA. Improved pedestrian and bicycle access generally benefits socioeconomically disadvantaged populations.

Concept 43-I1 – Cost Opinions

Estimated costs for this concept would be:

- Option A: $7,000
- Option B: $10,000

6.5.6. Concept 43-I2: Rogue River Highway/Main Street Turning Radius Improvements

Rogue River Highway (also known as OR 99 and OR 234, parallel alignment) is a two-lane facility with a posted speed of 45 mph through the Main Street intersection. Main Street is also a two-lane facility that provides access between I-5, adjacent neighborhoods, and recreational facilities.

As discussed in Concept 43-I1: Rogue River Highway/Main Street Intersection Modifications, this intersection does not operate with conventional STOP control. Intersection truck turning templates were evaluated for a WB-67 (typical design vehicle), and it was determined that the eastbound right turn (from Rogue River Highway to southbound Main Street) is not designed for truck traffic design vehicle turns, but they can be accommodated (meaning turning maneuvers result in trucks crossing into other travel lanes). This is a safety concern for motorists if trucks need to swing wide into oncoming traffic lanes and non-vehicular traffic, thus cutting the corner and infringing on the shoulder/bikeway. The intersection area provides an opportunity for new development, which may be affected by the configuration of this intersection.

This improvement concept would increase the turning radius on the southwest corner of the intersection, as shown in Figure 6-18, to provide improved safety for all modes, enhance the connections to area businesses and recreational areas, and remove potential barriers to new interchange commercial development

Concept 43-I2 – Traffic Operations and Safety

Existing ADT volumes on Rogue River Highway range from 400 vpd (west of the intersection) to 1,800 vpd (to the east), while ADT on Main Street is 1,250 vpd. Future (2038) volumes are estimated at 450 vpd to 2,150 vpd along the Rogue River Highway, and 1,500 vpd along Main Street. The intersection critical movement is the northbound left-right (NB L/R). The critical movement v/c ratio (and LOS) for the existing and future (2038) conditions would be 0.09 (LOS A) and 0.09 (LOS A), respectively. The improvement associated with Concept 43-I2 is not anticipated to change the capacity or traffic operations at the intersection. The increased turning radius would allow heavy vehicles to turn at higher speeds and accelerate more comfortably. The Concept 43-I2 improvements could improve the overall safety at the intersection by providing adequate space to serve all modes. It should be noted that, although higher speeds improve travel time and the overall driver experience, at the intersection they are less safe for other modes of travel and may outweigh the benefits of the added space.

During the five-year analysis period, there were no crashes reported at this intersection.

The intersection of Rogue River Highway at Main Street is a public access. This improvement is not expected to require additional access management, but providing a wider turning radius would widen the access and shorten access spacing to the west.

Concept 43-I2 – Basic Roadway Geometries and Right-of-Way Requirements

Roadway features and widths are described above in Section 6.5.5, Concept 43-I1 Rogue River Highway/Main Street Intersection Modifications. The improvements would widen the southwest corner to accommodate a WB-67 design vehicle and may require additional ROW. Physical constraints include the adjacent utility corridor.

Concept 43-I2 – Environmental and Land Use Assessment

Adjacent lands are zoned interchange commercial, rural residential, and EFU. The improved eastbound truck turning radius would serve the commercially zoned property located to the west of the intersection on the south side.

Freshwater emergent wetlands are nearby, but likely beyond the ROW impacts associated with Concept 43-I2. However, the increased impervious surface area may produce additional stormwater that would need to be treated.

No socioeconomic impacts are anticipated.

Concept 43-I2 – Cost Opinions

The estimated cost of Concept 43-I2 is $160,000.

6.5.7. Concept 43-I3: Rogue River Highway/2nd Avenue at N. River Road Intersection Enhancements

Rogue River Highway (OR 99 and OR 234 alignments, also known as 2nd Avenue) and N. River Road are two-lane facilities. The posted speed along both roadways is 45 mph. N. River Road provides access to a nearby quarry, while the Rogue River Highway provides access to the northern part of Gold Hill. The intersection is skewed and has unconventional traffic control.

Intersection truck turning templates were evaluated for a WB-67 (typical design vehicle), and it was determined that the eastbound right turn (from N. River Road to southbound Rogue River Highway) cannot be made while maintaining a single travel lane. This is a safety concern for motorists if trucks need to swing wide into oncoming traffic lanes and non-vehicular traffic, thus cutting the corner and infringing on the shoulder/bikeway. This improvement concept would realign the intersection and modify the current traffic control to a more standard configuration. A later phase, such as adding a westbound left-turn lane (and associated widening of the west leg of the intersection) could be considered in order to separate westbound left-turning vehicles and facilitate northbound truck turning.

There are two options (shown in Figure 6-19) for this concept:

- Option A addresses the eastbound truck turning movement by widening the southwest corner.
- Option B would realign the southern leg (bridge access) of the intersection at a near 90-degree angle for northbound left-turning movements with a STOP control and longer storage length (traditional T-intersection, side street STOP control). A second phase of this option would add a westbound left-turn lane and would widen the western leg of the intersection to the north, opposite the left-turn lane. Option A improvements would also be included to address the truck turning limitations.

A third option, realignment of N. River Road (western leg) as a single stopped approach, was considered but discarded due to environmental and physical constraints. Environmental constraints include the nearby Sardine Creek Wildlife Area. Physical constraints include the adjacent utility corridor, railroad tracks, the Rogue River, and the Rogue River Bridge (a historic structure with a width of 18 feet). The land and environmental impacts of this third option were assumed to be too great.

The purpose of this improvement concept is to provide improved safety for all modes and enhance the connections to area businesses and recreational areas. The realignment of the southern leg of the intersection may also provide an additional buffer between vehicular traffic on Rogue River Highway and the newly constructed multimodal path located in the southeast corner of the intersection.

Concept 43-I3 – Traffic Operations and Safety

The northbound approach of Rogue River Highway is the critical movement and has a v/c ratio that currently operates at 0.08. During the five-year analysis period, there were no crashes reported at this intersection. Traffic operations and safety for each of the two options are:

- Option A would improve the overall safety of the intersection but is not anticipated to change the traffic capacity or operations at the intersection. The increased turning radius would allow heavy vehicles to turn at higher speeds and accelerate more comfortably. It should be noted that, although higher speeds improve travel time and the overall driver experience, at the intersection they are less safe for other modes of travel, which may outweigh the benefits of the added space. Increasing the turning radius will potentially impact a new multi-use path on the south side of N. River Road.
- Option B would realign the intersection to address both the truck turning deficiency and the unconventional traffic control at the intersection. The realignment and truck turning modifications are not anticipated to have capacity impacts; however, the change in traffic control (T-intersection, side street STOP) would have roadway capacity impacts and would result in a northbound v/c ratio of 0.07 (existing 2012) and 0.09 (2038). While the traffic control would be conventional, it would require highway traffic to stop on a 45 mph facility in a rural area, which is unexpected and a potential safety concern in itself. This improvement concept would result in improved safety for trucks turning right

onto Rogue River Highway (eastbound right movement), but the modified STOP sign along Rogue River Highway has the potential to increase the number of rear-end collisions or to cause a failure of vehicles to stop at all. The bicycle and pedestrian modes would benefit from a more conventional STOP configuration and the reduced number of conflict points; however, a striped crosswalk is not included. The increased turning radius could also impact the new multi-use path on the south side of N. River Road.

The intersection of Rogue River Highway/2nd Avenue at N. River Road is a public access. Both options would have minor impacts to the access but would not require additional management. Widening the turning radius in both options would have minor impacts on spacing to the west, while the removal of pavement in Option B would slightly increase spacing to the east.

Concept 43-I3 – Basic Roadway Geometries and Right-of-Way Requirements

Physical constraints include the adjacent utility corridor, railroad tracks, and the historic Rogue River Bridge. Design features and ROW impacts include:

- Option A would widen the southwest corner to accommodate a WB-67 vehicle, which may require additional ROW. Some fill may be required to increase the turning radius on the southwest corner.
- Option B would realign the southern leg of the Rogue River Highway at the intersection as a two-lane approach and potentially result in ROW impacts. The degree of ROW impacts will need to be quantified at the time of design. Utility poles run perpendicular and adjacent to N. River Road (on both sides) and would need to be considered if widening (phase 2) is pursued.

Concept 43-I3 – Environmental and Land Use Assessment

The adjacent lands are zoned EFU and rural residential. Environmental constraints include the Rogue River, which has two ODFW-classified habitats: summer and winter Steelhead and fall and spring Chinook, Coho Salmon, and Pacific Lamprey. The Sardine Creek Wildlife Area is nearby and located to the north (on the other side of the railroad tracks).

- Option A would have ROW impacts in the southwest quadrant of the intersection. The proximity of the Rogue River and the need to fill near the river is also a concern with this option, although impacts could possibly be avoided. The nearby Sardine Creek Wildlife Area is another consideration. In addition, any impact to the new multi-use path could trigger Section 6(f) concerns. Additional impervious surface and stormwater treatment would also need to be addressed.
- Option B would have all of the same impacts as Option A; however, because changes would occur on both sides of the intersection, there would be a greater area of impact.

No socioeconomic impacts are anticipated with either option, but the potential impact to the multi-use path could be construed as a negative effect for disadvantaged populations, who may be more reliant on non-auto modes of travel.

Concept 43-I3 – Cost Opinions

The estimated costs of Concept 43-I3 are:

- Option A: $220,000
- Option B: $230,000

6.5.8. Concept 43-MM1: IMSA Roadways Multimodal Improvements

IMSA roadways are narrow; some have minimal lane widths (as narrow as 9 feet across the Rogue River Bridge); and most have minimal shoulder widths (0 to 5 feet), all of which have no bicycle or pedestrian facilities. Gold Hill is increasingly becoming known for its recreational opportunities, including the Rogue River Greenway and cycling routes.

This improvement concept considers improvements along Main Street and Rogue River Highway and includes three options. (Bridges will be considered later, in Concept 43-MM2: Rogue River Highway (Rock Point Bridge, 00332A) – Enhance Multimodal Access.) Rogue River Highway/2nd Avenue (north of the Rock Point Bridge) is served by the Rogue River Greenway. However, the multimodal improvements from the bridge south toward the interchange provide limited connectivity.

The three options to enhance the current infrastructure, illustrated in Figure 6-20, are:

- Option A would add signage along both IMSA roadways. Depending on the location, signs can warn drivers of bicycles and/or pedestrians in the roadway or remind them to share the road. Sharrows were considered, but they were eliminated from consideration due to roadway speeds in excess of 30 mph.
- Option B would widen the shoulders where ROW exists. This is a spot treatment and would not result in continuous facilities.
- Option C would include the signage from Option A combined with warning lights to capture the drivers' attention. The installation would be ideal in areas that are constrained (areas of narrow ROW or bridge width) and would be activated only when users are present. An example of a sign/warning light combination is a caution pedestrian sign with a light ensemble attached (either LED or alternating yellow).

Concept 43-MM1 – Traffic Operations and Safety

Existing ADT volumes on Rogue River Highway range from 1,600 vpd to 2,300 vpd, while ADT on Main Street ranges from 200 vpd to 1,300 vpd. Future (2038) volumes are estimated at 1,900 vpd to 2,700 vpd along the Rogue River Highway and 200 vpd to 1,500 vpd along Main Street. There were two crashes reported along Rogue River Highway (between N. River Road and

Lampman Road) in the five-year analysis period. Both were fixed object collisions that resulted in property damage only. Neither involved non-auto transportation.

All of the options would improve driver awareness of other modes using the roadways. Additionally:

- Operationally, Option A would provide no change to the roadway capacity and would not change how the road is currently used, although there may be occasional slowing of vehicular traffic when a bicycle or pedestrian is present.
- Option B would not modify roadway capacity either, though it would provide areas for non-motorized users to pull off of the road to let motorized users pass and would improve the user experience for non-motorized users. Option B would provide areas where the modes could be separated, which would be an enhancement along the 45 mph facility.
- Operationally, Option C would be the same as Option A.

None of the options would impact access spacing or require access management; all impacted roads are public facilities.

Concept 43-MM1 – Basic Roadway Geometries and Right-of-Way Requirements

All improvements are anticipated to be within ODOT ROW. Design features for the various options include:

- Option A would maintain existing paved section and ROW.
- Option B would widen the paved roadway to the south in spot locations along Rogue River Highway within existing ROW.
- Physically, Option C would be the same as Option A.

Concept 43-MM1 – Environmental and Land Use Assessment

Lands in the vicinity are zoned rural residential, interchange commercial, and EFU. The Rogue River and freshwater emergent wetlands are in proximity to the north of this concept.

- There are no environmental or land use impacts anticipated for Option A or Option C.
- Option B would be within ODOT ROW along Rogue River Highway. Though the Rogue River is nearby the Rogue River Highway widening (to the north), impacts are not anticipated. However, the increased impervious surface area may produce additional stormwater that would need to be treated.
- Any of the three options could provide socioeconomic benefits by improving non-motorized access across the roadways and river. Improved pedestrian and bicycle access generally benefits disadvantaged populations.

Concept 43-MM1 – Cost Opinions

The estimated costs for Option 43-MM1 are:

- Option A: $15,000 (signage along Main Street and Rogue River Highway)
- Option B: $450,000 (widen Rogue River Highway to the south, install guardrail, provide paved 8-foot shoulders on both sides)
- Option C: approximately $50,000 (per warning light installation)

6.5.9. Concept 43-MM2: Rogue River Highway (Rock Point Bridge, 00332A) – Enhance Multimodal Access

The Rogue River Highway (Rock Point Bridge, 00332A) is a historic structure built in 1919. The railings were recently replaced (in 2010). However, the travel lanes are still only 9 feet wide. The total structure width is 19 to20 feet, leaving no room for bicycle or pedestrian facilities.

Concept 43-MM2 considers multimodal enhancements to facilitate non-motorized crossings of the bridge and has three options for consideration, as illustrated in Figure 6-21:

- Option A would add signage on the bridge.
- Option B would construct 8-foot-wide paths on both sides of the Rock Point Bridge.
- Option C would build a parallel structure and maintain the aesthetics of the historic bridge. It is assumed that the parallel structure would be located at the nearest narrow section, which was assumed to be the connection between Main Street and N. River Road directly to the north. The structure is assumed to be 270 feet long and 15 feet wide. The width includes a 10-foot-wide path with a 2-foot shy distance (and railing) on both sides.

- Option D would be similar to Option C, but would serve vehicular traffic as well. Cost estimates were not prepared for this option, because a vehicular structure is not the original intent of the concept. If Option D were selected as the preferred concept, cost estimates would be revisited.

Concept 43-MM2 – Traffic Operations and Safety

Existing ADT volumes on Rogue River Highway are ~1,600 vpd; while the future (2038) volumes are estimated at 1,900 vpd. There are no documented crash patterns along the Rogue River Highway. Non-vehicular operations could be improved by providing additional facilities, as presented in any of these options. Traffic operation consideration for each of the options are:

- Option A would alert motorized traffic to the presence of non-vehicular traffic that may be sharing the roadway; however, it is not anticipated to change the bridge capacity or traffic operations.
- Option B would provide pathways along the bridge that would serve non-auto modes and separate them from motorized vehicles.

- Option C would provide a dedicated non-vehicular bridge with adequate width to serve a mix of modes and directions. Option C would also move non-motorized users off of the highway onto N. River Road, a rural major collector with a comparable posted speed of 45 mph; avoid the need to widen Rogue River Highway between Main Street and the Rock Point Bridge; and provide a direct route to Exit 43.
- Option D would provide a new vehicular structure that meets current design standards for vehicular and non-auto modes (vehicle travel lanes, bike lanes, and sidewalks). It would significantly impact the traffic circulation and operations within the IMSA north of the interchange. Additionally, it would provide unrestricted access to the City of Gold Hill and surrounding areas for freight, transit, and emergency vehicles, which are currently limited by the existing 9-foot travel lanes.

Options C and D would impact access spacing and require access management; all impacted roads are public facilities. Options C and D would change access at the Main Street and Rogue River Highway (OR 99) intersection and add a new access on N. River Road.

Concept 43-MM2 – Basic Roadway Geometries and Right-of-Way Requirements

Design and ROW needs vary with each option:

- Option A would not result in any changes to roadway geometry. Any further modifications to the bridge will continue to compromise the historic nature and aesthetics of the bridge. Option A can be implemented within existing ROW.
- Option B would not modify the existing roadway geometry of the bridge itself; however, it would create two 8-feet-wide paths that affect the aesthetics and historical nature of the bridge on both sides. Safe transitions at either end of the bridge, and a connection to the newly constructed Rogue River Greenway, present a concern that has not been considered in much detail with this preliminary concept. Option B can be constructed within existing ROW.
- Option C would include a new multi-use path bridge that includes 10 feet of travel width, 2 feet of shy distance on each side, and railing (for a total of 15 feet in width). It will require new non-motorized connections to the existing roadway network. Option C will require new ROW, the extent of which would be determined at the time of design.
- Option D, as mentioned above, would provide a new vehicular structure that meets current design standards for vehicular and non-auto modes (vehicle travel lanes, bike lanes, and sidewalks). This improvement is conceptual at this time and will be further vetted if this option is preferred. It will require new connections to the existing roadway network. Option D also will require new ROW, the extent of which would be determined at the time of design.

Concept 43-MM2 – Environmental and Land Use Assessment

The land adjacent to the existing bridge is zoned EFU, while the land between Main Street and N. River Road is zoned rural residential, interchange commercial, and EFU. All of the options for this improvement concept could provide socioeconomic benefits by improving non-motorized

access in the IMSA. Improved pedestrian and bicycle access generally benefits disadvantaged populations.

- Option A would occur within the current pavement extents and have no anticipated environmental impacts.
- Option B would require bridge work over the Rogue River, which carries summer and winter Steelhead and fall and spring Chinook, Coho Salmon, and Pacific Lamprey. The increased impervious surface area may produce additional stormwater that would need to be treated.
- Option C would also require bridge work over the Rogue River, which carries summer and winter Steelhead and fall and spring Chinook, Coho Salmon, and Pacific Lamprey, and which may require environmental permitting. In addition, Option C would potentially be aligned within two types of nearby wetlands: freshwater emergent and freshwater forested/shrub. The increased impervious surface area may produce additional stormwater that would need to be treated. Additional analysis to assess air quality and noise may be needed.

Concept 43-MM2 – Cost Opinions

The cost opinions for concepts involving bridge construction (Options B and C) include considerations for work bridges and falsework; however, they do not include 50 percent engineering and construction (E & C), roadway, temporary protection and direction of traffic (TP&D) costs, or inflation. The costs of Concept 43-MM2 vary as follows:

- Option A: $1,500
- Option B: $1,000,000
- Option C: $1,500,000

6.5.10. Concept 43-MM3: Profetta Lane to Old Stage Road – I-5 Alternative Multimodal Crossing

Main Street is a two-lane facility that provides access between I-5, adjacent neighborhoods, and recreational facilities. Main Street where it crosses I-5 via Interchange 43 does not have any bicycle or pedestrian facilities and minimal (1- to 2-foot-wide) shoulders. The Main Street Bridge over I-5 does not have any deficiencies listed (source: ODOT, 2012 Bridge Condition Report), and improvements to the structure are not anticipated at this time.

This improvement concept would provide an alternate (lower-cost) route improvement for crossing I-5 by connecting Profetta Lane to the Old Stage Road/Lampman Road undercrossing with a multi-use path, as seen in Figure 6-22.

Concept 43-MM3 – Traffic Operations and Safety

Existing ADT volumes on Main Street range from 200 vpd to 1,300 vpd. Future (2038) volumes are estimated to range from 200 vpd to 1,500 vpd along Main Street. Traffic volumes were not

collected on Lampman Road or Old Stage Road outside of the IMSA; however, volumes are expected to be less than those on Main Street. Pedestrian data is not available at this time.

There were no crashes reported during the five-year analysis period on any of the roadways (Profetta Lane, Old Stage Road, and Lampman Road) that would serve multimodal traffic as a result of this concept being implemented. However, the underpass that connects Old Stage Road to Lampman Road would need to incorporate a way for users of the multi-use path to safely enter the underpass. This concept improves connectivity, but it could require that significant measures be put in place to maintain safety. The underpass is currently constrained; it has limited shoulder width for multimodal users. Additional signage or widening of the underpass are options for addressing the safety concern; however, due to roadway speeds of 45 mph, sharrows would not be an option. Widening of the underpass would be costly, and therefore the funds may be more efficiently used by widening the Main Street I-5 overcrossing.

Profetta Lane is a public access, while the existing terminus of Old Stage Road provides access to residential driveways. This improvement may trigger additional access management, since it creates two new multimodal access points on existing public facilities.

Concept 43-MM3 – Basic Roadway Geometries and Right-of-Way Requirements

The existing cross section along Main Street includes two 12-foot travel lanes with minimal shoulders (approximately 1- to 2-foot wide). The existing roadway facilities are not planned to be widened; however, the existing unpaved path between Profetta Lane and Old Stage Road has some design constraints.

To the north of the path, the ground slopes steeply up to I-5, and to the south, there appears to be a ditch. The ditch runs along the path and then turns to the south right before the paved portion of Old Stage Road begins.

A fence that would be to the north of the unpaved path should be installed along the whole length of the path to protect path users from the steep slope. The fence would be installed in order to provide about 2 feet of lateral clearance from the path. A safety rail would also be installed to the south of the unpaved path to separate users from the existing ditch.

The multi-use path would feed into the Old Stage Road underpass, which is currently constrained.

This concept may result in ROW impacts along Lampman Road.

Concept 43-MM3 – Environmental and Land Use Assessment

The adjacent land use is EFU. The existing pavement on Old Stage Road marks the beginning of a residential area. The multi-use path will likely need to be an improved shared-use facility in order to avoid significant ROW impacts and to allow continued access for residential users.

The design may increase the impervious surface area and produce additional stormwater that would need to be treated.

The concept could provide socioeconomic benefits by improving non-motorized access in the IMSA. Improved pedestrian and bicycle access generally benefits disadvantaged populations.

Concept 43-MM3 – Cost Opinions

The cost of Concept 43-MM3 is approximately $470,000. This cost is for the multi-use path only and does not reflect measures to deal with the limited width of the Old Stage Road underpass.

6.6. Evaluation Matrix

The information presented in this memo will also be summarized in a separate matrix for comparison of alternatives.

Attachments:

Figure 6-1. Interchange 40 – Summary of Concepts
Figure 6-2. Concept 40-R1: Southbound Off-ramp Extension
Figure 6-3. Concept 40-R2: Southbound On-ramp Extension
Figure 6-4. Concept 40-R3: Southbound Ramp Terminal Turning Radius Improvements
Figure 6-5.Concept 40-R4: Northbound Off-Ramp Extension
Figure 6-6. Concept 40-R5: Northbound On-ramp Extension
Figure 6-7. Concept 40-R6: Northbound Ramp Terminal Turning Radius Improvements
Figure 6-8. Concept 40-R7: Southbound Off-ramp Guardrail Modification
Figure 6-9. Concept 40-I1: 2nd Avenue/Blackwell Road/Access Road Intersection Modifications
Figure 6-10. Concept 40-I2: 2nd Avenue/Blackwell Road/Access Road Turning Radius Improvements
Figure 6-11. Concept 40-I3: Access Road/Old Stage Road Turning Radius Improvements
Figure 6-12. Concept 40-MM1: 2nd Avenue (OR 99) Bridge Multimodal Improvements
Figure 6-13. Concept 40-MM2: Blackwell Road Multimodal Path
Figure 6-14. Interchange 43 – Summary of Concepts
Figure 6-15. Concepts 43-R1 & R2: Southbound Off-ramp and Turning Radius Improvements
Figure 6-16. Concepts 43-R3 & R4: Northbound Off-ramp and Turning Radius Improvements
Figure 6-17. Concept 43-I1: Rogue River Highway/Main Street Intersection Modifications
Figure 6-18. Concept 43-I2: Rogue River Highway/Main Street Turning Radius Improvements
Figure 6-19. Concept 43-I3: Rogue River Highway/2nd Avenue/N. River Road Intersection Enhancements
Figure 6-20. Concept 43-MM1: Study Area Roadways Multimodal Improvements
Figure 6-21. Concept 43-MM2: Rogue River Highway (OR 234/OR 99) Bridge Multimodal Improvements
Figure 6-22. Concept 43-MM3: I-5 Alternative Multimodal Crossing

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I-5 Exit 40 Improvement Concepts – Summary Evaluation Matrix

ID	Location	General Description	Purpose	Traffic Operations and Safety[1, 2, 3]	Basic Roadway Geometries and Right-of-Way[4]	Environmental and Land Use[5]	Cost Opinion[6]
INTERCHANGE RAMP IMPROVEMENTS							
40-R1	Southbound Off-ramp	Extend southbound off-ramp: ▪ Option A: Extend southbound off-ramp ▪ Option B: Straighten and extend southbound off-ramp	Provide adequate deceleration distance	▪ Off-ramp ADT (vpd): Existing – 750; Future (2038) – 900 ▪ Critical movement (EB L/T/R) V/C: Existing – 0.20; Future (2038) – 0.24 ▪ Critical movement (EB L/T/R) LOS: Existing – B; Future (2038) – C ▪ 1 fatal crash during 5-year analysis period ▪ No change to ramp capacity/operations ▪ Would provide additional queue storage ▪ Would enhance driver comfort during deceleration ▪ Interim project: Could perform pruning as a temporary mitigation for sight distance concerns ▪ Option B: Would improve sight distance and alleviate concerns	▪ Off-ramp has single 16' lane ▪ Current deceleration length is 280' and taper is 185' ▪ Desired deceleration length is 500' and taper is 400' ▪ Includes guardrail extension for length of improvement Option A: ▪ Improvements anticipated to be within ODOT ROW Option B: ▪ Depending on the alignment, new bridge over Kane Creek is between 170' and 470' ▪ Guardrail and barrier are included to match the recent construction ▪ ROW would be required	▪ Existing zoning is rural residential and EFU; new ROW would necessitate determination of whether a Statewide Planning Goal Exception is needed ▪ Nearby Kane Creek and ditch/irrigation canal ▪ Additional stormwater treatment may be needed with increased impervious surface ▪ No socioeconomic impacts anticipated ▪ High potential for archeological resource impacts in areas of undisturbed soils ▪ Option A: Would require extension of existing box culvert and modifications to the irrigation canal ▪ Option B: If bridge can be shifted outside the path of Kane Creek, it will have fewer impacts to Kane Creek but require more ROW	▪ Option A: $1,470,000 ▪ Option B: $4,190,000 - $7,579,000 ▪ Does not include utility relocation, hazardous materials, or ROW
40-R2	Southbound On-ramp	Extend length of southbound On-ramp	Provide adequate acceleration distance	▪ On-ramp ADT (vpd): Existing – 1,800; Future (2038) – 2,250 ▪ Critical movement (EB L/T/R) V/C: Existing – 0.20; Future (2038) – 0.24 ▪ Critical movement (EB L/T/R) LOS: Existing – B; Future (2038) – C ▪ 3 crashes during 5-year analysis period: minor injury (1), PDO (2) ▪ No change to ramp capacity or I-5 merge operations ▪ Additional length (compared to today) for larger vehicles to get up to speed	▪ On-ramp has single 17' lane ▪ Current acceleration length is 700' and taper is 225' ▪ Desired acceleration length is 1,100' and taper is 300' ▪ Improvements anticipated to be within ODOT ROW	▪ Existing zoning is EFU; new ROW would necessitate determination of whether a Statewide Planning Goal Exception is needed ▪ No nearby natural features, or anticipated land use or environmental impacts ▪ Additional stormwater treatment may be needed with increased impervious surface ▪ Environmental concerns include the adjacent fish bearing stream and wetlands ▪ No socioeconomic impacts anticipated	▪ $850,000 ▪ Does not include utility relocation, hazardous materials, or ROW
40-R3	Southbound Ramp Terminal	Modify northeast corner of ramp terminal intersection to improve truck mobility (SBL, EBL)	Provide adequate turning radius for WB-67	▪ Off-ramp ADT (vpd): Existing – 750; Future (2038) – 900 ▪ Access Road ADT (vpd): Existing – 2,550 to 3,800, Future (2038) – 3,200 to 4,750 ▪ Critical movement (EB L/T/R) V/C: Existing – 0.20; Future (2038) – 0.24 ▪ Critical movement (EB L/T/R) LOS: Existing – B; Future (2038) – C ▪ No crashes reported during 5-year analysis period ▪ No change to roadway capacity/operations ▪ Would improve overall safety ▪ Would make truck turning and acceleration easier ▪ Increased exposure time for bicycle and pedestrian traffic traveling along east side of Access Road	▪ On and off-ramps each have single ~16' travel lane ▪ Access Road has paved surface of 24'–34' ▪ Constructible within the available ROW (northeast corner) ▪ Significant fill needed for steep slopes on Access Road and the southbound On-ramp	▪ Existing zoning is EFU; new ROW would necessitate determination of whether a Statewide Planning Goal Exception is needed ▪ Would facilitate access to future intermodal hub, interchange commercial, and/or nearby industrial development ▪ No nearby environmental resources ▪ High potential for archeological resource impacts in areas of undisturbed soils ▪ Additional stormwater treatment may be needed with increased impervious surface ▪ No socioeconomic impacts anticipated	▪ $110,000 ▪ Does not include utility relocation, hazardous materials, or ROW
40-R4	Northbound Off-ramp	Extend length of northbound off-ramp	Provide adequate deceleration distance	▪ Off-ramp ADT (vpd): Existing – 2,300; Future (2038) – 2,900 ▪ Critical movement (WB L/T/R) V/C: Existing – 0.29; Future (2038) – 0.41 ▪ Critical movement (WB L/T/R) LOS: Existing – B; Future (2038) – B ▪ 5 crashes during 5-year analysis period, resulting in minor injuries (4) and PDO (1) ▪ No change to ramp capacity/operations ▪ Would provide additional queue storage ▪ Would enhance driver comfort during deceleration	▪ Off-ramp has single 16' lane ▪ Current deceleration length is 200' and no taper ▪ Desired deceleration length is 460' and taper 360' ▪ Includes guardrail ▪ Improvements anticipated to be within ODOT ROW	▪ Existing zoning is rural residential ▪ Nearby Kane Creek; no impacts anticipated ▪ Additional stormwater treatment may be needed with increased impervious surface ▪ No socioeconomic impacts anticipated	▪ $620,000 ▪ Does not include utility relocation, hazardous materials, or ROW

I-5 Exit 40 Improvement Concepts – Summary Evaluation Matrix

ID	Location	General Description	Purpose	Traffic Operations and Safety[1, 2, 3]	Basic Roadway Geometries and Right-of-Way[4]	Environmental and Land Use[5]	Cost Opinion[6]
40-R5	Northbound On-ramp	Extend length of northbound On-ramp	Provide adequate acceleration distance	▪ On-ramp ADT (vpd): Existing – 1,000; Future (2038) – 1,300 ▪ Critical movement (WB L/T/R) V/C: Existing – 0.29; Future (2038) – 0.41 ▪ Critical movement (WB L/T/R) LOS: Existing – B; Future (2038) – B ▪ 1 crash during 5-year analysis period: PDO ▪ No change to ramp capacity or I-5 merge operations ▪ Additional length (compared to today) for larger vehicles to get up to speed	▪ On-ramp has single 17' lane ▪ Current acceleration length is 765' and taper is 190' ▪ Desired acceleration length is 1,100' and taper is 295' ▪ Additional ROW needed for improvement ▪ Includes guardrail and drainage system	▪ Existing zoning is rural residential; new ROW would necessitate determination of whether a Statewide Planning Goal Exception is needed ▪ Nearby Kane Creek; no impacts anticipated ▪ Additional stormwater treatment may be needed with increased impervious surface ▪ No socioeconomic impacts anticipated	▪ $1,100,000 ▪ Includes drainage ▪ Does not include utility relocation, hazardous materials, or ROW
40-R6	Northbound Ramp Terminal	Modify southwest corner of ramp terminal intersection to better accommodate truck movements (NBL)	Provide adequate turning radius for WB-67	▪ Off-ramp ADT (vpd): Existing – 2,250, Future (2038) – 2,800 ▪ Access Road ADT (vpd): Existing – 3,800 to 5,450, Future (2038) – 4,750 to 6,800 ▪ Critical movement (WB L/T/R) V/C: Existing – 0.29; Future (2038) – 0.41 ▪ Critical movement (WB L/T/R) LOS: Existing – B; Future (2038) – B ▪ 7 crashes during 5-year analysis period: 1 serious injury ▪ Observed crash rate exceeds statewide critical crash rate ▪ No change to roadway capacity/operations ▪ Would improve overall safety ▪ Would make truck turning and acceleration easier	▪ On and off-ramps each have single 16' travel lane ▪ Access Road has paved surface of 24'–34' ▪ Includes guardrail ▪ Constructible within the available ROW (southwest corner)	▪ Existing zoning is rural residential ▪ High potential for archeological resource impacts in areas of undisturbed soils ▪ Would facilitate access to future intermodal hub, interchange commercial, and/or nearby industrial development ▪ No documented nearby environmental features ▪ Additional stormwater treatment needed with increased impervious surface ▪ No socioeconomic impacts anticipated	▪ $160,000 ▪ Does not include utility relocation, hazardous materials, or ROW
40-R7	Southbound Off-ramp	Move guardrail	Improve sight distance	▪ Off-ramp ADT (vpd): Existing – 750; Future (2038) – 900 ▪ Critical movement (EB L/T/R) V/C: Existing – 0.20; Future (2038) – 0.24 ▪ Critical movement (EB L/T/R) LOS: Existing – B; Future (2038) – C ▪ 1 fatal crash during 5-year analysis period ▪ No change to ramp capacity/operations ▪ Would provide additional sight distance for vehicles on southbound off-ramp; may decrease eastbound delay	▪ Off-ramp has single 16' lane ▪ Current sight distance for vehicles on the southbound off-ramp looking left (north) at oncoming traffic on Access Road is limited by guardrail ▪ Improvements anticipated to be within ODOT ROW	▪ Existing zoning is rural residential, and EFU; EFU impacts would necessitate determination whether a Statewide Planning Goal Exception is needed ▪ High potential for archeological resource impacts in areas of undisturbed soils ▪ Nearby Kane Creek and ditch/irrigation canal ▪ Additional stormwater treatment may be needed with increased impervious surface ▪ No socioeconomic impacts anticipated	▪ $239,000 ▪ Does not include utility relocation, hazardous materials, or ROW

I-5 Exit 40 Improvement Concepts – Summary Evaluation Matrix

ID	Location	General Description	Purpose	Traffic Operations and Safety[1, 2, 3]	Basic Roadway Geometries and Right-of-Way[4]	Environmental and Land Use[5]	Cost Opinion[6]
INTERSECTION IMPROVEMENTS							
40-I1	2nd Avenue / OR 99 and Blackwell Road at Access Road	Modify intersection ▪ Option A: Modify traffic control to all-way STOP ▪ Option B: Modify traffic control to all-way STOP and add westbound left-turn lane ▪ Option C: Realign Access Road to create a standard 4-legged intersection, all-way STOP control	Better facilitate turning movements and pedestrian crossing	▪ Blackwell Road ADT (vpd): Existing – 2,500; Future (2038) – 3,500 ▪ 2nd Avenue ADT (vpd): Existing – 5,800; Future (2038) – 6,500 ▪ Access Road ADT (vpd): Existing – 5,500; Future (2038) – 6,800 ▪ Critical movement (NB L/R) V/C: Existing – 0.55; Future – 0.76 ▪ Critical movement (NB L/R) LOS: Existing – C; Future – D ▪ Critical movement (NB L/R) Queue: Existing – 125'; Future – 175' ▪ 4 crashes during 5-year analysis period, including 3 minor injury ▪ Roadway user needs vary at intersection: rural section (to east), narrow bridge (to west), heavy recreational traffic, all modes Option A: ▪ Critical movement (NB L/R) V/C: Existing – 0.44; Future – 0.55 ▪ All-way STOP LOS: Existing – B; Future – B ▪ Critical movement (NB L/R) Queue: Existing – 100'; Future – 125' ▪ Stopping traffic on 2nd Avenue/OR 99 and Blackwell Road may facilitate posted speed transition but may result in more rear-end collisions ▪ Pedestrian/bicycle crossings easier with traffic stopped on 2nd Avenue/OR 99 and Blackwell Road Option B: ▪ Critical movement (NB L/R) V/C: Existing – 0.44; Future – 0.55 ▪ All-way STOP LOS: Existing – B; Future – B ▪ Critical movement (NB L/R) Queue: Existing – 100'; Future – 100' ▪ Left-turn lane criteria evaluated and met (ODOT-TPAU) ▪ Left-turn lane on Blackwell Road improves safety by separating turns from through traffic ▪ Other benefits and concerns with all-way STOP same as Option A Option C: ▪ Critical movement (NB L/T/R) V/C: Existing – 0.44; Future – 0.55 ▪ All-way STOP LOS: Existing – B; Future – B ▪ Critical movement (NB L/R) Queue: Existing – 100'; Future – 125' ▪ Realignment would improve driver expectation ▪ Realignment would decrease safety concerns associated with offset intersection ▪ Other benefits and concerns with all-way STOP same as Option A	▪ Existing travel lanes: 11-12' (all roadways) ▪ Existing shoulder width: 0'–2' (all roadways- most sections) ▪ Existing paved width: 24'–34' (all roadways); ▪ ROW: 80' (2nd Avenue), 83' (Blackwell Road), 40'(Access Road) Option A: ▪ Same as above Option B: ▪ Add 14' left-turn lane on Blackwell Road ▪ Widen shoulders to 8' on Blackwell Road and 12' on 2nd Avenue ▪ Assumes equal widening to each side ▪ Significant fill needed for steep slopes on both sides of 2nd Avenue/OR 99 and Blackwell Road for turn lane and shoulder widening ▪ Would require restriping and additional signage ▪ ROW impacts anticipated Option C: ▪ Significant fill needed for steep slopes on both sides of 2nd Avenue/OR 99 and Blackwell Road for rebuild/realignment of Access Road ▪ Assumes wide enough to accommodate either left or right northbound turn lanes ▪ ROW impacts anticipated in southwest corner	▪ Existing zoning is rural residential and EFU; new ROW would necessitate determination of whether a Statewide Planning Goal Exception is needed ▪ No environmental resource in immediate vicinity Option A: ▪ No land use or environmental impacts ▪ Improved pedestrian access generally benefits socioeconomically disadvantaged populations Option B: ▪ Potential land use impacts (EFU lands) ▪ No nearby natural elements or environmental impacts identified ▪ Additional stormwater treatment may be needed with increased impervious surface ▪ Improved pedestrian access generally benefits socioeconomically disadvantaged populations Option C: ▪ Similar impacts as Option B, though more significant due to large fill required for realignment	▪ Option A: $10,000 ▪ Option B: $850,000 ▪ Option C: $711,000 ▪ Does not include utility relocation, hazardous materials, or ROW
40-I2	2nd Avenue / OR 99 and Blackwell Road at Access Road	Modify southwest corner of intersection to better accommodate truck movements (EBR)	Provide adequate turning radius for WB-67	▪ Blackwell Road ADT (vpd): Existing – 2,500; Future (2038) – 3,500 ▪ 2nd Avenue ADT (vpd): Existing – 5,800; Future (2038) – 6,500 ▪ Access Road ADT (vpd): Existing – 5,500; Future (2038) – 6,800 ▪ Critical movement (NB L/R) V/C: Existing – 0.55; Future – 0.76 ▪ Critical movement (NB L/R) LOS: Existing – C; Future – D ▪ 4 crashes during 5-year analysis period, including 3 minor injury ▪ No change to roadway capacity/operations ▪ Would improve overall safety ▪ Would make truck turning and acceleration easier ▪ Adverse impacts for non-auto users (higher speed turning movement)	▪ Existing travel lanes: 11-12' (all roadways) ▪ Existing shoulder width: less than2' (all roadways) ▪ Improved corner shoulder width: 12'(2nd Avenue (OR 99)/Access Road) ▪ Existing paved width: 24'-28' (all roadways) ▪ ROW: 80' (2nd Avenue), 83' (Blackwell Road), 40' (Access Road) ▪ Appears constructible within the available ROW ▪ Includes guardrail ▪ Significant fill needed for steep slopes: Access Road and 2nd Avenue (OR 99)	▪ Existing zoning is rural residential and EFU ▪ Potential impacts to adjacent rural residential lands from fill ▪ Would facilitate access to future intermodal hub, interchange commercial, and/or nearby industrial development ▪ Additional stormwater treatment may be needed with increased impervious surface ▪ No socioeconomic impacts anticipated	▪ $225,000 ▪ Does not include utility relocation, hazardous materials, stormwater treatment, or ROW

I-5 Exit 40 Improvement Concepts – Summary Evaluation Matrix

ID	Location	General Description	Purpose	Traffic Operations and Safety[1, 2, 3]	Basic Roadway Geometries and Right-of-Way[4]	Environmental and Land Use[5]	Cost Opinion[6]
40-I3	Access Road at Old Stage Road	Modify northwest and southwest corners of intersection to better accommodate truck movements (SBR, NBL, and EBR)	Provide adequate turning radii for WB-67	▪ Access Road ADT (vpd): Existing – 2,550; Future (2038) – 3,200 ▪ Old Stage Rd ADT (vpd): Existing – 400; Future (2038) – 450 ▪ Critical movement (EB L/R) V/C: Existing – 0.07; Future – 0.07 ▪ Critical movement (EB L/R) LOS: Existing – B; Future – B ▪ No crashes reported during 5-year analysis period ▪ No change to roadway capacity/operations ▪ Would improve overall safety ▪ Would make truck turning and acceleration easier ▪ Adverse impacts for non-auto users (higher speed turning movement)	▪ Existing travel lanes: 12' (Access Road); 10' (Old Stage Road) ▪ Existing shoulder: 0–5' (Access Road); 0' (Old Stage Road) ▪ Improved corner shoulder width: 12'(Access Road/Old Stage Road) ▪ Existing paved width: 24'–34' (Access Road); 21' (Old Stage Road) ▪ ROW: 70'+ (Access Road); 65'+ (Old Stage Road) ▪ Constructible within the available ROW *Note: Geometric data from Technical Memorandum #3, based on ODOT Roadway Inventory report (2012). Since then, intersection and roadway have been modified as part of the Kane Creek Fish Passage project.*	▪ Existing zoning is EFU, interchange commercial ▪ Potential impacts to adjacent lands (EFU) – may need to consider Statewide Planning Goals ▪ Would facilitate access to interchange commercial and/or nearby industrial development ▪ Nearby Kane Creek, though no environmental impacts anticipated ▪ Additional stormwater treatment may be needed with increased impervious surface ▪ No socioeconomic impacts anticipated	▪ Northwest: $165,000 ▪ Southwest: $115,000 ▪ Does not include utility relocation, hazardous materials, or ROW
MULTIMODAL IMPROVEMENTS							
40-MM1	Access Road	Widen to provide 6'shoulders between Blackwell Road and Lampman Road	Provide facilities for all modes of travel, enhance access to the city, and improve safety	▪ Access Road ADT (vpd): Existing – 5,500; Future (2038) – 6,800 ▪ No change to roadway capacity/operations ▪ 2 crashes during 5-year analysis period, including 3 minor injury ▪ No non-motorized crashes during 5-year analysis period ▪ Project could connect other multimodal facilities ▪ Improved level of service/experience/connectivity for non-motorized users	▪ Existing travel lanes: 12' (Access Road) ▪ Existing shoulder: 0–5' ▪ Improved shoulder width: 5' ▪ Existing paved width: 24'–34' (Access Road) ▪ ROW: 50'+ ▪ ROW required ▪ The guardrail at the intersection between Access Road and Lampman Road will need to be shifted *Note: Geometric data from Technical Memorandum #3, based on ODOT Roadway Inventory report (2012). Since then, intersection and roadway have been modified as part of the Kane Creek Fish Passage project.*	▪ Adjacent lands are zoned rural residential; new ROW would necessitate determination of whether a Statewide Planning Goal Exception is needed ▪ There is an irrigation channel crossing Access Road where the culvert would have to be extended ▪ Additional stormwater treatment may be needed with increased impervious surface ▪ Improved non-motorized connectivity generally benefits socioeconomically disadvantaged populations ▪ High potential for archeological resource impacts in areas of undisturbed soils	▪ $924,000 ▪ Includes culvert extension ▪ Does not include utility relocation, hazardous materials, or ROW
40-MM2	Blackwell Road (OR 99)	Provide access for all modes of travel between Access Road and KOA campground: ▪ Option A: Widen to provide 6' shoulders ▪ Option B: Widen to provide a 10' multiuse path	Provide facilities for all modes of travel, enhance access to the city and downtown environment, and improve safety	▪ Blackwell Road ADT (vpd): Existing – 2,500; Future (2038) – 3,500 ▪ No change in vehicular capacity or operations ▪ Crash data not assessed east of Access Road Option A: ▪ Provides shoulders to rural County standard ▪ Enhances safety with better separation of modes ▪ Provides access for all modes on both sides of Blackwell Road ▪ Project could connect other multimodal facilities ▪ Improved level of service/experience/connectivity for non-motorized users Option B: ▪ Multiuse path separates traffic modes, improving overall safety ▪ Consistent with the Oregon Bicycle and Pedestrian Design Guidelines recommendations	▪ Existing travel lanes: 12' ▪ Existing shoulder width: 2' ▪ Existing paved width: 28' ▪ Existing drainage ditches on both sides ▪ ROW: 83' Option A: ▪ Improved shoulder width: 6' ▪ May require ROW acquisition Option B: ▪ 10' multi-use path on south side with 3' gravel shoulders ▪ Steep drainage ditches ▪ May require ROW acquisition	▪ For Option A, there is an irrigation channel crossing Blackwell Road where the culvert would have to be extended ▪ For Option B, the multi-use path would need a new culvert to cross the existing irrigation channel ▪ Existing zoning rural residential; new ROW would necessitate determination of whether a Statewide Planning Goal Exception is needed ▪ Potential impacts to adjacent lands ▪ Additional stormwater treatment may be needed with increased impervious surface ▪ Improved pedestrian access generally benefits socioeconomically disadvantaged populations	▪ Option A: $510,000 ▪ Option B: $215,000 ▪ Does not include utility relocation, hazardous materials, or ROW

Notes:
1. Traffic operations were evaluated for concepts that were identified to address operational deficiencies. The operational assessment focuses on the volume-to-capacity (v/c) ratio for the 2012 existing and 2038 future condition.
2. At intersections where potential changes in traffic control or turn lanes were considered, the procedures in the ODOT Analysis Procedures Manual (APM) were followed.
3. Some improvements are focused on addressing safety concerns or may address safety as well as traffic operations deficiencies. Crash patterns from the five-year analysis period (2007 through 2011) are discussed for those improvements that address safety.
4. Illustrations were developed for concepts that involve infrastructure improvements.
5. Impacts to resources were qualitatively assessed based on the data assembled for the environmental and land use reconnaissance. The level of analysis of the study area is designed to identify those areas judged to have considerable potential for conflict.
6. Rough order of magnitude cost opinions were developed using present day dollars and are consistent with standard estimating methods. The estimates include a contingency factor but do not include right-of-way costs. The cost opinions are intended to help differentiate alternatives by approximating the relative costs of each project.

General Notes: ADT = Average Daily Traffic; NB = northbound; SB = southbound; EB = eastbound; WB = westbound; R = right; L = left; T = through; vpd = vehicles per day; LOS = level of service; ROW = right-of-way; EFU = Exclusive Farm Use; PDO = property damage only; TPAU = Transportation Planning Analysis Unit.

I-5 Exit 43 Improvement Concepts – Summary Evaluation Matrix

ID	Location	General Description	Purpose	Traffic Operations and Safety[1, 2, 3]	Basic Roadway Geometries and Right-of-Way[4]	Environmental and Land Use[5]	Cost Opinion[6]
INTERCHANGE RAMP IMPROVEMENTS							
43-R1	Southbound Off-ramp	Extend length of southbound off-ramp	Provide adequate deceleration distance	▪ Off-ramp ADT (vpd): Existing – 500, Future (2038) – 600 ▪ Critical movement (EB L/T/R) V/C: Existing – 0.07; Future (2038) – 0.07 ▪ Critical Movement (EB L/T/R) LOS: Existing – A; Future (2038) – A ▪ 4 crashes during 5-year analysis period, resulted in minor injury (2), PDO (2) ▪ No change to ramp capacity/operations ▪ Would provide additional queue storage ▪ Would enhance driver comfort during deceleration	▪ Off-ramp has single 16' lane ▪ Current deceleration length is 280' ▪ Desired deceleration length is 345' ▪ Improvements anticipated to be within ODOT ROW	▪ Existing is rural residential, rural light industrial, and EFU; new ROW would necessitate determination of whether a Statewide Planning Goal Exception is needed (no ROW impacts anticipated) ▪ High potential for archeological resource impacts in areas of undisturbed soils ▪ Nearby West Valley Wildlife Area; no impacts anticipated ▪ Unknown hazardous waste site near off-ramp diverge from I-5; additional investigation needed ▪ Additional stormwater treatment may be needed with increased impervious surface ▪ No socioeconomic impacts anticipated	▪ $370,000 ▪ Does not include utility relocation, hazardous materials, or ROW
43-R2	Southbound Ramp Terminal	Modify southwest corner of ramp terminal intersection to better accommodate truck movements (EBR)	Provide adequate turning radius for WB-67	▪ Off-ramp ADT (vpd): Existing – 500; Future (2038) – 600 ▪ Main Street ADT (vpd): Existing – 250 to 700; Future (2038) – 300 to 900 ▪ Critical movement (EB L/T/R) V/C: Existing – 0.07; Future (2038) – 0.07 ▪ Critical movement (EB L/T/R) LOS: Existing – A; Future (2038) – A ▪ No crashes reported during 5-year analysis period ▪ No change to roadway capacity/operations ▪ Would improve overall safety ▪ Would make truck turning and acceleration easier	▪ Off-ramp is single 16' lane ▪ Widen section of roadway between the southbound off-ramp and Profetta Lane up to 28' ▪ Constructible within the available ROW (southwest corner)	▪ Existing zoning is EFU; new ROW would necessitate determination of whether a Statewide Planning Goal Exception is needed (no ROW impacts anticipated) ▪ High potential for archeological resource impacts in areas of undisturbed soils ▪ Would facilitate access to interchange commercial and light industrial lands on Frontage Road/Profetta Lane ▪ Nearby West Valley Wildlife Area; no impacts anticipated ▪ Unknown hazardous waste site near off-ramp diverge from I-5; additional investigation needed ▪ Additional stormwater treatment needed with increased impervious surface ▪ No socioeconomic impacts anticipated	▪ $150,000 ▪ Does not include utility relocation, hazardous materials, or ROW
43-R3	Northbound Off-ramp	Extend length of northbound off-ramp	Provide adequate deceleration distance	▪ Off-ramp ADT (vpd): Existing – 300; Future (2038) – 350 ▪ Critical movement (WB L/T/R) V/C: Existing – 0.03; Future (2038) – 0.04 ▪ Critical movement (WB L/T/R) LOS: Existing – A; Future (2038) – A ▪ 0 crashes during 5-year analysis period ▪ No change to ramp capacity/operations ▪ Would provide additional queue storage ▪ Would enhance driver comfort during deceleration	▪ Off-ramp has single 16' lane ▪ Current deceleration length is 305' and taper is 187' ▪ Desired deceleration length is 345' and taper is 215' ▪ Includes guardrail ▪ Improvements anticipated to be within ODOT ROW	▪ Existing zoning is EFU; new ROW would necessitate determination of whether a Statewide Planning Goal Exception is needed (no ROW impacts anticipated) ▪ High potential for archeological resource impacts in areas of undisturbed soils ▪ Nearby Rogue River; no impacts anticipated ▪ Additional stormwater treatment may be needed with increased impervious surface ▪ No socioeconomic impacts anticipated	▪ $550,000 ▪ Does not include utility relocation, hazardous materials, or ROW
43-R4	Northbound Ramp Terminal (I-5 and Main Street)	Modify northeast corner of ramp terminal intersection to better accommodate truck movements (WBR)	Provide adequate turning radius for WB-67	▪ Off-ramp ADT (vpd): Existing – 300; Future (2038) – 350 ▪ Main Street ADT (vpd): Existing – 750 to 1,250; Future (2038) – 900 to 1,500 ▪ Critical movement (WB L/T/R) V/C: Existing – 0.03; Future (2038) – 0.04 ▪ Critical movement (WB L/T/R) LOS: Existing – A; Future (2038) – A ▪ No crashes reported during 5-year analysis period ▪ No change to roadway capacity/operations ▪ Would improve overall safety ▪ Would make truck turning and acceleration easier	▪ Off-ramp is single 16' lane ▪ Widen section of roadway between the northbound off-ramp and Rogue River Highway up to 17' ▪ Constructible within the available ROW (northeast corner)	▪ Existing zoning is interchange commercial and EFU; new ROW would necessitate determination of whether a Statewide Planning Goal Exception is needed (no ROW impacts anticipated) ▪ Would facilitate access to interchange commercial Rogue River Highway ▪ Nearby Rogue River and freshwater emergent wetlands; no impacts anticipated ▪ Additional stormwater treatment may be needed with increased impervious surface ▪ No socioeconomic impacts anticipated	▪ $60,000 ▪ Does not include utility relocation, hazardous materials, or ROW

I-5 Exit 43 Improvement Concepts – Summary Evaluation Matrix

ID	Location	General Description	Purpose	Traffic Operations and Safety[1, 2, 3]	Basic Roadway Geometries and Right-of-Way[4]	Environmental and Land Use[5]	Cost Opinion[6]
INTERSECTION IMPROVEMENTS							
43-I1	Rogue River Highway (OR 99) at Main Street	Enhance pedestrian access and modify traffic control Option A: ▪ Add pedestrian crossing on west side and signage ▪ Maintain existing unconventional STOP control at intersection Option B: ▪ Modify intersection traffic control (change to all-way STOP) ▪ Add crosswalk at intersection	Provide facilities for all modes of travel	▪ Main Street ADT (vpd): Existing – 1,250; Future (2038) – 1,500 ▪ Rogue River Highway ADT (vpd): Existing – 400 to 1,800, Future (2038) – 450 to 2,150 ▪ Critical movement (NB L/R) V/C: Existing – 0.09; Future (2038) – 0.09 ▪ Critical movement (NB L/R) LOS: Existing – A; Future (2038) – A ▪ Critical movement (NB L/R) Queue: Existing – 50'; Future (2038) – 50' ▪ 0 crashes during 5-year analysis period ▪ Would improve overall safety Option A: ▪ Operations: Existing NB V/C – 0.09; Future NB V/C – 0.09 ▪ Provides a designated crossing area for pedestrians crossing roadway to improve safety; however, may provide a false sense of security ▪ Crosswalks not typical at rural intersections Option B: ▪ All-way STOP: Existing WB V/C – 0.13; Future WB V/C – 0.15 ▪ Critical movement (NBL) Queue: Existing – 50'; Future (2038) – 50' ▪ Conventional STOP control conducive to driver expectation and indicator of changing roadway conditions ▪ Other benefits and concerns are the same as Option A	▪ Number of existing travel lanes (Rogue River Highway and Main Street): 2 ▪ Existing travel lanes width (both roadways): 12' ▪ Existing shoulder width: 2' (minimum) ▪ Existing paved width (both roadways): 18'–38' ▪ No additional ROW needed for either option (A or B)	▪ Existing zoning rural residential, interchange commercial, EFU; new ROW would necessitate determination of whether a Statewide Planning Goal Exception is needed (no ROW impacts anticipated) ▪ No land use or environmental resource impacts ▪ Improved pedestrian access generally benefits socioeconomically disadvantaged populations	▪ Option A: $7,000 ▪ Option B: $10,000 ▪ Does not include utility relocation, hazardous materials, or ROW
43-I2	Rogue River Highway (OR 99) at Main Street	Modify southwest corner of intersection to better accommodate truck movements (EBR)	Provide adequate turning radius for WB-67	▪ Main Street ADT (vpd): Existing – 1,250; Future (2038) – 1,500 ▪ Rogue River Highway ADT (vpd): Existing – 400 to 1,800; Future (2038) – 450 to 2,150 ▪ Critical movement (NB L/R) V/C: Existing – 0.09; Future (2038) – 0.09 ▪ Critical movement (NB L/R) LOS: Existing – A; Future (2038) – A ▪ 0 crashes during 5-year analysis period ▪ No change to roadway capacity/operations ▪ Would improve overall safety ▪ Would make truck turning and acceleration easier	▪ Number of existing travel lanes (Rogue River Highway and Main Street): 2 ▪ Existing travel lanes width (both roadways): 12' ▪ Existing shoulder width (minimum): 2' ▪ Existing paved width (both roadways): 18'–38' ▪ May require additional ROW (southwest corner) ▪ Nearby utility corridor	▪ Existing zoning rural residential, interchange commercial, EFU; new ROW would necessitate determination of whether a Statewide Planning Goal Exception is needed ▪ Additional ROW needed on southwest corner (interchange commercial zoning) ▪ Would facilitate access to interchange commercial ▪ Nearby freshwater emergent wetlands; no impact anticipated ▪ Additional stormwater treatment may be needed with increased impervious surface ▪ No socioeconomic impacts anticipated	▪ $160,000 ▪ Does not include utility relocation, hazardous materials, or ROW

I-5 Exit 43 Improvement Concepts – Summary Evaluation Matrix

ID	Location	General Description	Purpose	Traffic Operations and Safety[1, 2, 3]	Basic Roadway Geometries and Right-of-Way[4]	Environmental and Land Use[5]	Cost Opinion[6]
43-I3	Rogue River Highway (OR 99/2nd Avenue) at N. River Road	Improve intersection function Option A: ▪ Modify southwest corner of intersection to better accommodate truck movements (EBL) Option B: ▪ Option A improvements ▪ Intersection realignment ▪ Modify intersection traffic control	Provide facilities for all modes of travel including WB-67	▪ N River Road ADT (vpd): Existing – ~1,100; Future (2038) – ~1,200 ▪ Rogue River Highway ADT (vpd): Existing – ~1,600 to 2,300; Future (2038) – ~1,900 to 2,700 ▪ Critical movement (NBL) V/C: Existing – 0.08; Future (2038) – 0.09 ▪ Critical movement (NBL) LOS: Existing – A; Future (2038) – A ▪ Critical movement (NBL) Queue: Existing – 25'; Future (2038) – 25' ▪ 0 crashes during 5-year analysis period Option A: ▪ Operations: Existing EB V/C – 0.05; Future NB V/C – 0.06 ▪ No change to roadway capacity/operations ▪ Would make eastbound truck turning and acceleration easier ▪ Increased turning speeds would be less safe for non-auto users ▪ Would reduce speed for majority of movements and improve overall safety Option B ▪ Side street STOP: Existing NBL/T V/C – 0.07; Future NB V/C – 0.09 ▪ Critical movement (NBL) Queue: Existing – 25'; Future (2038) – 50' ▪ Would make truck turning and acceleration easier ▪ Conventional STOP control conducive to driver expectation and indicator of changing roadway conditions, though 45 mph speed is a concern ▪ Could add later phase to provide a left-turn refuge lane for westbound traffic ▪ Potential increase in the number of rear-end collisions	▪ Existing travel lanes: 12' (both roadways) ▪ Existing shoulder width: 0' (N. River Road) to 2' (Rogue River Highway) ▪ Existing paved width: 24' (N. River Road); 18' to 38' (Rogue River Highway) ▪ Physical constraints: utility corridor, railroad tracks, and historic Rogue River Bridge Option A: ▪ Modifications to southwest corner ▪ Some fill may be needed to increase turning radius ▪ May require additional ROW Option B: ▪ Changes to southwest corner the same as for Option A ▪ Potential reduction in paved surface on southeast corner with intersection realignment	▪ Existing zoning is rural residential and EFU; new ROW would necessitate determination of whether a Statewide Planning Goal Exception is needed Option A: ▪ Potential land use impacts; consideration of Statewide Planning Goals may be needed ▪ Near Rogue River; 2 classified habitats that need to be considered ▪ Nearby Sardine Creek Wildlife area ▪ Any impact to the new multi-use path could trigger Section 6(f) concerns. ▪ Additional stormwater treatment may be needed with increased impervious surface ▪ No socioeconomic impacts anticipated Option B: ▪ Changes to southwest corner the same as for Option A ▪ Potential pavement reduction on southeast corner could offset added pavement on southwest corner ▪ Improved pedestrian access generally benefits socioeconomically disadvantaged populations	▪ Option A: $220,000 ▪ Option B: $230,000 ▪ Does not include utility relocation, hazardous materials, or ROW
MULTIMODAL IMPROVEMENTS							
43-MM1	IMSA Roadways (Main Street and Rogue River Highway)	Enhance multimodal access between I-5 and the City of Gold Hill Option A: ▪ Add signage to travel lanes Option B: ▪ Widen shoulders (to 8' on both sides) along Rogue River Highway where ROW exists (spot treatments); install guardrail Option C ▪ Add Option A signage ▪ Add activated warning lights	Provide facilities for all modes of travel	▪ Main Street ADT (vpd): Existing – 200 to 1,300; Future (2038) – 200 to 1,500 ▪ Rogue River Highway ADT (vpd): Existing – 1,600 to 2,300; Future (2038) – 1,900 to 2,700 ▪ Posted speed: 45 mph (Rogue River Highway); Main Street speed is not posted ▪ 2 crashes (Rogue River Highway) reported during 5-year analysis period, both PDO Option A: ▪ No change to roadway capacity/operations ▪ Occasional slowing of traffic when a bicycle is present and increased driver awareness Option B: ▪ No change to roadway capacity/operations ▪ Wider shoulders on Rogue River Highway would separate non-motorized traffic from travel lane ▪ Would allow motorized traffic to pass non-motorized traffic more easily (except on the bridge) Option C: ▪ Same as Option A	▪ Existing travel lanes: 9'–14' ▪ Existing shoulder width: 0–5' ▪ Existing paved width: 18'–38' Option A: ▪ Would maintain existing paved section and ROW Option B: ▪ Would widen the paved roadway to the south in spot locations along Rogue River Highway; within existing ROW Option C: ▪ Would maintain existing paved section and ROW	▪ Existing zoning is rural residential, interchange commercial, and EFU; new ROW would necessitate determination of whether a Statewide Planning Goal Exception is needed (no ROW impacts anticipated) All Options: ▪ Improved pedestrian/bicycle access generally benefits socioeconomically disadvantaged populations Option A: ▪ No impacts anticipated Option B: ▪ Rogue River and freshwater emergent wetlands are in proximity to Rogue River Highway (to the north); impacts not anticipated ▪ Additional stormwater treatment may be needed with increased impervious surface Option C: ▪ No impacts anticipated	▪ Option A: $15,000 (signage - Main Street and Rogue River Highway) ▪ Option B: $450,000 ▪ Option C: $50,000 per warning light installation

I-5 Exit 43 Improvement Concepts – Summary Evaluation Matrix

ID	Location	General Description	Purpose	Traffic Operations and Safety[1, 2, 3]	Basic Roadway Geometries and Right-of-Way[4]	Environmental and Land Use[5]	Cost Opinion[6]
43-MM2	Rogue River Highway (Rock Point Bridge, 00332A)	Enhance multimodal access across the Rock Point Bridge Option A: ▪ Add signage on the bridge Option B: ▪ Construct 8' cantilevered path on both sides Option C: ▪ Build a parallel structure directly north of the Main Street/Rogue River Highway intersection and connecting to N. River Road Option D: ▪ Similar to Option C, but would serve all modes of traffic	Provide facilities for all modes of travel	▪ Rogue River Highway ADT (vpd): Existing – ~1,600; Future (2038) – ~1,900 ▪ No documented crash patterns on Rogue River Highway Option A: ▪ No change to roadway capacity/operations ▪ Would increase driver awareness of non-auto travel Option B: ▪ Would improve overall safety by separating travel modes Option C: ▪ Would have significant impacts on non-auto circulation and operations at Main Street/Rogue River Highway intersection and also the new intersection with River Road ▪ Would separate modes of traffic by providing dedicated facilities to cross the river for non-motorized users ▪ Would increase safety for vulnerable users Option D: ▪ Would have significant impacts on circulation (all modes) and operations at Main Street/Rogue River Highway intersection and also the new intersection with River Road ▪ Enhanced freight and emergency vehicle access	▪ Existing travel lanes: 9' ▪ Existing shoulder width: none ▪ Existing structure width: 19'–20' Option A: ▪ No change to roadway ▪ Improvements anticipated to be within ODOT ROW Option B: ▪ No change to roadway ▪ Cantilevered path would be 8' ▪ Widening has not been assessed for structural viability ▪ Need to further consider safe transitions at each end of the bridge and connection to Rogue River Greenway ▪ Improvements anticipated to be within ODOT ROW Option C ▪ No change to bridge ▪ Separate facilities for non-motorized traffic ▪ New structure assumed to 270' long, 15' wide (10' path, 2' shy each side, and railing) ▪ Assumed to be located directly north of Main Street and connect to N. River Road ▪ Significant ROW impacts, to be determined at time of design Option D: ▪ No change to bridge ▪ Separate facilities for non-motorized traffic ▪ Assumed to be located directly north of Main Street and connect to N. River Road ▪ Significant ROW impacts, to be determined at time of design	▪ Existing zoning is EFU near existing bridge with interchange commercial and rural residential near Main Street; new ROW would necessitate determination of whether a Statewide Planning Goal Exception is needed All Options: ▪ Improved pedestrian access generally benefits socioeconomically disadvantaged populations ▪ Section 106 Determination of Effect would be required for all four options Option A: ▪ See impacts to "all options" Option B: ▪ Would affect the aesthetics and historical nature of the bridge ▪ Would require work over the Rogue River ▪ Additional stormwater treatment may be needed with increased impervious surface Option C: ▪ Potential land use impacts; determination of whether Statewide Planning Goal Exception is needed ▪ Environmental concerns include the adjacent fish-bearing stream and wetlands ▪ Environmental permitting ▪ Would require work over the Rogue River and freshwater emergent wetlands ▪ Additional stormwater treatment may be needed with increased impervious surface ▪ Air quality and noise analysis may be needed Option D ▪ Similar to Option C	▪ Option A: $1,500 ▪ Option B: $1,000,000 ▪ Option C: $1,500,000 ▪ Option D: not estimated at this time ▪ Does not include utility relocation, hazardous materials, or ROW
43-MM3	Profetta Lane to Old Stage Road – I-5 Alternative Mulitmodal Crossing	Provide alternate multimodal crossing of I-5 with multi-use path connection	Provide facilities across I-5 for all modes of travel	▪ Profetta Lane ADT (vpd): Existing – <100; Future (2038) – <100 ▪ Main Street ADT (vpd): Existing – 200 to 1,300; Future (2038) – 200 to 1,500 ▪ Lampman Road and Old Stage Road ADT, V/C, and LOS were not collected as part of this project near the proposed improvement area ▪ No documented crash patterns on Profetta Lane, Old Stage Road or Lampman Rd near planned improvement area ▪ Multi-use path would provide an alternative multimodal access across I-5 without rebuilding Exit43 ▪ The underpass that connects Old Stage Road to Lampman Road would also need to incorporate a way for users of the multi-use path to safely enter the underpass (e.g., additional signage or overpass widening)	▪ Existing travel lanes: 12' (Main Street) ▪ Existing shoulder: 1'–2' (Main Street) ▪ Existing unpaved path may not provide sufficient width for a multi-use path ▪ Widening requires slope stabilization down to I-5 ▪ Fence and safety rail would be needed ▪ Potential ROW impacts on Lampman Road	▪ Existing zoning is EFU; new ROW would necessitate determination of whether a Statewide Planning Goal Exception is needed ▪ Additional stormwater treatment may be needed with increased impervious surface ▪ The existing pavement on Old Stage Road is also the beginning of a residential area ▪ Improved pedestrian access generally benefits socioeconomically disadvantaged populations	▪ $470,000 ▪ Does not include utility relocation, hazardous materials, or ROW ▪ Does not include improvements to underpass

Notes:
1. Traffic operations were evaluated for concepts that were identified to address operational deficiencies. The operational assessment focuses on the volume-to-capacity (v/c) ratio for the 2012 existing condition and the 2038 future condition.
2. At intersections where potential changes in traffic control or turn lanes were considered, the procedures in the ODOT Analysis Procedures Manual (APM) were followed.
3. Some improvements are focused on addressing safety concerns or may address safety as well as traffic operations deficiencies. Crash patterns from the five-year analysis period (2007 through 2011) are discussed for those improvements that address safety.
4. Illustrations were developed for concepts that involve infrastructure improvements.
5. Impacts to resources were qualitatively assessed based on the data assembled for the environmental and land use reconnaissance. The level of analysis of the study area is designed to identify those areas judged to have considerable potential for conflict.
6. Rough order-of-magnitude cost opinions were developed using present day dollars and are consistent with standard estimating methods. The estimates include a contingency factor but do not include right-of-way costs. The cost opinions are intended to help differentiate alternatives by approximating the relative costs of each project.

General Notes: ADT = Average Daily Traffic; NB = northbound; SB = southbound; EB = eastbound; WB = westbound; R = right; L = left; T = through; vpd = vehicles per day; LOS = level of service; ROW = right-of-way; EFU = Exclusive Farm Use; PDO = property damage only; TPAU = Transportation Planning Analysis Unit.

- **40-R1** **Southbound Off-Ramp Extension** – Reconfigure off-ramp to improve deceleration distance and sight distance
- **40-R2** **Southbound On-ramp Extension** – Extend length of southbound on-ramp to provide adequate acceleration distance
- **40-R3** **Southbound Ramp Terminal Turning Radius Improvements** – Modify northeast corner to improve truck mobility (SBL, EBL)
- **40-R4** **Northbound Off-Ramp Extension** – Extend length of northbound off-ramp to provide adequate deceleration distance
- **40-R5** **Northbound On-ramp Extensio**n – Extend length of northbound on-ramp to provide adequate acceleration distance
- **40-R6** **Northbound Ramp Terminal Turning Radius Improvements** – Modify southwest corner to better accommodate truck movements (NBL)
- **40-R7** **Southbound Off-Ramp Guardrail Modification** – Move guardrail to improve sight distance
- **40-I1** **2nd Avenue/OR 99 and Blackwell Road at Access Road Intersection Modifications** – Modify traffic control, add left-turn lane, or realignment
- **40-I2** **2nd Avenue/OR 99 and Blackwell Road at Access Road Turning Radius Improvements** – Modify southwest corner to better accommodate truck movements (EBR)
- **40-I3** **Access Road/Old Stage Road Turning Radius Improvements** – Modify northwest and southwest corners to better accommodate truck movements (SBR, NBL, and EBR)
- **40-MM1** **Access Road Multimodal Access** – Widen to provide 6' shoulders between Blackwell Road and Lampman Rd
- **40-MM2** **Blackwell Road/OR 99 Multimodal Access** – Provide access for all modes of travel between Access Road and KOA camp ground by widening shoulders or constructing a multi-use path

I-5 Exits 40 and 43 Interchange Area Management Plans

Figure 6-1
Summary of Concepts
I-5 Exit 40

Legend

- Interchange Ramp Improvements
- Intersection Improvements
- Multimodal Improvements

I-5 Exits 40 and 43 Interchange Area Management Plans

Legend

- ROW Line
- Edge of Pavement
- Structure

Figure 6-2
Concept 40-R1
Southbound Off-Ramp Extension
I-5 Exit 40

I-5 Exits 40 and 43 Interchange Area Management Plans

Legend

ROW Line
Ramp Extension

Figure 6-3
Concept 40-R2
Southbound On-Ramp Extension
I-5 Exit 40

I-5 Exits 40 and 43 Interchange Area Management Plans

Legend

- ROW Line
- Edge of Pavement
- Edge of Gravel
- Proposed Guardrail
- New Pavement

Figure 6-4

Concept 40-R3
Southbound Ramp Terminal
Turning Radius Improvements
I-5 Exit 40

I-5 Exits 40 and 43 Interchange Area Management Plans

Legend

- ROW Line
- Edge of Pavement
- Edge of Gravel
- Proposed Guardrail
- New Pavement

Figure 6-5
Concept 40-R4
Northbound Off-Ramp Extension
I-5 Exit 40

I-5 Exits 40 and 43 Interchange Area Management Plans

Legend

- ROW Line
- Edge of Pavement
- Edge of Gravel
- Guardrail
- New Pavement

Figure 6-6
Concept 40-R5
Northbound On-Ramp Extension
I-5 Exit 40

I-5 Exits 40 and 43 Interchange Area Management Plans

Legend

- ROW Line
- Edge of Pavement
- Edge of Gravel
- Guardrail
- New Pavement

Figure 6-7

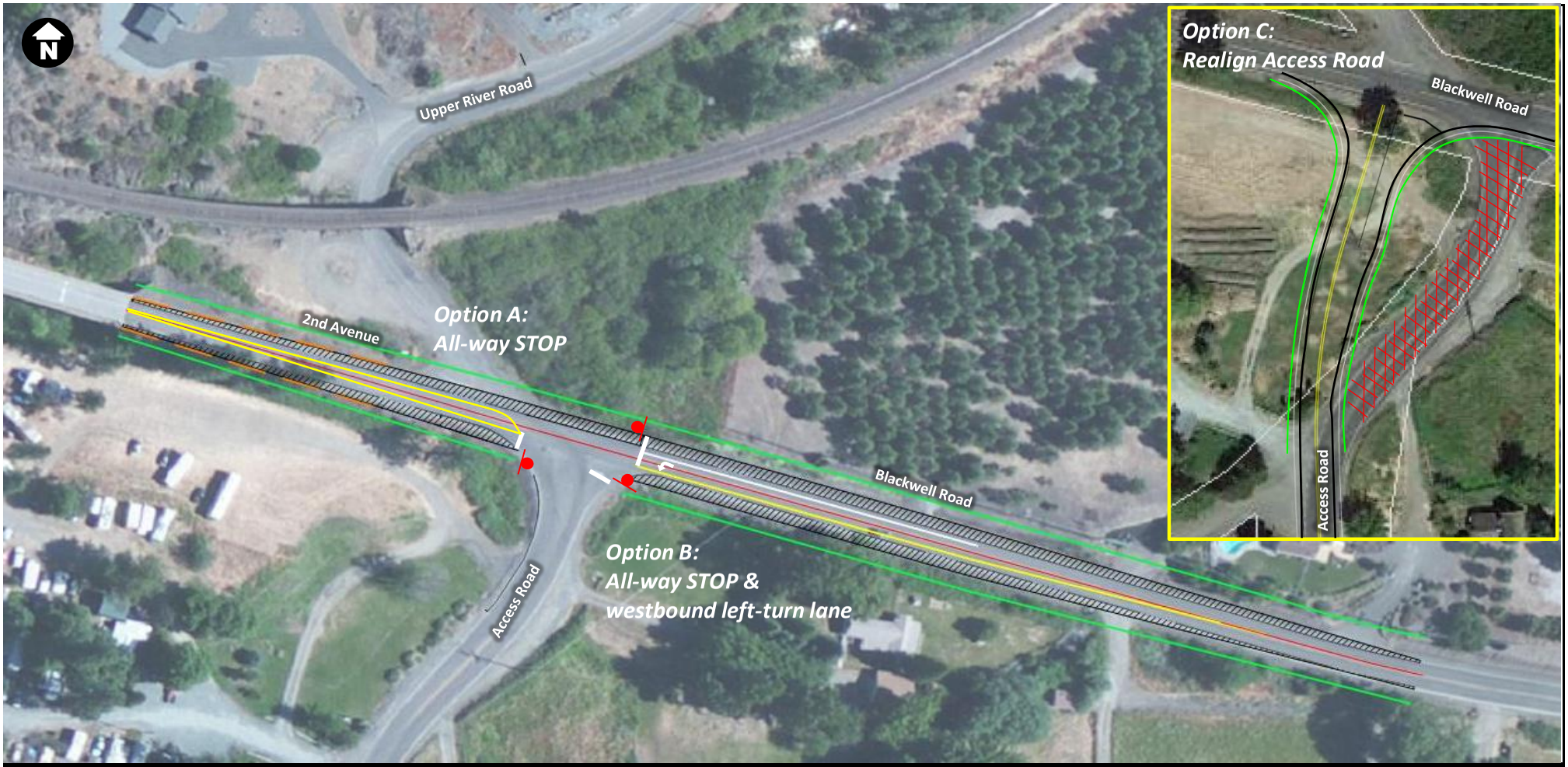
Concept 40-R6
Northbound Ramp Terminal
Turning Radius Improvements
I-5 Exit 40

I-5 Exits 40 and 43 Interchange Area Management Plans

Legend

- Edge of Pavement
- Edge of Gravel
- Guardrail
- New Pavement

Figure 6-8
Concept 40-R7
Southbound Off-Ramp
Sight Distance Improvements
I-5 Exit 40



I-5 Exits 40 and 43 Interchange Area Management Plans

Legend

- ROW Line
- Edge of Pavement
- Edge of Gravel
- Guardrail
- Centerline
- Striping
- Pavement Removal
- New Pavement
- STOP Control

Figure 6-9

Concept 40-I1

2nd Avenue/OR 99 and Blackwell Road at Access Road

Intersection Modifications

I-5 Exit 40

I-5 Exits 40 and 43 Interchange Area Management Plans

Legend

- Property Line
- Edge of Pavement
- Edge of Gravel
- New Pavement

Figure 6-10

Concept 40-I2

2nd Avenue/OR 99 and Blackwell Road at Access Road

Turning Radius Improvements

I-5 Exit 40

I-5 Exits 40 and 43 Interchange Area Management Plans

Legend

- ROW Line
- Edge of Pavement
- Edge of Gravel
- New Pavement

Figure 6-11

Concept 40-I3

Access Road at Old Stage Road

Turning Radius Improvements

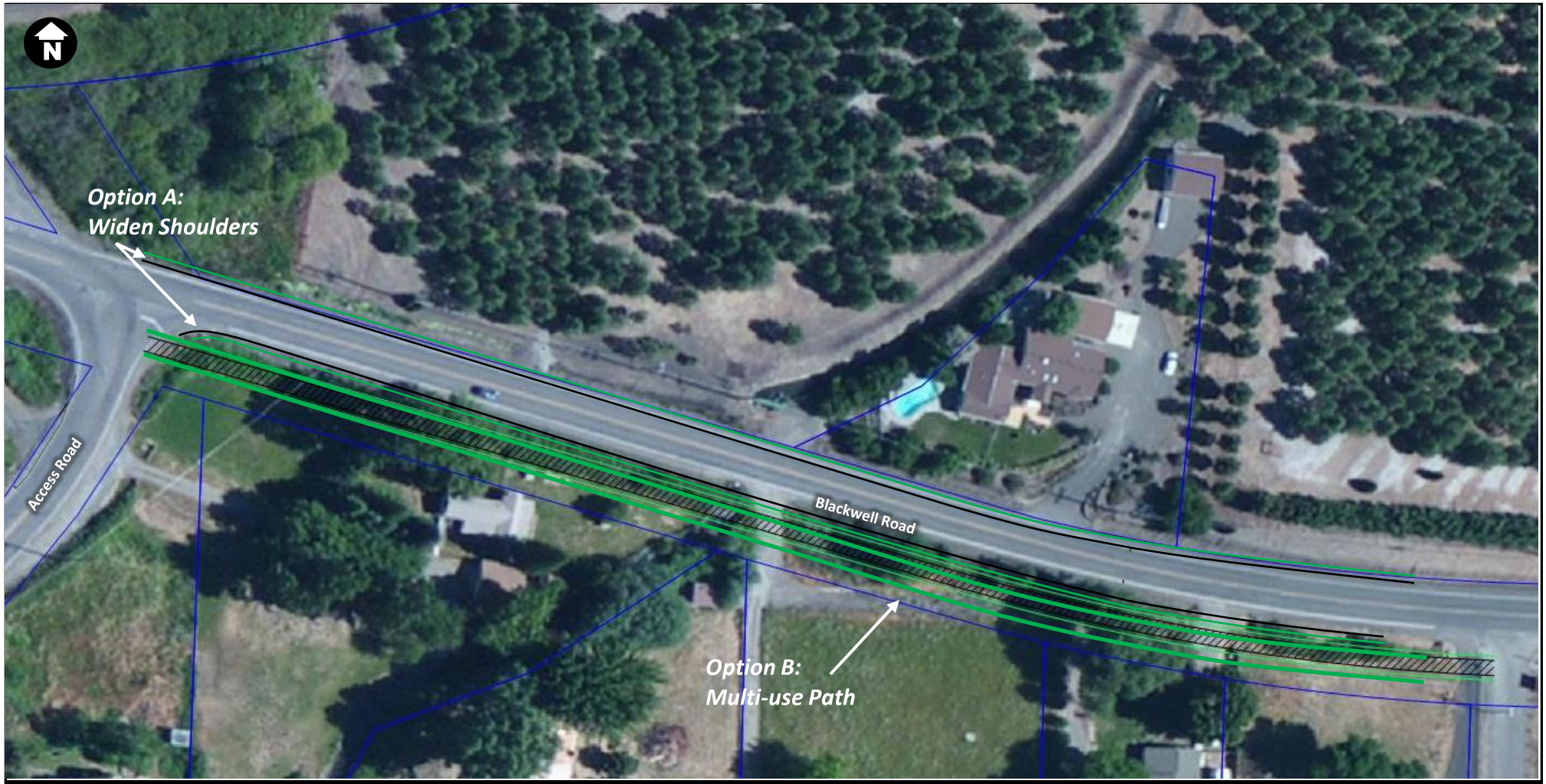
I-5 Exit 40

I-5 Exits 40 and 43 Interchange Area Management Plans

Legend

Edge of Pavement
Edge of Gravel

Figure 6-12
Concept 40-MM1
Access Road
Widen to Provide Multi-Modal Access
I-5 Exit 40



I-5 Exits 40 and 43 Interchange Area Management Plans

Figure 6-13

Concept 40-MM2
Blackwell Road (OR 99)
Multi-Modal Access
I-5 Exit 40

Legend

- ROW Line
- Edge of Pavement
- Edge of Gravel
- New Pavement

43-R1 **Southbound Off-Ramp Extension** – Extend length to provide adequate deceleration distance

43-R2 **Southbound Ramp Terminal Turning Radius Improvements** – Modify southwest corner to better accommodate truck movements (EBR)

43-R3 **Northbound Off-Ramp Extension** – Extend length to provide adequate deceleration distance

43-R4 **Northbound Ramp Terminal Turning Radius Improvements** – Modify northeast corner to better accommodate truck movements (WBR)

43-I1 **Rogue River Highway at Main Street Intersection Modifications** – Enhance pedestrian access and modify traffic control

43-I2 **Rogue River Highway at Main Street Turning Radius Improvements** – Modify southwest corner to better accommodate truck movements (EBR)

43-I3 **Rogue River Highway/2nd Avenue at N. River Road Intersection Enhancements** – Improve intersection function for all modes of travel

43-MM1 **IMSA Roadways Multimodal Improvements** – Enhance multimodal access between I-5 and the City of Gold Hill

43-MM2 **Rogue River Highway (Rock Point Bridge, 00332A)** – Enhance multimodal access across the Rock Point Bridge

43-MM3 **Profetta Lane to Old Stage Road - I-5 Alternative Multimodal Crossing** Provide alternate multimodal crossing of I-5 with multi-use path connection

I-5 Exits 40 and 43 Interchange Area Management Plans

Figure 6-14
Summary of Concepts
I-5 Exit 43

Legend

- Interchange Ramp Improvements
- Intersection Improvements
- Multimodal Improvements

I-5 Exits 40 and 43 Interchange Area Management Plans

Figure 6-15

Concepts 43-R1 and 43-R2
Southbound Off-Ramp
Ramp Extension and Improved Turning Radius
I-5 Exit 43

Legend

ROW Line
Edge of Pavement
Edge of Gravel

New Pavement for Ramp Extension

I-5 Exits 40 and 43 Interchange Area Management Plans

Legend

- Property Line
- Edge of Pavement
- Edge of Gravel
- Guardrail
- New Pavement for Ramp Extension
- New Pavement for Turning Radius

Figure 6-16

Concepts 43-R3 and 43-R4
Northbound Off-Ramp
Ramp Extension and Improved Turning Radius
I-5 Exit 43

I-5 Exits 40 and 43 Interchange Area Management Plans

Figure 6-17

Concept 43-I1

Rogue River Hwy at Main Street

Enhanced Pedestrian Access and Traffic Control Modification

I-5 Exit 43

Legend

Property Line

Crosswalk

STOP Control (Option B only)

I-5 Exits 40 and 43 Interchange Area Management Plans

Legend

- ROW Line
- Edge of Pavement
- Edge of Gravel
- New Pavement

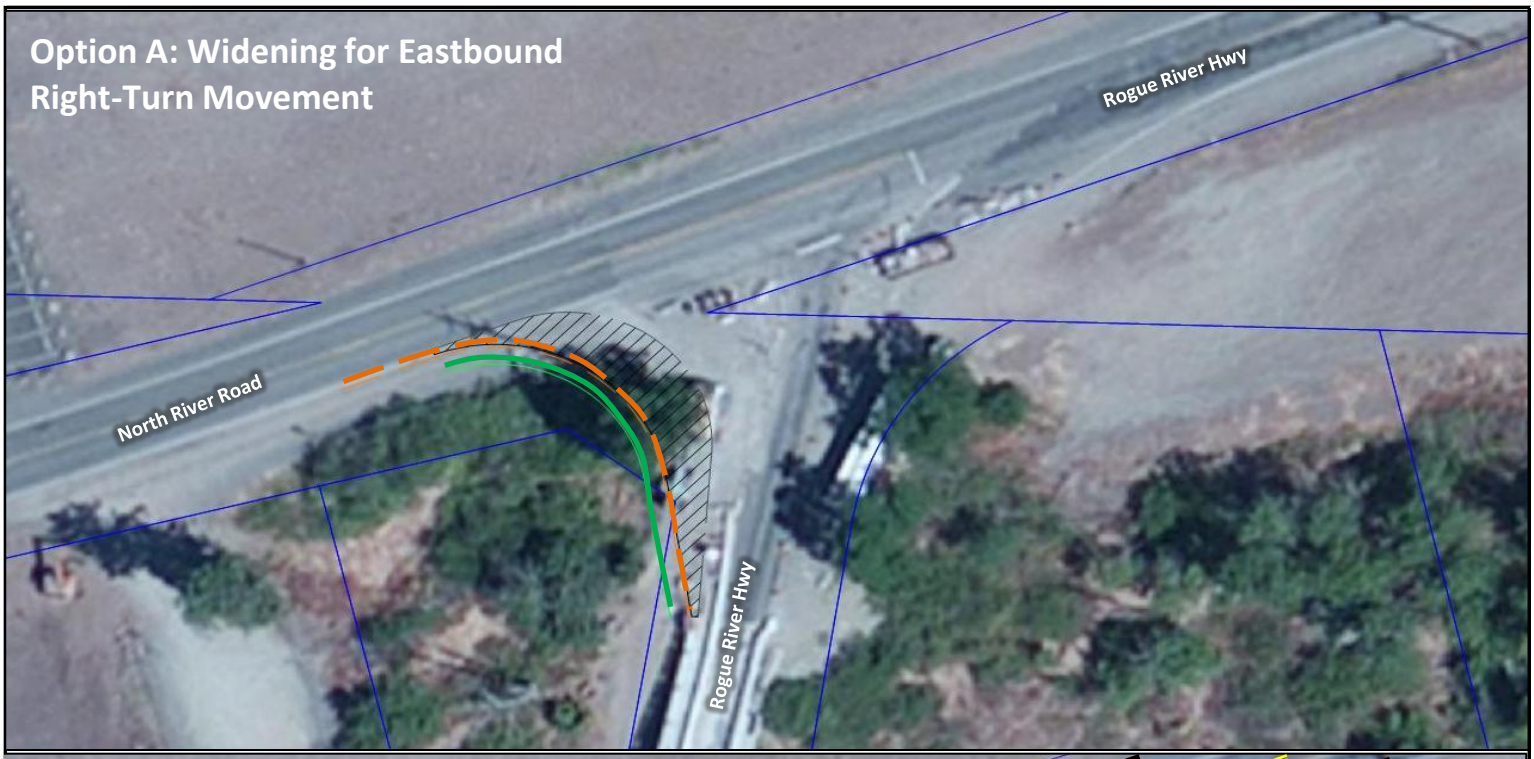
Figure 6-18

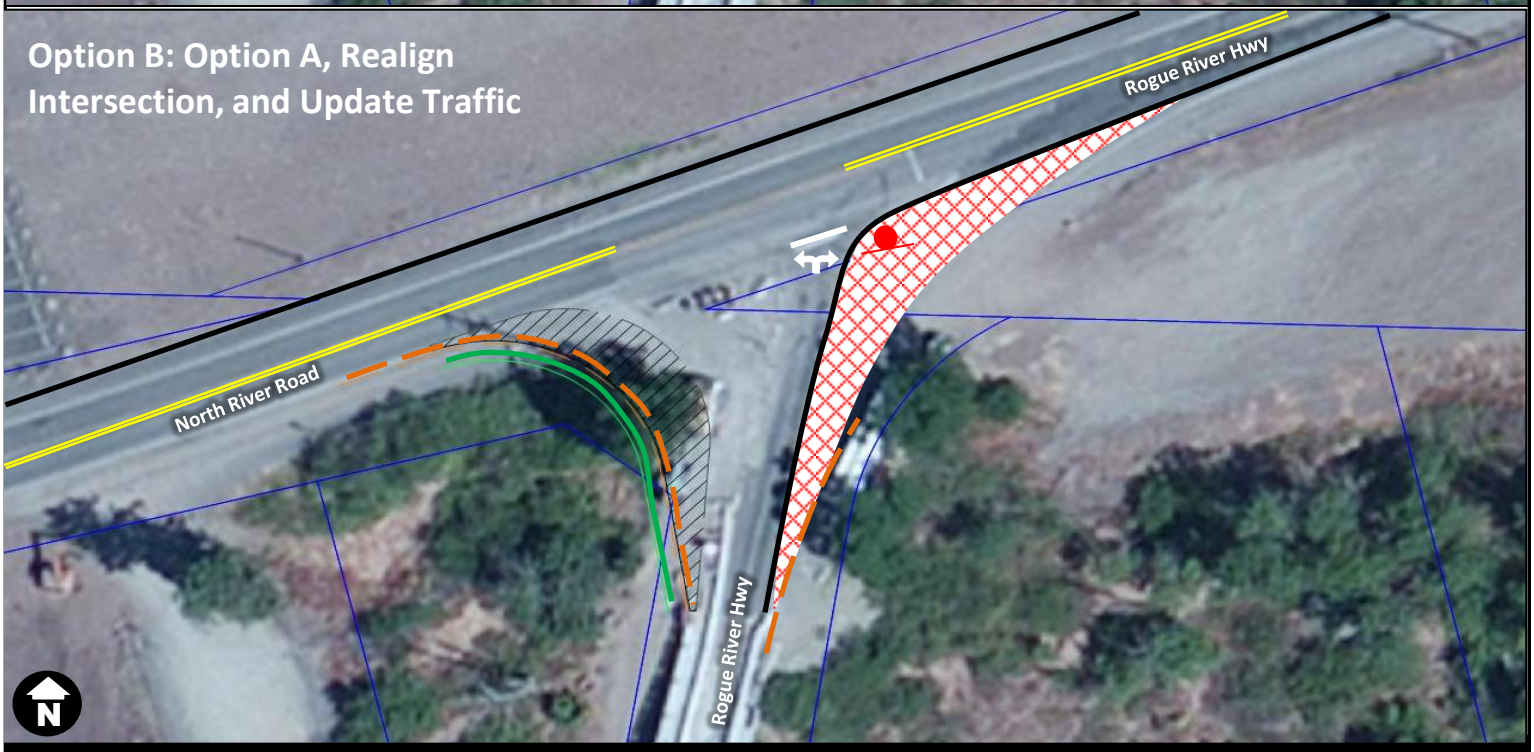
Concept 43-I2

Rogue River Hwy at Main Street

Improved Turning Radius

I-5 Exit 43





I-5 Exits 40 and 43 Interchange Area Management Plans

Legend

- ROW Line
- Edge of Pavement
- Edge of Gravel
- Guardrail
- Crosswalk
- New Pavement
- Pavement Removal
- STOP Control

Figure 6-19

Concept 43-I3

Rogue River Hwy/2nd Avenue at River Road

Intersection Enhancements

I-5 Exit 43

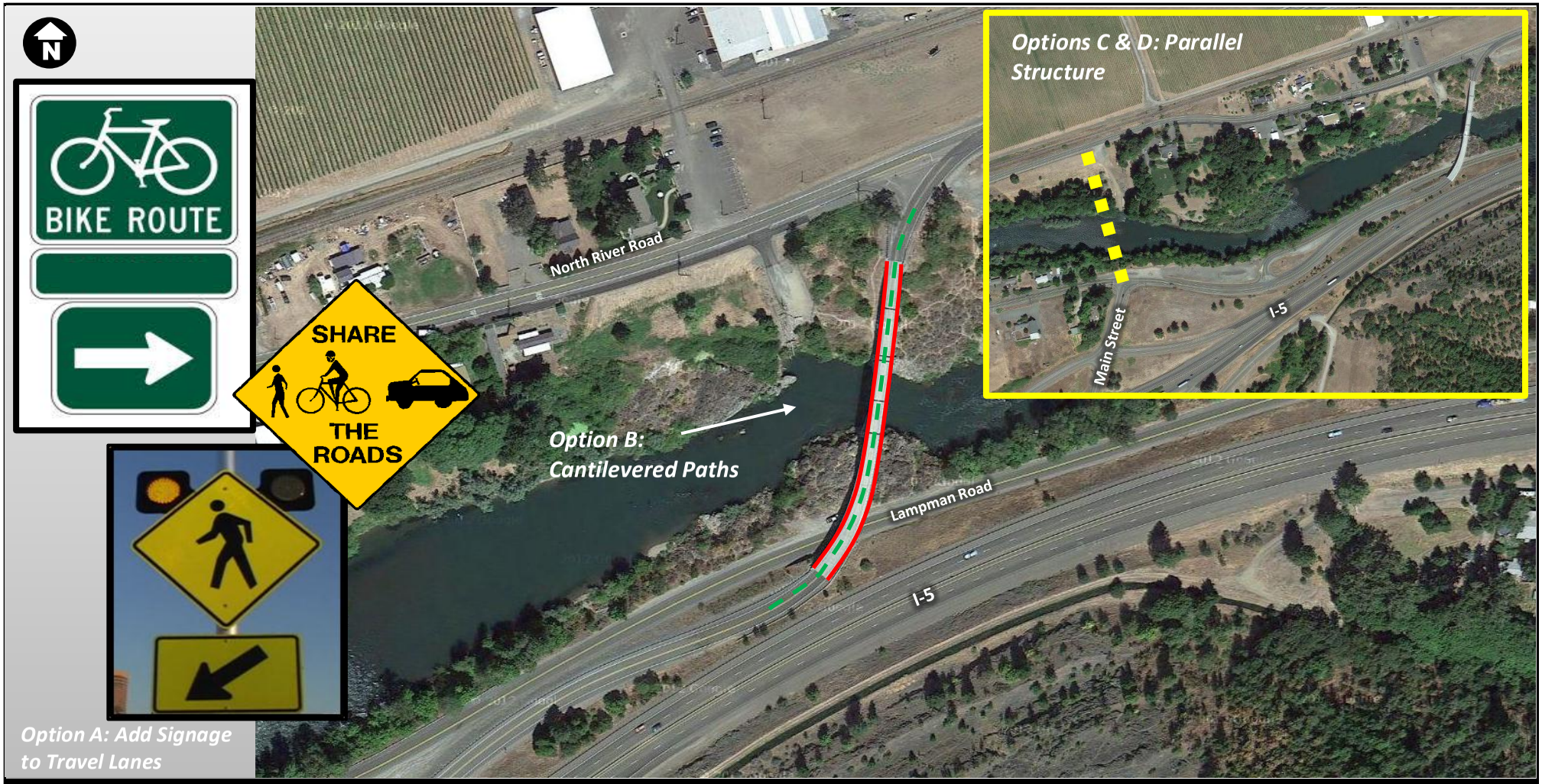
I-5 Exits 40 and 43 Interchange Area Management Plans

Legend

- Edge of Pavement
- Edge of Gravel
- Guardrail
- New Pavement

Figure 6-20

Concepts 43-MM1
IMSA Roadways
Enhance Multi-Modal Access
I-5 Exit 43



I-5 Exits 40 and 43 Interchange Area Management Plans

Legend

- Signs (Option A)
- Cantilevered Paths (Option B)
- Parallel Structure (Option C)

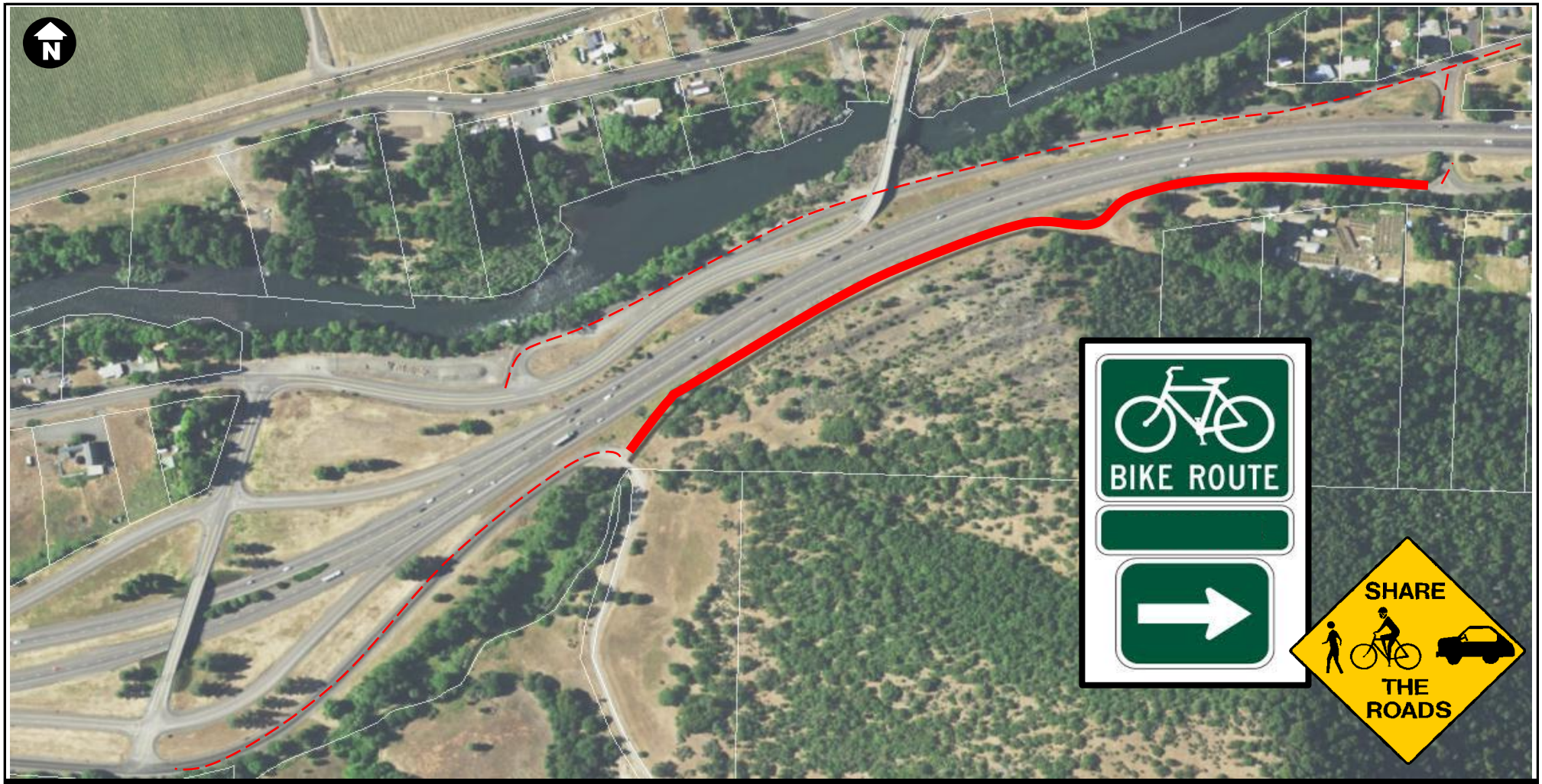
Figure 6-21

Concepts 43-MM2

Rogue River Hwy (Rock Point Bridge, 00332A)

Enhance Multi-Modal Access

I-5 Exit 43



I-5 Exits 40 and 43 Interchange Area Management Plans

Figure 6-22

Concepts 43-MM3

Profetta Lane to Old Stage Road

I-5 Alternative Multi-Modal Crossing

I-5 Exit 43

Legend

- Wayfinding Signage
- Proposed multi-use path with pedestrian railing
- ROW Line

I-5 Exits 40 and 43 (Gold Hill)

Interchange Area Management Plans

Technical Memorandum #9

Recommended Concept

Prepared for

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March 2016

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Table of Contents

9. RECOMMENDED CONCEPT 1

9.1. Alternatives Considered 1

9.2. Recommendations for I-5 Exit 40 2

9.2.1. Concept 40-R7: Southbound Off Ramp Guardrail Modification 3

9.2.2. Concept 40-I1: 2nd Avenue/OR 99 and Blackwell Road at Access Road – Intersection Enhancements 4

9.2.3. Concept 40-MM1: Access Road – Widen to Provide Multimodal Access 5

9.3. Recommendations for I-5 Exit 43 5

9.3.1. Concept 43-I3: Rogue River Highway/2nd Avenue at N. River Road Intersection Enhancements 7

9.3.2. Concept 43-MM1: IMSA Roadways Multimodal Enhancements 8

9.3.3. Concept 43-MM2: Rogue River Highway (Rock Point Bridge, 00332A) – Multimodal Enhancements 10

9.3.4. (NEW) Concept 43-MM3: I-5 Overcrossing – Multimodal Enhancement 11

9.4. Potential Management Actions 12

9.5. Policy and Code Amendments 13

9.6. Project Sheets 13

List of Tables

Table 9-1. I-5 Exit 40 Improvement Concepts 2

Table 9-2. I-5 Exit 43 Improvement Concepts 6

Attachments:

Figure 9-1. I-5 Exit 40 Recommended Concept
Figure 9-2. I-5 Exit 43 Recommended Concept

9. RECOMMENDED CONCEPT

This technical memorandum summarizes the recommendations for the improvement concepts that would constitute the recommended concept for the I-5 Exits 40 and 43 Interchange Area Management Plans (IAMPs). These recommendations are based on feedback from the Technical and Citizen Advisory Committees, comments received at the Public Open House, and input from ODOT, City, and County staff. The identified improvement concepts are intended to help achieve the goals and objectives set forth for this project while addressing identified deficiencies for all modes.

9.1. Alternatives Considered

The alternatives analysis presented in Technical Memorandum (TM) #6 focused on three areas for consideration within the interchange study area:

- Interchange Ramp Enhancements
- Intersection Enhancements
- Multimodal Enhancements

During and following the review of the alternatives analysis, one additional idea was recommended and has been incorporated in the text, depicted with "(new)" in the title. The additional concept includes the same level of assessment provided in the alternatives analysis. Table 9-1. I-5 Exit 40 Improvement Concepts and Table 9-2. I-5 Exit 43 Improvement Concepts summarize the recommendation status of all the alternatives considered in TM #6.

If an alternative is recommended as part of the Recommended Concept, a priority is also assigned as follows:

- **High priority** – projects that have existing operational or safety concerns (anticipated in the short-term)
- **Medium priority** – projects that have future operational or safety concerns (anticipated in the medium-term)
- **Low priority** – projects that address a design issue (anticipated in the long-term)

For projects that are not carried forward as part of the Recommended Concept, a potential follow up action is indicated. In cases where the follow up action is to revisit the idea during the next plan update, the concept may be revisited sooner in response to significant area development or a new safety concern. Overall, the combination of state and local improvements will eventually provide a multi-modal network that would meet forecast traffic demand based on adopted comprehensive plans and regional population and employment forecasts.

The project sheets illustrating the alternatives previously discussed in *Technical Memorandum #6: Alternatives Analysis* and recommended as part of the Recommended Concept are attached at the end of this technical memorandum.

9.2. Recommendations for I-5 Exit 40

Technical Memorandum #6 presented 12 improvement concepts for this interchange, several of which have varying options to consider and should be referenced for project specifics. A brief summary of the improvement concepts is presented in Table 9-1 along with the recommendation status. The recommended concepts are shown in Figure *9-1*. The following sections discuss the concepts recommended for implementation specific to this interchange.

Table 9-1. I-5 Exit 40 Improvement Concepts

Concept	Location	General Description	Recommendation
40-R1	Southbound Off Ramp	Extend southbound off ramp: ▪ Option A: Extend southbound off ramp ▪ Option B: Straighten and extend southbound off ramp	Not recommended- *Follow up action*: review when IAMP is updated[1]
40-R2	Southbound On Ramp	Extend southbound on ramp	Not recommended- *Follow up action*: review when IAMP is updated[1]
40-R3	Southbound Ramp Terminal	Improve turning radius	Not recommended- *Follow up action*: review when IAMP is updated[1]
40-R4	Northbound Off Ramp	Extend northbound off ramp	Not recommended- *Follow up action*: review when IAMP is updated[1]
40-R5	Northbound On Ramp	Extend northbound on ramp	Not recommended- *Follow up action*: review when IAMP is updated[1]
40-R6	Northbound Ramp Terminal	Improve turning radius	Not recommended- *Follow up action*: review when IAMP is updated[1]
40-R7	Southbound Off Ramp	Move guardrail	**Recommended - Medium Priority** **Triggers:** Crash pattern of angle collisions, increased traffic volumes, or area development
40-I1	2nd Avenue/OR 99 and Blackwell Road at Access Road	Modify intersection: ▪ Option A: Modify traffic control to all-way STOP ▪ Option B: Modify traffic control to all-way STOP and add westbound left-turn lane ▪ Option C: Realign to create a standard four-legged intersection, all-way STOP control	**Recommended (Option A) - Medium Priority** **Triggers:** Crash pattern of angle collisions or increased traffic volumes (operational) *Follow up action*: Options B and C recommended for further consideration in Jackson County TSP work (2016)
40-I2	Access Road at 2nd Avenue/OR 99 and Blackwell Road	Improve turning radius	Not recommended- *Follow up action*: recommended for further consideration in Jackson County TSP work (2016), compatible with 40-I1

Table 9-1. I-5 Exit 40 Improvement Concepts

Concept	Location	General Description	Recommendation
40-I3	Access Road at Old Stage Road	Improve turning radii	Not recommended- *Follow up action*: review when IAMP is updated[1]
40-MM1	Access Road	Widen to provide 6-foot shoulders between Blackwell Road and Exit 40	**Recommended - High Priority** **Triggers:** None; existing deficiency
40-MM2	Blackwell Road/OR 99	Provide access for all modes of travel between Access Road and KOA campground: ▪ Option A: Widen to provide 6-foot shoulders ▪ Option B: Widen to provide a 10-foot multiuse path	Not recommended- *Follow up action*: recommended for further consideration in Jackson County TSP work (2016), compatible with 40-I1

1. Concept may be revisited sooner in response to significant area development or a new safety concern

9.2.1. Concept 40-R7: Southbound Off Ramp Guardrail Modification

Concept 40-R7 considers modification/repositioning of the guardrail on the southwest end of the interchange bridge with the purpose of improving existing sight distance limitations and improving safety.

Discussion

The guardrail is needed at this location, so cannot be removed. Concept 40-R7 would improve vehicular sight distance of on-coming traffic when looking toward Gold Hill (north) over the bridge by modifying the placement of the existing guardrail (pulling away from the roadway). Accompanying signage may be needed dependent on the final design selected. An additional benefit of the modification is the opportunity to improve aesthetics and possibly add a gateway treatment or Gold Hill city sign.

Trigger

The triggers for this project include: a pattern of angle collisions, increase traffic volumes, or area development.

Recommendation

This project is recommended as a medium priority. Access management is not needed for this concept.

9.2.2. Concept 40-I1: 2nd Avenue/OR 99 and Blackwell Road at Access Road – Intersection Enhancements

Concept 40-I1 has three intersection realignment options to better incorporate the off-set Upper River Road, heavy westbound left-turn movement, and northbound vehicles along Access Road. The options:

- Option A would modify the intersection traffic control to an all-way STOP to make it easier to turn left from Access Road to 2nd Avenue.
- Option B would include the all-way STOP control and add a westbound left-turn lane to facilitate access to the I-5 interchange.
- Option C would realign the intersection, straighten Access Road, and include an all-way STOP control.

Discussion

Of the three options under consideration, Option A provides the most near-term benefits with the least risk for future throw-away should the Jackson County Transportation System Plan (TSP) update (currently underway) indicates a different function for these roadways or a modification to the adjacent historical bridge structure in the future.

Option B would provide additional westbound left-turn capacity; however, may not be necessary if the intersection control is modified to an all-way STOP (Option A) or if the Jackson County TSP indicates a different function for these roadways or a modification to the adjacent historical bridge structure in the future.

Option C would address all of the intersection concerns (off-set Upper River Road, high number of turning movements to/from the interchange, upward slope of Access Road when it meets 2nd Avenue/Blackwell Road); however, a project of this magnitude should be consistent with the goals of other regional plans such as Jackson County TSP process and Gold Hill Local Street Network Plan (both currently underway).

Trigger

The triggers for this project include: a pattern of angle collisions and increase traffic volumes (operational).

Recommendation

Concept 40-I1, Option A is recommended as an element of the I-5 Exit 40 IAMP as a medium priority. Access management is not needed for this concept. Concept 40-I1, Options B and C are not recommended at this time but have been sent for consideration to the Jackson County TSP project for consideration.

9.2.3. Concept 40-MM1: Access Road – Widen to Provide Multimodal Access

Concept 40-MM1 would improve the pedestrian experience by providing a consistent shoulder (that meet the minimum Jackson County standard width) for non-motorized access along the roadway. The purpose of the improvement is to enhance connectivity for non-motorized users and provide access to other multimodal facilities.

Note: This improvement stops short before the ramp terminals. While the I-5 overpass includes 5-foot shoulders (which meets the minimum Jackson County standard for a rural arterial), 6-foot shoulders would be consistent with state standards. Should the opportunity arise for a bridge replacement, the next phase of this improvement could consider widening/replacement of Access Road between the ramp terminals to provide full-width shoulders.

Discussion

The minimal area available as a shoulder (or the nonexistent shoulder, in some cases) forces non-motorized traffic onto the roadway, causing a safety concern. The current cross-section of Access Road also creates a gap in the non-motorized network. One of the plan goals is to increase multimodal access throughout the community and, in particular, into the city. Concept 40-MM1 would create a needed link between the residential area to the south of I-5 and the downtown community to the north. The improvement non-motorized connectivity, could potentially be considered a socioeconomic benefit, because improved pedestrian access generally benefits disadvantaged populations.

This improvement is expected to impact three residential driveways and the accesses to the Running Salmon RV Park and the Jackson County Fire District building. Although impacts would be minimal, coordination with residents and Jackson County Fire would be needed.

Trigger

There are no triggers for this project. It is an existing deficiency.

Recommendation

This project is recommended as a high priority. Progress toward meeting the applicable access spacing standards must be demonstrated or a deviation must be justified and approved by the Region Access Management Engineer.

9.3. Recommendations for I-5 Exit 43

Technical memorandum #6 presented 10 improvement concepts for this interchange, several of which have varying options to consider and should be referenced for project specifics. A brief summary of the improvement concepts is presented in Table 9-2 along with the recommendation status. The recommended concepts are shown in Figure 9-2. The following sections discuss the concepts recommended for implementation specific to this interchange.

Table 9-2. I-5 Exit 43 Improvement Concepts

ID	Location	General Description	Recommendation
43-R1	Southbound Off Ramp	Extend southbound off ramp	Not recommended- *Follow up action*: review when IAMP is updated[1]
43-R2	Southbound Ramp Terminal	Improve turning radius	Not recommended- *Follow up action*: review when IAMP is updated[1]
43-R3	Northbound Off Ramp	Extend northbound off ramp	Not recommended- *Follow up action*: review when IAMP is updated[1]
43-R4	Northbound Ramp Terminal	Improve turning radius	Not recommended- *Follow up action*: review when IAMP is updated[1]
43-I1	Rogue River Highway at Main Street	Provide for all modes at the intersection ▪ Option A: Add crosswalk on west side of intersection and signage for oncoming traffic ▪ Option B: Modify the traffic control and add crosswalks on multiple approaches	Not recommended- *Follow up action*: review when IAMP is updated[1]
43-I2	Main Street at Rogue River Highway (OR 99 and OR 234)	Improve turning radius	Not recommended- *Follow up action*: review when IAMP is updated[1]
43-I3	Rogue River Highway/2nd Avenue at N. River Road	Improve intersection function ▪ Option A: Improve turning radius ▪ Option B: Option A and realign intersection and update traffic control	**Recommended – High Priority** **Triggers:** Queuing into travel lanes, pattern of rear end collisions, or area development
43-MM1	IMSA roadways	Enhance multimodal access between I-5 and the City of Gold Hill ▪ Option A: Add signage to roadway and widen shoulders where ROW permits ▪ Option B : Add signage and activated warning lights	**Recommended (Option A)– Low Priority**; dependent on timing of 43-MM2, consider 1st phase (Main St to Lampman Rd), 2nd phase (Lampman Rd to Rock Point Br.) **Triggers:** Crash pattern of bicycle/ pedestrian collisions or area development Not recommended (Option B) – no further action

Table 9-2. I-5 Exit 43 Improvement Concepts

ID	Location	General Description	Recommendation
43-MM2	Rogue River Highway (Rock Point Bridge, 00332A)	Enhance multimodal access across the bridge ▪ Option A: Add signage ▪ Option B: Construct 8' cantilevered paths on both sides of bridge ▪ Option C: Build a new structure (non-vehicular traffic) ▪ Option D: Build a new structure (all modes)	**Recommended (Option A) – High Priority** **Triggers:** Crash pattern of bicycle/ pedestrian collisions, area development or funding availability Not recommended (Options B, C, and D) – no further action
43-MM3	(new) I-5 overcrossing – Multimodal Enhancement	Provide multimodal crossing of I-5 via the I-5 Exit 43 Interchange with use of sharrows	**Recommended – Medium Priority** **Triggers:** Crash pattern of bicycle/ pedestrian collisions, area development or funding availability
1. Concept may be revisited sooner in response to significant area development or a new safety concern			

9.3.1. Concept 43-I3: Rogue River Highway/2nd Avenue at N. River Road Intersection Enhancements

Rogue River Highway (OR 99 and OR 234 alignments, also known as 2nd Avenue) and N. River Road intersection is skewed and has unconventional traffic control. Concept 43-I3 would realign the intersection and modify the current traffic control to a more standard configuration. A later phase, such as adding a westbound left-turn lane (and associated widening of the west leg of the intersection) could be considered in order to separate westbound left-turning vehicles and facilitate northbound truck turning.

There are two options for this concept:

- Option A addresses the eastbound truck turning movement by widening the southwest corner.
- Option B would realign the southern leg (bridge access) of the intersection at a near 90-degree angle for northbound left-turning movements with a STOP control and longer storage length (traditional T-intersection, side street STOP control). A second phase of this option would add a westbound left-turn lane and would widen the western leg of the intersection to the north, opposite the left-turn lane. Option A improvements would also be included to address the truck turning limitations.

The purpose of this improvement concept is to provide improved safety for all modes and enhance the connections to area businesses and recreational areas. The realignment of the southern leg of the intersection may also provide an additional buffer between vehicular traffic on Rogue River Highway and the newly constructed multi-use path located in the southeast corner of the intersection.

Discussion

Although this intersection has unconventional traffic control it has no operational concerns; however, there are instances when vehicles queue in the northbound direction waiting to make a left-hand turn onto N. River Road and occupy part of the southbound (on-coming)traffic lane. Any improvement will need to consider the newly built multi-use path to the south of the intersection.

Option A would improve the overall safety of the intersection without changing capacity or operations at the intersection. It could impact the new multi-use path on the south side of N. River Road.

Option B would also improve the overall safety, as well as driver expectation, by realigning the intersection to facilitate truck turning to/from Rogue River Highway/2nd Avenue and updating the intersection traffic control to a conventional layout. The bicycle and pedestrian modes would benefit from a more conventional STOP configuration and the reduced number of conflict points.

There are currently improvement concepts in development that would realign the southern leg (similar to Option B) and update the intersection with conventional traffic control. Alternative traffic control options could be used depending on final design, and consideration should be given to protecting pedestrians using the Rogue River Greenway.

Trigger

The triggers for this project include: queuing into travel lanes, a pattern of rear-end collisions, and area development.

Recommendation

Option A is not recommended at this time, though may be considered at a later date if new development or safety concerns arise.

Elements of Option B are recommended and include: realignment and conventional traffic control at the intersection. This is a high priority improvement. The preliminary design indicates nearby driveways would not be impacted; if the final design results in impacts to the driveway access management will need to be reviewed. The widening for the westbound left-turn lane and turning radius in the southwest corner could be later phases if new development or safety concerns arise in the future.

9.3.2. Concept 43-MM1: IMSA Roadways Multimodal Enhancements

IMSA roadways are narrow; some have minimal lane widths (as narrow as 9 feet across the Rogue River Bridge); and most have minimal shoulder widths (0 to 5 feet), all of which have no bicycle or pedestrian facilities. The purpose of Concept 43-MM1 is to improve connectivity between the Rogue River Greenway the interchange. It considers improvements along Main Street and Rogue River Highway (excluding the bridge) and includes two options.

The two options to enhance the current infrastructure, are:

- Option A would add signage along both IMSA roadways and widen the shoulders where ROW exists. Depending on the location, signs can warn drivers of bicycles and/or pedestrians in the roadway or remind them to share the road. Sharrows were considered, but they were eliminated from consideration due to roadway speeds in excess of 30 mph. The shoulder widening is a spot treatment and would not result in continuous facilities.
- Option B would include the signage from Option A combined with warning lights to capture the drivers' attention. The installation would be ideal in areas that are constrained (areas of narrow ROW or bridge width) and would be activated only when users are present. An example of a sign/warning light combination is a caution pedestrian sign with a light ensemble attached (either LED or alternating yellow).

Discussion

Multimodal connectivity is lacking at and near Exit 43. These options would improve the safety (visibility) of non-motorized users and connectivity, though have no impact on roadway capacity. Either of the two options could provide socioeconomic benefits by improving non-motorized access across the roadways and river. Improved pedestrian and bicycle access generally benefits disadvantaged populations.

Option A would provide areas for non-motorized users to pull off of the road to let motorized users pass and would improve the user experience for non-motorized users. Additionally, it would provide areas where the modes could be separated, which would be an enhancement along the 45 mph facility.

Option B may result in occasional slowing of vehicular traffic when a bicycle or pedestrian is present.

Trigger

The triggers for this project include: a pattern of bicycle or pedestrian collisions and area development.

Recommendation

Option A is recommended as a low priority project. The signage element can be added at any time; however, the shoulder widening will need to balance the progress of Concept 43-MM2 with the area needs. It is a low priority project that could be phased. The first phase could be improvements along Rogue River Highway from Main Street to Lampman Road. The second phase would only be needed if a new bridge is not built and would include the section of roadway between Lampman Road to Rock Point Bridge. Access management is not needed for this concept.

Option B is not recommended.

9.3.3. Concept 43-MM2: Rogue River Highway (Rock Point Bridge, 00332A) – Multimodal Enhancements

The Rogue River Highway (Rock Point Bridge, 00332A) is a historic structure built in 1919 with a total structure width is 19 to20 feet which leaves no room for bicycle or pedestrian facilities.

Concept 43-MM2 considers multimodal enhancements to facilitate non-motorized crossings of the bridge and has three options for consideration.

- Option A would add signage on the bridge.
- Option B would construct 8-foot-wide paths on both sides of the Rock Point Bridge.
- Option C would build a parallel structure and maintain the aesthetics of the historic bridge. It is assumed that the parallel structure would be located at the nearest narrow section, which was assumed to be the connection between Main Street and N. River Road directly to the north. The structure is assumed to be 270 feet long and 15 feet wide. The width includes a 10-foot-wide path with a 2-foot shy distance (and railing) on both sides.

- Option D would be similar to Option C, but would serve vehicular traffic as well. The width includes a 40-foot cross-section with two 12-foot travel lanes and two 8-foot multiuse paths.

Discussion

Non-vehicular operations could be improved by providing additional facilities, as presented in any of these options, and provide socioeconomic benefits by improving non-motorized access in the IMSA. Improved pedestrian and bicycle access generally benefits disadvantaged populations.

Option A would alert motorized traffic to the presence of non-vehicular traffic that may be sharing the roadway; however, it is not anticipated to change the bridge capacity or traffic operations. It will continue to compromise the historic nature and aesthetics of the bridge.

Option B would provide pathways along the bridge that would serve non-auto modes and separate them from motorized vehicles. This option would modify the historic nature and aesthetics of the bridge and require safe transitions at either end of the bridge.

Option C would provide a dedicated non-vehicular bridge with adequate width to serve a mix of modes and directions. Option C would also move non-motorized users off of the highway onto N. River Road, a rural major collector with a comparable posted speed of 45 mph; avoid the need to widen Rogue River Highway between Main Street and the Rock Point Bridge; and provide a direct route to Exit 43. It will require new non-motorized connections to the existing roadway network. The new bridge would impact the Rogue River wildlife during construction and well as increase the overall stormwater that will need to be treated.

Option D would provide a new vehicular structure that meets current design standards for vehicular and non-auto modes (vehicle travel lanes and multimodal facilities). It would significantly impact the traffic circulation and operations within the IMSA north of the interchange. Additionally, it would provide unrestricted access to the City of Gold Hill and surrounding areas for freight, transit, and emergency vehicles, which are currently limited by the existing 9-foot travel lanes. This option would result in rerouting of the highway, including use of N. River Road, before connecting with the existing Rogue River Highway/2nd Avenue. Similar to Option C, it will require new connections to the existing roadway network. The new bridge would impact the Rogue River wildlife during construction and well as increase the overall stormwater that will need to be treated.

The cost opinion of Concept 43-MM2 Option D was not previously presented. The estimated project cost is approximately $16.6 million. This cost is for the widening only and does not include utility relocation, hazardous materials, or right-of-way.

Trigger

The triggers for this project include: a pattern of bicycle or pedestrian collisions, area development, or funding availability.

Recommendation

Option A is recommended as a high priority project. Access management is not needed for this concept.

Options B, C and D are not recommended.

9.3.4. (NEW) Concept 43-MM3: I-5 Overcrossing – Multimodal Enhancement

Main Street is a two-lane facility that provides access between I-5, adjacent neighborhoods, and recreational facilities. Main Street where it crosses I-5 via Interchange 43 does not have any bicycle or pedestrian facilities and minimal (1- to 2-foot-wide) shoulders. The Main Street Bridge over I-5 does not have any deficiencies listed (source: ODOT, 2012 Bridge Condition Report), and improvements to the structure are not anticipated at this time.

This improvement concept would provide multimodal access across I-5 by adding sharrows and signage across the I-5 Interchange 43 structure. While signage can be added to most roadways, sharrows are more appropriate on roadways with slower speeds (30 mph or less). Depending on the location signs can warn drivers of bicycles and/or pedestrians in the roadway or remind them to share the road. Main Street does not have a posted speed and may be an opportunity for sharrows; however, speed may still preclude it from this type of treatment.

Concept 43-MM3 – Traffic Operations and Safety

Existing ADT volumes on Main Street range from 200 vpd to 1,300 vpd. Future (2038) volumes are estimated to range from 200 vpd to 1,500 vpd along Main Street. Pedestrian data is not available at this time.

There were no crashes reported during the five-year analysis period on Main Street. This concept improves connectivity This option could improve driver awareness of other modes using the roadways. Additionally, sharrows would provide no change to the roadway capacity and would not change how the road is currently used.

The Main Street overcrossing has two public access points, one at each ramp terminal. Profetta Lane is less than 100 feet to south of the southbound ramp terminal and is also a public access. This improvement does not impact the current access spacing.

Concept 43-MM3 – Basic Roadway Geometries and Right-of-Way Requirements

The existing cross section along Main Street includes two 12-foot travel lanes with minimal shoulders (approximately 1- to 2-foot wide). This concept would maintain existing paved section and ROW. As noted earlier, sharrows are not typically installed on higher speed roadways which could be barrier to pursuing this option.

Concept 43-MM3 – Environmental and Land Use Assessment

The adjacent land use is interchange commercial and EFU. Statewide Planning Goals would need to be considered when impacting EFU zones. Any new work in areas of undisturbed soil have a high potential for archeological resource impacts. Nearby is the Rogue River and a freshwater emergent wetland; no impacts to those resources are anticipated.

The concept could provide socioeconomic benefits by improving non-motorized access in the IMSA. Improved pedestrian and bicycle access generally benefits disadvantaged populations.

Concept 43-MM3 – Cost Opinions

The cost of Concept 43-MM3 is approximately $2,500 to $10,000.

Trigger

The triggers for this project include: a pattern of bicycle or pedestrian collisions, area development, or funding availability.

Recommendation

This project is recommended as a medium priority. Access management is not needed for this concept.

9.4. Potential Management Actions

The analysis found no capacity or operational issues within the IMSA. As such, the Recommended Concept presented within this technical memorandum does not require assessment of management actions which would have been represented in technical memorandum #7.

9.5. Policy and Code Amendments

The analysis found no capacity or operational issues within the IMSA. As such, the Recommended Concept presented within this technical memorandum does not require assessment of policy and code amendments which would have been represented in technical memorandum #8.

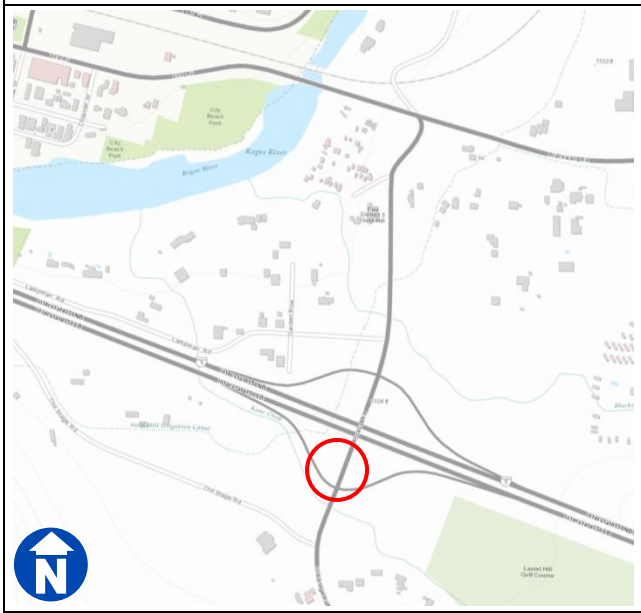
9.6. Project Sheets

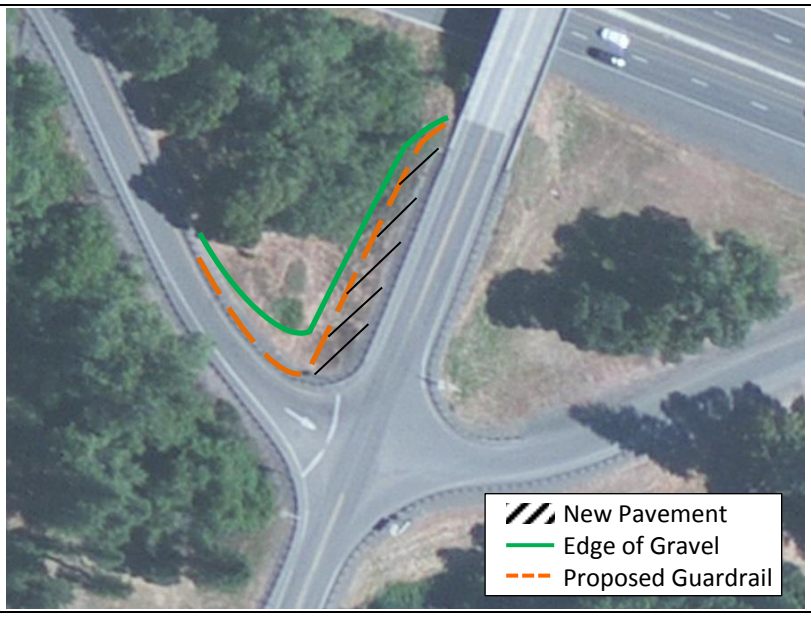
Project sheets have been prepared for each planned conceptual improvement that identifies:

- Name
- Location
- Recommended improvement
- Project purpose
- Existing/future deficiencies without project
- Result of improvements (i.e., how the project addresses deficiencies)
- Considerations/potential impacts
- Cost opinion (order of magnitude)
- Implementation (priority, phasing, triggers)
- Illustration

Project 40-R7. I-5 Exit 40 Southbound Off Ramp Guardrail Modification

I-5 Exits 40 (Kane Creek) & 43 (Rock Point): Interchange Area Management Plans

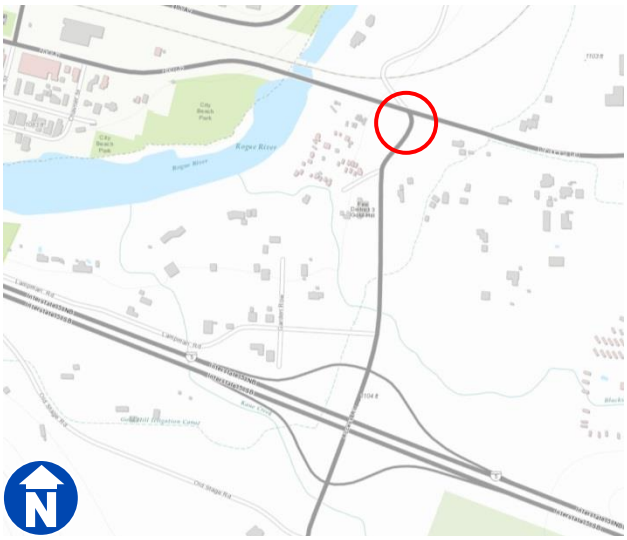




Description	Move guardrail and widen pavement in northwest corner of I-5 Exit 40 southbound ramp terminal	
Purpose	Improves sight distance for eastbound left-turning vehicles stopped at southbound off-ramp	
Roadway Characteristics	▪ Off-ramp has single 16' lane ▪ Current sight distance for vehicles on the southbound off-ramp looking left (north) at oncoming traffic on Access Road is limited by guardrail ▪ Improvements anticipated to be within ODOT ROW ▪ Off-ramp ADT (vpd): Existing – 750; Future (2038) – 900 ▪ Critical movement (EB L/T/R) V/C: Existing – 0.20; Future (2038) – 0.24 ▪ Critical movement (EB L/T/R) LOS: Existing – B; Future (2038) – C ▪ 1 fatal crash during 5-year analysis period	
How Improvement Addresses Deficiencies	**Existing/Future Deficiency**	**With Improvement**
	If a driver is stopped on the southbound off-ramp and the driver's eye level is approximately 3.5 feet from the pavement (e.g., when driving a sedan), the driver's sight distance is obstructed to the north by the guardrail on the west side of Access Road.	▪ Would provide additional sight distance for vehicles on southbound off-ramp; may decrease eastbound delay ▪ No change to ramp capacity/operations
Additional Considerations	▪ Existing zoning is rural residential, and EFU; EFU impacts would necessitate determination whether a Statewide Planning Goal Exception is needed ▪ High potential for archeological resource impacts in areas of undisturbed soils ▪ Nearby Kane Creek and ditch/irrigation canal ▪ Additional stormwater treatment may be needed with increased impervious surface ▪ Opportunity for gateway treatment to Gold Hill ▪ There is no access management needed for this concept	
Cost Opinion	▪ $240,000 ▪ Does not include utility relocation or hazardous materials	
Implementation	Medium priority ▪ Triggers: Crash pattern of angle collisions, increased traffic volumes, or area development	

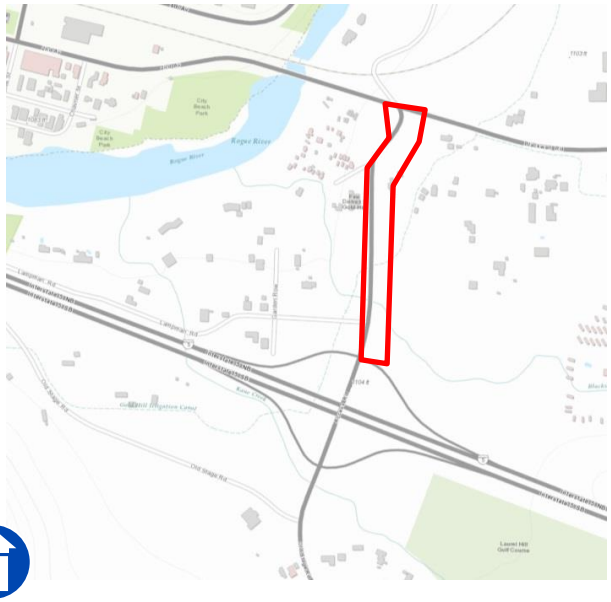
Project 40-I1. 2nd Avenue/OR 99 and Blackwell Road at Access Road Intersection Enhancements

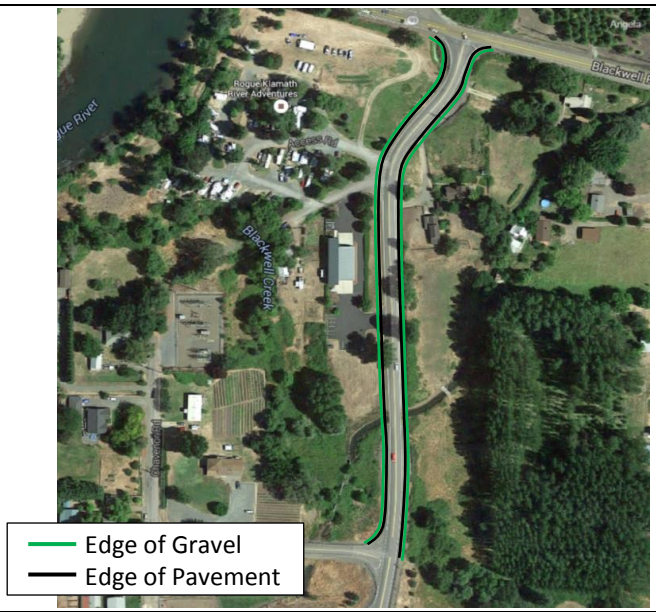
I-5 Exits 40 (Kane Creek) & 43 (Rock Point): Interchange Area Management Plans



Description	Modify traffic control to all-way STOP	
Purpose	Better facilitate turning movements and pedestrian crossing	
Roadway Characteristics	▪ Existing travel lanes: 11-12' (all roadways) ▪ Existing shoulder width: 0'–2' (all roadways- most sections) ▪ Existing paved width: 24'–34' (all roadways); ▪ Blackwell Road ADT (vpd): Existing – 2,500; Future (2038) – 3,500 ▪ 2nd Avenue ADT (vpd): Existing – 5,800; Future (2038) – 6,500 ▪ Access Road ADT (vpd): Existing – 5,500; Future (2038) – 6,800 ▪ Critical movement (NB L/R) V/C: Existing – 0.55; Future – 0.76 ▪ Critical movement (NB L/R) LOS: Existing – C; Future – D ▪ Critical movement (NB L/R) Queue: Existing – 125'; Future – 175' ▪ 4 crashes during 5-year analysis period, including 3 minor injury, 1 property damage only (PDO)	
How Improvement Addresses Deficiencies	**Existing/Future Deficiency**	**With Improvement**
	The current design of the intersection creates safety concerns for vehicles turning onto Blackwell Road/2nd Avenue from Access Rd as well as westbound left-turns stopped in the shared travel lane.	▪ Pedestrian/bicycle crossings easier with traffic stopped on 2nd Avenue/OR 99 and Blackwell Road ▪ Critical movement (NB L/R) V/C: Existing – 0.44; Future – 0.55 ▪ All-way STOP LOS: Existing – B; Future – B ▪ Critical movement (NB L/R) Queue: Existing – 100'; Future – 125'
Additional Considerations	▪ Stopping traffic on 2nd Avenue/OR 99 and Blackwell Road may facilitate posted speed transition but may result in more rear-end collisions ▪ No land use or environmental impacts ▪ There is no access management needed for this concept	
Cost Opinion	$10,000	
Implementation	Medium priority ▪ Triggers: Crash pattern of angle collisions or increased traffic volumes (operational)	

Project 40-MM1. Access Road – Widen to Provide Multi-Modal Access	***I-5 Exits 40 (Kane Creek) & 43 (Rock Point): Interchange Area Management Plans***

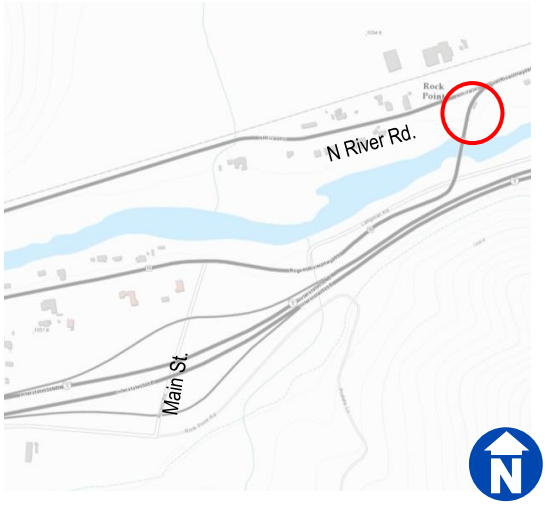


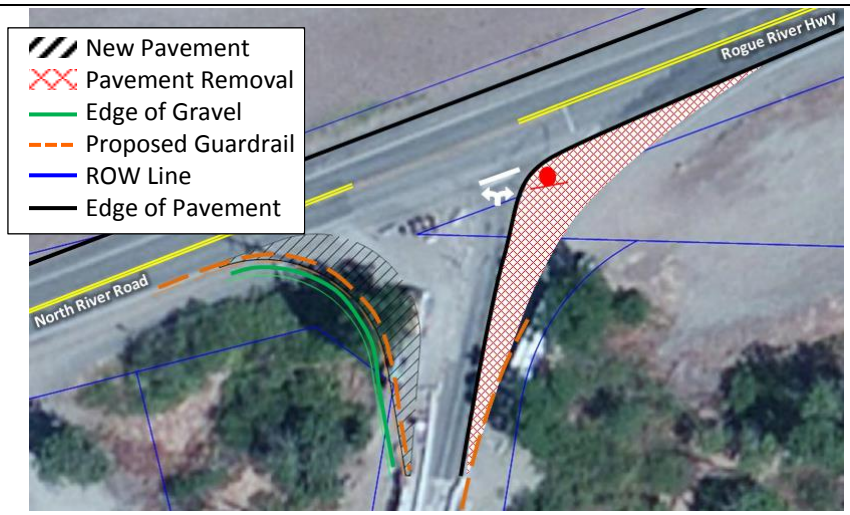


Description	Widen Access Road to provide 6'shoulders between Blackwell Road and I-5 Exit 40	
Purpose	Provide facilities for all modes of travel, enhance access to the city, and improve safety	
Roadway Characteristics	▪ Existing travel lanes: 12' (Access Road) ▪ Existing shoulder: 0–5' ▪ Improved shoulder width: 6' ▪ Existing paved width: 24'–34' (Access Road), 40' with improvement ▪ Access Road ADT (vpd): Existing – 5,500; Future (2038) – 6,800 ▪ 2 crashes during 5-year analysis period, including 3 minor injury	
How Improvement Addresses Deficiencies	**Existing/Future Deficiency**	**With Improvement**
	Currently non-motorized traffic must travel on the edge of the roadway, pinched between the roadway edge and higher speed vehicles, which is a safety concern	▪ Provide facilities for all modes of travel, enhance access to the city, and improve safety ▪ Project could connect other multimodal facilities ▪ Improved level of service/experience/connectivity for non-motorized users ▪ No change to roadway capacity/operations
Additional Considerations	▪ ROW required ▪ The guardrail at the intersection between Access Road and Lampman Road will need to be shifted ▪ There is an irrigation channel crossing Access Road where the culvert would have to be extended ▪ Progress toward meeting the applicable access spacing standards must be demonstrated or a deviation must be justified and approved by the Region Access Management Engineer	
Cost Opinion	▪ $925,000 ▪ Includes culvert extension ▪ Does not include utility relocation, hazardous materials, or ROW	
Implementation	High Priority ▪ Triggers: None; existing deficiency	

Project 43-I3. Rogue River Highway/2nd Avenue at N. River Road – Intersection Enhancements

I-5 Exits 40 (Kane Creek) & 43 (Rock Point): Interchange Area Management Plans

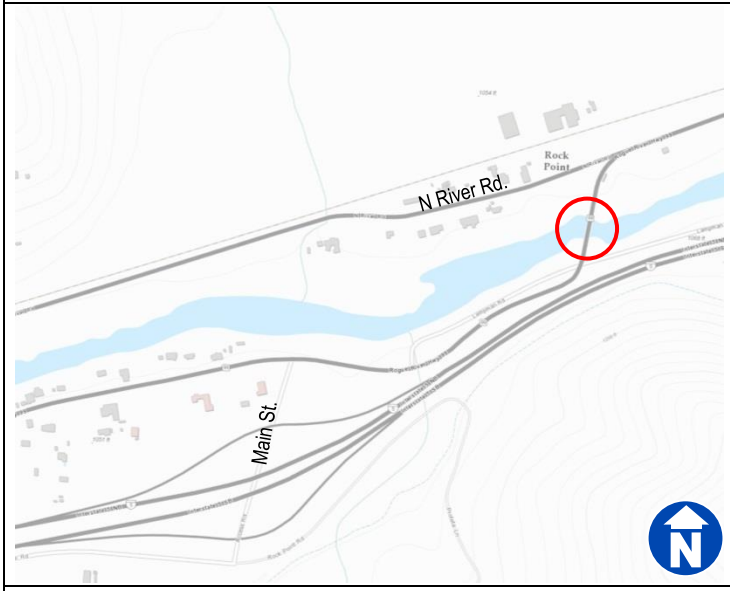




Description	▪ Modify southwest corner of intersection to better accommodate truck movements (EBR, WBL) ▪ Intersection realignment ▪ Modify intersection traffic control	
Purpose	Provide facilities for all modes of travel including WB-67 trucks	
Roadway Characteristics	▪ Existing travel lanes: 12' (both roadways) ▪ Existing shoulder width: 0' (N. River Road) to 2' (Rogue River Highway) ▪ Existing paved width: 24' (N. River Road); 18' to 38' (Rogue River Highway) ▪ Physical constraints: utility corridor, railroad tracks, and historic Rogue River Bridge ▪ N. River Road ADT (vpd): Existing – ~1,100; Future (2038) – ~1,200 ▪ Rogue River Highway ADT (vpd): Existing – ~1,600 to 2,300; Future (2038) – ~1,900 to 2,700 ▪ Critical movement (NBL) V/C: Existing – 0.08; Future (2038) – 0.09 ▪ Critical movement (NBL) LOS: Existing – A; Future (2038) – A ▪ Critical movement (NBL) Queue: Existing – 25'; Future (2038) – 25'	
How Improvement Addresses Deficiencies	**Existing/Future Deficiency**	**With Improvement**
	The intersection is skewed, has unconventional traffic control and lacks appropriate storage space for northbound left-turns	▪ Side street STOP: Existing NBL/T V/C – 0.07; Future NB V/C – 0.09 ▪ Critical movement (NBL) Queue: Existing – 25'; Future (2038) – 50' ▪ Would make truck turning and acceleration easier ▪ Conventional STOP control conducive to driver expectation and indicator of changing roadway conditions, though 45 mph speed is a concern ▪ Potential increase in the number of rear-end collisions
Additional Considerations	▪ Could add later phase to provide a left-turn refuge lane for westbound traffic ▪ Any impact to the new multi-use path could trigger Section 6(f) concerns ▪ Near Rogue River, there are two classified habitats that need to be considered ▪ Alternative traffic control options could be used depending on final design ▪ Consideration should be given to protecting pedestrian movements during final design process ▪ Progress toward meeting the applicable access spacing standards must be demonstrated or a deviation must be justified and approved by the Region Access Management Engineer	
Cost Opinion	$230,000	
Implementation	High priority ▪ Trigger: Queuing into travel lanes, pattern of rear end collisions, or area development	

Project 43-MM1. IMSA Roadways – Multimodal Enhancements	***I-5 Exits 40 (Kane Creek) & 43 (Rock Point): Interchange Area Management Plans***	
Description	Enhance multimodal access between I-5 and the City of Gold Hill (south of the Rock Point Bridge) by adding signage to travel lanes (Main Street and Rogue River Hwy) and widening shoulders where ROW exists	
Purpose	Provide facilities for all modes of travel and enhance safety	
Roadway Characteristics	▪ Existing travel lanes: 11'–14' ▪ Existing shoulder width: 0–5' ▪ Existing paved width: 22'–38' ▪ Posted speed: 45 mph (Rogue River Highway); Main Street speed is not posted ▪ Main Street ADT (vpd): Existing – 200 to 1,300; Future (2038) – 200 to 1,500 ▪ Rogue River Highway ADT (vpd): Existing – 1,600 to 2,300; Future (2038) – 1,900 to 2,700 ▪ 2 crashes (Rogue River Highway) reported during 5-year analysis period, both PDO	
How Improvement Addresses Deficiencies	**Existing/Future Deficiency**	**With Improvement**
	The roadways within the Interchange Management Study Area (IMSA) lack bicycle & pedestrian facilities	▪ Provide facilities for all modes of travel ▪ Increases awareness of bicycle presence ▪ No change to roadway capacity/operations
Additional Considerations	▪ Improved pedestrian/bicycle access generally benefits socioeconomically disadvantaged populations ▪ Would maintain existing paved section and ROW ▪ There is no access management needed for this concept	
Cost Opinion	▪ $465,000	
Implementation	Low priority ▪ Triggers: Crash pattern of bicycle/ pedestrian collisions or area development	

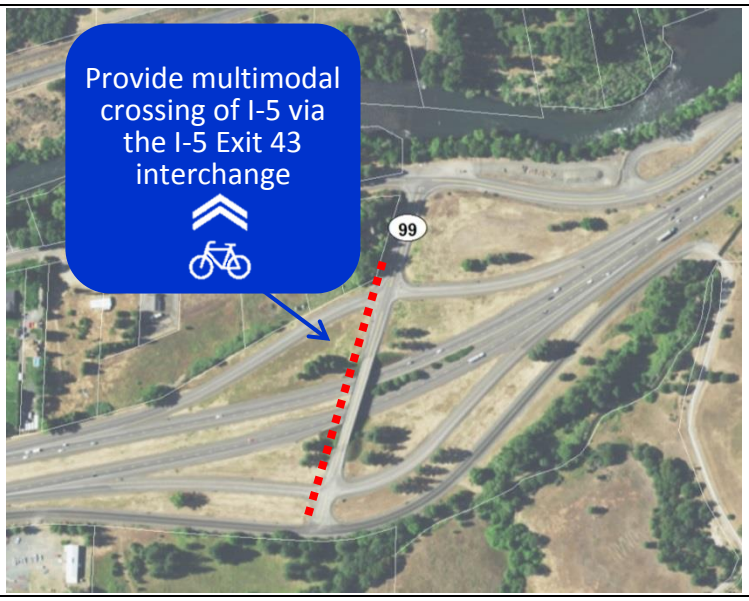
Project 43-MM2. Rogue River Highway (Rock Point Bridge, 00332A) – Multimodal Enhancements ***I-5 Exits 40 (Kane Creek) & 43 (Rock Point): Interchange Area Management Plans***



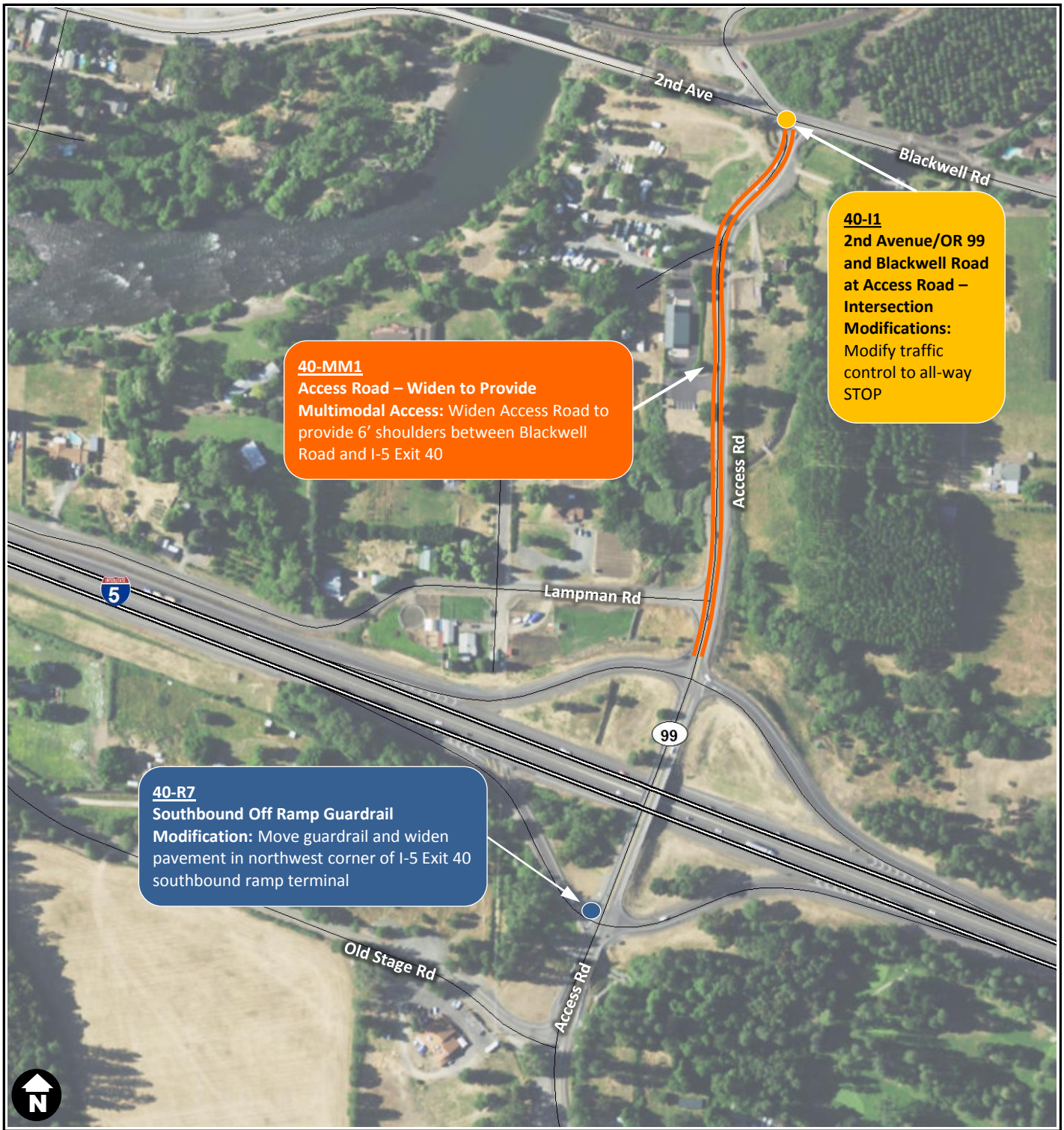
Description	Enhance multimodal access across the Rock Point Bridge by adding signage to the structure	
Purpose	Provide facilities for all modes of travel	
Roadway Characteristics	▪ Existing travel lanes: 9’ ▪ Existing shoulder width: none ▪ Existing structure width: 19’–20’ ▪ Rogue River Highway ADT (vpd): Existing – ~1,600; Future (2038) – ~1,900 ▪ No documented crash patterns on Rogue River Highway	
How Improvement Addresses Deficiencies	**Existing/Future Deficiency**	**With Improvement**
	The Rogue River Highway (Rock Point Bridge, 00332A) lacks bicycle & pedestrian facilities	▪ No change to roadway capacity/operations ▪ Provide facilities for all modes of travel ▪ Would increase driver awareness of non-auto travel
Additional Considerations	▪ Improved pedestrian access generally benefits socioeconomically disadvantaged populations ▪ Section 106 Determination of Effect would be required for both options ▪ Progress toward meeting the applicable access spacing standards must be demonstrated or a deviation must be justified and approved by the Region Access Management Engineer ▪ Consider one-way signalization of Rock Point Bridge (would still serve both directions of traffic) in order to facilitate transit/emergency vehicles; any installation of a traffic signal would require further review from Region 3 Traffic and State Traffic Engineer ▪ Rock Point Bridge is an historic structure	
Cost Opinion	▪ $1,500 ▪ Cost does not include utility relocation, hazardous materials, or ROW	
Implementation	▪ High priority ▪ Trigger: Crash pattern of bicycle/ pedestrian collisions, area development or funding availability	

Project 43-MM3. Widening of I-5 Overcrossing – Multimodal Enhancement

I-5 Exits 40 (Kane Creek) & 43 (Rock Point): Interchange Area Management Plans



Description	Provide multimodal crossing of I-5 by widening I-5 Exit 43 interchange structure to provide a cross-section of two 12’ travel lanes and 8’ shoulders	
Purpose	▪ Provide multimodal crossing of I-5 within the IMSA	
Roadway Characteristics	▪ Existing travel lanes: 12’ (Main Street) ▪ Existing shoulder: 1’–2’ (Main Street) ▪ Main Street ADT (vpd): Existing – 200 to 1,300; Future (2038) – 200 to 1,500 ▪ Main Street speed is not posted ▪ There were no crashes reported during the five-year analysis period on Main Street	
How Improvement Addresses Deficiencies	**Existing/Future Deficiency**	**With Improvement**
	Currently, there is not a safe alternative for bicycle & pedestrians to cross I-5 within the Interchange Management Study Area (IMSA)	▪ No change to roadway capacity/operations ▪ Provides facilities across I-5 for all modes of travel ▪ Enhanced freight and emergency vehicle access
Additional Considerations	▪ A speed study would be needed to ensure the roadway speeds are reasonable for typical sharrow use; additional signage could be considered to mitigate potential concerns of user expectation ▪ Roadway speed is a concern for this type of installation and may trigger a Condition C approval process ▪ Any new work in areas of undisturbed soil have a high potential for archeological resource impacts ▪ There is no access management needed for this concept	
Cost Opinion	▪ $2,500–$10,000 (depending on use of signage) ▪ Does not include E&C, roadway, or TP&D costs	
Implementation	Medium priority ▪ Triggers: Crash pattern of bicycle/pedestrian collisions, area development or funding availability	

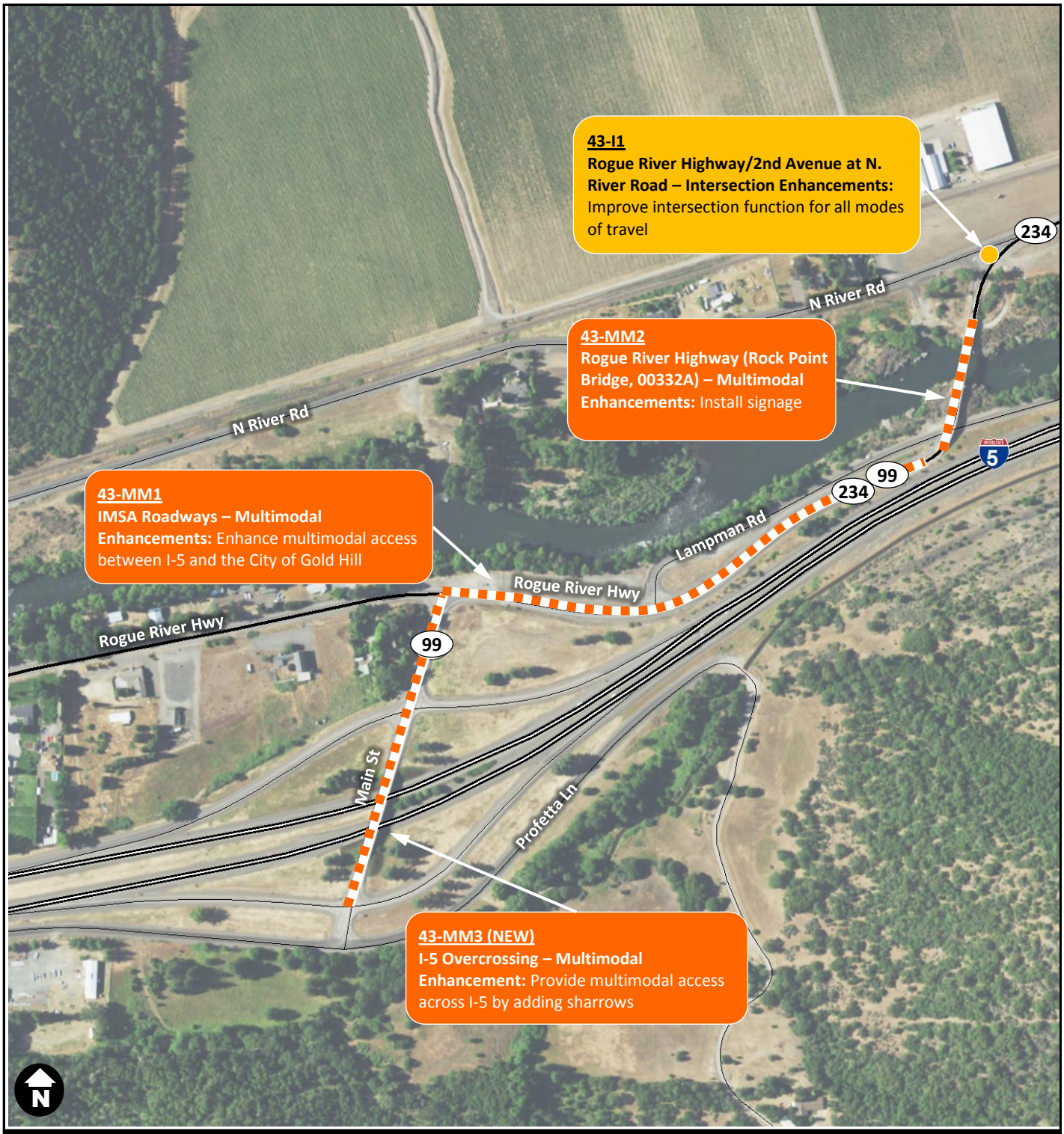


I-5 Exits 40 and 43 Interchange Area Management Plans

Figure 9-1
Recommended Concept
I-5 Exit 40

Legend

- Interchange Ramp Improvements
- Intersection Improvements
- Multimodal Improvements



I-5 Exits 40 and 43 Interchange Area Management Plans

Figure 9-2
Recommended Concept
I-5 Exit 43

Legend

- Interchange Ramp Improvements (None identified for IAMP 43)
- Intersection Improvements
- Multimodal Improvements

IAMPs 40 & 43 Draft Plan

Comment resolved
Comment in process
Comment not addressed

Comment No.	Document	Date	Contributor	Comment	Response
1	Draft Plan	1/15/2016	Thomas Guevara	Michael – ODOT Access management	Done
2	Draft Plan	1/15/2016	Thomas Guevara	OR 234 (Highway Name?)	added Sam's Valley Highway to initial description of OR 234 (ES-1), wasn't clear if we should carry it through the document
3	Draft Plan	1/15/2016	Thomas Guevara	Similar to I-5 Exit 40 (delete)	did search for "similar to I-5 Exit 40" and removed all references through the document
4	Draft Plan	1/15/2016	Thomas Guevara	City of Gold Hill (Should City be capitalized/)	in most cases the tech editor replaced the "C" with a "c": tech editor response: I generally follow the style that when you are talking about the governmental entity, then you capitalize "City" in "City of Portland" or in this case "City of Gold Hill" – for example, if the "City of Gold Hill" were the subject of the sentence – as an entity, it could take an action, such as implementing a policy – then it would be capitalized. For example: "Officials from ODOT, FHWA, and the City of Gold Hill attended meetings." However, if it is being referred to as a geographical place, then it would be lowercase: "I live in the city of Gold Hill."
5	Draft Plan	1/15/2016	Thomas Guevara	Name of bridge on OR 238/OR 99 (name of highways)	OR 234 (Sam's Valley Highway)/ OR 99 (Rogue River Highway), Rock Point Bridge: added ; added OR 234 bridge name at Exit 40 as well for consistency (Gold Hill Bridge)

IAMPs 40 & 43 Draft Plan					Comment resolved Comment in process Comment not addressed
Comment No.	**Document**	**Date**	**Contributor**	**Comment**	**Response**
6	Draft Plan	1/15/2016	Thomas	Space in paragraph (page 3-2 and 3-4)	Done
7	Draft Plan	1/15/2016	Thomas Guevara	Add Year before 2015, 2038 etc… (page 3-7, 3-10, 4-7, and 4-8)	Done
8	Draft Plan	1/15/2016	Thomas	Correct spelling of Exist (page 3-10)	Done
9	Draft Plan	1/15/2016	Thomas Guevara	After the City of Gold Hill IAMP adoption (delete on page 3-17 and 4-19)	Done
10	Draft Plan	2/3/2016	Michael Wang	Project 40 MM1. Access Road-Widen to provide Multi-Modal Access. Please add this into the access management section. " Possible consolidation or modification of existing driveways on Access Road will be consider within the project limits."	Updated project sheet for 40-3 (previously 40-MM1) with suggested language.
11	Draft Plan	2/3/2016	Michael Wang	Project 40-I1. 2nd Avenue/OR 99 and Blackwell Road at Access Road Intersection Enhancements. Most of local public support this project in the open house. Maybe we can reconsider its priority? It is a low cost project.	Leave as medium priority per Thomas Guevara email dated 3/11/2016.
12	Draft Plan	1/26/2016	Peter	No further comments	No Issues
13	Draft Plan	2/4/2016	Anna Henson	No further comments	No Issues
14	Draft Plan	1/28/2016	TAC	43-1. Rogue River Highway/2nd Avenue at N. River Road – Intersection Enhancements: Include language for how pedestrians will be protected/separated from vehicular traffic	Added bullet: "Consideration should be given to protecting pedestrian movements during final design process" in Additional Considerations
15	Draft Plan	1/28/2016	TAC	43-1. Rogue River Highway/2nd Avenue at N. River Road – Intersection Enhancements: Include language to suggest that alternative traffic control options could be used depending on final design	Added bullet: "Alternative traffic control options could be used depending on final design" in Additional Considerations

IAMPs 40 & 43 Draft Plan					Comment resolved Comment in process Comment not addressed
Comment No.	**Document**	**Date**	**Contributor**	**Comment**	**Response**
16	Draft Plan	1/28/2016	TAC	43-2. IMSA Roadways – Multimodal Enhancements: Adjust figure to clarify where shoulder widening would occur	Adjusted figure to indicate widening would NOT happen on the interchange structure
17	Draft Plan	1/28/2016	TAC	43-3. Rogue River Highway (Rock Point Bridge, 00332A) – Multimodal Enhancements: Remove Option B (Parallel Structure)	Done.
18	Draft Plan	1/28/2016	TAC	43-3. Rogue River Highway (Rock Point Bridge, 00332A) – Under “Additional Considerations”, add suggestion to consider one-way signalization (would still serve both directions of traffic) – clarify this would need further review from Region Traffic but could facilitate transit/emergency vehicles.	Added "Consider one-way signalization of Rock Point Bridge (would still serve both directions of traffic) in order to facilitate transit/emergency vehicles. Any installation of a traffic signal would require further review from Region 3 Traffic"
19	Draft Plan	1/28/2016	TAC	43-4. Widening of I-5 Overcrossing – Multimodal Enhancement: There is no pedestrian destination/generator on the south side of the freeway to justify widening structure	Noted.
20	Draft Plan	1/28/2016	TAC	43-4. Widening of I-5 Overcrossing – Multimodal Enhancement: Change this option to provide sharrows pending speed study	Changed to: I-5 Overcrossing – Multimodal Enhancement and included option for sharrows and identified potential need for speed study or Condition C approval