Oregon
Theodore R. Kulongoski, Governor

Department of Land Conservation and Development
635 Capitol Street, Suite 150
Salem, OR 97301-2540
(503) 373-0050
Fax (503) 378-5518
www.lcd.state.or.us

NOTICE OF ADOPTED AMENDMENT

February 21, 2008

TO: Subscribers to Notice of Adopted Plan
or Land Use Regulation Amendments

FROM: Mara Ulloa, Plan Amendment Program Specialist

SUBJECT: City of Klamath Falls Plan Amendment
DLCD File Number 011-07

The Department of Land Conservation and Development (DLCD) received the attached notice of adoption. A copy of the adopted plan amendment is available for review at the DLCD office in Salem and the local government office.

Appeal Procedures*

DLCD ACKNOWLEDGMENT or DEADLINE TO APPEAL: March 5, 2008

This amendment was submitted to DLCD for review 45 days prior to adoption. Pursuant to ORS 197.830 (2)(b) only persons who participated in the local government proceedings leading to adoption of the amendment are eligible to appeal this decision to the Land Use Board of Appeals (LUBA).

If you wish to appeal, you must file a notice of intent to appeal with the Land Use Board of Appeals (LUBA) no later than 21 days from the date the decision was mailed to you by the local government. If you have questions, check with the local government to determine the appeal deadline. Copies of the notice of intent to appeal must be served upon the local government and others who received written notice of the final decision from the local government. The notice of intent to appeal must be served and filed in the form and manner prescribed by LUBA, (OAR Chapter 661, Division 10). Please call LUBA at 503-373-1265, if you have questions about appeal procedures.

***NOTE:** **THE APPEAL DEADLINE IS BASED UPON THE DATE THE DECISION WAS MAILED BY LOCAL GOVERNMENT. A DECISION MAY HAVE BEEN MAILED TO YOU ON A DIFFERENT DATE THAN IT WAS MAILED TO DLCD. AS A RESULT YOUR APPEAL DEADLINE MAY BE EARLIER THAN THE ABOVE DATE SPECIFIED.**

Cc: Gloria Gardiner, DLCD Urban Planning Specialist
Mark Radabaugh, DLCD Regional Representative
Bill Holmstrom, DLCD Transportation Planner
Mark Willrett, City of Klamath Falls

<paa> ya/

FORM 2

D L C D NOTICE OF ADOPTION

DEPT OF

FEB 14 2008

LAND CONSERVATION AND DEVELOPMENT

This form **must be mailed** to DLCD **within 5 working days after the final decision**
per ORS 197.610, OAR Chapter 660 - Division 18

(See reverse side for submittal requirements)

Jurisdiction: City of Klamath Falls Local File No.: Ordinance No. 08-03
(If no number, use none)

Date of Adoption: 1-8-2008 Date Mailed: 2-13-2008
(Must be filled in) (Date mailed or sent to DLCD)

Date the Notice of Proposed Amendment was mailed to DLCD: 10-24-2007

X Comprehensive Plan Text Amendment ___ Comprehensive Plan Map Amendment

___ Land Use Regulation Amendment ___ Zoning Map Amendment

___ New Land Use Regulation ___ Other: _____
(Please Specify Type of Action)

Summarize the adopted amendment. Do not use technical terms. Do not write "See Attached."

Amendment to the City's TSP consisting of modifications to seven roadway segments and to six intersection segments.

Describe how the adopted amendment differs from the proposed amendment. If it is the same, write "Same." If you did not give notice for the proposed amendment, write "N/A."

Same

Plan Map Changed from: N/A to _____

Zone Map Changed from: N/A to _____

Location: _____ Acres Involved: _____

Specify Density: Previous: _____ New: _____

Applicable Statewide Planning Goals: _____

Was an Exception Adopted? Yes: ____ No: X

DLCD File No.: 001-07 (16501)

Did the Department of Land Conservation and Development receive a notice of Proposed Amendment **FORTY FIVE (45) days prior to the first evidentiary hearing**. Yes: X No: ____

If no, do the Statewide Planning Goals apply. Yes: ___ No: ____

If no, did The Emergency Circumstances Require immediate adoption. Yes: ___ No: ____

Affected State or Federal Agencies, Local Governments or Special Districts: ODOT, Klamath County Public Works

Local Contact: Mark Willrett Area Code + Phone Number: 541-883-5364

Address: 226 S 5th Street

City: Klamath Falls Zip Code+4: 97601

ADOPTION SUBMITTAL REQUIREMENTS

This form **must be mailed** to DLCD **within 5 working days after the final decision** per ORS 197.610, OAR Chapter 660 - Division 18.

1. Send this Form and **TWO (2) Copies of the Adopted Amendment to:**

ATTENTION: PLAN AMENDMENT SPECIALIST
DEPARTMENT OF LAND CONSERVATION AND DEVELOPMENT
635 CAPITOL STREET NE, SUITE 150
SALEM, OREGON 97301-2540

2. Submit **TWO (2) copies** the adopted material, if copies are bounded please submit **TWO (2) complete copies** of documents and maps.

3. Please Note: Adopted materials must be sent to DLCD not later than **FIVE (5) working days** following the date of the final decision on the amendment.

4. Submittal of of this Notice of Adoption must include the text of the amendment plus adopted findings and supplementary information.

5. The deadline to appeal will be extended if you submit this notice of adoption within five working days of the final decision. Appeals to LUBA may be filed within **TWENTY-ONE (21) days** of the date, the "Notice of Adoption" is sent to DLCD.

6. In addition to sending the "Notice of Adoption" to DLCD, you must notify persons who participated in the local hearing and requested notice of the final decision.

7. **Need More Copies?** You can copy this form on to 8-1/2x11 green paper only ; or call the DLCD Office at (503) 373-0050; or Fax your request to:(503) 378-5518; or Email your request to Larry.French@state.or.us - ATTENTION: PLAN AMENDMENT SPECIALIST.

ORDINANCE NO. 08-03

A SPECIAL ORDINANCE AMENDING THE KLAMATH FALLS TRANSPORTATION SYSTEM PLAN AS SET FORTH IN A COMPREHENSIVE SUB-AREA MASTER PLAN FOR THE ORINDALE/BALSAM STUDY AREA.

WHEREAS, The City of Klamath Falls, through its periodic review process and the analysis of its Transportation System Plan, has identified deficiencies in the transportation segment of the Klamath Falls Comprehensive Plan in the southwest quadrant of the City; and

WHEREAS, the City has undertaken to remedy those deficiencies by commissioning the preparation of an Orindale/Balsam Sub-Area Master Plan and adopting the recommendations set forth therein; and

WHEREAS, The Orindale/Balsam Sub-Area Master Plan dated May 14, 2007 is a comprehensive circulation and access management plan for the OR 66 highway corridor located between Orindale Road and the US 66/140 junction, as well as other roadways in that vicinity, and said Plan is in compliance with the Klamath Falls Comprehensive Plan; NOW THEREFORE,

THE CITY OF KLAMATH FALLS HEREBY ORDAINS AS FOLLOWS:

Section 1

The amendments to the City of Klamath Falls Transportation System Plan as set forth in the Orindale/Balsam Sub-Area Master Plan, dated May 14, 2007 are hereby adopted and shall be effective as of the effective date of this Ordinance.

Passed by the Council of the City of Klamath Falls this 7th day of January, 2008.

Presented to the Mayor, approved and signed this 8th day of January, 2008.

Mayor

ATTEST:

Shirley Kappas
Deputy Recorder

STATE OF OREGON)
COUNTY OF KLAMATH) ss.
CITY OF KLAMATH FALLS)

I, _____, Recorder (Deputy Recorder) for the City of Klamath Falls, Oregon, do hereby certify that the foregoing is a true and correct copy of a Ordinance duly adopted by the Council of the City of Klamath Falls, Oregon, at the meeting held on the _____ day of January, 2008 and thereafter approved and signed by the Mayor and attested by the City Recorder.

_____
City Recorder (Deputy Recorder)

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING
610 SW Alder Street, Suite 700, Portland, OR 97205 P 503.228.5230 F 503.273.8169

TECHNICAL MEMORANDUM

Klamath Falls, OR
Orindale/Balsam Sub-Area Master Plan
& Transportation SDC Methodology

Date: May 14, 2007 **Project** #: 7718.0

To: Mark Willrett, Director of Public Works
City of Klamath Falls
500 Klamath Avenue
Klamath Falls, Oregon 97601

From: Del Huntington, P.L.S.
Marc Butorac, P.E., P.T.O.E
Kate Sylvester

Subject: System Development Charge Analysis and Methodology

Introduction

The City of Klamath Falls, Oregon commissioned a sub-area transportation master plan for the Orindale-Balsam area to provide a better understanding of the potential impacts to the transportation system, future deficiencies, and estimated costs to plan and construct necessary roadway improvements to ensure that property owners and developers are provided a level of certainty regarding necessary transportation improvements and contributions to mitigate potential impacts in a fair and equitable manner.

The remainder of this memorandum documents the transportation master plan for the study area, as well as the transportation System Development Charge methodology recommended to fund the anticipated transportation improvements for the Orindale-Balsam study area. The proposed System Development Charge is intended to fund anticipated transportation improvements by applying a "per trip" fee to future development in the study area. All existing development in the study area is exempt from the System Development Charge.

The System Development Charge was developed by considering the existing land uses and traffic conditions in the study area, identifying the potential for future development in the study area, and determining necessary transportation mitigations and associated costs for the build out scenario. This memorandum summarizes the methodology used to develop the System Development Charge, including 1) the existing land uses and traffic conditions; 2) the necessary transportation improvements to accommodate forecast regional growth through year 2025; 3) the assumptions used to estimate development potential in the study area; 4) the necessary transportation improvements and associated costs to accommodate the local development under year 2025 conditions; 5) a preliminary funding strategy to address the transportation mitigation

costs; and 6) the next steps necessary to complete the study and implement a development review and funding process for the study area.

Study Area

The study area comprises approximately 1,115 acres southwest of OR-140 at the far west of Klamath County, Oregon. Approximately 200 acres are within the City of Klamath Falls city limits, while the remainder is within the Urban Growth Boundary (UGB) in Klamath County. Downtown Klamath Falls, northeast of the study area, is a primary destination for employment, retail, and recreational traffic from the study area. Figure 1 shows the site vicinity and the study area.

This study considered the development potential of City and County property beyond what was assumed for this area in the *Klamath Falls West Side Refinement Plan, Transportation System Plan* prepared by Parsons Brinkerhoff (PB) in May 2006. The PB study included much of the study area for this analysis; however it concentrated on the potential development that could occur to the north of OR-140 and assumed little development south of OR-140. The City is anticipating higher development north and south of OR-66, which is the focus of this study. The PB study identified intersection improvements for three intersections within the Orindale/Balsam study area, including two concepts for the OR-66/OR-140 intersection. As identified in the PB study, it is likely that additional traffic in the Orindale/Balsam study area will trigger mitigation needs east of the OR-66/OR-140 intersection. The *Klamath Falls West Side Refinement Plan, Transportation System Plan* is included as Appendix "A".

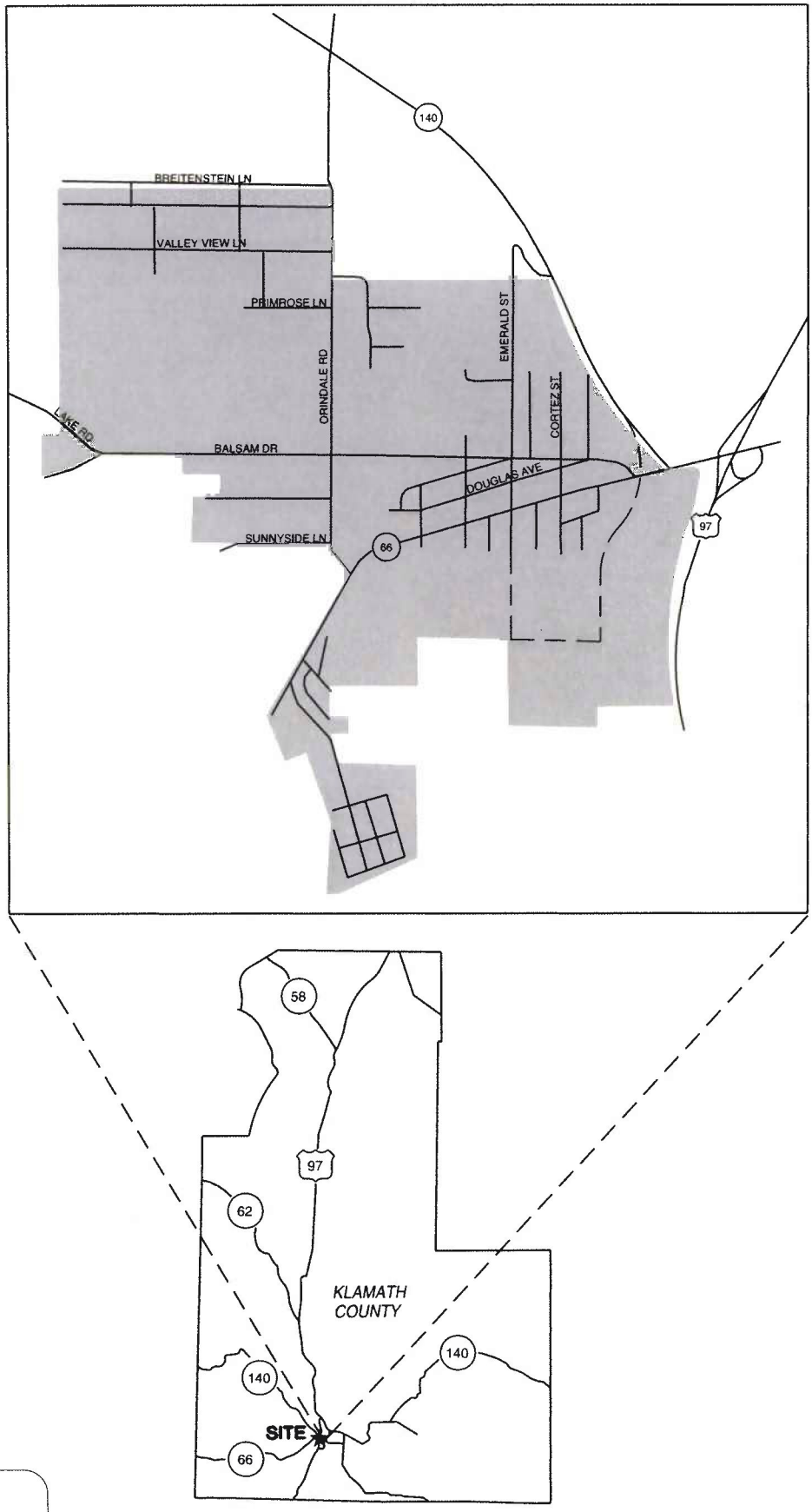
For analysis purposes the study area was divided into sub-sections north and south of OR-66. Figure 2 shows the two sub-sections of the study area.

Existing Conditions

Zoning and Land Use

Approximately 20 percent of the study area is within the city limits of Klamath Falls, while the rest is outside the city but within Klamath County and the UGB. More than 80 percent of the study area is zoned for residential development. Within the city limits, most of the residential land is zoned Medium Density, which has a minimum lot size of 5,000 square-feet. The remainder of the residential land within the city limits and nearly all of the residential land in the study area outside the city limits is zoned Suburban Residential, which has a minimum lot size of 10,000 square-feet. There are also approximately 75 acres of commercial land and 65 acres of industrial land in the study area, most of which is adjacent to Highway 97 south of OR-66. Figure 3 shows the City Limits and the zoning in the study area.

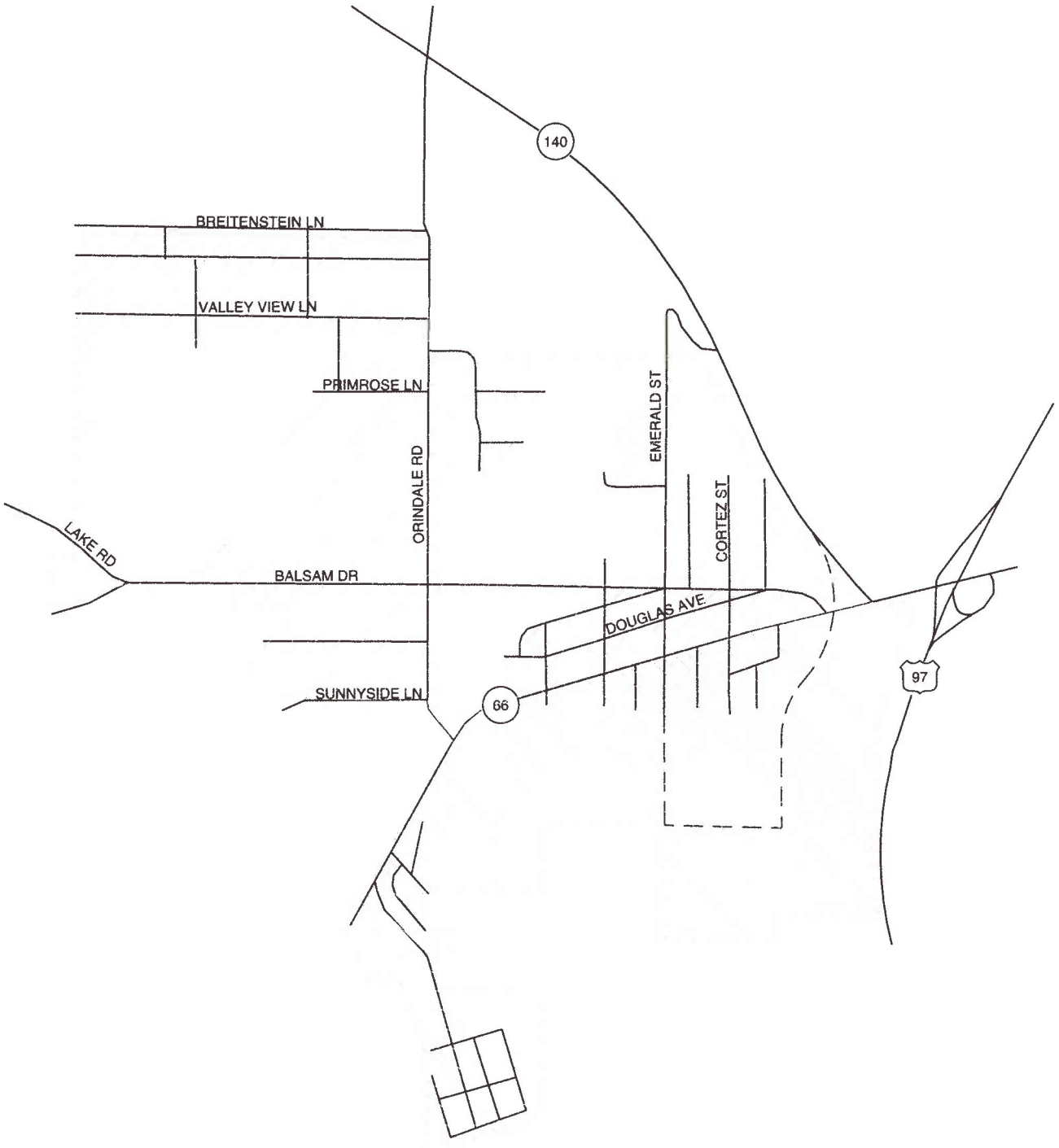
Most of the study area is currently undeveloped. Existing development is primarily residential; there are a few neighborhood developments with residential lots sizes ranging from 6,500 square-feet to 1-acre, and a minimal number of small agricultural land uses in the study area.



SITE VICINITY MAP
KLAMATH FALLS, OREGON

FIGURE
1

H:\projfile\7718pdx\DWGS\Figs\7718Figs Full Area.dwg May 14, 2007 - 1:44pm - ksylvester Layout Tab: FIG 01



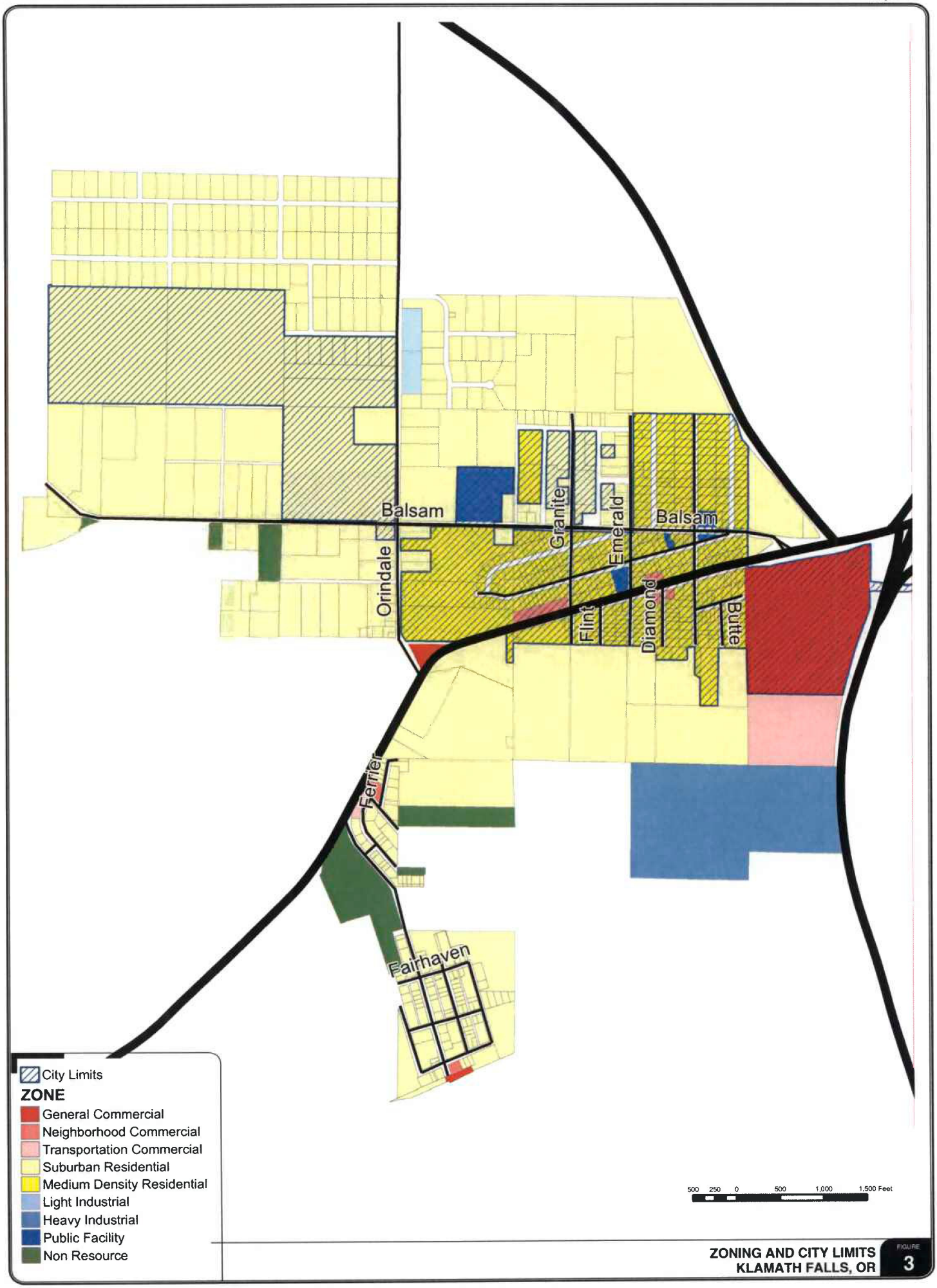
LEGEND

NORTH SUB-SECTION

SOUTH SUB-SECTION

STUDY AREA SUB-SECTIONS
KLAMATH FALLS, OREGON

FIGURE 2



ZONING AND CITY LIMITS
KLAMATH FALLS, OR

FIGURE 3

March 2007

Transportation Facilities

Highway 97, OR-140, and OR-66 are the primary highways in the project vicinity. Orindale Road, running north-south, and Balsam Road, running east-west, are the primary arterial roads in the study area. Table 1 summarizes the characteristics of the key roadways in the study area.

Table 1 Existing Transportation Facilities and Roadway Designations

Roadway	Classification by roadway ownership	Cross Section	Speed Limit	Sidewalks?	Bicycle Lanes?	On-Street Parking?
OR-140	Statewide (Expressway) – ODOT	2-4 lane	55	No	No	No
OR-66	District – ODOT	2-4 lane	35, 45	No	No	No
Highway 97	Statewide (Expressway) – ODOT	2-4 lane	50	No	No	No
Orindale Road	Collector – Klamath County	2-lane	45	No	No	No
Balsam Road	Collector – Klamath County	2-lane	35, 55	No	No	No
Emerald Street	Collector – Klamath County	2-lane	NP	No	No	No

NP = Not Posted

Study Intersections

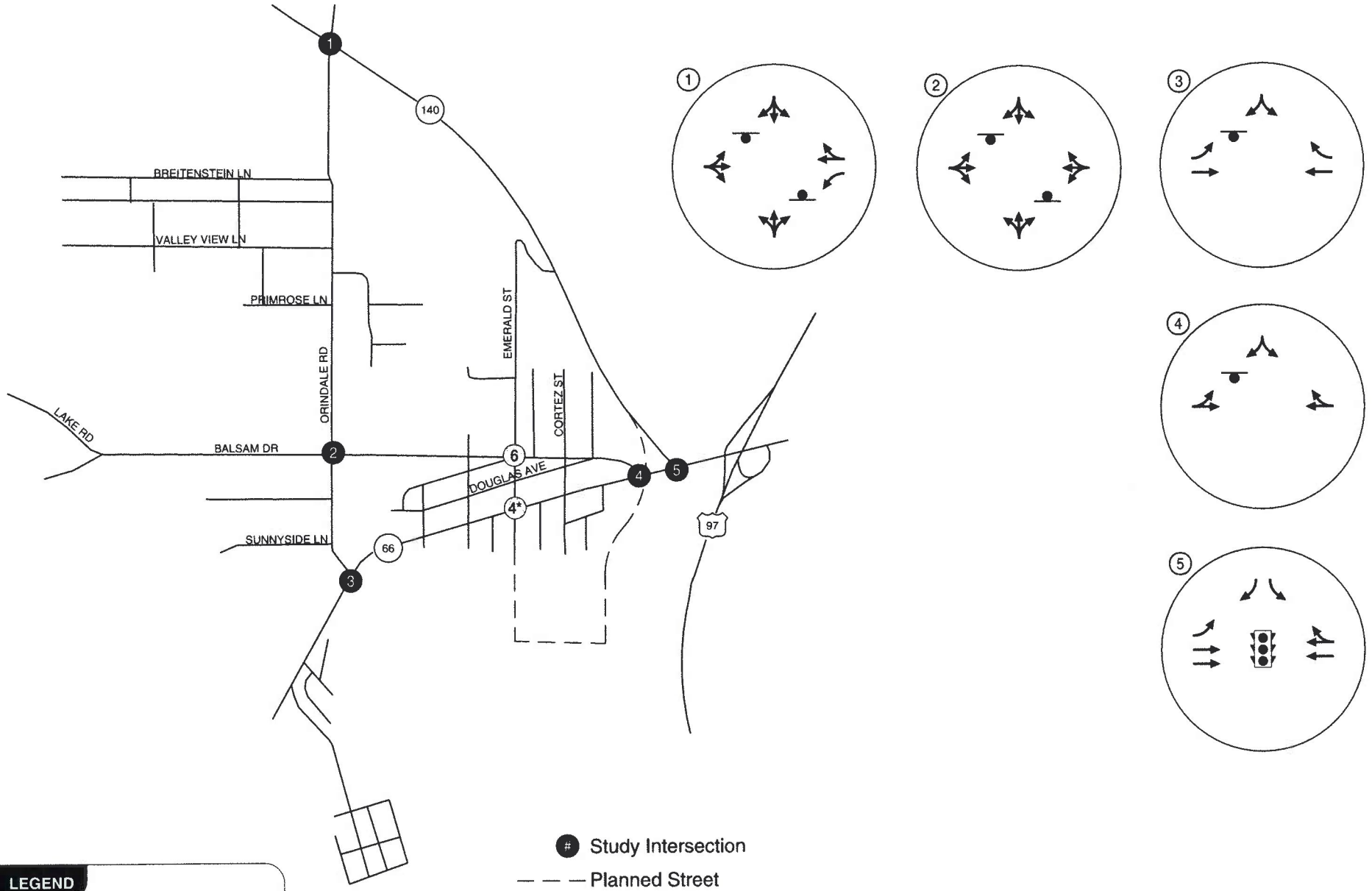
The following intersections were considered in the traffic analyses:

- Orindale Road/OR-140
- Orindale Road/Balsam Road
- Emerald Street/Balsam Road
- Orindale Road/OR-66
- OR-66/Balsam Road[1]
- OR-66/Emerald Street[2]
- OR-66/OR-140

Figure 4 illustrates the location of the study intersections, the existing lane configurations, and the associated traffic control devices.

[1] For the future analysis scenarios it was assumed that Balsam Road would no longer connect to OR-66. The Emerald Street / OR-66 intersection was assumed to replace this intersection as the primary arterial connection to OR-66 east of Orindale Road in the study area. This expected change in circulation pattern is discussed in more detail in the future analysis section of this report.

[2] The Emerald Street intersections were only considered in the future analysis scenarios when it was assumed that Emerald Street would become a key roadway in the study area.



EXISTING LANE CONFIGURATIONS AND TRAFFIC CONTROL DEVICES KLAMATH FALLS, OREGON

FIGURE 4

H:\projfile\7718pdx\DWGS\Figs\7718Figs Full Area.dwg May 14, 2007 - 1:47pm - ksylvester Layout Tab: FIG 04

Existing Operations

All level-of-service analyses described in this report were performed in accordance with the procedures stated in the *2000 Highway Capacity Manual* (Reference 1). A description of level of service and the criteria by which they are determined is presented in Appendix "B" of this memorandum. Appendix "B" also indicates how level of service is measured and what is generally considered the acceptable range of level of service. As ODOT evaluates intersections based on a volume to capacity (v/c) analysis, the resultant v/c ratios are provided for each location that intersects with a state highway.

The peak 15-minute flow rate during the weekday a.m. and p.m. peak hours were used in the evaluation of all intersection levels of service. Thus, the analyses reflect conditions that are only likely to occur for 15 minutes out of each average peak hour.

The existing conditions analysis was conducted using turning movement counts included in the *Klamath Falls West Side Refinement Plan.* These manual turning movement counts were collected during the weekday a.m. and p.m. peak hours in April 2005. *These existing conditions turning movement counts are included as Appendix "C".*

The existing conditions analysis indicates that all of the study intersections currently operate under capacity and at level of service (LOS) C or better. The ODOT managed intersections operate at a 0.32 v/c ratio or better. Figure 5 shows the weekday a.m. and p.m. peak hour traffic operations. These results are consistent with the existing conditions operations analysis provided in the *Klamath Falls West Side Refinement Plan. Appendix "D" contains the existing conditions operational analysis worksheets.*

Year 2025 Regional Growth Conditions

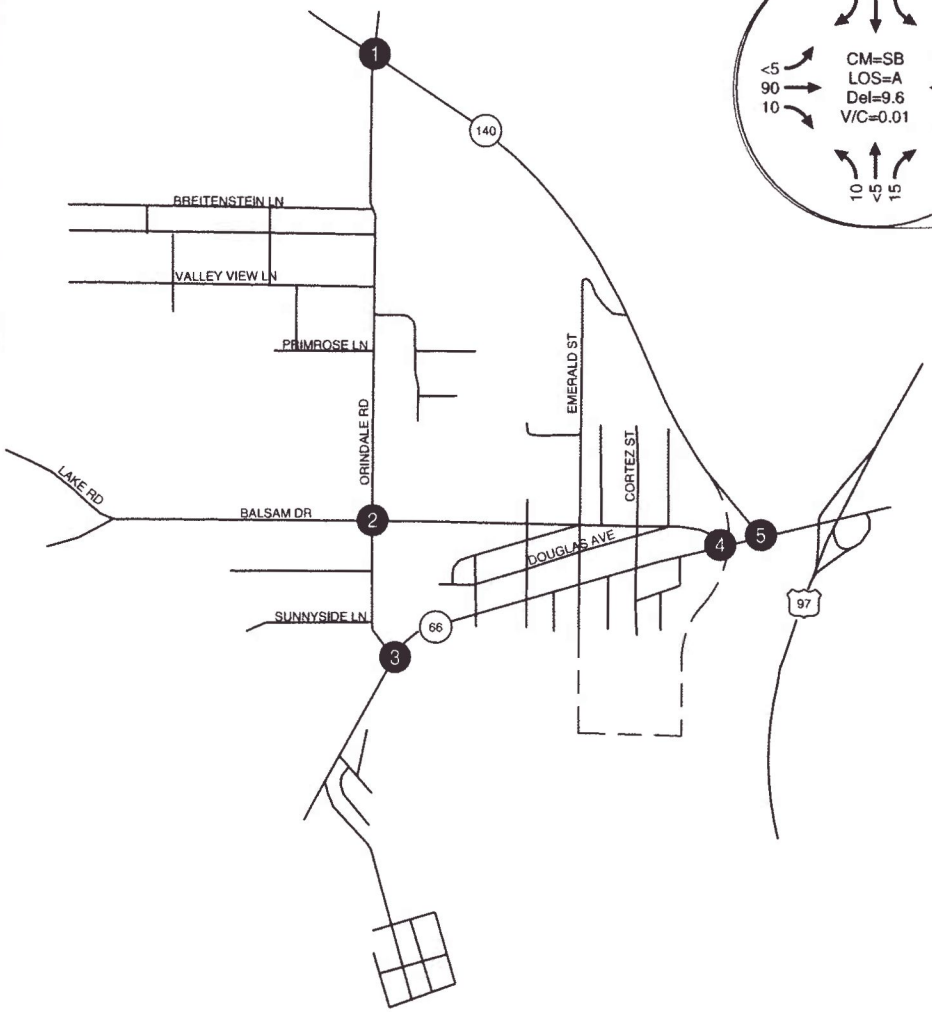
Forecast Traffic Volumes

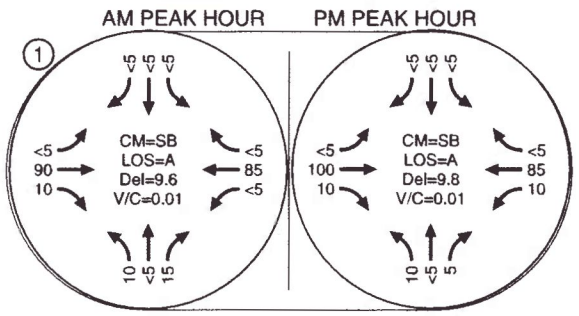
The year 2025 No Development Scenario assumes continued regional growth, but no new development within the study area. Year 2025 was selected as the future analysis year in order to be consistent with the future analysis in the *Klamath Falls West Side Refinement Plan.*

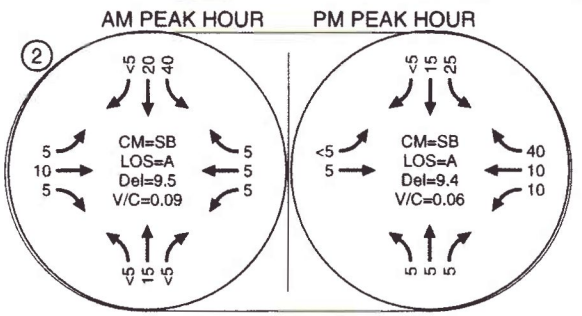
A 3% annual growth rate was applied to existing traffic volumes on OR-66 and OR-140 to account for regional growth. This rate is consistent with the growth projected by the ODOT Transportation Planning and Analysis Unit (TPAU). Growth rates in the TPAU model used for the *Klamath Falls West Side Refinement Plan* range from 1.5% to 6% annually.

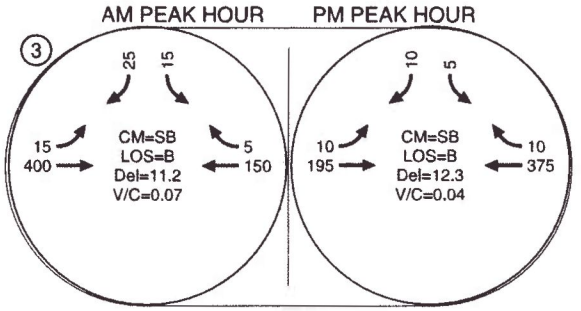
Additional traffic was added to account for a planned residential development north of the study area on Orindale Road. Approximately 25% of the traffic generated by this development was assumed to use OR-140 and the remaining traffic was assumed to travel north into Klamath Falls. No traffic from this development was assumed to cut through the study area.

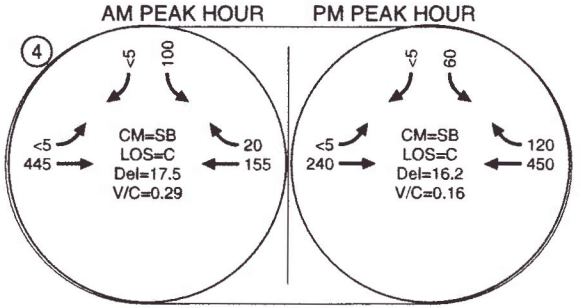
Figure 6 shows the forecast weekday a.m. and p.m. peak hour traffic volumes for the 2025 Regional Growth Conditions.

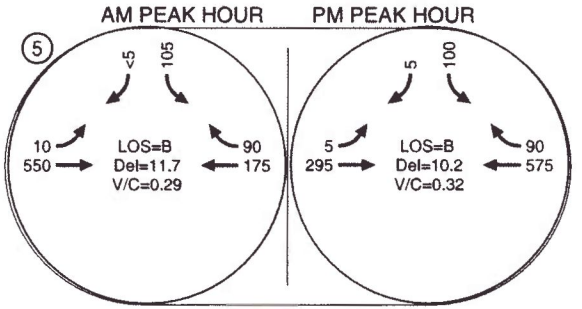












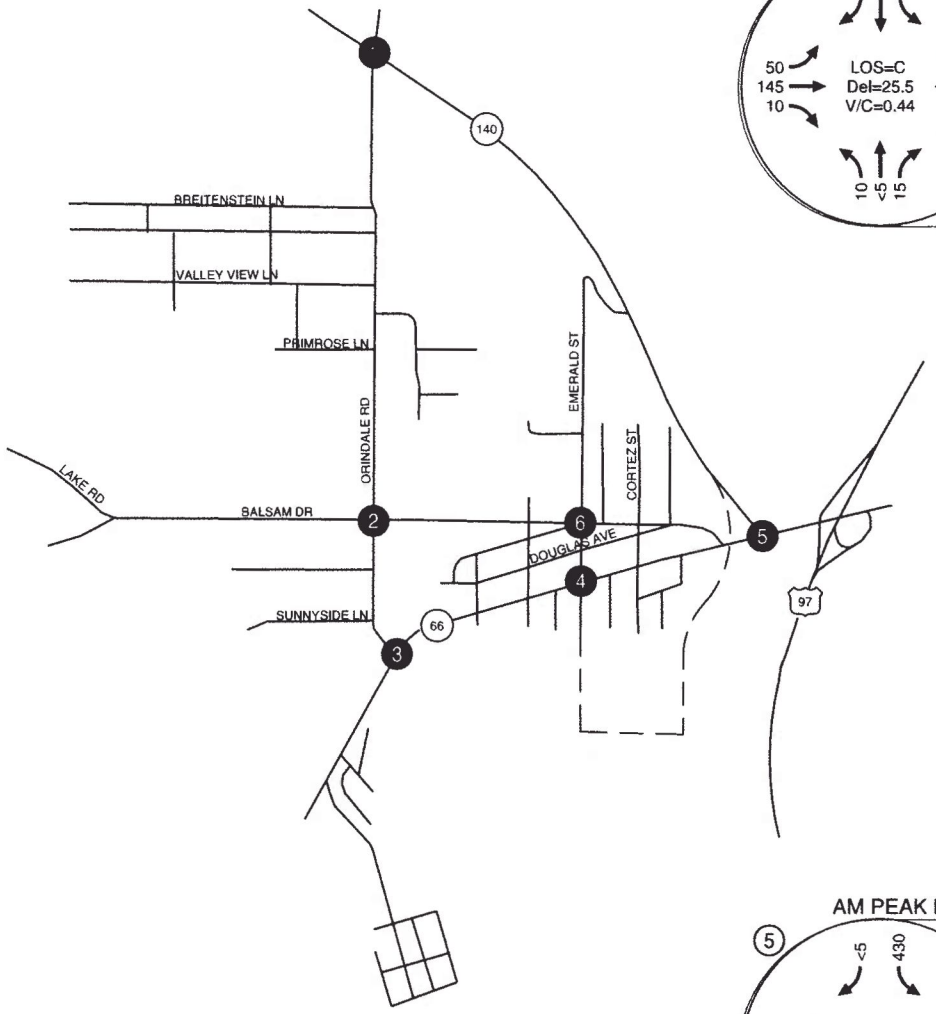
LEGEND

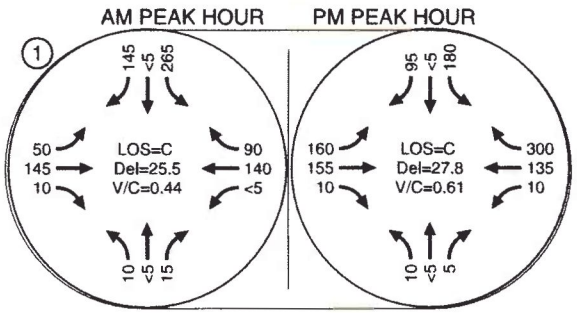
CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

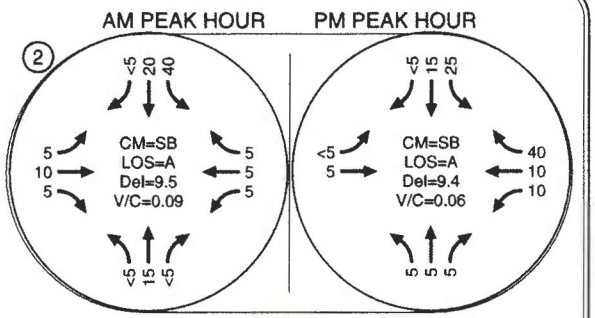
2005 EXISTING TRAFFIC CONDITIONS
KLAMATH FALLS, OREGON

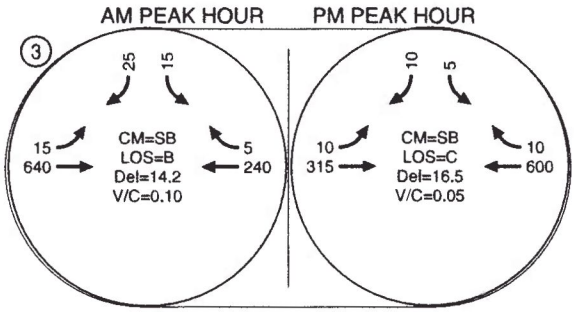
FIGURE 5

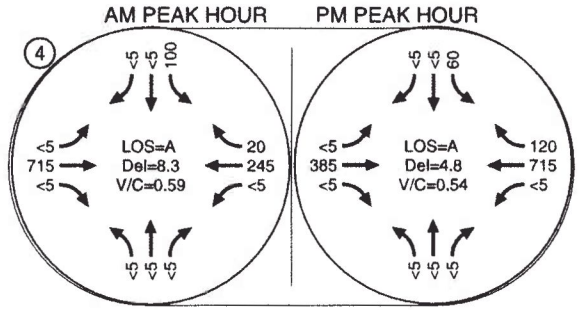
H:\projfile\7718pdx\DWGS\Figs\7718Figs Full Area.dwg May 14, 2007 - 1:47pm ksylvester Layout Tab: FIG 05

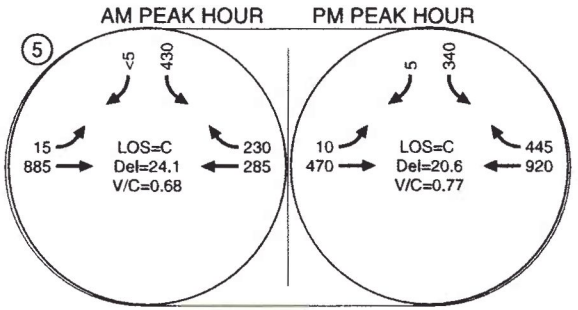


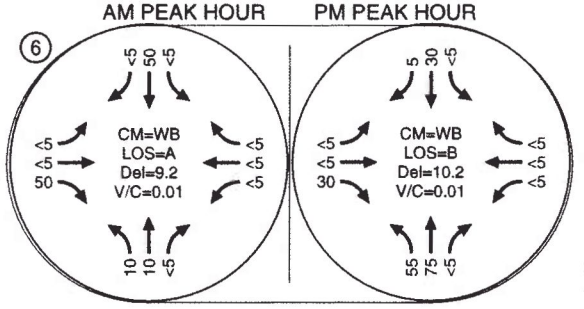












LEGEND

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

2025 REGIONAL GROWTH TRAFFIC CONDITIONS
WEEKDAY OPERATIONS
KLAMATH FALLS, OREGON

FIGURE 6

Transportation Improvements

It was assumed that the forecast transportation improvements identified for OR-140 in the *Klamath Falls West Side Refinement Plan* will occur regardless of the build out within the Orindale/Balsam study area. The *Klamath Falls West Side Refinement Plan* is included as Appendix "A".

Orindale Road/OR-140

Traffic from the planned residential development north of OR-140 will cause the intersection of Orindale Road/OR-140 to meet traffic signal warrants at about 75% of build out of this in-process development. The PB study identifies construction of a full interchange as a long-term improvement at this location. For the purposes of this study, it was assumed that the intersection will be signalized in the near-term in conjunction with the proposed development to the north of the study area, without any financial contribution from development within the study area. Construction of an eastbound left-turn lane was assumed to provide access to the north development site. Traffic operations are expected to improve if an interchange is constructed rather than a signal.

OR-66/Balsam Drive and OR-66/Emerald Street

Based on the distance and estimated travel time, the majority of the anticipated traffic from the Orindale/Balsam study area will travel south to OR-66, then east along OR-66 into various locations within Klamath Falls. Preliminary traffic signal warrants will be met at the OR-66/Balsam intersection with the estimated traffic from the study area. However, it is unlikely that ODOT will allow signalization of the existing intersection, as it is located less than 500 feet from the OR-140/OR-66 intersection and does not meet ODOT's standard traffic signal spacing for a District-level highway. Furthermore, ODOT is considering relocating the OR-66/OR-140 intersection to the west, which places it even closer to the existing OR-66/Balsam intersection.

It was assumed that Balsam Road will no longer connect to OR-66 and the traffic will be redirected to an improved OR-66/Emerald Street intersection. Emerald Street was selected as the logical connection because it extends farther into the study area than the other north-south collector roads in the vicinity and it is spaced roughly half-way between the Orindale Road/OR-66 and OR-140/OR-66 intersections.

Emerald Street/Balsam Drive/Cleveland Avenue

The existing Emerald Street/Balsam Drive intersection, to the north of OR-66, currently has five legs, as Cleveland Avenue connects to the intersection from the southwest. For purposes of this study, it was assumed that Cleveland Avenue, will no longer access this intersection. The traffic generated from this local street (ten to twenty homes) will access major travel corridors via Granite Road.

Forecast Traffic Operations

Operational analyses were conducted for the study intersections, using the weekday a.m. and p.m. peak hour turning movement volumes shown in Figure 6, to determine the 2025 Regional Growth traffic conditions. *The Regional Growth traffic operations analysis worksheets are included in Appendix "D".*

OR-66/Emerald Street

Without any improvements, the critical southbound approach is forecast to operate at LOS F with a volume-to-capacity ratio of 0.65 during the weekday a.m. peak hour. Because MUTCD Signal Warrants #1, #2, and #3 are met, signalization of this intersection is appropriate to provide safe and efficient access to OR-66 from the study area.

Signalization of OR-66/Emerald Street intersection is assumed in all future analysis scenarios. It is also assumed that when signalization occurs, Emerald Street will be upgraded to a 3-lane minor collector and the stop-control at the Emerald/Balsam intersection will be changed so that the north- and southbound approaches are uncontrolled.

With this improvement in place, all of the study intersections are forecast to operate under capacity at LOS D or better during the weekday a.m. and p.m. peak hours, as shown in Figure 6.

Year 2025 Local Build-Out Conditions

Development Potential

Development potential within the study area was estimated using tax assessment property information provided by Klamath County, a review of aerial photography and topographic information, and discussions with City staff and the City Council. It was assumed that undeveloped land would build-out at the maximum density permitted under the current zoning, with a few exceptions due to topographic or other constraints. The specific build-out assumptions are discussed below.

Northern Sub-Section

Approximately 95% of the 730 acres in the northern sub-section is zoned for residential uses. The remaining 5% consists of commercial, industrial, public facilities, and non-resource lands. It was assumed that no development would occur on land zoned Public Facilities or Non-Resource.

Residential

Approximately 30% of the northern sub-section is currently developed in neighborhood patterns with lots ranging in size from 6,500 square-feet to 1-acre. For the purposes of this study, it was assumed that these homes would not redevelop within the 20-year study period.

It was estimated that there are approximately 85 existing homes on lots of at least 1-acre or greater in size which are not organized into neighborhood patterns. It was assumed that these parcels could be redeveloped, subdivided, and/or partitioned into smaller lots within the 20 year study period.

It was assumed that development proposals that have been submitted to the City but not yet built will be approved and built as planned. The four planned developments that have been submitted for approval but not yet built include:

- Crossroads Subdivision (140 homes on 29 acres)
- Cregan Park (196 homes on 40 acres)
- Orindale Village I (266 homes on 80 acres)

- Orindale Village II (155 homes on 50 acres)

It was assumed that the remaining underdeveloped land (approximately 285 acres) will build-out residentially with 5,000 square-foot lots in the City and 10,000 square-foot lots in the County.

Based on these assumptions, the northern sub-section could build-out with approximately 1,625 new homes.

Commercial

A floor-area-ratio (FAR) of 0.20 was assumed for the 5 acres of commercially zoned land in the northern sub-section. All of these properties front OR-66. It was assumed that one-half acre of this land would develop with a high-intensity commercial use (convenience store) and that the remaining 4.5 acres would develop with a more general commercial use (shopping center).

Industrial

It was assumed that the 10 acres of industrially zoned land in the northern sub-section would develop with a light industrial use. The trip generation potential was estimated using the trip rate per gross acre in the ITE Trip Generation Manual, 7th Edition.

Southern Sub-Section

The southern sub-section consists of approximately 385 acres. The majority of the area is zoned residential; however, there are significant commercially and industrially zoned lands. There are 23 acres zoned Non-Resource where it was assumed no development would occur.

Residential

Roughly 230 acres are zoned residential in the south sub-section. There are about 155 existing homes covering 55 acres that are on lots smaller than 1-acre. For the purposes of this study, it was assumed that these homes would not redevelop within the 20-year study period.

There are about 45 residential parcels smaller than one acre (comprising roughly 20 acres) that are currently not developed. It was assumed that these parcels will develop without being further subdivided.

Due to the steep terrain on about 55 acres of undeveloped land opposite the OR-66/Orindale Road intersection, it was assumed that no more than 5 homes would develop in this area.

It was assumed that the remaining underdeveloped residential land (approximately 100 acres) will build out at the maximum density permitted by the current zoning (5,000 square-foot lots for Medium Density Residential, and 10,000 square-foot lots for Suburban Residential). This includes approximately 10 existing homes on lots larger than one-acre that are not organized into neighborhood developments for which it was assumed that redevelopment, subdivision, and/or partitioning into smaller lots could occur within the 20 year study period.

Based on these assumptions, about 380 new homes could develop in the south sub-section of the study area.

Commercial
A floor/area ratio of 0.20 was assumed for the 69 acres of commercial land in the southern sub-section, resulting in approximately 605,000 square feet of commercial development potential within the southern area. It was assumed that 0.5 acre of this land would develop with a high-intensity commercial use (convenience store) and that the remaining 68.5 acres would develop with a more general commercial use (shopping center).

Industrial
It was assumed that the 65 acres of industrially zoned land in the southern sub-section would develop with a light industrial use. The trip generation potential was estimated using the trip rate per gross acre in the ITE Trip Generation Manual, 7th Edition.

Figure 7 shows the location and size of the land uses expected to occur under Local Build-Out Conditions.

Trip Generation

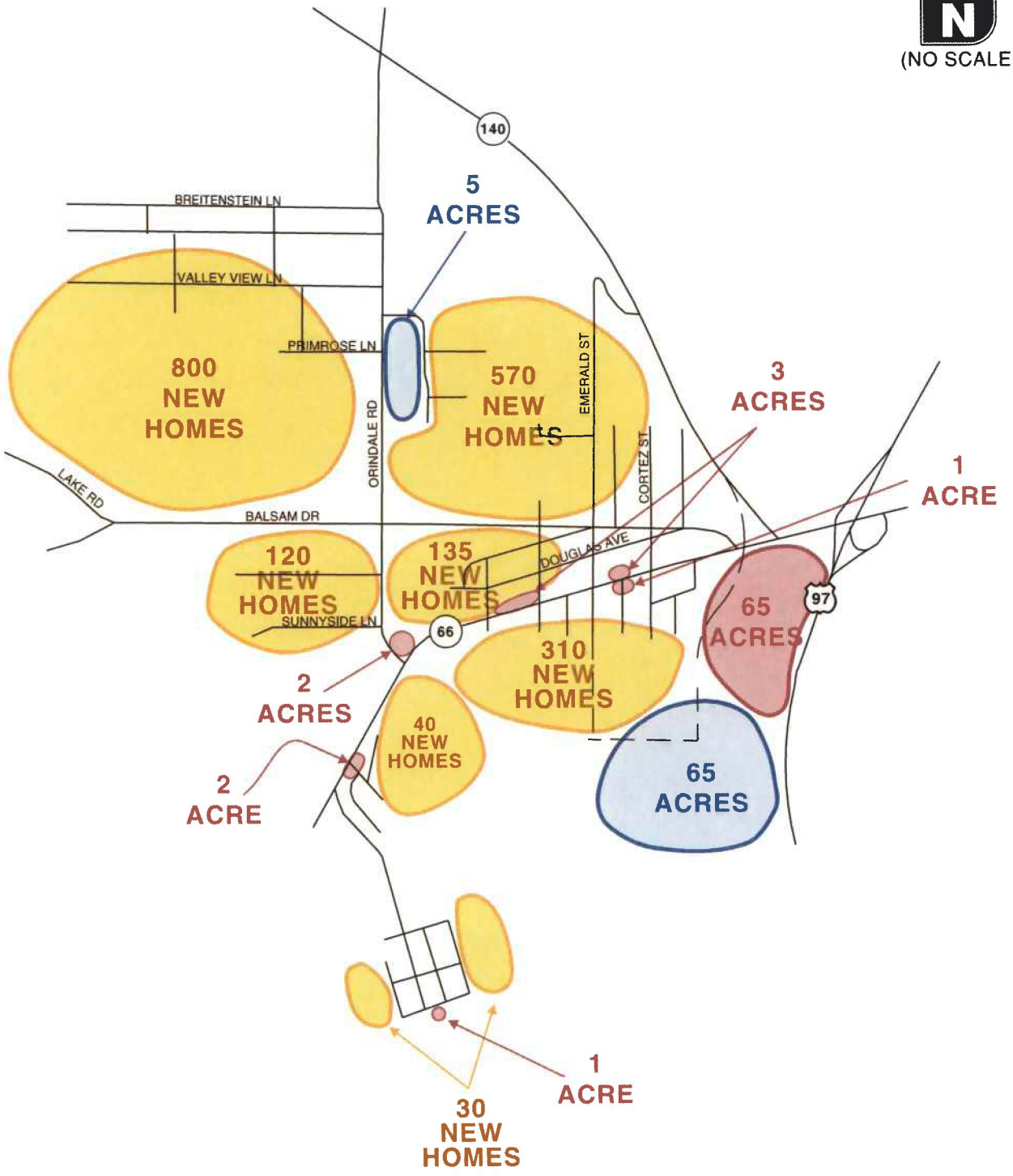
Trip generation estimates for each development scenario were developed based on ITE Trip Generation Manual, 7th Edition.

Trip generation estimates for existing and expected residential development were developed using Land Use Code 210: Single-Family Detached Housing. Land Use Code 820: Shopping Center was used to estimate the trip generation potential of land zoned General Commercial or Transportation Commercial, while Land Use Code 851: Convenience Store was used to estimate the trip generation potential of land zoned Neighborhood Commercial.

Fifty percent of the commercial trips were assumed to be new trips on the network (primary trips), 34 percent of the trips were assumed to be trips already on OR-66 or OR-140 that are diverted to or from the commercial site (pass-by trips), and the remaining 16 percent of trips were assumed to be trips already on Highway 97 that are diverted to and from the commercial site (diverted link trips). These ratios are consistent with the ITE Trip Generation Handbook, 7th Edition.

Because it was assumed that existing homes on parcels larger than 1 acre could either redeveloped or subdivided a trip discount was included to provide a reduction for the existing use (85 in the northern sub-section, 10 in the southern sub-section). A trip discount allows a property owner to receive a credit for the existing trips in the event that a site is redeveloped. For example, if a property owner replaces an existing single-family home (10 daily trips) with five new single-family homes (50 daily trips) a 10 trip credit is applied and the development is charged for 40 new trips.

Table 2 shows the estimated trip generation for the northern and southern sub-sections and for the entire study area.



LEGEND	Northern Sub-Section	Southern Sub-Section
Residential	1625 New Homes	380 New Homes
Commercial	5 Acres (39,000 sf leasable space)	69 Acres (605,000 sf leasable space)
Industrial	5 Acres	65 Acres

Approximate Development Potential
Klamath Falls, Oregon

FIGURE 7

H:\PROJFILE\7718\DWGS\FIGS\03-16-07\7718F302.CDR

Table 2 Revised Estimated Trip Generation

Land Use	ITE Code	Size (units)	Daily Trips	AM Peak Hour Trips			PM Peak Hour Trips		
				In	Out	Total	In	Out	Total
Northern Sub-Section									
Residential	210	1,710	16,365	320	960	1,285	1,090	640	1,730
Industrial	110	5	260	35	5	40	5	25	30
Commercial	820/ 851	39,000	4,710	170	160	330	180	180	360
Discount for Existing Homes	210	(85)	(815)	(15)	(50)	(65)	(55)	(30)	(85)
Discount for Commercial Pass-by (34%)	820/ 851		(1,600)	(55)	(55)	(110)	(60)	(60)	(120)
Discount for Commercial Diverted (16%)	820/ 851		(755)	(25)	(25)	(50)	(30)	(30)	(60)
Net New Trips			***18,165***	***430***	***995***	***1,430***	***1,130***	***725***	***1,855***
Southern Sub-Section									
Residential	210	390	3,715	70	220	290	245	145	390
Industrial	120	65	435	65	65	130	70	70	140
Commercial	820/ 851	605,000	28,470	500	360	860	1,180	1,265	2,445
Discount for Existing Homes	210	(10)	(95)	(5)	(5)	(10)	(5)	(5)	(10)
Discount for Commercial Pass-by (34%)	820/ 851		(9,680)	(145)	(145)	(290)	(415)	(415)	(830)
Discount for Commercial Diverted (16%)	820/ 851		(4,555)	(70)	(70)	(140)	(195)	(195)	(390)
Net New Trips			***18,290***	***415***	***425***	***840***	***880***	***865***	***1,745***
Total Study Area									
Total New Trips			***36,455***	***845***	***1,420***	***2,270***	***2,010***	***1,590***	***3,600***
Total New Trips Excluding Commercial			***19,865***	***470***	***1,195***	***1,670***	***1,350***	***845***	***2,195***

If development occurs as assumed, a total of 2,005 (1,625 in the north and 380 in the south) new homes could be built in the study area. Additionally, 644,000 square feet of commercial property could be built and 70 acres of industrial land could be developed. In total, build-out of the study area could generate approximately 36,455 new trips daily with 2,270 occurring during the weekday a.m. peak hour and 3,600 occurring during the weekday p.m. peak hour.

If the commercial trips are excluded from the SDC program, development included in the SDC program could generate an estimated 19,865 daily trips.

Trip Distribution

The distribution of new trips onto the study area roadway system was estimated based on local and regional destinations, an examination of the transportation facilities and the relative travel times to reach the major roadways. It was assumed that the vast majority of weekday a.m. and p.m. peak hour trips to and from homes within the study area will be destined to and from

downtown Klamath Falls via Highway 97. The same trip distribution pattern was assumed for the industrial development because it is expected that most of the trips with be destined to or arriving via Highway 97. Based on discussions with City staff and an evaluation of local and regional commercial centers, it was estimated that the primary market areas for the commercial properties in the study area will be within the study area and development northwest of the study area. Only a small percentage of the new trips are expected to travel to or from downtown Klamath Falls and areas to the east. The residential and industrial trip distribution pattern is illustrated in Figure 8. The commercial trip distribution pattern shown in Figure 9 applies only to primary trips to and from the commercial properties. As described above, half of the commercial trips are assumed to be pass-by or diverted trips traveling on OR-66, OR-140, or Highway 97. These trips are not included in the distribution pattern shown in Figure 9.

Figure 10 shows the assignment of new trips onto the network. *Appendix "E" shows the assignment of trips onto the network by land use and location within the study area.*

Forecast Traffic Operations

The Year 2025 Regional Background Growth traffic volumes shown in Figure 6 were added to the traffic volumes expected to be generated by build-out of the study area shown in Figure 10 to reach the year 2025 Local Build-Out traffic volumes shown in Figure 11. Figure 11 shows the forecast total traffic operations associated with build-out of the study area in year 2025.

Mitigated Traffic Conditions

The following roadway segment adjustments are recommended to accommodate the projected traffic volumes:

1. OR-66: 5-lane Major Arterial between Orindale and Highway 97
2. Orindale Road: 3-lane Major Collector between OR-140 and OR-66
3. Emerald Street: 3-lane Minor Collector south of Balsam
4. Balsam Drive: 3-lane Minor Collector between Orindale and Emerald
5. Emerald Street Extension: 3-lane Minor Collector between OR-66 and industrial property boundary
6. OR-140/Commercial Extension: 3-lane Major Collector between OR-66 and industrial property boundary
7. New Collector: 3-lane Minor Collector between Emerald Extension and Commercial Extension

In addition, the following intersection improvements are needed to achieve the operational conditions shown in Figure 11:

1. Orindale Road/OR-140: provide eastbound right-turn lane and northbound left-turn lane (in addition to signalization and eastbound left-turn lane assumed under regional growth conditions)

2. Orindale Road/Balsam Drive: Signalize or install a single-lane roundabout [3]
3. Emerald Street/Balsam Drive: Convert stop-control from north-south movements to east-west movements
4. Orindale Road/OR-66: Signalize, add westbound right-turn lane
5. OR-66/Emerald Street: Signalize, add westbound right-turn lane
6. OR-66/OR-140: Provide northbound, eastbound, and westbound right-turn lanes; provide second eastbound and westbound left-turn lanes; provide second southbound receiving lane

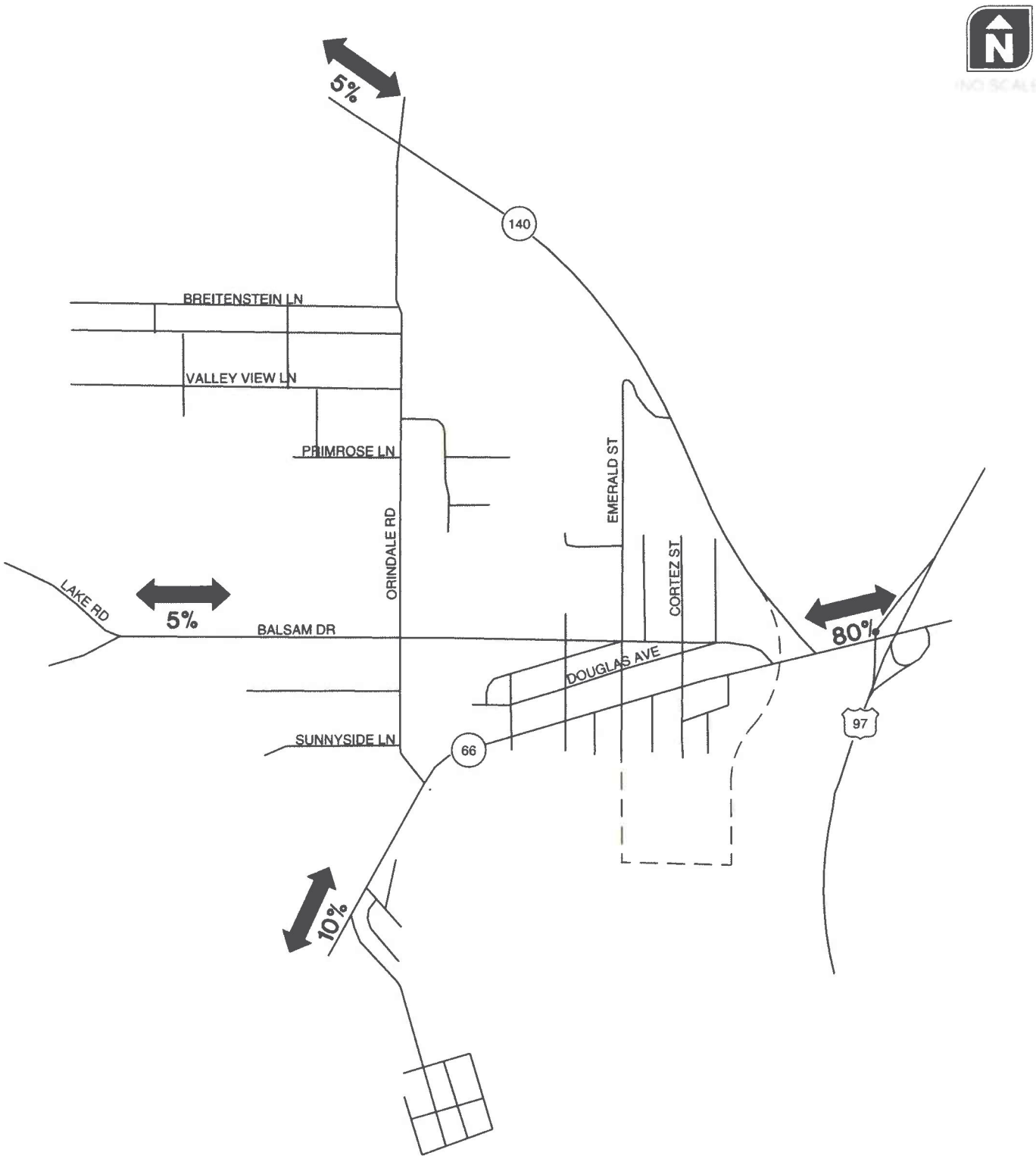
With these improvements in place, all signalized study intersections are forecast to operate under capacity at LOS D or better during the weekday a.m. and p.m. peak hours. The unsignalized Emerald Street/Balsam Drive intersection is forecast to operate at LOS E during the p.m. peak hour. The poor LOS at this intersection reflects delay experienced for the critical movement only. The OR-66/OR-140 intersection is forecast to operate with a volume-to-capacity ratio of 0.80 during the weekday a.m. peak hour and 0.88 during the weekday p.m. peak hour. The OR-66/Emerald Street intersection is forecast to operate with a volume to capacity ratio of 0.73 during the p.m. peak hour. All other study intersections on the state highways are forecast to operate at a v/c ratio of 0.67 or better during both peak hours.

The OR-66/OR-140 intersection is forecast to fail to meet the ODOT standard for District highways. To achieve acceptable operations at this intersection without constructing a new facility to share the demand to and from Highway 97, OR-66 would need to be widened to 3-through lanes in each direction in the vicinity of the intersection. ODOT is not likely to build a facility of this size and the right-of-way costs would be extensive, thus it was assumed that the higher level of congestion would be tolerated and that the additional through-lanes would not be constructed. Further analysis of the OR-66/Highway 97 interchange and adjacent segments should be conducted to refine the expected operations at this intersection.

Appendix "D" contains the Local Build-Out operational analysis worksheets.

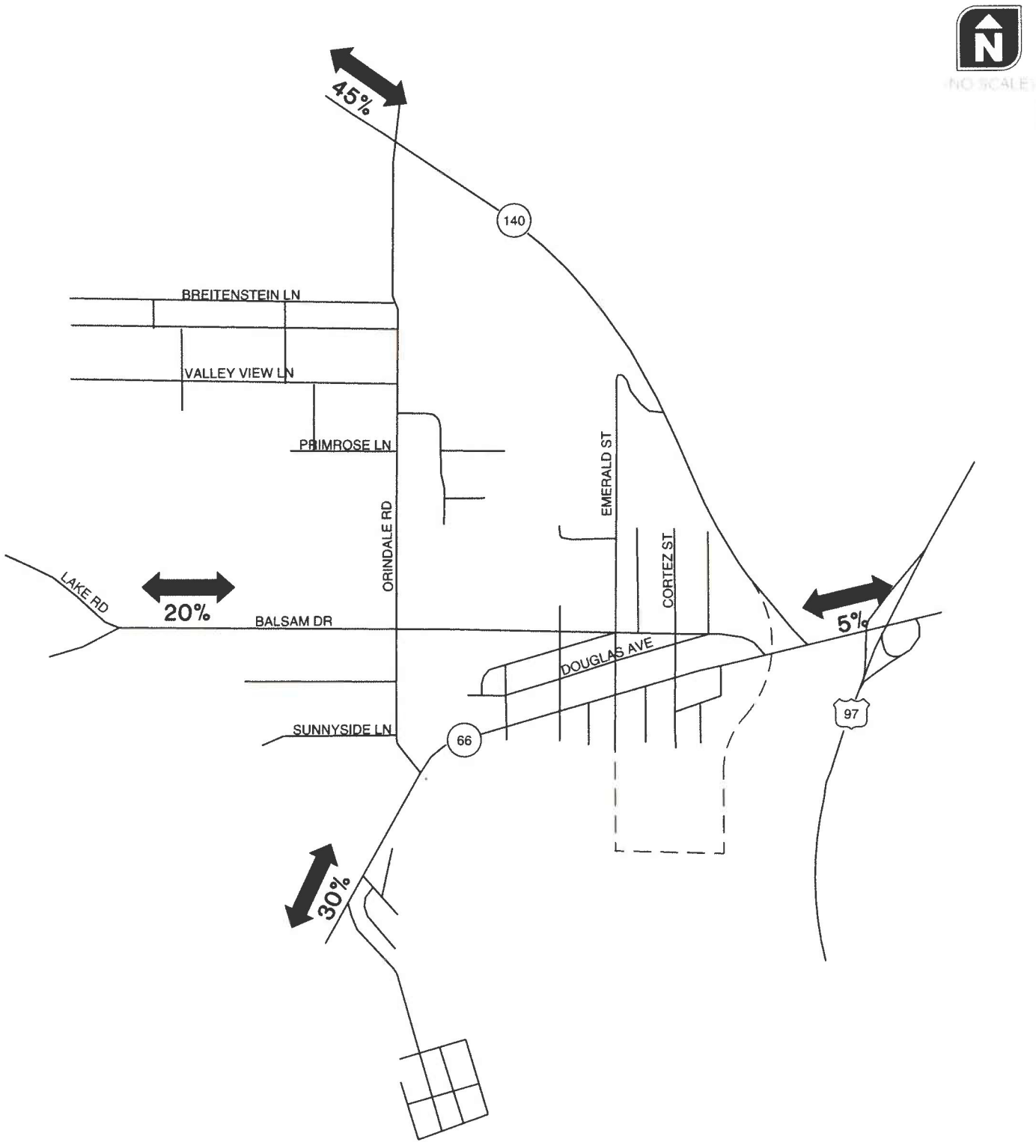
Figures 12 illustrates the necessary mitigation improvements noted in Table 3 and required for build-out of the study area. Figure 13 shows the proposed traffic control and lane configurations associated with the recommended improvements.

[3] A single-lane roundabout was assumed for the cost estimate for the SDC. Either a single-lane roundabout or a signalized intersection may be acceptable alternatives. The cost estimate for the roundabout is slightly higher than for a signal.



TRIP DISTRIBUTION PATTERN
RESIDENTIAL AND INDUSTRIAL DEVELOPMENT
KLAMATH FALLS, OREGON

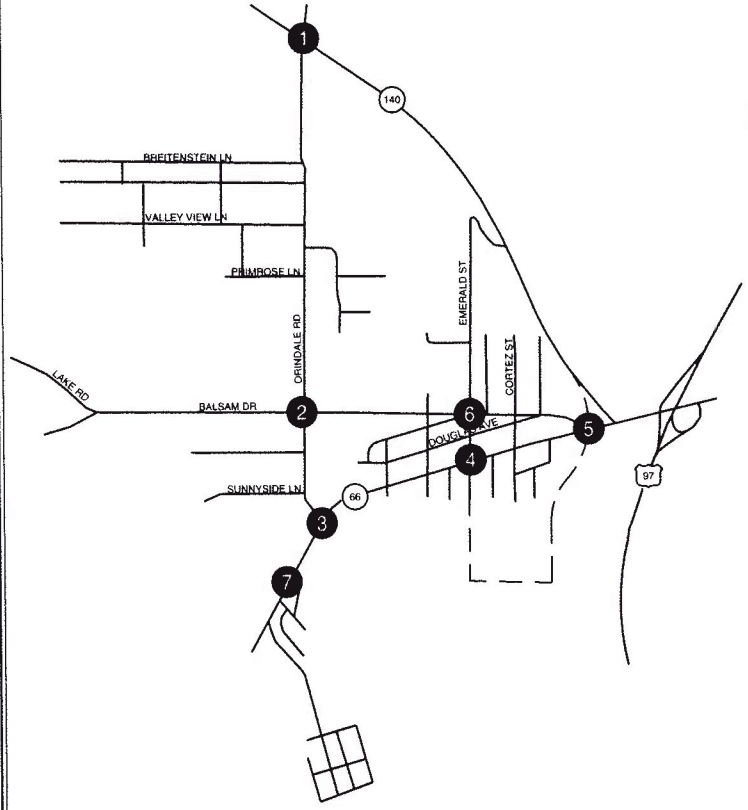
FIGURE 8

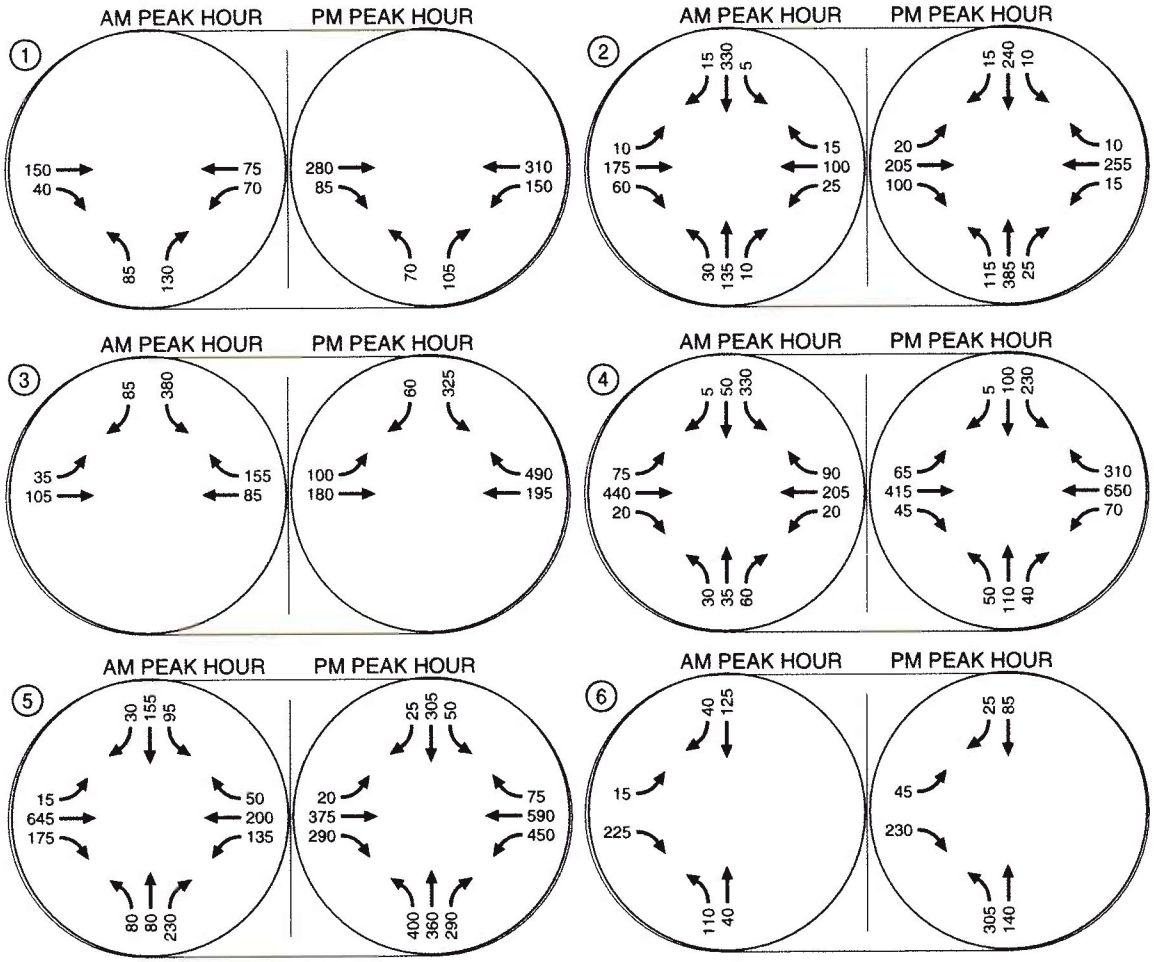


TRIP DISTRIBUTION PATTERN
COMMERCIAL DEVELOPMENT
KLAMATH FALLS, OREGON

FIGURE **9**

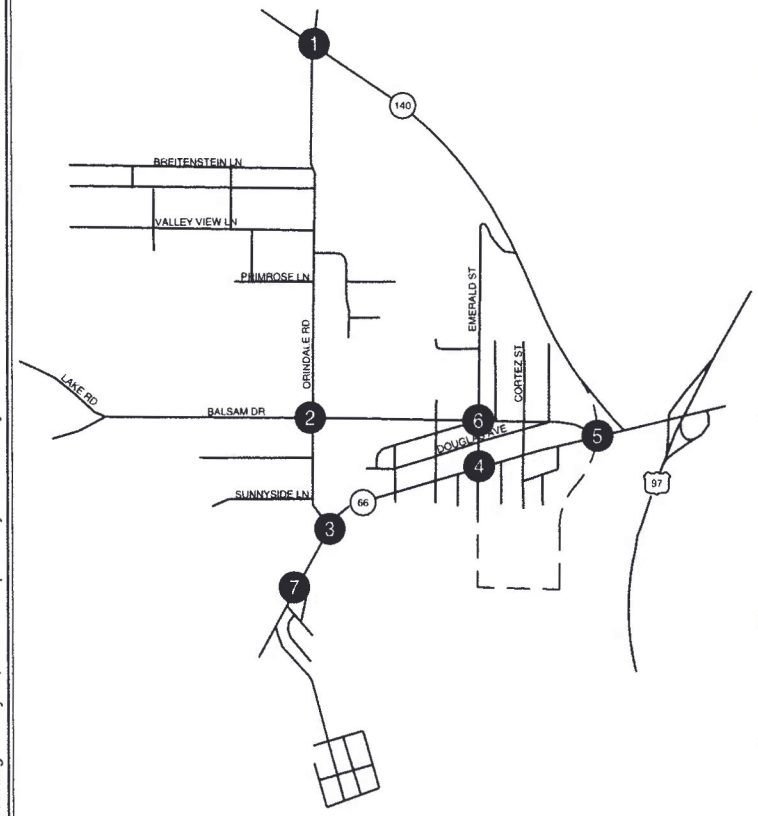
H:\proj\file\7718pdx\DWGS\Figs\7718Figs Full Area.dwg May 14, 2007 - 1:48pm - ksylvester Layout Tab: FIG 09

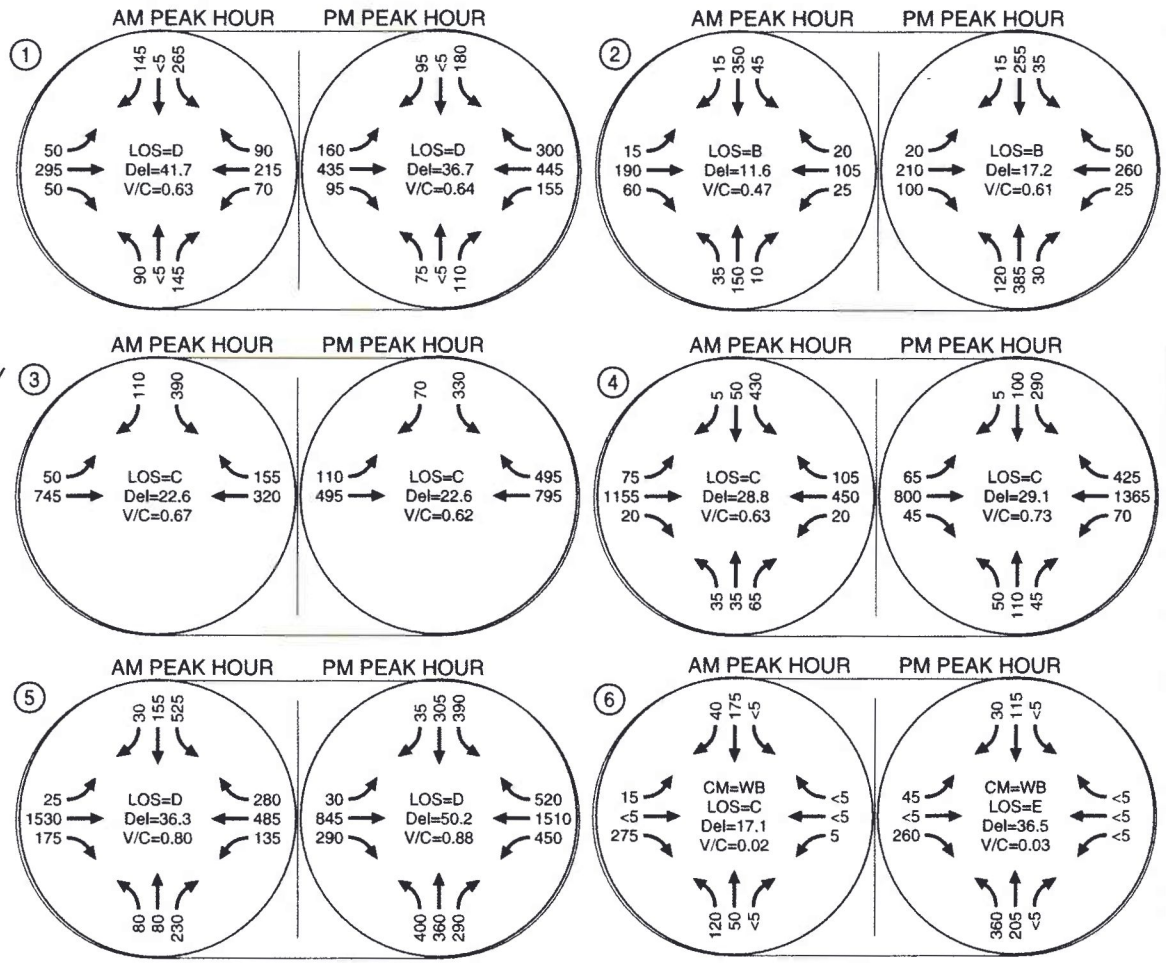




TRIP ASSIGNMENT
LOCAL BUILD OUT
KLAMATH FALLS, OREGON

FIGURE **10**



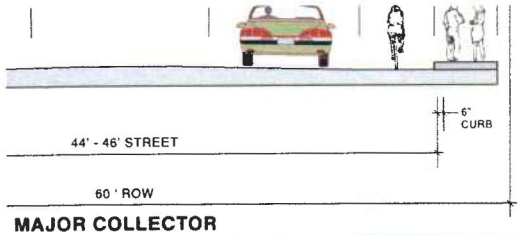


LEGEND

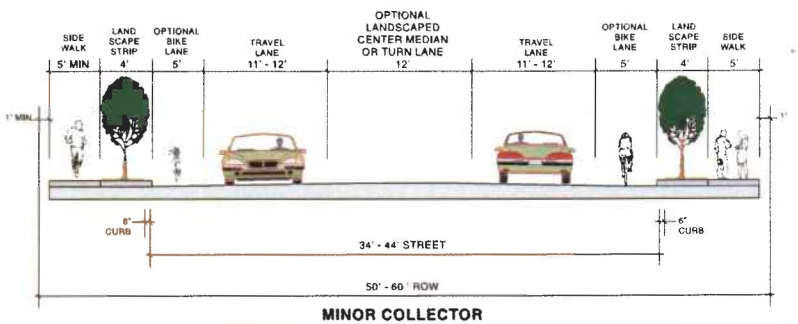
CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

MITIGATED TRAFFIC OPERATIONS
2025 LOCAL BUILD OUT TRAFFIC CONDITIONS
KLAMATH FALLS, OREGON

FIGURE 11

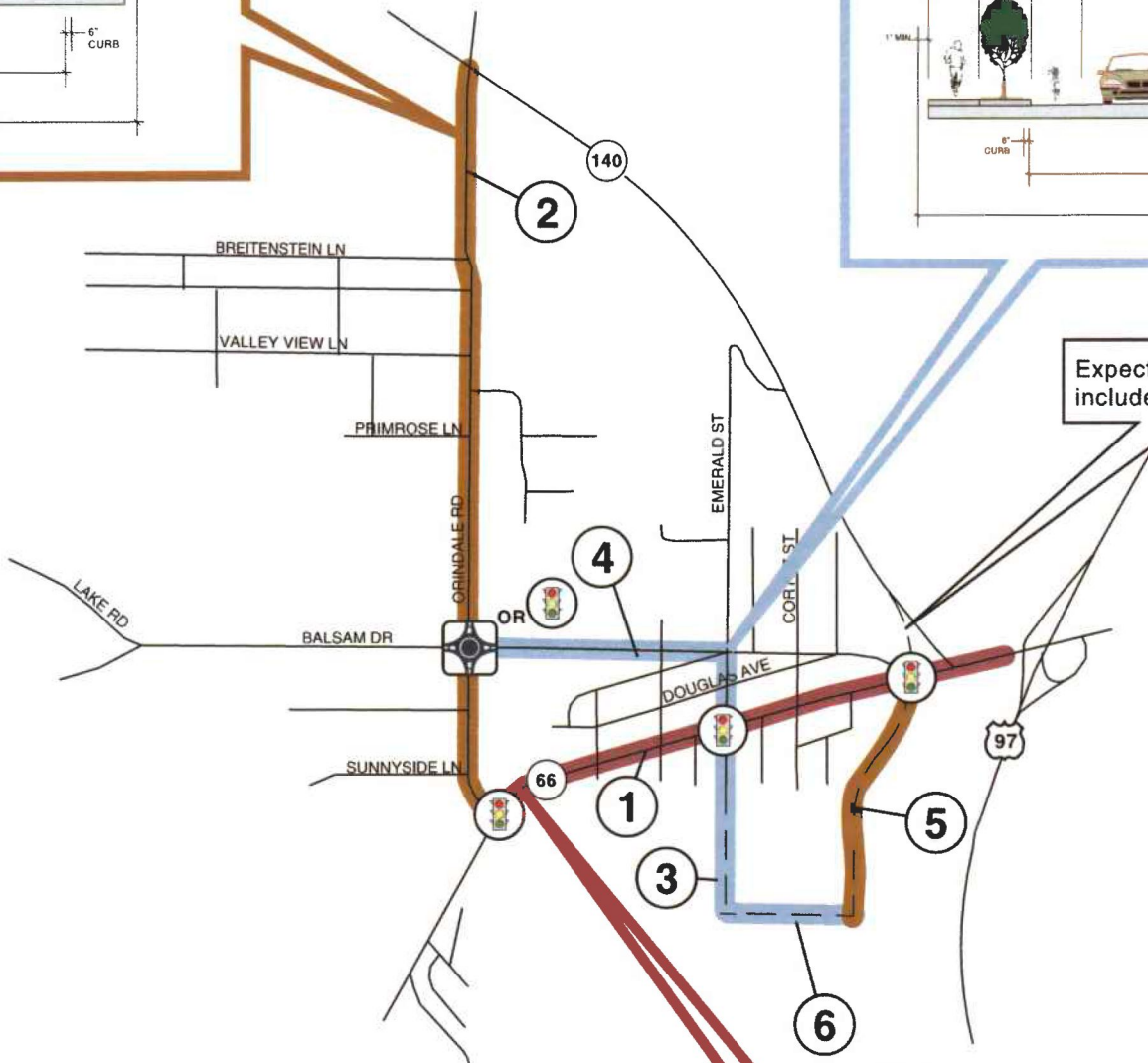


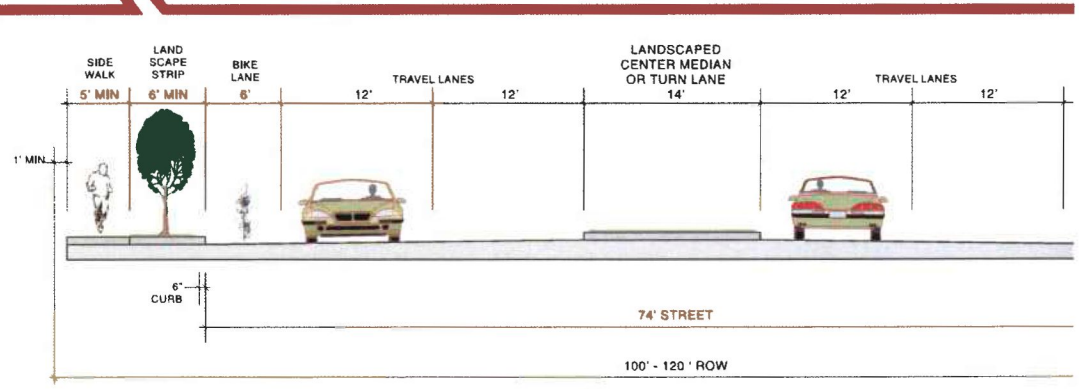
MAJOR COLLECTOR

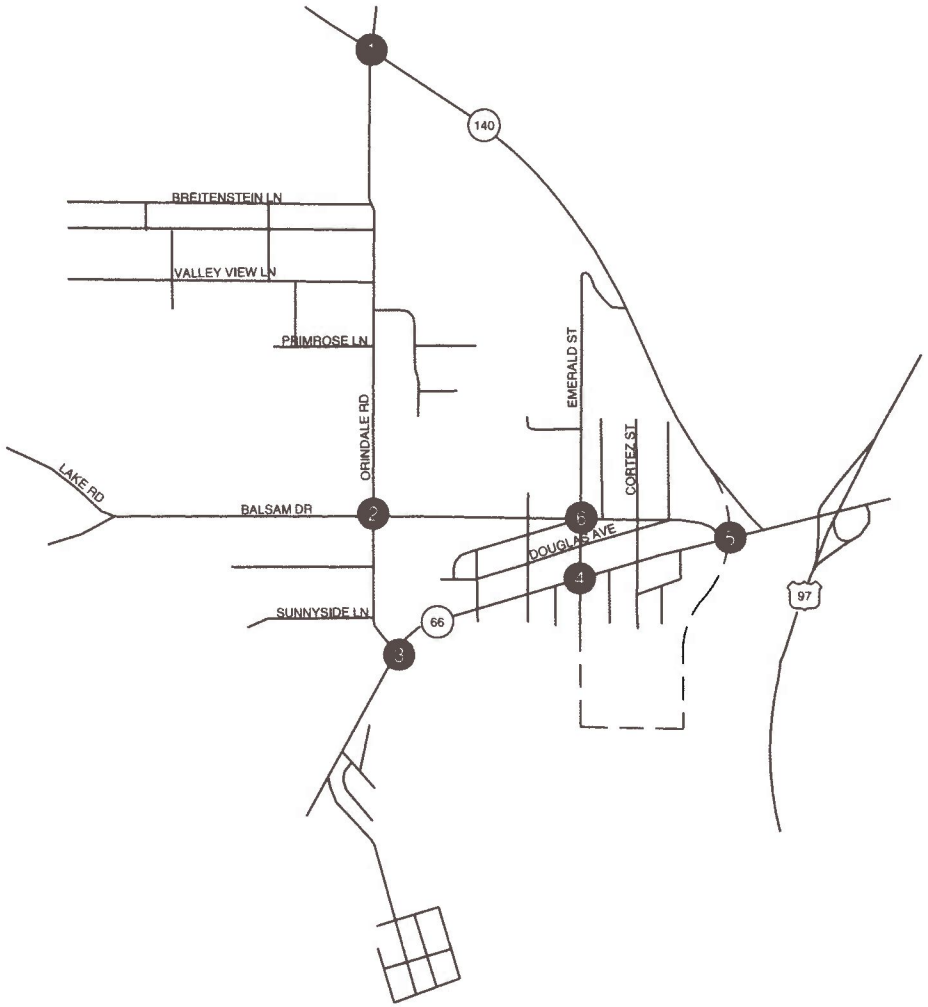


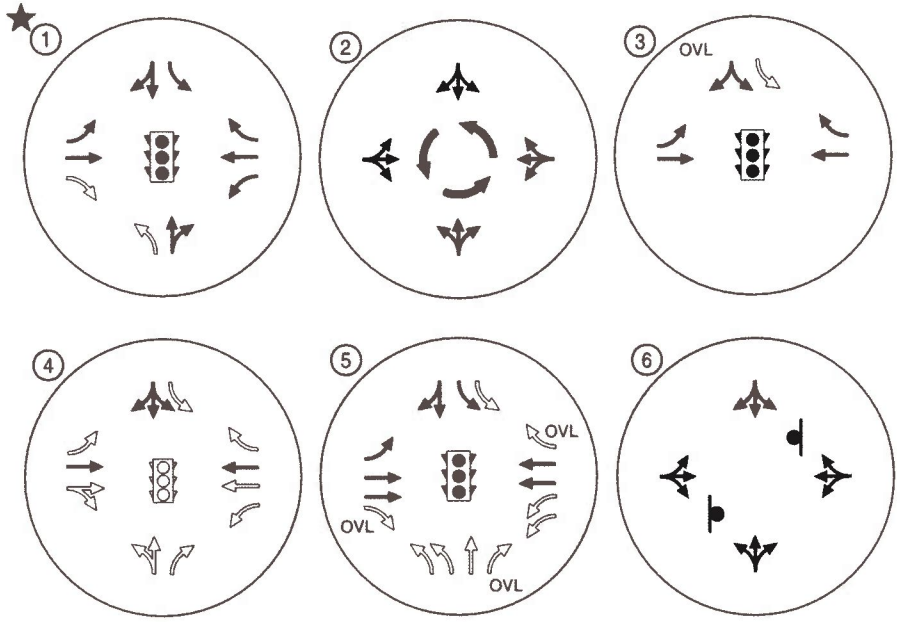
MINOR COLLECTOR

Expected realignment of OR-140 not included in SDC prgram mitigations.









LEGEND

OVL - OVERLAP

- STOP SIGN

- TRAFFIC SIGNAL

★ - Signalization and turn lanes to and from north assumed to be conditioned with development north of the study area

INTERSECTION IMPROVEMENTS
2025 BUILD OUT TRAFFIC CONDITIONS
KLAMATH FALLS, OREGON

FIGURE 13

System Development Charge Alternatives

In order to develop a proportional based system development charge overlay zone for the Orindale/Balsam study area, the costs of the transportation improvement needs were estimated at a planning level. The estimated cost of each improvement was then divided by the total number of estimated new trips generation within the study area to determine the cost per daily trip. *The cost estimation worksheets are shown in Appendix "F".*

Four alternatives were developed, including:

- Alternative A: Including commercial developments and OR-66 improvements
- Alternative B: Including commercial developments, excluding OR-66 improvements
- Alternative C: Excluding commercial developments, including OR-66 improvements
- Alternative D: Excluding commercial developments and OR-66 improvements

Table 3 summarizes the improvement costs for each of the alternatives.

Table 3 Improvement Summary

#	Improvement	Estimated Cost	Cost Per Trip			
			Alt. A	Alt. B	Alt. C	Alt. D
Link Improvements: State Roads						
1	*OR-66*: 5-lane Major Arterial between Hwy 97 and Orindale	$6,681,000	$183		$336	
	*OR-66 right-of-way acquisition**	$2,139,000	$59		$108	
	SUBTOTAL	$8,820,000	$242		$444	
Link Improvements: Local Roads						
2	*Orindale Road:* 3-lane Major Collector between OR-140 and Balsam	$4,487,000	$123	$123	$226	$226
	Orindale Road: 3-lane Major Collector between Balsam and OR-66	$1,342,000	$37	$37	$68	$68
3	*Emerald Street:* 3-lane Minor Collector between Balsam and south end	$530,000	$15	$15	$27	$27
	Emerald Street Extension: 3-lane Minor Collector between OR-66 and Industrial property	$1,555,000	$43	$43	$78	$78
4	*Balsam Drive:* 3-lane Minor Collector between Orindale and Balsam	$1,882,000	$52	$52	$95	$95
5	*OR-140/Commercial Extension:* 3-Lane Major Collector between OR-66 and new collector	$1,968,000	$53	$53	$99	$99
6	*New East-West Collector:* 3-lane Minor Collector between Emerald and Commercial Collector	$1,101,000	$30	$30	$55	$55
	SUBTOTAL	$12,865,000	$353	$353	$648	$648
Intersection Improvements						
	Orindale / OR-140: Provide EB RT lane and NB LT lane	$89,000	$2	$2	$4	$4
	Orindale / Balsam: Single-lane Roundabout	$500,000	$14	$14	$25	$25
	OR-66 / Orindale Road:: Signalize	$336,000	$9	$9	$17	$17
	OR-66 / Orindale Road: Signal modifications, provide WB RT lane, second SB LT lane	$248,000	$7	$7	$13	$13
	OR-66 / Emerald Street: Signalize, provide WB RT lane	$399,000	$11	$11	$20	$20
	OR-66 / OR-140: Provide NB, EB, and WB RT; SB, EB, and WB second LT lanes; second SB receiving lane and taper; signal modification (70% of $618,000)	$433,000	$12	$12	$22	$22
	SUBTOTAL	$2,005,000	$55	$55	$101	$101
Orindale/Balsam System Development Charge Transportation Study						
		$81,500	$2	$2	$4	$4
Total						
Total Cost		$23,771,500	$652		$1,197	
Total Cost (no OR-66 Link Improvements)		$14,951,500		$410		$753

*Based on discussions with the City of Klamath Falls and ODOT, the cost of acquiring right-of-way was estimated using an estimate of $15 per square foot. The cost is considered to be volatile; however, this was agreed to be a conservative order-of-magnitude estimate.

As shown in Table 3, the total cost for all improvements is approximately $23.75 million. The system development charges for the four alternatives range from $410 per trip when commercial developments are included and OR-66 improvements are excluded to $1,197 per trip when commercial developments are excluded and OR-66 improvements are included.

System Development Charge Administration

It is recommended that the City of Klamath Falls develop a System Development Charge program for the Orindale/Balsam study area. The general characteristics of the proposed program are outline below.

Development Process

- The City, in negotiations with the developer, may elect to collect system development charges and develop roadway improvements as necessary, or elect to have the developer construct the roadway improvements as part of the development.

Transportation System Development Charges (TSDC)

- TSDCs are to be collected at the point in time when the water hook-up is processed for each new development.
- The TSDC is to be phased in, with an initial fee of half of the total SDC in 2007. This amount will increase by 10 percent of the total SDC each year for the five successive years. This results in the total SDC charged in 2012 and beyond.
- An annual increase in the TSDC will also be applied to account for inflation and will be tied to the City's adopted price index for construction related projects.

Credits

- All right of way and construction costs within the approved list of roadway improvements paid for and/or constructed by a developer shall result in a credit for the developer.
- Credits accrued by the developer shall be transferable within the study area to other developers.

Exceptions

- Any development in the study area that requires a zone change or comprehensive plan amendment will be required to prepare a traffic impact study. The study will be used to determine the number of primary trips that the site will generate and the resultant system development charge. In addition, land use actions that result in a significant impact per OAR 660-12-0060 will potentially be responsible for additional improvements not identified within the Orindale/Balsam transportation master plan.

Benefits

- Developers are able to proceed with development without preparing a Traffic Impact Analysis as a means to identify appropriate mitigation measures.

- All new development to the area contributes an equal and proportionate share to the necessary future roadway improvements.
- Provides predictability and immediate response from the City when the development is consistent with the sub-area transportation master plan assumptions.

Action Items

- Gain City Council approval of the proposed System Development Charge Program
- City adoption of ordinance to provide for the System Development Charge Program

In order for the System Development Charge Program to be equally applied to all future developments in the Orindale/Balsam Sub-Area, an Intergovernmental Agreement (IGA) is required between the City, Klamath County, and ODOT. This IGA will ensure that all future development in the Klamath Falls Orindale/Balsam Sub-Area follow the same criteria for development, regardless of the responsible agency.